Louisiana-Pacific Corporation

30

4-41

GOES WITH TEST REPORT # 20

Route 8, Box 8263
Hayward, Wisconsin 54843
715/634-3454
FAX: 715/634-5963

June 22, 1995

Mr. Michael F. Wood, Director
Mr. Laxmi Kesari
Multi Media Enforcement & Strategic
Planning Division
United States Environmental Protection Agency
Aerials Rios Blvd.
1200 Pennsylvania, N.W., 7th Floor
Room 3119C
Washington, D.C. 20004

Re: Clean Air Enforcement Action - United States V. Louisiana-Pacific Corporation, No: Cv 93-0869 (W.D.La)

Dear Gentlemen:

Attached please find two copies of a revised page 17 for a report entitled "Report of Emissions Testing of a Regenerative Thermal Oxidizer, Louisiana-Pacific Corporation, Houlton, Maine." This testing was performed April 19, 1995 on the press RTO. The revision concerns a description of the test method used and does not affect the results. Also enclosed are two copies of the particulate lab data, along with the cover letter from TRC. This additional data has been submitted for your information.

If you have any questions regarding this information please contact me.

Sincerely,

S. M. Somers

Susan Somers

cc: Robert Hartley - Maine DEP
Mark Stile - Houlton, ME
Norm Radford Jr. - Vinson &
Mark Becker - Hayward

ROUTING & REQUEST

Please... To: Michael Wood
- ☐ Read
- ☐ Handle
- ☐ Approve

And...
- ☐ Forward From: Sue Somers
- ☐ Return
- ☐ Keep or Toss
- ☐ Review with Me Date: 6-22-95

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TRC Environmental Corporation

5 Waterside Crossing
Windsor, Connecticut 06095
Telephone 203-289-8631
Facsimile 203-298-6399

June 9, 1995

Ms. Susan Somers
Louisiana Pacific Corporation
Route 8, Box 8263
Hayward, WI 54843

Re: Amendments to the Houlton, Maine Emission Test Report

Dear Ms. Somers:

Attached please find six copies of a revised page 17 and six copies of the laboratory data for particulate matter emission tests conducted at the Houlton facility. The laboratory data includes filter weights and probe rinse residue weights.

If you have any questions please do not hesitate to contact Ray Potter or myself.

Yours Very Truly,

TRC ENVIRONMENTAL CORPORATION

James Canora
Manager Environmental Measurements

Mail
2 copies each

for two hours, and weighed to constant weight. Results were reported to the nearest 0.1 mg.

Container No. 2: The acetone wash was transferred to a tared beaker and evaporated to dryness at ambient temperature and pressure. The sample was then oven dried at 320°F ± 10°F for six hours, cooled in a desiccator for two hours, and weighed to constant weight. Results were reported to the nearest 0.1 mg.

Container No. 3: The impinger contents were extracted using methylene chloride to separate the organic and inorganic materials. The resulting extracts were transferred to tared beakers and evaporated to dryness at ambient temperature and pressure. The samples were then air dried in a desiccator and weighed to constant weight. Results were reported to the nearest 0.1 mg.

Container No. 4: Silica gel was weighed to the nearest 0.5 mg. The weight of the moisture entrapped in the silica gel, along with the impingers, was used to calculate the moisture content of the stack gas.

4.3 EPA Methd 3 - Oxygen and Carbon Dioxide Monoxide Measurements

An integrated Tedlar bag sample was collected concurrent with each PM test run and analyzed in accordance with EPA Method 3 for O_2 and CO_2. **Figure 4-5** presents a schematic of the sampling train. Concentrations of O_2 and CO_2 were measured using an Orsat flue gas analyzer. Each bag sample was analyzed in triplicate.

Page

ANALYSIS OF EPA METHOD 5 OR CASCADE FILTERS

Project Name: L.P. Project Number: 18226

Weighing QC

M5 Probe Rinse Weights

Final Weight	1	2	3	4	5	6
Date	4/24	4/24				
Time	10:20	16:24				
0.500g	0.49972	0.49972				
100.000g	99.99914	99.99919				
%RH	28%	28%				
°F	73°	72°				

Silica Gel

Sample ID	g

Sample Type F=Filter T=Thimble PW=Probe Wash C=Cascade Filter

Test # / mls PW	F/T# / Beaker #	FW 1	FW 2	FW 3	FW 4	FW 5	FW 6	Average FW	Initial W F/T	Initial W Beaker	Blank Correction	mg Particulate
In-1-2	2316	112.13861	112.13859					112.13937	112.13311 ✓			5.26 mg ✓
In-2-2	1458	100.02964	100.02996					100.02981	100.02585 ✓			3.96 mg ✓
In-3-2	75	98.74106	98.74116					98.74111	98.74000 ✓			1.11 mg ✓
Out-1-2	1341	101.28390	101.28402					101.28396	101.28170 ✓			2.26 mg ✓
Out-2-2	1465	100.04956	100.04966					100.04961	100.04818 ✓			1.43 mg ✓
Out-3-2	1466	107.42076	107.42086					107.42081	107.41990 ✓			0.91 mg ✓
Acetone Blank	1432	98.96020	98.96026					98.96023	98.96025 ✓			-0.02 mg nd < 0.5 mg ✓

Witnessed and Understood by me,

Lance Cottin

Date: 4/25/95 Recorded by, Maureen Keating Date 4/24/95

Form 911-2

Page

ANALYSIS OF EPA METHOD 5 OR CASCADE FILTERS

Project Name: Louisiana Pacific Project Number: 18226

M.5 Filter Weights

Weighing QC

Final Weight	1	2	3	4	5	6
Date	4/24/95	4/24/95				
Time	07:50	14:00				
0.500g	0.49980	0.49980				
100.000g	99.99912	99.99912				
%RH	51%	51%				
°F	76°	76°				

Silica Gel

Sample ID	9

Sample Type F=Filter T=Thimble PW=Probe Wash C=Cascade Filter

Test # mls PW	F/T# Beaker #	FW	FW 2	FW 3	FW 4	FW 5	FW 6	Average FW	Initial W F/T Initial W Beaker	Blank Correction	mg Particulate
IN-1-1	251	0.46397	0.46388					0.46392	0.46056		-2.64 mg nd<0.5 mg
IN-2-1	248	0.46643	0.46622					0.46632	0.47066		-4.34 mg nd<0.5 mg
IN-3-1	250	0.46786	0.46787					0.46786	0.47001		-2.15 mg nd<0.5 mg
O-1-1	252	0.46397	0.46387					0.46392	0.46620		-2.28 mg nd<0.5 mg
O-2-1	247	0.46861	0.46867					0.46864	0.47060		-1.96 mg nd<0.5 mg
O-3-1	249	0.46541	0.46534					0.46538	0.46717		-1.79 mg nd<0.5 mg
Filter Blank	246	0.46832	0.46833					0.46832	0.46838		-0.06 mg nd<0.5 mg

Witnessed and Understood by me,

Date:

Recorded by. Lance Colth

Date 4/24/95

Form 911-2

ROUTING & REQUEST

Please...
To: Laxmi Kesari
☐ Read
☐ Handle
☐ Approve
And...
☐ Forward
From: Sue Somers
☐ Return
☐ Keep or Toss
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Date: 6-22-95

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Louisiana-Pacific Corporation

Route 8, Box 8263
Hayward, Wisconsin 54843
715/634-3454
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June 22, 1995

Mr. Michael F. Wood, Director
Mr. Laxmi Kesari
Multi Media Enforcement & Strategic
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1200 Pennsylvania, N.W., 7th Floor
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S. M. Somers

Susan Somers

cc: Robert Hartley - Maine DEP w/enc
Mark Stile - Houlton, ME
Norm Radford Jr. - Vinson & Elkins
Mark Becker - Hayward
Gerry Nason - Houlton, ME w/enc
Keith Seelig - Hayward WI
Elizabeth Smith - Portland w/enc

TRC Environmental Corporation

5 Waterside Crossing
Windsor, Connecticut 06095
Telephone 203-289-8631
Facsimile 203-298-6399

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Louisiana Pacific Corporation
Route 8, Box 8263
Hayward, WI 54843

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TRC ENVIRONMENTAL CORPORATION

James Canora
Manager Environmental Measurements

Mail
2 copies each

for two hours, and weighed to constant weight. Results were reported to the nearest 0.1 mg.

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An integrated Tedlar bag sample was collected concurrent with each PM test run and analyzed in accordance with EPA Method 3 for O_2 and CO_2. **Figure 4-5** presents a schematic of the sampling train. Concentrations of O_2 and CO_2 were measured using an Orsat flue gas analyzer. Each bag sample was analyzed in triplicate.

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ANALYSIS OF EPA METHOD 5 OR CASCADE FILTERS

Project Name: L.P. Project Number: 18226

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Weighing QC

Final Weight	1	2	3	4	5	6
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100.000g	99.9914	99.9914				
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°F	72°	72°				

Silica Gel

Sample ID	g

Sample Type: F=Filter I=Thimble PW=Probe Wash C=Cascade Filter

Test # / mls PW	F/I# / Beaker #	FW 1	FW 2	FW 3	Average FW	Initial W F/I	Initial W Beaker	Blank Correction	mg Particulate
		FW 4	FW 5	FW 6					
In-1-2		112.13861	112.13859		112.13937				5.26 mg ✓
	2360					112.13311 ✓			
In-2-2		100.02964	100.02996		100.02981				3.96 mg ✓
	1458					100.02585 ✓			
In-3-2		98.74106	98.74116		98.7411				1.11 mg ✓
	75					98.74000 ✓			
Out-1-2		101.28390	101.28402		101.28396				2.26 mg ✓
	1341					101.28170 ✓			
Out-2-2		100.04956	100.04966		100.04961				1.43 mg ✓
	1465					100.04818 ✓			
Out-3-2		107.42076	107.42086		107.42081				0.91 mg ✓
	1466					107.41990 ✓			
Acetone Blank		98.96020	98.96026		98.96023				-0.02 mg
	1432					98.96025 ✓			nd < 0.5 mg ✓

Witnessed and Understood by me,

Lance Cotton

Date: 4/25/95 Recorded by, Maureen Keating Date 4/24/95

Form 911-2

Page

ANALYSIS OF EPA METHOD 5 OR CASCADE FILTERS

Project Name: Louisiana Pacific Project Number: 18226

M.5 Filter Weights

Weighing QC

Final Weight	1	2	3	4	5	6
Date	4/24/95	4/24/95				
Time	07:50	14:00				
0.500g	0.49980	0.49980				
100.000g	99.99912	99.99912				
%RH	51%	51%				
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Sample ID	g

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IN-3-1	250	0.46786	0.46787		0.46786	0.47001		-2.15 mg nd<0.5 mg
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O-2-1	247	0.46861	0.46867		0.46864	0.47060		-1.96 mg nd<0.5 mg
O-3-1	249	0.46541	0.46534		0.46538	0.46717		-1.79 mg nd<0.5 mg
Filter Blank	246	0.46832	0.46833		0.46832	0.46838		-0.06 mg nd<0.5 mg

Witnessed and Understood by me,

Date: | Recorded by: Lance Colth | Date 4/24/95

Form 911-2

Report of Emissions Testing of a Regenerative Thermal Oxidizer

Louisiana-Pacific Corporation
Houlton, Maine

Prepared By:

Raymond D. Potter
Principal Scientist

TRC Project No. 18226

May, 1995

TRC Environmental Corporation

5 Waterside Crossing
Windsor, CT 06095
☎ (203) 289-8631 Fax (203) 298-6399

A TRC Company

Table of Contents

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Appendices

1.0 INTRODUCTION

TRC Environmental Corporation (TRC) was retained by Louisiana-Pacific Corporation to conduct a compliance test program at its facility in New Limerick, Maine. The purpose of this program was to demonstrate that emissions from the regenerative thermal oxidizer (RTO) are in compliance with United States Environmental Protection Agency (USEPA) regulations and the State of Maine Department of Environmental Protection Agency (MEDEP) permit number A-327-72-E-M. Testing is required by the Consent Decree Between the USEPA and Louisiana-Pacific issued on September 30, 1993. Emissions measurements were performed to determine the capture efficiency and destruction efficiency of the vapor collection system of the press enclosure and associated RTO. Testing was conducted at the inlet and outlet of the RTO to determine inlet loading and outlet emissions of total hydrocarbons (THC) and total particulate matter (TPM), including condensible particulate matter. All testing was conducted in accordance with accepted USEPA test methodologies.

TRC demonstrated the collection efficiency of the vapor collection/control system by evaluation of the permanent enclosure around the press against the criteria of proposed EPA Method 30. The THC destruction efficiency was determined by simultaneously monitoring inlet and outlet concentrations of THC in accordance with EPA Method 25A. The destruction efficiency of TPM was determined by simultaneous measurements for TPM at the RTO inlet and outlet in accordance with EPA Methods 1-5 and 202.

The test program was conducted on April 19, 1995 and was supervised by Mr. Raymond Potter of TRC. Mr. Mark Becker, of Louisiana-Pacific provided the process and logistical support during the program. Mr. Robert Hartely, of the Maine State Department of Environmental Protection, observed the test program.

Section 2.0 of this test report presents a summary and discussion of the test results. Section 3.0 describes the process and associated control equipment and the parameters that were monitored during testing. Section 4.0 details the test methods to be used, and Section 5.0 presents TRC's quality control plan for this program.

2.0 SUMMARY AND DISCUSSION OF RESULTS

Triplicate tests were conducted at the inlet and outlet of the RTO to determine the inlet loading and outlet emission rates of THC and TPM. Sampling was conducted in accordance with EPA Methods 1-5, 25A, and 202. Testing was performed simultaneously at the inlet and outlet sampling locations. In addition, the permanent enclosure that collects vapors from the press was evaluated in accordance with EPA Method 30. The following sections provide the results

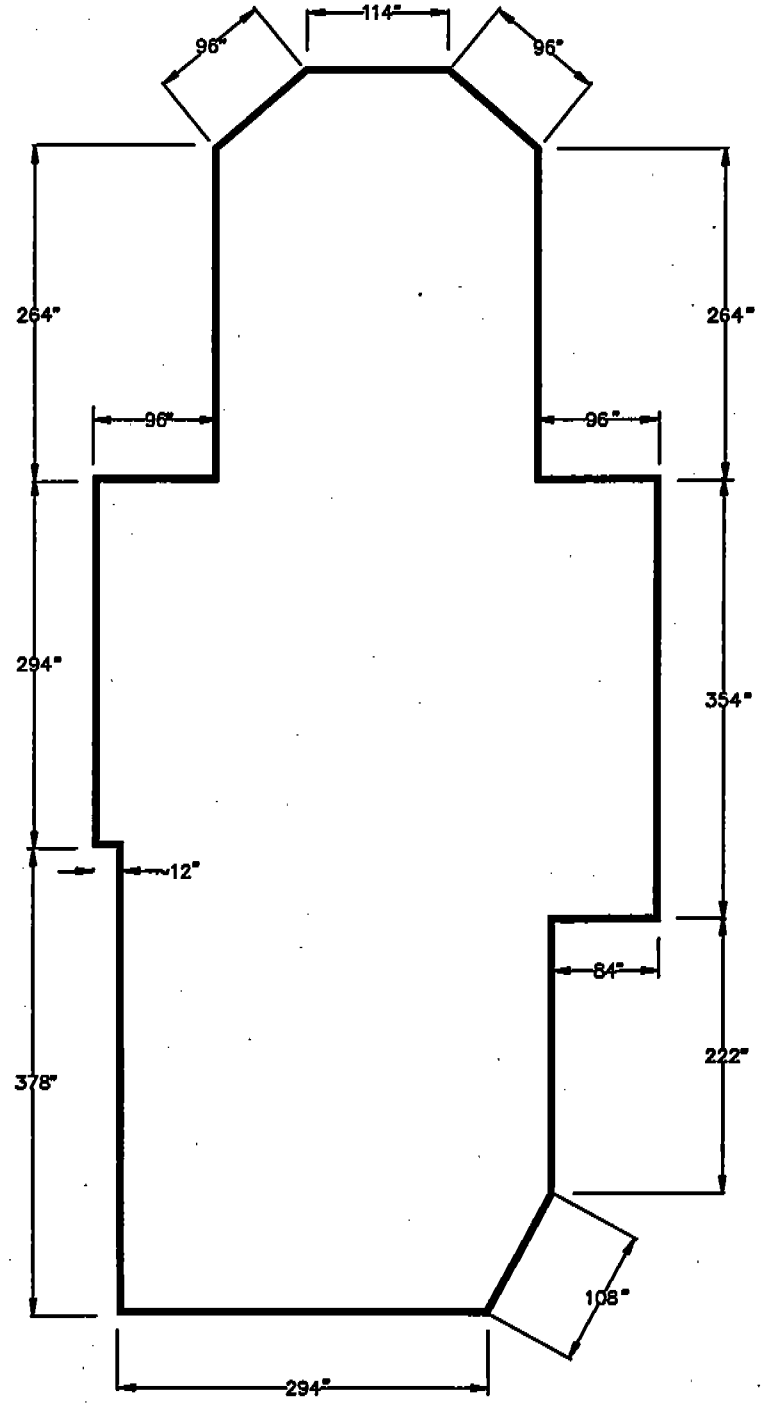
2.1 Capture Efficiency Evaluation of the Press Enclosure

Fugitive emissions created during the pressing of oriented strand board (OSB) are collected by a total enclosure that surrounds the press. The capture efficiency of the press enclosure was evaluated in accordance with EPA Method 30 guidelines. This method specifies physical characteristics and air velocities within an enclosure in order to qualify it as 100% efficient. Figure 2-1 presents a diagram of the total enclosure. The ratio of natural draft opening area to total enclosure area was 0.01, which is within the limit of 0.05 as specified by method 30.

In addition, TRC monitored air flow into the enclosure during each test by direct measurement and the use of smoke tubes. The results of these measurements are presented in Table 2-1. These measurements indicated that the flowrate at each natural draft opening was directed into the enclosure and was in excess of the specified 200 feet per minute. All associated field notes are presented in Appendix A.

2.2 THC Destruction Efficiency and Emissions

Triplicate 60-minute tests were conducted at the RTO inlet and outlet to determine the emission rate and destruction efficiency of THCs. The results of the inlet and outlet THC testing are presented in Table 2-2. The results indicate that the average inlet loading rate was 5.75 pounds per hour (lb/hr) and the average outlet emission rate was 0.19 lb/hr. The average THC destruction efficiency was 96.7%. All associated field data and calculations are presented in Appendix B.



ENCLOSURE TO NDO RATIO

$$\text{NEAR} = \frac{139.3\ ft^2}{13{,}982.5\ ft^2} = 0.01$$

LIMIT $\leq$ 0.05

* MINIMUM HEIGHT OF ENCLOSURE 472"

TRC
TRC Environmental Corporation
5 Waterside Crossing
Windsor, CT 06095
(203) 289-8631

LOUISIANA-PACIFIC CORPORATION
NEW LIMERICK, MAINE

FIGURE 2-1.
PRESS VENT ENCLOSURE

Date: 5/95 | Drawing No. 18226

Table 2-1

Summary of Velocity Measurements
At NDO Openings
EPA Method 30

Louisiana-Pacific Corporation
New Limerick, Maine
April 19, 1995

NDO #	Description	NDO Velocities Test 1 (fpm)	Test 2 (fpm)	Test 3 (fpm)
1	Open Margin Around Doorway	550	600	600
2	Board Slot (inlet)	400	400	400
4	Open Margin Around Doorway	500	550	500
5	Open Margin Around Doorway	600	600	550
6	Open Margin Around Doorway	600	600	600
7	Open Margin Around Doorway	600	550	550
8	Board Slot (outlet)	450	550	550
9	Open Margin Around Doorway	600	550	600
10	Open Margin Around Doorway	550	600	600
11	Open Margin Around Doorway	500	550	600
NDOs Below Floor Level				
1	Triangle Conveyor *	350	400	300
2	Wall @ Return Conveyor			
	a) Door Slot	600	600	600
	b) Door Slot	500	550	500
	c) Coveyor Slot	400	400	400
MINIMUM VELOCITY		**350**	**400**	**300**

* NDOs at concrete wall could not be accessed for measurement.
Velocity measurements were performed in the doorway to the lower level.

NDO # 3 does not exist. The original numbering of the NDOs skipped #3.

Table 2-2

Summary of Total Hydrocarbon Emissions
EPA Method 25A

Louisiana-Pacific Corporation
New Limerick, Maine
April 19, 1995

Test	Time	Inlet Conc. (ppm)a	Inlet Flowrate (SCFM)b	Inlet Loading Rate (lb/hr)	Outlet Conc. (ppm)a	Outlet Flowrate (SCFM)b	Outlet Loading Rate (lb/hr)	Destruction Efficiency (%)
1	08:40-09:40	13.4	65500	6.02	0.6	65980	0.27	95.49
2	10:40-11:40	13.4	64850	5.96	0.4	64450	0.18	97.03
3	12:35-13:35	12.0	64260	5.29	0.3	64160	0.13	97.50
Average				5.75			0.19	96.68

a - Concentration measured on a wet basis.
b - Standard cubic feet per minute at 68 degrees farenheight and 29.92 inches of mercury. This measurement is not corrected for stack moisture.

2.3 PM Destruction Efficiency and Emissions

Triplicate 72-minute tests were conducted at the RTO inlet and outlet to determine the emission rate and removal efficiency of particulate matter (PM), condensable particulate matter (CPM), and total particulate matter (TPM). The results of the inlet and outlet testing are presented in Tables 2-3 and 2-4, respectivley. Prior to testing, TRC performed cyclonic flow measurements at the inlet and outlet sampling locations. The results of this evaluation demonstrated the absence of cyclonic flow. All associated field data for this evaluation, as well as the remaining particulate sampling, are presented in Appendix C.

2.3.1 Particulate Matter

Particulate matter was measured in accordance with EPA Methods 1-5. PM represents particulate matter that was collected in the front half of the particulate train which includes particulate matter collected on the filter media and on the probe liner. The results indicate that the average inlet loading rate of PM was 0.57 lb/hr and that the average outlet emission rate of PM was 0.33 lb/hr. The average removal efficiency of PM was 47.4%.

2.3.2 Condensible Particulate Matter

Condensable particulate matter was measured in accordance with EPA Method 202. CPM represents particulate matter that was collected in the impinger solutions of the particulate train and includes both organic and inorganic material. The results indicate that the average inlet loading rate of CPM was 1.91 lb/hr and that the average outlet emission rate of CPM was 0.75 lb/hr. The average removal efficiency of CPM was 60.7%.

2.3.3 Total Particulate Matter

Total particulate matter was measured in accordance with EPA Methods 1-5, and 202. TPM represents the sum of the PM and CPM. The inlet results indicated that the average inlet loading concentration was 0.0045 grains per dry standard cubic foot (gr/DSCF) and the average loading rate was 2.48 lb/hr. The outlet results indicated that the average outlet emission concentration was 0.0020 gr/DSCF and the average emission rate was 1.08 lb/hr. The average removal efficiency of TPM was 56.5%.

Table 2-3

Summary of Inlet Particulate Loading
EPA Methods 5 and 202

Louisiana-Pacific Corporation
New Limerick, Maine
April 19, 1995

Test Number Time Location	In-1 0835-0955 Stack	In-2 1040-1200 Stack	In-3 1235-1402 Stack	Average
Stack Conditions				
Stack Temperature (oF)	123	128	127	126
CO_2 (%)	0.10	0.10	0.10	0.10
O_2 (%)	19.6	19.6	19.6	19.6
Moisture (%)	0.54	0.87	1.42	0.94
Volumetric Flowrate, Actual (ACFM)	72700	72500	71800	72300
Volumetric Flowrate, Dry Std. (DSCFM)[a]	65200	64200	63400	64300
Sample Conditions				
Sample Volume Dry (DSCF)	60.46	59.34	58.74	59.51
Isokinetic Ratio (%)	96.9	96.4	96.8	96.7
Particulate Emissions (EPA Method 5)				
Particulate Catch (mg)	5.8	4.5	1.7	4.0
Concentration (grains/DSCF)	0.0015	0.0012	0.0004	0.0010
Mass Emission Rate (lb/hr)	0.82	0.64	0.24	0.57
Condensable Particulate Emissions (EPA Method 202)				
Organic PM Catch (mg)	9.7	10.1	6.4	8.7
Concentration (grains/DSCF)	0.0025	0.0026	0.0017	0.0023
Mass Emission Rate (lb/hr)	1.38	1.44	0.91	1.25
Inorganic PM Catch (mg)	4.4	5.7	4.0	4.7
Concentration (grains/DSCF)	0.0011	0.0015	0.0010	0.0012
Mass Emission Rate (lb/hr)	0.62	0.81	0.57	0.67
Total Condensable PM Emission Rate (lb/hr)	2.00	2.25	1.48	1.91
TOTAL PM INLET LOADING	2.82	2.89	1.72	2.48
Concentration (grains/DSCF)	0.0051	0.0053	0.0032	0.0045
Mass Emission Rate (lb/hr)	2.82	2.89	1.72	2.48

a - DSCFM Dry Standard Conditions at 68oF and 29.92 in. Hg

Table 2-4

Summary of Outlet Particulate Emissions
EPA Methods 5 and 202

Louisiana-Pacific Corporation
New Limerick, Maine
April 19, 1995

Test Number Time Location	Out-1 0835-0955 Stack	Out-2 1040-1200 Stack	Out-3 1235-1402 Stack	Average
Stack Conditions				
Stack Temperature (oF)	234	232	229	232
CO_2 (%)	0.00	0.00	0.30	0.10
O_2 (%)	19.5	19.3	19.3	19.4
Moisture (%)	1.31	1.46	1.57	1.44
Volumetric Flowrate, Actual (ACFM)	86400	84100	83400	84600
Volumetric Flowrate, Dry Std. (DSCFM)a	65100	63500	63100	63900
Sample Conditions				
Sample Volume Dry (DSCF)	53.27	51.80	53.28	52.78
Isokinetic Ratio (%)	97.1	96.8	100.2	98.0
Particulate Emissions (EPA Method 5)				
Particulate Catch (mg)	2.8	1.9	1.4	2.0
Concentration (grains/DSCF)	0.0008	0.0006	0.0004	0.0006
Mass Emission Rate (lb/hr)	0.45	0.31	0.22	0.33
Condensable Particulate Emissions (EPA Method 202)				
Organic PM Catch (mg)	6.1	2.7	2.2	3.7
Concentration (grains/DSCF)	0.0018	0.0008	0.0006	0.0011
Mass Emission Rate (lb/hr)	0.98	0.44	0.35	0.59
Inorganic PM Catch (mg)	1.0	1.0	1.0	1.0
Concentration (grains/DSCF)	0.0003	0.0003	0.0003	0.0003
Mass Emission Rate (lb/hr)	0.16	0.16	0.16	0.16
Total Condensable PM Emission Rate (lb/hr)	1.15	0.60	0.51	0.75
TOTAL PM EMISSIONS				
Concentration (grains/DSCF)	0.0029	0.0017	0.0013	0.0020
Mass Emission Rate (lb/hr)	1.59	0.91	0.73	1.08

a - DSCFM Dry Standard Conditions at 68oF and 29.92 in. Hg

3.0 PROCESS DESCRIPTION

The Houlton, Maine facility operates one oriented strandboard line including two wafer dryers, a press, and two thermal oil heaters. The pair of 12 x 48 MEC rotary drum dryers exhaust through a primary material separation cyclones, a wet scrubber, and finally through a regenerative thermal oxidizer for final treatment.

During testing the plant operated produced approximately 19.0 tons of finished product per hour which is in excess of 90% of the daily production rate of 440 tons per day (as described in the test protocol). Plant personnel monitored and recorded the following data:

Board Thickness	7/16" (nominal)
Number of boards produced per hour (8' x 16')	224.5
Trim (%)	9.4
Pounds of resin used per hour	
MDI	287.8
Phenolic	664.2
Pounds of wax used per hour	279.6
Type of resin used	MDI and Phenolic
Press temperature	210^0 C

Copies of the process data are presented in Appendix D.

4.0 SAMPLING AND ANALYTICAL METHODS

Sampling was conducted simultaneously at the inlet and outlet of the RTO. Inlet sampling was conducted from two ports in the 54-inch diameter stack. The ports were located 2.8 diameters downstream from any flow disturbances and 5.4 diameters upstream from any flow disturbances. Twenty four traverse points were sampled with each isokinetic sampling train. The inlet sampling point locations are presented in Figure 5-1.

Outlet sampling was conducted from two ports in the 76-inch diameter stack. The ports were located 10.4 diameters downstream from any flow disturbances and 6.9 diameters upstream from the stack exhaust. Twelve traverse points were sampled with each isokinetic sampling train. The inlet sampling point locations are presented in Figure 4-2.

The following sections describe the various methods that were used.

4.1 EPA Method 25A - Total Hydrocarbon Measurements

THC concentrations were simultaneously monitored at the inlet and outlet of the RTO in accordance with EPA Method 25A. The data was recorded on stripcharts and indicated real-time VOC concentrations and therefore process operations.

Sample Collection

The inlet and outlet sampling trains each consisted of a stainless steel probe, heated Teflon sample line, and a Thermo Environmental Corporation (TECO) Model 51 flame ionization detector (FID) total hydrocarbon (THC) analyzer. A schematic of this sampling system is shown in Figure 4-3. The FID was multipoint calibrated with Protocol 1 propane in air gas standards.

The TECO THC analyzer, which utilizes a flame ionization process, measures hydrocarbons C_1 through C_{18}. A small amount of sample containing hydrocarbons will be introduced to the system through a heated filter and sample line. The sample gas then enters the heated detector bench, which contains the FID. The resulting current is detected and amplified by an electrometer/amplifier circuit. The output of the amplifier provides a signal for direct readout on a meter and for output to a stripchart recorder.

Figure 4-1

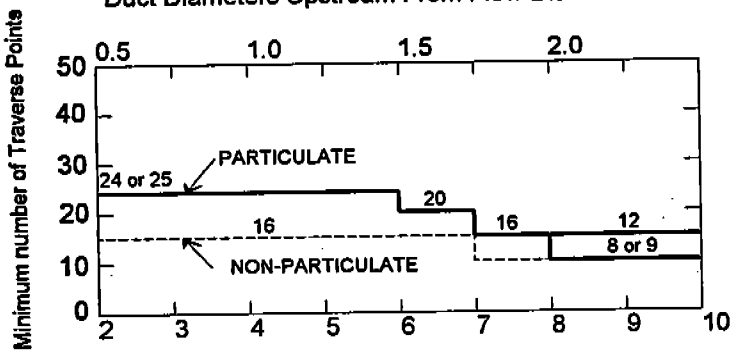
TRC Environmental Corporation

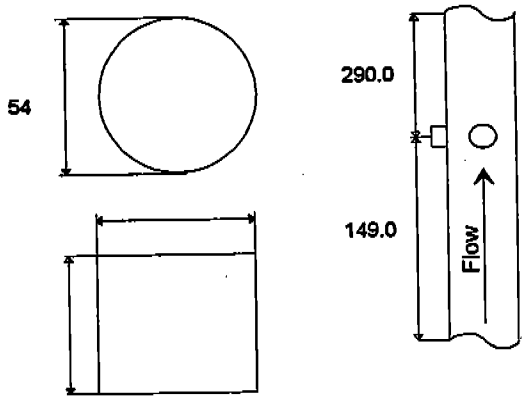
EPA Method 1 Data Sheet

Firm	Louisiana-Pacific
Location	RTO Inlet
Diameters Upstream	5.4
Diameters Downstream	2.8
Nipple Size (in.)	6

Total Traverse Points Required	24
Number of Ports	2
Points Per Port	12
Traverse (Horizontal or Vertical)	Horizontal/Vertical

Minimum Number of Traverse Points For Particulate and Non-Particulate Traverses





Cross-Sectional Layout For Rectangular Stacks	
Total Traverse Points	Matrix
9	3x3
12	4x3
16	4x4
20	5x4
25	5x5

Location of Points on a Circular Stack

Point Number On a Diameter	(Percent of Stack Diameter from Inside Wall to Traverse Point) No. of Traverse Points on a Diameter) 4	8	10	12
1	6.7	3.2	2.6	2.1
2	25.0	10.5	8.2	6.7
3	75.0	19.4	14.6	11.8
4	93.3	32.3	22.6	17.7
5		67.7	34.2	25.0
6		80.6	65.8	35.6
7		89.5	77.4	64.4
8		96.8	85.4	75.0
9			91.8	82.3
10			97.4	88.2
11				93.3
12				97.9

Traverse Point Location

Point Number	Distance From Wall	Total Distance
1	1.1	7.1
2	3.6	9.6
3	6.4	12.4
4	9.6	15.6
5	13.5	19.5
6	19.2	25.2
7	34.8	40.8
8	40.5	46.5
9	44.4	50.4
10	47.6	53.6
11	50.4	56.4
12	52.9	58.9

Figure 4-2

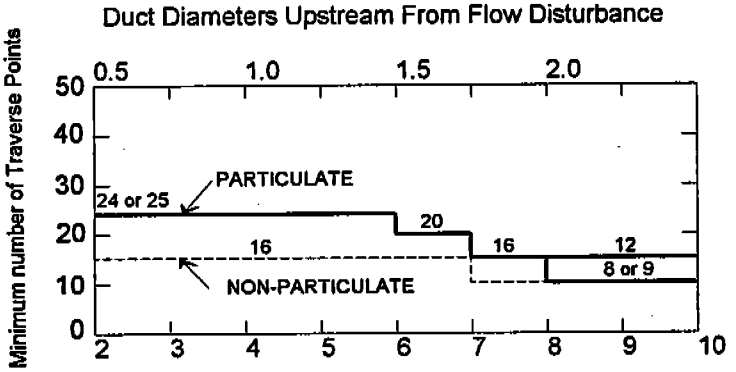
TRC Environmental Corporation

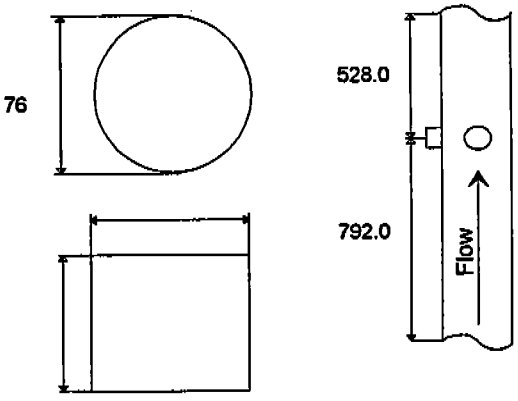
EPA Method 1 Data Sheet

Firm	Louisiana-Pacific
Location	RTO Outlet
Diameters Upstream	6.9
Diameters Downstream	10.4
Nipple Size (in.)	6

Total Traverse Points Required	12
Number of Ports	2
Points Per Port	6
Traverse (Horizontal or Vertical)	Horizontal

Minimum Number of Traverse Points For Particulate and Non-Particulate Traverses





Cross-Sectional Layout For Rectangular Stacks	
Total Traverse Points	Matrix
9	3x3
12	4x3
16	4x4
20	5x4
25	5x5

Location of Points on a Circular Stack

Point Number On a Diameter	(Percent of Stack Diameter from Inside Wall to Traverse Point) No. of Traverse Points on a Diameter)			
	4	8	10	12
1	6.7	3.2	2.6	2.1
2	25.0	10.5	8.2	6.7
3	75.0	19.4	14.6	11.8
4	93.3	32.3	22.6	17.7
5		67.7	34.2	25.0
6		80.6	65.8	35.6
7		89.5	77.4	64.4
8		96.8	85.4	75.0
9			91.8	82.3
10			97.4	88.2
11				93.3
12				97.9

Traverse Point Location

Point Number	Distance From Wall	Total Distance
1	3.3	9.3
2	11.1	17.1
3	22.5	28.5
4	53.5	59.5
5	64.9	70.9
6	72.7	78.7
7		
8		
9		
10		
11		
12		

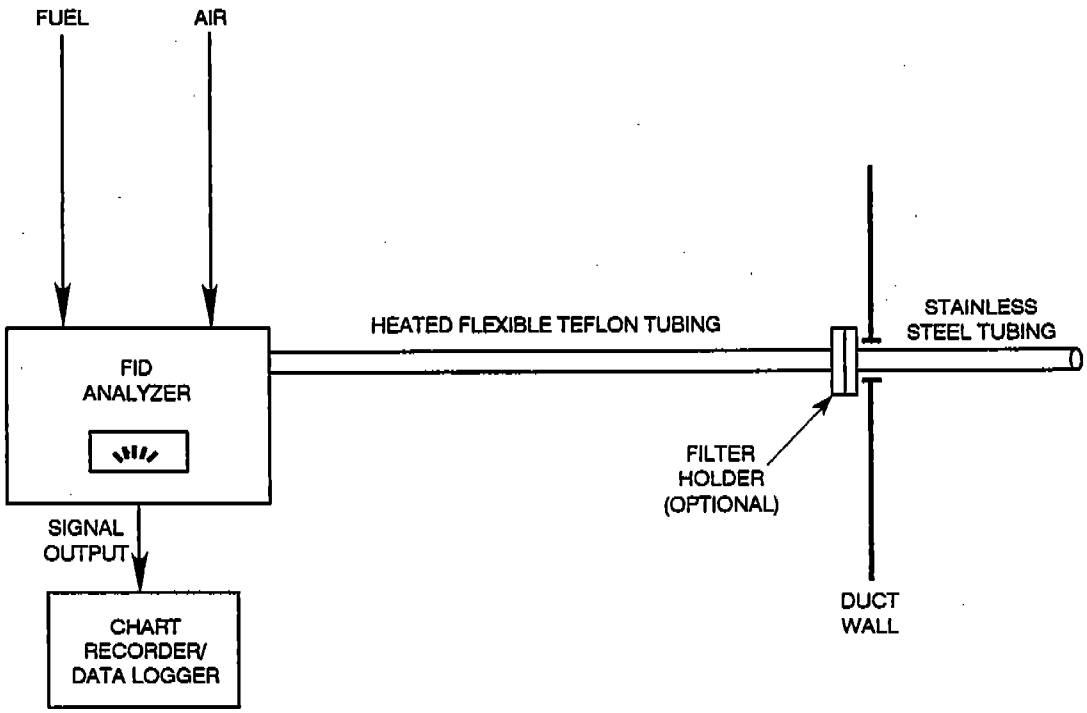


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Figure 4-3

FLAME IONIZATION DETECTION SAMPLING SYSTEM EPA METHOD 25A

Date:

Drawing No.:

4.2 EPA Methods 5 and 202 - Total Particulate Measurements

Emission concentrations of total PM was measured at the inlet and outlet of the RTO in accordance with EPA Methods 1-5 and 202. Triplicate 60-minute tests were performed at both locations with inlet and outlet sampling conducted simultaneously.

4.2.1 Sample Collection

PM sampling was accomplished by use of an EPA Method 5 train. The sample train is shown schematically in **Figure 4-4** and consists of a nozzle, probe, filter, four impingers, a vacuum pump, dry-gas meter, and an orifice flow meter.

A stainless steel nozzle was attached to a glass-lined stainless steel probe which was heated to prevent condensation. Teflon mat filter papers supported in 4½-inch glass filter holders were used as the particulate collection media. The filter assembly was enclosed in a heated box to maintain temperatures at 248°F ± 25°F. A thermocouple located inside the back half of the filter holder monitored the gas stream temperature and verified that the temperature was kept at 248°F ± 25°F.

An ice bath containing four impingers was attached to the back end of the filter via a flexible umbilical line. The first and second impingers contained 100 milliliters (mℓ) each of deionized water. The third impinger was empty, and the fourth impinger contained silica gel to remove any remaining moisture. Flexible tubing, a vacuum gauge, a needle valve, a leakless vacuum pump, a bypass valve, a dry-gas meter calibration orifice, and an inclined manometer completed the sampling train. The stack velocity pressure and temperature were monitored by an S-type pitot and a thermocouple connected to a potentiometer. A check valve was not used in the TRC sampling train.

A nomograph was used to quickly determine the orifice pressure drop required for the measured pitot velocity pressure and stack temperature in order to maintain isokinetic sampling conditions. Sampling flow was adjusted by means of the bypass valve. Before and after each particulate test run, the sampling train was leak checked to meet the 0.02 cfm limit. All pertinent test data were recorded on the appropriate field data sheets.

