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RESULTS OF THE APRIL 4 - 9, 1992
EPA-AIR EMISSION COMPLIANCE TESTS
AT THE LOUISIANA-PACIFIC PLANT
IN URANIA, LOUISIANA

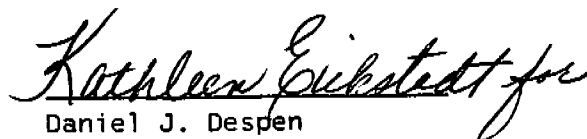
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Report Number 2-3534

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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 April 4 - 9, 1992 Interpoll Laboratories personnel conducted Federal air emission compliance tests at the Louisiana Pacific Corporation (LP) Plant located in Urania, Louisiana. 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 Jim Boswell and Paul Jones 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.

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 Ratfisch 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 Core and Face Dryers 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 81.7 to 86.8 minutes.

Testing on the No. 1,2 and 3 Press Vents 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.

Testing on the Aspirator Stack was conducted from two test ports

oriented at 90 degrees on the stack. The test ports are located 7.59 diameters downstream of the nearest flow disturbance and 1.67 diameters upstream of the next flow disturbance. A 20-point traverse was used at each test site to isokinetically collect the particulate and formaldehyde samples. Each traverse point was sampled 3 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 Press Vent	2.87	NA
No. 2 Press Vent	2.76	NA
No. 3 Press Vent	2.36	NA
No. 4 Press Vent	1.65	NA
Core Dryer	22.0	21.2
Face Dryer	18.4	17.6

Carbon monoxide determinations were performed on the Core and Face 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)
Core Dryer	107	19.8
Face Dryer	96	16.8

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

<u>Source</u>	<u>Concentration (ppm.w)</u>	<u>Emission rate (LB/HR)</u>
No. 1 Press Vent	2.00	0.510
No. 2 Press Vent	2.10	0.527
No. 3 Press Vent	1.75	0.480
No. 4 Press Vent	0.67	0.186
Core Dryer	5.41	1.07
Face Dryer	0.99	0.187
Aspirator	0.16	0.020

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

<u>Source</u>	<u>Concentration (ppm.w)</u>	<u>Emission rate (LB/HR)</u>
No. 1 Press Vent	42	4.01
No. 2 Press Vent	31	3.26
No. 3 Press Vent	14	1.45
No. 4 Press Vent	15	1.61
Core Dryer	630	49.8
Face Dryer	565	42.4
Aspirator	23	1.15

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.

Source category:

Reconstituted wood products

Date:

Plant name :

L-P, Urania

Location:

Test date :

Ref. No.:

Process :

OSB

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
Press vent total	none	total hydrocarbon	3	1.9			
		AVERAGE					
		filt. PM	1	6.22	8.03	3.88	0.78
		filt. PM	2	6.64	7.53	4.41	0.88
		filt. PM	3	6.34	8.13	3.90	0.78
		AVERAGE				4.06	0.81
		cond. inorg. PM	1	1.21	8.03	0.75	0.150
		cond. inorg. PM	2	0.87	7.53	0.58	0.116
		cond. inorg. PM	3	1.09	8.13	0.67	0.135
		AVERAGE				0.668	0.134
		cond. org. PM	1	2.00	8.03	1.24	0.249
		cond. org. PM	2	2.04	7.53	1.35	0.271
		cond. org. PM	3	2.87	8.13	1.77	0.353
		AVERAGE				1.455	0.291
		formaldehyde	1	1.72	8.20	1.05	0.2102
		formaldehyde	2	1.66	7.53	1.11	0.2211
		formaldehyde	3	1.72	8.13	1.06	0.2117
		AVERAGE				1.0716	0.2143
		total hydrocarbon	1	11.30	8.10	6.98	1.40
		total hydrocarbon	2	9.25	7.53	6.15	1.23
		total hydrocarbon	3	10.46	8.10	6.46	1.29
		AVERAGE				6.53	1.31

Source category:

Plant name :

Test date :

Process :

Reconstituted wood products

L-P, Urania

Date:

Location:

Ref. No.

7

OSB

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
Core dryer Wood-fired	Multiclone	filt. PM	1	18.81	7.30	1.29	2.58
		filt. PM	2	16.56	7.30	1.13	2.27
		filt. PM	3	13.01	7.30	0.89	1.78
		AVERAGE				1.10	2.21
		cond. inorg. PM	1	3.12	7.30	0.214	0.428
		cond. inorg. PM	2	3.23	7.30	0.222	0.443
		cond. inorg. PM	3	2.52	7.30	0.173	0.346
		AVERAGE				0.203	0.405
		cond. org. PM	1	3.39	7.30	0.232	0.464
		cond. org. PM	2	2.53	7.30	0.173	0.346
		cond. org. PM	3	2.69	7.30	0.184	0.369
		AVERAGE				0.196	0.393
		PM-10	1	12.76	7.30	0.87	1.75
		PM-10	2	16.08	7.30	1.10	2.20
		PM-10	3	18.61	7.30	1.27	2.55
		AVERAGE				1.08	2.17
		cond. inorg. PM	1	3.12	7.30	0.214	0.427
		cond. inorg. PM	2	3.94	7.30	0.270	0.540
		cond. inorg. PM	3	2.55	7.30	0.175	0.350
		AVERAGE				0.220	0.439
		cond. org. PM	1	1.58	7.30	0.108	0.216
		cond. org. PM	2	2.53	7.30	0.173	0.346
		cond. org. PM	3	2.57	7.30	0.176	0.352
		AVERAGE				0.152	0.305
		Total cond. PM	1	4.70	7.30	0.322	0.643
		Total cond. PM	2	6.47	7.30	0.443	0.886
		Total cond. PM	3	5.12	7.30	0.351	0.701
		AVERAGE				0.372	0.744
		CO	1	43	7.30	2.94	5.9
		CO	2	27	7.30	1.87	3.7
		CO	3	13	7.30	0.92	1.83
		CO	4	9	7.30	0.61	1.21
		CO	5	13	7.30	0.87	1.74
		CO	6	13	7.30	0.91	1.83
		AVERAGE				1.35	2.70
		CO2	1	4,930	7.30	338	675
		CO2	2	4,681	7.30	321	641
		CO2	3	4,650	7.30	318	637

TTC REPORTED
AS CARBON

Source category:

Reconstituted wood products

Date:

Plant name :

L-P, Urania

Location:

Test date :

Ref. No.:

Process :

OSB

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
	C8	CO2	4	5,625	7.30	385	771
		CO2	5	5,188	7.30	355	711
		CO2	6	5,428	7.30	372	744
		CO2	7	5,473	7.30	375	750
		CO2	8	4,560	7.30	312	625
		CO2	9	4,849	7.30	332	664
		AVERAGE				345	691
		formaldehyde	1	1.0367	7.30	0.0710	0.1420
		formaldehyde	2	1.2116	7.30	0.083	0.1660
		formaldehyde	3	0.9540	7.30	0.065	0.1307
		AVERAGE				0.0731	0.1462
		total hydrocarbon	1	56.1	7.30	3.84	7.68
		total hydrocarbon	2	47.1	7.30	3.23	6.45
		total hydrocarbon	3	46.2	7.30	3.16	6.33
		AVERAGE				3.41	6.82
Face dryer Wood-fired	Multiclone	filt. PM	1	17.39	6.60	1.32	2.63
		filt. PM	2	18.16	6.60	1.38	2.75
		filt. PM	3	12.31	6.60	0.93	1.87
		AVERAGE				1.21	2.42
		cond. inorg. PM	1	1.48	6.60	0.112	0.224
		cond. inorg. PM	2	0.43	6.60	0.033	0.066
		cond. inorg. PM	3	0.97	6.60	0.073	0.146
		AVERAGE				0.073	0.145
		cond. org. PM	1	1.85	6.60	0.140	0.281
		cond. org. PM	2	1.50	6.60	0.114	0.227
		cond. org. PM	3	1.24	6.60	0.094	0.187
		AVERAGE				0.116	0.232
		PM-10	1	15.81	6.60	1.20	2.40
		PM-10	2	15.56	6.60	1.18	2.36
		PM-10	3	18.11	6.60	1.37	2.74
		AVERAGE				1.25	2.50
		cond. inorg. PM	1	0.29	6.60	0.022	0.044
		cond. inorg. PM	2	0.36	6.60	0.027	0.054
		cond. inorg. PM	3	0.42	6.60	0.032	0.064
		AVERAGE				0.027	0.054
		cond. org. PM	1	0.81	6.60	0.061	0.123
		cond. org. PM	2	0.65	6.60	0.049	0.099
		cond. org. PM	3	0.85	6.60	0.064	0.128

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
		AVERAGE				0.058	0.116
		Total cond. PM	1	1.10	6.60	0.083	0.166
		Total cond. PM	2	1.01	6.60	0.076	0.153
		Total cond. PM	3	1.27	6.60	0.096	0.192
		AVERAGE				0.085	0.170
		CO	1	34	17.0185	1.00	2.00
		CO	2	16.37	17.3765	0.47	0.94
		CO	3	19.576	17.132	0.57	1.14
		CO	4	24.855	16.861	0.74	1.47
		CO	5	9.624	16.591	0.29	0.58
		CO	6	7	17.209	0.22	0.43
		CO	7	21	17.147	0.62	1.24
		CO	8	10	17.1385	0.31	0.61
		CO	9	7	17.618	0.21	0.42
		AVERAGE				0.49	0.98
		CO2	1	6,308	6.60	478	956
		CO2	2	6,560	6.60	497	994
		CO2	3	6,115	6.60	463	926
		CO2	4	5,671	6.60	430	859
		CO2	5	5,466	6.60	414	828
		CO2	6	5,552	6.60	421	841
		CO2	7	6,003	6.60	455	909
		CO2	8	6,352	6.60	481	962
		CO2	9	6,288	6.60	476	953
		AVERAGE				457	914
		formaldehyde	1	0.2009	6.60	0.0152	0.0304
		formaldehyde	2	0.2533	6.60	0.019	0.0384
		formaldehyde	3	0.1059	6.60	0.008	0.0160
		AVERAGE				0.0141	0.0283
		total hydrocarbon	1	46.7	6.60	3.54	7.08
		total hydrocarbon	2	45.1	6.60	3.42	6.83
		total hydrocarbon	3	35.5	6.60	2.69	5.38
		AVERAGE				3.21	6.43
				lb/hr	MSF/hr	kg/MSM	lb/MSF
Press vent 1	none	filt. PM	1	2.08			
		filt. PM	2	1.78			

Source category:

Reconstituted wood products

Date:

Plant name :

L-P, Urania

Location:

Test date :

Ref. No.:

Process :

OSB

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
		filt. PM	3	1.93			
		AVERAGE					
		cond. inorg. PM	1	0.28			
		cond. inorg. PM	2	0.14			
		cond. inorg. PM	3	0.38			
		AVERAGE					
		cond. org. PM	1	0.33			
		cond. org. PM	2	0.52			
		cond. org. PM	3	1.18			
		AVERAGE					
		formaldehyde	1	0.4987			
		formaldehyde	2	0.5169			
		formaldehyde	3	0.5132			
		AVERAGE					
		total hydrocarbon	1	5.2			
		total hydrocarbon	2	3.7			
		total hydrocarbon	3	3.2			
		AVERAGE					
Press vent 2	none	filt. PM	1	1.53			
		filt. PM	2	1.18			
		filt. PM	3	1.91			
		AVERAGE					
		cond. inorg. PM	1	0.13			
		cond. inorg. PM	2	0.31			
		cond. inorg. PM	3	0.33			
		AVERAGE					
		cond. org. PM	1	1.04			
		cond. org. PM	2	0.95			
		cond. org. PM	3	1.25			
		AVERAGE					
		formaldehyde	1	0.4452			
		formaldehyde	2	0.5302			
		formaldehyde	3	0.6050			
		AVERAGE					
		total hydrocarbon	1	2.9			
		total hydrocarbon	2	2.8			
		total hydrocarbon	3	4.1			
		AVERAGE					

Source category:

Reconstituted wood products

Date:

Plant name :

L-P, Urania

Location:

Test date :

Ref. No.:

Process :

OSB

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
Press vent 3	none	filt. PM	1	1.72			
		filt. PM	2	2.34			
		filt. PM	3	1.51			
		AVERAGE					
		cond. inorg. PM	1	0.38			
		cond. inorg. PM	2	0.24			
		cond. inorg. PM	3	0.25			
		AVERAGE					
		cond. org. PM	1	0.28			
		cond. org. PM	2	0.24			
		cond. org. PM	3	0.11			
		AVERAGE					
		formaldehyde	1	0.5486			
		formaldehyde	2	0.4444			
		formaldehyde	3	0.4460			
		AVERAGE					
		total hydrocarbon	1	1.8			
		total hydrocarbon	2	1.2			
		total hydrocarbon	3	1.3			
		AVERAGE					
Press vent 4	none	filt. PM	1	0.89			
		filt. PM	2	1.34			
		filt. PM	3	0.99			
		AVERAGE					
		cond. inorg. PM	1	0.42			
		cond. inorg. PM	2	0.17			
		cond. inorg. PM	3	0.14			
		AVERAGE					
		cond. org. PM	1	0.35			
		cond. org. PM	2	0.31			
		cond. org. PM	3	0.33			
		AVERAGE					
		formaldehyde	1	0.2308			
		formaldehyde	2	0.1722			
		formaldehyde	3	0.1560			
		AVERAGE					
		total hydrocarbon	1	1.4			
		total hydrocarbon	2	1.5			

Table 1. Summary of the Results of the April 4, 1992 EPA Particulate Emission Compliance Test on the No. 1 press Vent Stack at the Louisiana-Pacific Plant Located in Urania, Louisiana.

ITEM	Run 1	Run 2	Run 3
Date of test	04-04-92	04-04-92	04-04-92
Time runs were done (HRS)	850/1054	1037/1153	1553/1655
Process rate			
Volumetric flow actual (ACFM) standard (DSCFM)	51410 50263	51758 50313	52338 50333
Gas temperature (DEG-F)	71	74	78
Moisture content (%V/V)	1.23	1.22	1.45
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	99.9	100.3
Particulate concentration actual (GR/ACF) standard (GR/DSCF)	.00611 .00625	.00550 .00566	.00778 .00809
Part. emission rate (LB/HR)	2.69	2.44	3.49

Note: Dry + Organic/Inorganic Wet Catch

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

ITEM	Run 1	Run 2	Run 3
Date of test	04-04-92	04-04-92	04-04-92
Time runs were done (HRS)	1723/1825	1855/1957	2022/2125
Process rate			
Volumetric flow actual (ACFM)	55919	54627	58090
standard (DSCFM)	55037	53722	56496
Gas temperature (DEG-F)	68	66	74
Moisture content (%V/V)	1.12	1.48	1.09
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	100.1	99.9
Particulate concentration			
actual (GR/ACF)	.00860	.00409	.00448
standard (GR/DSCF)	.00874	.00416	.00461
Part. emission rate (LB/HR)	4.12	1.92	2.23

Note: Dry + Organic/Inorganic Wet Catch

Table 3. Summary of the Results of the April 6, 1992 EPA Particulate Emission Compliance Test on the No. 3 Press Vent Stack at the Louisiana-Pacific Plant Located in Urania, Louisiana.

ITEM	Run 1	Run 2	Run 3
Date of test	04-06-92	04-06-92	04-06-92
Time runs were done (HRS)	915/1017	1056/1230	1259/1401
Process rate			
Volumetric flow (ACFM)	55661	56671	53695
actual standard (DSCFM)	54368	56504	53626
Gas temperature (DEG-F)	71	61	61
Moisture content (%V/V)	1.46	1.31	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 (%)	100.1	99.7	99.5
Particulate concentration			
actual (GR/ACF)	.00500	.00583	.00403
standard (GR/DSCF)	.00512	.00585	.00404
part. emission rate (LB/HR)	2.39	2.83	1.86

Note: Dry + Organic/Inorganic Wet Catch

Table 4. Summary of the Results of the April 6, 1992 EPA Particulate Emission Compliance Test on the No. 4 Press Vent Stack at the Louisiana-Pacific Plant Located in Urania, Louisiana.

ITEM	Run 1	Run 2	Run 3
Date of test	04-06-92	04-06-92	04-06-92
Time runs were done (HRS)	1424/1526	1556/1658	1720/1841
Process rate			
Volumetric flow actual (ACFM)	57825	55469	55497
standard (DSCFM)	56313	54250	54185
Gas temperature (DEG-F)	70	69	69
Moisture content (%V/V)	1.94	1.58	1.80
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 (%)	100.2	100.0	100.2
Particulate concentration			
actual (GR/ACF)	.00333	.00385	.00307
standard (GR/DSCF)	.00342	.00394	.00315
Part. emission rate (LB/HR)	1.65	1.83	1.46

Note: Dry + Organic/Inorganic Wet Catch

Table 5. Summary of the Results of the April 8, 1992 EPA Particulate Emission Compliance Test on the Core Dryer Stack at the Louisiana Pacific Plant Located in Urania, Louisiana.

ITEM	Run 1	Run 2	Run 3
Date of test	04-08-92	04-08-92	04-08-92
Time runs were done (HRS)	1604/1706	1749/1853	1919/2050
Process rate			
Volumetric flow actual standard	53486 34871	53274 35158	53237 35946
Gas temperature (DEG-F)	215	215	215
Moisture content (%V/V)	16.52	15.43	13.57
Gas composition (%V/V.dry) carbon dioxide oxygen nitrogen	2.35 18.50 79.15	2.15 18.65 79.20	2.20 18.60 79.20
Isokinetic variation (%)	100.9	98.8	97.6
Particulate concentration actual (GR/ACF) standard (GR/DSCF)	.0552 .0847	.0489 .0741	.0399 .0592
Part. emission rate (LB/HR)	25.32	22.32	18.23

Note: Dry + Organic/Inorganic Wet Catch

Table 6. Summary of the Results of the April 9, 1992 EPA Particulate Emission Compliance Test on the Face Dryer Stack at the Louisiana Pacific Plant Located in Urania, Louisiana.

ITEM	Run 1	Run 2	Run 3
Date of test	04-09-92	04-09-92	04-09-92
Time runs were done (HRS)	915/1030	1100/1200	1235/1341
Process rate			
Volumetric flow actual (ACFM)	50331	50176	51430
standard (DSCFM)	33722	33182	34418
Gas temperature (DEG-F)	211	217	217
Moisture content (%V/V)	14.53	14.90	13.96
Gas composition (%V/V, dry)			
carbon dioxide	2.45	2.40	2.35
oxygen	18.35	18.20	18.50
nitrogen	79.20	79.40	79.15
Isokinetic variation (%)	99.7	99.1	98.7
Particulate concentration			
actual (GR/ACF)	.0480	.0467	.0329
standard (GR/DSCF)	.0717	.0707	.0492
Part. emission rate (LB/HR)	20.72	20.10	14.52

Note: Dry + Organic/Inorganic Wet Catch

Table 7. Summary of the Results of the April 9, 1992 PM-10 Determinations on the Core Dryer Stack at the Louisiana-Pacific Plant Located in Urania, Louisiana.

ITEM	Run 1	Run 2	Run 3
Date of test	04-09-92	04-09-92	04-09-92
Time runs were done (HRS)	1450/1619	1650/1815	1840/2005
Process rate			
Volumetric flow actual (ACFM) standard (DSCFM)	55608 37972	55672 36904	55293 36230
Gas temperature (DEG-F)	213	214	218
Moisture content (%V/V)	12.67	15.08	15.55
Gas composition (%V/V, dry) carbon dioxide oxygen nitrogen	2.10 18.75 79.15	1.80 19.05 79.15	1.95 18.85 79.20
Isokinetic variation (%)	96.1	101.8	100.5
PM-10 concentration..... actual.....(GR/ACF) dry standard.....(GR/DSCF)	.0366 .0537	.0472 .0713	.0501 .0764
PM-10 mass rate.....(LB/HR)	17.46	22.55	23.73

Note: Dry + Organic/Inorganic Wet Catch

Table 8. Summary of the Results of the April 8, 1992 PM-10 Determinations on the Face Dryer Stack at the Louisiana-Pacific Plant Located in Urania, Louisiana.

ITEM	Run 1	Run 2	Run 3
Date of test	04-08-92	04-08-92	04-08-92
Time runs were done (HRS)	1205/1328	1407/1532	1610/1750
Process rate			
Volumetric flow actual (ACFM) standard (DSCFM)	51881 34037	52207 34753	51743 34264
Gas temperature (DEG-F)	214	207	211
Moisture content (%V/V)	16.22	15.79	15.73
Gas composition (%V/V, dry) carbon dioxide oxygen nitrogen	2.70 18.05 79.25	2.75 17.95 79.30	2.60 18.10 79.30
Isokinetic variation (%)	111.8	102.9	104.2
PM-10 concentration..... actual.....(GR/ACF) dry standard.....(GR/DSCF)	.0380 .0580	.0370 .0556	.0437 .0660
PM-10 mass rate.....(LB/HR)	16.91	16.57	19.38

Note: Dry + Organic/Inorganic Wet Catch

Table 9. Summary of the April 8 & 9, 1992 Carbon Monoxide Emission Compliance Test on the Core Dryer at the Louisiana-Pacific Plant in Urania, Louisiana.

	Date	Time	Volumetric		Emission Rate
			Flow Rate	Concentration	
		(HRS)	(DSCFM)	(ppm,w)	(LB/HR)
1	04-08-92	1054-1157	35914	231	42.9
2	04-08-92	1228-1330	34972	150	27.3
3	04-08-92	1401-1503	35655	72	13.4
	Avg		35514	151	27.9
4	04-09-92	1450-1619	37972	47	8.86
5	04-09-92	1650-1815	36904	67	12.7
6	04-09-92	1840-2005	36230	71	13.4
	Avg		37035	62	11.7

Table 10. Summary of the April 8 & 9, 1992 Carbon Monoxide Emission Compliance Test on the Face Dryer at the Louisiana-Pacific Plant in Urania, Louisiana.

Date	Time	Volumetric		Emission Rate
		Flow Rate	Concentration	
	(HRS)	(DSCFM)	(ppm,w)	(LB/HR)
04-08-92	1205-1328	34037	192	34.0
04-08-92	1407-1532	34753	91	16.4
04-08-92	1610-1750	34264	110	19.6
Avg		34351	131	23.3
04-09-92	0915-1030	33722	144	24.9
04-09-92	1100-1200	33182	57	9.62
04-09-92	1235-1341	34418	43	7.43
Avg		33774	81	14.0
04-09-92	0915-1017	34294	122	21.2
04-09-92	1100-1203	34277	60	10.5
04-09-92	1235-1341	35236	42	7.38
Avg		34602	75	13.0

Table 11. Summary of the April 4 - 6, 1992 Formaldehyde Emission Compliance Test at the Louisiana-Pacific Plant in Urania, Louisiana.

Date	Time (HRS)	Volumetric		Emission Rate (LB/HR)
		Flow Rate (DSCFM)	Concentration (ppm.w)	
(No. 1 Press Vent)				
04-04-92	0850-0952	56319	1.87	0.499
04-04-92	1037-1154	52941	2.07	0.517
04-04-92	1553-1655	52395	2.06	0.513
Avg		53885	2.00	0.510
(No. 2 Press Vent)				
04-04-92	1723-1825	50331	1.87	0.445
04-04-92	1855-1957	55782	2.00	0.530
04-04-92	2022-2123	52555	2.43	0.605
Avg		52889	2.10	0.527
(No. 3 Press Vent)				
04-06-92	0915-1018	56633	2.03	0.549
04-01-92	1056-1232	60296	1.55	0.444
04-01-92	1259-1400	56747	1.66	0.446
Avg		57892	1.75	0.480
(No. 4 Press Vent)				
04-06-92	1424-1526	59153	0.82	0.231
04-06-92	1556-1658	57018	0.63	0.172
04-06-92	1720-1844	57232	0.57	0.156
Avg		57801	0.67	0.186

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Table 12. Summary of the April 8 - 9, 1992 Formaldehyde Emission Compliance Test at the Louisiana-Pacific Plant in Urania, Louisiana.

Date	Time	Volumetric		Emission Rate
		Flow Rate	Concentration	
	(HRS)	(DSCFM)	(ppm,w)	(LB/HR)
(Core Dryer)				
04-08-92	1054-1157	35914	5.21	1.04
04-08-92	1228-1330	34972	6.20	1.21
04-08-92	1401-1503	35655	4.81	0.954
Avg		35514	5.41	1.07
(Face Dryer)				
04-09-92	0915-1017	34294	1.07	0.201
04-09-92	1100-1203	34277	1.35	0.253
04-09-92	1235-1341	35236	0.56	0.106
Avg		34602	0.99	0.187
(Aspirator)				
04-09-92	1615-1718	26283	0.16	0.02

Table 13. Summary of the April 4 - 6, 1992 Total Hydrocarbon Determinations at the Louisiana-Pacific Plant in Urania, Louisiana.

Date	Time	Volumetric		Emission Rate
		Flow Rate	Concentration	
	(HRS)	(DSCFM)	(ppmC,w)	(LB/HR)
(No. 1 Press Vent)				
04-04-92	1723-1825	50300	55	5.17
04-04-92	1855-1957	50300	39	3.72
04-04-92	2022-2123	50300	33	3.15
Avg		50300	42	4.01
(No. 2 Press Vent)				
04-04-92	0850-0954	55040	28	2.91
04-04-92	1037-1154	55040	27	2.81
04-04-92	1553-1655	55040	39	4.06
Avg		55040	31	3.26
(No. 3 Press Vent)				
04-06-92	1424-1526	53700	18	1.83
04-06-92	1556-1659	53700	12	1.22
04-06-92	1720-1844	53700	13	1.32
Avg		53700	14	1.45
(No. 4 Press Vent)				
04-06-92	0915-1024	56300	13	1.39
04-06-92	1056-1232	56300	14	1.50
04-06-92	1259-1406	56300	18	1.93
Avg		56300	15	1.61

Table 14. Summary of the April 8 - 9, 1992 Total Hydrocarbon Determinations at the Louisiana-Pacific Plant in Urania, Louisiana.

Date	Time	Volumetric		Emission Rate
		Flow Rate	Concentration	
	(HRS)	(DSCFM)	(ppmC,w)	(LB/HR)
(Core Dryer)				
04-08-92	1054-1157	35914	705	56.1
04-08-92	1228-1330	34972	603	47.1
04-08-92	1401-1503	35655	582	46.2
Avg		35514	630	49.8
(Face Dryer)				
04-09-92	0915-1018	33722	624	46.7
04-09-92	1100-1203	33182	600	45.1
04-09-92	1235-1341	34418	471	35.5
Avg		33774	565	42.4
(Aspirator)				
04-09-92	1615-1718	26283	23	1.15

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 Press Vent

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

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

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.....	20.64	20.64	20.60
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	78.10	78.10	77.92
water vapor.....	1.23	1.22	1.45

Dry molecular weight.....	28.84	28.84	28.84
Wet molecular weight.....	28.71	28.71	28.68
Specific gravity.....	0.992	0.992	0.991
Water mass flow.....(LB/HR)	1749	1744	2085

FO	0.000	0.000	0.000
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Test No. 2
No. 1 Press Vent Stack

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

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

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.....	20.65	20.68	20.58
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	78.11	78.23	77.86
water vapor.....	1.22	1.06	1.54

Dry molecular weight.....	28.84	28.84	28.84
Wet molecular weight.....	28.71	28.73	28.67
Specific gravity.....	0.992	0.992	0.990
Water mass flow.....(LB/HR)	0.00	0.00	0.00

FO	0.000	0.000	0.000
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Test No. 4
No. 2 Press Vent Stack

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

Date of run	Run 1 04-04-92	Run 2 04-04-92	Run 3 04-04-92
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.....	20.67	20.59	20.67
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	78.19	77.90	78.21
water vapor.....	1.12	1.48	1.09
Dry molecular weight.....	28.84	28.84	28.84
Wet molecular weight.....	28.72	28.68	28.72
Specific gravity.....	0.992	0.991	0.992
Water mass flow.....(LB/HR)	1747	2264	1745
FO	0.000	0.000	0.000

Test No. 5
No. 2 Press Vent Stack

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

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

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.....	20.64	20.51	20.60
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	78.09	77.59	77.95
water vapor.....	1.24	1.88	1.42

Dry molecular weight.....	28.84	28.84	28.84
Wet molecular weight.....	28.71	28.64	28.69
Specific gravity.....	0.992	0.989	0.991
Water mass flow.....(LB/HR)	0.00	0.00	0.00

FO	0.000	0.000	0.000
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Test No. 7
No. 3 Press Vent

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

	Run 1	Run 2	Run 3
Date of run	04-06-92	04-06-92	04-06-92

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.....	20.59	20.63	20.68
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	77.91	78.04	78.25
water vapor.....	1.46	1.31	1.04

Dry molecular weight.....	28.84	28.84	28.84
Wet molecular weight.....	28.68	28.70	28.73
Specific gravity.....	0.991	0.991	0.992
Water mass flow.....(LB/HR)	2264	2098	1577

FO	0.000	0.000	0.000
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Test No. 8
No. 3 Press Vent Stack

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

	Run 1	Run 2	Run 3
Date of run	04-06-92	04-06-92	04-06-92

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.....	20.51	20.52	20.62
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	77.61	77.63	78.03
water vapor.....	1.85	1.82*	1.32

Dry molecular weight.....	28.84	28.84	28.84
Wet molecular weight.....	28.64	28.64	28.70
Specific gravity.....	0.989	0.989	0.991
Water mass flow.....(LB/HR)	0.00	0.00	0.00

* Free or condensed water in the gas stream.

FO	0.000	0.000	0.000
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Test No. 10
No. 4 Press Vent Stack

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

Date of run	Run 1 04-06-92	Run 2 04-06-92	Run 3 04-06-92
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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.....	20.49	20.57	20.52
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	77.53	77.82	77.65
water vapor.....	1.94	1.58	1.80
Dry molecular weight.....	28.84	28.84	28.84
Wet molecular weight.....	28.63	28.67	28.65
Specific gravity.....	0.989	0.990	0.989
Water mass flow.....(LB/HR)	3131	2441	2784

FO	0.000	0.000	0.000
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Test No. 11
No. 4 Press Vent Stack

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

	Run 1	Run 2	Run 3
Date of run	04-06-92	04-06-92	04-06-92

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.....	20.55	20.54	20.52
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	77.74	77.70	77.62
water vapor.....	1.68	1.74	1.84

Dry molecular weight.....	28.84	28.84	28.84
Wet molecular weight.....	28.66	28.65	28.64
Specific gravity.....	0.990	0.990	0.989
Water mass flow.....(LB/HR)	0.00	0.00	0.00

F0	0.000	0.000	0.000
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Test No. 15
Face Dryer Stack

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

	1 Run 1	2 Run 2	3 Run 3
Date of run	04-08-92	04-08-92	04-08-92

Dry basis (orsat)

carbon dioxide.....	2.70	2.75	2.60
oxygen.....	18.05	17.95	18.10
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	79.25	79.30	79.30

Wet basis (orsat)

carbon dioxide.....	2.26	2.32	2.19
oxygen.....	15.12	15.12	15.25
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	66.40	66.78	66.83
water vapor.....	16.22	15.79	15.73

Dry molecular weight.....	29.15	29.16	29.14
Wet molecular weight.....	27.35	27.40	27.39
Specific gravity.....	0.945	0.946	0.946
Water mass flow.....(LB/HR)	18481	18277	17937

FO	1.056	1.073	1.077
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Test No. 16
Core Dryer Stack

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

	1 Run 1	2 Run 2	3 Run 3
Date of run	04-08-92	04-08-92	04-08-92

Dry basis (orsat)

carbon dioxide.....	2.00	1.95	1.90
oxygen.....	18.90	18.85	18.85
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	79.10	79.20	79.25

Wet basis (orsat)

carbon dioxide.....	1.69	1.63	1.60
oxygen.....	15.93	15.76	15.82
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	66.67	66.23	66.53
water vapor.....	15.72	16.37	16.05

Dry molecular weight.....	29.08	29.07	29.06
Wet molecular weight.....	27.33	27.25	27.28
Specific gravity.....	0.944	0.941	0.942
Water mass flow.....(LB/HR)	0.00	0.00	0.00

FO	1.000	1.051	1.079
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Test No. 18
Core Dryer Stack

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

	4	5	6
	Run 1	Run 2	Run 3
Date of run	04-08-92	04-08-92	04-08-92

Dry basis (orsat)

carbon dioxide.....	2.35	2.15	2.20
oxygen.....	18.50	18.65	18.60
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	79.15	79.20	79.20

Wet basis (orsat)

carbon dioxide.....	1.96	1.82	1.90
oxygen.....	15.44	15.77	16.08
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	66.08	66.98	68.45
water vapor.....	16.52	15.43	13.57

Dry molecular weight.....	29.12	29.09	29.10
Wet molecular weight.....	27.28	27.38	27.59
Specific gravity.....	0.942	0.946	0.953
Water mass flow.....(LB/HR)	19350	17993	15832

FO	1.021	1.047	1.045
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Test No. 19
Face Dryer Stack

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

	⁴ Run 1	⁵ Run 2	⁶ Run 3
Date of run	04-09-92	04-09-92	04-09-92

Dry basis (orsat)

carbon dioxide.....	2.45	2.40	2.35
oxygen.....	18.35	18.20	18.50
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	79.20	79.40	79.15

Wet basis (orsat)

carbon dioxide.....	2.09	2.04	2.02
oxygen.....	15.68	15.49	15.92
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	67.69	67.57	68.10
water vapor.....	14.53	14.90	13.96

Dry molecular weight.....	29.13	29.11	29.12
Wet molecular weight.....	27.51	27.46	27.56
Specific gravity.....	0.950	0.948	0.952
Water mass flow.....(LB/HR)	16085	16297	15658

FO	1.041	1.125	1.021
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Test No. 20
Face Dryer Stack

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

	7	8	9
	Run 1	Run 2	Run 3
Date of run	04-09-92	04-09-92	04-09-92

Dry basis (orsat)

carbon dioxide.....	2.55	2.70	2.60
oxygen.....	18.15	18.05	18.20
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	79.30	79.25	79.20

Wet basis (orsat)

carbon dioxide.....	2.18	2.30	2.27
oxygen.....	15.54	15.37	15.92
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	67.91	67.46	69.28
water vapor.....	14.36	14.87	12.52

Dry molecular weight.....	29.13	29.15	29.14
Wet molecular weight.....	27.53	27.50	27.75
Specific gravity.....	0.951	0.950	0.958
Water mass flow.....(LB/HR)	0.00	0.00	0.00

FO	1.078	1.056	1.038
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Test No. 22
Core Dryer Stack

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

	7	8	9
	Run 1	Run 2	Run 3
Date of run	04-09-92	04-09-92	04-09-92

Dry basis (orsat)

carbon dioxide.....	2.10	1.80	1.95
oxygen.....	18.75	19.05	18.85
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	79.15	79.15	79.20

Wet basis (orsat)

carbon dioxide.....	1.83	1.53	1.65
oxygen.....	16.37	16.18	15.92
carbon monoxide.....	0.00	0.00	0.00
nitrogen.....	69.12	67.22	66.89
water vapor.....	12.67	15.08	15.55

Dry molecular weight.....	29.09	29.05	29.07
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Wet molecular weight.....	27.68	27.38	27.35
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Specific gravity.....	0.956	0.946	0.945
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Water mass flow.....(LB/HR)	15450	18376	18707
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FO	1.024	1.028	1.051
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Test No. 24
Aspirator Stack

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

Date of run Run 1
04-09-92

Dry basis (orsat)

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

Wet basis (orsat)

carbon dioxide.....	0.03
oxygen.....	20.47
carbon monoxide.....	0.00
nitrogen.....	77.43
water vapor.....	2.07

Dry molecular weight.....	28.84
Wet molecular weight.....	28.62
Specific gravity.....	0.988
Water mass flow.....(LB/HR)	0.00

FO

0.000

3.2 Results of Particulate Determinations

Test No. 1
No. 1 Press Vent

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

	Run 1	Run 2	Run 3
Date of run	04-04-92	04-04-92	04-04-92
Time run start/end.....(HRS)	850/1054	1037/1153	1553/1655
Static pressure.....(IN.WC)	-0.11	-0.11	-0.11
Cross sectional area (SQ.FT)	25.03	25.03	25.03
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	-3.0	-2.0	-3.0
desiccant.....(GRAMS)	13.0	12.0	15.0
total.....(GRAMS)	10.0	10.0	12.0
Total particulate material..			
.....collected(grams)	0.0154	0.0140	0.0201
Gas meter coefficient.....	0.9991	0.9991	0.9991
Barometric pressure..(IN.HG)	29.78	29.78	29.78
Avg. orif.pres.drop..(IN.WC)	1.64	1.74	1.69
Avg. gas meter temp..(DEF-F)	81.2	101.6	101.3
Volume through gas meter....			
at meter conditions...(CF)	39.04	40.65	40.81
standard conditions.(DSCF)	38.02	38.15	38.32
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.241	.241	.241
Avg.stack gas temp ..(DEG-F)	71	74	78
Volumetric flow rate.....			
actual.....(ACFM)	51410	51758	52338
dry standard.....(DSCFM)	50263	50313	50333
Isokinetic variation.....(%)	99.7	99.9	100.3
Particulate concentration...			
actual.....(GR/ACF)	0.00611	0.00550	0.00778
dry standard.....(GR/DSCF)	0.00625	0.00566	0.00809
Particle mass rate...(LB/HR)	2.693	2.442	3.492

Test No. 4
No. 2 Press Vent Stack

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

	Run 1 04-04-92	Run 2 04-04-92	Run 3 04-04-92
Date of run			
Time run start/end.....(HRS)	1723/1825	1855/1957	2022/2125
Static pressure.....(IN.WC)	-0.11	-0.11	-0.11
Cross sectional area (SQ.FT)	25.03	25.03	25.03
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	-1.0	1.0	2.0
desiccant.....(GRAMS)	11.0	12.0	8.0
total.....(GRAMS)	10.0	13.0	10.0
Total particulate material..			
.....collected(grams)	0.0236	0.0110	0.0128
Gas meter coefficient.....	0.9991	0.9991	0.9991
Barometric pressure...(IN.HG)	29.78	29.78	29.78
Avg. orif.pres.drop...(IN.WC)	1.92	1.91	2.03
Avg. gas meter temp...(DEF-F)	100.1	97.4	98.1
Volume through gas meter....			
at meter conditions...(CF)	44.25	43.13	45.32
standard conditions.(DSCF)	41.66	40.80	42.83
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.241	.241	.241
Avg.stack gas temp ..(DEG-F)	68	66	74
Volumetric flow rate.....			
actual.....(ACFM)	55919	54627	58090
dry standard.....(DSCFM)	55037	53722	56496
Isokinetic variation.....(%)	99.8	100.1	99.9
Particulate concentration...			
actual.....(GR/ACF)	0.00860	0.00409	0.00448
dry standard.....(GR/DSCF)	0.00874	0.00416	0.00461
Particle mass rate...(LB/HR)	4.124	1.916	2.233

Test No. 7
No. 3 Press Vent

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

	Run 1 04-06-92	Run 2 04-06-92	Run 3 04-06-92
Date of run			
Time run start/end.....(HRS)	915/1017	1056/1230	1259/1401
Static pressure.....(IN.WC)	-0.11	-0.11	-0.11
Cross sectional area (SQ.FT)	25.03	25.03	25.03
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	1.0	0.0	-5.0
desiccant.....(GRAMS)	12.0	12.0	14.0
total.....(GRAMS)	13.0	12.0	9.0
Total particulate material..			
.....collected(grams)	0.0137	0.0162	0.0106
Gas meter coefficient.....	0.9991	0.9991	0.9991
Barometric pressure..(IN.HG)	29.81	29.81	29.81
Avg. orif.pres.drop..(IN.WC)	1.83	2.04	1.83
Avg. gas meter temp..(DEF-F)	82.0	84.7	91.7
Volume through gas meter....			
at meter conditions...(CF)	42.40	44.09	42.31
standard conditions.(DSCF)	41.29	42.74	40.48
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.241	.241	.241
Avg.stack gas temp ..(DEG-F)	71	61	61
Volumetric flow rate.....			
actual.....(ACFM)	55661	56671	53695
dry standard.....(DSCFM)	54368	56504	53626
Isokinetic variation.....(%)	100.1	99.7	99.5
Particulate concentration...			
actual.....(GR/ACF)	0.00500	0.00583	0.00403
dry standard.....(GR/DSCF)	0.00512	0.00585	0.00404
Particle mass rate...(LB/HR)	2.386	2.833	1.857

Test No. 10
No. 4 Press Vent Stack

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

	Run 1	Run 2	Run 3
Date of run	04-06-92	04-06-92	04-06-92
Time run start/end.....(HRS)	1424/1526	1556/1658	1720/1841
Static pressure.....(IN.WC)	-0.11	-0.11	-0.11
Cross sectional area (SQ.FT)	25.03	25.03	25.03
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)	17.0	12.0	15.0
total.....(GRAMS)	18.0	14.0	16.0
Total particulate material..			
.....collected(grams)	0.0095	0.0105	0.0084
Gas meter coefficient.....	0.9991	0.9991	0.9991
Barometric pressure..(IN.HG)	29.81	29.81	29.81
Avg. orif.pres.drop..(IN.WC)	1.96	1.85	1.88
Avg. gas meter temp..(DEF-F)	92.8	98.7	96.1
Volume through gas meter....			
at meter conditions...(CF)	44.83	43.56	43.39
standard conditions.(DSCF)	42.81	41.14	41.19
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.241	.241	.241
Avg.stack gas temp ..(DEG-F)	70	69	69
Volumetric flow rate.....			
actual.....(ACFM)	57825	55469	55497
dry standard.....(DSCFM)	56313	54250	54185
Isokinetic variation.....(%)	100.2	100.0	100.2
Particulate concentration...			
actual.....(GR/ACF)	0.00333	0.00385	0.00307
dry standard.....(GR/DSCF)	0.00342	0.00394	0.00315
Particle mass rate...(LB/HR)	1.653	1.831	1.462

Test No. 18
Core Dryer Stack

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

	Run 1	Run 2	Run 3
Date of run	04-08-92	04-08-92	04-08-92
Time run start/end.....(HRS)	1604/1706	1749/1853	1919/2050
Static pressure.....(IN.WC)	-1.50	-1.50	-1.50
Cross sectional area (SQ.FT)	9.62	9.62	9.62
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	152.0	134.0	120.0
desiccant.....(GRAMS)	16.0	19.0	13.0
total.....(GRAMS)	168.0	153.0	133.0
Total particulate material..			
.....collected(grams)	0.2198	0.1898	0.1531
Gas meter coefficient.....	1.0010	1.0010	1.0010
Barometric pressure..(IN.HG)	29.97	29.97	29.97
Avg. orif.pres.drop..(IN.WC)	1.44	1.41	1.42
Avg. gas meter temp..(DEF-F)	92.4	93.7	87.3
Volume through gas meter....			
at meter conditions...(CF)	41.65	41.23	41.16
standard conditions.(DSCF)	40.04	39.54	39.94
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.183	.183	.183
Avg.stack gas temp ..(DEG-F)	215	215	215
Volumetric flow rate.....			
actual.....(ACFM)	53486	53274	53237
dry standard.....(DSCFM)	34871	35158	35946
Isokinetic variation.....(%)	100.9	98.8	97.6
Particulate concentration...			
actual.....(GR/ACF)	0.05520	0.04886	0.03992
dry standard.....(GR/DSCF)	0.08470	0.07407	0.05915
Particle mass rate...(LB/HR)	25.316	22.320	18.225

Test No. 19
Face Dryer Stack

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

	Run 1	Run 2	Run 3
Date of run	04-09-92	04-09-92	04-09-92
Time run start/end.....(HRS)	915/1030	1100/1200	1235/1341
Static pressure.....(IN.WC)	-1.10	-1.10	-1.10
Cross sectional area (SQ.FT)	9.62	9.62	9.62
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	121.0	129.0	111.0
desiccant.....(GRAMS)	17.0	10.0	22.0
total.....(GRAMS)	138.0	139.0	133.0
Total particulate material..			
.....collected(grams)	0.1778	0.1714	0.1233
Gas meter coefficient.....	0.9991	0.9991	0.9991
Barometric pressure..(IN.HG)	29.90	29.90	29.90
Avg. orif.pres.drop..(IN.WC)	1.41	1.39	1.50
Avg. gas meter temp..(DEF-F)	84.5	96.2	102.6
Volume through gas meter....			
at meter conditions...(CF)	39.40	39.37	41.13
standard conditions.(DSCF)	38.27	37.43	38.66
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.183	.183	.183
Avg.stack gas temp ..(DEG-F)	211	217	217
Volumetric flow rate.....			
actual.....(ACFM)	50331	50176	51430
dry standard.....(DSCFM)	33722	33182	34418
Isokinetic variation.....(%)	99.7	99.1	98.7
Particulate concentration...			
actual.....(GR/ACF)	0.04802	0.04671	0.03292
dry standard.....(GR/DSCF)	0.07170	0.07066	0.04921
Particle mass rate...(LB/HR)	20.724	20.096	14.516

3.3 Results of PM-10 Determinations

Test No. 15
Face Dryer Stack

Results of PM-10 Determinations -----

	Run 1	Run 2	Run 3
Date of run	04-08-92	04-08-92	04-08-92
Time run start/end.....(HRS)	1205/1328	1407/1532	1610/1750
Static pressure.....(IN.WC)	-1.05	-1.05	-1.05
Cross sectional area (SQ.FT)	9.62	9.62	9.62
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	115.0	110.0	114.0
desiccant.....(GRAMS)	13.0	8.0	9.0
total.....(GRAMS)	128.0	118.0	123.0
Total PM-10 material.....			
.....collected(grams)	0.1171	0.1070	0.1329
Gas meter coefficient.....	0.9991	0.9991	0.9991
Barometric pressure..(IN.HG)	29.97	29.97	29.97
Avg. orif.pres.drop..(IN.WC)	0.49	0.43	0.45
Avg. gas meter temp..(DEF-F)	88.7	101.2	107.7
Volume through gas meter....			
at meter conditions...(CF)	32.35	31.50	33.36
standard conditions.(DSCF)	31.18	29.67	31.08
Total sampling time....(MIN)	81.74	82.78	86.82
Nozzle diameter.....(IN)	.133	.133	.133
Avg.stack gas temp ..(DEG-F)	214	207	211
Volumetric flow rate.....			
actual.....(ACFM)	51881	52207	51743
dry standard.....(DSCFM)	34037	34753	34264
Isokinetic variation.....(%)	111.8	102.9	104.2
PM-10 cutpoint.....(um)	9.72	10.17	10.21
PM-10 concentration.....			
actual.....(GR/ACF)	0.03800	0.03702	0.04368
dry standard.....(GR/DSCF)	0.05795	0.05564	0.06599
PM-10 mass rate.....(LB/HR)	16.907	16.573	19.380

Test No. 22
Core Dryer Stack

Results of PM-10 Determinations -----

	Run 1 04-09-92	Run 2 04-09-92	Run 3 04-09-92
Date of run			
Time run start/end.....(HRS)	1450/1619	1650/1815	1840/2005
Static pressure.....(IN.WC)	-1.00	-1.00	-1.00
Cross sectional area (SQ.FT)	9.62	9.62	9.62
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	90.0	110.0	110.0
desiccant.....(GRAMS)	9.0	7.0	8.0
total.....(GRAMS)	99.0	117.0	118.0
Total PM-10 material.....			
.....collected(grams)	0.1119	0.1436	0.1497
Gas meter coefficient.....	0.9991	0.9991	0.9991
Barometric pressure..(IN.HG)	29.90	29.90	29.90
Avg. orif.pres.drop..(IN.WC)	0.45	0.49	0.45
Avg. gas meter temp..(DEF-F)	94.8	94.7	92.2
Volume through gas meter....			
at meter conditions...(CF)	33.84	32.67	31.64
standard conditions.(DSCF)	32.18	31.08	30.22
Total sampling time....(MIN)	88.02	82.54	82.80
Nozzle diameter.....(IN)	.133	.133	.133
Avg.stack gas temp ..(DEG-F)	213	214	218
Volumetric flow rate.....			
actual.....(ACFM)	55608	55672	55293
dry standard.....(DSCFM)	37972	36904	36230
Isokinetic variation.....(%)	96.1	101.8	100.5
PM-10 cutpoint.....(um)	10.36	9.93	10.12
PM-10 concentration.....			
actual.....(GR/ACF)	0.03662	0.04725	0.05006
dry standard.....(GR/DSCF)	0.05365	0.07130	0.07642
PM-10 mass rate.....(LB/HR)	17.463	22.554	23.733

