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RESULTS OF THE MARCH 30 - APRIL 2, 1992
EPA-AIR EMISSION COMPLIANCE TESTS
AT THE LOUISIANA-PACIFIC PLANT
IN NEW WAVERLY, TEXAS

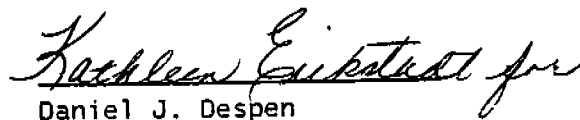
Submitted to:

LOUISIANA-PACIFIC CORPORATION
P.O. Box 3107
Conroe, Texas 77305

Attention:

Dr. Jim Boswell
Director of Environmental Control

Approved by:



Daniel J. Despen
Manager
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Report Number 2-3533
May 18, 1992
SP/slp

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ABBREVIATIONS

ACFM	actual cubic feet per minute
cc (ml)	cubic centimeter (milliliter)
DSCFM	standard cubic foot of dry gas per minute
DSML	dry standard milliliter
DEG-F (°F)	degrees Fahrenheit
DIA.	diameter
FP	finished product for plant
FT/SEC	feet per second
g	gram
GPM	gallons per minute
GR/ACF	grains per actual cubic foot
GR/DSCF	grains per dry standard cubic foot
g/dscm	grams per dry standard cubic meter
HP	horsepower
HRS	hours
IN.	inches
IN.HG.	inches of mercury
IN.WC.	inches of water
LB	pound
LB/DSCF	pounds per dry standard cubic foot
LB/HR	pounds per hour
LB/10 ⁶ BTU	pounds per million British Thermal Units heat input
LB/MMBTU	pounds per million British Thermal Units heat input
LTPD	long tons per day
MW	megawatt
mg/Nm ³	milligrams per dry standard cubic meter
ug/Nm ³	micrograms per dry standard cubic meter
microns (um)	micrometer
MIN.	minutes
ng	nanograms
ohm-cm	ohm-centimeter
PM	particulate matter
PPH	pounds per hour
PPM	parts per million
ppmC	parts per million carbon
ppm,d	parts per million, dry
ppm,w	parts per million, wet
ppt	parts per trillion
PSI	pounds per square inch
SQ.FT.	square feet
TPD	tons per day
ug	micrograms
v/v	percent by volume
w/w	percent by weight
<	< (when following a number)

Standard conditions are defined as 68 °F (20 °C) and 29.92 IN. of mercury pressure.

1 INTRODUCTION

During the period March 30 - April 2, 1992 Interpoll Laboratories personnel conducted Federal air emission compliance tests at the Louisiana Pacific Corporation (LP) Plant located in New Waverly, Texas. On-site testing was performed by Mark Kaehler, Duke Brennan, Curt Mosser, and Bob Aschenbach. Coordination between testing activities and plant operation was provided by Randy Bennett of LP. The test was witnessed by Jeffrey Burdette and Jim Peters, who were representing the Environmental Protection Agency.

Particulate evaluations were performed in accordance with EPA Methods 2-5, CFR Title 40, Part 60, Appendix A (revised July 1, 1991). A preliminary determination of the gas linear velocity profile was made before the first particulate determination to allow selection of the appropriate nozzle diameter for isokinetic sample withdrawal. An Interpoll Labs sampling train which meets or exceeds specifications in the above-cited reference was used to isokinetically extract particulate samples by means of a heated glass-lined probe. Wet catch samples were collected in the back half of the Method 5 sampling train to provide samples for methylene chloride extraction to determine total condensible organic compounds. A yaw angle determination was performed in accordance with EPA Method 1, Section 2.4 using an S-Type pitot tube system which allows rotation of the pitot tube on its long axis for nulling and measurement of the yaw angle.

PM-10 determinations were performed in accordance with EPA Method 201A (Ibid, Part 51, Appendix M). An Interpoll Labs sampling train which meets or exceeds specifications in the above-cited reference was used to extract PM-10 samples by means of an Anderson PM-10 cyclone and a stainless steel probe. The cyclone used in this work meets or exceeds the specifications of Method 201A. Velocity pressure measurements were made prior to each run to determine the proper dwell times at each traverse point.

Formaldehyde samples were collected in accordance with EPA Draft Method 0011 (SW 846 3rd Ed.). The samples were collected isokinetically using a Method 5 sampling train with an aqueous acidic 2,4-dinitrophenylhydrazine absorbing solution and analyzed by high performance liquid chromatography.

Total gaseous hydrocarbon concentrations were determined instrumentally using a Ratfish Model RS55 heated flame ionization detector (HFID) calibrated against propane in air standards. The THC concentration was continuously monitored by extracting a slipstream of exhaust gas by means of a heated probe and filter holder. A heat-traced teflon line was used to transport the sample gas from the filter holder outlet to the analyzer inlet.

Carbon monoxide determinations were performed in accordance with EPA Method 10 (Ibid). Concentrations were determined using a non-dispersive infrared (NDIR) continuous emission monitor.

Testing on the No. 1 Dryer was conducted from two test ports oriented at 90 degrees on the stack. The test ports are located greater than 8 stack diameters downstream of the nearest flow disturbance and greater than 2 stack diameters upstream of the stack exit. A 12-point traverse was used to isokinetically collect the particulate and formaldehyde samples. Each traverse point was sampled five minutes to give a total sampling time of sixty minutes per run. The PM-10 run times varied from 78.8 to 87.6 minutes. A yaw angle determination was performed prior to sampling. The average of the absolute value was found to be 1° which meets the EPA specifications of less than 20°.

Testing on the No. 2 Dryer was conducted from two test ports oriented at 90 degrees on the stack. The test ports are located greater than eight stack diameters downstream of the nearest flow disturbance and greater than two diameters upstream of the stack exit. A 12-point traverse was used to isokinetically collect the particulate and formalde-

hyde samples. Each traverse point was sampled five minutes to give a total sampling time of sixty minutes per run. The PM-10 run times varied from 76.9 to 77.8 minutes.

Testing on the No. 1,2 and 3 Press Vents and the No. 4 Forming Line Vent was conducted from two test ports oriented at 90 degrees on the stack. The test ports are located < 0.5 diameters downstream of the nearest flow disturbance (approved by the EPA) and .5 diameters upstream of the stack exit. A 24-point traverse was used at each test site to isokinetically collect the particulate and formaldehyde samples. Each traverse point was sampled 2.5 minutes to give a total sampling time of sixty minutes per run.

The important results of the test are summarized in Section 2. Detailed results are presented in Section 3. Field data and all other supporting information are presented in the appendices.

2 SUMMARY AND DISCUSSION

The important results of the particulate and PM-10 emission compliance tests are summarized in Tables 1 - 8. An overview of the results is presented below:

Source	Emission Rates	
	Particulate	PM-10
	(LB/HR)	(LB/HR)
No. 1 Dryer	21.7	18.7
No. 2 Dryer	15.2	17.1
No. 1 Press Vent	3.62	NA
No. 2 Press Vent	4.16	NA
No. 3 Press Vent	4.26	NA
No. 4 Form Line Vent	2.09	NA

Carbon monoxide determinations were performed on the Nos 1 & 2 Dryers. The results of those determinations are summarized in Tables 9 and 10, and an overview provided below:

Source	Concentration	Emission rate
	(ppm,w)	(LB/HR)
No. 1 Dryer	31	9.6
No. 2 Dryer	41	13

Source category:

Reconstituted wood products

Date:

Plant name :

L-P, New Waverly

Location:

Test date :

Ref. No.: 5

Process :

Basis for process rate :

Source	Type of control	Pollutant	Run No.	Emission rate, lb/hr	Process rate, ton/hr	Emission factor	
						kg/Mg	lb/ton
Dryer No. 1 Wood-fired <i>M25A TAC Reported as Carbon</i>	???	filt. PM	1	17.71	5.40	1.64	3.28
		filt. PM	2	16.34	5.25	1.56	3.11
		filt. PM	3	14.56	5.40	1.35	2.70
		AVERAGE				1.51	3.03
		cond. inorg. PM		2.47	5.40	0.229	0.457
		cond. inorg. PM	2	4.43	5.25	0.422	0.845
		cond. inorg. PM	3	2.95	5.40	0.273	0.547
		AVERAGE				0.308	0.616
		cond. org. PM	1	2.58	5.40	0.239	0.478
		cond. org. PM	2	2.13	5.25	0.203	0.405
		cond. org. PM	3	1.80	5.40	0.167	0.334
		AVERAGE				0.203	0.406
		PM-10	1	14.62	4.70	1.56	3.11
		PM-10	2	15.49	5.70	1.36	2.72
		PM-10	3	15.70	5.00	1.57	3.14
		AVERAGE				1.49	2.99
		cond. inorg. PM	1	1.99	4.70	0.212	0.423
		cond. inorg. PM	2	1.55	5.70	0.136	0.271
		cond. inorg. PM	3	2.16	5.00	0.216	0.432
		AVERAGE				0.188	0.376
		cond. org. PM	1	1.51	4.70	0.161	0.322
		cond. org. PM	2	1.37	5.70	0.120	0.240
		cond. org. PM	3	1.59	5.00	0.159	0.319
		AVERAGE				0.147	0.294
		Total cond. PM	1	3.50	4.70	0.372	0.745
		Total cond. PM	2	2.91	5.70	0.256	0.511
		Total cond. PM	3	3.76	5.00	0.376	0.751
		AVERAGE				0.335	0.669
		CO	1	10	4.70	1.05	2.1
		CO	2	8	5.70	0.74	1.5
		CO	3	8.864	5	0.89	1.8
		CO	4	9.567	4.7	1.02	2.0
		CO	5	8.425	5.7	0.74	1.5
		CO	6	8	5.00	0.81	1.63
		CO	7	10	5.40	0.94	1.88
		CO	8	11	5.25	1.08	2.15
		CO	9	11	5.40	1.01	2.03
		AVERAGE				0.92	1.84

Source category:

Plant name :

Test date :

Process :

Reconstituted wood products
L-P, New Waverly

Date:

Location:

Ref. No.:

Basis for process rate :

Source	Type of control	Pollutant	Run No.	Emission rate, lb/hr	Process rate, ton/hr	Emission factor	
						kg/Mg	lb/ton
	<i>Carbon</i>	CO2	1	6,370	4.70	678	1,355
		CO2	2	7,322	5.70	642	1,285
		CO2	3	6,976	5	698	1,395
		CO2	4	7,300	4.7	777	1,553
		CO2	5	8,687	5.7	762	1,524
		CO2	6	6,853	5.00	685	1,371
		CO2	7	6,900	5.40	639	1,278
		CO2	8	6,776	5.25	645	1,291
		CO2	9	7,319	5.40	678	1,355
		AVERAGE				689	1379
		formaldehyde	1	0.1464	4.70	0.0156	0.0311
		formaldehyde	2	0.1177	5.70	0.010	0.0206
		formaldehyde	3	0.1037	5.00	0.010	0.0207
		AVERAGE				0.0121	0.0242
		total hydrocarbon	1	46.9	4.70	4.99	9.98
		total hydrocarbon	2	40.1	5.70	3.52	7.04
		total hydrocarbon	3	41.6	5.00	4.16	8.32
		AVERAGE				4.22	8.44
Dryer No. 2 Wood-fired	???	filt. PM	1	13.23	5.55	1.19	2.38
		filt. PM	2	14.13	4.80	1.47	2.94
		filt. PM	3	12.95	5.25	1.23	2.47
		AVERAGE				1.30	2.60
		cond. inorg. PM	1	1.61	5.55	0.145	0.291
		cond. inorg. PM	2	0.86	4.80	0.090	0.179
		cond. inorg. PM	3	0.27	5.25	0.026	0.051
		AVERAGE				0.087	0.174
		cond. org. PM	1	1.45	5.55	0.131	0.262
		cond. org. PM	2	0.95	4.80	0.099	0.198
		cond. org. PM	3	0.02	5.25	0.002	0.004
		AVERAGE				0.077	0.155
		PM-10	1	12.98	4.70	1.38	2.76
		PM-10	2	12.73	4.50	1.41	2.83
		PM-10	3	13.90	4.40	1.58	3.16
		AVERAGE				1.46	2.92
		cond. inorg. PM	1	1.61	4.70	0.172	0.344
		cond. inorg. PM	2	2.31	4.50	0.257	0.514
		cond. inorg. PM	3	3.20	4.40	0.363	0.727
		AVERAGE				0.264	0.528

Source category:

Reconstituted wood products

Date:

Plant name :

L-P, New Waverly

Location:

Test date :

Ref. No.:

Process :

Basis for process rate :

Source	Type of control	Pollutant	Run No.	Emission rate, lb/hr	Process rate, ton/hr	Emission factor	
						kg/Mg	lb/ton
		cond. org. PM	1	1.50	4.70	0.159	0.318
		cond. org. PM	2	1.25	4.50	0.139	0.278
		cond. org. PM	3	1.72	4.40	0.196	0.391
		AVERAGE				0.165	0.329
		Total cond. PM	1	3.11	4.70	0.331	0.662
		Total cond. PM	2	3.56	4.50	0.396	0.792
		Total cond. PM	3	4.92	4.40	0.559	1.118
		AVERAGE				0.429	0.857
		CO	1	11	4.7	1.18	2.37
		CO	2	14.033	4.5	1.56	3.12
		CO	3	14.009	4.4	1.59	3.18
		CO	4	13.397	4.5	1.49	2.98
		CO	5	12.711	4.5	1.41	2.82
		CO	6	12	4.4	1.41	2.82
		CO	7	14	5.55	1.26	2.53
		CO	8	13	4.8	1.38	2.75
		CO	9	15	5.25	1.38	2.77
		AVERAGE				1.41	2.82
		CO2	1	5,837	4.7	621	1,242
		CO2	2	5,399	4.5	600	1,200
		CO2	3	5,879	4.4	668	1,336
		CO2	4	5,751	4.5	639	1,278
		CO2	5	5,855	4.5	651	1,301
		CO2	6	6,678	4.4	759	1,518
		CO2	7	5,985	5.55	539	1,078
		CO2	8	5,546	4.8	578	1,155
		CO2	9	5,483	5.25	522	1,044
		AVERAGE				620	1239
		formaldehyde	1	0.2444	4.50	0.0272	0.0543
		formaldehyde	2	0.2629	4.50	0.029	0.0584
		formaldehyde	3	0.2461	4.40	0.028	0.0559
		AVERAGE				0.0281	0.0562
		total hydrocarbon	1	24.6	4.50	2.73	5.47
		total hydrocarbon	2	23.7	4.50	2.63	5.27
		total hydrocarbon	3	26.1	4.40	2.97	5.93
		AVERAGE				2.78	5.56

as
Calbm



COMPANY

Neodesha, Kansas U.S.A.

By R.G.T. & D.B.Date 3-31-92Customer L.P. OSBJob No. 511-WT Location NEW WAVERLY, TX.Sht. No. 1 of

DRYER THRU-PUT TESTS

TEST 1	DRYER NO. 2. (FACE)	(PM-10) AND (CH ₂ O + VOC)	TIME
RUN 1	320 lbs 1:59.83	160	11:10
RUN 2	280 lbs 2:00.03	190	11:40
RUN 3	340 lbs 1:59.97	170	12:05
TOTAL	940 lbs 5:59.83 = 5.997	470 ÷ 3 = 156 2/3	
	156.75 #/MIN X 60 = 9,404.7 #/HR	9400 #/HR	

TEST 2			
RUN 1	280 lbs 2:00.02	140	1:05
RUN 2	320 lbs 1:59.99	160	1:22
RUN 3	260 lbs 2:00.32	130	2:00
TOTALS	860 6:00.33 = 6.006	430 ÷ 3 = 143 1/3	
	143.19 X 60 = 8591.4 #/HR	8600 #/HR	

TEST 3			
RUN 1	300 lbs 2:00.15	150	2:45
RUN 2	320 lbs 1:59.83	160	3:20
RUN 3	380 lbs 2:07.57	190	3:40
TOTALS	1000 lbs 6:07.55 6.126	500 ÷ 3 = 166 2/3	
	163.24 X 60 = 9794.3 #/HR	10,000 #/HR	

PARTICULATE

TEST 4			
RUN 1	360 lbs 1:59.84	180	3:15
RUN 2	380 lbs 2:00.24	190	4:30
TOTALS	740 lbs 4:00.08 = 4.001	270 ÷ 2 = 135	
	134.95 X 60 = 11097.2 #/HR	11,100 #/HR	

TEST 5			
RUN 1	320 lbs 1:59.90	160	5:35
RUN 2	320 lbs 2:00.12	160	5:50
TOTALS	640 4:00.02 = 4.000	320 ÷ 2 = 160	
	160 X 60 = 9600 #/HR	9600 #/HR	

TEST 6			
RUN 1	340 lbs 2:00.17	170	7:00
RUN 2	360 lbs 1:59.59	180	
TOTALS	700 LBS 3:59.76 3.996	350 ÷ 2 = 175	
	176.5 X 60 = 10,590 #/HR	10,500 #/HR	
	4,880 + 30.126		
	162 X 60 = 9720 #/HR		

FOR
AD-42
REF ⑤

1403

05 0818



COMPANY

Neodesha, Kansas U.S.A.

By R G TALLEYDate 3-31-92Customer L.P.Job No. 511-WT Location NEW WAVERLY, TX Sht. No. 1 of

FUEL DUMP TESTS

CORE DRYER LIVE BOTTOM

2 - 5 REVOLUTION TESTS

TOTAL 46.2 #s

4.62 #s / REV.

MOISTURE CONTENT 4.0%

BULK DENSITY = 16.0 #s / CU.FT.

FACE DRYER LIVE BOTTOM

2 - 5 REVOLUTION TESTS

TOTAL 42 #s

4.2 #s / REV.

MOISTURE CONTENT 9.8%

BULK DENSITY = 16.6 #s / CU.FT.

THERMAL OIL LIVE BOTTOM

NO DATA TAKEN AS THIS UNIT WAS ON LINE DURING
THE ENTIRE TEST. THE LIVE BOTTOM ON THIS UNIT IS
THE SAME AS THOSE ON THE 2 DRYERS AND THE FUEL COMES
FROM THE SAME BIN.

THERMAL OIL AIR FLOW TEST

TEMP = 640°F

DUCT SIZE 30" DIA.

S.P. = -5.8" W.C.

A = 4.909

V.P. 1. .2

2. .2

3. .3

4. .3

5. .4

6. .4

7. .3

8. .2

9. .2

10. .1

TOTAL 2.6

AVERAGE Vp = .26

V = 2942

ACFM = 14,442



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WEIGHT TICKET

TEST #1

9149

WEIGHT		DATE	TIME		
23720 G LB 11:20 AM 03/31/92		GROSS		No. 202659	
23400		TARE		TRUCK NO. _____	
400 G LB 11:25 AM 03/31/92		NET		TRAILER NO. _____	
OUT					
CHIP ☐ CHAMPION ☐ O & I ☐ ST. REGIS ☐ LUFKIN ☐ SHAVING ☐ URANIA ☐ SHELDON ☐ OTHER <u>Wafer Test</u>					
IN					
BARK ☐ BARK ☐ BOILER FUEL ☐ CAUSTIC ☐ CORES ☐ DIESEL ☐ PLYWOOD ☐ FLOUR ☐ GAS ☐ PHENOFIL ☐ RESIN ☐ WAX ☐ SAWMILL ☐ MISC. ☐ _____ WAFERWOOD ☐					
GUARD SIGNATURE _____				05 0820	
				DRIVERS SIGNATURE _____	

Blue No 2



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WEIGHT TICKET

TEST #2

9149

WEIGHT		DATE	TIME		
23720 G LB 11:47 AM 03/31/92		GROSS		No. 202662	
23440 G LB 11:56 AM 03/31/92		TARE		TRUCK NO. _____	
		NET		TRAILER NO. _____	
OUT					
CHIP ☐ CHAMPION ☐ O & I ☐ ST. REGIS ☐ LUFKIN ☐ SHAVING ☐ URANIA ☐ SHELDON ☐ OTHER _____					
IN					
BARK ☐ BARK ☐ BOILER FUEL ☐ CAUSTIC ☐ CORES ☐ DIESEL ☐ PLYWOOD ☐ FLOUR ☐ GAS ☐ PHENOFIL ☐ RESIN ☐ WAX ☐ SAWMILL ☐ MISC. ☐ <u>weighed test wafer</u> WAFERWOOD ☐					
GUARD SIGNATURE <u>B/K</u>				05 0820A	
				DRIVERS SIGNATURE _____	



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9149

157 TEST #3

WEIGHT TICKET

WEIGHT 23760 G LB 12:13 PM 03/31/92 23420 G LB 12:19 PM 03/31/92 GROSS TARE NET		DATE TIME No. 202666 TRUCK NO. TRAILER NO.	
OUT CHIP CHAMPION ☐ O & I ☐ LUFKIN ☐ SHAVING URANIA ☐ ST. REGIS SHELDON ☐ OTHER _____			
IN BARK ☐ PLYWOOD ☐ SAWMILL ☐ WAFERWOOD ☐		BARK ☐ BOILER FUEL ☐ CAUSTIC ☐ CORES ☐ DIESEL ☐ FLOUR ☐ GAS ☐ PHENOFIL ☐ RESIN ☐ WAX ☐ MISC. ☐ <u>weighed test wafer</u>	
GUARD SIGNATURE _____		05 0821 DRIVERS SIGNATURE _____	



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9149

2ND TEST

WEIGHT TICKET

WEIGHT 23680 G LB 01:07 PM 03/31/92 23400 G LB 01:14 PM 03/31/92 GROSS TARE NET		DATE TIME No. 202683 TRUCK NO. TRAILER NO.	
OUT CHIP CHAMPION ☐ O & I ☐ LUFKIN ☐ SHAVING URANIA ☐ ST. REGIS SHELDON ☐ OTHER _____			
IN BARK ☐ PLYWOOD ☐ SAWMILL ☐ WAFERWOOD ☐		BARK ☐ BOILER FUEL ☐ CAUSTIC ☐ CORES ☐ DIESEL ☐ FLOUR ☐ GAS ☐ PHENOFIL ☐ RESIN ☐ WAX ☐ MISC. ☐ <u>weighed wafter</u>	
GUARD SIGNATURE _____		05 0822 DRIVERS SIGNATURE _____	



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9/49

2ND TEST

WEIGHT TICKET 2

WEIGHT <u>23700 G LB 01:38 PM 03/31/92</u> GROSS _____ <u>23380 G LB 01:49 PM 03/31/92</u> TARE _____ NET _____	DATE _____ TIME _____	No. 202693 TRUCK NO. _____ TRAILER NO. _____		
OUT CHIP ☐ CHAMPION ☐ O & I ☐ LUFKIN ☐ SHAVING ☐ URANIA ☐ ST. REGIS _____ SHELDON ☐ OTHER _____				
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:25%; vertical-align: top;"> IN BARK ☐ PLYWOOD ☐ SAWMILL ☐ WAFERWOOD ☐ </td> <td style="width:75%; vertical-align: top;"> BARK ☐ BOILER FUEL ☐ CAUSTIC ☐ CORES ☐ DIESEL ☐ FLOUR ☐ GAS ☐ PHENOFIL ☐ RESIN ☐ WAX ☐ MISC. ☐ <u>weighed wafer</u> </td> </tr> </table>			IN BARK ☐ PLYWOOD ☐ SAWMILL ☐ WAFERWOOD ☐	BARK ☐ BOILER FUEL ☐ CAUSTIC ☐ CORES ☐ DIESEL ☐ FLOUR ☐ GAS ☐ PHENOFIL ☐ RESIN ☐ WAX ☐ MISC. ☐ <u>weighed wafer</u>
IN BARK ☐ PLYWOOD ☐ SAWMILL ☐ WAFERWOOD ☐	BARK ☐ BOILER FUEL ☐ CAUSTIC ☐ CORES ☐ DIESEL ☐ FLOUR ☐ GAS ☐ PHENOFIL ☐ RESIN ☐ WAX ☐ MISC. ☐ <u>weighed wafer</u>			
<u>BB</u> GUARD SIGNATURE		05 0823 DRIVERS SIGNATURE		



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9/49

2ND TEST

WEIGHT TICKET 3

WEIGHT <u>23640 G LB 02:18 PM 03/31/92</u> GROSS _____ <u>23380 G LB 02:29 PM 03/31/92</u> TARE _____ NET _____	DATE _____ TIME _____	No. 202703 TRUCK NO. _____ TRAILER NO. _____		
OUT CHIP ☐ CHAMPION ☐ O & I ☐ LUFKIN ☐ SHAVING ☐ URANIA ☐ ST. REGIS _____ SHELDON ☐ OTHER _____				
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:25%; vertical-align: top;"> IN BARK ☐ PLYWOOD ☐ SAWMILL ☐ WAFERWOOD ☐ </td> <td style="width:75%; vertical-align: top;"> BARK ☐ BOILER FUEL ☐ CAUSTIC ☐ CORES ☐ DIESEL ☐ FLOUR ☐ GAS ☐ PHENOFIL ☐ RESIN ☐ WAX ☐ MISC. ☐ <u>weighed wafer</u> </td> </tr> </table>			IN BARK ☐ PLYWOOD ☐ SAWMILL ☐ WAFERWOOD ☐	BARK ☐ BOILER FUEL ☐ CAUSTIC ☐ CORES ☐ DIESEL ☐ FLOUR ☐ GAS ☐ PHENOFIL ☐ RESIN ☐ WAX ☐ MISC. ☐ <u>weighed wafer</u>
IN BARK ☐ PLYWOOD ☐ SAWMILL ☐ WAFERWOOD ☐	BARK ☐ BOILER FUEL ☐ CAUSTIC ☐ CORES ☐ DIESEL ☐ FLOUR ☐ GAS ☐ PHENOFIL ☐ RESIN ☐ WAX ☐ MISC. ☐ <u>weighed wafer</u>			
<u>BB</u> GUARD SIGNATURE		05 0824 DRIVERS SIGNATURE		



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9149

3rd TEST

WEIGHT TICKET

WEIGHT		DATE	TIME	No. 202714 TRUCK NO. _____ TRAILER NO. _____
23680 G LB 02:54 PM 03/31/92		GROSS		
23380 G LB 03:00 PM 03/31/92		TARE		
		NET		
OUT				
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐	
		ST. REGIS		
SHAVING	URANIA ☐		SHELDON ☐	
OTHER		OTHER <u>TRUCK WEIGHT - w/w TEST</u>		
IN				
BARK ☐	BARK ☐ BOILER FUEL ☐ CAUSTIC ☐ CORES ☐ DIESEL ☐			
PLYWOOD ☐	FLOUR ☐ GAS ☐ PHENOFIL ☐ RESIN ☐ WAX ☐			
SAWMILL ☐	MISC. ☐			
WAFERWOOD ☐				
GUARD SIGNATURE <u>R. H.</u>		DRIVERS SIGNATURE		

05 0825



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9149

3rd TEST

WEIGHT TICKET

WEIGHT		DATE	TIME	No. 202722 TRUCK NO. <u>9149</u> TRAILER NO. _____
23720 G LB 03:24 PM 03/31/92		GROSS		
23720 G LB 03:24 PM 03/31/92		TARE		
23400 G LB 03:34 PM 03/31/92		NET		
OUT				
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐	
		ST. REGIS		
SHAVING	URANIA ☐		SHELDON ☐	
OTHER		OTHER <u>Wafer Test</u>		
IN				
BARK ☐	BARK ☐ BOILER FUEL ☐ CAUSTIC ☐ CORES ☐ DIESEL ☐			
PLYWOOD ☐	FLOUR ☐ GAS ☐ PHENOFIL ☐ RESIN ☐ WAX ☐			
SAWMILL ☐	MISC. ☐			
WAFERWOOD ☐				
GUARD SIGNATURE <u>[Signature]</u>		DRIVERS SIGNATURE		

05 0825A



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3rd TEST
3

WEIGHT TICKET

WEIGHT		DATE	TIME
GROSS			
23760 G LB 03:47 PM 03/31/92		TARE	
23380 G LB 03:51 PM 03/31/92		NET	
No. 202730			
TRUCK NO. <u>9149</u>			
TRAILER NO. _____			
OUT			
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐
		ST. REGIS	
SHAVING	URANIA ☐		SHELDON ☐
OTHER <u>Wafer Test</u>			
IN			
BARK ☐	BARK ☐ BOILER FUEL ☐ CAUSTIC ☐ CORES ☐ DIESEL ☐		
PLYWOOD ☐	FLOUR ☐ GAS ☐ PHENOFIL ☐ RESIN ☐ WAX ☐		
SAWMILL ☐	MISC. ☐ _____		
WAFERWOOD ☐			
GUARD SIGNATURE _____		DRIVERS SIGNATURE _____	

05 0826



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9149

4th TEST

WEIGHT TICKET

WEIGHT		DATE	TIME
GROSS			
23740 G LB 04:21 PM 03/31/92		TARE	
23380 G LB 03:52 PM 03/31/92		NET	
No. 202731			
TRUCK NO. _____			
TRAILER NO. _____			
OUT			
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐
		ST. REGIS	
SHAVING	URANIA ☐		SHELDON ☐
OTHER _____			
IN			
BARK ☐	BARK ☐ BOILER FUEL ☐ CAUSTIC ☐ CORES ☐ DIESEL ☐		
PLYWOOD ☐	FLOUR ☐ GAS ☐ PHENOFIL ☐ RESIN ☐ WAX ☐		
SAWMILL ☐	MISC. ☐ _____		
WAFERWOOD ☐			
GUARD SIGNATURE _____		DRIVERS SIGNATURE _____	

05 0826A



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4th TEST

WEIGHT TICKET

2

WEIGHT		DATE	TIME	No. 202742 TRUCK NO. _____ TRAILER NO. _____
23360 G LB 04:49 PM 03/31/92		GROSS _____		
23740 G LB 04:45 PM 03/31/92		TARE _____		
		NET _____		
OUT				
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐	
		ST. REGIS		
SHAVING	URANIA ☐		SHELDON ☐	
OTHER	OTHER <u>Wafer Test</u>			
IN				
BARK ☐	BARK ☐	BOILER FUEL ☐	CAUSTIC ☐	CORES ☐
PLYWOOD ☐	FLOUR ☐	GAS ☐	PHENOFIL ☐	RESIN ☐
SAWMILL ☐	MISC. ☐			
WAFERWOOD ☐				
GUARD SIGNATURE _____				05 0827
				DRIVERS SIGNATURE _____



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5th TEST

WEIGHT TICKET

1

WEIGHT		DATE	TIME	No. 202743 TRUCK NO. _____ TRAILER NO. _____
23680 G LB 05:36 PM 03/31/92		GROSS _____		
23360 G LB 05:42 PM 03/31/92		TARE _____		
		NET _____		
OUT				
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐	
		ST. REGIS		
SHAVING	URANIA ☐		SHELDON ☐	
OTHER	OTHER <u>Wafer Test</u>			
IN				
BARK ☐	BARK ☐	BOILER FUEL ☐	CAUSTIC ☐	CORES ☐
PLYWOOD ☐	FLOUR ☐	GAS ☐	PHENOFIL ☐	RESIN ☐
SAWMILL ☐	MISC. ☐			
WAFERWOOD ☐				
GUARD SIGNATURE _____				05 0828
				DRIVERS SIGNATURE _____



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5th TEST

WEIGHT TICKET 2

9149

WEIGHT	DATE	TIME	
23680 G LB 05:57 PM 03/31/92	GROSS		No. 202751
22760 G LB 05:01 PM 03/31/92	TARE		TRUCK NO. _____
	NET		TRAILER NO. _____
OUT			
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐
SHAVING	URANIA ☐	ST. REGIS	SHELDON ☐
OTHER _____			
IN			
BARK ☐	BARK ☐	BOILER FUEL ☐	CAUSTIC ☐
PLYWOOD ☐	FLOUR ☐	GAS ☐	PHENOFIL ☐
SAWMILL ☐	MISC. ☐	RESIN ☐	
WAFERWOOD ☐	WAX ☐		
MISC. ☐ <u>Wafers</u>			
GUARD SIGNATURE _____			05 0829
			DRIVERS SIGNATURE _____



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1st TEST

WEIGHT TICKET 1

9149

WEIGHT	DATE	TIME	
23700 G LB 07:02 PM 03/31/92	GROSS		No. 202756
21260 G LB 07:06 PM 03/31/92	TARE		TRUCK NO. _____
	NET		TRAILER NO. _____
OUT			
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐
SHAVING	URANIA ☐	ST. REGIS	SHELDON ☐
OTHER _____			
IN			
BARK ☐	BARK ☐	BOILER FUEL ☐	CAUSTIC ☐
PLYWOOD ☐	FLOUR ☐	GAS ☐	PHENOFIL ☐
SAWMILL ☐	MISC. ☐	RESIN ☐	
WAFERWOOD ☐	WAX ☐		
MISC. ☐ <u>Wafers</u>			
GUARD SIGNATURE _____			05 0829A
			DRIVERS SIGNATURE _____



Louisiana-Pacific Corporation

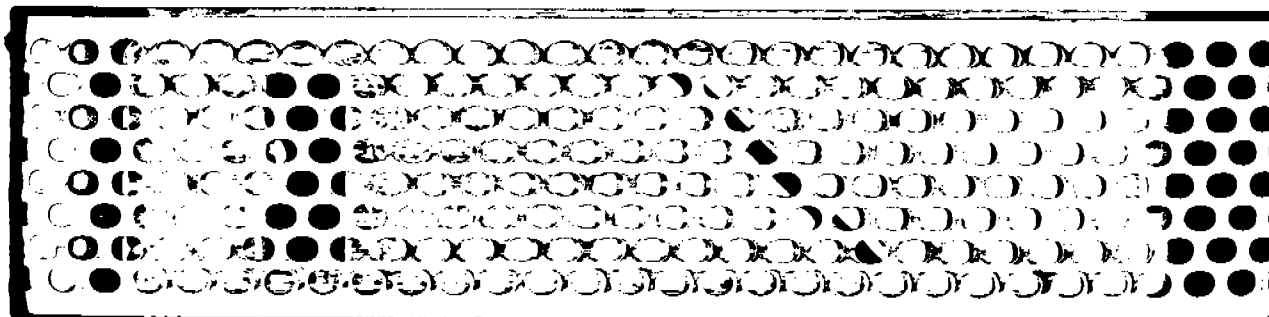
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6th TEST

WEIGHT TICKET 2

9197

WEIGHT		DATE	TIME	No. 202757 TRUCK NO. _____ TRAILER NO. _____
GROSS				
TARE				
NET				
OUT				
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐	
SHAVING	URANIA ☐	ST. REGIS	SHELDON ☐	
OTHER _____				
IN				
BARK ☐	BARK ☐	BOILER FUEL ☐	CAUSTIC ☐	CORES ☐
PLYWOOD ☐	FLOUR ☐	GAS ☐	PHENOFIL ☐	RESIN ☐
SAWMILL ☐	MISC. ☐	WAX ☐		
WAFERWOOD ☐	_____			
GUARD SIGNATURE _____		05 0830 DRIVERS SIGNATURE _____		



COMPANY

Neodesha, Kansas U.S.A.

By ΔB/RGT

Date 3-31-92

Customer

LF

~~Job No.~~ OSR

Location

NEW WAYERLY, TX

Shr. No.

of 23

$$\begin{array}{r} 0.50 \\ -0.83 \\ \hline \end{array}$$

THRU-PUT
94@4.7 #/HR

DRYER TEST DATA
DRYER NO. 2 (FACE)

TEST TYPE: $(\text{PMIO})^{\text{E}} / \text{C}_{12}\text{O} \& \text{K}$

1# LST

421-1401
2001

[illegible]

4/2/92

New Weekly
PRESS OPERATING DATA

S. B. Bredette

COREResin Flow, lb/hr
Resin, %
Wax, (relative value)

090	1002	1112	1155	1316	1414	1516	1653	1750
160	200	174	134	162	179	162	203	190
13	15	12	13	16	14	12	13	11
19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9

FACEResin Flow, lb/hr
Resin, %
Wax, (relative value)

90	176	113	101	110	158	146	115	180
16	15	14	14	14	13	18	14	14
24.7	24.7	24.7	24.7	24.7	24.7	24.7	24.7	24.7

PRESS

Board weight, lb/ft

9.1	9.3	9.0	8.7	8.5	8.4	8.6	9.0	8.5
-----	-----	-----	-----	-----	-----	-----	-----	-----

Line Speed, ft/min

13	13	13	13	14	13.5	13.5	13.5	12.5
----	----	----	----	----	------	------	------	------

Wedge set
Board Thickness, mm

10.40	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
-------	------	------	------	------	------	------	------	------

Temperatures

Acheat, °C

228	226	225	229	229	231	227	226	228
-----	-----	-----	-----	-----	-----	-----	-----	-----

Special, °C

230	227	228	231	230	231	230	230	231
-----	-----	-----	-----	-----	-----	-----	-----	-----

Zone 1, °C

228	226	226	230	240	232	228	227	228
-----	-----	-----	-----	-----	-----	-----	-----	-----

Zone 2, °C

230	226	226	230	235	233	229	228	230
-----	-----	-----	-----	-----	-----	-----	-----	-----

Zone 3, °C

229	226	227	230	235	230	230	229	230
-----	-----	-----	-----	-----	-----	-----	-----	-----

Boards Produced

Bin 1

0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---

Bin 2

4	4	5	5	0	1	0	0	0
---	---	---	---	---	---	---	---	---

Bin 3

56	73	102	115	129	140	174	213	225
----	----	-----	-----	-----	-----	-----	-----	-----

Bin 4

206	248	452	563	764	922	1063	1286	1430
-----	-----	-----	-----	-----	-----	------	------	------

Density, lb/ft³

47.1	47.2	NC	45.6	NC	46.0	NC	48.0	
------	------	----	------	----	------	----	------	--

Dimensions, L x W x H

L, inches
W, inches
H, inches

96	96	96	96	96	96	96	96	96
48	48	48	48	48	48	48	48	48
3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8

05 0952

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS

3/31/92

New Waverly
PRESS OPERATING DATA

J. Burdette

CORE

Resin Flow, lb/hr
 Resin, %
 Wax, (relative take)

0520	1020	1144	1230	1347	1502	1610	1718	1817
80	107	107	100	123	105	91	68	
6	6	7	5	7	7	6	4	
19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	

FACE

Resin Flow, lb/hr
 Resin, %
 Wax, (relative take)

370	364	375	396	283	351	340	265	
40	35	23	25	23	25	31	28	
24.8	24.7	24.7	24.9	24.9	24.9	24.8	24.7	

PRESS

Board weight, lb/ft

Line Speed, ft/min
 wedge set -
 Board thickness, mm

Temperatures

Acheat, °C

Special, °C

Zone 1, °C

Zone 2, °C

Zone 3, °C

Boards Produced

Bin 1

Bin 2

Bin 3

Bin 4

Density, lb/ft³

Dimensions, LxWxH
 L, inches
 W, inches
 H, inches

Stopped

Press

9.6	10.0	9.8	10.1	9.8	10.5	9.9	9.9	
12.0	12.0	12.0	12.0	12.0	12.0	11.0	11.0	
9.50	9.50	9.50	9.50	9.5	9.5	9.5	9.5	
214	221	220	219	219	220	218	219	
219	220	220	221	220	220	220	220	
204	219	220	221	221	221	221	220	
212	221	221	220	221	220	220	219	
214	222	222	220	221	220	221	221	
4	4	4	4	4	4	4	0	
0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	
316	335	454	522	634	743	843	931	18
N/C	48.4	N/C	49.1	47.7	N/C	N/C		
193	43	193	193	193	193	193	193	
48	48	48	48	48	48	48	48	
3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	

05 0853

22-141 50 SHEETS
 22-142 100 SHEETS
 22-144 200 SHEETS



4/1/92

New Wawarthy
PRESS OPERATING DATA

J. Burdette

COREResin Flow, lb/hr
Resin, %
Wax, (relative value)

0105	1070	1119	1146	1220	1300	1359	1422	1735	1880
157	130	142	150	120	150	163	136	168	167
11	9	9	9	8	12	12	11	11	12
19.9	19.9	20.0	20.0	19.9	19.9	19.9	19.9	19.9	19.9

FACEResin Flow, lb/hr
Resin, %
Wax, (relative value)

290	326	N/A	356	300	350	400	350	307	330
28	28	N/A	26	30	31	29	33	31	33
24.8	24.8	N/A	24.8	24.9	24.8	24.7	24.7	24.7	24.7

PRESS

Board Weight, lb/ft

Line Speed, ft/min

Wedge
Board Thickness, mmTemperatures

Archeat, °C

Special, °C

Zone 1, °C

Zone 2, °C

Zone 3, °C

Boards Produced

Bin 1

Bin 2

Bin 3

Bin 4

Density, lb/ft³

Dimensions, LxWxH

L, inches

W, inches

H, inches

9.2	9.3	9.0	8.5	8.7	8.7	8.9	8.9	9.2	8.9
17.5	18.5	19.0	19.5	20.0	20.5	21	21	21	21
9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
228	228	229	231	229	226	231	230	226	229
229	230	230	231	230	229	231	230	229	230
229	230	231	233	231	230	231	231	226	229
230	231	231	233	230	227	230	231	226	230
230	231	231	233	231	229	230	230	225	229
0	0	0	2	2	6	8	16	0	2
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1
388	568	680	738	816	1014	1201	1368	1475	1614
46.0	N/C	47.3	N/C	N/C	46.1	46.0	N/C	N/C	42.5
193	193	193	193	193	193	193	193	193	193
48	48	48	48	48	48	48	48	48	48
3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8

05 0757

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS



4/1/92

New Wagonry
Dryer Data

J. Bardette

(CORE) Dryer #1

Inlet Temp

Outlet Temp

Opacity, %

Moisture out, %

feed rate

fuel counter

% high fire rate

wood, type

Fuel type

(FACE) Dryer #2

Inlet Temp

Outlet Temp

Opacity, %

Moisture out, %

feed rate

fuel counter

% high fire rate

wood type

Fuel type

Thermal Oil

Temp out

Temp in

Pressure Drop, in H₂O

% high fire rate

Moisture in, %

0910	1046	1130	1225	1355	1515	1630	1742	1865	
553	552	551	550	556	517	523	123	544	
230	229	228	224	227	227	228	139	228	
3	3	5	7	3	4	3	0		
5.6	6.0	4.6	6.0	5.6	5.8	6.8	5.8	down	5.8
13%	13%	13%	13%	12%	13%	13%	0%		
449	995	1227	1654	2058	2479	2908	3095	Dryer	
26	34	35	35	34	34	34	0	Bin Full -	
green	green	green	green	green	green	green	-		
Dry Fines	Dry Fines	Dry Fines	Dry Fines	Dry Fines	Dry Fines	Dry Fines	-		
630	440	530	607	425	518	534	555	622	540
176	182	178	183	185	184	190	183	185	183
SAME AS CORE						ONE STACK			1%
5.6	5.4	6.0	6.4	6.0	6.6	5.0	6.6	6.4	5.8
20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
946	1367	1545	1828	2224	2604	2921	3260	347	re-set
37	22	31	31	22	31	29	32	30	
green	green	green	green	green	green	green	green	green	
Dry Fines	Dry Fines	Dry Fines	Dry Fines	Dry Fines	Dry Fines	Dry Fines	Dry Fines	Dry Fines	
498	500	500	499	497	499	501	498	500	
465	467	467	467	466	468	471	463	466	
5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
65	62	61	59	58	59	59	65	58	

05 0758



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9149

WEIGHT TICKET

1ST
TEST
1

WEIGHT		DATE	TIME
23800	G LB 11:53 AM 03/30/92		
GROSS			
23500	G LB 11:58 AM 03/30/92		
TARE			
NET			
No. 202535			
TRUCK NO. _____			
TRAILER NO. _____			
OUT			
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐
SHAVING	URANIA ☐	ST. REGIS	SHELDON ☐
OTHER _____			
IN			
BARK ☐	BARK ☐	BOILER FUEL ☐	CAUSTIC ☐
PLYWOOD ☐	FLOUR ☐	GAS ☐	PHENOFIL ☐
SAWMILL ☐	MISC. ☐	RESIN ☐	WAX ☐
WAFERWOOD ☐			
GUARD SIGNATURE _____			
DRIVERS SIGNATURE _____ 0767			



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9149

WEIGHT TICKET

1ST
TE
Z

WEIGHT		DATE	TIME
23800	G LB 12:16 PM 03/30/92		
GROSS			
23480	G LB 12:21 PM 03/30/92		
TARE			
NET			
No. 202539			
TRUCK NO. _____			
TRAILER NO. _____			
OUT			
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐
SHAVING	URANIA ☐	ST. REGIS	SHELDON ☐
OTHER _____			
IN			
BARK ☐	BARK ☐	BOILER FUEL ☐	CAUSTIC ☐
PLYWOOD ☐	FLOUR ☐	GAS ☐	PHENOFIL ☐
SAWMILL ☐	MISC. ☐	RESIN ☐	WAX ☐
WAFERWOOD ☐	MISC. ☒ Truck weight		
GUARD SIGNATURE _____ BB			
DRIVERS SIGNATURE _____			



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9149

290 TES

WEIGHT TICKET /

WEIGHT		DATE	TIME	No. 202552 TRUCK NO. <u>9149</u> TRAILER NO. _____
23780	G LB 02:04 PM 03/30/92	GROSS	_____	
23500	G LB 02:09 PM 03/30/92	TARE	_____	
23500	G LB 02:09 PM 03/30/92	NET	_____	
OUT				
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐	
		ST. REGIS		
SHAVING	URANIA ☐		SHELDON ☐	
OTHER _____				
IN				
BARK ☐	BARK ☐	BOILER FUEL ☐	CAUSTIC ☐	CORES ☐
PLYWOOD ☐	FLOUR ☐	GAS ☐	PHENOFIL ☐	RESIN ☐
SAWMILL ☐	MISC. ☐	_____		
WAFERWOOD ☐				
GUARD SIGNATURE _____			DRIVERS SIGNATURE <u>04 0770</u>	



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9149

151 TES

WEIGHT TICKET 3

WEIGHT		DATE	TIME	No. 202543 TRUCK NO. _____ TRAILER NO. _____
23820	G LB 12:35 PM 03/30/92	GROSS	_____	
23500	G LB 12:40 PM 03/30/92	TARE	_____	
		NET	_____	
OUT				
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐	
		ST. REGIS		
SHAVING	URANIA ☐		SHELDON ☐	
OTHER <u>TRUCK WEIGHT FOR PLYWOOD</u>				
IN				
BARK ☐	BARK ☐	BOILER FUEL ☐	CAUSTIC ☐	CORES ☐
PLYWOOD ☐	FLOUR ☐	GAS ☐	PHENOFIL ☐	RESIN ☐
SAWMILL ☐	MISC. ☐	_____		
WAFERWOOD ☐				
GUARD SIGNATURE <u>R.H.</u>			DRIVERS SIGNATURE <u>04 0769</u>	



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2007

WEIGHT TICKET

2

WEIGHT	DATE	TIME	
23780 G LB 01:42 PM 03/30/92			GROSS
23460 G LB 01:48 PM 03/30/92			TARE
			NET

No. 202549

TRUCK NO.

TRAILER NO.

OUT

CHIP

CHAMPION ☐

O & I ☐

ST. REGIS

LUFKIN ☐

SHAVING

URANIA ☐

SHELDON ☐

OTHER TRUCK WEIGHT FOR PLYWOOD (W/W)

OTHER

IN

BARK ☐

BARK ☐ BOILER FUEL ☐ CAUSTIC ☐ CORES ☐ DIESEL ☐

PLYWOOD ☐

FLOUR ☐ GAS ☐ PHENOFIL ☐ RESIN ☐ WAX ☐

SAWMILL ☐

MISC. ☐

WAFERWOOD ☐

GUARD SIGNATURE

DRIVERS SIGNATURE

04 0771



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2007

WEIGHT TICKET

3?

WEIGHT	DATE	TIME	
23820 G LB 02:23 PM 03/30/92			GROSS
23280 G LB 02:22 PM 03/30/92			TARE
			NET

No. 202556

TRUCK NO.

TRAILER NO.

OUT

CHIP

CHAMPION ☐

O & I ☐

ST. REGIS

LUFKIN ☐

SHAVING

URANIA ☐

SHELDON ☐

OTHER

OTHER

IN

BARK ☐

BARK ☐ BOILER FUEL ☐ CAUSTIC ☐ CORES ☐ DIESEL ☐

PLYWOOD ☐

FLOUR ☐ GAS ☐ PHENOFIL ☐ RESIN ☐ WAX ☐

SAWMILL ☐

MISC. ☐

WAFERWOOD ☐

GUARD SIGNATURE

DRIVERS SIGNATURE

04 0772



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9/49

2ND TEST 4

WEIGHT TICKET

WEIGHT	DATE	TIME	
GROSS			No. 202562
23780 G LB 02:51 PM 03/30/92			TRUCK NO. _____
TARE			TRAILER NO. _____
23460 G LB 02:58 PM 03/30/92			
NET			
OUT			
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐
SHAVING	URANIA ☐	ST. REGIS	SHELDON ☐
OTHER _____			
IN			
BARK ☐	BARK ☐	BOILER FUEL ☐	CAUSTIC ☐
PLYWOOD ☐	FLOUR ☐	GAS ☐	PHENOFIL ☐
SAWMILL ☐	MISC. ☐	_____	
WAFERWOOD ☐	CORES ☐		
			DIESEL ☐
			RESIN ☐
			WAX ☐
GUARD SIGNATURE _____		DRIVERS SIGNATURE 04 0773	



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9/49

3rd TEST

WEIGHT TICKET

WEIGHT	DATE	TIME	
GROSS			No. 202570
23780 G LB 03:21 PM 03/30/92			TRUCK NO. 9/49
TARE			TRAILER NO. _____
NET			
OUT			
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐
SHAVING	URANIA ☐	ST. REGIS	SHELDON ☐
OTHER _____			
IN			
BARK ☐	BARK ☐	BOILER FUEL ☐	CAUSTIC ☐
PLYWOOD ☐	FLOUR ☐	GAS ☐	PHENOFIL ☐
SAWMILL ☐	MISC. ☐	_____	
WAFERWOOD ☐	CORES ☐		
			DIESEL ☐
			RESIN ☐
			WAX ☐
GUARD SIGNATURE _____		DRIVERS SIGNATURE 04 0774	



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3rd TEST

WEIGHT TICKET

2

WEIGHT	DATE	TIME	
GROSS			No. 202577
23780 G LB 03:55 PM 03/30/92	TARE		TRUCK NO. 9149
23440 G LB 04:00 PM 03/30/92	NET		TRAILER NO.
OUT			
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐
		ST. REGIS	
SHAVING	URANIA ☐		SHELDON ☐
OTHER			
OTHER Wafer Test Weight			
IN			
BARK ☐	BARK ☐	BOILER FUEL ☐	CAUSTIC ☐
PLYWOOD ☐	FLOUR ☐	GAS ☐	PHENOFIL ☐
SAWMILL ☐	MISC. ☐		
WAFERWOOD ☐			
GUARD SIGNATURE		DRIVERS SIGNATURE 04 0775	



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3rd TEST

WEIGHT TICKET

3

WEIGHT	DATE	TIME	
GROSS			No. 202581
23800 G LB 04:17 PM 03/30/92	TARE		TRUCK NO. 9149
23460 G LB 04:24 PM 03/30/92	NET		TRAILER NO.
OUT			
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐
		ST. REGIS	
SHAVING	URANIA ☐		SHELDON ☐
OTHER			
OTHER Wafer Test Weight			
IN			
BARK ☐	BARK ☐	BOILER FUEL ☐	CAUSTIC ☐
PLYWOOD ☐	FLOUR ☐	GAS ☐	PHENOFIL ☐
SAWMILL ☐	MISC. ☐		
WAFERWOOD ☐			
GUARD SIGNATURE		DRIVERS SIGNATURE 04 0776	



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4th TEST

WEIGHT TICKET #1

WEIGHT		DATE	TIME	No. 202591 TRUCK NO. _____ TRAILER NO. _____
GROSS				
TARE				
NET				
OUT				
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐	
SHAVING	URANIA ☐	ST. REGIS	SHELDON ☐	
OTHER _____				
IN				
BARK ☐	BARK ☐ BOILER FUEL ☐ CAUSTIC ☐ CORES ☐ DIESEL ☐			
PLYWOOD ☐	FLOUR ☐ GAS ☐ PHENOFIL ☐ RESIN ☐ WAX ☐			
SAWMILL ☐	MISC. ☐ <u>weighed test waferwood</u>			
WAFFERWOOD ☐				
BB				
GUARD SIGNATURE		DRIVERS SIGNATURE <u>04 0727</u>		



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4th TEST

WEIGHT TICKET #2

WEIGHT		DATE	TIME	No. 202594 TRUCK NO. _____ TRAILER NO. _____
GROSS				
TARE				
NET				
OUT				
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐	
SHAVING	URANIA ☐	ST. REGIS	SHELDON ☐	
OTHER _____				
IN				
BARK ☐	BARK ☐ BOILER FUEL ☐ CAUSTIC ☐ CORES ☐ DIESEL ☐			
PLYWOOD ☐	FLOUR ☐ GAS ☐ PHENOFIL ☐ RESIN ☐ WAX ☐			
SAWMILL ☐	MISC. ☐ <u>weighed test waferwood</u>			
WAFFERWOOD ☐				
BB				
GUARD SIGNATURE		DRIVERS SIGNATURE <u>04 0778</u>		



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4th TES

WEIGHT TICKET #3

WEIGHT		DATE	TIME		
23780 G LB 05:53 PM 03/30/92		GROSS		No. 202596	
23440 G LB 05:57 PM 03/30/92		TARE		TRUCK NO. _____	
		NET		TRAILER NO. _____	
OUT					
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐		
SHAVING	URANIA ☐	ST. REGIS	SHELDON ☐		
OTHER _____		OTHER _____			
IN					
BARK ☐	BARK ☐	BOILER FUEL ☐	CAUSTIC ☐	CORES ☐	DIESEL ☐
PLYWOOD ☐	FLOUR ☐	GAS ☐	PHENOFIL ☐	RESIN ☐	WAX ☐
SAWMILL ☐	MISC. ☐ weighed test wafter				
WAFERWOOD ☐					
GUARD SIGNATURE _____			DRIVERS SIGNATURE 04 0779		



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5th TES

WEIGHT TICKET #2

WEIGHT		DATE	TIME		
		GROSS		No. 202600	
23800 G LB 07:04 PM 03/30/92		TARE		TRUCK NO. 9149	
23440 G LB 07:08 PM 03/30/92		NET		TRAILER NO. _____	
OUT					
CHIP	CHAMPION ☐	O & I ☐	LUFKIN ☐		
SHAVING	URANIA ☐	ST. REGIS	SHELDON ☐		
OTHER _____		OTHER _____			
IN					
BARK ☐	BARK ☐	BOILER FUEL ☐	CAUSTIC ☐	CORES ☐	DIESEL ☐
PLYWOOD ☐	FLOUR ☐	GAS ☐	PHENOFIL ☐	RESIN ☐	WAX ☐
SAWMILL ☐	MISC. ☐ weighed				
WAFERWOOD ☐					
GUARD SIGNATURE _____			DRIVERS SIGNATURE 04 0780		



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5th TEST

WEIGHT TICKET #1

7149

WEIGHT		DATE	TIME		
23780 G LB 06:27 PM 03/30/92		GROSS		No. 202597	
23440 G LB 06:31 PM 03/30/92		TARE		TRUCK NO. <u>7149</u>	
		NET		TRAILER NO. _____	
OUT					
CHIP	CHAMPION ☐	O & I ☐	ST. REGIS	LUFKIN ☐	Driver No. 1
SHAVING	URANIA ☐			SHELDON ☐	
OTHER _____					
OTHER _____					
IN					
BARK ☐	BARK ☐ BOILER FUEL ☐ CAUSTIC ☐ CORES ☐ DIESEL ☐				
PLYWOOD ☐	FLOUR ☐ GAS ☐ PHENOFIL ☐ RESIN ☐ WAX ☐				
SAWMILL ☐	MISC. ☐ <u>lumber</u>				
WAFERWOOD ☐					

GUARD SIGNATURE _____

DRIVERS SIGNATURE _____

04 0781



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WEIGHT TICKET

9149

WEIGHT		DATE	TIME		
23780 G LB 06:50 PM 03/30/92		GROSS		No. 202603	
22420 G LB 07:15 PM 03/30/92		TARE		TRUCK NO. _____	
		NET		TRAILER NO. _____	
OUT					
CHIP	CHAMPION ☐	O & I ☐	ST. REGIS	LUFKIN ☐	
SHAVING	URANIA ☐			SHELDON ☐	
OTHER _____					
OTHER _____					
IN					
BARK ☐	BARK ☐ BOILER FUEL ☐ CAUSTIC ☐ CORES ☐ DIESEL ☐				
PLYWOOD ☐	FLOUR ☐ GAS ☐ PHENOFIL ☐ RESIN ☐ WAX ☐				
SAWMILL ☐	MISC. ☐ <u>lumber</u>				
WAFERWOOD ☐					

GUARD SIGNATURE _____

DRIVERS SIGNATURE _____

04 0782

Monday 3/30/92

Laxmi -

Attached are the :

- 1) Field sampling data sheets (copied from Interpoll)
- 2) Production Records provided by Louisiana Pacific
- 3) My personal production rate records collected per Al Nugent

This represents the complete list of material Al requested that I provide you. At the end of the program I will also provide copies of my personal log detailing daily activities as well as copies of the audit forms I completed during the field effort.

Jeff Burdette

04 0766

Tables 11 and 12 summarize the results of the formaldehyde determinations. The average concentration and emission rates are summarized below:

Source	Concentration (ppm,w)	Emission rate (LB/HR)
No. 1 Dryer	0.37	0.123
No. 2 Dryer	0.71	0.250
No. 1 Press Vent	0.32	0.082
No. 2 Press Vent	1.73	0.428
No. 3 Press Vent	0.66	0.167
No. 4 Form Line Vent	0.06	0.016

The results of the THC tests are summarized in Tables 13 and 14. The following table provides an overview:

Source	Concentration (ppm,w)	Emission rate (LB/HR)
No. 1 Dryer	322	42.9
No. 2 Dryer	175	24.8
No. 1 Press Vent	61	5.80
No. 2 Press Vent	78	7.57
No. 3 Press Vent	78	8.02

No difficulties were encountered in the field by Interpoll Labs or in the laboratory evaluation of the samples which were conducted by Interpoll Labs. On the basis of this fact and a complete review of the entire data and results, it is our opinion that the results reported herein are accurate and closely reflect the actual values which existed at the time the test was performed.

Table 1. Summary of the Results of the March 30, 1992 EPA Particulate Emission Compliance Test on the No. 1 Dryer Stack at the Louisiana Pacific Plant Located in New Waverly, Texas.

ITEM	Run 1	Run 2	Run 3
Date of test	03-30-92	03-30-92	03-30-92
Time runs were done (HRS)	1700/1802	1820/1922	1940/2042
process rate (LB/HR)	0.0	0.0	0.0
Volumetric flow actual (ACFM) standard (DSCFM)	81951 62828	80212 61697	81906 62719
Gas temperature (DEG-F)	177	174	173
Moisture content (%V/V)	6.66	6.82	7.36
Gas composition (%V/V, dry) carbon dioxide oxygen nitrogen	1.60 19.20 79.20	1.60 19.10 79.30	1.70 19.10 79.20
Isokinetic variation (%)	99.0	100.0	100.4
particulate concentration actual (GR/ACF) standard (GR/DSCF)	.0324 .0423	.0333 .0433	.0275 .0359
Part. emission rate (LB/HR)	22.76	22.90	19.32

Note: Dry + Organic/Inorganic Wet Catch

Table 2. Summary of the Results of the March 31, 1992 EPA Particulate Emission Compliance Test on the No. 2 Dryer Stack at the Louisiana Pacific Plant Located in New Waverly, Minnesota.

ITEM	Run 1	Run 2	Run 3
Date of test	03-31-92	03-31-92	03-31-92
Time runs were done (HRS)	1610/1712	1735/1837	1903/2005
Process rate (LB/HR)	0.0	0.0	0.0
Volumetric flow actual (ACFM) standard (DSCFM)	83280 67066	82646 67329	82017 66568
Gas temperature (DEG-F)	145	136	135
Moisture content (%V/V)	6.86	7.12	7.66
Gas composition (%V/V, dry) carbon dioxide oxygen nitrogen	1.30 19.50 79.20	1.20 19.60 79.20	1.20 19.60 79.20
Isokinetic variation (%)	99.5	100.0	100.8
Particulate concentration actual (GR/ACF) standard (GR/DSCF)	.0228 .0284	.0225 .0276	.0188 .0232
part. emission rate (LB/HR)	16.30	15.94	13.24

Note: Dry + Organic/Inorganic Wet Catch

Table 3. Summary of the Results of the April 1, 1992 EPA Particulate Emission Compliance Test on the No. 1 Press Vent Stack at the Louisiana Pacific Plant Located in New Waverly, Texas.

ITEM	Run 1	Run 2	Run 3
Date of test	04-01-92	04-01-92	04-01-92
Time runs were done (HRS)	1110/1212	1246/1348	1435/1538
Process rate (LB/HR)	0.0	0.0	0.0
Volumetric flow actual (ACFM) standard (DSCFM)	53106 50491	51893 50149	52247 50082
Gas temperature (DEG-F)	81	76	78
Moisture content (%V/V)	1.56	0.95	1.26
Gas composition (%V/V.dry) carbon dioxide oxygen nitrogen	0.03 20.90 79.07	0.03 20.90 79.07	0.03 20.90 79.07
Isokinetic variation (%)	99.7	100.2	100.1
Particulate concentration actual (GR/ACF) standard (GR/DSCF)	.00850 .00894	.00939 .00972	.00627 .00654
Part. emission rate (LB/HR)	3.87	4.18	2.81

Note: Dry + Organic/Inorganic Wet Catch

Table 4. Summary of the Results of the April 1, 1992 EPA Particulate Emission Compliance Test on the No. 2 Press Vent Stack at the Louisiana Pacific Plant Located in New Waverly, Texas.

ITEM	Run 1	Run 2	Run 3
Date of test	04-01-92	04-01-92	04-01-92
Time runs were done (HRS)	1630/1753	1827/1929	2001/2103
Process rate (LB/HR)	0.0	0.0	0.0
Volumetric flow actual (ACFM)	54631	53635	54325
standard (DSCFM)	51224	50380	51511
Gas temperature (DEG-F)	90	89	84
Moisture content (%V/V)	1.34	1.37	1.33
Gas composition (%V/V, dry)			
carbon dioxide	0.03	0.03	0.03
oxygen	20.90	20.90	20.90
nitrogen	79.07	79.07	79.07
Isokinetic variation (%)	99.8	99.0	99.9
Particulate concentration			
actual (GR/ACF)	.00997	.00907	.00784
standard (GR/DSCF)	.0106	.00966	.00827
Part. emission rate (LB/HR)	4.67	4.17	3.65

Note: Dry + Organic/Inorganic Wet Catch

Table 5. Summary of the Results of the April 2, 1992 EPA Particulate Emission Compliance Test on the No. 3 Press Vent Stack at the Louisiana Pacific Plant Located in New Waverly, Texas.

ITEM	Run 1	Run 2	Run 3
Date of test	04-02-92	04-02-92	04-02-92
Time runs were done (HRS)	940/1042	1115/1217	1253/1356
Process rate (LB/HR)	0.0	0.0	0.0
Volumetric flow actual (ACFM)	53030	55363	53563
standard (DSCFM)	50328	51252	50763
Gas temperature (DEG-F)	85	86	86
Moisture content (%V/V)	1.16	1.65	1.04
Gas composition (%V/V.dry)			
carbon dioxide	0.03	0.03	0.03
oxygen	20.90	20.90	20.90
nitrogen	79.07	79.07	79.07
Isokinetic variation (%)	99.6	99.1	100.1
Particulate concentration			
actual (GR/ACF)	.0102	.00883	.00858
standard (GR/DSCF)	.0107	.00955	.00906
Part. emission rate (LB/HR)	4.64	4.19	3.94

Note: Dry + Organic/Inorganic Wet Catch

Table 6. Summary of the Results of the April 2, 1992 EPA Particulate Emission Compliance Test on the No. 4 Forming Line Vent at the Louisiana Pacific Plant Located in New Waverly, Texas.

ITEM	Run 1	Run 2	Run 3
Date of test	04-02-92	04-02-92	04-02-92
Time runs were done (HRS)	1512/1614	1650/1752	1825/1927
Process rate (LB/HR)	0.0	0.0	0.0
Volumetric flow actual (ACFM)	51170	52170	52275
standard (DSCFM)	50714	51670	52006
Gas temperature (DEG-F)	62	62	60
Moisture content (%V/V)	1.14	1.22	1.12
Gas composition (%V/V, dry)			
carbon dioxide	0.03	0.03	0.03
oxygen	20.90	20.90	20.90
nitrogen	79.07	79.07	79.07
Isokinetic variation (%)	100.1	100.4	99.8
Particulate concentration			
actual (GR/ACF)	.00507	.00510	.00395
standard (GR/DSCF)	.00512	.00515	.00397
Part. emission rate (LB/HR)	2.23	2.28	1.77

Note: Dry + Organic/Inorganic Wet Catch

Table 7. Summary of the Results of the March 30, 1992 PM-10 Determinations on the No. 1 Dryer Stack at the Louisiana Pacific Plant Located in New Waverly, Texas.

ITEM	Run 1	Run 2	Run 3
Date of test	03-30-92	03-30-92	03-30-92
Time runs were done (HRS)	1130/1300	1325/1455	1518/1636
Process rate (LB/HR)	0.0	0.0	0.0
Volumetric flow actual (ACFM)	87356	88406	89639
standard (DSCFM)	66289	66672	67753
Gas temperature (DEG-F)	179	179	179
Moisture content (%V/V)	7.39	7.87	7.73
Gas composition (%V/V, dry)			
carbon dioxide	1.40	1.60	1.50
oxygen	19.40	19.10	19.30
nitrogen	79.20	79.30	79.20
Isokinetic variation (%)	84.1	93.2	92.1
PM-10 concentration.....			
actual.....(GR/ACF)	.0242	.0243	.0253
dry standard.....(GR/DSCF)	.0319	.0322	.0335
PM-10 mass rate.....(LB/HR)	18.12	18.40	19.46

Note: Dry + Organic/Inorganic Wet Catch

Table 8. Summary of the Results of the March 31, 1992 PM-10 Determinations on the No. 2 Dryer Stack at the Louisiana Pacific Plant Located in New Waverly, Texas.

ITEM	Run 1	Run 2	Run 3
Date of test	03-31-92	03-31-92	03-31-92
Time runs were done (HRS)	1100/1220	1245/1402	1425/1542
Process rate (LB/HR)	0.0	0.0	0.0
Volumetric flow actual (ACFM) standard (DSCFM)	88578 70872	89071 71501	89095 71379
Gas temperature (DEG-F)	143	143	144
Moisture content (%V/V)	7.77	7.37	7.40
Gas composition (%V/V, dry) carbon dioxide oxygen nitrogen	1.20 19.60 79.20	1.10 19.70 79.20	1.20 19.70 79.10
Isokinetic variation (%)	89.8	85.8	86.3
PM-10 concentration..... actual.....(GR/ACF) dry standard.....(GR/DSCF)	.0212 .0265	.0213 .0266	.0246 .0308
PM-10 mass rate.....(LB/HR)	16.09	16.29	18.82

Note: Dry + Organic/Inorganic Wet Catch

Table 9. Summary of the March 30, 1992 Carbon Monoxide Emission Compliance Test on the No. 1 Dryer at the Louisiana-Pacific Plant in New Waverly, Texas.

	Date	Time	Volumetric		Emission Rate
			Flow Rate	Concentration	
		(HRS)	(DSCFM)	(ppm,w)	(LB/HR)
1	03-30-92	1130-1300	66290	31	9.8
2	03-30-92	1325-1455	66670	27	8.4
3	03-30-92	1518-1636	67750	28	8.9
	Avg		66903	29	9.0
4	03-30-92	1150-1252	66470	31	9.6
5	03-30-92	1330-1440	66610	27	8.4
6	03-30-92	1520-1627	66560	26	8.1
	Avg		66547	28	8.7
7	03-30-92	1700-1802	62830	35	10
8	03-30-92	1820-1922	61700	39	11
9	03-30-92	1940-2042	62720	37	11
	Avg		62417	37	11

Table 10. Summary of the March 31, 1992 Carbon Monoxide Emission Compliance Test on the No. 2 Dryer at the Louisiana-Pacific Plant in New Waverly, Texas.

	Date	Time	Volumetric		Emission Rate
			Flow Rate	Concentration	
		(HRS)	(DSCFM)	(ppm,w)	(LB/HR)
1	03-31-92	1100-1220	70870	33	11
2	03-31-92	1245-1402	71500	42	14
3	03-31-92	1425-1542	71380	42	14
	Avg		71250	39	13
4	03-31-92	1100-1202	69815	41	13
5	03-31-92	1240-1342	71085	38	13
6	03-31-92	1425-1543	69490	39	12
	Avg		70130	39	13
7	03-31-92	1610-1712	67070	45	14
8	03-31-92	1735-1837	67330	42	13
9	03-31-92	1903-2005	66570	46	15
	Avg		66990	44	14

Table 11. Summary of the March 30 - April 1, 1992 Formaldehyde Emission Compliance Test at the Louisiana-Pacific Plant in New Waverly, Texas.

Date	Time	Volumetric		Emission Rate
		Flow Rate	Concentration	
	(HRS)	(DSCFM)	(ppm,w)	(LB/HR)
(No. 1 Dryer)				
03-30-92	1150-1252	66470	0.44	0.146
03-30-92	1330-1440	66611	0.36	0.118
03-30-92	1520-1627	66561	0.31	0.104
Avg		66547	0.37	0.123
(No. 2 Dryer)				
03-31-92	1100-1202	69813	0.69	0.24
03-31-92	1240-1342	71086	0.74	0.26
03-31-92	1425-1543	69487	0.70	0.25
Avg		70129	0.71	0.25
(No. 1 Press Vent)				
04-01-92	1110-1212	53269	0.46	0.115
04-01-92	1246-1348	53832	0.44	0.113
04-01-92	1435-1536	54252	0.07	0.017
Avg		53784	0.32	0.082
(No. 2 Press Vent)				
04-01-92	1630-1753	52981	1.33	0.335
04-01-92	1827-1927	52481	1.23	0.305
04-01-92	2001-2102	51772	2.63	0.644
Avg		52411	1.73	0.428

Table 12. Summary of the April 2, 1992 Formaldehyde Emission Compliance Test at the Louisiana-Pacific Plant in New Waverly, Texas.

Date	Time	Volumetric		Emission Rate
		Flow Rate	Concentration	
	(HRS)	(DSCFM)	(ppm,w)	(LB/HR)
(No. 3 Press Vent)				
04-02-92	0940-1041	54528	0.61	0.156
04-02-92	1115-1220	54418	0.77	0.200
04-02-92	1253-1355	51411	0.60	0.146
Avg		53452	0.66	0.167
(No. 4 Forming Line Vent)				
04-02-92	1512-1614	55414	0.06	0.015
04-02-92	1650-1751	54633	0.06	0.016
04-02-92	1825-1925	54891	0.06	0.016
Avg		54979	0.06	0.016

Table 13. Summary of the March 30 - April 1, 1992 Total Hydrocarbon Determinations at the Louisiana-Pacific Plant in New Waverly, Texas.

Date	Time	Volumetric Flow Rate	Concentration	Emission Rate
	(HRS)	(DSCFM)	(ppmC,w)	(LB/HR)
(No. 1 Dryer)				
03-30-92	1150-1252	66470	351	46.9
03-30-92	1330-1440	66610	303	40.1
03-30-92	1520-1627	66560	312	41.6
Avg		66547	322	42.9
(No. 2 Dryer)				
03-31-92	1100-1202	69815	174	24.6
03-31-92	1240-1342	71085	165	23.7
03-31-92	1425-1543	69490	186	26.1
Avg		70130	175	24.8
(No. 1 Press Vent)				
04-01-92	1630-1755	50000	59	5.58
04-01-92	1827-1930	50000	64	6.06
04-01-92	2001-2105	50000	61	5.77
Avg		50000	61	5.80
(No. 2 Press Vent)				
04-02-92	0940-1043	51000	105	10.1
04-02-92	1116-1221	51000	66	6.38
04-02-92	1253-1358	51000	64	6.18
Avg		51000	78	7.57

Table 14. Summary of the April 2, 1992 Total Hydrocarbon Determinations
at the Louisiana-Pacific Plant in New Waverly, Texas.

Date	Time	Volumetric		Emission Rate
		Flow Rate	Concentration	
	(HRS)	(DSCFM)	(ppmC,w)	(LB/HR)
(No. 3 Press Vent)				
04-01-92	1110-1217	54500	63	6.47
04-01-92	1300-1401	54500	81	8.32
04-01-92	1437-1540	54500	90	9.25
Avg		54500	78	8.02

3 RESULTS

The results of all field and laboratory evaluations are presented in this section. Gas composition (orsat and moisture) are presented first followed by the computer printout of the particulate, PM-10, carbon monoxide and formaldehyde results. Preliminary measurements including test port locations are given in the appendices.

The results have been calculated on a personal computer using programs written in Extended BASIC specifically for source testing calculations. EPA-published equations have been used as the basis of the calculation techniques in these programs.

The emission rates have been calculated using the product of the concentration times flow method.

3.1 Results of Orsat and Moisture Determinations

Test No. 1
No. 1 Dryer Stack

Results of Orsat & Moisture Analyses-----Methods 3 & 4(%v/v)

	1	2	3
	Run 1	Run 2	Run 3
Date of run	03-30-92	03-30-92	03-30-92
Dry basis (orsat)			
carbon dioxide.....	1.40	1.60	1.50
oxygen.....	19.40	19.10	19.30
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	79.20	79.30	79.20
Wet basis (orsat)			
carbon dioxide.....	1.30	1.47	1.38
oxygen.....	17.97	17.60	17.81
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	73.35	73.06	73.08
water vapor.....	7.39	7.87	7.73
Dry molecular weight.....	29.00	29.02	29.01
Wet molecular weight.....	28.19	28.15	28.16
Specific gravity.....	0.974	0.972	0.973
Water mass flow.....(LB/HR)	14841	15971	15929
FO	1.071	1.125	1.067

Test No. 2
No. 1 Dryer Stack

Results of Orsat & Moisture Analyses-----Methods 3 & 4(%v/v)

	⁴ Run 1	⁵ Run 2	⁶ Run 3
Date of run	03-30-92	03-30-92	03-30-92

Dry basis (orsat)

carbon dioxide.....	1.60	1.90	1.50
oxygen.....	19.30	18.80	19.40
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	79.10	79.30	79.10

Wet basis (orsat)

carbon dioxide.....	1.49	1.79	1.40
oxygen.....	17.96	17.67	18.11
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	73.60	74.54	73.86
water vapor.....	6.96	6.01	6.63

Dry molecular weight.....	29.03	29.06	29.02
Wet molecular weight.....	28.26	28.39	28.29
Specific gravity.....	0.976	0.981	0.977
Water mass flow.....(LB/HR)	0.00	0.00	0.00

FO	1.000	1.105	1.000
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Test No. 4
No. 1 Dryer Stack

Results of Orsat & Moisture Analyses-----Methods 3 & 4(%v/v)

	7	8	9
	Run 1	Run 2	Run 3
Date of run	03-30-92	03-30-92	03-30-92
Dry basis (orsat)			
carbon dioxide.....	1.60	1.60	1.70
oxygen.....	19.20	19.10	19.10
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	79.20	79.30	79.20
Wet basis (orsat)			
carbon dioxide.....	1.49	1.49	1.57
oxygen.....	17.92	17.80	17.69
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	73.93	73.89	73.37
water vapor.....	6.66	6.82	7.36
Dry molecular weight.....	29.02	29.02	29.04
Wet molecular weight.....	28.29	28.27	28.22
Specific gravity.....	0.977	0.976	0.975
Water mass flow.....(LB/HR)	12569	12671	13977
FO	1.062	1.125	1.059

Test No. 5
No. 2 Dryer Stack

Results of Orsat & Moisture Analyses-----Methods 3 & 4(%v/v)

	1 Run 1 03-31-92	2 Run 2 03-31-92	3 Run 3 03-31-92
Date of run			

Dry basis (orsat)

carbon dioxide.....	1.20	1.10	1.20
oxygen.....	19.60	19.70	19.70
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	79.20	79.20	79.10

Wet basis (orsat)

carbon dioxide.....	1.11	1.02	1.11
oxygen.....	18.08	18.25	18.24
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	73.05	73.37	73.25
water vapor.....	7.77	7.37	7.40
Dry molecular weight.....	28.98	28.96	28.98
Wet molecular weight.....	28.12	28.16	28.17
Specific gravity.....	0.971	0.973	0.973
Water mass flow.....(LB/HR)	16750	15947	15990

FO

1.083

1.091

1.000

Test No. 6
No. 2 Dryer Stack

Results of Orsat & Moisture Analyses-----Methods 3 & 4(%v/v)

	4 Run 1 03-31-92	5 Run 2 03-31-92	6 Run 3 03-31-92
Date of run			
Dry basis (orsat)			
carbon dioxide.....	1.20	1.20	1.40
oxygen.....	19.70	19.60	19.50
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	79.10	79.20	79.10
Wet basis (orsat)			
carbon dioxide.....	1.11	1.12	1.30
oxygen.....	18.21	18.27	18.10
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	73.13	73.82	73.44
water vapor.....	7.55	6.79	7.16
Dry molecular weight.....	28.98	28.98	29.00
Wet molecular weight.....	28.15	28.23	28.22
Specific gravity.....	0.972	0.975	0.975
Water mass flow.....(LB/HR)	0.00	0.00	0.00

FO

1.000

1.083

1.000

Test No. 8
No. 2 Dryer Stack

Results of Orsat & Moisture Analyses-----Methods 3 & 4(%v/v)

	7	8	9
	Run 1	Run 2	Run 3
Date of run	03-31-92	03-31-92	03-31-92

Dry basis (orsat)

carbon dioxide.....	1.30	1.20	1.20
oxygen.....	19.50	19.60	19.60
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	79.20	79.20	79.20

Wet basis (orsat)

carbon dioxide.....	1.21	1.11	1.11
oxygen.....	18.16	18.20	18.10
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	73.76	73.56	73.13
water vapor.....	6.86	7.12	7.66

Dry molecular weight.....	28.99	28.98	28.98
Wet molecular weight.....	28.23	28.19	28.14
Specific gravity.....	0.975	0.974	0.972
Water mass flow.....(LB/HR)	13866	14474	15486

FO	1.077	1.083	1.083
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Test No. 9
No. 1 Press Vent Stack

Results of Orsat & Moisture Analyses-----Methods 3 & 4(%v/v)

Date of run	Run 1 04-01-92	Run 2 04-01-92	Run 3 04-01-92
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Dry basis (orsat)

carbon dioxide.....	0.03	0.03	0.03
oxygen.....	20.90	20.90	20.90
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	79.07	79.07	79.07

Wet basis (orsat)

carbon dioxide.....	0.03	0.03	0.03
oxygen.....	20.57	20.70	20.64
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	77.83	78.32	78.07
water vapor.....	1.56	0.95	1.26

Dry molecular weight.....	28.84	28.84	28.84
Wet molecular weight.....	28.67	28.74	28.70
Specific gravity.....	0.990	0.993	0.992
Water mass flow.....(LB/HR)	2250	1343	1792

FO	0.000	0.000	0.000
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Test No. 10
No. 1 Press Vent Stack

Results of Orsat & Moisture Analyses-----Methods 3 & 4(%v/v)

	Run 1	Run 2	Run 3
Date of run	04-01-92	04-01-92	04-01-92

Dry basis (orsat)

carbon dioxide.....	0.00	0.00	0.00
oxygen.....	0.00	0.00	0.00
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	100.00	100.00	100.00

Wet basis (orsat)

carbon dioxide.....	0.00	0.00	0.00
oxygen.....	0.00	0.00	0.00
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	98.57	98.10	98.79
water vapor.....	1.43	1.90	1.21

Dry molecular weight.....	28.00	28.00	28.00
Wet molecular weight.....	27.86	27.81	27.88
Specific gravity.....	0.962	0.961	0.963
Water mass flow.....(LB/HR)	0.00	0.00	0.00

FO	0.000	0.000	0.000
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Test No. 12
No. 2 Press Vent Stack

Results of Orsat & Moisture Analyses-----Methods 3 & 4(%v/v)

	Run 1	Run 2	Run 3
Date of run	04-01-92	04-01-92	04-01-92

Dry basis (orsat)

carbon dioxide.....	0.03	0.03	0.03
oxygen.....	20.90	20.90	20.90
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	79.07	79.07	79.07

Wet basis (orsat)

carbon dioxide.....	0.03	0.03	0.03
oxygen.....	20.62	20.61	20.62
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	78.01	77.99	78.02
water vapor.....	1.34	1.37	1.33

Dry molecular weight.....	28.84	28.84	28.84
Wet molecular weight.....	28.70	28.69	28.70
Specific gravity.....	0.991	0.991	0.991
Water mass flow.....(LB/HR)	1947	1964	1946

FO	0.000	0.000	0.000
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Test No. 13
No. 2 Press Vent Stack

Results of Orsat & Moisture Analyses-----Methods 3 & 4(%v/v)

	Run 1	Run 2	Run 3
Date of run	04-01-92	04-01-92	04-01-92

Dry basis (orsat)

carbon dioxide.....	0.00	0.00	0.00
oxygen.....	0.00	0.00	0.00
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	100.00	100.00	100.00

Wet basis (orsat)

carbon dioxide.....	0.00	0.00	0.00
oxygen.....	0.00	0.00	0.00
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	98.49	99.08	98.62
water vapor.....	1.51	0.92	1.38
Dry molecular weight.....	28.00	28.00	28.00
Wet molecular weight.....	27.85	27.91	27.86
Specific gravity.....	0.962	0.964	0.962
Water mass flow.....(LB/HR)	0.00	0.00	0.00

FO	0.000	0.000	0.000
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Test No. 15
No. 3 Press Vent Stack

Results of Orsat & Moisture Analyses-----Methods 3 & 4(%v/v)

	Run 1	Run 2	Run 3
Date of run	04-02-92	04-02-92	04-02-92

Dry basis (orsat)

carbon dioxide.....	0.03	0.03	0.03
oxygen.....	20.90	20.90	20.90
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	79.07	79.07	79.07

Wet basis (orsat)

carbon dioxide.....	0.03	0.03	0.03
oxygen.....	20.66	20.55	20.68
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	78.16	77.76	78.25
water vapor.....	1.16	1.65	1.04

Dry molecular weight.....	28.84	28.84	28.84
Wet molecular weight.....	28.72	28.66	28.73
Specific gravity.....	0.992	0.990	0.992
Water mass flow.....(LB/HR)	1651	2414	1493

FO	0.000	0.000	0.000
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Test No. 16
No. 3 Press Vent Stack

Results of Orsat & Moisture Analyses-----Methods 3 & 4(%v/v)

	Run 1	Run 2	Run 3
Date of run	04-02-92	04-02-92	04-02-92

Dry basis (orsat)

carbon dioxide.....	0.00	0.00	0.00
oxygen.....	0.00	0.00	0.00
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	100.00	100.00	100.00

Wet basis (orsat)

carbon dioxide.....	0.00	0.00	0.00
oxygen.....	0.00	0.00	0.00
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	99.09	98.62	99.04
water vapor.....	0.91	1.38	0.96

Dry molecular weight.....	28.00	28.00	28.00
Wet molecular weight.....	27.91	27.86	27.90
Specific gravity.....	0.964	0.962	0.964
Water mass flow.....(LB/HR)	0.00	0.00	0.00

FO	0.000	0.000	0.000
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Test No. 18
No. 4 Forming Line Vent

Results of Orsat & Moisture Analyses-----Methods 3 & 4(%v/v)

	Run 1	Run 2	Run 3
Date of run	04-02-92	04-02-92	04-02-92

Dry basis (orsat)

carbon dioxide.....	0.03	0.03	0.03
oxygen.....	20.90	20.90	20.90
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	79.07	79.07	79.07

Wet basis (orsat)

carbon dioxide.....	0.03	0.03	0.03
oxygen.....	20.66	20.65	20.67
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	78.17	78.11	78.19
water vapor.....	1.14	1.22	1.12

Dry molecular weight.....	28.84	28.84	28.84
Wet molecular weight.....	28.72	28.71	28.72
Specific gravity.....	0.992	0.992	0.992
Water mass flow.....(LB/HR)	1643	1788	1649

FO	0.000	0.000	0.000
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Test No. 19
No. 4 Forming Line Vent Stack

Results of Orsat & Moisture Analyses-----Methods 3 & 4(%v/v)

	Run 1	Run 2	Run 3
Date of run	04-02-92	04-02-92	04-02-92

Dry basis (orsat)

carbon dioxide.....	0.00	0.00	0.00
oxygen.....	0.00	0.00	0.00
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	100.00	100.00	100.00

Wet basis (orsat)

carbon dioxide.....	0.00	0.00	0.00
oxygen.....	0.00	0.00	0.00
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	98.92	99.40	98.91
water vapor.....	1.08	0.60	1.09

Dry molecular weight.....	28.00	28.00	28.00
Wet molecular weight.....	27.89	27.94	27.89
Specific gravity.....	0.963	0.965	0.963
Water mass flow.....(LB/HR)	0.00	0.00	0.00

FO	0.000	0.000	0.000
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3.2 Results of Particulate Determinations

Test No. 4
No. 1 Dryer Stack

Results of Particulate Loading Determinations-----Method 5

	Run 1 03-30-92	Run 2 03-30-92	Run 3 03-30-92
Date of run			
Time run start/end.....(HRS)	1700/1802	1820/1922	1940/2042
Static pressure.....(IN.WC)	-1.10	-1.10	-1.10
Cross sectional area (SQ.FT)	19.15	19.15	19.15
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	45.0	47.0	53.0
desiccant.....(GRAMS)	10.0	9.0	9.0
total.....(GRAMS)	55.0	56.0	62.0
Total particulate material..			
.....collected(grams)	0.0996	0.1012	0.0857
Gas meter coefficient.....	0.9991	0.9991	0.9991
Barometric pressure..(IN.HG)	29.74	29.74	29.74
Avg. orif.pres.drop..(IN.WC)	1.36	1.30	1.32
Avg. gas meter temp..(DEF-F)	113.4	95.7	84.4
Volume through gas meter....			
at meter conditions...(CF)	39.65	38.11	38.09
standard conditions.(DSCF)	36.36	36.06	36.80
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.185	.185	.185
Avg.stack gas temp ..(DEG-F)	177	174	173
Volumetric flow rate.....			
actual.....(ACFM)	81951	80212	81906
dry standard.....(DSCFM)	62828	61697	62719
Isokinetic variation.....(%)	99.0	100.0	100.4
Particulate concentration...			
actual.....(GR/ACF)	0.03239	0.03329	0.02751
dry standard.....(GR/DSCF)	0.04226	0.04330	0.03594
Particle mass rate...(LB/HR)	22.761	22.898	19.320

Test No. 8
No. 2 Dryer Stack

Results of Particulate Loading Determinations-----Method 5

	Run 1 03-31-92	Run 2 03-31-92	Run 3 03-31-92
Date of run			
Time run start/end.....(HRS)	1610/1712	1735/1837	1903/2005
Static pressure.....(IN.WC)	-0.80	-0.80	-0.80
Cross sectional area (SQ.FT)	19.15	19.15	19.15
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	49.0	53.0	57.0
desiccant.....(GRAMS)	12.0	11.0	12.0
total.....(GRAMS)	61.0	64.0	69.0
Total particulate material..collected(grams)	0.0717	0.0705	0.0590
Gas meter coefficient.....	0.9991	0.9991	0.9991
Barometric pressure..(IN.HG)	29.69	29.69	29.69
Avg. orif.pres.drop..(IN.WC)	1.56	1.56	1.52
Avg. gas meter temp..(DEF-F)	115.2	99.2	92.0
Volume through gas meter....			
at meter conditions...(CF)	42.73	41.92	41.23
standard conditions.(DSCF)	39.02	39.38	39.23
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.185	.185	.185
Avg.stack gas temp ..(DEG-F)	145	136	135
Volumetric flow rate.....			
actual.....(ACFM)	83280	82646	82017
dry standard.....(DSCFM)	67066	67329	66568
Isokinetic variation.....(%)	99.5	100.0	100.8
Particulate concentration...			
actual.....(GR/ACF)	0.02282	0.02250	0.01883
dry standard.....(GR/DSCF)	0.02835	0.02763	0.02321
Particle mass rate...(LB/HR)	16.299	15.944	13.242

Test No. 9
No. 1 Press Vent Stack

Results of Particulate Loading Determinations-----Method 5

	Run 1 04-01-92	Run 2 04-01-92	Run 3 04-01-92
Date of run			
Time run start/end.....(HRS)	1110/1212	1246/1348	1435/1538
Static pressure.....(IN.WC)	-0.15	-0.15	-0.15
Cross sectional area (SQ.FT)	21.48	21.48	21.48
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	0.0	0.0	3.0
desiccant.....(GRAMS)	15.0	9.0	9.0
total.....(GRAMS)	15.0	9.0	12.0
Total particulate material..			
.....collected(grams)	0.0258	0.0280	0.0188
Gas meter coefficient.....	0.9991	0.9991	0.9991
Barometric pressure..(IN.HG)	29.63	29.63	29.63
Avg. orif.pres.drop..(IN.WC)	2.04	1.98	2.01
Avg. gas meter temp..(DEF-F)	94.1	89.3	90.5
Volume through gas meter....			
at meter conditions...(CF)	47.00	46.54	46.53
standard conditions.(DSCF)	44.52	44.46	44.35
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.241	.241	.241
Avg.stack gas temp ..(DEG-F)	81	76	78
Volumetric flow rate.....			
actual.....(ACFM)	53106	51893	52247
dry standard.....(DSCFM)	50491	50149	50082
Isokinetic variation.....(%)	99.7	100.2	100.1
Particulate concentration...			
actual.....(GR/ACF)	0.00850	0.00939	0.00627
dry standard.....(GR/DSCF)	0.00894	0.00972	0.00654
Particle mass rate...(LB/HR)	3.870	4.177	2.807