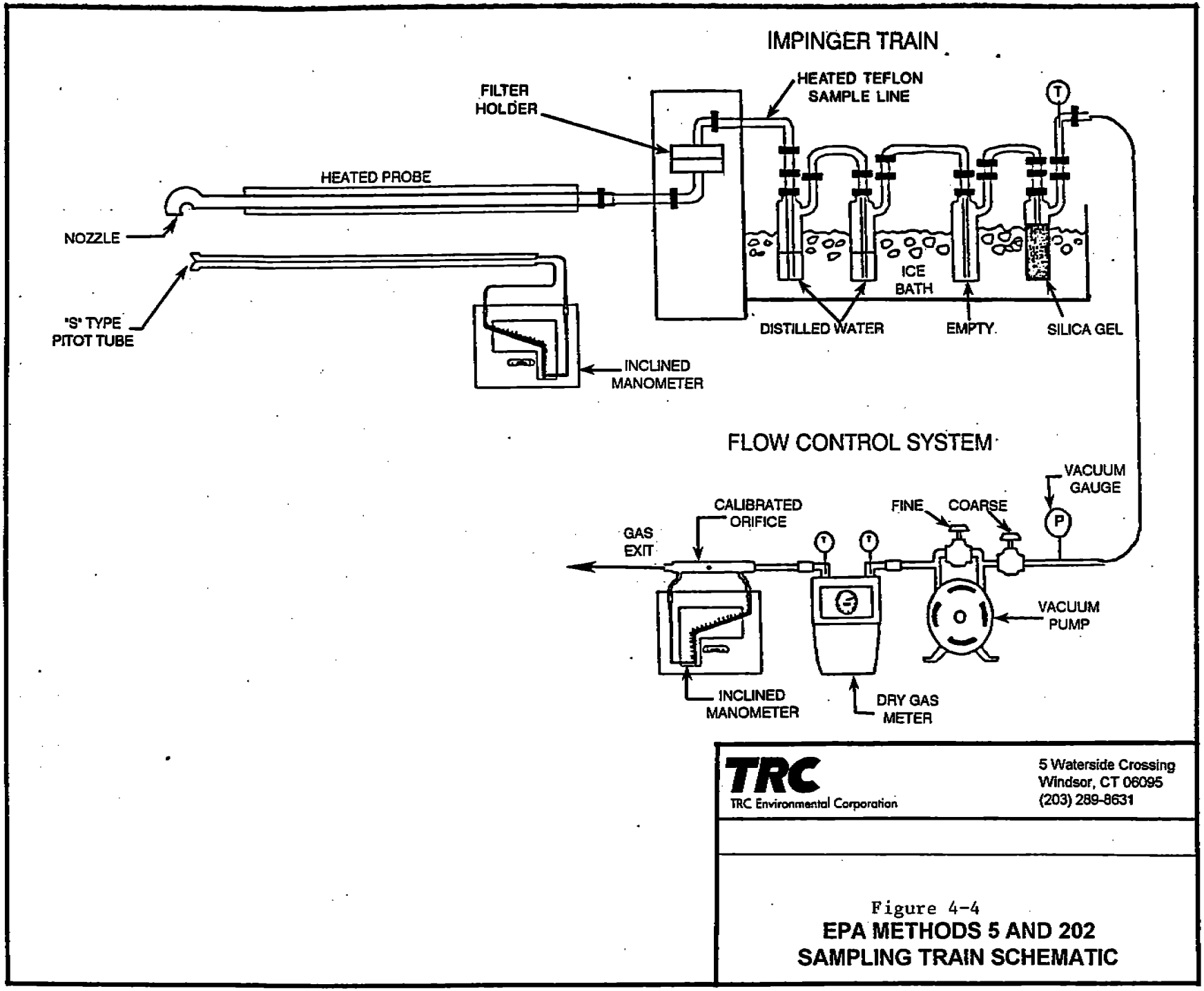

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Figure 4-4
EPA METHODS 5 AND 202
SAMPLING TRAIN SCHEMATIC

4.2.2 Sample Recovery

Four sample containers were used, as follows:

Container No. 1: The filter was sealed with Para-film in the field, and recovered at the TRC on-site trailer into a clean petri dish.

Container No. 2: The nozzle, probe, and filter housing were rinsed in triplicate with acetone and deposited into a clean sample container.

Container No. 3: The impinger contents were purged following the final leak check for 15 minutes using high purity nitrogen. Following the nitrogen purge the impinger contents were measured volumetrically to the nearest milliliter.and deposited into a sample jar. Each impinger was rinsed three times with methylene chloride. The methylene chloride rinses were also deposited into the sample jar.

Container No. 4: Silica gel from the fourth impinger was transferred to its original container and weighed to the nearest 0.5 milligram (mg).

4.2.3 Sample Analysis

The samples were transported to TRC's laboratory, where the following analyses were performed:

Container No. 1: The filter and any loose PM from the sample container was transferred to a tared glass weighing dish. The sample was then oven dried at 320°F ± 10°F for six hours, cooled in a desiccator

for two hours, and weighed to constant weight. Results were reported to the nearest 0.1 mg.

Container No. 2: The acetone wash was transferred to a tared beaker and evaporated to dryness at ambient temperature and pressure. The sample was then oven dried at 320°F ± 10°F for six hours, cooled in a desiccator for two hours, and weighed to constant weight. Results were reported to the nearest 0.1 mg.

Container No. 3: The impinger contents were extracted using methylene chloride to separate the organic and inorganic materials. The resulting extracts were transferred to tared beakers and evaporated to dryness at ambient temperature and pressure. The sample was then oven dried at 320°F ± 10°F for six hours, cooled in a desiccator for two hours, and weighed to constant weight. Results were reported to the nearest 0.1 mg.

Container No. 4: Silica gel was weighed to the nearest 0.5 mg. The weight of the moisture entrapped in the silica gel, along with the impingers, was used to calculate the moisture content of the stack gas.

4.3 EPA Methd 3 - Oxygen and Carbon Dioxide Monoxide Measurements

An integrated Tedlar bag sample was collected concurrent with each PM test run and analyzed in accordance with EPA Method 3 for O_2 and CO_2. **Figure 4-5** presents a schematic of the sampling train. Concentrations of O_2 and CO_2 were measured using an Orsat flue gas analyzer. Each bag sample was analyzed in triplicate.

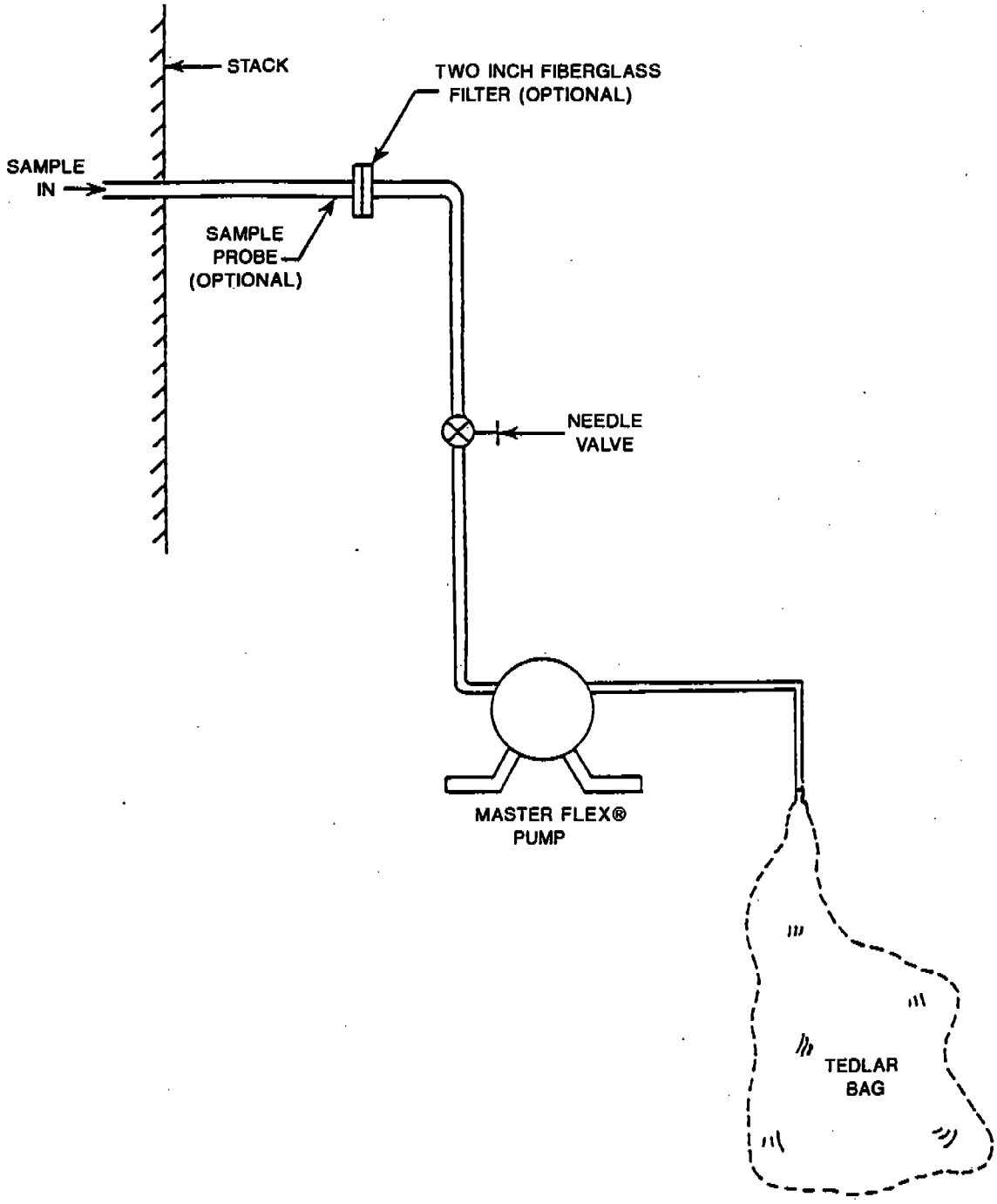

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Figure 4-5

EPA METHOD 3
SAMPLING TRAIN SCHEMATIC

5.0 QUALITY ASSURANCE

The project manager will be responsible for implementation of the TRC quality assurance (QA) program as applied to this project. The program is designed to ensure that emission measurement work is performed by qualified people using proper equipment following written procedures in order to provide accurate, defensible data.

At the beginning of the test day, a meeting will be held to orient TRC and Louisiana-Pacific personnel to the activities scheduled for that day and to determine if any special considerations are appropriate for the day's work.

5.1 Sampling Quality Assurance

The TRC quality assurance program for source measurements is designed so that the work done by competent, trained individuals experienced on the specific metrologies being used; using properly calibrated equipment; and using approved procedures for sample handling and documentation.

TRC's measurement devices, pitot tubes, dry-gas meters, thermocouples, and portable gas analyzers are uniquely identified and calibrated with documented procedures and acceptance criteria before and after each field effort. Records of all calibration data are maintained in TRC files.

Data are recorded on standard forms. Bound field notebooks are used to record observations and miscellaneous elements affecting data, calculations, or evaluation.

Specific details of TRC's QA program for stationary air pollution sources may be found in *Quality Assurance Handbook for Air Pollution Measurement Systems,* Volume III (EPA-600/4-77-027b).

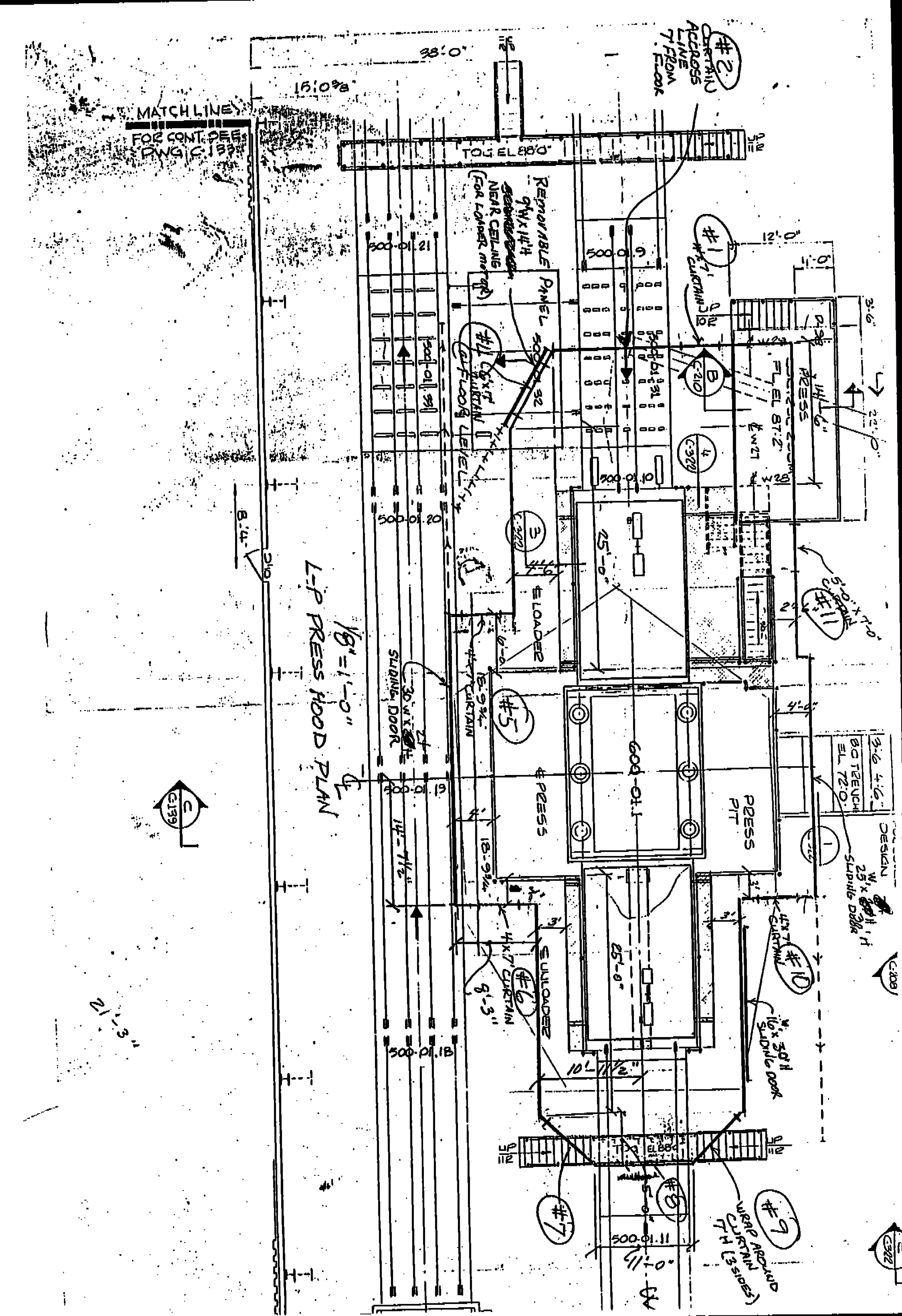
In the mobile laboratory, analysts record calibration and analysis data in notebooks and summarize specific data on prepared data sheets. Notebooks, data sheets, and calculations will be reviewed by the project manager.

5.2 Analytical Quality Control

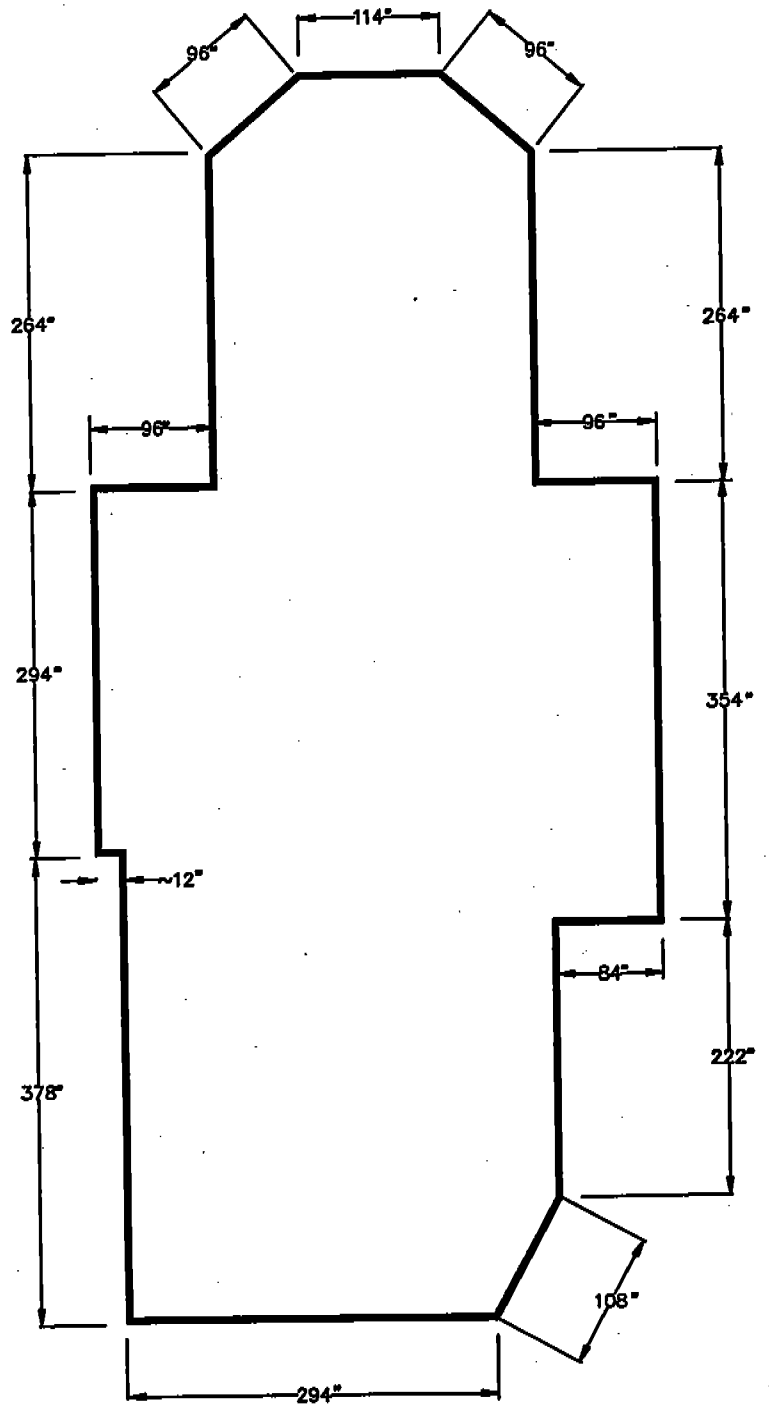
Compressed gases used as fuels and carriers are purchased at specific purities, according to application. Compressed gases used as calibration standards are always National Institute for Standards and Technology (NIST) traceable, either directly or indirectly.

Appendix A

Capture Efficiency Data



L-P PRESS HOOD PLAN
1/8" = 1'-0"
MATCH LINE
FOR CONT SEE DWG C-133
38'-0"
15'-0 3/8"
TOG EL 88'0"
#2 CURTAIN ACROSS LINE 7' FROM FLOOR
#1 7' CURTAIN
12'-0"
1'-0"
3'-6"
PRESS 14'-6"
22'-0"
EL 87'-2"
REMOVABLE PANEL 9'W x 14'H NEAR CEILING (FOR LOWER MOTOR)
#4 6' x 7' CURTAIN @ FLOOR LEVEL
500-01.21
500-01.9
500-01.10
500-01.20
500-01.19
500-01.18
500-01.11
500-01.32
600-01.1
C-210
C-320
C-139
25'-0"
€ LOADER
€ PRESS
€ UNLOADER
PRESS PIT
#11 5'-0" x 7'-0" CURTAIN
4'-0"
3'-6" 4'-6"
BC TRENCH EL 72'0"
DESIGN
25' x 11' SLIDING DOOR
#5 18'-9 3/4" 4' x 7' CURTAIN
18'-9 3/4"
30' x 24' SLIDING DOOR
14'-11 1/2"
#6 4' x 7' CURTAIN
9'-3"
#10 4' x 7' CURTAIN
16' x 30' H SLIDING DOOR
10'-11 1/2"
25'-0"
#7
#8
#9 WRAP AROUND CURTAIN 7'H (3 SIDES)
11'-0"
8'-4"
21'-3"



ENCLOSURE TO NDO RATIO

$$\text{NEAR} = \frac{139.3\ ft^2}{13{,}982.5\ ft^2} = 0.01$$

LIMIT ≤ 0.05

* MINIMUM HEIGHT OF ENCLOSURE 472"

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LOUISIANA-PACIFIC CORPORATION
NEW LIMERICK, MAINE

FIGURE 2-1.
PRESS VENT ENCLOSURE

Date: 5/95

Drawing No. 18226

LP Enclosure Areas

Enclosure area = area of sides + area of top + area of floor

* minimum height of enclosure 472"

Sides

L	H	Area
294"	472"	963.7 ft²
378		1239.0
12		122.7
294		963.7
96		314.7
264		865.3
96		314.7
114		373.7
96		314.7
264		865.3
96		314.7
354		1160.3
84		275.3
222		727.7
108		354.0
		9169.5

Top	2406.5
floor	2406.5
sides	9169.5
	13982.5

↓ Opening in Press enclosure @ Floor Level = SI/SF

#1 (2"x47") + (3/4" x 47") = = 1925 / .90

#2 58" X 125" 7250 50.35

#3 ~~same as #1~~ (2) does not exist

#4 " .90

#5 " .90

#6 " .90

#7 (76 x 3½") 266 / 1.85

#8 (12½" X 125") + (38" x 11") + ~~(76" x 3½")~~ 1980.5 / 13.75

#9 (76 x 3½") 1.85

#10 Same as #1 .90

#11 " .90

OPENINGS BELOW FLOOR LEVEL

↓

#1 TRIANGLE CONVEYOR (HOLES THRU-CONC. WALL) = SI/SF

(12" x 60" x 2 ea) + (48" X 125") = 7440 / 51.67

* #2 WALL @ RETURN CONV. #4

(40" x 84" X 2 ea) + (11" X 125") = = SI/SF

8095 / 56.22

* Total NDO area 181.09

Main Press RTO Duct ϕ = 54" 2,290 si / 15.9 SF

* #2 doors (2) installed

(40 x 90 x 2) + (11 x 125) =

* New total area (139.3)

Notebook No._____

PROJECT_____ Continued From Page_____

Enclosure velocities

Floor level

Opening #	Description	TEST 1 (0845)	TEST 2 (1105)	TEST 3 (1350)
1	door slot	550	600	600
2	web slot (in)	400	400	400
4	door slot	500	550	550
5	door slot	600	600	550
6	door slot	600	600	600
7	door slot	600	550	550
8	web slot (out)	450	550	550
9	door slot	600	550	600
10	door slot	550	600	600
11	door slot	500	550	600

Below Floor

1	Tramp & conveyor (measured in duct way)	350	400	300
2	door slot B*	600	600	600
	door slot B**	550	550	550
	web slot	400	400	400

Minimum NDD Velocity 350 400 (350) 300

* B) is on control room side
** B) on side opposite control room

Continued on Page

Read and Understood By

Appendix B

THC Data

TRC Environmental Corporation
VOC Destruction Efficiency

Firm	Louisiana Pacific	Ambient Temp	50 oF
Location	Houlton, Maine	Bar. Pressure	30.04 in HG
Operator	Craig Scott	Vacuum Gauge	200 mBar
Sample		Date	April 19, 1995
Location	RTO Inlet / Outlet		

INLET LOCATION

Test Number	Test Time	Total Hydro-Carbons	Initial System Calibration	Final System Calibration	Drift % Of Span	Analyzer Range	Average Effluent Gas Conc. (PPM)
T-1	08:40-09:40	Zero	0.2	1.0	-0.8	100	
		Mid Cal	50.0	50.4	-0.4	100	13.4
T-2	10:40-11:40	Zero	1.0	1.4	-0.4	100	
		Mid Cal	50.4	50.6	-0.2	100	13.4
T-3	12:35-13:35	Zero	1.4	1.2	0.2	100	
		Mid Cal	50.6	50.2	0.4	100	12.0
T-4		Zero			0.0	100	
		Mid Cal			0.0	100	
				Limits	+/- 3%		

OUTLET LOCATION

Test Number	Test Time	Total Hydro-Carbons	Initial System Calibration	Final System Calibration	Drift % Of Span	Analyzer Range	Actual Effluent Gas Conc. (PPM)
T-1	08:40-09:40	Zero	0.0	0.0	0.0	50	
		Mid Cal	29.6	29.1	1.0	50	0.6
T-2	10:40-11:40	Zero	0.0	0.0	0.0	50	
		Mid Cal	29.1	28.9	0.4	50	0.4
T-3	12:35-13:35	Zero	0.0	0.0	0.0	50	
		Mid Cal	28.9	28.5	0.8	50	0.3
T-4		Zero			0.0	50	
		Mid Cal			0.0	50	
				Limits	+/- 3%		

System Calibration Error Test

	Zero Cal. Gas System Response	Analyzer Calibration Error	Low Cal. Gas System Response	Analyzer Calibration Error	Mid Cal. Gas System Response	Analyzer Calibration Error	High Cal. Gas System Response	Analyzer Calibration Error
Inlet	0.2	-0.2	30.1	-0.3	50.0	-2.9	91.5	-0.7
Outlet	0.0	0.0	9.7	-3.2	29.6	1.3	49.1	-1.0
	Limits	+/- 5%		+/- 5%		+/- 5%		+/- 5%

Calibration Gases

	Low Cal	Mid Cal	High Cal	Cylinder Identification Low	Mid	High
THC Inlet	30	48.6	90.9	ALM027771	ALM026158	ALM015730

Calibration Gases

	Low Cal	Mid Cal	High Cal	Cylinder Identification Low	Mid	High
THC Outlet	9.4	30	48.6	ALM026158	ALM015730	ALM043750

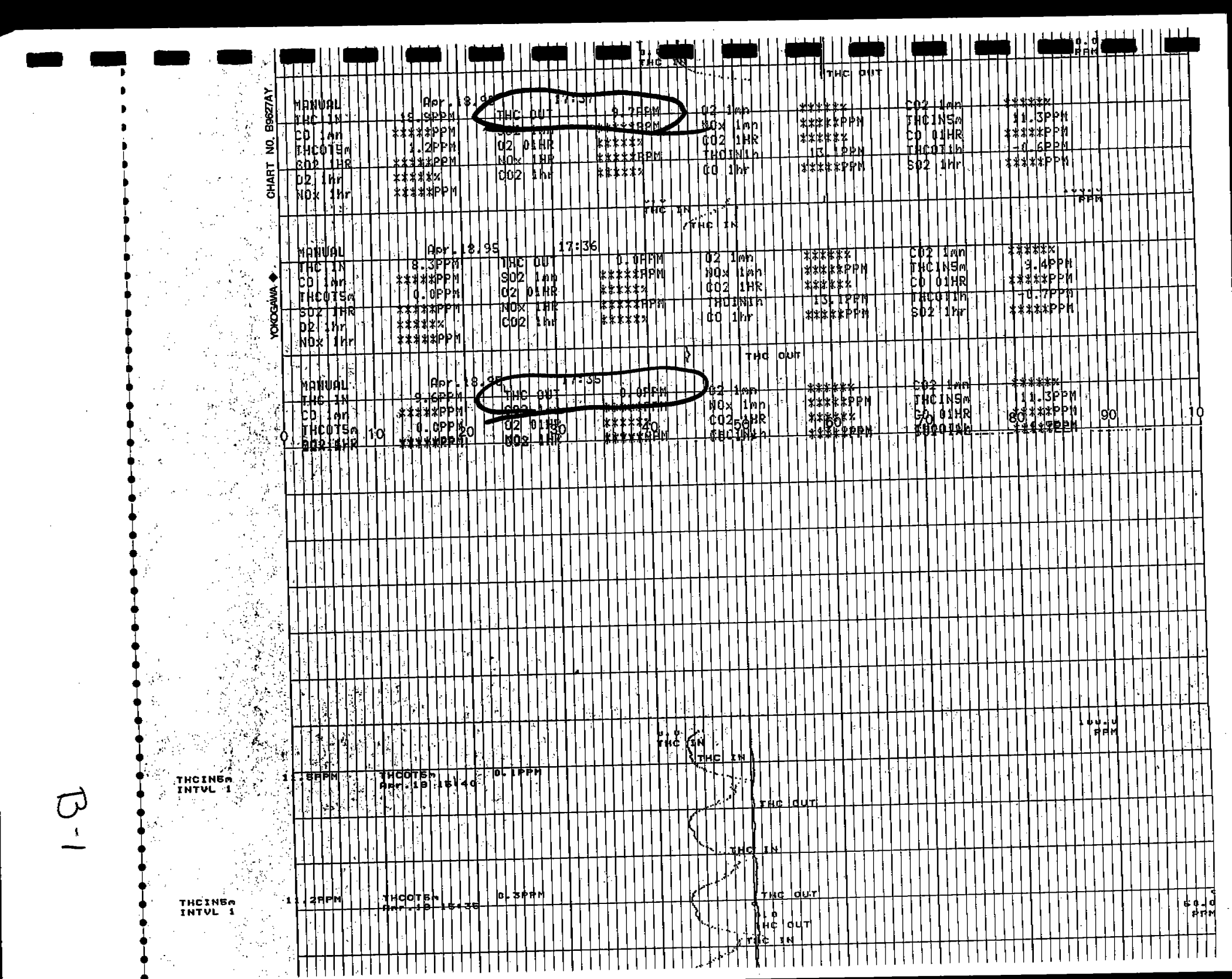


CHART NO. B9627AY
YOKOGAWA
MANUAL
Apr.18.95
17:37
THC IN 8.5PPM
CO 1Hr *****PPM
THCOT5m 1.2PPM
SO2 1HR *****PPM
O2 1hr ******%
NOx 1hr *****PPM
THC OUT 9.7PPM
SO2 1mn *****PPM
O2 01HR ******%
NOx 1HR *****PPM
CO2 1hr ******%
O2 1mn ******
NOx 1mn *****PPM
CO2 1HR ******%
THCIN1h 13.1PPM
CO 1hr *****PPM
CO2 1mn ******
THCIN5m 11.3PPM
CO 01HR *****PPM
THCO1Th -0.6PPM
SO2 1Hr *****PPM
MANUAL
Apr.18.95
17:36
THC IN 8.3PPM
CO 1Hr *****PPM
THCOT5m 0.0PPM
SO2 1HR *****PPM
O2 1hr ******%
NOx 1hr *****PPM
THC OUT 0.0PPM
SO2 1mn *****PPM
O2 01HR ******%
NOx 1HR *****PPM
CO2 1hr ******%
O2 1mn ******
NOx 1mn *****PPM
CO2 1HR ******%
THCIN1h 13.1PPM
CO 1hr *****PPM
CO2 1mn ******
THCIN5m 3.4PPM
CO 01HR *****PPM
THCO1Th -0.7PPM
SO2 1Hr *****PPM
MANUAL
Apr.18.95
17:35
THC IN 9.6PPM
CO 1Hr *****PPM
THCOT5m 0.0PPM
SO2 1HR *****PPM
THC OUT 0.0PPM
O2 01HR ******%
NOx 1HR *****PPM
O2 1mn ******
NOx 1mn *****PPM
CO2 1HR ******%
CO2 1mn ******
THCIN5m 11.3PPM
CO 01HR *****PPM
SO2 1Hr *****PPM
THCIN5m
INTVL 1
11.8PPM
THCOT5m
Apr.19 15:40
0.1PPM
THCIN5m
INTVL 1
11.2PPM
THCOT5m
Apr.19 15:35
0.3PPM
THC IN
THC OUT
0
10
20
30
40
50
60
70
80
90
100
PPM

B-1

THC 1Hr	*****PPM	NOx 1...	*****PPM	THC ...	...2PPM	THCIN1h	0.6PPM
O2 1hr	*****%	CO2 1hr	*****%	CO 1hr	*****PPM	SO2 1hr	*****PPM
NOx 1hr	*****PPM						

0 10 20 30 40 50 60 70 80 90 100

THC OUT

THCINSm 11.4PPM THCOT5m 5.8PPM
INTVL 1 Apr.18 17:50

THC IN
0.0
THC OUT
THC OUT

50.0 PPM

MANUAL	Apr.18.95		17:47				
THC IN	7.9PPM	THC OUT	9.1PPM	O2 1mn	*****%	CO2 1mn	*****%
CO 1hr	*****PPM	SO2 1mn	*****PPM	NOx 1mn	*****PPM	THCINSm	12.4PPM
THCOT5m	5.6PPM	O2 01HR	*****%	CO2 1HR	*****%	CO 01HR	*****PPM
SO2 1HR	*****PPM	NOx 1HR	*****PPM	THCIN1h	12.6PPM	THCOT1h	0.5PPM
O2 1hr	*****%	CO2 1hr	*****%	CO 1hr	*****PPM	SO2 1hr	*****PPM
NOx 1hr	*****PPM						

THC IN

MANUAL	Apr.18.95		17:46				
THC IN	21.4PPM	THC OUT	9.0PPM	O2 1mn	*****%	CO2 1mn	*****%
CO 1mn	*****PPM	SO2 1mn	*****PPM	NOx 1mn	*****PPM	THCINSm	12.3PPM
THCOT5m	4.0PPM	O2 01HR	*****%	CO2 1HR	*****%	CO 01HR	*****PPM
SO2 1HR	*****PPM	NOx 1HR	*****PPM	THCIN1h	12.6PPM	THCOT1h	0.4PPM
O2 1hr	*****%	CO2 1hr	*****%	CO 1hr	*****PPM	SO2 1hr	*****PPM
NOx 1hr	*****PPM						
CO 1mn	*****PPM	SO2 1mn	*****PPM	NOx 1mn	*****PPM	THCINSm	11.3PPM
THCOT5m	3.4PPM	O2 01HR	*****%	CO2 1HR	*****%	CO 01HR	*****PPM
SO2 1HR	*****PPM	NOx 1HR	*****PPM	THCIN1h	12.6PPM	THCOT1h	0.3PPM
O2 1hr	*****%	CO2 1hr	*****%	CO 1hr	*****PPM	SO2 1hr	*****PPM
NOx 1hr	*****PPM						

THC OUT
THC OUT

PPM

MANUAL	Apr.18.95		17:45				
THC IN	6.3PPM	THC OUT	0.0PPM	O2 1mn	*****%	CO2 1mn	*****%
CO 1mn	*****PPM	SO2 1mn	*****PPM	NOx 1mn	*****PPM	THCINSm	5.6PPM
THCOT5m	0.0PPM	O2 01HR	*****%	CO2 1HR	*****%	CO 01HR	*****PPM
SO2 1HR	*****PPM	NOx 1HR	*****PPM	THCIN1h	12.6PPM	THCOT1h	0.3PPM
O2 1hr	*****%	CO2 1hr	*****%	CO 1hr	*****PPM	SO2 1hr	*****PPM
NOx 1hr	*****PPM						

0 10 20 30 40 50 60 70 80 90 100

INTVL 1 Apr.18 17:46

THC IN

THC OUT

THCINSm 11.4PPM THCOT5m 5.3PPM
INTVL 1 Apr.18 17:40

TRC ENVIRONMENTAL

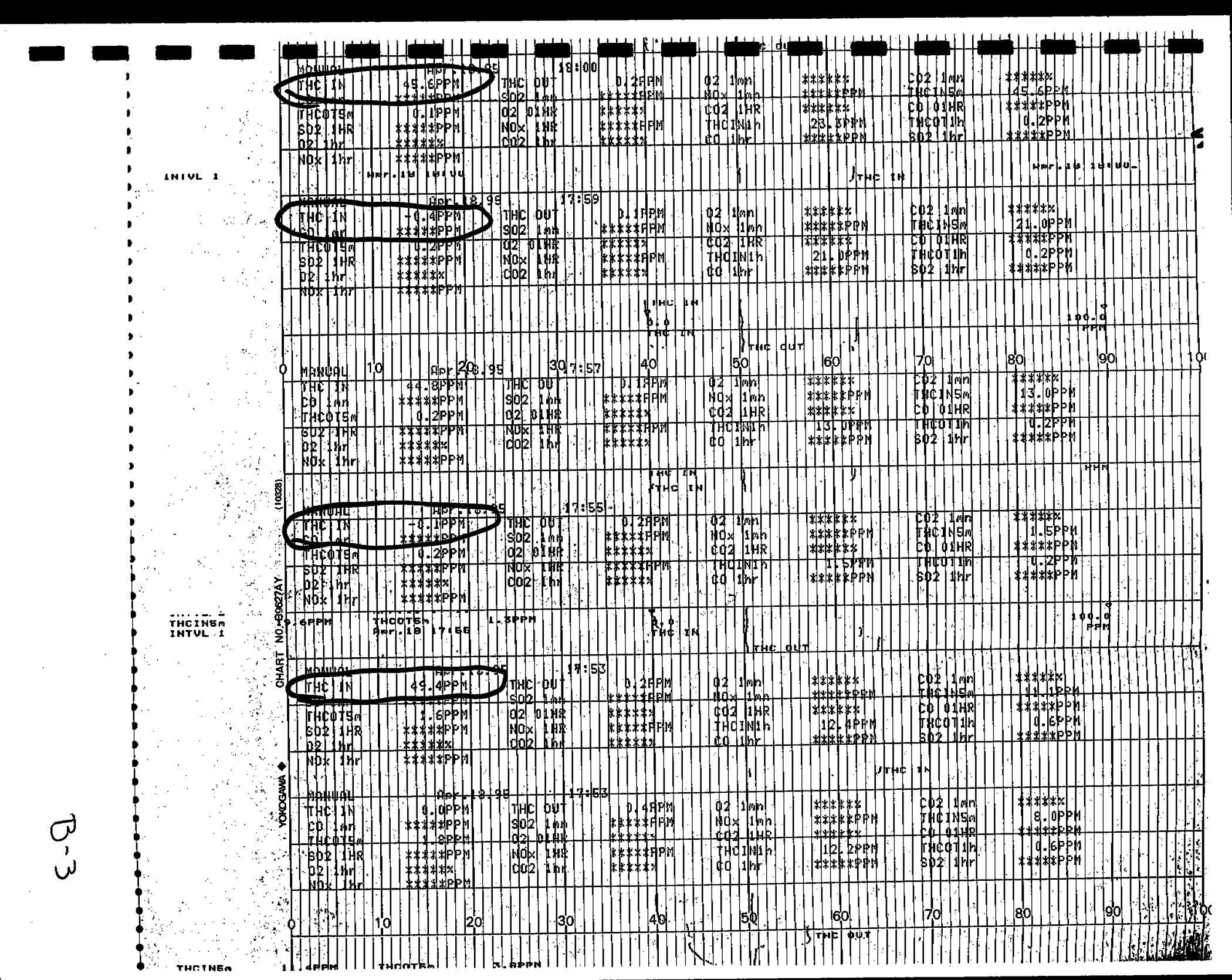
100.0 PPM

THC IN
0.0
THC IN

THC OUT

MANUAL	Apr.18.95		17:37				
THC IN	19.9PPM	THC OUT	9.7PPM	O2 1mn	*****%	CO2 1mn	*****%
CO 1mn	*****PPM	SO2 1mn	*****PPM	NOx 1mn	*****PPM	THCINSm	11.3PPM
THCOT5m	1.2PPM	O2 01HR	*****%	CO2 1HR	*****%	CO 01HR	*****PPM
SO2 1HR	*****PPM	NOx 1HR	*****PPM	THCIN1h	13.1PPM	THCOT1h	0.6PPM

CHART NO. B9627AY (10328)


MANUAL Apr.18.95 18:00
THC IN 49.6PPM
CO 1mn *****PPM
THCOTSm 0.1PPM
SO2 1HR *****PPM
O2 1hr ******%
NOx 1hr *****PPM
THC OUT 0.2PPM
SO2 1mn *****PPM
O2 01HR ******%
NOx 1HR *****PPM
CO2 1hr ******%
O2 1mn ******%
NOx 1mn *****PPM
CO2 1HR ******%
THCINlh 23.3PPM
CO 1hr *****PPM
CO2 1mn ******%
THCINSm 45.6PPM
CO 01HR *****PPM
THCOTlh 0.2PPM
SO2 1hr *****PPM
MANUAL Apr.18.95 17:59
THC IN -0.4PPM
CO 1mn *****PPM
THCOTSm 0.2PPM
SO2 1HR *****PPM
O2 1hr ******%
NOx 1hr *****PPM
THC OUT 0.1PPM
SO2 1mn *****PPM
O2 01HR ******%
NOx 1HR *****PPM
CO2 1hr ******%
O2 1mn ******%
NOx 1mn *****PPM
CO2 1HR ******%
THCINlh 21.0PPM
CO 1hr *****PPM
CO2 1mn ******%
THCINSm 21.0PPM
CO 01HR *****PPM
THCOTlh 0.2PPM
SO2 1hr *****PPM
THC IN
0.0
THC IN
THC OUT
100.0
PPM
0
10
20
30
40
50
60
70
80
90
100
MANUAL Apr.20.95 17:57
THC IN 44.8PPM
CO 1mn *****PPM
THCOTSm 0.2PPM
SO2 1HR *****PPM
O2 1hr ******%
NOx 1hr *****PPM
THC OU 0.1PPM
SO2 1mn *****PPM
O2 01HR ******%
NOx 1HR *****PPM
CO2 1hr ******%
O2 1mn ******%
NOx 1mn *****PPM
CO2 1HR ******%
THCINlh 13.0PPM
CO 1hr *****PPM
CO2 1mn ******%
THCINSm 13.0PPM
CO 01HR *****PPM
THCOTlh 0.2PPM
SO2 1hr *****PPM
HHR
THC IN
THC IN
MANUAL Apr.19.95 17:55
THC IN -0.1PPM
CO 1mn *****PPM
THCOTSm 0.2PPM
SO2 1HR *****PPM
O2 1hr ******%
NOx 1hr *****PPM
THC OUT 0.2PPM
SO2 1mn *****PPM
O2 01HR ******%
NOx 1HR *****PPM
CO2 1hr ******%
O2 1mn ******%
NOx 1mn *****PPM
CO2 1HR ******%
THCINlh 1.5PPM
CO 1hr *****PPM
CO2 1mn ******%
THCINSm 1.5PPM
CO 01HR *****PPM
THCOTlh 0.2PPM
SO2 1hr *****PPM
THCINSm
INTVL 1
9.6PPM
THCOTSm 1.5PPM
Apr.19 17:55
0.0
THC IN
THC OUT
100.0
PPM
MANUAL Apr.18.95 17:53
THC IN 49.4PPM
CO 1mn *****PPM
THCOTSm 1.6PPM
SO2 1HR *****PPM
O2 1hr ******%
NOx 1hr *****PPM
THC OUT 0.2PPM
SO2 1mn *****PPM
O2 01HR ******%
NOx 1HR *****PPM
CO2 1hr ******%
O2 1mn ******%
NOx 1mn *****PPM
CO2 1HR ******%
THCINlh 12.4PPM
CO 1hr *****PPM
CO2 1mn ******%
THCINSm 11.1PPM
CO 01HR *****PPM
THCOTlh 0.6PPM
SO2 1hr *****PPM
THC IN
MANUAL Apr.18.95 17:53
THC IN 9.0PPM
CO 1mn *****PPM
THCOTSm 1.8PPM
SO2 1HR *****PPM
O2 1hr ******%
NOx 1hr *****PPM
THC OUT 0.4PPM
SO2 1mn *****PPM
O2 01HR ******%
NOx 1HR *****PPM
CO2 1hr ******%
O2 1mn ******%
NOx 1mn *****PPM
CO2 1HR ******%
THCINlh 12.2PPM
CO 1hr *****PPM
CO2 1mn ******%
THCINSm 8.0PPM
CO 01HR *****PPM
THCOTlh 0.6PPM
SO2 1hr *****PPM
0
10
20
30
40
50
60
70
80
90
100
THC OUT
CHART NO.HB627AY (10328)
YOKOGAWA
B-3
THCINSm
11.4PPM
THCOTSm
3.8PPM