3.4 Results of Carbon Monoxide Determinations

Test No. 15
Face Dryer Stack

Results of CO Determinations -----Method 10

	Run 1	Run 2	Run 3
Date of run	04-08-92	04-08-92	04-08-92
Time run start/end.....(HRS)	1205-1328	1407-1532	1610-1750
Total sampling time....(MIN)	81.7	82.8	86.8
Moisture content.....(%V/V)	16.22	15.79	15.73
O2 Concentration.....(%V/V)	18.05	17.95	18.10
Volumetric flow rate (DSCFM)	34037	34753	34264
CO concentration.....			
(GR/DSCF).....	0.1165	0.0550	0.0667
(MG/DSCM).....	266.78	125.82	152.61
(PPM-WET).....	191.86	90.95	110.39
(PPM-DRY).....	229.00	108.00	131.00
(PPM-DRY @ 7% O2).....	1086.	495.74	632.41
CO emission rate.....(LB/HR)	33.994	16.370	19.576

CO = Carbon monoxide

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

Test No. 16
Core Dryer Stack

Results of CO Determinations -----Method 10

	Run 1	Run 2	Run 3
Date of run	04-08-92	04-08-92	04-08-92
Time run start/end.....(HRS)	1054-1157	1228-1330	1401-1503
Total sampling time....(MIN)	60.0	60.0	60.0
Moisture content.....(%V/V)	15.72	16.37	16.05
O2 Concentration.....(%V/V)	18.90	18.85	18.85
Volumetric flow rate (DSCFM)	35914	34972	35655
CO concentration.....			
(GR/DSCF).....	0.1394	0.0911	0.0438
(MG/DSCM).....	319.21	208.53	100.19
(PPM-WET).....	230.93	149.70	72.20
(PPM-DRY).....	274.00	179.00	86.00
(PPM-DRY @ 7% O2).....	1826.	1165.	560.00
CO emission rate.....(LB/HR)	42.918	27.302	13.373

CO = Carbon monoxide

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

Test No. 19
Face Dryer Stack

Results of CO Determinations -----Method 10

	Run 1	Run 2	Run 3
Date of run	04-09-92	04-09-92	04-09-92
Time run start/end.....(HRS)	0915-1030	1100-1200	1235-1341
Total sampling time....(MIN)	60.0	60.0	60.0
Moisture content.....(%V/V)	14.53	14.90	13.96
O2 Concentration.....(%V/V)	18.35	18.20	18.50
Volumetric flow rate (DSCFM)	33722	33182	34418
CO concentration.....			
(GR/DSCF).....	0.0860	0.0338	0.0252
(MG/DSCM).....	196.89	77.47	57.67
(PPM-WET).....	144.44	56.59	42.59
(PPM-DRY).....	169.00	66.50	49.50
(PPM-DRY @ 7% O2).....	892.83	332.50	277.20
CO emission rate.....(LB/HR)	24.855	9.624	7.430

CO = Carbon monoxide

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

Test No. 20
Face Dryer Stack

Results of CO Determinations -----Method 10

	Run 1	Run 2	Run 3
Date of run	04-09-92	04-09-92	04-09-92
Time run start/end.....(HRS)	0915-1017	1100-1203	1235-1341
Total sampling time....(MIN)	60.0	60.0	60.0
Moisture content.....(%V/V)	14.36	14.87	12.52
O2 Concentration.....(%V/V)	18.15	18.05	18.20
Volumetric flow rate (DSCFM)	34294	34277	35236
CO concentration.....			
(GR/DSCF).....	0.0723	0.0356	0.0244
(MG/DSCM).....	165.43	81.55	55.92
(PPM-WET).....	121.61	59.59	41.99
(PPM-DRY).....	142.00	70.00	48.00
(PPM-DRY @ 7% O2).....	697.54	332.20	240.00
CO emission rate.....(LB/HR)	21.239	10.465	7.376

CO = Carbon monoxide

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

Test No. 22
Core Dryer Stack

Results of CO Determinations -----Method 10

	Run 1	Run 2	Run 3
Date of run	04-09-92	04-09-92	04-09-92
Time run start/end.....(HRS)	1450-1619	1650-1815	1840-2005
Total sampling time....(MIN)	88.0	82.5	82.8
Moisture content.....(%V/V)	12.67	15.08	15.55
O2 Concentration.....(%V/V)	18.75	19.05	18.85
Volumetric flow rate (DSCFM)	37972	36904	36230
CO concentration.....			
(GR/DSCF).....	0.0272	0.0400	0.0430
(MG/DSCM).....	62.33	91.69	98.44
(PPM-WET).....	46.72	66.83	71.36
(PPM-DRY).....	53.50	78.70	84.50
(PPM-DRY @ 7% O2).....	332.89	565.03	550.23
CO emission rate.....(LB/HR)	8.860	12.667	13.352

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 Press Vent Stack

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

	Run 1	Run 2	Run 3
Date of run	04-04-92	04-04-92	04-04-92
Time run start/end.....(HRS)	850/ 952	1037/1154	1553/1655
Static pressure.....(IN.WC)	-0.11	-0.11	-0.11
Cross sectional area (SQ.FT)	25.03	25.03	25.03
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	-2.0	-5.0	0.0
desiccant.....(GRAMS)	13.0	14.0	13.0
total.....(GRAMS)	11.0	9.0	13.0
Formaldehyde in sample..(uG)	2800	2900	2900
Gas meter coefficient.....	1.0010	1.0010	1.0010
Barometric pressure..(IN.HG)	29.78	29.78	29.78
Avg. orif.pres.drop..(IN.WC)	1.82	1.63	1.65
Avg. gas meter temp..(DEF-F)	70.2	83.0	88.6
Volume through gas meter....			
at meter conditions...(CF)	42.15	40.55	40.84
standard conditions.(DSCF)	41.99	39.43	39.31
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.239	.239	.239
Avg.stack gas temp ..(DEG-F)	71	74	78
Volumetric flow rate.....			
actual.....(ACFM)	57583	54392	54507
dry standard.....(DSCFM)	56319	52941	52395
Isokinetic variation.....(%)	99.9	99.8	100.5
CH2O concentration.....			
(GR/DSCF).....	0.0010	0.0011	0.0011
(MG/DSCM).....	2.37	2.61	2.62
(PPM-DRY).....	1.90	2.09	2.10
(PPM-WET).....	1.87	2.07	2.06
CH2O emission rate...(LB/HR)	0.49871	0.51688	0.51315

CH2O = Formaldehyde

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

Test No. 5
No. 2 Press Vent Stack

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

	Run 1 04-04-92	Run 2 04-04-92	Run 3 04-04-92
Date of run			
Time run start/end.....(HRS)	1723/1825	1855/1957	2022/2123
Static pressure.....(IN.WC)	-0.11	-0.11	-0.11
Cross sectional area (SQ.FT)	25.03	25.03	25.03
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	-4.0	-4.0	-4.0
desiccant.....(GRAMS)	14.0	21.0	16.0
total.....(GRAMS)	10.0	17.0	12.0
Formaldehyde in sample..(uG)	2500	3000	3400
Gas meter coefficient.....	1.0010	1.0010	1.0010
Barometric pressure..(IN.HG)	29.78	29.78	29.78
Avg. orif.pres.drop..(IN.WC)	1.56	1.77	1.59
Avg. gas meter temp..(DEF-F)	90.3	85.5	84.7
Volume through gas meter....			
at meter conditions...(CF)	39.10	43.29	40.45
standard conditions.(DSCF)	37.51	41.91	39.20
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.239	.239	.239
Avg.stack gas temp ..(DEG-F)	68	66	74
Volumetric flow rate.....			
actual.....(ACFM)	51250	56951	54209
dry standard.....(DSCFM)	50331	55782	52555
Isokinetic variation.....(%)	99.9	100.7	100.0
CH2O concentration.....			
(GR/DSCF).....	0.0010	0.0011	0.0013
(MG/DSCM).....	2.36	2.54	3.08
(PPM-DRY).....	1.89	2.03	2.46
(PPM-WET).....	1.87	2.00	2.43
CH2O emission rate...(LB/HR)	0.44523	0.53017	0.60495

CH2O = Formaldehyde

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

Test No. 8
No. 3 Press Vent Stack

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

	Run 1 04-06-92	Run 2 04-06-92	Run 3 04-06-92
Date of run			
Time run start/end.....(HRS)	915/1018	1056/1232	1259/1400
Static pressure.....(IN.WC)	-0.11	-0.11	-0.11
Cross sectional area (SQ.FT)	25.03	25.03	25.03
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	4.0	-2.0	-1.0
desiccant.....(GRAMS)	13.0	22.0	13.0
total.....(GRAMS)	17.0	20.0	12.0
Formaldehyde in sample..(uG)	3100	2500	2500
Gas meter coefficient.....	1.0010	1.0010	1.0010
Barometric pressure..(IN.HG)	29.81	29.81	29.81
Avg. orif.pres.drop..(IN.WC)	1.80	2.07	1.82
Avg. gas meter temp..(DEF-F)	71.5	75.8	81.3
Volume through gas meter....			
at meter conditions...(CF)	42.72	45.65	43.25
standard conditions.(DSCF)	42.50	45.08	42.25
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.239	.239	.239
Avg.stack gas temp ..(DEG-F)	72	61	61
Volumetric flow rate.....			
actual.....(ACFM)	58346	60855	56997
dry standard.....(DSCFM)	56633	60296	56747
Isokinetic variation.....(%)	100.6	100.2	99.8
CH2O concentration.....			
(GR/DSCF).....	0.0011	0.0009	0.0009
(MG/DSCM).....	2.59	1.97	2.10
(PPM-DRY).....	2.07	1.58	1.68
(PPM-WET).....	2.03	1.55	1.66
CH2O emission rate...(LB/HR)	0.54860	0.44437	0.44595

CH2O = Formaldehyde

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is less than or equal to the reported value

Test No. 11
No. 4 Press Vent Stack

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

	Run 1	Run 2	Run 3
Date of run	04-06-92	04-06-92	04-06-92
Time run start/end.....(HRS)	1424/1526	1556/1658	1720/1844
Static pressure.....(IN.WC)	-0.11	-0.11	-0.11
Cross sectional area (SQ.FT)	25.03	25.03	25.03
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	4.0	4.0	4.0
desiccant.....(GRAMS)	12.0	12.0	13.0
total.....(GRAMS)	16.0	16.0	17.0
Formaldehyde in sample..(UG)	1300	970	880
Gas meter coefficient.....	1.0010	1.0010	1.0010
Barometric pressure..(IN.HG)	29.81	29.81	29.81
Avg. orif.pres.drop..(IN.WC)	1.92	1.78	1.84
Avg. gas meter temp..(DEF-F)	84.9	87.4	88.3
Volume through gas meter....			
at meter conditions...(CF)	45.60	44.17	44.45
standard conditions.(DSCF)	44.26	42.66	42.87
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.239	.239	.239
Avg.stack gas temp ..(DEG-F)	70	69	69
Volumetric flow rate.....			
actual.....(ACFM)	60600	58394	58611
dry standard.....(DSCFM)	59153	57018	57232
Isokinetic variation.....(%)	100.3	100.3	100.4
CH2O concentration.....			
(GR/DSCF).....	0.0005	0.0004	0.0003
(MG/DSCM).....	1.04	0.81	0.73
(PPM-DRY).....	0.84	0.65	0.58
(PPM-WET).....	0.82	0.63	0.57
CH2O emission rate...(LB/HR)	0.23079	0.17215	0.15603

CH2O = Formaldehyde

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

Test No. 16
Core Dryer Stack

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

	Run 1	Run 2	Run 3
Date of run	04-08-92	04-08-92	04-08-92
Time run start/end.....(HRS)	1054/1157	1228/1330	1401/1503
Static pressure.....(IN.WC)	-1.50	-1.50	-1.50
Cross sectional area (SQ.FT)	9.62	9.62	9.62
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	154.0	154.0	153.0
desiccant.....(GRAMS)	17.0	21.0	20.0
total.....(GRAMS)	171.0	175.0	173.0
Formaldehyde in sample..(uG)	9400	11000	8600
Gas meter coefficient.....	1.0010	1.0010	1.0010
Barometric pressure..(IN.HG)	29.97	29.97	29.97
Avg. orif.pres.drop..(IN.WC)	1.66	1.59	1.63
Avg. gas meter temp..(DEF-F)	77.3	84.5	89.7
Volume through gas meter....			
at meter conditions...(CF)	43.71	43.19	44.14
standard conditions.(DSCF)	43.23	42.14	42.66
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.188	.188	.188
Avg.stack gas temp ..(DEG-F)	216	215	215
Volumetric flow rate.....			
actual.....(ACFM)	54640	53550	54366
dry standard.....(DSCFM)	35914	34972	35655
Isokinetic variation.....(%)	100.2	100.3	99.6
CH2O concentration.....			
(GR/DSCF).....	0.0034	0.0040	0.0031
(MG/DSCM).....	7.71	9.26	7.15
(PPM-DRY).....	6.18	7.41	5.73
(PPM-WET).....	5.21	6.20	4.81
CH2O emission rate...(LB/HR)	1.03670	1.21159	0.95398

CH2O = Formaldehyde

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is less than or equal to the reported value

Test No. 20
Face Dryer Stack

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

	Run 1 04-09-92	Run 2 04-09-92	Run 3 04-09-92
Date of run			
Time run start/end.....(HRS)	915/1017	1100/1203	1235/1341
Static pressure.....(IN.WC)	-1.10	-1.10	-1.10
Cross sectional area (SQ.FT)	9.62	9.62	9.62
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	130.0	139.0	106.0
desiccant.....(GRAMS)	15.0	14.0	20.0
total.....(GRAMS)	145.0	153.0	126.0
Formaldehyde in sample..(uG)	1800	2300	940
Gas meter coefficient.....	1.0010	1.0010	1.0010
Barometric pressure..(IN.HG)	29.90	29.90	29.90
Avg. orif.pres.drop..(IN.WC)	1.47	1.52	1.55
Avg. gas meter temp..(DEF-F)	76.2	83.6	91.0
Volume through gas meter....			
at meter conditions...(CF)	41.25	42.36	43.15
standard conditions.(DSCF)	40.76	41.30	41.50
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.188	.188	.188
Avg.stack gas temp ..(DEG-F)	212	217	215
Volumetric flow rate.....			
actual.....(ACFM)	51127	51770	51636
dry standard.....(DSCFM)	34294	34277	35236
Isokinetic variation.....(%)	98.9	100.3	98.0
CH2O concentration.....			
(GR/DSCF).....	0.0007	0.0009	0.0004
(MG/DSCM).....	1.57	1.97	0.80
(PPM-DRY).....	1.25	1.58	0.64
(PPM-WET).....	1.07	1.35	0.56
CH2O emission rate...(LB/HR)	0.20093	0.25334	0.10591

CH2O = Formaldehyde

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

Test No. 24
Aspirator Stack

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

	Run 1
Date of run	04-09-92
Time run start/end.....(HRS)	1615/1718
Static pressure.....(IN.WC)	-10.80
Cross sectional area (SQ.FT)	8.51
Pitot tube coefficient.....	.840
Water in sample gas	
condenser.....(ML)	0.0
impingers.....(GRAMS)	4.0
desiccant.....(GRAMS)	12.0
total.....(GRAMS)	16.0
Formaldehyde in sample..(uG)	200.00
Gas meter coefficient.....	1.0010
Barometric pressure..(IN.HG)	29.90
Avg. orif.pres.drop..(IN.WC)	1.16
Avg. gas meter temp..(DEF-F)	94.4
Volume through gas meter....	
at meter conditions...(CF)	37.39
standard conditions.(DSCF)	35.71
Total sampling time....(MIN)	60.00
Nozzle diameter.....(IN)	.188
Avg.stack gas temp ..(DEG-F)	82
Volumetric flow rate.....	
actual.....(ACFM)	28321
dry standard.....(DSCFM)	26283
Isokinetic variation.....(%)	100.0
CH2O concentration.....	
(GR/DSCF).....	0.0001
(MG/DSCM).....	0.20
(PPM-DRY).....	0.16
(PPM-WET).....	0.16
CH2O emission rate...(LB/HR)	0.02

CH2O = Formaldehyde

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



Test No. 1
No. 1 Press Vent

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

Date of Determination.....	04-04-92
Time of Determination.....(HRS)	745
Barometric pressure.....(IN.HG)	29.78
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	24
Shape of duct.....	Round
Stack diameter.....(IN)	67.75
Duct area.....(SQ.FT)	25.03
Direction of flow.....	UP
Static pressure.....(IN.WC)	-.11
Avg. gas temp.....(DEG-F)	70
Moisture content.....(% V/V)	1.23
Avg. linear velocity.....(FT/SEC)	36.0
Gas density.....(LB/ACF)	.07390
Molecular weight.....(LB/LBMOLE)	28.84
Mass flow of gas.....(LB/HR)	239877
Volumetric flow rate.....	
actual.....(ACFM)	54098
dry standard.....(DSCFM)	52970

Test No. 2
No. 1 Press Vent Stack

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

Date of Determination.....	04-04-92
Time of Determination.....(HRS)	850
Barometric pressure.....(IN.HG)	29.78
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	24
Shape of duct.....	Round
Stack diameter.....(IN)	67.75
Duct area.....(SQ.FT)	25.03
Direction of flow.....	UP
Static pressure.....(IN.WC)	-.11
Avg. gas temp.....(DEG-F)	72
Moisture content.....(% V/V)	1.22
Avg. linear velocity.....(FT/SEC)	38.4
Gas density.....(LB/ACF)	.07363
Molecular weight.....(LB/LBMOLE)	28.84
Mass flow of gas.....(LB/HR)	254707
Volumetric flow rate.....	
actual.....(ACFM)	57658
dry standard.....(DSCFM)	56246

Test No. 5
No. 2 Press Vent Stack

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

Date of Determination.....	04-04-92
Time of Determination.....(HRS)	1723
Barometric pressure.....(IN.HG)	29.78
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	24
Shape of duct.....	Round
Stack diameter.....(IN)	67.75
Duct area.....(SQ.FT)	25.03
Direction of flow.....	UP
Static pressure.....(IN.WC)	-.11
Avg. gas temp.....(DEG-F)	68
Moisture content.....(% V/V)	1.24
Avg. linear velocity.....(FT/SEC)	34.0
Gas density.....(LB/ACF)	.07418
Molecular weight.....(LB/LBMOLE)	28.84
Mass flow of gas.....(LB/HR)	227237
Volumetric flow rate.....	
actual.....(ACFM)	51057
dry standard.....(DSCFM)	50174

Test No. 15
Face Dryer Stack

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

Date of Determination.....	04-08-92
Time of Determination.....(HRS)	930
Barometric pressure.....(IN.HG)	29.97
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	12
Shape of duct.....	Round
Stack diameter.....(IN)	42
Duct area.....(SQ.FT)	9.62
Direction of flow.....	UP
Static pressure.....(IN.WC)	-1.05
Avg. gas temp.....(DEG-F)	215
Moisture content.....(% V/V)	16.22
Avg. linear velocity.....(FT/SEC)	92.9
Gas density.....(LB/ACF)	.05550
Molecular weight.....(LB/LBMOLE)	29.15
Mass flow of gas.....(LB/HR)	178509
Volumetric flow rate.....	
actual.....(ACFM)	53610
dry standard.....(DSCFM)	35102

Test No. 16
Core Dryer Stack

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

Date of Determination.....	04-08-92
Time of Determination.....(HRS)	1025
Barometric pressure.....(IN.HG)	29.97
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	12
Shape of duct.....	Round
Stack diameter.....(IN)	42
Duct area.....(SQ.FT)	9.62
Direction of flow.....	UP
Static pressure.....(IN.WC)	-1.5
Avg. gas temp.....(DEG-F)	213
Moisture content.....(% V/V)	15.72
Avg. linear velocity.....(FT/SEC)	91.2
Gas density.....(LB/ACF)	.05558
Molecular weight.....(LB/LBMOLE)	29.08
Mass flow of gas.....(LB/HR)	175528
Volumetric flow rate.....	
actual.....(ACFM)	52636
dry standard.....(DSCFM)	34734

Test No. 18
Core Dryer Stack

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

Date of Determination.....	04-08-92
Time of Determination.....(HRS)	1025
Barometric pressure.....(IN.HG)	29.97
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	12
Shape of duct.....	Round
Stack diameter.....(IN)	42
Duct area.....(SQ.FT)	9.62
Direction of flow.....	UP
Static pressure.....(IN.WC)	-1.5
Avg. gas temp.....(DEG-F)	213
Moisture content.....(% V/V)	16.52
Avg. linear velocity.....(FT/SEC)	91.3
Gas density.....(LB/ACF)	.05547
Molecular weight.....(LB/LBMOLE)	29.12
Mass flow of gas.....(LB/HR)	175352
Volumetric flow rate.....	
actual.....(ACFM)	52689
dry standard.....(DSCFM)	34440

Test No. 20
Face Dryer Stack

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

Date of Determination.....	04-09-92
Time of Determination.....(HRS)	915
Barometric pressure.....(IN.HG)	29.9
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	12
Shape of duct.....	Round
Stack diameter.....(IN)	42
Duct area.....(SQ.FT)	9.62
Direction of flow.....	UP
Static pressure.....(IN.WC)	-1.1
Avg. gas temp.....(DEG-F)	210
Moisture content.....(% V/V)	14.36
Avg. linear velocity.....(FT/SEC)	88.4
Gas density.....(LB/ACF)	.05616
Molecular weight.....(LB/LBMOLE)	29.13
Mass flow of gas.....(LB/HR)	172043
Volumetric flow rate.....	
actual.....(ACFM)	51057
dry standard.....(DSCFM)	34341

Test No. 22
Core Dryer Stack

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

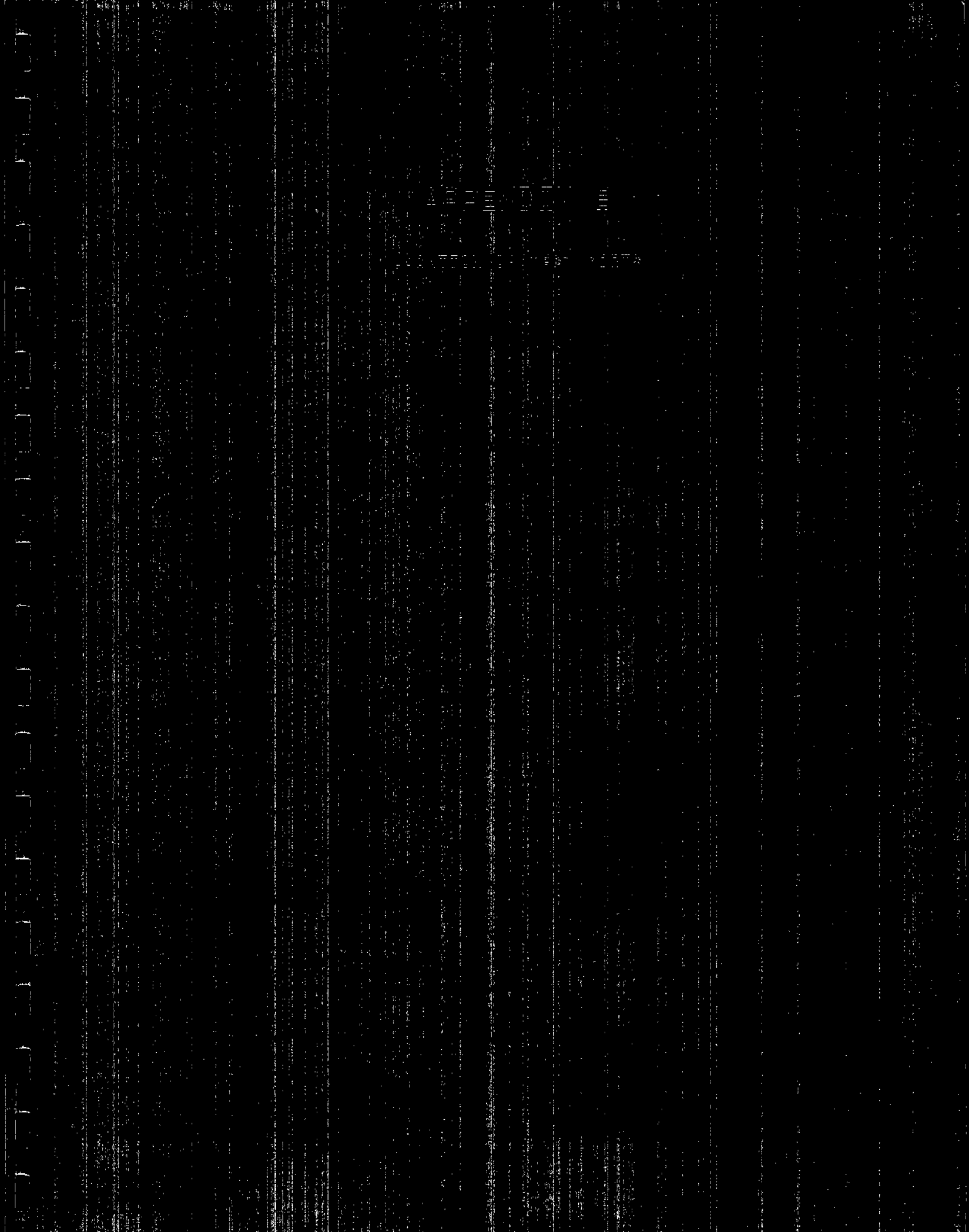
Date of Determination.....	04-09-92
Time of Determination.....(HRS)	1440
Barometric pressure.....(IN.HG)	29.9
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	12
Shape of duct.....	Round
Stack diameter.....(IN)	42
Duct area.....(SQ.FT)	9.62
Direction of flow.....	UP
Static pressure.....(IN.WC)	-1
Avg. gas temp.....(DEG-F)	213
Moisture content.....(% V/V)	12.67
Avg. linear velocity.....(FT/SEC)	93.5
Gas density.....(LB/ACF)	.05622
Molecular weight.....(LB/LBMOLE)	29.09
Mass flow of gas.....(LB/HR)	182160
Volumetric flow rate.....	
actual.....(ACFM)	54001
dry standard.....(DSCFM)	36883

Test No. 24
Aspirator Stack

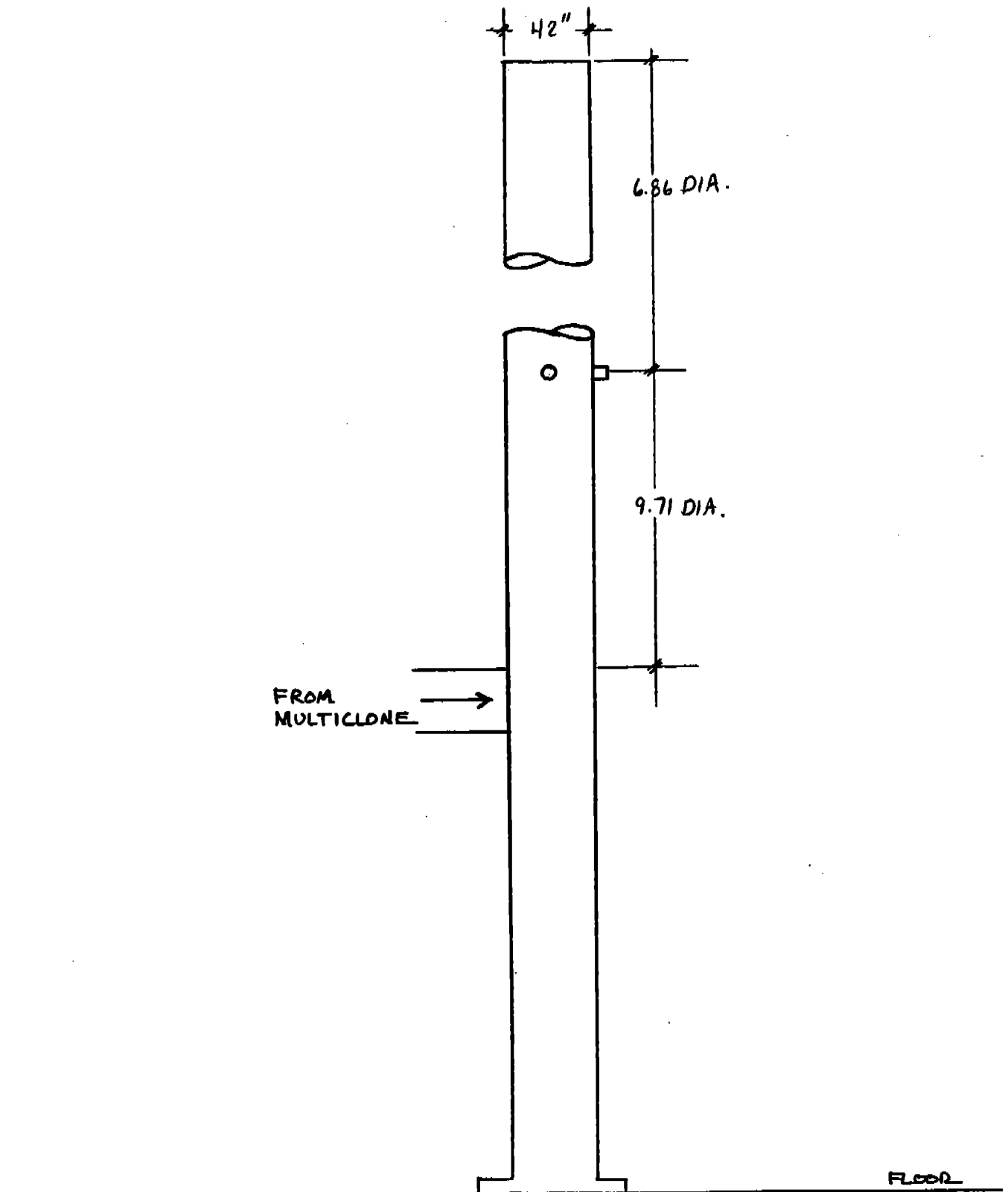
Results of Volumetric Flow Rate Determination-----Method 2

Date of Determination.....	04-09-92
Time of Determination.....(HRS)	1615
Barometric pressure.....(IN.HG)	29.9
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	20
Shape of duct.....	Round
Stack diameter.....(IN)	39.5
Duct area.....(SQ.FT)	8.51
Direction of flow.....	DOWN
Static pressure.....(IN.WC)	-10.8
Avg. gas temp.....(DEG-F)	82
Moisture content.....(% V/V)	2.07
Avg. linear velocity.....(FT/SEC)	55.5
Gas density.....(LB/ACF)	.07042
Molecular weight.....(LB/LBMOLE)	28.84
Mass flow of gas.....(LB/HR)	119721
Volumetric flow rate.....	
actual.....(ACFM)	28333
dry standard.....(DSCFM)	26295



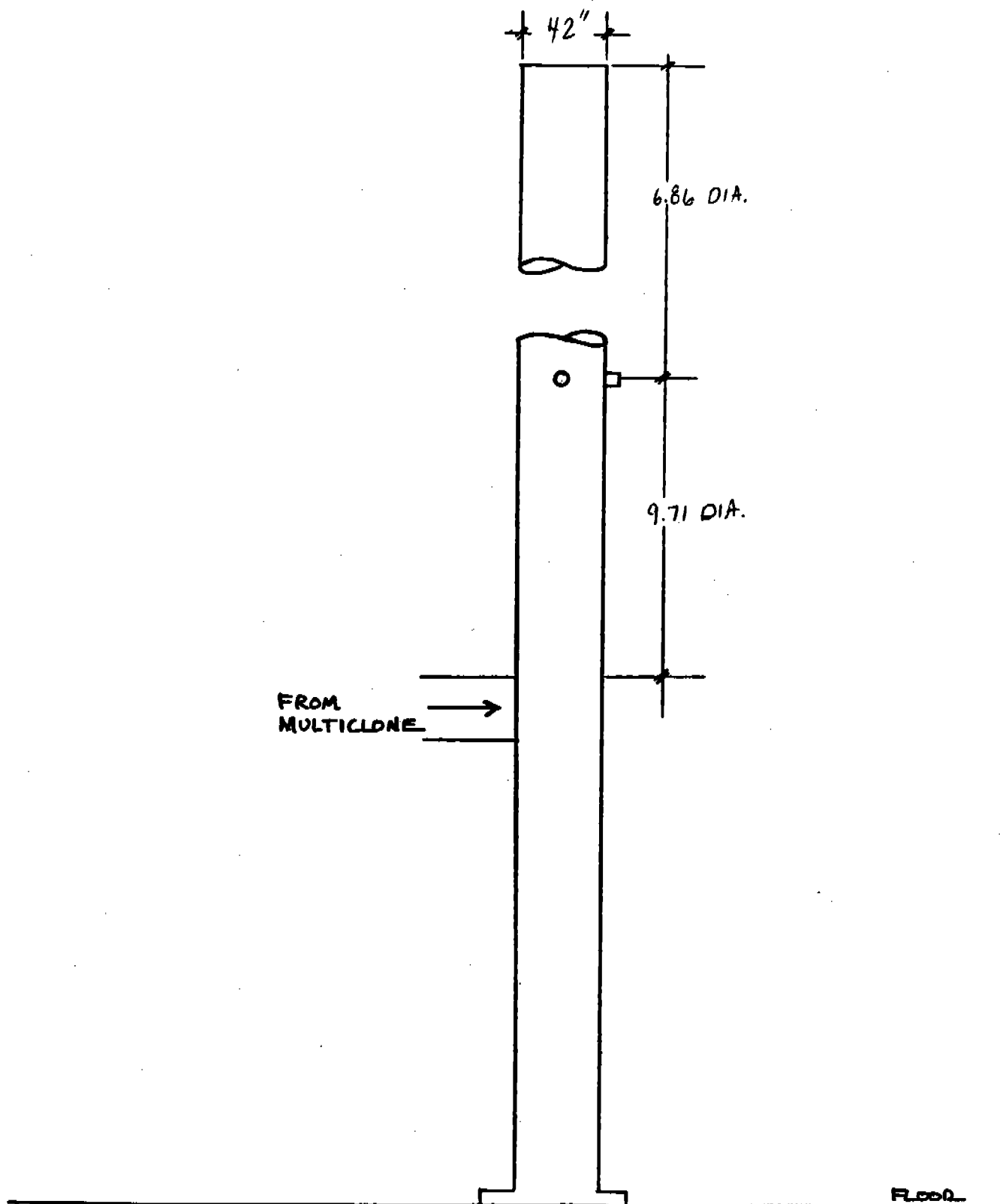


CORE DRYER
L-P URANIA, LA.



NOT TO SCALE

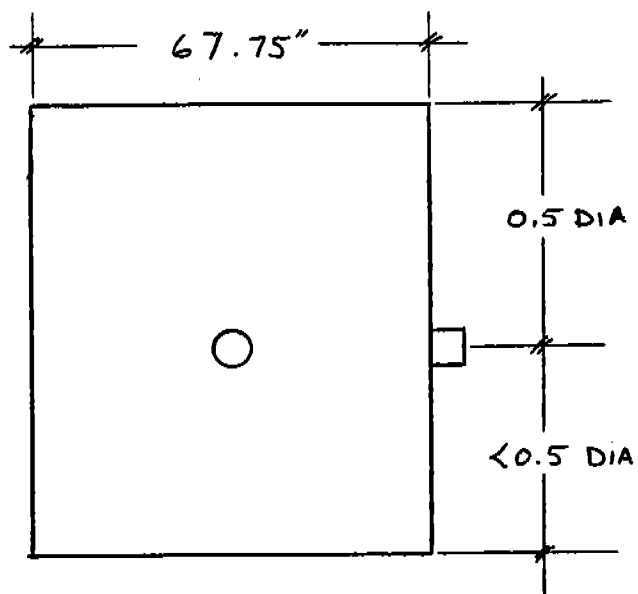
FACE DRYER
LP URANIA, L.A.



NOT TO SCALE

PORTABLE PRESS VENT EXTENSION

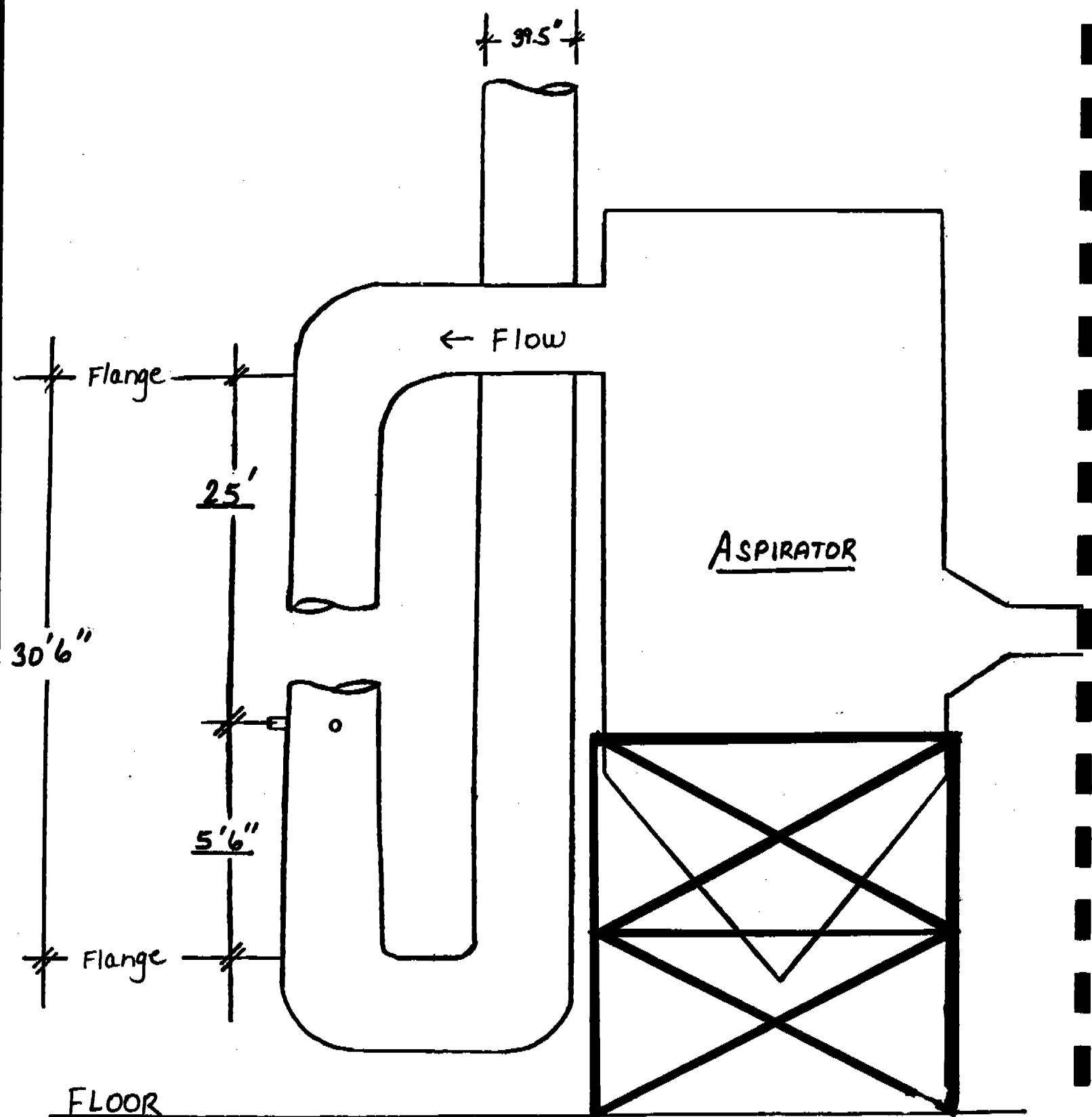
L-P URANIA, LA.



NOTE: EXTENSION WAS APPROVED BY EPA

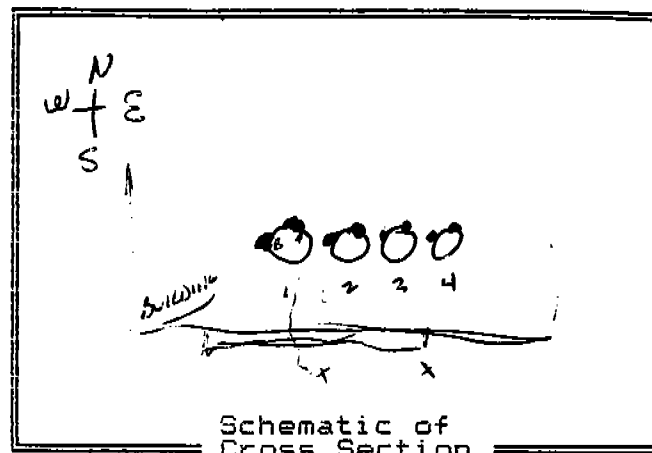
NOT TO SCALE

ASPIRATOR
L-P URANIA, L.A.



INTERPOL LABORATORIES EPA METHOD 2 FIELD DATA SHEET

Job L.P. / URBANIA, LA.
 Source NO. 1 PATSK VENT
 Test 1 Runs (1-3) Date 4/4/92
 Stack dimen. 67.75 IN.
 Dry bulb °F Wet bulb °F
 Manometer: ☐ Reg. ☐ Exp. ☐ Elec.
 Barometric pressure 29.78 in Hg
 Static pressure -.11 in WC
 Operators D. BRENNAN + B. ASCHENBACH
 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>3 1/2</u> in.		Time start: <u>245</u> hrs	
A	1	.021	14.23	4.92	.08
	2	.067	4.54	8.04	.16
	3	.118	7.99	11.49	.42
	4	.177	11.99	15.49	.80
	5	.250	16.94	20.44	.62
	6	.356	24.12	27.62	.37
	7	.644	43.63	47.13	.21
	8	.750	50.81	54.31	.75
	9	.823	58.76	59.26	.67
	10	.882	59.75	63.25	.59
	11	.933	63.21	66.71	.44
	12	.979	66.33	69.83	.20
B	1				
	2			avg.	.4425
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	10				
	11				
	12				
Temp. meas. tool & S/N:		PDT-3		Time end: <u>255</u> hrs	

R or nothing = reg. manometer; S = expanded; E = electronic S-392.1
 C-1

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / URBAN Date 4/4/92 Test 1 Run 1
 Source NO. 1 PRESS VENT STACK No. of traverse points 24
 Method S 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
4208 ☒ other(s) _____
 No. of probe wash bottles: 1
 Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1	490	493	-.3
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1560	1487	13.0
Total			16.0

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: 0850 (HRS) Time end: 0954 (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 L.P. / URBANIA Operators D. BRENNAN & B. ASCHENBACH Pitot No. 21-C Cp .54
 Source NO. 1 PRESS VENT STACK Meter Box No. 3 Bar. Press. 29.78 inHg H₂O 1.5 x
 Date 7/14/82 Computer conf. 1.80 in NC Nozzle No. 8-4 Nozzle Dia .251 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Drift Meter (inWC)	Des. Vol. (cf)	VAC. inHg	Temperature (°F)				Gas In	Gas Out	Oxygen (xv/v)
							Stack	Probe	Dry	Wet			
A -12	0850	145.815	.17	.65	6.93	2.5	75	234	255	59	73	71	20.9
11	5.0	146.93	.50	1.80	8.80	6.5	70				75	72	20.9
10	7.5	148.74	.52	1.96	6.71	7.0	69	235	254	58	75	72	20.9
9	10.0	150.68	.61	2.28	2.78	8.5	72				76	73	
8	12.5	152.78	.75	2.82	5.08	10.5	70	235	255	58	78	74	20.9
7	15.0	155.06	.15	.56	6.12	2.0	71				78	74	
6	17.5	157.56	.31	1.18	7.41	5.0	67	236	255	58	79	75	20.9
5	20.0	159.75	.67	2.54	9.80	9.5	68				81	76	
4	22.5	162.18	.83	3.16	2.24	12.0	68	235	255	55	82	77	20.9
3	25.0	164.24	.56	2.13	4.24	8.0	70				82	78	
2	27.5	165.25	.12	.46	5.18	1.0	69	233	256	54	82	78	20.9
1	30.0	166.046	.10	.37	6.02	1.0	80				82	79	
B -12	32.5	167.05	.15	.56	7.06	2.0	78	232	255	54	80	85	20.9
11	35.0	168.20	.17	.65	8.18	2.5	65				86	81	
10	37.5	170.54	.81	3.12	0.62	12.5	66	233	255	54	88	82	20.9
9	40.0	173.31	1.05	4.04	3.39	13.0	67				88	82	
8	42.5	175.86	.90	3.47	5.96	13.0	67	231	254	51	87	83	20.9
7	45.0	179.42	.27	1.04	7.37	5.0	71				87	83	
6	47.5	179.17	.43	1.66	9.16	6.0	68	230	255	51	88	84	20.9
5	50.0	181.62	.86	3.29	1.66	13.0	72				89	84	
4	52.5	182.91	.20	.77	2.88	3.0	70	232	255	51	89	85	20.9
3	55.0	183.88	.12	.46	3.93	1.0	75				90	85	
2	57.5	184.40	.04	.15	4.37	1.0	74	230	253	50	90	86	20.9
1	60.0	184.858	.03	.11	4.84	1.0	79				89	86	
(1054)													
Σ = 60		Σ = 39.043		Σ = 16.4							AVG. = 81.2		

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / URANIA, LA Date 4/4/92 Test 1 Run 2
 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: { .012 cfm at 18 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone FRONT HALF
4209 ☒ 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	<u>495</u>	<u>497</u>	<u>-2.0</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1512</u>	<u>1500</u>	<u>12.0</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: 1037 (HRS) Time end: 1153 (HRS)
 Sampling rate: 1037 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 L. P. / URMIA, LA. Operator D. BROWN & B. ASHENGRO Pitot No. 21-6 Cp .84
 Source NO. 1 PRESS JET SPAC Water Box No. 3 Bar. Press. 29.99 inHg H₂O 1.5 x
 Date 4/1/72 10:01 AM 1 Run 2 Gas meter const. 998 1.00 in WC Nozzle Dia. 2.1 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Drifts Water (inWC)	Dis. Vol. (cf)	VAC. inHg	Temperature (°F)						Oxygen (xv/v)	
							Stack	Probe	Dye	Imp.	Gas In	Gas Out		
A-	(1037)	185.400												
	12	2.5	.09	.34	6.20	1.0	76	230	261	61	91	91		20.9
	11	5.0	.17	.65	7.33	2.5	76				96	92		
	10	7.5	.82	3.18	9.81	12.5	75	229	260	58	99	93		20.9
	9	10.0	1.05	4.07	2.62	16.5	76				100	93		
	8	12.5	.98	3.80	5.34	16.0	76	230	257	58	100	94		20.9
	7	15.0	.36	1.40	7.00	5.5	76				100	94		
	6	17.5	.46	1.79	8.87	7.0	76	231	255	58	100	95		20.9
	5	20.0	.92	3.57	1.51	14.5	77				103	96		
	4	22.5	.46	1.79	3.39	4.0	79	232	258	55	104	97		20.9
B-	3	25.0	.06	.23	4.07	1.0	77				102	97		
	2	27.5	.06	.23	4.75	1.0	83	231	257	55	102	96		20.9
	1	30.0	.01	.03	5.03	1.0	78				100	96		
	12	32.5	.12	.48	6.00	1.0	66	230	260	53	105	100		20.9
	11	35.0	.24	.96	7.38	4.0	66				107	100		
	10	37.5	.82	3.28	9.92	12.0	66	232	259	53	109	101		20.9
	9	40.0	.60	2.41	2.11	9.0	66				109	102		
	8	42.5	.69	2.77	4.45	10.0	67	230	260	51	110	102		20.9
	7	45.0	.19	.74	5.67	3.0	82				109	103		
	6	47.5	.36	1.41	7.35	5.5	81	230	259	50	111	103		20.9
	5	50.0	.67	2.68	9.66	9.5	70				111	104		
	4	52.5	.80	3.19	2.18	12.0	72	231	261	50	112	104		20.9
	3	55.0	.42	1.68	4.01	6.5	73				111	104		
	2	57.5	.18	.72	5.21	3.0	70	230	260	50	111	104		20.9
	1	60.0	.07	.28	5.96	1.0	69				111	104		
	(NS3)													
	0 = 12													
V _s = 40.645											Avg.	101.6		

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / URANIA, LA. Date 4/1/92 Test 1 Run 3
 Source No. 1 PRESS VENT No. of traverse points 24
 Method 5 Filter holder: GLASS Filter type: 4.6.8

Sample Train Leak Check:

Pretest: { 0.02 cfm at 15 in. Hg. (vac)
 Posttest: { .003 cfm at 20 in. Hg. (vac)

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone FRONT HALF
4210 ☒ 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	<u>493</u>	<u>496</u>	<u>-3.0</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1417</u>	<u>1402</u>	<u>15.0</u>
Total			<u>12.0</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: 1553 (HRS) Time end: 1655 (HRS)
 Sampling rate: _____ cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: _____

CF-023

INTERPOL LABORDIRIES EPA METHOD 5 FIELD DATA SHEET

L.P. / URANIA

Job

Source

Date

4/1/92

Press VENT STACK

1 Run 3

Operator: D BRENNAN + B. ASCHENBACH

Meter Box No. 3

Computer Conf. 2001

Pilot No. Z1-6

Bar. Press. 29.98

Nozzle No. 8-4

Dp .8V

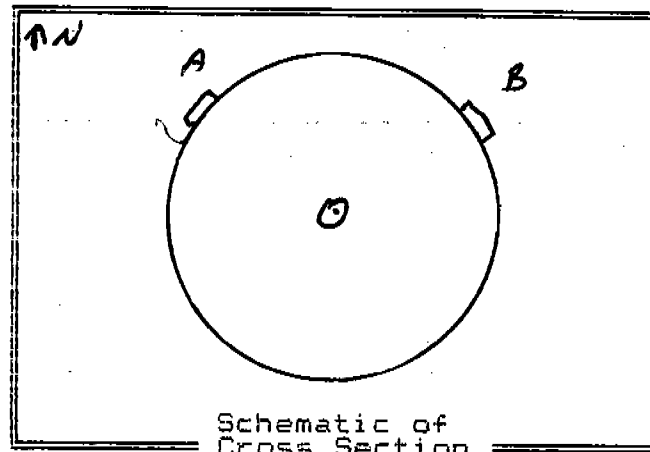
inHg H2O

Nozzle Dia .251 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Drifted Meter (inWC)	Des. Vol. (cf)	VAC. inHg	Temperature (°F)				Gas/Dut	Oxygen (xv/v)
							Stack	Probe	Oven	Inpg.	Gas/in	
A-	12	226.405	.17	.65	7.54	3.0	90	232	256	58	95	20.9
	11	227.55	.60	2.29	9.65	11.5	84				95	
	10	229.62	.72	2.75	1.97	14.0	86	230	255	57	96	20.9
	9	231.95	.58	2.23	4.06	12.0	83				101	
	8	234.06	.62	2.38	6.22	12.0	85	232	255	55	97	20.9
	7	236.24	.17	.65	7.36	3.0	86				102	
	6	237.39	.35	1.35	8.99	6.0	82	230	257	55	98	26.9
	5	239.02	.64	2.48	4.20	12.0	83				106	
	4	241.14	.85	3.30	3.74	17.0	82	231	258	52	99	26.9
	3	243.66	.44	1.74	5.58	8.0	82				105	
	2	245.58	.09	.35	6.41	1.0	84	232	260	52	99	20.9
	1	247.45	.07	.27	7.15	1.0	85				104	
B-	12	247.218	15	.58	8.22	3.0	82	230	258	51	105	26.9
	11	248.23	.60	2.36	5.38	11.5	74				109	
	10	250.40	.66	2.62	2.66	13.0	72	230	258	51	108	20.9
	9	252.68	.79	3.14	5.15	16.0	70				107	
	8	255.15	.92	3.65	7.83	18.0	70	232	256	50	106	20.9
	7	257.42	.23	.91	9.18	1.0	71				105	
	6	259.21	.45	1.79	1.06	8.0	70	230	255	50	105	26.9
	5	261.04	.83	3.28	3.61	14.5	72				107	
	4	263.54	.09	.35	4.95	4.0	72	231	255	48	106	20.9
	3	264.99	.07	.28	5.80	1.0	73				105	
	2	265.85	.04	.15	6.54	1.0	70	228	254	47	105	20.9
	1	266.60	.04	.15	7.10	1.0	73				104	
							Avg. = 101.3					
							Avg. = 101.3					

INTERPOL LABORATORIES EPA METHOD 2 FIELD DATA SHEET

Job L.P. / Urania, LA
 Source No. 1 Press Vent / Stack
 Test 2 Run 0 Date 4-4-92
 Stack dimen. 67 3/4 IN.
 Dry bulb _____ °F Wet bulb _____ °F
 Manometer: ☒ Reg. ☐ Exp. ☐ Elec.
 Barometric pressure 29.75 in Hg
 Static pressure -.11 in WC
 Operators Mikaehler & C. Musser
 Pitot No. 29U-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>3 1/2</u> in.		Time start: <u>0850</u> hrs	
A 1	.021	1.42	4.92	.02	
2	.067	4.54	8.04	.04	
3	.118	7.99	11.49	.07	
4	.177	11.99	15.49	.32	
5	.250	16.94	20.44	1.02	
6	.356	24.12	27.62	.139	
7	.644	43.63	47.13	.14	↑
8	.750	50.91	54.31	.68	
9	.823	55.76	59.26	1.04	72
10	.892	59.76	63.26	1.12	↓
11	.933	63.21	66.71	.69	
12	.979	66.33	69.83	.70	
B - 1				.07	
2				.17	
3				.59	
4				.95	
5				.83	
6				.37	
7				.12	
8				.70	
9				1.02	
10				.98	
11				.78	
12				.31	
Temp. meas. tool & S/N: <u>PDT-3/TC</u>				Time end: _____ hrs	

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / Urania, LA Date 9-4-92 Test 2 Run 1
 Source No. 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 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. Kaehler & C. Mosser

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1	<u>593</u>	<u>595</u>	<u>(2)</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1377</u>	<u>1364</u>	<u>13</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

INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job A.P. / Virginia LA Operator M. Knechtel TC Mosser Pitot No. 290-6 Cp .94
 Source No. 1 Press Vent 1 Stack Meter Box No. 2 Bar. Press. 29.78 inHg H₂O 1 x
 Date 4-4-92 1061 2 Run 1 Computer conf. 1.00/0 Nozzle No. Q455 Nozzle Dia. .232 IN.