Test No. 12
No. 2 Press Vent Stack

Results of Particulate Loading Determinations-----Method 5

	Run 1 04-01-92	Run 2 04-01-92	Run 3 04-01-92
Date of run			
Time run start/end.....(HRS)	1630/1753	1827/1929	2001/2103
Static pressure.....(IN.WC)	-0.15	-0.15	-0.15
Cross sectional area (SQ.FT)	21.48	21.48	21.48
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	1.0	2.0	1.0
desiccant.....(GRAMS)	12.0	11.0	12.0
total.....(GRAMS)	13.0	13.0	13.0
Total particulate material..			
.....collected(grams)	0.0312	0.0276	0.0244
Gas meter coefficient.....	0.9991	0.9991	0.9991
Barometric pressure...(IN.HG)	29.63	29.63	29.63
Avg. orif.pres.drop...(IN.WC)	2.05	2.00	2.08
Avg. gas meter temp...(DEF-F)	87.2	96.2	92.1
Volume through gas meter....			
at meter conditions...(CF)	47.16	46.75	47.87
standard conditions.(DSCF)	45.24	44.11	45.51
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.241	.241	.241
Avg.stack gas temp ..(DEG-F)	90	89	84
Volumetric flow rate.....			
actual.....(ACFM)	54631	53635	54325
dry standard.....(DSCFM)	51224	50380	51511
Isokinetic variation.....(%)	99.8	99.0	99.9
Particulate concentration...			
actual.....(GR/ACF)	0.00997	0.00907	0.00784
dry standard.....(GR/DSCF)	0.01064	0.00966	0.00827
Particle mass rate...(LB/HR)	4.673	4.170	3.653

Test No. 15
No. 3 Press Vent Stack

Results of Particulate Loading Determinations-----Method 5

	Run 1 04-02-92	Run 2 04-02-92	Run 3 04-02-92
Date of run			
Time run start/end.....(HRS)	940/1042	1115/1217	1253/1356
Static pressure.....(IN.WC)	-0.15	-0.15	-0.15
Cross sectional area (SQ.FT)	21.48	21.48	21.48
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	0.0	0.0	-1.0
desiccant.....(GRAMS)	11.0	16.0	11.0
total.....(GRAMS)	11.0	16.0	10.0
Total particulate material..			
.....collected(grams)	0.0309	0.0278	0.0264
Gas meter coefficient.....	0.9991	0.9991	0.9991
Barometric pressure..(IN.HG)	29.65	29.15	29.65
Avg. orif.pres.drop..(IN.WC)	1.97	2.11	2.05
Avg. gas meter temp..(DEF-F)	84.2	88.6	87.7
Volume through gas meter....			
at meter conditions...(CF)	45.96	47.73	46.89
standard conditions.(DSCF)	44.35	44.93	44.96
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.241	.241	.241
Avg.stack gas temp ..(DEG-F)	85	86	86
Volumetric flow rate.....			
actual.....(ACFM)	53030	55363	53563
dry standard.....(DSCFM)	50328	51252	50763
Isokinetic variation.....(%)	99.6	99.1	100.1
Particulate concentration...			
actual.....(GR/ACF)	0.01020	0.00883	0.00858
dry standard.....(GR/DSCF)	0.01075	0.00955	0.00906
Particle mass rate...(LB/HR)	4.637	4.194	3.942

Test No. 18
No. 4 Forming Line Vent

Results of Particulate Loading Determinations-----Method 5

	Run 1 04-02-92	Run 2 04-02-92	Run 3 04-02-92
Date of run			
Time run start/end.....(HRS)	1512/1614	1650/1752	1825/1927
Static pressure.....(IN.WC)	-0.15	-0.15	-0.15
Cross sectional area (SQ.FT)	21.48	21.48	21.48
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	-4.0	-3.0	0.0
desiccant.....(GRAMS)	15.0	15.0	11.0
total.....(GRAMS)	11.0	12.0	11.0
Total particulate material..			
.....collected(grams)	0.0149	0.0153	0.0118
Gas meter coefficient.....	0.9991	0.9991	0.9991
Barometric pressure..(IN.HG)	29.65	29.65	29.65
Avg. orif.pres.drop..(IN.WC)	1.98	2.06	2.09
Avg. gas meter temp..(DEF-F)	78.3	82.2	83.6
Volume through gas meter....			
at meter conditions...(CF)	46.02	47.35	47.49
standard conditions.(DSCF)	44.89	45.87	45.89
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.241	.241	.241
Avg.stack gas temp ..(DEG-F)	62	62	60
Volumetric flow rate.....			
actual.....(ACFM)	51170	52170	52275
dry standard.....(DSCFM)	50714	51670	52006
Isokinetic variation.....(%)	100.1	100.4	99.8
Particulate concentration...			
actual.....(GR/ACF)	0.00507	0.00510	0.00395
dry standard.....(GR/DSCF)	0.00512	0.00515	0.00397
Particle mass rate...(LB/HR)	2.226	2.279	1.769

3.3 Results of PM-10 Determinations

Test No. 1
No. 1 Dryer Stack

Results of PM-10 Determinations -----

	Run 1	Run 2	Run 3
Date of run	03-30-92	03-30-92	03-30-92
Time run start/end.....(HRS)	1130/1300	1325/1455	1518/1636
Static pressure.....(IN.WC)	-1.10	-1.10	-1.10
Cross sectional area (SQ.FT)	19.15	19.15	19.15
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	45.0	55.0	48.0
desiccant.....(GRAMS)	8.0	8.0	8.0
total.....(GRAMS)	53.0	63.0	56.0
Total PM-10 material.....			
.....collected(grams)	0.0647	0.0726	0.0684
Gas meter coefficient.....	0.9991	0.9991	0.9991
Barometric pressure..(IN.HG)	29.74	29.74	29.74
Avg. orif.pres.drop..(IN.WC)	0.45	0.60	0.59
Avg. gas meter temp..(DEF-F)	93.4	112.9	117.5
Volume through gas meter....			
at meter conditions...(CF)	33.02	37.96	34.66
standard conditions.(DSCF)	31.31	34.78	31.50
Total sampling time....(MIN)	87.63	87.43	78.80
Nozzle diameter.....(IN)	.150	.150	.150
Avg.stack gas temp ..(DEG-F)	179	179	179
Volumetric flow rate.....			
actual.....(ACFM)	87356	88406	89639
dry standard.....(DSCFM)	66289	66672	67753
Isokinetic variation.....(%)	84.1	93.2	92.1
PM-10 cutpoint.....(um)	11.02	10.16	10.12
PM-10 concentration.....			
actual.....(GR/ACF)	0.02419	0.02428	0.02531
dry standard.....(GR/DSCF)	0.03189	0.03221	0.03350
PM-10 mass rate.....(LB/HR)	18.117	18.404	19.456

Test No. 5
No. 2 Dryer Stack

Results of PM-10 Determinations -----

	Run 1 03-31-92	Run 2 03-31-92	Run 3 03-31-92
Date of run			
Time run start/end.....(HRS)	1100/1220	1245/1402	1425/1542
Static pressure.....(IN.WC)	-0.80	-0.80	-0.80
Cross sectional area (SQ.FT)	19.15	19.15	19.15
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	48.0	44.0	46.0
desiccant.....(GRAMS)	8.0	7.0	6.0
total.....(GRAMS)	56.0	51.0	52.0
Total PM-10 material.....			
.....collected(grams)	0.0538	0.0521	0.0612
Gas meter coefficient.....	0.9991	0.9991	0.9991
Barometric pressure..(IN.HG)	29.69	29.69	29.69
Avg. orif.pres.drop..(IN.WC)	0.58	0.56	0.58
Avg. gas meter temp..(DEF-F)	87.1	109.6	119.6
Volume through gas meter....			
at meter conditions...(CF)	32.72	32.88	33.96
standard conditions.(DSCF)	31.34	30.24	30.70
Total sampling time....(MIN)	76.85	76.94	77.81
Nozzle diameter.....(IN)	.150	.150	.150
Avg.stack gas temp ..(DEG-F)	143	143	144
Volumetric flow rate.....			
actual.....(ACFM)	88578	89071	89095
dry standard.....(DSCFM)	70872	71501	71379
Isokinetic variation.....(%)	89.8	85.8	86.3
PM-10 cutpoint.....(um)	9.93	10.24	10.20
PM-10 concentration.....			
actual.....(GR/ACF)	0.02119	0.02133	0.02463
dry standard.....(GR/DSCF)	0.02649	0.02658	0.03076
PM-10 mass rate.....(LB/HR)	16.092	16.291	18.818

3.4 Results of Carbon Monoxide Determinations

Test No. 1
No. 1 Dryer Stack

Results of CO Determinations -----Method 10

	Run 1	Run 2	Run 3
Date of run	03-30-92	03-30-92	03-30-92
Time run start/end.....(HRS)	1130-1300	1325-1455	1518-1636
Total sampling time....(MIN)	87.6	87.4	78.8
Moisture content.....(%V/V)	7.39	7.87	7.73
O2 Concentration.....(%V/V)	19.40	19.10	19.30
Volumetric flow rate (DSCFM)	66290	66670	67750
CO concentration.....			
(GR/DSCF).....	0.0173	0.0148	0.0153
(MG/DSCM).....	39.61	33.79	34.95
(PPM-WET).....	31.49	26.72	27.68
(PPM-DRY).....	34.00	29.00	30.00
(PPM-DRY @ 7% O2).....	297.50	213.68	247.06
CO emission rate.....(LB/HR)	9.830	8.432	8.864

CO = Carbon monoxide

A trailing '<' symbol indicates that the true value
is less than or equal to the reported value

Test No. 2
No. 1 Dryer Stack

Results of CO Determinations -----Method 10

	Run 1	Run 2	Run 3
Date of run	03-30-92	03-30-92	03-30-92
Time run start/end.....(HRS)	1150-1252	1330-1440	1520-1627
Total sampling time....(MIN)	60.0	60.0	60.0
Moisture content.....(%V/V)	6.96	6.01	6.63
O2 Concentration.....(%V/V)	19.30	18.80	19.40
Volumetric flow rate (DSCFM)	66470	66610	66560
CO concentration.....			
(GR/DSCF).....	0.0168	0.0148	0.0142
(MG/DSCM).....	38.45	33.79	32.62
(PPM-WET).....	30.70	27.26	26.14
(PPM-DRY).....	33.00	29.00	28.00
(PPM-DRY @ 7% O2).....	271.76	184.55	245.00
CO emission rate.....(LB/HR)	9.567	8.425	8.128

CO = Carbon monoxide

A trailing '<' symbol indicates that the true value
is less than or equal to the reported value

Test No. 4
No. 1 Dryer Stack

Results of CO Determinations -----Method 10

	Run 1	Run 2	Run 3
Date of run	03-30-92	03-30-92	03-30-92
Time run start/end.....(HRS)	1700-1802	1820-1922	1940-2042
Total sampling time....(MIN)	60.0	60.0	60.0
Moisture content.....(%V/V)	6.66	6.82	7.36
O2 Concentration.....(%V/V)	19.20	19.10	19.10
Volumetric flow rate (DSCFM)	62830	61700	62720
CO concentration.....			
(GR/DSCF).....	0.0188	0.0214	0.0204
(MG/DSCM).....	43.11	48.93	46.60
(PPM-WET).....	34.54	39.14	37.06
(PPM-DRY).....	37.00	42.00	40.00
(PPM-DRY @ 7% O2).....	287.78	309.47	294.74
CO emission rate.....(LB/HR)	10.139	11.302	10.942

CO = Carbon monoxide

A trailing '<' symbol indicates that the true value
is less than or equal to the reported value

Test No. 5
No. 2 Dryer Stack

Results of CO Determinations -----Method 10

	Run 1	Run 2	Run 3
Date of run	03-31-92	03-31-92	03-31-92
Time run start/end.....(HRS)	1100-1220	1245-1402	1425-1542
Total sampling time....(MIN)	76.9	76.9	77.8
Moisture content.....(%V/V)	7.77	7.37	7.40
O2 Concentration.....(%V/V)	19.60	19.70	19.70
Volumetric flow rate (DSCFM)	70870	71500	71380
CO concentration.....			
(GR/DSCF).....	0.0183	0.0229	0.0229
(MG/DSCM).....	41.94	52.43	52.43
(PPM-WET).....	33.20	41.68	41.67
(PPM-DRY).....	36.00	45.00	45.00
(PPM-DRY @ 7% O2).....	360.00	484.62	484.62
CO emission rate.....(LB/HR)	11.127	14.033	14.009

CO = Carbon monoxide

A trailing '<' symbol indicates that the true value
is less than or equal to the reported value

Test No. 6
No. 2 Dryer Stack

Results of CO Determinations -----Method 10

	Run 1	Run 2	Run 3
Date of run	03-31-92	03-31-92	03-31-92
Time run start/end.....(HRS)	1100-1202	1240-1342	1425-1543
Total sampling time....(MIN)	60.0	60.0	60.0
Moisture content.....(%V/V)	7.55	6.79	7.16
O2 Concentration.....(%V/V)	19.70	19.60	19.50
Volumetric flow rate (DSCFM)	69815	71085	69490
CO concentration.....			
(GR/DSCF).....	0.0224	0.0209	0.0209
(MG/DSCM).....	51.26	47.77	47.77
(PPM-WET).....	40.68	38.22	38.06
(PPM-DRY).....	44.00	41.00	41.00
(PPM-DRY @ 7% O2).....	473.85	410.00	382.67
CO emission rate.....(LB/HR)	13.397	12.711	12.426

CO = Carbon monoxide

A trailing '<' symbol indicates that the true value
is less than or equal to the reported value

Test No. 8
No. 2 Dryer Stack

Results of CO Determinations -----Method 10

	Run 1	Run 2	Run 3
Date of run	03-31-92	03-31-92	03-31-92
Time run start/end.....(HRS)	1610-1712	1735-1837	1903-2005
Total sampling time....(MIN)	60.0	60.0	60.0
Moisture content.....(%V/V)	6.86	7.12	7.66
O2 Concentration.....(%V/V)	19.50	19.60	19.60
Volumetric flow rate (DSCFM)	67070	67330	66570
CO concentration.....			
(GR/DSCF).....	0.0244	0.0229	0.0254
(MG/DSCM).....	55.92	52.43	58.25
(PPM-WET).....	44.71	41.80	46.17
(PPM-DRY).....	48.00	45.00	50.00
(PPM-DRY @ 7% O2).....	448.00	450.00	500.00
CO emission rate.....(LB/HR)	14.041	13.214	14.517

CO = Carbon monoxide

A trailing '<' symbol indicates that the true value
is less than or equal to the reported value

3.5 Results of Formaldehyde Determinations

Test No. 2
No. 1 Dryer Stack

Results of Formaldehyde Tests ----- EPA Method 0011

	Run 1 03-30-92	Run 2 03-30-92	Run 3 03-30-92
Date of run			
Time run start/end.....(HRS)	1150/1252	1330/1440	1520/1627
Static pressure.....(IN.WC)	-1.10	-1.10	-1.10
Cross sectional area (SQ.FT)	19.15	19.15	19.15
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	71.0	62.0	84.0
desiccant.....(GRAMS)	24.0	25.0	14.0
total.....(GRAMS)	95.0	87.0	98.0
Formaldehyde in sample..(uG)	990	850	760
Gas meter coefficient.....	1.0010	1.0010	1.0010
Barometric pressure..(IN.HG)	29.74	29.74	29.74
Avg. orif.pres.drop..(IN.WC)	3.20	3.69	3.79
Avg. gas meter temp..(DEG-F)	82.7	85.8	86.1
Volume through gas meter....			
at meter conditions...(CF)	61.41	66.12	67.05
standard conditions.(DSCF)	59.89	64.20	65.08
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.239	.239	.239
Avg.stack gas temp ..(DEG-F)	179	180	180
Volumetric flow rate.....			
actual.....(ACFM)	87209	86633	87100
dry standard.....(DSCFM)	66470	66611	66561
Isokinetic variation.....(%)	92.3	98.8	100.2
CH2O concentration.....			
(GR/DSCF).....	0.0003	0.0002	0.0002
(MG/DSCM).....	0.59	0.47	0.42
(PPM-DRY).....	0.47	0.38	0.33
(PPM-WET).....	0.44	0.36	0.31
CH2O emission rate...(LB/HR)	0.14640	0.11766	0.10372

CH2O = Formaldehyde

A trailing '<' symbol indicates that the true value
is less than or equal to the reported value

Test No. 6
No. 2 Dryer Stack

Results of Formaldehyde Tests ----- EPA Method 0011

	Run 1	Run 2	Run 3
Date of run	03-31-92	03-31-92	03-31-92
Time run start/end.....(HRS)	1100/1202	1240/1342	1425/1543
Static pressure.....(IN.WC)	-0.80	-0.80	-0.80
Cross sectional area (SQ.FT)	19.15	19.15	19.15
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	89.0	77.0	86.0
desiccant.....(GRAMS)	30.0	29.0	25.0
total.....(GRAMS)	119.0	106.0	111.0
Formaldehyde in sample..(uG)	1800	1900	1800
Gas meter coefficient.....	1.0010	1.0010	1.0010
Barometric pressure..(IN.HG)	29.69	29.69	29.69
Avg. orif.pres.drop..(IN.WC)	4.18	4.22	4.16
Avg. gas meter temp..(DEF-F)	78.4	84.7	89.8
Volume through gas meter....			
at meter conditions...(CF)	69.80	70.58	70.47
standard conditions.(DSCF)	68.67	68.64	67.89
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.239	.239	.239
Avg.stack gas temp ..(DEG-F)	138	140	139
Volumetric flow rate.....			
actual.....(ACFM)	86375	87433	85772
dry standard.....(DSCFM)	69813	71086	69487
Isokinetic variation.....(%)	100.8	99.0	100.1
CH2O concentration.....			
(GR/DSCF).....	0.0004	0.0004	0.0004
(MG/DSCM).....	0.94	0.99	0.95
(PPM-DRY).....	0.75	0.79	0.76
(PPM-WET).....	0.69	0.74	0.70
CH2O emission rate...(LB/HR)	0.24443	0.26286	0.24608

CH2O = Formaldehyde

A trailing '<' symbol indicates that the true value
is less than or equal to the reported value

Test No. 10
No. 1 Press Vent Stack

Results of Formaldehyde Tests ----- EPA Method 0011

	Run 1	Run 2	Run 3
Date of run	04-01-92	04-01-92	04-01-92
Time run start/end.....(HRS)	1110/1212	1246/1348	1435/1536
Static pressure.....(IN.WC)	-0.12	-0.12	-0.12
Cross sectional area (SQ.FT)	21.48	21.48	21.48
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	-2.0	1.0	0.0
desiccant.....(GRAMS)	16.0	18.0	12.0
total.....(GRAMS)	14.0	19.0	12.0
Formaldehyde in sample..(uG)	740	730	110
Gas meter coefficient.....	1.0010	1.0010	1.0010
Barometric pressure..(IN.HG)	29.63	29.63	29.63
Avg. orif.pres.drop..(IN.WC)	1.88	1.93	1.94
Avg. gas meter temp..(DEF-F)	75.7	77.2	76.3
Volume through gas meter....			
at meter conditions...(CF)	46.39	47.35	47.23
standard conditions.(DSCF)	45.52	46.34	46.30
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.239	.239	.239
Avg.stack gas temp ..(DEG-F)	81	76	78
Volumetric flow rate.....			
actual.....(ACFM)	55957	56253	56568
dry standard.....(DSCFM)	53269	53832	54252
Isokinetic variation.....(%)	98.2	99.0	98.1
CH2O concentration.....			
(GR/DSCF).....	0.0003	0.0002	0.0000
(MG/DSCM).....	0.58	0.56	0.08
(PPM-DRY).....	0.46	0.45	0.07
(PPM-WET).....	0.46	0.44	0.07
CH2O emission rate...(LB/HR)	0.11502	0.11266	0.01712

CH2O = Formaldehyde

A trailing '<' symbol indicates that the true value
is less than or equal to the reported value

Test No. 13
No. 2 Press Vent Stack

Results of Formaldehyde Tests ----- EPA Method 0011

	Run 1 04-01-92	Run 2 04-01-92	Run 3 04-01-92
Date of run	04-01-92	04-01-92	04-01-92
Time run start/end.....(HRS)	1630/1753	1827/1927	2001/2102
Static pressure.....(IN.WC)	-0.12	-0.12	-0.12
Cross sectional area (SQ.FT)	21.48	21.48	21.48
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	1.0	-1.0	-3.0
desiccant.....(GRAMS)	14.0	10.0	16.0
total.....(GRAMS)	15.0	9.0	13.0
Formaldehyde in sample..(uG)	2200	2000	4100
Gas meter coefficient.....	1.0010	1.0010	1.0010
Barometric pressure..(IN.HG)	29.63	29.63	29.63
Avg. orif.pres.drop..(IN.WC)	1.91	1.88	1.75
Avg. gas meter temp..(DEF-F)	72.9	73.4	76.2
Volume through gas meter....			
at meter conditions...(CF)	46.86	46.41	44.63
standard conditions.(DSCF)	46.22	45.73	43.74
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.239	.239	.239
Avg.stack gas temp ..(DEG-F)	90	88	84
Volumetric flow rate.....			
actual.....(ACFM)	56568	55575	54630
dry standard.....(DSCFM)	52981	52481	51772
Isokinetic variation.....(%)	100.3	100.2	97.1
CH2O concentration.....			
(GR/DSCF).....	0.0007	0.0007	0.0015
(MG/DSCM).....	1.69	1.55	3.33
(PPM-DRY).....	1.35	1.24	2.66
(PPM-WET).....	1.33	1.23	2.63
CH2O emission rate...(LB/HR)	0.33494	0.30483	0.64441

CH2O = Formaldehyde

A trailing '<' symbol indicates that the true value
is less than or equal to the reported value

Test No. 16
No. 3 Press Vent Stack

Results of Formaldehyde Tests ----- EPA Method 0011

	Run 1	Run 2	Run 3
Date of run	04-02-92	04-02-92	04-02-92
Time run start/end.....(HRS)	940/1041	1115/1220	1253/1355
Static pressure.....(IN.WC)	-0.12	-0.12	-0.12
Cross sectional area (SQ.FT)	21.48	21.48	21.48
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	-2.0	-2.0	-3.0
desiccant.....(GRAMS)	11.0	16.0	12.0
total.....(GRAMS)	9.0	14.0	9.0
Formaldehyde in sample..(uG)	1000	1300	940
Gas meter coefficient.....	1.0010	1.0010	1.0010
Barometric pressure..(IN.HG)	29.65	29.65	29.65
Avg. orif.pres.drop..(IN.WC)	1.89	1.93	1.71
Avg. gas meter temp..(DEF-F)	60.1	65.5	66.4
Volume through gas meter....			
at meter conditions...(CF)	45.91	47.14	43.90
standard conditions.(DSCF)	46.43	47.19	43.85
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.239	.239	.239
Avg.stack gas temp ..(DEG-F)	85	86	86
Volumetric flow rate.....			
actual.....(ACFM)	57310	57561	54220
dry standard.....(DSCFM)	54528	54418	51411
Isokinetic variation.....(%)	97.9	99.7	98.0
CH2O concentration.....			
(GR/DSCF).....	0.0003	0.0004	0.0003
(MG/DSCM).....	0.76	0.98	0.76
(PPM-DRY).....	0.61	0.78	0.61
(PPM-WET).....	0.61	0.77	0.60
CH2O emission rate...(LB/HR)	0.15599	0.19914	0.14633

CH2O = Formaldehyde

A trailing '<' symbol indicates that the true value
is less than or equal to the reported value

Test No. 19
No. 4 Forming Line Vent Stack

Results of Formaldehyde Tests ----- EPA Method 0011

	Run 1	Run 2	Run 3
Date of run	04-02-92	04-02-92	04-02-92
Time run start/end.....(HRS)	1512/1614	1650/1751	1825/1925
Static pressure.....(IN.WC)	-0.12	-0.12	-0.12
Cross sectional area (SQ.FT)	21.48	21.48	21.48
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	-5.0	-2.0	-3.0
desiccant.....(GRAMS)	16.0	8.0	14.0
total.....(GRAMS)	11.0	6.0	11.0
Formaldehyde in sample..(uG)	100	100	100
Gas meter coefficient.....	1.0010	1.0010	1.0010
Barometric pressure..(IN.HG)	29.65	29.65	29.65
Avg. orif.pres.drop..(IN.WC)	1.98	1.91	1.94
Avg. gas meter temp..(DEF-F)	61.6	60.4	60.3
Volume through gas meter....			
at meter conditions...(CF)	47.14	46.25	46.57
standard conditions.(DSCF)	47.55	46.75	47.09
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.235	.239	.239
Avg.stack gas temp ..(DEG-F)	63	62	60
Volumetric flow rate.....			
actual.....(ACFM)	55983	54802	55147
dry standard.....(DSCFM)	55414	54633	54891
Isokinetic variation.....(%)	102.0	98.4	98.6
CH2O concentration.....			
(GR/DSCF).....	0.0000	0.0000	0.0000
(MG/DSCM).....	0.07	0.08	0.08
(PPM-DRY).....	0.06	0.06	0.06
(PPM-WET).....	0.06	0.06	0.06
CH2O emission rate...(LB/HR)	0.01548	0.01552	0.01549
CH2O = Formaldehyde			

A trailing '<' symbol indicates that the true value
is less than or equal to the reported value

Test No. 1
No. 1 Dryer Stack

Results of Volumetric Flow Rate Determination-----Method 2

Date of Determination.....	03-30-92
Time of Determination.....(HRS)	1000
Barometric pressure.....(IN.HG)	29.74
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	12
Shape of duct.....	Round
Stack diameter.....(IN)	59.25
Duct area.....(SQ.FT)	19.15
Direction of flow.....	UP
Static pressure.....(IN.WC)	-1.1
Avg. gas temp.....(DEG-F)	174
Moisture content.....(% V/V)	7.39
Avg. linear velocity.....(FT/SEC)	72.2
Gas density.....(LB/ACF)	.06043
Molecular weight.....(LB/LBMOLE)	29.00
Mass flow of gas.....(LB/HR)	300821
Volumetric flow rate.....	
actual.....(ACFM)	82969
dry standard.....(DSCFM)	63432

Test No. 5
No. 2 Dryer Stack

Results of Volumetric Flow Rate Determination-----Method 2

Date of Determination.....	03-31-92
Time of Determination.....(HRS)	800
Barometric pressure.....(IN.HG)	29.69
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	12
Shape of duct.....	Round
Stack diameter.....(IN)	59.25
Duct area.....(SQ.FT)	19.15
Direction of flow.....	UP
Static pressure.....(IN.WC)	-.8
Avg. gas temp.....(DEG-F)	138
Moisture content.....(% V/V)	7.77
Avg. linear velocity.....(FT/SEC)	76.3
Gas density.....(LB/ACF)	.06386
Molecular weight.....(LB/LBMOLE)	28.98
Mass flow of gas.....(LB/HR)	335771
Volumetric flow rate.....	
actual.....(ACFM)	87631
dry standard.....(DSCFM)	70672

Test No. 9
No. 1 Press Vent Stack

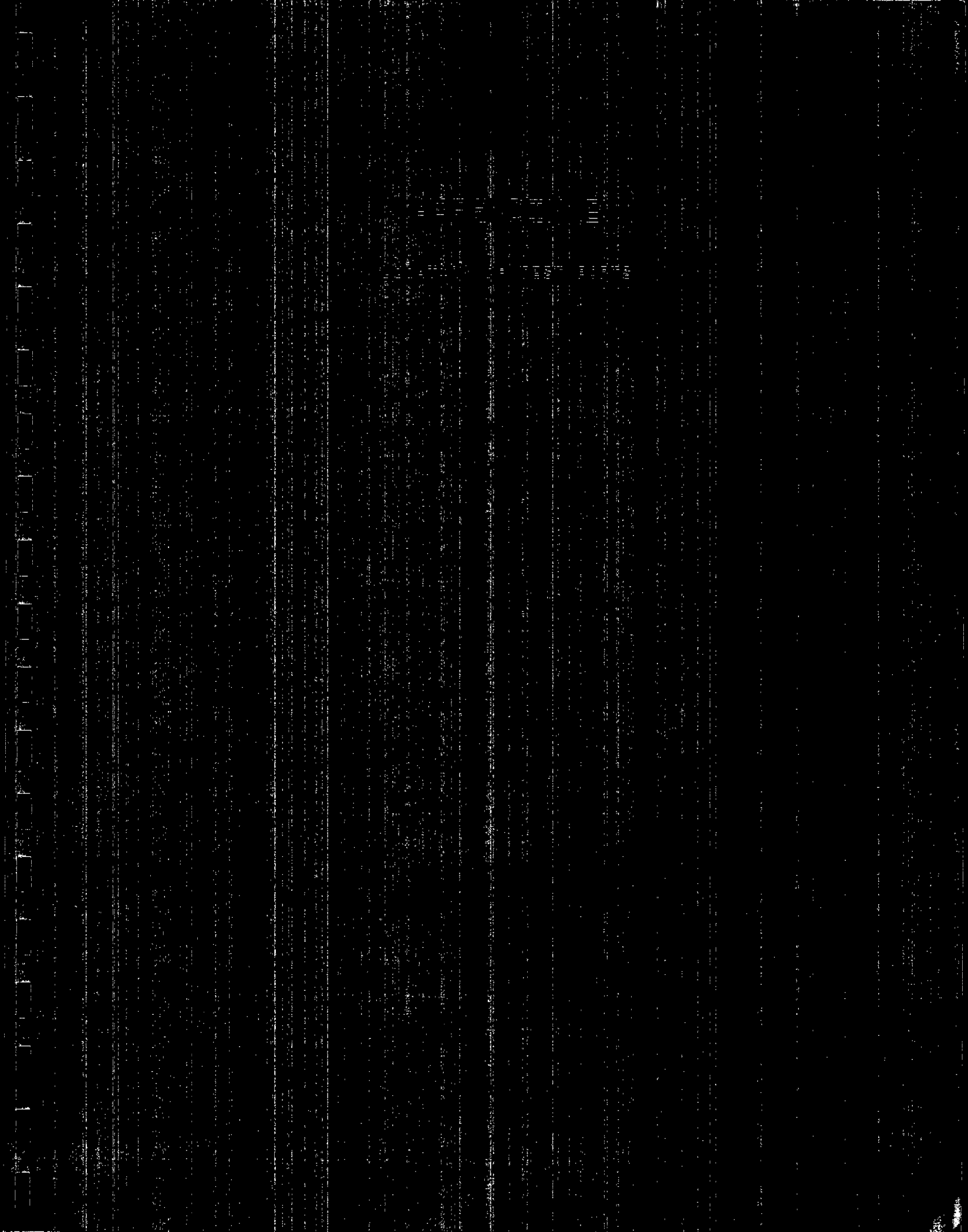
Results of Volumetric Flow Rate Determination-----Method 2

Date of Determination.....	04-01-92
Time of Determination.....(HRS)	910
Barometric pressure.....(IN.HG)	29.63
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	24
Shape of duct.....	Round
Stack diameter.....(IN)	62.75
Duct area.....(SQ.FT)	21.48
Direction of flow.....	UP
Static pressure.....(IN.WC)	-.15
Avg. gas temp.....(DEG-F)	82
Moisture content.....(% V/V)	1.56
Avg. linear velocity.....(FT/SEC)	40.0
Gas density.....(LB/ACF)	.07180
Molecular weight.....(LB/LBMOLE)	28.84
Mass flow of gas.....(LB/HR)	221991
Volumetric flow rate.....	
actual.....(ACFM)	51528
dry standard.....(DSCFM)	48915

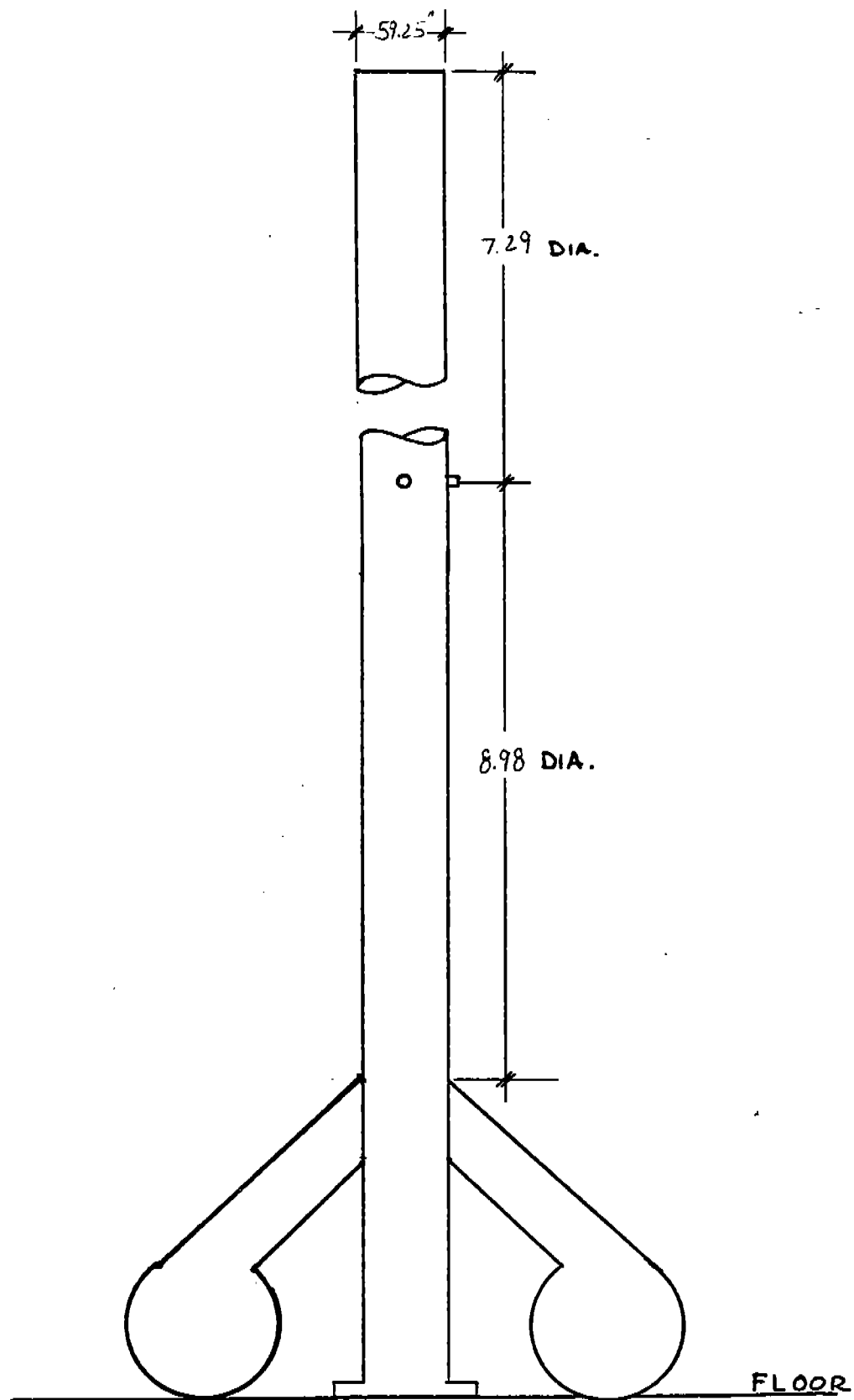
Test No. 13
No. 2 Press Vent Stack

Results of Volumetric Flow Rate Determination-----Method 2

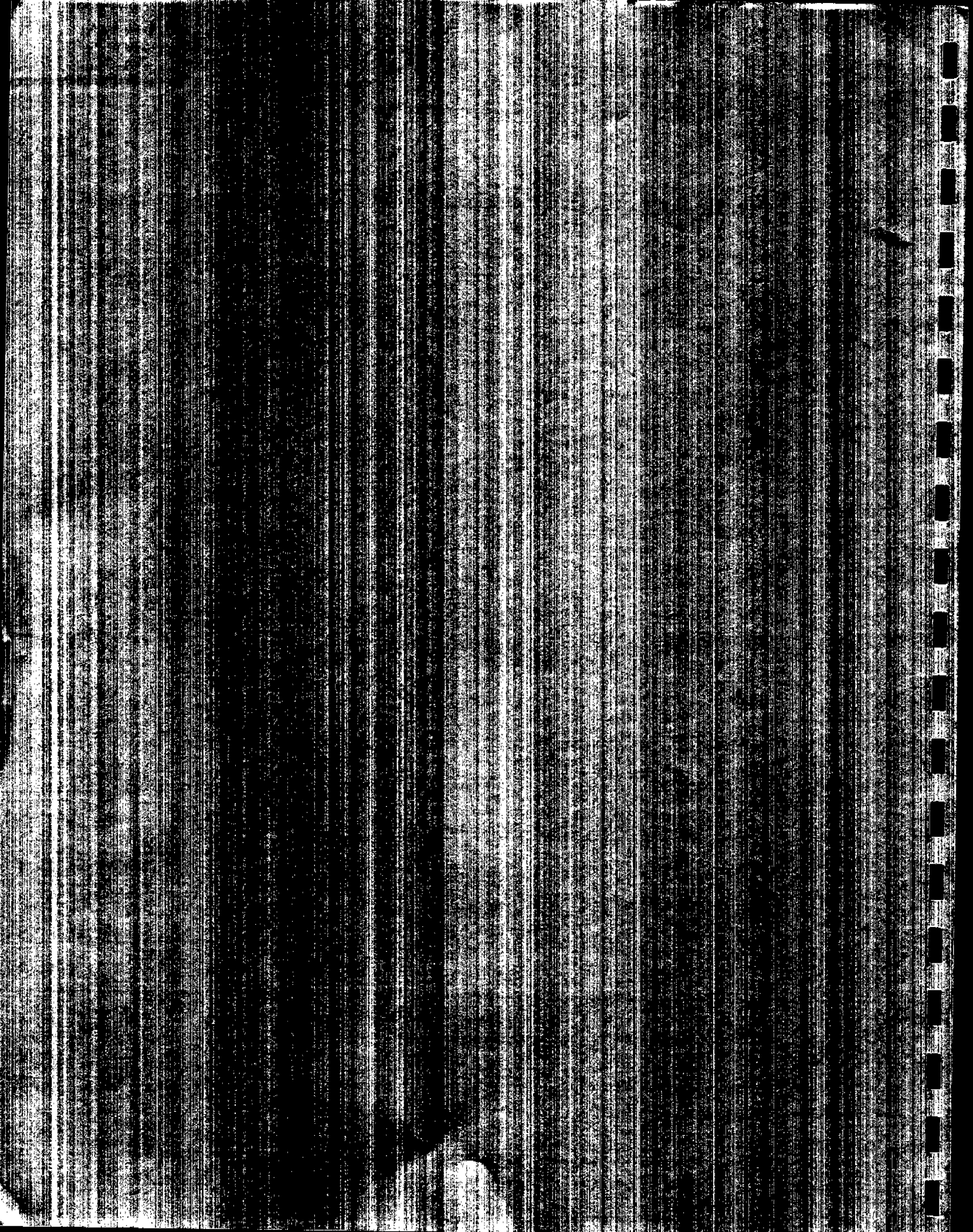
Date of Determination.....	04-01-92
Time of Determination.....(HRS)	1630
Barometric pressure.....(IN.HG)	29.63
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	24
Shape of duct.....	Round
Stack diameter.....(IN)	62.75
Duct area.....(SQ.FT)	21.48
Direction of flow.....	UP
Static pressure.....(IN.WC)	-.12
Avg. gas temp.....(DEG-F)	89
Moisture content.....(% V/V)	1.51
Avg. linear velocity.....(FT/SEC)	43.4
Gas density.....(LB/ACF)	.06886
Molecular weight.....(LB/LBMOLE)	28.00
Mass flow of gas.....(LB/HR)	231166
Volumetric flow rate.....	
actual.....(ACFM)	55950
dry standard.....(DSCFM)	52470



NO. 1 AND 2 DRYERS
L-P NEW WAVERLY, TX



NOT TO SCALE



Test No. 1
No. 1 Dryer Stack

Results of Volumetric Flow Rate Determination-----Method 2

Date of Determination.....	03-30-92
Time of Determination.....(HRS)	1000
Barometric pressure.....(IN.HG)	29.74
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	12
Shape of duct.....	Round
Stack diameter.....(IN)	59.25
Duct area.....(SQ.FT)	19.15
Direction of flow.....	UP
Static pressure.....(IN.WC)	-1.1
Avg. gas temp.....(DEG-F)	174
Moisture content.....(% V/V)	7.39
Avg. linear velocity.....(FT/SEC)	72.2
Gas density.....(LB/ACF)	.06043
Molecular weight.....(LB/LBMOLE)	29.00
Mass flow of gas.....(LB/HR)	300821
Volumetric flow rate.....	
actual.....(ACFM)	82969
dry standard.....(DSCFM)	63432

Test No. 2
No. 1 Dryer Stack

Results of Volumetric Flow Rate Determination-----Method 2

Date of Determination.....	03-30-92
Time of Determination.....(HRS)	1140
Barometric pressure.....(IN.HG)	29.74
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	12
Shape of duct.....	Round
Stack diameter.....(IN)	59.25
Duct area.....(SQ.FT)	19.15
Direction of flow.....	UP
Static pressure.....(IN.WC)	-1.1
Avg. gas temp.....(DEG-F)	179
Moisture content.....(% V/V)	6.96
Avg. linear velocity.....(FT/SEC)	75.6
Gas density.....(LB/ACF)	.06011
Molecular weight.....(LB/LBMOLE)	29.03
Mass flow of gas.....(LB/HR)	313085
Volumetric flow rate.....	
actual.....(ACFM)	86805
dry standard.....(DSCFM)	66154

Test No. 5
No. 2 Dryer Stack

Results of Volumetric Flow Rate Determination-----Method 2

Date of Determination.....	03-31-92
Time of Determination.....(HRS)	800
Barometric pressure.....(IN.HG)	29.69
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	12
Shape of duct.....	Round
Stack diameter.....(IN)	59.25
Duct area.....(SQ.FT)	19.15
Direction of flow.....	UP
Static pressure.....(IN.WC)	-.8
Avg. gas temp.....(DEG-F)	138
Moisture content.....(% V/V)	7.77
Avg. linear velocity.....(FT/SEC)	76.3
Gas density.....(LB/ACF)	.06386
Molecular weight.....(LB/LBMOLE)	28.98
Mass flow of gas.....(LB/HR)	335771
Volumetric flow rate.....	
actual.....(ACFM)	87631
dry standard.....(DSCFM)	70672

Test No. 6
No. 2 Dryer Stack

Results of Volumetric Flow Rate Determination-----Method 2

Date of Determination.....	03-31-92
Time of Determination.....(HRS)	1100
Barometric pressure.....(IN.HG)	29.69
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	12
Shape of duct.....	Round
Stack diameter.....(IN)	59.25
Duct area.....(SQ.FT)	19.15
Direction of flow.....	UP
Static pressure.....(IN.WC)	-.8
Avg. gas temp.....(DEG-F)	130
Moisture content.....(% V/V)	7.55
Avg. linear velocity.....(FT/SEC)	74.4
Gas density.....(LB/ACF)	.06479
Molecular weight.....(LB/LBMOLE)	28.98
Mass flow of gas.....(LB/HR)	332316
Volumetric flow rate.....	
actual.....(ACFM)	85485
dry standard.....(DSCFM)	70041

Test No. 9
No. 1 Press Vent Stack

Results of Volumetric Flow Rate Determination-----Method 2

Date of Determination.....	04-01-92
Time of Determination.....(HRS)	910
Barometric pressure.....(IN.HG)	29.63
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	24
Shape of duct.....	Round
Stack diameter.....(IN)	62.75
Duct area.....(SQ.FT)	21.48
Direction of flow.....	UP
Static pressure.....(IN.WC)	-.15
Avg. gas temp.....(DEG-F)	82
Moisture content.....(% V/V)	1.56
Avg. linear velocity.....(FT/SEC)	40.0
Gas density.....(LB/ACF)	.07180
Molecular weight.....(LB/LBMOLE)	28.84
Mass flow of gas.....(LB/HR)	221991
Volumetric flow rate.....	
actual.....(ACFM)	51528
dry standard.....(DSCFM)	48915

Test No. 10
No. 1 Press Vent Stack

Results of Volumetric Flow Rate Determination-----Method 2

Date of Determination.....	04-01-92
Time of Determination.....(HRS)	1110
Barometric pressure.....(IN.HG)	29.63
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	24
Shape of duct.....	Round
Stack diameter.....(IN)	62.75
Duct area.....(SQ.FT)	21.48
Direction of flow.....	UP
Static pressure.....(IN.WC)	-.12
Avg. gas temp.....(DEG-F)	77
Moisture content.....(% V/V)	1.43
Avg. linear velocity.....(FT/SEC)	43.3
Gas density.....(LB/ACF)	.07042
Molecular weight.....(LB/LBMOLE)	28.00
Mass flow of gas.....(LB/HR)	235494
Volumetric flow rate.....	
actual.....(ACFM)	55737
dry standard.....(DSCFM)	53480

Test No. 13
No. 2 Press Vent Stack

Results of Volumetric Flow Rate Determination-----Method 2

Date of Determination.....	04-01-92
Time of Determination.....(HRS)	1630
Barometric pressure.....(IN.HG)	29.63
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	24
Shape of duct.....	Round
Stack diameter.....(IN)	62.75
Duct area.....(SQ.FT)	21.48
Direction of flow.....	UP
Static pressure.....(IN.WC)	-.12
Avg. gas temp.....(DEG-F)	89
Moisture content.....(% V/V)	1.51
Avg. linear velocity.....(FT/SEC)	43.4
Gas density.....(LB/ACF)	.06886
Molecular weight.....(LB/LBMOLE)	28.00
Mass flow of gas.....(LB/HR)	231166
Volumetric flow rate.....	
actual.....(ACFM)	55950
dry standard.....(DSCFM)	52470

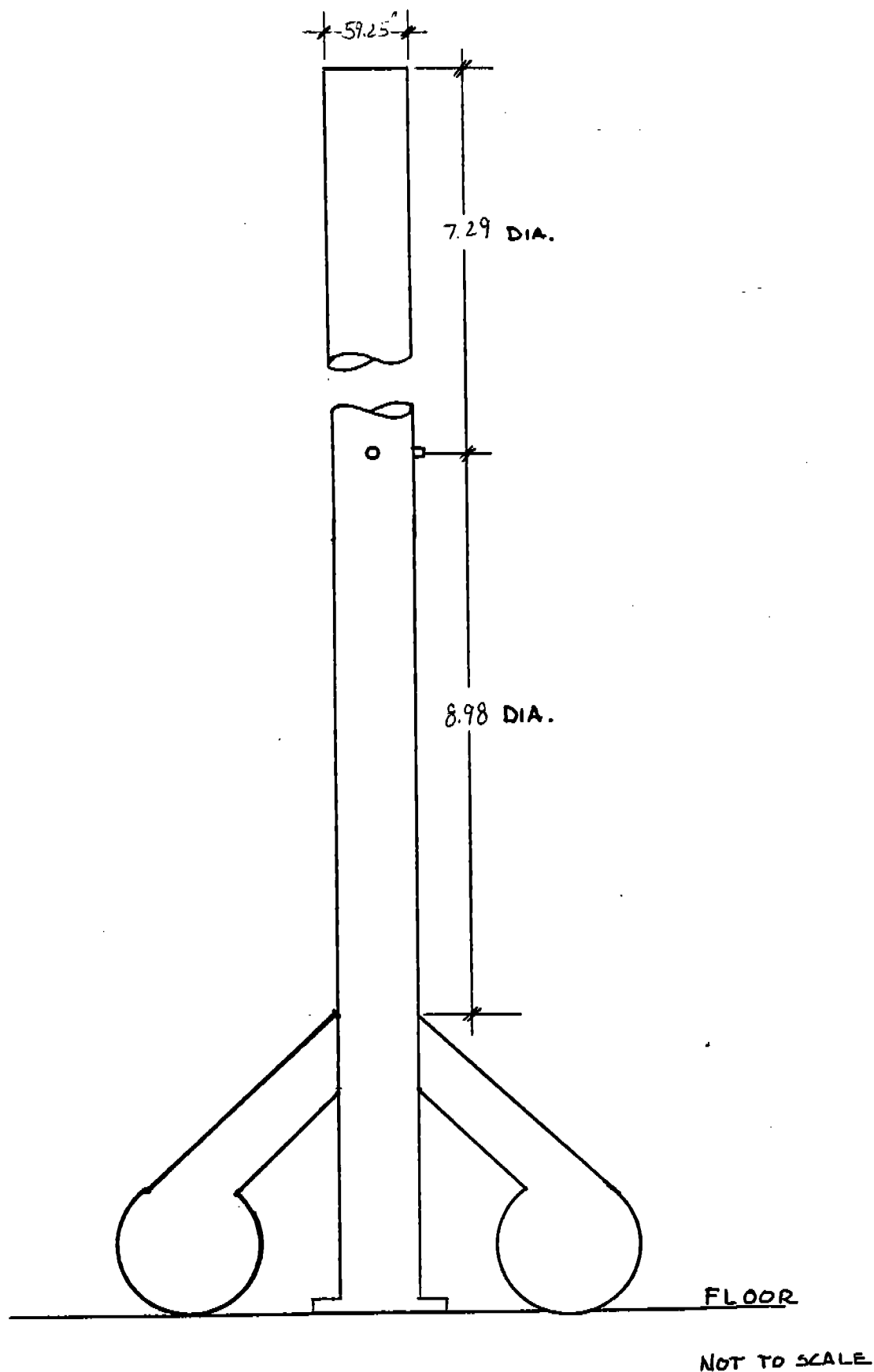
Test No. 16
No. 3 Press Vent Stack

Results of Volumetric Flow Rate Determination-----Method 2

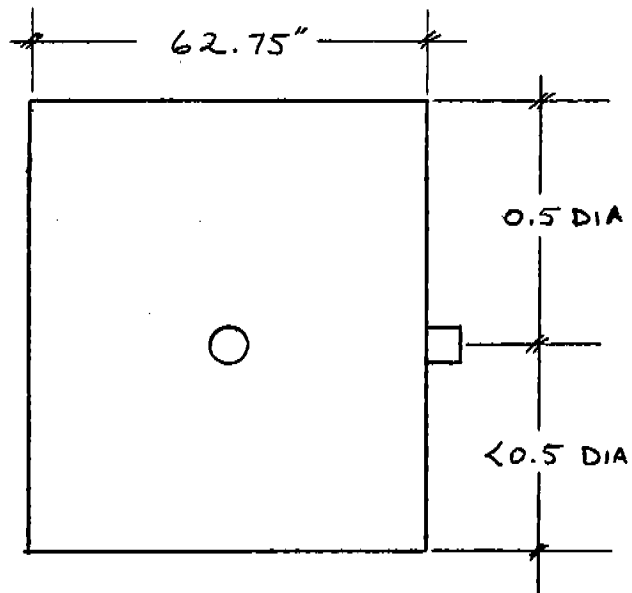
Date of Determination.....	04-02-92
Time of Determination.....(HRS)	840
Barometric pressure.....(IN.HG)	29.65
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	24
Shape of duct.....	Round
Stack diameter.....(IN)	62.75
Duct area.....(SQ.FT)	21.48
Direction of flow.....	UP
Static pressure.....(IN.WC)	-.12
Avg. gas temp.....(DEG-F)	85
Moisture content.....(% V/V)	0.91
Avg. linear velocity.....(FT/SEC)	44.4
Gas density.....(LB/ACF)	.06956
Molecular weight.....(LB/LBMOLE)	28.00
Mass flow of gas.....(LB/HR)	239053
Volumetric flow rate.....	
actual.....(ACFM)	57276
dry standard.....(DSCFM)	54474

NO. 1 AND 2 DRYERS

L-P NEW WAVERLY, TX



PORTABLE PRESS VENT EXTENSION



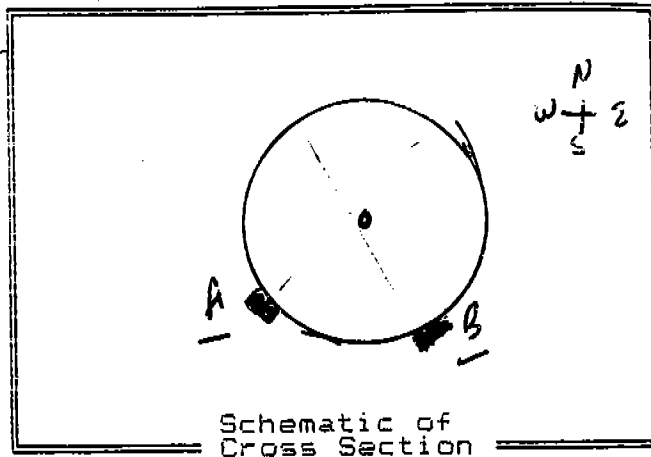
NOTE: EXTENSION WAS APPROVED BY EPA

NOT TO SCALE

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

INTERPOLL LABORATORIES EPA METHOD 2 FIELD DATA SHEET

Job L.P. / NEW Waverly
Source NEW Waverly, Tx. No. 1 Dyer
Test 1 Runs 1-3 Date 3/30/1920
Stack dimen. 59 1/4 IN.
Dry bulb °F Wet bulb °F
Manometer: ☒ Reg. ☐ Exp. ☐ Elec.
Barometric pressure 29.74 in Hg
Static pressure -1.1 in WC
Operators D. BRENNAN, B. ASKEW
Pitot No. 24-6 Cp 81



PM-10

Traverse Point No.	Fraction of Diameter	Distance from Stack Wall (in)	Distance from End of Port (in)	Velocity Pressure (in WC)	Temperature of gas (°F)
		Port length:	6.5 in.	Time start: 1000 hrs	
A	1	.044	2.607	4.11	2/ 1.2 (1.45)
	2	.146	8.65	15.15	2/ 1.4 (1.50)
	3	.296	17.54	24.04	0/ 1.5 (1.6) 174
	4	.704	41.71	46.21	2/ 1.5 (1.6) 175 232
	5	.854	50.60	57.10	2/ 1.5 (1.6)
	6	.956	56.64	63.14	0/ .88 (1.20) 173
B	1				2/ 1.3 (1.4)
	2				2/ 1.5 (1.6) 174
	3				2/ 1.5 (1.5)
	4				0/ 1.5 (1.5)
	5				0/ 1.4 (1.4)
	6				0/ .94 (1.8)
				1.34	134 232
Temp. meas. tool & S/N: PST 3				Time end: 1030 hrs	

R or nothing = reg. manometer; ~~G~~ expanded; E = electronic

S-392.1

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job C.P. / NEW WAVERLY, TX. Date 3/30/92 Test 1 Run 1
 Source MS 1 DRYER No. of traverse points 12
 Method 201 Filter holder: STAINLESS Filter type: 2.5" 45
STEEL

Sample Train Leak Check:

Pretest: 0.12 cfm at 15 in. Hg. (vac)
 Posttest: 0.00 cfm at 9 in. Hg. (vac)

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone

5724 ☒ acetone probe
☐ other(s)

No. of probe wash bottles: 1

Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	540	495	45.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1371	1363	8.0
Total			53.0

Integrated Gas Sampling Data:

Bag Pump No. B-7 Box No. 6 Bag No. 1

Bag Material: 5-layer Aluminized Tedlar Size: 44 L

Pretest leak check: 0.00 cc/min at 16 in. Hg.

Time start: 1130 (HRS) Time end: 1300 (HRS)

Sampling rate: 300 cc/min Operator: D. BRENNAN

S/N of O₂ Analyzer used to monitor train outlet: 3

CF-023

INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

1000 C.P. / NEW WARE

100 C.P. / NEW WARE

100 E.P. / NEW WAVE

Job C.P. / NEW MARY

106 C.P. / WEN WANGYU

Job	C.P. / NEW WARE	Operators	D. BENNARD & B. ASCHENBACH	Pitot No.
106				

106 C.P. / NEW WAREHOUSE

Job	C. P. / NEW MERRY	Operators	D. BOENNER + B. AGENTENBACH	Pilot No.	2-1-6	City	CH
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106 C.P. / NEW WAVEWAY
Operators
D. BOENMAN & B. AGENTHART
Pilot No. 21-6 5-1
C4 C4

[illegible]

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / NEW WJERW, TX. Date 3/30/92 Test 1 Run 2
 Source NO. 1 D27512 STACIL No. of traverse points 12
 Method 201A Filter holder: 5725 Filter type: 2.5" L.F.
M-10 STACIL

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac)
 Posttest: .005 cfm at 11.5 in. Hg. (vac)

Particulate Catch Data:

No.s of filters used: Recovery solvent(s)

1
5725 ☒ acetone probe
☐ other(s)

No. of probe wash bottles: 1
 Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	<u>549</u>	<u>194</u>	<u>355.0</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1434</u>	<u>1426</u>	<u>8.0</u>
Total			<u>363.0</u>

Integrated Gas Sampling Data:

Bag Pump No. B-7 Box No. 6 Bag No. 2
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: .00 cc/min at 17 in. Hg.
 Time start: 1325 (HRS) Time end: 1455 (HRS)
 Sampling rate: 300 cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: 3

CF-023

INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

400
4100
4200
4300
4400
4500
4600
4700
4800
4900
5000
5100
5200
5300
5400
5500
5600
5700
5800
5900
6000
6100
6200
6300
6400
6500
6600
6700
6800
6900
7000
7100
7200
7300
7400
7500
7600
7700
7800
7900
8000
8100
8200
8300
8400
8500
8600
8700
8800
8900
9000
9100
9200
9300
9400
9500
9600
9700
9800
9900

[illegible]

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job C.P. / NEW WAVERLY, TX. Date 3/30/92 Test 1 Run 3
 Source NO. 1 DRYER STACK No. of traverse points 12
 Method 201A Filter holder: ST6/AL255 Filter type: 2.5" G.F.
PM-10 ST55L

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac)
 Posttest: .005 cfm at 10 in. Hg. (vac)

Particulate Catch Data:

No.s of filters used: Recovery solvent(s)

1
572L ☒ acetone PROBE
☐ other(s) _____

No. of probe wash bottles: 1

Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	<u>543</u>	<u>495</u>	<u>48.0</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1379</u>	<u>1371</u>	<u>8.0</u>
Total			<u>56.0</u>

Integrated Gas Sampling Data:

Bag Pump No. B-7 Box No. 6 Bag No. 3
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: .00 cc/min at 15 in. Hg.
 Time start: 1518 (HRS) Time end: 1636 (HRS)
 Sampling rate: 300 cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: 3

CF-023

Job C.P. / NEW WARELY TX.
Source NO. 1 DRYER stack
Date 3/30/92 Post 1 Run 1

Directors
Water Box No. 3 Sub 1.82 TN NC
Computer Cost. 9991

Pitot No.	24-6	Cp	.84
Bar. Press.	29.74	10Hg	H2O 7.5 x
Nozzle No.	mm-10 (2)	Nozzle Dia	.150 in.

[illegible]

INTERPOLL LABORATORIES EPA METHOD 2 FIELD DATA SHEET

Job Louisiana Pacific / New Waverly, Tx

Source No. 1 Dwyer / Stack

Test 2 Run C Date 3-30-92

Stack dimen. 59.25 IN.

Dry bulb _____ °F Wet bulb _____ °F

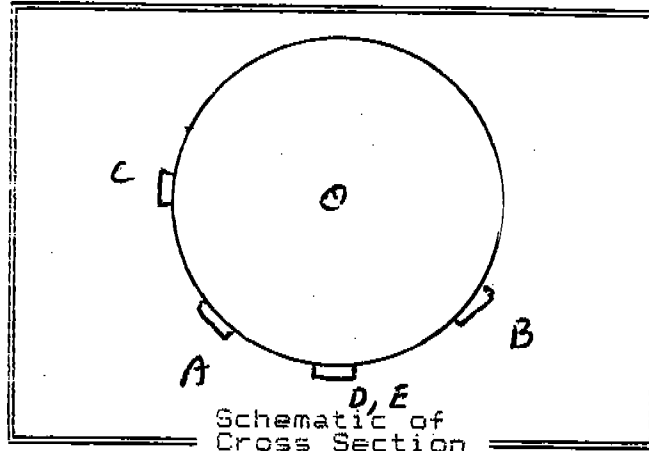
Manometer: ☒ Reg. ☐ Exp. ☐ Elec.

Barometric pressure 29.74 in Hg

Static pressure 7.10 in WC

Operators H. Kaepler & C. Mosser

Pitot No. 29V-6 Cp .97



Formaldehyde.

Traverse Point No.	Fraction of Diameter	Distance from Stack Wall (in)	Distance from End of Port (in)	Velocity Pressure (in WC)	Temperature of gas (°F)
		Port length:	6 in.	Time start: 1140 hrs	
C-1	.044	2.61	8.61	1.20	
2	.146	8.65	14.65	1.45	
3	.294	17.54	23.54	1.60	
4	.704	41.71	47.71	1.55	
5	.854	50.60	56.60	1.53	↑
6	.956	56.64	62.64	1.57	179
D-1				1.15	↓
2				1.35	
3				1.52	
4				1.56	
5				1.50	
6				1.49	
Port 'E' is above port 'D' by approx. 3'					
Temp. meas. tool & S/N: PDF-3/TC					
Time end:				hrs	

R or nothing= reg. manometer; S= expanded; E = electronic 9-392.1

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job AP / New Waverly, TX Date 3-30-92 Test 2 Run 1
 Source No. 1 Dyer / Stack No. of traverse points 12
 Method 0011 Filter holders: NA Filter type: NA

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 0.02 cfm at 12 in. Hg. (vac) ☒

Particulate Catch Data:

No. of filters used: NA Recovery solvent(s)
☐ acetone
☒ other(s) MeCl₂
 No. of ^{Imp.} probe wash bottles: 1
 Sample recovered by: M. Kaehler + C. Mosser

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	670	599	71
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1477	1453	24
Total			95

Integrated Gas Sampling Data:

Bag Pump No. B10 Box No. 11 Bag No. 1
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: 0 cc/min at 15 in. Hg.
 Time start: 1150 (HRS) Time end: 1252 (HRS)
 Sampling rate: 400 cc/min Operator: M. Kaehler
 S/N of O₂ Analyzer used to monitor train outlet: 9

CF-023

300 Louisiana Pacific / New Ulm, TX
 Source No. 1 Dryer / Stack
 Date 3-30-92 1061 3 Run 1
 Operators Michael t.c. Messer
 Motor Box No. 4 175 IN NC
 Gasometer Count. 1.0010
 Pitut No. 211-6 Cp 154
 Bar. Press. 29.27 inHg H2D
 Nozzle No. 6653 Nozzle Dia. 2 3/8 in.

[illegible]

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / New Waverly TX Date 3-30-92 Test 2 Run 2
 Source No. 1 Dye / Stack No. of traverse points 12
 Method CO II Filter holder: NA Filter type: NA

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 2 0.02 cfm at 15 in. Hg. (vac) ☒

Particulate Catch Data:

No. of filters used: NA Recovery solvent(s)
☐ acetone ☒ other(s) Me Cl₂
 No. of ^{Imp} probe wash bottles: 1
 Sample recovered by: McKeebler & C. Mosser

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	660	598	62
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1403	1378	25
Total			87

Integrated Gas Sampling Data:

Bag Pump No. B10 Box No. 11 Bag No. 2
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: 0 cc/min at 15 in. Hg.
 Time start: 1330 (HRS) Time end: 1440 (HRS)
 Sampling rate: 400 cc/min Operator: McKeebler
 S/N of O₂ Analyzer used to monitor train outlet: 3

CF-023

Job L.P. / New wayer 4 Tx
 Source Ala. D-ger / Stack
 Date 3-30-92 1991 Run 2
 Operators McKeeley & Moyer
 Water Box No. 4 HP 6.75 IN NC
 Computer Cost. 1,000.00
 Pitot No. 290-6 Cp 8Y
 Bar. Press. 29.74 inHg H2O @ 2
 Nozzle No. Gloss Nozzle Dia. 2.35 IN.

[illegible]

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job A.P. / Waverly Date 3-30-92 Test 2 Run 3
 Source Mail Dryer / Stach No. of traverse points 12
 Method 0011 Filter holder: NA Filter type: NA

Sample Train Leak Checks:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 0.02 cfm at 15 in. Hg. (vac) ☒

Particulate Catch Data:

No. of filters used: NA Recovery solvent(s):
☐ acetone
☒ other(s) Me Cl₂
 No. of ^{Imp} probe wash bottles: 1
 Sample recovered by: McKeebler & C. Masser

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	685	601	84
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1491	1477	14
Total			98

Integrated Gas Sampling Data:

Bag Pump No. B10 Box No. 11 Bag No. 3
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: 0 cc/min at 15 in. Hg.
 Time start: 1520 (HRS) Time end: 1627 (HRS)
 Sampling rate: 400 cc/min Operator: McKeebler
 S/N of O₂ Analyzer used to monitor train outlet: 5

CF-023

Job L.P. / New Waverly, TX
 Source MS. / Dryer / School
 Date 3-30-92 1981 Run 2
 Operators M. Koehler & C. Mosier
 Motor Box No. 4 HP 1.75 IN HC
 Governor SFFt. 1.0010
 Pitot No. 29U-6 Cp
 Bar. Press. 29.24 inHg
 Nozzle No. 0755 Nozzle Dia. 6 IN.

[illegible]

Job L.P. / NEW WAREHO, Tx.
Source NO. 1 DRYER STACK
Test 4 Runs 1-3 Date 3/30/92
Stack dimen. 59 1/4" IN.
Dry bulb °F Wet bulb °F
Manometer: ☐ Reg. ☐ Exp. ☐ Elec.
Barometric pressure 29.74 in Hg
Static pressure -1.1 in WC
Operators D. BRENNAN + B. ASCHENBERG
Pitot No. 21-6 Cp -84

Schematic of
Cross Section

Particulate

[illegible]

R or nothing= reg. manometer; S= expanded; E = electronic

S-392, 1

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job C.P. / NEW WAVERLY, TX. Date 3/30/92 Test 4 Run 1
 Source NO. 1 DRYER STALK No. of traverse points 24
 Method 5 Filter holder: ELASS Filter type: 2 4' 6 F.

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: .00 cfm at 7 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) ☒ acetone PROBE + NOZZLE
4/78 ☐ other(s):

No. of probe wash bottles: 1
 Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	542	497	45.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1444	1434	10.0
Total			55.0

Integrated Gas Sampling Data:

Bag Pump No. B-7 Box No. 2 Bag No. 1
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: .00 cc/min at 15 in. Hg.
 Time start: 1700 (HRS) Time end: 1802 (HRS)
 Sampling rate: 400 cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: 3

CF-023

INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job LP/NEW WARELY
 Source NO. 1 ARTERIAL STATION
 Date 3/30/82 Run 1

Operator B. BEGGS
 Meter Box No. 3
 Gas meter coeff. 9991

Pilot No. 21-C
 Bar. Press. 29.71 inHg
 Nozzle No. 8-3 Nozzle Dia. 1.85 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inH ₂ O)	Drifts Meter (inH ₂ O)	Dis. Vol. (cf)	VAC. inHg	Temperature (°F)				Oxygen	
							Stack	Probe	Dry	Wet	Gas Out	(% vol)
A-12	2.5	164.800	1.1	1.14	6.32	3.5	179	246	255	49	113	19.2
"	5.0	166.34	1.35	1.40	8.00	4.0	179			50	113	18.7
10	7.5	169.72	1.45	1.50	9.74	4.5	179	245	257	50	113	18.5
9	10.0	171.46	1.45	1.50	1.49	4.5	179				117	18.0
8	12.5	173.18	1.45	1.50	3.16	4.5	180	248	256	50	117	18.4
7	15.0	174.96	1.45	1.51	4.98	4.5	178				117	18.5
6	17.5	176.63	1.40	1.46	6.70	4.5	177	250	258	50	117	18.6
5	20.0	178.34	1.40	1.45	8.42	4.5	178				117	18.8
4	22.5	180.03	1.35	1.41	0.11	4.5	175	242	255	48	117	19.0
3	25.0	181.70	1.25	1.30	1.73	4.5	176				117	18.7
2	27.5	183.33	1.15	1.20	3.29	7.0	174	242	256	48	116	18.5
1	30.0	184.402	.55	.57	4.37	2.0	174				116	18.3
B-12	32.5	185.97	1.25	1.30	6.00	4.0	175	243	255	48	116	19.0
"	35.0	187.62	1.30	1.35	7.65	4.0	176				115	18.9
10	37.5	189.35	1.45	1.50	9.39	5.0	180	243	257	48	116	19.0
9	40.0	191.13	1.52	1.57	1.17	5.0	180				116	19.0
8	42.5	192.92	1.50	1.55	2.94	5.0	180	235	248	47	116	19.0
7	45.0	194.70	1.50	1.55	4.71	5.0	179				116	19.0
6	47.5	196.50	1.50	1.55	6.48	5.0	178	236	249	47	116	19.1
5	50.0	198.28	1.45	1.51	8.23	5.0	176				115	19.0
4	52.5	199.95	1.40	1.45	9.94	5.0	176	235	250	46	114	19.4
3	55.0	201.63	1.35	1.40	1.62	5.0	174				113	19.4
2	57.5	203.23	1.20	1.24	3.20	4.5	176	236	252	46	112	19.5
1	60.0	204.446	.73	.75	4.44	3.0	176				111	19.5
	(1802)											
	θ = 60	V ₀ = 39.646		ΔH 1.36							Avg. = 113.4	

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job LP / NEW WOVERLY, TX. Date 3/30/92 Test Y Run 2
 Source NO. 1 DRYER STACK No. of traverse points 24
 Method S Filter holder: GLASS Filter type: 4" 6.7

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac)
 Posttest: .00 cfm at 10 in. Hg. (vac)

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s)
4129 ☒ acetone PROBE + NOZZLE
☐ other(s) _____

No. of probe wash bottles: 1
 Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	543	496	47.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1388	1379	9.0
Total			56.0

Integrated Gas Sampling Data:

Bag Pump No. B-7 Box No. 2 Bag No. 2
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: .00 cc/min at 15 in. Hg.
 Time start: 1820 (HRS) Time end: 1922 (HRS)
 Sampling rate: 400 cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: 3

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INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job LP/NEW Waverly Operator D. Bagnall B. Assessor W. Pittot No. 21-6 CP 8-4
 Source Dr. 1 Draper Street Meter Box No. 3 Bar. Press. 29.74 10Hg 2.0 x
 Date 3/21/84 Gasometer Cof. 9991 Nozzle No. 8-3 Nozzle Dia. 1.85 in.

Transverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inHg)	Drift Meter (inHg)	Des. Vol. (cf)	VAC. inHg	Temperatures (°F)				Gas In	Gas Out	Oxygen (xv/v)
							Stack	Probe	Dry	Imp.			
B-12	(1820)	205.00	1.10	1.15	6.52	4.5	180	235	256	42	103	100	19.0
	2.5	206.60	1.25	1.29	8.12	5.0	178				104	100	
	5.0	208.19	1.35	1.39	9.78	5.0	179	232	245	40	104	99	19.2
	7.5	209.82	1.40	1.44	1.47	5.0	178				103	98	
	10.0	211.49	1.45	1.54	1.93	5.5	178	234	246	40	103	98	19.2
	12.5	213.16	1.50	1.52	6.66	6.0	177	235	245	39	103	97	19.3
	15.0	214.89	1.45	1.49	8.38	6.0	177				103	97	
	17.5	216.63	1.40	1.44	0.07	5.5	175	238	246	39	102	96	19.3
	20.0	218.36	1.30	1.34	1.70	5.5	174				102	96	
	22.5	220.09	1.20	1.24	3.26	5.0	173	239	244	39	102	96	19.3
A-12	24.5	221.74	.75	.77	4.50	3.5	173				101	96	
	27.5	223.30	1.15	1.18	6.03	4.0	174	238	245	39	100	94	19.3
	30.0	224.515	1.40	1.44	7.71	5.5	174				99	93	
	32.5	226.00	1.45	1.49	9.41	6.0	174	240	246	39	97	91	19.3
	35.0	227.67	1.50	1.53	1.14	6.0	174				96	89	
	37.5	229.35	1.45	1.48	2.84	6.0	173	242	251	38	96	88	19.3
	40.0	231.08	1.45	1.48	4.54	6.0	173				94	87	
	42.5	232.86	1.40	1.43	6.20	6.0	172	240	249	38	93	87	19.3
	45.0	234.57	1.35	1.38	7.83	5.5	171				93	86	
	47.5	236.29	1.30	1.33	9.44	5.5	170	243	248	39	92	86	19.3
	50.0	237.88	1.10	1.12	6.91	4.5	169				92	85	
	52.5	239.50	.89	.91	2.24	4.0	169	242	248	39	91	85	19.3
	55.0	240.93	.38	.38	8.11	1.5	169				90	85	
	57.5	242.26											
	60.0	243.112											
(1922)													
θ = 60		V _m = 38.11	ΔH = 30									Avg. = 95.7	

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job LP / NEW Waverly, TX Date 3/30/92 Test 4 Run 3
 Source NO 1 DRYER STAIL No. of traverse points 24
 Method 5 Filter holder: GLASS Filter type: 4" G.F.

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: .003 cfm at 10 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) ☒ acetone PALBE + NOZZLE
4180 ☐ other(s) _____

No. of probe wash bottles: 1
 Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	554	501	53.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1453	1444	9.0
Total			62.0

Integrated Gas Sampling Data:

Bag Pump No. B-7 Box No. 2 Bag No. 3
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: .00 cc/min at 16 in. Hg.
 Time start: 1940 (HRS) Time end: 2042 (HRS)
 Sampling rate: 400 cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: 3

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INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job LP / NEW WAREHOUSE
 Source NO. 1 DAYTON STACK
 Date 3/26/82 Test 4 Run 3

Operator D. DENNARD & B. A.
 Meter Box No. 388
 Cosmeter Code 3

Pitot No. 21-6
 Bar. Press. 29.74 in Hg
 Nozzle No. 8-3 Nozzle Dia. 1.25 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (in H ₂ O)	Drifts Meter (in H ₂ O)	Des. Vol. (cf)	VAC. in Hg	Temperature (°F)					Oxygen (xv/v)
							Stack	Probe	Duct	Ingr.	Gas In	Gas Out
A-12	1940	243.40	1.20	1.20	4.91	3.5	170	230	245	56	81	78
11	2.5	244.93	1.35	1.35	6.51	4.0	173				83	78
10	5.0	246.55	1.50	1.50	8.20	4.0	173	232	245	53	85	78
9	7.5	248.22	1.50	1.50	9.89	4.0	173				85	79
8	10.0	249.89	1.50	1.50	1.59	4.5	173	231	248	52	87	81
7	12.5	251.62	1.50	1.50	3.22	4.5	173				88	81
6	15.0	253.23	1.50	1.50	4.97	4.5	172	233	250	52	88	81
5	17.5	254.92	1.45	1.45	6.61	4.5	172				88	81
4	20.0	256.58	1.40	1.40	8.20	4.0	172	235	248	49	88	82
3	22.5	258.20	1.30	1.30	9.72	4.0	171				88	82
2	25.0	259.75	1.20	1.20	1.19	3.5	170	234	249	49	88	82
1	27.5	261.23	1.10	1.10	2.45	3.0	170				88	81
B-12	30.0	262.445	1.20	1.20	3.98	4.0	171	231	252	48	89	81
11	32.5	263.98	1.30	1.30	5.56	4.5	176				90	82
10	35.0	265.60	1.40	1.40	7.20	5.0	177	232	253	48	90	82
9	37.5	267.23	1.40	1.40	8.85	5.0	178				90	82
8	40.0	268.88	1.45	1.45	6.52	5.0	178	230	250	48	90	82
7	42.5	270.49	1.50	1.50	2.22	5.0	178				90	82
6	45.0	272.16	1.50	1.50	3.86	5.0	177	229	249	48	90	82
5	47.5	273.87	1.45	1.45	5.51	5.0	175				90	82
4	50.0	275.58	1.40	1.40	7.19	5.0	172	230	250	48	90	82
3	52.5	277.21	1.30	1.30	8.78	4.5	172				90	82
2	55.0	278.82	1.15	1.15	0.88	4.0	171	230	253	48	90	82
1	57.5	280.30	1.15	1.15	1.47	3.0	170				89	82
	60.0	281.494	1.15	1.15	1.47	3.0						
	(2042)											
	0 = 60	V ₀ = 38.094									AVG. = 84.1	

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / NEW WAVELEY Date 3/31/92 Test 5 Run 1
 Source NO. 2 DRYER STACK No. of traverse points 12
 Method 201A Filter holder: STAINLESS Filter type: 2.5 μ 6E
PM-10 ST22 L

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac)

Posttest: .005 cfm at 13 in. Hg. (vac)

DR.

Particulate Catch Data:

No.s of filters used: Recovery solvent(s)

1 acetone probe
5727 other(s)

No. of probe wash bottles: 1

Sample recovered by: B. BRENNAN

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1	535	487	48.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1424	1416	8.0
Total			56.0

Integrated Gas Sampling Data:

Bag Pump No. B-7 Box No. 2 Bag No. 1

Bag Material: 5-layer Aluminized Tedlar Size: 44 L

Pretest leak check: .00 cc/min at 16 in. Hg.

Time start: 1100 (HRS) Time end: 1220 (HRS)

Sampling rate: 300 cc/min Operator: D. BRENNAN

S/N of O₂ Analyzer used to monitor train outlet: 3

CF-023

Druggists
Master Box No. 3 HA 1.96 IN NC
Cosmetologist 999
D. B. S. M. W. - B. A. S. M. W. - B. A. S. M. W.

Pitot No. 2426 CP 81
Bar. Press. 29.69 inHg H2O 6 x
Nozzle No. 7224622 Nozzle Dia 1.56 in.

[illegible]

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / NEW WAVELEY Date 3/31/92 Test 5 Run 2
 Source NO. 2 DRYER STACK No. of traverse points 12
 Method 207A Filter holder: GLASS STAINLESS Filter type: 2.5" G.F.
PM-10 STEEL

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: .005 cfm at 12 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: Recovery solvent(s)

1
(SF28) ☒ acetone PROBS
☐ other(s)

No. of probe wash bottles: 1

Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	533	489	44.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1404	1397	7.0
Total			51.0

Integrated Gas Sampling Data:

Bag Pump No. B-7 Box No. 2 Bag No. 2
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: .00 cc/min at 14 in. Hg.
 Time start: 12:15 (HRS) Time end: 14:02 (HRS)
 Sampling rate: 300 cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: 3

CF-023

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / NEW WARELY Date 3/31/92 Test 5 Run 3
 Source NO. 2 DRYER STEEL No. of traverse points 12
 Method 201A Filter holder: STAINLESS Filter type: 2.5" G.F.
STEEL

Sample Train Leak Check:

Pretest: { 0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: { .619 cfm at 13 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: Recovery solvent(s)

1 (5729) ☒ acetone PROBS
☐ other(s) _____

No. of probe wash bottles: 1
 Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	545	499	46.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1430	1424	6.0
Total			52.0

Integrated Gas Sampling Data:

Bag Pump No. B-7 Box No. 2 Bag No. 3
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: .00 cc/min at 14 in. Hg.
 Time start: 1425 (HRS) Time end: 1542 (HRS)
 Sampling rate: 300 cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: 3

CF-023

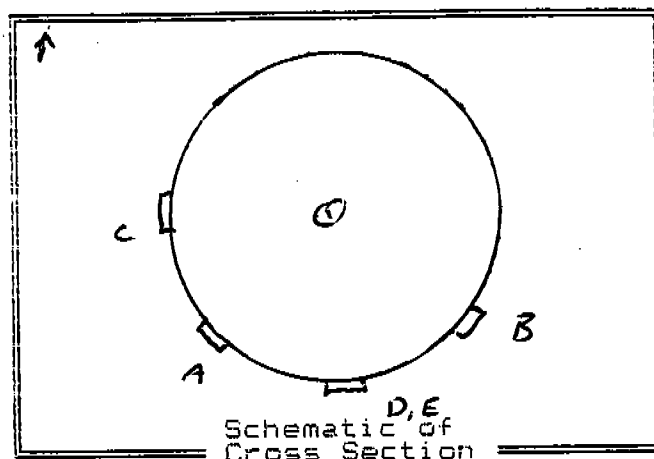
Job L.P. / NEW WARELY, TX.
Source No. 2 Borden Stain
Date 3/31/92 1981 5 RU

Operator D. Baerwald & B. Aschenberg Pitot No. 27-6 Cp .84
Meter Box No. 3 ¹⁰⁰⁰ 1-86 IN UC Bar. Press. 29.69 inHg HZ
ELECTRIC CO. 1603 909 NOV 10 1946 NOV 10 1946 DID

$$\begin{array}{r} \text{Cp} \cdot \\ \hline \text{100 Hg} \quad \text{H}_2\text{O} \quad 7.5 \times \\ \text{100 D}_2\text{O} \quad 130 \text{ IN.} \end{array}$$

[illegible]

Job L.P. / New Waverly, TX
Source No. 2 Dryer / Stack
Test 6 Run 0 Date 3/31/92
Stack dimen. 59.25 IN.
Dry bulb °F Wet bulb °F
Manometer: ☒ Reg. ☐ Exp. ☐ Elec.
Barometric pressure 29.69 in Hg
Static pressure -.80 in WC
Operators M. Kachler & C. Messor
Pitot No. 29U-6 Cp .84



Formaldehyde

[illegible]

R or nothing= reg. manometer; S= expanded; E = electronic

S-392.1

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job A.P. / New Waverly, TX Date 3-31-92 Test 6 Run 1
 Source No. 2 Dryer / Stack No. of traverse points 12
 Method 0011 Filter holder: NA Filter type: NA

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 0.02 cfm at 16 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: NA Recovery solvent(s)
☐ acetone
☒ other(s) Me Cl₂
 No. of ^{Imp}~~probe~~ wash bottles: 1
 Sample recovered by: Michael M. C. Mosser

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	689	600	89
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1426	1396	30
Total			119

Integrated Gas Sampling Data:

Bag Pump No. B10 Box No. 11 Bag No. 1
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: 0 cc/min at 15 in. Hg.
 Time start: 1100 (HRS) Time end: 1202 (HRS)
 Sampling rate: 400 cc/min Operator: Michael
 S/N of O₂ Analyzer used to monitor train outlet: 9

CF-023

JOE	L.P. / New Waverly, TX
SOURCE	No. 2 Oyster / Jstach
DATE	3-31-92 1981 RUN 1

Operator Mr. Kogut & C. Mosser
Meter Box No. 4 HA 1.25 IN NC
Gasmeter serial. 1.0000

Pilot No. 29U-E C4 84
 Bar. Press. 29.65 inHg H2O 6 x
 Nozzle No. Class WZ11 D10 239 in.

[illegible]

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / New Waverly, TX Date 3-31-92 Test 6 Run 2
 Source No. 2 Dryer / Steel No. of traverse points 12
 Method 0011 Filter holder: NA Filter type: NA

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 20.02 cfm at 16 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: _____ Recovery solvent(s) _____

NA ☐ acetone
☒ other(s) MeCl₂

No. of ^{Imp} ~~probe~~ wash bottles: 1
 Sample recovered by: McKaepler + C. Messer

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	<u>680</u>	<u>603</u>	<u>77</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1515</u>	<u>1486</u>	<u>29</u>
Total			<u>106</u>

Integrated Gas Sampling Data:

Bag Pump No. B10 Box No. 11 Bag No. 2
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: 0 cc/min at 15 in. Hg.
 Time start: 1240 (HRS) Time end: 1342 (HRS)
 Sampling rate: 400 cc/min Operator: McKaepler
 S/N of O₂ Analyzer used to monitor train outlet: 7

CF-023

500 L.P. / New Wave City IX
500100 No. 2 Paper / Street
500100 3 31-92 181 6 Nov 2

Operators Michael, + C. Diaz
Meter Box No. 4 HP 1.25 IN DC
Computer Cost. 1.000

Pitot No. 296-6 Cy 84
Bar. Press. 29.65 in Hg H2O 25 x
Nozzle No. 6755 Nozzle Dia. 2.37 in.

[illegible]

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job A.P. / New Waverly, TX Date 3-31-92 Test 6 Run 3
 Source No. 2 Dryer / Stack No. of traverse points 12
 Method 0011 Filter holder: NA Filter type: NA

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 20.02 cfm at 15 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: Recovery solvent(s)

NA ☐ acetone
☒ other(s) MeCl₂

No. of ~~probe~~ ^{Imp} wash bottles: 1
 Sample recovered by: Michael & C. Mosser

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1	<u>699</u>	<u>603</u>	<u>86</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1451</u>	<u>1426</u>	<u>25</u>
Total			<u>111</u>

Integrated Gas Sampling Data:

Bag Pump No. B16 Box No. 11 Bag No. 3
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: 0 cc/min at 15 in. Hg.
 Time start: 1425 (HRS) Time end: 1543 (HRS)
 Sampling rate: 400 cc/min Operator: Michael
 S/N of O₂ Analyzer used to monitor train outlet: 9

CF-023

1001 6.2 / New Waverly TX
1002 No. 2 Paper Stack
1003 3-31-91 6 Run 3

Operator _____
Meter Box No. 4
Cometer cost. \$1.25

Pittot No. 296-6 Ep 184
 Bar. Press. 29.89 inHg H2O 8.8 x
 NDIII No. 6/85 NDIII Dia. 239 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Drifted Meter (inWC)	Det. Vol. (cf)	VAC. inHg	Temperatures (°F)						Oxygen (Kv/F)
							Stack	Pipe	Duct	Ingr.	Gas In	Gas/Dut	
D-6	(1425)	232.20	1.48	4.10	8.01	11	130	234	252	43	93	82	19.7
S	10	238.00	1.59	4.40	4.02	13	128				88	84	19.2
4	15	250.02	1.60	4.43	0.07	13	131	237	255	43	91	85	19.8
3	20	256.01	1.58	4.32	6.06	13	141				92	86	19.6
2	25	261.50	1.35	3.69	1.60	11	143	242	259	42	93	87	19.6
1	30	266.15	1.18	3.20	6.77	9	149				95	88	19.7
C-6	35	272.53	1.50	4.12	2.64	11	143	245	256	42	90	87	19.2
S	40	278.60	1.61	4.40	8.68	13	142				95	89	19.6
4	45	284.81	1.70	4.67	4.92	14	142	241	255	44	95	89	19.7
3	50	290.97	1.67	4.59	1.11	14	142				95	89	19.2
2	55	297.92	1.51	4.16	2.01	12.5	141	243	260	45	95	90	19.7
1	60	302.67	1.37	3.79	2.65	10.5	139				97	91	19.7
	(1543)												
												</	

Job L.P. / NEW WAVERLY
Source NO. 2 DRYER STACK
Test 8 Runs 1-3 Date 3/31/92
Stack dimen. 59 1/4" IN.
Dry bulb _____ °F Wet bulb _____ °F
Manometer: ☒ Reg. ☐ Exp. ☐ Elec.
Barometric pressure 29.69 in Hg
Static pressure -.80 in WC
Operators D. BRENNAN + B. ASCHENBACH
Pitot No. 21-6 Cp 84

Traverse Point No.		Fraction of Diameter	Distance from Stack Wall (in)	Distance from End of Port (in)	Velocity Pressure (in WC)	Temperature of gas (°F)
			Port length:	6.5 in.	Time start:	hrs
A	1	.044	2.607	9.11		
	2	.146	8.65	15.15		
	3	.296	17.54	24.04		
	4	.704	41.71	48.21		
	5	.854	50.60	57.10		
	6	.956	56.64	63.14		
B	1					
	2					
	3					
	4					
	5					
	6					
Temp. meas. tool & S/N:					Time end: hrs	

R or nothing= reg. manometer; S= expanded; E = electronic S-392.1

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / NEW MEXICO Date 3/31/92 Test 8 Runs 1
 Source NO. 2 DRIVER STAGE No. of traverse points 12
 Method 5 Filter holder: GLASS Filter type: 4'6.F.

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 0.05 cfm at 8 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone POB2 + NO226
4181 ☒ other(s)
 No. of probe wash bottles: 1
 Sample recovered by: M. KREHLER

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	545	496	49.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1416	1404	12.0
Total			61.0

Integrated Gas Sampling Data:

Bag Pump No. B-7 Box No. 6 Bag No. 1
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: .00 cc/min at 15 in. Hg.
 Time start: 1610 (HRS) Time end: 1712 (HRS)
 Sampling rate: 400 cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: 3

CF-023

C.P. / NEW WAVE

1000 C.P. / NEW WARELY
 SOURCE NO F PAYEE STATE NO
 Date 3/31/92 8

Operators D. BRENNAN & B. ASCHENBACH
 Meter Box No. 3 KPH 1.80 IN HC
 Gas meter cost. .9991

Pilot No.
Bar. Pressure
Nozzle No.

21-6 CP 1H9 HZ1
8-29-69 63-114 D1B
8-3 ND114 D1B
8-1

7.6 x 55 = 417

[illegible]

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / NEW Waverly Date 3/31/92 Test 8 Run 2
 Source NEW Waverly No. 2 Dry SL SWK No. of traverse points 12
 Method 5 Filter holder: GLASS Filter type: 4" G.F.