CO 1mn	*****PPM	SO2 1HR	*****PPM	NOx 5mn	*****PPM	CO2 1mn	1.4
THCOT5m	-1.1PPM	O2 01HR	*****%	CO2 1HR	*****%	CO 01HR	*****PPM
SO2 1HR	*****PPM	NOx 1HR	*****PPM	THCIN1h	16.3PPM	THCOT1h	-1.1PPM
O2 1hr	*****%	CO2 1hr	*****%	CO 1hr	*****PPM	SO2 1hr	*****PPM
NOx 1hr	*****PPM						

INTVL 1 Apr.19 07:16

THC IN

MANUAL Apr.19.95 07:17

THC IN	0.2PPM	THC OUT	-1.1PPM	O2 1mn	*****%	CO2 1mn	*****%
CO 1mn	*****PPM	SO2 1mn	*****PPM	NOx 1mn	*****PPM	THCIN5m	38.1PPM
THCOT5m	-1.1PPM	O2 01HR	*****%	CO2 1HR	*****%	CO 01HR	*****PPM
SO2 1HR	*****PPM	NOx 1HR	*****PPM	THCIN1h	11.0PPM	THCOT1h	-1.2PPM
O2 1hr	*****%	CO2 1hr	*****%	CO 1hr	*****PPM	SO2 1hr	*****PPM
NOx 1hr	*****PPM						

THC OUT

THCIN5m INTVL 1 0.5PPM THCOT5m Apr.19 07:13 -0.7PPM

THC IN

THC OUT 0.0 THC OUT

50.0 PPM

CHART NO. B9627AY

YOKOGAWA ◆

THC IN

MANUAL Apr.19.95 07:09

THC IN	0.0PPM	THC OUT	-1.8PPM	O2 1mn	*****%	CO2 1mn	*****%
CO 1mn	*****PPM	SO2 1mn	*****PPM	NOx 1mn	*****PPM	THCIN5m	-0.5PPM
THCOT5m	-1.3PPM	O2 01HR	*****%	CO2 1HR	*****%	CO 01HR	*****PPM
SO2 1HR	*****PPM	NOx 1HR	*****PPM	THCIN1h	-0.7PPM	THCOT1h	-1.7PPM
O2 1hr	*****%	CO2 1hr	*****%	CO 1hr	*****PPM	SO2 1hr	*****PPM
NOx 1hr	*****PPM						

THCIN5m INTVL 1 -0.7PPM THCOT5m Apr.19 07:08 -1.6PPM

0 10 20 30 40 50 60 70 80 90 100

THC OUT

TRC ENVIRONMENT

0.0 THC IN THC IN

100.0 PPM

07:06 400mm/h

THC IN

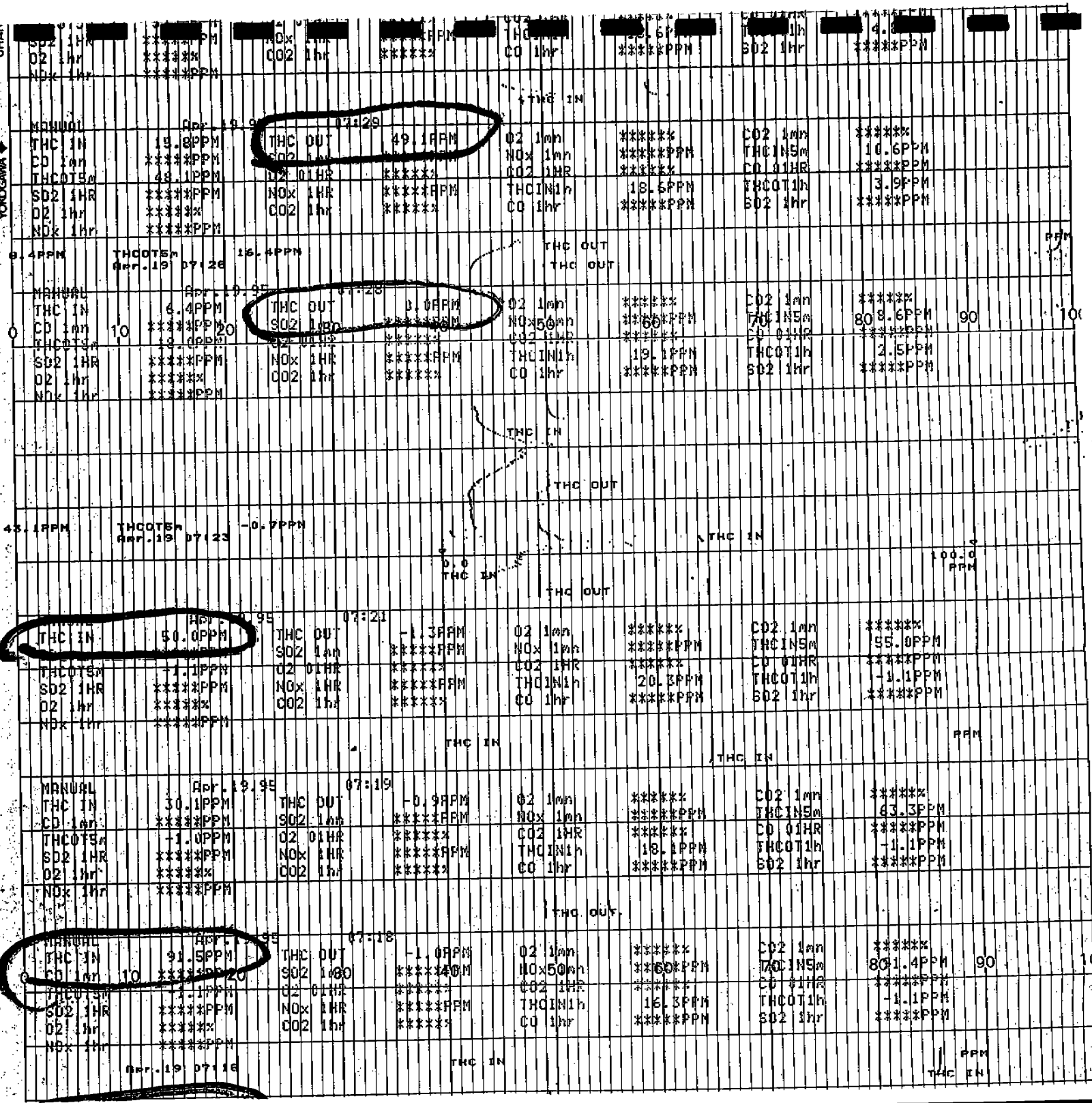
0.0 THC OUT THC OUT

50.0 PPM

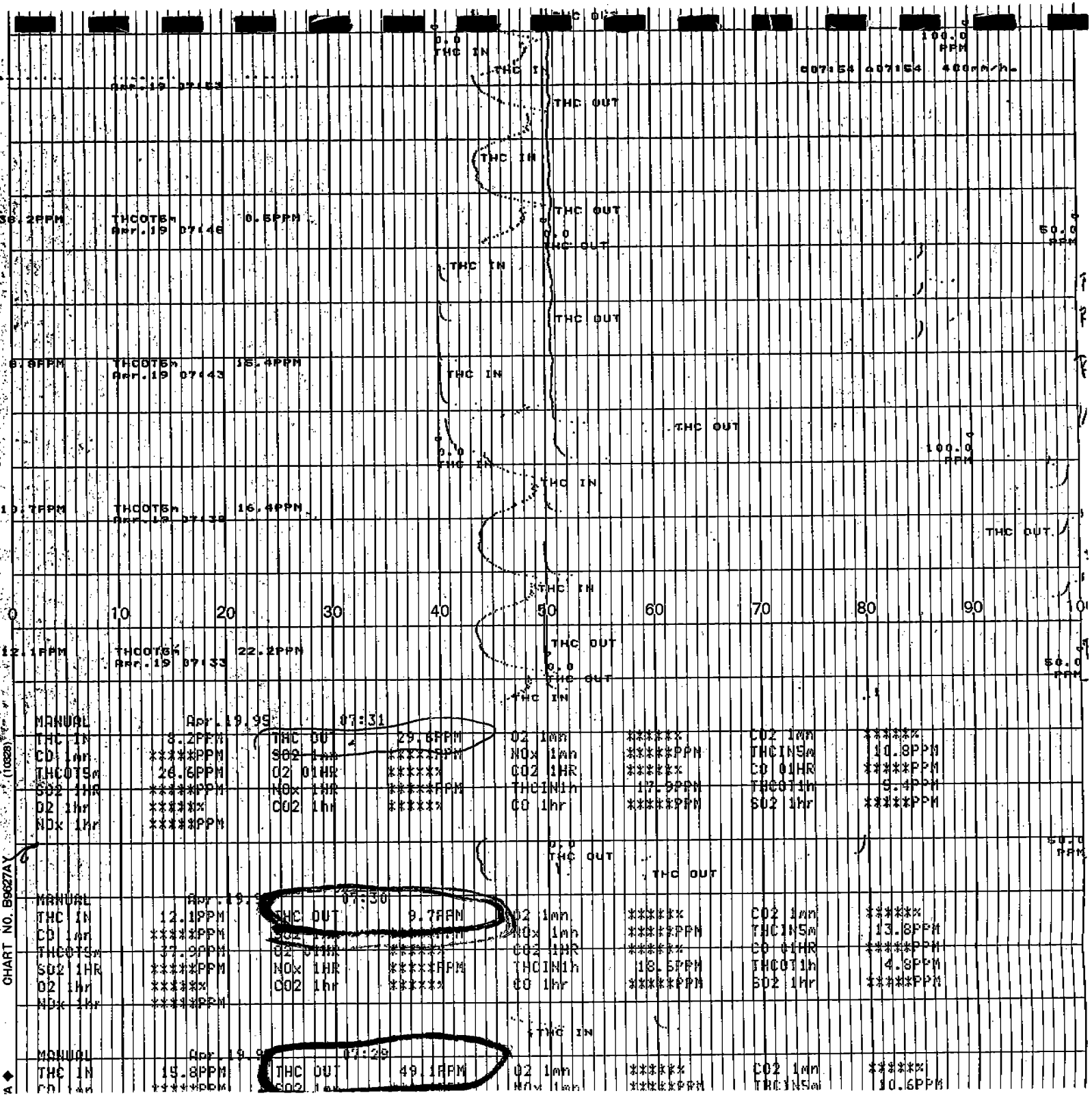
MANUAL Apr.19.95 18:00

THC IN	45.6PPM	THC OUT	0.2PPM	O2 1mn	*****%	CO2 1mn	*****%
CO 1mn	*****PPM	SO2 1mn	*****PPM	NOx 1mn	*****PPM	THCIN5m	45.6PPM
THCOT5m	0.1PPM	O2 01HR	*****%	CO2 1HR	*****%	CO 01HR	*****PPM
SO2 1HR	*****PPM	NOx 1HR	*****PPM	THCIN1h	23.3PPM	THCOT1h	0.2PPM
O2 1hr	*****%	CO2 1hr	*****%	CO 1hr	*****PPM	SO2 1hr	*****PPM
NOx 1hr	*****PPM						

B-4


YOKOGAWA
MANUAL Apr.19.95 07:29
THC IN 19.8PPM
CO 1mn *****PPM
THCOT5m 48.1PPM
SO2 1HR *****PPM
O2 1hr ******
NOx 1hr *****PPM
THC OUT 49.1PPM
SO2 1mn *****PPM
O2 01HR ******
NOx 1HR *****PPM
CO2 1hr ******
O2 1mn ******
NOx 1mn *****PPM
CO2 1HR ******
THCIN1h 18.6PPM
CO 1hr *****PPM
CO2 1mn ******
THCIN5m 10.6PPM
CO 01HR *****PPM
THCOT1h 3.9PPM
SO2 1hr *****PPM
THCIN5m 8.4PPM
INTVL 1
THCOT5m 16.4PPM
Apr.19 07:26
MANUAL Apr.19.95 07:28
THC IN 6.4PPM
CO 1mn *****PPM
THCOT5m -0.0PPM
SO2 1HR *****PPM
O2 1hr ******
NOx 1hr *****PPM
THC OUT 0.0PPM
SO2 1mn *****PPM
O2 01HR ******
NOx 1HR *****PPM
CO2 1hr ******
O2 1mn ******
NOx 1mn *****PPM
CO2 1HR ******
THCIN1h 19.1PPM
CO 1hr *****PPM
CO2 1mn ******
THCIN5m 8.6PPM
CO 01HR *****PPM
THCOT1h 2.5PPM
SO2 1hr *****PPM
THCIN5m 43.1PPM
INTVL 1
THCOT5m -0.7PPM
Apr.19 07:23
MANUAL Apr.19.95 07:21
THC IN 50.0PPM
CO 1mn *****PPM
THCOT5m -1.1PPM
SO2 1HR *****PPM
O2 1hr ******
NOx 1hr *****PPM
THC OUT -1.3PPM
SO2 1mn *****PPM
O2 01HR ******
NOx 1HR *****PPM
CO2 1hr ******
O2 1mn ******
NOx 1mn *****PPM
CO2 1HR ******
THCIN1h 20.3PPM
CO 1hr *****PPM
CO2 1mn ******
THCIN5m 55.0PPM
CO 01HR *****PPM
THCOT1h -1.1PPM
SO2 1hr *****PPM
MANUAL Apr.19.95 07:19
THC IN 30.1PPM
CO 1mn *****PPM
THCOT5m -1.0PPM
SO2 1HR *****PPM
O2 1hr ******
NOx 1hr *****PPM
THC OUT -0.9PPM
SO2 1mn *****PPM
O2 01HR ******
NOx 1HR *****PPM
CO2 1hr ******
O2 1mn ******
NOx 1mn *****PPM
CO2 1HR ******
THCIN1h 18.1PPM
CO 1hr *****PPM
CO2 1mn ******
THCIN5m 63.3PPM
CO 01HR *****PPM
THCOT1h -1.1PPM
SO2 1hr *****PPM
MANUAL Apr.19.95 07:18
THC IN 91.5PPM
CO 1mn *****PPM
THCOT5m -1.1PPM
SO2 1HR *****PPM
O2 1hr ******
NOx 1hr *****PPM
THC OUT -1.0PPM
SO2 1mn *****PPM
O2 01HR ******
NOx 1HR *****PPM
CO2 1hr ******
O2 1mn ******
NOx 1mn *****PPM
CO2 1HR ******
THCIN1h 16.3PPM
CO 1hr *****PPM
CO2 1mn ******
THCIN5m 81.4PPM
CO 01HR *****PPM
THCOT1h -1.1PPM
SO2 1hr *****PPM
INTVL 1
Apr.19 07:16
0 10 20
80 90 100
PPM
THC IN
THC OUT

B.3


INTVL 1
Apr.19 07:53
THC IN
THC OUT
THCIN5m 36.2PPM
INTVL 1
THCOT5m 0.5PPM
Apr.19 07:48
THCIN5m 8.8PPM
INTVL 1
THCOT5m 15.4PPM
Apr.19 07:43
THCIN5m 10.7PPM
INTVL 1
THCOT5m 16.4PPM
Apr.19 07:38
THCIN5m 12.1PPM
INTVL 1
THCOT5m 22.2PPM
Apr.19 07:33
0 10 20 30 40 50 60 70 80 90 100
MANUAL Apr.19.99 07:31
THC IN 8.2PPM
CO 1mn ******PPM
THCOT5m 26.6PPM
SO2 1HR ******PPM
O2 1hr ******%
NOx 1hr ******PPM
THC OUT 29.6PPM
SO2 1mn ******PPM
O2 01HR ******%
NOx 1HR ******PPM
CO2 1hr ******%
O2 1mn ******%
NOx 1mn ******PPM
CO2 1HR ******%
THCIN1h 17.9PPM
CO 1hr ******PPM
CO2 1mn ******%
THCIN5m 10.8PPM
CO 01HR ******PPM
THCOT1h 5.4PPM
SO2 1hr ******PPM
MANUAL Apr.19.99 07:30
THC IN 12.1PPM
CO 1mn ******PPM
THCOT5m 22.2PPM
SO2 1HR ******PPM
O2 1hr ******%
NOx 1hr ******PPM
THC OUT 9.7PPM
SO2 1mn ******PPM
O2 01HR ******%
NOx 1HR ******PPM
CO2 1hr ******%
O2 1mn ******%
NOx 1mn ******PPM
CO2 1HR ******%
THCIN1h 18.5PPM
CO 1hr ******PPM
CO2 1mn ******%
THCIN5m 13.8PPM
CO 01HR ******PPM
THCOT1h 4.8PPM
SO2 1hr ******PPM
MANUAL Apr.19.99 07:29
THC IN 15.8PPM
THC OUT 49.1PPM
O2 1mn ******%
CO2 1mn ******%
THCIN5m 10.6PPM
CHART NO. B9627AX (10828)

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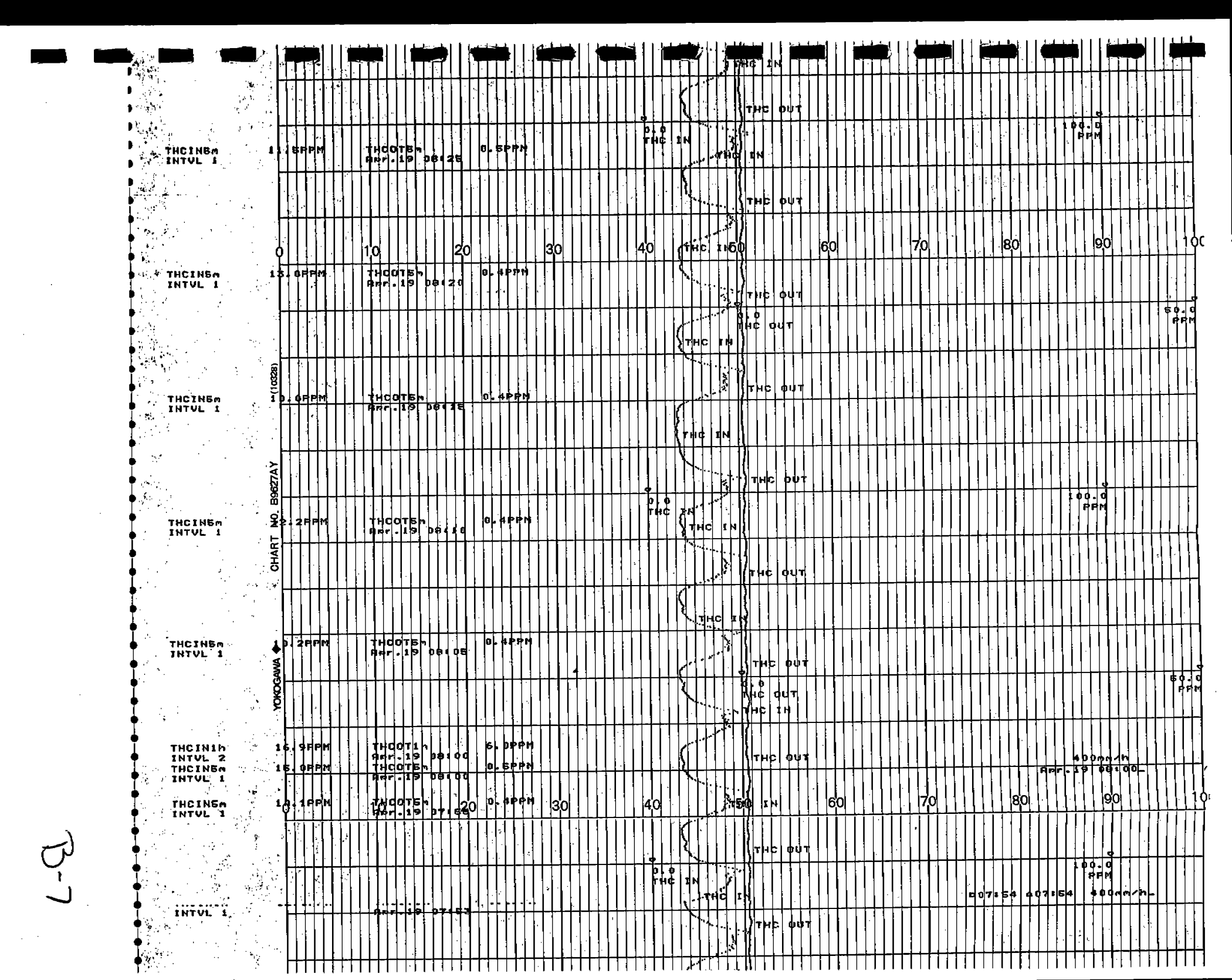
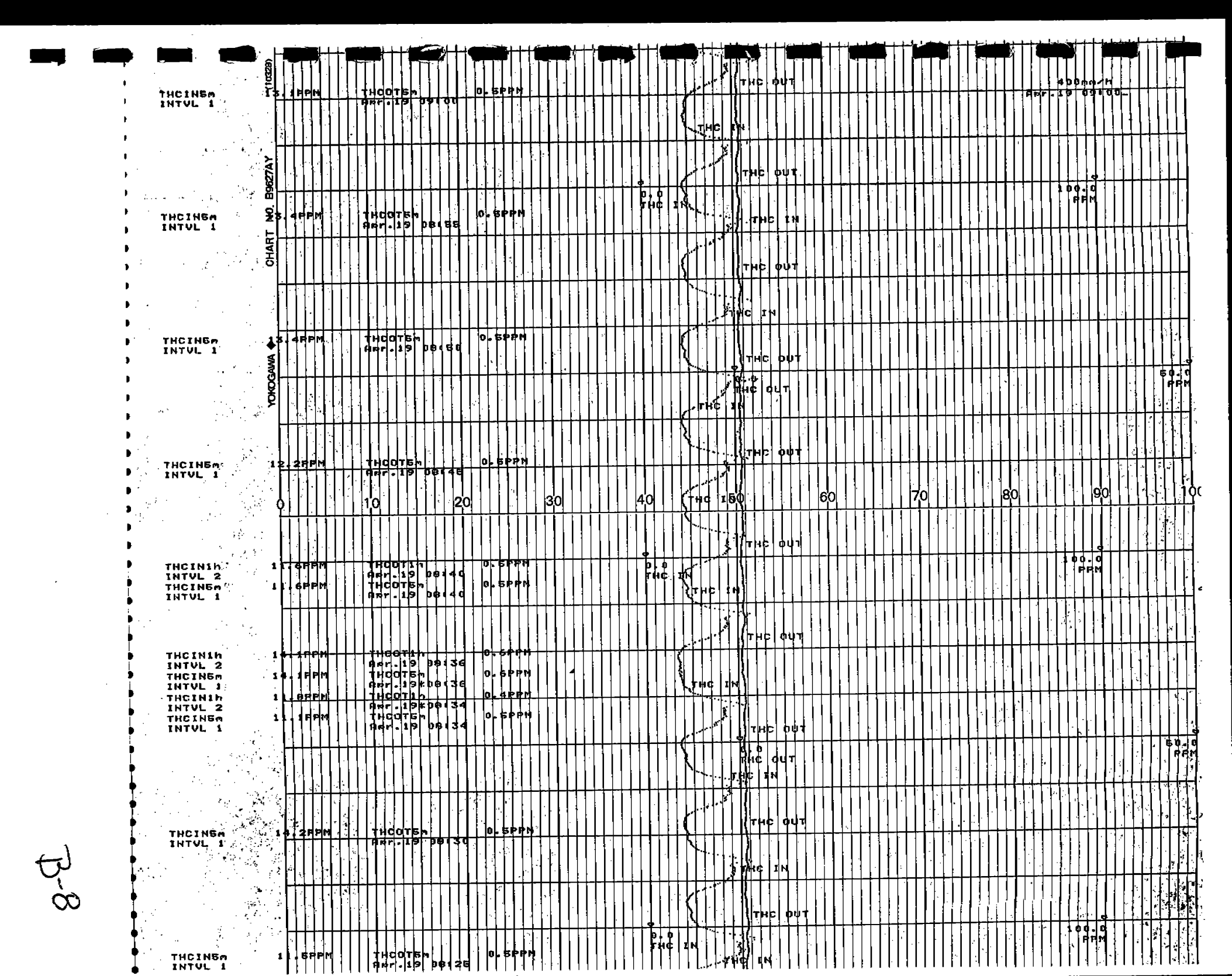
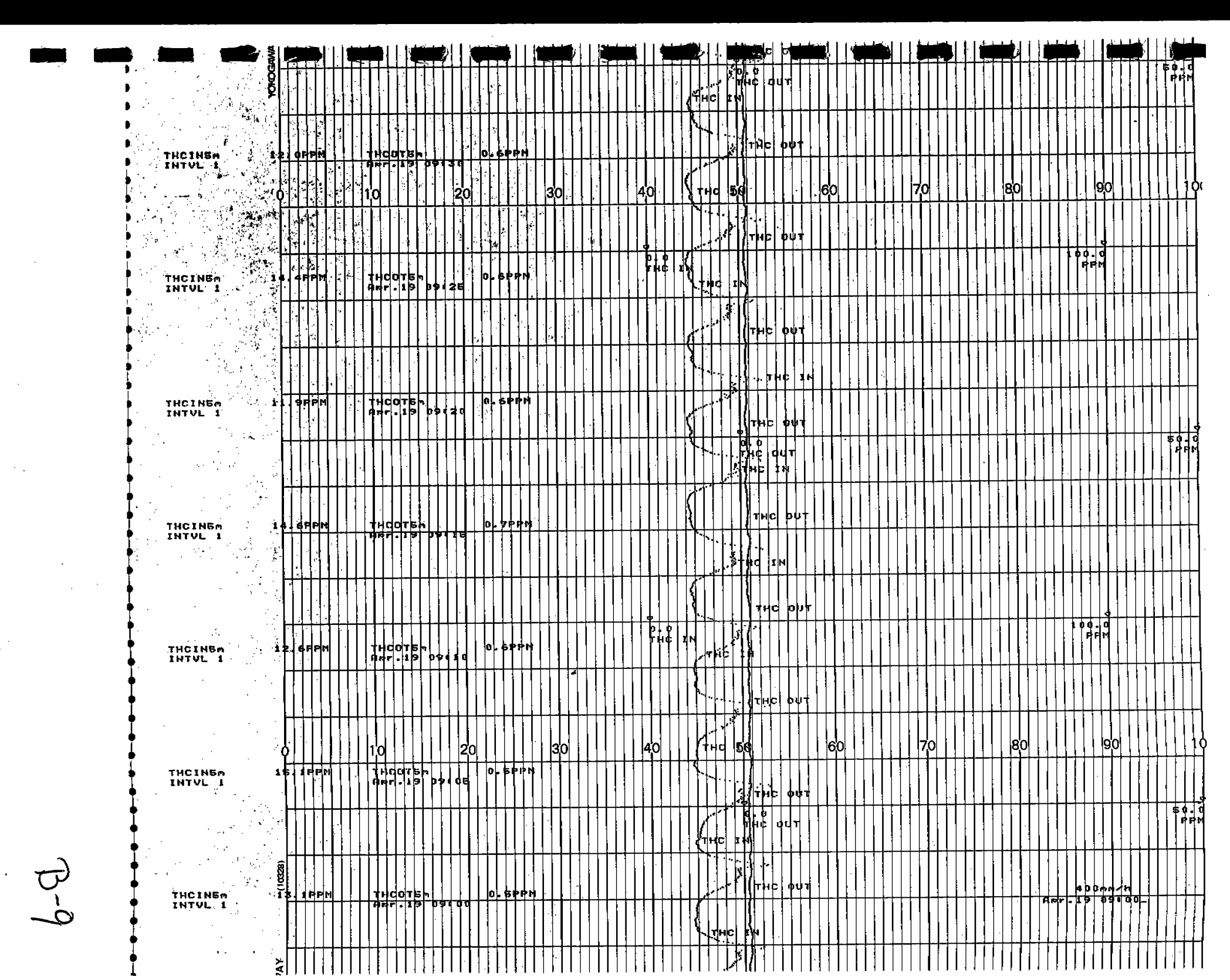

THCIN6m
INTVL 1
11.6PPM
THCOT6m
Apr.19 08:25
0.5PPM
THC IN
THC OUT
100.0
PPM
0.0
THCIN6m
INTVL 1
13.0PPM
THCOT6m
Apr.19 08:20
0.4PPM
60.0
PPM
THCIN6m
INTVL 1
10.0PPM
THCOT6m
Apr.19 08:15
0.4PPM
CHART NO. B9627AY
THCIN6m
INTVL 1
12.2PPM
THCOT6m
Apr.19 08:10
0.4PPM
THCIN6m
INTVL 1
10.2PPM
THCOT6m
Apr.19 08:05
0.4PPM
YOKOGAWA
THCIN1h
INTVL 2
16.9PPM
THCOT1h
Apr.19 08:00
6.0PPM
THCIN6m
INTVL 1
16.0PPM
THCOT6m
Apr.19 08:00
0.5PPM
400mm/h
Apr.19 08:00
THCIN6m
INTVL 1
10.1PPM
THCOT6m
Apr.19 07:59
0.4PPM
07:54 07:54 400mm/h
INTVL 1
Apr.19 07:53
0
10
20
30
40
50
60
70
80
90
100

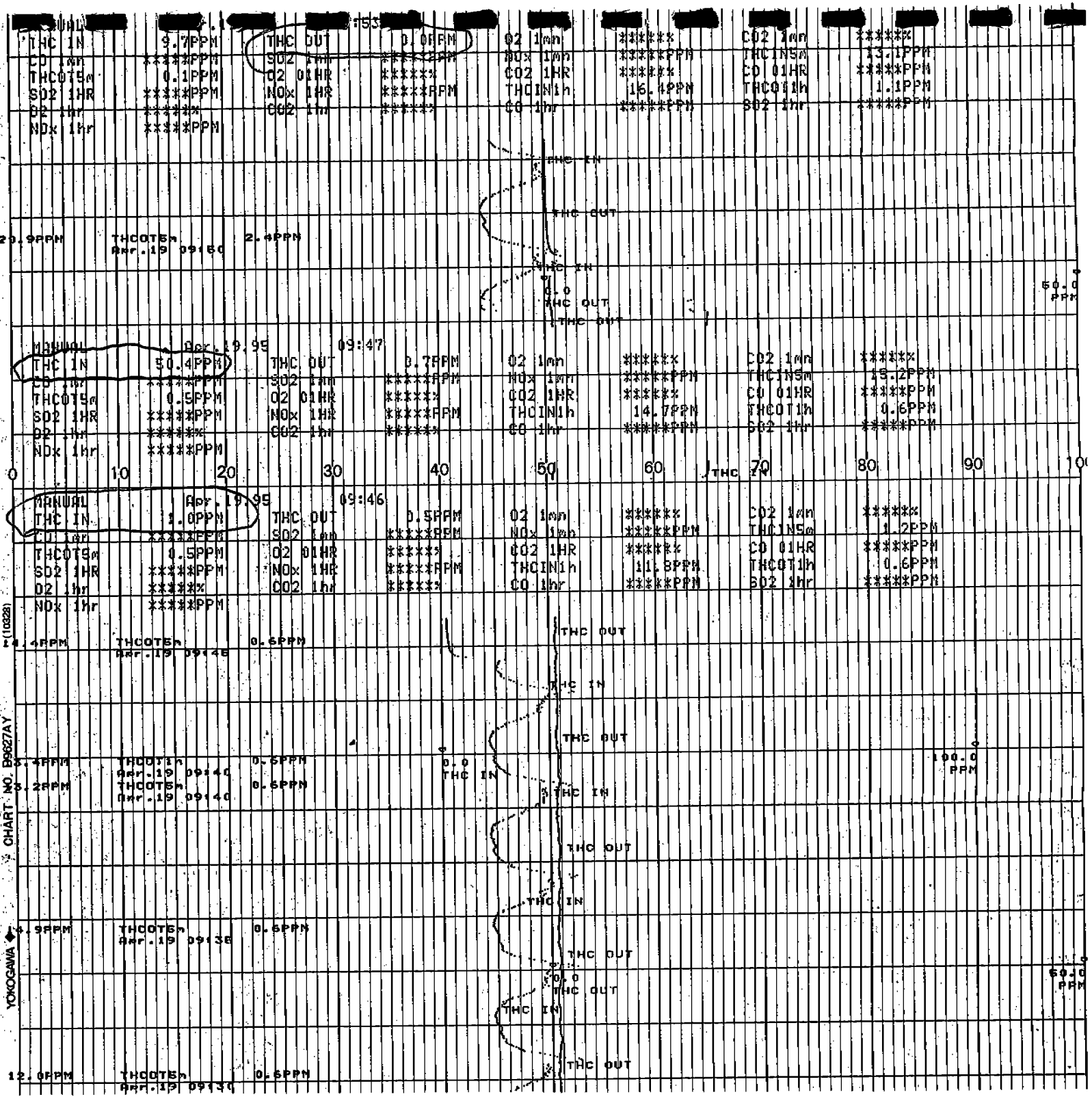
B-7


THCIN5m
INTVL 1
THCOT5m
Apr.19 09:00
0.5PPM
THC OUT
THC IN
400ppmC/M
100.0
PPM
0.0
CHART NO. B9627AY
THCIN5m
INTVL 1
THCOT5m
Apr.19 08:55
0.5PPM
THC IN
THC OUT
YOKOGAWA
THCIN5m
INTVL 1
THCOT5m
Apr.19 08:50
0.5PPM
THC OUT
THC IN
60.0
PPM
THCIN5m
INTVL 1
THCOT5m
Apr.19 08:45
0.5PPM
0
10
20
30
40
50
60
70
80
90
100
THCIN1h
INTVL 2
THCIN5m
INTVL 1
THCOT1h
Apr.19 08:40
THCOT5m
Apr.19 08:40
0.5PPM
0.5PPM
THCIN1h
INTVL 2
THCIN5m
INTVL 1
THCOT1h
Apr.19 08:36
THCOT5m
Apr.19 08:36
0.5PPM
0.5PPM
THCIN1h
INTVL 2
THCIN5m
INTVL 1
THCOT1h
Apr.19 08:34
THCOT5m
Apr.19 08:34
0.4PPM
0.5PPM
THCIN5m
INTVL 1
THCOT5m
Apr.19 08:30
0.5PPM
THCIN5m
INTVL 1
THCOT5m
Apr.19 08:25
0.5PPM

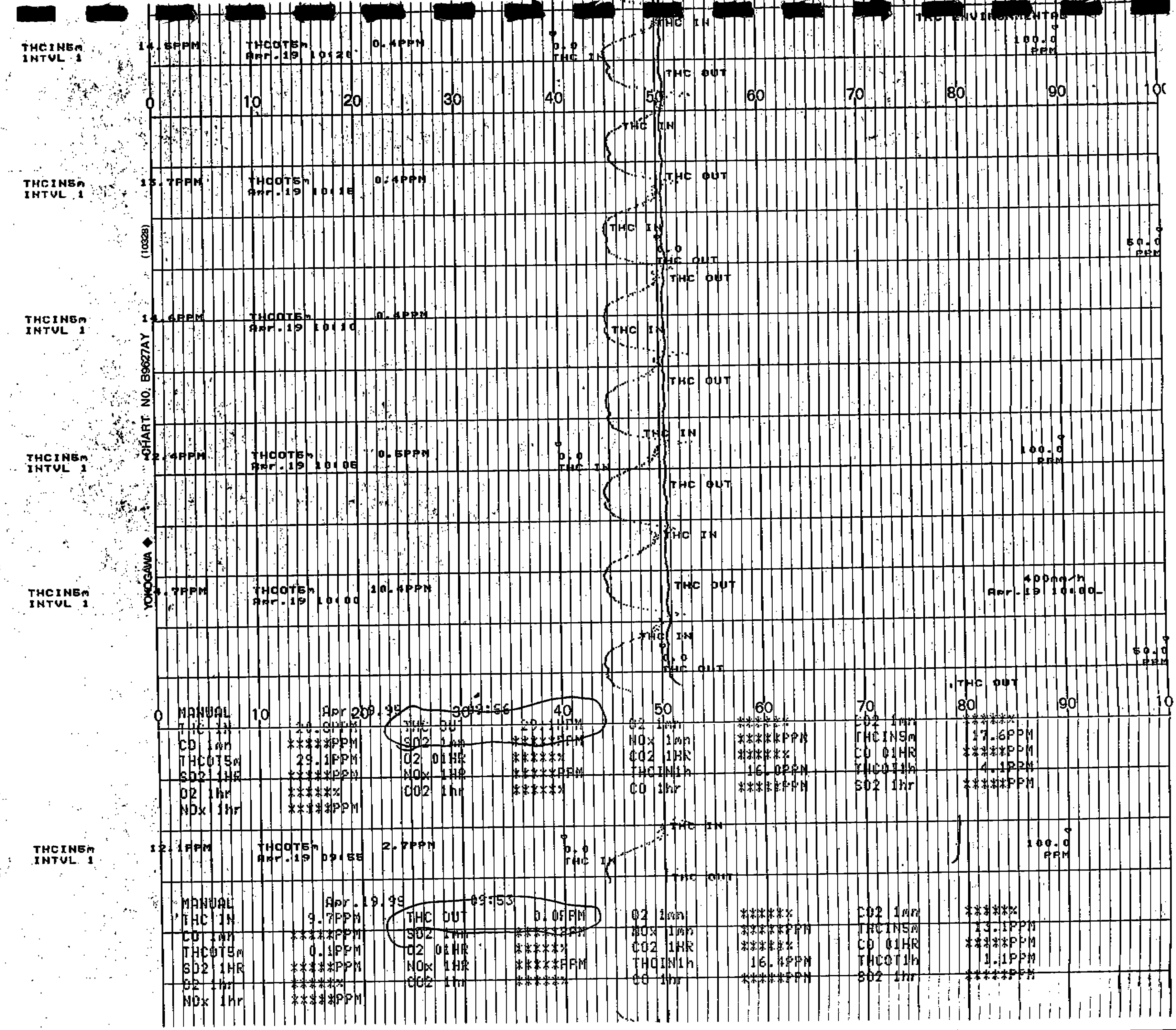
B-8


THCIN5m
INTVL 1
12.0PPM
THCOT5m
Apr.19 09:30
0.6PPM
THCIN5m
INTVL 1
14.4PPM
THCOT5m
Apr.19 09:25
0.6PPM
THCIN5m
INTVL 1
11.9PPM
THCOT5m
Apr.19 09:20
0.6PPM
THCIN5m
INTVL 1
14.6PPM
THCOT5m
Apr.19 09:15
0.7PPM
THCIN5m
INTVL 1
12.6PPM
THCOT5m
Apr.19 09:10
0.6PPM
THCIN5m
INTVL 1
15.1PPM
THCOT5m
Apr.19 09:05
0.5PPM
THCIN5m
INTVL 1
13.1PPM
THCOT5m
Apr.19 09:00
0.6PPM
THC OUT
THC IN
0.0
100.0
PPM
50.0
400mm/h
Apr.19 09:00
0
10
20
30
40
50
60
70
80
90
100

B-9


MANUAL Apr.19.95 09:53
THC IN 9.7PPM
CO 1mn *****PPM
THCOT5m 0.1PPM
SO2 1HR *****PPM
O2 1hr ******%
NOx 1hr *****PPM
THC OUT 0.0PPM
SO2 1mn *****PPM
O2 01HR ******
NOx 1HR *****PPM
CO2 1hr ******
O2 1mn ******
NOx 1mn *****PPM
CO2 1HR ******
THCIN1h 16.4PPM
CO 1hr *****PPM
CO2 1mn ******
THCIN5m 13.1PPM
CO 01HR *****PPM
THCOT1h 1.1PPM
SO2 1hr *****PPM
THCIN5m 20.9PPM
INTVL 1
THCOT5m 2.4PPM
Apr.19 09:50
THC IN
THC OUT
0.0
50.0
PPM
MANUAL Apr.19.95 09:47
THC IN 50.4PPM
CO 1mn *****PPM
THCOT5m 0.5PPM
SO2 1HR *****PPM
O2 1hr ******%
NOx 1hr *****PPM
THC OUT 0.7PPM
SO2 1mn *****PPM
O2 01HR *****
NOx 1HR *****PPM
CO2 1hr ******
O2 1mn ******
NOx 1mn *****PPM
CO2 1HR ******
THCIN1h 14.7PPM
CO 1hr *****PPM
CO2 1mn ******
THCIN5m 15.2PPM
CO 01HR *****PPM
THCOT1h 0.6PPM
SO2 1hr *****PPM
0 10 20 30 40 50 60 70 80 90 100
THC IN
MANUAL Apr.19.95 09:46
THC IN 1.0PPM
CO 1mn *****PPM
THCOT5m 0.5PPM
SO2 1HR *****PPM
O2 1hr ******%
NOx 1hr *****PPM
THC OUT 0.5PPM
SO2 1mn *****PPM
O2 01HR *****
NOx 1HR *****PPM
CO2 1hr ******
O2 1mn ******
NOx 1mn *****PPM
CO2 1HR ******
THCIN1h 11.8PPM
CO 1hr *****PPM
CO2 1mn ******
THCIN5m 1.2PPM
CO 01HR *****PPM
THCOT1h 0.6PPM
SO2 1hr *****PPM
THCIN5m 14.4PPM
INTVL 1
THCOT5m 0.6PPM
Apr.19 09:45
THC OUT
THC IN
THC OUT
THCIN1h 3.4PPM
INTVL 2
THCOT1h 0.6PPM
Apr.19 09:40
THCIN5m 13.2PPM
INTVL 1
THCOT5m 0.6PPM
Apr.19 09:40
0.0
THC IN
100.0
PPM
THC IN
THC OUT
THC IN
THCIN5m 14.9PPM
INTVL 1
THCOT5m 0.6PPM
Apr.19 09:35
THC OUT
0.0
THC OUT
THC IN
50.0
PPM
THC OUT
THCIN5m 12.0PPM
INTVL 1
THCOT5m 0.6PPM
Apr.19 09:30
(10328)
CHART NO. B9627AY
YOKOGAWA