Transfer Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (ft/min)	Drifted Meter (ft/min)	Det. Vol. (cf)	VAC. inHg	Temperature (°F)					Oxygen (xv/v)	
							Stack	Probe	Dry	Impq.	Gas/Dut		
A - 1													
1	2.5	889.97	.02	.06	9.95	2	75	238	256	45	58	58	20.9
2	5	890.50	.04	.13	0.46	2	70				58	58	20.9
3	2.5	891.21	.07	.23	1.14	2	69	242	253	43	59	58	20.9
4	10	892.58	.32	1.05	2.58	3	72				61	59	20.9
5	12.5	895.08	1.02	3.35	5.14	8.5	70	245	255	43	65	61	20.9
6	15	896.93	.139	1.29	6.75	3.5	71				67	62	20.9
7	17.5	897.78	.14	.47	2.72	3	67	243	258	42	68	63	20.9
8	20	899.92	.68	2.88	8.84	5.5	70				69	63	20.4
9	27.5	902.40	1.04	3.47	2.47	9	68	246	261	42	73	64	20.9
10	25	905.24	1.12	3.73	5.20	10	70				74	65	20.9
11	27.5	907.31	.69	2.31	7.35	6	70	249	260	42	76	67	20.9
12	30	909.45	.70	2.31	9.51	6	79				76	67	20.9
B - 1													
1	32.5	910.17	.07	.23	0.20	2	75	251	258	42	74	67	20.9
2	35	911.23	.17	.57	1.28	2	72				74	68	20.9
3	37.5	913.18	.59	2.00	3.29	5	66	248	255	43	76	69	20.9
4	40	915.26	.95	3.21	5.83	8	67				79	70	20.9
5	42.5	918.12	.93	2.82	8.22	7	67	245	259	43	80	71	20.9
6	45	919.80	.70	1.28	9.83	3.5	61				81	72	20.9
7	47.5	920.84	.12	.41	0.25	2	68	243	260	44	80	72	20.9
8	50	922.90	.70	2.36	2.94	6	72				82	72	20.9
9	52.5	925.50	1.02	3.46	5.59	8.5	70	244	262	43	84	74	20.9
10	55	928.00	.88	2.97	8.06	7.5	75				85	74	20.9
11	57.5	930.35	.78	2.64	0.38	7	74	242	260	44	85	75	20.9
12	60	931.75	.31	1.85	1.90	4	77				85	75	20.9
(0952)													
V = 472.15				482							Avg. = 70.2		

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / Urania, LA
 Source No. 1 Press Vent / Stack
 Method 0011 Filter holder: NA

Date 4-4-92 Test 2 Run 2
 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) ~~10~~

Particulate Catch Data:

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

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1	594	599	(5)
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1460	1446	14
Total			9

Integrated Gas Sampling Data:

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. / Urethane 6A Operator M. Kaefer 6C-Mosser Pitot No. 200-6 Dp 8V
 Source Abol Press 154 Motor Box No. 4 Bar. Press. 29.78 inHg H₂O 2.2 X
 Date 4-4-92 Computer Code 10010 Nozzle No. 6/55 Nozzle Dia. 2.39 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Drifted Meter (inWC)	Det. Vol. (cf)	VAC. inHg	Temperature (°F)					Oxygen (xy/v)
							Stack	Probe	Duct	Temp.	Gas In	
B-1 (1037)												
1	2.5	932.70	.12	.39	3.59	2	81	235	245	74	73	20.9
2	5	933.64	.15	.50	4.60	2	76			74	74	20.9
3	7.5	936.80	.75	2.48	6.04	6	79	238	249	77	75	20.9
4	10	939.33	.98	3.27	9.42	8	76			81	76	20.9
5	12.5	941.72	.85	2.85	1.83	7	76	241	247	83	77	20.9
6	15	943.60	.46	1.55	3.61	4	76			84	78	20.9
7	17.5	944.63	.13	.44	4.57	2	76	240	245	84	78	20.9
8	20	946.70	.67	2.26	6.72	5.5	77			86	79	20.9
9	22.5	948.88	.69	2.33	8.91	6	77	138	249	88	80	20.9
10	25	951.36	.91	3.08	1.43	8	77			89	80	20.9
11	27.5	953.30	.53	1.78	3.35	4	83	242	253	90	81	20.9
12	30	954.66	.23	.78	4.62	2.5	78			89	81	20.9
A-1												
1	32.5	955.18	.02	.06	5.00	2	66	240	257	80	79	20.9
2	35	955.49	.02	.06	5.38	2	66			81	79	20.9
3	37.5	955.99	.05	.17	5.97	2	66	244	255	82	80	20.9
4	40	957.82	.48	1.65	7.82	4	66			85	81	20.9
5	42.5	960.47	1.04	3.57	0.53	9	67	247	259	89	82	20.9
6	45	962.51	.46	1.55	2.32	4	82			90	83	20.9
7	47.5	963.87	.14	.47	3.31	2	82	245	259	90	83	20.9
8	50	965.85	.88	3.05	5.82	7.5	70			92	84	20.9
9	52.5	967.92	.63	2.17	7.94	5.5	72	242	261	93	84	20.9
10	55	970.30	.80	2.75	0.33	7	73			94	85	20.9
11	57.5	972.05	.43	1.49	2.10	4	70	245	259	94	86	20.9
12	60	973.25	.16	.56	3.19	2	65			93	86	20.9
(1154)												
		V = 90.55	~H 163						Avg. = 83.0			

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / Urania, VA Date 4-4-92 Test 2 Run 3
 Source No. 1 Press Vent / Stach 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) ~~80~~
 Posttest: 20.02 cfm at 12 in. Hg. (vac) ~~80~~

Particulate Catch Data:

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

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	<u>595</u>	<u>595</u>	<u>-</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1390</u>	<u>1377</u>	<u>13</u>
Total			<u>13</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 L.P. / Virginia, LA
 Source No. 1 Press Vent
 Date 4-4-92 1991 2 15 3

Operators Mike Schuler & C. Mosser
 Meter Box No. 9 175 IN NC
 Gas meter conf. 1-0010

Pilot No. 290-6 CP 134
 Bar. Press. 29.73 IN HG 1 X
 Nozzle No. Class Nozzle Dia. 239 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inH ₂ O)	Drifts Meter (inH ₂ O)	Det. Vol. (cf)	VAC. inHg	Temperatures (°F)						Oxygen (xv/v)
							Stack	Probe	Dyn	Inq.	Gas In	Gas Out	
1553													
A-1	2.5	973.80	.02	.06	4.17	2	90	238	250	77	80	80	20.9
2	5	974.74	.04	.13	4.69	2	84				80	80	20.9
3	7.5	975.68	.12	.40	5.60	2	86	242	253	45	81	81	20.9
4	10	976.99	.27	.90	6.96	2.5	83				82	81	20.9
5	12.5	979.46	.45	3.16	9.51	8	85	237	256	44	85	82	20.9
6	15	981.44	.50	1.71	1.39	9.5	73				87	83	20.9
7	17.5	982.40	.12	.40	2.31	2	82	242	254	44	88	83	20.9
8	20	984.78	.89	2.99	4.80	7.5	83				91	84	20.9
9	22.5	987.41	1.04	3.51	7.49	9	82	245	259	44	93	85	20.9
10	25	989.81	.82	2.78	9.90	7	82				93	86	20.9
11	27.5	991.42	.30	1.02	1.36	3	84	244	260	45	94	86	20.9
12	30	992.51	.13	.44	2.32	2	85				93	86	20.9
13-1	32.5	993.12	.07	.23	3.03	2	85	240	257	45	90	86	20.5
2	25	994.10	.15	.51	4.07	2.5	74				91	86	20.9
3	37.5	996.40	.20	2.43	6.32	6	70	239	255	44	94	87	20.9
4	40	998.45	.97	3.37	8.97	8.5	70				96	88	20.9
5	42.5	1001.50	.91	3.17	1.54	8	70	242	257	45	97	88	20.9
6	45	1003.39	.42	1.47	3.30	4	71				97	89	20.9
7	47.5	1004.57	.20	.70	4.52	2	72	240	255	45	96	89	20.9
8	50	1006.68	.69	2.10	6.76	6	72				97	89	20.9
9	52.5	1009.01	.73	2.54	9.07	6.5	72	243	254	46	98	89	20.9
10	55	1011.38	.78	2.71	1.46	7	73				99	90	20.9
11	57.5	1013.48	.54	1.88	3.45	4.5	74	241	254	46	99	90	20.9
12	60	1014.64	.19	.66	4.13	2	74				98	90	20.9
1655													
V = 40.84		Avg. = 88.6											
θ = 60													

Job L.P. / URBWIA, CA.

Source NO. 2 PRESS VERT STAKIL

Test 4 Runs (15) Date 4/4/92

Stack dimen. 69.75 IN.

Dry bulb _____ °F Wet bulb _____ °F

Manometer: ☐ Reg. ☐ Exp. ☐ Elec.

Barometric pressure 29.78 in Hg

Static pressure - . 11 in WC

Operators D. BLENKIN + B. ASCHENBICH

Pitot No. 21-6 Co .84

Schematic of
Cross Section

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

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / URBANIA, LA Date 4/4/92 Test 4 Run 1
 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: .002 cfm at 16 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone FRONT HALF
4211 ☒ other(s) _____
 No. of probe wash bottles: 1
 Sample recovered by: D.B.

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1	495	496	-1.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1523	1512	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: 1723 (HRS) Time end: 1825 (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.1 URBANIA, LA.Operator B. (Béat) B. ASCHENBACHPilot No. 21-6 Cp .81Source NO. 2 PULS VENT STACKMeter Box No. 3 IN MCBar. Press. 29.38 IN Hg H2ONozzle No. 824 Nozzle Dia. 2.5 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inH ₂ O)	Drifts Meter (inH ₂ O)	Obs. Vol. (cf)	VAC. inHg	Temperatures (°F)						Dye (XV/V)	
							Stack	Probe	Dye	Impq.	Gas In	Gas Out		
	(1923)	267.200												
B-12	2.5	269.22	.32	1.26	9.28	5.0	71	226	242	55	98	95		20.9
11	5.0	270.97	.38	1.49	6.98	6.0	72				100	95		
10	7.5	273.11	.60	2.36	3.13	8.0	70	226	245	54	102	95		20.9
9	10.0	275.72	.92	3.62	5.79	13.5	69				103	96		
8	12.5	279.76	.50	1.98	7.76	7.0	69	227	246	54	103	96		20.9
7	15.0	279.41	.33	1.31	9.36	5.0	68				103	96		
6	17.5	281.49	.56	2.22	1.43	8.0	68	227	245	54	105	97		20.9
5	20.0	284.12	.90	3.55	4.09	14.0	69				105	97		
4	22.5	285.51	.24	.95	5.46	3.5	68	229	245	54	104	97		20.9
3	25.0	286.54	.15	.59	6.55	2.0	68				104	97		
2	27.5	287.69	.04	.15	7.11	1.0	68	230	246	51	104	97		20.9
1	30.0	287.522	.02	.67	7.50	1.0	68				102	96		
A-12	32.5	288.79	.22	.87	8.87	3.0	68	231	247	50	104	96		20.9
11	35.0	290.49	.36	1.43	6.49	5.5	68				105	97		
10	37.5	292.94	.76	3.01	2.92	12.0	68	230	248	50	106	97		20.9
9	40.0	295.58	.89	3.53	5.56	14.0	67				106	97		
8	42.5	298.10	.80	3.18	8.06	12.0	67	232	247	48	104	97		20.9
7	45.0	299.97	.45	1.79	9.93	6.5	67				104	97		
6	47.5	301.53	.30	1.19	1.47	4.0	67	231	250	48	105	97		20.9
5	50.0	303.93	.78	3.10	3.94	11.5	66				105	97		
4	52.5	306.41	.79	3.14	6.42	11.5	66	230	253	48	106	97		20.9
3	55.0	308.68	.65	2.59	8.68	9.5	66				105	97		
2	57.5	310.37	.37	1.47	6.38	5.0	66	229	252	48	105	97		20.9
1	60.0	311.945	.29	1.16	1.90	4.0	65				105	97		
	(1825)													
	0 = 60	V = 44.245		^H 1.92									Avq. = 100.1	

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / URANIA, LA. Date 4/4/92 Test 4 Run 2
 Source NO. 2 PRESS VENT STACK No. of traverse points 24
 Method 5 Filter holder: GUSS Filter type: 4" G.F.

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) 1
 Posttest: .01 cfm at 17 in. Hg. (vac) 1

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone FRONT HALF
4212 ☒ 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	<u>497</u>	<u>496</u>	<u>1.0</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1535</u>	<u>1523</u>	<u>12.0</u>
Total			<u>13.0</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: 1855 (HRS) Time end: 1957 (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 C.P. / URBANIA, LA. Operator D. BRENNAN & B. ASHENGU Pilot No. 21-6 CP 84
 Source 06.2 PASS VENT STACK Meter Box No. 3 999 1.90 IN HG Bar. Press. 29.32 IN HG H₂O 1.34
 Date 4/14/82 10:21 AM 4 Run 2 Gasometer const. 8.7 Nozzle Dia. 2.4 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inH ₂ O)	Drifts Meter (inH ₂ O)	Des. Vol. (cf)	VAC. inH ₂ O	Temperature (°F)				Gas Out	Oxygen (%)
							Stack	Probe	Dye	Inpy.	Gas In	
A-12	(1855)	312.30	.14	.56	3.35	1.0	65	235	263	51	92	20.9
11	5.0	313.31	.43	1.69	5.16	6.0	65				97	20.9
10	7.5	315.13	.80	3.17	7.44	12.0	64	234	262	51	99	20.9
9	10.0	317.57	.78	3.10	0.09	12.0	64				99	20.9
8	12.5	320.02	.88	3.49	2.69	13.5	64	235	260	50	99	20.9
7	15.0	322.64	.30	1.20	4.22	5.0	63				99	20.9
6	17.5	324.27	.26	1.04	5.65	3.5	63	236	261	50	100	20.9
5	20.0	325.68	.66	2.63	7.92	9.5	63				102	20.9
4	22.5	327.87	.92	3.17	0.59	14.5	63	236	262	49	102	20.9
3	25.0	330.49	.73	2.92	2.98	11.5	63				101	20.9
2	27.5	332.93	.40	1.60	4.75	6.5	63	235	261	48	101	20.9
1	30.0	334.76	.125	.50	5.75	1.0	63				101	20.9
B-12	32.5	335.802	.35	1.40	4.40	5.0	63	234	261	47	103	20.9
11	35.0	337.45	.38	1.52	9.14	5.5	63				103	20.9
10	37.5	339.13	.55	2.21	1.22	8.0	62	233	260	47	104	20.9
9	40.0	341.21	.96	3.86	3.96	15.0	61				104	20.9
8	42.5	343.87	.49	1.98	5.94	7.0	61	229	258	47	103	20.9
7	45.0	345.92	.32	1.25	7.50	5.0	62				104	20.9
6	47.5	347.53	.57	2.25	9.60	8.0	72	230	255	46	104	20.9
5	50.0	349.62	1.05	4.14	2.45	16.5	71				104	20.9
4	52.5	352.37	.33	1.29	7.04	5.0	79	229	256	46	103	20.9
3	55.0	354.04	.10	.39	4.92	1.0	78				102	20.9
2	57.5	355.18	.61	.63	5.20	1.0	81	230	255	46	102	20.9
1	60.0	355.426	.61	.63	5.48	1.0	76				98	20.9
	(1957)											
	θ = 60	V ₀ = 43.126		ΔH 1.91							Avg. = 97.4	

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / URANIA, LA. Date 4/4/92 Test 4 Run 3
 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)
 Posttest: .003 cfm at 16 in. Hg. (vac)

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone FRONT HALF
4228 ☒ 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	496	2.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1443	1435	8.0
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: 2023 (HRS) Time end: 2125 (HRS)
 Sampling rate: _____ cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: _____

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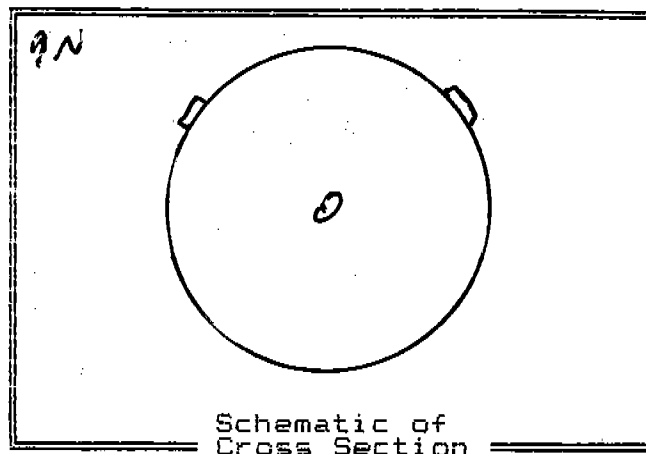
INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job C.P. / URBANIA, LA.Source NO. 2 PRESS VENTDate 4/10/82 Test 4 Run 3Operator D. BERNARD & B. ASCHENBACH
Meter Box No. 3 SHA IN MC
Compressor Code 999/7-90Pitot No. 21-6 Cp .84
Bar. Press. 29.78 inHg H₂O
Nozzle No. 8-9 Nozzle Dia. .271 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Drifts Meter (inWC)	Dps. Vol. (cf)	VAC. inHg	Temperatures (°F)						Oxygen (xv/v)
							Stack	Probe	Open	Impq.	Gas In	Gas Out	
B-12	20.22	355.80					78	231	246	43	92	90	20.9
	2.5	357.49	.36	1.40	7.45	5.0	80				96	92	
	5.0	359.30	.45	1.72	9.28	6.0	98	233	250	43	99	93	20.9
	7.5	361.58	.74	2.85	1.63	10.0	79				100	93	
	10.0	364.19	.93	3.58	4.27	13.5	78	234	248	42	100	93	20.9
	12.5	366.25	.51	1.98	6.24	7.0	77				100	93	
	15.0	367.77	.29	1.13	7.72	4.0	74	233	250	42	103	94	20.9
	17.5	370.05	.70	2.73	6.03	10.0	79				103	94	
	20.0	372.66	.95	3.68	2.71	13.5	79	236	249	42	102	94	20.9
	22.5	374.39	.37	1.44	4.39	5.0	79				102	95	
A-12	25.0	375.41	.13	.50	5.39	2.0	79				100	94	20.9
	27.5	375.96	.04	.15	5.94	1.0	80	237	248	42	99	94	20.9
	30.0	376.346	.62	.67	6.33	1.0	78				101	94	20.9
	32.5	377.29	.13	.50	7.33	1.0	78	235	251	41	104	95	20.9
	35.0	379.69	.43	1.68	9.15	5.5	80				105	96	20.9
	37.5	381.43	.72	2.79	1.49	10.0	77	236	250	41	105	96	
	40.0	383.92	.82	3.20	3.99	12.5	79	235	248	41	104	96	20.9
	42.5	386.21	.65	2.54	6.23	9.5	74				104	96	
	45.0	388.22	.51	2.00	8.21	7.0	67	231	247	40	105	96	20.9
	47.5	389.90	.35	1.39	9.87	5.0	65				105	96	
	50.0	392.43	.87	3.47	2.48	13.0	67	232	248	40	105	97	20.9
	52.5	395.09	.90	3.58	5.12	14.0	61				103	96	
	55.0	397.67	.84	3.38	7.70	13.0	62	228	250	40	102	96	20.9
	57.5	399.69	.52	2.09	9.73	7.0	60				101	96	
	60.0	401.117	.23	.93	1.08	4.0							
		(2125)											
		Σ = 45.317									Avg. = 98.1		
		θ = 60											

INTERPOL LABORATORIES EPA METHOD 2 FIELD DATA SHEET

Job R.P. / Urania, LA
 Source No. 2 Press Vent / Stack
 Test 5 Run 0 Date 4-4-92
 Stack dimen. 67.25 IN.
 Dry bulb °F Wet bulb °F
 Manometer: ☒ Reg. ☐ Exp. ☐ Elec.
 Barometric pressure 29.78 in Hg
 Static pressure -1.1 in WC
 Operators M. Kaehler & C. Mosser
 Pitot No. 29V-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: 3.5 in.		Time start: 1723 hrs	
A-1	.021	1.42	4.92	.02	
2	.067	4.54	8.07	.02	
3	.118	7.99	11.49	.27	
4	.177	11.99	15.49	.40	
5	.250	16.94	20.44	.60	
6	.356	24.12	27.62	.29	
7	.644	43.63	47.13	.28	
8	.750	50.31	54.13	.92	
9	.823	55.76	59.26	.85	
10	.882	59.76	63.26	.76	
11	.933	63.21	66.71	.30	68°
12	.979	66.33	69.83	.12	
B-1				.02	
2				.02	
3				.05	
4				.20	
5				1.03	
6				.71	
7				.28	
8				.48	
9				.97	
10				.54	
11				.35	
12				.28	
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 A.P. / Urania, LA
 Source No. 2 Press Vent / Stack
 Method 0011 Filter holder: NA

Date 4-4-92 Test 4 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. Kaehler & C. Mosser

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	<u>591</u>	<u>595</u>	<u>(4)</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1474</u>	<u>1460</u>	<u>14</u>
Total			<u>10</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 A.P. / Urania, LA Operator Michael C. Mosser Pitot No. 290-6 CP BY
 Source No. 2 press vent / stack Meter Box No. 4 HP 6.25 IN MC Sur. Press. 29.28 IN Hg H₂O 1.3 X
 Date 4-9-92 1981 4 / 9 / 92 Gas meter coeff. 1.0000 Nozzle No. Class Nozzle Dia. 239 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (in Hg)	Drifts Meter (in Hg)	Obs. Vol. (cf)	VAC. in Hg	Temperatures (°F)						Oxygen (xv/v)
							Stack	Probe	Dyn	lapy.	GasIn	GasOut	
(1223)													
A-1	2.5	15.45	.02	.06	5.38	2	71	240	255	42	84	84	20.9
2	5	15.78	.02	.06	5.75	2	72				84	84	20.9
3	7.5	18.62	.77	2.58	8.06	6	79	242	258	42	86	84	20.9
4	10	20.63	.90	3.08	8.58	7.5	69				89	85	20.9
5	12.5	22.85	.68	2.34	2.78	6	69	239	257	42	91	86	20.9
6	15	24.15	.29	1.00	4.23	3	69				92	86	20.9
7	17.5	25.64	.28	.97	5.66	3	68	243	260	43	93	87	20.9
8	20	28.15	.92	3.17	8.23	8	70				95	88	20.9
9	22.5	30.65	.85	2.95	8.71	7.5	68	242	259	43	96	88	20.9
10	25	33.00	.76	2.64	3.06	7	68				96	88	20.9
11	27.5	34.62	.30	1.04	4.54	3	66	241	257	43	96	89	20.9
12	30	35.53	.12	.42	5.48	2	68				95	88	20.9
B-1	32.5	35.94	.02	.07	5.87	2	68	243	255	42	91	87	20.9
2	35	36.39	.02	.08	6.25	2	68				90	87	20.9
3	37.5	36.96	.05	.17	6.85	2	68	246	259	43	90	87	20.9
4	40	38.13	.20	.69	8.06	2	67				92	87	20.9
5	42.5	40.72	1.03	3.56	8.78	9	67	245	257	44	96	88	20.9
6	45	43.00	.71	2.47	3.05	6	67				97	89	20.9
7	47.5	44.51	.28	.98	4.49	3	67	247	260	44	97	89	20.9
8	50	46.38	.48	1.68	6.37	4	66				97	89	20.9
9	52.5	44.00	.97	3.38	9.03	8.5	66	250	258	44	98	90	20.9
10	55	51.06	.54	1.89	1.03	5	66				98	90	20.9
11	57.5	52.66	.35	1.23	2.64	3	66	248	255	44	98	90	20.9
12	60	54.10	.26	.91	4.03	2.5	65				97	90	20.9
(1825)													
θ = 60		V ₀ = 39.1		ΔH = 1.50								Avg. = 90.3	

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / Urmia, LA
 Source No. 2 Press Vent / Stack
 Method CO II Filter holder: NA

Date 4-4-92 Test 5 Run 2
 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. of filters used: _____ Recovery solvent(s) _____

NA ☐ acetone
☒ other(s) MeCl₂

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

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	591	595	(4)
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1374	1353	21
Total			17

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. / Urethane, 6A Operators M. Kaehler, F.C. Mazon Pitot No. 290-6 CP 84
 Source No. 2 Press, Vent / Stack Meter Box No. 4 HN 1.7c IN NC Bar. Press. 29.78 IN Hg H₂O 2.2 x
 Date 4-4-92 1981 5 Run 2 Gas meter coeff. 1.0010 Nozzle No. 6.55 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inH ₂ O)	Drifts Water (inH ₂ O)	Des. Vol. (cf)	VAC. inH ₂ O	Temperature (°F)				Oxygen (xv/v)
							Stack	Probe	Dry	Wet	
B-1	(1955) 2.5	54.70	.02	.07	5.08	2	65	243	258	83	20.9
2	5	55.15	.03	.10	5.54	2	65			83	20.9
3	7.5	55.68	.22	.76	6.80	2	64	247	260	83	20.9
4	10	56.84	.87	3.01	9.29	7	64			86	20.9
5	12.5	59.22	1.05	3.64	10.02	9	64	244	260	89	20.9
6	15	62.00	.63	2.20	4.16	5.5	63			91	20.9
7	17.5	64.12	.15	.52	5.21	2	63	241	262	90	20.9
8	20	65.18	.46	1.61	7.04	4	63			91	20.9
9	22.5	67.09	.94	3.29	9.65	8	63	238	259	93	20.9
10	25	69.60	.61	2.14	1.77	5	63			93	20.9
11	27.5	71.82	.42	1.48	3.52	4	63	240	257	93	20.9
12	30	73.63	.76	.91	4.91	3	63			93	20.9
A-1	32.5	74.98	.12	.42	5.85	2	63	243	257	90	20.9
2	35	75.92	.28	.98	7.28	3	63			91	20.9
3	37.5	77.31	.67	2.35	9.49	5	62	245	256	92	20.9
4	40	79.54	.93	3.27	12.10	8	61			94	20.9
5	42.5	82.10	.72	2.54	4.40	6	61	242	254	94	20.9
6	45	84.44	.35	1.10	5.84	3	62			93	20.9
7	47.5	85.93	.41	1.42	7.56	3.5	72	241	255	93	20.9
8	50	87.65	.78	2.70	9.93	6.5	71			94	20.9
9	52.5	89.97	.85	2.90	12.38	7	79	243	257	94	20.9
10	55	92.47	.83	2.83	4.81	7	78			94	20.9
11	57.5	94.83	.44	1.50	6.58	4	81	240	257	93	20.9
12	60	96.61	.25	.86	7.93	2	76			93	20.9
	(1957)										
		V ₀ = 43.29								AVG. = 85.5	

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / Urania, LA Date 4-4-92 Test 5 Run 3
 Source No. 2 Press Vent / Strick 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: 2.002 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. LaChlor & C. Mosser

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	<u>592</u>	<u>596</u>	<u>(4)</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1490</u>	<u>1474</u>	<u>16</u>
Total			<u>12</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 L.P. / Oregon 1A
 Source Miller Press Vent / Stack
 Date 4-4-92 5 Run 3

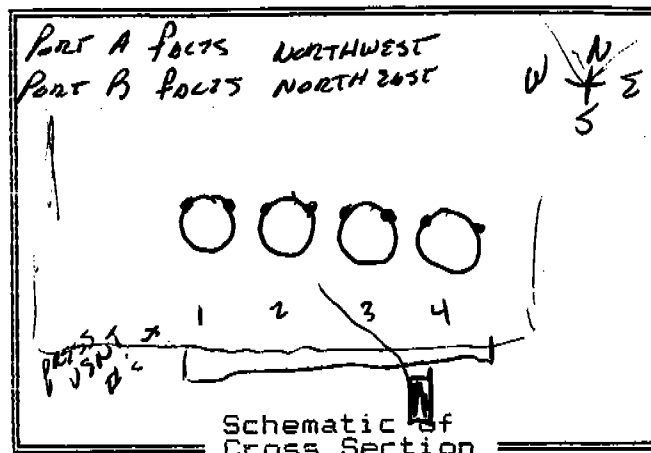
Operators W. Kachler & S. Moseley
 Meter Box No. 4 HP 1.25 IN UC
 Gasometer Serial 10010

Pitot No. 29U-6 Cp 184
 Bar. Press. 29.28 IN Hg H₂O 12.5
 Nozzle No. 6655 Nozzle Dia. 2.32 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 (xv/v)
							Stack	Probe	Dven	Impg.	Gas/In	Gas/Out	
A-1	2.5	98.40	.13	.44	9.35	2	78	242	255	44	79	79	20.9
2	5	99.30	.29	.96	0.76	2.5	80				80	79	20.9
3	7.5	100.70	.98	3.26	3.34	8	78	239	257	42	84	80	20.9
4	10	105.30	.78	2.61	5.66	6.5	99				86	81	20.9
5	12.5	105.58	.29	.97	2.08	3	78	245	257	42	87	81	20.9
6	15	108.27	.19	.64	0.23	2	77				87	81	20.9
7	17.5	109.76	.30	1.02	9.89	3	74	244	260	43	87	81	20.9
8	20	111.52	.50	1.68	1.55	4	79				98	82	20.9
9	22.5	113.72	.72	2.42	3.79	6	79	247	259	43	90	82	20.9
10	25	115.94	.67	2.26	5.95	6	79				90	93	20.9
11	27.5	118.07	.62	2.09	8.03	5	80	244	257	43	91	83	20.9
12	30	119.99	.54	1.83	9.98	4.5	77				91	93	20.9
B-1	32.5	120.60	.04	.13	0.52	2	77	248	257	43	87	82	20.9
2	35	120.99	.03	.10	0.98	2	75				86	81	20.9
3	37.5	121.65	.05	.16	1.57	2	80	245	255	44	85	81	20.9
4	40	122.40	.10	.33	2.40	2	77				85	91	20.9
5	42.5	125.01	1.04	3.48	5.08	9	79	241	259	43	88	82	20.9
6	45	127.12	.67	2.27	7.15	6	74				90	83	20.9
7	47.5	128.40	.18	.62	0.39	2	67	240	261	44	89	83	20.9
8	50	130.50	.67	2.32	0.58	6	65				90	83	20.9
9	52.5	133.16	.95	3.27	3.18	8	67	244	260	45	91	83	20.9
10	55	135.60	.83	2.90	5.63	7.5	61				92	83	20.9
11	57.5	137.55	.49	1.71	7.52	4	61	244	257	45	91	93	20.9
12	60	138.85	.13	.80	8.81	2	60				91	83	20.9
(2123)													
θ = 60		V ₀ = 40 m/s		ΔH 1.59							Avg. = 84.7		

INTERPOL LABORATORIES EPA METHOD 2 FIELD DATA SHEET

Job L.P. / URANIA, LA.
 Source NO. 3 PRESS VENT
 Test 7 Runs 1-3 Date 4/6/72
 Stack dimen. 67.75 IN.
 Dry bulb _____ °F Wet bulb _____ °F
 Manometer: ☐ Reg. ☐ Exp. ☐ Elec.
 Barometric pressure 29.81 in Hg
 Static pressure -.11 in WC
 Operators D. BRENNAN + B. ASCHENBACH
 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>3 1/2</u> in.		Time start: _____ hrs	
A	1	.021	1.423	4.92	
	2	.067	4.54	8.04	
	3	.118	7.99	11.49	
	4	.177	11.99	15.49	
	5	.250	16.94	20.44	
	6	.356	24.12	27.62	
	7	.444	43.63	47.13	
	8	.750	50.81	54.31	
	9	.823	55.76	59.26	
	10	.882	59.75	63.25	
	11	.933	63.21	66.71	
	12	.979	66.33	69.83	
B	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	10				
	11				
	12				
Temp. meas. tool & S/N:				Time end: _____ hrs	

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / URAWIA, LA. Date 4/4/92 Test 7 Run 1
 Source NO. 3 PRESS VENT STACK No. of traverse points 24
 Method 5 Filter holder: GLASS Filter type: 4" 6.5"

Sample Train Leak Check:

Pretest: { 0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 0.004 cfm at 19.5 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone FRONT HALF
4229 ☒ 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	497	1.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1448	1436	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: 9:15 (HRS) Time end: 10:17 (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. / URANIA, LA.Source 3 Press Vent SticicDate 8/6/82 Run 1Operator D. BRENNAN B. ASCHENBACH Pitot No. 21-6 Cp .84Meter Box No. 3Bar. Press. 29.81 in HgCompu. Syst. 3-999 1-90 IN NCNozzle No. 8-4 Nozzle Dia. 2.41 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (in H ₂ O)	Orifice Meter (in H ₂ O)	Dep. Vbl. (cf)	VAC. in Hg	Temperatures (°F)					Oxygen (xv/v)		
							Stack	Probe	Duct	Ingr.	Gas In		Gas/Dut	
B-12	(0915)	412.800					78	233	246	46	72	71	20.9	
11	2.5	413.87	.16	.60	3.97	2.5	79				74	71		
10	5.0	415.19	.25	.92	5.18	3.5	70	232	245	45	78	73	20.9	
9	7.5	417.49	.76	2.86	7.49	10.0	69				79	73		
8	10.0	419.87	.80	3.03	9.87	12.0	67	233	245	45	80	74	20.9	
7	12.5	422.47	.97	3.69	2.50	14.5	64				81	75		
6	15.0	424.15	.35	1.34	4.09	5.0	63	230	246	45	83	75	20.9	
5	17.5	425.75	.37	1.43	5.74	5.0	68				86	77		
4	20.0	428.49	1.10	4.19	8.54	17.0	70	229	247	45	85	77	20.9	
3	22.5	430.64	.63	2.41	6.28	9.0	72				86	78		
2	25.0	432.40	.40	1.52	2.38	5.5	94	228	248	44	85	78	20.9	
1	27.5	433.29	.10	.36	3.22	1.0	74				84	78		
A-12	30.0	433.849	.04	.15	3.76	1.0	75	229	248	44	86	79	20.9	
11	32.5	435.06	.21	.80	5.00	3.0	73				89	80		
10	35.0	436.59	.32	1.22	6.52	5.0	74	230	250	44	90	80	20.9	
9	37.5	438.53	.55	2.10	8.53	7.0	72				91	81		
8	40.0	440.79	.70	2.68	6.79	10.0	71	231	249	44	92	81	20.9	
7	42.5	443.17	.78	3.00	3.18	11.5	69				90	81		
6	45.0	444.47	.22	.85	4.46	3.0	64	232	249	44	92	82	20.9	
5	47.5	446.36	.48	1.87	6.36	6.5	66				92	83		
4	50.0	448.68	.73	2.83	8.68	10.5	68	233	250	44	93	83	20.9	
3	52.5	450.92	.67	2.60	6.92	10.0	75				92	82		
2	55.0	452.98	.55	2.14	2.94	8.0	70	233	250	43	92	83	20.9	
1	57.5	454.25	.22	.84	4.22	5.5	70				92	83		
	60.0	455.201	.12	.46	5.17	1.0								
(1017)														
Σ = 42.461													Avg. = 82.0	
B = 60														

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / URANIA, LA. Date 4/6/92 Test 7 Run 2
 Source NO. 3 PRESS VENT No. of traverse points 24
 Method 5 Filter holder: GLASS Filter type: 4" 6.5

Sample Train Leak Check:

Pretest: { 0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 1005 cfm at 19 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s): ☒ acetone FRONT HALF
4230 ☐ 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>497.0</u>	<u>497</u>	<u>0.0</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1460</u>	<u>1448</u>	<u>12.0</u>
Total			<u>12.0</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: 1056 (HRS) Time end: 1230 (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 5/17 SAMPLE LOG SHEET

Job L.P. / UZANIA, LA Date 4/6/92 Test 7 Run 3
 Source NO. 3 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) ☒
 Posttest: -0.02 cfm at 18.5 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone FRONT HALF
1231 ☒ 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>492</u>	<u>497</u>	<u>-5.50</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1474</u>	<u>1460</u>	<u>14</u>
Total			<u>9.0</u>

Integrated Gas Sampling Data: AMBIENT A/02

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: 1259 (HRS) Time end: 1401 (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 C.P. / URBANIA, LA.Source 90.3 PRESS VENTDate 4/14/92 1991 Run 3Operator D. BEZANSONMeter Box No. 3Computer Code 9991Pitot No. 21-6Bar. Press. 21.81Nozzle No. 2-4Co. 84

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Drifts Meter (inWC)	Des. Vel. (ft)	VAC. inHg	Temperatures (°F)						Oxygen (xv/v)	
							Stack	Probe	Oven	App.	Gas In	Gas Out		
	(1259)	500.10												
8-12	2.5	500.70	.05	.19	0.71	1.0	61	240	261	43	84	82	20.9	
11	5.0	502.36	.39	1.53	2.42	5.5	60				88	83		
10	7.5	504.55	.64	2.51	4.61	9.0	61	242	260	43	88	83	20.9	
9	10.0	506.89	.75	2.94	6.97	12.0	61				91	84		
8	12.5	509.62	.99	3.88	9.70	17.0	61	241	257	43	92	85	20.9	
7	15.0	511.32	.32	1.26	1.26	5.0	61				92	85		
6	17.5	513.08	.41	1.61	3.03	6.0	62	240	255	43	91	86	20.9	
5	20.0	515.82	1.05	4.13	5.84	17.0	62				96	87		
4	22.5	517.87	.53	2.10	7.86	6.5	61	241	255	43	94	87	20.9	
3	25.0	519.66	.38	1.51	9.64	6.0	60				96	87		
2	27.5	520.49	.10	.39	0.45	1.0	60	240	253	43	95	87	20.9	
1	30.0	521.197	.07	.27	1.18	1.0	61				93	87		
A-12	32.5	522.43	.21	.83	2.45	3.0	60	238	250	42	95	88	20.9	
11	35.0	524.23	.41	1.63	4.23	6.0	61				99	89		
10	37.5	526.60	.70	2.79	6.55	10.5	61	236	248	42	99	89	20.9	
9	40.0	528.86	.66	2.63	8.81	10.0	61				100	90		
8	42.5	531.29	.77	3.07	1.25	12.0	61	236	249	42	100	90	20.9	
7	45.0	532.64	.23	.91	2.59	3.5	64				99	91		
6	47.5	534.44	.41	1.63	4.37	5.0	62	235	251	42	100	91	20.9	
5	50.0	536.67	.70	2.79	6.70	10.5	62				101	91		
4	52.5	538.95	.67	2.68	8.98	10.0	61	234	252	42	102	92	20.9	
3	55.0	540.93	.48	1.92	6.92	7.0	61				100	91		
2	57.5	541.88	.12	.48	1.89	2.0	61	232	249	42	100	91	20.9	
1	60.0	542.413	.63	.12	2.38	1.0	61				99	91		
	(1401)													
	0 = 60	V ₀ = 42.313		ΔH 6.83							Avg. = 91.7			

Job L.P. / Urania, L.A.
Source No. 3 Press Vent
Test B Run 0 Date 4-6-92
Stack dimen. 67.75 IN.
Dry bulb °F Wet bulb °F
Manometer: ☒ Reg. ☐ Exp. ☐ Elec.
Barometric pressure 29.81 in Hg
Static pressure -11 in WC
Operators MK C.M.
Pitot No. Cp

[illegible]

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

S-392.1

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job LiP. / Ucania, LA
 Source No. 3 Press Vent & Stack
 Method 0011 Filter holder: NA

Date 4-6-92 Test 8 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: NA Recovery solvent(s)
☐ acetone
☒ other(s) MeCl₂
 No. of ^{Imp}~~probe~~ wash bottles: 1
 Sample recovered by: Michaeler & C. Mosser

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1	<u>597</u>	<u>593</u>	<u>4</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1372</u>	<u>1359</u>	<u>13</u>
Total			<u>17</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

INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job 2.12. / Urethane, 1st Operator M. Kaehler & C. Mesinger Pitot No. 29V-6 Cp 18V
 Sample 2 Press, Vent Motor Box No. 4 Bar. Press. 29.84 inHg H₂O
 Date 2-6-92 Computer Code 1 Nozzle No. 10010 Nozzle Dia. 2.35 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inH ₂ O)	Driftless Meter (inH ₂ O)	Dis. Vol. (cf)	VAC. inHg	Temperature (°F)				Oxygen	
							Stack	Probe	Dyn	Impy.	Gas/In	Gas/Out
B-1	2.5	147.00	.04	.13	7.50	2	70	235	247	43	62	62
2	5	148.48	.13	.42	8.42	2	79				62	62
3	7.5	150.55	.67	2.30	0.50	5.5	70	241	250	42	62	64
4	10	152.78	.86	2.93	2.87	7	69				67	63
5	12.5	155.07	.77	2.55	5.12	6.5	67	242	256	42	70	64
6	15	156.84	.45	1.51	6.86	4	64				71	65
7	12.5	158.08	.20	.67	8.06	2	63	244	254	42	72	66
8	20	160.40	.89	2.96	0.46	7	68				74	67
9	22.5	162.70	.78	2.60	2.74	6.5	70	245	257	43	76	67
10	25	165.35	1.00	3.32	5.32	8	72				77	68
11	27.5	167.35	.58	1.92	7.29	5	76	248	255	42	78	69
12	30	168.68	.26	.86	8.62	2.5	74				77	69
A-1	32.5	169.16	.03	.10	9.07	2	74	251	253	42	73	68
2	35	169.99	.12	.39	9.97	2	73				74	68
3	37.5	171.20	.21	.69	1.15	2	74	250	256	43	75	69
4	40	173.01	.55	1.83	3.08	4	71				78	70
5	42.5	175.80	.20	4.00	5.92	10	71	246	259	43	80	71
6	45	177.53	.41	1.38	2.60	4	69				80	71
7	47.5	178.83	.25	.85	8.91	2.5	64	245	257	44	80	71
8	50	181.45	.97	3.26	1.49	8	66				81	72
9	52.5	183.78	.60	2.70	3.83	6.5	68	242	257	44	82	73
10	55	186.33	.95	3.21	6.39	8	68				83	73
11	57.5	188.38	.59	1.97	8.40	5	75	244	260	44	82	73
12	60	189.72	.12	.74	9.63	2	70				82	73
(1018)												
Σ = 60		Σ = 42.72		Σ = 1.80							Avg. = 71.5	

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / Urania, LA
 Source No. 3 Press Vent / Stack
 Method 0011 Filter holder: NA

Date 4-6-92 Test 8 Run 2
 No. of traverse points 24
 Filter type: NA

Sample Train Leak Check:

Pretest: { 0.02 cfm at 15 in. Hg. (vac) ~~NA~~
 Posttest: 20.02 cfm at 12 in. Hg. (vac) ~~NA~~

Particulate Catch Data:

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

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1	594	596	(2)
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1352	1330	22
Total			20

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.P. / Urania, CA Operator M. Gaehler t.c. Masse Pilot No. 290-6 Cp -87
 Source No. 3 Press Vent Water Box No. 4 Bar. Press. 29.8 inHg H₂O 2.5 in.
 Date 4-6-96 Gas analyzer cert. 10010 Nozzle No. Class Nozzle Dia. 0.39 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Drifts Water (inWC)	Det. Vol. (cf)	VAC. inHg	Temperature (°F)				Oxygen (xv/v)	
							Stack	Probe	Duct	Leaky	Gas In	Gas Out
1	2.5	190.30	.03	.10	0.74	2	74	242	256	39	68	68
2	5	191.80	.15	.49	1.74	2	72				70	69
3	7.5	193.40	.39	1.29	3.36	3	71	245	260	40	73	69
4	10	196.15	1.19	3.97	6.18	10	68				78	71
5	12.5	198.87	1.15	3.82	8.95	10	74	243	257	40	79	72
6	15	201.64	1.10	3.73	1.70	10	64				74	72
7	17.5	203.58	.53	1.82	3.62	4.5	60	248	257	40	71	69
8	20	206.15	.99	3.37	6.22	8	57				73	70
9	22.5	208.44	.77	2.63	8.52	7	58	245	259	41	76	71
10	25	210.70	.75	2.57	0.80	7	58				78	72
11	27.5	212.36	.33	1.14	2.32	3	57	246	260	42	79	72
12	30	212.99	.06	.20	2.97	2	58				78	72
13-1	31.5	213.49	.03	.10	3.43	2	58	246	262	42	75	71
2	35	214.16	.05	.17	4.02	2	57				75	72
3	37.5	215.92	.56	1.92	5.99	5	58	244	258	43	79	73
4	40	218.55	.97	3.33	8.59	9	58				82	74
5	42.5	221.22	1.03	3.56	1.28	9.5	57	241	255	42	83	75
6	45	223.50	.73	2.53	3.55	7	58				84	75
7	47.5	224.99	.27	.94	4.94	3	58	246	255	43	83	76
8	50	227.26	.76	2.63	7.26	7	58				85	76
9	52.5	229.60	.77	2.67	9.59	7	59	243	258	43	86	77
10	55	232.07	.88	3.06	2.09	8	58				86	77
11	57.5	234.40	.78	2.71	4.45	6	58	245	256	43	86	78
12	60	235.95	.31	1.08	5.95	3	58				86	78
(1232)												
0 = 60		V _m = 45.65		2.07							Avg. = 75.8	

11111
 11113
 11113

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / Urania, LA Date 4-6-92 Test B Run 3
 Source No. 3 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) 0
 Posttest: 0.02 cfm at 12 in. Hg. (vac) 0

Particulate Catch Data:

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

NA ☐ acetone
☒ other(s) MeCl₂

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

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	<u>598</u>	<u>599</u>	<u>(1)</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1385</u>	<u>1372</u>	<u>13</u>
Total			<u>12</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

INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job L.P. / Uranium LA Operator Michael R. C. Mosser Pitot No. 200-6 Cp 0.8
 Source No. 3 Press Vent Meter Box No. 4 Bar. Press. 29.81 inHg 1.8 in.
 Date 4-6-92 Generator Count. 10010 Nozzle No. 6455 Nozzle Dia. 2.39 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Driftless Water (inWC)	Dep. Vol. (cf)	VAC. inHg	Temperatures (°F)						Oxygen (xv/v)
							Stack	Probe	Dry	Insp.	Gas/in	Gas/Dut	
B-1	2.5	236.30	.15	.51	7.32	2	61	245	253	44	73	73	20.9
2	5	238.34	.13	.44	8.27	2	60				74	73	20.9
3	2.5	240.22	.57	1.93	9.24	4.5	61	248	255	43	76	73	20.9
4	10	242.65	.92	3.12	2.76	7.5	61				80	75	20.9
5	12.5	245.25	.96	3.27	5.33	8	61	252	259	43	82	76	20.9
6	15	247.25	.55	1.88	7.30	5	61				83	76	20.9
7	17.5	248.37	.5	.51	8.33	2	62	249	260	43	83	76	20.9
8	20	250.57	.75	2.56	0.62	6.5	62				85	77	20.9
9	22.5	253.16	.92	3.16	3.16	8.5	61	246	258	43	86	78	20.9
10	25	255.82	1.03	3.56	5.86	9	60				87	79	20.9
11	27.5	257.41	.31	1.08	7.35	3	60	243	260	42	86	79	20.9
12	30	258.73	.25	.87	8.69	2.5	61				86	79	20.9
A-1	32.5	259.22	.03	.10	9.16	2	61	244	259	43	83	78	20.9
2	35	259.98	.08	.27	9.91	2	61				82	78	20.9
3	37.5	261.33	.26	.90	1.27	2.5	61	247	261	44	84	78	20.9
4	40	263.33	.61	2.11	3.35	5	61				87	79	20.9
5	42.5	266.12	1.11	3.82	6.15	9	63	245	263	44	89	80	20.9
6	45	268.08	.50	1.73	8.04	4	64				89	80	20.9
7	47.5	269.65	.32	1.11	9.56	3	62	246	260	44	88	80	20.9
8	50	272.18	1.02	3.53	2.25	8.5	62				90	81	20.9
9	52.5	274.85	.98	3.41	4.90	8	61	249	257	44	90	81	20.9
10	55	277.14	.64	2.23	7.05	5	61				90	81	20.9
11	57.5	278.61	.31	1.08	8.55	3	61	246	255	44	90	81	20.9
12	60	279.55	.12	.42	9.48	2	61				88	81	20.9
(1400)													
Σ = 60		Σ = 43.25		Σ = 1.82							Av. = 81.3		

INTERPOLL LABORATORIES EPA METHOD 2 FIELD DATA SHEET

Job L.P. / URANIA, LA.
 Source NO. 4 PRESS VENT
 Test 10 Runs (1-3) Date 4/6/92
 Stack dimen. 67.75 IN.
 Dry bulb °F Wet bulb °F
 Manometer: ☐ Reg. ☐ Exp. ☐ Elec.
 Barometric pressure 29.81 in Hg
 Static pressure -.11 in WC
 Operators D. BRENNAN & B. ASCHENBACH
 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:	3 1/2 in.	Time start:	hrs
A	1	.021	1.423	4.92	
	2	.067	4.54	8.04	
	3	.118	7.99	11.49	
	4	.177	11.99	15.49	
	5	.250	16.94	20.44	
	6	.356	24.12	27.62	
	7	.644	43.63	47.13	
	8	.750	50.81	54.31	
	9	.823	55.76	59.26	
	10	.882	59.75	63.25	
	11	.933	63.21	66.71	
	12	.979	66.33	69.83	
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

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / URANIA, LA.
 Source NO. 4 PRESS VENT STACK
 Method 5 Filter holder: GLASS

Date 4/6/92 Test 10 Run 1
 No. of traverse points 24
 Filter type: 4" G.F.