Sample Train Leak Check:

Pretest: 0.02 cfm at 15 in. Hg. (vac)
 Posttest: .00 cfm at 9 in. Hg. (vac)

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s)
(4182) ☒ acetone PROBE + NOZZLE
☐ other(s) _____
 No. of probe wash bottles: 1
 Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	549	496	53.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1441	1430	11.0
Total			64.0

Integrated Gas Sampling Data:

Bag Pump No. B-7 Box No. 6 Bag No. 2
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: .00 cc/min at 14 in. Hg.
 Time start: 1735 (HRS) Time end: 1837 (HRS)
 Sampling rate: 400 cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: 3

CF-023

U.S. DEPT. OF JUSTICE
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D. C. 20535

TO : SAC, NEW YORK

FROM : SAC, NEW YORK (100-100000)

SUBJECT: [REDACTED]

DATE: 3/31/92

BY: [REDACTED]

100-100000-100000

Directorate D. GRENDEL & B. ASCHENBACH
Meter Box No. 3 kWh 1.90 IN NC
Comptrolr conf. 500

Pilot No. 21-6 CP .84
Bar. Press. 29.69 INHG
Nozzle No. 623 Nozzle Dia.

$$\begin{array}{r} 1.84 \\ \text{CH}_3\text{NH}_2 + \text{H}_2\text{O} \rightleftharpoons \text{CH}_3\text{NH}_3^+ + \text{OH}^- \end{array}$$
[illegible]

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / NEW Waverly Date 3/31/82 Test 8 Run 3
 Source NO 2 DRYER STACK No. of traverse points 12
 Method 5 Filter holder: GLASS Filter type: 4" GF

Sample Train Leak Check:

Pretest: (.01 cfm at 17 in. Hg. (vac) ☒
 Posttest: .005 cfm at 10 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone
4183 ☒ other(s) PROBE + NOZZLES
 No. of probe wash bottles: 1
 Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	<u>554</u>	<u>497</u>	<u>57.0</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1362</u>	<u>1350</u>	<u>12.0</u>
Total			<u>69.0</u>

Integrated Gas Sampling Data:

Bag Pump No. B-7 Box No. 6 Bag No. 3
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: .00 cc/min at 17 in. Hg.
 Time start: 1903 (HRS) Time end: 2005 (HRS)
 Sampling rate: 400 cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: 3

CF-023

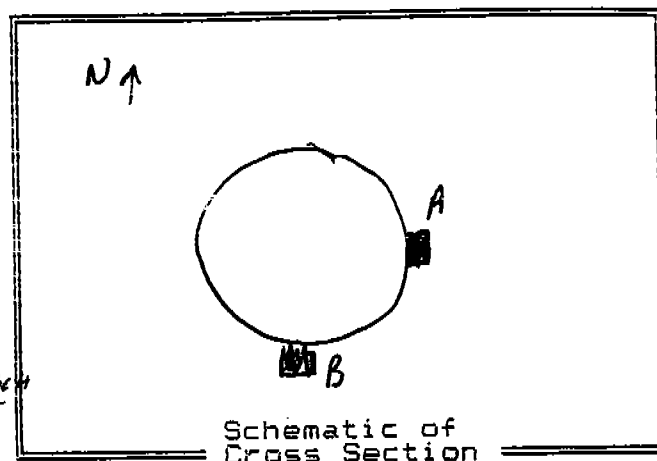
INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job L.P. NEW WARELY Operator D. BRENNAN & B. ASCHENBACH Pitot No. 21-C Cp .84
 Source 96 & 97th Street Motor Box No. 3 HP 1.20 IN NC Bar. Press. 29.99 inHg H2O 7.5
 Date 3/21/92 Test 8 Run 3 Computer conf. 9991 Nozzle No. 5-3 Nozzle Dia. .85 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inH ₂ O)	Drifts Water (inH ₂ O)	Des. Vol. (cf)	VAC. inHg	Temperatures (°F)							Oxygen (xv/v)	
							Stack	Probe	Dry	Wet	Gas In	Gas Out			
A-6	(1903)	486.40													
	5	483.73	1.25	1.38	3.70	4.5	132	246	265	42	88	87		19.6	
	10	487.19	1.50	1.62	7.24	6.0	133				93	88			
	15	490.86	1.60	1.74	0.92	6.5	132	250	261	42	94	88		19.6	
	20	494.54	1.55	1.67	4.52	6.0	137				96	89			
	25	497.93	1.35	1.45	7.88	5.0	143	255	264	42	96	88		19.8	
A-6	30	500.829	1.05	1.13	0.85	4.0	142				97	89			
	35	504.08	1.20	1.30	4.04	5.0	136	254	265	40	96	89		19.8	
	40	507.62	1.45	1.60	7.58	5.5	125				97	89			
	45	511.20	1.55	1.71	1.23	6.0	127	259	269	42	96	89		19.6	
	50	514.88	1.60	1.75	4.92	6.5	132				97	89			
	55	518.55	1.55	1.67	8.53	6.0	140	260	270	42	97	89		19.7	
	60	521.626	1.10	1.19	1.58	4.5	140				97	90			
(2005)														1	

INTERPOL LABORATORIES EPA METHOD 2 FIELD DATA SHEET

Job L.P./NEW WAVEY, TX
 Source NO. 1 PRESS VENT STACK
 Test 9 Runs 1-3 Date 4/1/92
 Stack dimen. 62.75 IN.
 Dry bulb °F Wet bulb °F
 Manometer: ☒ Reg. ☐ Exp. ☐ Elec.
 Barometric pressure 29.63 in Hg
 Static pressure -.15 in WC
 Operators D. BRENNAN + B. B. HENRY
 Pitot No. 21-6 Cp .84



Particulate

Traverse Point No.		Fraction of Diameter	Distance from Stack Wall (in)	Distance from End of Port (in)	Velocity Pressure (in WC)	Temperature of gas (°F)
			Port length: 6.0 in.	Time start: 9:10 hrs		
A	1	.021	1.32	7.32	.38	82
	2	.067	2.78	8.78	.47	
	3	.118	4.90	10.90	.47	
	4	.177	7.35	13.35	.55	
	5	.250	10.38	16.38	.50	
	6	.356	14.77	20.77	.35	
	7	.444	21.73	32.73	.38	
	8	.750	31.13	37.13	.56	
	9	.823	34.15	40.15	.65	
	10	.882	36.60	42.60	.58	
	11	.933	38.72	44.72	.62	
	12	.979	40.63	46.63	.38	
B	1					
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
Temp. meas. tool & S/N:					Time end: hrs	

R or nothing = reg. manometer; S = expanded; E = electronic

S-392.1

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / NEW Waverly Date 7/1/92 Test 9 Run 1
 Source NG / PRESS VENT STACK No. of traverse points 27
 Method S Filter holder: GLASS Filter type: 1" G.F.

Sample Train Leak Check:

Pretest: ^{.010} ~~0.02~~ cfm at 15 in. Hg. (vac)
 Posttest: .003 cfm at 18 in. Hg. (vac)

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s): acetone

4184 ☒ acetone PROBE + NOZZLE
☐ other(s) _____

No. of probe wash bottles: 1

Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	497.0	497.0	0.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1456	1441	15.0
Total			15.0

Integrated Gas Sampling Data: AMBIENT AIR

Bag Pump No. _____ Box No. _____ Bag No. _____

Bag Material: 5-layer Aluminized Tedlar Size: 44 L

Pretest leak check: _____ cc/min at _____ in. Hg.

Time start: 1110 (HRS) Time end: 1212 (HRS)

Sampling rate: _____ cc/min Operator: D. BRENNAN

S/N of O₂ Analyzer used to monitor train outlet: _____

CF-023

INTERPOLL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job I.P. / NEW WAVEWAY TX.
 Source NO. 1 PASSES WEST
 Date 07/11/92

Operator D. BAZZANINI
 Meter Box No. 3
 Gas meter coeff. 1.00

Pitot No. 21-6
 Bar. Press. 29.3 in Hg
 Nozzle Dia. 2.41 in.
 Nozzle No. 8-4

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (in H ₂ O)	Orifice Meter (in H ₂ O)	Dep. Vol. (cf)	VAC. in Hg	Temperature (°F)				Gas/Dwt	Oxygen (XV/V)
							Stack	Probe	Duct	Inpg.	Gas/in	
A-12	(110)	540.400	.38	1.36	2.01	6.0	93	230	250	48	84	83
	2.5	542.04		2.34	4.13	10.0	93				86	83
	5.0	544.14	.65	2.02	6.10	8.5	93	232	251	50	87	84
	7.5	546.09	.86	3.14	8.56	13.5	93				91	86
	10.0	548.51	.87	1.53	6.28	7.0	97	231	254	50	91	86
	12.5	550.31	.42	.95	1.14	4.5	93				92	87
	15.0	551.76	.26	1.82	3.52	7.5	88	231	255	48	96	89
	17.5	553.57	.49	2.20	5.60	9.0	79				98	90
	20.0	555.59	.58	2.61	7.85	11.5	75	230	253	46	98	90
	22.5	557.85	.68	2.38	6.01	10.5	74				99	90
B-	25.0	560.00	.62	1.92	1.95	8.0	74	231	255	46	101	92
	27.5	561.94	.50	1.23	3.51	6.0	75				101	92
	30.0	563.536	.32	2.76	5.83	12.0	85	230	251	47	101	93
	32.5	565.81	.73	3.38	8.40	15.0	70				101	94
	35.0	568.32	.87	2.90	6.79	13.0	73	233	250	48	100	94
	37.5	570.70	.75	4.10	3.62	17.0	66				99	93
	40.0	573.51	1.05	1.80	5.50	9.0	67	230	251	46	99	93
	42.5	575.43	.46	1.01	6.91	5.0	72				100	94
	45.0	576.87	.26	.85	8.21	4.0	74	230	254	46	101	94
	47.5	578.20	.22	2.01	0.19	9.0	75				103	94
	50.0	580.11	.52	2.40	2.37	11.0	75	232	251	46	103	94
	52.5	582.28	.62	1.34	3.99	6.5	81				103	94
	55.0	584.04	.35	1.68	5.81	7.0	82	231	250	45	103	95
	57.5	585.85	.44	1.15	7.32	5.0	81				103	95
	60.0	587.403	.30									
	(1212)											
	0 = 60											
		V _s = 47.003		ΔH = .04							Avg. = 94.1	

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / NEW WISPERLY, TX.
 Source NEW WISPERLY NO. 1 PRESS VENT
 Method 5 Filter holder: 60855

Date 4/1/92 Test 9 Run 2
 No. of traverse points 24
 Filter type: GLASS 4" 6.F.

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac)
 Posttest: -00 cfm at 17 in. Hg. (vac)

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s)
4185 ☒ acetone FRONT HALF
☐ other(s) _____

No. of probe wash bottles: 1
 Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	498	498	0.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1465	1456	9.0
Total			9.0

Integrated Gas Sampling Data: AMBIENT AIR

Bag Pump No. _____ Box No. _____ Bag No. _____

Bag Material: 5-layer Aluminized Tedlar Size: 44 L

Pretest leak check: _____ cc/min at _____ in. Hg.

Time start: 1246 (HRS) Time end: 1348 (HRS)

Sampling rate: _____ cc/min Operator: D. BRENNAN

S/N of O₂ Analyzer used to monitor train outlet: _____

CF-023

INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Operator D. Brennan + E. Alexander Pitot No. 21-C CP 84
 Water Box No. 3 ^{TR} TR NC Bar. Press. 29.63 inHg H2O 2.0X
 Compressor Conf. 9991 1.96 Nozzle No. 824 Nozzle Dia. 2.71 in.

Source No. 1 Press Vent
Date 4/11/92 1981 9 Run 2

[illegible]

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / NEW Waverly, TX Date 4/1/92 Test 9 Run 3
 Source NO. 1 PRESS VENT STACK No. of traverse points 24
 Method 5 Filter holder: GLASS Filter type: 4" G.F.

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: .006 cfm at 18 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone FRONT HOLE
4186 ☒ other(s)
 No. of probe wash bottles: 1
 Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	499	496	3.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1424	1465	9.0
Total			12.0

Integrated Gas Sampling Data: AMBIENT AIR

Bag Pump No. _____ Box No. _____ Bag No. _____
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: _____ cc/min at _____ in. Hg.
 Time start: 1435 (HRS) Time end: 1538 (HRS)
 Sampling rate: _____ cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: _____

CF-023

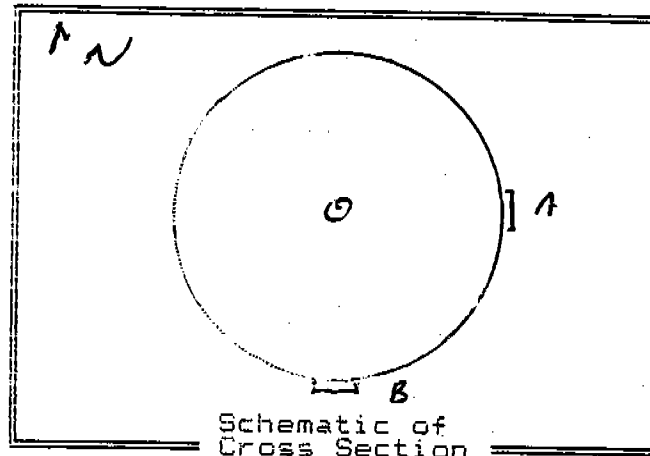
INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job C.P. New Wharf, TXSource AP-1 Press VentDate 01/17/92Run 3Operators D. Brennan & B. Aschenbach Pitot No. 21-6 CP 84
Meter Box No. 3 Bar. Press. 29.63 inHg H₂O 2.6 x
Gas meter coeff. 1.00 1.92 in H₂O Nozzle No. 8-1 Nozzle Dia 2.41 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inH ₂ O)	Drifts Water (inH ₂ O)	Des. Vol. (cf)	VAC. inHg	Temperature (°F)				Oxygen (xv/v)
							Stack	Probe	Oven	Inlet	
A-12	1435	634.706	.32	1.20	6.22	5.0	91	228	246	83	26.9
"	2.5	636.21	.42	2.30	8.32	10.0	91			84	
10	5.0	638.31	.43	1.61	6.08	7.0	90	230	245	84	26.9
9	7.5	646.12	.74	2.79	2.40	12.5	85			85	
8	10.0	642.40	.60	2.29	4.50	10.0	81	230	247	85	26.9
7	12.5	644.53	.37	1.43	6.16	6.0	75			85	
6	15.0	646.21	.51	1.94	8.10	8.0	84	231	248	86	26.9
5	17.5	648.12	.55	2.11	6.13	9.0	76		4	86	
4	20.0	650.13	.65	2.52	2.34	11.5	73	230	250	87	26.9
3	22.5	652.36	.64	2.49	4.54	11.5	72			87	
2	25.0	654.55	.56	2.19	6.60	9.0	70	231	249	87	26.9
1	27.5	656.60	.19	.74	7.81	3.5	73			87	
B-12	30.0	657.827	.70	2.74	0.11	12.5	70	230	250	88	26.9
"	32.5	660.11	.82	3.20	2.60	15.0	71			88	
11	35.0	662.57	.69	2.69	4.89	12.5	73	232	253	88	26.9
10	37.5	664.88	1.05	4.08	7.70	17.0	72			88	
9	40.0	667.61	.42	1.64	9.49	7.5	72	233	252	88	26.9
8	42.5	669.45	.275	1.07	0.94	5.0	72			88	
7	45.0	670.95	.24	.92	2.28	4.0	83	232	250	88	26.9
6	47.5	672.26	.40	1.54	4.01	7.0	79			89	
5	50.0	674.00	.55	2.13	6.05	10.0	78	229	249	89	26.9
4	52.5	676.05	.43	1.66	7.85	7.0	82			89	
3	55.0	677.84	.41	1.57	9.61	6.5	81	230	247	89	26.9
2	57.5	679.62	.36	1.38	1.26	6.0	83			90	
1	60.0	681.226									
	(1538)										
	0 = 60	Y = 46.526		2.01						Av. = 90.5	

INTERPOL LABORATORIES EPA METHOD 2 FIELD DATA SHEET

Job L.P. / New Waverly, TX
 Source No. 1 Press Vent / Stack
 Test 10 Run 0 Date 4-1-92
 Stack dimen. 62.75 IN.
 Dry bulb °F Wet bulb °F
 Manometer: ☒ Reg. ☐ Exp. ☐ Elec.
 Barometric pressure 29.63 in Hg
 Static pressure -.12 in WC
 Operators M. Kaehler + C. Mosser
 Pitot No. 290-6 Cp .84



Formaldehyde

Traverse Point No.	Fraction of Diameter	Distance from Stack Wall (in)	Distance from End of Port (in)	Velocity Pressure (in WC)	Temperature of gas (°F)
		Port length:	<u>6</u> in.	Time start: <u>1110</u> hrs	
A-1	.021	1.32	7.32	.24	
2	.067	4.20	10.20	.42	
3	.118	7.40	13.40	.36	
4	.177	11.11	17.11	.59	
5	.250	15.69	21.69	.45	
6	.356	22.34	28.34	.24	
7	.644	40.41	46.41	.35	
8	.750	47.06	53.06	.47	
9	.823	51.64	57.64	1.05	<u>A</u>
10	.882	55.35	61.35	.74	
11	.933	58.55	64.55	.80	77
12	.979	61.43	67.43	.64	<u>B</u>
B-1				.44	
2				.60	
3				.64	
4				.69	
5				.70	
6				.52	
7				.41	
8				.67	
9				.86	
10				.53	
11				.53	
12				.69	

Temp. meas. tool & S/N: PDT-31TC

Time end: hrs

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / New Waverly, TN
 Source Ab. 1 Press Vent / Stack
 Method DOCI Filter holder: _____

Date 4-1-92 Test 10 Run 1
 No. of traverse points 24
 Filter type: NA

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 0.02 cfm at 10 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: _____ Recovery solvent(s) _____

NA ☐ acetone
☒ other(s) Meck

No. of ^{Imp} wash bottles: 1
 Sample recovered by: M. Kachler & C. Hesser

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	597	599	(2)
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1406	1390	16
Total			14

Integrated Gas Sampling Data: NA / Ambient

Bag Pump No. _____ Box No. _____ Bag No. _____

Bag Material: 5-layer Aluminized Tedlar Size: 44 L

Pretest leak check: _____ cc/min at _____ in. Hg.

Time start: _____ (HRS) Time end: _____ (HRS)

Sampling rate: _____ cc/min Operator: _____

S/N of O₂ Analyzer used to monitor train outlet: _____

CF-023

INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job A-2 / New Waverly Ex Operator Mickelberger, T.C. Mosser Pitot No. 290-6 Cp .84
 Source At 1 Press Vent 20 Meter Box No. 4 Bar. Press. 29.63 inHg 2 x
 Date 4-1-92 Gasometer Count. 10000 Nozzle No. Class Nozzle Dia .235 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Drifted Meter (inWC)	Obs. Vol. (cf)	VAC. inHg	Temperature (°F)					Drygas (xv/v)
							Stack	Probe	Dyn	Imp	Gas In	Gas Out
A-1	2.5	313.32	.29	.90	3.35	2.5	98	235	245	43	67	67
2	5	314.85	.42	1.31	4.98	3.5	96				69	68
3	2.5	316.42	.36	1.13	6.49	3	96	240	242	43	71	68
4	10	318.29	.59	1.85	8.42	4	98				73	69
5	12.5	320.04	.45	1.42	0.12	3.5	97	241	246	42	74	70
6	15	321.57	.29	.91	1.49	2.5	97				75	71
7	17.5	323.07	.35	1.12	3.00	3	89	238	246	42	76	71
8	20	324.80	.47	1.52	4.76	4	84				77	72
9	22.5	327.44	1.05	3.40	7.39	8.5	83	235	244	42	80	73
10	25	329.68	.74	2.42	9.62	6.5	80				80	73
11	27.5	331.94	.80	2.64	1.94	6.5	75	239	246	43	81	73
12	30	334.10	.64	2.12	4.03	5	76				81	74
B-1	32.5	335.85	.44	1.45	5.75	3.5	78	242	244	44	79	73
2	35	337.82	.60	2.00	7.78	4.5	70				80	74
3	37.5	339.87	.64	2.15	9.68	5	68	240	247	44	81	74
4	40	342.05	.69	2.33	2.06	5.5	66				82	74
5	42.5	344.24	.70	2.36	4.26	5.5	67	237	248	44	82	75
6	45	346.20	.52	1.75	6.15	4	69				82	75
7	47.5	347.90	.41	1.36	7.83	3	74	241	246	45	83	75
8	50	349.99	.67	2.23	9.97	5	75				83	75
9	52.5	352.34	.86	2.85	2.39	7	75	238	245	45	83	76
10	55	354.28	.53	1.76	4.30	4	76				83	76
11	57.5	356.19	.53	1.74	6.19	4	82	240	244	46	83	76
12	60	358.39	.69	2.27	8.35	5.5	81				83	76
(12/12)												
Σ = 60		V _s = 46.35		Σ H 1.88							Avg. = 75.7	

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job A.P. / New Waverly, TX Date 4-1-92 Test 10 Run 2
 Source N-1 Press Vent / Stack No. of traverse points 24
 Method 0011 Filter holder: NA Filter type: NA

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 20.02 cfm at 10 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: Recovery solvent(s)

NA ☐ acetone
☒ other(s) MeCl₂

No. of ^{Imp} ~~press~~ wash bottles: 1
 Sample recovered by: M. Kaehler & C. Messer

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	602	601	1
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1515	1497	18
Total			19

Integrated Gas Sampling Data: NA / Ambient

Bag Pump No. _____ Box No. _____ Bag No. _____

Bag Material: 5-layer Aluminized Tedlar Size: 44 L

Pretest leak check: _____ cc/min at _____ in. Hg.

Time start: _____ (HRS) Time end: _____ (HRS)

Sampling rate: _____ cc/min Operator: _____

S/N of O₂ Analyzer used to monitor train outlet: _____

CF-023

INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job L.P. / New Waverly, TX Operator McKeebler & C. Mosser Pilot No. 290-6 Dp 89
 Sample Abc. 1 Press Vent / Stack Water Box No. 4 Bar. Press. 29.63 inHg H₂O 23.5 in
 Date 4-1-92 Press 1061 10 Run 2 Estimator COIT 4 1.25 in NC Nozzle No. Class Nozzle Dia. 23.5 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inH ₂ O)	Drifts Meter (inH ₂ O)	Dye Vol. (cf)	VAC. inHg	Temperatures (°F)						Oxygen (xv/v)
							Stack	Probe	Dye	Temp.	Gas In	Gas/Dye	
B-1													
1	2.5	358.90	.52	1.74	0.76	5	236	236	240	43	72	71	20.9
2	5	362.76	.61	2.02	2.81	5.5	241				74	71	20.9
3	7.5	364.92	.60	2.00	4.99	5.5	73	235	242	43	76	72	20.9
4	10	368.95	.71	2.30	7.01	7	77				78	73	20.9
5	12.5	369.13	.68	2.28	9.17	6.5	70	239	245	43	79	73	20.9
6	15	371.18	.63	2.12	1.25	5.5	71				79	73	20.9
7	17.5	372.86	.43	1.43	2.96	4	76	237	248	44	80	74	20.9
8	20	374.85	.57	1.90	4.94	5	75				81	74	20.9
9	22.5	377.34	.90	3.01	7.42	8	73	240	250	44	82	74	20.9
10	25	379.27	.54	1.80	9.34	5	77				81	74	20.9
11	27.5	381.25	.57	1.89	1.31	5	80	242	249	45	82	75	20.9
12	30	383.44	.68	2.25	3.46	6	81				82	75	20.9
A-1													
1	32.5	385.06	.35	1.17	5.02	3.5	78	245	253	45	79	74	20.9
2	35	386.68	.39	1.27	6.63	4	88				81	74	20.9
3	37.5	388.15	.40	1.31	8.27	4	86	243	251	44	81	75	20.9
4	40	390.02	.51	1.69	0.14	4.5	80				81	75	20.9
5	42.5	391.82	.47	1.57	1.93	4.5	77	244	250	44	82	75	20.9
6	45	393.35	.30	1.01	3.38	3	73				82	75	20.9
7	47.5	394.98	.37	1.24	4.97	3.5	76	240	247	45	82	75	20.9
8	50	397.00	.60	2.01	2.00	6	76				82	75	20.9
9	52.5	399.54	.98	3.30	9.60	9	71	238	245	45	83	76	20.9
10	55	401.82	.68	2.30	1.78	7	71				82	76	20.9
11	57.5	404.10	.75	2.53	9.06	7	71	235	242	45	83	76	20.9
12	60	406.25	.67	2.26	6.21	6.5	73				83	76	20.9
(1348)													
Σ = 47.35							Avg. = 77.2						

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / New Waverly, TX
 Source No. 1 Press Vent / Stack
 Method 0011 Filter holder: NA

Date 4-1-92 Test 10 Run 3
 No. of traverse points 24
 Filter type: 1A

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 20.02 cfm at 10 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: NA Recovery solvent(s)

☐ acetone
☒ other(s) Me Cl₂

No. of ^{Imp} wash bottles: 1
 Sample recovered by: McKachler + C. Mosser

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	599	599	-
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1418	1406	12
Total			12

Integrated Gas Sampling Data: NA / Ambient

Bag Pump No. _____ Box No. _____ Bag No. _____

Bag Material: 5-layer Aluminized Tedlar Size: 44 L

Pretest leak check: _____ cc/min at _____ in. Hg.

Time start: _____ (HRS) Time end: _____ (HRS)

Sampling rate: _____ cc/min Operator: _____

S/N of O₂ Analyzer used to monitor train outlet: _____

CF-023

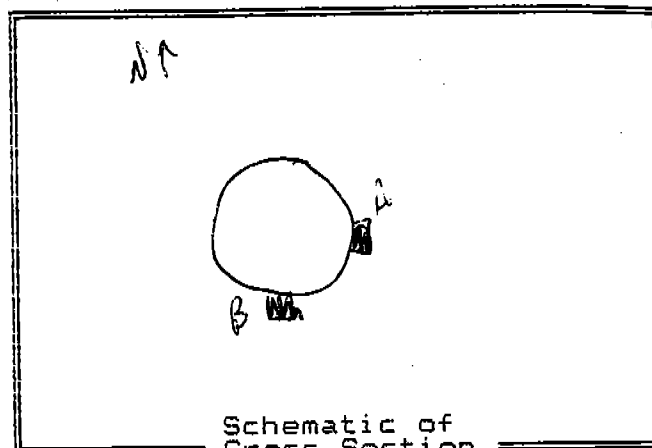
INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job 2.2.1 New Waverly, TX Operator Michael + C. Mosser Pitot No. 290-6 Cp .84
 Source Amel Press Plant / Street Motor Box No. 4 Bar. Press. 29.63 inHg H₂O 1.5 X
 Date 4-1-92 Gas analyzer coeff. 1.0010 Nozzle Dia. .235 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Orifice Meter (inWC)	Obs. Vol. (cf)	YAC. inHg	Temperature (°F)					Oxygen (x/v/v)
							Stack	Probe	Duct	Inlet	Gas/Duct	
A-1	(1435)	406.60	.28	.90	7.96	2.5	91	241	253	44	69	20.9
2	5	409.83	.45	1.43	9.66	3.5	91				72	20.9
3	7.5	411.25	.39	1.25	1.25	3	89	238	251	43	73	20.9
4	10	413.21	.60	1.94	3.24	4.5	85				75	20.9
5	12.5	415.09	.51	1.66	5.08	4	81	239	254	43	77	20.9
6	15	416.268	.32	1.06	6.55	3	75				77	20.9
7	17.5	417.99	.28	.91	7.91	2.5	84	242	250	42	77	20.9
8	20	419.72	.47	1.54	9.69	4	78				78	20.9
9	22.5	422.25	1.03	3.41	2.32	8.5	73	240	252	42	80	20.9
10	25	424.59	.75	2.50	4.58	0.5	72				80	20.9
11	27.5	426.87	.77	2.56	6.87	6.5	72	237	251	42	80	20.9
12	30	428.98	.63	2.10	8.95	5	73				81	20.9
B-1	32.5	430.57	.36	1.20	0.52	3	73	241	248	43	76	20.9
2	35	432.49	.62	2.05	2.57	5	75				80	20.9
3	37.5	434.55	.60	1.98	4.58	5	78	244	250	44	81	20.9
4	40	436.69	.69	2.29	6.75	5.5	74				82	20.9
5	42.5	438.86	.67	2.24	8.90	5.5	72	241	247	44	82	20.9
6	45	440.94	.60	2.01	0.93	5	72				82	20.9
7	47.6	442.77	.47	1.54	2.71	4	73	238	245	44	82	20.9
8	50	444.82	.65	2.13	4.80	5	83				83	20.9
9	52.5	447.40	.97	3.21	7.37	8	78	235	244	45	84	20.9
10	55	449.50	.65	2.16	9.48	5	77				83	20.9
11	57.5	451.70	.69	2.28	1.64	5.5	79	239	248	46	83	20.9
12	60	453.83	.68	2.27	3.80	5.5	75				93	20.9
(1536)												
Avg. = 60		47.23		1.94							Avg. = 76.3	

INTERPOLL LABORATORIES EPA METHOD 2 FIELD DATA SHEET

Job L.P. NEW Waverly, TX.
 Source NO. 2 PRESS VENT STACK
 Test 12 Runs 1-3 Date 4/1/92
 Stack dimen. 62.75 IN.
 Dry bulb _____ °F Wet bulb _____ °F
 Manometer: ☒ Reg. ☐ Exp. ☐ Elec.
 Barometric pressure 29.63 in Hg
 Static pressure -15 in WC
 Operators D. BRENNAN & B. ASHENBACH
 Pitot No. 21-C Cp .84



Schematic of Cross Section

Particulate

Traverse Point No.	Fraction of Diameter	Distance from Stack Wall (in)	Distance from End of Port (in)	Velocity Pressure (in WC)	Temperature of gas (°F)
		Port length: <u>60</u> in.		Time start: _____ hrs	
A	1	.621	1.32	7.32	
	2	.067	2.78	8.78	
	3	.118	4.90	10.90	
	4	.177	7.35	13.35	
	5	.250	10.38	16.38	
	6	.356	14.77	20.77	
	7	.644	26.73	32.73	
	8	.750	31.13	37.13	
	9	.823	34.15	40.15	
	10	.882	36.60	42.60	
	11	.933	38.72	44.72	
	12	.979	46.63	46.63	
B	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	10				
	11				
	12				
Temp. meas. tool & S/N:				Time end: _____ hrs	

R or nothing = reg. manometer; S = expanded; E = electronic

S-392.1

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / NEW WARELY, TX Date 4/1/92 Test 12 Run 1
 Source NO. 2 PRESS VENT No. of traverse points 24
 Method 5 Filter holder: GLASS Filter type: 4" G.F.

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) 1
 Posttest: 0.07 cfm at 16 in. Hg. (vac) 1

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone FRONT HALF
4187 ☒ acetone FRONT HALF
☐ other(s) _____
 No. of probe wash bottles: 1
 Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	497	496	1.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1372	1360	12.0
Total			13.0

Integrated Gas Sampling Data: AMBIENT AIR

Bag Pump No. _____ Box No. _____ Bag No. _____
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: _____ cc/min at _____ in. Hg.
 Time start: 1630 (HRS) Time end: 1753 (HRS)
 Sampling rate: _____ cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: _____

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INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job L.P. / NEW WARELY TX. Operator D. BRENNAN & B. ASCHENBACH Pitot No. 21-C CP 54
 Source NO. 2 PRESS. JNT. STACIL Meter Box No. 3 Bar. Press. 29.33 inHg H₂O 2.0 X
 Date 4/1/92 Generator Coeff. 1 Nozzle No. 8-4 Nozzle Dia. 2.571 IN.

Trough Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inHG)	Drift Water (inHG)	Dep. Vol. (cf)	VAC. inHG	Temperature (°F)					Oxygen (%v/v)	
							Stack	Probe	Dry	Imp.	Gas In		Gas Out
A-12	(1630)	681.700	.58	2.14	3.72	6.5	91	293	247	48	81	80	20.9
11	2.5	683.72	.69	2.53	5.92	8.0	90				84	81	
10	5.0	685.90	.53	1.96	7.86	6.0	89	229	245	48	79	78	20.9
9	7.5	687.89	.75	2.74	0.14	8.5	89				82	79	
8	10.0	690.16	.45	1.65	1.91	5.0	90	230	246	47	84	79	20.9
7	12.5	691.97	.38	1.40	3.55	4.5	91				86	80	
6	15.0	693.61	.39	1.44	5.21	4.5	89	231	248	46	87	80	20.9
5	17.5	695.27	.73	2.69	7.48	8.5	90				90	82	
4	20.0	697.48	.95	3.51	0.08	12.0	91	230	249	46	91	82	20.9
3	22.5	700.05	.82	3.03	2.49	9.5	92				91	82	
2	25.0	702.44	.75	2.77	4.80	9.0	91	232	251	46	92	83	20.9
1	27.5	704.76	.48	1.78	6.46	6.0	93				92	83	
B-12	30.0	706.675	.47	1.75	8.50	5.5	88	230	254	46	92	84	20.9
11	32.5	708.48	.77	2.85	0.84	9.0	92				94	84	
10	35.0	710.79	.63	2.23	2.97	7.5	93	230	255	45	94	85	20.9
9	37.5	712.93	.58	2.16	5.01	7.0	92				95	85	
8	40.0	715.00	.38	1.42	6.67	5.0	91	229	256	45	95	85	20.9
7	42.5	716.69	.26	.97	8.05	3.5	89				95	85	
6	45.0	718.06	.25	.94	9.40	3.5	89	229	253	45	95	86	20.9
5	47.5	719.41	.37	1.39	1.05	5.0	89				97	86	
4	50.0	721.15	.68	2.55	3.27	8.0	88	231	250	45	98	87	20.9
3	52.5	723.31	.50	1.88	5.19	6.0	88				98	87	
2	55.0	725.22	.57	2.15	7.24	6.5	88	233	248	45	98	87	20.9
1	57.5	727.23	.34	1.28	8.82	4.0	87				98	88	
	60.0	728.861											
	(1753)												
	0 = 60	V ₁ = 47.161		42.05							AVG. = 87.2		

e. (Gases - (Flow) Direct)

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / NEW WAVELEY, TX. Date 2/1/92 Test 2 Run 2
 Source NO. 2 DANGER SIGNAL PRESS VENT No. of traverse points 21
 Method 5 Filter holder: GLASS Filter type: 4" G.F.

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: .011 cfm at 12.5 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone FRONT HALF
4188 ☒ other(s) ☐
 No. of probe wash bottles: 1
 Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	562	560	2.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1383	1372	11.0
Total			13.0

Integrated Gas Sampling Data: AMBIENT AIR

Bag Pump No. _____ Box No. _____ Bag No. _____
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: _____ cc/min at _____ in. Hg.
 Time start: 1827 (HRS) Time end: 1929 (HRS)
 Sampling rate: _____ cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: _____

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INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job L.P. / NEW WAREHOUSE TX. Operators D. BAZZANUN + B. ASANAGAWA Pitot No. 21-C Cp 84
 Source 77142-1061 NO. 2 Pass Vent Meter Box No. 3 IN NC Bar. Press. 29.63 inHg H₂O 1.5 in.
 Date 7/14/81 17 Run 2 Gasometer Coeff. 9991 1.70 IN NC Nozzle No. 7-4 Nozzle Dia. 2.51 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Drifts Meter (inWC)	Des. Vol. (cf)	VAD. inHg	Temperatures (°F)					Oxygen (Kv/v)	
							Stack	Probe	Dry	Impq.	Gas In		Gas Out
B-12	(1827)	729.50	.49	1.82	1.32	5.5	90	231	254	53	84	81	20.9
"	2.5	731.33	.74	2.72	3.65	8.0	91				87	82	
"	5.0	733.59	.66	2.43	5.81	8.0	91	230	255	52	88	82	20.9
"	7.5	735.78	.59	2.19	7.86	7.0	89				89	82	
9	10.0	737.84	.39	1.45	9.53	5.0	89	233	251	52	90	83	20.9
8	12.5	739.57	.30	1.12	1.01	4.0	86				92	83	
7	15.0	741.06	.28	1.04	2.43	3.5	88	235	250	50	92	84	20.9
6	17.5	742.48	.35	1.31	4.02	4.5	89				94	84	
5	20.0	743.97	.65	2.43	6.19	8.0	89	234	246	50	95	85	20.9
4	22.5	746.12	.49	1.82	8.07	6.0	92				95	85	
3	25.0	748.04	.60	2.24	0.16	7.5	90	231	247	49	96	86	20.9
2	27.5	750.10	.43	1.61	1.93	5.0	90				96	86	
1	30.0	751.97	.50	1.88	3.84	6.0	86	230	245	46	95	86	20.9
A-12	32.5	753.86	.68	2.54	6.07	8.5	89				97	87	
"	35.0	756.69	.54	2.02	8.05	6.5	90	232	248	46	96	87	20.9
"	37.5	758.11	.72	2.70	0.34	8.5	89				96	88	
"	40.0	760.37	.55	2.06	2.35	6.5	89	235	246	45	96	88	20.9
8	42.5	762.41	.52	1.95	4.30	6.5	89				97	88	
7	45.0	764.37	.43	1.20	5.83	4.0	88	232	242	45	97	89	20.9
6	47.5	765.90	.43	1.62	7.61	5.0	88				98	89	
5	50.0	767.57	.43	3.49	6.22	12.0	90	230	245	45	99	89	20.9
4	52.5	770.12	.79	2.98	2.63	11.0	87				100	90	
3	55.0	773.56	.59	2.24	4.72	7.5	86	228	247	45	100	91	20.9
2	57.5	774.79	.27	1.02	6.14	3.5	87				100	91	
1	60.0	776.245											
	(1929)												
	0 = 60	V ₀ = 46.745		2.0							Av _g =	96.2	

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / NEW WAVELEY, TX Date 4/1/92 Test 12 Run 3
 Source NO 2 PRESS VENT STAIL No. of traverse points 24
 Method 5 Filter holder: GLASS Filter type: 4" G.E.

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) 4
 Posttest: .006 cfm at 16 in. Hg. (vac) 3

Particulate Catch Data:

No.s of filters used: 4214 Recovery solvent(s) acetone FRONT HLP
☒ other(s) _____
 No. of probe wash bottles: 1
 Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	564	563	1.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1388	1376	12.0
Total			13.0

Integrated Gas Sampling Data: AMBIENT AIR

Bag Pump No. _____ Box No. _____ Bag No. _____
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: _____ cc/min at _____ in. Hg.
 Time start: 2001 (HRS) Time end: 2003 (HRS)
 Sampling rate: _____ cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: _____

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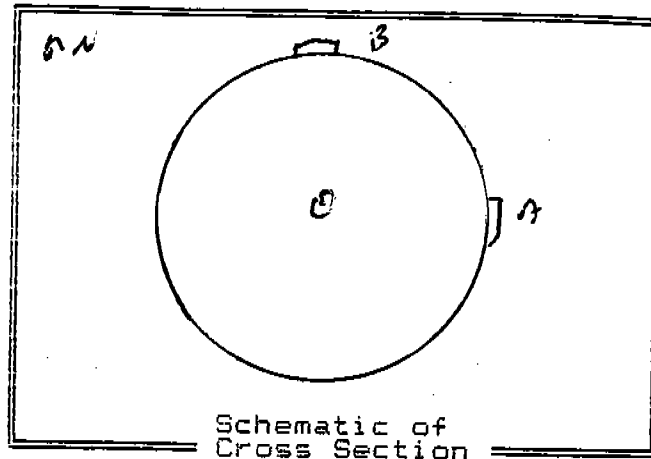
INTERPOL LABS LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job L.P. / NEW INTERPOLSource NO. 1 PRESS VENTDate 9/1/92 Test 12 Run 3Operator D. BRENNANMotor Box No. 3Computer Conf. 9991Pitot No. 21-6Bar. Press. 29.73 inHgNozzle No. 8-4CP 24H2O 1.5 XNozzle Dia. 2.44 in.

Inversion Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inHg)	Drift Meter (inHg)	Obs. Vol. (cf)	VAC. inHg	Temperature (°F)				Gas In	Gas Out	Oxygen (xv/v)
							Stack	Probe	Dry	Wet			
A-12	(2001)	776.60	.53	1.98	8.56	6.0	89	240	263	40	86	81	20.9
	2.5	778.54	.67	2.50	6.75	8.0	85				91	86	
	5.0	780.76	.52	1.96	2.70	6.0	84	242	260	40	92	86	20.9
	7.5	782.72	.67	2.52	4.91	8.0	85				93	86	
	10.0	784.92	.49	1.85	6.80	6.0	85	242	261	39	91	87	20.9
	12.5	786.86	.47	1.78	8.66	5.5	83				95	87	
	15.0	788.67	.38	1.44	6.34	4.5	82	245	260	39	95	87	20.9
	17.5	790.35	.62	2.35	2.47	7.0	82				97	88	
	20.0	792.41	.93	3.52	5.09	13.0	83	244	257	39	97	89	20.9
	22.5	795.02	.76	2.89	7.46	9.5	82				97	89	
B-12	25.0	797.38	.57	2.17	9.52	7.0	83	241	256	40	97	89	20.9
	27.5	799.50	.48	1.82	1.41	6.0	84				97	89	
	30.0	801.423	.58	2.20	3.46	7.0	84	243	255	40	91	87	20.9
	32.5	803.49	.80	3.01	5.89	9.5	84				98	89	
	35.0	805.89	.53	2.01	7.87	6.5	85	242	256	40	97	89	20.9
	37.5	807.92	.56	2.13	9.91	6.5	83				98	89	
	40.0	809.94	.42	1.60	1.68	5.0	84	240	251	39	98	90	20.9
	42.5	811.69	.25	.95	3.05	3.0	83				98	90	
	45.0	813.65	.30	1.14	4.55	4.0	83	240	250	39	98	90	20.9
	47.5	814.57	.36	1.37	6.19	4.5	83				98	90	
	50.0	816.18	.70	2.66	8.46	8.0	84	236	246	40	99	90	20.9
	52.5	818.43	.54	2.06	6.47	6.5	84				99	90	
	55.0	820.47	.58	2.20	2.55	7.0	85	235	245	40	99	90	20.9
	57.5	822.54	.48	1.82	4.44	6.0	85				99	90	
	60.0	824.465											
	(2903)												
		V ₀ = 47.865	ΔH = 2.08								Avg. = 21.1		

INTERPOL LABORATORIES EPA METHOD 2 FIELD DATA SHEET

Job L.P. / New Waverly, TX
 Source No. 2 Press Vent / Stack
 Test 13 Run 0 Date 4-1-92
 Stack dimen. 62.75 IN.
 Dry bulb °F Wet bulb °F
 Manometer: ☒ Reg. ☐ Exp. ☐ Elec.
 Barometric pressure 29.63 in Hg
 Static pressure -.12 in WC
 Operators M. Kachler + C. Misser
 Pitot No. 290-6 Cp .84



Yarnold, Hyde

Traverse Point No.	Fraction of Diameter	Distance from Stack Wall (in)	Distance from End of Port (in)	Velocity Pressure (in WC)	Temperature of gas (°F)
		Port length:	6 in.	Time start: 1630 hrs	
A-1	.021	1.32	7.32	.02	
2	.067	4.20	10.20	.78	
3	.118	7.40	13.40	.82	
4	.177	11.11	17.11	.95	
5	.250	15.69	21.69	.75	
6	.356	22.34	28.34	.40	
7	.644	40.41	46.41	.48	
8	.750	47.06	53.06	.46	
9	.823	51.64	57.64	.66	89
10	.882	55.35	61.35	.57	
11	.933	58.55	64.55	.68	
12	.979	61.43	67.43	.57	
B-1				.51	
2				.56	
3				.55	
4				.72	
5				.44	
6				.32	
7				.30	
8				.47	
9				.67	
10				.67	
11				.80	
12				.71	

Temp. meas. tool & S/N: PDT-3/TC Time end: hrs

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / Lake Waverly, TX
 Source Am. 7 Press vent / Stack
 Method 0011 Filter holder: NA

Date 4-1-92 Test 13 Run 1
 No. of traverse points 24
 Filter type: NA

Sample Train Leak Check:

Pretest: { 0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 20.02 cfm at 10 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: NA Recovery solvent(s)

☐ acetone
☒ other(s) MeCl₂

No. of ^{Imp} probe wash bottles: 1
 Sample recovered by: M. Kachler + C. Moser

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	<u>580</u>	<u>580</u>	<u>1</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1529</u>	<u>1515</u>	<u>14</u>
Total			<u>15</u>

Integrated Gas Sampling Data: NA / Ambient

Bag Pump No. _____ Box No. _____ Bag No. _____

Bag Material: 5-layer Aluminized Tedlar Size: 44 L

Pretest leak check: _____ cc/min at _____ in. Hg.

Time start: _____ (HRS) Time end: _____ (HRS)

Sampling rate: _____ cc/min Operator: _____

S/N of O₂ Analyzer used to monitor train outlet: _____

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INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job 6.2.1 New Waverly, TX Operator Mr. Baekler, F.C. Mosser Pitot No. 290-6 Cp 54
 Source Atmos. & Process Vent / Stack Meter Box No. 4 Bar. Pres. 29.83 in Hg H2O 25.5 x
 Date 4-1-92 Test 13 Run 1 Gasometer Refill. 10010 Nozzle No. Class Nozzle Dia. 232 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (ft)	Drift Factor (in Hg)	Bar. Ref. (in Hg)	Temperature (°F)				Gas In	Gas Out	Oxygen (xv/v)
						Stack	Probe	Duct	Imp.			
B-1	2.5	454.20	.51	1.00	5.63	92	238	251	44	67	67	20.9
2	5	455.68	.56	1.28	2.53	91				70	68	20.9
3	7.5	459.41	.55	1.26	9.41	89	240	248	44	67	67	20.9
4	10	461.52	.72	2.31	1.57	82				70	68	20.9
5	12.5	463.29	.44	1.41	3.26	90	243	250	43	71	68	20.9
6	15	464.73	.32	1.02	4.70	91				72	68	20.9
7	17.5	466.18	.30	.96	6.10	89	241	247	43	73	69	20.9
8	20	467.86	.47	1.51	2.85	90				74	69	20.9
9	22.5	469.92	.67	2.15	9.94	91	238	247	43	75	70	20.9
10	25	472.00	.67	2.18	2.04	85				76	70	20.9
11	27.5	474.30	.80	2.57	4.33	91	235	244	44	77	71	20.9
12	30	476.48	.71	2.29	6.49	91				78	71	20.9
A-1	32.5	478.56	.62	2.00	8.51	90	237	246	43	76	70	20.9
1	35	480.77	.78	2.50	0.77	92				77	71	20.9
2	37.5	483.02	.82	2.63	3.08	93	240	246	43	78	71	20.9
3	40	485.54	.45	3.05	5.57	93				79	72	20.9
4	42.5	487.26	.75	2.43	7.80	90	238	247	43	79	72	20.9
5	45	489.46	.40	1.30	9.43	89				79	72	20.9
6	47.5	491.18	.45	1.46	1.16	89	240	251	44	79	72	20.9
7	50	492.92	.46	1.49	2.91	89				79	72	20.9
8	52.5	495.00	.66	2.15	5.00	88	243	248	44	79	72	20.9
9	55	496.93	.57	1.85	6.95	88				80	72	20.9
10	57.5	499.09	.68	2.21	9.08	88	241	249	44	80	72	20.9
11	60	501.06	.57	1.86	1.03	87				80	73	20.9
(1753)												
Σ = 60		46.56		1.91								
Avg. = 72.9												

Stop at
1635
restart
at 1656

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job A.P. / New Waverly, TX Date 4-1-92 Test 13 Run 2
 Source No. 2 Press Vent / Stack No. of traverse points 24
 Method EC11 Filter holder: NA Filter type: NA

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 20.02 cfm at 10 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: Recovery solvent(s)

NA ☐ acetone
☒ other(s) MeCl₂

No. of ^{Imp}~~press~~ wash bottles: 1
 Sample recovered by: Mr Kaehler & C. Mosser

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	548	599	(1)
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1428	1418	10
Total			9

Integrated Gas Sampling Data: NA / Ambient

Bag Pump No. _____ Box No. _____ Bag No. _____

Bag Material: 5-layer Aluminized Tedlar Size: 44 L

Pretest leak check: _____ cc/min at _____ in. Hg.

Time start: _____ (HRS) Time end: _____ (HRS)

Sampling rate: _____ cc/min Operator: _____

S/N of O₂ Analyzer used to monitor train outlet: _____

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INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job A.P. / New Maury TX Operators M. Koehler & C. M. Hagg Pitot No. 200-6 Ep 28Y
 Source Abilene Press Plant / Stack Meter Box No. 4 Bur. Press. 28.63 inHg 20.9
 Date 4-1-92 Gas meter Coeff. 1.0010 Nozzle No. 655 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inH ₂ O)	Orifice Meter (inH ₂ O)	Des. Vol. (cf)	VAC. inHg	Temperatures (°F)						Oxygen (xv/v)
							Stack	Probe	Dry	Wet	Gas In	Gas Out	
A - 1													
1	2.5	501.30	.63	2.03	3.33	5	90	237	250	44	66	65	20.9
2	5	503.36	.78	2.48	5.56	6	90				69	66	20.9
3	7.5	505.58	.80	2.55	7.82	6	91	241	248	43	71	67	20.9
4	10	507.82	1.01	3.23	0.37	8	89				73	68	20.9
5	12.5	510.32	.75	2.41	2.58	6	89	243	245	43	74	68	20.9
6	15	512.63	.36	1.16	4.11	3	88				75	69	20.9
7	17.5	515.94	.47	1.52	5.87	4	88	243	247	44	76	69	20.9
8	20	517.75	.49	1.58	7.67	4	89				76	69	20.9
9	22.5	519.81	.71	2.29	9.82	5	89	239	249	44	77	70	20.9
10	25	521.80	.56	1.82	1.75	4.5	87				78	70	20.9
11	27.5	523.84	.64	2.09	3.81	5	84	242	251	44	79	71	20.9
12	30	525.92	.65	2.10	5.89	5	90				79	71	20.9
B - 1													
1	32.5	527.43	.32	1.20	2.45	3	80	243	254	43	77	70	20.9
2	35	529.37	.61	1.97	9.46	4.5	89				79	71	20.9
3	37.5	531.26	.50	1.62	1.28	4	80	240	252	43	79	71	20.9
4	40	533.35	.68	2.20	3.40	5.5	89				80	71	20.9
5	42.5	534.97	.35	1.14	4.93	3	89	237	250	43	80	72	20.9
6	45	536.38	.30	1.97	6.34	3	89				79	72	20.9
7	47.5	537.74	.27	1.88	2.69	2.5	88	235	252	44	79	71	20.9
8	50	539.40	.43	1.40	9.38	3.5	87				79	71	20.9
9	52.5	541.47	.62	2.02	1.41	5	87	238	249	44	80	72	20.9
10	55	543.52	.64	2.08	3.47	5	88				80	72	20.9
11	57.5	545.74	.25	2.45	5.71	6	86	240	252	44	81	72	20.9
12	60	547.71	.56	1.83	7.65	4	87				81	72	20.9
(1927)													
Σ = 60		Σ = 46.41		Σ = 18.89								Av. = 73.4	

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / New Waverly, TX Date 4-1-92 Test 13 Run 3
 Source N. & Press Vent / Stack No. of traverse points 21
 Method 0011 Filter holder: NA Filter type: NA

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) 7
 Posttest: 20.02 cfm at 10 in. Hg. (vac) 8

Particulate Catch Data:

No.s of filters used: Recovery solvent(s)

NA ☐ acetone
☒ other(s) MeCl₂

No. of ^{Imp}~~probe~~ wash bottles: 1
 Sample recovered by: McKeebler + C Mosser

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	594	597	(3)
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1484	1468	16
Total			13

Integrated Gas Sampling Data: NA / Ambient

Bag Pump No. _____ Box No. _____ Bag No. _____

Bag Material: 5-layer Aluminized Tedlar Size: 44 L

Pretest leak check: _____ cc/min at _____ in. Hg.

Time start: _____ (HRS) Time end: _____ (HRS)

Sampling rate: _____ cc/min Operator: _____

S/N of O₂ Analyzer used to monitor train outlet: _____

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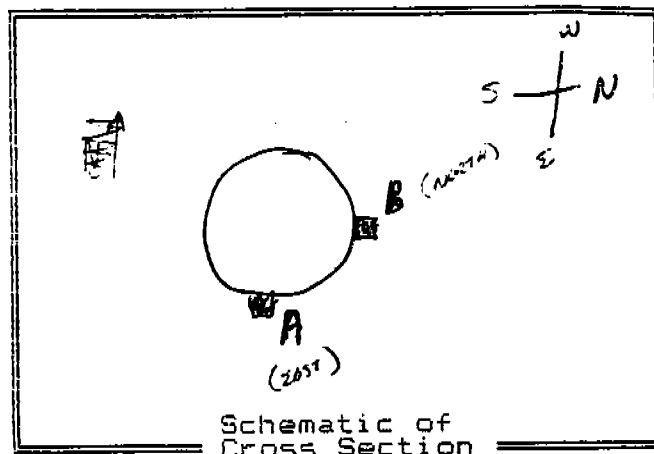
INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job h.p. / New March, TX
 Source Abilene Press Vent / Stack
 Date 4-1-92 13 Run 3
 Operators M. Keckler & C. Moser Pitot No. 24006 Cp 84
 Gas Meter 125 IN NC Bar. Press. 29.63 inHg H₂O 45 X
 Gas Meter 125 IN NC Nozzle No. 6555 Nozzle Dia. 2.35 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inH ₂ O)	Drifts Meter (inH ₂ O)	Des. Vol. (cf)	VAC. inHg	Temperature (°F)				Dye		Gas In	Gas Out	Oxygen (xv/v)
							Stack	Probe	Dye	Imp.	Gas In	Gas Out			
B-1	2.5	579.10	.37	1.20	9.56	3.5	89	243	255	42	64	64	64	64	20.9
2	5	549.52	.57	1.81	1.46	4.5	88				67	65	65	65	20.9
3	7.5	553.38	.56	1.80	3.37	5	84	239	252	42	68	65	65	65	20.9
4	10	555.48	.69	2.22	5.48	6	85				71	66	66	66	20.9
5	12.5	557.14	.42	1.36	7.14	4	85	242	250	42	92	66	66	66	20.9
6	15	558.65	.33	1.07	8.61	3.5	93				72	67	67	67	20.9
7	17.5	560.10	.30	.98	0.02	3	92	244	251	42	72	67	67	67	20.9
8	20	561.63	.36	1.17	1.56	3	83				73	67	67	67	20.9
9	22.5	563.17	.60	1.95	3.54	5.5	83	241	248	43	74	67	67	67	20.9
10	25	565.54	.57	1.86	5.48	5	82				75	67	67	67	20.9
11	27.5	567.68	.68	2.21	7.60	6	83	238	245	43	75	68	68	68	20.9
12	30	569.47	.52	1.69	9.45	5	83				75	68	68	68	20.9
A-1	32.5	571.53	.63	2.05	1.49	6	83	240	250	44	74	67	67	67	20.9
2	35	573.69	.71	2.30	3.65	6.5	84				75	68	68	68	20.9
3	37.5	575.82	.77	2.49	5.90	7	86	237	252	43	75	68	68	68	20.9
4	40	578.34	.94	3.06	8.39	9	93				76	68	68	68	20.9
5	42.5	580.44	.60	1.96	0.38	6	82	237	251	44	76	68	68	68	20.9
6	45	581.97	.36	1.17	1.93	3.5	83				75	68	68	68	20.9
7	47.5	583.46	.33	1.07	3.41	3	83	241	248	45	75	68	68	68	20.9
8	50	585.04	.42	1.37	5.08	4	83				75	68	68	68	20.9
9	52.5	587.21	.71	2.31	7.24	6.5	84	235	248	45	75	68	68	68	20.9
10	55	589.00	.48	1.56	9.02	4.5	84				75	68	68	68	20.9
11	57.5	590.42	.53	1.72	0.89	5	85	242	248	45	76	68	68	68	20.9
12	60	542.73	.52	1.69	1.75	5	85				76	68	68	68	20.9
(2102)															
V _m = 44, 63															
θ = 60															
Avg. = 70.2															

INTERPOL LABORATORIES EPA METHOD 2 FIELD DATA SHEET

Job L.P. NEW WIRELY, TX.
 Source NO. 3 PRESS VENT STACK
 Test 15 Runs (1-3) Date 7/2/92
 Stack dimen. 62.75 IN.
 Dry bulb °F Wet bulb °F
 Manometer: ☒ Reg. ☐ Exp. ☐ Elec.
 Barometric pressure 29.65 in Hg
 Static pressure -.15 in WC
 Operators D. BRENNAN & B. RSHENGLICH
 Pitot No. 21-6 Cp .84



Particulate

Traverse Point No.	Fraction of Diameter	Distance from Stack Wall (in)	Distance from End of Port (in)	Velocity Pressure (in WC)	Temperature of gas (°F)
		Port length: <u>6.0</u> in.	Time start: <u> </u> hrs		
A	1	.021	1.32	7.32	
	2	.067	2.78	8.78	
	3	.118	4.90	10.90	
	4	.177	7.35	13.35	
	5	.250	10.38	16.38	
	6	.356	14.77	20.77	
	7	.444	26.73	36.73	
	8	.750	31.13	37.13	
	9	.823	34.15	40.15	
	10	.882	36.60	42.60	
	11	.933	38.72	44.72	
	12	.979	40.63	46.63	
B	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	10				
	11				
	12				
Temp. meas. tool & S/N: <u>PAT 3</u>				Time end: <u> </u> hrs	

R or nothing = reg. manometer; S = expanded; E = electronic S-392.1

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / NEW WARELY, TX Date 4/12/92 Test 15 Run 1
 Source NO 3 PRESS VENT No. of traverse points 24
 Method 5 Filter holder: 60432 Filter type: 4" 6.4

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: .007 cfm at 16 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone FRONT HALF
4215 ☒ other(s)
 No. of probe wash bottles: 1
 Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	497	497	0.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1440	1429	11.0
Total			11.0

Integrated Gas Sampling Data: AMBIENT AIR

Bag Pump No. _____ Box No. _____ Bag No. _____
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: _____ cc/min at _____ in. Hg.
 Time start: 0940 (HRS) Time end: 1042 (HRS)
 Sampling rate: _____ cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: _____

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INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job L.P. NEW WARELY TX.Source NO. 3 PRESSURE STACKDate 4/2/72 1967 15 Nov 1Operator D. BRENNAN & B. ASCHENBACHMeter Box No. 3 IN NCGas meter Coft. 999Pilot No. 21-C CP 8-1Bar. Press. 29.65 inHgNozzle Dia. 2.97 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Orifice Meter (inWC)	Dep. Vol. (cf)	VAC. inHg	Temperature (°F)				Oxygen (xvsv)	
							Stack	Probe	Duct	Impq.	Gas In	Gas Out
12	2.5	838.900	.74	2.71	1.16	8.5	87	229	246	46	67	67
11	5.0	841.10	.93	3.36	3.65	12.0	83				83	72
10	7.5	843.61	.56	1.85	5.52	6.5	83	228	245	45	84	72
9	10.0	845.55	.63	2.33	7.63	7.5	83				85	73
8	12.5	847.61	.38	1.41	9.26	5.0	83	228	249	48	86	74
7	15.0	849.25	.25	.93	6.60	3.5	82				87	75
6	17.5	850.60	.29	1.08	2.04	4.0	82	228	250	45	88	76
5	20.0	852.06	.47	1.75	3.87	6.0	84				90	77
4	22.5	853.83	.71	2.65	6.12	9.0	84	228	251	45	90	78
3	25.0	856.11	.52	1.94	8.05	6.5	84				90	78
2	27.5	858.05	.50	1.86	9.94	6.0	85	230	254	44	90	79
1	30.0	859.92	.28	1.04	1.36	4.0	85				91	79
12	32.5	861.515	.38	1.42	3.02	5.0	83	229	255	44	90	80
11	35.0	863.08	.45	1.68	4.82	5.5	85				92	80
10	37.5	864.87	.47	1.76	6.66	6.0	86	230	257	43	92	81
9	40.0	866.69	.78	2.91	9.02	16.0	86				93	81
8	42.5	868.97	.44	1.65	6.81	5.5	86	230	256	43	93	82
7	45.0	870.84	.48	1.80	2.67	6.0	86				94	83
6	47.5	872.69	.32	1.20	4.20	4.0	88	231	253	42	94	83
5	50.0	874.23	.51	1.91	6.12	6.0	87				95	84
4	52.5	876.13	.90	3.37	8.67	12.0	86	233	253	42	95	84
3	55.0	878.07	.66	2.48	6.86	8.0	86				95	84
2	57.5	880.86	.62	2.32	2.98	8.0	87	232	254	42	95	84
1	60.0	882.99	.47	1.77	4.83	6.0	86				95	85
		884.865										
	(10/127)											
		V _s = 45.965		1.97							Av _g = 81.2	
		Q = 6.0										

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / NEW WARELY TX Date 4/2/92 Test 15 Run 2
 Source NE 3 PRESS VENT STACK No. of traverse points 24
 Method 5 Filter holder: 6655 Filter type: 4" 6.F.

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac)
 Posttest: .012 cfm at 16 in. Hg. (vac)

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s)
4216 ☒ acetone FRONT HALF
☐ other(s) _____
 No. of probe wash bottles: 1
 Sample recovered by: D.B.

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	<u>490</u>	<u>490</u>	<u>0.0</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1450</u>	<u>1440</u>	<u>10.0</u>
Total			<u>10.0</u>

Integrated Gas Sampling Data: AMBIENT AIR

Bag Pump No. _____ Box No. _____ Bag No. _____
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: _____ cc/min at _____ in. Hg.
 Time start: 1115 (HRS) Time end: 1217 (HRS)
 Sampling rate: _____ cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: _____

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INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job L.P. / NEW WARELY, TX. Operator D. S. G. / 100 IN NC Pitot No. 216 DP 8.1
 Source NO. 3 PRESS VENT Meter Box No. 3 Bar. Press. 29.7 inHg 1.5 x
 Date 4/2/82 Computer conf. 929 Nozzle No. 241 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Drifts Meter (inWC)	Dis. Vol. (cf)	VAC. inHg	Temperature (°F)						Oxygen (Xv/v)
							Stack	Probe	Dye	Imp.	Gas/in	Gas/Dut	
A-12	(1115) 2.5	885.30	.46	1.71	7.11	5.5	88	227	263	49	84	82	20.9
11	5.0	887.11	.60	2.22	9.16	7.0	88				87	81	
10	7.5	889.13	.57	2.11	1.18	7.0	88	227	260	49	88	81	26.9
9	10.0	891.16	.70	2.60	3.11	8.0	87				89	80	
8	12.5	893.35	.52	1.94	5.34	6.0	86	228	261	49	90	82	20.9
7	15.0	895.29	.58	2.16	7.38	7.0	87				91	83	
6	17.5	897.35	.47	1.76	9.42	6.0	85	228	260	49	92	83	20.9
5	20.0	899.18	.70	2.62	1.47	8.5	86				92	83	
4	22.5	901.40	.91	3.40	1.03	10.5	86	227	263	48	94	84	20.9
3	25.0	903.95	.72	2.70	6.31	9.5	86				94	84	
2	27.5	906.22	.59	2.22	8.38	8.0	85	227	259	48	94	85	20.9
1	30.0	908.35	.42	1.57	0.13	5.5	88				94	85	
B-12	32.5	912.46	.77	2.88	2.49	9.0	87	228	257	48	94	85	20.9
11	35.0	914.98	.90	3.37	5.04	11.5	87				95	85	
10	37.5	917.22	.65	2.44	7.22	8.5	86	230	260	48	94	85	20.9
9	40.0	919.46	.69	2.59	9.46	8.5	86				95	86	
8	42.5	921.41	.52	1.96	1.41	6.5	86	230	259	48	95	86	20.9
7	45.0	923.16	.40	1.51	3.12	5.0	85				95	86	
6	47.5	924.55	.27	1.02	4.53	3.5	86	231	257	48	95	86	20.9
5	50.0	926.29	.40	1.51	6.24	5.0	86				95	86	
4	52.5	928.57	.73	2.75	8.55	9.0	86	231	256	48	97	86	20.9
3	55.0	930.50	.48	1.81	6.43	6.0	85				96	86	
2	57.5	932.00	.34	1.28	2.01	4.0	85	230	257	48	96	87	20.9
1	60.0	933.025	.15	.56	3.07	1.5	86				96	87	
	(1217)												
		V _m = 47.725		ΔH 2.11							AVG. = 87.6		
		θ = 60											

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / NEW WARELY, Tx. Date 4/12/92 Test 15 Run 3
 Source NO. 3 PRESS WENT STAIL No. of traverse points 21
 Method 5 Filter holder: GLASS Filter type: 4" G.F.

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac)
 Posttest: -0.17 cfm at 16.5 in. Hg. (vac)

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone FRONT HALF
4203 other(s) _____
 No. of probe wash bottles: 1
 Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	496	497	-.1
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1491	1480	11.0
Total			10.0

Integrated Gas Sampling Data: AMBIENT AIR

Bag Pump No. _____ Box No. _____ Bag No. _____
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: _____ cc/min at _____ in. Hg.
 Time start: 1253 (HRS) Time end: 1356 (HRS)
 Sampling rate: _____ cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: _____

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INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Lab _____ C.P. / NEW BRUNSWICK, TX.
Source NO. 3 PASS, VENT
Date 4/2/92 101 15 RR

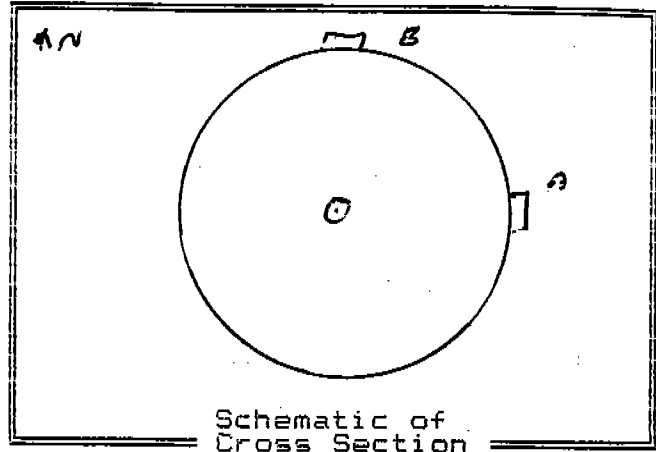
Operator D. BEZIMANOV + 6. PASCHEV BACH
Operator Box No. 3 xhr 190 IN NC
Computer Cost. 9991

Pitot No.	21-C	CP	84
Bar. Press.	29.65	10Hg	1.5 x
Nozzle No.	34	Nozzle Dia	.241 in.

[illegible]

INTERPOL LABORATORIES EPA METHOD 2 FIELD DATA SHEET

Job L.P. / Ven. Waverly, TX
 Source No. 3 Press Vent / Stack
 Test 16 Run 0 Date 9-2-92
 Stack dimen. 62.75 IN.
 Dry bulb °F Wet bulb °F
 Manometer: ☒ Reg. ☐ Exp. ☐ Elec.
 Barometric pressure 29.65 in Hg
 Static pressure -.12 in WC
 Operators M. Kaehler & C. Mosser
 Pitot No. 29V-0 Cp .94



Formaldehyde

Traverse Point No.	Fraction of Diameter	Distance from Stack Wall (in)	Distance from End of Port (in)	Velocity Pressure (in WC)	Temperature of gas (°F)
Port length: <u>6</u> in.				Time start: <u>0940</u> hrs	
A-1	.021	1.37	2.37	.46	
2	.067	4.20	10.20	.70	
3	.118	7.40	13.40	.73	
4	.177	11.11	17.11	.94	
5	.250	15.69	21.69	.74	
6	.356	22.34	28.34	.46	
7	.644	40.41	46.41	.41	
8	.750	47.06	53.06	.52	↑
9	.823	57.64	57.64	.83	85
10	.882	55.35	61.35	.56	
11	.933	58.55	64.55	.58	↓
12	.979	61.43	67.43	.46	
B-1				.39	
2				.52	
3				.50	
4				.69	
5				.44	
6				.28	
7				.34	
8				.57	
9				.64	
10				.67	
11				1.02	
12				.85	

Temp. meas. tool & S/N: PDT-3/TC Time end: hrs

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job A.P. / Ven. Havenly, TX Date 4-2-92 Test 16 Run 1
 Source M-3 Press Vent / 5th fl No. of traverse points 211
 Method 0011 Filter holder: NA Filter type: NA

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 2 0.02 cfm at 10 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: NA Recovery solvent(s)
☐ acetone
☒ other(s) Me Cl₂
 No. of ^{Imp} ~~probe~~ wash bottles: 1
 Sample recovered by: M. Kachler & G. Mosser

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1	590	592	(2)
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1454	1443	11
Total			9

Integrated Gas Sampling Data: NA / Ambient

Bag Pump No. _____ Box No. _____ Bag No. _____
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: _____ cc/min at _____ in. Hg.
 Time start: _____ (HRS) Time end: _____ (HRS)
 Sampling rate: _____ cc/min Operator: _____
 S/N of O₂ Analyzer used to monitor train outlet: _____

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INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job A.P. / New Waverly, TX Operator W. Kae Ager & C. Maffett Pilot No. 29V-6 Cp 6.4
 Source Ab. 3 Power Plant / Stage 1 Meter Box No. 4 Bar. Press. 20.65 inHg H₂O 1.5 x
 Date 4-2-82 Gas meter coeff. 1.0010 Nozzle No. 20.65 inHg 250 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inH ₂ O)	Drifted Water (inH ₂ O)	Des. Vol. (cf)	VAC. inHg	Temperature (°F)					Oxygen (xv/v)
							Stack	Probe	Duct	Impg.	Gas In	Gas Out
A-1	2.5	602.30	.99	1.50	4.01	4	83	235	255	41	51	50
2	5	604.08	.70	2.19	6.07	5	83				53	51
3	7.5	608.22	.73	2.29	6.18	5.5	83	238	254	41	55	52
4	10	610.58	.94	2.95	0.59	7	83				57	52
5	11.5	612.25	.74	2.33	2.72	6	83	242	256	41	59	53
6	15	614.48	.46	1.46	4.42	4	82				60	54
7	17.5	616.09	.41	1.30	6.03	3.5	82	241	255	42	61	54
8	20	617.89	.52	1.65	2.83	4	84				62	55
9	22.5	620.15	.03	2.63	0.11	6	84	244	258	41	64	56
10	25	622.04	.56	1.78	1.99	4	84				64	56
11	27.5	623.92	.58	1.84	3.90	4	85	245	258	42	65	57
12	30	625.65	.46	1.46	5.61	3.5	85				65	57
B-1	32.5	627.23	.39	1.24	7.10	3	84	243	256	42	64	57
2	35	629.07	.52	1.68	9.00	4	84				66	58
3	37.5	630.75	.50	1.54	0.78	4	85	246	255	43	66	59
4	40	632.02	.69	2.20	2.87	5	86				67	59
5	42.5	634.53	.44	1.40	4.55	3.5	86	249	257	43	67	59
6	45	635.97	.28	.89	5.85	2.5	88				67	60
7	47.5	637.40	.34	1.08	7.36	3	88	247	259	42	67	60
8	50	639.32	.57	1.81	9.26	4	88				68	60
9	52.5	641.33	.04	2.04	1.28	4.5	88	244	253	43	68	60
10	55	643.42	.67	2.14	3.35	5	86				69	61
11	57.5	645.81	1.02	3.26	5.90	8	86	239	251	43	70	61
12	60	648.21	.85	2.72	8.23	7	86				70	62
(1041)												
θ = 60		V _m = 45.91		W = 7.89							Avg. = 60.1	

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L. P. / Chem. Laboratory, TX
 Source veg. 3 Press vent
 Method 0011 Filter holder: NA

Date 4-1-92 Test 16 Run 2
 No. of traverse points 24
 Filter type: NA

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: < 0.02 cfm at 15 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: NA Recovery solvent(s)
☐ acetone
☒ other(s) MeCl₂
 No. of ^{Imp} wash bottles: 1
 Sample recovered by: M. Kaehler & C. Mosser

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	542	594	(2)
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1454	1438	16
Total			14

Integrated Gas Sampling Data: NA / Ambient

Bag Pump No. _____ Box No. _____ Bag No. _____
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: _____ cc/min at _____ in. Hg.
 Time start: _____ (HRS) Time end: _____ (HRS)
 Sampling rate: _____ cc/min Operator: _____
 S/N of O₂ Analyzer used to monitor train outlet: _____

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INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job L.P. 1 New Warehouse TX Operator Dr. Kachler YC Messer Pitot No. 290-6 Cp 54
 Source Wall Press Vent Meter Box No. 4 HF 275 IN NC 2 Bar. Press. 29.65 IN Hg 20 X
 Date 4-2-92 Computer Coeff. 1.0010 Nozzle No. 6422 Nozzle Dia. 258 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inH ₂ O)	Driftless Water (inH ₂ O)	Des. Vol. (cf)	VAC. inH ₂ O	Temperatures (°F)						Oxygen (xv/v)
							Stack	Probe	Duct	Inlet	Exhaust		
B-1	2.5	648.50	.44	1.41	0.17	4	84	243	253	42	53	57	20.9
2	5	652.05	.53	1.69	2.00	4	83				60	58	20.9
3	7.5	653.88	.54	1.73	3.85	4	83	241	256	41	62	58	20.9
4	10	656.13	.84	2.68	6.16	7	87				65	59	20.9
5	12.5	658.08	.55	1.76	8.03	4.5	86	244	256	42	66	60	20.9
6	15	659.33	.24	.27	9.18	2	87				66	60	20.9
7	17.5	660.99	.45	1.45	8.98	4	85	240	253	42	67	61	20.9
8	20	662.85	.52	1.68	2.81	4	84				69	61	20.9
9	22.5	664.45	.71	2.29	4.95	6	86	238	250	43	70	62	20.9
10	25	667.00	.67	2.16	7.04	6	86				70	62	20.9
11	27.5	669.42	.93	3.00	9.49	8	87	239	252	43	71	63	20.9
12	30	671.76	.82	2.64	1.75	7.5	88				72	63	20.9
A-1	32.5	673.58	.48	1.55	3.56	4	87	242	254	42	69	63	20.9
2	35	675.51	.54	1.90	5.51	5	87				70	63	20.9
3	37.5	677.65	.69	2.24	7.63	6	85	241	256	43	71	64	20.9
4	40	680.07	.96	3.11	0.13	8.5	85				72	64	20.9
5	42.5	682.90	.74	2.40	2.33	7.5	86	239	255	43	72	64	20.9
6	45	684.20	.49	1.59	4.12	4.5	86				71	64	20.9
7	47.5	685.05	.41	1.33	5.76	3.5	86	242	255	44	71	64	20.9
8	50	687.62	.50	1.62	7.56	4	86				72	64	20.9
9	52.5	689.79	.77	2.50	5.81	7	85	240	253	44	72	64	20.9
10	55	691.77	.57	1.85	1.74	5.5	85				72	65	20.9
11	57.5	693.70	.55	1.79	3.64	5	86	238	250	44	73	65	20.9
12	60	695.64	.38	1.24	5.72	3.5	86				73	65	20.9
(1220)													
Σ = 60		Σ = 47.14	Σ = 14.43	Σ = 14.43	Σ = 14.43	Σ = 14.43	Σ = 14.43	Σ = 14.43	Σ = 14.43	Σ = 14.43	Σ = 14.43	Σ = 14.43	Σ = 14.43
Avg. = 65.5													

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job Ref. 1 New Waverly, TX
 Source No. 3 Press Vent / Stack
 Method CO11 Filter holder: NA

Date 4-2-92 Test 16 Run 3
 No. of traverse points 24
 Filter type: NA

Sample Train Leak Check:

Pretest: < 0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 20.02 cfm at 10 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: NA Recovery solvent(s)

☐ acetone

☒ other(s) MeCl₂

No. of ^{Imp} probe wash bottles: 1

Sample recovered by: M. Kachler & C. Mosser

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1	591	594	(3)
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1466	1454	12
Total			9

Integrated Gas Sampling Data: NA / Ambient

Bag Pump No. _____ Box No. _____ Bag No. _____

Bag Material: 5-layer Aluminized Tedlar Size: 44 L

Pretest leak check: _____ cc/min at _____ in. Hg.

Time start: _____ (HRS) Time end: _____ (HRS)

Sampling rate: _____ cc/min Operator: _____

S/N of O₂ Analyzer used to monitor train outlet: _____

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INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job A.P. 1 New Haven, TX Operator Mike Walker Pitot No. 290-6 Cp 180
 Source No. 3 Press Vent Meter Box No. 4 Bar. Press. 29.65 inHg H₂O 1.2 X
 Date 4-2-82 Computer conf. 1.00/C Nozzle No. 6333 Nozzle Dia. 2.35 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inH ₂ O)	Drifts Meter (inH ₂ O)	Des. Vol. (cf)	VAC. inHg	Temperature (°F)				Gas/Dut	Oxygen (xv/v)
							Stack	Probe	Oven	Ingr.	Gas/In	
A-1	2.5	696.00	.53	1.70	7.84	4	87	237	245	44	54	20.9
2	5	657.87	.67	2.11	9.89	4.5	86				61	20.9
3	7.5	694.94	.69	2.19	1.97	5	87	240	252	43	64	20.9
4	10	704.35	.90	2.86	4.35	7	97				66	20.9
5	12.5	706.44	.70	2.23	6.46	6	87	241	255	43	68	20.9
6	15	708.14	.42	1.35	8.11	7.5	85				69	20.9
7	12.5	709.55	.31	1.00	9.52	3	84	239	258	43	69	20.9
8	20	711.35	.47	1.81	1.27	4	85				89	20.9
9	22.5	713.62	.83	2.67	3.58	6.5	84	242	257	42	71	20.9
10	25	715.44	.48	1.55	5.34	3.5	85				71	20.9
11	27.5	717.32	.55	1.73	7.23	4	84	244	255	42	71	20.9
12	30	718.88	.37	1.14	8.78	3	85				71	20.9
B-1	32.5	720.33	.31	1.00	0.21	3	85	242	257	43	70	20.9
2	35	722.11	.50	1.59	1.99	4	93				70	20.9
3	37.5	723.84	.49	1.56	3.76	4	90	241	254	43	71	20.9
4	40	725.95	.72	2.30	5.91	6	90				72	20.9
5	42.5	727.52	.38	1.22	7.48	3	91	243	250	43	73	20.9
6	45	728.92	.27	.87	8.81	2.5	89				72	20.9
7	47.5	730.13	.25	.80	0.09	2	87	245	252	44	72	20.9
8	50	731.77	.43	1.39	1.76	3.5	87				72	20.9
9	52.5	733.79	.63	2.04	3.79	5	84	242	248	43	73	20.9
10	55	735.74	.57	1.85	5.72	4.5	84				73	20.9
11	57.5	737.80	.65	2.11	7.78	5	84	240	245	44	73	20.9
12	60	739.90	.70	2.28	9.93	5	81				74	20.9
(1355)												
		V = 43.90		H 4.71							Avg. = 66.4	
		0 = 60										

INTERPOL LABORATORIES EPA METHOD 2 FIELD DATA SHEET

Job L.P. / NEW WAVELEY, TX.
 Source NO 4 FURNACE LINE VENT
 Test 18 Runs (1-3) Date 4/2/92
 Stack dimen. 62.75 IN.
 Dry bulb °F Wet bulb °F
 Manometer: ☐ Reg. ☐ Exp. ☐ Elec.
 Barometric pressure 29.65 in Hg
 Static pressure -.15 in WC
 Operators D. BRENNAN
 Pitot No. 21-6 Cp .84

Schematic of
Cross Section

Particulate

Traverse Point No.	Fraction of Diameter	Distance from Stack Wall (in)	Distance from End of Port (in)	Velocity Pressure (in WC)	Temperature of gas (°F)
		Port length: <u>6</u> in.	Time start: <u> </u> hrs		
A	1	.021	1.32	7.32	
	2	.067	2.78	8.78	
	3	.118	4.90	16.90	
	4	.177	7.35	13.35	
	5	.250	10.38	16.38	
	6	.356	14.77	26.77	
	7	.444	26.73	32.73	
	8	.750	31.13	37.13	
	9	.823	34.15	40.15	
	10	.882	36.60	42.60	
	11	.933	38.72	44.72	
	12	.979	40.63	46.63	
B	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	10				
	11				
	12				
Temp. meas. tool & S/N: <u>POT 3</u>				Time end: <u> </u> hrs	

R or nothing = reg. manometer; S = expanded; E = electronic S-392.1

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.R. / NEW WICKERY, TX. Date 4/12/92 Test 18 Run 1
 Source NO 4 FARMING LIKE VENT No. of traverse points 24
 Method 5 Filter holder: GLASS Filter type: 4" G.E.

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 0.02 cfm at 17 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone FRONT HALF
4204 ☐ other(s) _____
 No. of probe wash bottles: 1
 Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	495	499	- .40
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1395	1380	15.0
Total			11.0

Integrated Gas Sampling Data:

AMBIENT AIR

Bag Pump No. _____ Box No. _____ Bag No. _____
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: _____ cc/min at _____ in. Hg.
 Time start: 1512 (HRS) Time end: 1614 (HRS)
 Sampling rate: _____ cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: _____

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INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job L.P. / NEW WISKEY, TX.Source NO. 4 Farming Line VentDate 11/2/82 1982 18 Mon 1Operators D. BRENNAN + G. ASCHENBACHWater Box No. 3Compressor Coeff. .991Pilot No. 21-CBer. Press. 29.65Nozzle No. 8-7Dp .8410Hg 1.0H2O 1.0

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Drifted Water (inWC)	Des. Vol. (cf)	VAC. inHg	Temperatures (°F)						Oxygen (cc/v)
							Stack	Probe	Dry	Wet	Gas In	Gas Out	
A-12	(1512)	980.70	.61	2.37	2.82	10.0	62	228	246	40	73	69	20.9
11	8.0	982.78	.68	2.48	5.03	11.5	58				75	69	
10	7.5	985.00	.56	2.11	7.04	9.5	63	227	244	40	77	70	20.9
9	10.0	987.03	.82	3.15	9.47	15.0	62				79	71	
8	12.5	989.43	.47	1.81	1.32	8.5	62	230	245	40	79	71	20.9
7	15.0	991.38	.45	1.71	3.14	7.5	62				80	72	
6	17.5	993.19	.52	2.01	5.09	4.5	62	231	244	40	81	72	20.9
5	20.0	995.12	.47	1.82	6.94	8.0	62				82	73	
4	22.5	996.99	.70	2.71	9.21	13.0	62	230	245	38	83	74	20.9
3	25.0	999.24	.53	2.06	1.19	9.0	61				83	74	
2	27.5	1001.24	.33	1.28	2.75	6.0	63	230	243	38	83	74	20.9
1	30.0	2.79	.30	1.16	4.24	5.0	63				83	74	
B-12	32.5	4.179	.40	1.55	5.96	7.0	62	229	244	38	84	75	20.9
11	35.0	5.93	.84	3.26	8.44	14.5	62				83	75	
10	37.5	8.39	.45	1.75	10.27	8.0	62	227	246	38	83	75	20.9
9	40.0	10.27	.58	2.25	12.34	10.0	62				84	76	
8	42.5	12.30	.45	1.75	14.17	5.0	62	228	245	38	84	76	20.9
7	45.0	14.18	.35	1.36	15.78	6.0	62				85	76	
6	47.5	15.85	.36	1.41	17.42	6.0	60	227	245	38	85	77	20.9
5	50.0	17.49	.45	1.76	19.26	8.0	60				86	77	
4	52.5	19.22	.74	2.90	21.61	13.0	60	230	246	37	87	78	20.9
3	55.0	21.49	.54	2.11	23.62	10.0	62				87	78	
2	57.5	23.51	.75	3.98	24.99	4.5	62	229	246	37	86	78	20.9
1	60.0	25.02	.40	1.56	26.72	6.5	63				86	78	
	(1614)	1026.720											
	0 = 60	V ₀ = 46.02											

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / NEW WOODRIDGE, Tx. Date 4/2/92 Test 18 Run 2
 Source NO. 4 FORMING LINE VENT No. of traverse points 24
 Method 5 Filter holder: GLASS Filter type: 4" G.F.

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: .011 cfm at 11.5 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone FRONT HALF
4205 ☒ other(s) _____
 No. of probe wash bottles: 1
 Sample recovered by: D. BREUNEN

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1	494	497	-3.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1372	1357	15.0
Total			12.0

Integrated Gas Sampling Data: AMBIENT AIR

Bag Pump No. _____ Box No. _____ Bag No. _____
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: _____ cc/min at _____ in. Hg.
 Time start: 1650 (HRS) Time end: 1752 (HRS)
 Sampling rate: _____ cc/min Operator: D. BREUNEN
 S/N of O₂ Analyzer used to monitor train outlet: _____

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INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job C.P. / NEW WAREHOUSE TX.
 Source NO. 4 EXHAUST LINE UNIT
 Date 5/12/92 Test 18 Run 2

Operator D. SZCZEPAN & B. ASCHENBACH
 Meter Box No. 3 HP 1-90 IN MC
 Gas meter coeff. .9991

Pitot No. 21-C CP 3-4
 Bar. Press. 29.63 IN HG H2O 1.0 X
 Nozzle No. 8-4 Nozzle Dia. 2.11 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (in WC)	Orifice Meter (in WC)	Des. Vol. (cf)	VAC. in HG	Temperature (°F)				Oxygen (xv/v)
							Stack	Probe	Duct	Inlet	
B-12	16.50	27.10	.73	2.83	9.41	8.5	63	230	262	71	20.9
11	5.0	31.53	.64	2.46	1.56	8.0	62			72	
10	7.5	33.57	.57	2.20	3.59	7.0	61	234	260	72	20.9
9	10.0	35.95	.82	3.16	6.03	10.0	62			73	
8	12.5	37.92	.48	1.86	7.90	6.0	62	233	261	71	20.9
7	15.0	39.57	.35	1.36	9.51	4.5	62			75	
6	17.5	41.36	.42	1.64	1.27	5.5	60	233	259	76	20.9
5	20.0	43.26	.49	1.91	3.18	6.0	62			76	
4	22.5	45.56	.75	2.93	5.55	9.0	60	230	261	77	20.9
3	25.0	47.67	.59	2.31	7.64	7.5	62			77	
2	27.5	49.87	.63	2.46	9.81	8.0	62	229	260	77	20.9
1	30.0	51.563	.38	1.48	1.50	5.0	63			78	
A-12	32.5	53.54	.51	2.00	3.45	6.5	62	230	262	79	20.9
11	35.0	55.56	.56	2.20	5.51	7.0	60			80	
10	37.5	57.40	.43	1.69	7.31	5.0	61	232	261	80	20.9
9	40.0	59.62	.70	2.75	9.61	8.5	62			80	
8	42.5	61.33	.38	1.49	1.30	5.0	62	233	260	81	20.9
7	45.0	62.97	.35	1.38	2.94	7.5	61			81	
6	47.5	64.49	.30	1.18	4.45	4.0	63	230	263	81	20.9
5	50.0	66.25	.40	1.58	6.19	5.0	62			82	
4	52.5	68.38	.63	2.49	8.38	8.0	61	229	261	82	20.9
3	55.0	70.38	.52	2.05	6.37	6.5	62			82	
2	57.5	72.48	.59	2.33	2.49	7.5	62	228	260	82	20.9
1	60.0	74.453	.44	1.71	4.32	6.0	62			83	
	1752										
	0 = 60	V _m = 47.353		ΔH = 3.06						Av _g = 81.2	

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / NEW WILKIN, TX. Date 4/2/92 Test 18 Run 3
 Source NO. 4 FARMING LANE VENT No. of traverse points 24
 Method 5 Filter holder: GLASS Filter type: 4" G.F.

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: .01 cfm at 15 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone FRONT HALF
4201 ☒ other(s)

No. of probe wash bottles: 1
 Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	497	497	0.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1383	1372	11.0
Total			11.0

Integrated Gas Sampling Data: AMBIENT AIR

Bag Pump No. _____ Box No. _____ Bag No. _____

Bag Material: 5-layer Aluminized Tedlar Size: 44 L

Pretest leak check: _____ cc/min at _____ in. Hg.

Time start: 1825 (HRS) Time end: 1927 (HRS)

Sampling rate: _____ cc/min Operator: D. BRENNAN

S/N of O₂ Analyzer used to monitor train outlet: _____

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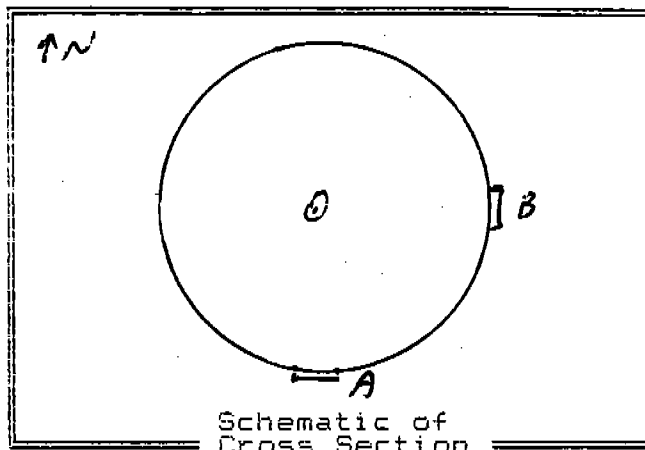
INTERPOLL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job L.P. / New Wauzary, Tx.Source No. 4 Farming Lanes, West.Date 4/22/82Operator D. Bazzanone + B. AschenbachMeter Box No. 3Pitot No. 21-6Bar. Press. 29.45Moisture No. 2-4Moisture Dia. 2.5Moisture Dia. 2.5

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inH ₂ O)	Drifted Meter (inH ₂ O)	Dep. Vol. (cf)	VAC. inHg	Temperature (°F)						Oxygen (xv/v)
							Stack	Probe	Oven	Insp.	Gas In	Gas/Dut	
(1825)													
A-12	2.5	76.76	.52	2.03	6.79	6.0	62	231	255	46	80	77	20.9
11	5.0	78.84	.58	2.23	8.83	7.0	62				82	78	
10	7.5	80.62	.42	1.63	6.59	5.0	60	235	256	46	83	78	20.9
9	10.0	82.82	.68	2.63	2.93	8.0	61				85	78	
8	12.5	84.48	.35	1.36	4.44	4.5	60	234	257	46	85	78	20.9
7	15.0	86.11	.37	1.44	6.10	4.5	61				86	79	
6	17.5	87.50	.25	.97	7.47	3.5	61	234	254	46	86	79	20.9
5	20.0	89.18	.39	1.52	9.18	5.0	59				88	79	
4	22.5	91.30	.60	2.34	1.30	8.0	60	235	255	44	88	80	20.9
3	25.0	93.25	.50	1.95	3.23	6.5	61				89	80	
2	27.5	95.22	.49	1.92	5.15	6.5	60	234	253	44	89	80	20.9
1	30.0	96.67	.30	1.17	6.44	4.0	60				88	80	
B-12	32.5	98.67	.56	2.18	8.70	7.0	61	232	250	44	89	80	20.9
11	35.0	101.18	.85	3.32	1.22	10.5	60				87	81	
10	37.5	103.35	.62	2.43	3.38	8.0	60	232	248	44	89	81	20.9
9	40.0	105.96	.92	3.60	6.00	12.0	59				89	81	
8	42.5	107.98	.50	1.96	7.94	6.5	59	230	249	43	88	81	20.9
7	45.0	109.86	.46	1.80	9.81	6.0	59				89	81	
6	47.5	111.70	.45	1.77	1.65	6.0	58	229	251	43	89	81	20.9
5	50.0	113.71	.57	2.24	3.72	7.0	58				90	81	
4	52.5	116.22	.80	3.14	6.18	10.5	58	230	250	43	90	81	20.9
3	55.0	118.24	.53	2.08	8.18	6.5	59				89	81	
2	57.5	120.28	.58	2.27	0.27	9.0	59	229	247	43	89	81	20.9
1	60.0	122.28	.53	2.67	2.27	6.5	60				90	82	
(1927)													
Σ = 60		Y _h = 47.448		ΔH = 2.09								Av _g = 83.6	

INTERPOL LABORATORIES EPA METHOD 2 FIELD DATA SHEET

Job L.P. / New Waverly, TX
 Source No. 4 Farming Line Vent/Stack
 Test 14 Run 0 Date 4-2-92
 Stack dimen. 62.75 IN.
 Dry bulb °F Wet bulb °F
 Manometer: ☒ Reg. ☐ Exp. ☐ Elec.
 Barometric pressure 29.65 in Hg
 Static pressure -.12 in WC
 Operators M. Kachler & C. Masson
 Pitot No. 29V-6 Cp .84



Traverse Point No.	Fraction of Diameter	Distance from Stack Wall (in)	Distance from End of Port (in)	Velocity Pressure (in WC)	Temperature of gas (°F)
		Port length: <u>6</u> in.		Time start: <u>1512</u> hrs	
A-1	.021	1.37	7.37		
2	.067	4.20	10.20		
3	.118	7.40	13.40		
4	.177	11.11	17.11		
5	.250	15.69	21.69		
6	.356	22.34	28.34		
7	.444	40.41	46.41		
8	.750	47.06	53.06		
9	.823	51.64	57.64		
10	.882	55.35	61.35		
11	.933	58.55	64.55		
12	.979	61.43	67.43		
B-1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
Temp. meas. tool & S/N: <u>PDT-3/TC</u>				Time end: <u> </u> hrs	

R or nothing = reg. manometer; S = expanded; E = electronic S-392.1

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / New Mexico, TX
 Source No. 4 Farming Line Vent / Stack
 Method 0011 Filter holder: NA

Date 4-2-92 Test 19 Run 1
 No. of traverse points 24
 Filter type: NA

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 20.02 cfm at 12 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: _____ Recovery solvent(s) _____

NA ☐ acetone
☒ other(s) MeCl₂

No. of ^{Imp}~~probe~~ wash bottles: 1
 Sample recovered by: M. Kachler & C. Mosser

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	<u>55</u>	<u>590</u>	<u>(5)</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>M70</u>	<u>1454</u>	<u>16</u>
Total			<u>11</u>

Integrated Gas Sampling Data NA / Ambient

Bag Pump No. _____ Box No. _____ Bag No. _____

Bag Material: 5-layer Aluminized Tedlar Size: 44 L

Pretest leak check: _____ cc/min at _____ in. Hg.