B-2


THC ENVIRONMENTAL
THCIN5m INTVL 1
14.5PPM
THCOT5m Apr.19 10:20
0.4PPM
0.0 THC IN
100.0 PPM
THC IN
THC OUT
0 10 20 30 40 50 60 70 80 90 100
THCIN5m INTVL 1
13.7PPM
THCOT5m Apr.19 10:15
0.4PPM
(10328)
50.0 PPM
THCIN5m INTVL 1
14.6PPM
THCOT5m Apr.19 10:10
0.4PPM
CHART NO. B9627AY
THCIN5m INTVL 1
12.4PPM
THCOT5m Apr.19 10:05
0.5PPM
0.0 THC IN
100.0 PPM
YOKOGAWA ◆
THCIN5m INTVL 1
14.7PPM
THCOT5m Apr.19 10:00
10.4PPM
400mm/h Apr.19 10:00
MANUAL Apr.20.99 10:56
THC IN 10.0PPM
THC OUT 20.1PPM
O2 1mn *****%
CO2 1mn *****%
CO 1mn *****PPM
SO2 1mn *****PPM
NOx 1mn *****PPM
THCIN5m 17.6PPM
THCOT5m 29.1PPM
O2 01HR *****%
CO2 1HR *****%
CO 01HR *****PPM
SO2 1HR *****PPM
NOx 1HR *****PPM
THCIN1h 16.0PPM
THCOT1h 4.1PPM
O2 1hr *****%
CO2 1hr *****%
CO 1hr *****PPM
SO2 1hr *****PPM
NOx 1hr *****PPM
THCIN5m INTVL 1
12.1PPM
THCOT5m Apr.19 09:55
2.7PPM
0.0 THC IN
100.0 PPM
MANUAL Apr.19.99 09:53
THC IN 9.7PPM
THC OUT 0.0PPM
O2 1mn *****%
CO2 1mn *****%
CO 1mn *****PPM
SO2 1mn *****PPM
NOx 1mn *****PPM
THCIN5m 13.1PPM
THCOT5m 0.1PPM
O2 01HR *****%
CO2 1HR *****%
CO 01HR *****PPM
SO2 1HR *****PPM
NOx 1HR *****PPM
THCIN1h 16.4PPM
THCOT1h 1.1PPM
O2 1hr *****%
CO2 1hr *****%
CO 1hr *****PPM
SO2 1hr *****PPM
NOx 1hr *****PPM

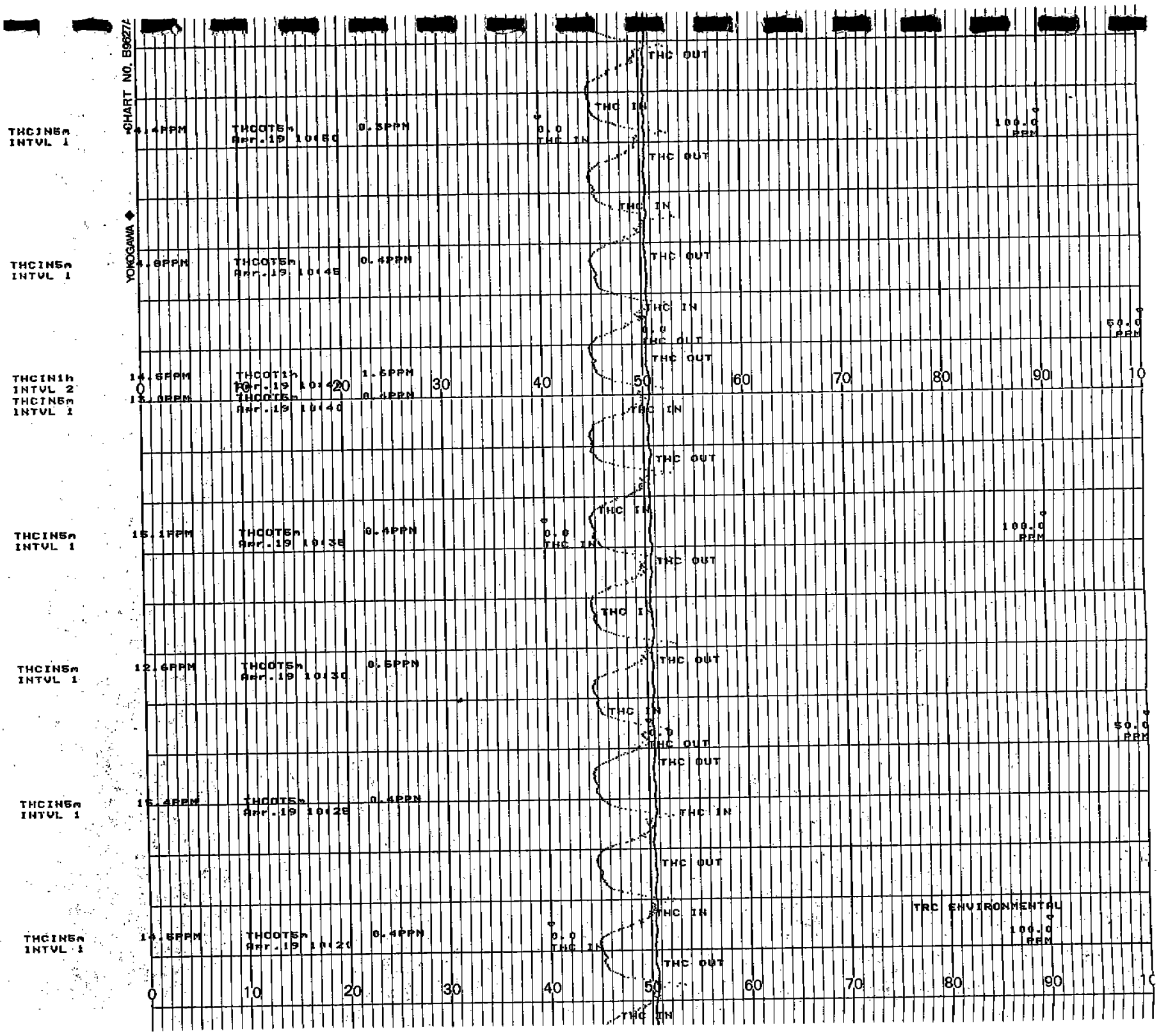


CHART NO. B9627
YOKOGAWA
THCIN5m INTVL 1
THCOT5m Apr.19 10:50
0.5PPM
THC OUT
THC IN
100.0 PPM
THCIN5m INTVL 1
4.8PPM
THCOT5m Apr.19 10:45
0.4PPM
50.0 PPM
THCIN1h INTVL 2
14.6PPM
THCOT1h Apr.19 10:40
1.6PPM
THCIN5m INTVL 1
13.8PPM
THCOT5m Apr.19 10:40
0.4PPM
THCIN5m INTVL 1
15.1PPM
THCOT5m Apr.19 10:35
0.4PPM
THCIN5m INTVL 1
12.6PPM
THCOT5m Apr.19 10:30
0.5PPM
THCIN5m INTVL 1
15.4PPM
THCOT5m Apr.19 10:25
0.4PPM
THCIN5m INTVL 1
14.6PPM
THCOT5m Apr.19 10:20
0.4PPM
TRC ENVIRONMENTAL
0 10 20 30 40 50 60 70 80 90

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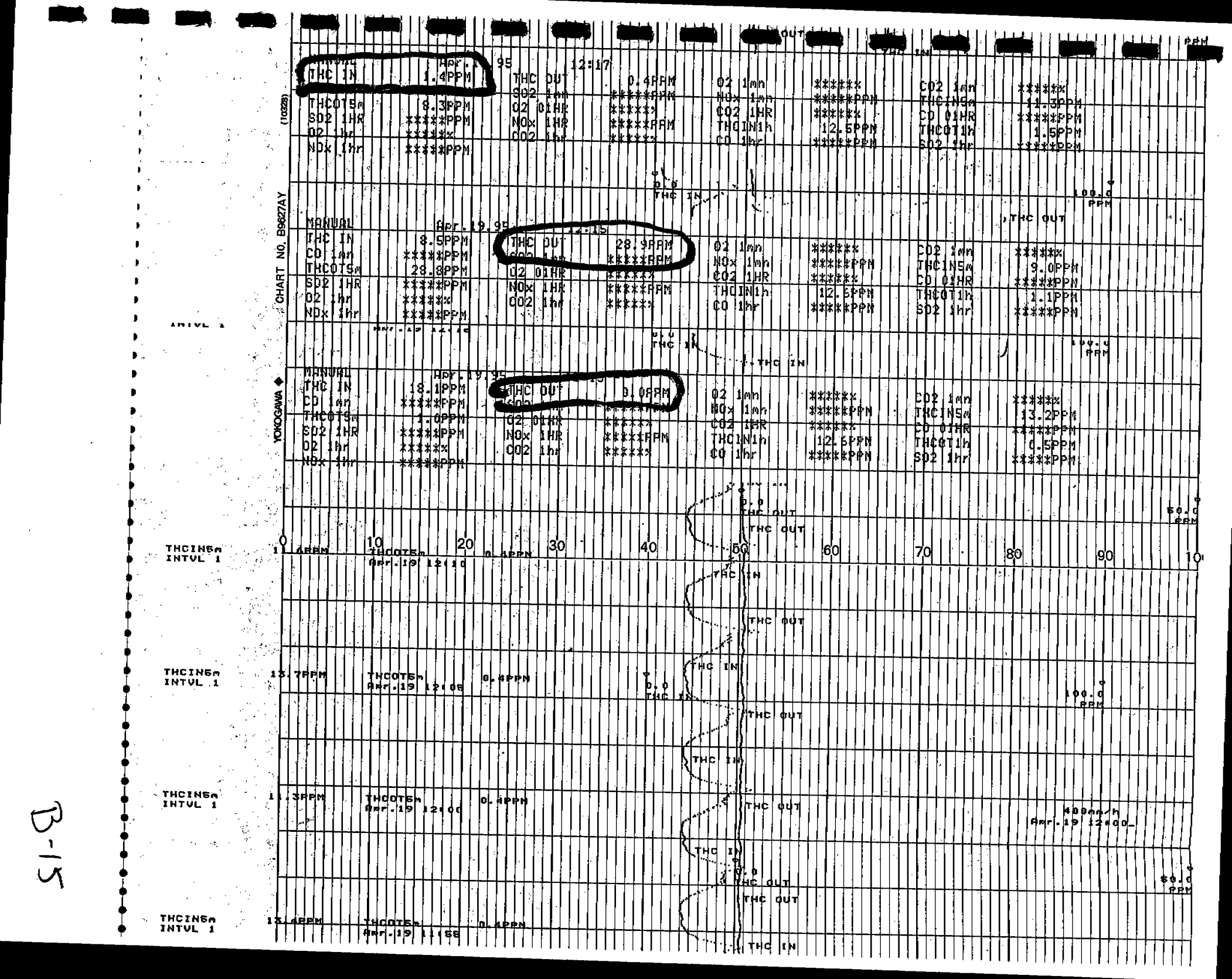
YOKOGAWA
CHART NO. B9627AY
(1032S)
MANUAL
Apr.19 95 12:17
THC IN 1.4PPM
THC OUT 0.4PPM
THCOTSm 8.3PPM
SO2 1mn ******PPM
O2 1mn ******
NOx 1mn ******PPM
SO2 1HR *****PPM
O2 1HR ******
CO2 1HR ******
O2 1hr ******
NOx 1HR ******PPM
CO2 1hr ******
THCIN1h 12.5PPM
CO 1hr ******PPM
CO2 1mn ******
THCINSm 11.3PPM
CO 01HR ******PPM
THCOT1h 1.5PPM
SO2 1hr ******PPM
THC IN
THC OUT
100.0 PPM
MANUAL
Apr.19 95 12:15
THC IN 8.5PPM
CO 1mn ******PPM
THCOTSm 28.8PPM
SO2 1HR ******PPM
O2 1hr ******
NOx 1hr ******PPM
THC OUT 28.9PPM
O2 01HR ******
NOx 1HR ******PPM
CO2 1hr ******
O2 1mn ******
NOx 1mn ******PPM
CO2 1HR ******
THCIN1h 12.5PPM
CO 1hr ******PPM
CO2 1mn ******
THCINSm 9.0PPM
CO 01HR ******PPM
THCOT1h 1.1PPM
SO2 1hr ******PPM
THC IN
THC OUT
100.0 PPM
MANUAL
Apr.19 95
THC IN 18.1PPM
CO 1mn ******PPM
THCOTSm 1.0PPM
SO2 1HR ******PPM
O2 1hr ******
NOx 1hr ******PPM
THC OUT 0.0PPM
O2 01HR ******
NOx 1HR ******PPM
CO2 1hr ******
O2 1mn ******
NOx 1mn ******PPM
CO2 1HR ******
THCIN1h 12.5PPM
CO 1hr ******PPM
CO2 1mn ******
THCINSm 13.2PPM
CO 01HR ******PPM
THCOT1h 0.5PPM
SO2 1hr ******PPM
THC IN
THC OUT
50.0 PPM
0 10 20 30 40 50 60 70 80 90 100
THCINSm 11.4PPM
INTVL 1
THCOTSm
Apr.19 12:10
0.4PPM
THC IN
THC OUT
THCINSm 13.7PPM
INTVL 1
THCOTSm
Apr.19 12:05
0.4PPM
THC IN
THC OUT
100.0 PPM
THCINSm 11.3PPM
INTVL 1
THCOTSm
Apr.19 12:00
0.4PPM
THC IN
THC OUT
400nm/h
Apr.19 12:00
THC IN
THC OUT
50.0 PPM
THCINSm 13.4PPM
INTVL 1
THCOTSm
Apr.19 11:55
0.4PPM
THC OUT
THC IN

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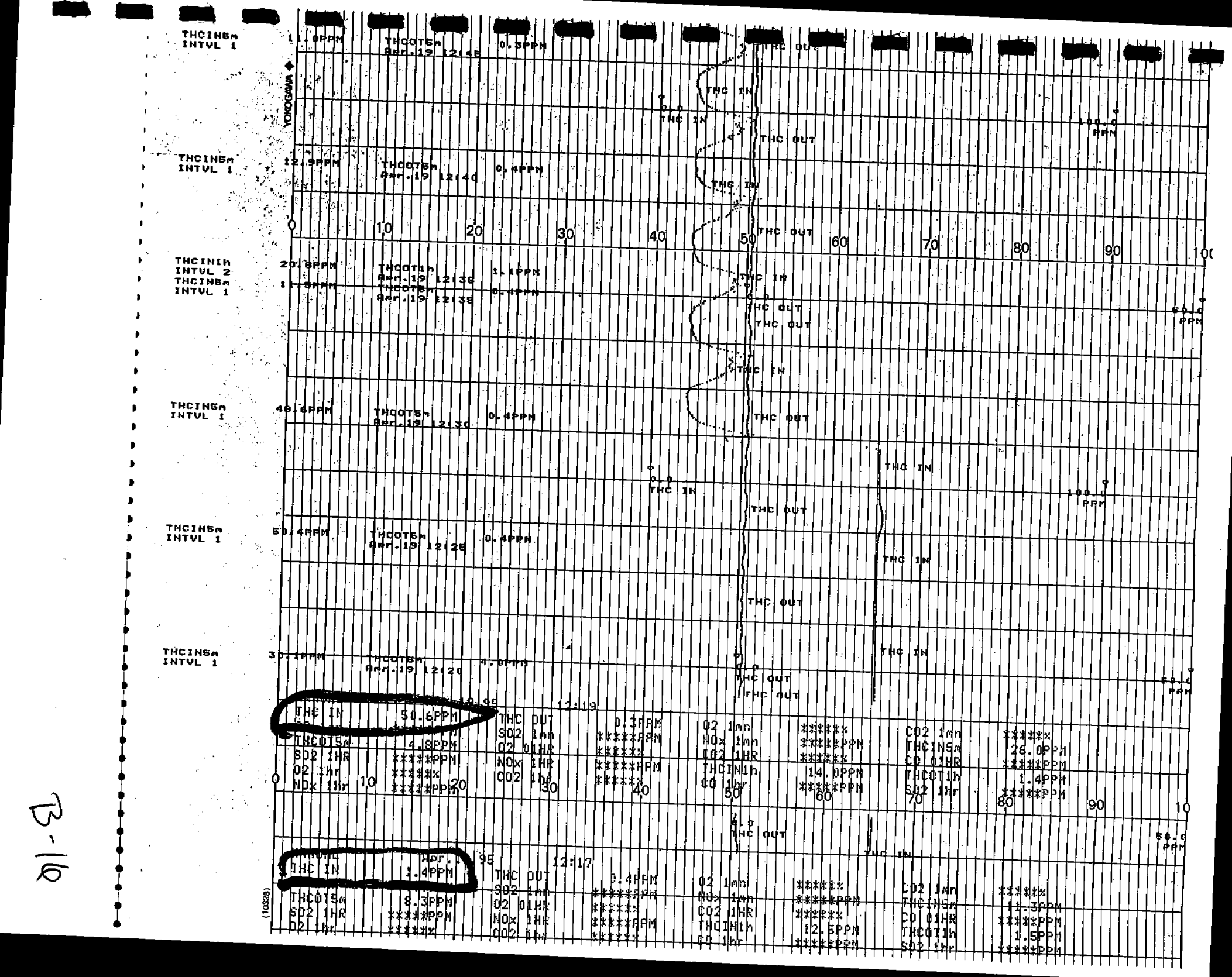
THCIN5m
INTVL 1
THCOT5m
Apr.19 12:46
0.3PPM
THC OUT
THC IN
YOKOGAWA
THC IN
THC OUT
100.0
PPM
THCIN5m
INTVL 1
12.9PPM
THCOT5m
Apr.19 12:40
0.4PPM
THC IN
0
10
20
30
40
50
THC OUT
60
70
80
90
THCIN1h
INTVL 2
20.8PPM
THCOT1h
Apr.19 12:36
1.1PPM
THCIN5m
INTVL 1
11.8PPM
THCOT5m
Apr.19 12:36
0.4PPM
THC IN
THC OUT
50.0
PPM
THC OUT
THCIN5m
INTVL 1
48.6PPM
THCOT5m
Apr.19 12:30
0.4PPM
THC IN
THC IN
100.0
PPM
THC OUT
THCIN5m
INTVL 1
50.4PPM
THCOT5m
Apr.19 12:26
0.4PPM
THC IN
THC OUT
THCIN5m
INTVL 1
30.1PPM
THCOT5m
Apr.19 12:20
4.0PPM
THC IN
50.6PPM
12:19
THC OUT
0.3PPM
SO2 1mn
*****PPM
O2 01HR
*****
NOx 1HR
*****PPM
CO2 1Hr
*****
O2 1mn
******
NOx 1mn
*****PPM
CO2 1HR
******
THCIN1h
14.0PPM
CO 1Hr
*****PPM
CO2 1mn
******
THCIN5m
26.0PPM
CO 01HR
*****PPM
THCOT1h
1.4PPM
SO2 1Hr
*****PPM
THCOT5m
4.8PPM
SO2 1HR
*****PPM
O2 1Hr
******
NOx 1Hr
*****PPM
THC OUT
THC IN
THC IN
1.4PPM
12:17
THC OUT
0.4PPM
SO2 1mn
*****PPM
O2 01HR
*****
NOx 1HR
*****PPM
CO2 1Hr
******
O2 1mn
******
NOx 1mn
*****PPM
CO2 1HR
******
THCIN1h
12.5PPM
CO 1Hr
*****PPM
CO2 1mn
******
THCIN5m
11.3PPM
CO 01HR
*****PPM
THCOT1h
1.5PPM
SO2 1Hr
*****PPM
THCOT5m
8.3PPM
SO2 1HR
*****PPM
O2 1Hr
******
(10328)

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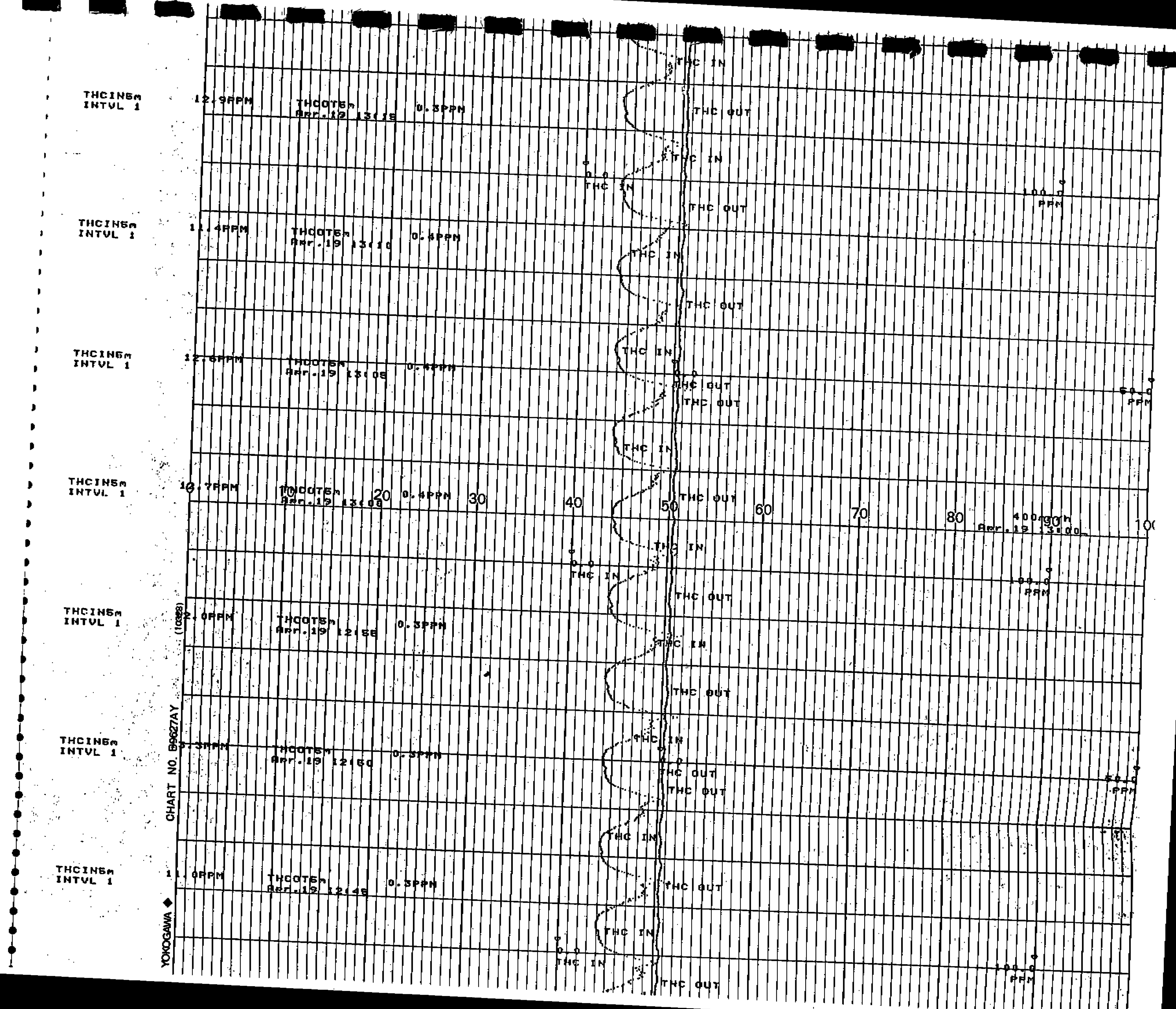
THCIN5m INTVL 1 12.9PPM THCOT5m Apr.19 13:15 0.3PPM
THCIN5m INTVL 1 11.4PPM THCOT5m Apr.19 13:10 0.4PPM
THCIN5m INTVL 1 12.6PPM THCOT5m Apr.19 13:05 0.4PPM
THCIN5m INTVL 1 10.7PPM THCOT5m Apr.19 13:00 0.4PPM
THCIN5m INTVL 1 12.0PPM THCOT5m Apr.19 12:55 0.3PPM
THCIN5m INTVL 1 13.3PPM THCOT5m Apr.19 12:50 0.3PPM
THCIN5m INTVL 1 11.0PPM THCOT5m Apr.19 12:45 0.3PPM
THC IN
THC OUT
100.0 PPM
50.0 PPM
400mm/h Apr.19 13:00
10 20 30 40 50 60 70 80 90 100
CHART NO. B9627AY
YOKOGAWA

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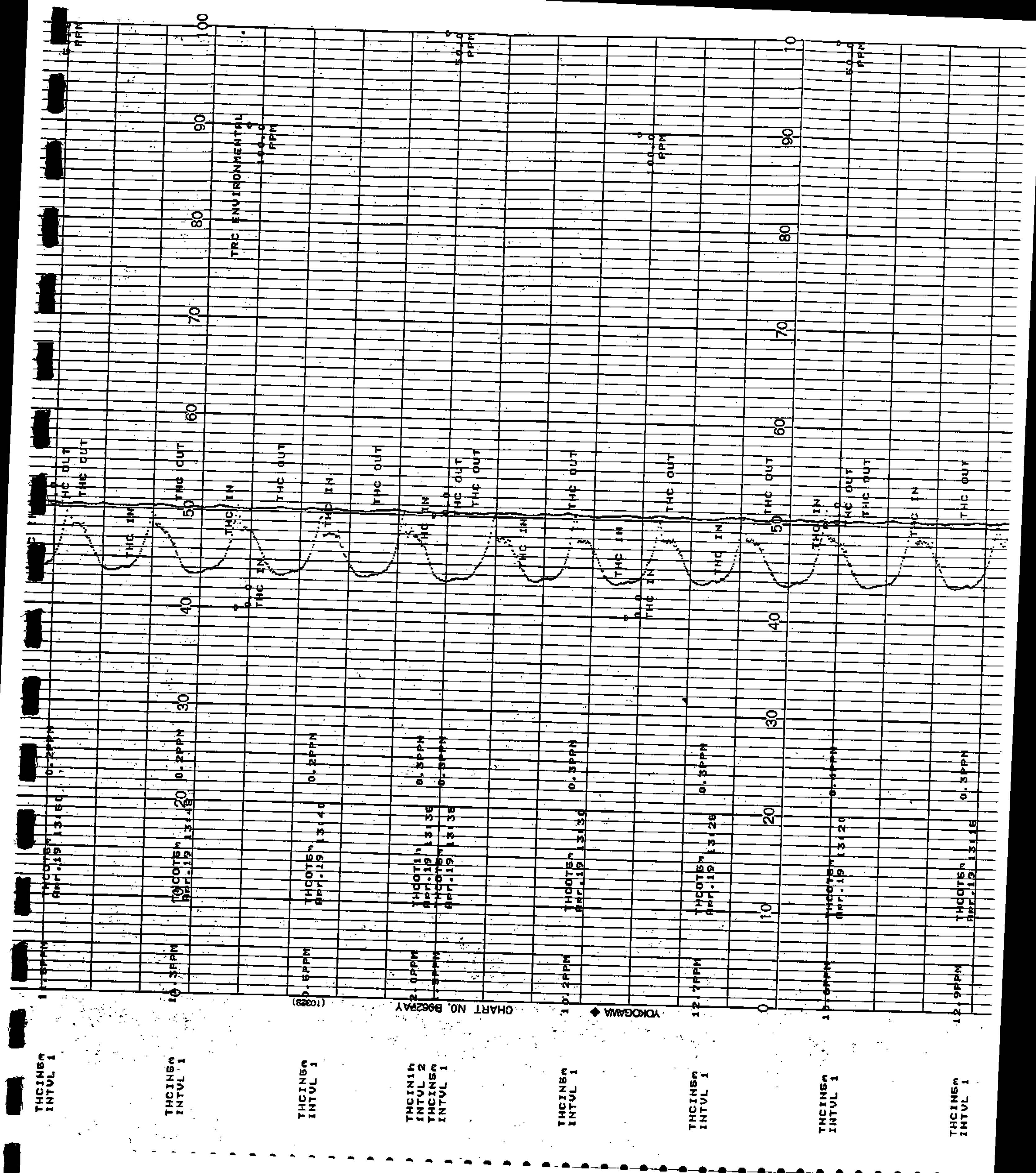
TRC ENVIRONMENTAL
THC OUT
THC IN
THCOTS5m Apr.19 13:50 0.2PPM
THCOTS5m Apr.19 13:45 0.2PPM
THCOTS5m Apr.19 13:40 0.2PPM
THCOT1h Apr.19 13:35 0.3PPM
THCOTS5m Apr.19 13:35 0.3PPM
THCOTS5m Apr.19 13:30 0.3PPM
THCOTS5m Apr.19 13:25 0.3PPM
THCOTS5m Apr.19 13:20
THCOTS5m Apr.19 13:15 0.3PPM
THCINS5m INTVL 1
THCIN1h INTVL 2
CHART NO. B9627AY
YOKOGAWA

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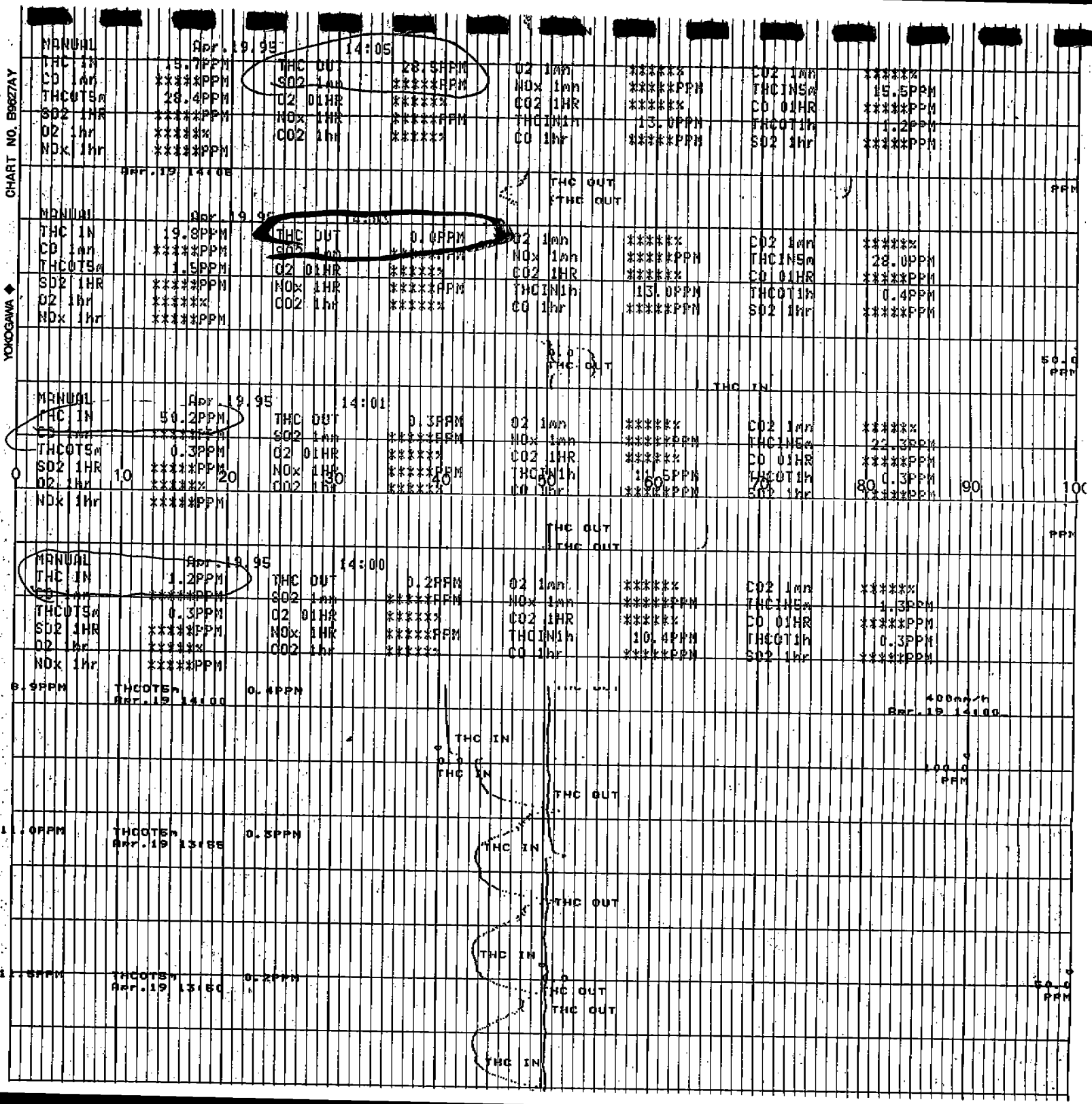
CHART NO. B9827AY
YOKOGAWA
MANUAL Apr.19.95 14:05
THC IN 15.7PPM THC OUT 28.5PPM O2 1mn ****** CO2 1mn ******
CO 1mn *****PPM SO2 1mn *****PPM NOx 1mn *****PPM THCIN5m 15.5PPM
THCOT5m 28.4PPM O2 01HR ****** CO2 1HR ****** CO 01HR *****PPM
SO2 1HR *****PPM NOx 1HR *****PPM THCIN1h 13.0PPM THCOT1h 1.2PPM
O2 1hr ****** CO2 1hr ****** CO 1hr *****PPM SO2 1hr *****PPM
INTVL 1
Apr.19 14:05
THC OUT
THC OUT
PPM
MANUAL Apr.19.95 14:03
THC IN 19.8PPM THC OUT 0.4PPM O2 1mn ****** CO2 1mn ******
CO 1mn *****PPM SO2 1mn *****PPM NOx 1mn *****PPM THCIN5m 28.0PPM
THCOT5m 1.9PPM O2 01HR ****** CO2 1HR ****** CO 01HR *****PPM
SO2 1HR *****PPM NOx 1HR *****PPM THCIN1h 13.0PPM THCOT1h 0.4PPM
O2 1hr ****** CO2 1hr ****** CO 1hr *****PPM SO2 1hr *****PPM
THC OUT
50.0
PPM
THC IN
MANUAL Apr.19.95 14:01
THC IN 50.2PPM THC OUT 0.3PPM O2 1mn ****** CO2 1mn ******
CO 1mn *****PPM SO2 1mn *****PPM NOx 1mn *****PPM THCIN5m 22.3PPM
THCOT5m 0.3PPM O2 01HR ****** CO2 1HR ****** CO 01HR *****PPM
SO2 1HR *****PPM NOx 1HR *****PPM THCIN1h 14.5PPM THCOT1h 0.3PPM
O2 1hr ****** CO2 1hr ****** CO 1hr *****PPM SO2 1hr *****PPM
NOx 1hr *****PPM
0 10 20 30 40 50 60 70 80 90 100
THC OUT
THC OUT
PPM
MANUAL Apr.19.95 14:00
THC IN 1.2PPM THC OUT 0.2PPM O2 1mn ****** CO2 1mn ******
CO 1mn *****PPM SO2 1mn *****PPM NOx 1mn *****PPM THCIN5m 1.3PPM
THCOT5m 0.3PPM O2 01HR ****** CO2 1HR ****** CO 01HR *****PPM
SO2 1HR *****PPM NOx 1HR *****PPM THCIN1h 10.4PPM THCOT1h 0.3PPM
O2 1hr ****** CO2 1hr ****** CO 1hr *****PPM SO2 1hr *****PPM
NOx 1hr *****PPM
THCIN5m 9.9PPM THCOT5m 0.4PPM
INTVL 1
Apr.19 14:00
400mm/h
Apr.19 14:00
THC IN
0.0
THC IN
100.0
PPM
THC OUT
THCIN5m 11.0PPM THCOT5m 0.3PPM
INTVL 1
Apr.19 13:55
THC IN
THC OUT
THC IN
THCIN5m 11.6PPM THCOT5m 0.2PPM
INTVL 1
Apr.19 13:50
THC OUT
THC OUT
50.0
PPM
THC IN

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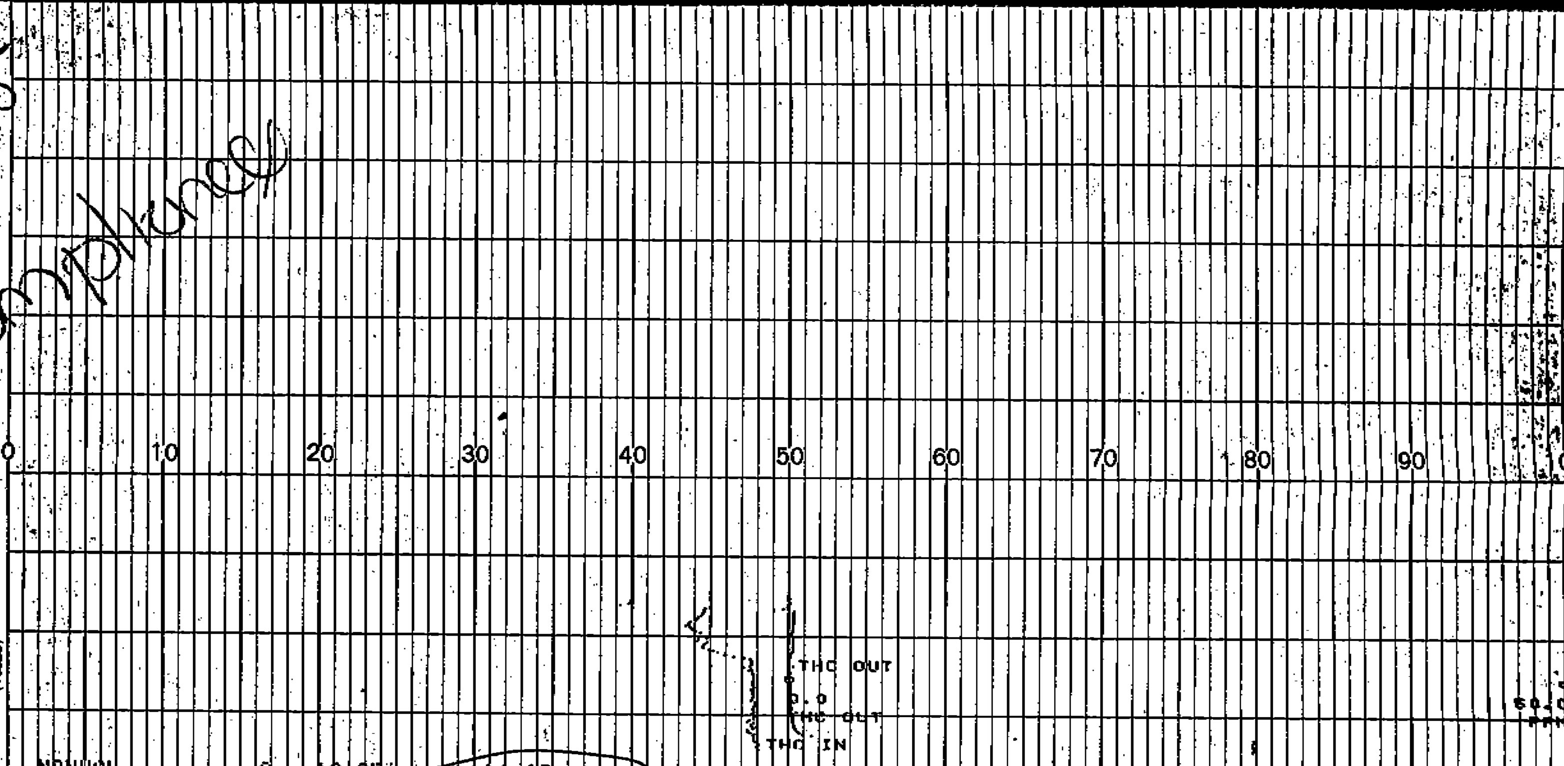
[redacted]

4/19/95
LP
compliance



NO. B9627AY (10328)

MANUAL Apr.19,95 14:05

THC IN	15.7PPM	THC OUT	28.5PPM	O2 1mn	******%	CO2 1mn	******%
CO 1mn	*****PPM	SO2 1mn	*****PPM	NOx 1mn	*****PPM	THCIN5m	15.5PPM
THCOUT5m	28.4PPM	O2 01HR	******%	CO2 1HR	******%	CO 01HR	*****PPM
SO2 1HR	*****PPM	NOx 1HR	*****PPM	THCIN1h	13.0PPM	THCOT1h	1.2PPM
O2 1hr	*****%	CO2 1hr	******%	CO 1hr	*****PPM	SO2 1hr	*****PPM
NOx 1hr	*****PPM						

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Appendix C

PM Data

Appendix C.1

Field Data

TRC Environmental Consultants, Inc.