Sample Train Leak Check:

Pretest: { 0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: { .004 cfm at 17.5 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone FRONT HALF
4232 ☒ other(s) ☐
 No. of probe wash bottles: 1
 Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	498.0	497.0	1.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1439	1422	17.0
Total			18.0

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: 1424 (HRS) Time end: 1526 (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 L.P. / URANIA, LA. Operator D. BARNARD & B. ASHLEY Pitot No. 21-6 Cp .84
 Source NO. 4 PRESS VENT Meter Box No. 3 Bar. Press. 29.81 inHg H2O 1.37
 Date 4/16/82 Computer Code 10 Nozzle No. 8-4 Nozzle Dia. .251 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	Temperatures (°F)						Oxygen (xv/v)
							Stack	Probe	Oven	Ingr.	Gas In	Gas Out	
B-12	(1424)	542.800	.12	.46	3.74	2.0	74	231	246	55	88	86	26.9
11	5.0	543.73	.53	2.03	5.71	9.0	75				89	87	
10	7.5	545.64	.88	3.38	8.25	16.0	73	230	248	54	92	87	26.9
9	10.0	548.21	.86	3.31	0.78	17.0	73				92	87	
8	12.5	550.72	.55	2.12	2.80	11.0	74	232	247	54	92	88	26.9
7	15.0	552.76	.46	1.79	4.66	9.0	70				93	88	
6	17.5	556.16	.27	1.04	6.08	5.0	74	231	249	54	93	88	26.9
5	20.0	558.49	.82	3.17	8.55	17.0	72				98	89	
4	22.5	560.72	.65	2.52	6.76	14.0	75	233	251	51	97	89	26.9
3	25.0	563.04	.70	2.71	3.05	14.5	74				96	89	
2	27.5	564.75	.37	1.42	1.71	7.0	79	230	253	51	96	89	26.9
1	30.0	565.827	.16	.62	5.81	3.0	77				96	89	
A-12	32.5	566.94	.17	.66	6.45	3.0	72	229	254	50	96	89	26.9
11	35.0	568.93	.54	2.13	8.98	10.5	65				100	91	26.9
10	37.5	571.22	.67	2.66	1.25	14.0	64	231	255	46	100	91	
9	40.0	573.95	1.0	3.96	4.02	17.0	64				99	91	26.9
8	42.5	576.13	.60	2.38	6.18	13.0	64	232	251	45	97	91	
7	45.0	579.37	.19	.75	7.39	3.5	64				97	91	26.9
6	47.5	580.74	.26	1.03	8.81	5.0	63	230	254	45	98	92	
5	50.0	581.52	1.04	4.11	1.63	17.0	64				100	92	
4	52.5	583.63	.55	2.19	3.69	11.5	64	231	252	45	99	92	26.9
3	55.0	585.24	.30	1.19	5.22	6.0	64				98	92	
2	57.5	586.67	.25	.99	6.61	4.5	65	229	250	44	100	92	26.9
1	60.0	587.629	.16	.51	7.62	2.5	66				100	92	
	(1526)												
V ₀ = 44.829											Avg. = 92.8		
θ = 60													

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / URANIA, LA- Date 4/6/92 Test 10 Run 2
 Source NO. 4 PRESS VENT STKIL No. of traverse points 24
 Method 5 Filter holder: GLOSS Filter type: 4.6.µ

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: .005 cfm at 16.5 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone FRONT HALF
4233 ☒ other(s)
 No. of probe wash bottles: 1
 Sample recovered by: D. BRENNAN

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	500	498	2.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1280	1168	112.0
Total			114.0

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: 1556 (HRS) Time end: 1658 (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. URANIA, CA.Source NO. 4 PRESSURE VENT STACKDate 9/12/92 Test 10 Run 2Operator D. BRENNAN & B. ASHMAN Pilot No. 21-C Cp 84Motor Box No. 3 ^{inHg} Bar. Press. 29.81 ^{inHg} H₂O 1.6 XGas meter const. .590 Nozzle No. 8-4 Nozzle Dia. .251 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 (xy/v)	
							Stack	Probe	Dyan	Impg.	Gas In	Gas Out		
A-12	(1556)	588.000												
	2.5	589.29	.24	.94	9.34	3.0	66	240	255	49	92	90		26.9
	5.0	591.03	.39	1.52	1.06	5.5	66				95	90		
	7.5	593.08	.52	2.04	3.05	7.0	65	240	256	48	97	91		26.9
	9	595.69	.96	3.79	5.75	14.0	65				99	92		
	8	598.19	.78	3.67	8.19	12.0	65	239	259	48	99	92		26.9
	7	599.63	.26	.97	9.57	3.5	66				99	92		
	6	601.46	.45	1.77	1.43	6.0	66	238	260	48	101	93		26.9
	5	603.99	.90	3.48	4.03	12.5	76				103	94		
	4	605.65	.34	1.32	5.65	5.0	75	239	259	48	102	94		26.9
	3	607.11	.29	1.12	7.13	4.0	77				103	95		
	2	608.35	.20	.78	8.37	3.0	76	240	257	47	103	95		26.9
	1	609.167	.08	.31	9.15	1.0	79				104	95		
B-12	32.5	610.12	.11	.42	0.07	1.0	79	241	256	47	102	95		26.9
	35.0	611.97	.45	1.77	1.93	6.0	70				105	96		
	37.5	614.38	.80	3.16	4.42	11.5	68	240	257	47	106	97		26.9
	40.0	616.93	.82	3.25	6.95	12.5	67				106	97		
	42.5	619.57	.91	3.60	9.61	13.0	67	238	257	46	105	97		26.9
	7	621.21	.30	1.19	1.14	4.5	67				104	97		
	6	622.42	.19	.75	2.36	2.5	68	239	255	46	104	97		26.9
	5	624.65	.65	2.58	4.61	9.0	67				106	97		
	4	626.80	.60	2.39	6.78	8.0	66	240	256	46	106	98		26.9
	3	628.98	.60	2.38	8.94	8.0	67				107	98		
	2	630.63	.33	1.31	0.56	5.0	67	242	255	46	106	98		26.9
	1	631.555	.11	.44	1.49	2.0	67				106	98		
	(1658)													
	0 = 60	V ₀ = 43.555		^H 1.85								Avg. = 98.7		

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / URANIA, LA. Date 4/6/92 Test 10 Run 3
 Source NO. 4 PRESS VENT No. of traverse points 24
 Method 5 Filter holder: GLASS Filter type: Y.C.F.

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac)
 Posttest: .002 cfm at 17 in. Hg. (vac)

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s)
4250 ☒ 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	497	1.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1283	1268	15.0
Total			16.0

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: 1720 (HRS) Time end: 1841 (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 C.P. / URBANIA, LA.Source Pro 4 Passes PerDate 8/1/92 Test 10 Run 3Operator D. B. CampbellMotor Box No. 3Computer Ident. 9991Pilot No. 21-6Cp .84Bar. Press. 29.81 inHgNozzle Dia. 3/16 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Drifted Meter (inWC)	Des. Vol. (cf)	VAC. (inHg)	Temperatures (°F)					Oxygen (xv/v)	
							Stack	Probe	Dye	Inpg.	Gas In		Gas Out
B-12	2.5	632.00	.11	.72	2.90	1.0	74	233	231	76	95	93	20.9
"	5.0	634.66	.45	1.76	4.75	6.0	69				98	94	
10	7.5	637.27	.87	3.40	7.32	13.0	69	235	256	43	100	95	20.9
9	10.0	639.76	.83	3.26	9.84	13.0	68				100	95	
8	12.5	642.38	.89	3.49	2.45	15.5	68	234	254	42	100	96	20.9
7	15.0	644.50	.55	2.17	4.51	8.0	68				99	95	
6	17.5	646.14	.33	1.29	6.10	5.0	71	235	252	42	101	95	20.9
5	20.0	648.57	.77	3.02	8.53	11.5	70				103	96	
4	22.5	651.06	.80	3.14	1.01	12.0	70	235	254	42	103	96	20.9
3	25.0	653.18	.57	2.26	3.11	8.0	67				103	95	
2	27.5	654.62	.30	1.19	4.64	5.0	67	234	256	42	102	95	20.9
1	30.0	655.902	.21	.83	5.92	3.0	67				103	96	
A-12	32.5	657.05	.16	.63	9.04	2.5	65	232	255	40	101	95	20.9
"	35.0	658.76	.37	1.45	8.73	5.0	71				102	95	
10	37.5	661.13	.74	2.90	1.11	11.5	71	234	255	40	95	93	20.9
9	40.0	663.84	1.0	3.91	3.86	15.5	67				97	93	
8	42.5	665.82	.35	1.37	5.49	5.0	67	235	254	41	97	93	20.9
7	45.0	666.79	.20	.78	6.73	3.0	68				98	93	
6	47.5	668.10	.27	1.05	8.17	3.5	71	234	250	41	99	93	20.9
5	50.0	670.92	1.05	4.08	0.98	15.5	71				92	90	
4	52.5	672.28	.21	.81	2.24	3.0	70	235	246	42	93	90	20.9
3	55.0	673.55	.22	.85	3.53	3.0	70				94	90	
2	57.5	674.87	.22	.86	4.82	3.0	68	235	245	42	98	91	26.9
1	60.0	675.393	.04	.15	5.38	1.0	68				96	91	
(1892)													
θ = 60		θ = 43.393		ΔH = 1.88								Av. = 96.1	

d. Plant Drift (20 mm)

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / Urania, LA Date 4-6-92 Test 11 Run 1
 Source No. 4 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: <0.02 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} wash bottles: 1
 Sample recovered by: Mikaehler & C. Mosser

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	<u>603</u>	<u>599</u>	<u>4</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1364</u>	<u>1352</u>	<u>12</u>
Total			<u>16</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 L.P. / Upstream LA Operator M. K. Laender & Associates Pilot No. 290-6 Cp 8%
 Source No. 4 Press Vent / Stack Meter Box No. 4 HF 1-25 IN MC Bar. Press. 29.8 IN Hg H2O 45 X
 Date 4-6-92 Computer Code 11 Run 1 Nozzle No. Class Nozzle Dia. 2.39 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (in H ₂ O)	Orifice Meter (in H ₂ O)	Det. Vol. (cf)	VAC. in Hg	Temperature (°F)						Oxygen (xv/v)
							Stack	Probe	Duct	Impq.	Gas In	Gas Out	
A-1													
1	2.5	280.00	.11	.37	0.87	2	74	243	255	42	77	77	20.9
2	5	280.92	.16	.53	1.92	2	75				78	77	20.9
3	7.5	283.14	.21	.70	3.12	2	73	245	253	42	80	77	20.9
4	10	284.73	.35	1.18	4.68	3	73				82	78	20.9
5	12.5	287.39	1.10	3.69	7.42	7.5	74	248	254	42	85	79	20.9
6	15	289.23	.53	1.80	9.35	4	90				87	80	20.9
7	17.5	290.50	.10	.68	0.53	2	74	245	257	43	87	80	20.9
8	20	292.76	.79	2.68	2.88	6	72				88	81	20.9
9	22.5	295.49	1.00	3.38	5.52	8	75	249	260	42	89	81	20.9
10	25	297.84	.81	2.75	7.90	6.5	74				90	82	20.9
11	27.5	299.23	.52	1.75	9.81	4.5	79	250	260	43	90	82	20.9
12	30	301.25	.28	.95	1.21	3	77				90	82	20.9
B-1													
1	31.5	302.15	.10	.34	2.05	2	77	252	258	43	87	81	20.9
2	35	303.53	.29	1.00	3.49	3	65				88	81	20.9
3	37.5	305.72	.73	2.52	5.77	6	64	248	255	44	90	82	20.9
4	40	308.27	.95	3.29	8.38	8	64				92	83	20.9
5	42.5	310.61	.70	2.43	0.62	6	64	246	258	44	92	83	20.9
6	45	311.99	.24	.83	1.89	2.5	64				91	83	20.9
7	47.5	313.84	.48	1.67	3.79	4	63	246	254	45	92	84	20.9
8	50	316.05	.75	2.61	6.13	6.5	64				93	84	20.9
9	52.5	318.69	1.07	3.72	8.90	9	64	247	257	45	93	84	20.9
10	55	321.47	1.03	3.58	1.62	9	64				93	85	20.9
11	57.5	323.73	.68	2.36	3.84	6	65	245	254	45	93	85	20.9
12	60	325.60	.40	1.39	5.55	3.5	66				93	85	20.9
(1526)													
Σ = 60		Σ = 45.60		Σ = 1.92							Av. = 84.9		

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / Urania, LA Date 4-6-92 Test 11 Run 2
 Source No. 4 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: 0.02 cfm at 12 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: McKeeley & C. Mosser

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	<u>601</u>	<u>597</u>	<u>4</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1397</u>	<u>1385</u>	<u>12</u>
Total			<u>16</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 L.P. / Uranium, LA Operator M. F. G. / S. H. G. / S. H. G. Pitot No. 29V-6 Cp 84
 Source Mo. H. Press Vent / Stack Meter Box No. 4 Bar. Pres. 29.01 inHg H₂O 1.5 in.
 Date 4-8-92 Gas analyzer cost. 10010 Nozzle No. Glass Nozzle Dia. 239 in.

Traverse Point No.	Sampling Time (min)	Supply Volume (cf)	Velocity Head (inHG)	Drifts Meter (inHG)	Des. Vol. (cf)	VAC. inHG	Temperature (°F)						Gas In	Gas Out	Oxygen (xv/v)
							Stack	Probe	Dyn	Leq.					
B-1 (1556)															
1	2.5	325.90	.25	.87	7.24	2.5	66	242	253	45	82	80	20.9		
2	5	327.20	.46	1.58	9.05	4	66				82	80	20.9		
3	7.5	329.00	.76	2.60	13.6	6	65	247	255	44	83	80	20.9		
4	10	331.25	.75	2.57	3.65	6	65				86	81	20.9		
5	12.5	333.58	.69	2.38	5.86	5	65	250	252	44	88	82	20.9		
6	15	335.72	.29	1.00	7.31	3	66				89	82	20.9		
7	17.5	337.27	.41	1.42	9.02	3.5	66	248	254	43	90	83	20.9		
8	20	341.14	.64	2.17	1.14	5.5	76				91	83	20.9		
9	22.5	343.55	.82	2.79	3.54	6.5	75	247	258	43	92	84	20.9		
10	25	345.96	.80	2.71	5.92	6.5	77				93	84	20.9		
11	27.5	347.99	.59	2.01	7.96	5	76	245	256	44	93	85	20.9		
12	30	349.34	.24	.81	9.27	2	79				92	85	20.9		
A-1 (1658)															
1	32.5	349.95	.05	.17	9.86	2	79	242	257	44	88	83	20.9		
2	35	350.75	.10	.34	0.71	2	70				88	84	20.9		
3	37.5	351.82	.16	.55	1.78	2	68	240	261	45	89	84	20.9		
4	40	353.41	.33	1.14	3.32	3	67				91	85	20.9		
5	42.5	355.99	1.00	3.45	5.99	7	67	238	260	45	93	86	20.9		
6	45	358.12	.67	2.32	8.19	5.5	67				94	86	20.9		
7	47.5	359.57	.23	.80	9.49	2.5	68	243	257	46	94	86	20.9		
8	50	361.27	.40	1.39	1.19	3.5	67				94	86	20.9		
9	52.5	363.90	.96	3.33	3.83	8	66	243	255	46	96	87	20.9		
10	55	366.22	.75	2.61	6.16	6	67				96	87	20.9		
11	57.5	368.42	.66	2.30	8.35	5.5	67	245	258	46	96	87	20.9		
12	60	370.07	.38	1.32	0.02	3.5	67				96	88	20.9		
													AVG. = 87.4	20.9	
V _m = 44.17															
(1658)															

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.A. / Urania, LA
 Source No. 4 Presc Vent / Stack
 Method poll Filter holder: NA

Date 4-6-92 Test 11 Run 3
 No. of traverse points 21
 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: NA Recovery solvent(s)

☐ acetone
☒ other(s) Me Ch

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

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	<u>603</u>	<u>599</u>	<u>4</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1377</u>	<u>1364</u>	<u>13</u>
Total			<u>17</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: _____

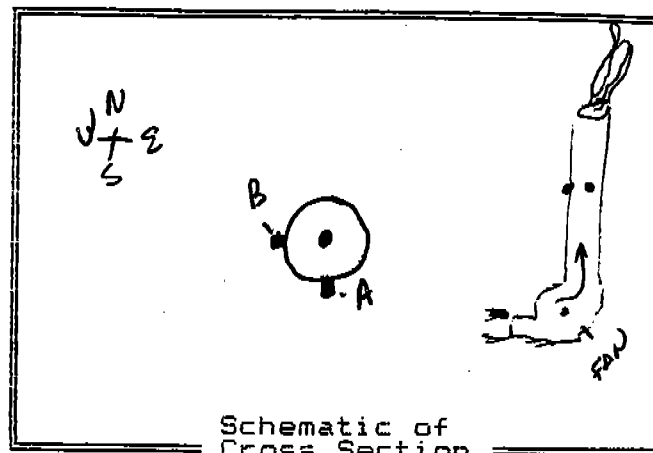
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INTERPOL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job A.P. / Virginia, A Operator M. Kessler to McGee Pitot No. 290-6 Cy 184
 Source Ala. 4 Press Vent / Stack Water Box No. 4 Bar. Press. 29.81 inHg H₂O 1.5 x
 Date 4-6-92 Computer edit. 11 Run 3 Nozzle No. 6/ass Nozzle Dir. 239 in.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inH ₂ O)	Drifted Water (inH ₂ O)	Dep. Vol. (cf)	VAC. inHg	Temperature (°F)					Oxygen (xv/v)		
							Stack	Probe	Duct	Inp4.	Gas/In		Gas/Duct	
A-1														
	(120)	370.40	.03	.10	0.86	2	78	242	257	83	82	20.9		
2	5	371.88	.17	.58	1.95	2	69			84	83	20.9		
3	7.5	373.10	.20	.68	3.14	2	69	245	255	86	83	20.9		
4	10	374.61	.32	1.10	4.65	3	68			88	84	20.9		
5	12.5	377.35	1.10	3.77	7.44	9	68	244	258	92	85	20.9		
6	15	379.74	.79	2.74	9.83	6.5	65			93	86	20.9		
7	17.5	380.88	.14	.48	0.84	2	71	247	256	92	86	20.9		
8	20	383.21	.83	2.86	3.27	7	70			94	87	20.9		
9	22.5	385.39	.65	2.25	5.41	5.5	68	245	259	94	87	20.9		
10	25	388.00	.94	3.26	8.05	8	67			95	87	20.9		
11	27.5	389.99	.50	1.74	9.96	5	67	250	260	95	87	20.9		
12	30	391.37	.4	.83	1.28	2	67			94	87	20.9		
B-1														
	32.5	392.27	.10	.34	2.14	2	67	248	260	98	85	20.9		
2	35	393.45	.25	.86	3.47	2.5	71			90	85	20.9		
3	37.5	395.72	.78	2.67	5.83	6.5	71			90	85	20.9		
4	40	398.35	.94	3.24	8.42	8	67			93	86	20.9		
5	42.5	400.61	.69	2.42	9.67	6	60	244	258	93	86	20.9		
6	45	402.19	.29	1.00	2.12	3	68			93	86	20.9		
7	47.5	403.65	.44	1.52	3.90	3.5	71	242	255	93	86	20.9		
8	50	406.23	.81	2.81	6.32	7	71			90	84	20.9		
9	52.5	408.70	.82	2.81	8.73	7	70	244	256	91	85	20.9		
10	55	411.25	.94	3.23	1.32	8	70			93	85	20.9		
11	57.5	413.30	.53	1.83	3.27	5.5	68	245	258	93	86	20.9		
12	60	414.85	.32	1.11	4.80	3	68			93	86	20.9		
(1844)														
V _s = 44.41							Avg. = 88.3							
Q = 60														

Job L.P. / URANIA, LA.
Source FACE DAYER
Test 15 Runs 1-3 Date 4/8/42
Stack dimen. 42" IN.
Dry bulb 215 °F Wet bulb 136 °F
Manometer: ☒ Reg. ☐ Exp. ☐ Elec.
Barometric pressure 29.97 in Hg
Static pressure -1.05 in WC
Operators D. BRENNAN + B. FISCHENBACH
Pitot No. 245 (PM-10) 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 in.	Time start: 930 hrs	
A	1	.041	1.848	7.848	1.70	213
	2	.146	6.132	12.132	2.10	
	3	.296	12.432	18.432	2.30	215
	4	.704	29.568	35.568	2.10	
	5	.854	35.868	41.868	2.00	214
	6	.956	40.152	46.152	1.90	
B	1				1.75	215
	2				2.10	
	3				2.30	215
	4				2.30	
	5				2.00	215
	6				2.00	
Temp. meas. tool & S/N: PDS IL					Time end: 940 hrs	

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

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job C.P. / URANIA, LA.
Source FACE DRYER STAIN
Method 201 Filter holder: STAINLESS
STEEL

Date 4/8/92 Test _____ Run 1
No. of traverse points 12
Filter type: 2.5" G.F.

Sample Train Leak Check:

Pretest: { 0.02 cfm at 15 in. Hg. (vac)
Posttest: - .06 } cfm at 6 in. Hg. (vac).

Particulate Catch Data:

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

4162 ~~5218~~ acetone probe
other(s) _____

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

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	606	490	115
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1448	1435	13.0
Total			128.0

Integrated Gas Sampling Data:

Bag Pump No. R-12 Box No. 14 Bag No. 1

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

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

Time start: 1205 (HRS) Time end: 1328 (HRS)

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

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

CF-023

101. C.P. / URBANIA, LA.

1001 C.P. / URANIA, LA.
 1002 FACE DAYPA STAGE
 1003 4/8/92 13 RD 1
 1004

Dyeaturs A. B.
 Water Box No.
 Generator cost

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24.5 (m-10) 1.84

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[illegible]

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / URANIA, LA. Date 4/8/92 Test 15 Run 2
 Source FACE DRYER STACK No. of traverse points 18
 Method 201 Filter holder: STAINLESS Filter type: 2.5" G.F.
(PM-10) STEEL

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac)
 Posttest: .002 cfm at 8 in. Hg. (vac)

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone FRONT HALF (PROBE)
(4163) 5749 ☒ acetone FRONT HALF (PROBE)
☐ 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>602</u>	<u>492</u>	<u>110.0</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1392</u>	<u>1384</u>	<u>8.0</u>
Total			<u>118.0</u>

Integrated Gas Sampling Data:

Bag Pump No. B-12 Box No. 14 Bag No. 2
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: .00 cc/min at 16 in. Hg.
 Time start: 1467 (HRS) Time end: 1532 (HRS)
 Sampling rate: 300 cc/min Operator: A. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: 3

CF-023

Lab L.P. / URANIA, L.A.

DOUGHERTY D. BRENNAN + B. ASHENBACH

Pittut No. 245 (Puma) Cu . 8.1

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James J. Cox, Jr.
James J. Cox, Jr.

1226.
3

7861 7861

Bar. Fritz
Hertz

DATE: 29.97 IN HQ HZ
NO. PM-10 (1) NO 210 D: 10

Traverse Point No.	Sampling Time (min)	Sample Volume (cc)	Velocity Head (in H ₂ O)	Drift Meter (in H ₂ O)	Des. Vol. (cc)	VAC. in Hg	Temperature (°F)						Oxygen (xv/v)
							Stack	Probe	Duct	Impg.	Gas In	Gas Out	
A-	(1407)	902.700					208	212	215	59	91	91	17.5
	6.05	904.99	1.50	.43	6.05	1.5	206	212	214	56	93	93	17.6
	12.96	907.56	1.95	.41	6.90	1.5	209	210	218	55	101	95	17.6
	20.12	910.28	2.10	.43	7.16	1.5	210	211	220	53	104	96	17.7
	27.20	912.97	2.35	.44	7.58	2.0	207	210	216	53	105	97	17.7
B-	31.96	915.97	2.15	.44	7.25	2.0	206	213	218	53	107	99	17.7
	42.45	918.819	2.30	.44	7.49	2.0	209	212	214	53	107	99	17.8
	48.41	921.08	1.95	.44	5.95	2.0	208	215	212	53	108	100	17.5
	55.49	923.77	2.05	.44	7.08	2.0	208	220	216	54	109	101	17.7
	62.66	926.50	2.10	.44	7.16	2.0	206	218	215	54	109	102	17.4
	69.82	929.24	2.10	.44	6.90	2.0	206	215	216	54	110	102	17.5
	76.63	931.86	1.95	.44	6.05	2.0	205	215	213	55	110	102	17.6
	82.78	934.196	1.50	.44									
	(1532)												
		V _m = 31.496		A _H = .43								Avg. = 101.2	
		Q = 52.78											

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / URAMIA, CA. Date 4/8/92 Test 15 Run 3
 Source FACZ DRYER STACK No. of traverse points 12
 Method 201 Filter holder: STAINLESS Filter type: 2.5" 6.F
(pm-10) STEEL

Sample Train Leak Check:

Pretest: { 0.02 cfm at 15 in. Hg. (vac) ☒ FILTER
 Posttest: .003 cfm at 7 in. Hg. (vac) ☒ 4175 e(66.27)

Particulate Catch Data: Pre 0.02 cfm at 12 in Hg (vac) ☒ FILTER
Post 4194

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

2
~~STAINLESS~~ 1. 4165
 2. 4194
☒ acetone PERC32
☐ 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>603</u>	<u>489</u>	<u>114.0</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1458</u>	<u>1449</u>	<u>9.0</u>
Total			<u>123.0</u>

Integrated Gas Sampling Data:

Bag Pump No. B-12 Box No. 14 Bag No. 3
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: .00 cc/min at 14 in. Hg.
 Time start: 1610 (HRS) Time end: 1750 (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. / VERBENA, CA.

JOH L.P. / VERBIA, LA.
SOURCE FACE DRYED STICK

4100 44892 1961 15 RUN 3

Operators D. Beckman & B. Aschenbach Pitot No. 24-5 (Puro) 84
Meter Box No. 3 *HU 192 IN MC Bar. Press. 29.97 inHg HZ
Computer Conf. 7991 Nozzle No. AN-100 Nozzle Dia.

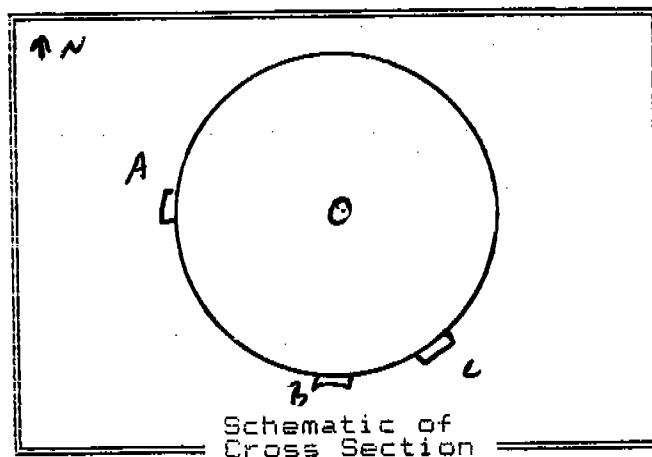
Pitot No. 24-5 (Amo) Cr. 84
Bar. Press. 29.97 in Hg H2O 76 x
Nozzle No. Amo 1 Nozzle Dia. .133 in.

[illegible]

* CHANGED PICTURES IN PM-10

S-0037R

Job L.P. / Urania, LA
Source Core Dryer / Stack
Test 16 Run 0 Date 4-8-92
Stack dimen. 42 IN.
Dry bulb 213 °F Wet bulb _____ °F
Manometer: ☒ Reg. ☐ Exp. ☐ Elec.
Barometric pressure 29.97 in Hg
Static pressure -1.50 in WC
Operators M. Kachler & C. Mosser
Pitot No. 29V-4 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: 5.5 in.	Time start: 1025 hrs		
A-1	.044	1.25	7.35	1.68	
2	.146	6.13	11.63	1.82	
3	.246	12.43	17.93	2.10	
4	.204	29.57	35.07	1.86	213
5	.054	35.87	41.37	1.80	
6	.956	40.15	45.65	1.80	
B-1				1.69	
2				1.85	
3				2.30	
4				2.48	
5				2.20	
6				1.97	
Port 'C' approximately 2' above level of ports 'A' & 'B'.					
Temp. meas. tool & S/N: PDT-3 / TC				Time end: hrs	

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

S-392.1

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / Urania, LA Date 4.9.92 Test 16 Run 1
 Source Core 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 11 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: Mikeahler & C. Mosser

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1	752	598	154
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1385	1368	17
Total			171

Integrated Gas Sampling Data:

Bag Pump No. B10 Box No. 6 Bag No. 1

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

Pretest leak check: 0 cc/min at 15 in. Hg.

Time start: 1054 (HRS) Time end: 1157 (HRS)

Sampling rate: 400 cc/min Operator: Mikeahler

S/N of O₂ Analyzer used to monitor train outlet: 9

CF-023

Job L.P. / Urania, LA
 Source Cere Dyer / Stack
 Date 4-8-92 Run 16

Operator McKeebler + C. Mosser
 Water Box No. 4 HP 125 11 NC
 Generator Code 1.0010

Pilot No. 290-4 Cp .53
 Bar. Press. 29.97 10Hg H2O 14 X
 Nozzle No. Glass Nozzle Dio. .088 IN.

[illegible]

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / Urania, VA
 Source Core Dryer / Stack
 Method 0011 Filter holder: NA

Date 4-8-92 Test 16 Run 2
 No. of traverse points 12
 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 ~~probe~~ ^{Imp} wash bottles: 1
 Sample recovered by: Michael & C. Mosser

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	<u>753</u>	<u>599</u>	<u>154</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1377</u>	<u>1356</u>	<u>21</u>
Total			<u>175</u>

Integrated Gas Sampling Data:

Bag Pump No. B10 Box No. 6 Bag No. 2
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: 0 cc/min at 15 in. Hg.
 Time start: 1228 (HRS) Time end: 1330 (HRS)
 Sampling rate: 400 cc/min Operator: Michael
 S/N of O₂ Analyzer used to monitor train outlet: 9

CF-023

1001	L.P. / Uramay LA	
1002	Gege Dyeat / 5 fack	
1003	4.B.82	1001 16 RvH 2

Director McKaeher & C. Mosser
 Printer Box No. 4 1.25 11 NC
 Computer Cost. 1.000

Pilot No. 290-6 Cp 104 120 156 18
 Bur. Press. 19.97 104 120 156 18
 Nozzle No. 6133 Nozzle Dia. 1.08 IN.

[illegible]

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / Urania, LA Date 4-8-92 Test 16 Run 3
 Source Core 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 12 in. Hg. (vac) ☒

Particulate Catch Data:

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

NA ☐ acetone
☒ other(s) Me Cl₂

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

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	752	599	153
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1405	1385	20
Total			173

Integrated Gas Sampling Data:

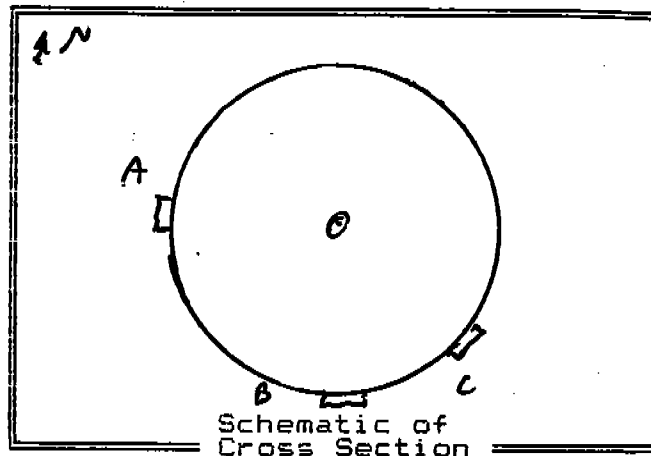
Bag Pump No. B10 Box No. 6 Bag No. 3
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: 0 cc/min at 15 in. Hg.
 Time start: 1401 (HRS) Time end: 1503 (HRS)
 Sampling rate: 400 cc/min Operator: McKaepler
 S/N of O₂ Analyzer used to monitor train outlet: 9

CF-023

Job L.P. / Urmay, LA
 Source Core Dryer / stack
 Date 4-8-92 1951 14 Run 3
 Operators Mikaelbaler & C. Mosser
 Motor Box No. 4 HP 1.25 IN NC
 Generator Serial. 1,000,0

[illegible]

Job L.P. / Urania, LA
Source Core Dryer / Stack
Test 1B Run 0 Date 4-8-92
Stack dimen. 42 IN.
Dry bulb °F Wet bulb °F
Manometer: ☒ Reg. ☐ Exp. ☐ Elec.
Barometric pressure 29.97 in Hg
Static pressure -1.50 in WC
Operators McKachler & C. Mosser
Pitot No. 290-9 Cp .84

[illegible]

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

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / Urania, LA Date 4-8-92 Test 18 Run 1
 Source Core Dryer / Stack No. of traverse points 12
 Method 5 Filter holder: 4" glass Filter type: 4" G.F.

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: 1 Recovery solvent(s)
4/65 ☒ acetone
☒ other(s) MeCl₂

No. of probe wash bottles: 1
 Sample recovered by: McKaeher & C. Mosser

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	642	490	152
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1440	1424	16
Total			168

Integrated Gas Sampling Data:

Bag Pump No. 1310 Box No. 30 Bag No. 1
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: 0 cc/min at 15 in. Hg.
 Time start: 1604 (HRS) Time end: 1706 (HRS)
 Sampling rate: 400 cc/min Operator: McKaeher
 S/N of O₂ Analyzer used to monitor train outlet: 9

CF-023

Job L.P. / Ramsey, L.A. Run 1
Source Core 2024 / 3243 Run 1
Date 4-8-92 Run 18
Operators McKee, L. & C. Hoesel
Meter Box No. 4 425 IN NC
Generator Sdtt. 1.0010

[illegible]

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. IURANIA, LA. Date 4/8/92 Test 18 Run 2
Source COAL DRYER STACK 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: ☒ .62 cfm at 11.5 in. Hg. (vac) ☐

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) ☒ acetone FRONT HALF
9166 ☐ other(s) _____
No. of probe wash bottles: 1
Sample recovered by: D. BRENNAN + L. MOSSER

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	621	490	131.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1459	1440	19.0
Total			153.0

Integrated Gas Sampling Data:

Bag Pump No. B-10 Box No. 30 Bag No. 2
Bag Material: 5-layer Aluminized Tedlar Size: 44 L
Pretest leak check: .00 cc/min at 16 in. Hg.
Time start: 1749 (HRS) Time end: 1853 (HRS)
Sampling rate: 400 cc/min Operator: D.B. + M.K.
S/N of O₂ Analyzer used to monitor train outlet: 9

CF-023

L.P. / UREANID

१५४

11/10/2008

DATE 4/8/95- 1881 18 RPT 2

DATE 4/8/95- 1881 18 RPT 2

DATE 4/8/95- 1881 18 RPT 2

Dr. B. + M. K. + C. M.

302 F. 2d 725

1.001	1.001
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Plant No. 29V-5 CD .dy

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Prv66. 19.47
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10Hg H2O

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NOZZLE NO. 8-3 NOZZLE DIA. 1/2

[illegible]

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / URANIA, LA Date 4/8/92 Test 18 Run 3
 Source CORR DYER STAIL No. of traverse points 12
 Method 8 Filter holder: GLOSS Filter type: 7" G.F.

Sample Train Leak Check:

Pretest: 0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: 0.00 cfm at 10 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone FRONT HALF
4195 ☒ other(s)
 No. of probe wash bottles: 1
 Sample recovered by: M. KAHLER & C. MOSSER

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	<u>610</u>	<u>490</u>	<u>120.0</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1390</u>	<u>1377</u>	<u>13.0</u>
Total			<u>133.0</u>

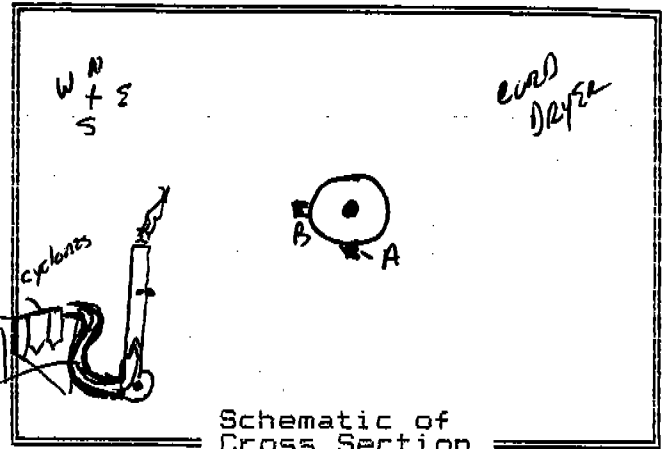
Integrated Gas Sampling Data:

Bag Pump No. B-10 Box No. 30 Bag No. 3
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: .60 cc/min at 17 in. Hg.
 Time start: 1919 (HRS) Time end: 2050 (HRS)
 Sampling rate: 400 cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: 9

CF-023

INTERPOL LABORATORIES EPA METHOD 2 FIELD DATA SHEET

Job L.P. / URANIA, LA.
 Source FACE DRYER STACK
 Test 19 Runs (13) Date 4/9/92
 Stack dimen. 42" IN.
 Dry bulb °F Wet bulb °F
 Manometer: ☐ Reg. ☐ Exp. ☐ Elec.
 Barometric pressure 29.90 in Hg
 Static pressure -1.1 in WC
 Operators B. ASCHENBACH & D. BRENNAN
 Pitot No. 21-5 Cp .84



(plus)
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	.044	1.848	7.85	
	2	.146	6.132	12.13	
	3	.296	12.43	18.43	
	4	.704	29.568	35.57	
	5	.854	35.868	41.868	
B	6	.956	40.15	46.15	
B	7				
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	98				
	99				
	100				
Temp. meas. tool & S/N:				Time end:	hrs

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P./UKANIA, LA. Date 4/9/92 Test 19 Run 1
 Source FAC2 DRYER STAIL 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) ☒ 5 FILTER
 Posttest: { .004 cfm at 15 in. Hg. (vac) ☒ 5 4196

Particulate Catch Data:

Pre - 4.62 @ 15' Hg 5 FILTER
 Post - .006 @ 8' Hg 5 4199

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

2 4196 - 4199 ☒ 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	609	488	121.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1398	1381	17.0
Total			138.0

Integrated Gas Sampling Data:

Bag Pump No. 12 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: 0915 (HRS) Time end: 1630 (HRS)
 Sampling rate: 60 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. / UEAUSA Operator D. BROWN & B.A. Pitot No. 21-S Cp .81
 Source FACE DRYER STACK Water Box No. 3 Bar. Press. 29.98 inHg H₂O 13.2
 Date 4/19/92 Gasometer conf. 9991.92 in Hg Nozzle No. 523 Nozzle Dia. .183 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	(0915)	986.710												
	5	989.79	1.60	1.21	9.77	5.0	210	239	253	49	78	73		18.2
	10	992.48	1.75	1.35	2.95	5.0	209				80	74		18.2
	15	996.30	1.90	1.47	6.28	5.0	209	240	255	46	84	76		18.3
	20	999.79	2.15	1.67	9.83	6.0	210				86	77		18.4
	25	1003.24	2.00	1.55	3.26	6.0	211	240	254	45	88	78		18.5
B-1	30	1006.315	1.55	1.21	6.30	5.0	210				90	79		18.6
	35	1009.54	1.70	1.33	9.49	5.5	209	241	255	44	91	81		18.5
	40	1012.88	1.95	1.53	2.91	6.0	210				93	81		18.5
	45	1016.265	1.95	1.52	16.32	9.0	215	240	252	44	94	82		18.5
	50	1019.75	2.00	1.57	19.80	7.0	211				93	84		18.7
	55	1023.04	1.80	1.40	23.09	5.5	216	240	254	42	97	86		18.6
	60	1026.112	1.35	1.06	25.96	4.0	215				98	87		18.8
(1030)														
Σ = 60		Σ = 39.402		ΔH 6.41									Av. = 81.5	

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / URANIA Date 4/9/92 Test 19 Run 2
 Source FACE BACK STACK No. of traverse points 12
 Method S Filter holder: GLASS Filter type: Y.B.F.

Sample Train Leak Check:

Pretest: $\checkmark$ 0.02 cfm at 15 in. Hg. (vac) $\sum$ FILTER
 Posttest: $\checkmark$.009 cfm at 16 in. Hg. (vac) $\sum$ 4197

Particulate Catch Data: $\checkmark$ Pre 4.02 @ 16" VIL $\sum$ FILTER
 $\checkmark$ Post .002 @ 12" VIL $\sum$ 4200

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

2 acetone FRONT HALF
4197 - 4200 other(s)

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

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	618	489	129
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1388	1378	10
Total			139

Integrated Gas Sampling Data:

Bag Pump No. B-12 Box No. 6 Bag No. 2
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: .00 cc/min at 18 in. Hg.
 Time start: 1100 (HRS) Time end: 1210 (HRS)
 Sampling rate: 400 cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: 3

CF-023

L.P. / UERANIA

Job _____
Source PACZ PAPER STICK
Date 7/9/72 1061 19

Operator D. BERNARD
Water Box No. 3 W 1.90 IN NC
Compressor Code -999

Pilot No. 20-5 (BWS) Cp .84
Bar. Press. 29.90 in Hg
Nozzle No. 2-2 Nozzle Dia. .183 IN.

[illegible]

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / UPRONIA, LA. Date 4/9/92 Test 19 Run 3
 Source FACE DRYER STAGIL No. of traverse points 12
 Method 5 Filter holder: 6UPSS Filter type: 4.6.F.

Sample Train Leak Check:

Pretest: { 0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: { .005 cfm at 17 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone FRONT HALF
4198 ☒ other(s)
 No. of probe wash bottles: 1
 Sample recovered by: D.B.