Time start: _____ (HRS) Time end: _____ (HRS)

Sampling rate: _____ cc/min Operator: _____

S/N of O₂ Analyzer used to monitor train outlet: _____

CF-023

Job	L.P. / New Identities	TK
Source	No. 4 Encrypted Line Vent / Steel	
Date	4-7-92	pg Run
Operators	Muhkaefer & C. Moser	
Water Box No.	4	75 IN UC
Generator Code	1.0010	
Pilot No.	240-6	CP 184
Bar. Press.	24.65	IN H ₂ O
Nozzle No.	6255	Nozzle Dia. 2.35 IN.

[illegible]

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / New Jersey, TX
 Source No. 4 Refining Line Vent / Stack
 Method SO11 Filter holder: NA

Date 4-2-92 Test 19 Run 2
 No. of traverse points 27
 Filter type: NA

Sample Train Leak Check:

Pretest: { 0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 0.02 cfm at 12 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: _____ Recovery solvent(s) _____

NA ☐ acetone
☒ other(s) Me Cl₂

No. of ^{Imp}~~probe~~ wash bottles: 1
 Sample recovered by: M. Kachler & C. Masson

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	594	596	(2)
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1474	1466	8
Total			6

Integrated Gas Sampling Data: NA / Ambient

Bag Pump No. _____ Box No. _____ Bag No. _____

Bag Material: 5-layer Aluminized Tedlar Size: 44 L

Pretest leak check: _____ cc/min at _____ in. Hg.

Time start: _____ (HRS) Time end: _____ (HRS)

Sampling rate: _____ cc/min Operator: _____

S/N of O₂ Analyzer used to monitor train outlet: _____

CF-023

INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job 6.2.1 New Waverly, TX Pitot No. 290-6 Cp 0.5
 Source Waverly Farm, 1/2 mile west of Spack Bar. Press. 29.65 inHg H₂O 1
 Date 4-2-92 Gas analyzer serial 181 Run 2 Nozzle No. 235 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (L)	Velocity Head (inHg)	Orifice Meter (inHg)	Des. Vol. (L)	VAC. inHg	Temperature (°F)					Oxygen (xy/v)
							Stack	Probe	Duct	Ingr.	Gas In	Gas Out
A-1	2.5	789.80	.49	1.64	9.60	4	62	238	247	42	54	51
2	5	791.56	.57	1.88	1.53	4.5	62				56	54
3	7.5	793.48	.56	1.86	3.44	4.5	61	240	251	42	58	55
4	10	795.49	.65	2.16	5.50	5	62				59	56
5	12.5	797.31	.46	1.53	7.24	4	62	243	255	42	61	56
6	15	798.84	.34	1.13	8.74	3	62				61	56
7	17.5	800.44	.42	1.40	0.41	3.5	63	241	258	43	62	57
8	20	802.18	.46	1.54	2.16	4	60				62	57
9	22.5	804.21	.64	2.14	4.22	5	60	244	255	43	63	57
10	25	806.06	.48	1.60	6.00	4	62				64	58
11	27.5	807.75	.44	1.47	7.72	3.5	62	240	251	42	64	58
12	30	809.50	.44	1.47	9.43	3.5	63				64	58
B-1	31.5	810.95	.32	1.07	0.89	3	63	238	247	43	63	58
2	35	812.77	.52	1.75	2.75	4	60				64	58
3	37.5	814.52	.46	1.55	4.51	4	60	237	248	43	65	59
4	40	816.75	.77	2.58	6.77	6	62				66	59
5	42.5	818.70	.57	1.91	8.73	4.5	62	241	253	44	66	59
6	45	820.58	.53	1.78	0.61	4	63				66	59
7	47.5	822.33	.43	1.45	2.31	3.5	61	243	250	44	66	59
8	50	824.30	.55	1.85	4.23	4	61				66	60
9	52.5	826.91	.95	3.19	6.75	8	61	240	252	45	67	60
10	55	828.97	.71	2.40	8.94	6	60				66	60
11	57.5	831.88	.99	3.33	1.51	8.5	61	242	255	45	66	60
12	60	834.05	.42	3.09	3.99	8	62				66	60
	(1751)											
		V ₀ = 46.25		11.691							Av _g = 60.4	

INTERFOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / New Haven, CT
 Source No. 4 Forming line vent / Stack
 Method CC11 Filter holder: NA

Date 4-2-92 Test 19 Run 3
 No. of traverse points 2Y
 Filter type: NA

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 20.02 cfm at 12 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: _____ Recovery solvent(s) _____

NA ☐ acetone
☒ other(s) Me Cl₂

No. of ^{Imp} ~~probe~~ wash bottles: 1
 Sample recovered by: Mikachler & C. Mosser

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	<u>591</u>	<u>594</u>	<u>(3)</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1484</u>	<u>1470</u>	<u>14</u>
Total			<u>11</u>

Integrated Gas Sampling Data: NA / Amb. ent

Bag Pump No. _____ Box No. _____ Bag No. _____

Bag Material: 5-layer Aluminized Tedlar Size: 44 L

Pretest leak check: _____ cc/min at _____ in. Hg.

Time start: _____ (HRS) Time end: _____ (HRS)

Sampling rate: _____ cc/min Operator: _____

S/N of O₂ Analyzer used to monitor train outlet: _____

CF-023

INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job L.P. 1. New Mexico, Inc. Operator William C. Messer Pitot No. 20V-6 Cp 1.84
 Source Flow Facility Water Box No. 175 IN NC Bar. Press. 23.65 IN Hg H2O 1
 Date 4-2-92 Emission cost. 1.0000 Nozzle No. 6000 Nozzle Dia. 23.1 IN.

Transfer Point No.	Sampling Time (min)	Supply Volume (cf)	Velocity Head (in H ₂ O)	Drifted Water (in H ₂ O)	Obs. Vol. (cf)	VAC. in Hg	Temperature (°F)					Oxygen (xvrv)	
							Stack	Probe	Duct	Insp.	Gas In		Gas Out
B-1	2.5	834.40	.59	1.97	6.37	5.5	62	237	250	41	53	53	20.9
2	5	836.96	.60	1.98	8.34	5.5	62				57	54	20.9
3	7.5	838.38	.51	1.70	8.17	5	60	240	247	41	58	55	20.9
4	10	840.20	.78	2.59	2.43	7	61				60	56	20.9
5	12.5	842.43	.53	1.77	4.30	5	61	239	249	40	61	56	20.9
6	15	844.42	.54	1.80	6.19	5	61				62	56	20.9
7	17.5	846.27	.40	1.34	7.82	4	60	239	253	41	62	57	20.9
8	20	847.75	.47	1.58	4.54	4	59				63	57	20.9
9	22.5	849.63	.97	3.26	2.13	9	58	242	251	42	64	58	20.9
10	25	852.10	.73	2.46	4.34	7	58				64	58	20.9
11	27.5	854.41	.96	3.21	6.86	9	61	245	253	41	64	58	20.9
12	30	856.92	.95	3.18	4.37	9	61				65	58	20.9
A-1	32.5	859.40	.40	1.34	4.01	4	61	246	258	42	63	58	20.9
2	35	861.08	.56	1.87	2.94	5	62				64	58	20.9
3	37.5	862.89	.54	1.82	4.84	5	60	242	255	42	65	59	20.9
4	40	864.76	.63	2.13	6.90	6	59				65	59	20.9
5	42.5	866.57	.44	1.49	8.62	4	59	243	250	42	65	59	20.9
6	45	868.65	.37	1.25	8.20	3.5	59				65	59	20.9
7	47.5	870.24	.35	1.15	1.74	3.5	59	245	252	43	65	59	20.9
8	50	871.76	.44	1.49	3.46	4	58				65	59	20.9
9	52.5	873.52	.65	2.20	5.55	6	58	245	257	43	66	59	20.9
10	55	875.58	.41	1.39	7.22	4	58				66	59	20.9
11	57.5	877.27	.48	1.62	9.02	4.5	59	241	257	44	66	59	20.9
12	60	879.07	.56	1.89	8.96	5	59				66	60	20.9
(1925)													
0 = 60		V ₀ = 46.87		1.694									
											Av _g = 60.3		

Interpoll Laboratories
(612) 786-6020

EPA Method 3 Data Reporting Sheet
Orsat Analysis

Job A.2 / New Wave, TX Source 26.1 Dryer
 Team Leader D. Brennan Test Site Stack
 Date Submitted 3-30-92 Date of Test 3-30-92
 Test No. 1 No. of Runs Completed 3
 Date of Analysis 3-30-92 Technician Mark Boehlke

Test/ Run	Sample Log Number and Type	No. of An.	Buret Readings (ml)			Conc. CO ₂	Conc. O ₂	F _o
			Zero Pt.	After CO ₂	After O ₂	%v/v Dry	%v/v Dry	
1/1	☒ B ☐ F	1	0.00	1.40	20.80	1.40	19.40	1.071
		2	0.00	1.40	20.80	1.40	19.40	1.071
		Avg				1.40	19.40	
1/2	☒ B ☐ F	1	0.00	1.60	20.70	1.60	19.10	1.125
		2	0.00	1.60	20.70	1.60	19.10	1.125
		Avg				1.60	19.10	
1/3	☒ B ☐ F	1	0.00	1.50	20.80	1.50	19.30	1.067
		2	0.00	1.50	20.80	1.50	19.30	1.067
		Avg				1.50	19.30	
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						

☒ Ambient Air QA Check
☒ Orsat Analyzer System Leak Check
☒ F_o Within EPA M-3 Guidelines
 for fuel type.

Where $F_o = \frac{20.9 - O_2}{CO_2}$

EPA Method 3 Guidelines
F_o Range

Fuel Type
 Coal:
 Anthracite/Lignite 1.016-1.130
 Bituminous 1.083-1.230
 Oil:
 Distillate 1.260-1.413
 Residual 1.210-1.370
 Gas:
 Natural 1.600-1.836
 Propane 1.434-1.586
 Butane 1.405-1.553
 Wood/Wood Bark 1.000-1.130

F=Flask (250 cc all glass)
 (50 cc 100 cc)

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EPA Method 3 Data Reporting Sheet
Orsat Analysis

Job A.P. / New Haven, TX Source U.S. 1 Dryer
 Team Leader M. Kachler Test Site Stack
 Date Submitted 3-30-92 Date of Test 3-30-92
 Test No. 2 No. of Runs Completed 3
 Date of Analysis 3-30-92 Technician Mark Kachler

Test/ Run	Sample Log Number and Type	No. of An.	Buret Readings (ml)			Conc. CO ₂ %v/v Dry	Conc. O ₂ %v/v Dry	F _o
			Zero Pt.	After CO ₂	After O ₂			
2/1	☒ B ☐ F	1	0.00	1.60	20.90	1.60	19.90	1.000
		2	0.00	1.60	20.90	1.60	19.30	1.000
		Avg				1.60	19.30	
2/2	☒ B ☐ F	1	0.00	1.90	20.70	1.90	18.80	1.105
		2	0.00	1.90	20.70	1.90	18.80	1.105
		Avg				1.90	18.80	
2/3	☒ B ☐ F	1	0.00	1.50	20.90	1.50	19.40	1.000
		2	0.00	1.50	20.90	1.50	19.40	1.000
		Avg				1.50	19.40	
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						

- ☒ Ambient Air QA Check
☒ Orsat Analyzer System Leak Check
☒ F_o Within EPA M-3 Guidelines
 for fuel type.

Where F_o = $\frac{20.9 - O_2}{CO_2}$

EPA Method 3 Guidelines
Fuel Type F_o Range

Coal:	
Anthracite/Lignite	1.016-1.130
Bituminous	1.083-1.230
Oil:	
Distillate	1.260-1.413
Residual	1.210-1.370
Gas:	
Natural	1.600-1.836
Propane	1.434-1.586
Butane	1.405-1.553
Wood/Wood Bark	1.000-1.130

F=Flask (250 cc all glass)
 B=Tedlar Bag (5-layer)

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EPA Method 3 Data Reporting Sheet
Orsat Analysis

Job A.P. / New Haven, TX Source No. 1 Dryer
 Team Leader B. Brennan Test Site Stack
 Date Submitted 3-30-92 Date of Test 3-30-92
 Test No. 4 No. of Runs Completed 3
 Date of Analysis 3-30-92 Technician Mark Bachler

Test/ Run	Sample Log Number and Type	No. of An.	Buret Readings (ml)			Conc. CO ₂ %v/v Dry	Conc. O ₂ %v/v Dry	F ₀
			Zero Pt.	After CO ₂	After O ₂			
4/1	☒ B ☐ F	1	0.00	1.60	20.80	1.60	19.20	1.063
		2	0.00	1.60	20.80	1.60	19.20	1.063
		Avg				1.60	19.20	
4/2	☒ B ☐ F	1	0.00	1.50	20.70	1.60	19.10	1.125
		2	0.00	1.60	20.70	1.60	19.10	1.125
		Avg				1.60	19.10	
4/3	☒ B ☐ F	1	0.00	1.70	20.80	1.70	19.10	1.059
		2	0.00	1.70	20.80	1.70	19.10	1.059
		Avg				1.70	19.10	
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						

- ☒ Ambient Air QA Check
☒ Orsat Analyzer System Leak Check
☒ F₀ Within EPA M-3 Guidelines
 for fuel type.

Where F₀ = $\frac{20.9 - O_2}{CO_2}$

EPA Method 3 Guidelines
Fuel Type F₀ Range

Coal:	Anthracite/Lignite	1.016-1.130
	Bituminous	1.083-1.230
Oil:	Distillate	1.260-1.413
	Residual	1.210-1.370
Gas:	Natural	1.600-1.836
	Propane	1.434-1.586
	Butane	1.405-1.553

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EPA Method 3 Data Reporting Sheet
Orsat Analysis

Job _____ Source _____
Team Leader _____ Test Site _____
Date Submitted _____ Date of Test _____
Test No. _____ No. of Runs Completed _____
Date of Analysis _____ Technician _____

Test/ Run	Sample Log Number and Type	No. of An.	Buret Readings (ml)			Conc. CO ₂ %v/v Dry	Conc. O ₂ %v/v Dry	F _o
			Zero Pt.	After CO ₂	After O ₂			
5/1		1		1.20	20.80	1.20	19.60	1.093
		2						
		Avg						
5/2		1		1.10	20.80	1.10	19.70	1.091
		2						
		Avg						
5/3		1		1.20	20.90	1.20	19.70	1.000
		2						
		Avg						
		1						
		2						
		Avg						
		1						
		2						
		Avg						
		1						
		2						
		Avg						
		1						
		2						
		Avg						
		1						
		2						
		Avg						
		1						
		2						
		Avg						
		1						
		2						
		Avg						

- ☐ Ambient Air QA Check
☐ Orsat Analyzer System Leak Check
☐ F_o Within EPA M-3 Guidelines
for fuel type.

Where $F_o = \frac{20.9 - O_2}{CO_2}$

EPA Method 3 Guidelines
Fuel Type F_o Range

Coal:	
Anthracite/Lignite	1.016-1.130
Bituminous	1.083-1.230
Oil:	
Distillate	1.260-1.413
Residual	1.210-1.370
Gas:	
Natural	1.600-1.836
Propane	1.434-1.586
Butane	1.405-1.553
Wood/Wood Bark	1.000-1.150

Interpoll Laboratories
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EPA Method 3 Data Reporting Sheet
Orsat Analysis

Job L.P. / New Waverly, TX
Team Leader _____
Date Submitted _____
Test No. _____
Date of Analysis _____

Source _____
Test Site _____
Date of Test _____
No. of Runs Completed _____
Technician _____

Test/ Run	Sample Log Number and Type	No. of An.	Buret Readings (ml)			Conc. CO ₂ %v/v Dry	Conc. O ₂ %v/v Dry	F _o
			Zero Pt.	After CO ₂	After O ₂			
6/1	☐ B ☐ F	1		1.20	20.90	1.20	19.70	1.000
		2						
		Avg						
6/2	☐ B ☐ F	1		1.20	20.80	1.20	19.60	1.083
		2						
		Avg						
6/3	☐ B ☐ F	1		1.40	20.90	1.40	19.50	1.000
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						

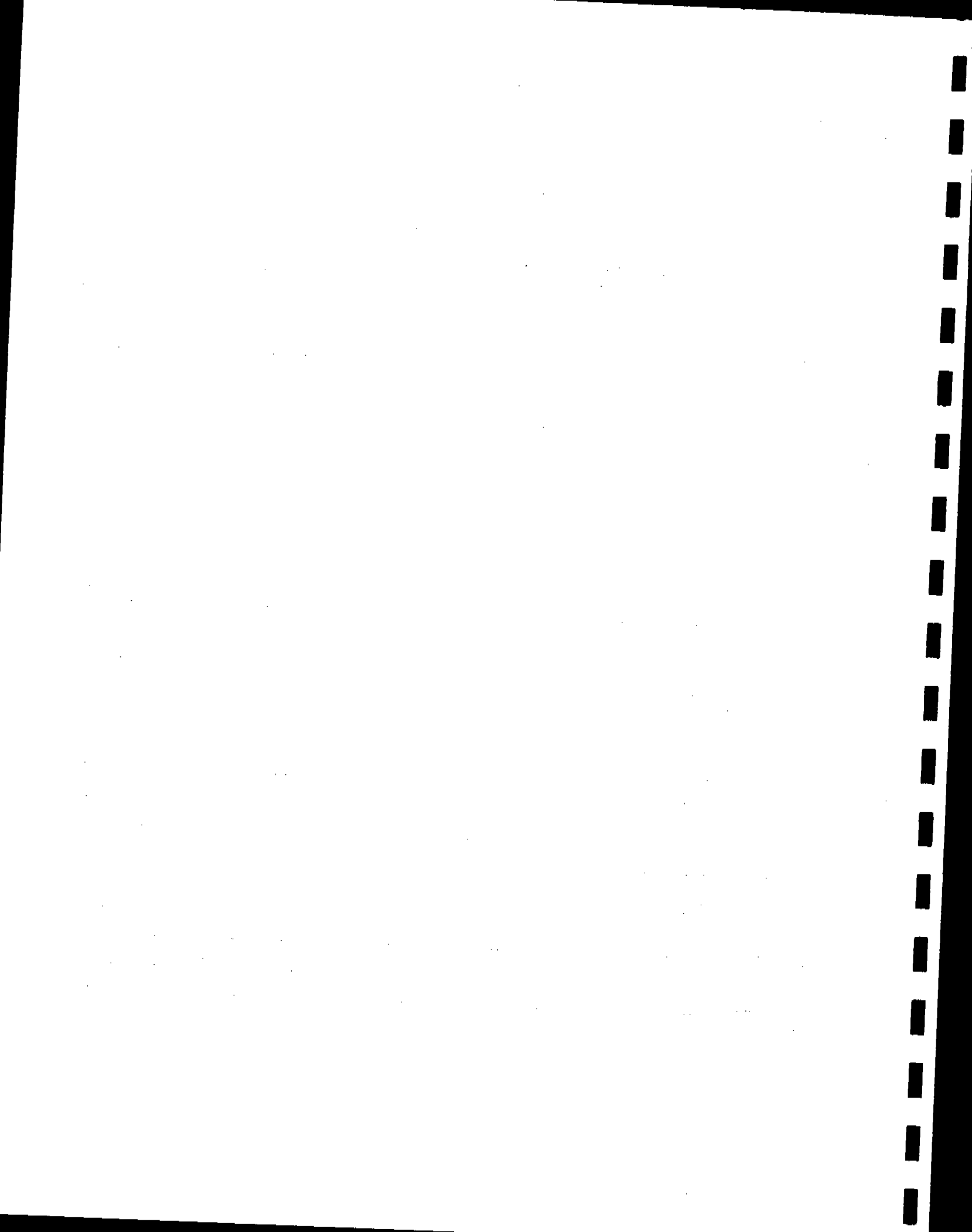
- ☐ Ambient Air QA Check
☐ Orsat Analyzer System Leak Check
☐ F_o Within EPA M-3 Guidelines
for fuel type.

Where $F_o = \frac{20.9 - O_2}{CO_2}$

EPA Method 3 Guidelines
F_o Range

Fuel Type	
Coal:	
Anthracite/Lignite	1.016-1.130
Bituminous	1.083-1.230
Oil:	
Distillate	1.260-1.413
Residual	1.210-1.370
Gas:	
Natural	1.600-1.836
Propane	1.434-1.586
Butane	1.405-1.553
Wood/Wood Bark	1.000-1.130

F=Flask (250 cc all glass)
Or-Tedlar Bag (5-layer)



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EPA Method 3 Data Reporting Sheet
Orsat Analysis

Job L.P. / New Waverly, TX
Team Leader D. Brennan
Date Submitted 3-31-92
Test No. 8
Date of Analysis 3-31-92

Source No. 2 Dryer

Test Site stack

Date of Test 3-31-92

No. of Runs Completed 3

Technician Mark Seckler

Test/ Run	Sample Log Number and Type	No. of An.	Buret Readings (ml)			Conc. CO ₂ %v/v Dry	Conc. O ₂ %v/v Dry	F _o
			Zero Pt.	After CO ₂	After O ₂			
8/1	☐ B ☐ F	1		1.30	20.80	1.30	19.50	1.077
		2						
		Avg						
8/2	☐ B ☐ F	1		1.20	20.60	1.20	19.60	1.083
		2						
		Avg						
8/3	☐ B ☐ F	1		1.20	20.80	1.20	19.60	1.083
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						
	☐ B ☐ F	1						
		2						
		Avg						

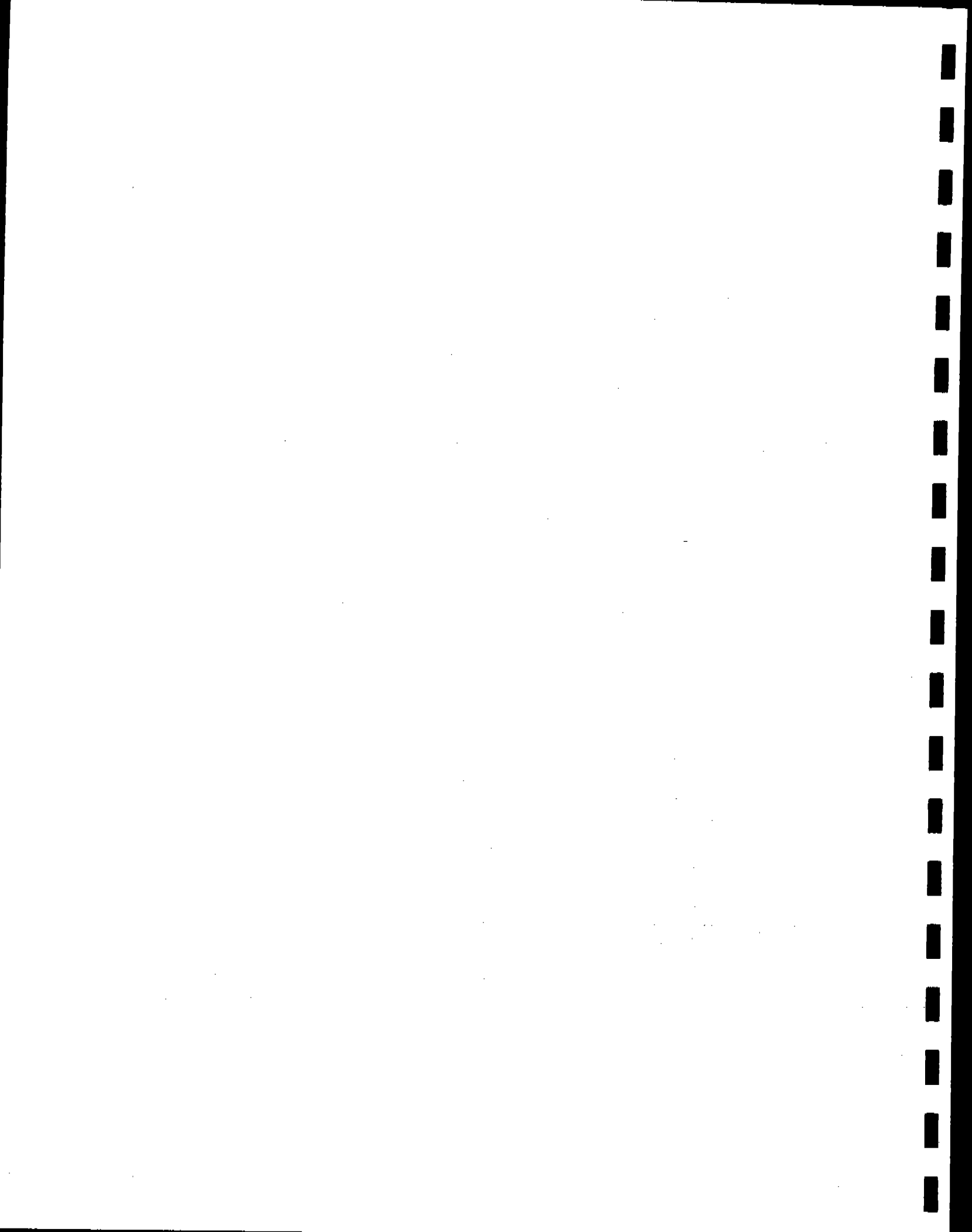
- ☐ Ambient Air QA Check
☐ Orsat Analyzer System Leak Check
☐ F_o Within EPA M-3 Guidelines
for fuel type.

Where $F_o = \frac{20.9 - O_2}{CO_2}$

F=Flask (250 cc all glass)
B=Tedlar Bag (5-layer)

EPA Method 3 Guidelines
Fuel Type F_o Range

Coal:	
Anthracite/Lignite	1.016-1.130
Bituminous	1.083-1.230
Oil:	
Distillate	1.260-1.413
Residual	1.210-1.370
Gas:	
Natural	1.600-1.836
Propane	1.434-1.586
D-6 Butane	1.405-1.553
Wood/Wood Bark	1.000-1.130



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EPA Method 5 Data Reporting Sheet
Impinger Catch/Wisconsin Protocol

Job L.P. New Weaverly, Tx Source #1 Dryer
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 3-30-92
Test No. 4 No. of Runs Completed 3
Date of Analysis 4-27-92 Technician C. Helgeson

		Solvent Phase	Aqueous Phase
0	Test <u>Run 0</u> Field Blank Log Number _____ Comments _____	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
1	Test <u>4</u> Run <u>1</u> Log Number <u>5793-21</u> Comments _____	Dish No. <u>5</u> Dish Tare Wt. <u>50.6812</u> g Dish+Sample Wt. <u>50.6929</u> g Sample Wt. <u>0.0117</u> g	Dish No. <u>58</u> Dish Tare Wt. <u>50.2245</u> g Dish+Sample Wt. <u>50.2357</u> g Sample Wt. <u>0.0112</u> g
2	Test <u>4</u> Run <u>2</u> Log Number <u>-24</u> Comments _____	Dish No. <u>27</u> Dish Tare Wt. <u>52.4436</u> g Dish+Sample Wt. <u>52.4534</u> g Sample Wt. <u>0.0098</u> g	Dish No. <u>93</u> Dish Tare Wt. <u>53.9831</u> g Dish+Sample Wt. <u>54.0031</u> g Sample Wt. <u>0.0200</u> g
3	Test <u>4</u> Run <u>3</u> Log Number <u>-27</u> Comments _____	Dish No. <u>46</u> Dish Tare Wt. <u>46.2224</u> g Dish+Sample Wt. <u>46.2308</u> g Sample Wt. <u>0.0084</u> g	Dish No. <u>401</u> Dish Tare Wt. <u>49.5316</u> g Dish+Sample Wt. <u>49.5451</u> g Sample Wt. <u>0.0135</u> g
4	Test <u>Run</u> Log Number _____ Comments _____	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
5	Test <u>Run</u> Log Number _____ Comments _____	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g

Results Solvent Phase:

Field Blk. Run 1 Run 2 Run 3

	<u>0.0113</u>	<u>0.0094</u>	<u>0.0080</u>		
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Blank Solvent Wt. 0.0004 g

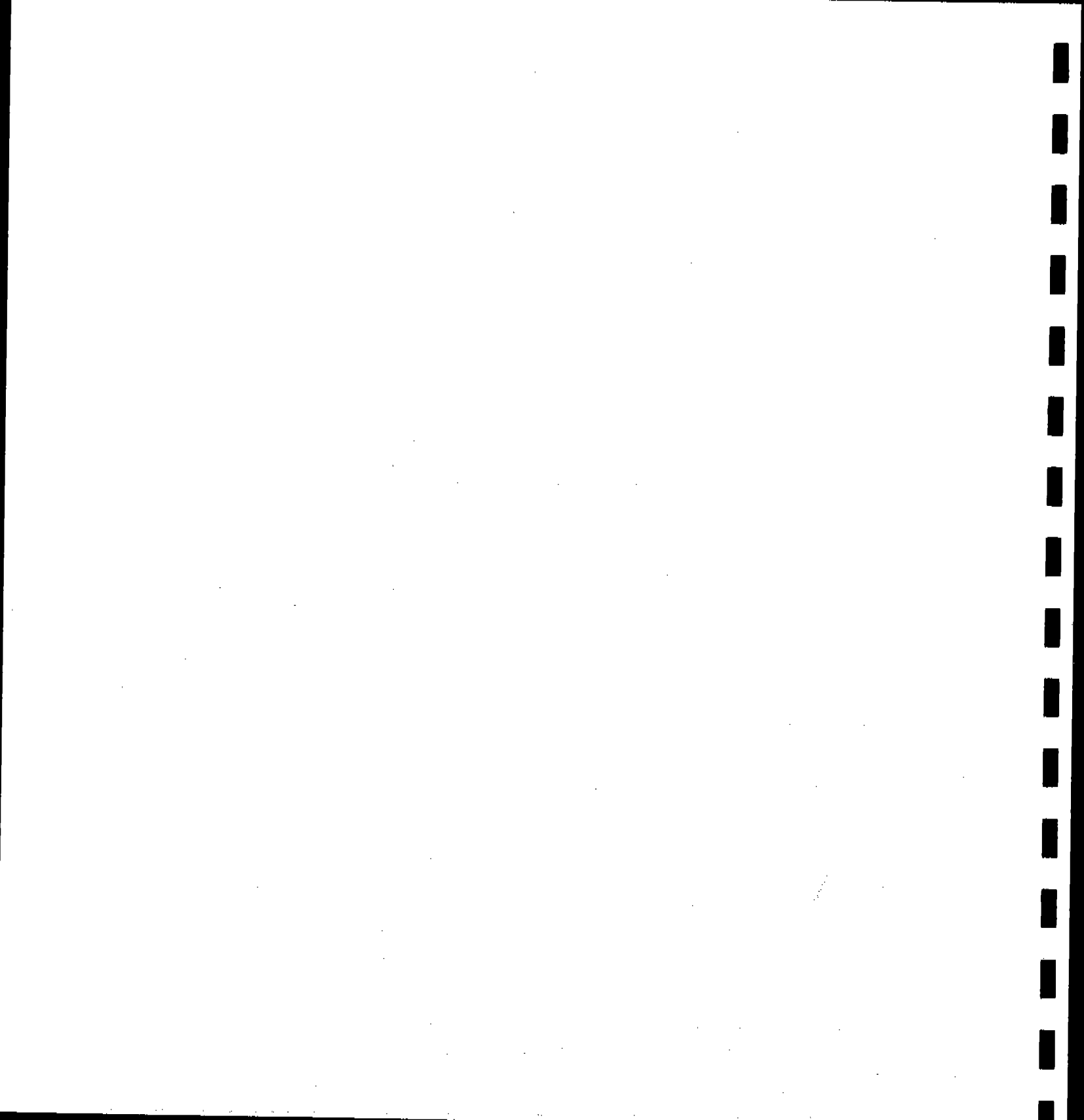
Run 4 Run 5

Results Aqueous Phase:

Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	<u>0.0108</u>	<u>0.0146</u>	<u>0.0131</u>		
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LSC-03WYR



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EPA Method 5 Data Reporting Sheet
Probe/Cyclone Wash

Job LP/ New Waverly Tx. Source #1 Dryer
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 3-30-92
Test No. 4 No. of Runs Completed 3
Date of Analysis 4-13-92 Technician C. Helgeson
Transport Leakage ☒ None ml Solvent Acetone

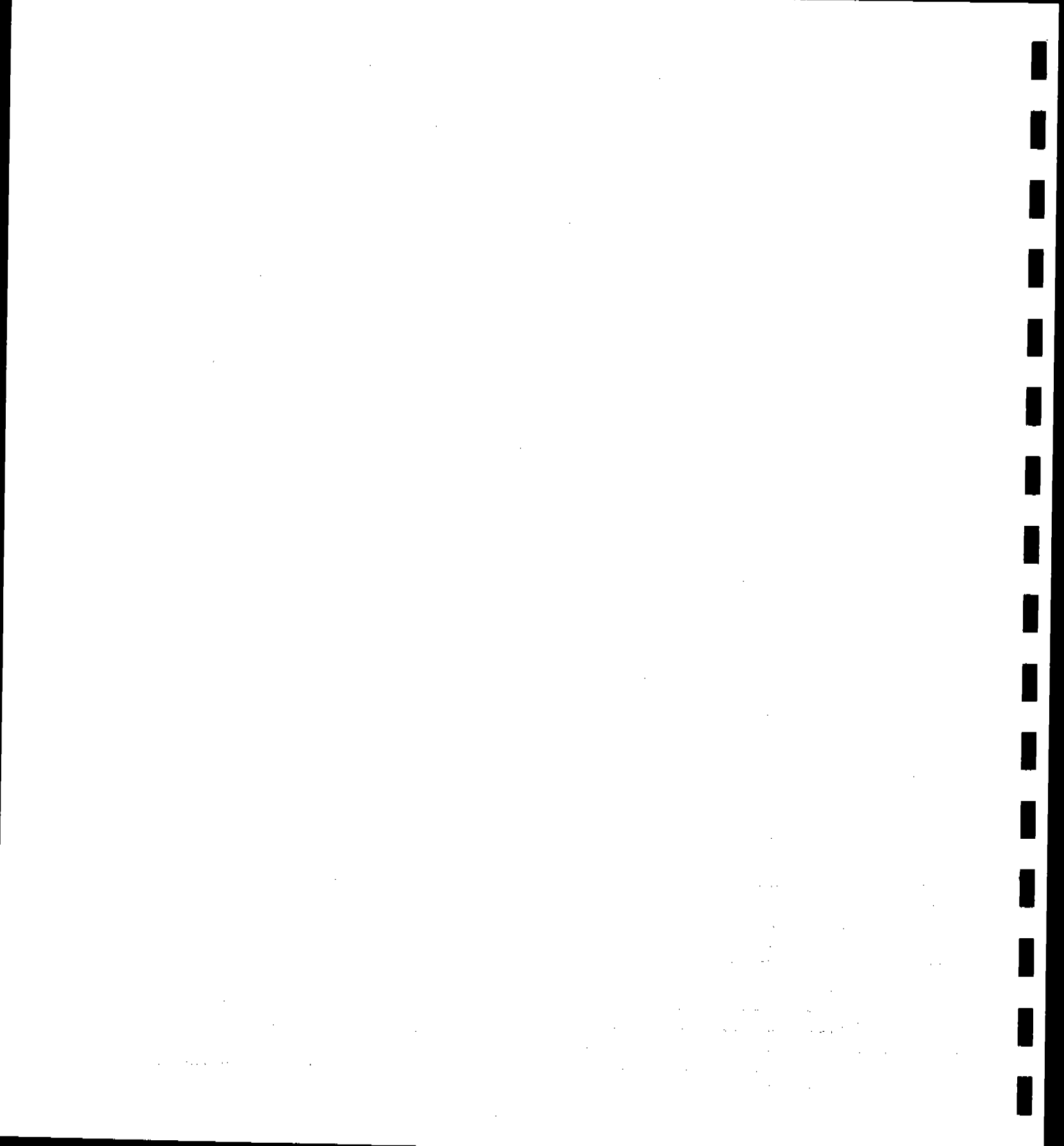
0	Test <u>Run 0</u> Field Blank Log Number _____ Vol. of Solvent _____ ml *Solvent Residue <u>3.33</u> ug/ml	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
1	Test <u>4</u> Run <u>1</u> Vol. of Solvent <u>130</u> ml Log Number <u>5793-19</u> Comments _____	Dish No. <u>113</u> Dish Tare Wt. <u>50.1386</u> g Dish+Sample Wt. <u>50.1560</u> g Sample Wt. <u>0.0174</u> g
2	Test <u>4</u> Run <u>2</u> Vol. of Solvent <u>150</u> ml Log Number <u>-22</u> Comments _____	Dish No. <u>203</u> Dish Tare Wt. <u>46.8693</u> g Dish+Sample Wt. <u>46.8832</u> g Sample Wt. <u>0.0139</u> g
3	Test <u>4</u> Run <u>3</u> Vol. of Solvent <u>140</u> ml Log Number <u>-25</u> Comments _____	Dish No. <u>403</u> Dish Tare Wt. <u>47.0963</u> g Dish+Sample Wt. <u>47.1064</u> g Sample Wt. <u>0.0101</u> g
4	Test _____ Run _____ Vol. of Solvent _____ ml Log Number _____ Comments _____	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
5	Test _____ Run _____ Vol. of Solvent _____ ml Log Number _____ Comments _____	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g

*Solvent Residue ug/ml = [(Sample Wt. g) (10⁶)] / Vol. of Sol. ml
EPA-M5 Acetone Residue Blank Spec. { 7.8 ug/ml

Results:

Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	<u>0.0170</u>	<u>0.0134</u> ^{D-8}	<u>0.0096</u>		
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EPA Method 5 Data Reporting Sheet
Filter Gravimetrics

Job LP/New Waverly Tx. Source #1 Dryer
Team Leader DB Test Site Stack
Date Submitted 4-92 Date of Test 3-30-92
Test No. 4 No. of Runs Completed 3
Date of Analysis 4-13-92 Technician C. Helgeson

0	Test <u>4</u> Run <u>0</u> Field Blank Log Number <u>5793-108</u> Comments _____	Filter No. <u>4177</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9343</u> g Filter+Sample Wt. <u>.9344</u> g Sample Wt. <u>0.0001</u> g
1	Test <u>4</u> Run <u>1</u> Log Number <u>- 20</u> Comments _____	Filter No. <u>4178</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9377</u> g Filter+Sample Wt. <u>.9982</u> g Sample Wt. <u>0.0605</u> g
2	Test <u>4</u> Run <u>2</u> Log Number <u>- 23</u> Comments _____	Filter No. <u>4179</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9473</u> g Filter+Sample Wt. <u>.9006</u> g Sample Wt. <u>0.0588</u> g
3	Test <u>4</u> Run <u>3</u> Log Number <u>- 26</u> Comments _____	Filter No. <u>4180</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9344</u> g Filter+Sample Wt. <u>.9894</u> g Sample Wt. <u>0.0550</u> g
4	Test _____ Run _____ Log Number _____ Comments _____	Filter No. _____ Filter Type _____ Filter Tare Wt. _____ g Filter+Sample Wt. _____ g Sample Wt. _____ g
5	Test _____ Run _____ Log Number _____ Comments _____	Filter No. _____ Filter Type _____ Filter Tare Wt. _____ g Filter+Sample Wt. _____ g Sample Wt. _____ g

Results:

Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.0605	0.0588	0.0550		
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Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.0946	0.1012	0.0857		
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EPA Method 5 Data Reporting Sheet
Impinger Catch/Wisconsin Protocol

Job L.P./New Waverly Source NO. 2 Dryer
Team Leader DB Test Site Stock
Date Submitted 4-13-92 Date of Test 3-31-92
Test No. 8 No. of Runs Completed 3
Date of Analysis 4-29-92 Technician R. E. Elm

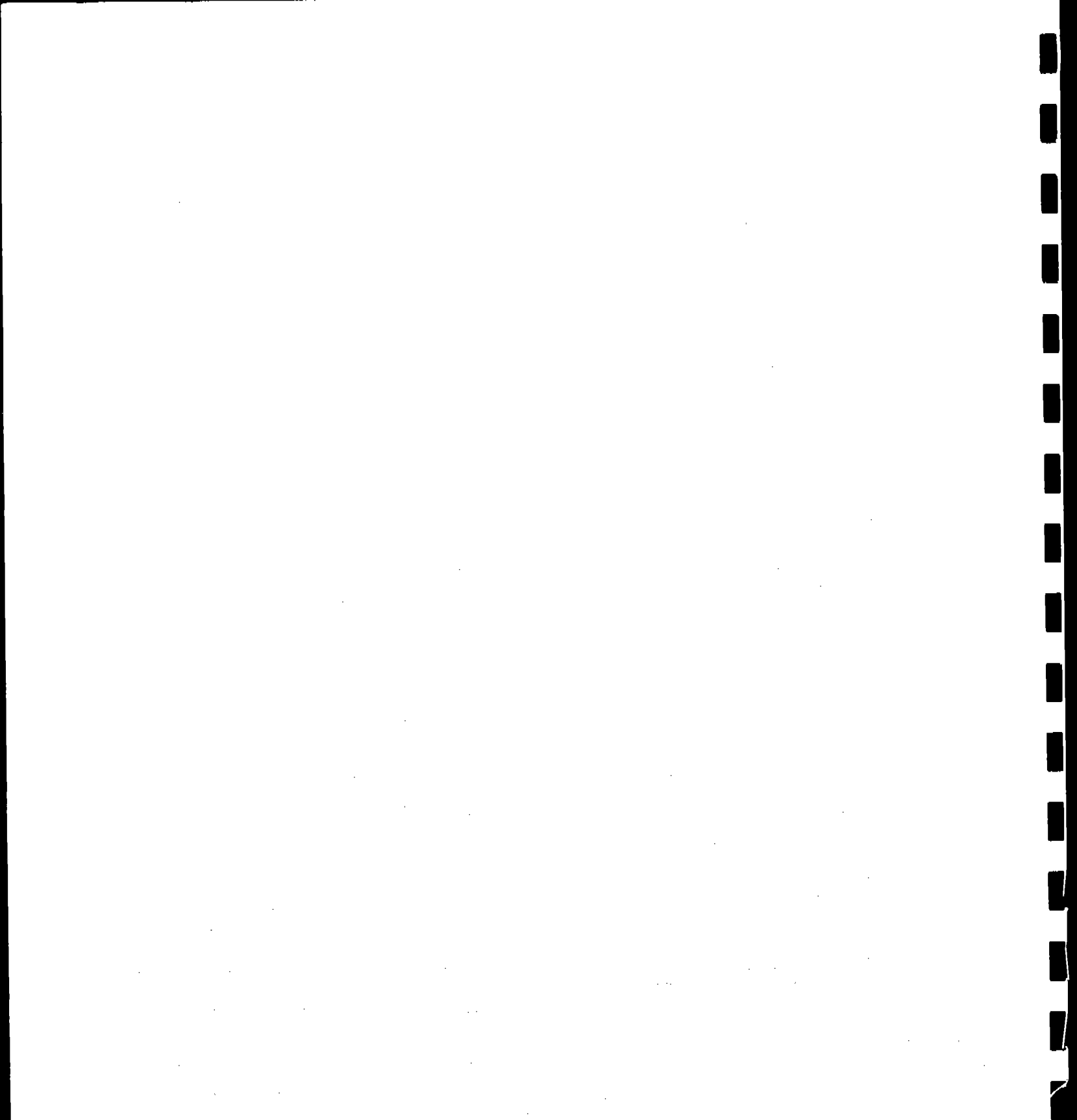
		Solvent Phase	Aqueous Phase
0	Test <u>Run 0</u> Field Blank Log Number Comments	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
1	Test <u>8</u> Run <u>1</u> Log Number <u>5793-47</u> Comments	Dish No. <u>1A</u> Dish Tare Wt. <u>44.1946</u> g Dish+Sample Wt. <u>44.2014</u> g Sample Wt. <u>0.0068</u> g	Dish No. <u>3</u> Dish Tare Wt. <u>52.1200</u> g Dish+Sample Wt. <u>52.1275</u> g Sample Wt. <u>0.0075</u> g
2	Test <u>8</u> Run <u>2</u> Log Number <u>-50</u> Comments	Dish No. <u>2</u> Dish Tare Wt. <u>46.2265</u> g Dish+Sample Wt. <u>46.2311</u> g Sample Wt. <u>0.0046</u> g	Dish No. <u>53</u> Dish Tare Wt. <u>44.3981</u> g Dish+Sample Wt. <u>44.4023</u> g Sample Wt. <u>0.0042</u> g
3	Test <u>8</u> Run <u>3</u> Log Number <u>-53</u> Comments	Dish No. <u>17</u> Dish Tare Wt. <u>46.3821</u> g Dish+Sample Wt. <u>46.3826</u> g Sample Wt. <u>0.0005</u> g	Dish No. <u>69</u> Dish Tare Wt. <u>47.9891</u> g Dish+Sample Wt. <u>47.9907</u> g Sample Wt. <u>0.0016</u> g
4	Test <u>Run</u> Log Number Comments	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
5	Test <u>Run</u> Log Number Comments	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g

Results Solvent Phase:

Field Blk.	Run 1	Run 2	Run 3	Blank Solvent Wt. <u>0.0004</u> g	Run 4	Run 5
	<u>0.0064</u>	<u>0.0042</u>	<u>0.0001</u>			

Results Aqueous Phase:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	<u>0.0071</u>	<u>0.0038</u>	<u>0.0012</u>		



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EPA Method 5 Data Reporting Sheet
Probe/Cyclone Wash

Job L.P. / New Waverly TX. Source #2 Dryer
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 3-31-92
Test No. 8 No. of Runs Completed 3
Date of Analysis 4-13-92 Technician C. Helgeson
Transport Leakage ☒ None ☐ _____ ml Solvent Acetone

0

Test Run 0 Dish No. _____
Field Blank Dish Tare Wt. _____ g
Log Number _____ Dish+Sample Wt. _____ g
Vol. of Solvent _____ ml Sample Wt. _____ g
*Solvent Residue 3.33 ug/ml

1

Test 8 Run 1 Dish No. 015
Vol. of Solvent 90 ml Dish Tare Wt. 45.0668 g
Log Number 5793-45 Dish+Sample Wt. 45.0834 g
Comments _____ Sample Wt. 0.0169 g

2

Test 8 Run 2 Dish No. 119
Vol. of Solvent 110 ml Dish Tare Wt. 47.7651 g
Log Number 48 Dish+Sample Wt. 47.7844 g
Comments _____ Sample Wt. 0.0193 g

3

Test 8 Run 3 Dish No. 408
Vol. of Solvent 100 ml Dish Tare Wt. 47.6255 g
Log Number 51 Dish+Sample Wt. 47.6381 g
Comments _____ Sample Wt. 0.0116 g

4

Test Run Dish No. _____
Vol. of Solvent _____ ml Dish Tare Wt. _____ g
Log Number _____ Dish+Sample Wt. _____ g
Comments _____ Sample Wt. _____ g

5

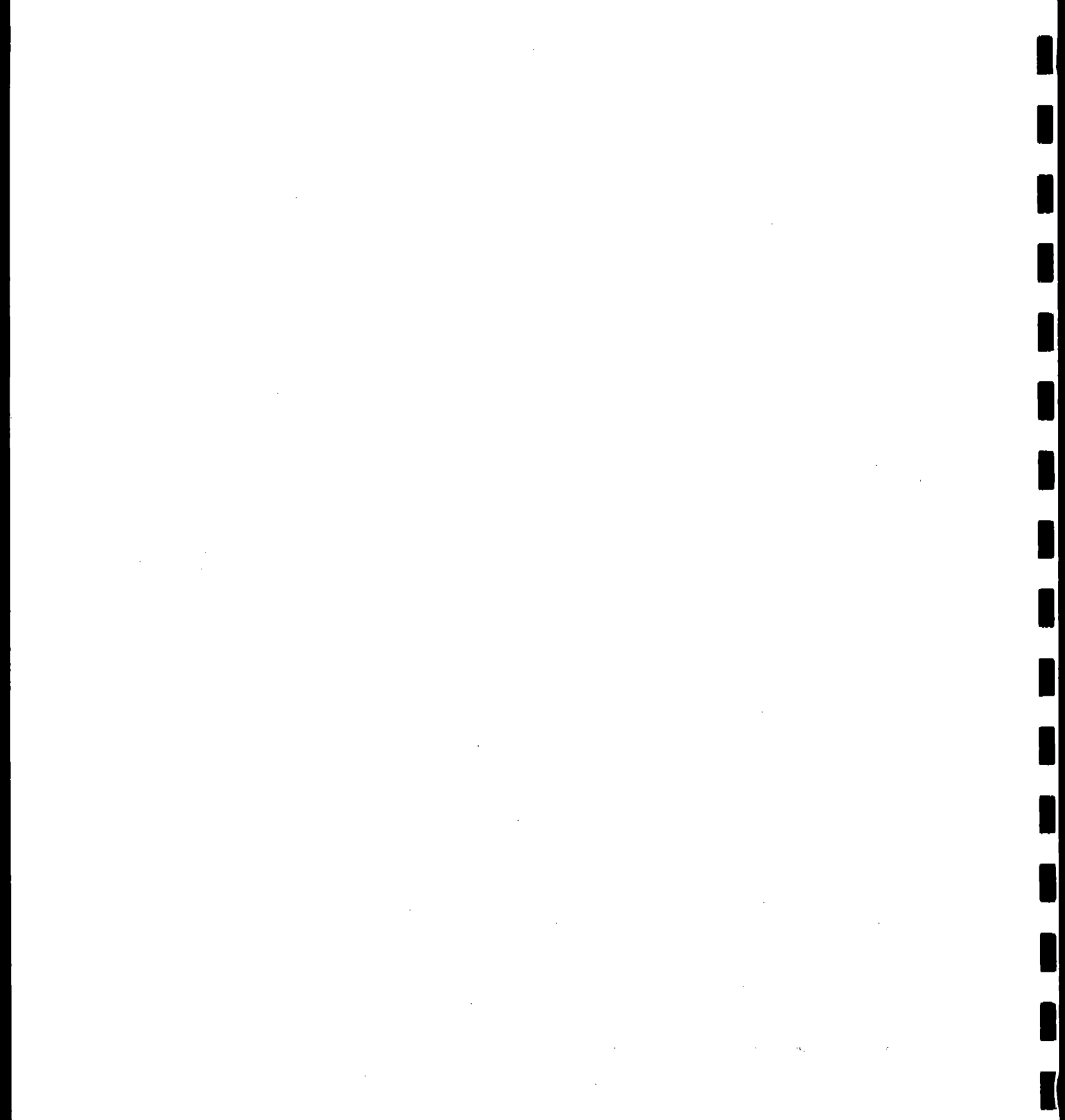
Test Run Dish No. _____
Vol. of Solvent _____ ml Dish Tare Wt. _____ g
Log Number _____ Dish+Sample Wt. _____ g
Comments _____ Sample Wt. _____ g

*Solvent Residue _____ ug/ml = [(Sample Wt. _____ g) (10⁶)] / Vol. of Sol. _____ ml
EPA-M5 Acetone Residue Blank Spec. { 7.8 ug/ml

Results:

Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.0166	0.0189	0.0116		
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EPA Method 5 Data Reporting Sheet
Filter Gravimetrics

Job LP/New Waverly TX. Source #2 Dryer
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 3-31-92
Test No. 8 No. of Runs Completed 3
Date of Analysis 4-13-92 Technician C. Helgeson

0	Test <u>Run 0</u> Field Blank Log Number _____ Comments _____	Filter No. _____ Filter Type _____ Filter Tare Wt. _____ g Filter+Sample Wt. _____ g Sample Wt. _____ g
1	Test <u>8</u> Run <u>1</u> Log Number <u>5793-46</u> Comments _____	Filter No. <u>4181</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9532</u> g Filter+Sample Wt. <u>.9948</u> g Sample Wt. <u>0.0416</u> g
2	Test <u>P</u> Run <u>2</u> Log Number <u>-49</u> Comments _____	Filter No. <u>4182</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9358</u> g Filter+Sample Wt. <u>.9794</u> g Sample Wt. <u>0.0436</u> g
3	Test <u>8</u> Run <u>3</u> Log Number <u>-52</u> Comments _____	Filter No. <u>4183</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9382</u> g Filter+Sample Wt. <u>.9843</u> g Sample Wt. <u>0.0461</u> g
4	Test <u>Run</u> Log Number _____ Comments _____	Filter No. _____ Filter Type _____ Filter Tare Wt. _____ g Filter+Sample Wt. _____ g Sample Wt. _____ g
5	Test <u>Run</u> Log Number _____ Comments _____	Filter No. _____ Filter Type _____ Filter Tare Wt. _____ g Filter+Sample Wt. _____ g Sample Wt. _____ g

Results:

Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.0416	0.0436	0.0461		
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Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.0717	0.0705	0.0590		
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EPA Method 5 Data Reporting Sheet
Impinger Catch/Wisconsin Protocol

Job L.P./New Waverly Source NO. 1 Press Vent
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-1-92
Test No. 9 No. of Runs Completed 3
Date of Analysis 4-29-92 Technician R. G. Guma

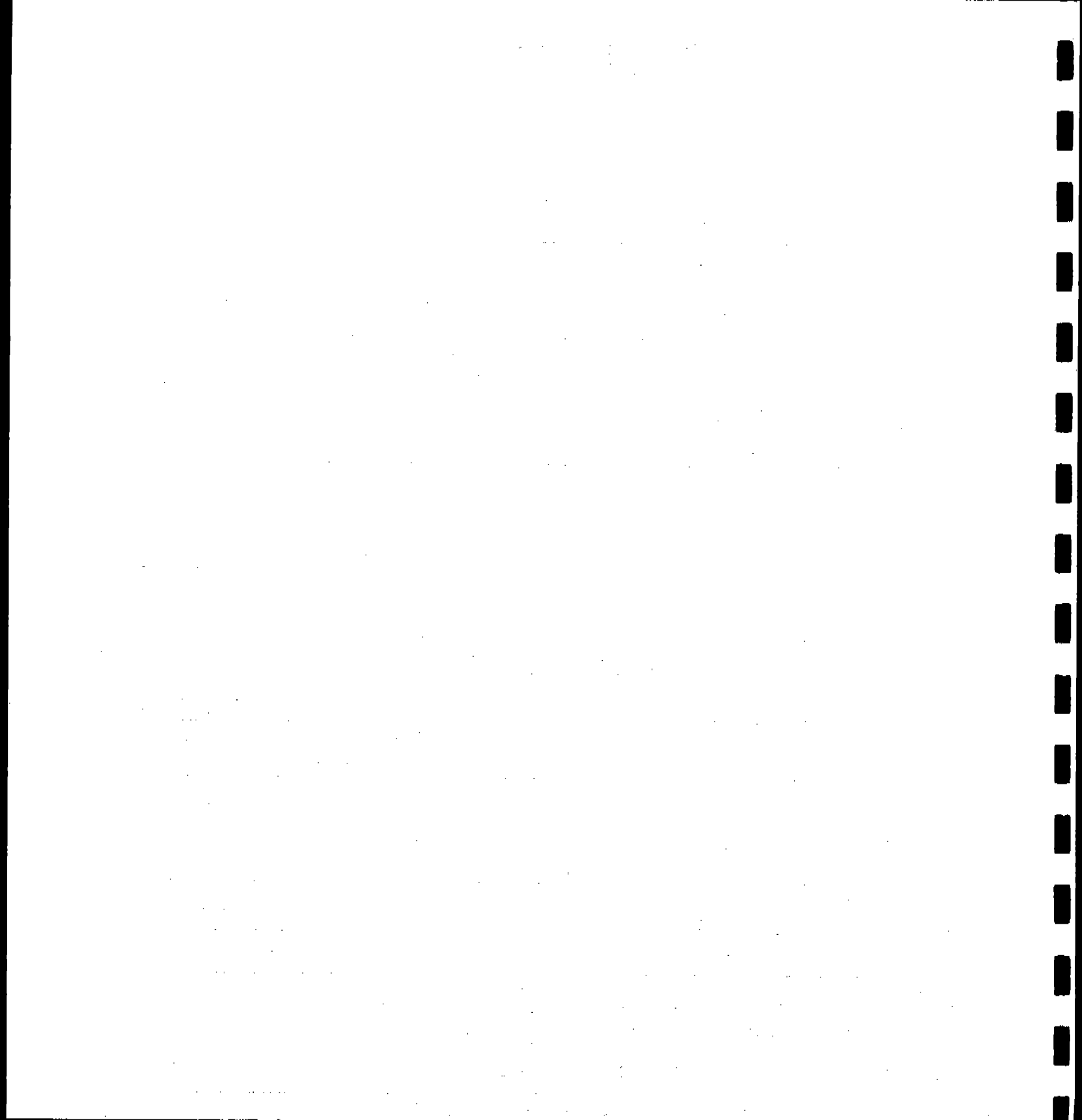
		Solvent Phase	Aqueous Phase
0	Test <u>Run 0</u> Field Blank Log Number Comments	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
1	Test <u>9 Run 1</u> Log Number <u>5793-59</u> Comments	Dish No. <u>405</u> Dish Tare Wt. <u>48.4910</u> g Dish+Sample Wt. <u>48.4977</u> g Sample Wt. <u>0.0067</u> g	Dish No. <u>400</u> Dish Tare Wt. <u>47.0997</u> g Dish+Sample Wt. <u>47.1101</u> g Sample Wt. <u>0.0104</u> g
2	Test <u>9 Run 2</u> Log Number <u>-62</u> Comments	Dish No. <u>512</u> Dish Tare Wt. <u>49.3540</u> g Dish+Sample Wt. <u>49.3607</u> g Sample Wt. <u>0.0067</u> g	Dish No. <u>404</u> Dish Tare Wt. <u>47.6388</u> g Dish+Sample Wt. <u>47.6495</u> g Sample Wt. <u>0.0107</u> g
3	Test <u>9 Run 3</u> Log Number <u>-65</u> Comments	Dish No. <u>516</u> Dish Tare Wt. <u>49.2718</u> g Dish+Sample Wt. <u>49.2753</u> g Sample Wt. <u>0.0035</u> g	Dish No. <u>506</u> Dish Tare Wt. <u>48.6410</u> g Dish+Sample Wt. <u>48.6460</u> g Sample Wt. <u>0.0050</u> g
4	Test <u>Run</u> Log Number Comments	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
5	Test <u>Run</u> Log Number Comments	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g

Results Solvent Phase:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	<u>0.0063</u>	<u>0.0063</u>	<u>0.0031</u>		

Results Aqueous Phase:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	<u>0.0100</u>	<u>0.0103</u>	<u>0.0046</u>		



Interpoll Laboratories
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EPA Method 5 Data Reporting Sheet
Probe/Cyclone Wash

Job L.P. / New Waverly TX Source #1 Press Vent
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-1-92
Test No. 9 No. of Runs Completed 3
Date of Analysis 4-13-92 Technician C. Helgeson
Transport Leakage ☒ None ☐ ml Solvent Acetone

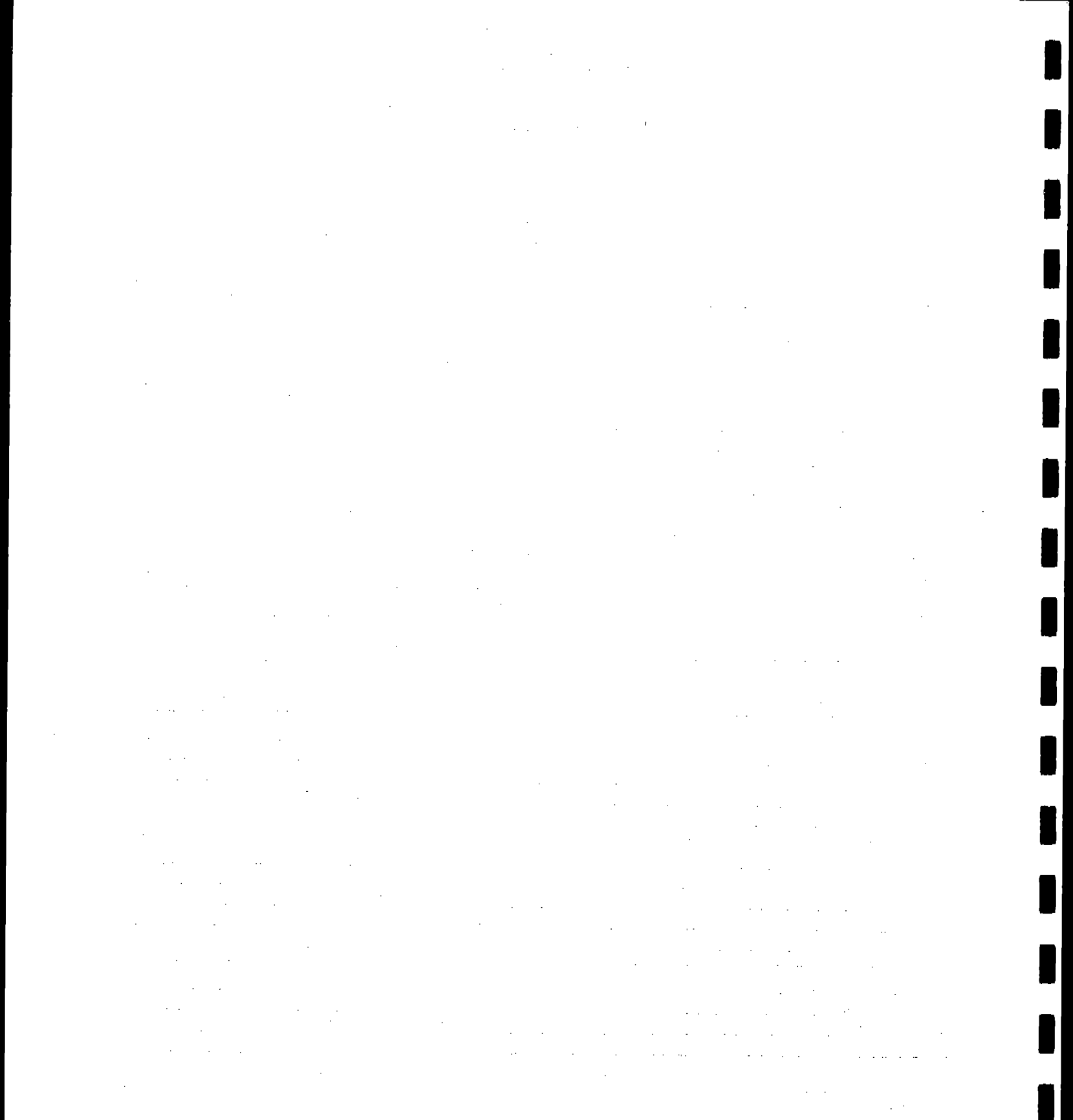
0	Test <u>9</u> Run <u>0</u> Field Blank Log Number <u>5793-54</u> Vol. of Solvent <u>90</u> ml *Solvent Residue <u>3.33</u> ug/ml	Dish No. <u>35</u> Dish Tare Wt. <u>51.0901</u> g Dish+Sample Wt. <u>51.0904</u> g Sample Wt. <u>0.0003</u> g
1	Test <u>9</u> Run <u>1</u> Vol. of Solvent <u>110</u> ml Log Number <u>57</u> Comments <u> </u>	Dish No. <u>37</u> Dish Tare Wt. <u>48.8500</u> g Dish+Sample Wt. <u>48.8581</u> g Sample Wt. <u>0.0081</u> g
2	Test <u>9</u> Run <u>2</u> Vol. of Solvent <u>90</u> ml Log Number <u>-60</u> Comments <u> </u>	Dish No. <u>39</u> Dish Tare Wt. <u>49.4370</u> g Dish+Sample Wt. <u>49.4445</u> g Sample Wt. <u>0.0075</u> g
3	Test <u>9</u> Run <u>3</u> Vol. of Solvent <u>110</u> ml Log Number <u>-63</u> Comments <u> </u>	Dish No. <u>61</u> Dish Tare Wt. <u>44.5885</u> g Dish+Sample Wt. <u>44.5967</u> g Sample Wt. <u>0.0082</u> g
4	Test <u> </u> Run <u> </u> Vol. of Solvent <u> </u> ml Log Number <u> </u> Comments <u> </u>	Dish No. <u> </u> Dish Tare Wt. <u> </u> g Dish+Sample Wt. <u> </u> g Sample Wt. <u> </u> g
5	Test <u> </u> Run <u> </u> Vol. of Solvent <u> </u> ml Log Number <u> </u> Comments <u> </u>	Dish No. <u> </u> Dish Tare Wt. <u> </u> g Dish+Sample Wt. <u> </u> g Sample Wt. <u> </u> g

*Solvent Residue 3.33 ug/ml = [(Sample Wt. 0.0083 g) (10⁶)] / Vol. of Sol. 90 ml
EPA-MS Acetone Residue Blank Spec. 7.8 ug/ml

Results:

Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.0077	0.0072	0.0078		
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EPA Method 5 Data Reporting Sheet
Filter Gravimetrics

Job LP/New Waverly Tx Source # 1 Press vent
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-1-92
Test No. 9 No. of Runs Completed 3
Date of Analysis 4-13-92 Technician C. Helgeson

0	Test <u>9</u> Run <u>0</u> Field Blank Log Number <u>5793-55</u> Comments _____	Filter No. <u>4217</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9610</u> g Filter+Sample Wt. <u>.9613</u> g Sample Wt. <u>0.0003</u> g
1	Test <u>9</u> Run <u>1</u> Log Number <u>-58</u> Comments _____	Filter No. <u>4184</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9416</u> g Filter+Sample Wt. <u>.9434</u> g Sample Wt. <u>0.0018</u> g
2	Test <u>9</u> Run <u>2</u> Log Number <u>-61</u> Comments _____	Filter No. <u>4185</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9455</u> g Filter+Sample Wt. <u>.9497</u> g Sample Wt. <u>0.0042</u> g
3	Test <u>9</u> Run <u>3</u> Log Number <u>-64</u> Comments _____	Filter No. <u>4186</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9464</u> g Filter+Sample Wt. <u>.9497</u> g Sample Wt. <u>0.0033</u> g
4	Test _____ Run _____ Log Number _____ Comments _____	Filter No. _____ Filter Type _____ Filter Tare Wt. _____ g Filter+Sample Wt. _____ g Sample Wt. _____ g
5	Test _____ Run _____ Log Number _____ Comments _____	Filter No. _____ Filter Type _____ Filter Tare Wt. _____ g Filter+Sample Wt. _____ g Sample Wt. _____ g

Results:

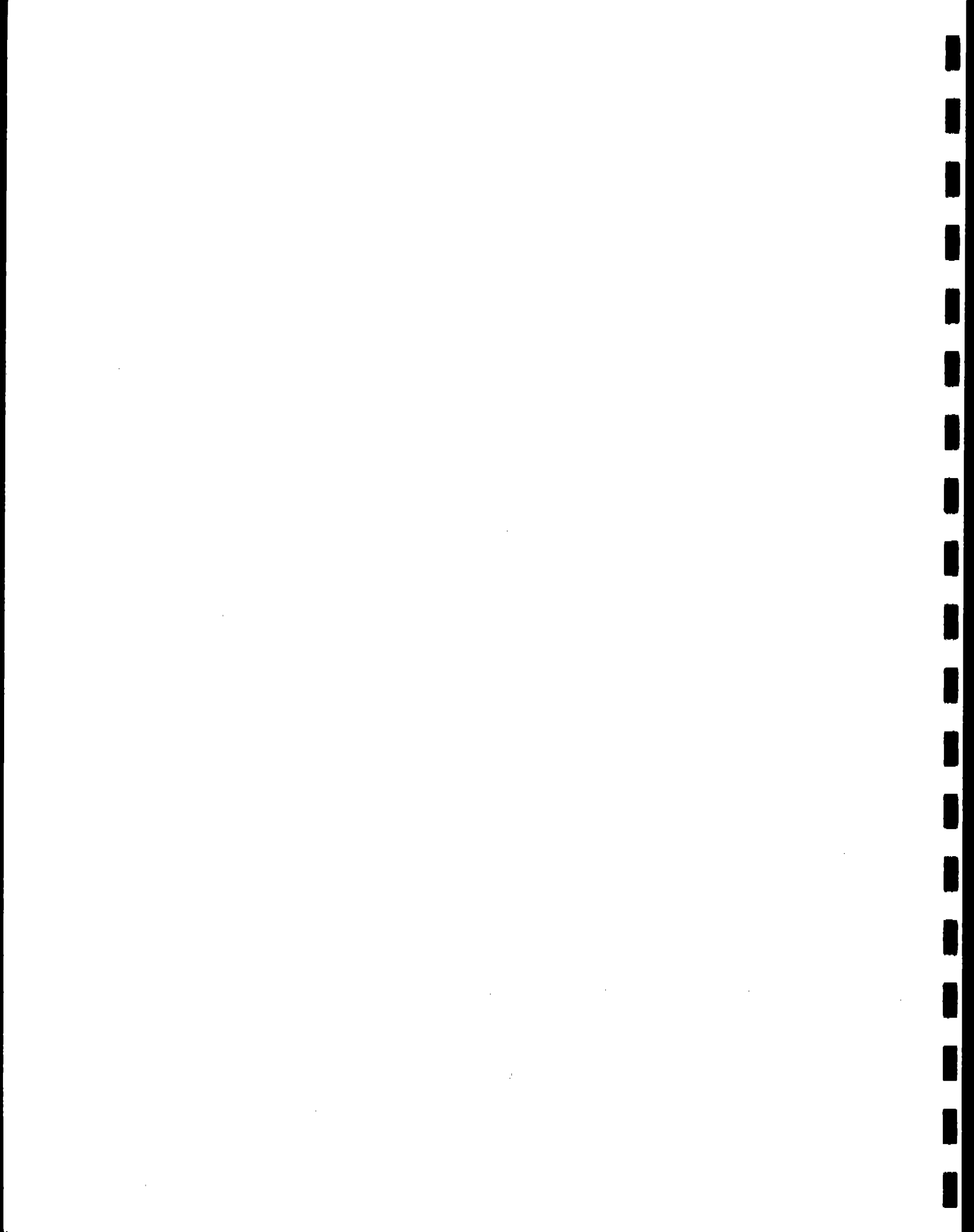
Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.0018	0.0042	0.0033		
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Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.0258	0.0280	0.0188		
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LSC-02PR



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EPA Method 5 Data Reporting Sheet
Impinger Catch/Wisconsin Protocol

Job L.P. New Waverly TX Source #2 Press Vent
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-1-92
Test No. 12 No. of Runs Completed 3
Date of Analysis 4-29-92 Technician C. Helgeson

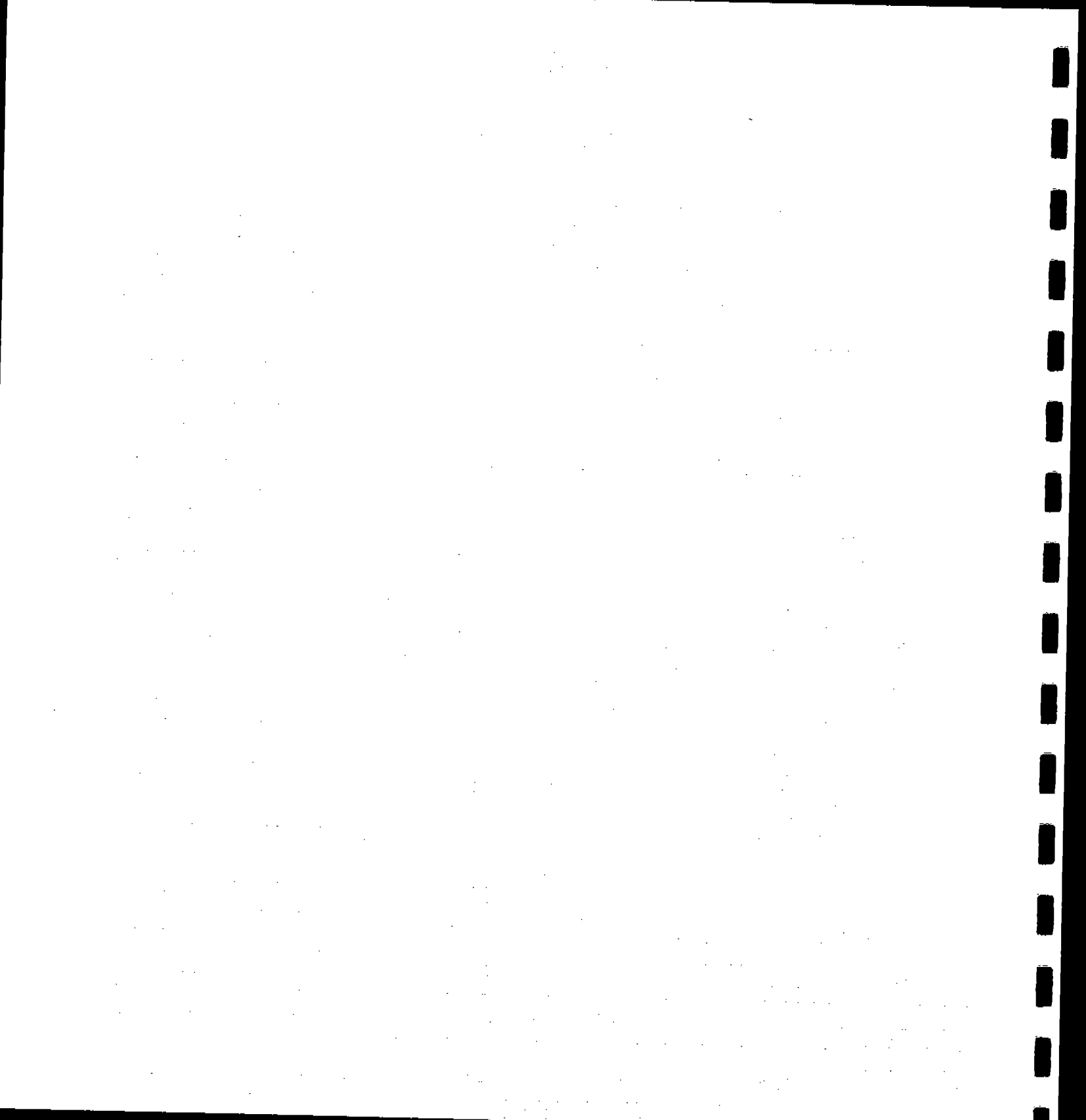
		Solvent Phase	Aqueous Phase
0	Test <u>12</u> Run <u>0</u> Field Blank Log Number <u>5793-107</u> Comments _____	Dish No. <u>60</u> Dish Tare Wt. <u>49.6285</u> g Dish+Sample Wt. <u>49.6289</u> g Sample Wt. <u>0.0004</u> g	Dish No. <u>14</u> Dish Tare Wt. <u>49.7351</u> g Dish+Sample Wt. <u>49.7355</u> g Sample Wt. <u>0.0004</u> g
1	Test <u>12</u> Run <u>1</u> Log Number <u>-71</u> Comments _____	Dish No. <u>402</u> Dish Tare Wt. <u>47.5807</u> g Dish+Sample Wt. <u>47.5893</u> g Sample Wt. <u>0.0086</u> g	Dish No. <u>22</u> Dish Tare Wt. <u>51.3604</u> g Dish+Sample Wt. <u>51.3676</u> g Sample Wt. <u>0.0072</u> g
2	Test <u>12</u> Run <u>2</u> Log Number <u>-74</u> Comments _____	Dish No. <u>507</u> Dish Tare Wt. <u>47.8423</u> g Dish+Sample Wt. <u>47.8516</u> g Sample Wt. <u>0.0093</u> g	Dish No. <u>29</u> Dish Tare Wt. <u>49.8015</u> g Dish+Sample Wt. <u>49.8056</u> g Sample Wt. <u>0.0041</u> g
3	Test <u>12</u> Run <u>3</u> Log Number <u>-77</u> Comments _____	Dish No. <u>509</u> Dish Tare Wt. <u>47.6242</u> g Dish+Sample Wt. <u>47.6302</u> g Sample Wt. <u>0.0060</u> g	Dish No. <u>44</u> Dish Tare Wt. <u>47.6232</u> g Dish+Sample Wt. <u>47.6249</u> g Sample Wt. <u>0.0017</u> g
4	Test _____ Run _____ Log Number _____ Comments _____	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
5	Test _____ Run _____ Log Number _____ Comments _____	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g

Results Solvent Phase:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	<u>0.0082</u>	<u>0.0089</u>	<u>0.0086</u>		

Results Aqueous Phase:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	<u>0.0068</u>	<u>0.0037</u>	<u>0.0028</u>		



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EPA Method 5 Data Reporting Sheet
Probe/Cyclone Wash

Job LP/New Waverly Source # 2 Press Vent
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-1-92
Test No. 12 No. of Runs Completed 3
Date of Analysis 4-13-92 Technician C. Helgeson
Transport Leakage None ml Solvent Acetone

0	Test <u>Run 0</u> Field Blank Log Number _____ Vol. of Solvent _____ ml *Solvent Residue <u>3.33</u> ug/ml	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
1	Test <u>12</u> Run <u>1</u> Vol. of Solvent <u>100</u> ml Log Number <u>5743-69</u> Comments _____	Dish No. <u>62</u> Dish Tare Wt. <u>50.8878</u> g Dish+Sample Wt. <u>50.8977</u> g Sample Wt. <u>0.0099</u> g
2	Test <u>12</u> Run <u>2</u> Vol. of Solvent <u>100</u> ml Log Number <u>-72</u> Comments _____	Dish No. <u>306</u> Dish Tare Wt. <u>48.6360</u> g Dish+Sample Wt. <u>48.6455</u> g Sample Wt. <u>0.0095</u> g
3	Test <u>12</u> Run <u>3</u> Vol. of Solvent <u>110</u> ml Log Number <u>-75</u> Comments _____	Dish No. <u>516</u> Dish Tare Wt. <u>49.2684</u> g Dish+Sample Wt. <u>49.2774</u> g Sample Wt. <u>0.0090</u> g
4	Test _____ Run _____ Vol. of Solvent _____ ml Log Number _____ Comments _____	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
5	Test _____ Run _____ Vol. of Solvent _____ ml Log Number _____ Comments _____	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g

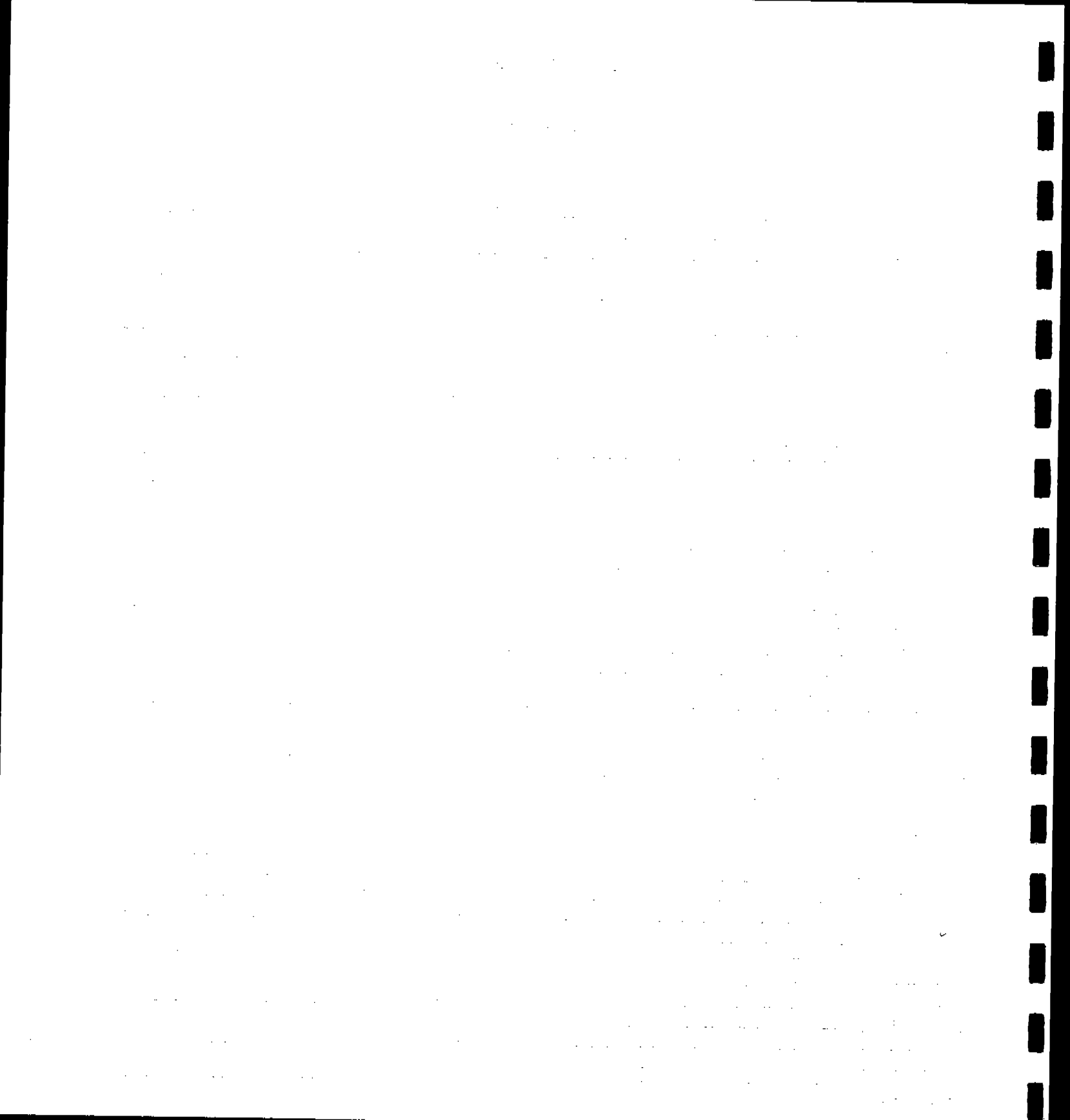
*Solvent Residue _____ ug/ml = [(Sample Wt. _____ g) (10⁶)] / Vol. of Sol. _____ ml

EPA-MS Acetone Residue Blank Spec. { 7.8 ug/ml

Results:

Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	<u>0.0096</u>	<u>0.0092</u>	<u>0.0086</u>		
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EPA Method 5 Data Reporting Sheet
Filter Gravimetrics

Job LP/New Waverly Source #2 Press Vent
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-1-92
Test No. 12 No. of Runs Completed 3
Date of Analysis 4-13-92 Technician C. Helgeson

0	Test <u>Run 0</u> Field Blank Log Number _____ Comments _____	Filter No. _____ Filter Type _____ Filter Tare Wt. _____ g Filter+Sample Wt. _____ g Sample Wt. _____ g
1	Test <u>12</u> Run <u>1</u> Log Number <u>5793-70</u> Comments _____	Filter No. <u>4187</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9544</u> g Filter+Sample Wt. <u>.9610</u> g Sample Wt. <u>0.0066</u> g
2	Test <u>12</u> Run <u>2</u> Log Number <u>-73</u> Comments _____	Filter No. <u>4188</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9580</u> g Filter+Sample Wt. <u>.9638</u> g Sample Wt. <u>0.0058</u> g
3	Test <u>12</u> Run <u>3</u> Log Number <u>-76</u> Comments _____	Filter No. <u>4214</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9647</u> g Filter+Sample Wt. <u>.9691</u> g Sample Wt. <u>0.0044</u> g
4	Test _____ Run _____ Log Number _____ Comments _____	Filter No. _____ Filter Type _____ Filter Tare Wt. _____ g Filter+Sample Wt. _____ g Sample Wt. _____ g
5	Test _____ Run _____ Log Number _____ Comments _____	Filter No. _____ Filter Type _____ Filter Tare Wt. _____ g Filter+Sample Wt. _____ g Sample Wt. _____ g

Results:

Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.0066	0.0058	0.0044		
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Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.0312	0.0276	0.0244		
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LSC-02PR

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EPA Method 5 Data Reporting Sheet
Impinger Catch/Wisconsin Protocol

Job LP. New Waverly TX Source #3 Press Vent
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-2-92
Test No. 15 No. of Runs Completed 3
Date of Analysis 4-29-92 Technician C. Helgeson

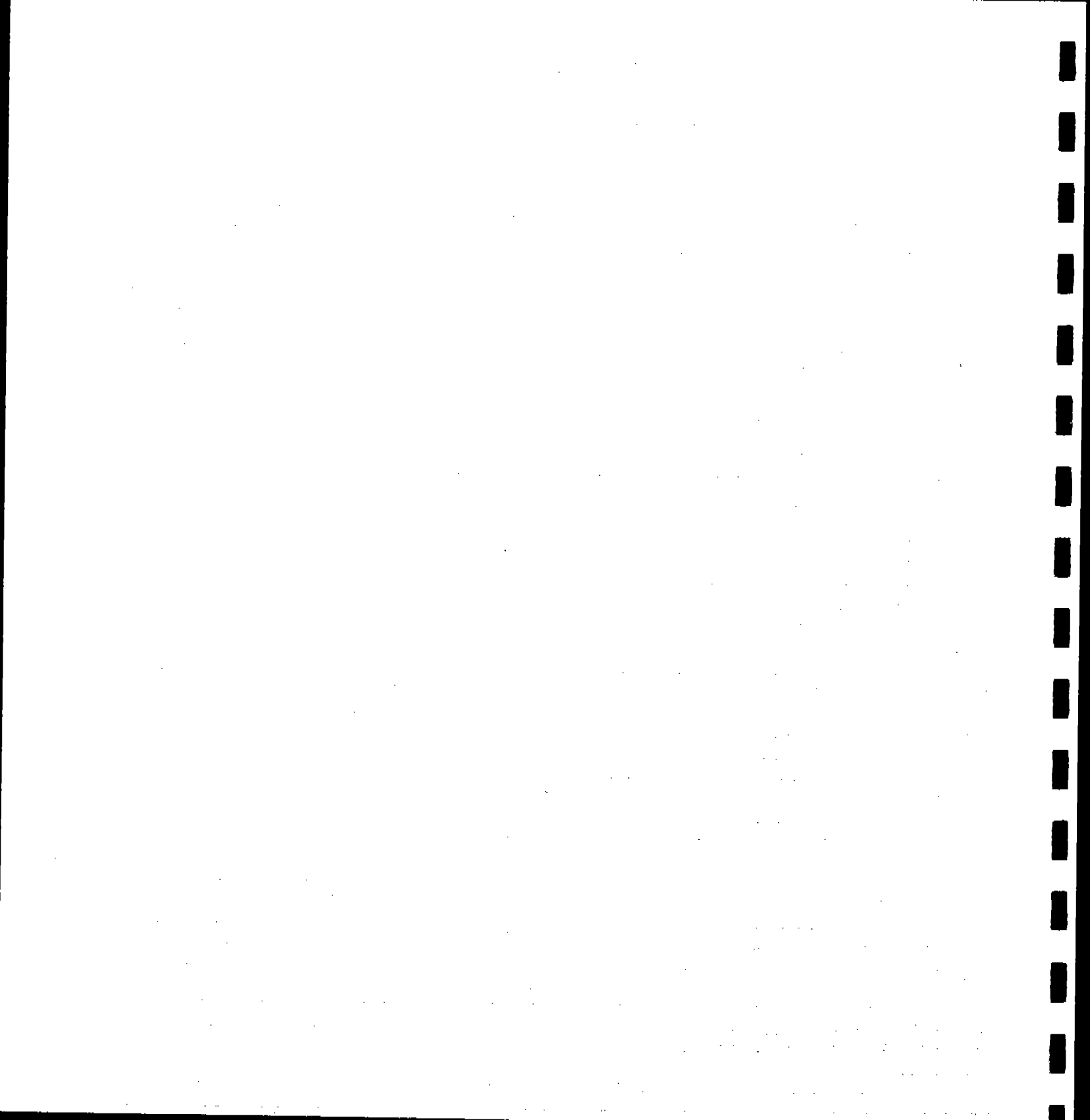
		Solvent Phase	Aqueous Phase
0	Test <u>Run 0</u> Field Blank Log Number Comments	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
1	Test <u>15</u> Run <u>1</u> Log Number <u>5793-82</u> Comments	Dish No. <u>513</u> Dish Tare Wt. <u>47.4126</u> g Dish+Sample Wt. <u>47.4246</u> g Sample Wt. <u>0.0120</u> g	Dish No. <u>45</u> Dish Tare Wt. <u>50.8904</u> g Dish+Sample Wt. <u>50.8948</u> g Sample Wt. <u>0.0044</u> g
2	Test <u>15</u> Run <u>2</u> Log Number <u>-85</u> Comments	Dish No. <u>514</u> Dish Tare Wt. <u>48.7132</u> g Dish+Sample Wt. <u>48.7220</u> g Sample Wt. <u>0.0088</u> g	Dish No. <u>57</u> Dish Tare Wt. <u>47.9143</u> g Dish+Sample Wt. <u>47.9195</u> g Sample Wt. <u>0.0052</u> g
3	Test <u>15</u> Run <u>3</u> Log Number <u>-88</u> Comments	Dish No. <u>520</u> Dish Tare Wt. <u>48.5271</u> g Dish+Sample Wt. <u>48.5346</u> g Sample Wt. <u>0.0075</u> g	Dish No. <u>117</u> Dish Tare Wt. <u>47.3720</u> g Dish+Sample Wt. <u>47.3769</u> g Sample Wt. <u>0.0049</u> g
4	Test <u>Run</u> Log Number Comments	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
5	Test <u>Run</u> Log Number Comments	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g