TRC
EPA METHOD 2
VELOCITY TRAVERSE AND FLOWRATE DETERMINATION

PLANT LP-Maine
DATE 4/17/95
LOCATION RTO Inlet
STACK DIMENSIONS 54"ø AREA _____ ft²
BAROMETRIC PRESSURE, Pb = 30.04 in. Hg
STACK STATIC PRESSURE, Pg = ± -4.0 in. H_2O
STACK GAS MOLECULAR WEIGHT (Wet), M_w _____
STACK GAS MOISTURE CONTENT, % H_2O = _____
PITOT NO. _____ Cp= 0.84
TESTER RD/DP

cyclonic check

SCHEMATIC OF TRAVERSE POINT LOCATION
Cyclonic Flow Angle + θ Clockwise - θ Counterclockwise

PORT	POINT	ΔP Inch H_2O	$\sqrt{\Delta P}$	T_s (°F)	± θ	Pitots reversed for Negative Flow?	$\sqrt{\Delta P} \cdot \cos\theta$
1	1	1.50		77°	-13		
	2	1.90			-15		
	3	1.85			-15		
	4	1.65			-15		
	5	1.80			-14		
	6	1.85			-10		
	7	1.90			-2		
	8	1.80			0		
	9	1.90			-5		
	10	1.70			-6		
	11	1.55			-4		
	12	1.20			-2		
2	1	1.20			-8		
	2	1.70			-12		
	3	1.80			-12		
	4	1.80			-12		
	5	1.75			-9		
	6	1.75			-15 -8		
	7	2.10			-8		
		Average		T_s = °F	*		
				T_{sr} = °R			

*Avg. of absolute values including zeroes

Absolute Gas Temperature, $T_{sr} = T_s + 460^\circ$
Absolute Gas Pressure, $P_s = P_b + P_g/13.6$ = _____
Gas Velocity, $V_s = (85.49)\ C_p\ (\sqrt{\Delta P} \cdot \cos\theta)\ \text{avg}\ \sqrt{\frac{T_{sr}\ \text{avg}}{P_s\ M_w}}$ = _____ ft/sec

Actual Gas Flowrate, $Q_a = (V_s)(60)(A)$ = _____ ACFM
Standard Gas Flowrate, $Q_{std} = Q_a \left(\frac{528^\circ R}{T_{sr}}\right)\left(\frac{P_s}{29.92}\right)\left(\frac{100 - \%\ H_2O}{100}\right)$ = _____ DSCFM

TRC Environmental Consultants, Inc.

TRC
EPA METHOD 2
VELOCITY TRAVERSE AND FLOWRATE DETERMINATION

PLANT LP - Maine
DATE 4/17/95
LOCATION K10 Inlet
STACK DIMENSIONS _____ AREA _____ ft^2
BAROMETRIC PRESSURE, Pb = _____ in. Hg
STACK STATIC PRESSURE, Pg = ± _____ in. H_2O
STACK GAS MOLECULAR WEIGHT (Wet), M_w _____
STACK GAS MOISTURE CONTENT, % H_2O = _____
PITOT NO. _____ Cp= _____
TESTER _____

Cyclonic Check

SCHEMATIC OF TRAVERSE POINT LOCATION
Cyclonic Flow Angle + θ Clockwise, - θ Counterclockwise

PORT	POINT	ΔP Inch H_2O	$\sqrt{\Delta P}$	T_s (°F)	± θ	Pitots reversed for Negative Flow?	$\sqrt{\Delta P} \cdot \cos\theta$
2	8	2.00		77	-7		
	9	2.00			-7		
	10	1.95			-8		
	11	1.20			-9		
	17	1.20			-8		
		Average		T_s = °F	*8.7 ✓		
				T_{sr} = °R			

*Avg. of absolute values including zeroes

Absolute Gas Temperature, $T_{sr} = T_s + 460^{\circ}$
Absolute Gas Pressure, $P_s = P_b + P_g/13.6$ = _____
Gas Velocity, $V_s = (85.49)\, C_p\, (\sqrt{\Delta P} \cdot \cos\theta)_{avg} \sqrt{\frac{T_{sr\ avg}}{P_s\ M_w}}$ = _____ ft/sec

Actual Gas Flowrate, $Q_a = (V_s)(60)(A)$ = _____ ACFM
Standard Gas Flowrate, $Q_{std} = Q_a \left(\frac{528^{\circ}R}{T_{sr}}\right)\left(\frac{P_s}{29.92}\right)\left(\frac{100 - \%\ H_2O}{100}\right)$ = _____ DSCFM

TRC Environmental Consultants, Inc.

TRC
EPA METHOD 2
VELOCITY TRAVERSE AND FLOWRATE DETERMINATION

Cyclonic Check

PLANT LP - Maine
DATE 4/17/95
LOCATION RTO Outlet
STACK DIMENSIONS 70" ø AREA ft²
BAROMETRIC PRESSURE, Pb = 30.04 in. Hg
STACK STATIC PRESSURE, Pg = ± -0.42 in. H_2O
STACK GAS MOLECULAR WEIGHT (Wet), M_w
STACK GAS MOISTURE CONTENT, % H_2O =
PITOT NO. Cp= 0.84
TESTER RP/DP

SCHEMATIC OF TRAVERSE POINT LOCATION

Cyclonic Flow Angle + θ Clockwise, - θ Counterclockwise

PORT	POINT	ΔP Inch H_2O	$\sqrt{\Delta P}$	T_s (°F)	± θ	Pitots reversed for Negative Flow?	$\sqrt{\Delta P} \cdot \cos\theta$
1	1	.48		236	4		
	2	.57			3		
	3	.68			4		
	4	.64			5		
	5	.62			4		
	6	.51			5		
2	1	.55			5		
	2	.63			5		
	3	.60			5		
	4	.57			5		
	5	.58			5		
	6	.60			5		
		Average		T_s = °F	*<3		
				T_{sr} = °R			

*Avg. of absolute values including zeroes

Absolute Gas Temperature, $T_{sr} = T_s + 460^\circ$

Absolute Gas Pressure, $P_s = P_b + P_g/13.6 =$

Gas Velocity, $V_s = (85.49)\, C_p\, (\sqrt{\Delta P} \cdot \cos\theta)_{avg} \sqrt{\frac{T_{sr\ avg}}{P_s\, M_w}} =$ ft/sec

Actual Gas Flowrate, $Q_a = (V_s)(60)(A) =$ ACFM

Standard Gas Flowrate, $Q_{std} = Q_a \left(\frac{528^\circ R}{T_{sr}}\right)\left(\frac{P_s}{29.92}\right)\left(\frac{100 - \%\ H_2O}{100}\right) =$ DSCFM

IN-1

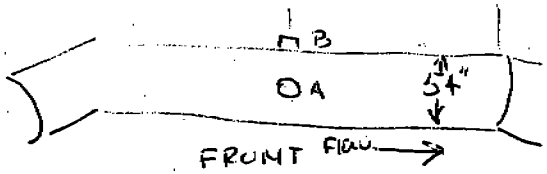
Isokinetic Flue Gas Sampling Data Sheet

Project No. 18226
Client L.P
Facility Houston, LTE
Source Inlet
Sample Location Inlet
Stack Diameter 54"
Date 4-19-95
Run No. IN-1
Operator S. Bayko
Meter Box No. 808836
Meter Δ H@ 1.95
Y Factor 1.00

Very Important - Fill in All Blanks

Read and Record at the Start of Each Test Point

Sketch



Sheet 1 of 2
Train Prepared By C.S
Pitot Number and Side AAX 6-1
Pitot Tube CP .84
Filter No. / Thimble No. 251
Ambient Temp.°F 40
Bar. Pressure., In. Hg
Assumed Moisture, % 6%
Heater Box Setting, °F 250
Nozzle # / Dia., In. .197
Probe Length / Material 6' Glass
Probe Heater Setting 250

Point A	Clock Time 24-hr	Clock Time min	Dry Gas Meter, (ft³)	Pitot In. H_2O Δ P	Orifice Δ H In. H_2O Desired	Orifice Δ H In. H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Pump Vacuum In. Hg Gauge	Temperatures (°F) Stack	Filter Box	Imp Temp	XAD Cond	Probe	Filter Outlet
1	08.37	0	837.700	1.1	1.54	1.5	46	44	4	81	240	43	NA	245	
2		3	839.7	1.2	1.68	1.7	46	44	4 1/2	109	250	40		250	
3		6	841.7	1.6	2.24	2.24	47	44	6	120	250	41		250	
4		9	844.0	1.6	2.24	2.24	50	45	6	122	250	42		250	
5		12	846.4	1.7	2.38	2.38	54	46	6	123	250	45		250	
6		15	848.8	1.6	2.24	2.24	55	46	6	123	250	46		250	
7		18	851.2	1.6	2.24	2.24	57	47	6	124	250	46		250	
8		21	853.6	1.8	2.52	2.52	58	47	7	124	250	47		250	
9		24	856.1	1.8	2.52	2.52	59	49	7	124	250				

Train Leak Check:
Before Test: .002 CF 60 SEC 15 In. Hg
After Test: .000 CF 60 SEC 9 In. Hg

	I	F	Static Pressure		
Pitot Tube Leak Check	✓	✓	Port	A	-3.7
ORSAT Train Leak Check			In. H_2O		
			In. Hg		

Comments:

K-factor 1.4

Started timer 22 sec late
Stop timer 22 sec early
S. Bayko

OK KSS 4/26/95

IN-1

Isokinetic Flue .S Sampling Data Sheet

Project No. _____ Date 4-19-95 Sheet 2 of 2

Client LP Run No. IN-1

Facility Houlton ME Sample Location _____ Operator S. Boyle

Source _____

Point	Clock Time 24-hr	Clock Time min	Dry Gas Meter, (ft^3)	Pitot in. H_2O ΔP	Orifice ΔH in. H_2O Desired	Orifice ΔH in. H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Pump Vacuum in. Hg Gauge	Temperatures (°F) °C Stack	Filter Box	Imp Temp	XAD Cond	Probe	Filter Outlet
10		27	858.6	1.7	2.38	2.38	60	49	6	127	250	50	NA	250	
11		30	861.05	1.7	2.38	2.38	61	51	6	126	250	51		250	
12		33	863.5	1.8	2.52	2.52	61	51	7	127	250	51		250	
B	Port change	36	866.070												
1	0919	36	866.070	1.8	2.52	2.52	56	54	7	123	240	49		250	
2		39	869.000	1.8	2.52	2.52	61	54	7	125	240	49		250	
3		42	871.6	1.9	2.66	2.66	63	55	7	124	240	51		240	
4		45	874.2	1.7	2.38	2.38	65	55	7	125	240	52		250	
5		48	876.6	1.9	2.66	2.66	65	55	7	127	250	53		255	
6		51	879.3	1.8	2.52	2.52	66	56	7	127	250	54		250	
7		54	881.75	1.7	2.38	2.38	67	57	7	127	245	54		250	
8		57	884.2	1.7	2.38	2.38	67	57	7	127	246	54		250	
9		60	886.85	1.6	2.24	2.24	68	57	6	127	240	54		240	
10		63	889.2	1.5	2.1	2.1	69	60	5½	131	245	54		250	
11		66	891.6	1.6	2.24	2.24	68	58	6	128	240	55		245	
12		69	894.0	1.6	2.24	2.24	68	59	6	129	230	55		230	
STOP	09:55	72	896.200												
Total			58.5 ✓			2.32 ✓		56 ✓		123 ✓					

Meter Leak Check During Test:

			Meter Reading Stop	Meter Reading Start
____ CF	____ SEC	____ In. Hg	____	____
____ CF	____ SEC	____ In. Hg	____	____

Static Pressure				
	Port			
	In. H_2O			
	In. Hg			

Comments:

$\sqrt{\Delta P_{ave}} = 1.2855$ ✓

imp vol - 5ml

silicagel 12

7

AF-060

IN-2

Isokinetic Flue Gas Sampling Data Sheet

Project No. _____
Client LO
Facility Houlton
Source _____
Sample Location inlet
Stack Diameter 54"
Date 4-19-95
Run No. IN-2
Operator SBayko
Meter Box No. 808.36
Meter Δ H@ 1.95
Y Factor 1.00

Very Important - Fill in All Blanks

Read and Record at the Start of Each Test Point

Sketch

Sheet 1 of 2
Train Prepared By _____
Pitot Number and Side 6-1 ADEY
Pitot Tube CP .84
Filter No. / Thimble No. 240
Ambient Temp.°F 45
Bar. Pressure., In. Hg 29.5
Assumed Moisture, % _____
Heater Box Setting, °F 250
Nozzle # / Dia., In. .197
Probe Length / Material 6'
Probe Heater Setting 250

Point A	Clock Time 24-hr	Clock Time min	Dry Gas Meter, (ft^3)	Pitot In. H_2O Δ P	Orifice Δ H In. H_2O Desired	Orifice Δ H In. H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Pump Vacuum In. Hg Gauge	Temperatures (°F) Stack	Filter Box	Imp Temp	XAD Cond	Probe	Filter Outlet
1	10:40	0	896.525	1.3	1.82	1.82	61	61	5	122	240	57	HIA	240	
2		3	898.700	1.3	1.82	1.82	65	61	6	123	240	53		250	
3		6	900.800	1.5	2.1	2.1	65	60	6 1/2	127	240	53		245	
4		9	903.1	1.6	2.24	2.24	66	60	7	128	240	54		240	
5		12	905.4	1.9	2.66	2.66	66	60	7	131	240	54		245	
6		15	907.9	1.8	2.52	2.52	66	60	8	128	240	56		250	
7		18	910.5	1.7	2.38	2.38	66	60	8	130	240	56		240	
8		21	913.05	1.8	2.52	2.52	66	60	8	130	240	57		245	
9		24	915.55	1.7	2.38	2.38	65	60	7 1/2	128	240	57		245	

Train Leak Check:
Before Test: .000 CF 15 ~~Hg~~ ~~SEC~~ 60 ~~Sec~~ ~~In. Hg~~
After Test: 000 CF 9 ~~SEC~~ 60 ~~In. Hg~~

	I	F	Static Pressure			
Pitot Tube Leak Check			Port	A		
ORSAT Train Leak Check			In. H_2O	-3.5		
			In. Hg			

Comments:

K-factor

OK KSS 4/26/95

AF-061

Isokinetic Flue Gas Sampling Data Sheet

Project No. _____ Date 4-19-95 Sheet 2 of 2

Client LP Run No. 1M-2

Facility Houlton Sample Location _____ Operator SBoyko

Source in

Point	Clock Time 24-hr	Clock Time min	Dry Gas Meter, (ft^3)	Pitot In. H_2O ΔP	Orifice ΔH In. H_2O Desired	Orifice ΔH In. H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Pump Vacuum In. Hg Gauge	Temperatures (°F) °C Stack	Filter Box	Imp Temp	XAD Cond	Probe	Filter Outlet
10		27	918.2	1.6	2.29	2.24	66	60	7½	130	250	58	NA	240	
11		30	920.5	1.5	2.1	2.1	66	60	7	127	255	58		240	
12		33	922.8	1.4	1.96	1.96	66	60	6	127	250	58		245	
B 1	11:52	36	925.1	1.9	2.66	2.66	65	60	8	127	260	54		240	
2		39	927.7	1.8	2.52	2.52	66	60	8	130	260	53		245	
3		42	930.3	1.8	2.52	2.52	67	60	8	128	260	55		240	
4		45	933.0	1.8	2.52	2.52	68	60	8	128	255	56		240	
5		48	935.5	1.9	2.66	2.66	67	60	8	131	255	57		240	
6		51	938.0	1.8	2.52	2.52	67	60	8	130	255	57		240	
7		54	940.6	1.7	2.38	2.38	67	60	7	128	250	57		240	
8		57	943.2	1.5	2.1	2.1	67	60	7	130	260	56		240	
9		60	945.4	1.4	1.96	1.96	67	60	6	130	250	55		240	
10		63	947.7	1.6	2.24	2.24	67	60	7	130	255	56		235	
11		66	950.3	1.4	1.96	1.96	67	60	6	130	250	56		240	
12		69	952.4	1.5	2.1	2.1	66	60	6	128	255	56	↓	240	
Stop	11:58	72	954.722												
Total			58.197 ✓			2.287 ✓	63 ✓			128 ✓					

Meter Leak Check During Test:

			Meter Reading Stop	Start
____ CF	____ SEC	____ In. Hg	____	____
____ CF	____ SEC	____ In. Hg	____	____

Static Pressure — Port B; In. H_2O −.32; In. Hg

Comments:

$\sqrt{\Delta P_{ave}} = 1.259$ ✓

moisture

impingers -4

silygel 15

11

AF-060

TRC

IM-3

Isokinetic Flue Gas Sampling Data Sheet

Project No. _____
Client L D
Facility Haulton
Source IM
Sample Location _____
Stack Diameter 54
Date 4-19-95
Run No. IM-3
Operator S. Bayko
Meter Box No. 808 36
Meter Δ H@ 1.95
Y Factor 1.00

Very Important - Fill in All Blanks

Read and Record at the Start of Each Test Point

Sketch

Sheet 1 of 2
Train Prepared By G.S.
Pitot Number and Side 6-1
Pitot Tube CP .84
Filter No. / Thimble No. 250
Ambient Temp.°F 40
Bar. Pressure., In. Hg 29.5
Assumed Moisture, % _____
Heater Box Setting, °F 250
Nozzle # / Dia., in. .197
Probe Length / Material _____
Probe Heater Setting 250

Point A	Clock Time 24 - hr	Clock Time min	Dry Gas Meter, (ft^3)	Pitot In. H_2O Δ P	Orifice Δ H In. H_2O Desired	Orifice Δ H In. H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Pump Vacuum In. Hg Gauge	Temperatures °F °C Stack	Filter Box	Imp Temp	XAD Cond	Probe	Filter Outlet
1	12:35	0	953.232	.90	1.26	1.26	58	57	5	115		53	NA		
2		3	957.65	1.2	1.68	1.66	60	57	3	115	235	52		240	~~240~~
3		6	959.6	1.6	2.24	2.24	61	57	5	126	250	52		240	
4		9	962.0	1.6	2.24	2.24	63	57	5	128	250	50		245	
5		12	964.45	1.8	2.52	2.52	64	57	5	128	250	51		245	
6		15	967.	1.7	2.38	2.38	65	57	5	130	250	52		249	
7		18	969.6	1.7	2.38	2.38	65	58	5	128	250	52		250	
8		21	972.0	1.7	2.38	2.38	67	58	5	128	250	53		250	
9		24	974.4	1.6	2.24	2.24	66	57	5	128	250	53		250	

Train Leak Check:
Before Test: .004 CF 60 SEC 15 In. Hg
After Test: .001 CF 60 SEC 7 In. Hg

	I	F	Static Pressure			
Pitot Tube Leak Check	✓		Port	A		
ORSAT Train Leak Check			In. H_2O	-3.6		
			In. Hg			

Comments:

18 ml H_2O

OK KCS 4/26/95

AF-061

Isokinetic Flue Gas Sampling Data Sheet

Project No. _____ Date 4-19-95 Sheet 2 of 2

Client LP Run No. IM-3

Facility Houlton Sample Location _____ Operator S. Bayko

Source IM

Point	Clock Time 24-hr	Clock Time min	Dry Gas Meter, (ft^3)	Pitot in. H_2O ΔP	Orifice ΔH in. H_2O Desired	Orifice ΔH in. H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Pump Vacuum in. Hg Gauge	Temperatures °F Stack	Filter Box	Imp Temp	XAD Cond	°C Probe	°C Filter Outlet
10		27	976.8	1.7	2.38	2.38	66	58	5	127	250	54	N/A	250	
11		30	979.3	1.6	2.24	2.24	66	58	4	128	250	54		250	
12		33	981.6	1.5	2.1	2.1	65	58	4	127	250	53		250	
1		36	983.923	1.7	2.38	2.38	60	57	5	126	240	51		250	
2		39	986.2	1.8	2.52	2.52	61	56	5	128	250	49		240	
3		42	988.8	1.9	2.66	2.66	61	56	5	128	250	49		250	
4		45	991.4	1.9	2.66	2.66	61	56	5	128	250	49		250	
5		48	993.9	1.9	2.66	2.66	62	55	5	128	250	50		250	
6		51	996.5	1.7	2.38	2.38	62	55	5	128	250	51		250	
7		54	998.9	1.6	2.24	2.24	62	55	4	130	250	51		250	
8		57	001.3	1.6	2.24	2.24	62	55	4	130	250	52		250	
9		60	003.6	1.5	2.1	2.1	62	55	4	128	250	52		250	
10		63	005.9	1.4	1.96	1.96	61	55	4	128	250	52		250	
11		66	8.1	1.5	2.1	2.1	62	55	4	128	250	52		250	
12		69	10.3	1.4	1.96	1.96	62	55	3 1/2	127	245	52		250	
END	1400	72	12.513												
Total			51.541	57.281		2.248 ✓		60 ✓		127 ✓					

Meter Leak Check During Test:

				Meter Reading Stop	Meter Reading Start
____ CF	____ SEC	____ in. Hg		____	____
____ CF	____ SEC	____ in. Hg		____	____

Static Pressure Port ____ ____ ____

in. H_2O ____ ____ ____

in. Hg ____ ____ ____

Comments:

$\sqrt{\Delta P} = 1.2632$ ✓

AF-060

TRC

Isokinetic Flue Gas Sampling Data Sheet

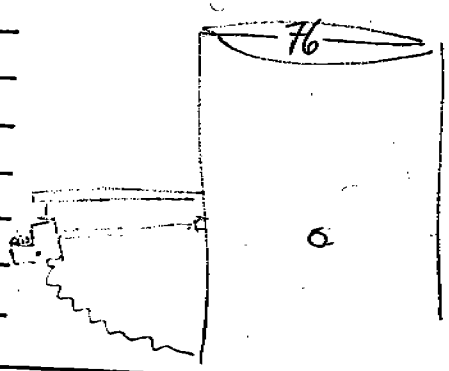
Page 1 of 2

Project No. 18226
Client L&P
Facility HOULTON, ME
Source STACK
Sample Location OUTLET
Stack Diameter 76 in
Date 4-19-95
Run No. OUT-1
Operator R. BAEZ / B MILLIARD
Meter Box No. 80823
Meter Δ H@ 1.84
Y Factor 1.00

Very Important - Fill in All Blanks

Read and Record at the Start of Each Test Point

Sketch



Sheet 1 of 2
Train Prepared By C. Jewett
Pitot Number and Side 8-4
Pitot Tube CP 0.84
Filter No. / Thimble No. 252
Ambient Temp. °F 40
Bar. Pressure, in. Hg 30.05
Assumed Moisture, % 6
Heater Box Setting, °F 250
Nozzle # / Dia., in. 0.26
Probe Length / Material 8' / GLASS
Probe Heater Setting 250

Point	Clock Time 24-hr	Clock Time min	Dry Gas Meter, (ft3)	Pitot in. H_2O Δ P	Orifice Δ H in. H_2O Desired	Orifice Δ H in. H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Pump Vacuum in. Hg Gauge	Temperatures (°F) Stack	Filter Box	Imp Temp	XAD Cond	Probe	Filter Outlet
A															
1	0835	0	91.217	0.5	1.743	1.74	45	46	5	224	242	40	-	230	
	0838	3	94.0	0.45	1.56	1.56	45	46	4.9	217	242	40	-	229	
2	0841	6	95.54	0.5	1.74	1.74	45	46	5.0	227	241	40	-	230	
	0844	9	97.82	0.55	1.92	1.92	45	46	5.2	235	241	40	-	229	
3	0847	12	99.93	0.55	1.92	1.92	45	46	5.2	232	241	40	-	228	
	0850	15	102.50	0.62	2.16	2.16	45	45	6.0	236	242	44	-	226	
4	0853	18	104.30	0.5	1.74	1.74	56	48	5.0	237	243	50	-	229	
	0856	21	107.1	0.53	1.85	1.85	56	49	5.2	236	244	53	-	230	
5	0859	24	108.7	0.55	1.92	1.92	56	48	5.2	237	244	53	-	230	

Train Leak Check:
Before Test: 0.00 CF 1560 SEC 60 15 In. Hg
After Test: 0.00 CF 60 SEC 9 In. Hg

	I	F	Static Pressure			
Pitot Tube Leak Check			Port			
ORSAT Train Leak Check			In. H_2O	-0.30		
			In. Hg			

Comments:
K FACTOR 3.495

AF-061

KS 4/25/95

Isokinetic Flue Gas Sampling Data Sheet

Page 2 of 2

Project No. ____ Date 4-19-95 Sheet 2 of 2

Client ____ Run No. Outlet -1

Facility ____ Sample Location Outlet Operator R. Baez / B. Milano

Source Stack Outlet

Point	Clock Time 24-hr	Clock Time min	Dry Gas Meter, (ft^3)	Pitot In. H_2O ΔP	Orifice ΔH In. H_2O Desired	Orifice ΔH In. H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Pump Vacuum In. Hg Gauge	Temperatures (°F) Stack	Filter Box	Imp Temp	XAD Cond	Probe	Filter Outlet
	0902	27	110.95	0.5	1.74	1.74	60	50	5.0	235	244	55	–	237	
6	0905	30	113.10	0.5	1.74	1.74	62	51	5.0	232	244	56	–	243	
	0908	33	115.20	0.47	1.64	1.64	62	51	5.0	235	241	56	–	244	
	0911	36	117.26	0.44	1.64	1.62	62	51	5.0	235	244	52	–	244	
1	0919	0	117.26	0.37	1.29	2.29	62	51	4.0	230	244	52	–	243	
	0922	3	119.07	0.37	1.29	1.29	61	51	4.0	230	244	52	–	243	
2	0925	6	120.90	0.50	1.74	1.74	64	55	5.0	235	245	54	–	247	
	0928	9	122.90	0.46	1.60	1.60	64	55	5.0	235	245	54	–	245	
3	0931	12	125.04	0.46	1.60	1.60	64	55	4.8	237	245	54	–	242	
	0934	15	127.10	0.50	1.74	1.74	66	56	5.0	237	244	57	–	244	
4	0937	18	129.22	0.55	1.92	1.92	67	57	5.0	238	245	53	–	242	
	0940	21	131.61	0.54	1.88	1.88	67	59	5.2	240	245	59	–	249	
5	0943	24	133.8	0.54	1.88	1.88	68	57	5.2	237	244	59	–	247	
	0946	27	135.87	0.59	2.06	2.06	68	58	5.2	237	244	59	–	247	
6	0949	30	138.8	0.52	1.82	1.82	68	57	5.0	237	244	59	–	247	
	0952	33	140.5	0.50	1.74	1.74	68	58	5.0	237	244	59	–	247	
	0955	36	142.723												
		Total	51.508 ✓		1.754 →			55 ✓		234 ✓					

Meter Leak Check During Test:

	Meter Reading Stop	Meter Reading Start
____ CF ____ SEC ____ In. Hg	____	____
____ CF ____ SEC ____ In. Hg	____	____

Static Pressure

Port			
In. H_2O			
In. Hg			

Comments:

$\sqrt{\Delta P}_{ave}$ = ~~0.7380~~ 0.7085 ✓

150's 98.9%

imp vol 1 ml

sillygel 14g / 15g

AF-060

TR

Isokinetic Flue Gas Sampling Data Sheet

Project No. 18226
Client Louisiana - Pacific
Facility Houlton, ME
Source STACK
Sample Location OUTLET
Stack Diameter 76
Date 4-19-94
Run No. OUTLET-2
Operator R. Cruz / B. McCHAND
Meter Box No. 80823
Meter Δ H@ 1.84
Y Factor 1.00

Very Important - Fill in All Blanks

Read and Record at the Start of Each Test Point

Sketch

Sheet 1 of 2
Train Prepared By C. Scott
Pitot Number and Side 8-4
Pitot Tube CP 0.84
Filter No. / Thimble No. 247
Ambient Temp.°F 50
Bar. Pressure., In. Hg
Assumed Moisture, % 6
Heater Box Setting, °F 250
Nozzle # / Dia., In. 0.26
Probe Length / Material 8 / GLASS
Probe Heater Setting 250

Point	Clock Time 24-hr	Clock Time min	Dry Gas Meter, (ft3)	Pitot In. H_2O ΔP	Orifice ΔH In. H_2O Desired	Orifice ΔH In. H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Pump Vacuum In. Hg Gauge	Temperatures °F °C Stack	Filter Box	Imp Temp	XAD Cond	Probe	Filter Outlet
A															
1		0	1430	.40	3.485	1.35	60	58	3	228	245	48		245	
		3	145.0	.40		1.39	60	58	3	229	245	49		245	
2		6	146.27	.46		1.6	60	58	3	229	245	49		245	
		9	148.7	.46		1.6	60	58	3	229	245	49		246	
3		12	150.8	.46		1.6	60	58	3	229	245	49		245	
		15	152.84	.50		1.74	61	58	4	234	246	49		246	
4		18	154.97	.50		1.74	62	59	4	234	246	52		246	
		21	157.1	.50		1.74	62	59	4	238	246	52		246	
5		24	159.23	.50		1.90	62	59	4	234	245	53		246	

Train Leak Check:
Before Test: 0.000 CF 60 SEC 15 In. Hg
After Test: 0.000 CF 60 SEC 15 In. Hg

	I	F	Static Pressure			
Pitot Tube Leak Check	0.00	0.00	Port	B		
ORSAT Train Leak Check			In. H_2O	-.31		
			In. Hg			

Comments:
F 3.485"

AF-061

OKS 4/25/95

Isokinetic Flue .S Sampling Data Sheet

Project No. _____ Date 4-19-95 Sheet 2 of 2

Client _____ Run No. 2

Facility _____ Sample Location OUTLET Operator BM

Source _____

Point	Clock Time 24-hr	Clock Time min	Dry Gas Meter, (ft^3)	Pitot in. H_2O ΔP	Orifice ΔH in. H_2O Desired	Orifice ΔH in. H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Pump Vacuum in. Hg Gauge	Temperatures °F °C Stack	Filter Box	Imp Temp	XAD Cond	Probe	Filter Outlet
	7	27	164.8	.55		1.9	61	57	4	239	245	53		245	
6		30	163.75	.55		1.9	61	57	4	237	245	53		245	
		33	166.1	.56		1.99	61	54	4	239	245	53		245	
		36	168.39									55			
A-1	11:24	0	168.39	.37		1.289	58	58	3	202	245	58		245	
		3	170.26	.37		1.289	59	58	3	202	245	53		245	
2		6	172.15	.45		1.56	59	58	4	223	245	53		245	
		9	174.2	.45		1.56	59	58	4	230	245	53		246	
3		12	176.25	.50		1.74	59	58	4	235	246	51		246	
		15	178.41	.50		1.74	59	57	4	235	245	51		245	
4		18	180.56	.52		1.81	59	57	4	238	245	51		245	
		21	182.75	.52		1.81	59	57	4	238	245	51		245	
5		24	184.9	.52		1.81	61	56	4	238	245	52		246	
		27	187.19	.52		1.81	61	56	4	238	245	52		246	
6		30	189.4	.45		1.56	61	56	4	238	245	52		245	
		33	191.48	.45		1.56	61	56	4	238	245	52		245	
	12:00	36	193.51												
Total			50.49 ✓			1.6624 ✓		59 ✓		232 ✓					

Meter Leak Check During Test:

			Meter Reading Stop	Meter Reading Start
____ CF	____ SEC	____ in. Hg	____	____
____ CF	____ SEC	____ in. Hg	____	____

Static Pressure				
Port	____	____	____	____
in. H_2O	____	____	____	____
in. Hg	____	____	____	____

Comments:

$\sqrt{\Delta P}_{avg}$ = 0.6901 / 0.6911

Imp -2

SG 18.3 / 16.3

AF-060

Isokinetic Flue Gas Sampling Data Sheet

Page 1 of 2

Project No. 18226
Client Louisiana-Pacific
Facility Houlton, ME
Source STACK
Sample Location OUTLET
Stack Diameter
Date 4-18/95
Run No. OUTLET-3
Operator S. [illegible] / S. Michaud
Meter Box No. 80823
Meter Δ H@ 1.84
Y Factor 1.00

Very Important - Fill in All Blanks

Read and Record at the Start of Each Test Point

Sketch

Sheet 1 of 2
Train Prepared By C. SCOTT
Pitot Number and Side 8-1
Pitot Tube CP 0.84
Filter No. / Thimble No. 242
Ambient Temp.°F 50
Bar. Pressure., In. Hg
Assumed Moisture, % 6
Heater Box Setting, °F 250
Nozzle # / Dia., In. 0.26
Probe Length / Material 5' / GLASS
Probe Heater Setting 250

Point	Clock Time 24-hr	Clock Time min	Dry Gas Meter, (ft^3)	Pitot In. H_2O ΔP	Orifice ΔH In. H_2O Desired	Orifice ΔH In. H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Pump Vacuum In. Hg Gauge	Temperatures Stack	Filter Box	Imp Temp	XAD Cond	Probe	Filter Outlet
1	12:36	0	193.634	.4		1.39	55	54	2	200	245	50		243	
		3	195.25	.4		1.39	56	55	2	200	245	50		245	
2		6	197.5	.47		1.63	58	55	2	228	245	50		246	
		9	199.6	.47		1.63	58	55	2	230	245	50		246	
3		12	201.63	.47		1.63	57	54	2	238	245	49		245	
		15	203.72	.47		1.63	57	54	2	238	245	49		245	
4		18	205.9	.50		1.74	58	54	2	239	245	50		245	
		21	207.91	.50		1.74	58	54	2	239	245	50		245	
5		24	210.1	.50		1.74	58	54	2	238	245	50		245	

Train Leak Check:
Before Test: 0.000 CF 60 SEC 15 In. Hg
After Test: 0.000 CF 60 SEC 10 In. Hg

	I	F		Static Pressure		
Pitot Tube Leak Check			Port	-.34		
ORSAT Train Leak Check			In. H_2O			
			In. Hg			

Comments:
K 3.485
235 ml H_2O

OK KS 4/25/95

AF-061

Isokinetic Flue .S Sampling Data Sheet

Project No. _____ Date 4-19-95 Sheet 2 of 2

Client _____ Run No. 3

Facility _____ Sample Location OUTLET Operator [illegible]

Source _____

Point	Clock Time 24-hr min	Clock Time 24-hr min	Dry Gas Meter, (ft^3)	Pitot in. H_2O ΔP	Orifice ΔH in. H_2O Desired	Orifice ΔH in. H_2O Actual	Dry Gas Temp. °F Inlet	Dry Gas Temp. °F Outlet	Pump Vacuum in. Hg Gauge	Temperatures °F °C Stack	Filter Box	Imp Temp	XAD Cond	Probe	Filter Outlet
A	27		212.27	.50		1.74	60	54	2	235	245	50		245	
6	30		214.45	.43		1.49	60	54	2	235	245	50		245	
	33		216.47	.43		1.49	58	54	2	236	245	50		245	
	36	13.12	218.463												
15	0	13.20	218.463	.43		1.49	58	54	2	218	245	50		245	
	3		220.4	.43		1.49	58	54	2	218	245	50		245	
2	6		222.5	.43		1.49	58	54	2	218	245	50		245	
	9		224.6	.43		1.49	58	54	2	215	245	50		245	
3	12		226.48	.51		1.77	55	51	2	225	245	47		245	
	15		228.62	.51		1.77	55	51	2	230	245	47		245	
4	18		230.77	.51		1.77	55	51	2	234	245	47		245	
	21		233.0	.51		1.77	55	51	2	238	245	47		245	
5	24		235.27	.51		1.77	54	50	2	237	245	48		245	
	27		237.61	.51		1.77	54	50	2	236	245	48		246	
6	30		239.8	.51		1.77	54	50	2	236	245	48		246	
	33		241.78	.51		1.77	54	50	2	236	245	48		246	
~~9~~	36		244.991												
			51.537 ✓			1.74 ✓		55 ✓		231 ✓					

Total _____

Meter Leak Check During Test:

			Meter Reading Stop	Start
____ CF	____ SEC	____ in. Hg	____	____
____ CF	____ SEC	____ in. Hg	____	____

Static Pressure

Port	____	____	____	____
in. H_2O	____	____	____	____
in. Hg	____	____	____	____

Comments:

$\sqrt{\Delta P_{avg}} = 0.6668$ ✓

AF-060

TRC
TRC Environmental Corporation

SHEET NO. ____ OF ____
PROJECT NO. ____
DATE ____
BY ____
CHK'D ____

SUBJECT ORSAT - LP

INLET #1 - AVG = O_2 = 19.6% CO_2 = 0.1%

Run 1		Run 2		Run 3		Run 4	
O_2	CO_2	O_2	CO_2	O_2	CO_2	O_2	CO_2
19.2%	0%	19.6%	.04%	20.6	0%	19%	0%

OUTLET #1 AVG = O_2 = 19.5% CO_2 = 0%

Run 1		Run 2	
O_2	CO_2	O_2	CO_2
20%	0%	19%	0

OUTLET #2 AVG = O_2 = 19.35% CO_2 = 0%

Run 1		Run 2		Run # 3	
O_2	CO_2	O_2	CO_2	O_2	CO_2
18.5%	0%	20%	0%	20%	0%

OUTLET #3 AVG O_2 = 19.3% CO_2 = 0.3%

Run 1		Run 2	
O_2	CO_2	O_2	CO_2
19.5%	0.5%	19%	0%

Appendix C.2

Analytical Data and Data Summaries

PARTICULATE TEST DATA

TEST	O-1	In-1	In-2	In-3
LOCATION	********	Stack	Stack	Stack
FIRM	********	LP	LP	LP
TIME	********	0835-0955	1040-1200	1235-1402
DATE	********	4-19-95	4-19-95	4-19-95
PROJECT NO.	********	18226	18226	18226
BAROMETRIC PRESSURE	in. Hg	30.05	30.05	30.05
STACK AREA	ft^2	15.90	15.90	15.90
NOZZLE DIAMETER	in.	0.197	0.197	0.197
SAMPLING TIME	min.	72	72	72
DRY GAS METER CAL FACTOR [Y]	********	1.00	1.00	1.00
PITOT COEFFICIENT	********	0.84	0.84	0.84
AVG. SQUARE DELTA P	in. H_2O	1.286	1.276	1.263
AVG. DELTA H	in. H_2O	2.32	2.29	2.25
AVG. METER TEMP.	^oF	56	63	60
STATIC PRESSURE	in. Hg	-3.70	-3.50	-3.60
AVG. STACK TEMPERATURE	^oF	123	128	127
SAMPLE VOLUME	ft^3	58.50	58.20	57.28
WATER COLLECTED	ml	7.0	11.0	18.0
CO 2	%	0.1	0.1	0.1
O 2	%	19.6	19.6	19.6
CO	%	0	0	0
N 2	%	80.3	80.3	80.3
PARTICULATE CATCH (Method 5)	mg	5.76	4.46	1.66
ORGANIC PM CATCH (Method 202)	mg	9.68	10.09	6.39
INORGANIC PM CATCH (Method 202)	mg	4.35	5.67	3.99
SAMPLE VOLUME DRY	DSCF	60.46	59.34	58.74
MOISTURE	%	0.5	0.9	1.4
MOLECULAR WEIGHT OF STACK GAS	lb/lb-mole	28.74	28.71	28.65
STACK VELOCITY	FPM	4571	4558	4514
VOLUMETRIC FLOWRATE, ACTUAL	ACFM	72685	72472	71779
VOLUMETRIC FLOWRATE, DRY STD.	DSCFM	65161	64239	63360
ISOKINETIC RATIO	%	96.9	96.4	96.8
PARTICULATE CONCENTRATION	grains/DSCF	0.00147	0.00116	0.00044
PARTICULATE EMISSION RATE	lb/hour	0.82	0.64	0.24
ORGANIC PM CONCENTRATION	grains/DSCF	0.00247	0.00262	0.00168
ORGANIC PM EMISSION RATE	lb/hour	1.38	1.44	0.91
INORGANIC PM CONCENTRATION	grains/DSCF	0.00111	0.00147	0.00105
INORGANIC PM EMISSION RATE	lb/hour	0.62	0.81	0.57

PARTICULATE TEST DATA

TEST	O-1	Out-1	Out-2	Out-3
LOCATION	********	Stack	Stack	Stack
FIRM	********	LP	LP	LP
TIME	********	0835-0955	1040-1200	1235-1402
DATE	********	4-19-95	4-19-95	4-19-95
PROJECT NO.	********	18226	18226	18226
BAROMETRIC PRESSURE	in. Hg	30.05	30.05	30.05
STACK AREA	ft^2	31.49	31.49	31.49
NOZZLE DIAMETER	in.	0.260	0.260	0.260
SAMPLING TIME	min.	72	72	72
DRY GAS METER CAL FACTOR [Y]	********	1.00	1.00	1.00
PITOT COEFFICIENT	********	0.84	0.84	0.84
AVG. SQUARE DELTA P	in. H_2O	0.709	0.691	0.687
AVG. DELTA H	in. H_2O	1.75	1.66	1.64
AVG. METER TEMP.	^oF	55	59	55
STATIC PRESSURE	in. Hg	-0.30	-0.31	-0.34
AVG. STACK TEMPERATURE	^oF	234	232	229
SAMPLE VOLUME	ft^3	51.51	50.49	51.54
WATER COLLECTED	ml	15.0	16.3	18.0
CO 2	%	0.0	0.0	0.3
O 2	%	19.5	19.3	19.3
CO	%	0	0	0
N 2	%	80.5	80.7	80.4
PARTICULATE CATCH (Method 5)	mg	2.76	1.93	1.41
ORGANIC PM CATCH (Method 202)	mg	6.09	2.70	2.24
INORGANIC PM CATCH (Method 202)	mg	1.00	1.00	1.00
SAMPLE VOLUME DRY	DSCF	53.27	51.80	53.28
MOISTURE	%	1.3	1.5	1.6
MOLECULAR WEIGHT OF STACK GAS	lb/lb-mole	28.64	28.61	28.65
STACK VELOCITY	FPM	2744	2672	2648
VOLUMETRIC FLOWRATE, ACTUAL	ACFM	86418	84139	83397
VOLUMETRIC FLOWRATE, DRY STD.	DSCFM	65121	63488	63130
ISOKINETIC RATIO	%	97.1	96.8	100.2
PARTICULATE CONCENTRATION	grains/DSCF	0.00080	0.00057	0.00041
PARTICULATE EMISSION RATE	lb/hour	0.45	0.31	0.22
ORGANIC PM CONCENTRATION	grains/DSCF	0.00176	0.00080	0.00065
ORGANIC PM EMISSION RATE	lb/hour	0.98	0.44	0.35
INORGANIC PM CONCENTRATION	grains/DSCF	0.00029	0.00030	0.00029
INORGANIC PM EMISSION RATE	lb/hour	0.16	0.16	0.16

TRC ENVIRONMENTAL CORPORATION, INC.
5 WATERSIDE CROSSING, WINDSOR, CT 06095
203-298-6326
Connecticut Certification No. PH-0426
AIHA Laboratory Accreditation No. 259

LABORATORY REPORT

LOUISIANA PACIFIC

Lab Number: 15656
Date Rec'd: 04/21/95
Date Analyzed: 04/24/95 through 04/27/95
Sample Description: Emissions - Method 5 and Method 202
No. Samples: 6 Sets and 2 Blanks, 12 Sets and 2 Blanks
Lab Project No.: 10902-3001-00001
TRC Project No: 18226

RESULTS

Sample Number	Media	Particulate Detected
IN-1-1	Filter #251	ND<0.5 mg
IN-2-1	Filter #248	ND<0.5 mg
IN-3-1	Filter #250	ND<0.5 mg
O-1-1	Filter #252	ND<0.5 mg
O-2-1	Filter #247	ND<0.5 mg
O-3-1	Filter #249	ND<0.5 mg
Filter Blank	Filter #246	ND<0.5 mg
IN-1-2	Probe Wash	5.26 mg
IN-1-3	Impinger Catch - Organic	ND<0.5 mg
IN-1-4	Backhalf Rinse - Organic	9.18 mg
IN-2-2	Probe Wash	3.96 mg
IN-2-3	Impinger Catch - Organic	ND<0.5 mg
IN-2-4	Backhalf Rinse - Organic	9.59 mg
IN-3-2	Probe Wash	1.11 mg
IN-3-3	Impinger Catch - Organic	ND<0.5 mg
IN-3-4	Backhalf Rinse - Organic	5.89 mg
OUT-1-2	Probe Wash	2.26 mg

RESULTS (cont.)