Condensate Data:

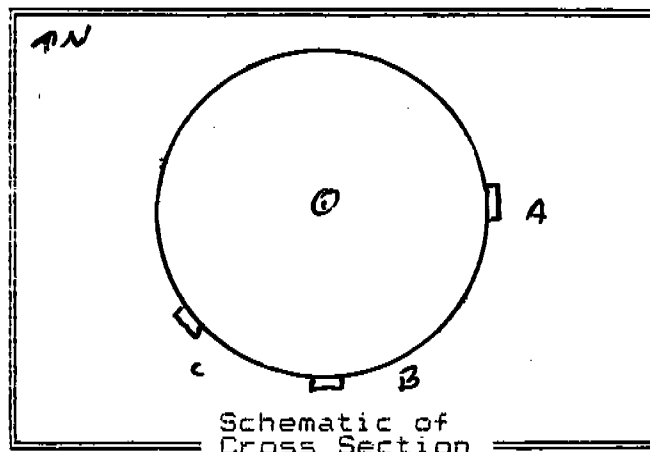
Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	600	489	111.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1420	1398	22.0
Total			193.0

Integrated Gas Sampling Data:

Bag Pump No. B-12 Box No. 6 Bag No. 3
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: .00 cc/min at 14 in. Hg.
 Time start: 1235 (HRS) Time end: 1341 (HRS)
 Sampling rate: 400 cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: 3

CF-023

Job L.P. / Urania, LA
Source Face Dryer / Stack
Test 20 Run 0 Date 4-9-92
Stack dimen. 42 IN.
Dry bulb °F Wet bulb °F
Manometer: ☒ Reg. ☐ Exp. ☐ Elec.
Barometric pressure 29.90 in Hg
Static pressure -1.10 in WD
Operators Michael & C. Mosser
Pitot No. 290-4 Co .87



Formaldehyde

[illegible]

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

9-392.1

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / Urania, LA Date 4-9-92 Test 20 Run 1
 Source Face 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 12 in. Hg. (vac) ☒

Particulate Catch Data:

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

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	725	595	130
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1478	1463	15
Total			145

Integrated Gas Sampling Data:

Bag Pump No. B10 Box No. 30 Bag No. 1
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: 0 cc/min at 15 in. Hg.
 Time start: 0915 (HRS) Time end: 1017 (HRS)
 Sampling rate: 400 cc/min Operator: Mikaehler
 S/N of O₂ Analyzer used to monitor train outlet: 9

CF-023

Job L.P. / Uranium 2 A
Source Face Dryer / Stack
Date 4-2-62 1st RO Run /

Operators M. Kaehler & C. Moser
Meter Box No. 4 AM 1.75 IN NC
Generator cost. 1.0000

Pitot No. 29V-4 Ep 134
Bar. Press. 29.90 inHg H2O 15 x
Nozzle No. Glass Nozzle Dia 1/8 in.

[illegible]

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / Urania, LA Date 4-9-92 Test 10 Run 2
 Source Face 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: NA Recovery solvent(s)
☐ acetone
☒ other(s) MeCl₂
 No. of ^{Imp} wash bottles: 1
 Sample recovered by: M. Kaehler & C. Misser

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	<u>735</u>	<u>596</u>	<u>139</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1492</u>	<u>1478</u>	<u>14</u>
Total			<u>153</u>

Integrated Gas Sampling Data:

Bag Pump No. B10 Box No. 30 Bag No. 2
 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: 1203 (HRS)
 Sampling rate: 400 cc/min Operator: M. Kaehler
 S/N of O₂ Analyzer used to monitor train outlet: 9

CF-023

Job L.P./Orania, LA
Source Face Dryer / Stock
Date 4-9-92 1987 20 Run 2

Operators Michael & C. Mosser
Water Box No. 4 4111 125 IN UC
Generator Code. 1.0010

Pitot No. 290-4 Cp .87
Bar. Press. 29.90 IN Hg
Nozzle No. 0655 Nozzle Dia .188 IN.

[illegible]

INTERPOL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job LIP / Urania, LA Date 4-9-92 Test 20 Run 3
 Source Face 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: 20.06 cfm at 13 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: M. Kaehler + C. Mosser

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1	<u>704</u>	<u>598</u>	<u>106</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1510</u>	<u>1490</u>	<u>20</u>
Total			<u>126</u>

Integrated Gas Sampling Data:

Bag Pump No. B10 Box No. 30 Bag No. 3
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: 0 cc/min at 15 in. Hg.
 Time start: 1235 (HRS) Time end: 1341 (HRS)
 Sampling rate: 400 cc/min Operator: M. Kaehler
 S/N of O₂ Analyzer used to monitor train outlet: 9

CF-023

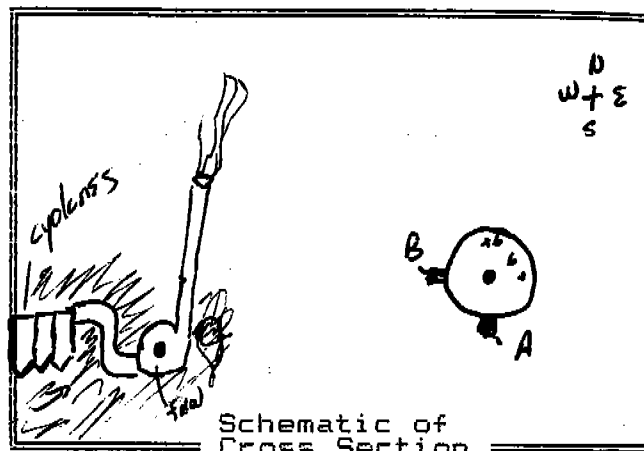
Job L.P. / Virginia, LA
Source Face Fryer 3 stack
Date 4-9-92 20 Run 3

Operators Michaelker & C. Mosser
Meter Box No. 4 HP 1.35 IN NE
Gasmeter Ccft. 1,000

Pilot No. 290-4 Co. BY
Bar. Press. 29.90 inHg H2O 40.5 X
Nozzle No. Glass Nozzle Dia. 1.08 IN.

[illegible]

Job E.P. / URANIA
Source LOD OYER
Test 22 Runs 1-3 Date 4/19/92
Stack dimen. 42" IN.
Dry bulb °F Wet bulb °F
Manometer: ☒ Reg. ☐ Exp. ☐ Elec.
Barometric pressure 29.90 in Hg
Static pressure -1.0 in WC
Operators D. BRENNAN & B. ASCHENBACH
Pitot No. 24-5 (PM-10) Cp 184

[illegible]

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

201
INTERPOL LABORATORIES EPA METHOD 5117 SAMPLE LOG SHEET

Job L.P. / URBANIA, LA. Date 4/9/92 Test 22 Run 1
 Source CORR DRYER STACK No. of traverse points 12
 Method 201 Filter holder: GLASS Filter type: 4'6.F
PM-10

Sample Train Leak Check:

Pretest: { 0.02 cfm at 15 in. Hg. (vac) ☒
 Posttest: { .008 cfm at 10 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone
4201 ☒ acetone PURGE + NUTRUE
☐ other(s) _____
 No. of probe wash bottles: 1
 Sample recovered by: D.B. + B.A.

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1	578	488	90.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1405	1396	9.0
Total			99.0

Integrated Gas Sampling Data:

Bag Pump No. B-12 Box No. 14 Bag No. 1
 Bag Material: 5-layer Aluminized Tedlar Size: 44 L
 Pretest leak check: .00 cc/min at 16 in. Hg.
 Time start: 1456 (HRS) Time end: 1619 (HRS)
 Sampling rate: 250 cc/min Operator: D. BRENNAN
 S/N of O₂ Analyzer used to monitor train outlet: _____

CF-023

Job _____
Source _____
Date _____

L.P. / URBANIA
CORD DUE TO STAGE 2
4/8/92 1981 22 RUN 1

Dr. J. B. Jones

D. BAZZANI - B. ASCHENBACH #
3 - 9991 1.82 IN NE

Pittot No. 24-5 (P.M.-W.)
Ber. Price. 29.9
Norrile No. (On 85)-1

$$\begin{array}{r} 1.8 \\ 100 \overline{) 180} \\ \underline{100} \\ 80 \\ 80 \\ \underline{80} \\ 0 \end{array}$$
$$\begin{array}{r} 18 \times 11 \\ \hline 198 \end{array}$$
[illegible]

201
INTERPOL LABORATORIES EPA METHOD ~~877~~ SAMPLE LOG SHEET

Job L.P. / URANIA Date 4/9/92 Test 22 Run 2
Source CORD DRYER STACK No. of traverse points 12
Method 301 Filter holder: GLASS Filter type: 4" GF.
(PM-10)

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
Posttest: 0.002 cfm at 6 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone PROBE + NOZZLE
4202 ☒ other(s)
No. of probe wash bottles: 1
Sample recovered by: D. BRENNAN + B. ASCHENACK

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1	598	188	110.0
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	1412	1405	7.0
Total			117.0

Integrated Gas Sampling Data:

Bag Pump No. B-12 Box No. 14 Bag No. 2
Bag Material: 5-layer Aluminized Tedlar Size: 44 L
Pretest leak check: .00 cc/min at 16 in. Hg.
Time start: 1650 (HRS) Time end: 1815 (HRS)
Sampling rate: 250 cc/min Operator: D. BRENNAN
S/N of O₂ Analyzer used to monitor train outlet: 3

CF-023

201
INTERPOLL LABORATORIES EPA METHOD ~~547~~ SAMPLE LOG SHEET

Job L.P. / URBANIA, LA.
Source CORD DRYER STACK
Method 201 Filter holder: GLASS
(PM-10)

Date 4/9/92 Test 22 Run 3
No. of traverse points 12
Filter type: 4" G.F.

Sample Train Leak Check:

Pretest: (0.02 cfm at 15 in. Hg. (vac) ☒
Posttest: .005 cfm at 9 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 1 Recovery solvent(s) acetone
4243 ☒ probe + nozzle
☐ other(s) _____
No. of probe wash bottles: 1
Sample recovered by: D.B. + B.A.

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1	<u>601</u>	<u>491</u>	<u>110.0</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>M20</u>	<u>D.B. M12</u>	<u>8.0</u>
Total			<u>118.0</u>

Integrated Gas Sampling Data:

Bag Pump No. B-12 Box No. 14 Bag No. 3
Bag Material: 5-layer Aluminized Tedlar Size: 44 L
Pretest leak check: .00 cc/min at 15 in. Hg.
Time start: 1840 (HRS) Time end: 2005 (HRS)
Sampling rate: 250 cc/min Operator: D. Brennan
S/N of O₂ Analyzer used to monitor train outlet: 3

CF-023

L.P. / URAVIA

Job _____
Source _____
Date 4/9/92 1084 22 RU
L.P. / URANIA _____
_____ 5820 PR/ER 576CH
_____ 22 RU

Distributors No. 3 ^{CHN}
 Meter Box No. 9991
 Meter Count. 1.52 IN NC

Pitot No. 24-5 (Pm-b) Cp .84
 Sur. Press. 29.99 in Hg HZ
 Nozzle No. 9m-b (i) Nozzle Dia

$$\begin{array}{r} 15 \times 11 \\ \hline 165 \end{array}$$
[illegible]

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / Urania, LA Date 4-9-92 Test 29 Run 1
 Source Aspirator / Stack No. of traverse points 20
 Method DDI Filter holder: 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.s of filters used: Recovery solvent(s)

NA ☐ acetone
☒ other(s) MeCl

No. of ~~probe~~ wash bottles: 1

Sample recovered by: M. Kaehler & C. Moser

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1	<u>603</u>	<u>599</u>	<u>4</u>
Impinger No. 2			
Impinger No. 3			
Condenser			
Desiccant	<u>1455</u>	<u>1443</u>	<u>12</u>
Total			<u>16</u>

Integrated Gas Sampling Data: NA / Amt. out

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: _____

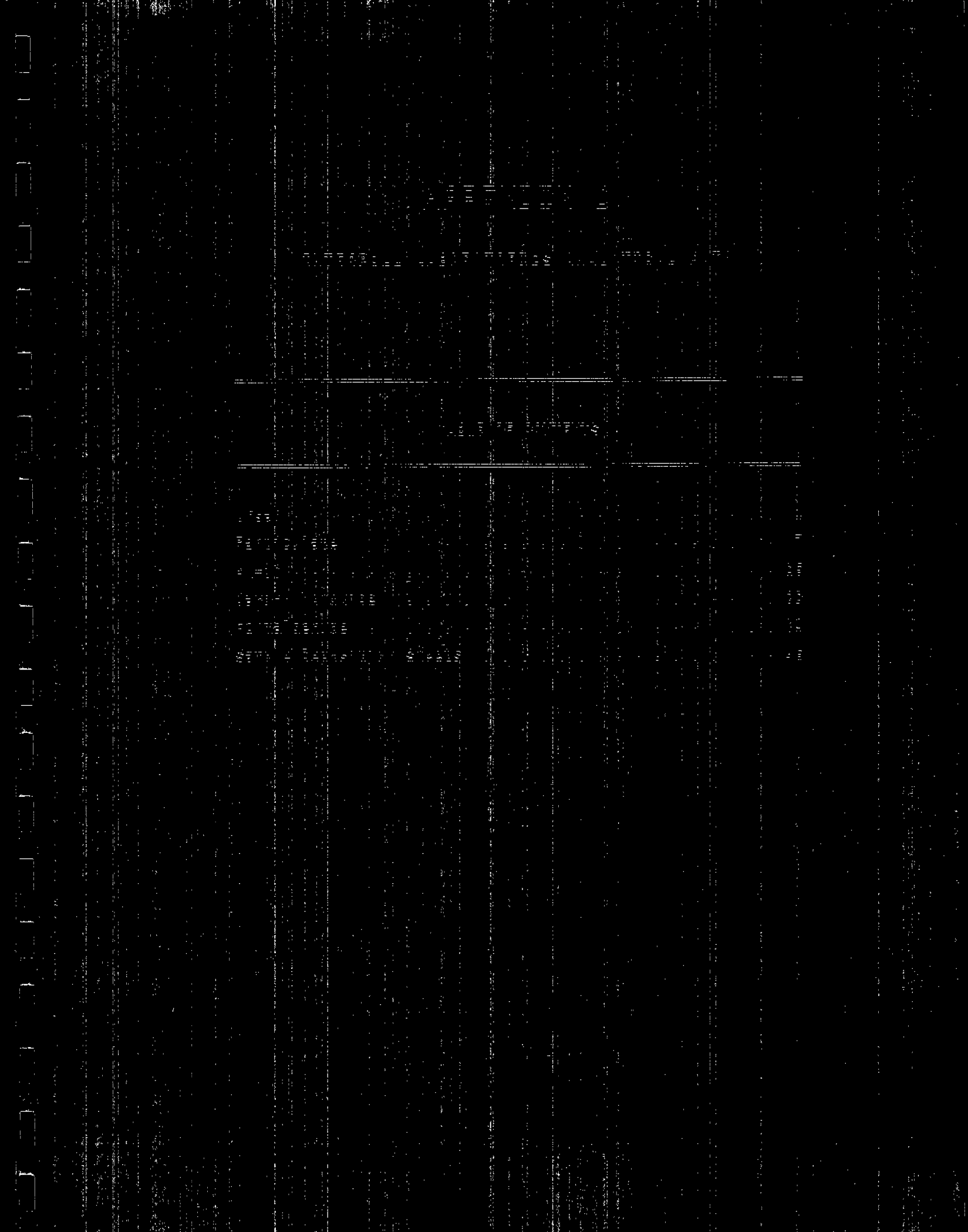
S/N of O₂ Analyzer used to monitor train outlet: _____

CF-023

Job L.P. / Ureana, LA
 Source _____
 Date 4-9-92 Run 1
 Operator Mikachler + C. Mosser
 Water Box No. 4 HP 1.75 IN UC _____
 Generator Sdft. 7,000 Dp .85
 Pitot No. 29V-Y IN H₂O 2 X
 Bar. Pres. 29.90 Nozzle Dia. .88 IN.

[illegible]





Interpoll Laboratories
(612) 786-6020

EPA Method 3 Data Reporting Sheet
Orsat Analysis

Job L.P. / Urania, LA
Team Leader D. Brennan
Date Submitted 4-8-92
Test No. 15
Date of Analysis 4-8-92

Source Face Dryer
Test Site Stall
Date of Test 4-8-92
No. of Runs Completed 3
Technician Mark S. Gannon

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			
15/1	☒ B ☐ F	1		2.70	20.75	2.70	18.05	1.056
		2						
		Avg						
15/2	☒ B ☐ F	1		2.75	20.70	2.75	17.95	1.073
		2						
		Avg						
15/3	☒ B ☐ F	1		2.60	20.70	2.60	18.10	1.077
		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
☐ F₀ Within EPA M-3 Guidelines
for fuel type.

Where $F_0 = \frac{20.9 - O_2}{CO_2}$

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

D-1

EPA Method 3 Guidelines	
Fuel Type	F ₀ 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

Interpoll Laboratories
(612) 786-6020

EPA Method 3 Data Reporting Sheet
Orsat Analysis

Job L.P. / Urania, A
Team Leader M. Kachler
Date Submitted 4-8-92
Test No. 16
Date of Analysis 4-8-92

Source Core Dryer
Test Site stach
Date of Test 4-8-92
No. of Runs Completed 3
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 ₀
			Zero Pt.	After CO ₂	After O ₂			
16/1		1		2.00	20.90	2.00	18.90	1.000
		2						
		Avg						
16/2		1		1.95	20.80	1.95	18.85	1.000
		2					18.85	1.051
		Avg						
16/3		1		1.90	20.75	1.90	18.85	1.079
		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
☐ F₀ Within EPA M-3 Guidelines
for fuel type.

Where $F_0 = \frac{20.9 - O_2}{CO_2}$

EPA Method 3 Guidelines

Fuel Type	F ₀ 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)

D-2

EPA Method 3 Data Reporting Sheet
Orsat Analysis

Job L.P. / Urania
Team Leader M. Kaehler
Date Submitted 4-8-92
Test No. 18
Date of Analysis 4-8-92

Source Core Dryer
Test Site Stack
Date of Test 4-8-92
No. of Runs Completed 3
Technician Mark Kaehler

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			
18/1	☒ B ☐ F	1		2.35	20.85	2.35	18.50	1.021
		2						
		Avg						
18/2	☒ B ☐ F	1		2.15	20.80	2.15	18.65	1.047
		2						
		Avg						
18/3	☒ B ☐ F	1		2.20	20.80	2.20	18.60	1.045
		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

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	1.600-1.936
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)

Interpoll Laboratories
(612) 786-6020

EPA Method 3 Data Reporting Sheet
Orsat Analysis

Job L.P. / Urania, CA
Team Leader D. Blum
Date Submitted 4-9-92
Test No. 19
Date of Analysis 4-9-92

Source Flare Dryer
Test Site Stad
Date of Test 4-9-92
No. of Runs Completed 3
Technician Mark Bachman

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			
19/1		1		2.15	20.80	2.45	18.35	1.041
		2						
		Avg						
19/2		1		2.40	20.60	2.40	18.20	1.125
		2						
		Avg						
19/3		1		2.35	20.85	2.35	18.50	1.021
		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
☐ F₀ Within EPA M-3 Guidelines
for fuel type.

Where $F_0 = \frac{20.9 - O_2}{CO_2}$

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

EPA Method 3 Guidelines	
Fuel Type	F ₀ 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
D-4 Wood/Wood Bark	1.000-1.130

Interpoll Laboratories
(612) 786-6020

EPA Method 3 Data Reporting Sheet
Orsat Analysis

Job L.P. / Urama, LA

Team Leader M. Kachler

Date Submitted 4-9-92

Test No. 20

Date of Analysis 4-9-92

Source Face Drift 1

Test Site Stack

Date of Test 4-9-92

No. of Runs Completed 3

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			
20/1	☒ B ☐ F	1		2.55	20.70	2.55	18.15	1.078
		2						
		Avg						
20/2	☒ B ☐ F	1		2.70	20.75	2.70	18.05	1.056
		2						
		Avg						
20/3	☒ B ☐ F	1		2.60	20.80	2.60	18.20	1.038
		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
Butane	1.405-1.553
D-5 Wood/Wood Bark	1.000-1.130

EPA Method 3 Data Reporting Sheet
Orsat Analysis

Job L.P. / Urania, LA
Team Leader D. Brennan
Date Submitted 4-9-92
Test No. 22
Date of Analysis 4-9-92

Source Core Dryer
Test Site Stack
Date of Test 4-9-92
No. of Runs Completed 3
Technician Mark Roshin

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			
22/1		1		2.10	20.85	2.10	18.75	1.024
		2						
		Avg						
22/2		1		1.80	20.85	1.80	19.05	1.028
		2						
		Avg						
22/3		1		1.95	20.80	1.95	18.85	1.051
		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
☐ F₀ Within EPA M-3 Guidelines
for fuel type.

Where $F_0 = \frac{20.9 - O_2}{CO_2}$

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

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
D-6 Wood/Wood Bark	1.000-1.130

Vicinia

FOR
AP-42
REF (7)

KDB

DATE 4-4-92

PRODUCTION REPORT
DAY# 2 WEEK 2

DAILY RUNNING TIME	WEEK TO DATE RUNNING TIME	MONTH TO DATE RUNNING TIME
.82	1.71	2.37

6 am - 6 pm

ROUGH SIZE	PRESS LOADS	SQ. FT. ACTUAL	SQ. FT. 3/8" BASIS	PRESS DOWNTIME
52x295 7/16	103	118,654	138,436	16 operator 3.5, 104
TOTALS	103	118,654	138,436	

Down - 128 min.

6 pm - 6 am

ROUGH SIZE	PRESS LOADS	SQ. FT. ACTUAL	SQ. FT. 3/8" BASIS	PRESS DOWNTIME
52x295 7/16	106	122,112	142,468	14.5 other 60.52
TOTALS	106	122,112	142,468	

Down - 131 min.

ROUGH SIZE	PRESS LOADS	SQ. FT. ACTUAL	SQ. FT. 3/8" BASIS	PRESS DOWNTIME
TOTALS				

Down - 259 min.

	PRESS LOADS	SQ. FT. ACTUAL	SQ. FT. 3/8" BASIS
TOTALS	209	240,768	280,904

	DAILY	WTD	MTD
PRODUCTION 3/8	280,904	581,969	802,392
SHIPMENTS 3/8		36,8008	1,700,902
AVERAGE PRICE		279.34	244.62
LBS OF RESIN USED	31,177	45,162	64,979
LBS Per MSF PROD. 3/8	25.4	77.6	81.0
RESIN COST (LBS X PRICE)	6218	13342	19,527
RESIN COST MSF/PROD. 3/8	22.14	22.94	24.34
LBS OF WAX USED	5578	12,333	17,801
LBS Per MSF PROD. 3/8	19.9	21.2	22.2
WAX COST (LBS X PRICE)	851	1881	2715
WAX COST MSF/PROD. 3/8	3.03	3.23	3.38
WOOD USAGE-CORDS	79.09	163.02	224.14
WOOD USAGE-LBS PER/M	1520	3025	4522
PAPER COST/MSF	10,871	24,228	35,331
LAP	%		
4x8	%		

09 1753

LAB ROUND SHEET

DATE 4-4-92 SHIFT 4 HOURS 6-6-11 TECH. Berry # Measured
FACE WOOD TOTALIZER 117800 LP RESIN TOTALIZER 8385 7928 Total
CORE WOOD TOTALIZER 102800 MDI RESIN TOTALIZER 5161 3183
AVG. I.B. 113.3 AVG. DENSITY 46.2 WAX STORAGE TANK LEVEL 14'2"/13'5"
PRESS LOADS 106 FOOTAGE FOR SHIFT (3/8" BASIS) 142,468
TOTAL RESIN USAGE 13,546 LBS/MSF 95.1 8LP 4.0 %MDI 5.0
TOTAL WAX USAGE 2789 LBS/MSF 20.3 8 1.3
220,600

	1st	2nd	3rd	4th
TIME				
PRESS LOAD				
LINE SPEED	<u>55</u>	<u>55</u>	<u>55</u>	
COMP. TIMER	<u>230</u>	<u>220</u>	<u>220</u>	
PRESS TEMP.	<u>380</u>	<u>380</u>	<u>380</u>	
MAT CENTERING	<u>OK</u>	<u>OK</u>	<u>OK</u>	
DECOM. POT	<u>120</u>	<u>120</u>	<u>120</u>	
DECOM. TIMER	<u>140</u>	<u>150</u>	<u>150</u>	
LP RESIN %	<u>7.5</u>	<u>7.5</u>	<u>7.5</u>	
MDI RESIN %	<u>5.0</u>	<u>5.0</u>	<u>5.0</u>	
POSITION HOLD				
TIME TO 2000 LBS.				
PRESSURE AT CYCLE END				
LINE SCALE	<u>8.2</u>	<u>7.9</u>	<u>8.0</u>	
TIME TO POSITION				
INTERNAL BOND	<u>112.8</u>	<u>112.6</u>	<u>109.4</u>	
WEIGHT (12" X 12")	<u>784</u>	<u>720</u>	<u>755</u>	
DENSITY (ACTUAL)	<u>47.1</u>	<u>45.2</u>	<u>46.3</u>	
SURFACE WAX SET POINT	<u>99</u>	<u>99</u>	<u>99</u>	
CORE WAX SET POINT	<u>50</u>	<u>50</u>	<u>50</u>	
SURFACE WAFER THICKNESS				
CORE WAFER THICKNESS				

Date	Time	Core Thayer	Face Thayer	MDI use/tank	PF use/tank	Core Wax	Face Wax	100% RS MDI	55% PF	Core Wax %	Face Wax %	Comments
	7:00	18400	21200	6	11	3	3	4.0	3.6	1.2	1.0	
	8:00	22100	24800	2 1/2	5	2	2	3.3	3.1	1.5	1.4	
	9:00	25800	28400	3	6	1	1	3.6	3.2	1.4	1.6	
	10:00	29500	32100	2	4	1 1/2	1	3.2	3.2	1.4	1.8	changed face 11.0
	11:00	33200	35800	3	5 1/2	2	1 1/2	4.1	4.2	1.6	1.1	11.0 2.1.0
	12:00	36900	39500	4	8	2 1/2	2 1/2	4.0	4.0	1.4	1.2	
	1:00	40600	43200	3	6	2 1/2	2	3.6	3.7	1.7	1.2	
	2:00											
	3:00	86100	92000	3	7	2 1/2	3	3.2	4.0	1.5	1.7	
	4:00	94100	102000	2 1/2	5	1 1/2	2	3.7	3.5	1.3	1.4	09 1752
	5:00	102000	117800	2 1/2	6	2	2	3.4	4.0	1.6	1.3	

DATE 4-3-72 SHIFT C-2 HOURS 6-6 AM. TECH. STEVE

CORE WOOD TOTALIZER 8180 MDI RESIN TOTALIZER 4442 ~~2500~~ 2404# MDI
AVG. I.B. 127.3 AVG. DENSITY 47.5 WAX STORAGE TANK LEVEL 4'10" / 4'11"

PRESS LOADS 98 FOOTAGE FOR SHIFT (3/8" BASIS) 131,716

TOTAL RESIN USAGE 12008 LBS/MSF 91.2 %LP 3.9 %MDI 5.0

TOTAL WAX USAGE 2895 LBS/MSF 21.9 % 1.5

1st	2nd	3rd	4th
50	50	50	
240	240	240	
381	381	381	
OK	OK	OK	
20	20	20	
50	50	50	
75	75	75	
50	50	50	
360	360	360	
8.3	8.1	8.2	
163	165	96	
132.6	122.0		
730	737	680	
47.1	47.6	47.8	
70	99	99	
70	70	70	

[illegible][illegible]



Louisiana-Pacific Corporation
URANIA

MOISTURE CONTENT REPORT
DRYERS

INNERSEAL

DATE 4-4-92 SHIFT #2 HOURS 6⁰⁰ P OPERATOR Chest

FACE DRYER

CORE DRYER

	TIME	TEMP.	MC %	F.R.	TEMP.	MC %	F.R.	KNOUS TEMP.
1.	6	223	9.4	30	246	6.4	24	512
2.	30	224	8.2	30	254	7.2	24	497
3.	7	238	8.4	30	256	7.0	24	508
4.	30	240	8.2	30	256	8.2	24	509
5.	8	242	9.0	30	256	9.4	24	512
6.	30	247	8.2	26	259	9.6	20	503
7.	9	246	8.0	26	266	8.2	20	507
8.	30	247	8.0	26	267	8.0	28	505
9.	10	240	6.6	30	270	8.8	20	504
10.	30	235	6.0	30	270	5.4	20	502
11.	11	223	8.8	32	254	8.4	24	507
12.	30	212	7.4	34	238	7.0	28	507
13.	12	214	7.4	34	246	7.0	28	502
14.	30	214	7.8	36	236	7.0	30	501
15.	1	215	7.6	36	236	7.6	30	502
16.	30	217	8.0	26	237	7.4	30	504
17.	2	239	7.8	28	252	8.2	22	512
18.	30	227	6.0	28	253	5.8	22	502
19.	3	Full	Dry	Bin 2	40	3.5		
20.	30	262	6.0	27	255	9.6	30	495
21.	4	226	6.6	27	240	7.4	22	505
22.	30	224	7.2	28	241	7.8	22	506
23.	5	221	7.8	28	245	7.6	22	504
24.	30	222	8.4	28	249	9.6	22	502

Core →

TIME CHECKED	FINES	TRIM	DUST
6:00	1/2	-	-
9:00	1/2	-	-
11:00	3/4	-	-
3:00	1/4	-	-
5:00	1/2	-	-

REMARKS Hammermill - OK
Core solid fuel airlock coupling
stripped ran gas 1225-1255

PRESS LOADS 103 09 1756

FOREMAN Wells



Louisiana-Pacific Corporation
URANIA

MOISTURE CONTENT REPORT
DRYERS

INNERSEAL

DATE 4/4/92 SHIFT 4 HOURS 6PM-6A OPERATOR Ezell

	FACE DRYER 6.0-8.0				CORE DRYER 6.0-8.0			
	TIME	TEMP.	MC %	F.R.	TEMP.	MC %	F.R.	KNOUS TEMP.
1.	6 PM	226	7.2	28	253	7.5	22	504
2.		227	5.6	28	252	6.2	22	501
3.	7 PM	225	6.6	28	251	6.8	22	504
4.		223	7.2	28	249	7.0	22	501
5.	8 PM	226	8.0	28	250	7.2	22	503
6.		229	9.0	28	252	7.6	22	509
7.	9 PM	226	9.5	28	253	7.5	22	507
8.		240	6.0	28	257	8.0	22	508
9.	10 PM	244	5.6	28	256	8.2	22	509
10.		241	7.2	26	262	6.8	20	502
11.	11 PM	246	6.8	26	263	6.6	20	504
12.		239	7.2	26	265	6.0	20	507
13.	12 AM	231	7.6	28	256	6.5	22	509
14.		232	7.5	28	256	8.2	22	509
15.	1 AM	236	7.4	28	258	8.0	22	504
16.		235	7.6	28	257	8.0	22	503
17.	3 AM	233	8.0	26	251	7.8	20	508
18.		236	9.0	28	252	9.0	22	506
19.	4 AM	244	5.6	28	261	5.6	22	501
20.		230	6.8	30	245	7.0	24	504
21.	5 AM	Shut	Down	Dryer	Shut	Down	Dryer	DOWN
22.		—	—	—	—	—	—	—
23.	5:30	—	—	—	—	—	—	—
24.	6 AM	Shift	Change	—	Shift	Change	—	—

TIME CHECKED	FINES	TRIM	DUST
6 PM	—	—	—
7 PM	1/4	—	—
12 AM	1/2	—	—
2 PM	1/2	—	—
3 PM	1/2	—	—

REMARKS 24PM RAN Cores

EPA Test 6 PM-9 PM

09-1757

PRESS LOADS 106

FOREMAN Wyatt



Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 4-4-92SHIFT 2OPERATOR Warren MaxwellBOARD THICKNESS 7/16"BOARD SIZE 52" x 295"BOARD TYPE Siding

6 AM - 6 PM

LOAD NO.	LINE SPEED	CYCLE TIMER	DE COMP TIME	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOSE	PRESS OPEN	TIME TO STOPS	TOTAL CYCLE	REMARKS
1	50	240	20/50	135	2600	380	608	614		6	
2				118			614	621		7	
3				141			621	627		6	
4				163			627	633		6	
5				152			633	639		6	
6				133			639	645		6	
7				130			645	651		6	
8				129			651	657		6	
9				134			657	703		6	
10				130			703	709		6	
11				136			709	715		6	
12				132			715	721		6	
13				129			721	727		6	
14				129			730	736	-3	6	Pile Up On Trans
15				124			741	747	-5	6	Low Air Pressure
16				119			803	809	-16	6	Pin Broke On
17				126			809	815		6	Stacker Hoist
18				129			815	821		6	
19				131			821	827		6	
20				130			827	833		6	
21				129			833	839		6	
22				131			839	845		6	
23	55	230	20/40	126			845	850		5	
24				137			850	856		6	
25				136			856	901		5	
26				131			901	907		6	
27				127			907	913		6	
28				129			913	918		5	
29				124			918	923		5	
30				119			923	929		6	
31				116			929	935		6	
32				115			935	941			

09 1759



Louisiana-Pacific

PRESS LOAD REPORT

DATE 4-4-92SHIFT 2OPERATOR Warren Marshall

Southern Division

BOARD THICKNESS 7/16"BOARD SIZE 52" X 295'BOARD TYPE Siding

LOAD NO.	LINE SPEED	CYCLE TIMER	DE COMP TIME	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOSE	PRESS OPEN	TIME TO STOPS	TOTAL CYCLE	REMARKS
33	55	240	20/40	113	2600	380	941	946		6	
34				120			946	951		5	
35				123			951	957		6	
36				135			957	1002		5	
37				130			1002	1008		6	
38				134			1008	1013		5	
39				131			1013	1019		6	
40				136			1019	1024		5	
41				132			1024	1030		6	
42				131			1030	1035		5	
43				125			1035	1041		6	
44				126			1041	1046		5	
45				127			1046	1052		6	
46				129			1052	1057		5	
47				126			1057	1103		6	
48				125			1103	1108		5	
49				126			1108	1114		6	
50				127			1114	1119		5	
51				130			1119	1125		6	
52				136			1125	1130		5	
53				105			1130	1136		6	
54				104			1136	1141		5	
55				96			1141	1145		6	
56				93			1145	1152		5	
57				92			1152	1158		6	
58				95			1158	1203		5	
59				93			1203	1209		6	
60				107			1209	1215		5	
61				107			1215	1220		6	
62				120			1220	1225		5	
63				120			1225	1231		6	
64				127			1231	1236		5	

09 1760



Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 4-4-92SHIFT 2OPERATOR W. J. N. N. N.BOARD THICKNESS 7/16"BOARD SIZE 52" X 295"BOARD TYPE Siding

LOAD NO.	LINE SPEED	CYCLE TIMER	DE COMP TIMER	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOSE	PRESS OPEN	TIME TO STOPS	TOTAL CYCLE	REMARKS
65	55	230	20/30	135	2500	380	1236	1241		5	
66				134			1241	1247		6	
67				142			1247	1252		6	
68				187			1252	1258		5	
69				139			1258	104		6	
70				136			104	109		5	
71				131			109	115		6	
72				156			115	121		6	
73				150			121	126		5	
74	50	240	20/40	148			310	316	-104	6	Filling Dry Bins
75				157			316	322		6	
76				142			322	328		6	
77				105			328	334		6	
78				99			334	340		6	
79				105			340	346		6	
80				109			346	353		7	
81				106			353	358		5	
82				107			358	405		7	
83				109			405	410		5	
84				110			410	416		6	
85	55.0	230	20/40	124			416	421		5	
86				126			421	427		6	
87				105			427	432		5	
88				112			432	437		6	
89				116			437	443		5	
90				99			443	449		6	
91				106			449	454		5	
92				110			454	500		6	
93				112			500	505		5	
94				115			505	511		6	
95				120			511	517		6	
96				126			517	522		5	

09 1761



Southern Division

PAPER LOAD REPORT

DATE 4-4-92

SHIFT 2

OPERATOR Warren Marshall

BOARD THICKNESS $7\frac{1}{2}$ "

BOARD SIZE 52" X 295"

BOARD TYPE Siding

[illegible]

Location Uranid

Date 4-4-92

Shift C-2, ✓

Pressing Cycle 270

Foreman Ricky Thorne

Hours 1 1/2 P.M. - 1 1/2 A.M.

Total Cycle 5.6 min-s.

[illegible]

SQ = 142468

DOWNTIME REPORT

Record in Minutes				
Elect.	Mech.	Operators	Other	Explain-Reasons
		-14		Swapping Batteries on Generator
		-5		pile up at loader
			-40	chose not Time
			-52	shut down
Total Elect.	Total Mech.	Total Operators	Total Other	GRAND TOTAL
		-19	-112	-131

Comments:

4.0

422

15 A. G. G. G.

39/0000

$$y + 10 = 15$$
[illegible]

78 3040

L. Calif

09 1763

3 1/4



Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 4-4-92SHIFT 4OPERATOR Billy GriffithBOARD THICKNESS 7/16"
BOARD SIZE 52" X 295"
BOARD TYPE Siding

6 PM - 6 AM

LOAD NO.	LINE SPEED	CYCLE TIME	DE COMP TIME	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOS	PRESS OPEN	TIME TO STOPS	TOTAL CYCLE	REMARKS
1	55	230	20/40	95	2600	380	601	606		5	
2				94			606	612		6	
3				92			612	617		4	
4				87			617	623		6	
5				85			623	628		5	
6				96			628	634		6	
7				104			634	639		5	
8				104			639	645		6	
9				102			645	650		5	
10				104			650	656		6	
11				102			656	661		5	
12				105			661	667		6	
13				98			667	672		5	
14				101			672	678		6	
15				102			678	683		5	
16				100			683	689		6	
17				92			689	694		5	
18				101			694	700		6	
19				103			700	705		5	
20				101			705	711		6	
21				107			711	717		6	
22				110			717	722		5	
23				115			722	728		6	
24				121			728	733		5	
25				107			733	739		6	
26				102			739	745		5	
27				98			745	750		6	
28							750	756		5	
29				102			756	761		6	
30				105			761	766		5	
31				110			766	772		6	
32				102			772	777		5	

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Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 7-4-72SHIFT 4OPERATOR 15.14BOARD THICKNESS 7/16"BOARD SIZE 52" x 296"BOARD TYPE Siding

LOAD NO.	LINE	CYCLE	DE	TIME	MAX.	PRESS	PRESS	PRESS	TIME	TOTAL	REMARKS
			COMP	TO	PRES.	TEMP.	CLOSE	OPEN	TO	CYCLE	
			TIMER	POS.					STOPS		
33	45	222	2-57	92	2600	340	850	903		6	
34				95			925	928		5	
35				94			905	913		5	
36				91			913	919		6	
37				83			919	925		6	
38				82			925	931		6	
39				83			931	936		5	
40				84			936	942		6	
41				83			942	947		5	
42				86			947	953		6	
43				87			953	958		5	
44				88			958	1004		6	
45				88			1004	1009		5	
46				91			1009	1015		6	
47				97			1015	1021		6	
48				103			1021	1026		5	
49				105			1026	1032		6	
50				98			1032	1037		5	
51				100			1037	1042		5	
52				91			1042	1102	-14	6	Scrapped Roller
53				103			1102	1107		5	on screw
54				107			1107	1112		5	
55				102			1112	1120		8	
56				101			1120	1130		6	
57				106			1130	1135		5	
58				117			1135	1141		6	
59				121			1141	1146		5	
60				109			1146	1152		6	
61				118			1152	1157		5	
62				122			1157	1203		6	
63				120			1203	1208		5	

09 1765



Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 4-4-92SHIFT 1OPERATOR B. H. H.BOARD THICKNESS 7/16"BOARD SIZE 42" x 225"BOARD TYPE 5.2.1.1

LOAD NO.	LINE SPEED	CYCLE TIME	DE COMP TIME	TIME TO POS.	MAX. PRES.	PRESS. TEMP.	PRESS. CLOSE	PRESS. OPEN	TIME TO STOP	TOTAL CYCLE	REMARKS
25	55.0	22.5	20/50	152	2300	350	1258	1214		6	
36				126			1214	1219		5	
37				119			1219	1245		6	
38				124			1225	1230		5	
39				121			1230	1230		6	
40				125			1235	1241		5	
71				127			1241	1247		6	
72				129			1247	1252		5	
73				118			1252	1258		6	
74				113			1258	103		5	
75				117			103	109		6	
76				120			109	114		5	
77				122			114	120		6	
78				119			120	125		5	
79				116			125	131		6	
80				119			131	136		5	
81				135			136	142		6	
82				122			142	147		5	
83				125			147	153		6	
84				131			153	204	-5	6	9.2.1.1.2-1.2.1.1.2
85				122			304	310	-60	6	
86				129			310	316		6	Time changed
87				126			316	322		6	
88				110			322	328		6	
89				110			328	333		6	
90				115			333	339		6	
91				114			339	345		6	
92				111			345	350		5	
93				106			350	356		6	
94				103			356	401		5	
95				104			401	407		6	
96				101			407	412		5	

09 1766



Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 4-4-52
SHIFT 4
OPERATOR B. M. H.

BOARD THICKNESS 7/16"
BOARD SIZE 52' x 295'
BOARD TYPE Sidney

LOAD NO.	LINE SPEED	CYCLE TIMER	DE COMP. TIMER	TIME TO POS.	MAX. PRES.	PRESS. TEMP.	PRESS. CLOSE	PRESS. OPEN	TIME TO STOP	TOTAL CYCLE	REMARKS
97	55.0	220	40/50	101	2650	320	412	418		6	
98				104			422	423		5	
99				111			423	429		6	
100				108			429	439		6	
101				108			438	440		5	
102				101			440	446	-	6	
103				105			446	451	-	5	
104				103			451	454		6	
105				108			457	460		5	
106				102			502	508		6	
107											
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09 1767

DATE 4-6-92

PRODUCTION REPORT

DAY 4 WEEK 2

DAILY RUNNING TIME	WEEK TO DATE RUNNING TIME	MONTH TO DATE RUNNING TIME
<u>.83</u>	<u>3.21</u>	<u>3.87</u>

DAY SHIFT				
ROUGH SIZE	PRESS LOADS	SQ. FT. ACTUAL	SQ. FT. 3/8" BASIS	PRESS DOWNTIME
<u>52 x 295 7/16</u>	<u>98</u>	<u>112,896</u>	<u>131,716</u>	<u>143</u>
TOTALS	<u>98</u>	<u>112,896</u>	<u>131,716</u>	

Down - 143 min

EVENING SHIFT				
ROUGH SIZE	PRESS LOADS	SQ. FT. ACTUAL	SQ. FT. 3/8" BASIS	PRESS DOWNTIME
<u>52 x 295 7/16</u>	<u>111</u>	<u>127,872</u>	<u>149,188</u>	<u>Elect. P</u>
TOTALS	<u>111</u>	<u>127,872</u>	<u>149,188</u>	<u>30</u>

Down - 86 min

GRAVEYARD SHIFT				
ROUGH SIZE	PRESS LOADS	SQ. FT. ACTUAL	SQ. FT. 3/8" BASIS	PRESS DOWNTIME
TOTALS				

Down - 249 min

PRESS LOADS	SQ. FT. ACTUAL	SQ. FT. 3/8" BASIS
<u>2508</u>		
TOTALS	<u>209</u>	<u>240,768</u>

	DAILY	WTD	MTD
PRODUCTION 3/8	<u>280,904</u>	<u>1,094,048</u>	<u>1,314,471</u>
SHIPMENTS 3/8	<u>451,673</u>	<u>819,181</u>	<u>2,152,575</u>
AVERAGE PRICE	<u>252.90</u>	<u>264.77</u>	<u>246.36</u>
LBS OF RESIN USED	<u>24,173</u>	<u>87,291</u>	<u>107,108</u>
LBS Per MSF PROD. 3/8	<u>86.1</u>	<u>79.8</u>	<u>81.5</u>
RESIN COST (LBS X PRICE)	<u>7737</u>	<u>27,347</u>	<u>33,526</u>
RESIN COST MSF/PROD. 3/8	<u>27.54</u>	<u>25.00</u>	<u>25.51</u>
LBS OF WAX USED	<u>4,825</u>	<u>10,375</u>	<u>25,843</u>
LBS Per MSF PROD. 3/8	<u>17.2</u>	<u>18.6</u>	<u>19.7</u>
WAX COST (LBS X PRICE)	<u>736</u>	<u>2,108</u>	<u>3,942</u>
WAX COST MSF/PROD. 3/8	<u>2.62</u>	<u>2.84</u>	<u>3.00</u>
WOOD USAGE-CORDS	<u>83.76</u>	<u>312.35</u>	<u>373.47</u>
WOOD USAGE-LBS PER/M	<u>16.10</u>	<u>6167</u>	<u>7664</u>
PAPER COST/MSF	<u>13,400</u>	<u>50,784</u>	<u>61,887</u>
LAP			
4x8			

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Louisiana-Pacific Corporation
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OSB

DAILY INVENTORY

DATE 4-6-92

PRESS LOADS 209

FOOTAGE (MSF-3/8) 280,904

RESIN USAGE (LBS)

	1st Shift	2nd Shift	3rd Shift	TOTAL
FACE	<u>7790</u>	<u>8848</u>		<u>16,638</u> .1480
CORE	<u>3,213</u>	<u>4,322</u>		<u>7,535</u> .70
TOTAL	<u>11,003</u>	<u>13,170</u>		
LBS/MSF	<u>83.5</u>	<u>88.3</u>		24,173

BEGINNING INVENTORY	<u>121,663</u>	LBS
INCOMING RESIN	<u>48,060</u>	LBS FACE
	<u>-</u>	LBS CORE
TOTAL	<u>169,723</u>	LBS
TOTAL RESIN USAGE	<u>24,173</u>	LBS
ENDING TOTAL	<u>145,550</u>	LBS

WAX USAGE (LBS)

	1st Shift	2nd Shift	3rd Shift	TOTAL
TOTAL	<u>2,252</u>	<u>2,573</u>		4,825 .1525
LBS/MSF	<u>17.1</u>	<u>17.2</u>		

BEGINNING INVENTORY	<u>52,030</u>	LBS
INCOMING WAX	<u>-</u>	LBS
TOTAL	<u>52,030</u>	LBS
TOTAL WAX USAGE	<u>4,825</u>	LBS
ENDING TOTAL	<u>47,205</u>	LBS
STORAGE TANK LEVEL	- TANK 1 <u>11'4"</u>	<u>136"</u>

WOOD USAGE (LBS)

	1st Shift	2nd Shift	3rd Shift	TOTAL
FACE	<u>108,600</u>	<u>128,600</u>		<u>237,200</u>
CORE	<u>95,700</u>	<u>119,400</u>		<u>215,100</u>
				452,300

COSTS

RESIN : LBS. FACE RESIN X COST + LBS CORE RESIN X COST / MSF =
\$27.55 /MSF

WAX : LBS FACE + LBS CORE X COST / MSF =

\$ 2.62 /MSF

Siding Overlay
259,998 sq.ft
51.54 /MSF

09 1769

Location Umana La

Date 4-6-92

Shift Crew 1

Pressing Cycle 220 second

Foreman Claude

Hours 6 Am - 6 Pm

Total Cycle 5-6-7-minut.

[illegible]

By It - 131,714

DOWNTIME REPORT

Record in Minutes				Explain Reasons
Elect.	Mech.	Operators	Other	
		163		Out of work
Total Elect.	Total Mech.	Total Operators	Total Other	GRAND TOTAL
		163		-163

Comments: 4X8A-21

8X16A-24

4-1

14-1

1-3



Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 4-6-92SHIFT Crew 1OPERATOR Kevin W.