Results Solvent Phase:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	<u>0.0116</u>	<u>0.0084</u>	<u>0.0071</u>		

Results Aqueous Phase:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	<u>0.0040</u>	<u>0.0048</u>	<u>D-190.0045</u>		



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EPA Method 5 Data Reporting Sheet
Probe/Cyclone Wash

Job LP/New Waverly Tx. Source #3 Press vent
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-2-92
Test No. 15 No. of Runs Completed 3
Date of Analysis 4-13-92 Technician C. Helgeson
Transport Leakage ☒ None ☐ ml Solvent Acetone

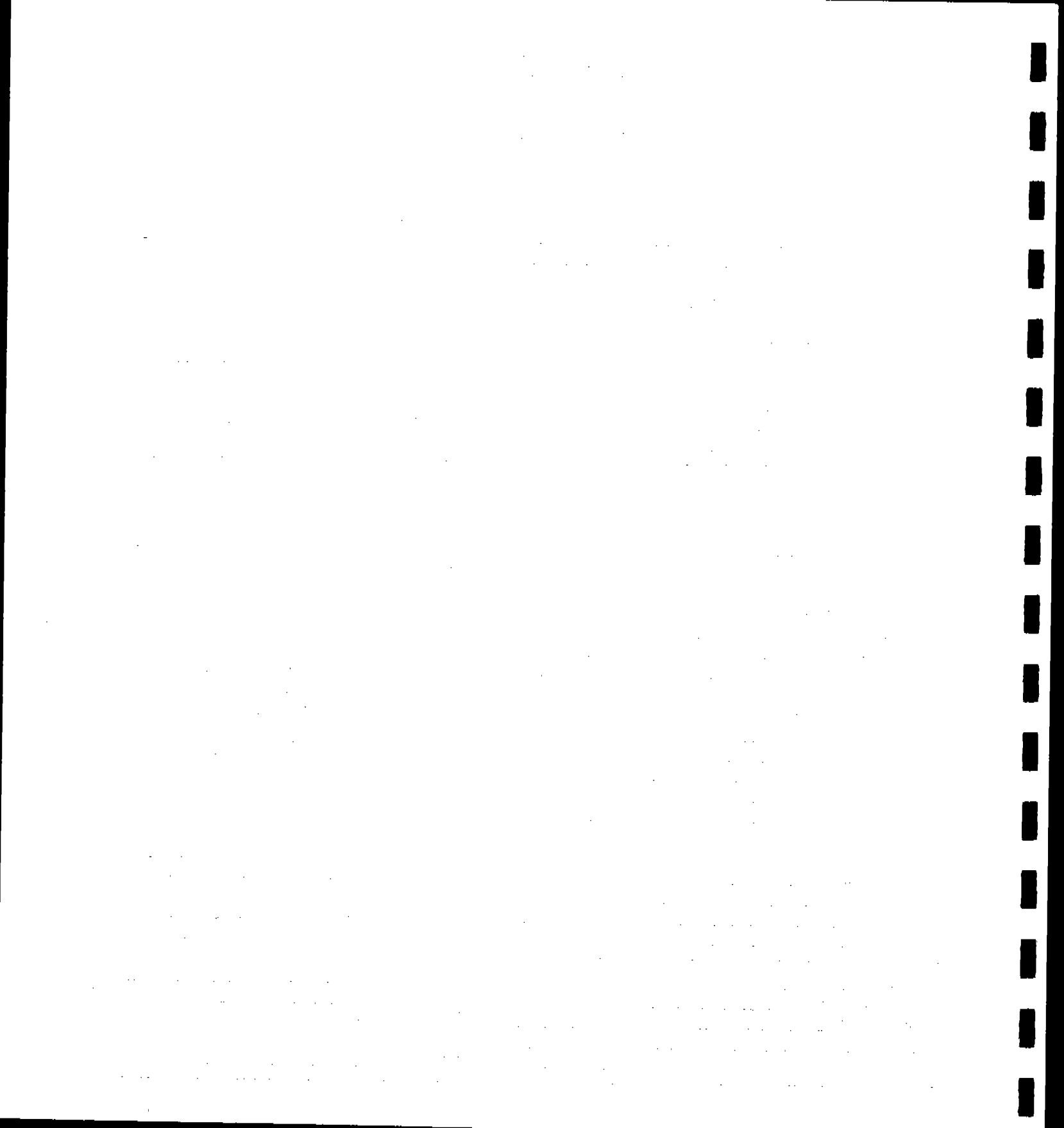
0	Test <u> </u> Run <u>0</u> Field Blank Log Number <u> </u> Vol. of Solvent <u> </u> ml *Solvent Residue <u>3.33</u> ug/ml	Dish No. <u> </u> Dish Tare Wt. <u> </u> g Dish+Sample Wt. <u> </u> g Sample Wt. <u> </u> g
1	Test <u>15</u> Run <u>1</u> Vol. of Solvent <u>100</u> ml Log Number <u>5793-106</u> Comments <u> </u>	Dish No. <u>26</u> Dish Tare Wt. <u>48.3833</u> g Dish+Sample Wt. <u>48.3950</u> g Sample Wt. <u>0.0117</u> g
2	Test <u>15</u> Run <u>2</u> Vol. of Solvent <u>100</u> ml Log Number <u>83</u> Comments <u> </u>	Dish No. <u>45</u> Dish Tare Wt. <u>50.8884</u> g Dish+Sample Wt. <u>50.8986</u> g Sample Wt. <u>0.0102</u> g
3	Test <u>15</u> Run <u>3</u> Vol. of Solvent <u>130</u> ml Log Number <u>86</u> Comments <u> </u>	Dish No. <u>53</u> Dish Tare Wt. <u>44.3962</u> g Dish+Sample Wt. <u>44.4085</u> g Sample Wt. <u>0.0123</u> g
4	Test <u> </u> Run <u> </u> Vol. of Solvent <u> </u> ml Log Number <u> </u> Comments <u> </u>	Dish No. <u> </u> Dish Tare Wt. <u> </u> g Dish+Sample Wt. <u> </u> g Sample Wt. <u> </u> g
5	Test <u> </u> Run <u> </u> Vol. of Solvent <u> </u> ml Log Number <u> </u> Comments <u> </u>	Dish No. <u> </u> Dish Tare Wt. <u> </u> g Dish+Sample Wt. <u> </u> g Sample Wt. <u> </u> g

*Solvent Residue ug/ml = [(Sample Wt. g) (10⁶)] / Vol. of Sol. ml
EPA-MS Acetone Residue Blank Spec. { 7.8 ug/ml

Results:

Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.0114	0.0099 ^{D-20}	0.0119		
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EPA Method 5 Data Reporting Sheet
Filter Gravimetrics

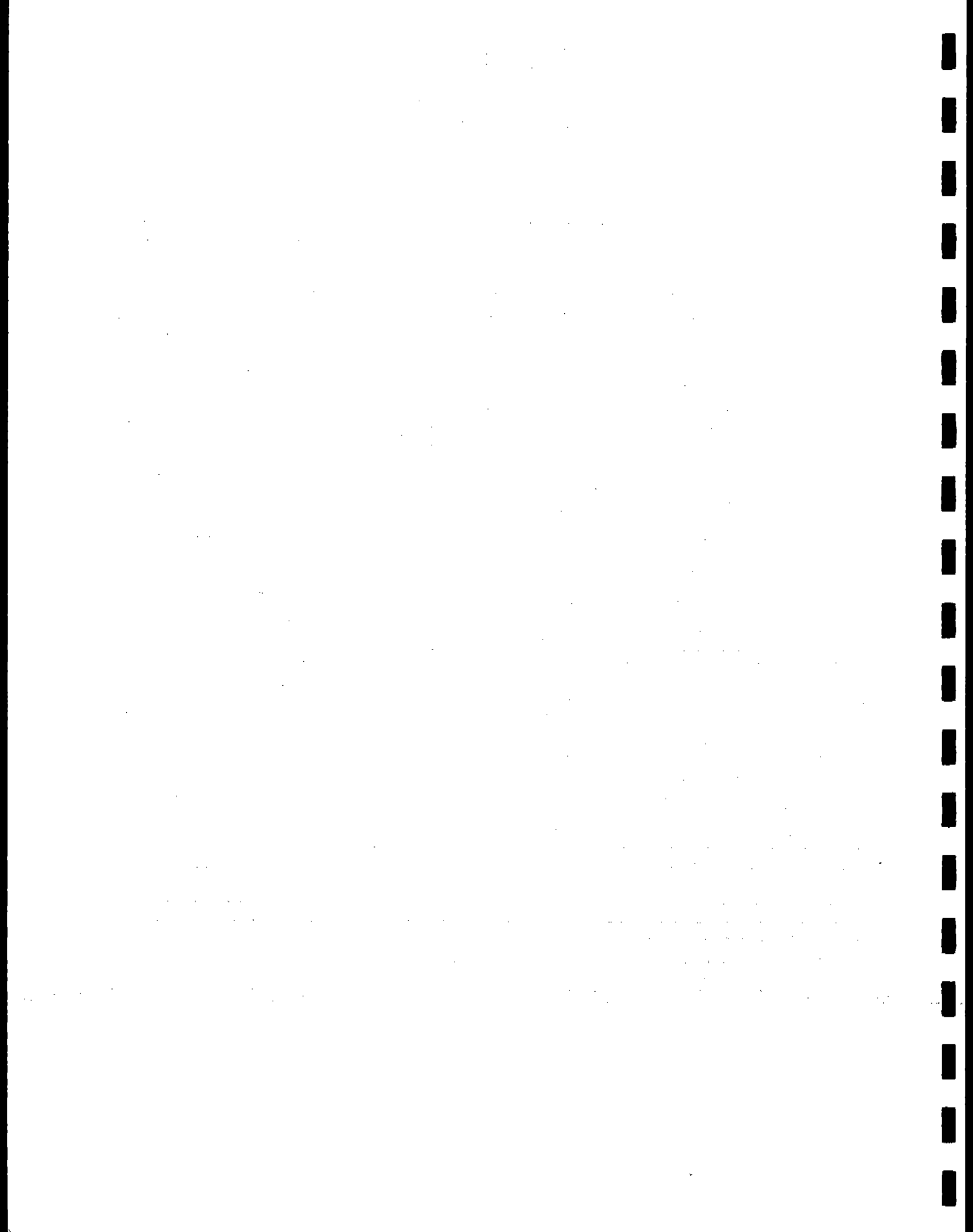
Job LP/New Waverly Tx. Source #3 Press Vent
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-2-92
Test No. 15 No. of Runs Completed 3
Date of Analysis 4-13-92 Technician C. Helgeson

0	Test <u>Run 0</u> Field Blank Log Number _____ Comments _____	Filter No. _____ Filter Type _____ Filter Tare Wt. _____ g Filter+Sample Wt. _____ g Sample Wt. _____ g
1	Test <u>15</u> Run <u>1</u> Log Number <u>5793-81</u> Comments _____	Filter No. <u>4215</u> Filter Type <u>4"GF</u> Filter Tare Wt. <u>.9576</u> g Filter+Sample Wt. <u>.9615</u> g Sample Wt. <u>0.0039</u> g
2	Test <u>15</u> Run <u>2</u> Log Number <u>-84</u> Comments _____	Filter No. <u>4216</u> Filter Type <u>4"GF</u> Filter Tare Wt. <u>.9649</u> g Filter+Sample Wt. <u>.9696</u> g Sample Wt. <u>0.0047</u> g
3	Test <u>15</u> Run <u>3</u> Log Number <u>-87</u> Comments _____	Filter No. <u>4203</u> Filter Type <u>4"GF</u> Filter Tare Wt. <u>.9262</u> g Filter+Sample Wt. <u>.9291</u> g Sample Wt. <u>0.0029</u> g
4	Test <u>Run</u> Log Number _____ Comments _____	Filter No. _____ Filter Type _____ Filter Tare Wt. _____ g Filter+Sample Wt. _____ g Sample Wt. _____ g
5	Test <u>Run</u> Log Number _____ Comments _____	Filter No. _____ Filter Type _____ Filter Tare Wt. _____ g Filter+Sample Wt. _____ g Sample Wt. _____ g

Results:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	0.0039	0.0047	0.0029		

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	0.0209	0.0278	0.0264		



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EPA Method 5 Data Reporting Sheet
Impinger Catch/Wisconsin Protocol

Job LoP. New Waverly Tx Source #4 Forming line Vent
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-2-92
Test No. 18 No. of Runs Completed 3
Date of Analysis 4-29-92 Technician C. Helgeson

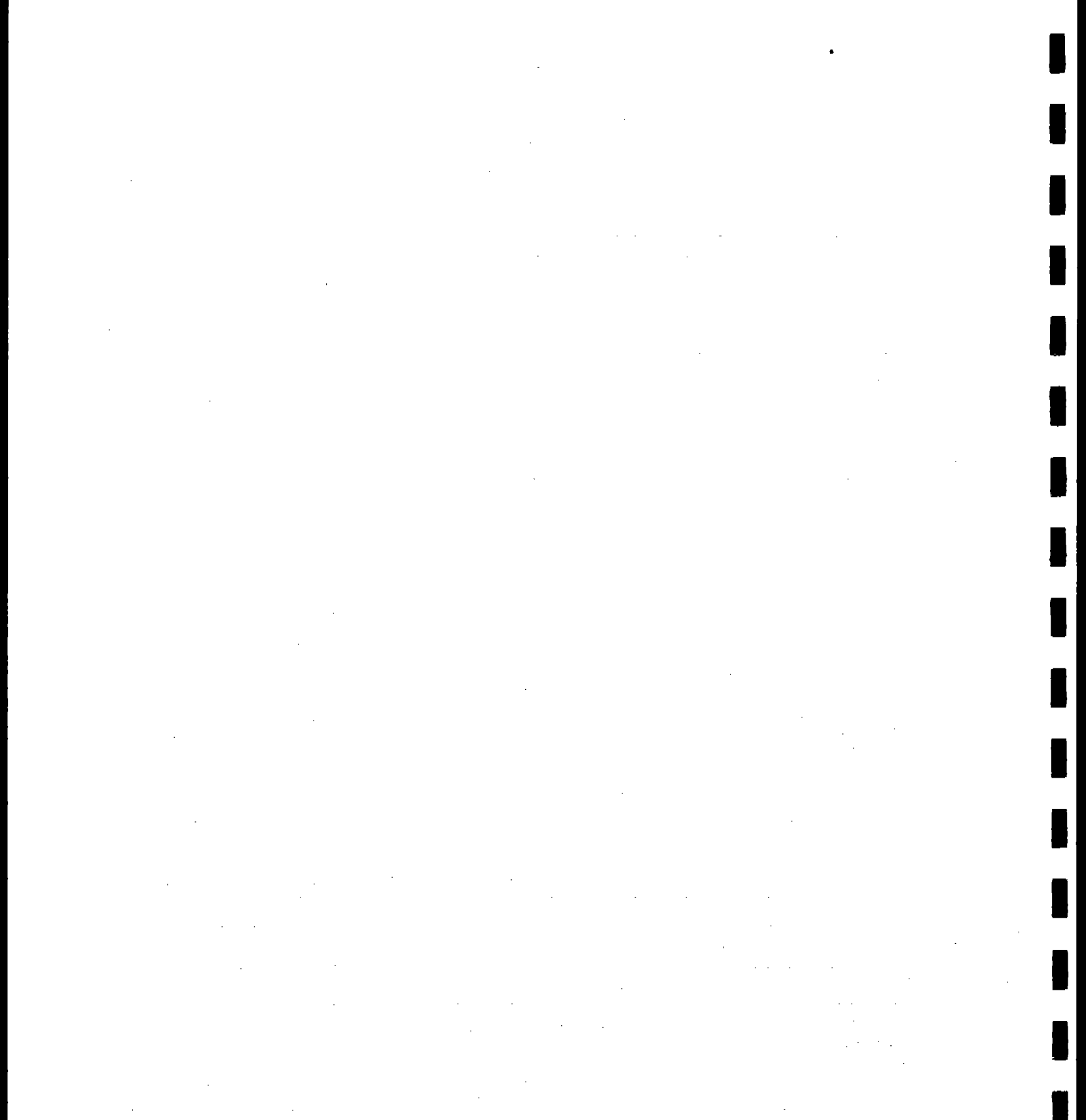
	Solvent Phase	Aqueous Phase
0	Test <u>Run 0</u> Field Blank Log Number _____ Comments _____	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
1	Test <u>18</u> Run <u>1</u> Log Number <u>5793-96</u> Comments _____	Dish No. <u>85</u> Dish Tare Wt. <u>73.9530</u> g Dish+Sample Wt. <u>73.9545</u> g Sample Wt. <u>0.0015</u> g
2	Test <u>18</u> Run <u>2</u> Log Number <u>-99</u> Comments _____	Dish No. <u>86</u> Dish Tare Wt. <u>73.5502</u> g Dish+Sample Wt. <u>73.5521</u> g Sample Wt. <u>0.0019</u> g
3	Test <u>18</u> Run <u>3</u> Log Number <u>-102</u> Comments _____	Dish No. <u>87</u> Dish Tare Wt. <u>73.3531</u> g Dish+Sample Wt. <u>73.3560</u> g Sample Wt. <u>0.0029</u> g
4	Test <u>Run</u> Log Number _____ Comments _____	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
5	Test <u>Run</u> Log Number _____ Comments _____	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g

Results Solvent Phase:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	<u>0.0011</u>	<u>0.0015</u>	<u>0.0025</u>		

Results Aqueous Phase:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	<u>0.0017</u>	<u>0.0028</u>	<u>0.0003</u>		



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EPA Method 5 Data Reporting Sheet
Probe/Cyclone Wash

Job LP/New Waverly Tx. Source #4 Farming line vent
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-2-92
Test No. 18 No. of Runs Completed 3
Date of Analysis 4-13-92 Technician C. Helgeson
Transport Leakage ☒ None ☐ ml Solvent Acetone

0	Test <u> </u> Run <u>0</u> Field Blank Log Number <u> </u> Vol. of Solvent <u> </u> ml *Solvent Residue <u>3.33</u> ug/ml	Dish No. <u> </u> Dish Tare Wt. <u> </u> g Dish+Sample Wt. <u> </u> g Sample Wt. <u> </u> g
1	Test <u>18</u> Run <u>1</u> Vol. of Solvent <u>90</u> ml Log Number <u>5793-94</u> Comments <u> </u>	Dish No. <u>60</u> Dish Tare Wt. <u>49.6261</u> g Dish+Sample Wt. <u>49.6374</u> g Sample Wt. <u>0.0113</u> g
2	Test <u>18</u> Run <u>2</u> Vol. of Solvent <u>90</u> ml Log Number <u>-97</u> Comments <u> </u>	Dish No. <u>404</u> Dish Tare Wt. <u>47.6390</u> g Dish+Sample Wt. <u>47.6484</u> g Sample Wt. <u>0.0094</u> g
3	Test <u>18</u> Run <u>3</u> Vol. of Solvent <u>80</u> ml Log Number <u>-100</u> Comments <u> </u>	Dish No. <u>407</u> Dish Tare Wt. <u>47.9919</u> g Dish+Sample Wt. <u>47.9993</u> g Sample Wt. <u>0.0074</u> g
4	Test <u> </u> Run <u> </u> Vol. of Solvent <u> </u> ml Log Number <u> </u> Comments <u> </u>	Dish No. <u> </u> Dish Tare Wt. <u> </u> g Dish+Sample Wt. <u> </u> g Sample Wt. <u> </u> g
5	Test <u> </u> Run <u> </u> Vol. of Solvent <u> </u> ml Log Number <u> </u> Comments <u> </u>	Dish No. <u> </u> Dish Tare Wt. <u> </u> g Dish+Sample Wt. <u> </u> g Sample Wt. <u> </u> g

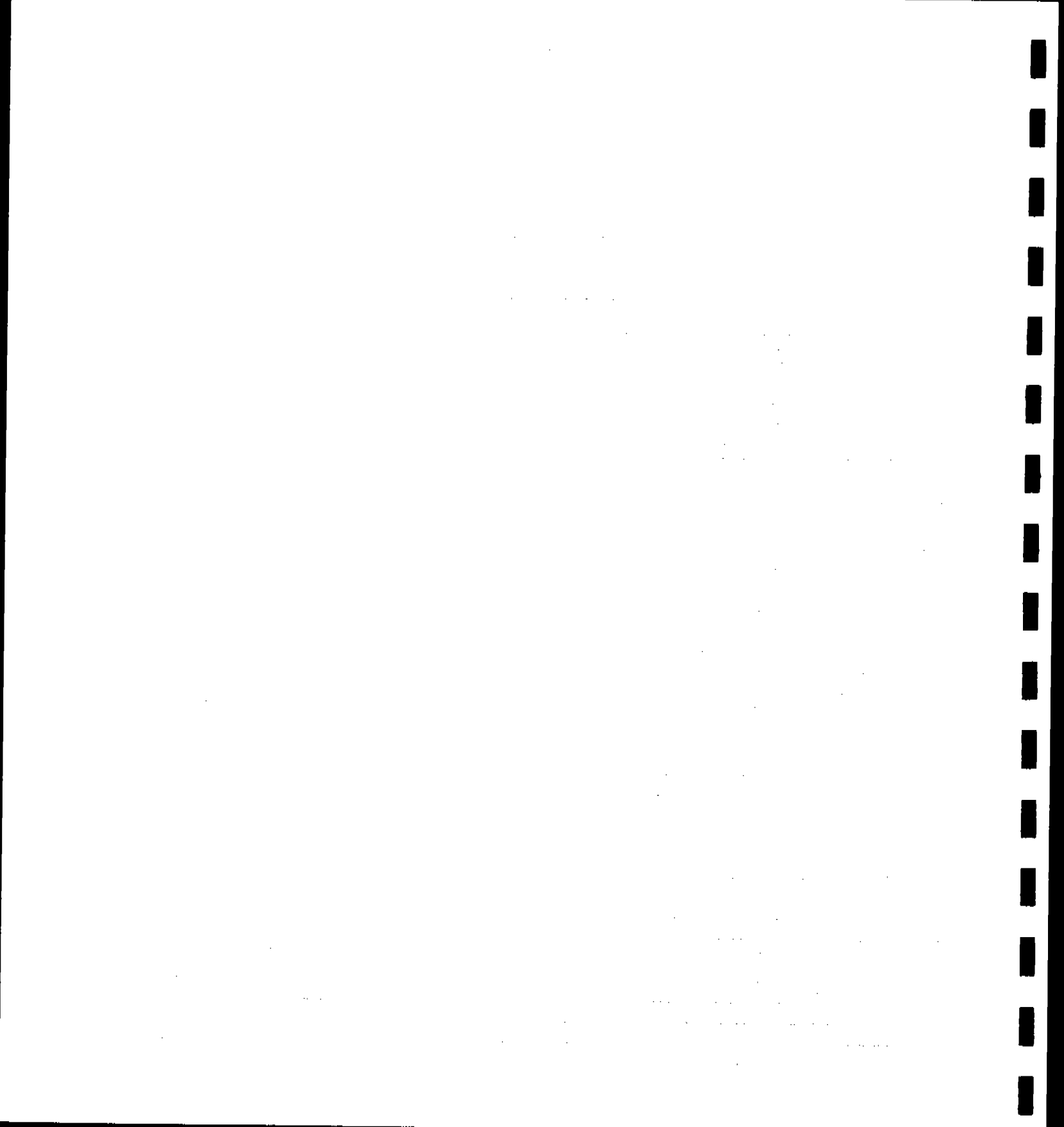
*Solvent Residue ug/ml = [(Sample Wt. g) (10⁴)] / Vol. of Sol. ml

EPA-M5 Acetone Residue Blank Spec. { 7.8 ug/ml

Results:

Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.0110	0.0091 ⁰⁻²³	0.0071		
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EPA Method 5 Data Reporting Sheet
Filter Gravimetrics

Job LP/ New Waverly, Tx Source 44 Forming Line Vent
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-2-92
Test No. 18 No. of Runs Completed 3
Date of Analysis 4-13-92 Technician C. Helgeson

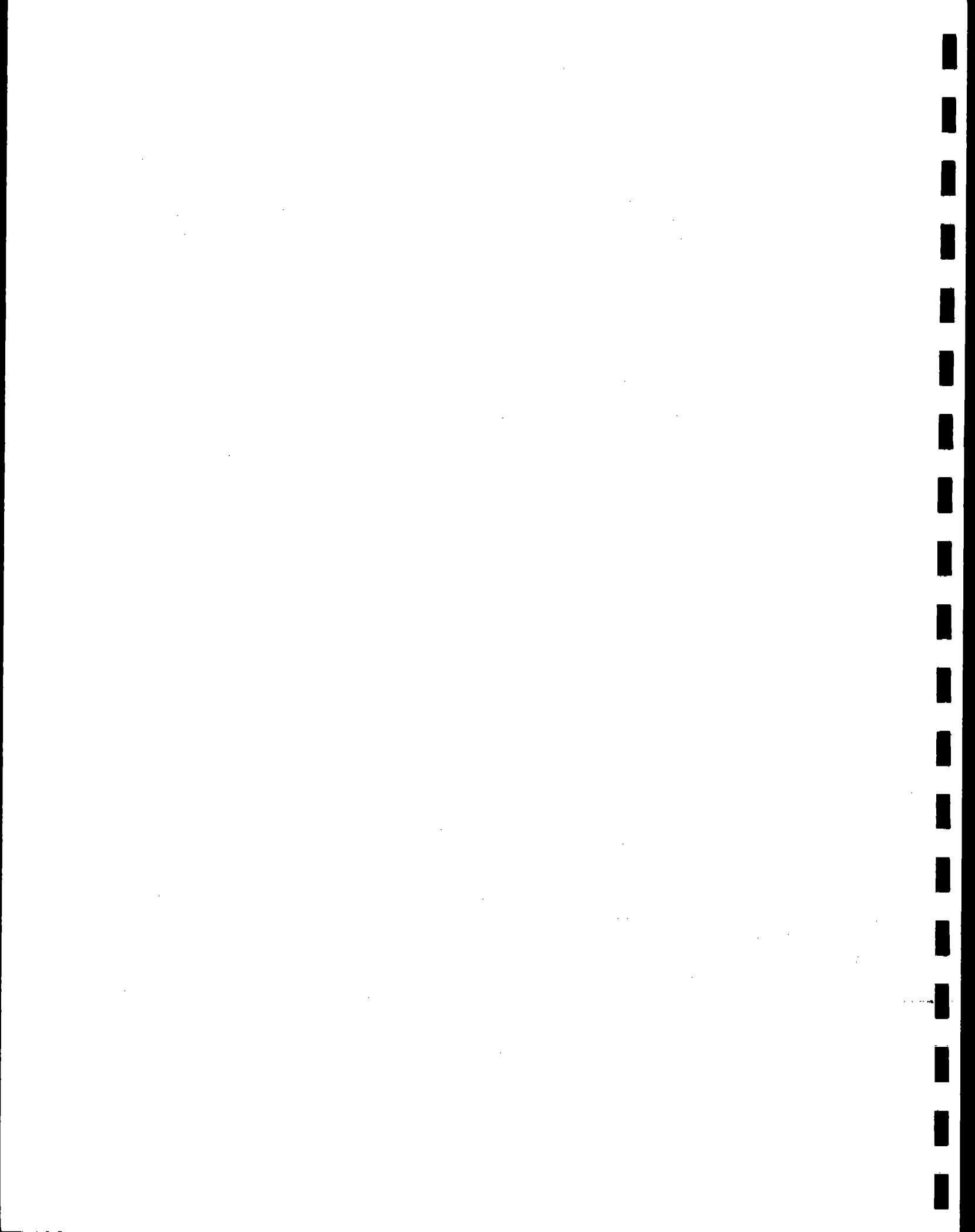
0	Test <u> </u> Run <u>0</u> Field Blank Log Number <u> </u> Comments <u> </u>	Filter No. <u> </u> Filter Type <u> </u> Filter Tare Wt. <u> </u> g Filter+Sample Wt. <u> </u> g Sample Wt. <u> </u> g
1	Test <u>18</u> Run <u>1</u> Log Number <u>5793-95</u> Comments <u> </u>	Filter No. <u>4204</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9442</u> g Filter+Sample Wt. <u>.9453</u> g Sample Wt. <u>0.0011</u> g
2	Test <u>18</u> Run <u>2</u> Log Number <u> </u> = <u>98</u> Comments <u> </u>	Filter No. <u>4205</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9501</u> g Filter+Sample Wt. <u>.9520</u> g Sample Wt. <u>0.0019</u> g
3	Test <u>18</u> Run <u>3</u> Log Number <u> </u> = <u>101</u> Comments <u> </u>	Filter No. <u>4206</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9575</u> g Filter+Sample Wt. <u>.9594</u> g Sample Wt. <u>0.0019</u> g
4	Test <u> </u> Run <u> </u> Log Number <u> </u> Comments <u> </u>	Filter No. <u> </u> Filter Type <u> </u> Filter Tare Wt. <u> </u> g Filter+Sample Wt. <u> </u> g Sample Wt. <u> </u> g
5	Test <u> </u> Run <u> </u> Log Number <u> </u> Comments <u> </u>	Filter No. <u> </u> Filter Type <u> </u> Filter Tare Wt. <u> </u> g Filter+Sample Wt. <u> </u> g Sample Wt. <u> </u> g

Results:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	0.0011	0.0019	0.0019		

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	0.0144	0.0153	0.0118		

LSC-02PR



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EPA Method 5 Data Reporting Sheet
Impinger Catch/Wisconsin Protocol

Job L.P. New Waverly, Tx. Source #1 Dryer
Team Leader D.B. Test Site Stack
Date Submitted 4-13-92 Date of Test 3-30-92
Test No. 7 No. of Runs Completed 3
Date of Analysis 4-27-92 Technician C. Helgeson

		Solvent Phase	Aqueous Phase
0	Test <u>1</u> Run <u>0</u> Field Blank Log Number <u>5793-03</u> Comments _____	Dish No. <u>1</u> Dish Tare Wt. <u>51.9686</u> g Dish+Sample Wt. <u>51.9640</u> g Sample Wt. <u>0.0046</u> g	Dish No. <u>11</u> Dish Tare Wt. <u>47.7578</u> g Dish+Sample Wt. <u>47.7582</u> g Sample Wt. <u>0.0004</u> g
1	Test <u>1</u> Run <u>1</u> Log Number <u>-06</u> Comments _____	Dish No. <u>30</u> Dish Tare Wt. <u>47.2548</u> g Dish+Sample Wt. <u>47.2656</u> g Sample Wt. <u>0.0058</u> g	Dish No. <u>62</u> Dish Tare Wt. <u>50.8975</u> g Dish+Sample Wt. <u>50.8950</u> g Sample Wt. <u>0.0075</u> g
2	Test <u>1</u> Run <u>2</u> Log Number <u>-09</u> Comments _____	Dish No. <u>57</u> Dish Tare Wt. <u>50.0187</u> g Dish+Sample Wt. <u>50.0245</u> g Sample Wt. <u>0.0058</u> g	Dish No. <u>204</u> Dish Tare Wt. <u>47.4636</u> g Dish+Sample Wt. <u>47.4701</u> g Sample Wt. <u>0.0065</u> g
3	Test <u>1</u> Run <u>3</u> Log Number <u>-12</u> Comments _____	Dish No. <u>66</u> Dish Tare Wt. <u>48.3076</u> g Dish+Sample Wt. <u>48.3136</u> g Sample Wt. <u>0.0060</u> g	Dish No. <u>208</u> Dish Tare Wt. <u>52.7967</u> g Dish+Sample Wt. <u>52.8047</u> g Sample Wt. <u>0.0080</u> g
4	Test _____ Run _____ Log Number _____ Comments _____	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
5	Test _____ Run _____ Log Number _____ Comments _____	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g

Results Solvent Phase:

Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

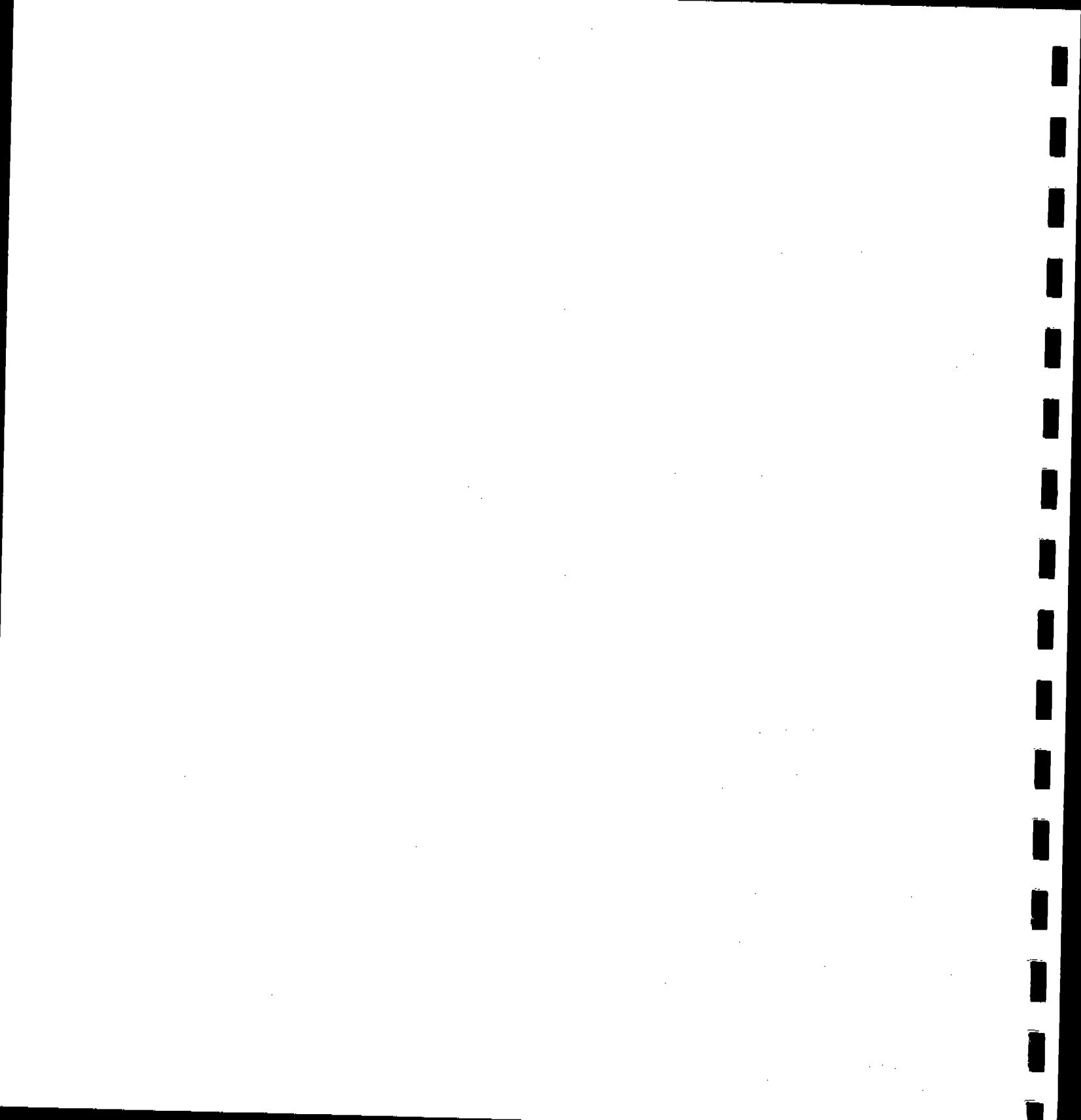
	<u>0.0054</u>	<u>0.0054</u>	<u>0.0056</u>		
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Results Aqueous Phase:

Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	<u>0.0071</u>	<u>0.0061</u>	<u>0.0076</u>		
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LSC-03WYP



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EPA Method 5 Data Reporting Sheet
Probe/Cyclone Wash

Job LP/ New Waverly Tx Source #1 Dryer
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 3-30-92
Test No. 1 No. of Runs Completed 3
Date of Analysis 4-13-92 Technician C. Helgeson
Transport Leakage ☐ None ☒ ml Solvent Acetone

0	Test <u>1</u> Run <u>0</u> Field Blank Log Number <u>5793-01</u> Vol. of Solvent <u>90</u> ml *Solvent Residue <u>3.33</u> ug/ml	Dish No. <u>34</u> Dish Tare Wt. <u>51.7548</u> g Dish+Sample Wt. <u>51.7551</u> g Sample Wt. <u>0.0003</u> g
1	Test <u>1</u> Run <u>1</u> Vol. of Solvent <u>40</u> ml Log Number <u>-04</u> Comments _____	Dish No. <u>111</u> Dish Tare Wt. <u>42.7800</u> g Dish+Sample Wt. <u>42.7816</u> g Sample Wt. <u>0.0016</u> g
2	Test <u>1</u> Run <u>2</u> Vol. of Solvent <u>50</u> ml Log Number <u>-07</u> Comments _____	Dish No. <u>201</u> Dish Tare Wt. <u>42.2302</u> g Dish+Sample Wt. <u>42.2315</u> g Sample Wt. <u>0.0013</u> g
3	Test <u>1</u> Run <u>3</u> Vol. of Solvent <u>50</u> ml Log Number <u>-10</u> Comments _____	Dish No. <u>400</u> Dish Tare Wt. <u>47.1000</u> g Dish+Sample Wt. <u>47.1012</u> g Sample Wt. <u>0.0012</u> g
4	Test _____ Run _____ Vol. of Solvent _____ ml Log Number _____ Comments _____	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
5	Test _____ Run _____ Vol. of Solvent _____ ml Log Number _____ Comments _____	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g

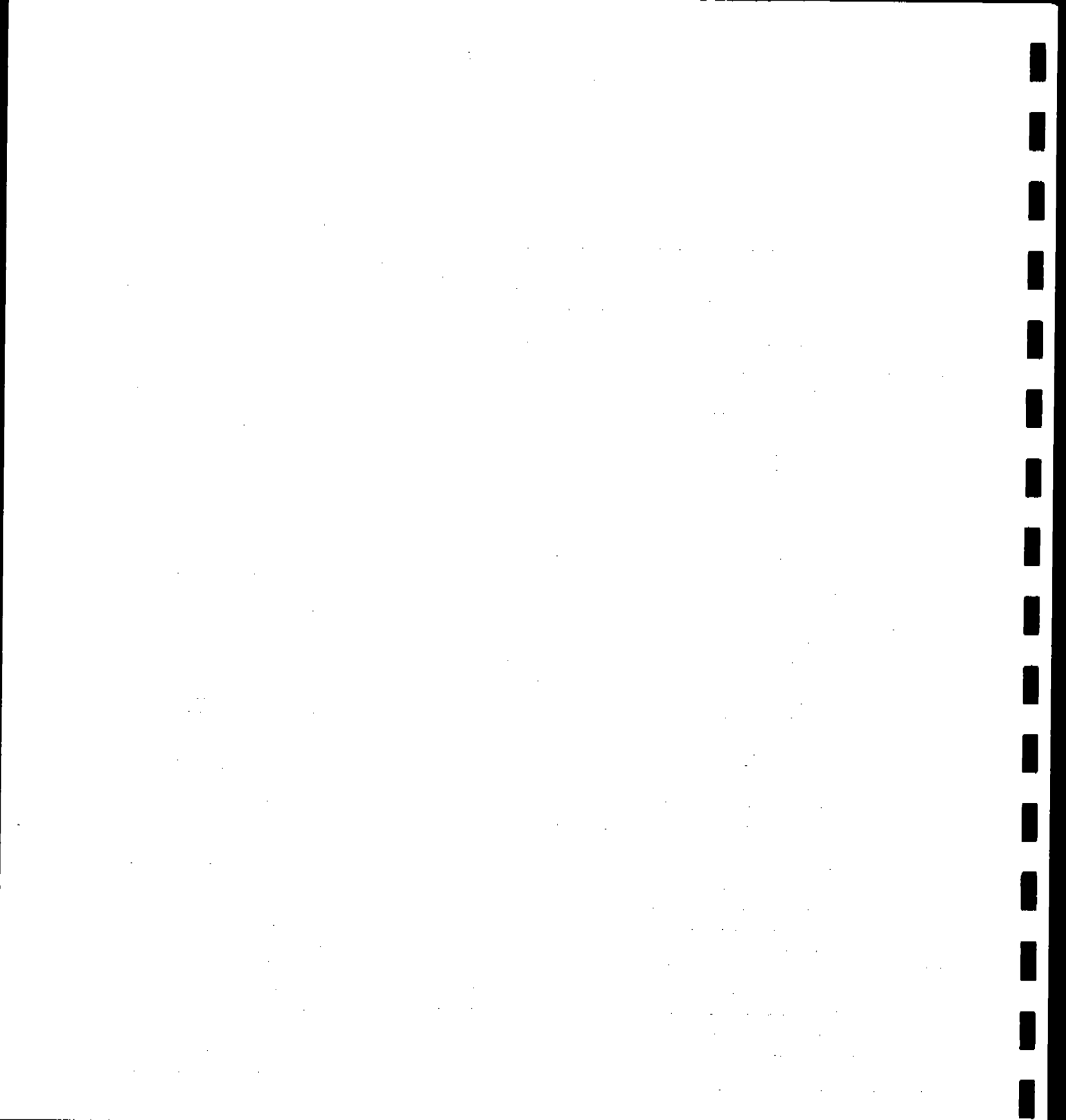
*Solvent Residue ug/ml = [(Sample Wt. 0.0003g) (10⁶)] / Vol. of Sol. 90 ml

EPA-M5 Acetone Residue Blank Spec. { 7.3 ug/ml

Results:

Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.0015	0.0011	D-26	0.0010		
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EPA Method 5 Data Reporting Sheet
Filter Gravimetrics
PM-10

Job LP/New Waverly, Tx Source #1 Dryer
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 3-30-92
Test No. 1 No. of Runs Completed 3
Date of Analysis 4-13-92 Technician C. Helgeson

0	Test <u>1</u> Run <u>0</u> Field Blank Log Number <u>5793-02</u> Comments _____	Filter No. <u>5730</u> Filter Type <u>2.5" GF</u> Filter Tare Wt. <u>.2714</u> g Filter+Sample Wt. <u>.2715</u> g Sample Wt. <u>0.0001</u> g
1	Test <u>1</u> Run <u>1</u> Log Number <u>-05</u> Comments _____	Filter No. <u>5724</u> Filter Type <u>2.5" GF</u> Filter Tare Wt. <u>.2683</u> g Filter+Sample Wt. <u>.3190</u> g Sample Wt. <u>0.0507</u> g
2	Test <u>1</u> Run <u>2</u> Log Number <u>-08</u> Comments _____	Filter No. <u>5725</u> Filter Type <u>2.5" GF</u> Filter Tare Wt. <u>.2717</u> g Filter+Sample Wt. <u>.3317</u> g Sample Wt. <u>0.0600</u> g
3	Test <u>1</u> Run <u>3</u> Log Number <u>-11</u> Comments _____	Filter No. <u>5726</u> Filter Type <u>2.5" GF</u> Filter Tare Wt. <u>.2708</u> g Filter+Sample Wt. <u>.3250</u> g Sample Wt. <u>0.0542</u> g
4	Test _____ Run _____ Log Number _____ Comments _____	Filter No. _____ Filter Type _____ Filter Tare Wt. _____ g Filter+Sample Wt. _____ g Sample Wt. _____ g
5	Test _____ Run _____ Log Number _____ Comments _____	Filter No. _____ Filter Type _____ Filter Tare Wt. _____ g Filter+Sample Wt. _____ g Sample Wt. _____ g

Results:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	0.0507	0.0600	0.0542		

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	0.0647	0.0726	0.0740		

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EPA Method 5 Data Reporting Sheet
Impinger Catch/Wisconsin Protocol

Job L.P. New Waverly Tx Source #2 Dryer
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 3-31-92
Test No. 5 No. of Runs Completed 3
Date of Analysis 4-27-92 Technician C. Helgeson

		Solvent Phase	Aqueous Phase
0	Test <u>Run 0</u> Field Blank Log Number Comments	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
1	Test <u>5</u> Run <u>1</u> Log Number <u>5793-30</u> Comments	Dish No. <u>3A</u> Dish Tare Wt. <u>57.8072</u> g Dish+Sample Wt. <u>57.8126</u> g Sample Wt. <u>0.0054</u> g	Dish No. <u>409</u> Dish Tare Wt. <u>46.1904</u> g Dish+Sample Wt. <u>46.1962</u> g Sample Wt. <u>0.0058</u> g
2	Test <u>5</u> Run <u>2</u> Log Number <u>-33</u> Comments	Dish No. <u>43</u> Dish Tare Wt. <u>46.5902</u> g Dish+Sample Wt. <u>46.5946</u> g Sample Wt. <u>0.0044</u> g	Dish No. <u>410</u> Dish Tare Wt. <u>50.5564</u> g Dish+Sample Wt. <u>50.5642</u> g Sample Wt. <u>0.0078</u> g
3	Test <u>5</u> Run <u>3</u> Log Number <u>-36</u> Comments	Dish No. <u>68</u> Dish Tare Wt. <u>48.0365</u> g Dish+Sample Wt. <u>48.0425</u> g Sample Wt. <u>0.0060</u> g	Dish No. <u>502</u> Dish Tare Wt. <u>46.9001</u> g Dish+Sample Wt. <u>46.9109</u> g Sample Wt. <u>0.0108</u> g
4	Test <u>Run</u> Log Number Comments	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
5	Test <u>Run</u> Log Number Comments	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g

Results Solvent Phase:

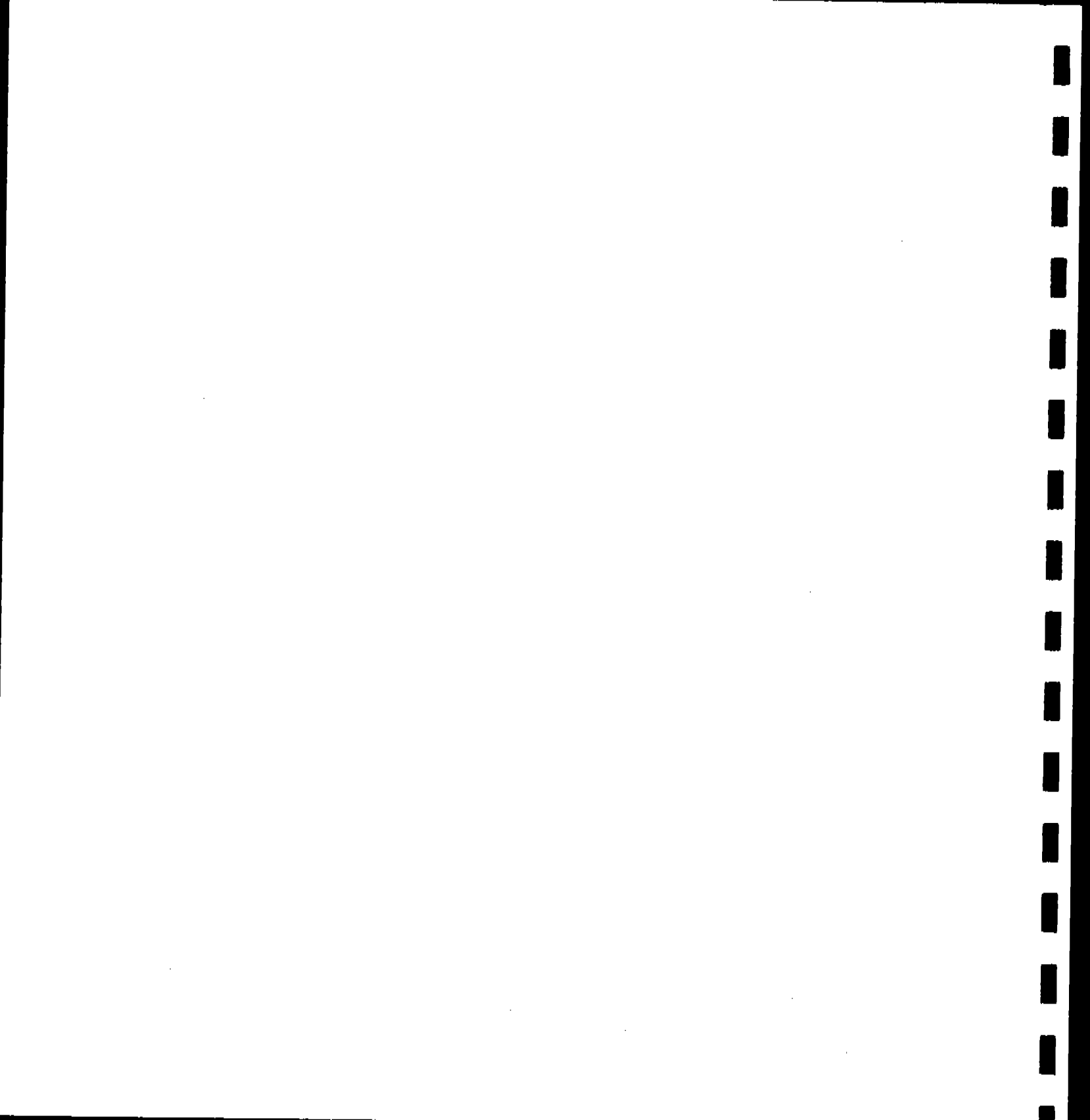
Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	<u>0.0050</u>	<u>0.0040</u>	<u>0.0056</u>		
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Results Aqueous Phase:

Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	<u>0.0054</u>	<u>0.0074</u>	<u>D-280.0104</u>		
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(612) 786-6020

EPA Method 5 Data Reporting Sheet
Probe/Cyclone Wash

Job LP/New Waverly Tx. Source #2 Dryer
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 3-31-92
Test No. 5 No. of Runs Completed 3
Date of Analysis 4-13-92 Technician C. Helgeson
Transport Leakage ☒ None ☐ ml Solvent Acetone

0	Test <u> </u> Run <u>0</u> Field Blank Log Number <u> </u> Vol. of Solvent <u> </u> ml *Solvent Residue <u>3.33</u> ug/ml	Dish No. <u> </u> Dish Tare Wt. <u> </u> g Dish+Sample Wt. <u> </u> g Sample Wt. <u> </u> g
1	Test <u>S</u> Run <u>1</u> Vol. of Solvent <u>40</u> ml Log Number <u>5793-28</u> Comments <u> </u>	Dish No. <u>501</u> Dish Tare Wt. <u>47.2488</u> g Dish+Sample Wt. <u>47.2514</u> g Sample Wt. <u>0.0026</u> g
2	Test <u>S</u> Run <u>2</u> Vol. of Solvent <u>40</u> ml Log Number <u>-31</u> Comments <u> </u>	Dish No. <u>517</u> Dish Tare Wt. <u>48.5938</u> g Dish+Sample Wt. <u>48.5960</u> g Sample Wt. <u>0.0022</u> g
3	Test <u>S</u> Run <u>3</u> Vol. of Solvent <u>40</u> ml Log Number <u>-34</u> Comments <u> </u>	Dish No. <u>522</u> Dish Tare Wt. <u>46.9998</u> g Dish+Sample Wt. <u>47.0012</u> g Sample Wt. <u>0.0014</u> g
4	Test <u> </u> Run <u> </u> Vol. of Solvent <u> </u> ml Log Number <u> </u> Comments <u> </u>	Dish No. <u> </u> Dish Tare Wt. <u> </u> g Dish+Sample Wt. <u> </u> g Sample Wt. <u> </u> g
5	Test <u> </u> Run <u> </u> Vol. of Solvent <u> </u> ml Log Number <u> </u> Comments <u> </u>	Dish No. <u> </u> Dish Tare Wt. <u> </u> g Dish+Sample Wt. <u> </u> g Sample Wt. <u> </u> g

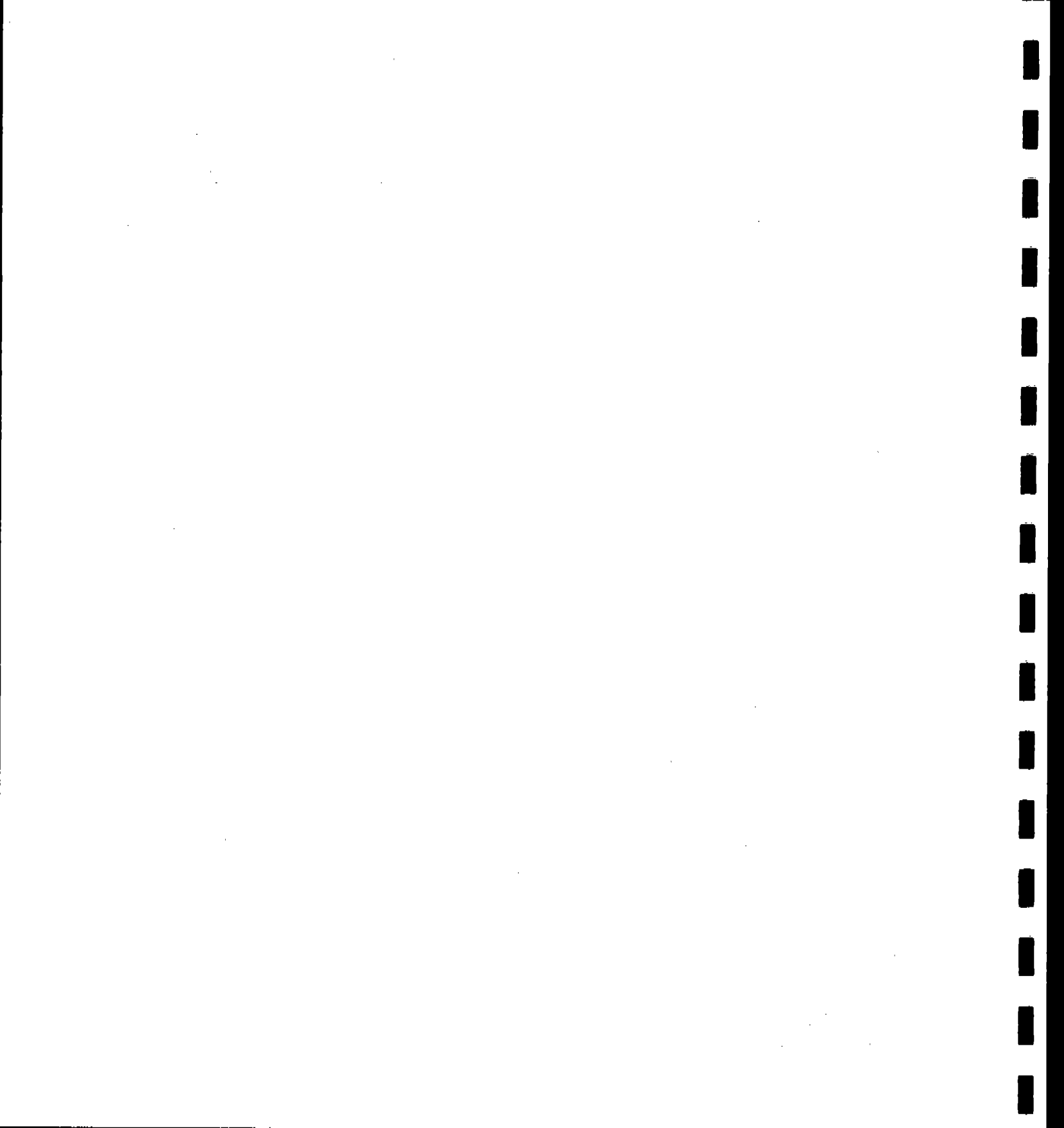
*Solvent Residue ug/ml = [(Sample Wt. g) (10⁶)] / Vol. of Sol. ml

EPA-M5 Acetone Residue Blank Spec. { 7.3 ug/ml

Results:

Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	<u>0.0025</u>	<u>0.0021</u>	<u>0.0013</u>		
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Interpoll Laboratories
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EPA Method 5 Data Reporting Sheet
Filter Gravimetrics
PM-10

Job LP/New Waverly, Tx. Source #2 Dryer
Team Leader DB Test Site Stack
Date Submitted 4-9-92 Date of Test 3-31-92
Test No. 5 No. of Runs Completed 3
Date of Analysis 4-13-92 Technician C. Helgeson

0	Test <u> </u> Run <u>0</u> Field Blank Log Number <u> </u> Comments <u> </u>	Filter No. <u> </u> Filter Type <u> </u> Filter Tare Wt. <u> </u> g Filter+Sample Wt. <u> </u> g Sample Wt. <u> </u> g
1	Test <u>5</u> Run <u>1</u> Log Number <u>5793-29</u> Comments <u> </u>	Filter No. <u>5727</u> Filter Type <u>2.5" 6F</u> Filter Tare Wt. <u>.2667</u> g Filter+Sample Wt. <u>.3076</u> g Sample Wt. <u>0.0409</u> g
2	Test <u>5</u> Run <u>2</u> - <u>32</u> Log Number <u> </u> Comments <u> </u>	Filter No. <u>5728</u> Filter Type <u>2.5" 6F</u> Filter Tare Wt. <u>.2704</u> g Filter+Sample Wt. <u>.3090</u> g Sample Wt. <u>0.0386</u> g
3	Test <u>5</u> Run <u>3</u> - <u>35</u> Log Number <u> </u> Comments <u> </u>	Filter No. <u>5729</u> Filter Type <u>2.5" 6F</u> Filter Tare Wt. <u>.2702</u> g Filter+Sample Wt. <u>.3141</u> g Sample Wt. <u>0.0439</u> g
4	Test <u> </u> Run <u> </u> Log Number <u> </u> Comments <u> </u>	Filter No. <u> </u> Filter Type <u> </u> Filter Tare Wt. <u> </u> g Filter+Sample Wt. <u> </u> g Sample Wt. <u> </u> g
5	Test <u> </u> Run <u> </u> Log Number <u> </u> Comments <u> </u>	Filter No. <u> </u> Filter Type <u> </u> Filter Tare Wt. <u> </u> g Filter+Sample Wt. <u> </u> g Sample Wt. <u> </u> g

Results:

Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.0409	0.0386	0.0439		
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Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.0538	0.0521	0.0612		
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LSC-02PR

EPA Method 10 NDIR Analysis

Job Name L.P. / New Waverly, Tx
Source 40.1 Dwyer / Stack
Date of Analysis 3.30.92
Technician Mark Gachler

NDIR Analyzer: ☒ Fugl ACS Model 3300
☐ Mon. Lab Model 8310
☐ Dasibi Model 3003
Range: 0 - 500 ppm
Flow rate: 1000 cc/min

Pretest Calibration				Post-test Calibration			
Conc.	Reading	Vendor	Cyl. Number	Conc.	Reading	Vendor	Cyl. Number
Zero gas: <u>0</u> ppm	<u>0</u> ppm	<u>Scot</u>	<u>K000472</u>	Zero gas: <u>0</u> ppm	<u>0</u> ppm	<u>Scot</u>	<u>K000472</u>
Upscale gas: <u>150</u> ppm	<u>142</u> ppm	<u>Scot</u>	<u>ALM 008528</u>	Upscale gas: <u>150</u> ppm	<u>147</u> ppm	<u>Scot</u>	<u>ALM 008528</u>
Upscale gas: <u>237</u> ppm	<u>240</u> ppm	<u>Linde</u>	<u>HA 8854</u>	Upscale gas: <u>237</u> ppm	<u>240</u> ppm	<u>Linde</u>	<u>HA 8854</u>
Upscale gas: <u> </u> ppm	<u> </u> ppm	<u> </u>	<u> </u>	Upscale gas: <u> </u> ppm	<u> </u> ppm	<u> </u>	<u> </u>

Sample Description Test/Run	Sample Log Number	CO Conc. (ppm, Dry)		
		Dilution Factor	Reading	Actual ppm
31		1	33	33
2/1		1	29	29
2/2		1	28	28
1/1		1	34	34
1/2		1	29	29
1/3		1	30	30

Sample Description Test/Run	Sample Log Number	CO Conc. (ppm, Dry)		
		Dilution Factor	Reading	Actual ppm
4/1		1	37	37
4/2		1	42	42
4/3		1	40	40

- Note 1: If sample dilution is required the sample is diluted with CO-free gas prior to analysis.
 Note 2: The Fugl ACS model 3300 has a rejection ratio for CO to CO₂ greater than 100,000: 1 and the Mon. Labs Model 8310 and Dasibi Model 3003 have rejection ratios greater than 200,000:1 and thus CO₂ removal prior to analysis is not required.
 Note 3: The analyzer must be zeroed and spanned immediately before and after sample analysis. Additional checks may be performed between sample analyses if required.

EPA Method 10 NDIR Analysis

Job Name L.P. / New Waverly, TX
Source Ab. 2 Dryer / S. Fach
Date of Analysis 3-31-92
Technician Mush Roehlen

NDIR Analyzer: ☒ Fugl ACS Model 3300
☐ Mon. Lab Model 8310
☐ Dasibi Model 3003
Range: 0 - 500 ppm
Flow rate: 1000 cc/min

Pretest Calibration

Conc. Reading Vendor Cyl. Number
Zero gas: 0 ppm Scott K000472
Upscale gas: 150 ppm Scott ALM 008828
Upscale gas: 237 ppm Linde HA 0854
Upscale gas: ppm

Post-test Calibration

Conc. Reading Vendor Cyl. Number
Zero gas: 0 ppm Scott K000472
Upscale gas: 150 ppm Scott ALM 008828
Upscale gas: 237 ppm Linde HA 0854
Upscale gas: ppm

Sample Description Test/Run	Sample Log Number	CO Conc. (ppm, Dry)		
		Dilution Factor	Reading	Actual ppm
1 0/1		1	44	44
2 6/2		1	41	41
3 6/3		1	41	41
5 5/1		1	36	36
5 5/2		1	45	45
5 5/3		1	45	45
9 9/1		1	48	48
9 9/2		1	45	45
9 9/3		1	50	50

Sample Description Test/Run	Sample Log Number	CO Conc. (ppm, Dry)		
		Dilution Factor	Reading	Actual ppm

- Note 1: If sample dilution is required the sample is diluted with CO-free gas prior to analysis.
Note 2: The Fugl ACS model 3300 has a rejection ratio for CO to CO₂ greater than 100,000: 1 and the Mon. Labs Model 8310 and Dasibi Model 3003 have rejection ratios greater than 200,000: 1 and thus CO₂ removal prior to analysis is not required.
Note 3: The analyzer must be zeroed and spanned immediately before and after sample analysis. Additional checks may be performed between sample analyses if required.

INTERPOLL LABORATORIES, INC.
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Louisiana Pacific/New Waverly, TX
Laboratory Log No. 5793

Results of Formaldehyde Analysis

Test: 2
Source: No. 1 Dryer Stack
Sample Type: Impinger Catch

Sample Log No.	Sample Description	Formaldehyde ^a
		Total ug
5793-13	Run 1	990
5793-14	Run 2	850
5793-15	Run 3	760

^aEPA Method 0011

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Louisiana Pacific/New Waverly, TX
Laboratory Log No. 5793

Results of Formaldehyde Analysis

Test: 6
Source: No. 2 Dryer Stack
Sample Type: Impinger Catch

Sample Log No.	Sample Description	Formaldehyde ^a
		Total ug
5793-38	Field Spike	580
5793-39	Run 1	1800
5793-40	Run 2	1900
5793-41	Run 3	1800

^aEPA Method 0011

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Louisiana Pacific/New Waverly, TX
Laboratory Log No. 5793

Results of Formaldehyde Analysis

Test: 10
Source: No. 2 Press Vent Stack
Sample Type: Impinger Catch

Sample Log No.	Sample Description	Formaldehyde ^a
		Total ug
5793-66	Run 1	740
5793-67	Run 2	730
5793-68	Run 3	110

^aEPA Method 0011

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Louisiana Pacific/New Waverly, TX
Laboratory Log No. 5793

Results of Formaldehyde Analysis

Test: 13
Source: No. 2 Press Vent Stack
Sample Type: Impinger Catch

Sample Log No.	Sample Description	Formaldehyde ^a
		Total ug
5793-78	Run 1	2200
5793-79	Run 2	2000
5793-80	Run 3	4100

^aEPA Method 0011

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Louisiana Pacific/New Waverly, TX
Laboratory Log No. 5793

Results of Formaldehyde Analysis

Test: 16
Source: No. 3 Press Vent Stack
Sample Type: Impinger Catch

Sample Log No.	Sample Description	Formaldehyde ^a
		Total ug
5793-90	Field Spike	690
5793-91	Run 1	1000
5793-92	Run 2	1300
5793-93	Run 3	940

^aEPA Method 0011

INTERPOLL LABORATORIES, INC.
(612)786-6020

Louisiana Pacific/New Waverly, TX
Laboratory Log No. 5793

Results of Formaldehyde Analysis

Test: 19
Source: No. 4 Forming Line Vent
Sample Type: Impinger Catch

Sample Log No.	Sample Description	Formaldehyde ^a
		Total ug
5793-103	Run 1	100
5793-104	Run 2	100
5793-105	Run 3	100

^aEPA Method 0011

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Chain of Custody
Sample Deposition Sheet

Job NEW LP / WABERY Source NO. 1 DRYER
Team Leader M. KESLER Test Site LOWDOWN STACK
Date Submitted _____ Date of Test 3/30/92
Test No. 1 No. of Runs Completed 3

No. of Samples	Type of Sample	Analysis Required	Comments
3 + BLANK	Probe Wash: ☒ Acetone ☐ D.I. Water	☐ As per EPA M-5 ☒ Other <u>PM-10</u>	
3 + BLANK	Filter: ☐ 4" G.F. ☐ S.S. Thimble ☒ 2.5" G.F. ☐ 47 mm G.F.	☐ As per EPA M-5 ☐ As per EPA M-17 ☒ Other <u>PM-10</u>	
3 + BLANK	Impinger Catch: ☒ D.I. Water ☐ 3% H ₂ O ₂ ☐ 4MS Hg Only ☐ 4MS Metals ☐ 1.0 N NaOH ☐ Other _____	☐ MN Protocol ☐ WI Protocol ☐ EPA M-6 or 8 ☐ Acid Gases ☐ Formaldehyde ☐ Metals ☒ Other <u>PM-10</u>	
/	Integrated Gas sample	☐ As per EPA M-3 ☐ As per EPA M-10 ☐ Other _____	
/	Oxides of Nitrogen (NO _x)	☐ As per EPA M-7A ☐ Other _____	Date _____ Time (HRS) _____
/	☐ Fuel Sample ☐ Aggregate	☐ Attached fuel Form #S-0163RRR	
/	Particle Size	☐ X-Ray Sedigraph ☐ Bahco Method ☐ Other _____	
/	Audit Samples ☐ Sulfur Dioxide ☐ Oxides of Nit. ☐ Other _____	☐ As per EPA M-6 ☐ As per EPA M-7A ☐ Other _____	

Source Information

- 1) Type of Source: ☐ Boiler ☐ Asphalt Plant ☐ Incinerator ☒ Dryer
☐ Other _____
- 2) Fuel: ☐ Coal ☒ Wood ☐ Gas ☐ Oil ☐ RDF ☐ Other _____
- 3) Is sample combustible? ☒ No ☐ Yes
- 4) Does sample need special handling? ☒ No ☐ Yes If yes, explain _____

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Chain of Custody
Sample Deposition Sheet

Job L.P. / New Waverly, TX Source No. 1 Dryer
Team Leader M. Knebler Test Site Stack
Date Submitted _____ Date of Test 3-30-92
Test No. 2 No. of Runs Completed 3

No. of Samples	Type of Sample	Analysis Required	Comments
✓	Probe Wash: ☐ Acetone ☐ D.I. Water	☐ As per EPA M-5 ☐ Other _____	_____
—	Filter: ☐ 4" G.F. ☐ S.S. Thimble ☐ 2.5" G.F. ☐ 47 mm G.F.	☐ As per EPA M-5 ☐ As per EPA M-17 ☐ Other _____	_____
3	Impinger Catch: ☐ D.I. Water ☐ 3% H ₂ O ₂ ☐ 4MS Hg Only ☐ 4MS Metals ☐ 1.0 N NaOH ☒ Other <u>2-4 DNPH</u>	☐ MN Protocol ☐ WI Protocol ☐ EPA M-6 or 8 ☐ Acid Gases ☒ Formaldehyde ☐ Metals ☐ Other _____	_____
3	Integrated Gas sample	☒ As per EPA M-3 ☒ As per EPA M-10 ☐ Other _____	_____
✓	Oxides of Nitrogen (NO _x)	☐ As per EPA M-7A ☐ Other _____	Date _____ Time (HRS) _____
—	☐ Fuel Sample ☐ Aggregate	☐ Attached fuel Form #S-0163RRR	_____
✓	Particle Size	☐ X-Ray Sedigraph ☐ Bahco Method ☐ Other _____	_____
✓	Audit Samples ☐ Sulfur Dioxide ☐ Oxides of Nit. ☐ Other _____	☐ As per EPA M-6 ☐ As per EPA M-7A ☐ Other _____	_____

Source Information

- 1) Type of Source: ☐ Boiler ☐ Asphalt Plant ☐ Incinerator ☒ Dryer
☐ Other _____
- 2) Fuel: ☐ Coal ☒ Wood ☐ Gas ☐ Oil ☐ RDF ☐ Other _____
- 3) Is sample combustible? ☒ No ☐ Yes
- 4) Does sample need special handling? ☒ No ☐ Yes If yes, explain _____

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Chain of Custody
Sample Deposition Sheet

Job LP1 NEW WAVELEY, TX. Source NO. 1 DRYER
 Team Leader M. KEBLER Test Site STACIL
 Date Submitted _____ Date of Test 3/30/92
 Test No. 41 No. of Runs Completed 3

No. of Samples	Type of Sample	Analysis Required	Comments
3	Probe Wash: ☒ Acetone ☐ D.I. Water	☒ As per EPA M-5 ☐ Other _____	
3	Filter: ☒ 4" G.F. ☐ S.S. Thimble ☐ 2.5" G.F. ☐ 47 mm G.F.	☒ As per EPA M-5 ☐ As per EPA M-17 ☐ Other _____	
3	Impinger Catch: ☒ D.I. Water ☐ 3% H ₂ O ₂ ☐ 4M5 Hg Only ☐ 4M5 Metals ☐ 1.0 N NaOH ☐ Other _____	☐ MN Protocol ☐ WI Protocol ☐ EPA M-6 or 8 ☐ Acid Gases ☐ Formaldehyde ☐ Metals ☒ Other <u>METHOD 202</u>	<u>IMPINGERS RINSED</u> <u>WITH D.I. H₂O</u> <u>& MCL₂ BND</u> <u>ADDED TO BULK</u> <u>HALE.</u>
/	Integrated Gas sample	☐ As per EPA M-3 ☐ As per EPA M-10 ☐ Other _____	
/	Oxides of Nitrogen (NO _x)	☐ As per EPA M-7A ☐ Other _____	Date _____ Time (HRS) _____
/	☐ Fuel Sample ☐ Aggregate	☐ Attached fuel Form #S-0163RRR	
/	Particle Size	☐ X-Ray Sedigraph ☐ Bahco Method ☐ Other _____	
/	Audit Samples ☐ Sulfur Dioxide ☐ Oxides of Nit. ☐ Other _____	☐ As per EPA M-6 ☐ As per EPA M-7A ☐ Other _____	

Source Information

- 1) Type of Source: ☐ Boiler ☐ Asphalt Plant ☐ Incinerator ☒ Dryer
☐ Other _____
- 2) Fuel: ☐ Coal ☒ Wood ☐ Gas ☐ Oil ☐ RDF ☐ Other _____
- 3) Is sample combustible? ☒ No ☐ Yes
- 4) Does sample need special handling? ☒ No ☐ Yes If yes, explain _____

S-278RRRR

Interpoll Laboratories
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Chain of Custody
Sample Deposition Sheet

Job LP / NEW WAYSLEY, TX. Source NO. 2 DRYER
Team Leader M. KAEHLER Test Site STH/LK
Date Submitted _____ Date of Test 3/3/92
Test No. 5 No. of Runs Completed 3

No. of Samples	Type of Sample	Analysis Required	Comments
3	Probe Wash: ☒ Acetone ☐ D.I. Water	☐ As per EPA M-5 ☒ Other <u>PM-10</u>	
3	Filter: ☐ 4" G.F. ☐ S.S. Thimble ☒ 2.5" G.F. ☐ 47 mm G.F.	☐ As per EPA M-5 ☐ As per EPA M-17 ☒ Other <u>PM-10</u>	
3	Impinger Catch: ☒ D.I. Water ☐ 3% H ₂ O ₂ ☐ 4MS Hg Only ☐ 4MS Metals ☐ 1.0 N NaOH ☐ Other _____	☐ MN Protocol ☐ WI Protocol ☐ EPA M-6 or 8 ☐ Acid Gases ☐ Formaldehyde ☐ Metals ☒ Other <u>PM-10</u>	
/	Integrated Gas sample	☐ As per EPA M-3 ☐ As per EPA M-10 ☐ Other _____	
/	Oxides of Nitrogen (NO _x)	☐ As per EPA M-7A ☐ Other _____	Date _____ Time (HRS) _____
/	☐ Fuel Sample ☐ Aggregate	☐ Attached fuel Form #S-0163RRR	
/	Particle Size	☐ X-Ray Sedigraph ☐ Bahco Method ☐ Other _____	
/	Audit Samples ☐ Sulfur Dioxide ☐ Oxides of Nit. ☐ Other _____	☐ As per EPA M-6 ☐ As per EPA M-7A ☐ Other _____	

Source Information

- 1) Type of Source: ☐ Boiler ☐ Asphalt Plant ☐ Incinerator ☒ Dryer
☐ Other _____
- 2) Fuel: ☐ Coal ☒ Wood ☐ Gas ☐ Oil ☐ RDF ☐ Other _____
- 3) Is sample combustibile? ☒ No ☐ Yes
- 4) Does sample need special handling? ☒ No ☐ Yes If yes, explain _____

S-278RRRR

Interpoll Laboratories
(612) 786-6020

Chain of Custody
Sample Deposition Sheet

Job A.P. / New Waverly, TX
Team Leader M. Kaehler
Date Submitted
Test No. 6

Source Ab 2 Dryer
Test Site Stack
Date of Test 3-31-92
No. of Runs Completed 3

No. of Samples	Type of Sample	Analysis Required	Comments
—	Probe Wash: ☐ Acetone ☐ D.I. Water	☐ As per EPA M-5 ☐ Other _____	_____
—	Filter: ☐ 4" G.F. ☐ S.S. Thimble ☐ 2.5" G.F. ☐ 47 mm G.F.	☐ As per EPA M-5 ☐ As per EPA M-17 ☐ Other _____	_____
34141	Impinger Catch: ☐ D.I. Water ☐ 3% H ₂ O ₂ ☐ 4M5 Hg Only ☐ 4M5 Metals ☐ 1.0 N NaOH ☒ Other <u>2-4 DAPH</u>	☐ MN Protocol ☐ WI Protocol ☐ EPA M-6 or 8 ☐ Acid Gases ☒ Formaldehyde ☐ Metals ☐ Other _____	_____
3	Integrated Gas sample	☒ As per EPA M-3 ☒ As per EPA M-10 ☐ Other _____	_____
—	Oxides of Nitrogen (NO _x)	☐ As per EPA M-7A ☐ Other _____	Date _____ Time (HRS) _____
—	☐ Fuel Sample ☐ Aggregate	☐ Attached fuel Form #S-0163RRR	_____
—	Particle Size	☐ X-Ray Sedigraph ☐ Bahco Method ☐ Other _____	_____
—	Audit Samples ☐ Sulfur Dioxide ☐ Oxides of Nit. ☐ Other _____	☐ As per EPA M-6 ☐ As per EPA M-7A ☐ Other _____	_____

Source Information

- 1) Type of Source: ☐ Boiler ☐ Asphalt Plant ☐ Incinerator ☒ Dryer
☐ Other _____
- 2) Fuel: ☐ Coal ☒ Wood ☐ Gas ☐ Oil ☐ RDF ☐ Other _____
- 3) Is sample combustible? ☒ No ☐ Yes
- 4) Does sample need special handling? ☒ No ☐ Yes If yes, explain _____

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Chain of Custody
Sample Deposition Sheet

Job L.P. / NEW WAVERLY, TX. Source NO. 2 DRYER
Team Leader M. KAEHLER Test Site STACK
Date Submitted _____ Date of Test 3/31/92
Test No. 8 No. of Runs Completed 3

No. of Samples	Type of Sample	Analysis Required	Comments
3	Probe Wash: ☒ Acetone ☐ D.I. Water	☒ As per EPA M-5 ☐ Other _____	
3	Filter: ☒ 4" G.F. ☐ S.S. Thimble ☐ 2.5" G.F. ☐ 47 mm G.F.	☒ As per EPA M-5 ☐ As per EPA M-17 ☐ Other _____	
3	Impinger Catch: ☒ D.I. Water ☐ 3% H ₂ O ₂ ☐ 4MS Hg Only ☐ 4MS Metals ☐ 1.0 N NaOH ☐ Other _____	☐ MN Protocol ☐ WI Protocol ☐ EPA M-6 or 8 ☐ Acid Gases ☐ Formaldehyde ☐ Metals ☒ Other <u>METHOD 202</u>	<u>Impingers RINSED WITH D.I. H₂O & MSGL, AND RINSED TO BACK HALF.</u>
/	Integrated Gas sample	☐ As per EPA M-3 ☐ As per EPA M-10 ☐ Other _____	
/	Oxides of Nitrogen (NO _x)	☐ As per EPA M-7A ☐ Other _____	Date _____ Time (HRS) _____
/	☐ Fuel Sample ☐ Aggregate	☐ Attached fuel Form #S-0163RRR	
/	Particle Size	☐ X-Ray Sedigraph ☐ Bahco Method ☐ Other _____	
/	Audit Samples ☐ Sulfur Dioxide ☐ Oxides of Nit. ☐ Other _____	☐ As per EPA M-6 ☐ As per EPA M-7A ☐ Other _____	

Source Information

- 1) Type of Source: ☐ Boiler ☐ Asphalt Plant ☐ Incinerator ☒ Dryer
☐ Other _____
- 2) Fuel: ☐ Coal ☒ Wood ☐ Gas ☐ Oil ☐ RDF ☐ Other _____
- 3) Is sample combustible? ☒ No ☐ Yes
- 4) Does sample need special handling? ☒ No ☐ Yes If yes, explain _____

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Chain of Custody
Sample Deposition Sheet

Job L.P. / NEW ADVISORY, TX. Source NO. 1 PRESS VENT
 Team Leader M. KESHER Test Site STACK
 Date Submitted _____ Date of Test 7/1/92
 Test No. 9 No. of Runs Completed 3

No. of Samples	Type of Sample	Analysis Required	Comments
<u>3</u> <u>+ BLANK</u>	Probe Wash: ☒ Acetone ☐ D.I. Water	☒ As per EPA M-5 ☐ Other _____	
<u>3</u> <u>BLANK</u>	Filter: ☒ 4" G.F. ☐ S.S. Thimble ☐ 2.5" G.F. ☐ 47 mm G.F.	☒ As per EPA M-5 ☐ As per EPA M-17 ☐ Other _____	
<u>3</u> <u>+ BLANK</u>	Impinger Catch: ☒ D.I. Water ☐ 3% H ₂ O ₂ ☐ 4M5 Hg Only ☐ 4M5 Metals ☐ 1.0 N NaOH ☐ Other _____	☐ MN Protocol ☐ WI Protocol ☐ EPA M-6 or 8 ☐ Acid Gases ☐ Formaldehyde ☐ Metals ☒ Other <u>METHOD 202</u>	<u>IMPINGERS RINSED WITH D.I. H₂O + H₂CL₂ AND 00030 TO BALIL HOLF.</u>
<u>/</u>	Integrated Gas sample	☐ As per EPA M-3 ☐ As per EPA M-10 ☐ Other _____	
<u>/</u>	Oxides of Nitrogen (NO _x)	☐ As per EPA M-7A ☐ Other _____	Date _____ Time (HRS) _____
<u>/</u>	☐ Fuel Sample ☐ Aggregate	☐ Attached fuel Form #S-0163RRR	
<u>/</u>	Particle Size	☐ X-Ray Sedigraph ☐ Bahco Method ☐ Other _____	
<u>/</u>	Audit Samples ☐ Sulfur Dioxide ☐ Oxides of Nit. ☐ Other _____	☐ As per EPA M-6 ☐ As per EPA M-7A ☐ Other _____	

Source Information

- 1) Type of Source: ☐ Boiler ☐ Asphalt Plant ☐ Incinerator ☐ Dryer
☒ Other PRESS VENT FAN
- 2) Fuel: ☐ Coal ☐ Wood ☐ Gas ☐ Oil ☐ RDF ☐ Other N/A
- 3) Is sample combustible? ☒ No ☐ Yes
- 4) Does sample need special handling? ☒ No ☐ Yes If yes, explain _____

S-278RRRR

Interpoll Laboratories
(612) 786-6020

Chain of Custody
Sample Deposition Sheet

Job L.P. / New Waverly, TX Source No. 1 Press Vent
Team Leader M. Kaehler Test Site Stack
Date Submitted _____ Date of Test 4-1-92
Test No. 10 No. of Runs Completed 3

No. of Samples	Type of Sample	Analysis Required	Comments
—	Probe Wash: ☐ Acetone ☐ D.I. Water	☐ As per EPA M-5 ☐ Other _____	
—	Filter: ☐ 4" G.F. ☐ S.S. Thimble ☐ 2.5" G.F. ☐ 47 mm G.F.	☐ As per EPA M-5 ☐ As per EPA M-17 ☐ Other _____	
3	Impinger Catch: ☐ D.I. Water ☐ 3% H ₂ O ₂ ☐ 4MS Hg Only ☐ 4MS Metals ☐ 1.0 N NaOH ☒ Other <u>2-4 DAPH</u>	☐ MN Protocol ☐ WI Protocol ☐ EPA M-6 or 8 ☐ Acid Gases ☒ Formaldehyde ☐ Metals ☐ Other _____	
—	Integrated Gas sample	☐ As per EPA M-3 ☐ As per EPA M-10 ☐ Other _____	<u>Ambient Air</u>
—	Oxides of Nitrogen (NO _x)	☐ As per EPA M-7A ☐ Other _____	Date _____ Time (HRS) _____
—	☐ Fuel Sample ☐ Aggregate	☐ Attached fuel Form #S-0163RRR	
—	Particle Size	☐ X-Ray Sedigraph ☐ Bahco Method ☐ Other _____	
—	Audit Samples ☐ Sulfur Dioxide ☐ Oxides of Nit. ☐ Other _____	☐ As per EPA M-6 ☐ As per EPA M-7A ☐ Other _____	

Source Information

- 1) Type of Source: ☐ Boiler ☐ Asphalt Plant ☐ Incinerator ☐ Dryer
☒ Other Press
- 2) Fuel: ☐ Coal ☐ Wood ☐ Gas ☐ Oil ☐ RDF ☒ Other LA
- 3) Is sample combustible? ☒ No ☐ Yes
- 4) Does sample need special handling? ☒ No ☐ Yes If yes, explain _____

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Chain of Custody
Sample Deposition Sheet

Job L.P. NEW Waverly, Tx.
Team Leader M. KEBELER
Date Submitted _____
Test No. 12

Source No. 2 PRESS VENT
Test Site STOCK
Date of Test 4/1/92
No. of Runs Completed 3

No. of Samples	Type of Sample	Analysis Required	Comments
3	Probe Wash: ☒ Acetone ☐ D.I. Water	☒ As per EPA M-5 ☐ Other _____	
3	Filter: ☒ 4" G.F. ☐ S.S. Thimble ☐ 2.5" G.F. ☐ 47 mm G.F.	☒ As per EPA M-5 ☐ As per EPA M-17 ☐ Other _____	
3	Impinger Catch: ☒ D.I. Water ☐ 3% H ₂ O ₂ ☐ 4M5 Hg Only ☐ 4M5 Metals ☐ 1.0 N NaOH ☐ Other _____	☐ MN Protocol ☐ WI Protocol ☐ EPA M-6 or 8 ☐ Acid Gases ☐ Formaldehyde ☐ Metals ☒ Other <u>METHOD 202</u>	<u>IMPINGERS RINSED WITH D.I. H₂O & msc/2</u> <u>& ADDED TO BACK-HOLE</u>
/	Integrated Gas sample	☐ As per EPA M-3 ☐ As per EPA M-10 ☐ Other _____	<u>AMBIENT AIR</u>
/	Oxides of Nitrogen (NO _x)	☐ As per EPA M-7A ☐ Other _____	Date _____ Time (HRS) _____
/	☐ Fuel Sample ☐ Aggregate	☐ Attached fuel Form #S-0163RRR	
/	Particle Size	☐ X-Ray Sedigraph ☐ Bahco Method ☐ Other _____	
/	Audit Samples ☐ Sulfur Dioxide ☐ Oxides of Nit. ☐ Other _____	☐ As per EPA M-6 ☐ As per EPA M-7A ☐ Other _____	

Source Information

- 1) Type of Source: ☐ Boiler ☐ Asphalt Plant ☐ Incinerator ☐ Dryer
☒ Other PRESS VENT
- 2) Fuel: ☐ Coal ☐ Wood ☐ Gas ☐ Oil ☐ RDF ☐ Other N/A
- 3) Is sample combustible? ☐ No ☐ Yes
- 4) Does sample need special handling? ☐ No ☐ Yes If yes, explain

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Chain of Custody
Sample Deposition Sheet

Job L.P. / New Waverly, TX Source No. 2 Press Vent
Team Leader M. Koehler Test Site Stack
Date Submitted _____ Date of Test 4-1-92
Test No. 13 No. of Runs Completed 3

No. of Samples	Type of Sample	Analysis Required	Comments
—	Probe Wash: ☐ Acetone ☐ D.I. Water	☐ As per EPA M-5 ☐ Other _____	
—	Filter: ☐ 4" G.F. ☐ S.S. Thimble ☐ 2.5" G.F. ☐ 47 mm G.F.	☐ As per EPA M-5 ☐ As per EPA M-17 ☐ Other _____	
3	Impinger Catch: ☐ D.I. Water ☐ 3% H ₂ O ₂ ☐ 4M5 Hg Only ☐ 4M5 Metals ☐ 1.0 N NaOH ☐ Other <u>2-4 DNPH</u>	☐ MN Protocol ☐ WI Protocol ☐ EPA M-6 or 8 ☐ Acid Gases ☒ Formaldehyde ☐ Metals ☐ Other _____	
—	Integrated Gas sample	☐ As per EPA M-3 ☐ As per EPA M-10 ☐ Other _____	<u>Ambient</u>
—	Oxides of Nitrogen (NO _x)	☐ As per EPA M-7A ☐ Other _____	Date _____ Time (HRS) _____
—	☐ Fuel Sample ☐ Aggregate	☐ Attached fuel Form #S-0163RRR	
—	Particle Size	☐ X-Ray Sedigraph ☐ Bahco Method ☐ Other _____	
—	Audit Samples ☐ Sulfur Dioxide ☐ Oxides of Nit. ☐ Other _____	☐ As per EPA M-6 ☐ As per EPA M-7A ☐ Other _____	

Source Information

- 1) Type of Source: ☐ Boiler ☐ Asphalt Plant ☐ Incinerator ☐ Dryer
☒ Other Press
- 2) Fuel: ☐ Coal ☐ Wood ☐ Gas ☐ Oil ☐ RDF ☒ Other NA
- 3) Is sample combustible? ☒ No ☐ Yes
- 4) Does sample need special handling? ☒ No ☐ Yes If yes, explain _____

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Chain of Custody
Sample Deposition Sheet

Job L.P. / NEW WARELY, TX Source NO. 3 PRESS VENT
Team Leader M. KOEHLER Test Site STOCK
Date Submitted _____ Date of Test 4/12/92
Test No. 15 No. of Runs Completed 3

No. of Samples	Type of Sample	Analysis Required	Comments
3	Probe Wash: ☒ Acetone ☐ D.I. Water	☒ As per EPA M-5 ☐ Other _____	
3	Filter: ☒ 4" G.F. ☐ S.S. Thimble ☐ 2.5" G.F. ☐ 47 mm G.F.	☒ As per EPA M-5 ☐ As per EPA M-17 ☐ Other _____	
3	Impinger Catch: ☒ D.I. Water ☐ 3% H ₂ O ₂ ☐ 4MS Hg Only ☐ 4MS Metals ☐ 1.0 N NaOH ☐ Other _____	☐ MN Protocol ☐ WI Protocol ☐ EPA M-6 or 8 ☐ Acid Gases ☐ Formaldehyde ☐ Metals ☒ Other <u>METHOD 202</u>	<u>IMPINGERS RINSED</u> <u>WITH D.I. H₂O</u> <u>+ M.L.B. AND</u> <u>ADDED TO BACK</u> <u>HOLE.</u>
AMBIENT	Integrated Gas sample	☐ As per EPA M-3 ☐ As per EPA M-10 ☐ Other _____	
/	Oxides of Nitrogen (NO _x)	☐ As per EPA M-7A ☐ Other _____	Date _____ Time (HRS) _____
/	☐ Fuel Sample ☐ Aggregate	☐ Attached fuel Form #S-0163RRR	
/	Particle Size	☐ X-Ray Sedigraph ☐ Bahco Method ☐ Other _____	
/	Audit Samples ☐ Sulfur Dioxide ☐ Oxides of Nit. ☐ Other _____	☐ As per EPA M-6 ☐ As per EPA M-7A ☐ Other _____	