Sample Number	Media	Particulate Detected
OUT-1-3	Impinger Catch - Organic	ND<0.5 mg
OUT-1-4	Backhalf Rinse - Organic	5.59 mg
OUT-2-2	Probe Wash	1.43 mg
OUT-2-3	Impinger Catch - Organic	ND<0.5 mg
OUT-2-4	Backhalf Rinse - Organic	2.20 mg
OUT-3-2	Probe Wash	0.91 mg
OUT-3-3	Impinger Catch - Organic	ND<0.5 mg
OUT-3-4	Backhalf Rinse - Organic	1.74 mg
$MeCl_2$ Blank	Blank - Organic	ND<0.5 mg
Acetone Blank	Blank	ND<0.5 mg
HPLC Blank	Blank - Organic	ND<0.5 mg
IN-1-3	Impinger Catch -Inorganic	1.04 mg
IN-1-4	Backhalf Rinse - Inorganic	3.31 mg
IN-2-3	Impinger Catch - Inorganic	ND<0.5 mg
IN-2-4	Backhalf Rinse - Inorganic	5.17 mg
IN-3-3	Impinger Catch - Inorganic	ND<0.5 mg
IN-3-4	Backhalf Rinse - Inorganic	3.49 mg
OUT-1-3	Impinger Catch - Inorganic	ND<0.5 mg
OUT-1-4	Backhalf Rinse - Inorganic	ND<0.5 mg
OUT-2-3	Impinger Catch - Inorganic	ND<0.5 mg
OUT-2-4	Backhalf Rinse - Inorganic	ND<0.5 mg
OUT-3-3	Impinger Catch - Inorganic	ND<0.5 mg
OUT-3-4	Backhalf Rinse - Inorganic	ND<0.5 mg
HPLC Blank	Blank - Inorganic	2.01 mg
Lab Blank	Blank - Inorganic	1.84 mg
Lab Blank	Blank - Organic	ND<0.5 mg

Analyst: Maureen Keating, Lance Cotton

Reviewed by: _____ or _____

Margaret F. Flanagan
Quality Control Manager

Gary L. Ritter, CIH, CHMM, LSP
Laboratory Director

TRC Environmental Consultants, Inc

CHAIN OF CUSTODY RECORD

PROJECT NO.	PROJECT NAME	
18226	L.P.	15656

SAMPLERS: *(Signature)* [signature] (R.P CS - RB - BM) (Printed) Stephen Boyko

FIELD SAMPLE NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	PM	back half	BI 202						REMARKS
IN-1-1	4/19		✓		inlet	1	X								filter #251
IN-2-1					↓		X								#248
IN-3-1					↓		X								#250
O-1-1					OUTLET		X								#252
O-2-1					↓		X								#247
O-3-1					↓		X								#249
Filter Blank					Blank		X								#246
in-1-2					IN		X								Probe wash
in-1-3					↓			X							impinger Catch
in-1-4					↓			X							Back half rinse
in-2-2					↓		X								Probe wash
in-2-3					↓			X							impinger Catch

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
[signature]	4-21-95 10:40				
(Printed)		(Printed)	(Printed)		(Printed)

Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks
		Lance Cotton	4/21/95 10:45	
(Printed)		(Printed) Lance Cotton		

Distribution: Original Plus One Accompanies Shipment (white and yellow); Copy to Coordinator Field Files (pink).

TRC Environmental Consultants, Inc

CHAIN OF CUSTODY RECORD

page 2 of

PROJECT NO.	PROJECT NAME	PARAMETERS	
18226	L.P		15656

SAMPLERS: (Signature) Stephen Bayko (Printed) Stephen Bayko

FIELD SAMPLE NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	PM Back half	Dy 202	REMARKS
in-2-4	4/19/95				inlet	1		X	Back half rinse
in-3-2					↓		X		Probe wash
in-3-3								X	impinger Catch
in-3-4								X	Back half rinse
out-1-2					out let		X		Probe wash
out-1-3								X	impinger catch
out-1-4								X	Back half
out-2-2							X		Probe wash
out-2-3								X	impinger catch
out-2-4								X	Back half rinse
out-3-2							X		Probe wash
out-3-3								X	impinger catch

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Stephen Bayko	4-21-95 1040				
(Printed)		(Printed)	(Printed)		(Printed)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
		Lance Cotton	4/21/95 10:45	
(Printed)		(Printed) Lance Cotton		

Distribution: Original Plus One Accompanies Shipment (white and yellow); Copy to Coordinator Field Files (pink).

TRC Environmental Consultants, Inc

CHAIN OF CUSTODY RECORD

PROJECT NO.	PROJECT NAME	PARAMETERS	15650
18226	LP		

SAMPLERS: (Signature) Stephen Bafko (Printed) Stephen Bafko

FIELD SAMPLE NUMBER	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	PM Back half by 202								REMARKS
OUT 3-4					OUTLET	1		X							Back half Rinse
$MeCl_2$ Blank					Blank	↓		X							$MeCl_2$
Acetone Blank					↓		X								Acetone
HPLC Blank						↓		X							HPLC

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Stephen Bafko	4-21- 10:40				
(Printed)		(Printed)	(Printed)		(Printed)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
		Lance Cotton	4/21/95 10:48	
(Printed)		(Printed) Lance Cotton		

Distribution: Original Plus One Accompanies Shipment (white and yellow); Copy to Coordinator Field Files (pink).

Appendix D

Process Data

Louisiana-Pacific Corporation

Route 8, Box 8263
Hayward, Wisconsin 54843
715/634-3454
FAX: 715/634-5963

Sent Via UPS Overnight

April 24, 1995

TRC Environmental Corporation
5 Waterside Crossing
Windsor, CT 06095

Attn: Raymond Potter

Dear Ray:

Enclosed please find the process data for the Houlton, Maine OSB Plant during the day of April 19, 1995.

If you have any questions regarding any of this material, feel free to call me at your first convenience.

Sincerely,

Mark Becker

cc: Sue Somers - w/o enclosure
Mark Stile - w/o enclosure

PAGE ___ OF ___

SUMMARY SHEET.

COMPLIANCE TESTING PRESS RTO

BOARD TRIM RATIO

BOARD THICKNESS 7/16 DATE 4/19/95

READINGS TAKEN BY M. STILE LINE SPEED 65 FPM.

TIME ~~Press~~ SHEET #	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO ~~IN %~~	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO IN %
1	83.4	75.54	.905			9.5
2	86.1	77.75	.903			9.7
3	85.6	77.62	.906			9.4
4	87.1	78.86	.905			9.5
5	84.9	77.06	.908			9.2
6	84.5	76.53	.906			9.4
7	83.5	75.83	.908			9.2

AVERAGE UN-TRIMMED WEIGHT: 85.0 KG.

AVERAGE TRIMMED WEIGHT: 77.03 KG.

AVERAGE TRIM RATIO. .906 = 9.4 %

COMPLIANCE TESTING
PRESS #TO

BOARD TRIM RATIO

BOARD THICKNESS 7/16 DATE 4-19-95

READINGS TAKEN BY Chamberlain LINE SPEED 65 FPM

Time	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO %
		[illegible]				
8:20		161.75 RL 20				
8:22	81.6	162.20 RL 21	.902			
8:26	82.5	75.08	.910			
8:30	84.7	76.80	.907			
8:34	83.2	75.52	.908			
8:36	82.3	74.50	.905			
8:40	81.6	73.50	.901			
8:44	82.9	75.32	.909			
8:46	81.0	73.18	.903			
8:49	86.1	77.96	.905			
8:52	83.6	75.94	.908			
8:55	85.7	77.54	.905			
8:59	82.0	74.00	.902			
9:02	87.6	79.44	.907			
9:05	83.4	75.22	.902			

AVERAGE UN-TRIMMED WEIGHT: 83.4 KG.

AVERAGE TRIMMED WEIGHT: 75.54 KG.

AVERAGE TRIM RATIO. .905

COMPLIANCE TESTING PRESS RTO

BOARD TRIM RATIO

BOARD THICKNESS 7/16 DATE 4-19-95

READINGS TAKEN BY Chamberlain LINE SPEED 65 FPM

Press Close TIME	KG UNTRIMMED WEIGHT	KG. TRIMMED WEIGHT	RATIO ~~SN-%~~	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO ~~SN-%~~
9:09	87.0	78.30	.900			
9:11	87.5	78.80	.901			
9:16	88.1	79.66	.904			
9:18	87.3	78.88	.904			
9:22	84.5	76.24	.902			
9:25	83.7	75.40	.901			
9:28	87.2	78.67	.902			
9:31	85.7	76.92	.879			
9:33	87.6	79.04	.902			
9:38	87.9	79.20	.901			
9:41	85.8	77.56	~~#2~~ .904			
9:44	83.0	75.64	.911			
9:48	86.6	78.32	.904			
9:50	86.2	78.24	.908			
9:53	86.3	76.30	.884			
9:56	84.8	76.84	.907			

AVERAGE UN-TRIMMED WEIGHT: 86.1 KG.

AVERAGE TRIMMED WEIGHT: 77.75 KG.

AVERAGE TRIM RATIO: .903

COMPLIANCE TESTING
PRESS RTO

BOARD TRIM RATIO

BOARD THICKNESS 7/16 DATE 4-19-95

READINGS TAKEN BY Chamberlain LINE SPEED 65 FPM

TIME	KG. UNTRIMMED WEIGHT	KG. TRIMMED WEIGHT	RATIO	KG. UNTRIMMED WEIGHT	KG. TRIMMED WEIGHT	RATIO
:00	85 0	77.04	.906			
:04	84.9	76.60	.902			
:06	85.0	77.14	.908			
:10	84.3	76.32	.905			
:13	85.9	77.82	.906			
:16	86.2	78.26	.908			
:19	85.4	77.50	.907			
:23	85.9	77.92	.907			
:25	85.2	77.96	.915			
:29	87.0	78.88	.907			
:32	85.0	77.94	.917			
:35	88.2	79.98	.907			
:38	85.3	77.06	.903			
:41	85.5	77.22	.903			
:45	84.2	76.36	.907			
:48	86.2	78.16	.907			
:51	85.2	77.30	.907			

AVERAGE UN-TRIMMED WEIGHT: 85.6 KG.

AVERAGE TRIMMED WEIGHT: 77.62 KG.

AVERAGE TRIM RATIO: .906

COMPLIANCE TESTING
PRESS RTO

BOARD TRIM RATIO

BOARD THICKNESS 7/16 DATE 4-19-95

READINGS TAKEN BY Chamberlain's LINE SPEED 65 FPM

	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO
	87.2	78.92	.905			
	87.0	79.32	.912			
	88.3	80.34	.910			
	85.2	77.12	.905			
	86.9	78.18	.900			
	88.1	79.72	.905			
	87.3	78.94	.904			
	88.4	80.18	.907			
	87.9	79.76	.907			
	87.8	78.40	.893			
	86.3	78.10	.905			
	87.7	79.08	.902			
	85.6	78.20	.914			
	86.9	78.84	.907			
	87.9	79.40 79.42	.903			
	87.8	79.64	.907			
	84.8	76.46	.902			

AVERAGE UN-TRIMMED WEIGHT: 87.1 KG.

AVERAGE TRIMMED WEIGHT: 78.86 KG.

AVERAGE TRIM RATIO: .905

COMPLIANCE TESTING
PRESS RTO

BOARD TRIM RATIO

BOARD THICKNESS 7/16 DATE 4-19-95

READINGS TAKEN BY Chamberlain LINE SPEED 65 FPM

TIME	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO
:49	83.6	74.76	.894			
2	86.6	78.64	.908			
55	86.6	78.36	.905			
:9	84.4	78.26	.927			
:02	86.2	78.24	.908			
:05	87.6	79.42	.907			
:08	84.5	78.54	.908			
:11	87.0	79.16	.910			
:15	84.4	76.48	.906			
:18	83.4	75.58	.906			
:21	83.4	75.68	.907			
:24	83.3	75.62	.908			
:27	85.5	77.46	.906			
:30	85.0	77.04	.906			
:33	83.0	74.88	.902			
:37	82.6	76.18	.922			
:41	83.8	75.80	.905			

AVERAGE UN-TRIMMED WEIGHT: 84.9 KG.

AVERAGE TRIMMED WEIGHT: 77.06 KG.

AVERAGE TRIM RATIO: .908

COMPLIANCE TESTING
PRESS RTO

BOARD TRIM RATIO

BOARD THICKNESS 7/16 DATE 4/19-95

READINGS TAKEN BY Chamberlain LINE SPEED 65 FPM.

Press close TIME	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO
12:44	84.2	76.16	.905			
12:47	86.0	77.76	.904			
12:50	82.6	74.68	.904			
12:53	84.4	76.12	.902			
12:56	82.5	74.94	.908			
12:59	82.8	74.84	.904			
1:02	84.2	75.95	.902			
1:05	85.2	77.10	.905			
1:08	86.9	78.70	.906			
1:12	86.7	78.42	.905			
1:15	85.2	77.30	.907			
1:18	83.4	75.22	.902			
1:22	83.2	75.54	.908			
1:25	84.6	76.50	.904			
1:28	85.6	78.22	.914			
1:31	85.0	77.02	.906			

AVERAGE UN-TRIMMED WEIGHT: 84.5 KG.

AVERAGE TRIMMED WEIGHT: 76.53 KG.

AVERAGE TRIM RATIO: .906

COMPLIANCE TESTING PRESS RTO

BOARD TRIM RATIO

BOARD THICKNESS 7/16 DATE 4-19-95

READINGS TAKEN BY Chamberlain LINE SPEED 65 FPM

TIME	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO
35	85.1	76.86				
38	84.7	76.26				
41	81.2	74.38				
44	82.5	74.74				
47	85.3	77.48				
50	85.4	77.86				
54	82.9	75.14				
57	84.6	77.18				
00	83.4	75.88				
03	81.1	73.46				
06	81.8	74.24				
09	83.9	76.04				
12	84.1	76.32				

AVERAGE UN-TRIMMED WEIGHT: 83.5 KG.

AVERAGE TRIMMED WEIGHT: 75.83 KG.

AVERAGE TRIM RATIO: .908 %

4-19-95

DAY TANK USAGE / PRESS RTO COMPLIANCE TESTING

TIME	WAX Begin	WAX END	WAX USAGE		MDI Begin	MDI END	MDI USAGE		L.P. Begin	L.P. END	L.P. USAGE
8:30 AM TO	34¼"	28'	6¼"		32¾"	30⅜"	2⅜"		53'	43¾"	9¾"
9:30 AM			318.75 LBS.				324.66 LBS.				1332 LB.
10:30-10:18	28"	23¼"	4¾"		30⅜"	28¾"	1⅝"		43¾	36¾	7"
			242.25 LBS.				222.13 LB.				956. LBS.
10:18 TO 11:18	23¼	18½	4¾	FILLED WAX TANK TO 34¼"	28¾	26¾	2"		36¾"	28"	8¾
			242.25				273.4 LB.				1196. LB.
11:18 AM TO 12:18 PM	34¼	29	5¼"		26¾	25"	1¾"		28"	20½"	7½"
			267.75 LB.				239.22 LB.				1025. LB.
12:18 TO 1:18	29"	23¾"	5¼"	FILLED WAX TO 34"	25"	22⅞"	2⅛"	FILLED L.P. TO 56½"	20½"	11½"	9¼"
			267.75 LB.				290.49 LB.				1264.4 LB.
1:18 TO 2:18	34"	29"	5"		22⅞"	20¾"	2⅛"		56½"	51"	5½"
			255 LB.				290.49 LB.				751.5 LB.
	L.P./MDI WEIGHT 10.3 LB/GAL, 136.7 LB/INCH IN TANKS										
	WAX WEIGHTS 6.8 LB/GAL, 51 LB/INCH IN TANK										

% Solids Liquid Phenolic

Time	location	Viscosity	Solids	% Solids
8:30 Am	Blender	490	1.247	58

COMPLIANCE TESTING
PRESS RTO

WAX & RESIN USAGE

BOARD THICKNESS _____ DATE 4/18/95

READINGS TAKEN BY _____ LINE SPEED 66.0

WAX IGI 420 Slack MDI Rubinate 840 PF RESIN Borden 05-574

TIME hourly	WAX DAY TANK LEVEL	SL WAX FLOW RATE IN GAL	MDI DAY TANK LEVEL	MDI FLOW RATE IN GAL	PF RESIN DAY TANK	PF RESIN FLOW IN GAL
PM 1:35		0.4170		0.480		1.76
PM 2:35		0.4160		0.4743		1.78
300 PM		0.4180		24		1.83

POUNDS OF PF RESIN / HOUR: 103 gallons - 1060.9 lbs.

POUNDS OF MDI / HOUR: 29 gallons - 288.4 lbs

POUNDS OF WAX / HOUR: 5 inches - ~~200~~ 160

255.4

4-19-95

DAY TANK USAGE / PRESS RTO COMPLIANCE TESTING

TIME	WAX BEGIN	WAX END	WAX USAGE		MDI BEGIN	MDI END	MDI USAGE		L.P. BEGIN	L.P. END	L.P. USE
										9 3/4"	
8:30 AM TO	34 1/4"	28"	6 1/4"		32 3/4"	30 3/8"	2 3/8"		53"	43 3/4"	9 3/4"
9:30 AM			318.75 LBS.				324.46 LBS.			1332.8	133 LB
										7"	
9:30-10:18	28"	23 1/4"	4 3/4"		30 3/8"	28 3/4"	1 5/8"		43 3/4	36 3/4	7"
			242.25 LBS				222.13 LB.			930.9	95 LB
										8 3/4"	
10:18 TO 11:18	23 1/4	18 1/2	4 3/4	FILLED WAX TANK TO 34"	28 3/4	26 3/4	2"		36 3/4"	28"	8 1/4"
			242.25				273.4 LB.			1196.15	119 LB
										7 1/2	
11:18 AM TO 12:18 PM	34 1/4	29	5 1/4"		26 3/4	25"	1 3/4"		28"	20 1/2"	7 1/2"
			267.75 LB				239.22 LB.			1025.25	105 LB
										9 1/4	
12:18 TO 1:18	29"	23 3/4"	5 1/4"	FILLED WAX TO 34"	25"	22 7/8"	2 1/8"	FILLED L.P. TO 56 1/2"	20 1/2"	11 1/4"	9 1/4"
			267.75 LB.				290.49 LB.			1264.48	126 LB
1:18 TO 2:18	34"	29"	5"		22 7/8"	20 3/4"	2 1/8"		56 1/2"	51"	5 1/2"
			255 LB.				290.49 LB			751.85 125	75 LB

L.P./MDI WEIGHT 10.3 LB./GAL, 136.7 LB/INCH IN TANKS

WAX WEIGHS 6.8 LB./GAL, 51 LB./INCH IN TANK

Chad Timmerman

Hydrocarbon Resin

WAX	MDI	L.P.W.
1593.75 ✓	1640.39 ✓	✓ 6527.41 LBS @ 58% SOLIDS
		x.58 =
		@ 100% SOLIDS 3785.9 ✓ LBS TOTAL

5:30 AM TO 2:18 PM = 5 HRS 42 MIN =

5.7 HOURS

1593.75 LBS WAX / 5.7 HOURS	1640.39 / 5.7	3785.9 / 5.7 =
✓ 279.6 LBS/HOUR ✓	287.8 LBS/HR ✓	✓ 664.2 LBS/HR

TFP/HR = LBS/HOUR

279.6 LBS/HR WAX / 38,338 LBS/HR FP	287.8 LBS/HR MDI / 38,338 LBS/HR FP	664.2 LBS/HR LPW / 38,338 LBS/HR FP
= 0.7293 % WAX	0.7507 % MDI	0.1675 % LPW (1.73?)

COMPLIANCE TESTING
PRESS RTO

Press Booth Flowmeter

WAX & RESIN USAGE

BOARD THICKNESS 7/16" DATE 4-19-95

READINGS TAKEN BY Ted Bell LINE SPEED 65'/min

WAX IGI 420 Slack MDI Rubinate 1840 PF RESIN Borden OS-57 H

TIME (Hourly)	WAX DAY TANK LEVEL	SL WAX FLOW RATE IN GPM		MDI DAY TANK LEVEL	MDI FLOW RATE IN GPM		PF RESIN DAY TANK	PF RESIN FLOW IN GPM	
8:18 Am		0.4140	GAL CALCULATED		0.4760	GAL 0		1.78	GAL 0
9:18 Am		0.4135	25		0.4960	28		1.90	113
10:18 Am		0.4135	25		0.4989	29 (57)		1.91	223 112
11:18 Am		0.4140	25		0.4974	29 (86)		1.92	350 114
12:18 PM		0.4210	25		0.5002	29 (115)		1.90	453 114
1:18 PM		0.4200	25		0.5021	30 (145)		1.89	567 114
2:18 PM		0.4377	26		0.4965	30 (175)		1.90	681 111
AVERAGES →		.4191	25.2		.4953	29.2		1.886	113
		RATE	BATCH		RATE	BATCH		RATE	BATCH

POUNDS OF PF RESIN / HOUR: 683.6

POUNDS OF MDI / HOUR: 292.4

POUNDS OF WAX / HOUR (SL ONLY) = 191.4

PRESSLOAD #		PRESSLOAD #		PRESSLOAD #		PRESSLOAD #		PRESSLOAD #	
FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT
1	985.62	1	1044.84	1		1		1	
2	984.2	2	1031.42	2		2		2	
3	1028.4	3	1039.44	3		3		3	
4	1032.24	4	1007.64	4		4		4	
5	1036.8	5	1010.28	5		5		5	
6	1021.98	6	999.08	6		6		6	
7	1025.78	7	1021.76	7		7		7	
8	1029.74	8	1010.18	8		8		8	
9	1028.68	9	1008.1	9		9		9	
10	1027.13	10	1008.36	10		10		10	
11	1047.06	11	994.33	11		11		11	
12	1055.4	12		12		12		12	
FLIGHT #1 TRIMMED WEIGHT		FLIGHT #1 TRIMMED WEIGHT		FLIGHT #1 TRIMMED WEIGHT		FLIGHT #1 TRIMMED WEIGHT		FLIGHT #1 TRIMMED WEIGHT	
		23478.46 / 23		= 1020.80		KG./PRESSLOAD AVERAGE		4/19/95 MT Attd	

(1) [redacted] Time [redacted] 8 [redacted] | [redacted] Time [redacted] 8:1 [redacted] | [redacted] Time [redacted] 8:14 [redacted] Time [redacted] 8:22 | Time [redacted] 8:25 [redacted] | 60/min

PRESSLOAD # 19		PRESSLOAD # 20		PRESSLOAD # 21		PRESSLOAD # 22		PRESSLOAD #	
FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT
1	82.5	1	81.3	1	81.6	1	82.5	1	84.7
2	81.5	2	82.8	2	82.2	2	82.8	2	82.5
3	80.6	3	81.8	3	83.4	3	81.5	3	82.3
4	81.6	4	82.0	4	83.7	4	80.8	4	81.6
5	82.7	5	81.7	5	81.6	5	81.9	5	82.5
6	80.8	6	82.6	6	82.9	6	81.5	6	81.6
7	82.2	7	81.3	7	85.9	7	82.3	7	81.5
8	81.4	8	81.3	8	83.0	8	81.9	8	82.3
9	82.4	9	83.9	9	82.8	9	80.6	9	82.4
10	81.2	10	81.9	10	81.8	10	81.5	10	81.7
11	81.6	11	80.0	11	87.	11	82.5	11	81.6
12 (980.20)	81.7	12 (981.30)	80.7	12 (998.10)	82.2	12 (981.10)	82.0	12 (986.70)	82.0
FLIGHT #1 TRIMMED WEIGHT		FLIGHT #1 TRIMMED WEIGHT		FLIGHT #1 TRIMMED WEIGHT		FLIGHT #1 TRIMMED WEIGHT		FLIGHT #1 TRIMMED WEIGHT	
		161.75 KG		73.58		75.08		76.80	

Dennis Shields 4-19-95

4928.1 / 5 = 985.62 KG

[redacted]

Flight #	Pressload # 24 Untrimmed Board Weight	Pressload # 25 Untrimmed Board Weight	Pressload # 26 Untrimmed Board Weight	Pressload # 27 Untrimmed Board Weight	Pressload # 28 Untrimmed Board Weight
1	83.2	82.3	81.6	82.9	81.0
2	82.9	82.0	81.9	81.0	82.8
3	83.1	83.0	81.8	82.2	83.2
4	83.1	83.2	82.1	80.6	81.3
5	83.8	82.2	82.4	80.8	83.1
6	81.8	81.5	80.6	80.9	81.0
7	82.6	82.3	82.6	81.4	81.6
8	82.6	80.5	80.0	81.4	80.5
9	81.4	82.3	82.1	81.2	80.8
10	82.9	82.2	81.1	80.6	83.1
11	81.3	83.7	81.2	81.9	81.0
12	82.3	83.1	82.5	81.	86.5
	991	(988.3)	979.9	975.9	985.9
Flight #1 Trimmed Weight	75.52	74.50	73.50	75.32	73.18

Pressload # 25, flights 6–8 note: X START ADJ 830 4/19/95

Pressload # 26, flights 6–7 note: 840 START ADJ 1 DOC TJ

$\frac{4921}{5} =$ 984.2 Kg.

Dennis Shields 4-19-95

PRESSLOAD # 39		PRESSLOAD # 40		PRESSLOAD # 41		PRESSLOAD # 42		PRESSLOAD # 43	
FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT
1	8.45	1	83.7	1	87.2	1 *	85.7	1	87.6
2	85.0	2	86.4	2	86.2	2	88.3	2	86.7
3	85.6	3	83.4	3	86.9	3	87.0	3	87.4
4	85.7	4	88.6	4	86.1	4	88.6	4	86.8
5	86.2	5	84.2	5	83.8	5	86.4	5	88.3
6	85.9	6	85.9	6	85.9	6	87.7	6	88.90
7	85.8	7	86.0	7	85.3	7	86.5	7	88.2
8	85.3	8	88.3	8	83.0	8	89.5	8	88.2
9	86.4	9	90.9	9	86.3	9	86.9	9	87.4
10	84.5	10	83.8	10	87.0	10	88.5	10	85.6
11	84.3	11	87.3	11	87.9	11	87.9	11	85.0
12 1024.1	84.9	12 1036.3	87.8	12 1030.2	84.6	12 1048.9	85.9	12 1044.5	84.4
FLIGHT #1 TRIMMED WEIGHT		FLIGHT #1 TRIMMED WEIGHT		FLIGHT #1 TRIMMED WEIGHT		FLIGHT #1 TRIMMED WEIGHT		FLIGHT #1 TRIMMED WEIGHT	
76.24		75.40		78.60		76.92		79.04	

Dennis Shields 4-19-95

5184 / 5 = 1036.8 lbs.

[redacted]

(A) PRESSLOAD # 49		PRESSLOAD # 50		PRESSLOAD # 51		PRESSLOAD # 52		PRESSLOAD # 53	
FLIGHT #	UNTRIMMED BOARD WEIGHT	4/19/95 FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT
1	85.6	1 [illegible]	83.9	1	85.5	1	85.9	1	83.2
2	86.3	2	84.8	2	85.0	2	84.9	2	85.
3	85.4	3	85.8	3	85.0	3	87.0	3	84.8
4	87.1	4	84.9	4	85.1	4	84.9	4	86.8
5	85.1	5	84.2	5	86.0	5	88.4	5	85.4
6	85.6	6	85.4	6	86.1	6	84.5	6	85.4
7	84.8	7	85.7	7	85.9	7	83.7	7	85.5
8	84.4	8	86.1	8	84.7	8	86.8	8	85.6
9	85.2	9	86.2	9	84.0	9	86.3	9	85.4
10	85.1	10	86.2	10	85.9	10	85.4	10	85.7
11	84.6	11	84.5	11	86.6	11	86.6	11	84.5
12 1023.7	84.5	12 1022.8	85.1	12 1025.5	85.7	12 1031.2	86.8	12 1022.7	85.4
FLIGHT # 2 TRIMMED WEIGHT	76.30	FLIGHT # 2 TRIMMED WEIGHT	76.88	FLIGHT # 2 TRIMMED WEIGHT	77.04	FLIGHT # 2 TRIMMED WEIGHT	76.60	FLIGHT # 2 TRIMMED WEIGHT	77.14

(57)

D. Shields 4-19-95

$\frac{5128.9}{5} =$ 1025.78 Kg

[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pressload #: 54	Pressload #: 55	Pressload #: 56	Pressload #: 57	Pressload #: 58
Flight # / Untrimmed Board Weight	Flight # / Untrimmed Board Weight	Flight # / Untrimmed Board Weight	Flight # / Untrimmed Board Weight	Flight # / Untrimmed Board Weight
1 83.1	1 86.3	1 85.0	1 86.4	1 86.2
2 84.3	2 85.9	2 86.2	2 85.4	2 85.9
3 86.3	3 85.0	3 84.8	3 86.3	3 86.6
4 85.2	4 87.4	4 84.9	4 85.4	4 86.8
5 86.1	5 84.8	5 85.9	5 85.4	5 87.5
6 85.6	6 84.6	6 83.4	6 86.1	6 85.8
7 85.2	7 85.8	7 85.1	7 84.8	7 85.9
8 85.9	8 85.8	8 85.4	8 86.9	8 86.2
9 84.3	9 86.3	9 86.7	9 87.2	9 87.2
10 87.0	10 86.9	10 84.3	10 85.5	10 85.9
11 85.1	11 85.9	11 85.8	11 85.8	11 87.6
12 86.6	12 (1030.7) 86.0	12 (1022.5) 85.0	12 (1032.4) 87.2	12 (1038.4) 86.8
(1024.7) Total Flight #2 Trimmed Weight	Flight #2 Trimmed Weight	Flight #2 Trimmed Weight	Flight #2 Trimmed Weight	Flight #2 Trimmed Weight
76.32	77.82	78.26	77.50	77.92

Dennis Shields 4-15-95

$\frac{S148.7}{5} =$

$= 1029.74$ kg.

[redacted]	Pressload # 64		Pressload # 65		Pressload # 66		Pressload # 67		Pressload #	
	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight
1	1	85.16	1	85.1	1	86.2	1	85.9	1	
2	2	85.15	2	84.2	2	86.2	2	85.2	2	
3	3	86.4	3	85.3	3	84.9	3	86.3	3	
4	4	85.5	4	84.8	4	86.3	4	86.6	4	
5	5	84.3	5	84.10	5	84.3	5	85.6	5	
6	6	84.5	6	85.8	6	86.9	6	85.7	6	
7	7	84.8	7	86.9	7	84.10	7	85.4	7	
8	8	84.2	8	87.10	8	85.4	8	86.3	8	
9	9	86.2	9	84.5	9	85.1	9	85.6	9	
10	10	84.9	10	86.5	10	85.8	10	87.8	10	
11	11	86.4	11	83.2	11	85.8	11	87.9	11	
12	12	85.16	12	84.5	12	84.2	12	89.1	12	
	1039		1021.9		1025.3		1037.4			
	Flight #2 Trimmed Weight		Flight #2 Trimmed Weight		Flight #2 Trimmed Weight		Flight #2 Trimmed Weight		Flight #2 Trimmed Weight	
	77.22		76.36		78.16		77.30			

Dennis Shields 4-19-95

4108.5 / 4 =

1027.125 lbs.

[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pressload # 68	Pressload # 69	Pressload # 70	Pressload # 71	Pressload # 72
Flight # / Untrimmed Board Weight	Flight # / Untrimmed Board Weight	Flight # / Untrimmed Board Weight	Flight # / Untrimmed Board Weight	Flight # / Untrimmed Board Weight
1 86.0	1 88.5	1 88.4	1 88.5	1 86.4
2 87.2	2 87.0	2 88.3	2 85.2	2 86.9
3 87.7	3 89.1	3 89.4	3 87.8	3 88.6
4 84.6	4 88.3	4 86.2	4 86.5	4 86.5
5 89.9	5 85.9	5 87.0	5 86.2	5 88.2
6 85.9	6 87.1	6 87.9	6 87.4	6 86.5
7 88.5	7 86.8	7 86.2	7 87.7	7 88.6
8 88.4	8 87.6	8 88.2	8 87.7	8 87.0
9 86.6	9 85.5	9 87.5	9 86.5	9 87.3
10 88.2	10 87.0	10 85.9	10 86.7	10 86.4
11 85.7	11 85.6	11 87.9	11 86.5	11 87.8
12 87.9	12 90.2	12 85.5	12 87.6	12 87.2
1046.6	1048.6	1048.4	1044.3	1047.4
Flight # 3 Trimmed Weight	Flight # 4 Trimmed Weight	Flight # 5 Trimmed Weight	Flight # 6 Trimmed Weight	Flight # 7 Trimmed Weight
78.92	79.32	80.34	77.12	78.18

4-15-95
Dennis Shields

5235.3 / 5 = 1047.06

[redacted] Pressload # 73		[redacted] Pressload # 74		[redacted] Pressload # 75		[redacted] Pressload # 76		[redacted] Pressload # 77	
Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight
1	86.0	1	88.2	1	86.2	1	89.7	1	86.6
2	88.1	2	87.3	2	88.4	2	87.9	2	87.8
3	85.2	3	84.5	3	88.9	3	88.3	3	89.1
4	86.7	4	90.1	4	88.2	4	89.1	4	87.2
5	89.5	5	86.9	5	86.7	5	87.3	5	90.9
6	86.1	6	86.2	6	88.4	6	88.4	6	90.9
7	86.7	7	88.2	7	87.7	7	89.4	7	86.6
8	87.4	8	85.6	8	86.3	8	88.3	8	89.9
9	87.5	9	88.6	9	89.8	9	88.1	9	87.8
10	86.5	10	89.0	10	85.7	10	86.3	10	87.1
11	88.4	11	92.8	11	89.4	11	87.3	11	89.8
12	88.2	12	89.4	12	89.1	12	87.7	12	87.6
1016.3		1036.8		1054.8		1057.8		1061.3	
Flight # Trimmed Weight		Flight # Trimmed Weight		Flight # Trimmed Weight		Flight # Trimmed Weight		Flight # Trimmed Weight	
79.72		78.94		80.18		79.76		78.40	

Dennis Shields 4-19-55

5277 / 5 = 1055.4 Kg

[redacted] PRESSLOAD # 78		[redacted] PRESSLOAD # 79		[redacted] PRESSLOAD # 80		[redacted] PRESSLOAD # 81		[redacted] PRESSLOAD # 82	
FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT
	86.8	1	88.5	1	86.2	1	85.1	1	85.1
	86.3	2	87.7	2	85.6	2	86.9	2	87.9
	86.7	3	87.5	3	84.6	3	86.1	3	88.1
	89.8	4	86.6	4	87.2	4	86.4	4	89.4
	87.7	5	87.6	5	85.1	5	85.4	5	86.6
	89.6	6	87.5	6	86.6	6	87.2	6	87.5
	88.6	7	87.5	7	85.8	7	85.4	7	86.3
	90.1	8	88.3	8	86.5	8	84.9	8	87.9
	89.3	9	87.8	9	86.8	9	85.5	9	87.7
	89.4	10	85.6	10	87.5	10	86.6	10	85.2
	87.5	11	85.9	11	88.5	11	87.1	11	86.1
105920	87.4	12 10477	86.7	12 1,040.2	89.8	12 1033.1	86.5	12 1044.5	86.7
FLIGHT # 12 TRIMMED WEIGHT	78.10	FLIGHT # 12 TRIMMED WEIGHT	79.08	FLIGHT # 12 TRIMMED WEIGHT	78.20	FLIGHT # 12 TRIMMED WEIGHT	78.84	FLIGHT # 12 TRIMMED WEIGHT	79.42

[redacted]

4/19/98 [signature]

522042

$\frac{5224.2}{5} =$ 1044.84

KJ.

11/1[redacted] 11:4[redacted] | [redacted] 11:45 [redacted] | [redacted] 11:5[redacted] | [redacted] 11:5[redacted] AM [redacted] | [redacted] 11:[redacted] | [redacted]

PRESSLOAD #. 83		PRESSLOAD # 84		PRESSLOAD # 85		PRESSLOAD # 86		PRESSLOAD # 87	
FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT
11:43 D [illegible]	87.9	1	87.1	1	86.2	1	85.0	1	85.2
Run II	87.8	2	84.8	2	83.6	2	86.6	2	86.6
#13	86.3	3	87.1	3	85.2	3	84.8	3	84.6
	85.9	4	83.8	4	86.2	4	86.9	4	86.6
	87.1	5	86.9	5	86.2	5	86.9	5	86.2
	84.8	6	87.1	6	84.6	6	84.9	6	88.2
	85.6	7	86.9	7	86.4	7	87.8	7	85.4
	85.6	8	86.1	8	85.6	8	89.0	8	88.6
	86.8	9	83.0	9	84.8	9	86.3	9	84.1
	86.1	10	86.9	10	84.0	10	86.8	10	85.5
	86.3	11	83.2	11	86.5	11	86.3	11	85.4
1035.3	85.1	12 1026.10	83.7	12 1025.5	85.7	12 1036.9	85.6	12 1033.3	86.9
FLIGHT #2	TRIMMED WEIGHT 79.64	FLIGHT #2	TRIMMED WEIGHT 76.46	FLIGHT #2	TRIMMED WEIGHT 74.76	FLIGHT #2	TRIMMED WEIGHT 78.64	FLIGHT #2	TRIMMED WEIGHT 78.36

[signature] 4/19/95

5157.1

1031.42 Kg.

PRESSLOAD # 88		PRESSLOAD # 89		PRESSLOAD # 90		PRESSLOAD # 91		PRESSLOAD # 92	
FLIGHT #	UNTRIMMED BOARD WEIGHT	4/4/95 FLIGHT #1	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT	FLIGHT #	UNTRIMMED BOARD WEIGHT
	87.1	1200 Load T.S. # Read m/s	86.7	1	87.4	1	87.6.	1	86.5
	84.4	2	86.2	2	87.6	2	86.5	2	87.0
	86.1	3	87.5	3	86.4	3	86.7	3	86.5
	83.9	4	86.5	4	86.5	4	86.3	4	87.2
	85.4	5	86.0	5	87.9	5	88.1	5	84.9
	85.4	6	88.0	6	86.7	6	87.0	6	85.9
	86.4	7	86.5	7	85.0	7	86.8	7	84.9
	84.6	8	89.9	8	85.8	8	86.6	8	89.6
	87.0	9	88.5	9	86.1	9	85.3	9	88.1
* NOON	86.6	10	88.6	10	86.2	10	85.7	10	86.3
	87.7	11	85.5	11	87.1	11	86.6	11	86.7
1031.5	86.9	1046.20	86.3	1040.2	87.3	1040.2	87.	1039.1	85.5
FLIGHT #2 TRIMMED WEIGHT		FLIGHT #2 TRIMMED WEIGHT		FLIGHT #2 TRIMMED WEIGHT		FLIGHT #2 TRIMMED WEIGHT		FLIGHT #2 TRIMMED WEIGHT	
78.26		78.24		79.42		78.51		79.16	

4-19-95

5197.2 / 5 = 1039.44 KG

Pressload # 93		Pressload # 94		Pressload # 95		Pressload # 96		Pressload # 97	
Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight
1	87.4	1	83.7	1	83.7	1	82.3	1	84.5
2	84.4	2	83.4	2	83.4	2	83.3	2	85.5
3	88.7	3	84.7	3	83.8	3	84.2	3	87.3
4	83.7	4	83.6	4	83.2	4	83.7	4	84.8
5	85.8	5	83.9	5	84.2	5	84.5	5	88.5
6	81.8	6	84.1	6	84.2	6	85.1	6	84.0
7	81.70	7	84.7	7	83.8	7	84.1	7	84.6
8	80.6	8	85.4	8	82.9	8	84.3	8	83.9
9	80.6	9	86.6	9	84.3	9	82.3	9	81.6
10	81.0	10	84.1	10	84.6	10	84.9	10	84.2
11	81.2	11	85.5	11	82.6	11	84.7	11	82.8
12 998.	81.1	12 10133	83.6	12 10049	84.2	12 10051	81.70	12 10169	85.2
Flight #2 Trimmed Weight	76.48	Flight #2 Trimmed Weight	75.58	Flight #2 Trimmed Weight	75.68	Flight #2 Trimmed Weight	75.62	Flight #2 Trimmed Weight	77.46

(ST)

5038.2 / 5 = 1007.64 KJ.