6 AM - 6 PM

BOARD THICKNESS 7/16
BOARD SIZE 52 X 295
BOARD TYPE Siding

LOAD NO.	LINE SPEED	CYCLE TIMER	DE COMP	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOSE	PRESS OPEN	TIME TO STOPS	TOTAL CYCLE	REMARKS
1	50	220	40	119	2600	380	622	628	-22	6	Out of wood
2				117			628	634		6	
3				126			634	641		7	
4				126			641	647		6	
5				132			647	653		6	
6				121			653	700		7	
7				127			700	706		6	
8				130			706	712		6	
9				127			712	719		7	
10				130			719	725		6	
11				92			916	922	-111	6	Out of wood
12				116			922	927		5	
13	55			123			927	933		6	
14				120			933	938		5	
15				132			938	944		6	
16	52			122			944	950		6	
17				124			950	956		6	
18				147			956	1002		6	
19				139			1002	1008		6	
20				131			1008	1014		6	
21				139			1014	1021		7	
22				139			1021	1027		6	
23				131			1027	1033		6	
24				138			1033	1039		6	
25				111			1039	1045		6	
26				101			1045	1051		6	
27				100			1051	1058		7	
28				95			1058	1105		7	
29				89			1105	1112		7	
30	55		25	96			1142	1148	-30	6	Out of wood
31				96			1148	1154		6	
32				113			1154	1159		5	

09 1771



Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 4-6-92
 SHIFT 1
 OPERATOR Kurin

BOARD THICKNESS 7/16
 BOARD SIZE 52 x 295
 BOARD TYPE siding

LOAD NO.	LINE SPEED	CYCLE TIME	DE COMP TIME	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOSE	PRESS OPEN	TIME TO STOP	TOTAL CYCLE	REMARKS
33	55	220	33	119	2600	380	1159	1205		6	
34				152			1205	1211		6	
35				159			1211	1216		5	
36				162			1216	1222		6	
37				151			1222	1227		5	
38				145			1227	1233		6	
39				136			1233	1238		5	
40				138			1238	1244		6	
41				139			1244	1249		5	
42				141			1249	1255		6	
43				147			1255	1300		5	
44				131			1300	1306		6	
45				145			1306	1311		5	
46				130			1311	1317		6	
47				139			1317	1322		5	
48				136			1322	1328		6	
49				141			1328	1333		5	
50				139			1333	1339		6	
51				133			1339	1345		6	
52				138			1345	1350		5	
53				132			1350	1356		6	
54				130			1356	1401		5	
55				128			1401	1407		6	
56				132			1407	1412		5	
57				133			1412	1418		6	
58				131			1418	1423		5	
59				136			1423	1429		6	
60				128			1429	1434		5	
61				131			1434	1440		6	
62				121			1440	1446		6	
63				123			1446	1451		5	
64				125			1451	1457		6	

09 1772



Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 4-6-92
 SHIFT 1
 OPERATOR Kevin

BOARD THICKNESS 7/16
 BOARD SIZE 52 x 295
 BOARD TYPE siding

LOAD NO.	LINE	CYCLE	DE COMP	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOSE	PRESS OPEN	TIME TO STOP	TOTAL CYCLE	REMARKS
65	55	220	33	120	260	380	257	303		5	
66				124			303	309		6	
67				121			309	314		5	
68				109			314	319		5	
69				109			319	324		5	
70				105			324	330		6	
71				99			330	335		5	
72				98			335	341		6	
73				95			341	346		5	
74				99			346	352		6	
75				103			352	357		5	
76				110			357	403		6	
77				103			403	409		6	
78				98			409	414		5	
79				99			414	420		6	
80				111			420	425		5	
81				112			425	431		6	
82				108			431	437		6	
83				117			437	442		5	
84				120			442	448		6	
85				117			448	453		5	
86				106			453	459		6	
87				113			459	504		5	
88				102			504	510		6	
89				110			510	515		5	
90				101			515	521		6	
91				103			521	526		5	
92				99			526	532		6	
93				104			532	537		5	
94				107			537	543		6	
95				108			543	548		5	
96				109			548	554		6	

09 1773



Southern Division

PRATT ROAD BRIDGE

DATE 4-6-92
SHIFT 1
OPERATOR Kevin

BOARD THICKNESS 7/16
BOARD SIZE 52 X 295
BOARD TYPE siding

09 1774



Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 4-6-92SHIFT 3OPERATOR Richy

6 PM - 6 AM

BOARD THICKNESS 7/16BOARD SIZE 52X295BOARD TYPE siding

LOAD NO.	LINE SPEED	CYCLE TIMER	DE COMP	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOSE	PRESS OPEN	TIME TO STOPS	TOTAL CYCLE	REMARKS
1	550	220	20/33	120	2600	380	605	611		6	
2				111			611	617		6	
3				113			617	622		5	
4				116			630	636	-8	6	Face Blender
5				104			636	642		6	Tripped out
6				113			642	648		6	
7				115			648	653		5	
8				104			653	659		6	
9				108			659	704		5	
10				106			704	710		6	
11				109			710	716		6	
12				115			716	722		6	
13				117			722	728		6	
14				120			728	734		6	
15				119			734	740		6	
16				118			740	745		5	
17				125			745	751		6	
18				124			751	757		6	
19				128			757	803		6	
20				126			803	809		6	
21				120			809	814		5	
22				118			814	820		6	
23				120			820	825		5	
24				121			825	831		6	
25				117			831	836		5	
26				115			836	842		6	
27				113			842	848		6	
28				115			848	854		6	
29				113			854	900		6	
30				119			900	905		5	
31				121			905	910		5	
32				125			910	916		6	

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Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 4-6-92
 SHIFT Crew 3
 OPERATOR Ricky C.

BOARD THICKNESS 7/16
 BOARD SIZE 52 X 295
 BOARD TYPE Siding

LOAD NO.	LINE SPEED	CYCLE TIMER	DE COMP RETNER	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOSE	PRESS OPEN	TIME TO STOPS	TOTAL CYCLE	REMARKS
33	55.0	220	20/33	118	2600	380	916	921		5	
34				121			921	927		6	
35				116			927	932		5	
36				113			932	938		6	
37				120			938	944		6	
38				117			944	949		5	
39				117			949	955		6	
40				116			955	1000		5	
41				117			1000	1006		6	
42				113			1006	1011		5	
43				117			1011	1017		6	
44				114			1017	1022		5	
45				114			1022	1028		6	
46				110			1028	1033		5	
47				106			1036	1042	-3	6	Pile up at th.
48				113			1042	1047		5	Transfer Belt
49	54.0	220	18/55	115			1047	1053		6	
50				127			1053	1058		5	
51				128			1058	1104		6	
52				119			1104	1109		5	
53				109			1109	1114		5	
54				113			1114	1119		5	
55				113			1119	1125		6	
56				115			1125	1131		6	
57				137			1201	1207	-30	6	Chain Broke
58				105			1207	1213		6	on Stacker
59				95			1213	1219		6	Hoist
60				97			1219	1225		6	
61				98			1225	1230		5	
62				110			1230	1236		6	
63				111			1236	1243		7	
64				103			1243	1248		5	

09 1777



Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 4-6-92SHIFT Crew 3OPERATOR Ricky C.BOARD THICKNESS 7/16BOARD SIZE 52X295BOARD TYPE Siding

LOAD NO.	LINE SPEED	CYCLE TIMER	DE COMP	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOSE	PRESS OPEN	TIME TO STOPS	TOTAL CYCLE	REMARKS
1.5	53.0	220	18/55	105	2600	380	1248	1254		6	
66				100			1254	100		6	
67				107			100	106		6	
68				109			106	111		5	
69				111			111	117		6	
70				110			117	123		6	
71				108			123	129		6	
72				113			129	134		5	
73				120			134	140		6	
74				115			140	146		6	
75				113			146	151		5	
76				115			151	157		6	
77				120			157	203		6	
78				109			203	209		6	
79				112			209	214		5	
80				111			214	220		6	
81				109			220	225		5	
82				110			225	231		6	
83				112			231	237		6	
84				114			237	243		6	
85				110			243	248		5	
86				112			248	254		6	
87				125			254	300		6	
88				134			300	306		6	
89				134			306	312		6	
90				145			312	318		6	
91				123			318	323		5	
92				114			323	329		6	
93				110			329	334		5	
94				111			334	340		6	
95				117			340	346		6	
96				114			346	352		6	

09 1778



PROFIT LOSS ACCOUNT

DATE 4-6-92
SHIFT Crew 3
OPERATOR RICKY C.

BOARD THICKNESS 7/16
BOARD SIZE 52X29.5
BOARD TYPE Siding

09 1779

DATE 4-8-92

PRODUCTION REPORT
DAY 6 WEEK 2

DAILY RUNNING TIME	WEEK TO DATE RUNNING TIME	MONTH TO DATE RUNNING TIME
<u>.83</u>	<u>4.24</u>	<u>4.90</u>

6 am - 6 pm DAY SHIFT

ROUGH SIZE	PRESS LOADS	SQ. FT. ACTUAL	SQ. FT. 3/8" BASIS	PRESS DOWNTIME
<u>52 x 295 7/16</u>	<u>116</u>	<u>133,632</u>	<u>155,908</u>	<u>9.00 min</u> <u>6.3</u> <u>operator</u> <u>2.9.4.9</u>
TOTALS	<u>116</u>	<u>133,632</u>	<u>155,908</u>	

6 pm - 6 am EVENING SHIFT

ROUGH SIZE	PRESS LOADS	SQ. FT. ACTUAL	SQ. FT. 3/8" BASIS	PRESS DOWNTIME
<u>52 x 295 7/16</u>	<u>101</u>	<u>116,352</u>	<u>135,748</u>	<u>2.00 min</u> <u>1.3</u> <u>operator</u> <u>1.44</u>
TOTALS	<u>101</u>	<u>116,352</u>	<u>135,748</u>	

GRAVEYARD SHIFT

ROUGH SIZE	PRESS LOADS	SQ. FT. ACTUAL	SQ. FT. 3/8" BASIS	PRESS DOWNTIME
TOTALS				

2604

TOTALS	PRESS LOADS	SQ. FT. ACTUAL	SQ. FT. 3/8" BASIS
	<u>217</u>	<u>249,984</u>	<u>291,656</u>

	DAILY	WTD	MTD
PRODUCTION 3/8	<u>291,656</u>	<u>1,452,904</u>	<u>1,673,329</u>
SHIPMENTS 3/8	<u>161,883</u>	<u>1,389,477</u>	<u>2,722,371</u>
AVERAGE PRICE	<u>202.77</u>	<u>258.37</u>	<u>246.95</u>
LBS OF RESIN USED	<u>21,911</u>	<u>115,162</u>	<u>134,979</u>
LBS Per MSF PROD. 3/8	<u>25.1</u>	<u>79.3</u>	<u>80.7</u>
RESIN COST (LBS X PRICE)	<u>6990</u>	<u>36,213</u>	<u>42,392</u>
RESIN COST MSF/PROD. 3/8	<u>23.97</u>	<u>24.93</u>	<u>25.33</u>
LBS OF WAX USED	<u>6111</u>	<u>28416</u>	<u>33,884</u>
LBS Per MSF PROD. 3/8	<u>21.0</u>	<u>19.6</u>	<u>20.2</u>
WAX COST (LBS X PRICE)	<u>962</u>	<u>4364</u>	<u>5198</u>
WAX COST MSF/PROD. 3/8	<u>3.30</u>	<u>3.00</u>	<u>3.11</u>
WOOD USAGE-CORDS	<u>81.37</u>	<u>413.67</u>	<u>474.79</u>
WOOD USAGE-LBS PER/M	<u>1507</u>	<u>9275</u>	<u>10,772</u>
PAPER COST/MSF	<u>15,505</u>	<u>70,713</u>	<u>81,816</u>
LAP _____			
4x8 _____			

09 1780

DATE 4-8-92

PRESS LOADS 217

FOOTAGE (MSF-3/8) 291,656

RESIN USAGE (LBS)

	<u>1st Shift</u>	<u>2nd Shift</u>	<u>3rd Shift</u>	<u>TOTAL</u>	
FACE	<u>8491</u>	<u>6631</u>		<u>15,122</u>	.1450
CORE	<u>3,320</u>	<u>3,469</u>		<u>6,789</u>	.70
TOTAL	<u>11,811</u>	<u>10,100</u>			
LBS/MSF	<u>75.8</u>	<u>74.4</u>		<u>21,911</u>	

BEGINNING INVENTORY	<u>184,850</u>	LBS
INCOMING RESIN	<u>-</u>	LBS FACE
	<u>-</u>	LBS CORE
TOTAL	<u>184,850</u>	LBS
TOTAL RESIN USAGE	<u>21,911</u>	LBS
ENDING TOTAL	<u>162,939</u>	LBS

WAX USAGE (LBS)

	<u>1st Shift</u>	<u>2nd Shift</u>	<u>3rd Shift</u>	<u>TOTAL</u>	
TOTAL	<u>3538</u>	<u>2573</u>		<u>6,111</u>	.1575
LBS/MSF	<u>22.6</u>	<u>18.9</u>			

BEGINNING INVENTORY	<u>45,275</u>	LBS
INCOMING WAX	<u>-</u>	LBS
TOTAL	<u>45,275</u>	LBS
TOTAL WAX USAGE	<u>6,111</u>	LBS
ENDING TOTAL	<u>39,164</u>	LBS
STORAGE TANK LEVEL	- TANK 1 <u>9'3"</u>	<u>111"</u>

WOOD USAGE (LBS)

	<u>1st Shift</u>	<u>2nd Shift</u>	<u>3rd Shift</u>	<u>TOTAL</u>
FACE	<u>118,500</u>	<u>100,900</u>		<u>219,400</u>
CORE	<u>110,900</u>	<u>109,200</u>		<u>220,100</u>
				<u>439,500</u>

COSTS

RESIN : LBS. FACE RESIN X COST + LBS CORE RESIN X COST / MSF =
\$23.96 /MSF

WAX : LBS FACE + LBS CORE X COST / MSF =
\$ 3.30 /MSF

Siding Overlay
300,835 sq.ft.
51.54 /msf

09 1781

Location Marina 2

Date 4-8-92

Shift Crew 3

Pressing Cycle 215 Sec.

Foreman Mite

Hours 6Am - 6Pm

Total Cycle 5-6-7 min.

Thickness & Density	Rough Size	Loads Produced	Panels Produced	Waste	Test	Net Panels Produced
7/16	52X295	101	1,212	-0-	3	1,212

47-135,748

DOWNTIME REPORT

Record in Minutes				Explain-Reasons
Elect.	Mech.	Operators	Other	
-13				SL2 inteed Tripped out causing 17 to plug 2X
		-144		Out of wood
Total Elect.	Total Mech.	Total Operators	Total Other	GRAND TOTAL
-13		-144		-157

Comments: 12'x16' / 8' 4x8

A- 31 / 20

$$\frac{4-2}{4}$$

C. r.

09 1782 :



Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 4-7-92SHIFT Crew 3OPERATOR Ricky C.BOARD THICKNESS 7/16BOARD SIZE 52x295BOARD TYPE Siding

LOAD NO.	LINE SPEED	CYCLE TIMER	DE COMP TIME	TIME TO POS.	MAX. PRES.	PRESS. TEMP.	PRESS. CLOSE	PRESS. OPEN	TIME TO STOPS	TOTAL CYCLE	REMARKS
1	58.0	215	18/35	73	2600	380	603	608		5	
2				74			608	614		6	
3				79			614	619		5	
4				85			619	625		5	
5	53.0	215	18/50	86			625	630		5	
6				88			630	636		6	
7				98			636	641		5	
8				105			641	646		5	
9				105			646	652		6	
10				115			652	658		6	
11				110			658	703		5	
12				110			703	709		6	
13				111			709	715		6	
14				138			715	720		5	SL2 in-feed
15				94			732	738	-12	6	Tripped out
16				98			738	743		5	Causing it to plug
17				96			743	748		5	
18				97			748	754		6	
19				89			754	759		5	
20				74			759	805		6	
21				82			805	810		5	
22	57.0	215	18/50	84			810	815		5	
23				87			815	821		6	
24				89			821	826		5	
25				90			826	831		5	
26				90			831	837		6	
27				88			837	842		5	
28				89			842	847		5	
29				72			847	852		5	
30				90			852	858		5	
31				101			858	903		5	
32				100			903	908		5	

09 1783

Southern Division

OPERATOR PICKY

BOARD TYPE Sidino

LOAD NO.	LINE SPEED	CYCLE TIME	DE COMP TIME	TIME TO POS.	MAX. PRES.	PRESS. TEMP.	PRESS. CLOSE	PRESS. OPEN	TIME TO STOP	TOTAL CYCLE	REMARKS
33	58.0	220	20/43	101	26.50	380	908	913		5	
34				103			913	919		5	
35				88			919	924		6	
36				71			927	932	-3	5	SL2 infeed Tripper
37				88			932	937		5	out causing it to
38				103			937	942		5	plug
39				99			942	947		6	
40				89			947	953		5	
41				88			953	958		5	
42				90			958	1004		6	
43				122			1004	1009		5	
44				122			1009	1014		5	
45				128			1014	1020		6	
46				126			1020	1125		5	
47				136			1025	1031		6	
48				147			1031	1036		5	
49				125			1036	1041		5	
50				102			1041	1046		5	
51				106			1046	1052		6	
52				105			1052	1057		5	
53				100			1057	1103		6	
54				93			1103	1108		5	
55	52.5	220	20/20	97			1108	1113		5	
56				98			1113	1118		5	
57				94			1118	1123		5	
58				92			1123	1128		5	
59				91			1128	1133		5	
60				97			1133	1139		6	
61				100			1139	1144		5	09 1784
62				99			1144	1150		6	
63				105			1150	1156		6	
64				105			1156	1156		6	



Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 4-8-92SHIFT Crew 3OPERATOR PickensBOARD THICKNESS 7/16BOARD SIZE 52X295BOARD TYPE Siding

LOAD NO.	LINE SPEED	CYCLE TIME	DE COMP TIME	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOSE	PRESS OPEN	TIME TO STOP	TOTAL CYCLE	REMARKS
65	50.0	215	18/60	92	2600	380	1202	1208		6	
66				92			1208	1214		6	
67				95			1214	1219		5	
68	50.0	215	18/60	109			1219	1225		6	out of wood
69				107			246	251	-144	5	
70				95			251	257		6	
71				94			257	303		6	
72				101			303	310		7	
73				97			310	316		6	
74				91			316	322		6	
75				90			322	328		6	
76				98			328	334		6	
77				104			334	340		6	
78				106			340	346		6	
79				136			346	352		6	
80				122			352	359		7	
81	5	215	18/60	129			359	405		6	
82				135			405	411		6	
83				115			411	416		5	
84				97			416	422		6	
85				118			422	428		6	
86				125			428	433		5	
87				120			433	439		6	
88				123			439	445		6	
89				121			445	451		6	
90				113			451	457		6	
91				112			457	502		5	
92				120			502	502		6	
93				112			502	514		6	
94				126			514	519		5	
95				134			519	525		6	
96				123			525	531		6	

09 1785

Southern Division

OPERATOR Picky C.

BOARD TYPE Single

[illegible]

~~09-1786~~

Location Usonia La

Date 4-8-92

Shift *Crew 1*

Pressing Cycle 215-230

Foreman C. Claude

Hours 6 Am 6 Pm

Total Cycle 5-6

Thickness & Density	Rough Size	Loads Produced	Panels Produced	Waste	Test	Net Panels Produced
7/16	52x295	116	1392	—	3	1.392

金花- 155,908

DOWNTIME REPORT

Record in Minutes				Explain-Reasons
Elect.	Mech.	Operators	Other	
	-63	-		Out of hand
		-8		CL-2 plugged
		-9		Cleaning structure roller
		-4		paper trouble
		-9		SL-2 plugged
Total Elect.	Total Mech.	Total Operators	Total Other	GRAND TOTAL
	-63	-30		-93

Comments: 485

12" x 16"

4. r. 1. - 31

44-40-24

725-1

6. Title: 6

11 - 4

Cell - 1

09 1787

5011.



Southern Division

PRESS LOAD REPORT

OPERATOR Kevin W.

BOARD TYPE Siding

LOAD NO.	LINE SPEED	CYCLE TIME	DE COMP TIME	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOSE	PRESS OPEN	TIME TO STOPS	TOTAL CYCLE	REMARKS
1	52	220	33	127	2600	380	703	709	-63	6	Out of wood
2				129			709	714		5	
3				130			714	720		6	
4				128			720	725		5	
5				147			725	731		6	
6				119			731	737		6	
7				104			737	743		6	
8				109			743	749		6	
9				102			749	755		6	
10	55		45	104			755	801		6	
11				105			801	807		6	
12				114			815	820	-8	5	CL-2 plugged
13				109			820	826		6	
14				125			826	831		5	
15				133			831	837		6	
16				130			837	842		5	
17				131			842	848		6	
18				154			848	853		5	
19				142			853	859		6	
20				163			859	904		5	
21				151			904	910		6	
22				165			910	915		5	
23				156			915	921		6	
24				151			921	927		6	
25				172			927	932		5	
26				183			932	938		6	
27				178			938	943		5	
28				169			943	949		6	
29				154			949	954		5	09 1788
30				147			954	9600		6	
31				132			1000	1005		5	
32				155			1005	1010		5	



Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 4-8-92SHIFT 1OPERATOR KevinBOARD THICKNESS 7/16BOARD SIZE 32 x 295BOARD TYPE siding

LOAD NO.	LINE SPEED	CYCLE TIME	DE COMP TIME	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOSE	PRESS OPEN	TIME TO STOPS	TOTAL CYCLE	REMARKS
33	55	230	25/35	124	2600	380	1011	1016		5	
34				126			1016	1022		6	
35				121			1022	1027		5	
36		220		118			1027	1033		6	
37				110			1033	1038		5	
38	58	215	35	114			1038	1044		6	
39				110			1044	1049		5	
40				101			1049	1054		5	
41				87			1054	1100		6	
42				89			1100	1105		5	
43				86			1105	1110		5	
44				88			1110	1115		5	
45				79			1115	1120		5	
46				82			1120	1125		5	
47				87			1125	1131		6	
48				88			1131	1137		6	
49				90			1137	1143		6	
50				86			1143	1148		5	
51				81			1148	1154		6	
52				90			1154	1159		5	
53				90			1159	1204		5	
54				91			1204	1209		5	
55				102			1209	1215		5	
56				103			1215	1220		5	
57				112			1220	1226		6	
58				114			1226	1231		5	
59				120			1231	1236		5	
60				119			1236	1242		6	09 1789
61				128			1242	1247		5	
62				131			1247	1253		6	
63				126			1253	1258		5	
64				127			1258	103		5	



Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 4-8-92
 SHIFT 1
 OPERATOR Kevin

BOARD THICKNESS 7/16
 BOARD SIZE 52 x 295
 BOARD TYPE siding

LOAD NO.	LINE SPEED	CYCLE TIME	DE COMP TIME	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOSE	PRESS OPEN	TIME TO STOPS	TOTAL CYCLE	REMARKS
65	57	215	35	129	2600	380	103	108		5	
66				123			108	114		6	
67				119			114	119		5	
68				121			119	124		5	
69				125			124	130		6	
70				120			130	135		5	
71				114			135	140		5	
72				121			140	146		6	
73				126			146	151		5	
74				123			151	156		5	
75				119			156	202		6	
76				110			202	207		5	
77				110			207	213		6	
78				108			222	227	-9	5	Cleaning structure roller
79				110			227	233		6	
80				100			233	238		5	
81				98			238	243		5	
82				100			243	248		5	
83				90			248	253		5	
84				100			253	258		5	
85				104			258	304		6	
86				110			304	309		5	
87				116			309	314		5	
88				117			314	319		5	
89				110			319	325		6	
90				101			325	330		5	
91				106			330	335		5	
92				104			335	340		5	
93				111			340	346		6	
94				108			346	351		5	
95				103			351	356		5	
96				111			356	361		5	

09 1790



Southern Division

PRESS LOAD REPORT

OPERATOR Kevin

BOARD TYPE *siding*

[illegible]



Louisiana-Pacific Corporation

Southern Division

Urania

DATE 4-9-92

PRODUCTION REPORT

DAY 7 WEEK 2

DAILY RUNNING TIME	WEEK TO DATE RUNNING TIME	MONTH TO DATE RUNNING TIME
<u>.91</u>	<u>5.15</u>	<u>5.81</u>

6 am - 6 pm DAY SHIFT				
ROUGH SIZE	PRESS LOADS	SQ. FT. ACTUAL	SQ. FT. 3/8" BASIS	PRESS DOWNTIME
<u>52 x 295 7/16</u>	<u>113</u>	<u>130,176</u>	<u>151,876</u>	<u>66,17.3</u>
TOTALS	<u>113</u>	<u>130,176</u>	<u>151,876</u>	

Down - 94 min

6 pm - 6 am EVENING SHIFT				
ROUGH SIZE	PRESS LOADS	SQ. FT. ACTUAL	SQ. FT. 3/8" BASIS	PRESS DOWNTIME
<u>52 x 295 7/16</u>	<u>126</u>	<u>145,152</u>	<u>169,349</u>	<u>27</u>
TOTALS	<u>126</u>	<u>145,152</u>	<u>169,349</u>	<u>15</u>

Down - 42 min

GRAVEYARD SHIFT				
ROUGH SIZE	PRESS LOADS	SQ. FT. ACTUAL	SQ. FT. 3/8" BASIS	PRESS DOWNTIME
TOTALS				

Down -

	PRESS LOADS <u>2868</u>	SQ. FT. ACTUAL	SQ. FT. 3/8" BASIS
TOTALS	<u>237</u>	<u>275,328</u>	<u>321,225</u>

	DAILY	WTD	MTD
PRODUCTION 3/8	<u>321,225</u>	<u>1,774,131</u>	<u>1,994,554</u>
SHIPMENTS 3/8	<u>157,513</u>	<u>1,541,990</u>	<u>2,879,884</u>
AVERAGE PRICE	<u>216.47</u>	<u>254.24</u>	<u>245.33</u>
LBS OF RESIN USED	<u>26,266</u>	<u>141,428</u>	<u>111,245</u>
LBS Per MSF PROD. 3/8	<u>82.0</u>	<u>79.7</u>	<u>81.0</u>
RESIN COST (LBS X PRICE)	<u>8879</u>	<u>45,092</u>	<u>51,271</u>
RESIN COST MSF/PROD. 3/8	<u>27.64</u>	<u>25.42</u>	<u>25.71</u>
LBS OF WAX USED	<u>5790</u>	<u>34,206</u>	<u>39,674</u>
LBS Per MSF BROD. 3/8	<u>18.0</u>	<u>19.3</u>	<u>19.9</u>
WAX COST (LBS X PRICE)	<u>912</u>	<u>5276</u>	<u>6110</u>
WAX COST MSF/PROD. 3/8	<u>2.84</u>	<u>2.97</u>	<u>3.06</u>
WOOD USAGE-CORDS	<u>93.61</u>	<u>502.28</u>	<u>568.40</u>
WOOD USAGE-LBS PER/M	<u>1574</u>	<u>10849</u>	<u>12346</u>
PAPER COST/MSF	<u>15,792</u>	<u>866.85</u>	<u>97,608</u>

LAP 8
4x8 8

09 1792

DATE 4-9-92

PRESS LOADS 239

FOOTAGE (MSF-3/8) 321,225

RESIN USAGE (LBS)

	<u>1st Shift</u>	<u>2nd Shift</u>	<u>3rd Shift</u>	<u>TOTAL</u>
FACE	<u>7988</u>	<u>9236</u>		<u>17,224</u> .1480
CORE	<u>4281</u>	<u>4761</u>		<u>9,042</u> .70
TOTAL	<u>12,269</u>	<u>13,997</u>		<u>26,266</u>
LBS/MSF	<u>80.8</u>	<u>82.7</u>		

BEGINNING INVENTORY	<u>162,939</u>	LBS
INCOMING RESIN	<u>49,360</u>	LBS FACE
	<u>-</u>	LBS CORE
TOTAL	<u>212,299</u>	LBS
TOTAL RESIN USAGE	<u>26,266</u>	LBS
ENDING TOTAL	<u>186,033</u>	LBS

WAX USAGE (LBS)

	<u>1st Shift</u>	<u>2nd Shift</u>	<u>3rd Shift</u>	<u>TOTAL</u>
TOTAL	<u>2573</u>	<u>3217</u>		<u>5790</u> .1575
LBS/MSF	<u>16.9</u>	<u>18.9</u>		
BEGINNING INVENTORY	<u>39,164</u>		LBS	
INCOMING WAX	<u>-</u>		LBS	
TOTAL	<u>39,164</u>		LBS	
TOTAL WAX USAGE	<u>5,790</u>		LBS	
ENDING TOTAL	<u>33,374</u>		LBS	
STORAGE TANK LEVEL: - TANK 1	<u>7'9"</u>		<u>93"</u>	

WOOD USAGE (LBS)

	<u>1st Shift</u>	<u>2nd Shift</u>	<u>3rd Shift</u>	<u>TOTAL</u>
FACE	<u>126,000</u>	<u>138,400</u>		<u>264,400</u>
CORE	<u>115,270</u>	<u>125,800</u>		<u>241,070</u>
				<u>505,470</u>

COSTS

RESIN : LBS. FACE RESIN X COST + LBS CORE RESIN X COST / MSF =
\$27.64 /MSF

WAX : LBS FACE + LBS CORE X COST / MSF =
\$2.84 /MSF

Siding Overlay
306,400 sq.ft.
51.54 /msf
09 1793

Location Uranis, LaDate 4-9-92Shift Crew 1Pressing Cycle 120Foreman Ricky TholeHours 6:00 - 4:00 PMTotal Cycle 56 min

Thickness & Density	Rough Size	Loads Produced	Panels Produced	Waste	Test	Net Panels Produced
7 1/2"	52" x 19"	126	1512	0	3	1512

SQ Ft. - 169349

DOWNTIME REPORT

Record in Minutes				Explain-Reasons
Elect.	Mech.	Operators	Other	
		-15		Tam up on stacker 32
	-27			Stacker hyd gauge blew out - out of oil
Total Elect.	Total Mech.	Total Operators	Total Other	GRAND TOTAL
	-27	-15		-42

Comments: 12' x 16' top 4 1/2" panel 30A-grade 31A-grade 7utility 0utility 18' x 6' - 1 utility

PRESS LOAD REPORT



Louisiana-Pacific

Southern Division

DATE 4-9-92SHIFT 4OPERATOR Billy GriffithBOARD THICKNESS 7/16"BOARD SIZE 52" X 295"BOARD TYPE Siding

LOAD NO.	LINE SPEED	CYCLE TIMER	DE COMP TIMER	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOSE	PRESS OPEN	TIME TO STOPS	TOTAL CYCLE	REMARKS
1	58	220	30/40	8'3	2600	380	625	607		5	
2				8'0			607	612		5	
3				8'0			612	617		5	
4				8'4			617	622		5	
5				8'0			622	628		6	
6				8'1			628	633		5	
7				7'4			633	638		5	
8				7'1			638	643		5	
9				7'6			643	649		6	
10				8'1			649	654		5	
11				8'1			654	659		5	
12				8'4			659	704		5	
13				8'2			704	709		5	
14				8'3			709	714		5	
15				7'8			714	710		6	
16				8'0			710	725		5	
17				8'4			725	730		5	
18				8'3			730	735		5	
19				8'7			735	740		5	
20				8'2			740	745		5	
21				8'2			745	750		5	
22				8'0			750	755		5	
23				8'5			755	801		5	
24				7'5			801	807		5	
25				7'5			807	815		5	
26				7'8			815	819		5	
27				9'6			819	822		5	
28				9'7			822	829		6	
29				10'9			829	834		5	
30				10'4			834	839		5	
31				10'5			839	844		5	
32				10'5			844	849		5	

09 1795



Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 9-9-91SHIFT 1OPERATOR B. [unclear]143
F11.3
CBOARD THICKNESS 7/16"BOARD SIZE 52" x 22"BOARD TYPE S-2-1-4

LOAD NO.	LINE SPEED	CYCLE TIME	DE COMP TIME	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOSE	PRESS OPEN	TIME TO STOPS	TOTAL CYCLE	REMARKS
85	180	220	30/10	97	4.5	3.20	849	854		5	
84				95			854	900		6	
83				97			900	905		5	
82				100			905	910		5	
81				94			910	915		5	
80				94			915	911		6	
79				93			911	927		6	
78				92			927	939	-4	6	Tar up on [unclear]
77				89			939	945		6	
76				85			945	951		6	
75				86			951	956		5	
74				88			956	1003		6	
73				83			1003	1009		6	
72				79			1009	1015		6	
71				96			1015	1021		6	
70				110			1021	1027		6	
69				107			1027	1033		6	
68				96			1033	1039		6	
67				100			1039	1045		6	
66				93			1045	1051		6	
65				107			1051	1057		6	
64				100			1057	1100		6	
63				102			1100	1105		5	
62				104			1105	1110		5	
61				97			1110	1116		6	
60				88			1116	1121		5	
59				85			1121	1126		5	
58				86			1126	1131		5	
57				89			1131	1136		5	
56				92			1136	1142		6	
55				90			1142	1147		5	

09 1796



Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 4-9-92SHIFT 4OPERATOR B. H. H.BOARD THICKNESS 7/16"BOARD SIZE 52" x 225"BOARD TYPE S. 11-7

LOAD NO.	LINE SPEED	CYCLE TIMER	DE COMP TIME	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOS	PRESS OPEN	TIME TO STOPS	TOTAL CYCLE	REMARKS
65	58.0	220	70/40	96	2600	380	1162	1157		5	
66				102			1157	1202		5	
67				94			1202	1208		6	
68				101			1208	1213		5	
69				103			1213	1218		5	
70				98			1218	1223		5	
71				97			1223	1228		5	
72				92			1228	1233		5	Jam up in the
73				92			1242	1247	-9	5	Stacker 2X
74				93			1247	1253		6	
75				90			1253	1254		6	
76				92			1254	1254		6	
77				22			1254	110		5	
78				95			137	143	-27	5	Stacker 1st
79				79			142	142		6	Lower Pinks
80				86			148	153		5	02' oil
81				88			153	158		5	
82				90			158	203		5	
83				92			203	209		6	
84				94			209	214		5	
85				95			214	219		5	
86				100			219	224		5	
87				112			224	229		5	
88				105			229	234		5	
89				103			234	240		6	
90				101			240	245		5	
91				99			245	250		5	
92				98			250	255		5	
93				103			255	300		5	
94				102			300	306		6	
95				103			306	311		5	
96				105			311	316		5	

09 1797



Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 4-9-92
 SHIFT 4
 OPERATOR 13.10.9

BOARD THICKNESS 7/8
 BOARD SIZE 52" x 52"
 BOARD TYPE Sidings

LOAD NO.	LINE SPEED	CYCLE TIMER	DE COMP TIME	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOSE	PRESS OPEN	TIME TO STOPS	TOTAL CYCLE	REMARKS
97	54.0	220	30/42	109	220	322	316	322		6	
98				113			323	327		5	
99				119			327	332		5	
100				120			332	337		5	
101				116			337	342		5	
102				121			342	348		6	
103				117			348	353		5	
104				112			353	358		5	
105				105			358	404		6	
106				105			404	409		5	
107				108			409	414		5	
108				108			414	419		5	
109				108			419	425		6	
110				110			425	430		5	
111				109			430	435		6	
112				110			435	441		5	
113				114			441	447		6	
114				119			447	452		5	
115				112			452	458		6	
116				108			458	502		5	
117				105			502	508		6	
118				100			508	514		5	
119				95			514	520		6	
120				100			520	526		6	
121				91			526	532		6	
122				94			532	539		7	
123				90			539	546		7	
124				86			546	552		6	
125				94			552	558		6	
126				93			558	604		6	

09 1798

Location Urania, La.Date 4-9-92Shift 2Pressing Cycle 220-240Foreman John WeeksHours 6 A.M. - 6 P.M.Total Cycle 586

Thickness & Density	Rough Size	Loads Produced	Panels Produced	Waste	Test	Net Panels Produced
7/16" 47-50	52" X 295"	113	1,356	0	3	1,353

Sq. Ft. 151,876

DOWNTIME REPORT

Record in Minutes				Explain-Reasons
Elect.	Mech.	Operators	Other	
		-66		Out of wood
		-17		Stacker would not discharge load
		-3		Ran short mat in Loader out
		-8		Changed Wbr Nozzles in C/Blender
Total Elect.	Total Mech.	Total Operators	Total Other	GRAND TOTAL
		-94		-94

Comments: Lap4x8A 3231U-33



Louisiana-Pacific

Southern Division

PRESS LOAD REPORTDATE 4-9-92SHIFT Crew 2OPERATOR Warren M.BOARD THICKNESS 7/16BOARD SIZE 52X295BOARD TYPE Siding

LOAD NO.	LINE SPEED	CYCLE TIMER	DE COMP TIME	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOSE	PRESS OPEN	TIME TO STOPS	TOTAL CYCLE	REMARKS
1	55	230	20 1/2	97	2600	380	600	606		6	
2				98			606	611		5	
3				83			611	617		6	
4				87			617	622		5	
5				90			622	628		6	
6	50	240	20 1/2	96			628	634		6	
7				85			634	640		6	
8				88			640	646		6	
9				93			646	652		6	
10				100			652	658		6	
11				103			658	704		6	
12				103			704	710		6	
13				112			710	716		6	
14				102			716	722		6	
15				114			828	834	-66	6	Out of wood
16				124			834	840		6	
17				138			840	846		6	
18				144			846	853		7	
19				148			853	859		6	
20				146			859	905		6	
21				146			905	911		6	
22				156			911	917		6	
23				126			917	923		6	
24				124			923	940	-17	6	Stair section
25				112			940	955	-3	6	Stair section
26				112			955	1001		6	ran short on
27				98			1019	1024	-8	5	Changed War 1100
28	58	220	30 1/2	101			1024	1030		5	in 2/2 order
29				105			1030	1034		5	
30				121			1034	1039		5	
31				121			1039	1045		6	
32				112			1045	1051		6	

09 1800



Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 4-9-92SHIFT 2OPERATOR Warren MaxwellBOARD THICKNESS 7/16"BOARD SIZE 52" X 295"BOARD TYPE Siding

LOAD NO.	LINE SPEED	CYCLE TIMER	DE COMP TIME	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOSE	PRESS OPEN	TIME TO STOP	TOTAL CYCLE	REMARKS
33	58	220	30/30	118	2600	380	1050	1055		5	
34				120			1055	1100		5	
35				116			1100	1106		6	
36				107			1106	1111		5	
37				110			1111	1116		5	
38				110			1116	1121		5	
39				115			1121	1126		5	
40				116			1126	1131		5	
41				108			1131	1136		5	
42				116			1136	1142		6	
43				111			1142	1147		5	
44				113			1147	1152		5	
45				107			1152	1157		5	
46				102			1157	1202		5	
47				104			1202	1207		5	
48				110			1207	1213		6	
49				99			1213	1218		5	
50				101			1218	1224		6	
51				93			1224	1229		5	
52				100			1229	1235		5	
53				96			1235	1240		6	
54				101			1240	1246		6	
55				106			1246	1252		6	
56				106			1252	1257		5	
57				106			1257	1302		5	
58				106			1302	1307		5	
59				101			1307	1313		6	
60				96			1313	1318		5	
61				98			1318	1323		5	
62				90			1323	1328		5	
63				93			1328	1333		5	
64							1333	1338			

09 1801



Southern Division

PRESS LOAD REPORT

DATE 4-9-92

SHIFT 2

OPERATOR Warner Brown

BOARD THICKNESS 7/8

BOARD SIZE 52" x 295'

BOARD TYPE Siding

[illegible]



Louisiana-Pacific

Southern Division

PRESS LOAD REPORT

DATE 4-9-92SHIFT 2OPERATOR Warren MaxwellBOARD THICKNESS 7/16"BOARD SIZE 52" X 295"BOARD TYPE Siding

LOAD NO.	LINE SPEED	CYCLE TIMER	DE COMP TIME	TIME TO POS.	MAX. PRES.	PRESS TEMP.	PRESS CLOSE	PRESS OPEN	TIME TO STOPS	TOTAL CYCLE	REMARKS
65	58	220	30/30	106	2600	380	139	144		5	
66				112			144	149		5	
67				111			149	154		5	
68				115			154	159		5	
69				116			159	204		5	
70				115			204	210		6	
71				119			210	215		5	
72				112			215	220		5	
73				110			220	225		5	
74				116			225	231		6	
75				131			231	236		5	
76				129			236	241		5	
77				136			241	247		6	
78				139			247	252		5	
79				140			252	257		5	
80				146			257	302		5	
81				140			302	307		5	
82				140			307	313		6	
83				130			313	318		5	
84				123			318	323		5	
85				121			323	329		6	
86				108			329	335		6	
87				107			335	340		5	
88				101			340	346		6	
89				106			346	351		5	
90				102			351	357		6	
91				103			357	402		5	
92				103			402	408		6	
93				106			408	413		5	
94				110			413	419		6	
95				116			419	424		5	
96				117							

09 1813

4/4/92

Organic
DEYER DATA

J. Burdette

CORE DEYERInlet Temp, °F
Outlet Temp, °FMoisture out, %
Feed Rate, %
High Fire RateWood type
Fuel typeFACE DEYERInlet Temp, °F
Outlet Temp, °FMoisture out, %
Feed Rate, %
High Fire RateWood type
Fuel type

Moisture in, %

THERMAL OIL HEATERTemp out, °F
Temp return, °F
% High Fire N/R
DC milliamps
DC voltsFEED RATE SETTINGSFines bin outfeed screw spd
Saw trim bin outfeed screw spd
Raw feed bin overall spd. adjust
Percent Fines
Percent Saw trim

0910 1020	1018	1112	1215	1310	1420	1755	1847	1936	2027
687	674	748	812	84	791	801	761	750	698
267	272	243	238	263	248	253	251	248	248
8.2	8.8	8.4	7.0	5.8	7.4	7.5	6.6	7.0	8.0
20	20	24	30	22	22	22	22	22	22
71	68	82	80	49	75	79	70	72	65
green Dry Fines	green Dry Fines	green Dry Fines	green Dry Fines	green Dry Fines	green Dry Fines	green Dry Fines	green Dry Fines	green Dry Fines	green Dry Fines
728	759	785	825	600	774	800	744	751	712
251	226	217	217	227	221	227	227	222	224
8.0	6.6	8.8	7.4	6.0	6.5	7.2	6.8	7.2	7.2
26	30	32	36	28	28	28	28	28	28
51	57	63	63	42	55	56	52	53	47
green Dry Fines	green Dry Fines	green Dry Fines	green Dry Fines	green Dry Fines	green Dry Fines	green Dry Fines	green Dry Fines	green Dry Fines	green Dry Fines
510	603	510	500	501	508	503	507	501	509
17	165	15	17	9.5	14.6	15	15	20 1500	20
120	115	110	120	75	105	110	110	110	110
71	0	84	84	72	0	0	0	71	0
23	0	0	0	23	0	0	0	23	0
90	90	99	99	90	90	90	90	90	90
90	90	99	99	90	90	90	90	90	90
30	30	30	30	30	30	30	30	30	30

goes to
Drywood plantFOR
AP-42
REF ⑦
KAB

09 1055

*Note! Drying down 1440 - 1515 - Pours P&H Press
not operating50 SHEETS
100 SHEETS
200 SHEETS22-141
22-142
22-144



4/4/92

Uranja
PRESS DATA

J. Burdette

CORE	4813	0953	1052	1201	1407	1700	1750	1840	1922	2018
Resin Flow, lb/hr	371	450	407	571	460	500	424	416	552	590
Resin, %	24	24	19	24	22	26	27	22	39	31
Resin Used Total, lbs	973	1521	2035	2581	3731	4142	222	629	1015	1481
Wax, %	52	52	53	52	52	52	53	52	88	88
Wax set point	50	50	50	60	50	60	50	50	80	80
FACE										
Resin Flow, lb/hr	900	714	1010	1035	1130	1019	896	1020	790	950
Resin, %	66	63	67	69	76	66	58	61	59	62
Resin Used Total, lbs	2036	3088	3572	4915	7144	7841	351	1030	1143	2443
Wax, %	100	100	100	100	99	100	100	100	100	100
Wax set point	99	99	99	99	99	99	99	99	99	99
PRESS										
Board Weight, lb/ft ²	8.1	8.4	8.3	8.1	8.8	8.0	8.1	8.5	8.7	8.1
Press Temperature, °F	382	380	382	380	382	381	381	381	381	382
Line Speed, ft/min	55.1	56.2	55.1	55.3	55.1	55.1	55.2	55.2	55.2	55.3
Board Thickness	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16
Cycle Time	5:30	6:29	5:30	5:29	5:30	5:30	6:30	—	6:31	6:30
Press loads/hour	11	11	10.5	11	11	11	11	11	11	11
Density	47.2	N/C	47.8	N/C	48.0	N/C	N/C	N/C	47.1	
WOOD USE										
surface layer 1, in/min	17.2	17.2	17.2	17.2	15.6	15.0	15.1	15.4	15.0	13.7
core layer 1, in/min	12.1	13.0	12.2	12.5	12.2	11.5	11.5	12.1	12.1	12.0
core layer 2, in/min	12.1	13.0	12.2	12.5	12.2	11.5	11.5	12.1	12.1	12.0
surface layer 2, in/min	17.2	17.2	17.2	17.2	15.6	15.0	15.1	15.4	15.0	13.7

* Note: stopped at 1326 to wait for Interpoll to get mechs and for wood bins to get full — started back at 1510

4/6/92

Uranica
DEYER DATA

J. Bredette

CORE DEYER

	0900	1040	1130	1227	1340	1512	1606	1726
Inlet Temp, °F	772	816	911	976	808	962	864	819
Outlet Temp, °F	245	247	252	252	242	244	249	253
Moisture out, %	8.0	7.4	7.0	8.0	8.2	8.0	7.0	7.8
Feed Rate, %	26	26	26	28	28	28	24	24
% High Fire Rate	77	90	94	96	86	91	84	79
Wood type	green	green	green	green	green	green	green	green
Fuel type	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	Fines	Fines	Fines	Fines	Fines	Fines	Fines	Fines

FACE DEYER

Inlet Temp, °F	754	882	989	974	913	985	871	831
Outlet Temp, °F	239	234	229	231	226	231	239	243
Moisture out, %	8.0	9.5	7.1	6.6	N/A	7.15	6.4	6.8
Feed Rate, %	28	32	32	34	34	34	30	28
% High Fire Rate	66	77	90.2	74	67	74	60	58
Wood type	green	green	green	green	green	green	green	green
Fuel type	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
	Fines	Fines	Fines	Fines	Fines	Fines	Fines	Fines
Moisture in, %								

THERMAL OIL HEATER

Temp out, °F	509	508	512	497	507	504	509	506
DC milliamps	11.5	17.5	13.5	17.5	14.5	16.5	16.0	16.0
DC volts	90	125	100	125	105	115	115	115

FEED RATE SETTINGS

Fines bin outfeed screw spd	0	0	0	71	0	0	0	71
Saw trim bin outfeed screw spd	0	0	0	28	0	0	0	29
Raw fuel bin overall spd. adjust	90	90	90	90	90	90	90	90
Percent Fines	90	90	90	90	90	90	90	90
Percent Saw trim	35	35	35	35	35	35	35	35

0946-1025 Dryers down + empty green bins

30 SHEETS
100 SHEETS
200 SHEETS22-141
22-142
22-144

4/6/92

Urania
PRESS DATA

J. Burdette

CORE	#	0910	1020	** 1140	1216	1325	1410	1520	1617	1717
Resin Flow, lb/hr		350	420	350	490	563	560	500	500	400
Resin, %		24	33	15	27	45	40	27	25	24
Resin Used Total		581	1191	1631	1947	2562	2951	2624	4099	4631
Wax, %		90	90	90	90	90	90	90	90	90
Wax Set Point		100	100	100	100	100	100	100	100	100
FACE										
Resin Flow, lb/hr		730	671	850	860	940	840	893	990	920
Resin, %		51	46	60	60	58	56	65	77	65
Resin Used Total		1038	1165	2567	3108	4140	4793	5810	6669	7546
Wax, %		90	90	90	90	90	90	90	90	90
Wax Set Point		96	96	96	96	96	96	96	96	96
PRESS										
Board Weight, lb/ft		8.0	8.4	8.3	8.7	8.1	8.2	8.5	8.4	8.2
Press Temperature, °F		383	381	381	380	382	380	380	381	380
Line Speed, ft/min		52.3	50.3	53.0	55.1	55.0	55.2	55.1	55.1	55.0
Board Thickness		7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16	7/16
Cycle Time		5:43	6:01	5:44	5:32	5:32	5:31	-	5:31	5:31
Press Loads/Hour		10	10	N/C	11	11	11	11	11	10.5
Density		47.6	N/C	N/C	N/C	47.2	N/C	N/C	N/C	47.8
WOOD USE										
Surface Layer 1, in./min		16.5	13.2	13.2	17.0	16.0	16.0	16.0	16.0	16.0
Core Layer 1, in./min		10.9	12.1	12.1	12.2	12.0	11.0	11.4	11.5	11.5
Core Layer 2, in./min		10.9	12.1	12.1	12.2	12.0	11.0	11.4	11.5	11.5
Surface Layer 2, in./min		16.5	13.2	13.2	17.0	16.0	16.0	16.0	16.0	16.0

* 0900 - Press down due to logs are small and can't maintain waterwood production.