Source Information

- 1) Type of Source: ☐ Boiler ☐ Asphalt Plant ☐ Incinerator ☐ Dryer
☒ Other PRESS VENT
- 2) Fuel: ☐ Coal ☐ Wood ☐ Gas ☐ Oil ☐ RDF ☐ Other N/A
- 3) Is sample combustible? ☒ No ☐ Yes
- 4) Does sample need special handling? ☒ No ☐ Yes If yes, explain _____

S-279RRRR

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Chain of Custody
Sample Deposition Sheet

Job L.P. / New Haven, CT Source No. 3 Pass Vent
Team Leader M. Kaehler Test Site Stack
Date Submitted _____ Date of Test 4-2-42
Test No. 16 No. of Runs Completed 3

No. of Samples	Type of Sample	Analysis Required	Comments
—	Probe Wash: ☐ Acetone ☐ D.I. Water	☐ As per EPA M-5 ☐ Other _____	
—	Filter: ☐ 4" G.F. ☐ S.S. Thimble ☐ 2.5" G.F. ☐ 47 mm G.F.	☐ As per EPA M-5 ☐ As per EPA M-17 ☐ Other _____	
3+141	Impinger Catch: ☐ D.I. Water ☐ 3% H ₂ O ₂ ☐ 4M5 Hg Only ☐ 4M5 Metals ☐ 1.0 N NaOH ☒ Other <u>2+4 DAPI</u>	☐ MN Protocol ☐ WI Protocol ☐ EPA M-6 or 8 ☐ Acid Gases ☒ Formaldehyde ☒ Metals ☐ Other _____	
—	Integrated Gas sample	☐ As per EPA M-3 ☐ As per EPA M-10 ☐ Other _____	<u>Ambient</u>
—	Oxides of Nitrogen (NO _x)	☐ As per EPA M-7A ☐ Other _____	Date _____ Time (HRS) _____
—	☐ Fuel Sample ☐ Aggregate	☐ Attached fuel Form #S-0163RRR	
—	Particle Size	☐ X-Ray Sedigraph ☐ Bahco Method ☐ Other _____	
—	Audit Samples ☐ Sulfur Dioxide ☐ Oxides of Nit. ☐ Other _____	☐ As per EPA M-6 ☐ As per EPA M-7A ☐ Other _____	

Source Information

- 1) Type of Source: ☐ Boiler ☐ Asphalt Plant ☐ Incinerator ☐ Dryer
☒ Other Blow Press
- 2) Fuel: ☐ Coal ☐ Wood ☐ Gas ☐ Oil ☐ RDF ☒ Other NA
- 3) Is sample combustible? ☒ No ☐ Yes
- 4) Does sample need special handling? ☒ No ☐ Yes If yes, explain _____

S-278RRRR

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(612) 786-6020

Chain of Custody
Sample Deposition Sheet

Job L.P. NEW WABERLY TX.
Team Leader M. K. DEWIL
Date Submitted _____
Test No. 18

Source No. 4 FARMING LINE VENT
Test Site STBUL
Date of Test 7/2/92
No. of Runs Completed 3

No. of Samples	Type of Sample	Analysis Required	Comments
3	Probe Wash: ☒ Acetone ☐ D.I. Water	☒ As per EPA M-5 ☐ Other _____	
3	Filter: ☒ 4" G.F. ☐ S.S. Thimble ☐ 2.5" G.F. ☐ 47 mm G.F.	☒ As per EPA M-5 ☐ As per EPA M-17 ☐ Other _____	
3	Impinger Catch: ☒ D.I. Water ☐ 3% H ₂ O ₂ ☐ 4M5 Hg Only ☐ 4M5 Metals ☐ 1.0 N NaOH ☐ Other _____	☐ MN Protocol ☐ WI Protocol ☐ EPA M-6 or 8 ☐ Acid Gases ☐ Formaldehyde ☐ Metals ☒ Other <u>METHOD 202</u>	<u>IMPINGERS RINSED</u> <u>WITH D.I. H₂O</u> <u>+ M₂Cl₂ AND</u> <u>ADDED TO BULK</u> <u>HALE</u>
<u>2</u> <u>AMBIENT</u>	Integrated Gas sample	☐ As per EPA M-3 ☐ As per EPA M-10 ☐ Other _____	
<u>/</u>	Oxides of Nitrogen (NO _x)	☐ As per EPA M-7A ☐ Other _____	Date _____ Time (HRS) _____
<u>/</u>	☐ Fuel Sample ☐ Aggregate	☐ Attached fuel Form #S-0163RRR	
<u>/</u>	Particle Size	☐ X-Ray Sedigraph ☐ Bahco Method ☐ Other _____	
<u>/</u>	Audit Samples ☐ Sulfur Dioxide ☐ Oxides of Nit. ☐ Other _____	☐ As per EPA M-6 ☐ As per EPA M-7A ☐ Other _____	

Source Information

- 1) Type of Source: ☐ Boiler ☐ Asphalt Plant ☐ Incinerator ☐ Dryer
☒ Other FARMING LINE VENT
- 2) Fuel: ☐ Coal ☐ Wood ☐ Gas ☐ Oil ☐ RDF ☐ Other N/A
- 3) Is sample combustible? ☒ No ☐ Yes
- 4) Does sample need special handling? ☒ No ☐ Yes If yes, explain _____

S-278RRRR

Interpoll Laboratories
(612) 786-6020

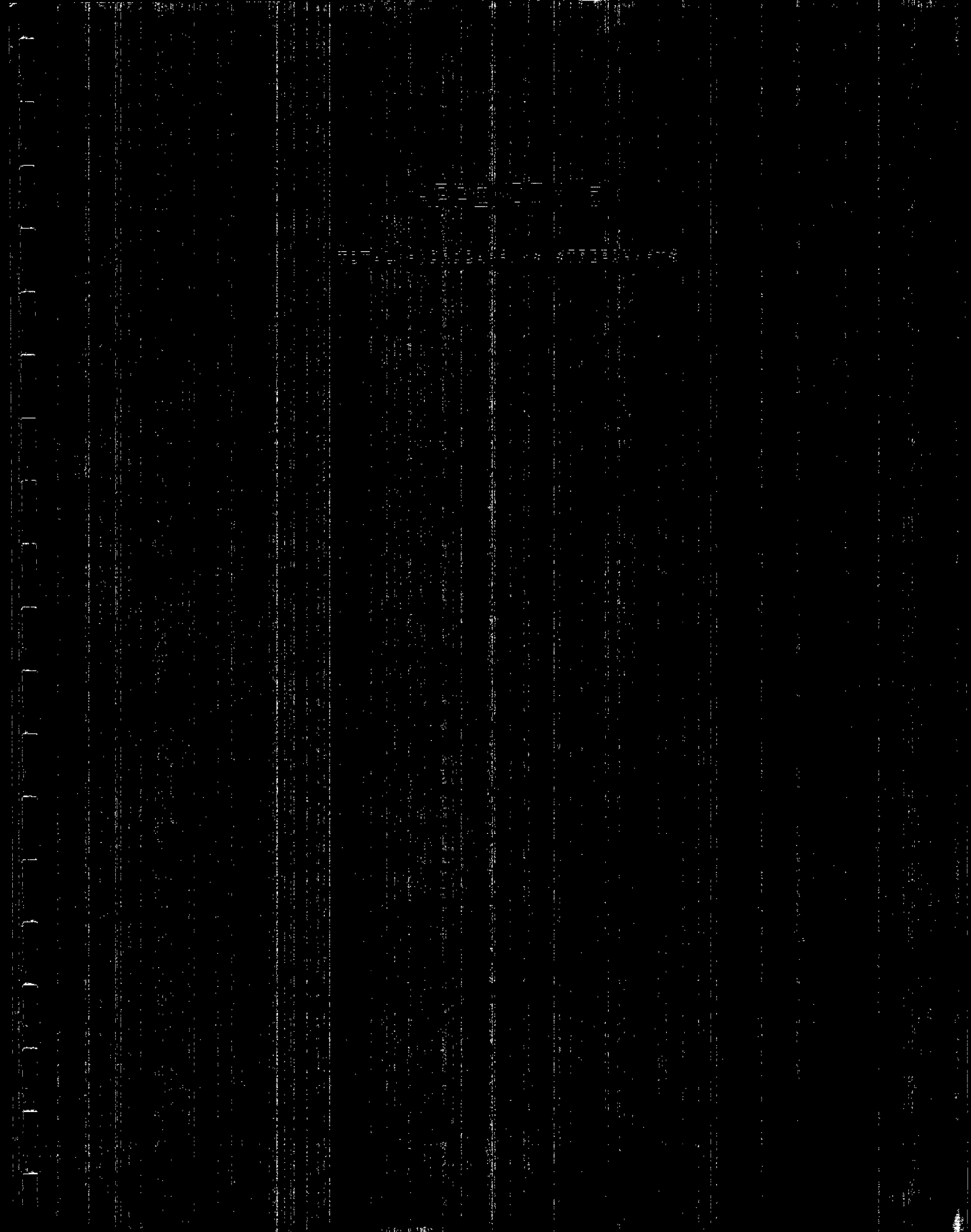
Chain of Custody
Sample Deposition Sheet

Job L.P. / New Waverly, TX Source Alc. 4 Forming Line Vent
Team Leader M. Kaehler Test Site Stack
Date Submitted _____ Date of Test 4-2-92
Test No. 19 No. of Runs Completed 3

No. of Samples	Type of Sample	Analysis Required	Comments
✓	Probe Wash: ☐ Acetone ☐ D.I. Water	☐ As per EPA M-5 ☐ Other _____	
—	Filter: ☐ 4" G.F. ☐ S.S. Thimble ☐ 2.5" G.F. ☐ 47 mm G.F.	☐ As per EPA M-5 ☐ As per EPA M-17 ☐ Other _____	
3	Impinger Catch: ☐ D.I. Water ☐ 3% H ₂ O ₂ ☐ 4M5 Hg Only ☐ 4M5 Metals ☐ 1.0 N NaOH ☒ Other <u>1% DMPH</u>	☐ MN Protocol ☐ WI Protocol ☐ EPA M-6 or 8 ☐ Acid Gases ☒ Formaldehyde ☐ Metals ☐ Other _____	
✓	Integrated Gas sample	☐ As per EPA M-3 ☐ As per EPA M-10 ☐ Other _____	<u>Ambient</u>
✓	Oxides of Nitrogen (NO _x)	☐ As per EPA M-7A ☐ Other _____	Date _____ Time (HRS) _____
—	☐ Fuel Sample ☐ Aggregate	☐ Attached fuel Form #S-0163RRR	
—	Particle Size	☐ X-Ray Sedigraph ☐ Bahco Method ☐ Other _____	
—	Audit Samples ☐ Sulfur Dioxide ☐ Oxides of Nit. ☐ Other _____	☐ As per EPA M-6 ☐ As per EPA M-7A ☐ Other _____	

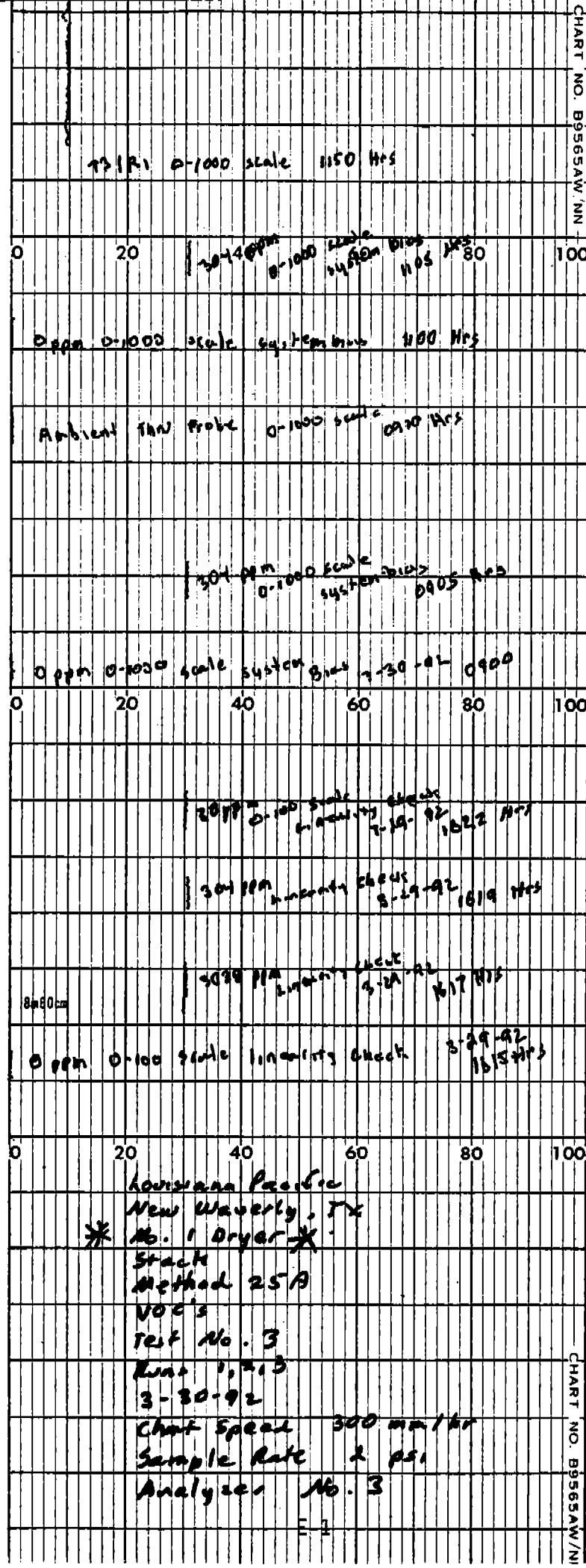
Source Information

- 1) Type of Source: ☐ Boiler ☐ Asphalt Plant ☐ Incinerator ☐ Dryer
☒ Other Forming Line
- 2) Fuel: ☐ Coal ☐ Wood ☐ Gas ☐ Oil ☐ RDF ☒ Other N/A
- 3) Is sample combustible? ☒ No ☐ Yes
- 4) Does sample need special handling? ☒ No ☐ Yes If yes, explain _____



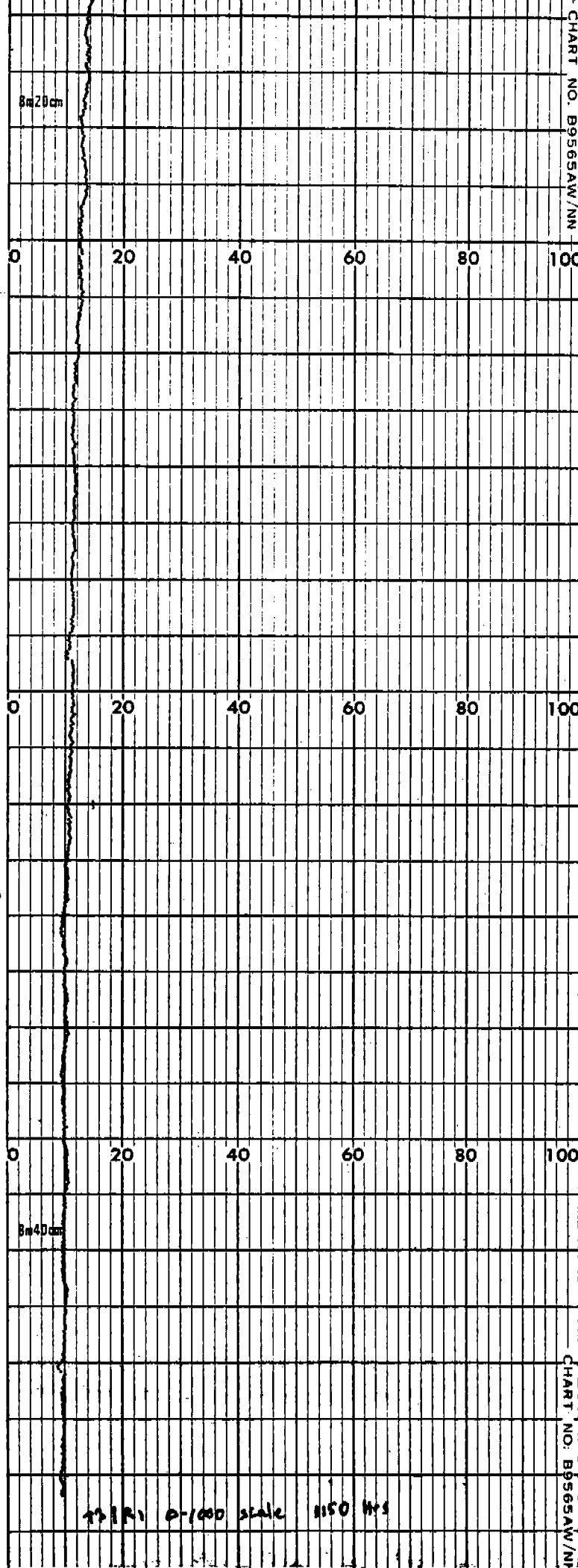
Test 3 →
Run 1
Start

Louisiana
Pacific
New Waverly



Louisiana
Pacific
Newbury
Test #3

1150 HRS
T₃R, →
Start



0 20 40 60 80 100

0 20 40 60 80 100

1330 HRS
T₃R₂ →
START

T₃R₂ 0-1000 scale 1330 HRS

1304 ppm 0-1000 scale system bias 1253 HRS

0 ppm 0-1000 scale system bias 1256 HRS

T₃R₁ →
End
1252 HRS

END T₃R₁ 0-1000 scale 1252 HRS

0 20 40 60 80 100

1440HRS T₃R₂ →
END

Louisiana
Pacific
Newbury

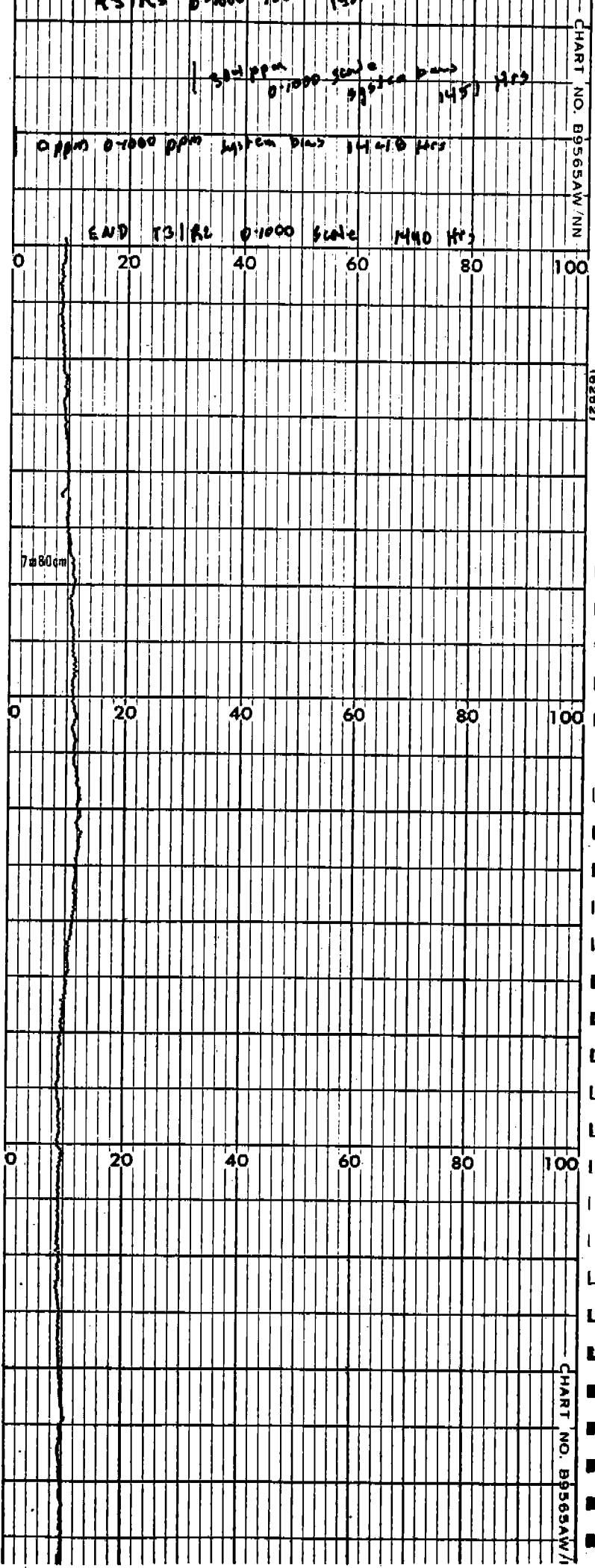


CHART NO. B9565AW/NN

0 20 40 60 80 100

(6227)

0 20 40 60 80 100

7m60cm

0 20 40 60 80 100

CHART NO. B9565AW

LP-
New
waverley
(cont.)

1520
T₃R₃ →
START

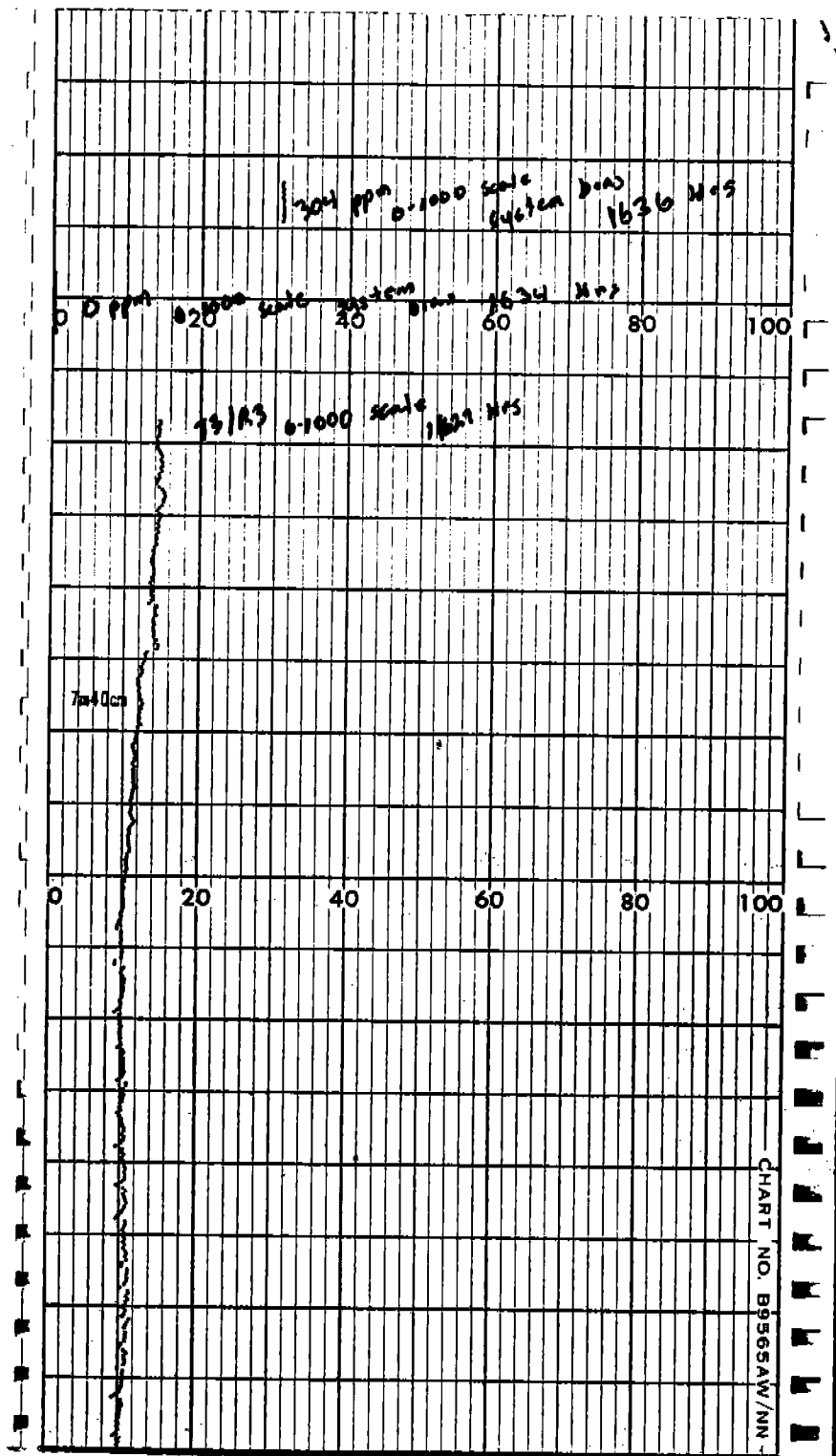
USING 0-1000 scale 1520 Hz

320 ppm
0-1000 scale
1450 Hz

0 ppm 0-1000 ppm with 1520 Hz

1627 HRS
T3 R3 →
END

LP-
new
waverley



Louisiana
Pacific-
New Waverly

1100HRS
T₇ R₁ START →

Louisiana Pacific
New Waverly, TX
No. 2-Dryer

Start 20
Method 25B

406's

Track No. 7

Runs 1, 2, 3

3-31-92

300 mm/hr chart speed

Sample Rate 2 ps

Analyzer No. 3

TR1 1100 HRS
0-100 scale

304 ppm 0-1000 scale
system bias 1005 HRS

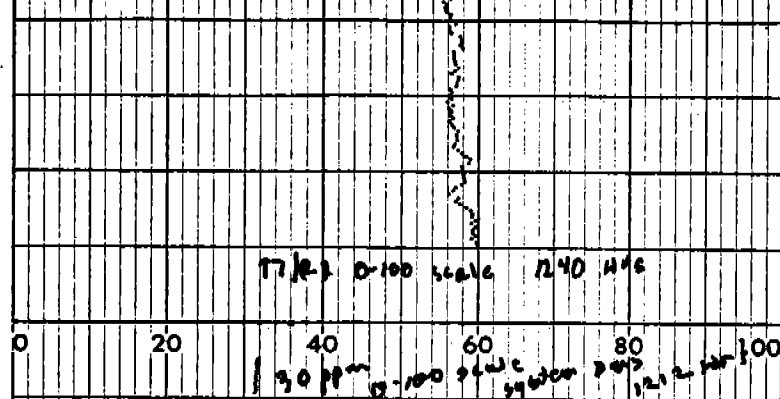
0 ppm 0-1000 scale system bias 1000 HRS

304 ppm 0-1000 scale
system bias 0812

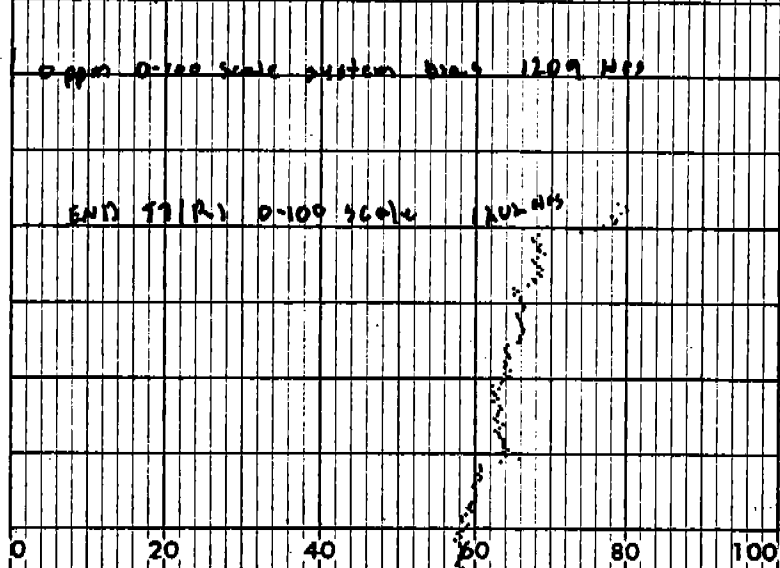
0 ppm 0-1000 scale system bias 0810 3-31-92

CHART NO. B9565AW/NN

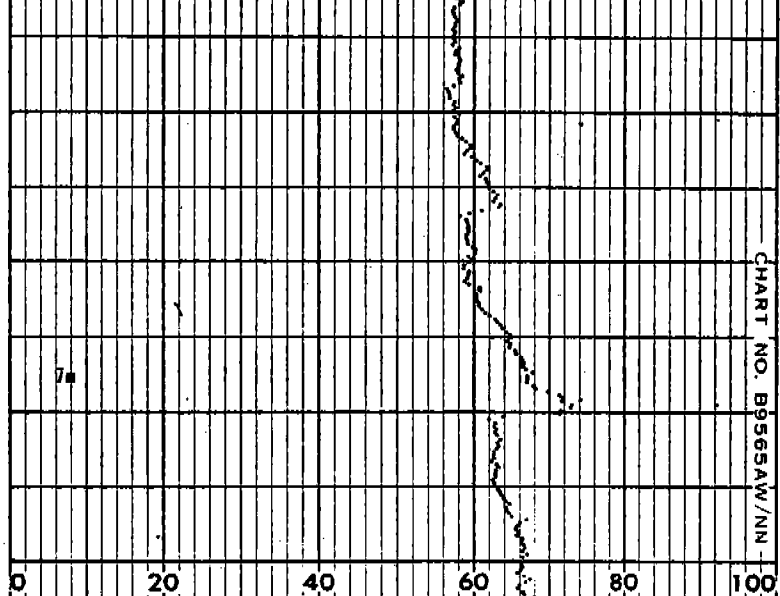
1240 HRS
T₇R₂ →
START



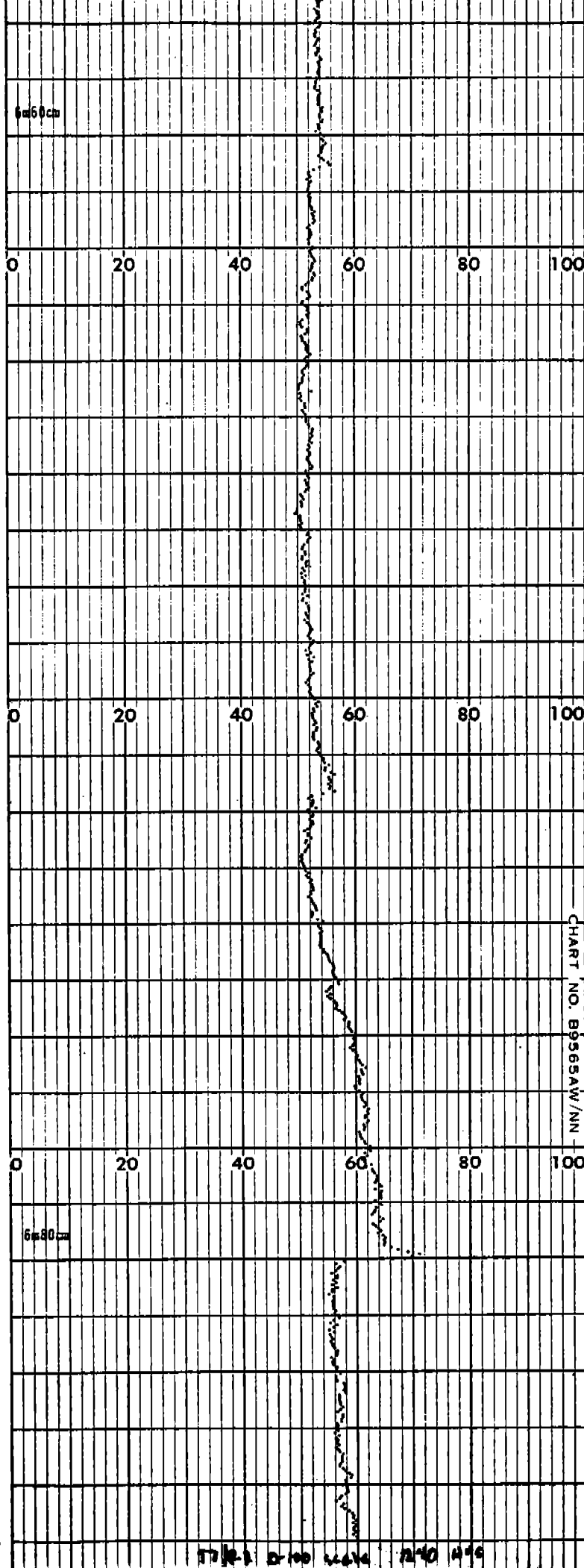
1202 HRS
T₇R₁ →
END



LP-
new
waverley
(cont.)



LP-New
wavy
(cont.)



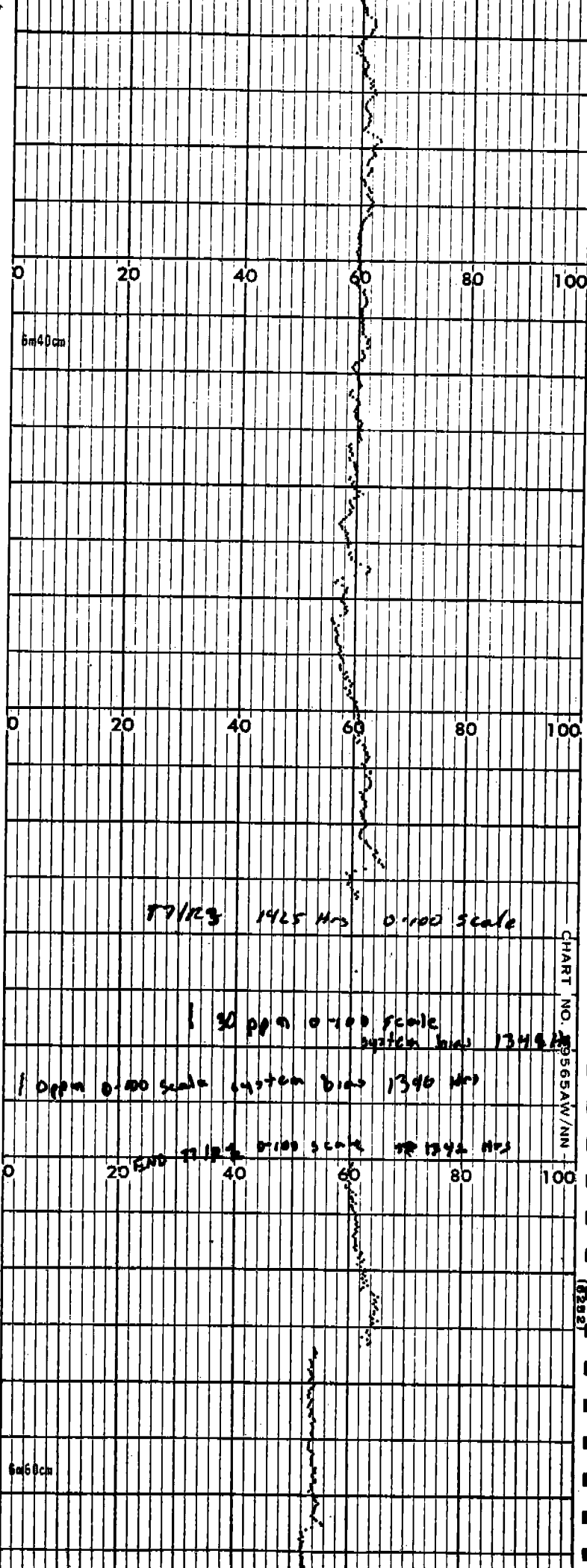
LP T₇R₂
1240 START →

1240 1240 1240 1240

LP-
new
waverly
(cont.)

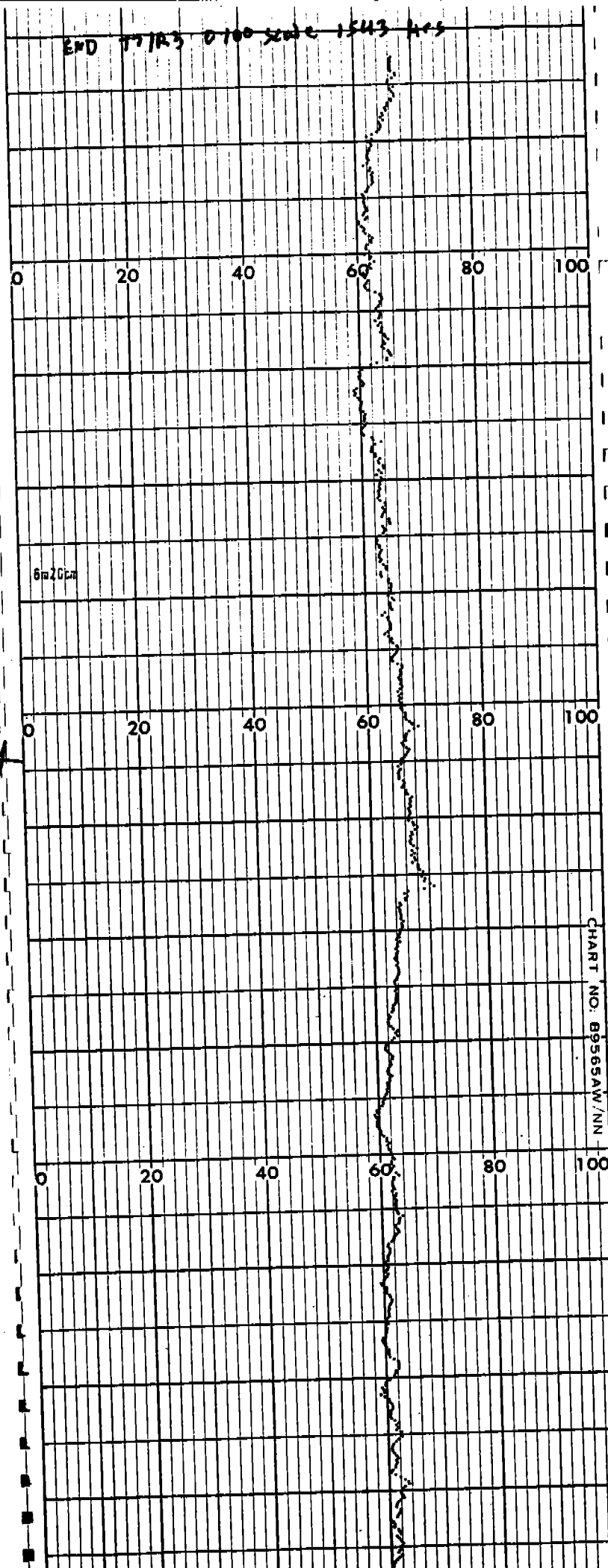
1425 HRS
T₇R₃ →
START

1242 HOURS
T₇R₂ →
END



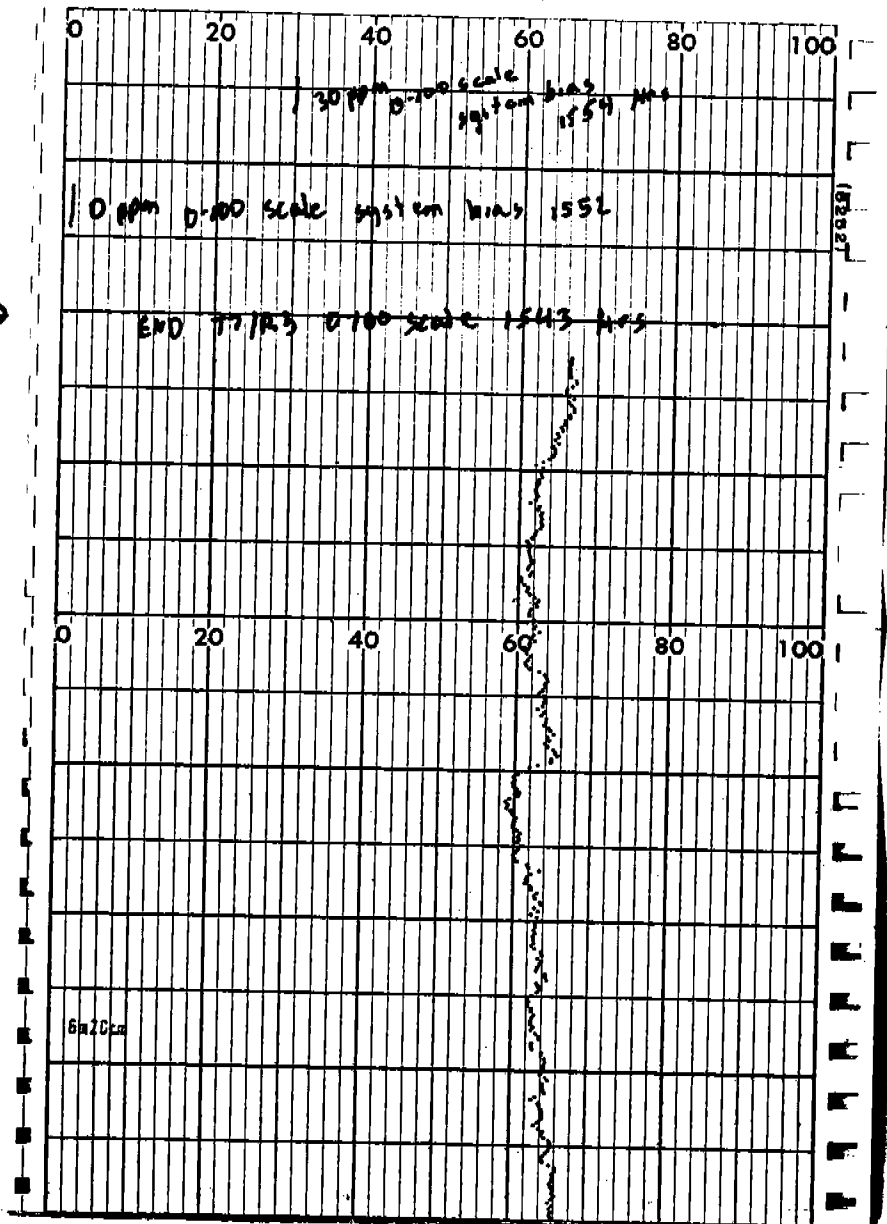
→
T₇R₃
END
1543HRS

Louisiana
Pacific
new survey
(cont.)



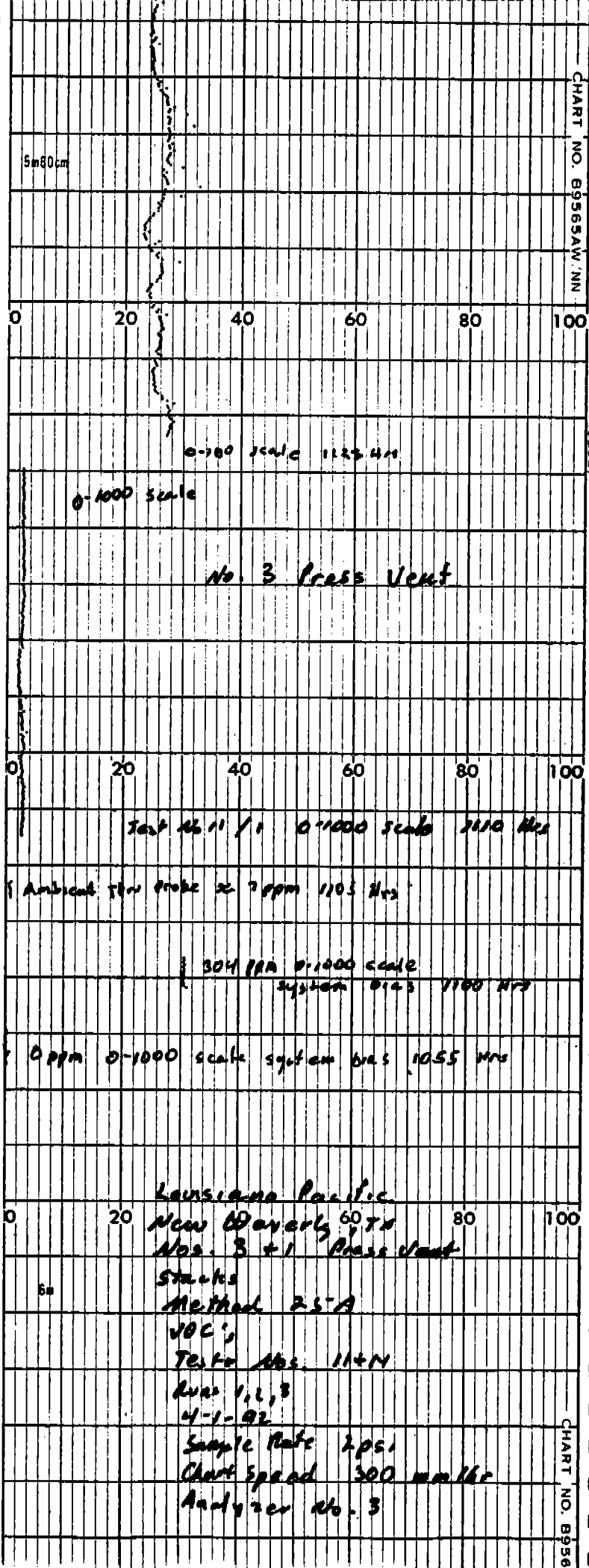
Louisiana
Pacific
New Waverly

1543 HRS ⇒
T7 R3
END



1123 HRS
T₁₁R. →
START

Louisiana
Pacific
New Waverly
4-1-92



1217 HRS
 T₁₁ R₁ →
 ENID

Louisiana
 Pacific-
 New
 Waverly
 (cont.)

Test 11

4-1-92

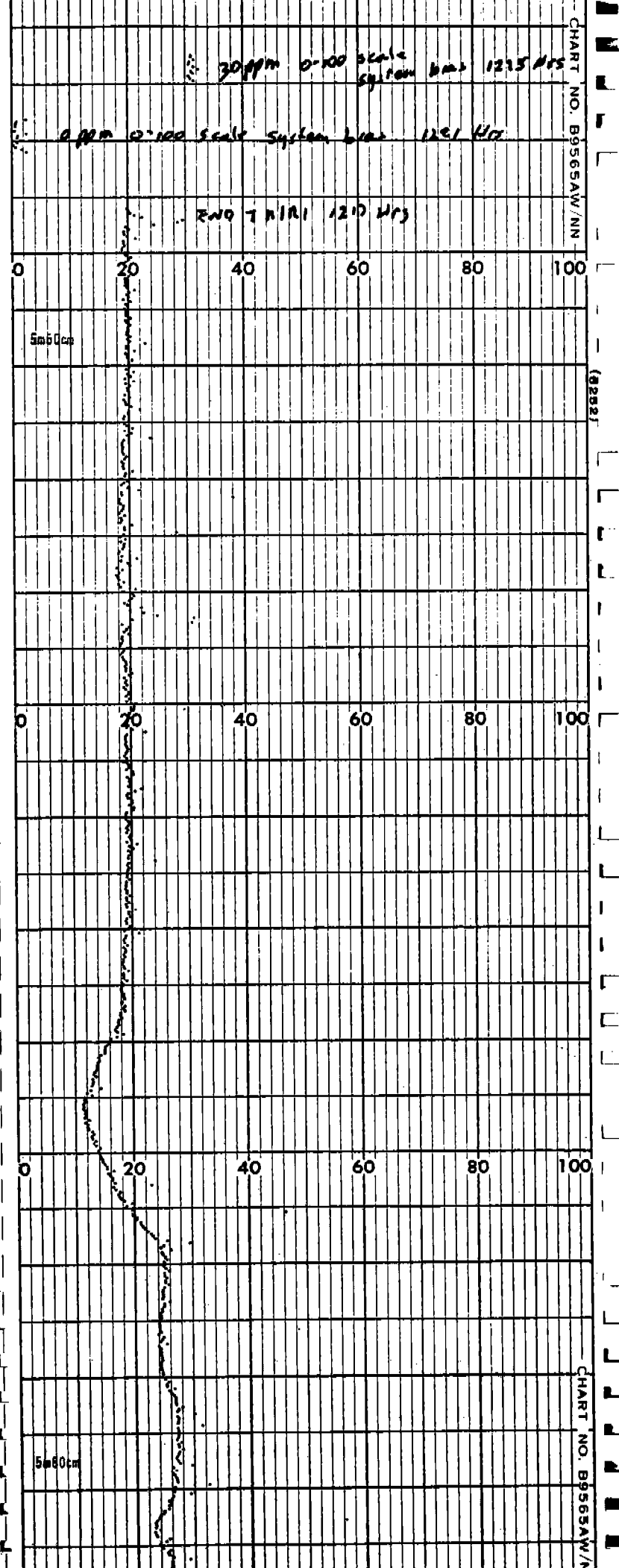


CHART NO. B9565AW/NN

(6252)

0 20 40 60 80 100

0 20 40 60 80 100

0 20 40 60 80 100

CHART NO. B9565AW/NN

LP-
New
waverly
(cont.)
4-1-92

1300HRS
T₁₁R₂ →
START

5m40cm

5.11 1.2 40-100 ppm 1300 Hrs

30 ppm 0-100 scale system bias 1225 Hrs

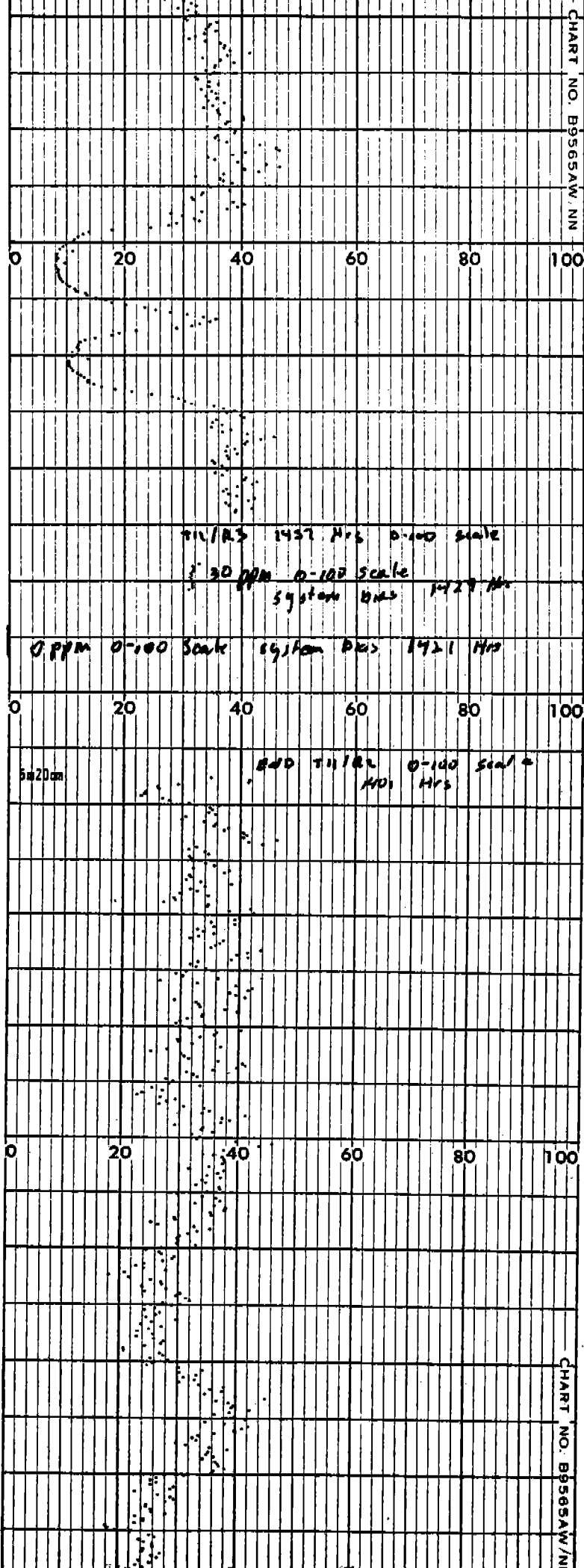
2.0 ppm 0-100 scale system bias 1251 Hrs

2.0 ppm 0-100 scale system bias 1270 Hrs

1437 HRS
 T₁₁R₃ →
 START

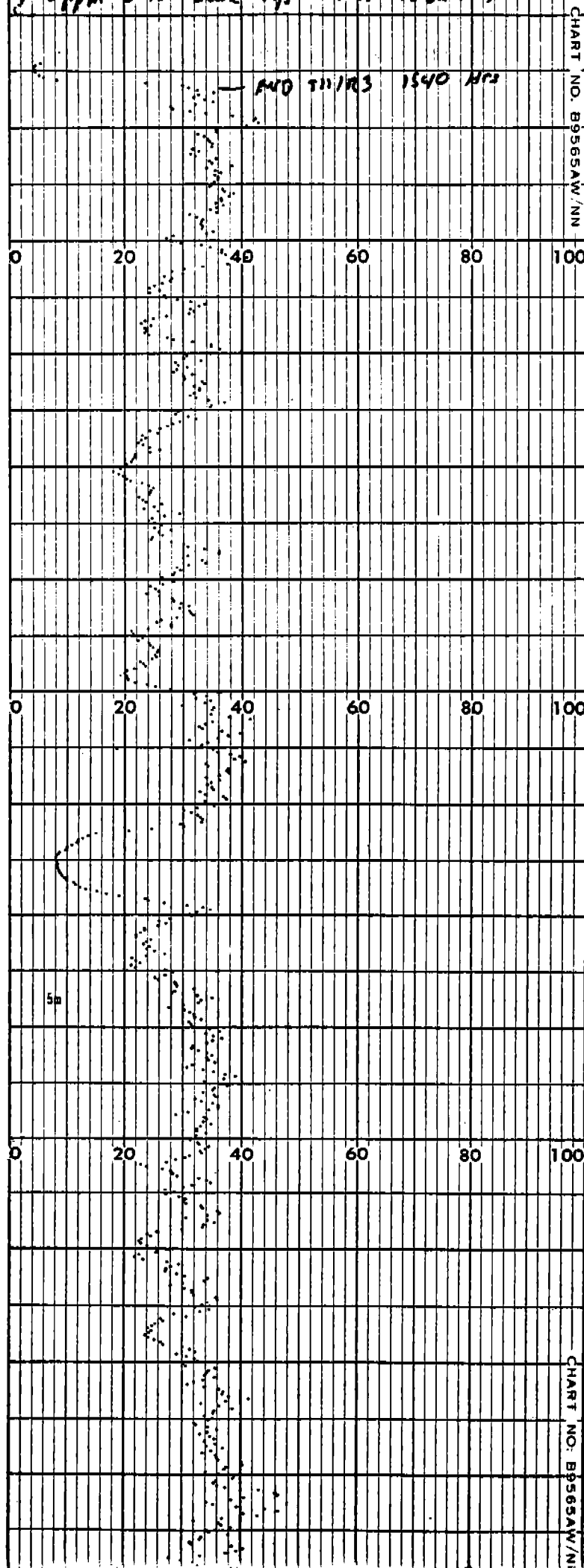
1401 HRS
 T₁₁R₂ →
 END

Y
 Louisiana
 Pacific-
 NW
 waverly
 4-1-92



1540 HRS
T₁₁R₃
END

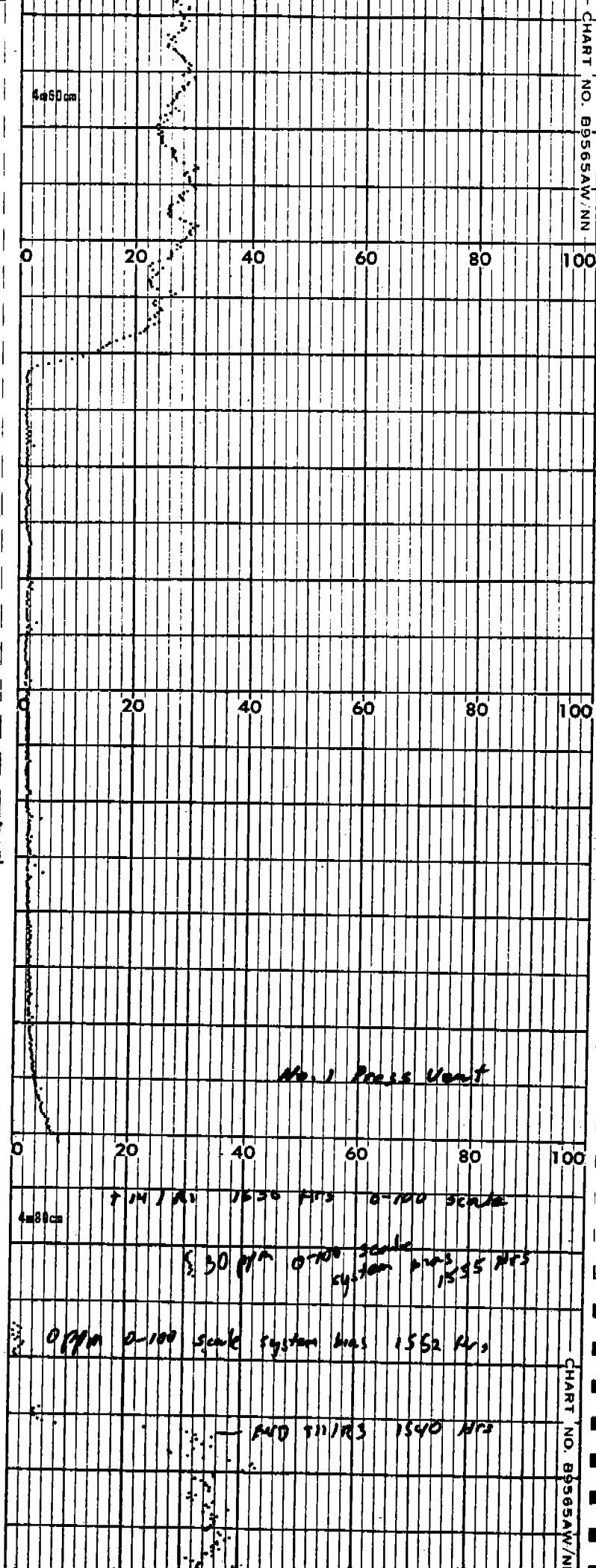
LP-
new
waverly
(cont.)
4-1-92



Louisiana
Pacific-
new
waverly

1630 HRS
T₁₄ R₁ →
START

4-1-92



Open 0-100 Scale System bars 1755 Hrs

CHART NO. B9565AW/NIN

SAID T.M. 1A1 1755 Hrs
0-100 Scale

0 20 40 60 80 100

Qm 40 cm

102027

0 20 40 60 80 100

LP-
new
waverly
4-1-92

0 20 40 60 80 100

Qm 60 cm

CHART NO. B9565AW/NIN

CHART NO. B9565AW/NN

0 20 40 60 80 100

1827

4020cm

0 20 40 60 80 100

0 20 40 60 80 100

TH 1R2 0-100 scale 1827 Hrs

30 ppm 0-100 scale system bias 1801 Hrs

0 ppm 0-100 scale system bias 1758 Hrs

200 TH 1A1 1755 Hrs
0-100 scale

CHART NO. B9565AW

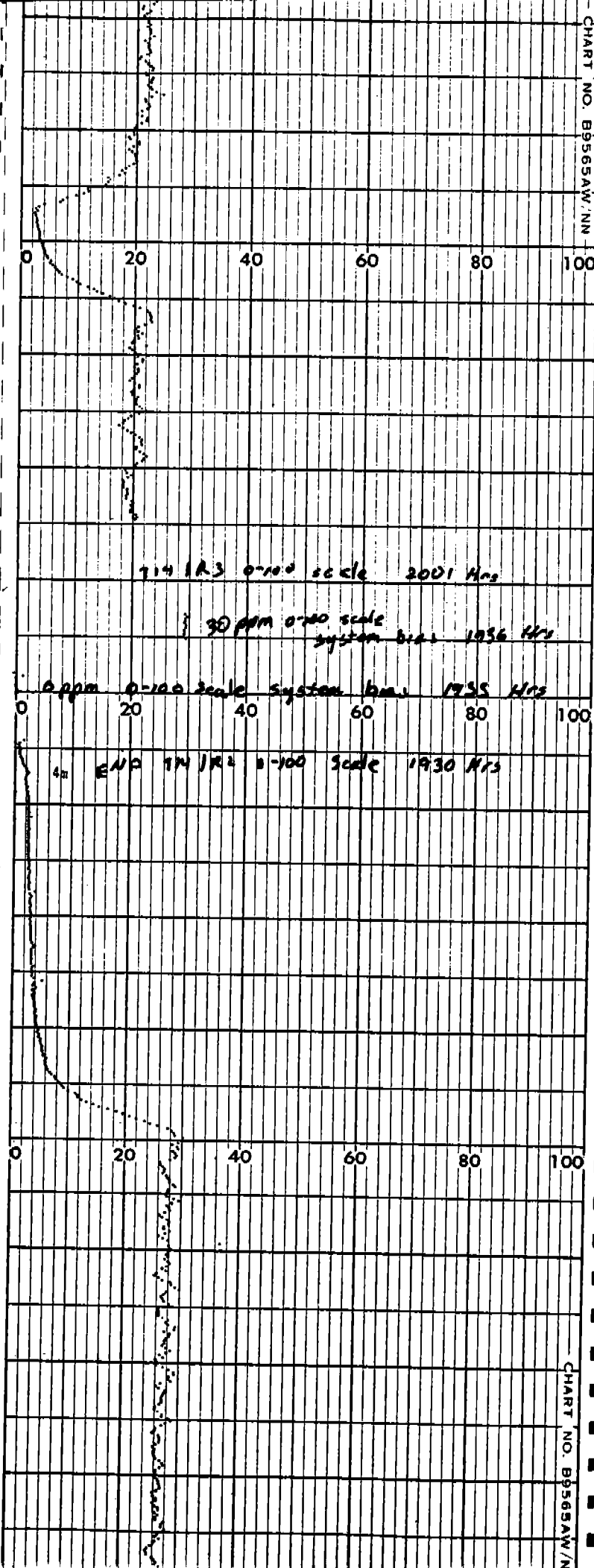
LP-
New
waverley
4-1-92

1827 HRS
T14R2 $\Rightarrow$
START

2001 HRS
T₁₄R₃ →
START

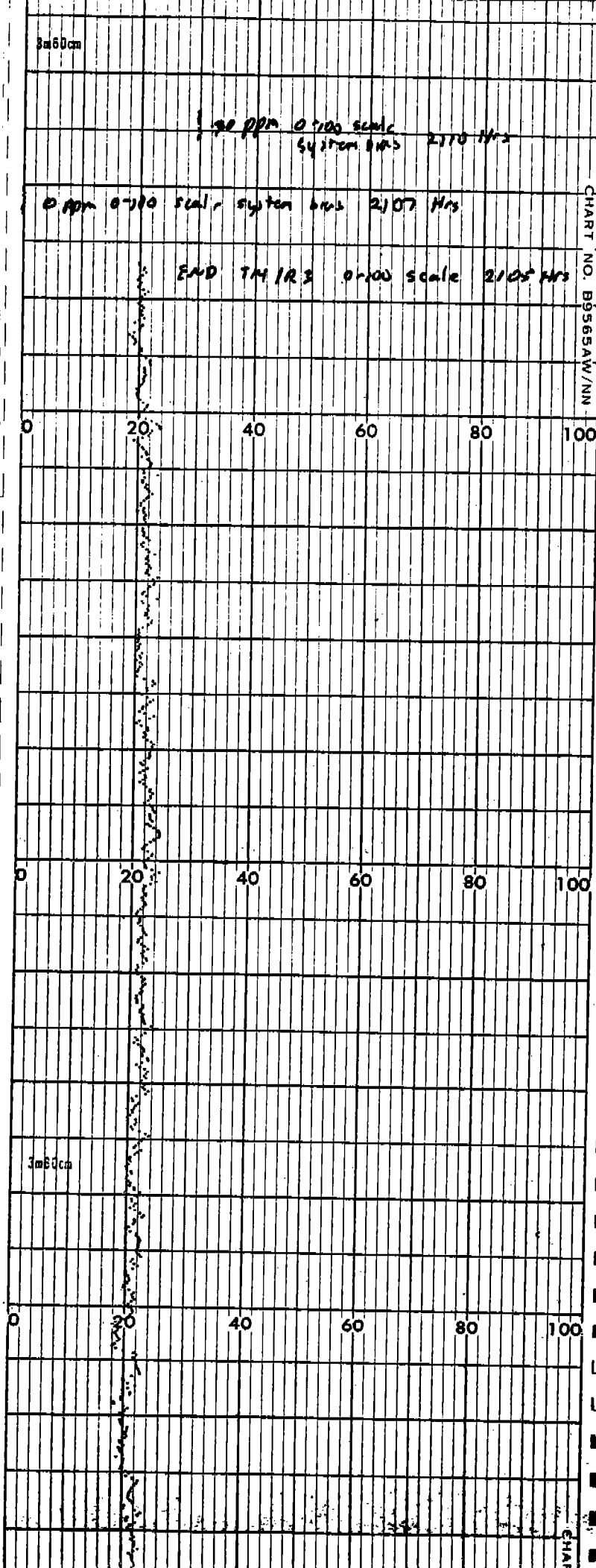
1930 HRS →
T₁₄R₂
END

LP-
new
Waverley
4-1-92



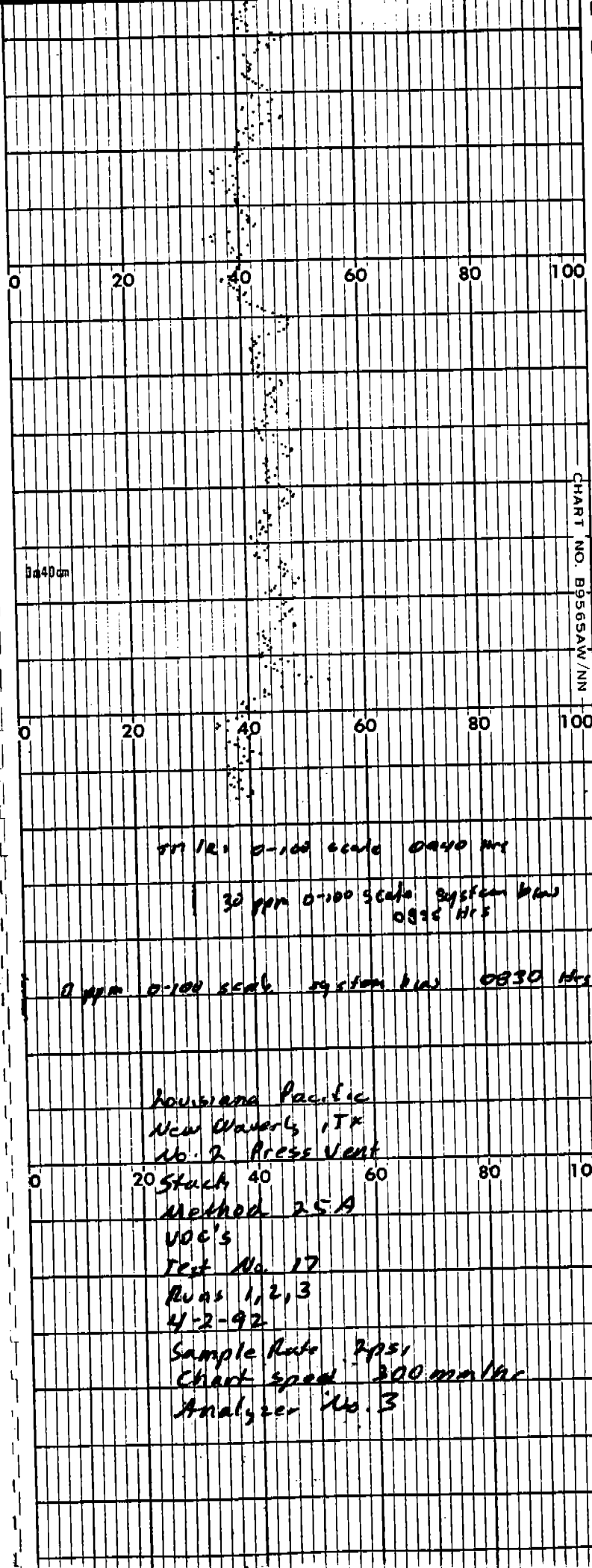
2105 HRS
T₁₄ R₃ →
END

LP-
new
waverley
(cont.)
4-1-92



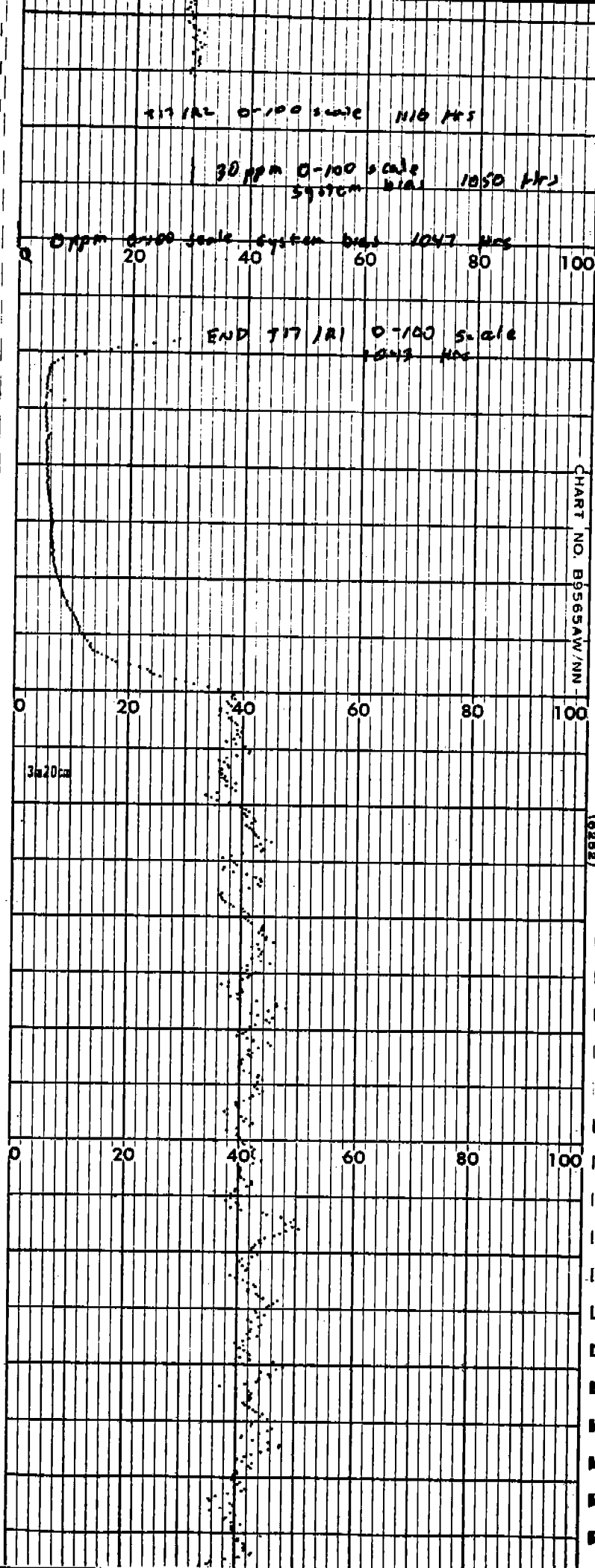
0940 HRS
T_{17R} →
START

LP-
New
Waverly
4-2-92



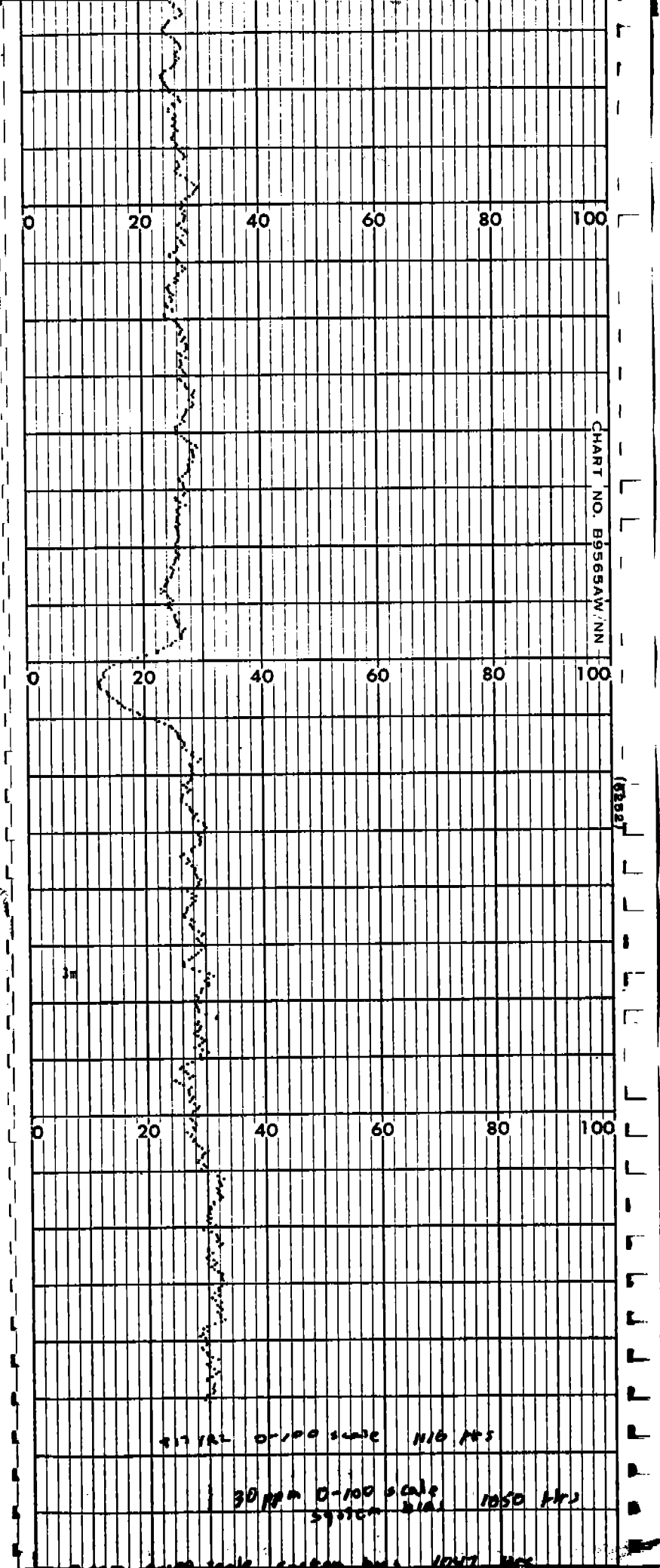
1043HRS
T₁₇R₁ →
END

LP-
new
waverley
4-2-92



LP-
 new
 waverly
 (cont.)
 4-2-92

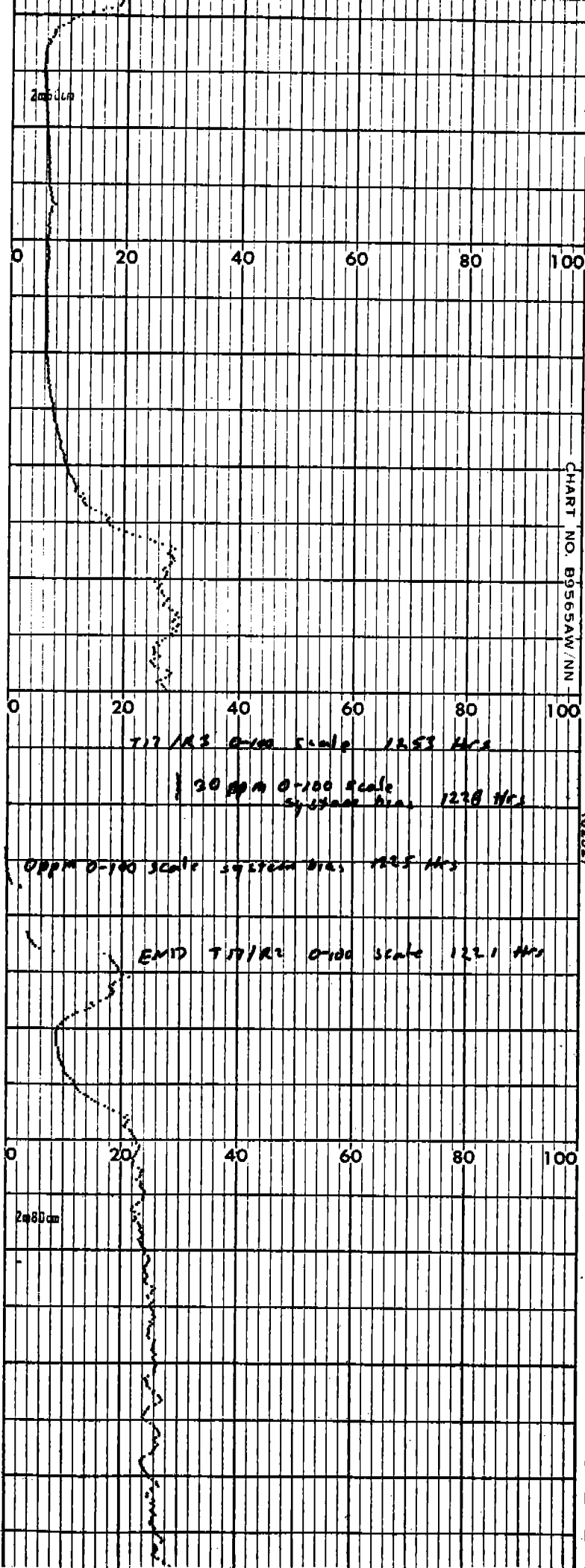
1116 HRS
 T₁₇ R₂ →
 START



1253 HRS
 $T_{17}R_3 \rightarrow$
 START

1221 HRS
 $T_{17}R_2 \rightarrow$
 END

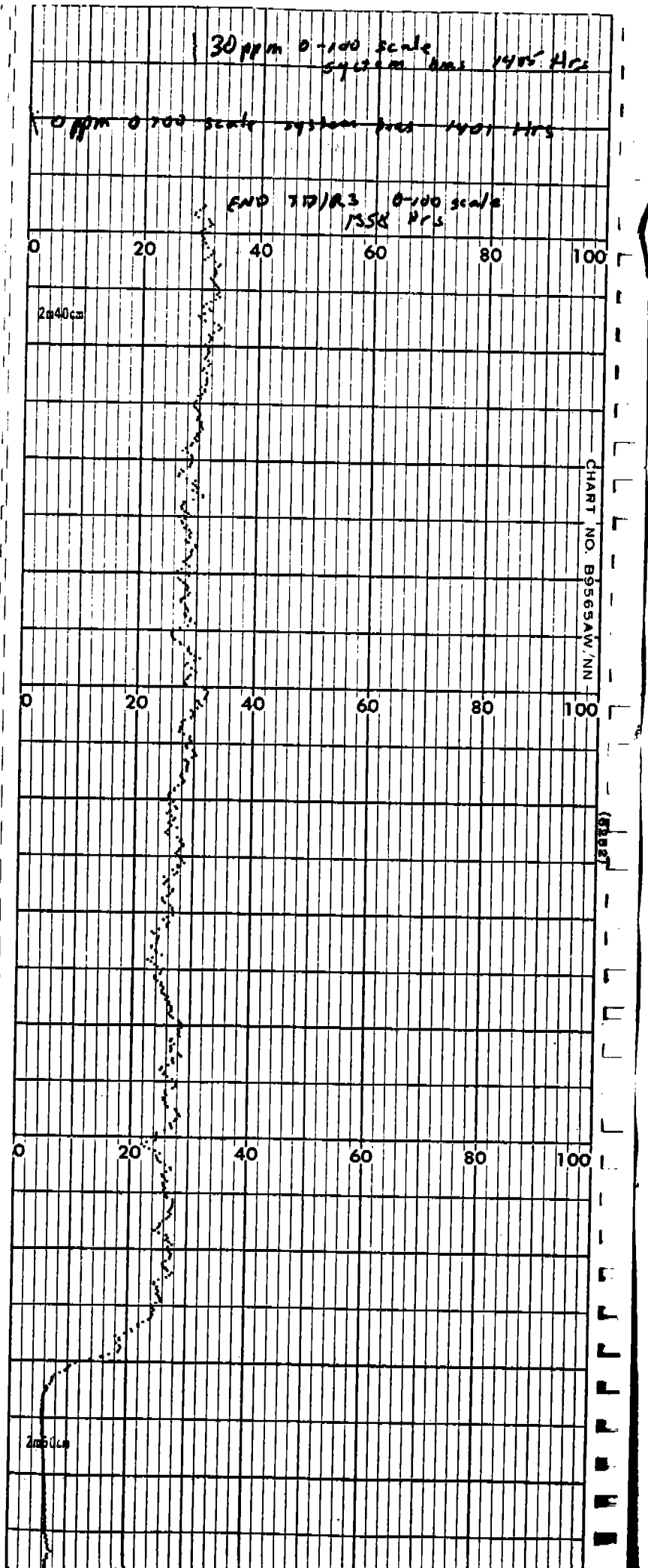
LP-
 new
 wavy
 (cont.)



1358 HRS

TNR3

END







TOTAL HYDROCARBON ANALYZER (FLAME IONIZATION)
Model RS 55

TECHNICAL DATA

MAINS : 115V/60H

RECORDER OUTPUT : 0 - 5 V / 4-20mA

MODEL: ☒ Manual switching
 ☐ Solenoid valves

HOUSING: ☐ Case, ☐ 19" - Rack

MEASURING RANGES:	1 = 0 - 10	C ₁
	2 = 0 - 100	C ₁
	3 = 0 - 1,000	C ₁
	4 = 0 - 10,000	C ₁

SPECIAL OPTIONS:

Flame out alarm

1 Alarm

Sample line

.....

ANALYZER CONDITIONS:

Temperature : 160.°C

Zero Point : 3,90....

Gain : 7,70....

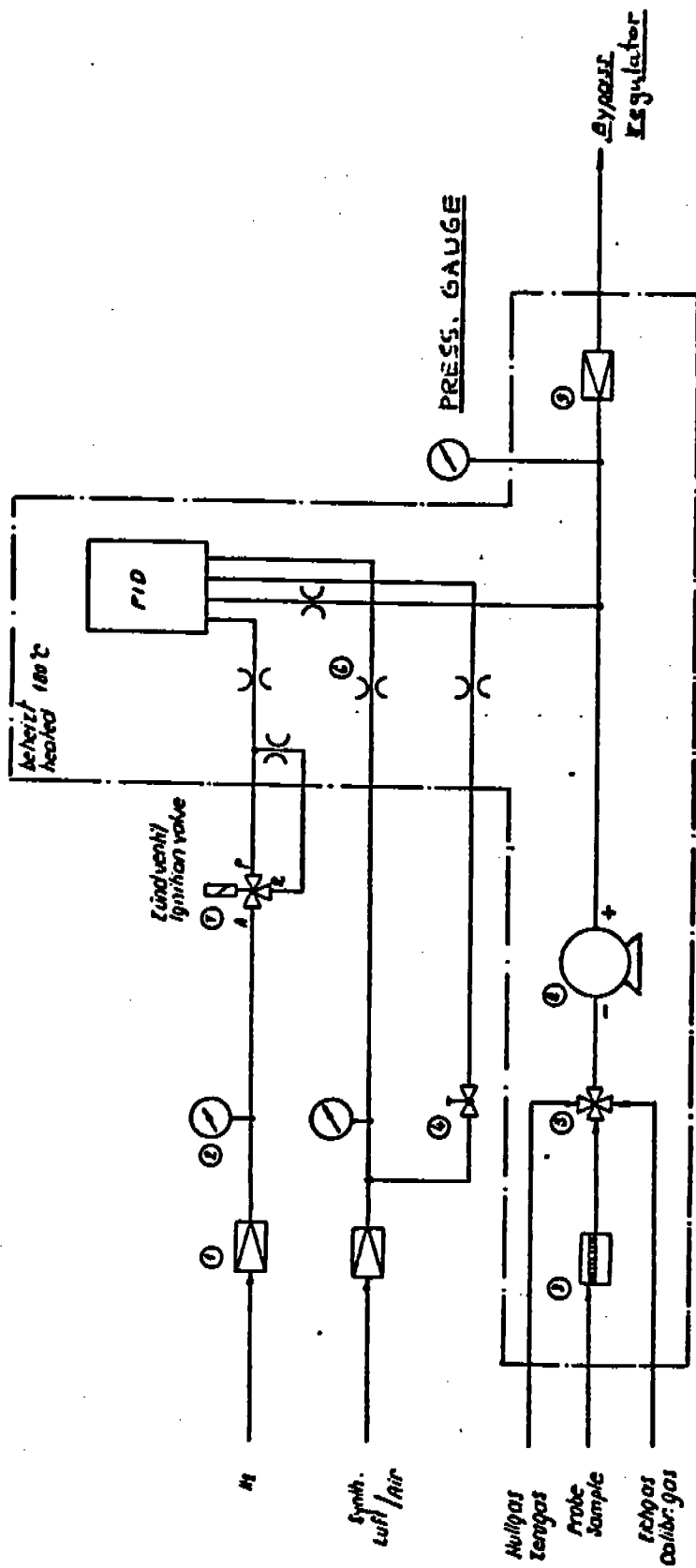
Pressure Setting: Sample/Spangas/Zerogas: 200 mbar

Fuel: Hydrogen : 0,35 bar

Combustion Air : 0,80 bar

Span Gases : 300. ppm C₁

24.000. ppm C₁



- 1 Druckregler
pressure regulator
- 2 Manometer
Gauge
- 3 Zündventil
ignition valve
- 4 Nadelventil
needle valve
- 5 3 Wege Ventil
3 way valve
- 6 Kapillare
capillary
- 7 Magnetventil
magnet valve
- 8 Pumpe
pump
- 9 Rückdruckregler
back pressure regulator

Zündventil
ignition valve
P-A angeschlossen
energized
R-A stillgelegt
at rest

Handumstellung
Manual switching

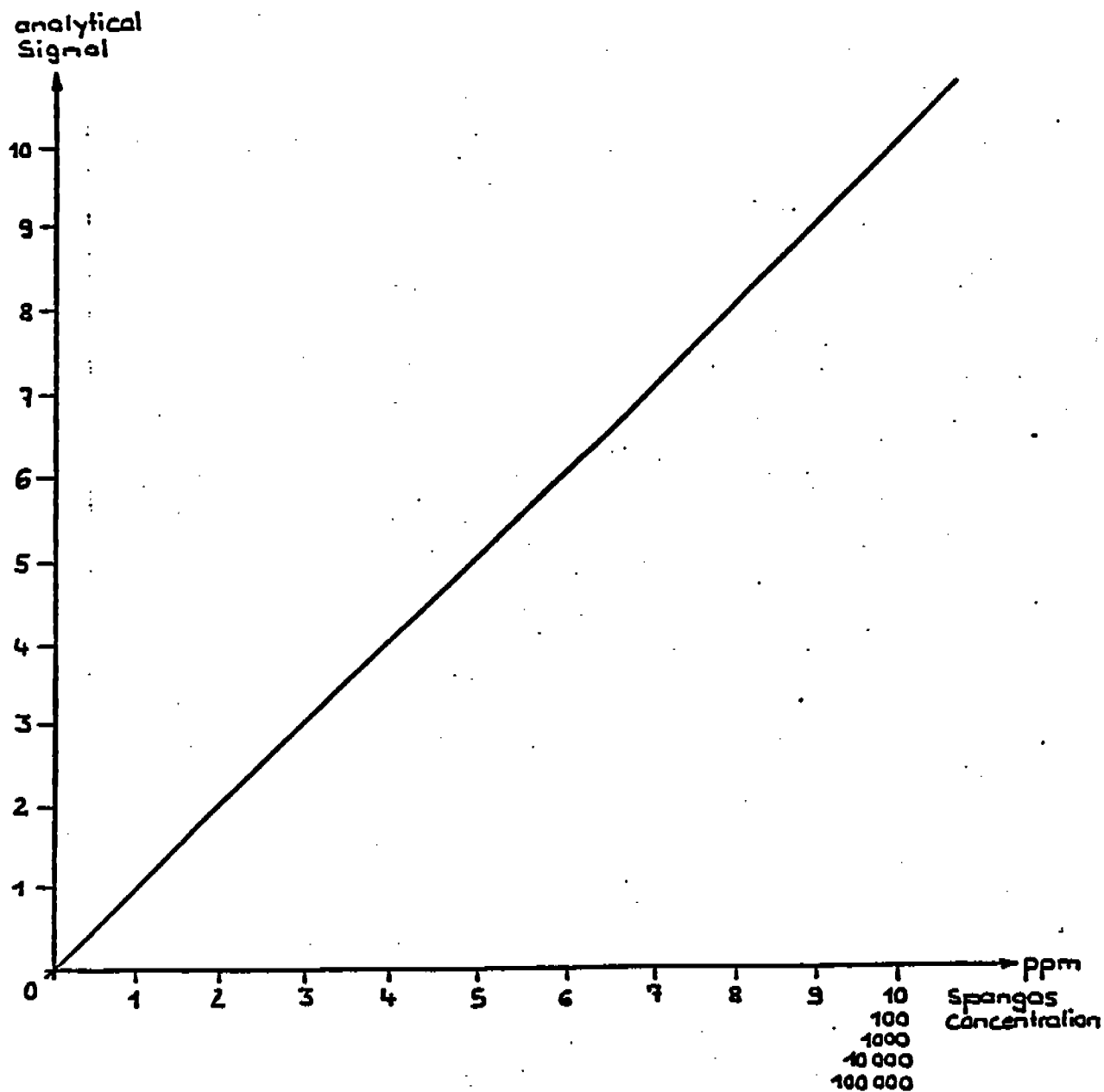


FLAMMEN IONISATIONS DETEKTOR
Flame Ionization Detector

Fließplan
Flow diagram

RS 35
13.04.88

CALIBRATION DIAGRAMM





INTERPOLL LABORATORIES EPA METHOD 2 FIELD DATA SHEET

Job Louisiana Pacific New Orleans, TX

Source No. 1 Dryer / Stack

Test 2 Run 0 Date 3-30-92

Stack dimen. 59.25 IN.

Dry bulb _____ °F Wet bulb _____ °F

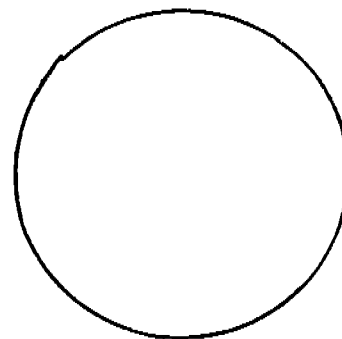
Manometer: ☐ Reg. ☐ Exp. ☐ Elec.