Pressload # 98		Pressload # 99		Pressload # 100		Pressload # 101		Pressload # 102	
Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight
1	85.0	1	86.6	1	82.1	1	82.3	1	84.9
2	85.0	2	83.0	2	82.6	2	83.8	2	84.2
3	85.6	3	84.6	3	82.9	3	83.2	3	83.9
4	83.2	4	84.0	4	84.6	4	83.3	4	85.0
5	87.6	5	84.5	5	83.0	5	84.7	5	84.6
6	85.2	6	86.0	6	83.1	6	83.0	6	82.6
7	84.8	7	84.0	7	84.5	7	85.3	7	85.6
8	84.8	8	85.8	8	84.4	8	84.0	8	86.2
9	85.7	9	84.6	9	84.2	9	82.9	9	85.4
10	84.2	10	86.0	10	85.3	10	82.6	10	83.9
11	82.6	11	82.9	11	83.2	11	83.1	11	82.3
12 1019	85.1	12 1015.3	83.3	12 1003.6	83.7	12 1001.4	83.2	12 1012.1	84.5
Flight #12 Trimmed Weight		Flight #12 Trimmed Weight		Flight #12 Trimmed Weight		Flight #12 Trimmed Weight		Flight #12 Trimmed Weight	
77.04		74.88		76.18		75.80		76.16	

5051.4 / 5 = 1010.28 kg

(ST)

[redacted] Pressload #. 103		[redacted] Pressload # 104		[redacted] Pressload # 105		[redacted] Pressload # 106		[redacted] Pressload # 107		[redacted]
Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	
	82.5	1	84.2	1	84.5	1	85.10	1	82.8	
	86.0	2	82.6	2	84.4	2	82.5	2	82.8	
	83.6	3	83.6	3	83.3	3	83.1	3	81.0	
	83.5	4	80.4	4	82.7	4	81.3	4	83.0	
	80.0	5	83.1	5	81.5	5	82.8	5	84.3	
	81.9	6	83.3	6	84.2	6	82.4	6	82.9	
	83.8	7	83.6	7	84.2	7	82.8	7	84.9	
	83.1	8	83.8	8	84.5	8	83.1	8	85.2	
	82.8	9	83.5	9	82.0	9	84.10	9	85.4	
	82.1	10	84.5	10	82.8	10	83.5	10	83.2	
	83.2	11	85.5	11	81.0	11	83.2	11	83.6	
996.3	81.8	12 1004.3	86.2	12 996.5	81.4	12 995.5	81.8	12 1002.8	83.7	
Flight #2 Trimmed Weight		Flight #2 Trimmed Weight		Flight #2 Trimmed Weight		Flight #2 Trimmed Weight		Flight #2 Trimmed Weight		
(ST) 77.76		74.68		76.12		74.94		74.84		999.08 KJ.

Pressload # 108		Pressload # 109		Pressload # 110		Pressload # 111		Pressload # 112	
Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight
1	83.8	1	85.4	1	86.5	1	86.0	1	86.2
2	84.2	2	85.2	2	86.9	2	86.7	2	85.2
3	83.1	3	84.7	3	87.2	3	87.5	3	86.5
4	83.4	4	84.4	4	86.4	4	87.2	4	86.7
5	82.8	5	83.4	5	87.1	5	86.6	5	87.5
6	81.7	6	82.2	6	86.7	6	85.6	6	85.6
7	83.5	7	84.0	7	85.8	7	84.3	7	86.1
8	82.7	8	83.8	8	86.2	8	87.1	8	86.0
9	82.5	9	83.7	9	87.0	9	85.2	9	84.6
10	83.4	10	84.5	10	84.5	10	86.3	10	84.9
11	83.8	11	82.4	11	85.3	11	87.0	11	84.3
12 1000.1	85.2	12 1008.3	84.6	12 1036.20	86.6	12 1036.1	86.8	12 1028.10	84.9
Flight #2 Trimmed Weight	75.95	Flight #2 Trimmed Weight	77.10	Flight #2 Trimmed Weight	78.70	Flight #2 Trimmed Weight	78.42	Flight #2 Trimmed Weight	77.30

5108.8

1021.76 K9.

5.1

[redacted] #117 [redacted] Pressload # 113		[redacted] #11[redacted] Pressload # 114		[redacted] #[redacted] Pressload # 115		[redacted] #[redacted] Pressload # 116		[redacted] #30[redacted] Pressload # 117	
Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight
1	84.2	1	83.4	1	84.3	1	84.8	1	84.7
2	83.4	2	83.2	2	84.6	2	85.6	2	85.0
3	84.8	3	83.4	3	83.6	3	84.1	3	84.3
4	83.3	4	83.8	4	84.2	4	82.8	4	83.4
5	84.5	5	82.6	5	83.8	5	85.3	5	83.5
6	83.8	6	83.8	6	85.1	6	84.2	6	84.6
7	85.1	7	82.6	7	84.0	7	83.8	7	86.2
8	83.6	8	82.7	8	92.3	8	85.2	8	85.2
9	83.2	9	83.9	9	83.5	9	83.7	9	83.8
10	84.0	10	83.5	10	84.6	10	85.6	10	83.8
11	84.2	11	84.2	11	84.4	11	84.5	11	83.5
12 10036	82.5	12 1000.6	83.5	12 1018.7	84.3	12 1014	85.8	12 10126	84.6
Flight # 12 Trimmed Weight		Flight # 12 Trimmed Weight		Flight # 12 Trimmed Weight		Flight # 12 Trimmed Weight		Flight # 12 Trimmed Weight	
57 75.22		75.54		76.50		78.22		77.02	

5050.9

1010.18
KJ.

[redacted]

Pressload # 118		Pressload # 119		Pressload # 120		Pressload # 121		Pressload # 122		
Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	
	85.4	1	84.2	1	83.0	1	82.4	1	81.6	
	85.1	2	84.7	2	81.20	2	82.5	2	85.3	
	85.2	3	84.6	3	83.4	3	82.3	3	81.3	
	83.9	4	86.2	4	84.3	4	84.1	4	83.8	
	84.6	5	84.4	5	84.2	5	85.3	5	83.2	
	83.6	6 4/19/95	84.0	6	84.9	6	84.1	6	81.8	
	84.4	7 7:35 PM RUN II	84.3	7	82.9	7	84.3	7	84.2	5040.5
	82.7	8 END VOM	90.2	8	84.2	8	82.4	8	83.3	
	84.5	9	82.9	9	82.4	9	86.6	9	81.5	
	84.0	10	85.7	10	85.1	10	83.7	10	83.6	
	84.2	11	83.5	11	84.4	11	84.0	11	83.8	
1013.8	86.2	12 1017.70	83.0	12 1004.6	84.6	12 1006.3	84.6	12 998.10	84.7	
Flight #12 Trimmed Weight		Flight #12 Trimmed Weight		Flight #12 Trimmed Weight		Flight #12 Trimmed Weight		Flight #12 Trimmed Weight		
(5) 76.86		76.26		74.38		74.74		77.48		1008.1 Kg.

Pressload # 123		Pressload # 124		Pressload # 125		Pressload # 126		Pressload # 127	
Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight
	83.4	1	82.4	1	84.0	1	83.8	1	83.0
	85.4	2	82.9	2	84.6	2	83.4	2	81.1
	82.6	3	85.3	3	83.4	3	82.9	3	83.2
	83.3	4	83.2	4	89.3	4	85.2	4	83.4
	81.4	5	84.0	5	84.8	5	84.2	5	83.5
	82.1	6	83.3	6	88.6	6	8512	6	81.4
	83.2	7	84.2	7	84.6	7	85.9	7	82.4
	82.3	8	85.9	8	88.0	8	83.6	8	81.3
	82.4	9	83.8	9	85.0	9	86.2	9	82.2
	82.3	10	85.0	10	85.1	10	85.2	10	82.6
	84.3	11	86.0	11	8516	11	84.4	11	83.2
995.7	83.0	12 1011.4	85.4	12 1029.7	86.7	12 1014.7	84.7	12 990.3	83.0
Flight #2 Trimmed Weight		Flight #2 Trimmed Weight		Flight #2 Trimmed Weight		Flight #1 Trimmed Weight		Flight #1 Trimmed Weight	
77.86		75.14		77.18		75.88		73.46	

5041.8

1008.36 KG.

(57)

Pressload # 128		Pressload # 129		Pressload # 130		Pressload # 131		Pressload # 132		
Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	Flight #	Untrimmed Board Weight	
	81.6	1	83.9	1	83.4	1		1		
	81.8	2	83.9	2	84.1	2		2		
	82.8	3	82.7	3	82.4	3		3		
	82.6	4	83.1	4	83.6	4		4		
	82.9	5	82.4	5	83.4	5		5		
	81.8	6	82.6	6	82.7	6		6		
	82.0	7	82.7	7	81.6	7		7		
	81.4	8	83.5	8	84.5	8		8		
	83.0	9	82.0	9	82.3	9		9		
	82.4	10	82.7	10	84.5	10		10		
	82.3	11	82.4	11	85.0	11		11		983
187.80	82.6	12 qq43	82.4	12 1001.5	84.0	12		12		
Flight #2 Trimmed Weight		Flight #2 Trimmed Weight		Flight #2 Trimmed Weight		Flight #2 Trimmed Weight		Flight #2 Trimmed Weight		
	74.24		76.04		76.72					994.33

(ST)

K9

18.8 LOADS / HR 65 F/MIN LINESPEED

X 1020.80

19191.04 KG./HR.

X 2.205

42,316.24 #/HR / 2000 = 21.158 T/HR

21.158 T/HR X 24 HRS = 507.79 T/DAY UNTRIMMED

507.79 X 9.4% TRIM RATIO = 47.73 T

507.79 − 47.73 = 460.06 T/DAY FINISH PRODUCT

460.06 / 24 = 19.169 T/HR PRODUCED

19.169 X 2000 = 38,338 LBS/HR PRODUCED

4/19/95 [signature]

RTO OPERATOR'S LOG #2

Date: 4-19-95

Shift Electrician inspect the RTO outside and take the following readings every two hours. Press Lineman to fill in when Electrician is busy. Propane readings: 3 X per shift, Vaporizer: 1 X per shift.

BTUE Syst On	RTO Delta P	Press. Inlet Duct	Burner Temperature #1	Burner Temperature #2	Burner Output % #1	Burner Output % #2	Motor Amps		Propane Pressures RTO Gage	Propane Pressures Vaporizer In	Propane Pressures Vaporizer Out
No	14	-4	1518	1516	37.5	48.7	111		7	65	8
No	15	-4	1530	1535	7.3	13.8	106				
No	14	-4	1538	1532	1.2	0.5	100		7		
No	14	-4	1533	1532	5.0	17.3	103				
No	14	-4	1524	1524	23.7	22.6	100		7		
No	14	-4	1531	1536	12.7	15.4	102				
No	14	-4	1518	1516	26.3	36.2	100				
No	14	-4	1511	1513	46.8	40.5	100				
No	14	-4	1526	1525	12.0	8.2	100				
No	14	-4	1519	1519	30.0	42.1	103				
No	14	-4	1514	1521	36.1	27.6	103				
No	14	-4	1533	1531	1.0	5.3	100				

Burner Setpoints: 1) 1520

2) 1520

Readings taken by: 1) J. Hawkins

2) J. CHARETTE

RTO OPERATOR'S LOG #1

Date: 4-19-95

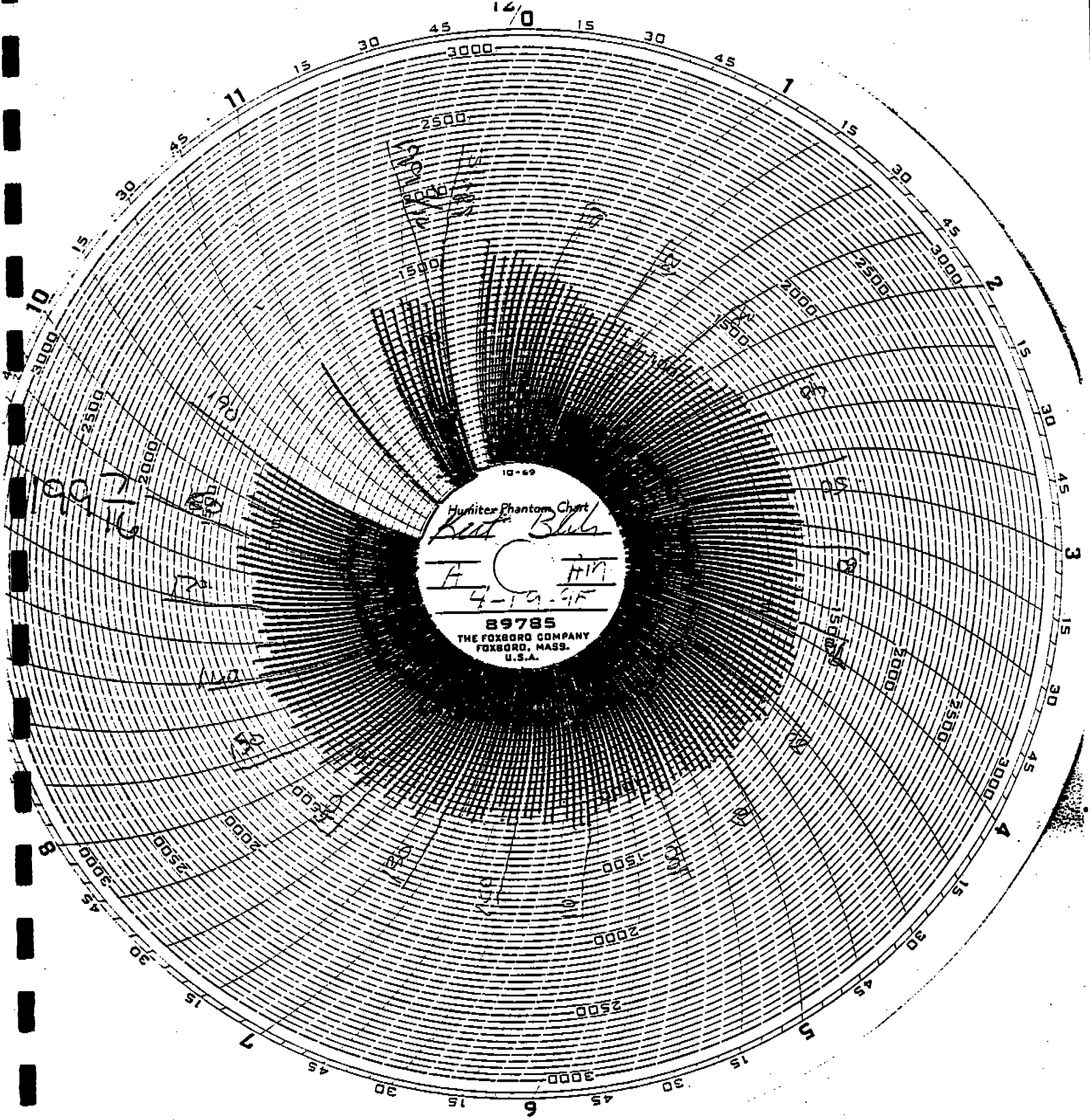
Shift Electrician inspect the RTO outside and take the following readings every two hours. Press Lineman to fill in when Electrician is busy.

DataLiner:

Recovery Chamber Temperatures 1	2	3	4	5	Inlet Press. W.C.	Burner Temp. 1	2	Inlet Temp.	Comb. Chamber Temp.	Exh. Temp.	Bak. Cool. Temp
335	314	328	329	331	3.4	1515	1528	111	1523	222	223
332	322	325	327	331	3.6	1514	1515	117	1517	228	226
336	328	326	335	327	3.9	1526	1524	121	1520	229	229
334	332	331	328	325	3.8	1524	1511	120	1531	230	230
338	330	342	327	324	3.3	1513	1505	121	1517	228	228
335	324	336	326	327	3.4	1520	1518	115	1524	223	224
335	326	330	329	317	3.7	1527	1525	114	1535	223	224
331	327	329	324	322	3.6	1523	1526	114	1531	226	227
335	327	328	330	317	3.7	1537	1529	114	1540	224	224
336	325	332	320	317	3.3	1510	1522	114	1528	223	225
332	328	322	332	318	3.6	1531	1521	114	1520	226	226
334	326	333	320	320	3.6	1522	1509	117	1515	222	226

Shift (at 12 AM): Propane tank #1 _____% Tank #2 _____%

Log startup/shutdown times, problems, maintenance items, etc.: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Hunniter Phantom Chart
89785
THE FOXBORO COMPANY
FOXBORO, MASS.
U.S.A.

19

LOUISIANA-PACIFIC CORP. PRESS REPORT
HOULTON, MAINE

OPERATOR K. BLAKE SHIFT (AM) PM CREW A DATE 4-19-95

LINE SPEED	FROM	TO	THICK-NESS	PRESS LOADS	PRESS TEMP	OVERALL TIMER	DECOMP. TIMER	REASON FOR LINESPEED CHANGE
65	700	630	7/16	191	210	135	12.1	Start
63	630	700	7/16	8	210	140	12.1	to watch FCOS

TOTALS 199 (3/8" FOOTAGE) = 356,618

FLKR STROKES 1445 TDT 83 min PEAB OIL BRNR: 154 DEBARKER DT 744 SANDER DT 19 min

KONUS #1 2670 KONUS #2 1193 SURFACE OIL BURNER ○ CORE OIL BURNER ○

DOWNTIME FROM	DOWNTIME TO	DOWNTIME(MINS) DEPARTMENTS M	E	O	QC	REASON FOR DOWN TIME
701	714	13				FCOS out of time
814	815		1			Lug chains FLT #11 stopped
916	917			1		Wait for Saws.
520	628		68			FCOS car traveling to far end hits mec. stop
		13	69	1		

*** MAINTENANCE / LOCK-OUT LOG ***

MOTOR # LOCKED OUT	FROM	TO	BRIEF DESCRIPTION OF WORK BEING DONE	INITIALS OF PERSON LOCKING OUT

LOUISIANA-PACIFIC
HOULTON, MAINE

SHIFT OPERATING REPORT

SUPERVISOR Prescott SHIFT Day AM / PM CREW A DATE 4-19-95

PRESS OPERATION:

THICKNESS	PRESSLOADS	3/8" FTG	DOWNTIME (Mins) M	E	O	QC
7/16	199	356618				
TOTAL	199	356618	13	69	1	

YARD OPERATIONS:

FIRE DUMP CLEANED _____ TIMES
TRUCKS USED DIRECT _____ TRUCKS
BARK TRUCKS LOADED _____ TRAILERS
MISCELLANEOUS _____

KONUS FURNACE	HRS. FUEL USAGE WOOD	HRS. FUEL USAGE OIL
#1	8hr 45min	36 min
#2	2hrs 30min	1hr 26 min

DRYER OPERATION:

	DRY FUEL USAGE LBS.	OIL FUEL USAGE HRS.	AVE. INLET TEMP	RUNNING TIME MINS.	DOWN TIME	AVG. WET MOISTURE	AVG. DRY MOISTURE	REASON FOR OIL USAGE
CORE	1610	⊖	983	1635	45	44.8%	5.1%	Wind
SURFACE	1185	⊖	1182	1630	90	46.4%	7.5%	Used

# OF UNITS	1/4.	5/16	3/8	7/16	15/32	1/2	19/32	23/32	OTHER
A				105					
A 1/2 UNITS									
U				9Pc					
E & X				5Pc					

IF LESS THAN 99.5%, WHY?

MAINTENANCE/LOCK-OUT LOG

MOTOR # LOCKED OUT	FROM	TO	BRIEF DESCRIPTION OF WORK BEING DONE	INITIALS OF PERSON LOCKING OUT

PERSONNEL COMMENTS/CONCERNS:

ABSENT/TARDY	REASON	EXTRA PERSONNEL	REASON
1.			
2.			
3.			

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Truline
WASHINGTON, PA.
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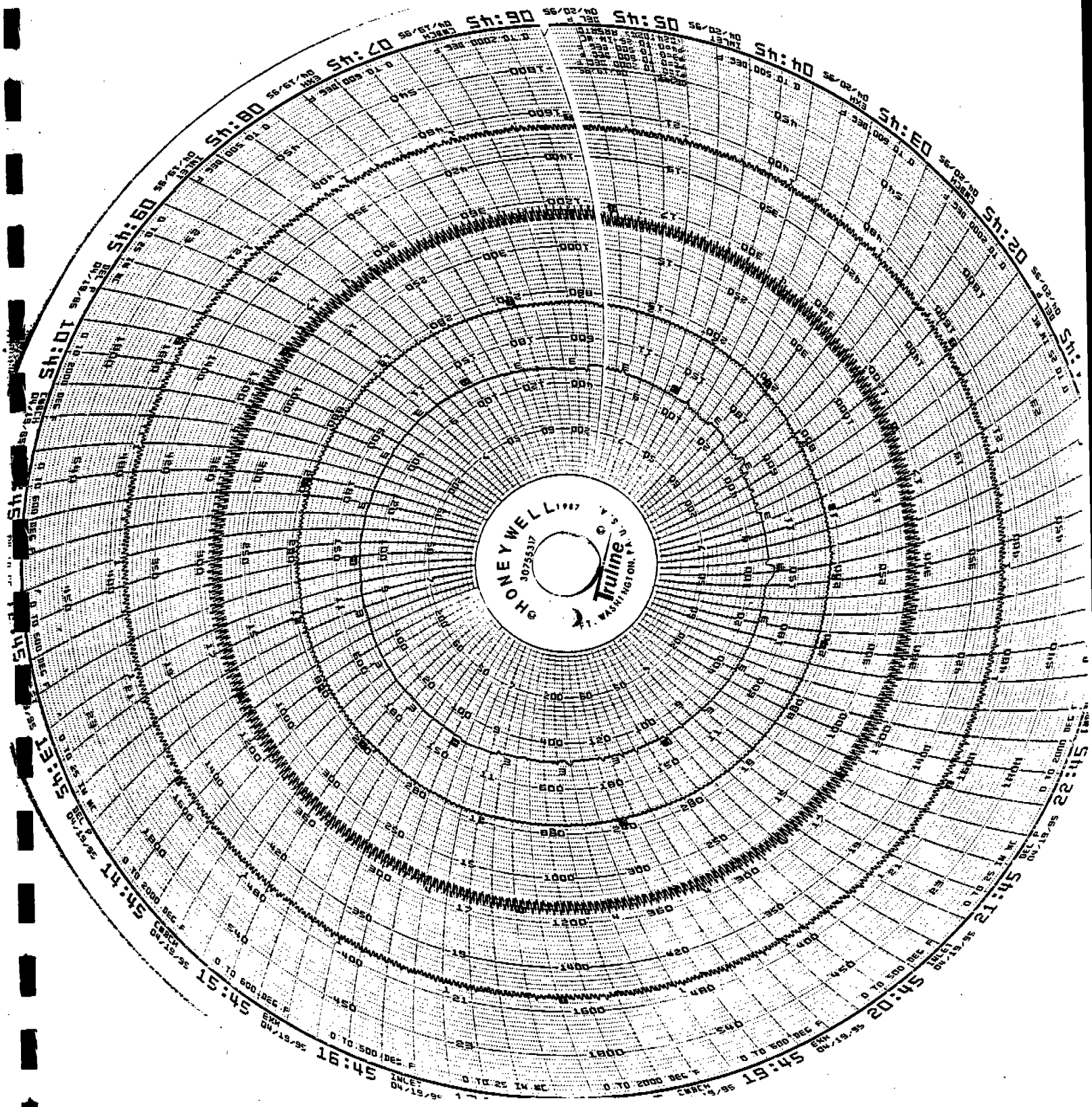
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WASHINGTON, PA.
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COMPLIANCE TESTING
PRESS RTO

PRESS TEMP & PROPANE USAGE

BOARD THICKNESS 7/16 DATE 4/18/95

READINGS TAKEN BY _____ LINE SPEED 66.00

TIME	½ HOUR PRESS TEMP	1 HOUR PROPANE GAL 1	GAL 2		
1:35 PM.	210° C	397.	30%		
2:00 PM	210° C				
2:30 PM	210° C				
3:00 PM	210° C				

AVERAGE

AVERAGE

AVERAGE

SUMMARY SHEET

COMPLIANCE TESTING
PRESS RTO

BOARD TRIM RATIO

BOARD THICKNESS 7/16 DATE 4/19/95

READINGS TAKEN BY M. STILE LINE SPEED 65 FPM.

TIME SHEET #	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO IN %
1	83.4	75.54	.905			9.5
2	86.1	77.75	.903			9.7
3	85.6	77.62	.906			9.4
4	87.1	78.86	.905			9.5
5	84.9	77.06	.908			9.2
6	84.5	76.53	.906			9.4
7	83.5	75.83	.908			9.2

AVERAGE UN-TRIMMED WEIGHT: 85.0 KG.

AVERAGE TRIMMED WEIGHT: 77.03 KG.

AVERAGE TRIM RATIO: .906 = 9.4 %

COMPLIANCE TESTING
PRESS RTO

BOARD TRIM RATIO

BOARD THICKNESS 7/16 DATE 4-19-95

READINGS TAKEN BY Chamberlain LINE SPEED 65 FPM

Time	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO IN % RATIO	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO %
		[redacted]				
8:20		161.75 RL 20				
8:23	81.6	73.5Kg 162.20 RL 21	.902			
8:26	82.5	75.08	.910			
8:30	84.7	76.80	.907			
8:34	83.2	75.52	.908			
8:36	82.3	74.50	.905			
8:40	81.6	73.50	.901			
8:44	82.9	75.32	.909			
8:46	81.0	73.18	.903			
8:49	86.1	77.96	.905			
8:52	83.6	75.96	.908			
8:55	85.7	77.54	.905			
8:59	82.0	74.00	.902			
9:02	87.6	79.44	.907			
9:05	83.4	75.22	.902			

AVERAGE UN-TRIMMED WEIGHT: 83.4 KG.

AVERAGE TRIMMED WEIGHT: 75.54 KG.

AVERAGE TRIM RATIO: .905

COMPLIANCE TESTING
PRESS RTO

BOARD TRIM RATIO

BOARD THICKNESS 7/16 DATE 4-19-95

READINGS TAKEN BY Chamberlain LINE SPEED 65 FPM

PRESS CLOSE TIME	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO ~~IN / OUT~~	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO ~~IN / OUT~~
9:09	87.0	78.30	.900			
9:11	87.5	78.80	.901			
9:16	88.1	79.66	.904			
9:18	87.3	78.88	.904			
9:22	84.5	76.24	.902			
9:25	83.7	75.40	.901			
9:28	87.2	78.65	.902			
9:31	85.7	76.92	.879			
9:33	87.6	79.04	.902			
9:38	87.9	79.20	.901			
9:41	85.8	77.56	~~#~~ 2 .904			
9:44	83.0	75.64	.911			
9:48	86.6	78.32	.904			
9:50	86.2	78.24	.908			
9:53	86.3	76.30	.884			
9:56	84.8	76.85	.907			

AVERAGE UN-TRIMMED WEIGHT: 86.1 KG.

AVERAGE TRIMMED WEIGHT: 77.75 KG.

AVERAGE TRIM RATIO: .903

COMPLIANCE TESTING
PRESS RTO

BOARD TRIM RATIO

BOARD THICKNESS 7/16 DATE 4-19-95

READINGS TAKEN BY Chamberlain LINE SPEED 65 FPM

PRESS CLOSE TIME	KG. UNTRIMMED WEIGHT	KG. TRIMMED WEIGHT	RATIO ~~IN %~~	KG. UNTRIMMED WEIGHT	KG. TRIMMED WEIGHT	RATIO ~~IN %~~
10:00	85 0	77.04	.906			
10:04	84.9	76.60	.902			
10:06	85.0	77.14	.908			
10:10	84.3	76:32	.905			
10:13	85.9	77.82	.906			
10:16	86.2	78.26	.908			
10:19	85.4	77.50	.907			
10:23	85.9	77.92	.907			
10:25	85.2	77.96	.915			
10:29	87.0	78.88	.907			
10:32	85.0	77.94	.917			
10:35	88.2	79.98	.907			
10:38	85.3	77.06	.903			
10:41	85.5	77.22	.903			
10:45	84.2	76.36	.907			
10:48	86.2	78.16	.907			
10:51	85.2	77.30	.907			

AVERAGE UN-TRIMMED WEIGHT: 85.6 KG.

AVERAGE TRIMMED WEIGHT: 77.62 KG.

AVERAGE TRIM RATIO: .906

COMPLIANCE TESTING
PRESS RTO

BOARD TRIM RATIO

BOARD THICKNESS 7/16 DATE 4-19-95

READINGS TAKEN BY Chamberlain LINE SPEED 65 FPM

Press Close TIME	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO ~~IN / O~~	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO ~~IN / O~~
10:55	87.2	78.92	.905			
10:56	87.0	79.32	.912			
11.00	88.3	80.34	.910			
11:03	85.2	77.12	.905			
11:07	86.9	78:18	.900			
11:10	88.1	79.72	.905			
11:13	87.3	78.94	.904			
11:18	88.4	80.18	.907			
11:20	87.9	79.76	.907			
11:23	87.8	78.40	.893			
11:27	86.3	78.10	.905			
11:30	87.7	79.08	.902			
11.33	85.6	78.20	.914			
11:36	86.9	78.84	.907			
11.40	87.9	79.40 79.42 mod	.903			
11.43	87.8	79.64	.907			
11.45	84.8	76.46	.902			

AVERAGE UN-TRIMMED WEIGHT: 87.1 KG.

AVERAGE TRIMMED WEIGHT: 78.86 KG.

AVERAGE TRIM RATIO: .905

COMPLIANCE TESTING
PRESS RTO

BOARD TRIM RATIO

BOARD THICKNESS 7/16 DATE 4-19-95

READINGS TAKEN BY Chamberlain LINE SPEED 65 FPM

Press Close TIME	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO
11:49	83.6	74.76	.894			
11:52	86.6	78.64	.908			
11:55	86.6	78.36	.905			
11:59	84.4	78.26	.927			
12:02	86.2	78.24	.908			
12:05	87.6	79.42	.907			
12:08	86.5	78.54	.908			
12:11	87.0	79.16	.910			
12:15	84.4	76.48	.906			
12:18	83.4	75.58	.906			
12:21	83.4	75.68	.907			
12:24	83.3	75.62	.908			
12:27	85.5	77.46	.906			
12:30	85.0	77.04	.906			
12:33	83.0	74.88	.902			
12:37	82.6	76.18	.922			
12:41	83.8	75.80	.905			

AVERAGE UN-TRIMMED WEIGHT: 84.9 KG.

AVERAGE TRIMMED WEIGHT: 77.06 KG.

AVERAGE TRIM RATIO: .908

COMPLIANCE TESTING
PRESS RTO

BOARD TRIM RATIO

BOARD THICKNESS 7/16 DATE 4-19-95

READINGS TAKEN BY Chamberlain LINE SPEED 65 FPM.

Press Close TIME	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO
12:44	84.2	76.16	.905			
12:47	86.0	77.76	.904			
12:50	82.6	74.68	.904			
12:53	84.4	76.12	.902			
12:56	82.5	74.94	.908			
12:59	82.8	74.84	.904			
1:02	84.2	75.95	.902			
1:05	85.2	77.10	.905			
1:08	86.9	78.70	.906			
1:12	86.7	78.42	.905			
1:15	85.2	77.30	.907			
1:18	83.4	75.22	.902			
1:22	83.2	75.54	.908			
1:25	84.6	76.50	.904			
1:28	85.6	78.22	.914			
1:31	85.0	77.02	.906			

AVERAGE UN-TRIMMED WEIGHT: 84.5 KG.

AVERAGE TRIMMED WEIGHT: 76.53 KG.

AVERAGE TRIM RATIO: .906

COMPLIANCE TESTING
PRESS RTO

BOARD TRIM RATIO

BOARD THICKNESS 7/16 DATE 4-19-95

READINGS TAKEN BY Chamberlain LINE SPEED 65 FPM

Press close TIME	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO [redacted]	KG UNTRIMMED WEIGHT	KG TRIMMED WEIGHT	RATIO [redacted]
:35	85.1	76.86				
:38	84.7	76.26				
:41	81.2	74.38				
:44	82.5	74.74				
:47	85.3	77.48				
:50	85.4	77.86				
:54	82.9	75.14				
:57	84.6	77.18				
1:00	83.4	75.88				
1:03	81.1	73.46				
1:06	81.8	74.24				
1:09	83.9	76.04				
1:12	84.1	76.32				

AVERAGE UN-TRIMMED WEIGHT: 83.5 KG.

AVERAGE TRIMMED WEIGHT: 75.83 KG.

AVERAGE TRIM RATIO: .908

RTO TESTING readings every 10 minutes -

Fuel type PROPANE Any meter conversion factors? NO

meter readings in Cu. ft. for nat. gas meter readings in gal. for propane

DATE: 4-19-95

By: Richard K. Lyons

Sheet ____ of ____

TIME	BED TEMPERATURES #1	#2	#3	#4	#5	INLET PRES-SURE	BURNER TEMP. #1	#2	INLET TEMP	COMBUSTION CHAMBER TEMP	EXHAUST TEMP	PRESSURE DROP	GAS METER READING
8:20	335	318	323	333	325	3.5	1530	1531	117	1528	225	14	
8:30	333	319	329	335	326	3.8	1529	1535	115	1537	225	14	
8:40	337	317	329	323	328	3.6	1523	1506	114	1526	225	15	
8:50	335	318	330	326	331	3.7	1525	1520	117	1527	227	14	
9:00	332	322	325	327	331	3.6	1514	1515	117	1517	228	15	
9:10	336	320	322	325	326	3.7	1514	1512	116	1523	225	15	
9:20	337	319	333	325	329	3.4	1514	1508	117	1528	225	14	
9:30	335	322	330	331	333	3.4	1514	1515	118	1518	226	15	
9:40	333	324	321	333	327	3.9	1514	1530	118	1517	229	14	
9:50	336	323	323	334	326	3.8	1527	1518	119	1531	226	15	
10:00	339	322	330	327	326	3.8	1523	1525	119	1537	226	14	
10:10	339	323	335	327	331	3.4	1518	1523	120	1531	226	14	
10:20	337	326	325	338	327	3.7	1515	1517	121	1538	228	14	
10:30	336	327	326	339	330	3.8	1523	1514	121	1529	229	14	
10:40	340	324	332	328	326	3.8	1520	1517	119	1518	226	14	
10:50	337	328	335	332	332	3.6	1518	1517	120	1521	228	14	
11:00	336	328	326	335	327	3.9	1526	1524	121	1520	229	14	
11:10	338	328	327	336	326	3.8	1525	1528	120	1543	229	14	
11:20	340	327	334	328	325	3.9	1512	1520	120	1521	226	14	
11:30	339	328	339	327	329	3.3	1515	1514	120	1521	228	14	
11:40	336	330	329	339	328	3.9	1525	1527	119	1538	229	14	
11:50	337	330	328	338	324	3.8	1520	1525	120	1531	230	14	
12:00	340	328	336	333	323	3.7	1534	1527	120	1531	227	14	
12:10	338	329	340	328	327	3.7	1514	1529	121	1523	228	14	
12:20	337	330	328	336	323	3.6	1527	1518	119	1530	228	14	
12:30	338	330	330	335	322	3.8	1514	1511	120	1518	228	14	
12:40	339	329	341	327	326	3.4	1524	1511	119	1518	228	14	
12:50	338	330	341	327	327	3.4	1527	1514	121	1523	230	14	
1:00	334	332	331	338	325	3.8	1524	1511	120	1531	230	14	
1:10	339	330	336	329	322	3.8	1512	1515	119	1517	227	15	

RTO TESTING readings every 10 minutes -

DATE: 4-19-95

Fuel type_____ Any meter conversion factors? _____

By: Richard K Lyons

meter readings in Cu. ft. for nat. gas meter readings in gal. for propane

Sheet ___ of ___

TIME	BED TEMPERATURES #1	#2	#3	#4	#5	INLET PRES-SURE	BURNER TEMP. #1	#2	INLET TEMP	COMBUSTION CHAMBER TEMP	EXHAUST TEMP	PRESSURE DROP	GAS METER READING
1:20	339	331	341	326	326	3.6	1520	1507	120	1524	227	14	
1:30	336	333	337	332	328	3.8	1529	1518	120	1519	229	14	
1:40	334	333	331	338	324	3.6	1513	1528	119	1530	228	14	
1:50	338	330	336	328	321	3.6	1523	1507	118	1514	227	15	
2:00	339	331	341	325	323	3.7	1514	1524	119	1529	227	14	
2:10	336	333	338	331	327	3.8	1513	1524	119	1529	230	14	
2:20	334	334	331	337	325	3.4	1519	1523	119	1524	228	14	
2:30													
2:40													
2:50													
3:00													
3:10													
3:20													
3:30													

COMPLIANCE TESTING
PRESS RTO

PRESS TEMP & PROPANE USAGE

BOARD THICKNESS 7/16" DATE 4-19-95

READINGS TAKEN BY [signature] LINE SPEED 65'/min

TIME	½ HOUR PRESS TEMP	1 HOUR PROPANE GAL			
9:18 AM	210° C				
9:50 AM	210° C				
10:20 AM	210° C				
10:50 AM	210° C				
11:20 AM	210° C				
11:50 AM	210° C				
12:20 PM	210° C				
12:50 PM	210° C				
1:20 PM	210° C				
1:50 PM	210° C				

AVERAGE

AVERAGE

AVERAGE

COMPLIANCE TESTING
PRESS RTO

PRESS TEMP & PROPANE USAGE

BOARD THICKNESS 7/16 DATE 4-19-95

READINGS TAKEN BY [illegible] LINE SPEED 65'/min

TIME	½ HOUR PRESS TEMP	1 HOUR PROPANE GAL				
1:20 PM	210°					

AVERAGE

AVERAGE

AVERAGE

D9

MATERIAL SAFETY DATA SHEET

IGI INTERNATIONAL WAXES
50 SALOME DRIVE
AGINCOURT, ONTARIO, CANADA M1S 2A8
EMERGENCY PHONE: (416) 293-4151

SECTION 1 - MATERIAL IDENTIFICATION AND USE

MATERIAL NAME: IGI 420 SLACK WAX — PRODUCT CODE: 420

CHEMICAL NAME	CHEMICAL FAMILY	CHEMICAL FORMULA
NOT APPLICABLE	PETROLEUM HYDROCARBON WAX	COMPLEX MIXTURE OF ALIPHATIC HYDROCARBONS
MOLECULAR WEIGHT	**CAS REGISTRY NUMBER**	**MATERIAL USE**
NOT APPLICABLE	64742-61-6	VARIOUS

SECTION 2 - HAZARDOUS INGREDIENTS

THIS IS NOT A CONTROLLED PRODUCT AS DEFINED BY THE CANADIAN HAZARDOUS PRODUCTS ACT (BILL C70) OR AS DEFINED BY U.S. OSHA HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200

SECTION 3 - PHYSICAL DATA

PHYSICAL STATE	ODOUR AND APPEARANCE	ODOUR THRESHOLD (PPM)
GAS [ ] LIQUID [ ] SOLID [X]	Slight odour - Yellow to brown viscous @25°C	NOT AVAILABLE

VAPOUR PRESSURE (mm Hg.)	VAPOUR DENSITY (AIR = 1)	EVAPORATION RATE	BOILING POINT (IBP)(°C)	FREEZING POINT (°C) (ASTM D938)
<0.01 @20°C	>5	<0.01 BUTYL ACETATE = 1	>369	61
% VOLATILE (BY VOLUME)	**SOLUBILITY IN WATER (20°C)**	**pH**	**SPECIFIC GRAVITY**	**COEFF. WATER/OIL DISTRIBUTION**
<0.01%	<0.1%	NOT APPLICABLE	@25°C = 0.91	<0.01

SECTION 4 - FIRE AND EXPLOSION DATA

FLAMMABILITY — IF YES UNDER WHICH CONDITIONS?
YES [X] NO [ ] — WILL SUPPORT A FLAME ONLY ABOVE THE FLASH POINT - SEE BELOW

MEANS OF EXTINCTION: USE WATER FOG,FOAM,DRY CHEMICAL OR CO_2. DO NOT USE A DIRECT STREAM OF WATER

SPECIAL PROCEDURES: USE WATER TO KEEP EXPOSED CONTAINERS COOL

FLASHPOINT (°C) (ASTM D92)	UPPER EXPLOSION LIMIT (% BY VOLUME)	LOWER EXPLOSION LIMIT (% BY VOLUME)
> 230	7.0%	0.9%
AUTO IGNITION TEMPERATURE (°C)	**TDG FLAMMABILITY CLASSIFICATION**	**HAZARDOUS COMBUSTION PRODUCTS**
NOT AVAILABLE	NOT DANGEROUS	CO_2, CO *See below

EXPLOSION DATA	SENSITIVITY TO IMPACT	RATE OF BURNING	EXPLOSIVE POWER	SENSITIVITY TO STATIC DISCHARGE
	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE

SECTION 5 - REACTIVITY DATA

CHEMICAL STABILITY — IF NO, UNDER WHICH CONDITIONS?
YES [X] NO [ ]

COMPATIBILITY WITH OTHER SUBSTANCES — IF NO, WHICH ONES?
YES [ ] NO [X] • STRONG OXIDIZING AGENTS, e.g. PEROXIDES,CHLORINE

E6

MATERIAL SAFETY DATA SHEET
IGI INTERNATIONAL WAXES
EMERGENCY PHONE: (416) 293-4151

SECTION 6 - TOXICOLOGICAL PROPERTIES AND HEALTH INFORMATION

ROUTE OF ENTRY

SKIN CONTACT [X] SKIN ABSORPTION [ ] EYE CONTACT [ ] INHALATION ACUTE [X] INHALATION CHRONIC [ ] INGESTION [ ]

EFFECTS OF ACUTE EXPOSURE TO MATERIAL

PARAFFIN WAX FUMES REPORTED TO CAUSE DISCOMFORT
MOLTEN PRODUCT WILL CAUSE BURNS ON CONTACT WITH SKIN

EFFECTS OF CHRONIC EXPOSURE TO MATERIAL

NOT AVAILABLE

LD_{50} OF MATERIAL SPECIFY SPECIES & ROUTE	LC_{50} OF MATERIAL SPECIFY SPECIES	EXPOSURE LIMIT OF MATERIAL	IRRITANCY OF MATERIAL
NOT AVAILABLE	NOT AVAILABLE	TLV/TWA 2 mg/m³ FOR PARAFFIN WAX FUMES (A.C.G.I.H.)	TLV LIMIT SET TO AVOID POSSIBLE IRRITATION
SENSITIZING CAPABILITY OF MATERIAL	**CARCINOGENICITY OF MATERIAL**	**REPRODUCTIVE EFFECTS OF MATERIAL**	**SYNERGISTIC MATERIALS**
NOT AVAILABLE	NOT AVAILABLE	NOT AVAILABLE	NONE KNOW

SECTION 7 - PREVENTIVE MEASURES

PERSONAL PROTECTIVE EQUIPMENT

GLOVES (SPECIFY)	RESPIRATORY (SPECIFY)	EYE (SPECIFY)
AS REQUIRED TO HANDLE HOT MATERIALS	NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION	NORMAL INDUSTRIAL EYE PROTECTION PRACTICES SHOULD BE EMPLOYED
FOOT WEAR (SPECIFY)	**CLOTHING (SPECIFY)**	**OTHER (SPECIFY)**
SPLASH RESISTANT	SPLASH RESISTANT	

ENGINEERING CONTROLS (SPECIFY e.g. VENTILATION ENCLOSED PROCESS)
LOCAL EXHAUST OR HOOD RECOMMENDED (FOR MOLTEN MATERIAL)

LEAK AND SPILL PROCEDURE: RECOVER FREE PRODUCT. KEEP PRODUCT OUT OF SEWERS AND WATERCOURSES BY DIKING OR IMPOUNDING. ALLOW TO SOLIDIFY AND SCRAPE UP.