Press started at 0910 - Interpoll starts at 0915

** 1112 - Press stopped low wood

1142 - Press started again

09 1058

4/9/92

Uranic
DEYER DATA

J. Burdette

CORE DEYERInlet Temp, °F
Outlet Temp, °FMoisture out, %
Feed Rate, %
High Fire RateWood type
Fuel typeFACE DEYERInlet Temp, °F
Outlet Temp, °FMoisture out, %
Feed Rate, %
% High Fire RateWood type
Fuel type

Moisture in, %

THERMAL OIL HEATERTemp out, °F
DC milliamps
DC voltsFEED RATE SETTINGSFiner bin outfeed saw spd
Saw trim bin outfeed saw spd

Raw feed bin overall spd. adjust

Percent Fines

Percent Saw trim

0886 1035 1145 1327 1535 1710 1800 1947

709 743 686 692 774 835 803
229 243 251 283 288 235 2367.4 6.6 6.6 7.0 7.6 6.5 6.2
26 24 24 28 28 28 28
60 60 53 51 53 69 61green mostly green mostly green green green green green
Dry Dry Dry Dry Dry Dry Dry Dry
Fines Fines Fines Fines Fines Fines Fines736 759 803 643 640 770 772 711
247 247 248 242 242 240 236 234
7.8 7.2 7.2 7.2 7.4 7.4 6.6 7.8
28 28 28 28 28 28 28 28
46 52 52 39 39 57 47 45green mostly green mostly green green green green green
Dry Dry Dry Dry Dry Dry Dry Dry
Fines Fines Fines Fines Fines Fines Fines

46.0 47.1 46.8 46.0 42.1 47.0 47.5 46.6

500 496 507 507 504 505 501 507
16.5 16.5 15.0 14.5 14.5 14.0 15.0 15.0
120 115 110 106 110 105 110 11071 0 0 71 71 0 84 71
23 0 0 23 23 0 0 23

90 90 90 90 90 90 90 90

90 90 90 90 90 90 90 90

30 30 30 30 30 30 30 30

749
238

7.1

729
242
7.3

46.2

FOR
AP-42
REF (7)

ICDB

09 1194



4/9/92

Vramia
PRESS DATA

J. Burdette

CORE

Resin Flow, lb/hr
Resin, %
Resin Used Total
Wax, %
Wax Set Point

0845	1020	1131	1317	1426	1557	1657
562	601	820	570	440	580	550
24	39	39	31	20	38	36
858	1299	2037	3031	3886	4657	5220
100	100	100	100	100	100	100
90	90	99	95	99	99	99

FACE

Resin Flow, lb/hr
Resin, %
Resin Used Total
Wax, %
Wax Set Point

845	1023	917	830	815	920	1040
61	74	62	59	59	63	74
1508	2386	2615	5068	6231	7411	8347
96	96	96	98	100	100	100
90	90	99	99	99	99	99

PRESS

Board Weight, lb/ft
Press Temperature, °F
Line Speed, ft/min
Board Thickness
Cycle Time
Press Loads/hour
Density

8.4	8.4	8.5	8.3	8.9	8.5	8.9
371	384	380	380	381	380	381
50.3	58.3	58.3	58.2	57.2	55.1	55.0
7/16	7/16	7/16	7/16	7/16	7/16	7/16
6:04	—	5:11	5:11	5:11	—	5:30
10	11.5	11.5	11.5	12	11	11
47.6	NK	49.7	NK	49.0	NK	NK

WOOD JOE

Surface Layer 1, in./min
Core Layer 1, in./min
Core Layer 2, in./min.
Surface Layer 2, in./min.

10.6	17.1	16.2	16.0	16.2	15.1	15.1
10.1	13.1	13.5	13.1	14.0	11.0	10.6
10.1	13.1	13.5	13.1	14.0	11.0	10.6
16.6	17.1	16.2	16.0	16.2	15.1	15.1

DUMP TESTS

MMW
4/9/92

FACE DRYER

TIME	lbs/DUMP	lbs/Hr.	2 MINUTE DUMPS
8:30	480	14400	
9:30	480	14400	
10:30	420	12600	
11:30	460	13800	
12:30	400	12000	
1:30	400	12000	
		13,200	AVG.

CORE DRYER

3:00	380	11400	
4:00	540	16200	
5:00	380	11400	
6:00	580	17400	
7:00	560	16800	
8:00	800	24000	14,640 AVG.
		24000 *	(← NOT INCL. IN AVG.)

* I don't believe this
is accurate -

J. Burdette

now
4/9/92

WOOD FUEL COUNTS

FACE DRYER

THER. OIL

TIME

SEC/5REV.

SEC/5REV.

8:50

62

69

10:05

64

74

11:35

60

72

1:05

87

75

CORE DRYER

3:05

57

4:35

48

6:10

43

7:35

48

PM10

PM

VOC/FORM

CORE

FACE

FACE

1450-1619

915-1030

915-1017

1650-1815

1100-1210

1100-1203

1840-2005

1235-1341

1235-1341

09 1197



Neodesha, Kansas U.S.A.

By M. WEINDORFER Date 4/9/92

Customer L/P

Job No. 520-212 Location UTAHIA CO. Sht. No. of

09 1198

AIR FLOW TEST REPORT

SYSTEM:

DESIGN ACFM:

DESIGN S.P.:

3202

PIPE DIA.: 42" AREA: 9.62

TIME	TEMP.	S.P. @ FAN.		V.P.					VELOCITY FPM	ACFM	
		IN	OUT	TOTAL	#1	#2	#3	#4			#5
3:00	270				.8	1.0	1.4	1.6	1.8	1.32	51950
4:40	260				.8	1.0	1.6	1.6	1.8	1.36	52369
6:05	270				.8	1.0	1.4	1.6	1.8	1.32	51950
7:30	265				.8	1.0	1.4	1.6	1.8	1.32	
					19 1/16	3 7/16	3" 6 3/16	9 1/2	14 3/8		

COMPANY

Neodesha, Kansas U.S.A.

CORE

By MARVIN SHARP

Date 4-9-92

Customer LP VIANA LA

Sht. No. 2 of 2

091199

Job No. _____ Location _____

Location

Sht. No. 2 of 2

CORE

[illegible]

COMPANY

Neodesha, Kansas U.S.A.

FACE

By MARVIN SHARP

Date 4-9-92

Customer L.P. URANIA L.P.

Job No. _____ Location _____ Sht. No. 1 of 2

09-1500

FACE

TIME	Feed %	IN		OUT		WOOD BURNER				IN		OUT		AIR FLOW	REMARKS
		TG F°	TG F°	% OUT	% OUT	PD	MA	VDC	MC %	MC %	TP F°	TP F°			
8 AM															
8 15	28	745	242	55.7		8.0	11.0	73				7.2			
8 30	28	739	243	54.4		7.5	10.5	70				7.4			
8 45	28	737	246	48.2		8.0	9.0	60			72.7		53097		
9 AM	28	733	247	46.8		8.0	8.8	65	46.0			7.4			
9 15	28	751	239	51.1		9.5	9.9	65							
9 30	28	752	242	55.0		9.5	10.2	70				8.4			
9 45	28	747	247	50.5		8.0	9.9	65							
10 AM	28	738	243	50.7		7.7	9.9	65	47.4		73.0	7.6	51522		
10 15	28	752	246	52.0		7.0	10.0	65							
10 30	28	748	246	52.4		7.0	10.0	70				7.2			
10 45	28	764	251	49.0		6.5	9.0	65							
11 AM	28	781	248	50.7		6.5	9.0	65	46.8			6.2			
11 15	28	764	246	51.3		6.5	9.0	65							
11 30	28	798	245	53.7		7.0	10.0	70			72.6		51593		

Neodesha, Kansas U.S.A.

COMPANY

FACE

By MARVIN SHOOP

Date 4-9-92

Customer LP URAINA LA

091201

Job No. _____ Location _____ Sht. No. 2 of 2

FACE

[illegible]



Neodesha, Kansas U.S.A.

By M. WEINCOFFER

Date 4/9/92

Customer 2/F

Job No. 520-UR

Location LIRANIA, CA.

Sht. No. 1 of 1

AIR FLOW TEST REPORT

SYSTEM:

2021 09

DESIGN ACFM:

DESIGN S.P.:

PIPE DIA.: 42" AREA: 902

TIME	TEMP.	S.P. @ FAN.		V.P.					VELOCITY	ACFM		
		IN	OUT	TOTAL	"1	"2	"3	"4			"5	AVG.
8:45	259				1.0	1.2	1.6	1.6	1.6	1.4	5519	53097
10:00	258				.9	1.2	1.4	1.6	1.6	1.32	5356	51522
11:30	260				.8	1.2	1.4	1.6	1.6	1.32	5363	51593
1:00	260				.8	1.2	1.4	1.6	1.6	1.32	5363	51593



COMPANY

Neodesha, Kansas U.S.A.

CORE

By MARVIN SAMP Date 4-9-92Customer L.P. VRAIN LAJob No. _____ Location _____ Sht. No. 1 of _____

09 1203

CORE

TIME	Feed %	IN		OUT		WOOD BURNER				IN		OUT		IN	OUT	AIR FLOW	REMARKS
		TG F°	TG F°	% OUT	% OUT	PD	MA	VDC	MC %	MC %	TP F°	TP F°					
2:50	28	748	233	59.4		7.9	11.5	77									
3:00	28	742	232	59.6		7.5	11.0	75	46.4	7.0	113	85				51950	
3:15	28	672	233	50.6		6.1	9.5	67									
3:30	28	702	229	55.6		7.1	10.5	74		6.4							
3:45	28	663	229	51.8		6.1	9.5	70									
4:00	28	684	225	54.1		6.6	10.2	72	42.4	7.2							SETPOINT ADJUSTMENT
4:15	28	703	224	56.3		7.1	10.8	75									
4:30	28	760	220	63.5		8.0	12.5	83		9.4	112.3	86.2				52369	
4:45	28	776	230	62.9		8.1	12.5	85									
5:00	28	776	234	61.1		8.0	11.9	77	47.0	9.6							
5:15	28	735	238	59.2		7.5	11.0	75									
5:30	28	761	235	63.6		8.2	12.5	83		7.8							
5:45	28	742	237	64.7		9.0	13.6	85									
6:00 PM	28	850	237	69.3		9.5	14.0	85			113.3	85.2				51950	

Interpoll Laboratories
(612) 786-6020

EPA Method 5 Data Reporting Sheet
Impinger Catch/Wisconsin Protocol

Job L.P. Urania Source #1 Press Vent
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-14-92
Test No. 1 No. of Runs Completed 3
Date of Analysis 4-29-92 Technician C. Helgeson

	Solvent Phase	Aqueous Phase
0	Test <u>1</u> Run <u>0</u> Field Blank Log Number <u>5794-03</u> Comments _____ Dish No. <u>72</u> Dish Tare Wt. <u>64.1692</u> g Dish+Sample Wt. <u>64.146</u> g Sample Wt. <u>0.0004</u> g	Dish No. <u>34</u> Dish Tare Wt. <u>51.7554</u> g Dish+Sample Wt. <u>51.7558</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>76</u> Dish Tare Wt. <u>70.2566</u> g Dish+Sample Wt. <u>70.2589</u> g Sample Wt. <u>0.0023</u> g	Dish No. <u>504</u> Dish Tare Wt. <u>50.0210</u> g Dish+Sample Wt. <u>50.0230</u> g Sample Wt. <u>0.0020</u> g
2	Test <u>1</u> Run <u>2</u> Log Number <u>-09</u> Comments _____ Dish No. <u>82</u> Dish Tare Wt. <u>60.7654</u> g Dish+Sample Wt. <u>60.7688</u> g Sample Wt. <u>0.0034</u> g	Dish No. <u>511</u> Dish Tare Wt. <u>45.5445</u> g Dish+Sample Wt. <u>45.5457</u> g Sample Wt. <u>0.0012</u> g
3	Test <u>1</u> Run <u>3</u> Log Number <u>-12</u> Comments _____ Dish No. <u>84</u> Dish Tare Wt. <u>79.0127</u> g Dish+Sample Wt. <u>79.0199</u> g Sample Wt. <u>0.0072</u> g	Dish No. <u>518</u> Dish Tare Wt. <u>48.1023</u> g Dish+Sample Wt. <u>48.1049</u> g Sample Wt. <u>0.0026</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

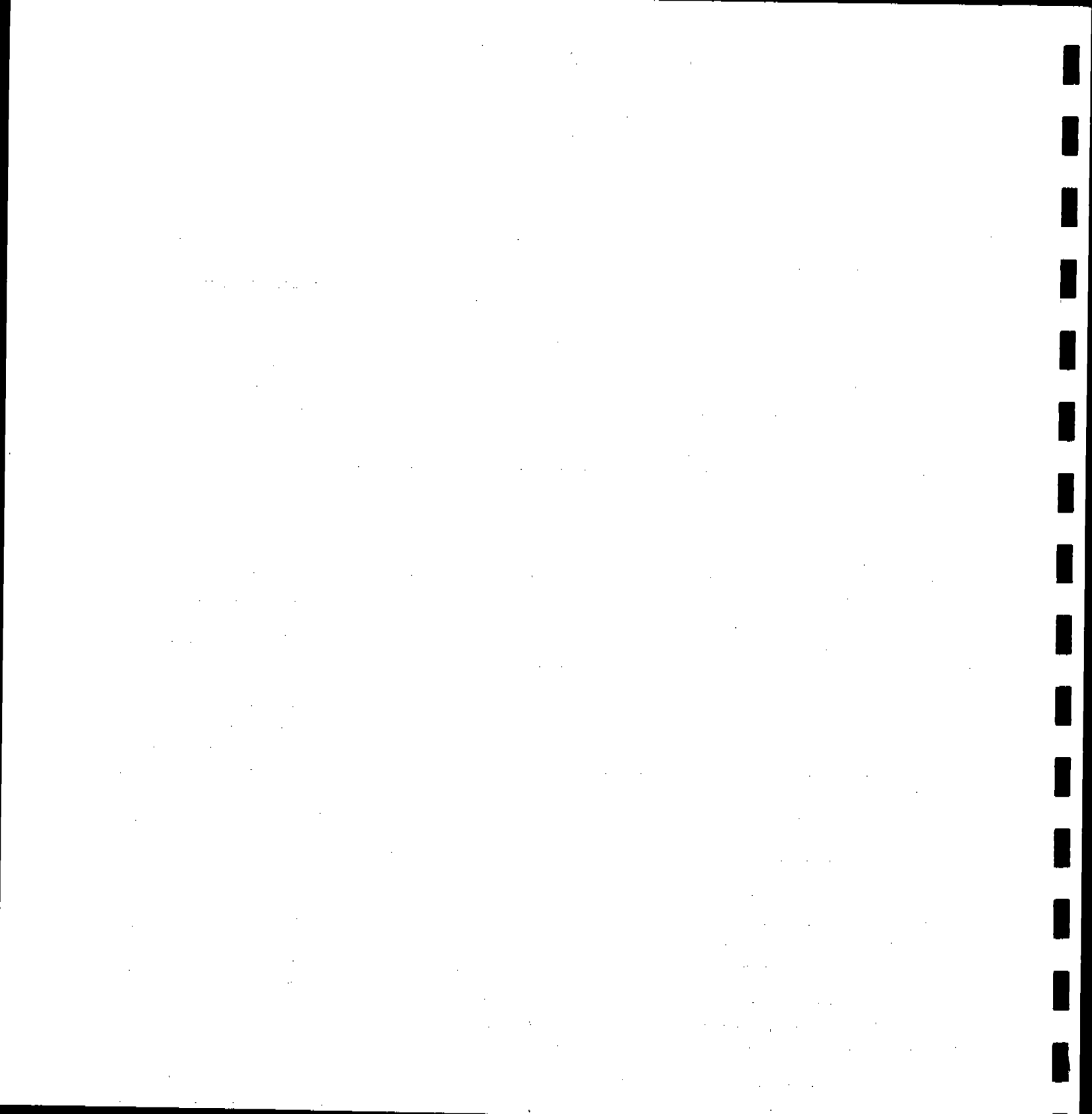
Results Solvent Phase:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	<u>0.0019</u>	<u>0.0030</u>	<u>0.0068</u>		

Blank Solvent Wt. 0.0004 g

Results Aqueous Phase:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	<u>0.0016</u>	<u>0.0008</u>	<u>0.0022</u>		



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EPA Method 5 Data Reporting Sheet
Probe/Cyclone Wash

Job LP Urania Source #1 Press vent
Team Leader DB Test Site Stock
Date Submitted 4-13-92 Date of Test 4-4-92
Test No. 1 No. of Runs Completed 3
Date of Analysis 4-17-92 Technician C. Helgeson
Transport Leakage ☒ None ☐ _____ ml Solvent Acetone

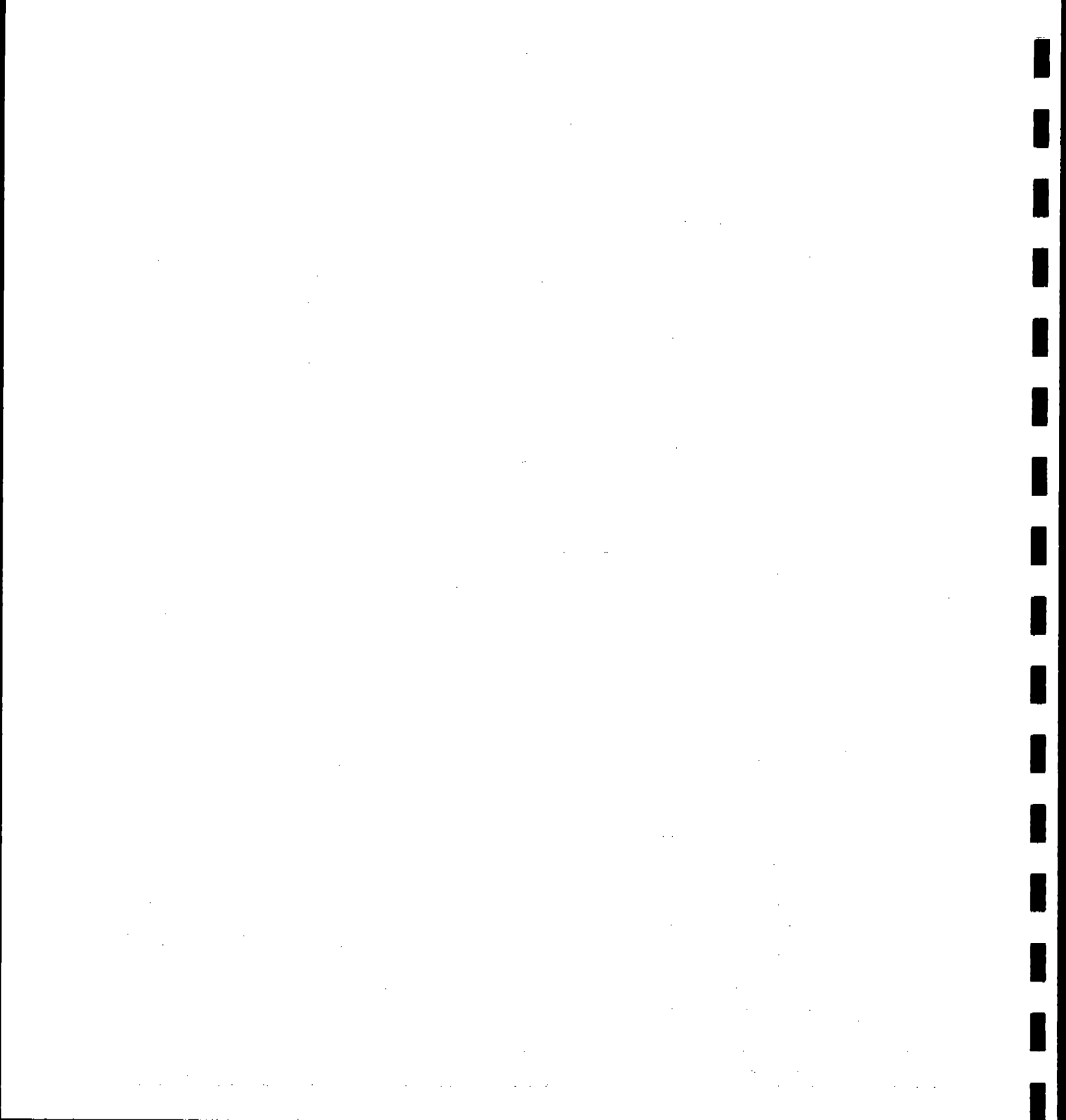
0	Test _____ Run <u>0</u> Field Blank Log Number _____ Vol. of Solvent _____ ml *Solvent Residue <u>3.33</u> ug/ml	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
1	Test <u>1</u> Run <u>1</u> Vol. of Solvent <u>90</u> ml Log Number <u>5794-04</u> Comments _____	Dish No. <u>208</u> Dish Tare Wt. <u>52.7985</u> g Dish+Sample Wt <u>52.8086</u> g Sample Wt. <u>0.0101</u> g
2	Test <u>1</u> Run <u>2</u> Vol. of Solvent <u>70</u> ml Log Number <u>-07</u> Comments _____	Dish No. <u>401</u> Dish Tare Wt. <u>49.5329</u> g Dish+Sample Wt <u>49.5425</u> g Sample Wt. <u>0.0096</u> g
3	Test <u>1</u> Run <u>3</u> Vol. of Solvent <u>60</u> ml Log Number <u>-10</u> Comments _____	Dish No. <u>406</u> Dish Tare Wt. <u>49.6194</u> g Dish+Sample Wt. <u>49.6287</u> g Sample Wt. <u>0.0093</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

	0.0098	0.0094	0.0091		
--	--------	--------	--------	--	--



Interpoll Laboratories
(612) 786-6020

EPA Method 5 Data Reporting Sheet
Filter Gravimetrics

Job L.P. Wrania La. Source #1 Press Vent
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-4-92
Test No. 1 No. of Runs Completed 3
Date of Analysis 4-15-92 Technician C. Helgeson

0	Test <u>1</u> Run <u>0</u> Field Blank Log Number <u>5794-02</u> Comments _____	Filter No. <u>4252</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9794</u> g Filter+Sample Wt. <u>.9796</u> g Sample Wt. <u>0.0002</u> g
1	Test <u>1</u> Run <u>1</u> Log Number <u>-05</u> Comments _____	Filter No. <u>4208</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9258</u> g Filter+Sample Wt. <u>.9276</u> g Sample Wt. <u>0.0021</u> g
2	Test <u>1</u> Run <u>2</u> Log Number <u>-08</u> Comments _____	Filter No. <u>4209</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9280</u> g Filter+Sample Wt. <u>.9288</u> g Sample Wt. <u>0.0008</u> g
3	Test <u>1</u> Run <u>3</u> Log Number <u>-11</u> Comments _____	Filter No. <u>4210</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9530</u> g Filter+Sample Wt. <u>.9550</u> g Sample Wt. <u>0.0020</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

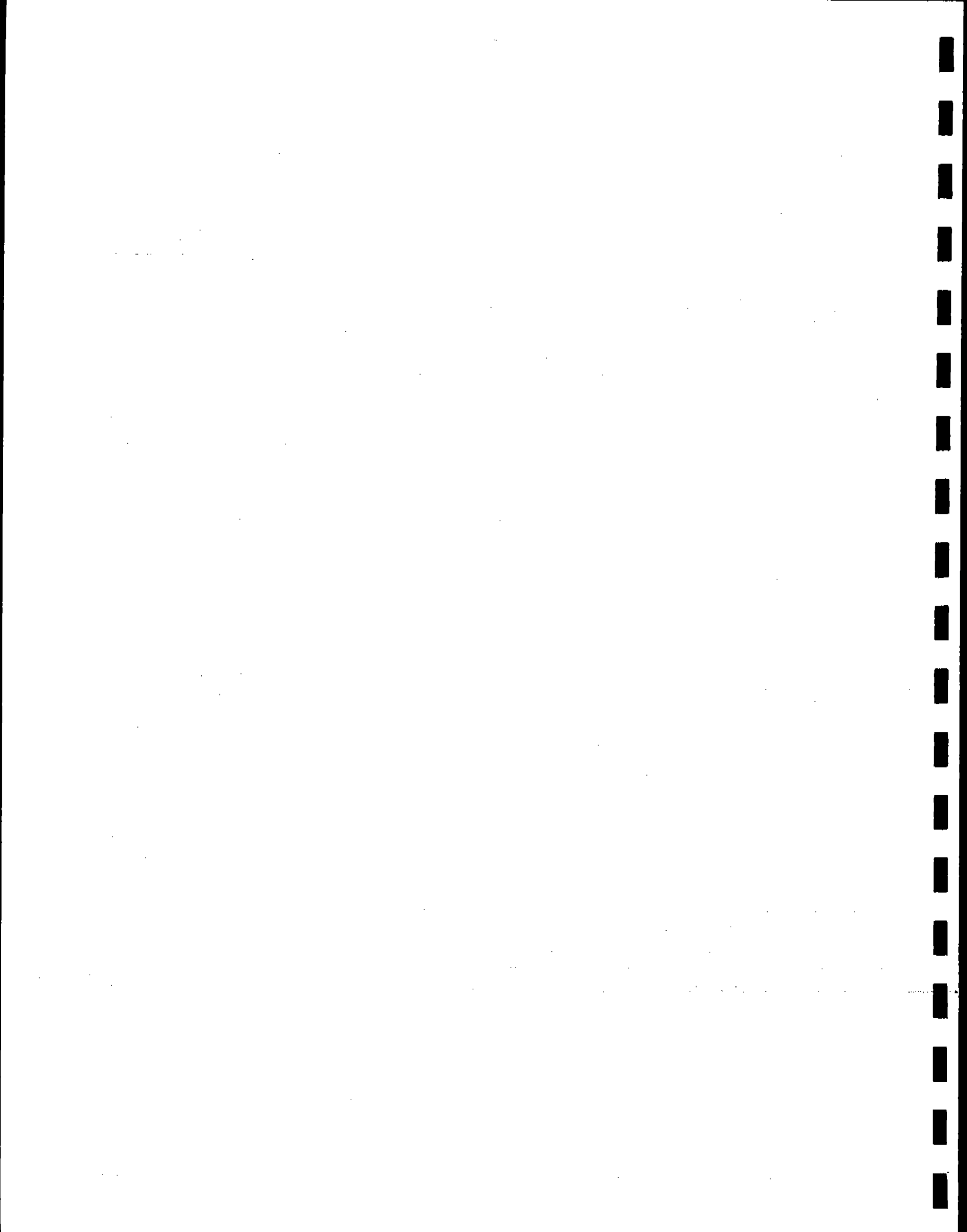
Results:

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

	0.0021	0.0008	0.0020		
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Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.0154	0.0140	0.0201		
--	--------	--------	--------	--	--



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EPA Method 5 Data Reporting Sheet
Impinger Catch/Wisconsin Protocol

Job L.P. Urania, La Source # 2 Press Vent
Team Leader D B Test Site Stack
Date Submitted 4-13-92 Date of Test 4-4-92
Test No. 4 No. of Runs Completed 3
Date of Analysis 5-1-92 Technician C. Helgeson

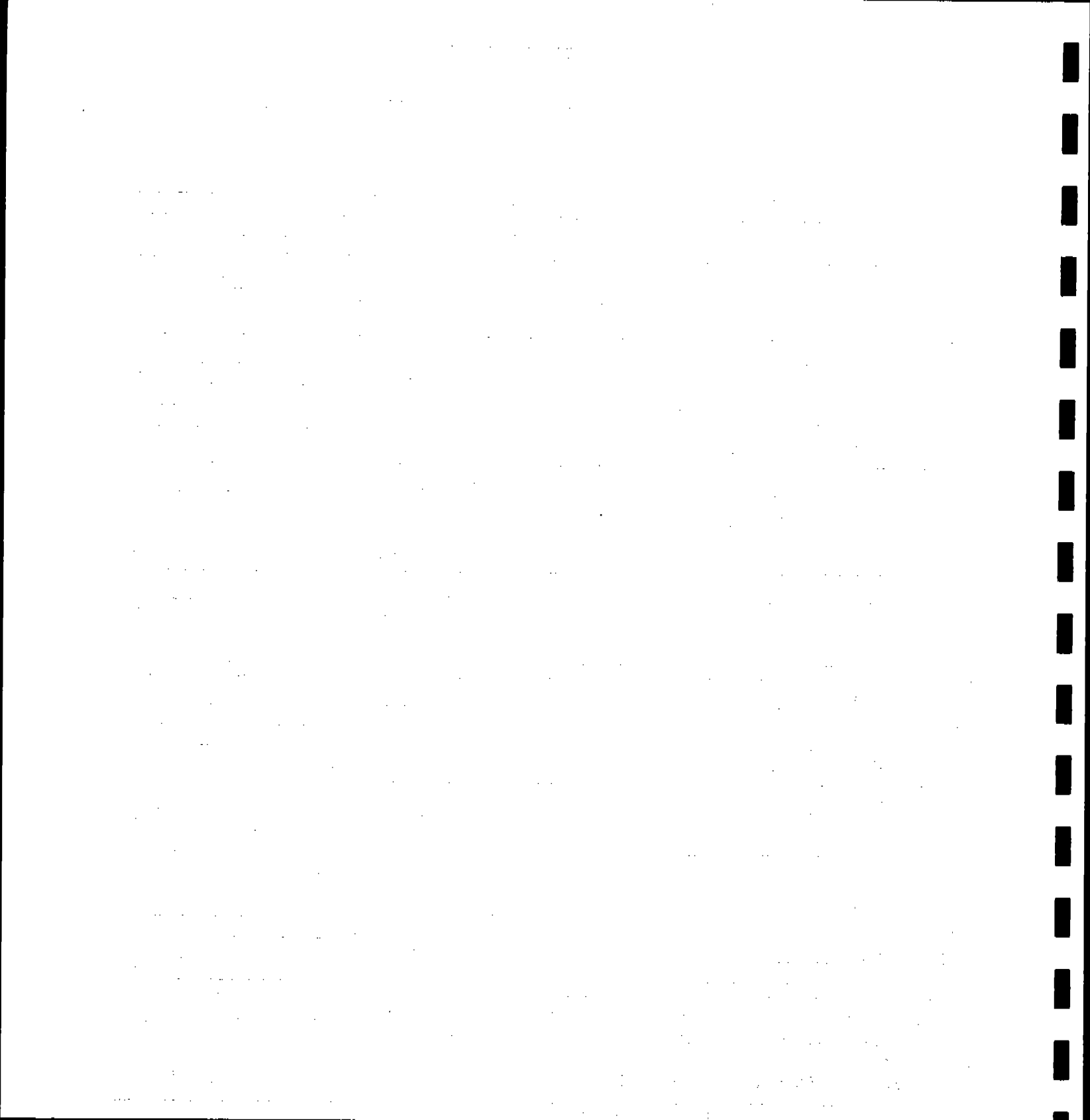
		Solvent Phase	Aqueous Phase
0	Test <u>Run 0</u> Field Blank Log Number _____ Comments _____	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
1	Test <u>4</u> Run <u>1</u> Log Number <u>5794-18</u> Comments _____	Dish No. <u>404</u> Dish Tare Wt. <u>47.6394</u> g Dish+Sample Wt. <u>47.6489</u> g Sample Wt. <u>0.0095</u> g	Dish No. <u>209</u> Dish Tare Wt. <u>43.2099</u> g Dish+Sample Wt. <u>43.21</u> g Sample Wt. <u>0.0015</u> g
2	Test <u>4</u> Run <u>2</u> Log Number <u>-21</u> Comments _____	Dish No. <u>502</u> Dish Tare Wt. <u>46.9003</u> g Dish+Sample Wt. <u>46.9050</u> g Sample Wt. <u>0.0047</u> g	Dish No. <u>504</u> Dish Tare Wt. <u>50.0209</u> g Dish+Sample Wt. <u>50.0227</u> g Sample Wt. <u>0.0018</u> g
3	Test <u>4</u> Run <u>3</u> Log Number <u>-24</u> Comments _____	Dish No. <u>522</u> Dish Tare Wt. <u>47.0006</u> g Dish+Sample Wt. <u>47.0053</u> g Sample Wt. <u>0.0050</u> g	Dish No. <u>506</u> Dish Tare Wt. <u>48.6371</u> g Dish+Sample Wt. <u>48.6387</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	Run 4	Run 5
	0.0091	0.0043	0.0046		

Results Aqueous Phase:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	0.0011	0.0014	0.0012		



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EPA Method 5 Data Reporting Sheet
Probe/Cyclone Wash

Job L.P. Urania Source #2 Press Vent
Team Leader PB Test Site Stack
Date Submitted 4-13-82 Date of Test 4-4-82
Test No. 4 No. of Runs Completed 3
Date of Analysis 4-17-82 Technician C. Heigeson
Transport Leakage ☒ None ☐ _____ ml Solvent Acetone

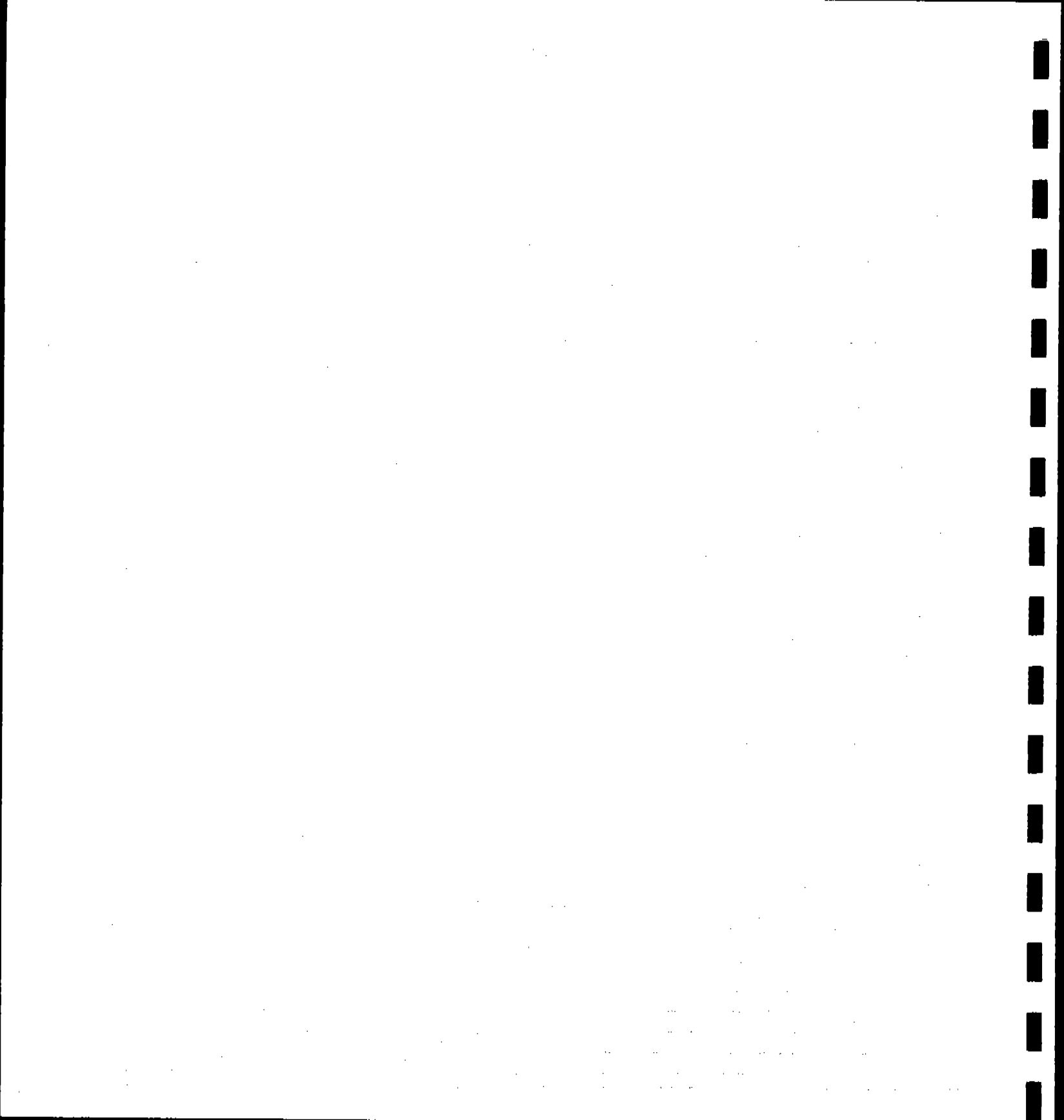
0	Test <u>4</u> Run <u>0</u> Field Blank Log Number <u>5794-190</u> Vol. of Solvent <u>90</u> ml *Solvent Residue <u>3.33</u> ug/ml	Dish No. <u>11</u> Dish Tare Wt. <u>47.7699</u> g Dish+Sample Wt. <u>47.7702</u> g Sample Wt. <u>0.0003</u> g
1	Test <u>4</u> Run <u>1</u> Vol. of Solvent <u>60</u> ml Log Number <u>-16</u> Comments _____	Dish No. <u>300</u> Dish Tare Wt. <u>63.9747</u> g Dish+Sample Wt. <u>63.9836</u> g Sample Wt. <u>0.0089</u> g
2	Test <u>4</u> Run <u>2</u> Vol. of Solvent <u>70</u> ml Log Number <u>-19</u> Comments _____	Dish No. <u>409</u> Dish Tare Wt. <u>46.1914</u> g Dish+Sample Wt. <u>46.1966</u> g Sample Wt. <u>0.0052</u> g
3	Test <u>4</u> Run <u>3</u> Vol. of Solvent <u>60</u> ml Log Number <u>-22</u> Comments _____	Dish No. <u>515</u> Dish Tare Wt. <u>50.0150</u> g Dish+Sample Wt. <u>50.0175</u> g Sample Wt. <u>0.0025</u> g
4	Test <u>4</u> 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 3.33 ug/ml = [(Sample Wt. 0.003g) (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

	<u>0.0087</u>	<u>0.0050</u>	<u>0.0023</u>		
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EPA Method 5 Data Reporting Sheet
Filter Gravimetrics

Job LP Urania, La. Source # 2 Press Vent
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-4-92
Test No. 4 No. of Runs Completed 3
Date of Analysis 4-15-92 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>4</u> Run <u>1</u> Log Number <u>5794-17</u> Comments _____	Filter No. <u>4211</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9799</u> g Filter+Sample Wt. <u>.9846</u> g Sample Wt. <u>0.0047</u> g
2	Test <u>4</u> Run <u>2</u> Log Number <u>- 20</u> Comments _____	Filter No. <u>4212</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9625</u> g Filter+Sample Wt. <u>.9628</u> g Sample Wt. <u>0.0003</u> g
3	Test <u>4</u> Run <u>3</u> Log Number <u>- 23</u> Comments _____	Filter No. <u>4228</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9779</u> g Filter+Sample Wt. <u>.9826</u> g Sample Wt. <u>0.0047</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

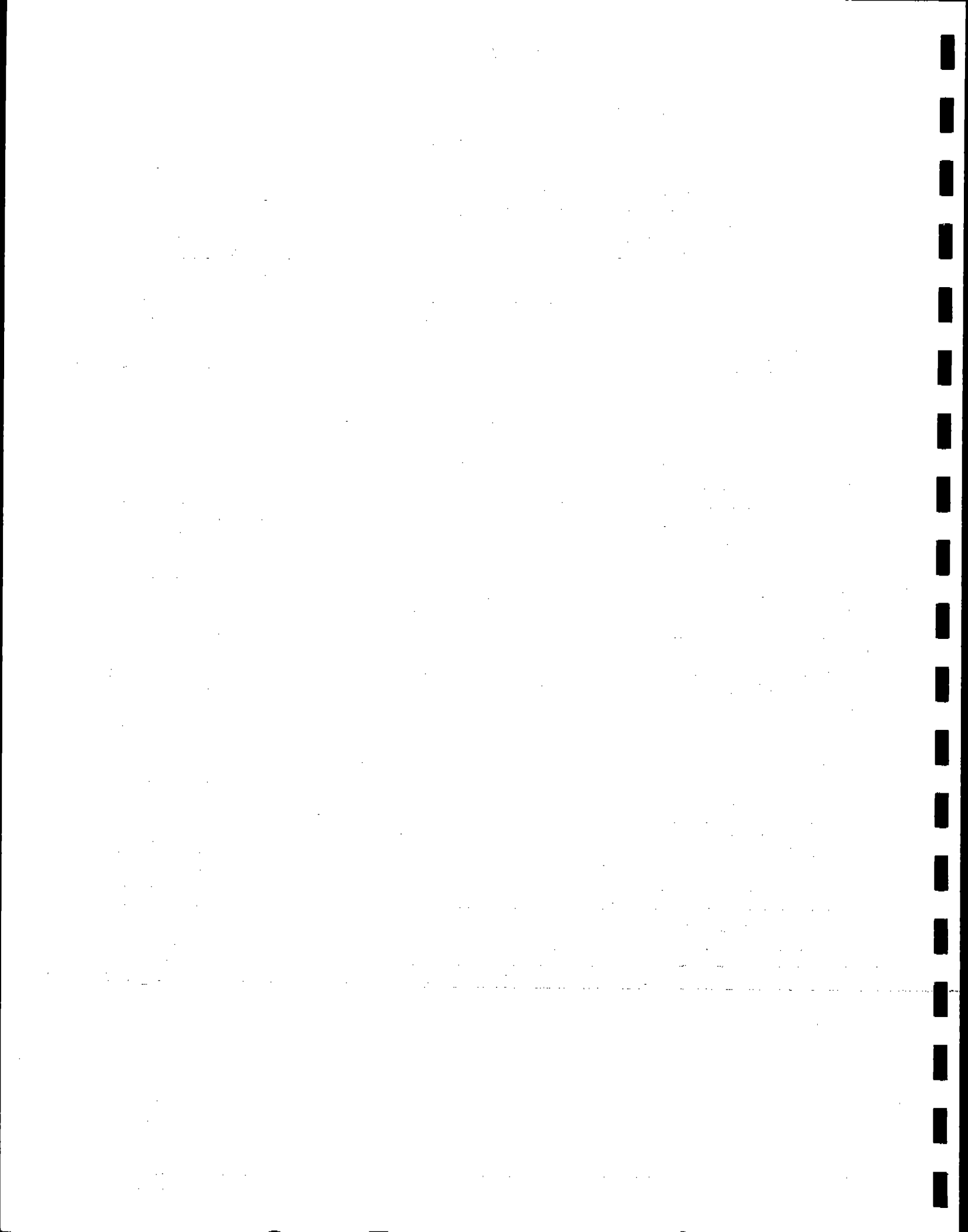
Results:

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

	0.0047	0.0003	0.0047		
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Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.0236	0.0110	0.0128		
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EPA Method 5 Data Reporting Sheet
Impinger Catch/Wisconsin Protocol

Job L.P. Urania La. Source #3 Press vent
Team Leader DB Test Site stick
Date Submitted 4-13-92 Date of Test 4-6-92
Test No. 7 No. of Runs Completed 3
Date of Analysis 5-1-92 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>7</u> Run <u>1</u> Log Number <u>5744-30</u> Comments	Dish No. <u>5A</u> Dish Tare Wt. <u>44.5320</u> g Dish+Sample Wt. <u>44.5340</u> g Sample Wt. <u>0.0020</u> g	Dish No. <u>401</u> Dish Tare Wt. <u>49.5323</u> g Dish+Sample Wt. <u>49.5349</u> g Sample Wt. <u>0.0026</u> g
2	Test <u>7</u> Run <u>2</u> Log Number <u>-33</u> Comments	Dish No. <u>27</u> Dish Tare Wt. <u>52.4957</u> g Dish+Sample Wt. <u>52.4965</u> g Sample Wt. <u>0.0018</u> g	Dish No. <u>406</u> Dish Tare Wt. <u>49.6193</u> g Dish+Sample Wt. <u>49.6211</u> g Sample Wt. <u>0.0018</u> g
3	Test <u>7</u> Run <u>3</u> Log Number <u>-36</u> Comments	Dish No. <u>400</u> Dish Tare Wt. <u>47.1013</u> g Dish+Sample Wt. <u>47.1023</u> g Sample Wt. <u>0.0010</u> g	Dish No. <u>511</u> Dish Tare Wt. <u>45.5440</u> g Dish+Sample Wt. <u>45.5458</u> g Sample Wt. <u>0.0018</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>0.0016</u>	<u>0.0014</u>	<u>0.0006</u>		

Results Aqueous Phase:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	<u>0.0022</u>	<u>0.0014</u>	<u>0.0014</u>		

1. The first of these is the fact that the
2. government has been unable to secure the
3. necessary funds to carry out its
4. policy of non-interference in the
5. internal affairs of the country.
6. This has been due to the fact that
7. the government has been unable to
8. secure the necessary funds to carry
9. out its policy of non-interference
10. in the internal affairs of the country.
11. This has been due to the fact that
12. the government has been unable to
13. secure the necessary funds to carry
14. out its policy of non-interference
15. in the internal affairs of the country.
16. This has been due to the fact that
17. the government has been unable to
18. secure the necessary funds to carry
19. out its policy of non-interference
20. in the internal affairs of the country.
21. This has been due to the fact that
22. the government has been unable to
23. secure the necessary funds to carry
24. out its policy of non-interference
25. in the internal affairs of the country.
26. This has been due to the fact that
27. the government has been unable to
28. secure the necessary funds to carry
29. out its policy of non-interference
30. in the internal affairs of the country.
31. This has been due to the fact that
32. the government has been unable to
33. secure the necessary funds to carry
34. out its policy of non-interference
35. in the internal affairs of the country.
36. This has been due to the fact that
37. the government has been unable to
38. secure the necessary funds to carry
39. out its policy of non-interference
40. in the internal affairs of the country.
41. This has been due to the fact that
42. the government has been unable to
43. secure the necessary funds to carry
44. out its policy of non-interference
45. in the internal affairs of the country.
46. This has been due to the fact that
47. the government has been unable to
48. secure the necessary funds to carry
49. out its policy of non-interference
50. in the internal affairs of the country.
51. This has been due to the fact that
52. the government has been unable to
53. secure the necessary funds to carry
54. out its policy of non-interference
55. in the internal affairs of the country.
56. This has been due to the fact that
57. the government has been unable to
58. secure the necessary funds to carry
59. out its policy of non-interference
60. in the internal affairs of the country.
61. This has been due to the fact that
62. the government has been unable to
63. secure the necessary funds to carry
64. out its policy of non-interference
65. in the internal affairs of the country.
66. This has been due to the fact that
67. the government has been unable to
68. secure the necessary funds to carry
69. out its policy of non-interference
70. in the internal affairs of the country.
71. This has been due to the fact that
72. the government has been unable to
73. secure the necessary funds to carry
74. out its policy of non-interference
75. in the internal affairs of the country.
76. This has been due to the fact that
77. the government has been unable to
78. secure the necessary funds to carry
79. out its policy of non-interference
80. in the internal affairs of the country.
81. This has been due to the fact that
82. the government has been unable to
83. secure the necessary funds to carry
84. out its policy of non-interference
85. in the internal affairs of the country.
86. This has been due to the fact that
87. the government has been unable to
88. secure the necessary funds to carry
89. out its policy of non-interference
90. in the internal affairs of the country.
91. This has been due to the fact that
92. the government has been unable to
93. secure the necessary funds to carry
94. out its policy of non-interference
95. in the internal affairs of the country.
96. This has been due to the fact that
97. the government has been unable to
98. secure the necessary funds to carry
99. out its policy of non-interference
100. in the internal affairs of the country.