Barometric pressure _____ in Hg

Static pressure 2.10 in WC

Operators M. Kaehler & C. Mosser

Pitot No. 2151 Cp NA



Schematic of
Cross Section

[illegible]

R or nothing= reg. manometer; S= expanded; E = electronic S-392.1

INTERPOL LABORATORIES
EPA Method 25A
Calibration Error Check & Drift Determination

Job L.P. / New Waverly, TX

Test 3 Run 10 Date 3-30-92

Operator Mikaehler

THC Calibration (Low Range):

Time (HRS) 1615

***	Cylinder Value (ppm)	Analyzer Response (ppm)	Difference (ppm)	Span Value (ppm)	Percent of Span
Zero gas	0	0	0		
Low level	30	30	0		
Mid level	304	308	4		
High level	3098	3093	5		

THC Calibration (High Range):

Time (HRS) _____

***	Cylinder Value (ppm)	Analyzer Response (ppm)	Difference (ppm)	Span Value (ppm)	Percent of Span
Zero gas	0				
Span					

O₂ Calibration:

Time (HRS) _____

***	Cylinder Value (%)	Analyzer Response (%)	Difference (%)	Span Value (%)	Percent of Span
Zero gas	0				
Mid level					
High level					

CO₂ Calibration:

Time (HRS) _____

***	Cylinder Value (%)	Analyzer Response (%)	Difference (%)	Span Value (%)	Percent of Span
Zero gas	0				
Mid level					
High level					

Must be within 2% of the span for each calibration gas

S-420-14

INTERPOLL LABORATORIES
(612) 786-6020

System Bias Check

Job A.P. 1 New Waverly, TX Source Am. 1 Dryer
Test 3 Run 423 Date 3-30-82 Site Stack
Operator M. Kaehler

Run	Time (HRS)	***	Cylinder Value (ppm)	Analyzer Resp (ppm)		Diff. CE-SB (ppm)	Span Val (PPM)	% of span
				Cal Err	Sys Bias			
1	0900	Zero gas	0	0	0	0	1000	0
		Upscale	304	308	305	3	1000	
2	1100	Zero gas	0	0	1	1	1000	
		Upscale	304	308	308	0	1000	
3	1254	Zero gas	0	0	2	2	1000	
		Upscale	304	308	307	1	1000	
4	1448	Zero gas	0	0	2	2	1000	
		Upscale	304	308	310	2	1000	
5	1632	Zero gas	0	0	3	3	1000	
		Upscale	304	308	310	2	1000	
6		Zero gas	0					
		Upscale						
7		Zero gas	0					
		Upscale						
8		Zero gas	0					
		Upscale						
9		Zero gas	0					
		Upscale						
10		Zero gas	0					
		Upscale						
11		Zero gas	0					
		Upscale						
12		Zero gas	0					
		Upscale						

Must be within 5% of the span for the zero or upscale cal. gas.

S420-11R

Job L.P. / New Waverly, TX
Source No. 2 Dryer / Stack
Test 7 Run 0 Date 3-31-92
Stack dimen. 59.25 IN.
Dry bulb °F Wet bulb °F
Manometer: ☐ Reg. ☐ Exp. ☐ Elec.
Barometric pressure 29.69 in Hg
Static pressure -1.80 in WC
Operators M. Kaehler + C. Mosser
Pitot No. Inst. Cp B4

[illegible]

R or nothing= reg. manometer; S= expanded; E = electronic S-392.1

INTERPOLL LABORATORIES
(612) 786-6020

System Bias Check

Job L.P. / New Waverly, TX Source Ab. 2 Dryer
 Test 7 Run 12.3 Date 3-31-92 Site Stack
 Operator Mikepler

Run	Time (HRS)	***	Cylinder Value (ppm)	Analyzer Resp (ppm)		Diff. CE-SB (ppm)	Span Val (PPM)	% of span
				Cal Err	Sys Bias			
1	0815	Zero gas	0	0	0	0	1000	
		Upscale	304	308	305	3	1000	
2	1000	Zero gas	0	0	1	1	1000	
		Upscale	304	308	306	2	1000	
3	1208	Zero gas	0	0	0	0	100	
		Upscale	30	30	32	2	100	
4	1345	Zero gas	0	0	3	3	100	
		Upscale	30	30	32	2	100	
5	1550	Zero gas	0	0	1	1	100	
		Upscale	30	30	30	0	100	
6		Zero gas	0					
		Upscale						
7		Zero gas	0					
		Upscale						
8		Zero gas	0					
		Upscale						
9		Zero gas	0					
		Upscale						
10		Zero gas	0					
		Upscale						
11		Zero gas	0					
		Upscale						
12		Zero gas	0					
		Upscale						

Must be within 5% of the span for the zero or upscale cal. gas.

S420-11R

Job L.P. / New Albany, IN
Source No. 23 Press Vent / Stack
Test 11+M Run 1, 2, 3 Date 4-1-90
Stack dimen. _____ IN.
Dry bulb _____ °F Wet bulb _____ °F
Manometer: ☐ Reg. ☐ Exp. ☐ Elec.
Barometric pressure _____ in Hg
Static pressure _____ in WC
Operators _____
Pitot No. _____ Cp _____

Schematic of
Cross Section

[illegible]

R or nothing= reg. manometer; S₆=expanded; E = electronic

S-392.1

INTERPOLL LABORATORIES
(612) 786-6020

System Bias Check

Job L.P. / New Waverly, TX
Test 11414 Run 12.3 Date 4-1-92
Operator M. Kaehler

Source No. 3 & 1 Press Vent
Site Stack

Run	Time (HRS)	***	Cylinder Value (ppm)	Analyzer Resp (ppm)		Diff. CE-SB (ppm)	Span Val (PPM)	% of span
				Cal Err	Sys Bias			
1	1045	Zero gas	0	0	0	0		
		Upscale	304	308	307	1		
2	1218	Zero gas	0	0	0	1		
		Upscale	30	30	32	2		
3	1430	Zero gas	0	0	0	0		
		Upscale	30	30	32	2		
4	1555	Zero gas	0	0	2	2		
		Upscale	30	30	31	1		
5	1800	Zero gas	0	0	1	1		
		Upscale	30	30	31	1		
6	1935	Zero gas	0	0	0	0		
		Upscale	30	30	29	1		
7	2007	Zero gas	0	0	0	0		
		Upscale	30	30	29	1		
8		Zero gas	0					
		Upscale						
9		Zero gas	0					
		Upscale						
10		Zero gas	0					
		Upscale						
11		Zero gas	0					
		Upscale						
12		Zero gas	0					
		Upscale						

Must be within 5% of the span for the zero or upscale cal. gas.

S420-11R

INTERPOLL LABORATORIES
(612) 786-6020

System Bias Check

Job LP-Newbury
Test 17 Run Date 4-2-92
Operator M. Kaehler

Source No. 2 Pass Vent
Site Stack

Run	Time (HRS)	***	Cylinder Value (ppm)	Analyzer Resp (ppm)		Diff. CE-SB (ppm)	Span Val (PPM)	% of span
				Cal Err	Sys Bias			
1	0930	Zero gas	0	0	0	0		
		Upscale	30	30	30	0		
2	1040	Zero gas	0	0	0	0		
		Upscale	30	30	30	0		
3	1223	Zero gas	0	0	0	0		
		Upscale	30	30	30	0		
4		Zero gas	0					
		Upscale						
5		Zero gas	0					
		Upscale						
6		Zero gas	0					
		Upscale						
7		Zero gas	0					
		Upscale						
8		Zero gas	0					
		Upscale						
9		Zero gas	0					
		Upscale						
10		Zero gas	0					
		Upscale						
11		Zero gas	0					
		Upscale						
12		Zero gas	0					
		Upscale						

Must be within 5% of the span for the zero or upscale cal. gas.

S420-11R

Scott Specialty Gases

Scott Environmental Technology, Inc.

1290 COMBERMERE STREET, TROY, MICHIGAN 48064 (313) 589-2950

Shipped From : Scott Michigan

Our Project # : 533359

Your P.O. # : 6033WW

Expiration Date : 8-18-93

Cylinder Number : BLH-001040

Cylinder Pressure 1900 psig

1 OF 1 COMPONENT(S)

Customer :

BENEX

2435 CLEVELAND AVENUE N.

ROBEVILLE, MN. 55113

*** CERTIFICATE OF ANALYSIS - EPA PROTOCOL 88868 ***

PERFORMED ACCORDING TO SECTION 3.0.4

Certified Per Traceability Procedure # 61

Protocol # 1

File # PG-2217

Certified Accuracy 1 % NBS Traceable

INSTRUMENTATION

REFERENCE STD

ANALYZED CYLINDER

LAST CALIBRA-

TION DATE

ANALYTICAL PRINCIPLE

FLAME IONIZATION DETECTOR

SRK #

CYLINDER

NUMBER

CONC.

CERTIFIED

CONC.

COMPONENT

16678 FF-26980 47.80 PPM

8M19 ALN-008946 31.20 PPM

30.07 PPM

PROPANE

BALANCE GAS : AIR

BECKMAN

400

2-18-92

ANALYSIS

DATE : 2-18-92

ZERO	TEST	RESULTS	REFERENCE	RESULTS
GAS	GAS	PPM	GAS	PPM
(mV)	(mV)		CONC.	
0.00	30.20	30.07	47.80 PPM	47.80
0.00	30.20	30.07	47.80	47.80
0.00	30.20	30.07	47.80	47.80

CALCULATED RESULTS 30.07
30.07
30.07

AVERAGE : 30.07 PPM

CALIBRATION CURVE				3 rd DEGREE
SRK #	CONC.	SPLIT	DVM	FITTED PERCENT
(CRM #)	PPH	PT (%)	(mV)	VALUE
16678	47.80	100	47.80	47.80 0.00
	31.20	65	31.40	31.26 0.20
	22.61	47	22.60	22.53 -0.35
	8.17	17	8.20	8.23 0.70
	0.00	0	0.00	0.00 0.00
		0		0.0000 0.00
		0		0.00 0.00
8M19	8.17	LOW	8.20	8.23 0.70
16649	47.80	HIGH	47.80	47.80 0.00

8M19 - GAS MANUFACTURER'S INTERNAL STANDARD

which shall be the replacement of this Company's gas which shall be the replacement of this Company's gas

without any other

without any other



Scott Specialty Gases

a division of
Scott Environmental Technology, Inc.

Shipped From : Scott Michigan

Our Project # : 533399

1290 COMBERMERE STREET, TROY, MICHIGAN 48064 (313) 589-2950

Customer :

GENEX

2455 CLEVELAND AVENUE N.
ROSEVILLE, MN. 55113

*** CERTIFICATE OF ANALYSIS - EPA PROTOCOL BASED ***

PERFORMED ACCORDING TO SECTION 3.0.4

Certified Per Traceability

Protocol # 1

Expiration Date : 8-6-93

Cylinder Number : BLM-000633

Cylinder Pressure : 1900 psig

Certified Accuracy 1% NBS TRACEABLE

File # PO-2183

1 OF 1 COMPONENTS

REFERENCE STD

ANALYZED CYLINDER

COMPONENT	CERTIFIED CONC.	SRM # (CRM #)	CYLINDER NUMBER	CONC.
PROPANE	304.3 PPM	16698	CLM-000702	466.0 PPM
		16698	CLM-000694	95.00 PPM

BALANCE GAS : AIR

INSTRUMENTATION

INSTR/MODEL/SERIAL
LAST CALIBRATION DATE

BECKMAN
400
1002059

ANALYTICAL PRINCIPLE

FLAME IONIZATION DETECTOR

H-2

DATE : 2-6-92

ANALYSIS

ZERO : GAS (mV)	TEST GAS (mV)	REFERENCE	
		CONC.	GAS
0.00	65.70	466.0 PPM	100.00
0.00	65.70	100.00	100.00
0.00	65.70	100.00	100.00

CALCULATED RESULTS
304.3
304.3
304.3

AVERAGE : 304.3 PPM

CALIBRATION CURVE

2 nd DEGREE

SRM # (CRM #)	CONC. PPM	SPLIT PT (%)	DVM (mV)	FITTED VALUE	PERCENT ERROR
16698	466.0	100	100.00	466.0	0.00
	315.8	68	68.10	315.6	-0.08
	199.9	43	43.30	199.7	-0.10
16698	95.00	20	20.80	95.45	0.47
	0.0000	0	0.00	0.0000	0.00
		0	0	0.0000	0.00
		0	0	0.00	0.00
16698	95.00	LOW	20.80	95.45	0.47
16698	466.0	HIGH	100.00	466.0	0.00

APPROVED BY : J. P. Davis

J. P. Davis

1 GAS - GAS MANUFACTURER'S INTERNAL STANDARD

which falls to comply with this analysis shall be replacement thereof by the Company without extra cost.

Scott Specialty Gases

a division of
Scott Environmental Technology, Inc.

1290 COMBERMERE STREET, TROY, MICHIGAN 48064 (313) 589-2950

Customer :

GENEX
2455 CLEVELAND AVENUE N.
ROBEVILLE, MN. 55113

1111 CERTIFICATE OF ANALYSIS - EPA PROTOCOL GASES 1111

PERFORMED ACCORDING TO SECTION 2.0.7.

Certified Per Traceability Procedure # 82

Protocol # 2

File # 90-2184

Certified Accuracy 2% ANALYTICAL UNCERTAINTY

1 OF 1 COMPONENTS

ANALYZED CYLINDER

REFERENCE STD

INSTRUMENTATION

COMPONENT
PROPANE

CERTIFIED CONC.
3038 PPM

SRM # CYLINDER NUMBER
16698 CLN-000702
16688 CLN-000694

CONC.
466.0 PPM
95.00 PPM

INSTR/MODEL/SERIAL #
BECKMAN 400 1002059

LAST CALIBRATION DATE
1-23-92

ANALYTICAL PRINCIPLE
FLAME IONIZATION DETECTOR

BALANCE GAS : AIR

H-3 ANALYSIS

DATE : 2-6-92

ZERO	TEST GAS (mV)	RESULTS PPM	REFERENCE GAS		RESULTS PPM
			CONC.	(mV)	
0.00	65.60	303.8	466.0 PPM	100.00	466.0
0.00	65.60	303.8	100.00	100.00	466.0
0.00	65.60	303.8	100.00	100.00	466.0

CALCULATED RESULTS
303.8

SAMPLE GAS SPLIT @ 10% OF FULL CONC.
303.8 PPM DIVIDED BY 10% = 3038 PPM.

CALIBRATION CURVE					2 nd DEGREE
SRM #	CONC. (CRM #)	SPLIT PPM	DMV PT (mV)	FITTED VALUE	PERCENT ERROR
16698	466.0	100	100.00	466.0	0.00
	313.6	60	68.10	313.6	-0.08
	199.9	43	43.30	199.7	-0.10
16688	95.00	20	20.80	95.43	0.47
	0.0000	0	0.00	0.0000	0.00
		0		0.0000	0.00
				0.00	0.00
16688	95.00	LOW	20.80	95.43	0.47
16698	466.0	HIGH	100.00	466.0	0.00

THIS - GAS MANUFACTURER'S INTERIM HANDOUT of this Company for use which fails to comply with this analysis shall be replacement thereof by the Company without extra cost.

Shapiro

Approved By :



Particulate Loadings and Emission Rates

The particulate emission rates were determined per EPA Methods 1-5, CFR title 40, Part 60, Appendix A (revised July 1, 1987). In this procedure, a preliminary velocity profile of the gases in the flue is obtained by means of a temperature and velocity traverse. On the basis of these values, sampling nozzles of appropriate diameter are selected to allow isokinetic sampling, a necessary prerequisite for obtaining a representative sample.

The sampling train consists of a heated glass-lined sampling probe equipped with a Type S pitot and a thermocouple. The probe is attached to a sampling module which houses the all-glass in line filter holder in a temperature controlled oven. In addition, the sampling module also houses the impinger case and a Drierite drying column. The sampling module is connected by means of an umbilical cord to the control module which houses the dry test gasmeter, the calibrated orifice, a leakless pump, two inclined manometers, and all controls required for operating the sampling train.

Particulate samples were collected as follows: The sample gas was drawn in through the sampling probe isokinetically and passed through a 4-inch diameter Gelman Type A/E glass fiber filter. The particulates were removed at this point and collected on the filter. The gases then passed through an ice-cooled impinger train and a desiccant-packed drying column which quantitatively absorb all moisture from the sample gas stream after which the sample gas passes through the pump and the dry test gasmeter which integrates the sample gas flow throughout the course of the test. A calibrated orifice attached to the outlet of the gasmeter provides instantaneous flow rate data.

A representative particulate sample was acquired by sampling for equal periods of time at the centroid of a number of equal area regions in the duct. The sampling rate is adjusted at each site such that an isokinetic sampling condition prevails. Nomographs are used to aid in the rapid determination of the sampling rate.

After sampling is complete, the filter is removed and placed in a clean container. The nozzle and inlet side of the filter holder are quantitatively washed with acetone and the washings are stored in a second container. A brush is often used in the cleaning step to help dislodge deposits. The samples are returned to the laboratory where they are logged in and analyzed. The volume of the acetone rinse ("probe wash") is noted and then the rinse is quantitatively transferred to a tared 120 cc porcelain evaporating dish and the acetone evaporated off at 97-105 °F. This temperature is used to prevent condensation of atmospheric moisture due to the cooling effect induced by the evaporation of acetone. The acetone-free sample is then transferred to an oven and dried at 105 °C for 30 minutes, cooled in a desiccator over Drierite, and then weighed to the nearest .01 mg. The filter sample is quantitatively transferred to a 6-inch watch glass and dried in an oven at 105 °C for two hours. The filter and watch glass are then cooled in a desiccator and the filter weighed to the nearest .01 mg. All weighings are performed in a balance room where the relative humidity is hydrostatted to less than 50% relative humidity. Microscopic examination of the samples is performed if any unusual characteristics are observed. The weight of the acetone rinse is corrected for the acetone blank. The Drierite column is weighed on-site and the water collected by Drierite is added to the condensate so that the total amount of absorbed water may be ascertained.

Integrated gas samples for Orsat analysis were collected at a constant flow rate throughout each particulate run. The gas samples were analyzed using an all-glass Orsat analyzer. Standard commercially prepared solutions were used in the Orsat analyzer (sat. KOH for carbon dioxide and reduced methylene blue for oxygen). In addition to the above, the oxygen content of the flue gas was measured at each traverse during the particulate determinations using a Teledyne Model 320P-4 Portable Oxygen Analyzer to sample the effluent from the Method 5 train.

Interpoll Laboratories
(612)786-6020

Condensible Organic Compounds Analysis
(State of Wisconsin - EPA Method 5)
Method II-8672-WI

Equipment: Separatory funnel - 500 cc with Teflon stopcock
 Powder funnel - 75 mm ID with a glass wood plug
 Evaporating dish(es) - 200 cc or 250 cc beaker

Reagents: Methylene chloride
 Sodium sulfate - (ACS) granular anhydrous (purified by
 heating for four hours in a shallow tray)

SAMPLING:

An all-glass impinger assembly is used in the back half of the EPA Method 5 sampling train when an organic wet catch is to be collected. The impinger assembly consists of a modified impinger, a Greenburg Smith impinger followed by another modified impinger. The third impinger should have a temperature measuring device at the outlet upstream of a final impinger or desiccant column to monitor the temperature of the outlet gas stream. Prior to the start of the test, each of the first two impingers should be charged with 100 g of Class I water. The Method 5 train should be operated as provided for in EPA Method 5. Ice should be added to the impinger bath to keep the temperature of the gas at the outlet at or less than 68 °F. After the post test leak check, the impinger train is removed and impinger contents poured into a tared all-glass sample bottle and closed with a Teflon-lined cap. The sample bottle is then weighed and the total condensate calculated by subtraction of the bottle tare weight and the

weight of initial water added to the impingers (200 g). A label is affixed and the sample is returned to the laboratory for analysis. The sample should be stored at 4 °C if the analysis is not conducted within 48 hours.

ANALYSIS:

1. Sample bottles are removed from storage and the contents quantitatively transferred to a clean 500 cc separatory funnel equipped with a Teflon stopcock.
2. Rinse the sample container with distilled water and add to separatory funnel.
3. Then rinse the sample container with acetone and pour through sodium sulfate into a tare beaker marked A.
4. The sample is then extracted consecutively with three 50 cc aliquots of methylene chloride. The extraction is performed according to normal laboratory practice observing the customary safety precaution of releasing excess pressure after each shaking.
5. After each of the three extractions are completed, the organic solvent should be dried by passing it through a funnel containing anhydrous sodium sulfate and collecting it and two 50 cc rinses in the tared beaker marked A (the same one used to catch the acetone container rinse).
6. Evaporate to dryness in a hood at 70 °F or less. Do not evaporate so quickly as to allow evaporative cooling to lower the temperature of the container below the dew point otherwise water will be condensed in the container.

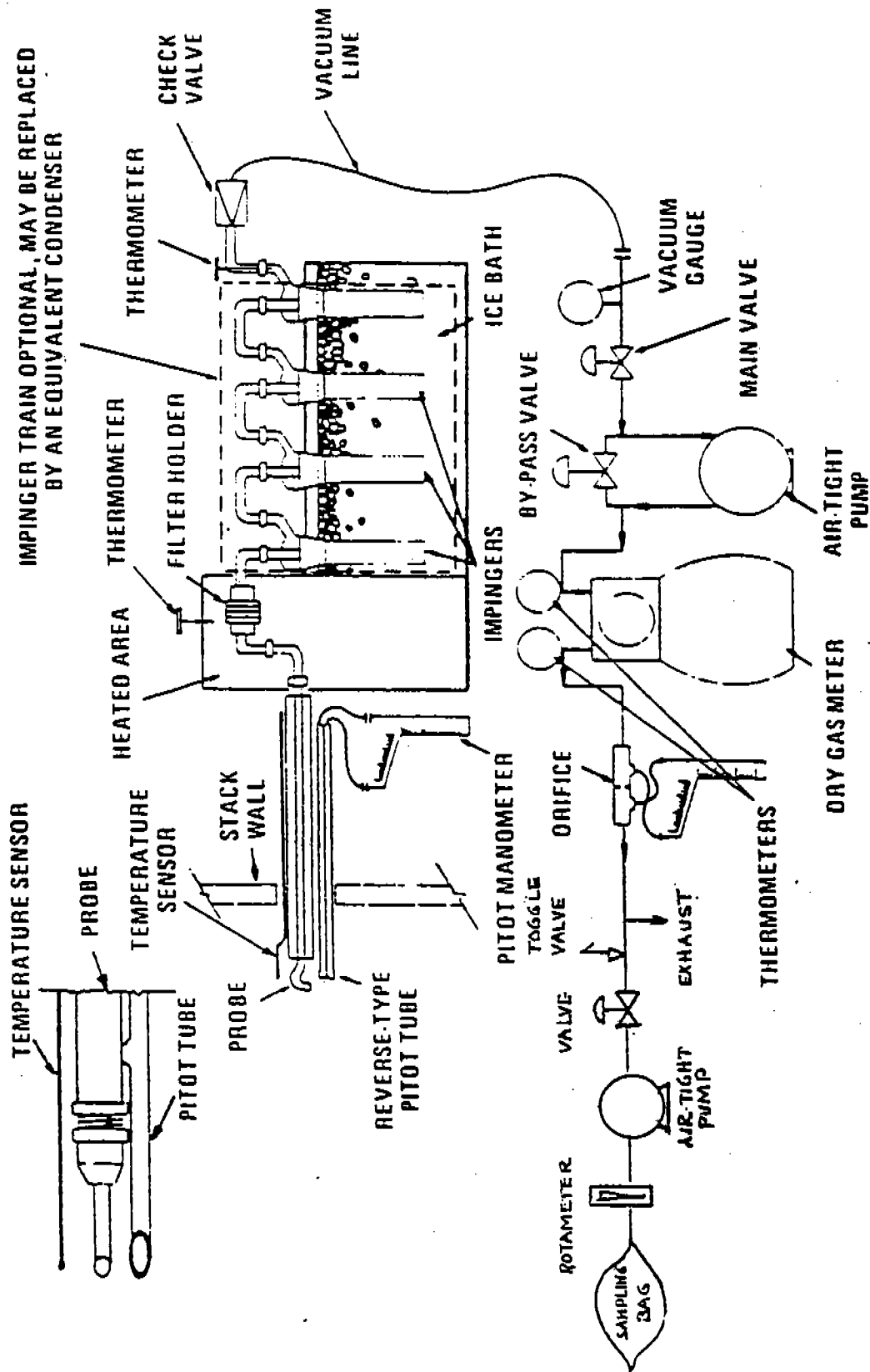
7. Desiccate for two hours in a sealed desiccator and final weigh. Report all results in grams. All weighings should be made to nearest 0.1 mg (four places).
8. The remaining liquid in the separatory funnel is then transferred to a tared beaker marked B and is evaporated to dryness at $220^{\circ}\text{F} \pm 10^{\circ}\text{F}$. The analyst may take an aliquot of the sample, transferring it to a tared beaker and evaporate to dryness at $220^{\circ}\text{F} \pm 10^{\circ}\text{F}$. If an aliquot is used, the weight of the sample and aliquot will have to be taken to correct for the total sample weight.
9. After the drying step, the sample is cooled in a desiccator and weighted to a constant weight to the nearest 0.1 mg.

Calculation (if aliquot is taken):

$$\text{grams} = \frac{(\text{grams recovered from aliquot}) \times (\text{total volume (ml) or grams of sample})}{(\text{aliquot volume (ml) or grams used})}$$

If volume is used, it must be used for both the aliquot and sample. The same goes for using weight.

10. A field blank should be analyzed in an identical manner. If a field blank is not submitted, take an aliquot of Class I water equal in volume to the samples and analyze in a similar manner.
11. The results for container A are to be marked in the organic section of Interpoll Form #LSC-036.
12. The results for container B are to be marked in the inorganic section of Interpoll Form #LSC-036.



Particulate sampling train.

METHOD 201A - DETERMINATION OF PM_{10} EMISSIONS
(Constant Sampling Rate Procedure)

(55 FR 14246)

1. Applicability and Principle

1.1 Applicability. This method applies to the in-stack measurement of particulate matter (PM) emissions equal to or less than an aerodynamic diameter of nominally 10 μm (PM_{10}) from stationary sources. The EPA recognizes that condensible emissions not collected by an in-stack method are also PM_{10} , and that emissions that contribute to ambient PM_{10} levels are the sum of condensible emissions and emissions measured by an in-stack PM_{10} method, such as this method or Method 201. Therefore, for establishing source contributions to ambient levels of PM_{10} , such as for emission inventory purposes, EPA suggests that source PM_{10} measurement include both in-stack PM_{10} and condensible emissions. Condensible emissions may be measured by an impinger analysis in combination with this method.

1.2 Principle. A gas sample is extracted at a constant flow rate through an in-stack sizing device, which separates PM greater than PM_{10} . Variations from isokinetic sampling conditions are maintained within well-defined limits. The particulate mass is determined gravimetrically after removal of uncombined water.

2. Apparatus

NOTE: Methods cited in this method are part of 40 CFR Part 60, Appendix A.

2.1 Sampling Train. A schematic of the Method 201A sampling train is shown in Figure 1. With the exception of the PM_{10} sizing device and in-stack filter, this train is the same as an EPA Method 17 train.

2.1.1 Nozzle. Stainless steel (316 or equivalent) with a sharp tapered leading edge. Eleven nozzles that meet the design specifications in Figure 2

are recommended. A large number of nozzles with small nozzle increments increase the likelihood that a single nozzle can be used for the entire traverse. If the nozzles do not meet the design specifications in Figure 2, then the nozzles must meet the criteria in Section 5.2.

2.1.2 PM_{10} Sizer. Stainless steel (316 or equivalent), capable of determining the PM_{10} fraction. The sizing device shall be either a cyclone that meets the specifications in Section 5.2 or a cascade impactor that has been calibrated using the procedure in Section 5.4.

2.1.3 Filter Holder. 63-mm, stainless steel. An Andersen filter, part number SE274, has been found to be acceptable for the in-stack filter.

NOTE: Mention of trade names or specific products does not constitute endorsement by the Environmental Protection Agency.

2.1.4 Pitot Tube. Same as in Method 5, Section 2.1.3. The pitot lines shall be made of heat resistant tubing and attached to the probe with stainless steel fittings.

2.1.5 Probe Liner. Optional, same as in Method 5, Section 2.1.2.

2.1.6 Differential Pressure Gauge, Condenser, Metering System, Barometer, and Gas Density Determination Equipment. Same as in Method 5, Sections 2.1.4, and 2.1.7 through 2.1.10, respectively.

2.2 Sample Recovery.

2.2.1 Nozzle, Sizing Device, Probe, and Filter Holder Brushes. Nylon bristle brushes with stainless steel wire shafts and handles, properly sized and shaped for cleaning the nozzle, sizing device, probe or probe liner, and filter holders.

2.2.2 Wash Bottles, Glass Sample Storage Containers, Petri Dishes, Graduated Cylinder and Balance, Plastic Storage Containers, Funnel and Rubber

Policeman, and Funnel. Same as in Method 5, Sections 2.2.2 through 2.2.8, respectively.

2.3 Analysis. Same as in Method 5, Section 2.3.

3. Reagents

The reagents for sampling, sample recovery, and analysis are the same as that specified in Method 5, Sections 3.1, 3.2, and 3.3, respectively.

4. Procedure

4.1 Sampling. The complexity of this method is such that, in order to obtain reliable results, testers should be trained and experienced with the test procedures.

4.1.1 Pretest Preparation. Same as in Method 5, Section 4.1.1.

4.1.2 Preliminary Determinations. Same as in Method 5, Section 4.1.2, except use the directions on nozzle size selection and sampling time in this method. Use of any nozzle ^{less than} greater than 0.16 in. in diameter require a sampling port diameter of 6 inches. Also, the required maximum number of traverse points at any location shall be 12. ? See pg. 22

4.1.2.1 The sizing device must be in-stack or maintained at stack temperature during sampling. The blockage effect of the CSR sampling assembly will be minimal if the cross-sectional area of the sampling assemble is 3 percent or less of the cross-sectional area of the duct. ^{ie $D_s \geq 17.5$ inches} If the cross-sectional area of the assembly is greater than 3 percent of the cross-sectional area of the duct, then either determine the pitot coefficient at sampling conditions or use a standard pitot with a known coefficient in a configuration with the CSR sampling assembly such that flow disturbances are minimized.

* When $D_s \leq 17.5$ inches, blockage exceeds 3%

4.1.2.2 The setup calculations can be performed by using the following procedures.

4.1.2.2.1 In order to maintain a cut size of $10\ \mu\text{m}$ in the sizing device, the flow rate through the sizing device must be maintained at a constant, discrete value during the run. If the sizing device is a cyclone that meets the design specifications in Figure 3, use the equations in Figure 4 to calculate three orifice ^{pressure drops} heads (ΔH): one at the average stack temperature, and the other two at temperatures $\pm 28^\circ\text{C}$ ($\pm 50^\circ\text{F}$) of the average stack temperature. Use the ΔH calculated at the average stack temperature as the ^{orifice} pressure head for the sample flow rate as long as the stack temperature during the run is within 28°C (50°F) of the average stack temperature. If the stack temperature varies by more than 28°C (50°F), then use the appropriate ΔH .

4.1.2.2.3 To select a nozzle, use the equations in Figure 5 to calculate $\Delta p_{\min}$ and $\Delta p_{\max}$ for each nozzle at all three temperatures. If the sizing device is a cyclone that does not meet the design specifications in Figure 3, the example worksheets can be used.

4.1.2.2.4 Correct the Method 2 pitot readings to Method 201A pitot readings by multiplying the Method 2 pitot readings by the square of a ratio of the Method 201A pitot coefficient to the Method 2 pitot coefficient.

Select the nozzle for which $\Delta p_{\min}$ and $\Delta p_{\max}$ bracket all of the corrected Method 2 pitot readings. If more than one nozzle meets this requirement,

select the nozzle giving the greatest symmetry. Note that if the expected pitot reading for one or more points is near a limit for a chosen nozzle, it may be outside the limits at the time of the run.

4.1.2.2.5 Vary the dwell time, or sampling time, at each traverse point proportionately with the point velocity. Use the equations in Figure 6 to calculate the dwell time at the first point and at each subsequent point. It is recommended that the number of minutes sampled at each point be rounded to the nearest 15 seconds.

4.1.3 Preparation of Collection Train. Same as in Method 5, Section 4.1.3, except omit directions about a glass cyclone.

4.1.4 Leak-Check Procedure. The sizing device is removed before the post-test leak-check to prevent any disturbance of the collected sample prior to analysis.

4.1.4.1 Pretest Leak-Check. A pretest leak-check of the entire sampling train, including the sizing device, is required. Use the leak-check procedure in Method 5, Section 4.1.4.1 to conduct a pretest leak-check.

4.1.4.2 Leak-Checks During Sample Run. Same as in Method 5, Section 4.1.4.1.

4.1.4.3 Post-Test Leak-Check. A leak-check is required at the conclusion of each sampling run. Remove the cyclone before the leak-check to prevent the vacuum created by the cooling of the probe from disturbing the collected sample and use the procedure in Method 5, Section 4.1.4.3 to conduct a post-test leak-check.

4.1.5 Method 201A Train Operation. Same as in Method 5, Section 4.1.5, except use the procedures in this section for isokinetic sampling and flow rate adjustment. Maintain the flow rate calculated in Section 4.1.2.2.1

throughout the run provided the stack temperature is within 28°C (50°F) of the temperature used to calculate ΔH . If stack temperatures vary by more than 28°C (50°F), use the appropriate ΔH value calculated in Section 4.1.2.2.1. Calculate the dwell time at each traverse point as in Figure 6.

4.2 Sample Recovery. If a cascade impactor is used, use the manufacturer's recommended procedures for sample recovery. If a cyclone is used, use the same sample recovery as that in Method 5, Section 4.2, except an increased number of sample recovery containers is required.

4.2.1 Container Number 1 (In-Stack Filter). The recovery shall be the same as that for Container Number 1 in Method 5, Section 4.2.

4.2.3 Container Number 2 (Cyclone or Large PM Catch). This step is optional. The anisokinetic error for the cyclone PM is theoretically larger than the error for the PM_{10} catch. Therefore, adding all the fractions to get a total PM catch is not as accurate as Method 5 or Method 201. Disassemble the cyclone and remove the nozzle to recover the large PM catch. Quantitatively recover the PM from the interior surfaces of the nozzle and cyclone, excluding the "turn around" cup and the interior surfaces of the exit tube. The recovery shall be the same as that for Container Number 2 in Method 5, Section 4.2.

4.2.4 Container Number 3 (PM_{10}). Quantitatively recover the PM from all of the surfaces from the cyclone exit to the front half of the in-stack filter holder, including the "turn around" cup inside the cyclone and the interior surfaces of the exit tube. The recovery shall be the same as that for Container Number 2 in Method 5, Section 4.2.

4.2.6 Container Number 4 (Silica Gel). The recovery shall be the same as that for Container Number 3 in Method 5, Section 4.2.

4.2.7 Impinger Water. Same as in Method 5, Section 4.2, under "Impinger Water."

4.3 Analysis. Same as in Method 5, Section 4.3, except handle Method 201A Container Number 1 like Container Number 1, Method 201A Container Numbers 2 and 3 like Container Number 2, and Method 201A Container Number 4 like Container Number 3. Use Figure 7 to record the weights of PM collected. Use Figure 5-3 in Method 5, Section 4.3, to record the volume of water collected.

4.4 Quality Control Procedures. Same as in Method 5, Section 4.4.

4.5 PM_{10} Emission Calculation and Acceptability of Results. Use the procedures in Section 6 to calculate PM_{10} emissions and the criteria in Section 6.3.5 to determine the acceptability of the results.

5. Calibration

Maintain an accurate laboratory log of all calibrations.

5.1 Probe Nozzle, Pitot Tube, Metering System, Probe Heater Calibration, Temperature Gauges, Leak-check of Metering System, and Barometer. Same as in Method 5, Section 5.1 through 5.7, respectively.

6. Calculations

Calculations are as specified in Method 5, Sections 6.3 through 6.7, and 6.9 through 6.11, with the addition of the following:

6.1 Nomenclature.

- B_{ws} = Moisture fraction of stack, by volume, dimensionless.
- C_1 = Viscosity constant, 51.12 micropoise for °K (51.05 micropoise for °R).
- C_2 = Viscosity constant, 0.372 micropoise/°K (0.207 micropoise/°R).
- C_3 = Viscosity constant, 1.05×10^{-4} micropoise/°K² (3.24×10^{-5} micropoise/°R²).
- C_4 = Viscosity constant, 53.147 micropoise/fraction O₂.
- C_5 = Viscosity constant, 74.143 micropoise/fraction H₂O.
- D_{50} = Diameter of particles having a 50 percent probability of penetration, μm .
- f_o = Stack gas fraction O₂, by volume, dry basis.
- K_1 = 0.3858 °K/mm Hg (17.64 °R/in. Hg).
- M_w = Wet molecular weight of the stack gas, g/g-mole (lb/lb-mole).
- M_d = Dry molecular weight of stack gas, g/g-mole (lb/lb-mole).
- P_{bar} = Barometric pressure at sampling site, mm Hg (in. Hg).
- P_s = Absolute stack pressure, mm Hg (in. Hg).
- Q_s = Total cyclone flow rate at wet cyclone conditions, m³/min (ft³/min). YES!
- $Q_{s(std)}$ = Total cyclone flow rate at ^{dry} standard conditions, dscm/min (dscf/min). DSCFM YES!
- T_m = Average absolute temperature of dry meter, °K (°R).
- T_s = Average absolute stack gas temperature, °K (°R).

$V_{m(std)}$ = Volume of gas measured by the dry gas meter, corrected to standard conditions, dscm (dscf).

$V_{w(std)}$ = Volume of water vapor in gas sample (standard conditions), scm (scf).

θ = Total sampling time, min.

μ_s = Viscosity of stack gas, micropoise.

6.2 Analysis of Cascade Impactor Data. Use the manufacturer's recommended procedures to analyze data from cascade impactors.

6.3 Analysis of Cyclone Data. Use the following procedures to analyze data from a single stage cyclone.

6.3.1 PM_{10} Weight. Determine the PM catch in the PM_{10} range from the sum of the weights obtained from Container Numbers 1 and 3 less the acetone blank.

6.3.2 Total PM Weight (optional). Determine the PM catch for greater than PM_{10} from the weight obtained from Container Number 2 less the acetone blank, and add it to the PM_{10} weight.

6.3.3 PM_{10} Fraction. Determine the PM_{10} fraction of the total particulate weight by dividing the PM_{10} particulate weight by the total particulate weight.

6.3.4 Aerodynamic Cut Size. Calculate the stack gas viscosity as follows:

$$\mu_s = C_1 + C_2 T_s + C_3 T_s^2 + C_4 f_{O_2} - C_5 B_{ws}$$

No! Use equation on page 24

$$V_{w(std)} = .04707 (V_f - V_i)$$

6.3.4.1 The PM₁₀ flow rate, at actual cyclone conditions, is calculated as follows:

$$Q_s = \frac{T_s}{K_1 P_s} \left(Q_{s(std)} + \frac{V_{w(std)}}{\theta} \right)$$

$$T_s = \bar{T}_s + 466$$

$$\text{but } Q_{s(std)} = \frac{V_{m(std)}}{\theta}$$

$$K_1 = 17.64$$

Substituting gives:

$$Q_s = \frac{5.467 \times 10^{-2} (\bar{T}_s + 466)}{\theta P_s} [V_{m(std)} + .04707 (V_f - V_i)]$$

6.3.4.2 Calculate the molecular weight on a wet basis of the stack gas as follows:

$$M_w = M_d (1 - B_{ws}) + 18.0 (B_{ws})$$

6.3.4.3 Calculate the actual D₅₀ of the cyclone for the given conditions as follows:

$$D_{50} = \beta_1 \left(\frac{T_s}{M_w P_s} \right)^{0.2091} \left(\frac{\mu_s}{Q_s} \right)^{0.7091}$$

actual cutpoint
achieved during
run

where $\beta_1 = 0.027754$ for metric units (0.15625 for English units).

6.3.5 Acceptable Results. The results are acceptable if two conditions are met. The first is that $9.0 \mu\text{m} \leq D_{50} \leq 11.0 \mu\text{m}$. The second is that no sampling points are outside $\Delta p_{\min}$ and $\Delta p_{\max}$, or that $80 \text{ percent} \leq I \leq 120 \text{ percent}$ and no more than one sampling point is outside $\Delta p_{\min}$ and $\Delta p_{\max}$. If D_{50} is less than $9.0 \mu\text{m}$, reject the results and repeat the test.

7. Bibliography

1. Same as Bibliography in Method 5.
2. McCain, J.D., J.W. Ragland, and A.D. Williamson. Recommended Methodology for the Determination of Particle Size Distributions in Ducted Sources, Final Report. Prepared for the California Air Resources Board by Southern Research Institute. May 1986.
3. Farthing, W.E., S.S. Dawes, A.D. Williamson, J.D. McCain, R.S. Martin, and J.W. Ragland. Development of Sampling Methods for Source PM₁₀ Emissions. Southern Research Institute for the Environmental Protection Agency. April 1989. NTIS PB 89 190375, EPA/600/3-88-056.
4. Application Guide for Source PM₁₀ Measurement with Constant Sampling Rate, EPA/600/3-88-057.

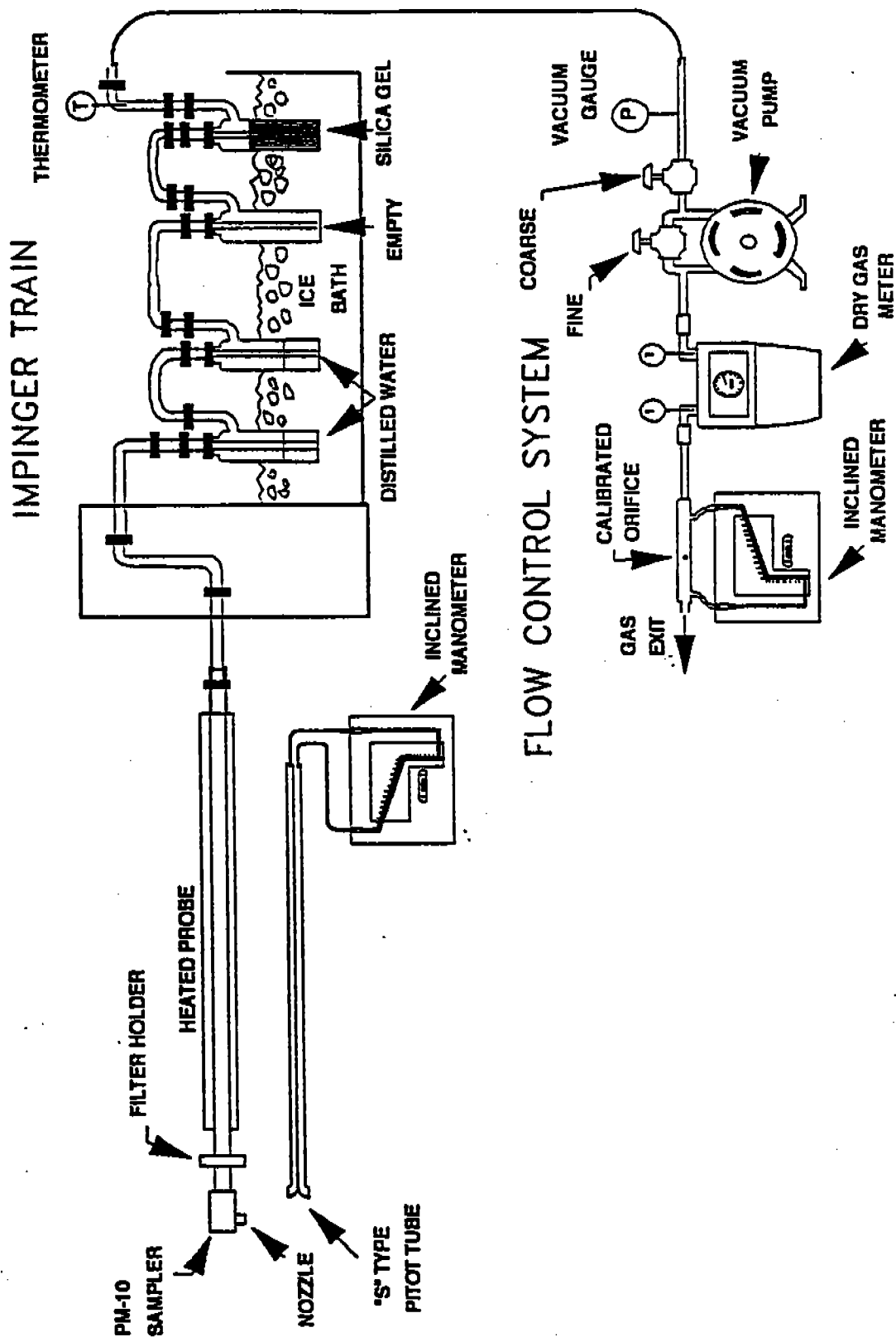
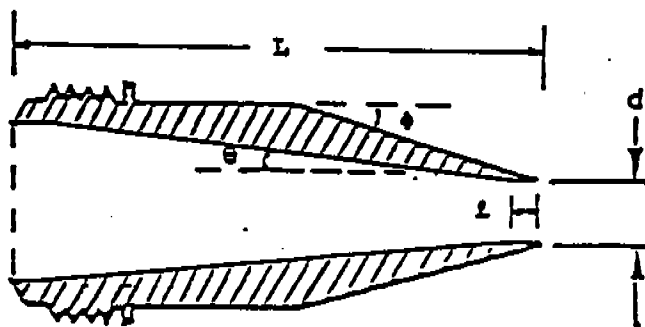


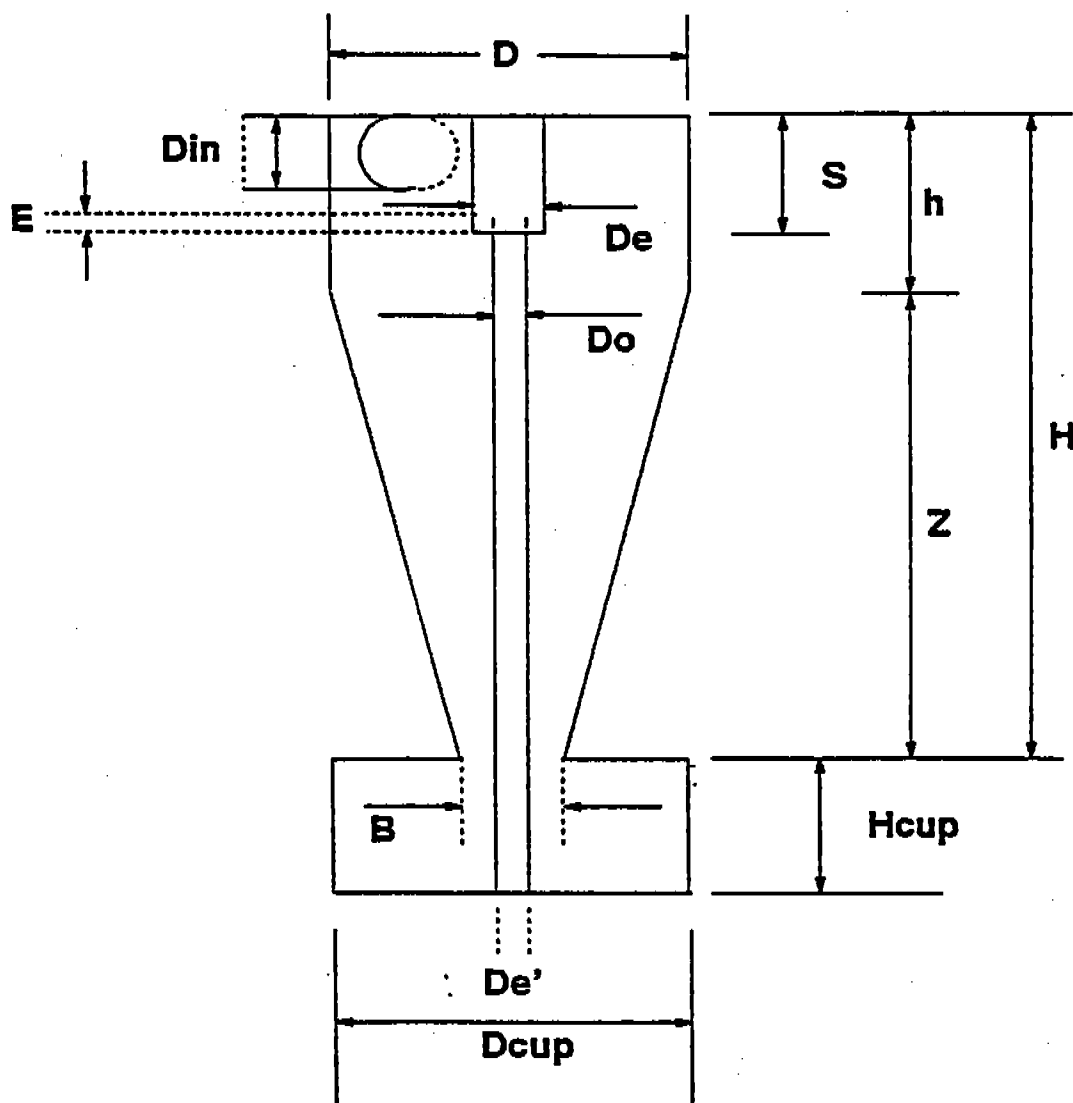
Figure 1. CSR Sampling Train



Nozzle Diameter (inches)	Cone Angle, θ (degrees)	Outside taper, ϕ (degrees)	Straight inlet length, l (inches)	Total Length L (inches)
0.136	4	15	<0.05	2.653 $\pm$ 0.05
0.150	4	15	<0.05	2.553 $\pm$ 0.05
0.164	5	15	<0.05	1.970 $\pm$ 0.05
0.180	6	15	<0.05	1.572 $\pm$ 0.05
0.197	6	15	<0.05	1.491 $\pm$ 0.05
0.215	6	15	<0.05	1.45 $\pm$ 0.05
0.233	6	15	<0.05	1.45 $\pm$ 0.05
0.264	5	15	<0.05	1.45 $\pm$ 0.05
0.300	4	15	<0.05	1.48 $\pm$ 0.05
0.342	4	15	<0.05	1.45 $\pm$ 0.05
0.390	3	15	<0.05	1.45 $\pm$ 0.05

Figure 2. Nozzle design specifications.

Cyclone Interior Dimensions



		Dimensions (+0.02 cm, +0.01 in.)												
		Din	D	De	B	H	h	Z	S	Hcup	Dcup	De'	Do	E
cm		1.27	4.47	1.50	1.88	6.95	2.24	4.71	1.57	2.25	4.45	1.02	1.24	0.25
in.		0.50	1.76	0.59	0.74	2.74	0.88	1.85	0.62	0.89	1.75	0.40	0.49	0.10

Figure 3. Cyclone design specifications.

Barometric pressure, P_{bar} , in. Hg = _____
 Stack static pressure, P_s , in. H₂O = _____
 Average stack temperature, t_s , °F = _____
 Meter temperature, t_m , °F = _____
 Orifice ΔH_s , in. H₂O = _____

Gas analysis:

$\%CO_2$ = _____
 $\%O_2$ = _____
 $\%N_2 + \%CO$ = _____
 Fraction moisture content, B_{ws} = _____

Molecular weight of stack gas, dry basis:

$$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO) = \text{_____ lb/lb mole}$$

Molecular weight of stack gas, wet basis:

$$M_w = M_d(1 - B_{ws}) + 18(B_{ws}) = \text{_____ lb/lb mole}$$

Absolute stack pressure:

$$P_s = P_{\text{bar}} + \frac{P_s}{13.6} = \text{_____ in. Hg}$$

Viscosity of stack gas:

$$\mu_s = 152.418 + 0.2552 t_s + 3.2355 \times 10^{-5} t_s^2 + 0.53147 (\%O_2) - 74.143 B_{ws} = \text{_____ micropoise}$$

Cyclone flow rate:

$$Q_s = 0.002837 \mu_s \left(\frac{t_s + 460}{M_w P_s} \right)^{0.2949} = \text{_____ ft}^3/\text{min}$$

Figure 4. Example worksheet 1 (Page 1 of 2), cyclone flow rate and ΔH .

Orifice pressure head (ΔH) needed for cyclone flow rate: note

$$\Delta H = \left[\frac{Q_s (1 - B_{ws}) P_s}{t_s + 460} \right]^2 \frac{(t_s + 460) M_d (1.083) \Delta H_a}{P_{bar}} = \text{_____ in. H}_2\text{O}$$

Calculate ΔH for three temperatures:

$t_s, ^\circ\text{F}$			
$\Delta H, \text{in. H}_2\text{O}$			

Figure 4. Example worksheet 1 (Page 2 of 2), cyclone flow rate and ΔH .

Stack viscosity, μ_s , micropoise = _____
 Absolute stack pressure, P_s , in. Hg = _____
 Average stack temperature, t_s , °F = _____
 Meter temperature, t_m , °F = _____
 Method 201A pitot coefficient, C_p = _____
 Cyclone flow rate, ft^3/min , Q_s = _____
 Method 2 pitot coefficient, C_p = _____
 Molecular weight of stack gas, wet basis, M_w = _____
 Nozzle diameter, D_n , in. = _____

Nozzle velocity

$$v_n = \frac{3.056 Q_s}{D_n^2} = \text{_____ ft/sec}$$

Maximum and minimum velocities:

Calculate R_{min} .

$$R_{min} = 0.2457 + \sqrt{0.3072 - \frac{0.2603 (\sqrt{Q_s}) \mu_s}{v_n^{1.5}}} = \text{_____}$$

If R_{min} is less than 0.5, or if an imaginary number occurs when calculating R_{min} , use Equation 1 to calculate v_{min} . Otherwise, use Equation 2.

Eq. 1 $v_{min} = v_n (0.5) = \text{_____ ft/sec}$

Eq. 2 $v_{min} = v_n R_{min} = \text{_____ ft/sec}$

Calculate R_{max} .

$$R_{max} = 0.4457 + \sqrt{0.5690 + \frac{0.2603 (\sqrt{Q_s}) \mu_s}{v_n^{1.5}}} = \text{_____}$$

Figure 5. Example worksheet 2 (page 1 of 2), nozzle selection.

If $R_{\max}$ is greater than 1.5, use Equation 3 to calculate $v_{\max}$. Otherwise, use Equation 4.

Eq. 3 $v_{\max} = v_n (1.5) = \underline{\hspace{2cm}} \text{ ft/sec}$

Eq. 4 $v_{\max} = v_n R_{\max} = \underline{\hspace{2cm}} \text{ ft/sec}$

Maximum and minimum velocity head values:

$$\Delta p_{\min} = 1.3686 \times 10^{-4} \frac{P_s M_w (v_{\min})^2}{(t_s + 460) C_p^2} = \underline{\hspace{2cm}} \text{ in. H}_2\text{O}$$

$$\Delta p_{\max} = 1.3686 \times 10^{-4} \frac{P_s M_w (v_{\max})^2}{(t_s + 460) C_p^2} = \underline{\hspace{2cm}} \text{ in. H}_2\text{O}$$

Nozzle Number				
D_n , in.				
v_n , ft/sec				
$v_{\min}$, ft/sec				
$v_{\max}$, ft/sec				
$\Delta p_{\min}$, in. H ₂ O				
$\Delta p_{\max}$, in. H ₂ O				

Velocity traverse data:

incorrect

$$\Delta p(\text{Method 201A}) = \Delta p(\text{Method 2}) \left(\frac{C_p}{C_p} \right)^2 = \Delta p^{M2} \left(\frac{C_p^{M2}}{C_p^{201A}} \right)^2$$

Figure 5. Example worksheet 2 (page 2 of 2), nozzle selection.

4-11-91 P

Total run time, minutes = _____

Number of traverse points = _____

$$t_1 = \left[\frac{\Delta p'_1}{\Delta p'_{avg}} \left(\frac{\text{Total run time}}{\text{Number of points}} \right) \right]$$

where:

t_1 = dwell time at first traverse point, minutes.

$\Delta p'_1$ = the velocity head at the first traverse point (from a previous traverse), in. H_2O .

$\Delta p'_{avg}$ = the square of the average square root of the Δp 's (from a previous velocity traverse), in. H_2O .

At subsequent traverse points, measure the velocity Δp and calculate the dwell time by using the following equation:

$$t_n = \frac{t_1}{\sqrt{\Delta p_1}} \sqrt{\Delta p_n}, \text{ where } n = 2, 3, \dots \text{total number of sampling points}$$

where:

t_n = dwell time at traverse point n , minutes.

Δp_n = measured velocity head at point n , in. H_2O .

Δp_1 = measured velocity head at point 1, in. H_2O .

Figure 6. Example worksheet 3 (page 1 of 2), dwell time.

Port No _____ Port No _____ Port No _____ Port No _____

Point Number	Δp	t	Δp	t	Δp	t	Δp	t
1								
2								
3								
4								
5								
6								

Figure 6. Example worksheet 3 (page 2 of 2), dwell time.

Plant _____
 Date _____
 Run no. _____
 Filter no. _____
 Amount of liquid lost during transport _____
 Acetone blank volume, ml _____
 Acetone wash volume, ml (4) _____ (5) _____
 Acetone blank conc., mg/mg (Equation 5-4, Method 5) _____
 Acetone wash blank, mg (Equation 5-5, Method 5) _____

Container number	Weight of PM ₁₀ (mg)		
	Final weight	Tare weight	Weight gain
1			
3			
Total.....			
Less acetone blank.....			
Weight of PM ₁₀			

Figure 7. Method 201A analysis sheet.

**TABLE 1. PERFORMANCE SPECIFICATIONS FOR SOURCE PM₁₀ CYCLONES
AND NOZZLE COMBINATIONS**

Parameter	Units	Specification
1. Collection efficiency	Percent	Such that collection efficiency falls within envelope specified by Section 5.2.6 and Figure 8.
2. Cyclone cut size (D ₅₀)	μm	10 ± 1 μm aerodynamic diameter

TABLE 2. PARTICLE SIZES AND NOMINAL GAS VELOCITIES FOR EFFICIENCY

Particle size (μm) ^a	Target gas velocities (m/sec)		
	7 ± 1.0	15 ± 1.5	25 ± 2.5
5 ± 0.5			
7 ± 0.5			
10 ± 0.5			
14 ± 1.0			
20 ± 1.0			

(a) Mass median aerodynamic diameter.

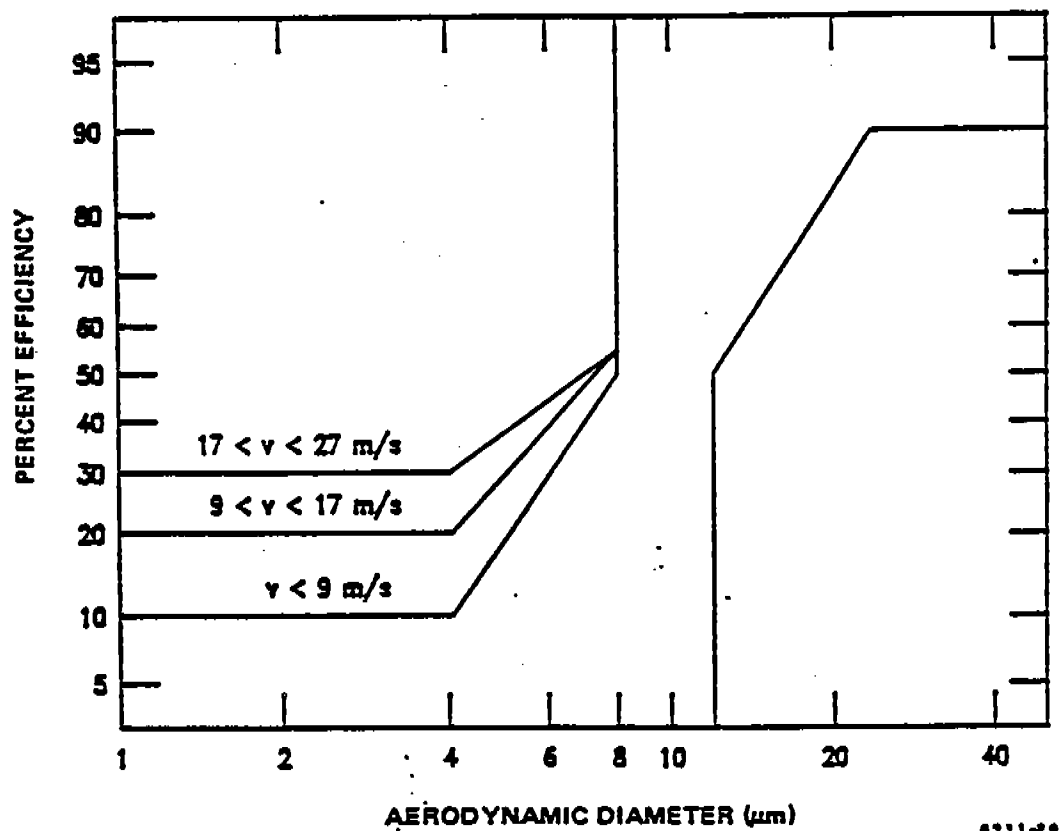


Figure 8. Efficiency envelope for the PM₁₀ cyclone.

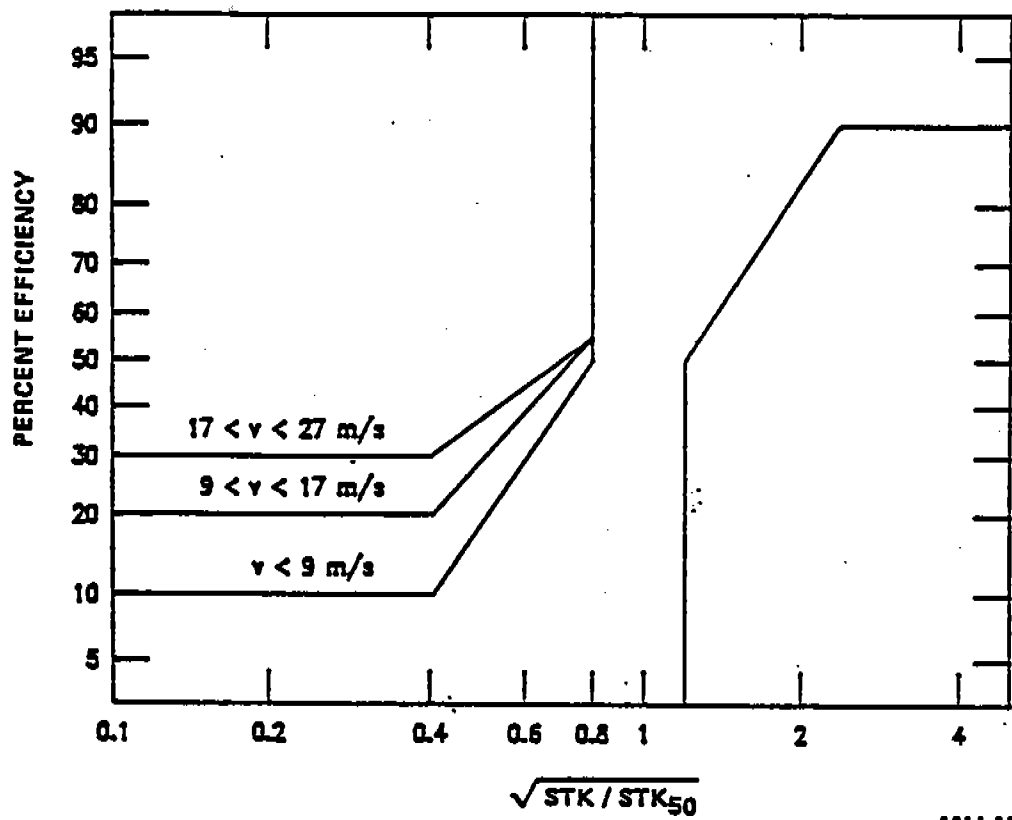


Figure 9. Efficiency envelope for first calibration stage.

(CO) content using a Luft-type nondispersive infrared analyzer (NDIR) or equivalent.

1.2 Applicability. This method is applicable for the determination of carbon monoxide emissions from stationary sources only when specified by the test procedures for determining compliance with new source performance standards. The test procedure will indicate whether a continuous or an integrated sample is to be used.

2. Range and Sensitivity

2.1 Range. 0 to 1,000 ppm.

2.2 Sensitivity. Minimum detectable concentration is 20 ppm for a 0 to 1,000 ppm span.

3. Interferences

Any substance having a strong absorption of infrared energy will interfere to some extent. For example, discrimination ratios for water (H_2O) and carbon dioxide (CO_2) are 3.5 percent H_2O per 7 ppm CO and 10 percent CO_2 per 10 ppm CO, respectively, for devices measuring in the 1,500 to 3,000 ppm range. For devices measuring in the 0 to 100 ppm range, interference ratios can be as high as 3.5 percent H_2O per 25 ppm CO and 10 percent CO_2 per 50 ppm CO. The use of silica gel and ascarite traps will alleviate the major interference problems. The measured gas volume must be corrected if these traps are used.

4. Precision and Accuracy

4.1 Precision. The precision of most NDIR analyzers is approximately ± 2 percent of span.

4.2 Accuracy. The accuracy of most NDIR analyzers is approximately ± 5 percent of span after calibration.

5. Apparatus

5.1 Continuous Sample (Figure 10-1).

5.1.1 Probe. Stainless steel or sheathed Pyrex¹ glass, equipped with a filter to remove particulate matter.

5.1.2 Air-Cooled Condenser or Equivalent. To remove any excess moisture.

5.2 Integrated Sample (Figure 10-2).

5.2.1 Probe. Stainless steel or sheathed Pyrex glass, equipped with a filter to remove particulate matter.

5.2.2 Air-Cooled Condenser or Equivalent. To remove any excess moisture.

5.2.3 Valve. Needle valve, or equivalent, to adjust flow rate.

5.2.4 Pump. Leak-free diaphragm type, or equivalent, to transport gas.

5.2.5 Rate Meter. Rotameter, or equivalent, to measure a flow range from 0 to 1.0 liter per min (0.035 cfm).

METHOD 10—DETERMINATION OF CARBON MONOXIDE EMISSIONS FROM STATIONARY SOURCES

1. Principle and Applicability

1.1 Principle. An integrated or continuous gas sample is extracted from a sampling point and analyzed for carbon monoxide

¹ Mention of trade names or specific products does not constitute endorsement by the Environmental Protection Agency.

5.2.6 Flexible Bag. Tedlar, or equivalent, with a capacity of 60 to 90 liters (2 to 3 ft³). Leak-test the bag in the laboratory before using by evacuating bag with a pump followed by a dry gas meter. When evacuation is complete, there should be no flow through the meter.

5.2.7 Pitot Tube. Type S, or equivalent, attached to the probe so that the sampling rate can be regulated proportional to the stack gas velocity when velocity is varying with the time or a sample traverse is conducted.

5.3 Analysis (Figure 10-3).

5.3.1 Carbon Monoxide Analyzer. Nondispersive infrared spectrometer, or equivalent. This instrument should be demonstrated, preferably by the manufacturer, to meet or exceed manufacturer's specifications and those described in this method.

5.3.2 Drying Tube. To contain approximately 200 g of silica gel.

5.3.3 Calibration Gas. Refer to section 6.1.

5.3.4 Filter. As recommended by NDIR manufacturer.

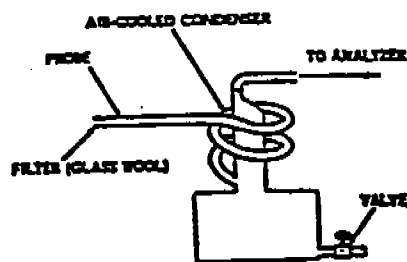


Figure 10-1. Continuous sampling train.

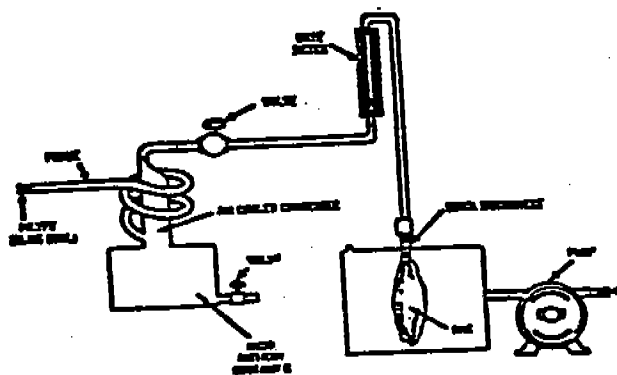


Figure 10-2. Integrated pre-sampling train.

5.3.5 CO₂ Removal Tube. To contain approximately 500 g of ascarite.

5.3.6 Ice Water Bath. For ascarite and silica gel tubes.

5.3.7 Valve. Needle valve, or equivalent, to adjust flow rate

5.3.8 Rate Meter. Rotameter or equivalent to measure gas flow rate of 0 to 1.0 liter per min (0.035 cfm) through NDIR.

5.3.9 Recorder (optional). To provide permanent record of NDIR readings.

6. Reagents

6.1 Calibration Gases. Known concentration of CO in nitrogen (N₂) for instrument span, prepurified grade of N₂ for zero, and two additional concentrations corresponding approximately to 60 percent and 30 percent span. The span concentration shall not exceed 1.5 times the applicable source performance standard. The calibration gases shall be certified by the manufacturer to be within ± 2 percent of the specified concentration.

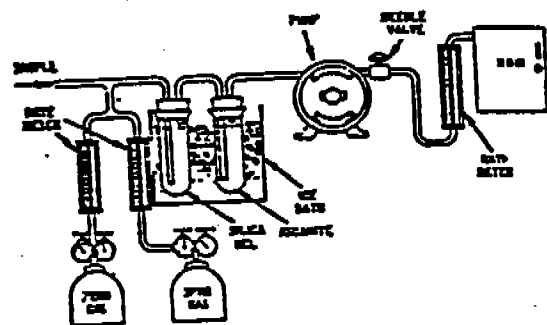


Figure 10-3. Analytical equipment.

6.2 Silica Gel. Indicating type, 6 to 16 mesh, dried at 175° C (347° F) for 2 hours.

6.3 Ascarite. Commercially available.

7. Procedure

7.1 Sampling.

7.1.1 Continuous Sampling. Set up the equipment as shown in Figure 10-1 making sure all connections are leak free. Place the probe in the stack at a sampling point and purge the sampling line. Connect the analyzer and begin drawing sample into the analyzer. Allow 5 minutes for the system to stabilize, then record the analyzer reading as required by the test procedure. (See section 7.2 and 8). CO₂ content of the gas may be determined by using the Method 3 integrated sample procedure, or by weighing the ascarite CO₂ removal tube and computing CO₂ concentration from the gas volume sampled and the weight gain of the tube.

7.1.2 Integrated Sampling. Evacuate the flexible bag. Set up the equipment as shown in Figure 10-2 with the bag disconnected. Place the probe in the stack and purge the sampling line. Connect the bag, making sure that all connections are leak free. Sample at a rate proportional to the stack velocity. CO₂ content of the gas may be determined by using the Method 3 integrated sample procedures, or by weighing the ascarite CO₂ removal tube and computing CO₂ concentration.

tion from the gas volume sampled and the weight gain of the tube.

7.2 CO Analysis. Assemble the apparatus as shown in Figure 10-3, calibrate the instrument, and perform other required operations as described in section 8. Purge analyzer with N₂ prior to introduction of each sample. Direct the sample stream through the instrument for the test period, recording the readings. Check the zero and span again after the test to assure that any drift or malfunction is detected. Record the sample data on Table 10-1.

8. Calibration

Assemble the apparatus according to Figure 10-3. Generally an instrument requires a warm-up period before stability is obtained. Follow the manufacturer's instructions for specific procedure. Allow a minimum time of 1 hour for warm-up. During this time check the sample conditioning apparatus, i.e., filter, condenser, drying tube, and CO₂ removal tube, to ensure that each component is in good operating condition. Zero and calibrate the instrument according to the manufacturer's procedures using, respectively, nitrogen and the calibration gases.

TABLE 10-1—FIELD DATA

Comments	
Location	_____
Test	_____
Date	_____
Operator	_____
Clock time	Rotameter setting, liters per minute (cubic feet per minute)

9. Calculation

Concentration of carbon monoxide. Calculate the concentration of carbon monoxide in the stack using Equation 10-1.

$$C_{CO \text{ stack}} = C_{CO \text{ msa}}(1 - F_{CO_2})$$

Eq. 10-1

Where:

$C_{CO \text{ stack}}$ = Concentration of CO in stack, ppm by volume (dry basis).

$C_{CO \text{ NDIR}}$ = Concentration of CO measured by NDIR analyzer, ppm by volume (dry basis).

F_{CO_2} = Volume fraction of CO₂ in sample, i.e., percent CO₂ from Orsat analysis divided by 100.

10. Alternative Procedures

10.1 Interference Trap. The sample conditioning system described in Method 10A, sections 2.1.2 and 4.2, may be used as an alternative to the silica gel and ascarite traps.

11. Bibliography

- 11.1 McElroy, Frank, The Intertech NDIR-CO Analyzer, Presented at 11th Methods Conference on Air Pollution, University of California, Berkeley, CA. April 1, 1970.
- 11.2 Jacobs, M. B., et al, Continuous Determination of Carbon Monoxide and Hydrocarbons in Air by a Modified Infrared Analyzer, J. Air Pollution Control Association, 9(2): 110-114, August 1959.
- 11.3 MSA LIRA Infrared Gas and Liquid Analyzer Instruction Book, Mine Safety Appliances Co., Technical Products Division, Pittsburgh, PA.
- 11.4 Models 215A, 315A, and 415A Infrared Analyzers, Beckman Instruments, Inc., Beckman Instructions 1835-B, Fullerton, CA. October 1967.
- 11.5 Continuous CO Monitoring System, Model A5611, Intertech Corp., Princeton, NJ.
- 11.6 UNOR Infrared Gas Analyzers, Bendix Corp., Ronceverte, WV

ADDENDA

A. PERFORMANCE SPECIFICATIONS FOR NDIR CARBON MONOXIDE ANALYZERS

Range (minimum)	0-1000 ppm.
Output (minimum)	0-10mV.
Minimum detectable sensitivity.	20 ppm.
Rise time, 90 percent (maximum).	30 seconds.
Fall time, 90 percent (maximum).	30 seconds.
Zero drift (maximum)	10% in 8 hours.
Span drift (maximum)	10% in 8 hours.
Precision (minimum)	±2% of full scale.
Noise (maximum)	±1% of full scale.
Linearity (maximum deviation)	2% of full scale.
Interference rejection ratio	CO ₂ —1000 to 1, H ₂ O—500 to 1.

B. Definitions of Performance Specifications.

Range—The minimum and maximum measurement limits.

Output—Electrical signal which is proportional to the measurement; intended for connection to readout or data processing devices. Usually expressed as millivolts or milliamperes full scale at a given impedance.

Full scale—The maximum measuring limit for a given range.

Minimum detectable sensitivity—The smallest amount of input concentration that can be detected as the concentration approaches zero.

Accuracy—The degree of agreement between a measured value and the true value; usually expressed as $\pm$ percent of full scale.

Time to 90 percent response—The time interval from a step change in the input concentration at the instrument inlet to a reading of 90 percent of the ultimate recorded concentration.

Rise Time (90 percent)—The interval between initial response time and time to 90 percent response after a step increase in the inlet concentration.

Fall Time (90 percent)—The interval between initial response time and time to 90 percent response after a step decrease in the inlet concentration.

Zero Drift—The change in instrument output over a stated time period, usually 24 hours, of unadjusted continuous operation when the input concentration is zero; usually expressed as percent full scale.

Span Drift—The change in instrument output over a stated time period, usually 24 hours, of unadjusted continuous operation when the input concentration is a stated upscale value; usually expressed as percent full scale.

Precision—The degree of agreement between repeated measurements of the same concentration, expressed as the average deviation of the single results from the mean.

Noise—Spontaneous deviations from a mean output not caused by input concentration changes.

Linearity—The maximum deviation between an actual instrument reading and the reading predicted by a straight line drawn between upper and lower calibration points.

METHOD 10A—DETERMINATION OF CARBON MONOXIDE EMISSIONS IN CERTIFYING CONTINUOUS EMISSION MONITORING SYSTEMS AT PETROLEUM REFINERIES

1. Applicability and Principle

1.1 Applicability. This method applies to the measurement of carbon monoxide (CO) at petroleum refineries. This method serves as the reference method in the relative accuracy test for nondispersive infrared (NDIR) CO continuous emission monitoring systems (CEMS's) that are required to be installed in petroleum refineries on fluid cata-

lytic cracking unit catalyst regenerators [40 CFR Part 60.105(a)(2)].

1.2 Principle. An integrated gas sample is extracted from the stack, passed through an alkaline permanganate solution to remove sulfur and nitrogen oxides, and collected in a Tedlar bag. The CO concentration in the sample is measured spectrophotometrically using the reaction of CO with p-sulfamino-benzoic acid.

1.3. Range and Sensitivity.

1.3.1 Range. Approximately 3 to 1800 ppm CO. Samples having concentrations below 400 ppm are analyzed at 425 nm, and samples having concentrations above 400 ppm are analyzed at 600 nm.

1.3.2 Sensitivity. The detection limit is 3 ppm based on three times the standard deviation of the mean reagent blank values.

1.4 Interferences. Sulfur oxides, nitric oxide, and other acid gases interfere with the colorimetric reaction. They are removed by passing the sampled gas through an alkaline potassium permanganate scrubbing solution. Carbon dioxide (CO₂) does not interfere, but, because it is removed by the scrubbing solution, its concentration must be measured independently and an appropriate volume correction made to the sampled gas.

1.5 Precision, Accuracy, and Stability.

1.5.1 Precision. The estimated intralaboratory standard deviation of the method is 3 percent of the mean for gas samples analyzed in duplicate in the concentration range of 39 to 412 ppm. The interlaboratory precision has not been established.

1.5.2 Accuracy. The method contains no significant biases when compared to an NDIR analyzer calibrated with National Bureau of Standards (NBS) standards.

1.5.3 Stability. The individual components of the colorimetric reagent are stable for at least 1 month. The colorimetric reagent must be used within 2 days after preparation to avoid excessive blank correction. The samples in the Tedlar¹ bag should be stable for at least 1 month if the bags are leak-free.

2. Apparatus

2.1 Sampling. The sampling train is shown in Figure 10A-1, and component parts are discussed below.

¹ Mention of trade names or commercial products in this publication does not consti-

tute the endorsement or recommendation for use by the Environmental Protection Agency.

SAMPLING FOR FORMALDEHYDE EMISSIONS FROM STATIONARY SOURCES JUL 16 1990

1.0 SCOPE AND APPLICATION

INTERPOLL LABORATORIES

1.1 This method is applicable to the determination of Destruction and Removal Efficiency (DRE) of formaldehyde, CAS Registry number 50-00-0, and possibly other aldehydes and ketones from stationary sources as specified in the regulations. The methodology has been applied specifically to formaldehyde; however, many laboratories have extended the application to other aldehydes and ketones. Compounds derivatized with 2,4-dinitrophenylhydrazine can be detected as low as 6.4×10^{-8} lbs/cu ft (1.8 ppbv) in stack gas over a 1 h sampling period, sampling approximately 45 cu ft.

2.0 SUMMARY OF METHOD

2.1 Gaseous and particulate pollutants are withdrawn isokinetically from an emission source and are collected in aqueous acidic 2,4-dinitrophenylhydrazine. Formaldehyde present in the emissions reacts with the 2,4-dinitrophenylhydrazine to form the formaldehyde dinitrophenylhydrazone derivative. The dinitrophenylhydrazone derivative is extracted, solvent-exchanged, concentrated, and then analyzed by high performance liquid chromatography.

3.0 INTERFERENCES

3.1 A decomposition product of 2,4-dinitrophenylhydrazine, 2,4-dinitroaniline, can be an analytical interferent if concentrations are high. 2,4-dinitroaniline can coelute with the 2,4-dinitrophenylhydrazone of formaldehyde under high performance liquid chromatography conditions which may be used for the analysis. High concentrations of highly oxygenated compounds, especially acetone, that have the same retention time or nearly the same retention time as the dinitrophenylhydrazone of formaldehyde and that also absorb at 360 nm will interfere with the analysis.

Formaldehyde, acetone, and 2,4-dinitroaniline contamination of the aqueous acidic 2,4-dinitrophenylhydrazine (DNPH) reagent is frequently encountered. The reagent must be prepared within five days of use in the field and must be stored in an uncontaminated environment both before and after sampling in order to minimize blank problems. Some level of acetone contamination is unavoidable, because acetone is ubiquitous in laboratory and field operations. However, the acetone contamination must be minimized.

4.0 APPARATUS AND MATERIALS

4.1 A schematic of the sampling train is shown in Figure 1. This sampling train configuration is adapted from EPA Method 5 procedures. The sampling train consists of the following components: Probe Nozzle, Pitot Tube, Differential Pressure Gauge, Metering System, Barometer, and Gas Density Determination Equipment.

4.1.1 Probe Nozzle: Quartz or glass with sharp, tapered (30° angle) leading edge. The taper shall be on the outside to preserve a constant inner diameter. The nozzle shall be buttonhook or elbow design. A range of nozzle sizes suitable

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for isokinetic sampling should be available in increments of 0.16 cm (1/16 in), e.g., 0.32 to 1.27 cm (1/8 to 1/2 in), or larger if higher volume sampling trains are used. Each nozzle shall be calibrated according to the procedures outlined in Section 8.1.

4.1.2 Probe Liner: Borosilicate glass or quartz shall be used for the probe liner. The tester should not allow the temperature in the probe to exceed $120 \pm 14^{\circ}\text{C}$ ($248 \pm 25^{\circ}\text{F}$).

4.1.3 Pitot Tube: The Pitot tube shall be Type S, as described in Section 2.1 of EPA Method 2, or any other appropriate device. The pitot tube shall be attached to the probe to allow constant monitoring of the stack gas velocity. The impact (high pressure) opening plane of the pitot tube shall be even with or above the nozzle entry plane (see EPA Method 2, Figure 2-6b) during sampling. The Type S pitot tube assembly shall have a known coefficient, determined as outlined in Section 4 of EPA Method 2.

4.1.4 Differential Pressure Gauge: The differential pressure gauge shall be an inclined manometer or equivalent device as described in Section 2.2 of EPA Method 2. One manometer shall be used for velocity-head readings and the other for orifice differential pressure readings.

4.1.5 Impingers: The sampling train requires a minimum of four impingers, connected as shown in Figure 1, with ground glass (or equivalent) vacuum-tight fittings. For the first, third, and fourth impingers, use the Greenburg-Smith design, modified by replacing the tip with a 1.3-cm inside diameter (1/2 in) glass tube extending to 1.3 cm (1/2 in) from the bottom of the flask. For the second impinger, use a Greenburg-Smith impinger with the standard tip. Place a thermometer capable of measuring temperature to within 1°C (2°F) at the outlet of the fourth impinger for monitoring purposes.

4.1.6 Metering System: The necessary components are a vacuum gauge, leak-free pump, thermometers capable of measuring temperature within 3°C (5.4°F), dry-gas meter capable of measuring volume to within 1%, and related equipment as shown in Figure 1. At a minimum, the pump should be capable of 4 cfm free flow, and the dry gas meter should have a recording capacity of 0-999.9 cu ft with a resolution of 0.005 cu ft. Other metering systems may be used which are capable of maintaining sampling rates within 10% of isokinetic collection and of determining sample volumes to within 2%. The metering system may be used in conjunction with a pitot tube to enable checks of isokinetic sampling rates.

4.1.7 Barometer: The barometer may be mercury, aneroid, or other barometer capable of measuring atmospheric pressure to within 2.5 mm Hg (0.1 in Hg). In many cases, the barometric reading may be obtained from a nearby National Weather Service Station, in which case the station value (which is the absolute barometric pressure) is requested and an adjustment for elevation differences between the weather station and sampling point is applied at a rate of minus 2.5 mm Hg (0.1 in Hg) per 30 m (100 ft) elevation increase (vice versa for elevation decrease).

4.1.8 Gas Density Determination Equipment: Temperature sensor and pressure gauge (as described in Sections 2.3 and 2.4 of EPA Method 2), and gas analyzer, if necessary (as described in EPA Method 3). The temperature sensor ideally should be permanently attached to the pitot tube or sampling probe in a fixed

configuration such that the tip of the sensor extends beyond the leading edge of the probe sheath and does not touch any metal. Alternatively, the sensor may be attached just prior to use in the field. Note, however, that if the temperature sensor is attached in the field, the sensor must be placed in an interference-free arrangement with respect to the Type S pitot tube openings (see EPA Method 2, Figure 2-7). As a second alternative, if a difference of no more than 1% in the average velocity measurement is to be introduced, the temperature gauge need not be attached to the probe or pitot tube.

4.2 Sample Recovery

4.2.1 Probe Liner: Probe nozzle and brushes; Teflon® bristle brushes with stainless steel wire handles are required. The probe brush shall have extensions of stainless steel, Teflon®, or inert material at least as long as the probe. The brushes shall be properly sized and shaped to brush out the probe liner, the probe nozzle, and the impingers.

4.2.2 Wash Bottles: Three wash bottles are required. Teflon® or glass wash bottles are recommended; polyethylene wash bottles should not be used because organic contaminants may be extracted by exposure to organic solvents used for sample recovery.

4.2.3 Graduated Cylinder and/or Balance: A graduated cylinder or balance is required to measure condensed water to the nearest 1 mL or 1 g. Graduated cylinders shall have divisions not >2 mL. Laboratory balances capable of weighing to ± 0.5 g are required.

4.2.4 Amber Glass Storage Containers: One-liter wide-mouth amber flint glass bottles with Teflon®-lined caps are required to store impinger water samples. The bottles must be sealed with Teflon® tape.

4.2.5 Rubber Policeman and Funnel: A rubber policeman and funnel are required to aid in the transfer of materials into and out of containers in the field.

5.0 REAGENTS

Reagent grade chemicals or better grades shall be used in all tests. Unless otherwise indicated, all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available.

5.1 Water: HPLC-grade water is used in preparation of DNPH reagent and in all other applications in the sampling train.

5.2 Silica Gel: Silica gel shall be indicating type, 6-16 mesh. If the silica gel has been used previously, dry at 175°C (350°F) for 2 h before using. New silica gel may be used as received. Alternatively, other types of desiccants (equivalent or better) may be used.

5.3 Crushed Ice: Quantities ranging from 10-50 lb may be necessary during a sampling run, depending upon ambient temperature. Samples which have been taken must be stored and shipped cold; sufficient ice for this purpose must be allowed.

5.4 2,4-Dinitrophenylhydrazine Reagent: The 2,4-dinitrophenylhydrazine reagent must be prepared in the laboratory within five days of sampling use in the field. Preparation of DNPH can also be done in the field, with consideration of appropriate procedures required for safe handling of solvent in the field. When a container of prepared DNPH reagent is opened in the field, the contents of the opened container should be used within 48 hours. All laboratory glassware must be washed with detergent and water and rinsed with water, methanol, and methylene chloride prior to use.

NOTE: The glassware must not be rinsed with acetone or unacceptable levels of acetone contamination will be introduced. If field preparation of DNPH is performed, caution must be exercised in avoiding acetone contamination.

Reagent bottles for storage of cleaned DNPH derivatizing solution must be rinsed with acetonitrile and dried before use. Baked glassware is not essential for preparation of DNPH reagent.

NOTE: DNPH crystals or DNPH solution should be handled with plastic gloves at all times, with prompt and extensive use of running water in case of skin exposure.

5.4.1 Preparation of Aqueous Acidic DNPH: The following materials and reagents are required for preparation of the reagent.

5.4.1.1 Bottles/Caps: amber 1- or 4 L bottles with Teflon®-lined caps are required for storing cleaned DNPH solution. Additional 4-L bottles are required to collect waste organic solvents.

5.4.1.2 Large Glass Container: at least one large glass container (8 to 16 L) is required for mixing the aqueous acidic DNPH solution.

5.4.1.3 Stir Plate/Large Stir Bars/Stir Bar Retriever: a magnetic stir plate and large stir bar are required for the mixing of the aqueous acidic DNPH solution. A stir bar retriever is needed for removing the stir bar from the large container holding the DNPH solution.

5.4.1.4 Buchner Filter/Filter Flask/Filter Paper: a large filter flask (2-4 L) with a buchner filter, appropriate rubber stopper, filter paper, and connecting tubing are required for filtering the aqueous acidic DNPH solution prior to cleaning.

5.4.1.5 Separatory Funnels: at least one large separatory funnel (2 L) is required for cleaning the DNPH prior to use.

5.4.1.6 Beakers: beakers (150 mL, 250 mL, and 400 mL) are useful for holding/measuring organic liquids when cleaning the aqueous acidic DNPH solution and for weighing DNPH crystals.

5.4.1.7 Funnels: at least one large funnel is needed for pouring the aqueous acidic DNPH into the separatory funnel.

5.4.1.8 Graduated Cylinders: at least one large graduated cylinder (1 to 2 L) is required for measuring HPLC-grade water and acid when preparing the DNPH solution.

5.4.1.9 Top-Loading Balance: a one-place top loading balance is needed for weighing out the DNPH crystals used to prepare the aqueous acidic DNPH solution.

5.4.1.10 Spatulas: spatulas are needed for weighing out DNPH when preparing the aqueous DNPH solution.

5.4.1.11 HPLC-Grade Water: water (HPLC-grade) is required to mix the aqueous DNPH solution.

5.4.1.12 Hydrochloric Acid: reagent grade hydrochloric acid (approximately 12N) is required for acidifying the aqueous DNPH solution.

5.4.1.13 2,4-Dinitrophenylhydrazine: a supply of moist solid 2,4-dinitrophenylhydrazine (DNPH) is required for preparation of aqueous acidic DNPH solution. The quantity of water may vary from 10 to 30%. Reagent grade or equivalent is required.

5.4.1.14 Methylene Chloride: methylene chloride (suitable for residue and pesticide analysis, GC/MS, HPLC, GC, Spectrophotometry or equivalent) is required for cleaning the aqueous acidic DNPH solution, rinsing glassware, and recovery of sample trains.

5.4.1.15 Cyclohexane: cyclohexane (HPLC grade) is required for cleaning the aqueous acidic DNPH solution.

NOTE: Do not use spectroanalyzed grades of cyclohexane if this sampling methodology is extended to aldehydes and ketones with four or more carbon atoms.

5.4.1.16 Methanol: methanol (HPLC grade or equivalent) is required for rinsing glassware.

5.4.1.17 Acetonitrile: acetonitrile (HPLC grade or equivalent) is required for rinsing glassware.

5.4.1.18 Formaldehyde: Analytical grade or equivalent formaldehyde is required for preparation of standards. If other aldehydes or ketones are used, analytical grade or equivalent is required.