WASTE DISPOSAL: DISPOSE OF IN APPROVED INCINERATOR OR LICENSED DISPOSAL FACILITY. FOLLOW LOCAL REGULATIONS.

HANDLING PROCEDURES AND EQUIPMENT: NO SPECIAL PROCEDURE OR EQUIPMENT REQUIRED.

STORAGE REQUIREMENTS: STORE NO HIGHER THAN 15°C ABOVE THE MELTING POINT. AVOID DIRECT EXPOSURE TO SUNLIGHT.

SPECIAL SHIPPING INFORMATION: NONE

SECTION 8 - FIRST AID MEASURE

EYE CONTACT: Immediately wash with fresh water for at least 15 minutes and get medical attention.

SKIN CONTACT: Wash contact areas with soap and water. If burned by hot product, cool molten material adhering to skin as quickly as possible and see a physician for removal of adhering material and treatment of burn.

INHALATION: Remove victim to fresh air. Seek medical attention.

INGESTION: Product is not acutely toxic by ingestion.

SOURCES USED:

A.C.G.I.H. "DOCUMENTATION OF THRESHOLD LIMIT VALUES"

F4

MATERIAL SAFETY DATA SHEET

IGI INTERNATIONAL WAXES
EMERGENCY PHONE: (416) 293-4151

SECTION 9 - MISCELLANEOUS

SECTION 10 - PREPARATION DATE OF THE M.S.D.S.

PREPARED BY: RESEARCH AND DEVELOPMENT LABORATORY PHONE: (416) 293-4151

DATE PREPARED: 02/94

APPROVED BY:

THE INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN ARE TO THE BEST OF OUR KNOWLEDGE AND BELIEF ACCURATE AND RELIABLE. WE DO NOT WARRANT OR GUARANTY THEIR ACCURACY AND ARE NOT LIABLE FOR ANY LOSS OR DAMAGE ARISING FROM THE USE THEREOF.

MATERIAL SAFETY DATA SHEET

Borden, Inc.
Packaging and Industrial Products Division
180 EAST BROAD STREET, COLUMBUS, OHIO 43215

IF IT'S BORDEN-IT'S GOT TO BE GOOD

Emergency Telephone
(614) 431-6600

THE OSHA HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200 REQUIRES THAT THE INFORMATION CONTAINED ON THESE SHEETS BE MADE AVAILABLE TO YOUR WORKERS. INSTRUCT YOUR WORKERS TO HANDLE THIS PRODUCT PROPERLY.
FOR INDUSTRIAL USE ONLY

LOUISIANA-PACIFIC CORP
ATTN:
STATION ROAD
NEW LIMERICK, ME 04761

NON-EMERGENCY TELEPHONE
(503) 746-8461

DESCRIPTION: CASCOPHEN OS57H
PRODUCT TYPE: LIQUID PF RESIN
APPLICATION: ORIENTED STRANDBOARD FACE RESIN

CUR ISS 14-SEP-94

SIGNAL WORD

WARNING!

This material is a "health hazard" and/or a "physical hazard" as determined when reviewed according to the requirements of the Occupational Safety and Health Administration 29 CFR Part 1910.1200 "Hazard Communication" Standard.

CHEMICAL HAZARD RATING

HEALTH=3(high)
FIRE=0(least)
REACTIVITY=1(slight)
CHRONIC=*

29CFR1910.1200 HAZARDOUS INGREDIENTS/REPORTED HEALTH EFFECTS

CAS/REGISTRY NO. MATERIAL DESCRIPTION

The ingredients listed below have been associated with one or more of the listed immediate and/or delayed(*) health hazards. Risk of damage and effects depends upon duration and level of exposure. BEFORE USING OR HANDLING, READ AND UNDERSTAND THE MSDS.

50-00-0 *FORMALDEHYDE
POTENTIAL CANCER HAZARD.
Rats chronically exposed to 14 ppm formaldehyde contracted nasal cancers. Based on animal data and limited epidemiological evidence, NTP and IARC have listed formaldehyde as a probable human carcinogen. OSHA regulates formaldehyde as a potential human carcinogen.

May cause allergic skin reaction. Some reports suggest that formaldehyde may cause respiratory sensitization, such as asthma, and that pre-existing respiratory and skin disorders may be aggravated by exposure.

Order #401451 Ship to #44818328

READ NEXT PAGE

29CFR1910.1200 HAZARDOUS INGREDIENTS/REPORTED HEALTH EFFECTS
CAS/REGISTRY NO. MATERIAL DESCRIPTION

OSHA has identified 0.5 ppm as the "Action Level", 29CFR 1910.1048. Please refer to the OSHA Standard for guidance applicable to your specific operations.

OSHA has stated that a concentration of 100 ppm is immediately dangerous to life and health and that the odor threshold for formaldehyde is 0.8-1 ppm, OSHA Occupational Exposure to Formaldehyde, 59 Fed. Reg. 22290, et seq.
ACGIH TLV: 0.3 ppm (0.37 mg/m3) Ceiling
OSHA PEL: 0.75 ppm(0.9 mg/m3) TWA; 2 ppm(2.5mg/m3)15min STEL
NIOSH DOCUMENT NUMBER: 77-126

PHYSICAL DATA	
FORM. FREE PF WAMTA11.1	<0.1%
PHENOL FREE, GC (OCF)	<0.5%
SP.GR. WESTPHAL BAL.	~1.26
STG. LIFE	2 WEEKS @ 21C (70F)
PH @ 25C	~11.3
CONTENT OF VOLATILE ORGANICS (VOC)	VOC EQUALS .50 LBS/GALLON LESS WATER
APPEARANCE	CLEAR LIQUID
COLOR	REDDISH BROWN
ODOR	SLIGHT AROMATIC
BOILING POINT	~102C
EVAPORATION RATE	~0.4 (N-BUTYL ACETATE=1)
FLASH POINT	NOT APPLICABLE
FREEZING POINT	<0C
AUTOIGNITION TEMPERATURE	NOT APPLICABLE
LOWER EXPLOSION LIMIT	NOT APPLICABLE
PERCENT VOLATILE BY WEIGHT	~43% @ 105C
SOLUBILITY IN WATER	INFINITE
UPPER EXPLOSION LIMIT	NOT APPLICABLE
VAPOR DENSITY	NOT APPLICABLE
VAPOR PRESSURE	~30MM HG @ 21C

IMMEDIATE HEALTH HAZARD DATA

SKIN ABSORPTION: No hazards known to Borden.
INGESTION: No hazards known to Borden.
INHALATION: Not expected to be harmful under normal conditions of use. However, if allowed to become airborne, may cause irritation of nose, throat and lungs. A similar product was found to be non-toxic by inhalation when tested as described in 16 CFR Part 1500.3 (c) (1) and (2).
SKIN: May cause irritation on prolonged or repeated

IMMEDIATE HEALTH HAZARD DATA

contact. A similar product was not a primary irritant (primary skin irritation index less than 5.0/8.0) when tested as described in 16 CFR Part 1500.41.
EYES: Causes chemical burns. A similar product was severely irritating when tested as described in 16 CFR Part 1500.42.

HANDLING PRECAUTIONS

INHALATION: Avoid prolonged or repeated breathing of vapor.
SKIN: Avoid prolonged or repeated contact with skin.
EYES: Do not get in eyes.
Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of the material from eyes, skin and clothing.
Wash thoroughly after handling.

EMERGENCY AND FIRST AID PROCEDURES

INGESTION: If accidently swallowed, dilute by drinking large quantities of water. Immediately contact poison control center or hospital emergency room for any other additional treatment directions.
INHALATION: Remove to fresh air.
SKIN CONTACT: In case of irritation, flush with water.
EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Eyelids should be held apart during irrigation to insure water contact with entire surface of eyes and lids. Call a physician.

FIRE AND EXPLOSION HAZARD DATA

Will not burn unless water has evaporated.
In case of fire, water should be used to keep fire-exposed containers cool.

REACTIVITY DATA

Normally stable, but may become unstable at high temperatures or may react with water.
Hazardous polymerization:
May occur.
Incompatibilities:
Oxidizers, acids.
Decomposition products may include:
CO, CO2, aldehydes (including formaldehyde), particulate matter and other organic compounds.

CONTROL MEASURES

If airborne contaminants are generated when the material is heated or handled, sufficient ventilation in volume and air flow patterns should be provided to keep air contaminant concentration levels below acceptable criteria.

ENGINEERING CONTROLS: The following exposure control techniques may be used to effectively minimize employee exposure: local exhaust ventilation, enclosed system design, process isolation and remote control in combination with appropriate use of personal protective equipment and prudent work practices. These techniques may not necessarily address all issues pertaining to your operations. We, therefore, recommend that you consult with experts of your choice to determine whether or not your programs are adequate.

PERSONAL PROTECTION INFORMATION

Use goggles if contact is likely.

Wear impervious gloves as required to prevent skin contact.

SPILL OR LEAK PROCEDURES

Large quantities: Enclose with diking material to prevent seepage into natural bodies of water, then consult Borden, Inc.

Small quantities: Soak up with absorbent material and remove to a chemical disposal area.

WASTE DISPOSAL

Recover free liquid. Absorb residue and dispose of according to local, state/provincial, and federal requirements.

STORAGE PRECAUTIONS

Store at 70 F or lower. Keep tightly closed.

TRANSPORT INFORMATION

REFER TO YOUR BILL OF LADING FOR PROPER DOT DESCRIPTION

BORDEN
IF ITS BORDEN-ITS GOT TO BE GOOD

MATERIAL SAFETY DATA SHEET

Borden, Inc.
Packaging and Industrial Products Division
180 EAST BROAD STREET, COLUMBUS, OHIO 43215

Emergency Telephone
(614) 431-6600

SARA TITLE III SECTION 313
AND 40 CFR Part 372
TOXIC CHEMICAL NOTIFICATION SHEET

CASCOPHEN 0S57H

This product contains the following toxic chemical(s) subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986, and Subpart C-Supplier Notification Requirement of 40 CFR Part 372.

CAS Registry Number	Chemical Name	Pct. By Weight

None required per SARA TITLE III SECTION 313

This Toxic Chemical Notification Sheet must not be detached from the Material Safety Data Sheet (MSDS). Any copying and redistribution of the MSDS shall include copying and redistribution of this notification sheet attached to copies of the MSDS subsequently redistributed.

040 45-0S57H-. PRINT DATE: 23-Sep-94 02:00 PM

MATERIAL SAFETY DATA SHEET

ICI Polyurethanes Group
West Deptford, New Jersey 08066
Phone, 24 hours: (302) 886-3000
Medical inquiries: (800) 327-8633
Chemtrec: (800) 424-9300

Issue Date: 12/16/92

MSDS#: 2289
Rev.: F

SECTION 1 NAME & HAZARD SUMMARY

***Material name: RUBINATE 1840 (formerly RUBINATE MF-184)

Hazard summary (as defined by OSHA Hazard Comm. Std., 29 CFR 1910.1200):
Physical hazards: None (see Section 5)
Health hazards: Based on MDI - irritant (eye, skin, respiratory passages, skin sensitizer), inhalation (TLV), harmful (respiratory sensitizer, lung injury).

Read the entire MSDS for a more thorough evaluation of the hazards.

SECTION 2 INGREDIENTS

	%	OSHA PEL
***Isocyanic acid, polymethylene polyphenylene ester ("polymeric" MDI; CAS 9016-87-9)	100	Not listed
CONTAINS:		
4,4'-Diphenylmethane diisocyanate (4,4'-MDI; CAS 101-68-8)		0.02 ppm, ceiling
Other MDI isomers and oligomers		Not listed

Ingredients not precisely identified are proprietary or nonhazardous. Values are not product specifications.

SECTION 3 PHYSICAL DATA

*** Appearance and odor: Dark brown viscous liquid
Boiling point: Decomposes at 646°F, 341.1°C
Vapor pressure (mm Hg at 20°C): <0.0001
*** Vapor density (air = 1): 8.5
Solubility in water: Reacts
pH: No data
Specific gravity: 1.2
% Volatile by volume: No data

SECTION 4 FIRE AND EXPLOSION HAZARD DATA

Flash point: 425°F, 218°C (COC)
Autoignition temperature: No data
Flammable limits (STP): No data

Extinguishing media:
Dry chemical, foam, carbon dioxide, halogenated agents. If water is used, use very large quantities. The reaction between water and hot isocyanate may be vigorous.

SECTION 6 HEALTH HAZARD ASSESSMENT (continued)

Skin absorption:

Systemically toxic concentrations of this product will probably not be absorbed through human skin.

Inhalation:

Vapors and aerosols can irritate eyes, nose and respiratory passages. Severe overexposure may lead to pulmonary edema. MDI can induce respiratory sensitization with asthma-like symptoms similar to those induced by TDI (toluene diisocyanate). Symptoms include chronic cough, tightness of chest with difficulty in breathing. These symptoms may be immediate or delayed up to several hours after exposure. There are reports that chronic exposures may result in permanent decreases in lung function.

Other effects of overexposure:

Recently, a study was completed where groups of rats were exposed for 6 hours/day, 5 days/week for a lifetime to atmospheres of respirable polymeric MDI aerosol. Overall, the tumor incidence, both benign and malignant, and the number of animals with tumors were not different from controls. However, at the top level only (6 mg/m^3), there was a significant incidence of a benign tumor of the lung (adenoma) and one malignant tumor (adenocarcinoma). There were no lung tumors at 1 mg/m^3 and no effects at 0.2 mg/m^3. The increased incidence of lung tumors is associated with prolonged respiratory irritation and the concurrent accumulation of yellow material in the lung which occurred throughout the study. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumor formation will occur.

First aid procedures:

Skin: Wash material off of the skin with plenty of soap and water. If redness, itching, or a burning sensation develops, get medical attention.
Eyes: Immediately flush with plenty of water for at least 15 minutes. If redness, itching, or a burning sensation develops, have eyes examined and treated by medical personnel.
Ingestion: Give 1 or 2 glasses of water to drink. If gastrointestinal symptoms develop, consult medical personnel. (Never give anything by mouth to an unconscious person.)
Inhalation: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is labored, give oxygen. Consult medical personnel.

SECTION 7 SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled:

Wear skin, eye, and respiratory protection during cleanup. Soak up material with absorbent and shovel into a chemical waste container. Cover container, but do not seal, and remove from work area. Prepare a decontamination solution of 0.2-0.5% liquid detergent and 3-8% concentrated ammonium hydroxide in water (5-10% sodium carbonate may be substituted for the ammonium hydroxide). Follow the precautions on the supplier's material safety data sheets. All operations should be performed by trained personnel familiar with the hazards of the chemicals used. Treat the spill area with the decontamination solution, using about 10 parts of solution for each part of the spill, and allow it to react for at least 10 minutes. Carbon dioxide will be evolved, leaving insoluble polyureas. For major spills, call CHEMTREC (Chemical Transportation Emergency Center) at 800-424-9300.

SECTION 8 SPECIAL PROTECTION INFORMATION (continued)

Protective clothing (continued):

Testing of some commercially available protective clothing indicates that clothing constructed of butyl rubber, nitrile rubber, Saranex® coated Tyvek® and some neoprene garments have excellent resistance to permeation by MDI. Clothing constructed of neoprene/latex rubber and some PVC garments exhibited limited resistance to permeation by MDI. Clothing constructed of polyethylene, latex rubber, PVC or polylaminated Tyvek® showed little resistance to permeation by MDI. Protective clothing should be selected and used in accordance with "Guidelines for the Selection of Chemical Protective Clothing" published by ACGIH.

Eye protection:

Chemical tight goggles; full faceshield in addition if splashing is possible.

Other protective equipment:

Eyewash station and safety shower in work area.

SECTION 9 SPECIAL PRECAUTIONS OR OTHER COMMENTS

Special precautions or other comments:

Prevent skin and eye contact. Observe TLV limitations. Avoid breathing vapors or aerosols. Workers should shower and change to fresh clothing after each shift. A sensitized individual should not be exposed to the product which caused the sensitization. Store in tightly sealed containers to protect from atmospheric moisture. Store in a cool area. Individuals with existing respiratory disease such as chronic bronchitis, emphysema or asthma should not be exposed to isocyanates. These individuals should be identified through baseline and annual evaluation and removed from further exposure. Medical examination should include medical history, vital capacity, and forced expiratory volume at one second.

SECTION 10 REGULATORY INFORMATION

TSCA (Toxic Substances Control Act) Regulations, 40 CFR 710:

All ingredients are on the TSCA Chemical Substance Inventory.

*** CEPA (Canadian Environmental Protection Act):

All ingredients are on the DSL (Domestic Substances List).

CERCLA and SARA Regulations (40 CFR 355, 370, and 372):

Section 313 Supplier Notification. This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372:

50% MDI, listed as Methylenebis(phenylisocyanate), MBI (CAS 101-68-8)

Prepared by: "Polyurethanes SHE" Telephone: (609) 423-8518

Prepared/Reviewed: 12/16/92
CCDB: C11021
CIDS: 23019

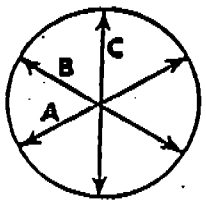
***This line or section contains revisions or new statements since the last issue date.

Appendix E

Calibration Data

TRC
NOZZLE CALIBRATION DATA SHEET

NOZZLE SET NO.: SS SET 1 DATE: 1-5-95 TECHNICIAN: D. PARRETTE

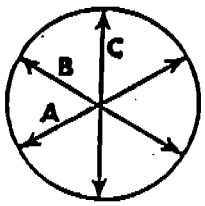


NOZZLE NO.	DIAMETER*	A	B	C	AVERAGE**
1-1		.197	.197	.197	.197
1-2					
1-3		.377	.379	.380	.379
1-4		.259	.260	.262	.260
1-5		.731	.731	.731	.731
1-6		.126	.127	.127	.127
1-7		.925	.925	.925	.925

* Measure to nearest .001".
** Three measurements must be within .004" of each other.

TRC
NOZZLE CALIBRATION DATA SHEET

NOZZLE
SET NO.: SS SET 2 DATE: 1-3-95 TECHNICIAN: D. PARRETTE



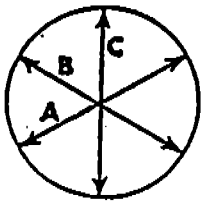
NOZZLE NO.	DIAMETER*	A	B	C	AVERAGE**
2-2		.261	.261	.261	.261
2-3		.379	.380	.379	.379
2-4		.505	.504	.505	.505
2-5		.129	.129	.129	.129
2-6		.918	.918	.918	.918
2-7		.740	.740	.740	.740
2-8		.311	.312	.311	.311

* Measure to nearest .001".
** Three measurements must be within .004" of each other.

TRC

NOZZLE CALIBRATION DATA SHEET

NOZZLE SET NO.: 55 SETS DATE: 1-5-94 TECHNICIAN: D. PARRETTE



NOZZLE NO.	DIAMETER*	A	B	C	AVERAGE**
5-1		.121	.121	.122	.121
5-3		.251	.250	.252	.251
5-4		.373	.374	.373	.373
5-5		.496	.498	.496	.497
5-6		.187	.187	.187	.187
5-7		.752	.751	.751	.751
5-8		.309	.309	.308	.309

* Measure to nearest .001".
** Three measurements must be within .004" of each other.

METHOD 5 MODULE CALIBRATION

ORIFICE/MODULE NO. 80823
BAROMETRIC PRESSURE (P_b) 30.20 in. Hg
DATE 3/7/95

DGM SERIAL NO. 2547143
STANDARD METER 16744
NAME DUANE PARRETTE

MODULE ORIFICE SETTING ΔH (in H_2O)	STANDARD METER				MODULE METER					
	VOLUME V_s (ft^3)	FACTOR Y_s	TEMPERATURE t_s (°F)	PRESSURE ΔP_s (in H_2O)	VOLUME V_m (ft^3)	TEMPERATURE t_{mi} (°F)	TEMPERATURE t_{mo} (°F)	TIME θ (min.)	Y	ΔH@ (in H_2O)
0.5	5	1.00	73	-0.50	4.983	76	76	12.67	1.01	1.79
1.0	5	1.00	73	-0.70	4.995	77	77	9.46	1.00	1.99
1.5	10	1.00	73	-0.92	9.982	76	77	14.91	1.00	1.85
2.0	10	1.00	73	-1.25	9.962	76	77	12.70	1.00	1.79
3.0	10	1.00	73	-1.70	9.934	77	77	10.37	1.00	1.79
								AVERAGE	1.00	1.84

FOR CHECK, USE THE AVERAGE ΔH@ FOR ΔH:

$$Y = \frac{V_s \left(P_b + \frac{P_s}{13.6}\right)(t_m + 460)\, Y_s}{V_m \left(P_b + \frac{\Delta H}{13.6}\right)(t_s + 460)}$$

$$\Delta H@ = \left[\frac{(0.0317)\,\Delta H}{P_b\,(t_m + 460)}\right]\left[\frac{(t_s + 460)\,\theta}{V_s\,Y_s}\right]^2$$

ACCEPTANCE CRITERIA:

Each Y must be 1.00 ± 0.01

Average ΔH@ must be 1.84 ± 0.25

Each ΔH@ must be within 0.15 of the average ΔH@

TC Readout Calibrated with Constant Voltage Source _____
t_{mi} 74 ok °F t_{mo} 74 ok °F Reference Thermometer ok 74 °F
Module Leak Check ok
Heater Box Control OK ok Probe Heater Control ok
Module Cleaned ok Pitot Tube Manometer Leak Check ok

Calibrated and Checked by Duane Parrette Date 3/7/95
Reviewed by _____ Date _____

5/3/83 - Rev. 12/91

TRC

METHOD 5 MODULE CALIBRATION

ORIFICE/MODULE NO. 80836
BAROMETRIC PRESSURE (P_b) 29.76 in. Hg
DATE 3/28/95

DGM SERIAL NO. ~~80823~~ 2713311
STANDARD METER 16749
NAME DUANE PARRETTE

MODULE ORIFICE SETTING ΔH (in H_2O)	STANDARD METER				MODULE METER				Y	ΔH@ (in H_2O)
	VOLUME V_s (ft^3)	FACTOR Y_s	TEMPERATURE t_s (°F)	PRESSURE ΔP_s (in H_2O)	VOLUME V_m (ft^3)	TEMPERATURE t_{mi} (°F)	TEMPERATURE t_{mo} (°F)	TIME θ (min.)		
0.5	5	1.00	71.5	-0.50	4.954	74	74	12.60	1.01	1.80
1.0	5	1.00	71.5	-0.76	4.953	74	74	9.17	1.01	1.91
1.5	10	1.00	71.5	-1.00	9.965	75	75	15.45	1.00	2.02
2.0	10	1.00	71.5	-1.20	9.989	75	75	13.39	1.00	2.03
3.0	10	1.00	71.5	-1.60	10.000	76	76	10.88	1.00	2.00
								AVERAGE	1.00	1.95

FOR CHECK, USE THE AVERAGE ΔH@ FOR ΔH:

$$Y = \frac{V_s \left(P_b + \frac{P_s}{13.6}\right)(t_m + 460)\, Y_s}{V_m \left(P_b + \frac{\Delta H}{13.6}\right)(t_s + 460)}$$

$$\Delta H@ = \left[\frac{(0.0317)\,\Delta H}{P_b\,(t_m + 460)}\right]\left[\frac{(t_s + 460)\,\theta}{V_s\, Y_s}\right]^2$$

ACCEPTANCE CRITERIA:

Each Y must be 1.00 ± 0.01

Average ΔH@ must be 1.84 ± 0.25

Each ΔH@ must be within 0.15 of the average ΔH@

TC Readout Calibrated with Constant Voltage Source _____
t_{mi} 77 °F t_{mo} 77 °F Reference Thermometer 76.8 °F
Module Leak Check o/c
Heater Box Control OK o/c Probe Heater Control o/c
Module Cleaned o/c Pitot Tube Manometer Leak Check o/c

Calibrated and Checked by Duane Parrette Date _____
Reviewed by _____ Date _____

TRC

METHOD 5 MODULE CALIBRATION

ORIFICE/MODULE NO. 808 36
BAROMETRIC PRESSURE (P_b) 29.50 in. Hg
DATE 4-22-95

DGM SERIAL NO. 7213311
STANDARD METER # 16744
NAME S. Bayko

MODULE ORIFICE SETTING ΔH (in H_2O)	STANDARD METER				MODULE METER					
	VOLUME V_s (ft^3)	FACTOR Y_s	TEMPERATURE t_s (°F)	PRESSURE ΔP_s (in H_2O)	VOLUME V_m (ft^3)	TEMPERATURE t_{mi} (°F)	TEMPERATURE t_{mo} (°F)	TIME θ (min.)	Y	ΔH@ (in H_2O)
.5	5	1.00	70	-.51	4.943	74	69	12.58	1.01	1.78
1.0	5	↓	↓	-.75	4.953	71	71	9.08	1.01	1.87
1.5	10	↓	↓	-1.00	9.904	72	72	15.10	1.01	1.94
2.0	10	↓	↓	-1.18	9.946	72	72	13.12	1.00	1.95
3.0	10	↓	↓	-1.65	9.915	72	72	10.78	1.00	1.97
								AVERAGE	1.01	1.90

FOR CHECK, USE THE AVERAGE ΔH@ FOR ΔH:

$$Y = \frac{V_s \left(P_b + \frac{P_s}{13.6}\right)(t_m + 460)\, Y_s}{V_m \left(P_b + \frac{\Delta H}{13.6}\right)(t_s + 460)}$$

$$\Delta H@ = \left[\frac{(0.0317)\,\Delta H}{P_b\,(t_m + 460)}\right]\left[\frac{(t_s + 460)\,\theta}{V_s\,Y_s}\right]^2$$

ACCEPTANCE CRITERIA:

Each Y must be 1.00 ± 0.01

Average ΔH@ must be 1.84 ± 0.25

Each ΔH@ must be within 0.15 of the average ΔH@

TC Readout Calibrated with Constant Voltage Source _____
t_{mi} 73 °F t_{mo} 73 °F Reference Thermometer 72.6 °F
Module Leak Check ok
Heater Box Control OK ok Probe Heater Control ok
Module Cleaned OK Pitot Tube Manometer Leak Check ok

Calibrated and Checked by Stephen Bayko Date 4-22-95
Reviewed by _____ Date _____

TRC

METHOD 5 MODULE CALIBRATION

MODULE ORIFICE SETTING ΔH (in Hg)	STANDARD METER		DRY GAS METER	
	Total VOL ~~Final~~	VOL ~~Initial~~	VOL_{Final}	$VOL_{Initial}$
0.5	5		24.443	19.500
1.0	5		29.453	24.500
1.5	10		40.704	30.800
2.0	10		50.650	40.704
3.0	10		60.565	50.650

Operator S Bayko Date 4-22-95

Status (Circle One): (Green) Red

Was Any Maintenance Performed (Circle One): Yes (No)

If Yes, Please Describe in Detail Below:

12/91

TRC

TRC Environmental Consultants, Inc.

Scott Specialty Gases, Inc.
2330 HAMILTON BOULEVARD SOUTH PLAINFIELD NJ 07080 (908)754-7700 FAX:(908)754-7303

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
TRC ENVIRONMENTAL
5 Waterside Crossing
Receiving Department
Windsor CT 06095
Attn.:ED SANTOS

Assay Laboratory
Scott Specialty Gases
2330 Hamilton Blvd
South Plainfield NJ 07080

Purchase order 25736
Scott Project #0730539

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards -Procedure G1 September 1993

Cylinder Number ALM027771
Cylinder Pressure 2000psig
Certification Date 11-02-1994
Expiration Date11-02-1997

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
(PROPANE)	9.38ppm	+/-1%NIST Directly Traceable
(Air cas132259100)	Balance	

*Do not use when cylinder Pressure is below 150 psig
*Analytical accuracy is inclusive of usual known error sour[illegible] which at least includes precision of the measurement processes

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
NTRMC3192	06/29/96	ALM025923	8.21 ppmC3H8 in AIR

INSTRUMENTATION

Instrument/Model/Serial#	Date Last Calibrated	Analytical Principle
C3H8:Varian-3700-56519277	10/06/1994	GC FID

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components	First Triad Analysis	Second Triad Analysis	Calibration Curve
PROPANE	Date: 11-02-1994 Response units: ppm Z1=0 R1= 8.21 T1=9.40 R2= 8.21 Z2=0 T2=9.36 Z3=0 T3=9.38 R3= 8.21 Ave. Conc. of Cust. Cyl.= 9.38		Concentration=A+Bx+Cx^2+Dx^3+Ex^4 r=0.9999957 Constants: A= -2.00231E-01 B=4.1478E-04 C= D= E=

Special Notes

Analyst Adela Sy

Scott Specialty Gases

2330 HAMILTON BOULEVARD SOUTH PLAINFIELD NJ 07080 (908)754-7700 FAX:(908)754-7303

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
TRC ENVIRONMENTAL
5 Waterside Crossing
Receiving Department
Windsor CT 06095
Attn: Scott Patterson

Assay Laboratory
Scott Specialty Gases
2330 Hamilton Blvd
South Plainfield NJ 07080

Purchase order 26565
Scott Project #0734167

ANALYTICAL INFORMATION
This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards -Procedure G1 September 1993

Cylinder Number ALM026158
Cylinder Pressure 2000psig

Certification Date 04-06-1995

Expiration Date 4-06-1998

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
(PROPANE)	30.0ppm	+/-1%NIST Directly Traceable
(Air cas132259100)	Balance	

*Do not use when cylinder Pressure is below 150 psig
*Analytical accuracy is inclusive of usual known error sources which at least includes precision of the measurement processes

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
NTRMC3392	06/29/96	ALM025146	33 ppmC3H8 in AIR

INSTRUMENTATION

Instrument/Model/Serial#	Date Last Calibrated	Analytical Principle
C3H8-Varian-3700-56519277	03/07/1995	GC FID

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components	First Triad Analysis	Second Triad Analysis	Calibration Curve
PROPANE	Date: 04-06-1995 Response units: ppm Z1=0 R1= 33 T1=30.0 R2= 33 Z2=0 T2=30.0 Z3=0 T3=30.0 R3= 33 Ave. Conc. of Cust. Cyl.= 30		Concentration=A+Bx+Cx^2+Dx^3+Ex^4 r=0.9999957 Constants: A= -2.00231E-01 B=4.1478E-04 C= D= E=

Special Notes

Analyst Adela Sy

Scott Specialty Gases

2330 HAMILTON BOULEVARD SOUTH PLAINFIELD NJ 07080 (908)754-7700 FAX:(908)754-7303

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
TRC ENVIRONMENTAL
5 Waterside Crossing
Receiving Department
Windsor CT 06095
Attn: Scott Patterson

Assay Laboratory
Scott Specialty Gases
2330 Hamilton Blvd
South Plainfield NJ 07080

Purchase order 26565
Scott Project #0734167

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards -Procedure G1 September 1993

Cylinder Number ALM015730
Cylinder Pressure 2000psig
Certification Date 04-06-1995
Expiration Date 4-06-1998

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
(PROPANE)	48.6ppm	+/-1%NIST Directly Traceable
(Air cas132259100)	Balance	

*Do not use when cylinder Pressure is below 150 psig
*Analytical accuracy is inclusive of usual known error sources which at least includes precision of the measurement processes

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
SRM1667B	09/30/96	CLM005277	47.3 ppmC3H8 in N2

INSTRUMENTATION

Instrument/Model/Serial#	Date Last Calibrated	Analytical Principle
C3H8:Varian-3700-56519277	03/07/1995	GC FID

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components	First Triad Analysis	Second Triad Analysis	Calibration Curve
PROPANE	Date: 04-06-1995 Response units: ppm Z1=0 R1= 47.3 T1=48.7 R2= 47.3 Z2=0 T2=48.6 Z3=0 T3=48.6 R3= 47.3 Ave. Conc. of Cust. Cyl.= 48.6		Concentration=A+Bx+Cx^2+Dx^3+Ex^4 r=0.9999957 Constants: A= -2.00231E-01 B=4.1478E-04 C= D= E=

Special Notes

Analyst Adela Sy

Scott Specialty Gases, Inc.

2330 HAMILTON BOULEVARD SOUTH PLAINFIELD NJ 07080 (908)754-7700 FAX:(908)754-7303

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
TRC ENVIRONMENTAL
5 Waterside Crossing
Receiving Department
Windsor CT 06095
Attn.:ED SANTOS

Assay Laboratory
Scott Specialty Gases
2330 Hamilton Blvd
South Plainfield NJ 07080

Purchase order 25736
Scott Project #0730539

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards -Procedure G1 September 1993

Cylinder Number ALM043750
Cylinder Pressure 2000psig
ANALYZED CYLINDER

Certification Date 11-02-1994

Expiration Date11-02-1997

Components	Certified Concentration	Analytical Uncertainty*
(PROPANE)	90.9ppm	+/-1%NIST Directly Traceable
(Air cas132259100)	Balance	

*Do not use when cylinder Preasure is below 150 psig
*Analytical accuracy is inclusive of usual known error sources which at least includes precision of the measurement processes

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
SRM2643A	11/25/96	SX20447	99.1 ppmC3H8 in N2

INSTRUMENTATION

Instrument/Model/Serial#	Date Last Calibrated	Analytical Principle
C3H8:Varian-3700-56519277	10/06/1994	GC FID

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components	First Triad Analysis	Second Triad Analysis	Calibration Curve
PROPANE	Date: 11-02-1994 Response units: ppm Z1=0 R1= 99.1 T1=91.1 R2= 99.1 Z2=0 T2=91.0 Z3=0 T3=90.7 R3= 99.1 Ave. Conc. of Cust. Cyl.= 90.9		Concentration=A+Bx+Cx^2+Dx^3+Ex^4 r=0.9999957 Constants: A= -2.00231E-01 B=4.1478E-04 C= D= E=

Special Notes

Analyst John O'shea

Scott Specialty Gases, Inc.

2330 HAMILTON BOULEVARD SOUTH PLAINFIELD NJ 07080 (908)754-7700 FAX:(908)754-7303

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
TRC ENVIRONMENTAL
5 Waterside Crossing
Receiving Department
Windsor CT 06095
Attn.:ED SANTOS

Assay Laboratory
Scott Specialty Gases
2330 Hamilton Blvd
South Plainfield NJ 07080

Purchase order 25736
Scott Project #0730539

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards -Procedure G1 September 1993

Cylinder Number ALM043745
Certification Date 11-02-1994
Expiration Date11-02-1997
Cylinder Pressure 2000psig

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
(PROPANE)	150ppm	+/-1%NIST Directly Traceable
(Air cas132259100)	Balance	

*Do not use when cylinder Pressure is below 150 psig
*Analytical accuracy is inclusive of usual known error sources which at least includes precision of the measurement processes

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
SRM2645A	09/07/97	FF27143	498 ppmC3H8 in N2

INSTRUMENTATION

Instrument/Model/Serial#	Date Last Calibrated	Analytical Principle
C3H8:Varian-3700-56519277	10/06/1994	GC FID

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components	First Triad Analysis	Second Triad Analysis	Calibration Curve
PROPANE	Date: 11-02-1994 Response units: ppm Z1=0 R1= 498 T1=150 R2= 498 Z2=0 T2=150 Z3=0 T3=149 R3= 498 Ave. Conc. of Cust. Cyl.= 150		Concentration=A+Bx+Cx^2+Dx^3+Ex^4 r=0.9999957 Constants: A= -2.00231E-01 B=4.1478E-04 C= D= E=

Special Notes

Analyst Adela Sy

Scott Specialty Gases, Inc.

2330 HAMILTON BOULEVARD, SOUTH PLAINFIELD, NJ 07080 (908) 754-7700 FAX: (908) 754-7303

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
TRC ENVIRONMENTAL
5 WATERSIDE CROSSING
RECEIVING DEPT
WINDSOR CT 06095

Assay Laboratory
Scott Specialty Gases
2330 Hamilton Blvd.
South Plainfield,NJ 07080

Purchase Order 24103
Scott Project # 0723322

ANALYTICAL INFORMATION

Certified to exceed the minimum specifications of EPA Protocol 1 Procedure #G1, Section Number 3.0.4

Cylinder Number 1L1710
Cylinder Pressure 2000 psig

Certification Date 9/30/93
Previous Certification Dates

Expiration Date 9/30/96

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Propane	249 ppm	+/-1% NIST Directly Traceable
Air	Balance	

*Analytical uncertainty is inclusive of usual known error sources which at least includes reference standard error & precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
SRM2645A	9/27/97	FF27143	498 ppm C3H8 in N2

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Varian /3700/ 56519277	9/9/93	GC-FID

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components: propane

First Triad Analysis

Date:9/30/93 Response Units:PPM
ZI=0 R1=498 T1=249
R2=498 Z2=0 T2=249
Z3=0 T3=249 R3=498
Ave. Conc. of Cust. Cyl.=249

Second Triad Analysis

Date: Response Units:
ZI= R1= T1=
R2= Z2= T2=
Z3= T3= R3=
Ave. Conc. of Cust. Cyl.=

Calibration Curve

Concentration=$A+Bx+Cx^2+Dx^3+Ex^4$
r=0.9999926
Constants: A=1.5815E-01
B=4.7835E-05 C=
D= E=

Special Notes

Analyst JOHN O'SHEA

Scott Specialty Gases, Inc.

2330 HAMILTON BOULEVARD, SOUTH PLAINFIELD, NJ 07080 (908) 754-7700 FAX: (908) 754-7303

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
TRC ENVIRONMENTAL
5 WATERSIDE CROSSING
RECEIVING DEPT
WINDSOR CT 06095

Assay Laboratory
Scott Specialty Gases
2330 Hamilton Blvd.
South Plainfield,NJ 07080

Purchase Order 24103
Scott Project # 0723322

ANALYTICAL INFORMATION

Certified to exceed the minimum specifications of EPA Protocol 1 Procedure #G1, Section Number 3.0.4

Cylinder Number AAL19351
Cylinder Pressure 2000 psig
Certification Date 9/30/93
Previous Certification Dates
Expiration Date 9/30/96

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Propane	494 ppm	+/-1% NIST Directly Traceable
Air	Balance	

*Analytical uncertainty is inclusive of usual known error sources which at least includes reference standard error & precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
SRM2645A	9/27/97	FF27143	498 ppm C3H8 in N2

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Varian /3700/ 56519277	9/9/93	GC-FID

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components	First Triad Analysis	Second Triad Analysis	Calibration Curve
propane	Date:9/30/93 Response Units:PPM ZI=0 R1=498 T1=494 R2=498 Z2=0 T2=494 Z3=0 T3=494 R3=498 Ave. Conc. of Cust. Cyl.=494	Date: Response Units: ZI= R1= T1= R2= Z2= T2= Z3= T3= R3= Ave. Conc. of Cust. Cyl.=	Concentration= $A+Bx+Cx^2+Dx^3+Ex^4$ r=0.9999926 Constants: A=1.5815E-01 B=4.7835E-05 C= D= E=

Special Notes

Analyst JOHN O'SHEA