5.4.2 Preparation of Aqueous Acidic DNPH Derivatizing Reagent: Each batch of DNPH reagent should be prepared and purified within five days of sampling, according to the procedure described below.

5.4.2.1 Place an 8-L container under a fume hood on a magnetic stirrer. Add a large stir bar and fill the container half full of HPLC-grade water. Save the empty bottle from HPLC-grade water. Start the stirring bar and adjust the stir rate to be as fast as possible. Using a graduated cylinder, measure 1.4 mL of concentrated hydrochloric acid. Slowly pour the acid into the stirring water. Fumes may be generated and the water may become warm. Weigh the DNPH crystals on a one-place balance (see Table 1 for approximate amounts) and add to the stirring acid solution. Fill the 8 L container to the 8 L mark with HPLC water and stir overnight. If all of the DNPH crystals have dissolved overnight, add additional DNPH and stir for two more hours. Continue the process of adding DNPH with additional stirring until a saturated solution has been formed. Filter the DNPH solution using vacuum filtration. Gravity filtration may be used, but a

much longer time is required. Store the filtered solution in an amber bottle at room temperature.

TABLE 1. APPROXIMATE AMOUNT OF CRYSTALLINE DNPH USED
TO PREPARE A SATURATED SOLUTION

Amount of Moisture in DNPH	Weight Required per 8 L of Solution
10 weight percent	31 g
15 weight percent	33 g
30 weight percent	40 g

Within five days of proposed use, place about 1.6 L of the DNPH reagent in a 2 L separatory funnel. Add approximately 200 mL of methylene chloride and stopper the funnel. Wrap the stopper of the funnel with paper towels to absorb any leakage. Invert and vent the funnel. Then shake vigorously for 3 minutes. Initially, the funnel should be vented frequently (every 10 - 15 sec). After the layers have separated, discard the lower (organic) layer.

Extract the DNPH a second time with methylene chloride and finally with cyclohexane. When the cyclohexane layer has separated from the DNPH reagent, the cyclohexane layer will be the top layer in the separatory funnel. Drain the lower layer (the cleaned extracted DNPH reagent solution) into an amber bottle that has been rinsed with acetonitrile and allowed to dry.

5.4.3 Quality Control: Take two aliquots of the extracted DNPH reagent. The size of the aliquots is dependent upon the exact sampling procedure used, but 100 mL is reasonably representative. To ensure that the background in the reagent is acceptable for field use, analyze one aliquot of the reagent according to the procedure of EPA Draft Method 8315. Save the other aliquot of aqueous acidic DNPH for use as a method blank when the analysis is performed.

5.4.4 Shipment to the Field: Tightly cap the bottle containing extracted DNPH reagent using a Teflon®-lined cap. Seal the bottle with Teflon® tape. After the bottle is labeled, the bottle may be placed in a friction-top can (paint can or equivalent) containing a 1 -2 inch layer of granulated charcoal and stored at ambient temperature until use.

If the DNPH reagent has passed the Quality Control criteria, the reagent may be packaged to meet necessary shipping requirements and sent to the sampling area. If the Quality Control criteria are not met, the reagent solution may be re-extracted or the solution may be re-prepared and the extraction sequence repeated.

If the DNPH reagent is not used in the field within five days of extraction, an aliquot may be taken and analyzed as described Draft Method 8315. If the reagent meets the Quality Control requirements, the reagent may be used. If the reagent does not meet Quality Control requirements, the reagent must be discarded and new reagent must be prepared and tested.

5.4.5 Calculation of Acceptable Levels of Impurities in DNPH Reagent: The acceptable impurity level (AIL, $\mu\text{g/mL}$) is calculated from the expected analyte level in the sampled gas (EAL, ppbv), the volume of air that will be sampled at standard conditions (SVOL, L), the formula weight of the analyte (FW, g/mol), and the volume of DNPH reagent that will be used in the impingers (RVOL, mL):

$$\text{AIL} = 0.1 \times [\text{EAL} \times \text{SVOL} \times \text{FW}/22.4 \times (\text{FW} + 180)/\text{FW}] / (\text{RVOL} \times 1000).$$

where 0.1 is the acceptable contaminant level, 22.4 is a factor relating ppbv to g/L, 180 is a factor relating the underivatized analyte to the derivatized analyte, and 1000 is a unit conversion factor.

5.4.6 Disposal of Excess DNPH Reagent: Excess DNPH reagent may be returned to the laboratory and recycled or treated as aqueous waste for disposal purposes. 2,4-Dinitrophenylhydrazine is a flammable solid when dry so water should not be evaporated from the solution of the reagent.

5.5 Field Spike Standard Preparation: To prepare a formaldehyde field spiking standard at 4.01 mg/mL, use a 500 μL syringe to transfer 0.5 mL of 37% by weight of formaldehyde (401 mg/mL) to a 50 mL volumetric flask containing approximately 40 mL of methanol. Dilute to 50 mL with methanol.

6.0 SAMPLE COLLECTION, PRESERVATION, AND HANDLING

6.1 Because of the complexity of this method, field personnel should be trained in and experienced with the test procedures in order to obtain reliable results.

6.2 Laboratory Preparation:

6.2.1 All the components shall be maintained and calibrated according to the procedure described in APTD-0576, unless otherwise specified.

6.2.2 Weigh several 200- to 300-g portions of silica gel in airtight containers to the nearest 0.5 g. Record on each container the total weight of the silica gel plus containers. As an alternative to preweighing the silica gel, it may instead be weighed directly in the impinger or sampling holder just prior to train assembly.

6.3 Preliminary Field Determinations:

6.3.1 Select the sampling site and the minimum number of sampling points according to EPA Method 1 or other relevant criteria. Determine the stack pressure, temperature, and range of velocity heads using EPA Method 2. A leak-check of the pitot lines according to EPA Method 2, Section 3.1, must be performed. Determine the stack gas moisture content using EPA Approximation Method 4 or its alternatives to establish estimates of isokinetic sampling-rate settings. Determine the stack gas dry molecular weight, as described in EPA Method 2, Section 3.6. If integrated EPA Method 3 sampling is used for molecular weight determination, the integrated bag sample shall be taken simultaneously with, and for the same total length of time as, the sample run.

6.3.2 Select a nozzle size based on the range of velocity heads so that it is not necessary to change the nozzle size in order to maintain isokinetic sampling rates below 28 L/min (1.0 cfm). During the run, do not change the nozzle.

Ensure that the proper differential pressure gauge is chosen for the range of velocity heads encountered (see Section 2.2 of EPA Method 2).

6.3.3 Select a suitable probe liner and probe length so that all traverse points can be sampled. For large stacks, to reduce the length of the probe, consider sampling from opposite sides of the stack.

6.3.4 A minimum of 45 ft³ of sample volume is required for the determination of the Destruction and Removal Efficiency (DRE) of formaldehyde from incineration systems (45ft³ is equivalent to one hour of sampling at 0.75 dscf). Additional sample volume shall be collected as necessitated by the capacity of the DNPH reagent and analytical detection limit constraints. To determine the minimum sample volume required, refer to sample calculations in Section 10.

6.3.5 Determine the total length of sampling time needed to obtain the identified minimum volume by comparing the anticipated average sampling rate with the volume requirement. Allocate the same time to all traverse points defined by EPA Method 1. To avoid timekeeping errors, the length of time sampled at each traverse point should be an integer or an integer plus 0.5 min.

6.3.6 In some circumstances (e.g., batch cycles) it may be necessary to sample for shorter times at the traverse points and to obtain smaller gas-volume samples. In these cases, careful documentation must be maintained in order to allow accurate calculation of concentrations.

6.4 Preparation of Collection Train:

6.4.1 During preparation and assembly of the sampling train, keep all openings where contamination can occur covered with Teflon® film or aluminum foil until just prior to assembly or until sampling is about to begin.

6.4.2 Place 100 mL of cleaned DNPH solution in each of the first two impingers, and leave the third impinger empty. If additional capacity is required for high expected concentrations of formaldehyde in the stack gas, 200 mL of DNPH per impinger may be used or additional impingers may be used for sampling. Transfer approximately 200 to 300 g of pre-weighed silica gel from its container to the fourth impinger. Care should be taken to ensure that the silica gel is not entrained and carried out from the impinger during sampling. Place the silica gel container in a clean place for later use in the sample recovery. Alternatively, the weight of the silica gel plus impinger may be determined to the nearest 0.5 g and recorded.

6.4.3 With a glass or quartz liner, install the selected nozzle using a Viton-A O-ring when stack temperatures are <260°C (500°F) and a woven glass-fiber gasket when temperatures are higher. See APTD-0576 (Rom, 1972) for details. Other connecting systems utilizing either 316 stainless steel or Teflon® ferrules may be used. Mark the probe with heat-resistant tape or by some other method to denote the proper distance into the stack or duct for each sampling point.

6.4.4 Assemble the train as shown in Figure 1. During assembly, do not use any silicone grease on ground-glass joints upstream of the impingers. Use Teflon® tape, if required. A very light coating of silicone grease may be used on ground-glass joints downstream of the impingers, but the silicone grease should be limited to the outer portion (see APTD-0576) of the ground-glass joints to

minimize silicone grease contamination. If necessary, Teflon® tape may be used to seal leaks. Connect all temperature sensors to an appropriate potentiometer/display unit. Check all temperature sensors at ambient temperature.

6.4.5 Place crushed ice all around the impingers. . .

6.4.6 Turn on and set the probe heating system at the desired operating temperature. Allow time for the temperature to stabilize. . . .

6.5 Leak-Check Procedures:

6.5.1 Pre-test Leak Check:

6.5.1.1 After the sampling train has been assembled, turn on and set the probe heating system at the desired operating temperature. Allow time for the temperature to stabilize. If a Viton-A O-ring or other leak-free connection is used in assembling the probe nozzle to the probe liner, leak-check the train at the sampling site by plugging the nozzle and pulling a 381-mm Hg (15 in Hg) vacuum.

NOTE: A lower vacuum may be used, provided that the lower vacuum is not exceeded during the test.

6.5.1.2 If an asbestos string is used, do not connect the probe to the train during the leak check. Instead, leak-check the train by first attaching a carbon-filled leak check impinger to the inlet and then plugging the inlet and pulling a 381-mm Hg (15 in Hg) vacuum. (A lower vacuum may be used if this lower vacuum is not exceeded during the test.) Then connect the probe to the train and leak-check at about 25 mm Hg (1 in Hg) vacuum. Alternatively, leak-check the probe with the rest of the sampling train in one step at 381 mm Hg (15 in Hg) vacuum. Leakage rates in excess of 4% of the average sampling rate or $>0.00057 \text{ m}^3/\text{min}$ (0.02 cfm), whichever is less, are acceptable.

6.5.1.3 The following leak check instructions for the sampling train described in APTD-0576 and APTD-0581 may be helpful. Start the pump with the fine-adjust valve fully open and coarse-adjust valve completely closed. Partially open the coarse-adjust valve and slowly close the fine-adjust valve until the desired vacuum is reached. Do not reverse direction of the fine-adjust valve, as liquid will back up into the train. If the desired vacuum is exceeded, either perform the leak check at this higher vacuum or end the leak check, as shown below, and start over.

6.5.1.4 When the leak check is completed, first slowly remove the plug from the inlet to the probe. When the vacuum drops to 127 mm (5 in) Hg or less, immediately close the coarse-adjust valve. Switch off the pumping system and reopen the fine-adjust valve. Do not reopen the fine-adjust valve until the coarse-adjust valve has been closed to prevent the liquid in the impingers from being forced backward into the sampling line and silica gel from being entrained backward into the third impinger.

6.5.2 Leak Checks During Sampling Runs:

6.5.2.1 If, during the sampling run, a component change (i.e., impinger) becomes

necessary, a leak check shall be conducted immediately after the interruption of sampling and before the change is made. The leak check shall be done according to the procedure described in Section 6.5.1, except that it shall be done at a vacuum greater than or equal to the maximum value recorded up to that point in the test. If the leakage rate is found to be no greater than $0.00057 \text{ m}^3/\text{min}$ (0.02 cfm) or 4% of the average sampling rate (whichever is less), the results are acceptable. If a higher leakage rate is obtained, the tester must void the sampling run.

NOTE: Any correction of the sample volume by calculation reduces the integrity of the pollutant concentration data generated and must be avoided.

6.5.2.2 Immediately after a component change and before sampling is re-initiated, a leak check similar to a pre-test leak check must also be conducted.

6.5.3 Post-test Leak Check:

6.5.3.1 A leak check is mandatory at the conclusion of each sampling run. The leak check shall be done with the same procedures as the pre-test leak check, except that the post-test leak check shall be conducted at a vacuum greater than or equal to the maximum value reached during the sampling run. If the leakage rate is found to be no greater than $0.00057 \text{ m}^3/\text{min}$ (0.02 cfm) or 4% of the average sampling rate (whichever is less), the results are acceptable. If, however, a higher leakage rate is obtained, the tester shall record the leakage rate and void the sampling run.

6.6 Sampling Train Operation:

6.6.1 During the sampling run, maintain an isokinetic sampling rate to within 10% of true isokinetic, below 28 L/min (1.0 cfm). Maintain a temperature around the probe of $120^\circ \pm 14^\circ\text{C}$ ($248^\circ \pm 25^\circ\text{F}$).

6.6.2 For each run, record the data on a data sheet such as the one shown in Figure 2. Be sure to record the initial dry-gas meter reading. Record the dry-gas meter readings at the beginning and end of each sampling time increment, when changes in flow rates are made, before and after each leak check, and when sampling is halted. Take other readings required by Figure 2 at least once at each sample point during each time increment and additional readings when significant adjustments (20% variation in velocity head readings) necessitate additional adjustments in flow rate. Level and zero the manometer. Because the manometer level and zero may drift due to vibrations and temperature changes, make periodic checks during the traverse.

6.6.3 Clean the stack access ports prior to the test run to eliminate the chance of sampling deposited material. To begin sampling, remove the nozzle cap, verify that the filter and probe heating systems are at the specified temperature, and verify that the pitot tube and probe are properly positioned. Position the nozzle at the first traverse point, with the tip pointing directly into the gas stream. Immediately start the pump and adjust the flow to isokinetic conditions. Nomographs, which aid in the rapid adjustment of the isokinetic sampling rate without excessive computations, are available. These nomographs are designed for use when the Type S pitot tube coefficient is 0.84 ± 0.02 and the stack gas equivalent density (dry molecular weight) is equal to 29 ± 4 . APTD-0576 details the procedure for using the nomographs. If the stack gas molecular weight and

the pitot tube coefficient are outside the above ranges, do not use the nomographs unless appropriate steps are taken to compensate for the deviations.

6.6.4 When the stack is under significant negative pressure (equivalent to the height of the impinger stem), take care to close the coarse-adjust valve before inserting the probe into the stack in order to prevent liquid from backing up through the train. If necessary, the pump may be turned on with the coarse-adjust valve closed.

6.6.5 When the probe is in position, block off the openings around the probe and stack access port to prevent unrepresentative dilution of the gas stream.

6.6.6 Traverse the stack cross section, as required by EPA Method 1, being careful not to bump the probe nozzle into the stack walls when sampling near the walls or when removing or inserting the probe through the access port, in order to minimize the chance of extracting deposited material.

6.6.7 During the test run, make periodic adjustments to keep the temperature around the probe at the proper levels. Add more ice and, if necessary, salt, to maintain a temperature of $<20^{\circ}\text{C}$ (68°F) at the silica gel outlet. Also, periodically check the level and zero of the manometer.

6.6.8 A single train shall be used for the entire sampling run, except in cases where simultaneous sampling is required in two or more separate ducts or at two or more different locations within the same duct, or in cases where equipment failure necessitates a change of trains. An additional train or additional trains may also be used for sampling when the capacity of a single train is exceeded.

6.6.9 When two or more trains are used, separate analyses of components from each train shall be performed. If multiple trains have been used because the capacity of a single train would be exceeded, first impingers from each train may be combined, and second impingers from each train may be combined.

6.6.10 At the end of the sampling run, turn off the coarse-adjust valve, remove the probe and nozzle from the stack, turn off the pump, record the final dry gas meter reading, and conduct a post-test leak check. Also, leak check the pitot lines as described in EPA Method 2. The lines must pass this leak check in order to validate the velocity-head data.

6.6.11 Calculate percent isokineticity (see Method 2) to determine whether the run was valid or another test should be made.

7.0 SAMPLE RECOVERY

7.1 Preparation:

7.1.1 Proper cleanup procedure begins as soon as the probe is removed from the stack at the end of the sampling period. Allow the probe to cool. When the probe can be handled safely, wipe off all external particulate matter near the tip of the probe nozzle and place a cap over the tip to prevent losing or gaining particulate matter. Do not cap the probe tip tightly while the sampling train is cooling because a vacuum will be created, drawing liquid from the impingers back through the sampling train.

7.1.2 Before moving the sampling train to the cleanup site, remove the probe from the sampling train and cap the open outlet, being careful not to lose any condensate that might be present. Remove the umbilical cord from the last impinger and cap the impinger. If a flexible line is used, let any condensed water or liquid drain into the impingers. Cap off any open impinger inlets and outlets. Ground glass stoppers, Teflon® caps, or caps of other inert materials may be used to seal all openings.

7.1.3 Transfer the probe and impinger assembly to an area that is clean and protected from wind so that the chances of contaminating or losing the sample are minimized.

7.1.4 Inspect the train before and during disassembly, and note any abnormal conditions.

7.1.5 Save a portion of all washing solutions (methylene chloride, water) used for cleanup as a blank. Transfer 200 mL of each solution directly from the wash bottle being used and place each in a separate, pre-labeled sample container.

7.2 Sample Containers:

7.2.1 Container 1: Probe and Impinger Catches. Using a graduated cylinder, measure to the nearest mL, and record the volume of the solution in the first three impingers. Alternatively, the solution may be weighed to the nearest 0.5 g. Include any condensate in the probe in this determination. Transfer the impinger solution from the graduated cylinder into the amber flint glass bottle. Taking care that dust on the outside of the probe or other exterior surfaces does not get into the sample, clean all surfaces to which the sample is exposed (including the probe nozzle, probe fitting, probe liner, first impinger, and impinger connector) with methylene chloride. Use less than 500 mL for the entire wash (250 mL would be better, if possible). Add the washings to the sample container.

7.2.1.1 Carefully remove the probe nozzle and rinse the inside surface with methylene chloride from a wash bottle. Brush with a Teflon® bristle brush, and rinse until the rinse shows no visible particles or yellow color, after which make a final rinse of the inside surface. Brush and rinse the inside parts of the Swagelok® fitting with methylene chloride in a similar way.

7.2.1.2 Rinse the probe liner with methylene chloride. While squirting the methylene chloride into the upper end of the probe, tilt and rotate the probe so that all inside surfaces will be wetted with methylene chloride. Let the methylene chloride drain from the lower end into the sample container. The tester may use a funnel (glass or polyethylene) to aid in transferring the liquid washes to the container. Follow the rinse with a Teflon® brush. Hold the probe in an inclined position, and squirt methylene chloride into the upper end as the probe brush is being pushed with a twisting action through the probe. Hold the sample container underneath the lower end of the probe, and catch any methylene chloride, water, and particulate matter that is brushed from the probe. Run the brush through the probe three times or more. With stainless steel or other metal probes, run the brush through in the above prescribed manner at least six times since there may be small crevices in which particulate matter can be entrapped. Rinse the brush with methylene chloride or water, and quantitatively collect these washings in the sample container. After the brushings, make a final rinse

of the probe as described above.

NOTE: Two people should clean the probe in order to minimize sample losses. Between sampling runs, brushes must be kept clean and free from contamination.

7.2.1.3 Rinse the inside surface of each of the first three impingers (and connecting tubing) three separate times. Use a small portion of methylene chloride for each rinse, and brush each surface to which sample is exposed with a Teflon® bristle brush to ensure recovery of fine particulate matter. Water will be required for the recovery of the impingers in addition to the specified quantity of methylene chloride. There will be at least two phases in the impingers. This two-phase mixture does not pour well, and a significant amount of the impinger catch will be left on the walls. The use of water as a rinse makes the recovery quantitative. Make a final rinse of each surface and of the brush, using both methylene chloride and water.

7.2.1.4 After all methylene chloride and water washings and particulate matter have been collected in the sample container, tighten the lid so that solvent, water, and DNPH reagent will not leak out when the container is shipped to the laboratory. Mark the height of the fluid level to determine whether leakage occurs during transport. Seal the container with Teflon® tape. Label the container clearly to identify its contents.

7.2.1.5 If the first two impingers are to be analyzed separately to check for breakthrough, separate the contents and rinses of the two impingers into individual containers. Care must be taken to avoid physical carryover from the first impinger to the second. The formaldehyde hydrazone is a solid which floats and froths on top of the impinger solution. Any physical carryover of collected moisture into the second impinger will invalidate a breakthrough assessment.

7.2.2 Container 2: Sample Blank. Prepare a blank by using an amber flint glass container and adding a volume of DNPH reagent and methylene chloride equal to the total volume in Container 1. Process the blank in the same manner as Container 1.

7.2.3 Container 3: Silica Gel. Note the color of the indicating silica gel to determine whether it has been completely spent and make a notation of its condition. The impinger containing the silica gel may be used as a sample transport container with both ends sealed with tightly fitting caps or plugs. Ground-glass stoppers or Teflon® caps may be used. The silica gel impinger should then be labeled, covered with aluminum foil, and packaged on ice for transport to the laboratory. If the silica gel is removed from the impinger, the tester may use a funnel to pour the silica gel and a rubber policeman to remove the silica gel from the impinger. It is not necessary to remove the small amount of dust particles that may adhere to the impinger wall and are difficult to remove. Since the gain in weight is to be used for moisture calculations, do not use water or other liquids to transfer the silica gel. If a balance is available in the field, the spent silica gel (or silica gel plus impinger) may be weighed to the nearest 0.5 g.

7.2.4 Sample containers should be placed in a cooler, cooled by although not in contact with ice. Sample containers must be placed vertically and, since they are glass, protected from breakage during shipment. Samples should be cooled during shipment so they will be received cold at the laboratory.

8.0 CALIBRATION

8.1 Probe Nozzle: Probe nozzles shall be calibrated before their initial use in the field. Using a micrometer, measure the inside diameter of the nozzle to the nearest 0.025 mm (0.001 in). Make measurements at three separate places across the diameter and obtain the average of the measurements. The difference between the high and low numbers shall not exceed 0.1 mm (0.004 in). When the nozzles become nicked or corroded, they shall be replaced and calibrated before use. Each nozzle must be permanently and uniquely identified.

8.2 Pitot tube: The Type S pitot tube assembly shall be calibrated according to the procedure outlined in Section 4 of EPA Method 2, or assigned a nominal coefficient of 0.84 if it is not visibly nicked or corroded and if it meets design and intercomponent spacing specifications.

8.3 Metering system:

8.3.1 Before its initial use in the field, the metering system shall be calibrated according to the procedure outlined in APTD-0576. Instead of physically adjusting the dry-gas meter dial readings to correspond to the wet-test meter readings, calibration factors may be used to correct the gas meter dial readings mathematically to the proper values. Before calibrating the metering system, it is suggested that a leak check be conducted. For metering systems having diaphragm pumps, the normal leak check procedure will not detect leakages within the pump. For these cases, the following leak check procedure will apply: make a ten-minute calibration run at 0.00057 m³/min (0.02 cfm). At the end of the run, take the difference of the measured wet-test and dry-gas meter volumes and divide the difference by 10 to get the leak rate. The leak rate should not exceed 0.00057 m³/min (0.02 cfm).

8.3.2 After each field use, check the calibration of the metering system by performing three calibration runs at a single intermediate orifice setting (based on the previous field test). Set the vacuum at the maximum value reached during the test series. To adjust the vacuum, insert a valve between the wet-test meter and the inlet of the metering system. Calculate the average value of the calibration factor. If the calibration has changed by more than 5%, recalibrate the meter over the full range of orifice settings, as outlined in APTD-0576.

8.3.3 Leak check of metering system: The portion of the sampling train from the pump to the orifice meter (see Figure 1) should be leak-checked prior to initial use and after each shipment. Leakage after the pump will result in less volume being recorded than is actually sampled. Use the following procedure: Close the main valve on the meter box. Insert a one-hole rubber stopper with rubber tubing attached into the orifice exhaust pipe. Disconnect and vent the low side of the orifice manometer. Close off the low side orifice tap. Pressurize the system to 13 - 18 cm (5 - 7 in) water column by blowing into the rubber tubing. Pinch off the tubing and observe the manometer for 1 min. A loss of pressure on the manometer indicates a leak in the meter box. Leaks must be corrected.

NOTE: If the dry-gas-meter coefficient values obtained before and after a test series differ by >5%, either the test series must be voided or calculations for test series must be performed using whichever meter coefficient value (i.e., before or after) gives the lower value of total sample volume.

8.4 Probe heater: The probe heating system must be calibrated before its initial use in the field according to the procedure outlined in APTD-0576. Probes constructed according to APTD-0581 need not be calibrated if the calibration curves in APTD-0576 are used.

8.5 Temperature gauges: Each thermocouple must be permanently and uniquely marked on the casting. All mercury-in-glass reference thermometers must conform to ASTM E-1 63C or 63F specifications. Thermocouples should be calibrated in the laboratory with and without the use of extension leads. If extension leads are used in the field, the thermocouple readings at ambient air temperatures, with and without the extension lead, must be noted and recorded. Correction is necessary if the use of an extension lead produces a change $>1.5\%$.

8.5.1 Impinger and dry-gas meter thermocouples: For the thermocouples used to measure the temperature of the gas leaving the impinger train, three-point calibration at ice water, room air, and boiling water temperatures is necessary. Accept the thermocouples only if the readings at all three temperatures agree to $\pm 2^{\circ}\text{C}$ (3.6°F) with those of the absolute value of the reference thermometer.

8.5.2 Probe and stack thermocouple: For the thermocouples used to indicate the probe and stack temperatures, a three-point calibration at ice water, boiling water, and hot oil bath temperatures must be performed. Use of a point at room air temperature is recommended. The thermometer and thermocouple must agree to within 1.5% at each of the calibration points. A calibration curve (equation) may be constructed (calculated) and the data extrapolated to cover the entire temperature range suggested by the manufacturer.

8.6 Barometer: Adjust the barometer initially and before each test series to agree to within ± 2.5 mm Hg (0.1 in Hg) of the mercury barometer or the corrected barometric pressure value reported by a nearby National Weather Service Station (same altitude above sea level).

8.7 Triple-beam balance: Calibrate the triple-beam balance before each test series, using Class S standard weights. The weights must be within $\pm 0.5\%$ of the standards, or the balance must be adjusted to meet these limits.

9.0 CALCULATIONS

Carry out calculations, retaining at least one extra decimal figure beyond that of the acquired data. Round off figures after final calculation.

9.1 Calculation of Total Formaldehyde:

To determine the total formaldehyde in mg, use the following equation:

Total mg formaldehyde = $C_d \times V \times DF \times$

$([\text{g/mole aldehyde}]/[\text{g/mole DNPH derivative}]) \times$

$10^{-3} \text{ mg/}\mu\text{g}$

where:

C_d = measured concentration of DNPH-formaldehyde derivative, $\mu\text{g/mL}$

V = organic extract volume, mL

DF = dilution factor

9.2 Formaldehyde concentration in stack gas:

Determine the formaldehyde concentration in the stack gas using the following equation:

$C_g = K [\text{total formaldehyde, mg}] / V_{m(\text{std})}$

where:

$K = 35.31 \text{ ft}^3/\text{m}^3$ if $V_{m(\text{std})}$ is expressed in English units

$= 1.00 \text{ m}^3/\text{m}^3$ if $V_{m(\text{std})}$ is expressed in metric units

$V_{m(\text{std})}$ = volume of gas sample as measured by dry gas meter, corrected to standard conditions, dscm (dscf)

9.3 Average Dry Gas Meter Temperature and Average Orifice Pressure Drop are obtained from the data sheet.

9.4 Dry Gas Volume: Calculate $V_{m(\text{std})}$ and adjust for leakage, if necessary, using the equation in Section 6.3 of EPA Method 5.

9.5 Volume of Water Vapor and Moisture Content: Calculate the volume of water vapor and moisture content from equations 5-2 and 5-3 of EPA Method 5.

10.0 DETERMINATION OF VOLUME TO BE SAMPLED

To determine the minimum sample volume to be collected, use the following sequence of equations.

10.1 From prior analysis of the waste feed, the concentration of formaldehyde (FORM) introduced into the combustion system can be calculated. The degree of destruction and removal efficiency that is required is used to determine the maximum amount of FORM allowed to be present in the effluent. This amount may be expressed as:

Max FORM_i Mass -

$$[(WF) (FORM_i \text{ conc}) (100 - XDRE)] / 100$$

where:

WF - mass flow rate of waste feed per h, g/h (lb/h)

FORM_i - concentration of FORM (wt %) introduced into the combustion process

DRE - percent Destruction and Removal Efficiency required

Max FORM - mass flow rate (g/h [lb/h]) of FORM emitted from the combustion source

10.2 The average discharge concentration of the FORM in the effluent gas is determined by comparing the Max FORM with the volumetric flow rate being exhausted from the source. Volumetric flow rate data are available as a result of preliminary EPA Method 1 - 4 determinations:

$$\text{Max FORM}_i \text{ conc} = [\text{Max FORM}_i \text{ Mass}] / DV_{\text{eff}(\text{std})}$$

where:

DV_{eff(std)} - volumetric flow rate of exhaust gas, dscm (dscf)

FORM_i conc - anticipated concentration of the FORM in the exhaust gas stream, g/dscm (lb/dscf)

10.3 In making this calculation, it is recommended that a safety margin of at least ten be included.

$$[LDL_{\text{FORM}} \times 10] / [FORM_i \text{ conc}] = V_{\text{abc}}$$

where:

LDL_{FORM} - detectable amount of FORM in entire sampling train

V_{abc} - minimum dry standard volume to be collected at dry-gas meter

10.4 The following analytical detection limits and DNPH Reagent Capacity (based on a total volume of 200 mL in two impingers) must also be considered in determining a volume to be sampled.

Table 2. Instrument Detection Limits and Reagent Capacity for Formaldehyde Analysis¹

Analyte	Detection Limit, ppbv ²	Reagent Capacity, ppmv
formaldehyde	1.8	66
acetaldehyde	1.7	70
acrolein	1.5	75
acetone/propionaldehyde	1.5	75
butyraldehyde	1.5	79
methyl ethyl ketone	1.5	79
valeraldehyde	1.5	84
isovaleraldehyde	1.4	84
hexaldehyde	1.3	88
benzaldehyde	1.4	84
o-/m-/p-tolualdehyde	1.3	89
dimethylbenzaldehyde	1.2	93

¹ Oxygenated compounds in addition to formaldehyde are included for comparison with formaldehyde; extension of the methodology to other compounds is possible.

² Detection limits are determined in solvent. These values therefore represent the optimum capability of the methodology.

11.0 QUALITY CONTROL

11.1 Sampling: See EPA Manual 600/4-77-027b for Method 5 quality control.

11.2 Analysis: The quality assurance program required for this method includes the analysis of field and method blanks, procedure validations, and analysis of field spikes. The assessment of combustion data and positive identification and quantitation of formaldehyde are dependent on the integrity of the samples received and the precision and accuracy of the analytical methodology. Quality Assurance procedures for this method are designed to monitor the performance of the analytical methodology and to provide the required information to take corrective action if problems are observed in laboratory operations or in field sampling activities.

11.2.1 Field Blanks: Field blanks must be submitted with the samples collected at each sampling site. The field blanks include the sample bottles containing aliquots of sample recovery solvents, methylene chloride and water, and unused DNPH reagent. At a minimum, one complete sampling train will be assembled in the field staging area, taken to the sampling area, and leak-checked at the beginning and end of the testing (or for the same total number of times as the actual sampling train). The probe of the blank train must be heated during the sample test. The train will be recovered as if it were an actual test sample. No gaseous sample will be passed through the Blank sampling train.

11.2.2 Method Blanks: A method blank must be prepared for each set of analytical operations, to evaluate contamination and artifacts that can be derived from glassware, reagents, and sample handling in the laboratory.

11.2.3 Field Spike: A field spike is performed by introducing 200 μ L of the Field Spike Standard into an impinger containing 200 mL of DNPH solution. Standard impinger recovery procedures are followed and the field spike sample is returned to the laboratory for analysis. The field spike is used as a check on field handling and recovery procedures. An aliquot of the field spike standard is retained in the laboratory for derivatization and comparative analysis.

12.0 METHOD PERFORMANCE

12.1 Method performance evaluation: The following expected method performance parameters for precision, accuracy, and detection limits are provided in Table 3.

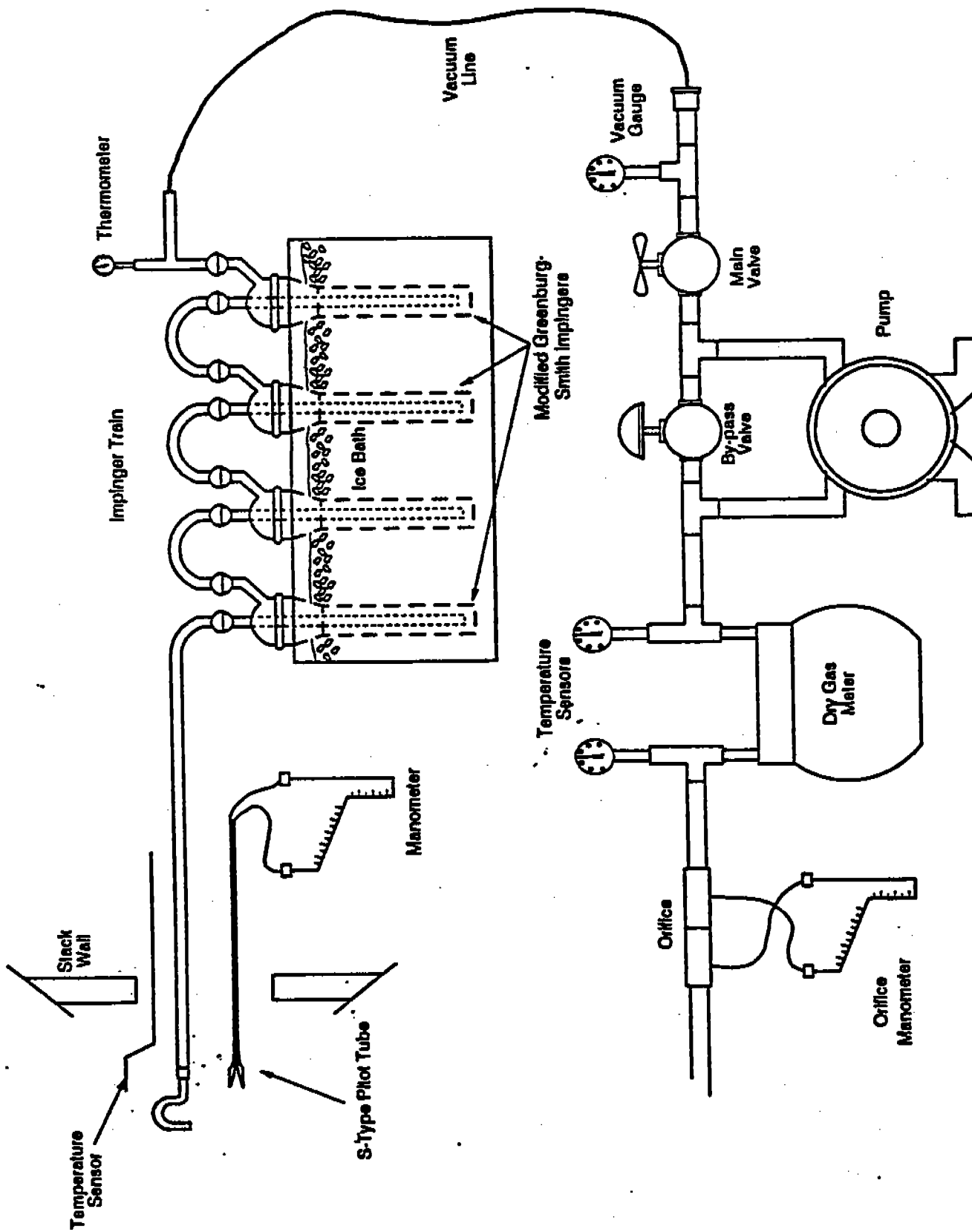
Table 3. Expected Method Performance for Formaldehyde

Parameter	Precision	¹ Accuracy ²	Detection Limit ³
Matrix: Dual trains	$\pm 15\%$ RPD	$\pm 20\%$	1.5×10^{-7} lb/ft ³ (1.8 ppbv)

¹ Relative percent difference limit for dual trains.

² Limit for field spike recoveries.

³ The lower reporting limit having less than 1% probability of false positive detection.



Formaldehyde Sampling Train



Pilot Tube Coefficient C_p

Atmospheric Temperature _____
Barometric Pressure _____
Assumed Moisture % _____
Probe Length, m (ft) _____
Nozzle Identification No. _____
Average Calibrated Nozzle Diameter, cm (in) _____
Probe Heating Setting _____
Leak Rate, m³/min. (cfm) _____
Probe Liner Material _____
Stallo Pressure, mm Hg (in. Hg) _____
Filter No. _____

497406

J-55

METHOD 25A—DETERMINATION OF TOTAL GASEOUS ORGANIC CONCENTRATION USING A FLAME IONIZATION ANALYZER

1. Applicability and Principle

1.1 Applicability. This method applies to the measurement of total gaseous organic concentration of vapors consisting primarily of alkanes, alkenes, and/or arenes (aromatic hydrocarbons). The concentration is expressed in terms of propane (or other appropriate organic calibration gas) or in terms of carbon.

1.2 Principle. A gas sample is extracted from the source through a heated sample line, if necessary, and glass fiber filter to a flame ionization analyzer (FLA). Results are reported as volume concentration equivalents of the calibration gas or as carbon equivalents.

2. Definitions

2.1 Measurement System. The total equipment required for the determination of the gas concentration. The system consists of the following major subsystems:

2.1.1 Sample Interface. That portion of the system that is used for one or more of the following: sample acquisition, sample transportation, sample conditioning, or protection of the analyzer from the effects of the stack effluent.

2.1.2 Organic Analyzer. That portion of the system that senses organic concentration and generates an output proportional to the gas concentration.

2.2 Span Value. The upper limit of a gas concentration measurement range that is

specified for affected source categories in the applicable part of the regulations. The span value is established in the applicable regulation and is usually 1.5 to 2.5 times the applicable emission limit. If no span value is provided, use a span value equivalent to 1.5 to 2.5 times the expected concentration. For convenience, the span value should correspond to 100 percent of the recorder scale.

2.3 Calibration Gas. A known concentration of a gas in an appropriate diluent gas.

2.4 Zero Drift. The difference in the measurement system response to a zero level calibration gas before and after a stated period of operation during which no unscheduled maintenance, repair, or adjustment took place.

2.5 Calibration Drift. The difference in the measurement system response to a mid-level calibration gas before and after a stated period of operation during which no unscheduled maintenance, repair or adjustment took place.

2.6 Response Time. The time interval from a step change in pollutant concentration at the inlet to the emission measurement system to the time at which 95 percent of the corresponding final value is reached as displayed on the recorder.

2.7 Calibration Error. The difference between the gas concentration indicated by the measurement system and the known concentration of the calibration gas.

3. Apparatus

A schematic of an acceptable measurement system is shown in Figure 25A-1. The essential components of the measurement system are described below:

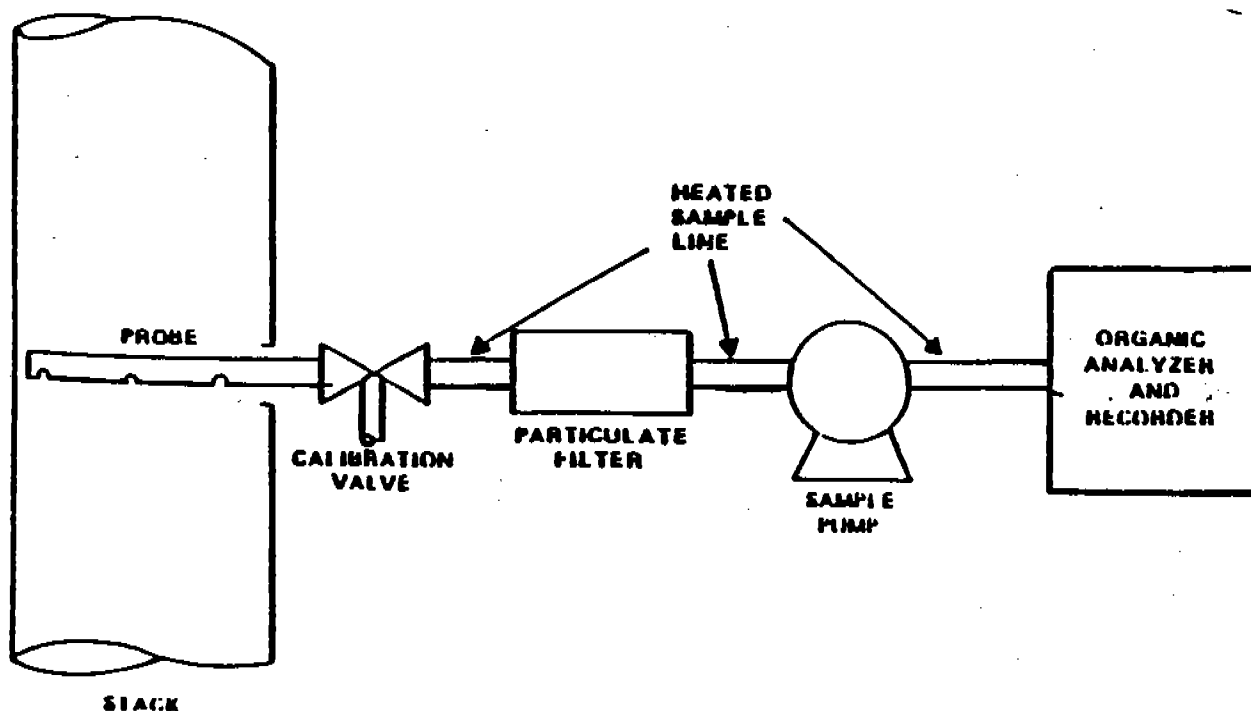


Figure 25A-1. Organic Concentration Measurement System.

3.1 Organic Concentration Analyzer. A flame ionization analyzer (FIA) capable of meeting or exceeding the specifications in this method.

3.2 Sample Probe. Stainless steel, or equivalent, three-hole rake type. Sample holes shall be 4 mm in diameter or smaller and located at 16.7, 50, and 83.3 percent of the equivalent stack diameter. Alternatively, a single opening probe may be used so that a gas sample is collected from the centrally located 10 percent area of the stack cross-section.

3.3 Sample Line. Stainless steel or Teflon[®] tubing to transport the sample gas to the analyzer. The sample line should be heated, if necessary, to prevent condensation in the line.

3.4 Calibration Valve Assembly. A three-way valve assembly to direct the zero and calibration gases to the analyzers is recommended. Other methods, such as quick-connect lines, to route calibration gas to the analyzers are applicable.

3.5 Particulate Filter. An in-stack or an out-of-stack glass fiber filter is recommended if exhaust gas particulate loading is significant. An out-of-stack filter should be heated to prevent any condensation.

3.6 Recorder. A strip-chart recorder, analog computer, or digital recorder for recording measurement data. The minimum data recording requirement is one measurement value per minute. Note: This method is often applied in highly explosive areas. Caution and care should be exercised in choice of equipment and installation.

4. Calibration and Other Gases

Gases used for calibrations, fuel, and combustion air (if required) are contained in compressed gas cylinders. Preparation of calibration gases shall be done according to the procedure in Protocol No. 1, listed in Reference 9.2. Additionally, the manufacturer of the cylinder should provide a recommended shelf life for each calibration gas cylinder over which the concentration does not change more than ± 2 percent from the certified value. For calibration gas values not generally available (i.e., organics between 1 and 10 percent by volume), alternative methods for preparing calibration gas mixtures, such as dilution systems, may be used with prior approval of the Administrator.

Calibration gases usually consist of propane in air or nitrogen and are determined in terms of the span value. Organic compounds other than propane can be used following the above guidelines and making the appropriate corrections for response factor.

* Mention of trade names or specific products does not constitute endorsement by the Environmental Protection Agency.

4.1 Fuel. A 40 percent H₂/60 percent He or 40 percent H₂/60 percent N₂ gas mixture is recommended to avoid an oxygen synergism effect that reportedly occurs when oxygen concentration varies significantly from a mean value.

4.2 Zero Gas. High purity air with less than 0.1 parts per million by volume (ppmv) of organic material (propane or carbon equivalent) or less than 0.1 percent of the span value, whichever is greater.

4.3 Low-level Calibration Gas. An organic calibration gas with a concentration equivalent to 25 to 35 percent of the applicable span value.

4.4 Mid-level Calibration Gas. An organic calibration gas with a concentration equivalent to 45 to 55 percent of the applicable span value.

4.5 High-level Calibration Gas. An organic calibration gas with a concentration equivalent to 80 to 90 percent of the applicable span value.

5. Measurement System Performance Specifications

5.1 Zero Drift. Less than ± 3 percent of the span value.

5.2 Calibration Drift. Less than ± 3 percent of span value.

5.3 Calibration Error. Less than ± 5 percent of the calibration gas value.

6. Pretest Preparations

6.1 Selection of Sampling Site. The location of the sampling site is generally specified by the applicable regulation or purpose of the test; i.e., exhaust stack, inlet line, etc. The sample port shall be located at least 1.5 meters or 2 equivalent diameters upstream of the gas discharge to the atmosphere.

6.2 Location of Sample Probe. Install the sample probe so that the probe is centrally located in the stack, pipe, or duct and is sealed tightly at the stack port connection.

6.3 Measurement System Preparation. Prior to the emission test, assemble the measurement system following the manufacturer's written instructions in preparing the sample interface and the organic analyzer. Make the system operable.

FIA equipment can be calibrated for almost any range of total organics concentrations. For high concentrations of organics (>1.0 percent by volume as propane) modifications to most commonly available analyzers are necessary. One accepted method of equipment modification is to decrease the size of the sample to the analyzer through the use of a smaller diameter sample capillary. Direct and continuous measurement of organic concentration is a necessary consideration when determining any modification design.

6.4 Calibration Error Test. Immediately prior to the test series, (within 2 hours of the start of the test) introduce zero gas and

high-level calibration gas at the calibration valve assembly. Adjust the analyzer output to the appropriate levels, if necessary. Calculate the predicted response for the low-level and mid-level gases based on a linear response line between the zero and high-level responses. Then introduce low-level and mid-level calibration gases successively to the measurement system. Record the analyzer responses for low-level and mid-level calibration gases and determine the differences between the measurement system responses and the predicted responses. These differences must be less than 5 percent of the respective calibration gas value. If not, the measurement system is not acceptable and must be replaced or repaired prior to testing. No adjustments to the measurement system shall be conducted after the calibration and before the drift check (Section 7.3). If adjustments are necessary before the completion of the test series, perform the drift checks prior to the required adjustments and repeat the calibration following the adjustments. If multiple electronic ranges are to be used, each additional range must be checked with a mid-level calibration gas to verify the multiplication factor.

6.5 Response Time Test. Introduce zero gas into the measurement system at the calibration valve assembly. When the system output has stabilized, switch quickly to the high-level calibration gas. Record the time from the concentration change to the measurement system response equivalent to 95 percent of the step change. Repeat the test three times and average the results.

7. Emission Measurement Test Procedure

7.1 Organic Measurement. Begin sampling at the start of the test period, recording time and any required process information as appropriate. In particular, note on the recording chart periods of process interruption or cyclic operation.

7.2 Drift Determination. Immediately following the completion of the test period and hourly during the test period, reintroduce the zero and mid-level calibration gases, one at a time, to the measurement system at the calibration valve assembly. (Make no adjustments to the measurement system until after both the zero and calibration drift checks are made.) Record the analyzer response. If the drift values exceed the specified limits, invalidate the test results preceding the check and repeat the test following corrections to the measurement system. Alternatively, recalibrate the test measurement system as in Section 6.4 and report the results using both sets of calibration data (i.e., data determined prior to the test period and data determined following the test period).

8. Organic Concentration Calculations

Determine the average organic concentration in terms of ppmv as propane or other

calibration gas. The average shall be determined by the integration of the output recording over the period specified in the applicable regulation.

If results are required in terms of ppmv as carbon, adjust measured concentrations using Equation 25A-1.

$$C_c = K C_m$$

Eq. 25A-1

Where:

C_c = Organic concentration as carbon, ppmv.

C_m = Organic concentration as measured, ppmv.

K = Carbon equivalent correction factor,

$K=2$ for ethane.

$K=3$ for propane.

$K=4$ for butane.

K = Appropriate response factor for other organic calibration gases.

9. Bibliography

9.1 Measurement of Volatile Organic Compounds—Guideline Series. U.S. Environmental Protection Agency, Research Triangle Park, NC. Publication No. EPA-450/2-78-041. June 1978. p. 46-54.

9.2 Traceability Protocol for Establishing True Concentrations of Gases Used for Calibration and Audits of Continuous Source Emission Monitors (Protocol No. 1). U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Research Triangle Park, NC. June 1978.

9.3 Gasoline Vapor Emission Laboratory Evaluation—Part 2. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC. EMB Report No. 75-GAS-6. August 1975.

CALCULATION EQUATIONS

METHOD 2

$$\bar{V}_s = 85.48 C_p (\sqrt{\Delta p})_{avg} \sqrt{\frac{T_{s(avg)}}{P_s M_s}}$$

$$Q_{s,d} = 60(1 - B_{ws}) \bar{V}_s A \left(\frac{528}{T_{s(avg)}}\right) \left(\frac{P_s}{29.92}\right)$$

$$Q_a = 60 \bar{V}_s A$$

$$\dot{m}_g = \frac{4.995 Q_{s,d} G_d}{1 - B_{ws}}$$

$$RH^* = 100 (vp_{twb} - 0.0003641 P_s (T_{db} - T_{wb}))/vp_{tdb}$$

$$B_{ws}^* = RH(vp_{tdb})/P_s$$

$$= \frac{4.585 \times 10^{-2} P_s M_s}{T_s (avg)}$$

*Alternate equations for calculating moisture content from wet bulb and dry bulb data.

SYMBOLS

A	= Cross sectional area of stack, SQ. FT.
A_n	= Cross sectional area of nozzle, SQ. FT.
B_{ws}	= Water vapor in gas stream, proportion by volume
C_p	= Pitot tube coefficient, dimensionless
C_a	= Concentration of particulate matter in stack gas, wet basis, GR/ACF
C_s	= Concentration of particulate matter in stack gas, dry basis, corrected to standard conditions, GR/DSCF
EA	= Excess air, percent by volume
γ	= Dry test meter correction factor, dimensionless
G_d	= Specific gravity (relative to air), dimensionless
I	= Isokinetic variation, percent by volume
M_d	= Molecular weight of stack gas, dry basis, g/g - mole.
$\dot{m}_g$	= Mass flow of wet flue gas, LB/HR
$\dot{m}_p$	= Particulate mass flow, LB/HR
M_s	= Molecular weight of stack gas, wet basis, g/g, mole.
M_p	= Total amount of particulate matter collected, g
P_{bar}	= Atmospheric pressure, IN. HG. (uncompensated)
P_g	= Stack static gas pressure, IN. WC.

P_s = Absolute pressure of stack gas, IN.HG.
 P_{std} = Standard absolute pressure, 29.92 IN. HG.
 A_a = Actual volumetric stack gas flow rate, ACFM
 $Q_{s,d}$ = Dry volumetric stack gas flow rate corrected to standard conditions, DSCFM
 RH = Relative humidity, %
 T_{db} = Dry bulb temperature of stack gas, °F
 T_{wb} = Wet bulb temperature of stack gas, °F
 $T_m(avg)$ = Absolute average dry gas meter temperature, °R
 $T_s(avg)$ = Absolute average stack temperature, °F
 T_{std} = Standard absolute temperature, 528 °F (68 °F)
 θ = Total sampling time, min.
 V_{lc} = Total volume of liquid collected in impingers and silica gel, ml
 V_m = Volume of gas sample as measured by dry gas meter, CF
 $V_m(std)$ = Volume of gas sample measured by the dry gas meter corrected to standard conditions, DSCF
 $V_w(std)$ = Volume of water vapor in the gas sample corrected to standard conditions, SCF
 $\bar{V}_s$ = Average actual stack gas velocity, FT/SEC
 v_{Ptdb} = Vapor pressure at T_{db} , IN. HG.

v_{ptwb} = Vapor pressure at T_{wb} , IN. HG

$\overline{\Delta H}$ = Average pressure differential across the orifice meter, IN. WC.

ΔP = Velocity pressure of stack gas, IN. WC.

γ = Dry test meter correction coefficient, dimensionless

ρ = Actual gas density, LB/ACF

CALCULATION EQUATIONS

METHOD 3

$$\%EA = \frac{100(\%O_2 -) .5\% CO}{0.264\% N_2 - \%O_2 + 0.5\% CO}$$

$$M_d = 0.44(\%CO_2) + 0.32 (\%O_2) + 0.28 (\%N_2 + \%CO)$$

$$M_s = M_d (I - B_{ws}) + 0.18 B_{ws}$$

$$B_{ws} = \frac{V_{w(std)}}{V_{w(std)} + V_{m(std)}}$$

CALCULATION EQUATIONS

METHOD 5

$$V_{m(std)} = 17.65 V_m \gamma \left(\frac{P_{bar} + \bar{\Delta H}/13.6}{T_{m(avg)}} \right)$$

$$V_{w(std)} = 0.0472 V_{Is}$$

$$B_{ws} = \frac{V_{w(std)}}{V_{w(std)} + V_{m(std)}}$$

$$I = 0.0944 \left(\frac{T_{s(avg)} V_{m(std)}}{P_s V_s A_n \theta (1 - B_{ws})} \right)$$

$$C_s = \frac{15.43 M_p}{V_{m(std)}}$$

$$C_a = \frac{272.3 M_p P_s}{T_{s(avg)} (V_{w(std)} + V_{m(std)})}$$

$$(\dot{m}_p)_1 = 8.5714 \times 10^{-3} C_s Q_{s,d}$$

$$(\dot{m}_p)_2 = \frac{1.3228 \times 10^{-1} M_p A}{O A_n}$$

$$\dot{m}_p = \frac{(\dot{m}_p)_1 + (\dot{m}_p)_2}{2}$$

SYMBOLS

A	= Cross sectional area of stack, SQ. FT.
A_n	= Cross sectional area of nozzle, SQ. FT.
B_{ws}	= Water vapor in gas stream, proportion by volume
C_p	= Pitot tube coefficient, dimensionless
C_a	= Concentration of particulate matter in stack gas, wet basis, GR/ACF
C_s	= Concentration of particulate matter in stack gas, dry basis, corrected to standard conditions, GR/DSCF
EA	= Excess air, percent by volume
γ	= Dry test meter correction factor, dimensionless
G_d	= Specific gravity (relative to air), dimensionless
I	= Isokinetic variation, percent by volume
M_d	= Molecular weight of stack gas, dry basis, g/g - mole.
$\dot{m}_g$	= Mass flow of wet flue gas, LB/HR
$\dot{m}_p$	= Particulate mass flow, LB/HR
M_s	= Molecular weight of stack gas, wet basis, g/g, mole.
M_p	= Total amount of particulate matter collected, g
P_{bar}	= Atmospheric pressure, IN. HG. (uncompensated)
P_g	= Stack static gas pressure, IN. WC.

P_s = Absolute pressure of stack gas, IN.HG.
 P_{std} = Standard absolute pressure, 29.92 IN. HG.
 A_a = Actual volumetric stack gas flow rate, ACFM
 $Q_{s,d}$ = Dry volumetric stack gas flow rate corrected to standard conditions, DSCFM
 RH = Relative humidity, %
 T_{db} = Dry bulb temperature of stack gas, °F
 T_{wb} = Wet bulb temperature of stack gas, °F
 $T_m(avg)$ = Absolute average dry gas meter temperature, °R
 $T_s(avg)$ = Absolute average stack temperature, °F
 T_{std} = Standard absolute temperature, 528 °F (68 °F)
 θ = Total sampling time, min.
 V_{lc} = Total volume of liquid collected in impingers and silica gel, ml
 V_m = Volume of gas sample as measured by dry gas meter, CF
 $V_m(std)$ = Volume of gas sample measured by the dry gas meter corrected to standard conditions, DSCF
 $V_w(std)$ = Volume of water vapor in the gas sample corrected to standard conditions, SCF
 $\bar{V}_s$ = Average actual stack gas velocity, FT/SEC
 v_{ptdb} = Vapor pressure at T_{db} , IN. HG.

- $v_{p_{twb}}$ = Vapor pressure at T_{wb} , IN. HG
- $\overline{\Delta H}$ = Average pressure differential across the orifice meter, IN. WC.
- ΔP = Velocity pressure of stack gas, IN. WC.
- γ = Dry test meter correction coefficient, dimensionless
- ρ = Actual gas density, LB/ACF

Interpoll Laboratories
PM-10 Equations

Preliminary Run Calculations:

$$M_d = 0.44 B_{CO_2} + 0.32 B_{O_2} + 0.28 (B_{N_2} + B_{CO})$$

$$M_s = M_d \left(1 - \frac{MC}{100} \right) + 0.18 (MC)$$

$$P_s = P_b + \frac{P_g}{13.6}$$

$$\mu = 152.418 + 0.2552 t_s + 3.2355 \times 10^{-5} t_s^2 \\ + 0.53147 (B_{O_2}) - 0.74143 MC$$

$$Q_s = 2.837 \times 10^{-3} \mu \left[\frac{(t_s + 460)}{(M_s P_s)} \right]^{0.2949}$$

$$\Delta H = \frac{1.083 (t_s + 460) M_d \Delta H_g}{P_b} \left[\frac{Q_s \left(1 - \frac{MC}{100} \right) P_s}{t_s + 460} \right]^2$$

$$\Delta_P^{M201A} = \Delta_P^{M2} \left(\frac{C_P^{M2}}{C_P^{M201A}} \right)^2$$

Dwell Times:

$$\text{Firstpoint} \quad \Delta t_1 = \left[\frac{\sqrt{\Delta P_1}}{(\sqrt{\Delta P})_{AVG}} \right]$$

$$\text{OtherPoints} \quad \Delta t_n = \left(\frac{\Delta t_1}{\sqrt{\Delta P_1}} \right) \sqrt{\Delta P_n} \quad \text{where } n = 2, 3, \dots, 12$$

9-5-91/PL

Post Test Calculations:

$$V_{n(std)} = 17.64 \gamma V_n \left(\frac{P_b + \frac{\Delta \bar{H}}{13.6}}{(\bar{t}_n + 460)} \right)$$

$$Q_s = \frac{5.669 \times 10^{-2} (\bar{t}_s + 460)}{\Theta P_s} [V_{n(std)} + 0.04707 (V_f - V_i)]$$

$$\mu = 152.418 + 0.2552 \bar{t}_s + 3.2355 \times 10^{-5} \bar{t}_s^2 \\ + 0.53147 B_{O_2} - 0.74143 MC$$

$$M_s = M_d \left(1 - \frac{MC}{100} \right) + 0.18 MC$$

$$D_{50} = 0.15625 \left(\frac{\bar{t}_s + 460}{M_s P_s} \right)^{0.2091} \left(\frac{\mu}{Q_s} \right)^{0.7091}$$

where

- M_d - dry molecular weight of exhaust gas
- B_{CO_2} - percent volume of CO_2 in exhaust gas on a dry basis
- B_{O_2} - percent by volume of O_2 in exhaust gas on a dry basis
- B_{N_2} - percent by volume of N_2 in exhaust gas on a dry basis
- B_{CO} - percent by volume of CO in exhaust gas on a dry basis
- MC - percent by volume of water vapor in exhaust gas
- M_s - actual molecular weight of exhaust gas
- P_s - absolute pressure of exhaust gas, IN.HG
- P_g - static pressure of exhaust gas, IN.WC
- P_b - absolute barometric pressure, IN.HG
- $\bar{t}_s$ - average exhaust gas temperature from preliminary determination or point gas temperature, °F
- Q_s - cyclone flow rate at actual (or stack) conditions, ACFM

$Q_{s(std)}$ - cyclone flow rate at dry standard conditions, DSCFM
 ΔH - pressure drop across calibrated orifice, IN.WC
 ΔH_e - orifice coefficient or pressure drop across calibrated orifice @ 0.75 DSCFM, IN.WC
 t_d - temperature of dry test meter, °F
 Δp^{N201A} - velocity pressure of gas stream as measured with S-type pitot attached to cyclone, IN.WC
 Δp^{N2} - velocity pressure of gas stream as measured with S-type pitot tube as per EPA Method 2 (preliminary traverse), IN.WC
 C_p^{N201A} - pitot tube coefficient of S-type pitot tube attached to cyclone, dimensionless
 C_p^{N2} - pitot tube coefficient of S-type pitot tube used in preliminary traverse, dimensionless
 Δt_n - dwell time at traverse point n, where n = 2, 3, ..., 12, minutes
 Δt_1 - dwell time at the first sampling point, minutes
 $\bar{t}_g$ - average stack gas temperature during test run, °F
 θ - total run time, minutes
 $V_{s(std)}$ - total dry volume of gas sampled, DSCF
 V_f - final volume of water in sampling train condenser system, ml
 V_i - initial volume of water in sampling train condenser system, ml
 $\bar{t}_d$ - average temperature of dry test meter during run, °F
 γ - dry test meter coefficient, dimensionless
 $\overline{\Delta H}$ - average pressure drop across the calibrated orifice in the sampling train during the run, IN.WC
 V_d - volume of dry gas sampled as measured by the dry test meter at meter conditions, CF
 D_{50} - actual or achieved 50% cutpoint for a given run of the device or cyclone used to remove or skim off those particles with aerodynamic equivalent diameters greater than or equal to 10 microns, microns

CALCULATION EQUATIONS

METHOD 10

$$\text{CO-PPM-DRY} = \text{CO}_{\text{CO}_2\text{-free,dry,avg}} (1 - \text{CO}_{2,d}/100)$$

$$\text{CO-PPM-WET} = \text{CO-PPM-DRY} (1 - \text{MC}/100)$$

$$\text{GR/DSCF} = 5.0885 \times 10^{-4} (\text{CO-PPM-DRY})$$

$$\text{mg/dscm} = 1.165 (\text{CO-PPM-DRY})$$

$$\dot{m} = 8.5714 \times 10^{-3} (\text{GR/DSCF})(Q_{s,d})$$

$$E = \frac{2.9857 \times 10^{-3} F_d (\text{GR/DSCF})}{20.9 - O_{2,d}}$$

Where

$\text{CO}_{\text{CO}_2\text{-free,dry,avg}}$ = average of two determinations of carbon monoxide on a dry, CO_2 -free integrated flue gas sample reported in ppm by volume

$\text{CO}_{2,d}$ = carbon dioxide concentration of flue gas on a dry percent by volume basis

$O_{2,d}$ = oxygen concentration of flue gas on a dry percent by volume basis

MC	= moisture content of flue gas on a percent by volume basis
CO-PPM-DRY	= carbon monoxide concentration in ppm by volume on a dry basis
CO-PPM-WET	= carbon monoxide concentration in ppm by volume on a wet or actual basis
GR/DSCF	= concentration of carbon monoxide in flue gas on a grains per dry standard cubic foot basis (68 °F, 29.92 IN.HG.)
mg/dscm	= concentration of carbon monoxide in flue gas on a milligrams per dry standard cubic meter basis (60 °F, 29.92 IN.HG.)
m	= emission or mass rate of carbon monoxide on a LB/HR basis
Q _{s,d}	= volumetric flow rate of flue gas in dry standard cubic feet per minute
E	= emission factor of carbon monoxide in pounds of carbon monoxide emitted per million BTU heat input (LB/MMBTU)
F _d	= F-Factor of respective fuel in dry standard cubic feet of exhaust gas at 0% oxygen per million BTU of heat input (DSCF/MMBTU)

CALCULATION EQUATIONS

Chromotropic Acid Method for Formaldehyde

$$m_t = \frac{m_a \times V_{\text{soln}}}{V_{\text{aliquot}}}$$

where m_t = mass of formaldehyde in total sample in ug
 m_a = mass of formaldehyde in aliquot in ug
 V_{soln} = volume of total sample in cc (500 cc normally)
 V_{aliquot} = volume of aliquot taken for analysis in cc

$$\text{PPM-DRY} = \frac{.0283 m_t}{V_{\text{std}}}$$

$$\text{PPM-WET} = \text{PPM DRY} (1-\text{MC}/100)$$

$$\text{GR/DSCF} = 5.45 \times 10^{-4} (\text{PPM-DRY})$$

$$\text{mg/dscm} = 1.249 (\text{PPM-DRY})$$

$$\dot{m} = 8.5714 \times 10^{-3} (\text{GR/DSCF}) (Q_{s,d})$$

where PPM-DRY = concentration of formaldehyde in parts per million by volume on a dry basis
 PPM-WET = concentration of formaldehyde in parts per million by volume on an actual or wet basis
 MC = moisture content of gas on a percent by volume basis
 GR/DSCF = concentration of formaldehyde in gas on a grains per dry standard cubic foot basis (68°F, 29.92 IN.HG.)
 $\dot{m}$ = emission or mass rate of formaldehyde in pounds per hour (LB/HR)

Method 25A

Total Gaseous Organics Calculation Equations

$$\text{GR C/SCF} = 2.180 \times 10^{-4} (\text{ppm,w})$$

$$\text{GR C/DSCF} = 2.180 \times 10^{-4} (\text{ppm,w}) / (1 - \text{MC}/100)$$

$$\text{LB C/HR} = 8.5714 \times 10^{-3} (\text{GR/DSCF}) (\text{DSCFM})$$

where:

GR C/SCF = grains of total gaseous organics as carbon per actual (wet) standard cubic foot

GR C/DSCF = grains of total gaseous organics as carbon per dry standard cubic foot

LB C/HR = pounds of total gaseous organics as carbon emitted per hour

Note 1: The Ratfisch Model RS55 Heated FID Analyzer as normally operated with a heated filter, heated sample line and heated detector oven gives ppm,w.

Note 2: ppm,C = ppm as carbon = ppm methane

EPA Method 5 Gas Metering System
Quality Control Check Data Sheet

Job L.P. / New Waverly, TX

Date 3-31-92

Operator M. Kaehler

Module No. 4

Instructions: Operate the control module at a flow rate equal to CHQ for 10 minutes before attaching the umbilical. Record the following data:

Bar press 29.69 in. Hg. $\tau =$ 1.0010 ΔH_Q 1.75 in. W.C.

Time (min)	Volume (CF)	Meter Temp. (°F)	
		Inlet	Outlet
<u>1.5</u>	<u>83.20</u>	<u>56</u>	<u>55</u>
<u>2.5</u>	<u>85.07</u>	<u>56</u>	<u>55</u>
<u>5.0</u>	<u>86.93</u>	<u>58</u>	<u>56</u>
<u>7.5</u>	<u>88.79</u>	<u>59</u>	<u>56</u>
<u>10</u>	<u>90.65</u>	<u>60</u>	<u>57</u>
<u>1.5</u>	$V_m =$ <u>7.45</u>	$Avg(t_m) =$ <u>57.13</u> °F	

Calculate Y_{en} as follows:

$$Y_{en} = \frac{1.786}{\tau V_m} \left[\frac{(t_m + 460)}{P_b} \right]^{0.5}$$

$$Y_{en} = \frac{1.786}{(1.0010)(7.45)} \left[\frac{(57.13) + 460}{(29.69)} \right]^{0.5}$$

$$Y_{en} = \underline{1.000}$$

If Y_{en} is not within the range of 0.97 to 1.03, "the volume metering system should be investigated before beginning."

CFR Title 40, Part 60, Appendix A, Method 5, Section 4.4.1

EPA Method 5 Gas Metering System
Quality Control Check Data Sheet

Job L.P. / New WAVERLY

Date 4-1-92

Operator Bob

Module No. 4

Instructions: Operate the control module at a flow rate equal to ΔH_0 for 10 minutes before attaching the umbilical. Record the following data:

Bar press 29.63 in. Hg. $\tau = \underline{1.00098}$ ΔH_0 1.75 in. W.C.

Time (min)	Volume (CF)	Meter Temp. (°F)	
		Inlet	Outlet
	(304.00)		
2.5	305.89	68	68
5.0	307.78	70	69
7.5	309.68	72	69
10	311.577	73	70
	$V_m = 7.577$	Avg (t_m) = $69.875^\circ F$	

Calculate Y_{en} as follows:

$$Y_{en} = \frac{1.786}{\tau V_m} \left[\frac{(t_m + 460)}{P_b} \right]^{0.5}$$

$$Y_{en} = \frac{1.786}{(1.00098)(7.577)} \left[\frac{(69.875 + 460)}{(29.63)} \right]^{0.5}$$

$$Y_{en} = \underline{.9960}$$

If Y_{en} is not within the range of 0.97 to 1.03, "the volume metering system should be investigated before beginning."

CFR Title 40, Part 60, Appendix A, Method 5, Section 4.4.1

Interpoll Laboratories, Inc.
(612) 786-6060

EPA Method 5 Gas Metering System
Quality Control Check Data Sheet

Job L.P. / New Waverly, TX

Date 4-2-92

Operator M. Luepker

Module No. 4

Instructions: Operate the control module at a flow rate equal to ΔH_0 for 10 minutes before attaching the umbilical. Record the following data:

Bar press 29.65 in. Hg. $\tau =$ 1.0010 ΔH_0 1.75 in. W.C.

Time (min)	Volume (CF)	Meter Temp. ($^{\circ}$ F)	
		Inlet	Outlet
	(544.80)		
2.5	546.47	51	50
5.0	548.33	53	51
7.5	600.21	54	51
10	602.06	56	52
	$V_m = 7.46$	Avg (t_m) = 52.25 $^{\circ}$ F	

Calculate Y_{en} as follows:

$$Y_{en} = \frac{1.786}{\tau V_m} \left[\frac{(t_m + 460)}{P_b} \right]^{0.5}$$

$$Y_{en} = \frac{1.786}{(1.0010)(7.46)} \left[\frac{(52.25) + 460}{(29.65)} \right]^{0.5}$$

$$Y_{en} = \underline{.994}$$

If Y_{en} is not within the range of 0.97 to 1.03, "the volume metering system should be investigated before beginning."

CFR Title 40, Part 60, Appendix A, Method 5, Section 4.4.1

EPA Method 5 Gas Metering System
Quality Control Check Data Sheet

Job Louisiana Pacific / New Waverly, TX

Date 3-29-92

Operator M. Kaehler

Module No. 4

Instructions: Operate the control module at a flow rate equal to ΔH for 10 minutes before attaching the umbilical. Record the following data:

Bar press 29.47 in. Hg. $\tau =$ 1.0010 ΔH 1.75 in. W.C.

Time (min)	Volume (CF)	Meter Temp. (°F)	
		Inlet	Outlet
	(878.10)		
2.5	880.05	77	77
5.0	881.97	79	77
7.5	883.88	80	78
10	885.82	82	79
	$V_m = 7.72$	$Avg(t_m) = 78.63^{\circ}F$	

Calculate Y_{en} as follows:

$$Y_{en} = \frac{1.786}{\tau V_m} \left[\frac{(t_m + 460)}{P_b} \right]^{0.5}$$

$$Y_{en} = \frac{1.786}{(1.0010)(7.72)} \left[\frac{(78.63) + 460}{(29.47)} \right]^{0.5}$$

$$Y_{en} = \underline{.9900}$$

If Y_{en} is not within the range of 0.97 to 1.03, "the volume metering system should be investigated before beginning."

CFR Title 40, Part 60, Appendix A, Method 5, Section 4.4.1

Interpoll Laboratories, Inc.
(612) 786-6060

EPA Method 5 Gas Metering System
Quality Control Check Data Sheet

Job L.P. / NEW WISLEY, Tx.

Date 3/29/92

Operator D. BRENNAN

Module No. 3

Instructions: Operate the control module at a flow rate equal to ΔH_0 for 10 minutes before attaching the umbilical. Record the following data:

Bar press 29.47 in. Hg. $\tau =$.9991 ΔH_0 1.90 in. W.C.

Time (min)	Volume (CF)	Meter Temp. (°F)	
		Inlet	Outlet
	(50.00)		
2.5	51.90	105	96
5.0	53.80	107	98
7.5	55.26	109	100
10	57.598	111	101
	$V_m = 7.598$	Avg (t_m) = <u>103.375</u>	

Calculate Y_{en} as follows:

$$Y_{en} = \frac{1.786}{\tau V_m} \left[\frac{(t_m + 460)}{P_b} \right]^{0.5}$$

$$Y_{en} = \frac{1.786}{(.9991)(7.598)} \left[\frac{(103.375) + 460}{(29.47)} \right]^{0.5}$$

$$Y_{en} = \underline{1.028}$$

If Y_{en} is not within the range of 0.97 to 1.03, "the volume metering system should be investigated before beginning."

CFR Title 40, Part 60, Appendix A, Method 5, Section 4.4.1

EPA Method 5 Gas Metering System
Quality Control Check Data Sheet

Job L.P. / NEW WAVELEY, TX.

Date 3/31/92

Operator D. BRENNAN

Module No. 3

Instructions: Operate the control module at a flow rate equal to ΔH_0 for 10 minutes before attaching the umbilical. Record the following data:

Bar press 29.69 in. Hg. $\tau =$.9991 ΔH_0 1.90 in. W.C.

Time (min)	Volume (CF)	Meter Temp. (°F)	
		Inlet	Outlet
	(287.00)		
2.5	288.86	69	59
5.0	290.70	71	60
7.5	292.53	72	61
10	294.338	72	62
	$V_m = 7.338$	Avg (t_m) = 65.75 °F	

Calculate Y_{en} as follows:

$$Y_{en} = \frac{1.786}{\tau V_m} \left[\frac{(t_m + 460)}{P_b} \right]^{0.5}$$

$$Y_{en} = \frac{1.786}{(.9991)(7.338)} \left[\frac{525.75}{(29.69)} \right]^{0.5}$$

$$Y_{en} = \underline{1.025}$$

If Y_{en} is not within the range of 0.97 to 1.03, "the volume metering system should be investigated before beginning."

CFR Title 40, Part 60, Appendix A, Method 5, Section 4.4.1

S-432R

Interpoll Laboratories, Inc.
(612) 786-6060

EPA Method 5 Gas Metering System
Quality Control Check Data Sheet

Job L.P. / NEW Waverly, Tx.

Date 4/1/92

Operator D. BRENNAN

Module No. 3

Instructions: Operate the control module at a flow rate equal to ΔH for 10 minutes before attaching the umbilical. Record the following data:

Bar press 29.63 in. Hg. $\tau =$.9991 ΔH 1.96 in. W.C.

Time (min)	Volume (CF)	Meter Temp. (°F)	
		Inlet	Outlet
<u>2.5</u>	<u>532.50</u>	<u>80</u>	<u>70</u>
<u>5.0</u>	<u>536.30</u>	<u>81</u>	<u>71</u>
<u>7.5</u>	<u>538.20</u>	<u>83</u>	<u>73</u>
<u>10</u>	<u>540.088</u>	<u>85</u>	<u>73</u>
	$V_m =$ <u>7.558</u>	$Avg(t_m) =$ <u>77.0</u> °F	

Calculate Y_{en} as follows:

$$Y_{en} = \frac{1.786}{\tau V_m} \left[\frac{(t_m + 460)}{P_b} \right]^{0.5}$$

$$Y_{en} = \frac{1.786}{(.9991)(7.558)} \left[\frac{(537.0 + 460)}{(29.63)} \right]^{0.5}$$

$$Y_{en} = \underline{1.0069}$$

If Y_{en} is not within the range of 0.97 to 1.03, "the volume metering system should be investigated before beginning."

CFR Title 40, Part 60, Appendix A, Method 5, Section 4.4.1

EPA Method 5 Gas Metering System
Quality Control Check Data Sheet

Job L.P. / NEW WADSWORTH, TX

Date 4/2/92

Operator D. BRENNAN

Module No. 3

Instructions: Operate the control module at a flow rate equal to QH₀ for 10 minutes before attaching the umbilical. Record the following data:

Bar press 29.65 in. Hg. $\tau =$.9991 QH₀ 1.90 in. W.C.

Time (min)	Volume (CF)	Meter Temp. (°F)	
		Inlet	Outlet
	(830.00)		
2.5	831.87	68	58
5.0	833.74	68	59
7.5	835.40	70	61
10	837.165	71	61
	V _m = 7465	Avg (t _m) = 64.125 °F	

Calculate Y_{en} as follows:

$$Y_{en} = \frac{1.786}{\tau V_m} \left[\frac{(t_m + 460)}{P_b} \right]^{0.5}$$

$$Y_{en} = \frac{1.786}{(.9991)(7465)} \left[\frac{(64.125) + 460}{(29.65)} \right]^{0.5}$$

$$Y_{en} = \underline{1.0068}$$

If Y_{en} is not within the range of 0.97 to 1.03, "the volume metering system should be investigated before beginning."

CFR Title 40, Part 60, Appendix A, Method 5, Section 4.4.1

S-432R

Interpoll Laboratories, Inc.
(612) 786-6020

Meter Box Calibration and Usage Status

Date of Report: April 17, 1992

Meter Box No. : 3 (Rockwell Dry Test Meter Serial No. 712852)

Date of Last Calibration: March 18, 1992

Calibration Technician: D. Brennan

Wet Test Meter No.: American Meter AL-20

Date of Use	Report No.	Initial Meter		Final Meter		Volume/Job (cu. ft.)	Total Volume* (cu. ft.)
		Reading		Reading			
March 24, 1992	2-3532	984.00		2043.42		1059.42	1059.42
March 20, 1992	2-3533	2050.00		3112.29		1062.29	2121.71

* Total volume through meter since last calibration.

Interpoll Laboratories, Inc.
(612) 786-6020

Meter Box Calibration and Usage Status

Date of Report: April 17, 1992

Meter Box No. : 4 (Rockwell Dry Test Meter Serial No. 964553)

Date of Last Calibration: March 17, 1992

Calibration Technician: D. Brennan

Wet Test Meter No.: American Meter AL-20

Date of Use	Report No.	Initial Meter Reading	Final Meter Reading	Volume/Job (cu. ft.)	Total Volume* (cu. ft.)
March 24, 1992	2-3532	709.80	1877.54	1167.74	1167.74
March 30, 1992	2-3533	1878.10	2880.97	1002.87	2170.61

* Total volume through meter since last calibration.

Date 3/18/92

Bar. Press. 29.21 in. Hg

INTERPOLL LABORATORIES, INC.
METER CALIBRATION SHEET

5 EPA METHOD 5

Control Module No. 3

Serial No. DTM 712 852

Hot Test Meter No. AL-20

Technician D. Brennan

[illegible]

Positive leak check performed by D. BENNAN
Water was in tolerance

Water was not in tolerance ☒: readjusted linkage

Water was not in tolerance ☐; changed dry test meters

Approved by K. Daniel Dye Date 3/18/92

* Based on AL-20 wet test meter calibration in Nov. 1991 against Bell Prover (NBS Traceable) - Carl Poe Co.

SO102RR 11/91

Date 3/17/92

Bar. Press. 29.21 in. Hg

INTERPOL LABORATORIES, INC.
METER CALIBRATION SHEET

5 EPA METHOD 5

Control Module No. _____

Serial No. DTM 964 553

Wet Test Meter No. AL-20

Technician D. Boenigden[illegible]

Positive leak check performed by D. BRENNAN

Water was in tolerance

Water was not in tolerance ☐: readjusted linkage

Water was not in tolerance ☒: changed dry test meters

Approved by Daniff K. Dyer Date 3/17/92

* Based on AL-20 wet test meter calibration in Nov. 1991 against Bell Prover (NBS Traceable) - Carl Poe Co.

DIFFERENTIAL PRESSURE AND PROOF CALIBRATION CURVES

WET TEST METER

PULSATION RANGE

DIFFERENTIAL INCHES H2O

.30

.20

.10

0

Calibrated with a 10 Ft. American Bell
Prover, Serial No. 3157. Traceable to
the Bureau of Standards. Reference No.
5249068, PI-TAPE.

AL-20 American Wet Test Meter

Serial No. 8-717

Stainless Steel w/Removable Back

Calibrated w/Saturated Air

Water Temp. 74° F.

Air Temp. 74° F.

Inlet Pressure 2" H2O Constant

Calibration Rate: 60 CFH Per/Hr.

Capacity Rate: 120 CFH Per/Hr.

Restricted Outlet for Rate Deviation

PROOF

101

100

99

CORRECT VOLUME * INDEX READING * PROOF * 100

20

40

60

80

100

120

DAVID BANKS

FLOW RATE - CUBIC FEET OF AIR PER HOUR

November, 1991

Interpoll Laboratories, Inc.
(612) 786-6020

Nozzle Calibration
Data Sheet

Date of Calibration: 03-30-92

Nozzle :Glass

Technician: M. Kaehler

The nozzle is rotated in 60 degree increments and the diameter at each point is measured to the nearest 0.001 inch. The observed readings and average are shown below.

Position	Diameter (inches)
1	.239
2	.238
3	.240
Average:	.239

Interpoll Laboratories, Inc.
(612) 786-6020

Nozzle Calibration
Data Sheet

Date of Calibration: 03-30-92

Nozzle :8-3

Technician: D. Brennan

The nozzle is rotated in 60 degree increments and the diameter at each point is measured to the nearest 0.001 inch. The observed readings and average are shown below.

Position	Diameter (inches)
1	.185
2	.184
3	.185
Average:	.185

Interpoll Laboratories, Inc.
(612) 786-6020

Nozzle Calibration
Data Sheet

Date of Calibration: 04-01-92

Nozzle Number 8-4

Technician: D. Brennan

The nozzle is rotated in 60 degree increments and the diameter at each point is measured to the nearest 0.001 inch. The observed readings and average are shown below.

Position	Diameter (inches)
1	.240
2	.241
3	.241
Average:	.241

Interpoll Laboratories, Inc.
(612) 786-6020

Nozzle Calibration
Data Sheet

Date of Calibration: 03-30-92

Nozzle Number PM1-2

Technician: D. Brennan

The nozzle is rotated in 60 degree increments and the diameter at each point is measured to the nearest 0.001 inch. The observed readings and average are shown below.

Position	Diameter (inches)
1	.150
2	.149
3	.150
Average:	.150

Interpoll Laboratories, Inc.

Temperature Measurement Device
Calibration Sheet

Unit under test:

Vendor Atkins
 Model Model # 39658-K Serial Number PDT #3
 Range — 1999 °F Thermocouple Type K
 Date of Calibration 3/19/91 Technician D. Van Hoever

Method of Calibration:

- ☐ Comparison against ASTM mercury in glass thermometer using a thermostatted and insulated aluminum block designed to provide uniform temperature. The temperature is adjusted by adjusting the voltage on the block heater cartridge.
- ☒ Omega Model CL-300 Type K Thermocouple Simulator which provides 22 precise temperature equivalent millivolt signals. The CL-300 is cold junction compensated. Calibration accuracy is $\pm 0.1\%$ of span (2100 °F) ± 1 degree (for negative temperatures add ± 2 degrees. The CL-300 simulates exactly the millivoltage of a Type K thermocouple at the indicated temperature.

Desired Temp (°F) Nominal	Temperature of Standard or Simulated Temp (°F)	Response of Unit Under Test (°F)	Deviation	
			Δt (°F)	(%)
0	0	-4	4	.87
100	100	93.5	6.5	1.16
200	200	195.8	4.2	.64
300	300	294	6	.79
400	400	390	10	1.16
500	500	489	11	1.14
600	600	591	9	.85
700	700	690	10	.86
800	800	794	6	.48
900	900	895	5	.37
1000	1000	999	1	.07
1100	1100	1100	—	—
1200	1200	1205	5	.30
1300	1300	1304	4	.23
1400	1400	1407	7	.38
1500	1500	1502	2	.10
1600	1600	1602	2	.10
1700	1700	1695	5	.23
1800	1800	1791	9	.40
1900	1900	1881	19	.80
2000	2000	1974	26	1.06
2100				
		Averages:		.57

OF = off scale response by unit under test (°F)
 $\% \text{ dev} = 100 \Delta t / (460 + t)$

- ☒ Unit in tolerance
☐ Unit was not in tolerance; recalibrated - See new calibration sheet.

Interpoll Laboratories, Inc.

Temperature Measurement Device
Calibration Sheet

Unit under test:

Vendor Gordon
Model 5310-K Serial Number PDT-9
Range 0-1999 °F Thermocouple Type K
Date of Calibration 10-21-91 Technician M. Kaehler

Method of Calibration:

- ☐ Comparison against ASTM mercury in glass thermometer using a thermostatted and insulated aluminum block designed to provide uniform temperature. The temperature is adjusted by adjusting the voltage on the block heater cartridge.
- ☒ Omega Model CL-300 Type K Thermocouple Simulator which provides 22 precise temperature equivalent millivolt signals. The CL-300 is cold junction compensated. Calibration accuracy is $\pm 0.1\%$ of span (2100 °F) ± 1 degree (for negative temperatures add ± 2 degrees. The CL-300 simulates exactly the millivoltage of a Type K thermocouple at the indicated temperature.

Desired Temp (°F) Nominal	Temperature of Standard or Simulated Temp (°F)	Response of Unit Under Test (°F)	Deviation	
			Δt (°F)	(%)
0	0	-4.1	4.1	.89
100	100	93.5	6.5	1.16
200	200	197	3	.45
300	300	294	6	.79
400	400	390	10	1.84
500	500	489	11	1.15
600	600	590	10	.94
700	700	690	10	.86
800	800	794	6	.48
900	900	895	5	.37
1000	1000	998	2	.14
1100	1100	1100	0	0
1200	1200	1204	4	.24
1300	1300	1304	4	.23
1400	1400	1406	6	.32
1500	1500	1502	2	.10
1600	1600	1601	1	.05
1700	1700	1695	5	.23
1800	1800	1791	9	.40
1900	1900	1881	19	.81
2000	2000	1974	26	1.06
2100				
		Averages:	7.12	.56

OF = off scale response by unit under test (°F)
% dev = $100 \Delta t / (460 + t)$

- ☒ Unit in tolerance
☐ Unit was not in tolerance; recalibrated - See new calibration sheet.

S-433

S-Type Pitot Tube Inspection SheetPitot No. 24-6Pitot tube dimensions:

1. External tubing diameter (D_t) .316 IN.
2. Base to Side A opening plane (P_A) .460 IN.
3. Base to Side B opening plane (P_B) .462 IN.

Alignment:

4. $\alpha_1 < 10^\circ$ 0
5. $\alpha_2 < 10^\circ$ 1
6. $B_1 < .50$.02
7. $B_2 < .50$.01
8. $Z < .125"$.01
9. $W < .0625"$.02

Distance from Pitot to Probe Components:

10. Pitot to 0.500 IN. nozzle .760 IN.
11. Pitot to probe sheath 3.00 IN.
12. Pitot to thermocouple (parallel to probe) 3.00 IN.
13. Pitot to thermocouple (perpendicular to probe) .760 IN.

Meets all EPA design criteria thus $C_p = 0.84$ Does not meet EPA design criteria - thus calibrate in wind tunnel
 $C_p =$ _____

Date of Inspection:

Inspected by:

3-2-82E. T. Newbold

S-Type Pitot Tube Inspection SheetPitot No. 6-29Pitot tube dimensions:

1. External tubing diameter (D_t) .316 IN.
2. Base to Side A opening plane (P_A) .462 IN.
3. Base to Side B opening plane (P_B) .462 IN.

Alignment:

4. $\alpha_1 < 10^\circ$ 0
5. $\alpha_2 < 10^\circ$ 0
6. $\beta_1 < 5^\circ$ 1
7. $\beta_2 < 5^\circ$ 1
8. $Z < .125"$.02
9. $W < .0625"$.02

Distance from Pitot to Probe Components:

10. Pitot to 0.500 IN. nozzle .762 IN.
11. Pitot to probe sheath 3.00 IN.
12. Pitot to thermocouple (parallel to probe) 3.00 IN.
13. Pitot to thermocouple (perpendicular to probe) .763 IN.

- ☒ Meets all EPA design criteria thus $C_p = 0.84$
- ☐ Does not meet EPA design criteria - thus calibrate in wind tunnel
 $C_p =$ _____

Date of Inspection:

Inspected by:

2-29-92G. T. Tawhid

CFR Title 40 Part 60 Appendix A Method 2

INTERPOLL LABORATORIES
(612)786-6020
Stack Sampling Department - QA
Aneroid Barometer Calibration Sheet

Date 11/14/91
Technician DUKE BRENNAN
Mercury Column Barometer No. LMB
Aneroid Barometer No. 90222001 (Duke's)

Actual Mercury Barometer Read	Ambient Temp.	Temperature Correction Factor	Adjusted Mercury Barometer Read	Initial Aneroid Barometer Read	Difference (Pba-Pbm)
29.47	69°	.108	29.361	29.37	-.009

Has this barometer shown any consistent problems with calibration? Yes ☒ No ☐ If yes, explain. _____

Has problem been alleviated? Yes/No. How? _____

*Note

Aneroid barometers will be calibrated periodically against a mercury column barometer. The aneroid barometer to be calibrated should be placed in close proximity to the mercury barometer and left to equilibrate for 20-30 minutes before calibrating. Aneroid barometer will be calibrated to the adjusted mercury barometer readings.

S-312

INTERPOLL LABORATORIES

(612)786-6020

Stack Sampling Department - QA
Aneroid Barometer Calibration SheetDate 3-20-92Technician Mark KaehlerMercury Column Barometer No. Lab 1Aneroid Barometer No. 560815

Actual Mercury Barometer Read	Ambient Temp.	Temperature Correction Factor	Adjusted Mercury Barometer Read	Initial Aneroid Barometer Read	Difference (P _{ba} -P _{bm})
29.260	76	.126	29.134	29.150	.016

Has this barometer shown any consistent problems with calibration? Yes/No. If yes, explain. _____

Has problem been alleviated? Yes/No. How? _____

***Note**

Aneroid barometers will be calibrated periodically against a mercury column barometer. The aneroid barometer to be calibrated should be placed in close proximity to the mercury barometer and left to equilibrate for 20-30 minutes before calibrating. Aneroid barometer will be calibrated to the adjusted mercury barometer readings.

S-312