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EPA Method 5 Data Reporting Sheet
Probe/Cyclone Wash

Job L.P. Urania Source #3 Press Vent
Team Leader DB Test Site Stack
Date Submitted 9-13-92 Date of Test 9-6-92
Test No. 7 No. of Runs Completed 3
Date of Analysis 9-27-92 Technician C. Helgeson
Transport Leakage ☒ None ☐ _____ ml Solvent Acetone

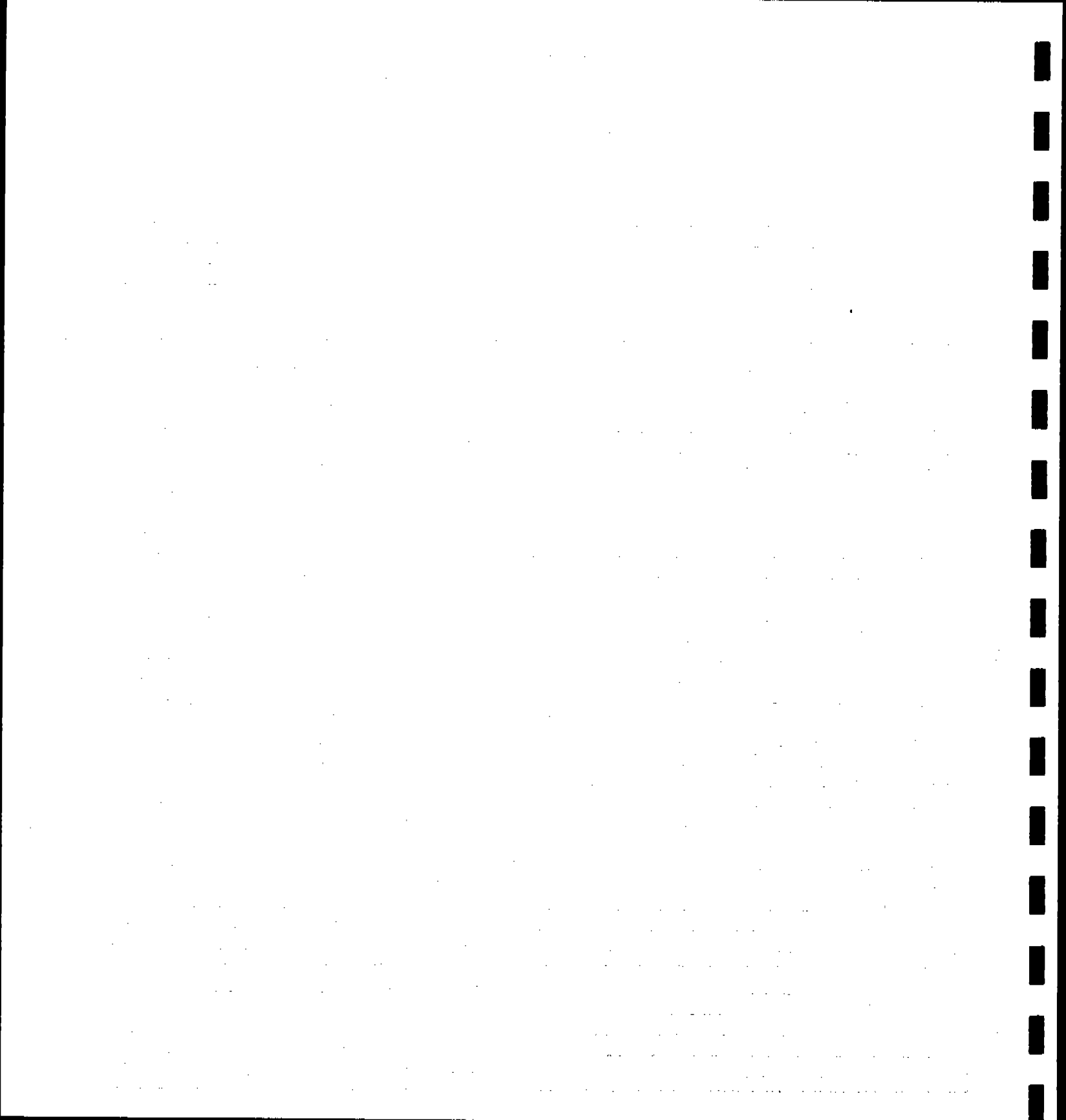
0	Test <u>7</u> Run <u>0</u> Field Blank Log Number <u>5744-191</u> Vol. of Solvent <u>90</u> ml *Solvent Residue <u>3.33</u> ug/ml	Dish No. <u>8</u> Dish Tare Wt. <u>48.6983</u> g Dish+Sample Wt. <u>48.6986</u> g Sample Wt. <u>0.0003</u> g
1	Test <u>7</u> Run <u>1</u> Vol. of Solvent <u>70</u> ml Log Number <u>-28</u> Comments _____	Dish No. <u>15</u> Dish Tare Wt. <u>49.2376</u> g Dish+Sample Wt. <u>49.2461</u> g Sample Wt. <u>0.0085</u> g
2	Test <u>7</u> Run <u>2</u> Vol. of Solvent <u>70</u> ml Log Number <u>-31</u> Comments _____	Dish No. <u>55</u> Dish Tare Wt. <u>47.7777</u> g Dish+Sample Wt. <u>47.7887</u> g Sample Wt. <u>0.0110</u> g
3	Test <u>7</u> Run <u>3</u> Vol. of Solvent <u>70</u> ml Log Number <u>-37</u> Comments _____	Dish No. <u>100</u> Dish Tare Wt. <u>45.9677</u> g Dish+Sample Wt. <u>45.9745</u> g Sample Wt. <u>0.0068</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 3.33 ug/ml = [(Sample Wt. 0.0003 g) (10⁶)] / Vol. of Sol. 90 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>0.0083</u>	<u>0.0108</u> D-14	<u>0.0066</u>		
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EPA Method 5 Data Reporting Sheet
Filter Gravimetrics

Job L.P. Wrania La. Source # 3 Press Vent
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-6-92
Test No. 7 No. of Runs Completed 3
Date of Analysis 4-15-92 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>7</u> Run <u>1</u> Log Number <u>5794-29</u> Comments _____	Filter No. <u>4229</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9774</u> g Filter+Sample Wt. <u>.9790</u> g Sample Wt. <u>0.0016</u> g
2	Test <u>7</u> Run <u>2</u> Log Number <u>-32</u> Comments _____	Filter No. <u>4230</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9784</u> g Filter+Sample Wt. <u>.9810</u> g Sample Wt. <u>0.0026</u> g
3	Test <u>7</u> Run <u>3</u> Log Number <u>-35</u> Comments _____	Filter No. <u>4231</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9713</u> g Filter+Sample Wt. <u>.9733</u> g Sample Wt. <u>0.0020</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

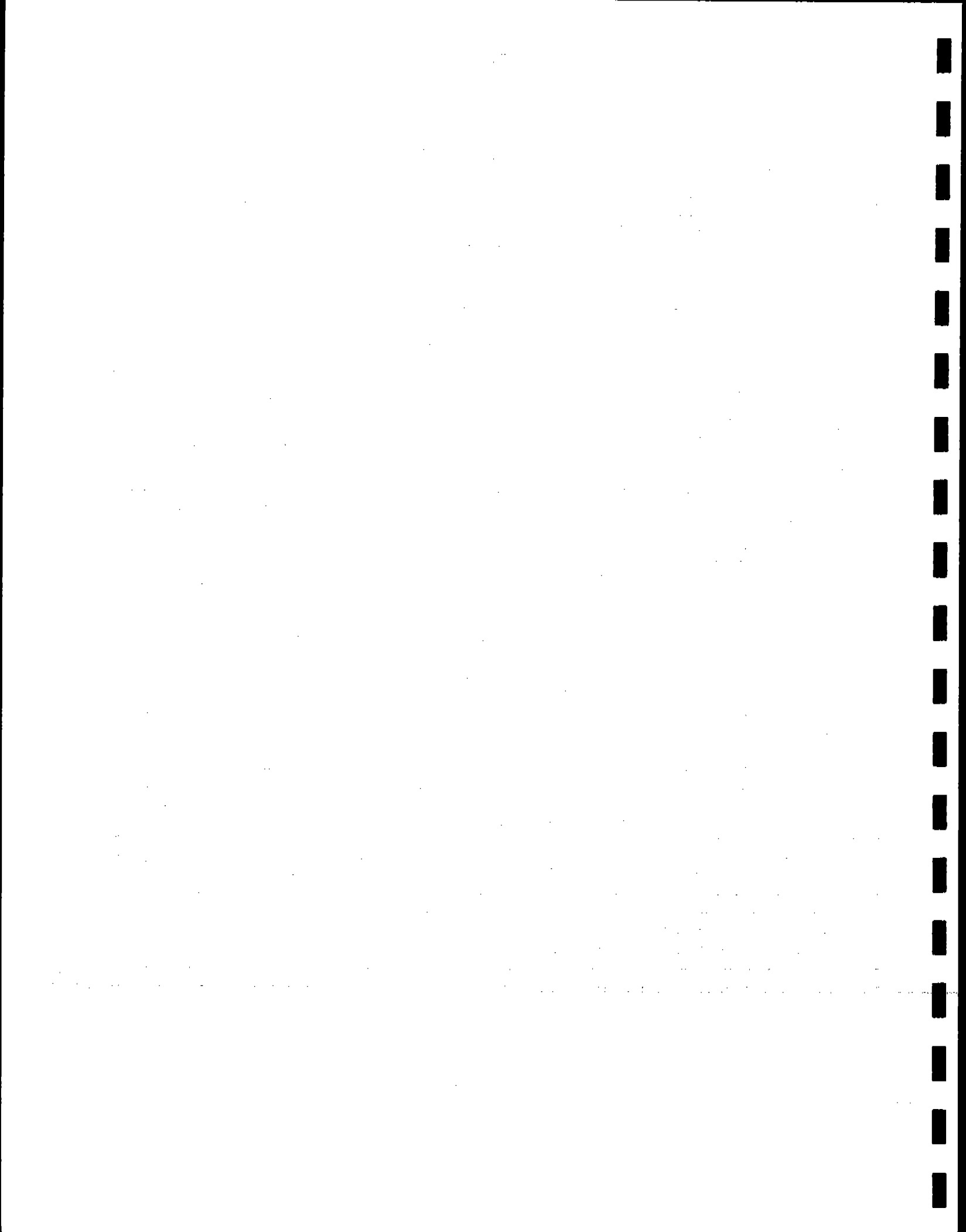
Results:

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

	0.0016	0.0026	0.0020		
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Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.0137	0.0162	0.0106		
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EPA Method 5 Data Reporting Sheet
Impinger Catch/Wisconsin Protocol

Job L.P. Urania La. Source #4 Press Vent
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-6-92
Test No. 10 No. of Runs Completed 3
Date of Analysis 5-1-92 Technician C. Helgeson

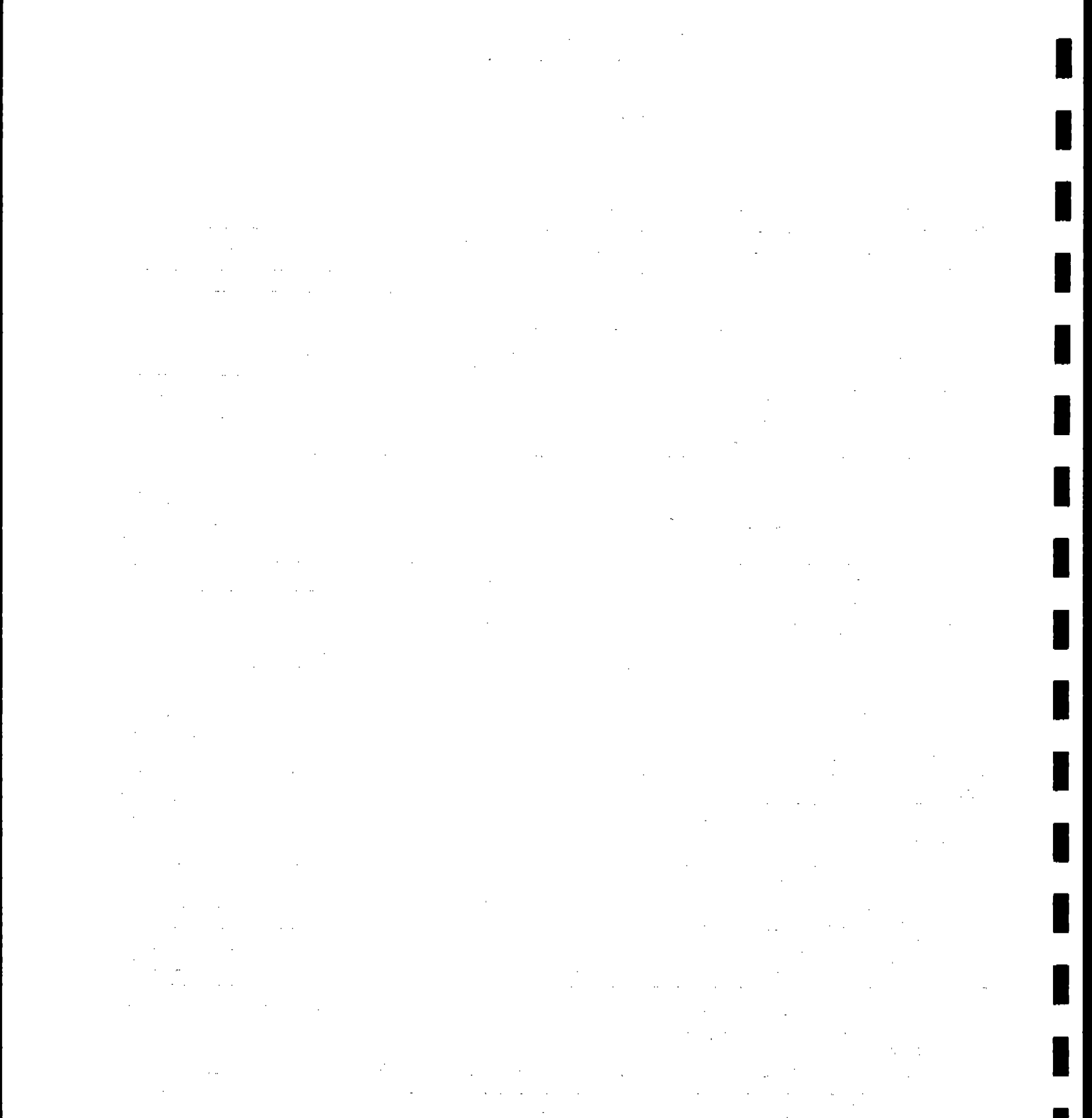
	Solvent Phase	Aqueous Phase
0	Test <u>10</u> Run <u>0</u> Field Blank Log Number <u>5794-192</u> Comments _____ Dish No. <u>3</u> Dish Tare Wt. <u>52.1192</u> g Dish+Sample Wt. <u>52.1196</u> g Sample Wt. <u>0.0004</u> g	Dish No. <u>6</u> Dish Tare Wt. <u>48.2707</u> g Dish+Sample Wt. <u>48.2791</u> g Sample Wt. <u>0.0004</u> g
1	Test <u>10</u> Run <u>1</u> Log Number <u>-42</u> Comments _____ Dish No. <u>34</u> Dish Tare Wt. <u>51.7551</u> g Dish+Sample Wt. <u>51.7526</u> g Sample Wt. <u>0.0024</u> g	Dish No. <u>29</u> Dish Tare Wt. <u>49.8013</u> g Dish+Sample Wt. <u>49.8041</u> g Sample Wt. <u>0.0028</u> g
2	Test <u>10</u> Run <u>2</u> Log Number <u>-45</u> Comments _____ Dish No. <u>53</u> Dish Tare Wt. <u>47.3962</u> g Dish+Sample Wt. <u>47.3989</u> g Sample Wt. <u>0.0022</u> g	Dish No. <u>30</u> Dish Tare Wt. <u>47.2604</u> g Dish+Sample Wt. <u>47.2616</u> g Sample Wt. <u>0.0012</u> g
3	Test <u>10</u> Run <u>3</u> Log Number <u>-48</u> Comments _____ Dish No. <u>69</u> Dish Tare Wt. <u>47.9877</u> g Dish+Sample Wt. <u>47.9900</u> g Sample Wt. <u>0.0023</u> g	Dish No. <u>62</u> Dish Tare Wt. <u>50.8884</u> g Dish+Sample Wt. <u>50.8896</u> g Sample Wt. <u>0.0012</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>0.0020</u>	<u>0.0018</u>	<u>0.0019</u>		

Results Aqueous Phase:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	<u>0.0024</u>	<u>0.0010</u>	<u>0.0008</u>		



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EPA Method 5 Data Reporting Sheet
Probe/Cyclone Wash

Job L.P. Urania La. Source #4 Press vent
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-6-92
Test No. 10 No. of Runs Completed 3
Date of Analysis 4-30-92 Technician C. Helgeson
Transport Leakage ☒ None ☐ ml Solvent Acetone

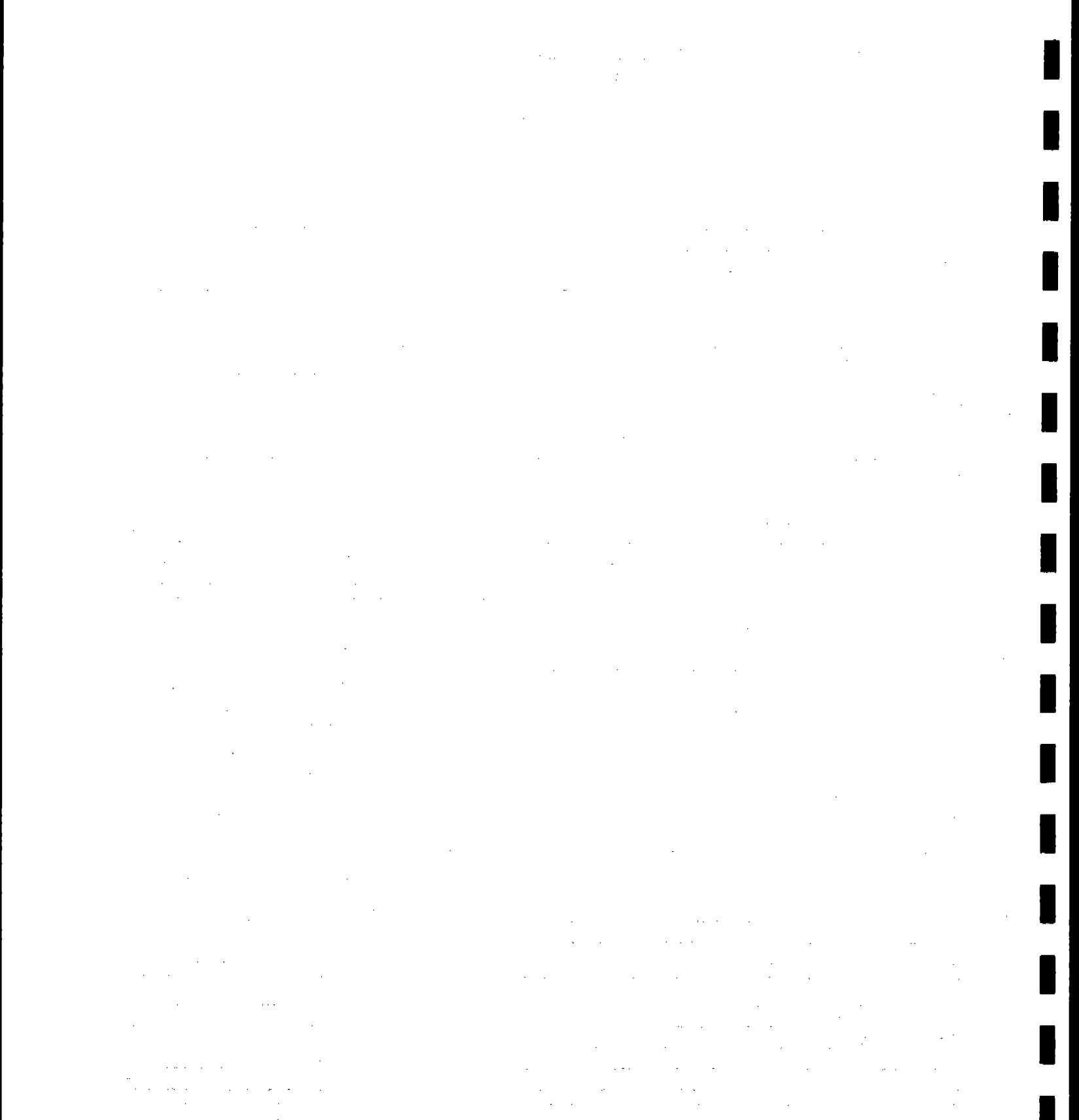
0	Test <u>Run 0</u> Field Blank Log Number _____ Vol. of Solvent _____ ml *Solvent Residue _____ ug/ml	Dish No. _____ Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
1	Test <u>10</u> Run <u>1</u> Vol. of Solvent <u>60</u> ml Log Number <u>5794-40</u> Comments _____	Dish No. <u>75</u> Dish Tare Wt. <u>80.8174</u> g Dish+Sample Wt. <u>80.8220</u> g Sample Wt. <u>0.0046</u> g
2	Test <u>10</u> Run <u>2</u> Vol. of Solvent <u>60</u> ml Log Number <u>-43</u> Comments _____	Dish No. <u>78</u> Dish Tare Wt. <u>85.5450</u> g Dish+Sample Wt. <u>85.5524</u> g Sample Wt. <u>0.0074</u> g
3	Test <u>10</u> Run <u>3</u> Vol. of Solvent <u>60</u> ml Log Number <u>-46</u> Comments _____	Dish No. <u>88</u> Dish Tare Wt. <u>55.9070</u> g Dish+Sample Wt. <u>55.9125</u> g Sample Wt. <u>0.0055</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

	0.0044	0.0072	0.0053		
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EPA Method 5 Data Reporting Sheet
Filter Gravimetrics

Job L P Urania, La. Source #4 Press Vent
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-6-92
Test No. 10 No. of Runs Completed 3
Date of Analysis 4-15-92 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>10</u> Run <u>1</u> Log Number <u>5744-41</u> Comments _____	Filter No. <u>4232</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9911</u> g Filter+Sample Wt. <u>.9918</u> g Sample Wt. <u>0.0007</u> g
2	Test <u>10</u> Run <u>2</u> Log Number <u>-44</u> Comments _____	Filter No. <u>4233</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9769</u> g Filter+Sample Wt. <u>.9774</u> g Sample Wt. <u>0.0005</u> g
3	Test <u>10</u> Run <u>3</u> Log Number <u>-47</u> Comments _____	Filter No. <u>4250</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9832</u> g Filter+Sample Wt. <u>.9836</u> g Sample Wt. <u>0.0004</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

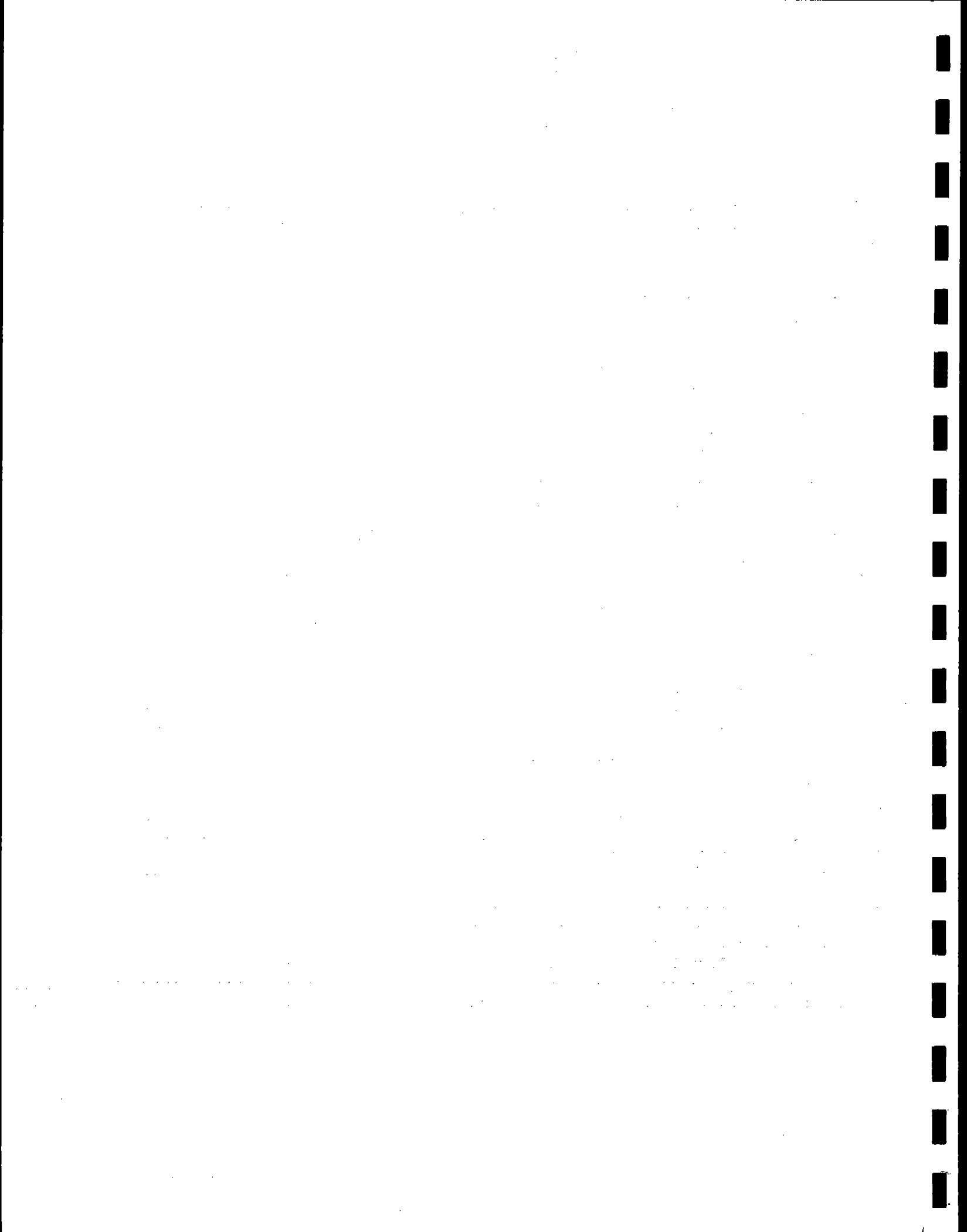
Results:

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

	0.0007	0.0005	0.0004		
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Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.0095	0.0105	0.0084		
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EPA Method 5 Data Reporting Sheet
Impinger Catch/Wisconsin Protocol

Job L.P. Urania, La. Source Core Dryer
Team Leader ME Test Site Stack
Date Submitted 4-13-92 Date of Test 4-8-92
Test No. 18 No. of Runs Completed 3
Date of Analysis 5-1-92 Technician C. Helgeson

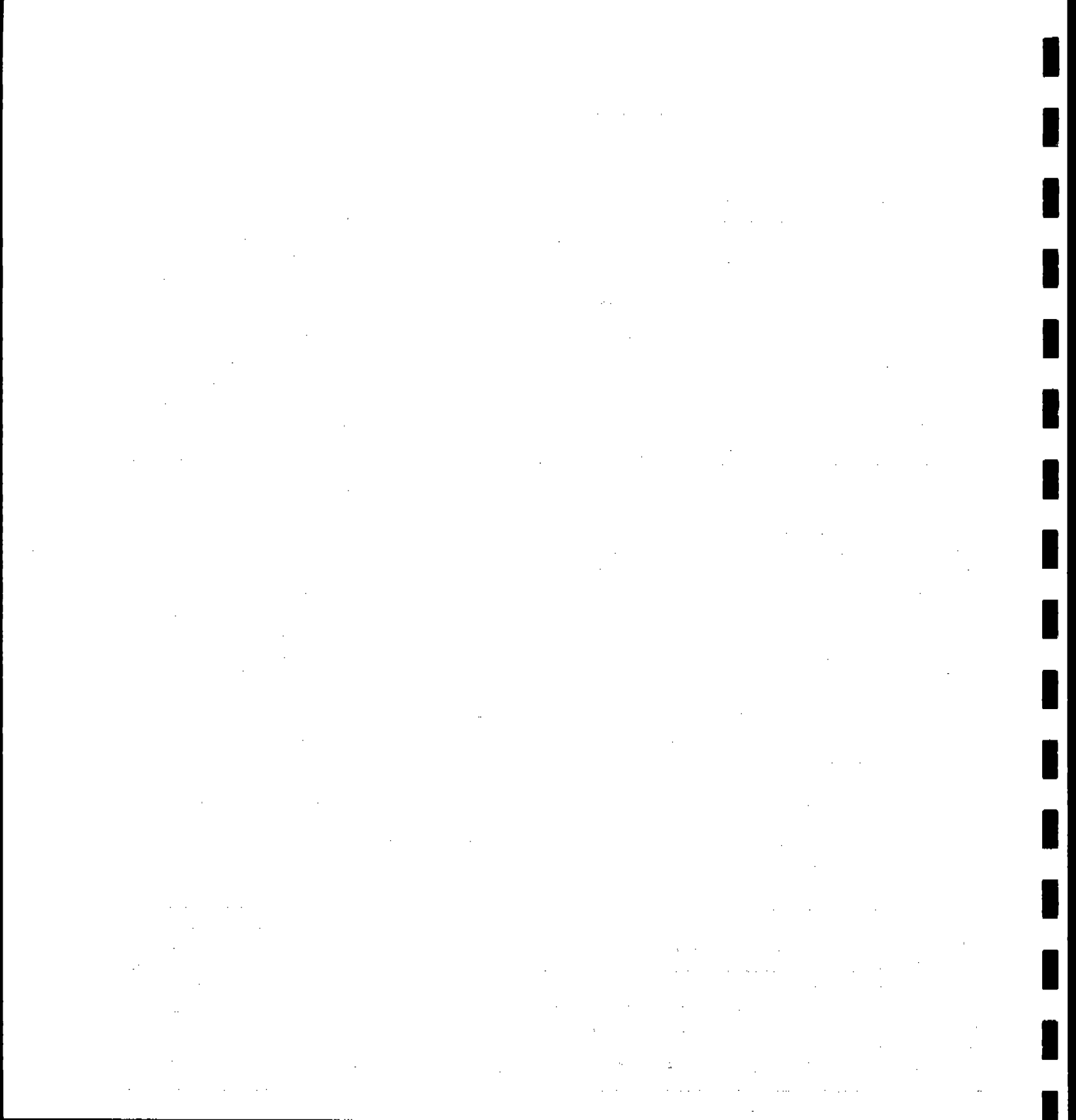
		Solvent Phase	Aqueous Phase
0	Test <u>Run 0</u> Field Blank Log Number Comments	Dish No. Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g	Dish No. Dish Tare Wt. _____ g Dish+Sample Wt. _____ g Sample Wt. _____ g
1	Test <u>18</u> Run <u>1</u> Log Number <u>5794-142</u> Comments	Dish No. <u>34</u> Dish Tare Wt. <u>57.8086</u> g Dish+Sample Wt. <u>57.8389</u> g Sample Wt. <u>0.0298</u> g	Dish No. <u>35</u> Dish Tare Wt. <u>51.0928</u> g Dish+Sample Wt. <u>51.1203</u> g Sample Wt. <u>0.0275</u> g
2	Test <u>18</u> Run <u>2</u> Log Number <u>-146</u> Comments	Dish No. <u>8</u> Dish Tare Wt. <u>48.7001</u> g Dish+Sample Wt. <u>48.7220</u> g Sample Wt. <u>0.0219</u> g	Dish No. <u>43</u> Dish Tare Wt. <u>46.5914</u> g Dish+Sample Wt. <u>46.6193</u> g Sample Wt. <u>0.0279</u> g
3	Test <u>18</u> Run <u>3</u> Log Number <u>-150</u> Comments	Dish No. <u>11</u> Dish Tare Wt. <u>47.7600</u> g Dish+Sample Wt. <u>47.7830</u> g Sample Wt. <u>0.0230</u> g	Dish No. <u>45</u> Dish Tare Wt. <u>50.8904</u> g Dish+Sample Wt. <u>50.9112</u> g Sample Wt. <u>0.0216</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>0.0294</u>	<u>0.0215</u>	<u>0.0226</u>			

Results Aqueous Phases:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	<u>0.0271</u>	<u>0.0275</u>	<u>0.0212</u>		



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EPA Method 5 Data Reporting Sheet
Probe/Cyclone Wash

Job LP Urania La. Source Core Dryer
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-8-92
Test No. 18 No. of Runs Completed 3
Date of Analysis 4-15-92 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>18</u> Run <u>1</u> Vol. of Solvent <u>120</u> ml Log Number _____ Comments _____	Dish No. <u>58</u> Dish Tare Wt. <u>50.2243</u> g Dish+Sample Wt. <u>50.2417</u> g Sample Wt. <u>0.0174</u> g
2	Test <u>18</u> Run <u>2</u> Vol. of Solvent <u>150</u> ml Log Number _____ Comments _____	Dish No. <u>66</u> Dish Tare Wt. <u>48.3091</u> g Dish+Sample Wt. <u>48.3254</u> g Sample Wt. <u>0.0163</u> g
3	Test <u>18</u> Run <u>3</u> Vol. of Solvent <u>220</u> ml Log Number _____ Comments _____	Dish No. <u>93</u> Dish Tare Wt. <u>53.9842</u> g Dish+Sample Wt. <u>53.9985</u> g Sample Wt. <u>0.0143</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

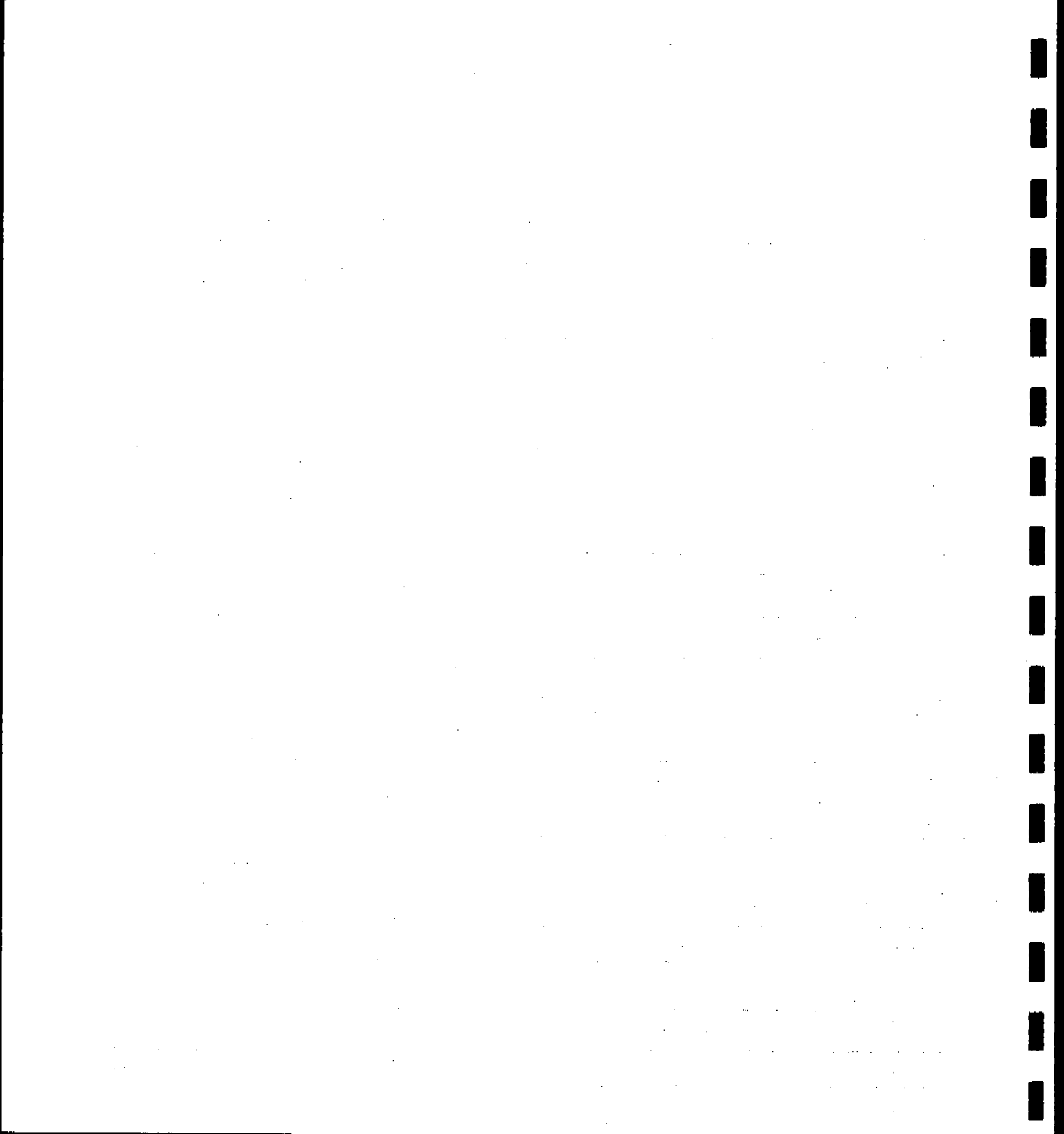
*Solvent Residue _____ ug/ml = [(Sample Wt. _____ g) (10⁶)] / Vol. of Sol. _____ ml
EPA-M5 Acetone Residue Blank Spec. { 7.8 ug/ml

Results:

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

	0.0168	0.0158	0.0136		
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LSC-01YR



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EPA Method 5 Data Reporting Sheet
Filter Gravimetrics

Job LoP Urania La Source Core Dryer
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-8-92
Test No. 18 No. of Runs Completed 3
Date of Analysis 4-15-92 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>5794-141</u> Comments <u> </u>	Filter No. <u>4164</u> Filter Type <u>4"6F</u> Filter Tare Wt. <u>.9614</u> g Filter+Sample Wt. <u>1.1079</u> g Sample Wt. <u>0.1465</u> g
2	Test <u>18</u> Run <u>2</u> Log Number <u> - 145</u> Comments <u> </u>	Filter No. <u>4166</u> Filter Type <u>4"6F</u> Filter Tare Wt. <u>.9442</u> g Filter+Sample Wt. <u>1.0692</u> g Sample Wt. <u>0.1250</u> g
3	Test <u>18</u> Run <u>3</u> Log Number <u> - 149</u> Comments <u> </u>	Filter No. <u>4195</u> Filter Type <u>4"6F</u> Filter Tare Wt. <u>.9505</u> g Filter+Sample Wt. <u>1.0462</u> g Sample Wt. <u>0.0957</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

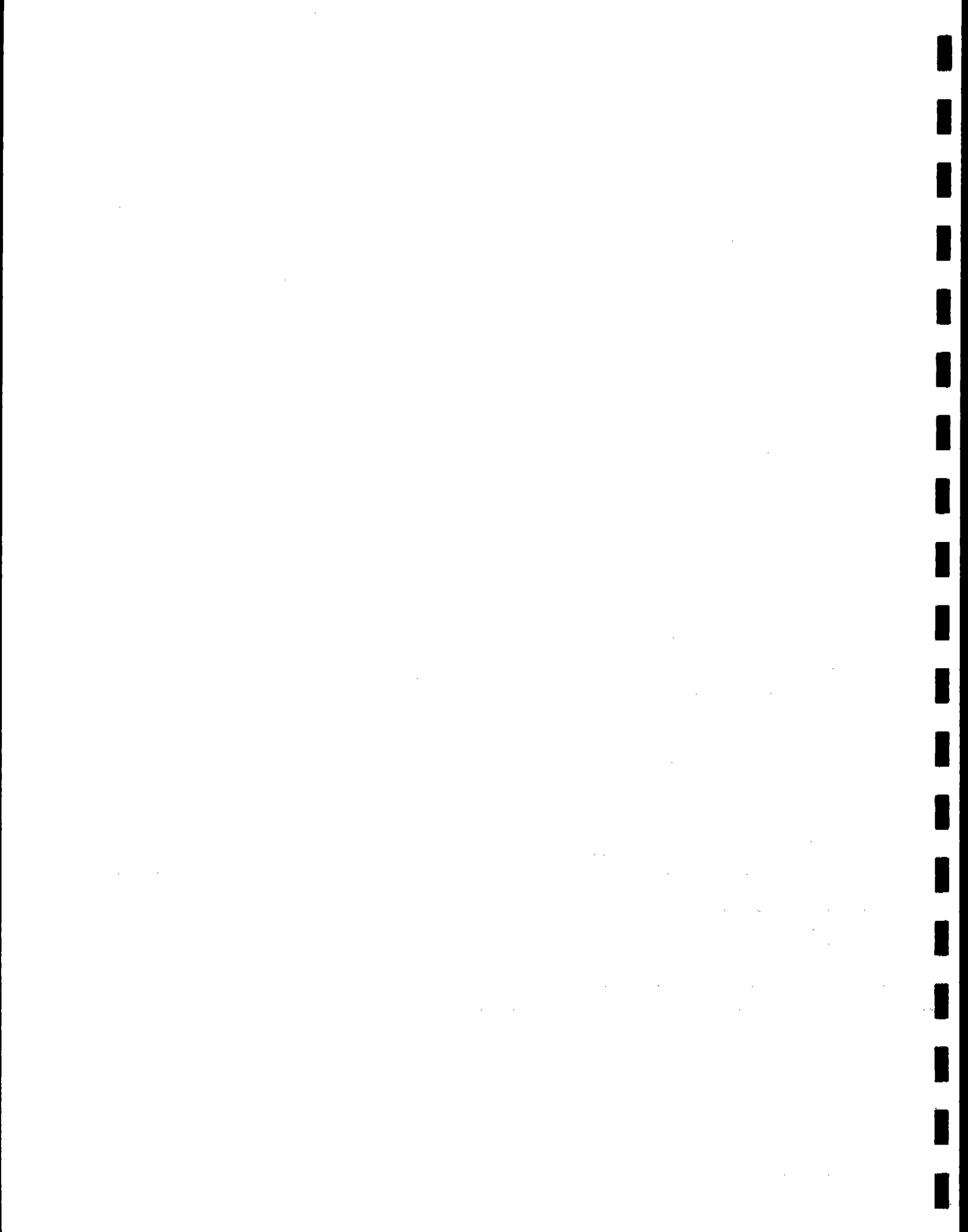
Results:

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

	0.1465	0.1250	0.0957		
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Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.2198	0.1898	0.1531		
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EPA Method 5 Data Reporting Sheet
Impinger Catch/Wisconsin Protocol

Job L.P. Urania Source Face Dvor
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-9-92
Test No. 19 No. of Runs Completed 3
Date of Analysis 5-1-92 Technician C. Helyesun

		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>19 Run 1</u> Log Number <u>5794-155</u> Comments _____	Dish No. <u>408</u> Dish Tare Wt. <u>47.6284</u> g Dish+Sample Wt. <u>47.6477</u> g Sample Wt. <u>0.0163</u> g	Dish No. <u>204</u> Dish Tare Wt. <u>47.4647</u> g Dish+Sample Wt. <u>47.4778</u> g Sample Wt. <u>0.0131</u> g
2	Test <u>19 Run 2</u> Log Number <u>-160</u> Comments _____	Dish No. <u>409</u> Dish Tare Wt. <u>46.1904</u> g Dish+Sample Wt. <u>46.2036</u> g Sample Wt. <u>0.0132</u> g	Dish No. <u>208</u> Dish Tare Wt. <u>52.7985</u> g Dish+Sample Wt. <u>52.8026</u> g Sample Wt. <u>0.0041</u> g
3	Test <u>19 Run 3</u> Log Number <u>-164</u> Comments _____	Dish No. <u>515</u> Dish Tare Wt. <u>50.0149</u> g Dish+Sample Wt. <u>50.0258</u> g Sample Wt. <u>0.0109</u> g	Dish No. <u>518</u> Dish Tare Wt. <u>48.1018</u> g Dish+Sample Wt. <u>48.1104</u> g Sample Wt. <u>0.0086</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:

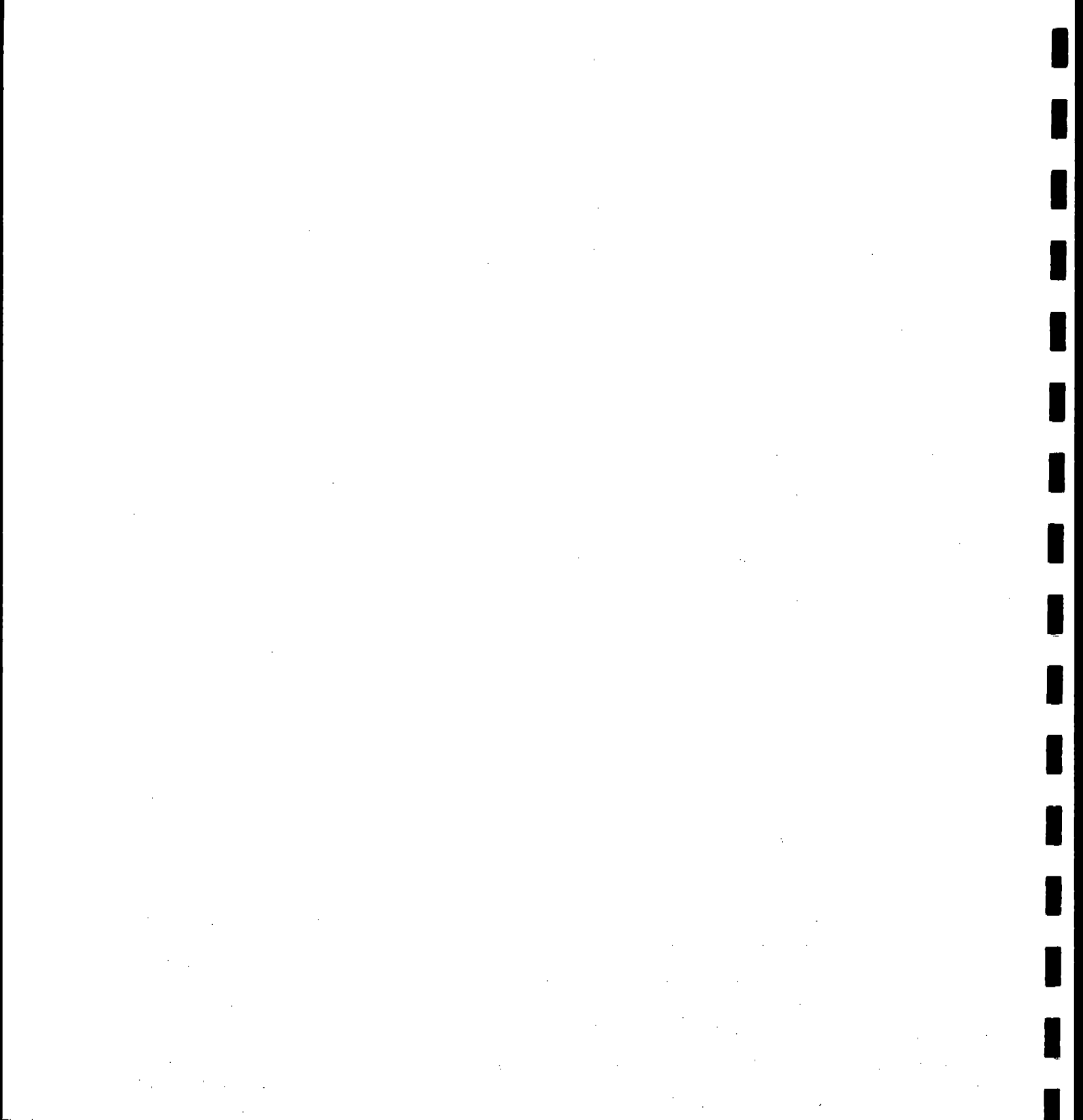
Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	<u>0.0154</u>	<u>0.0128</u>	<u>0.0105</u>		
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Results Aqueous Phase:

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

	<u>0.0127</u>	<u>0.0037</u>	<u>D-R2 0.0082</u>		
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EPA Method 5 Data Reporting Sheet
Probe/Cyclone Wash

Job LP Urania Source Face Dryer
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-4-92
Test No. 19 No. of Runs Completed 3
Date of Analysis 4-15-92 Technician C. Helgeson
Transport Leakage ☒ None ☐ _____ ml Solvent Acetone

0	Test <u>19</u> Run <u>0</u> Field Blank Log Number <u>5794-195</u> Vol. of Solvent <u>90</u> ml *Solvent Residue <u>3.33</u> ug/ml	Dish No. <u>8</u> Dish Tare Wt. <u>45.6987</u> g Dish+Sample Wt. <u>45.6990</u> g Sample Wt. <u>0.0003</u> g
1	Test <u>19</u> Run <u>1</u> Vol. of Solvent <u>50</u> ml Log Number <u>-152</u> Comments _____	Dish No. <u>30</u> Dish Tare Wt. <u>47.2611</u> g Dish+Sample Wt. <u>47.2800</u> g Sample Wt. <u>0.0189</u> g
2	Test <u>19</u> Run <u>2</u> Vol. of Solvent <u>60</u> ml Log Number <u>-157</u> Comments _____	Dish No. <u>43</u> Dish Tare Wt. <u>46.5904</u> g Dish+Sample Wt. <u>46.6009</u> g Sample Wt. <u>0.0100</u> g
3	Test <u>19</u> Run <u>3</u> Vol. of Solvent <u>40</u> ml Log Number <u>-162</u> Comments _____	Dish No. <u>46</u> Dish Tare Wt. <u>46.2231</u> g Dish+Sample Wt. <u>46.2303</u> g Sample Wt. <u>0.0072</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 3.33 ug/ml = [(Sample Wt. 0.0003 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

	<u>0.0187</u>	<u>0.0098</u>	<u>0.0071</u>		
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EPA Method 5 Data Reporting Sheet
Filter Gravimetrics

Job LP Urania La. Source Face Dryer
Team Leader DB Test Site stack
Date Submitted 4-13-92 Date of Test 4-9-92
Test No. 19 No. of Runs Completed 3
Date of Analysis 4-15-92 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>19</u> Run <u>1 - 1</u> Log Number <u>10F2</u> Comments <u>5794-153</u>	Filter No. <u>4196</u> Filter Type <u>4" 6F</u> Filter Tare Wt. <u>.9651</u> g Filter+Sample Wt. <u>1.0541</u> g Sample Wt. <u>0.0890</u> g
2	Test <u>19</u> Run <u>2 - 1</u> Log Number <u>5794-158</u> Comments <u>10F2</u>	Filter No. <u>4197</u> Filter Type <u>4" 6F</u> Filter Tare Wt. <u>.9329</u> g Filter+Sample Wt. <u>1.0402</u> g Sample Wt. <u>0.1078</u> g
3	Test <u>19</u> Run <u>3 - 1</u> Log Number <u>-163</u> Comments <u>10F2</u>	Filter No. <u>4198</u> Filter Type <u>4" 6F</u> Filter Tare Wt. <u>.9579</u> g Filter+Sample Wt. <u>1.0554</u> g Sample Wt. <u>0.0975</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

	0.0890	0.1078	0.0975		
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EPA Method 5 Data Reporting Sheet
Filter Gravimetrics

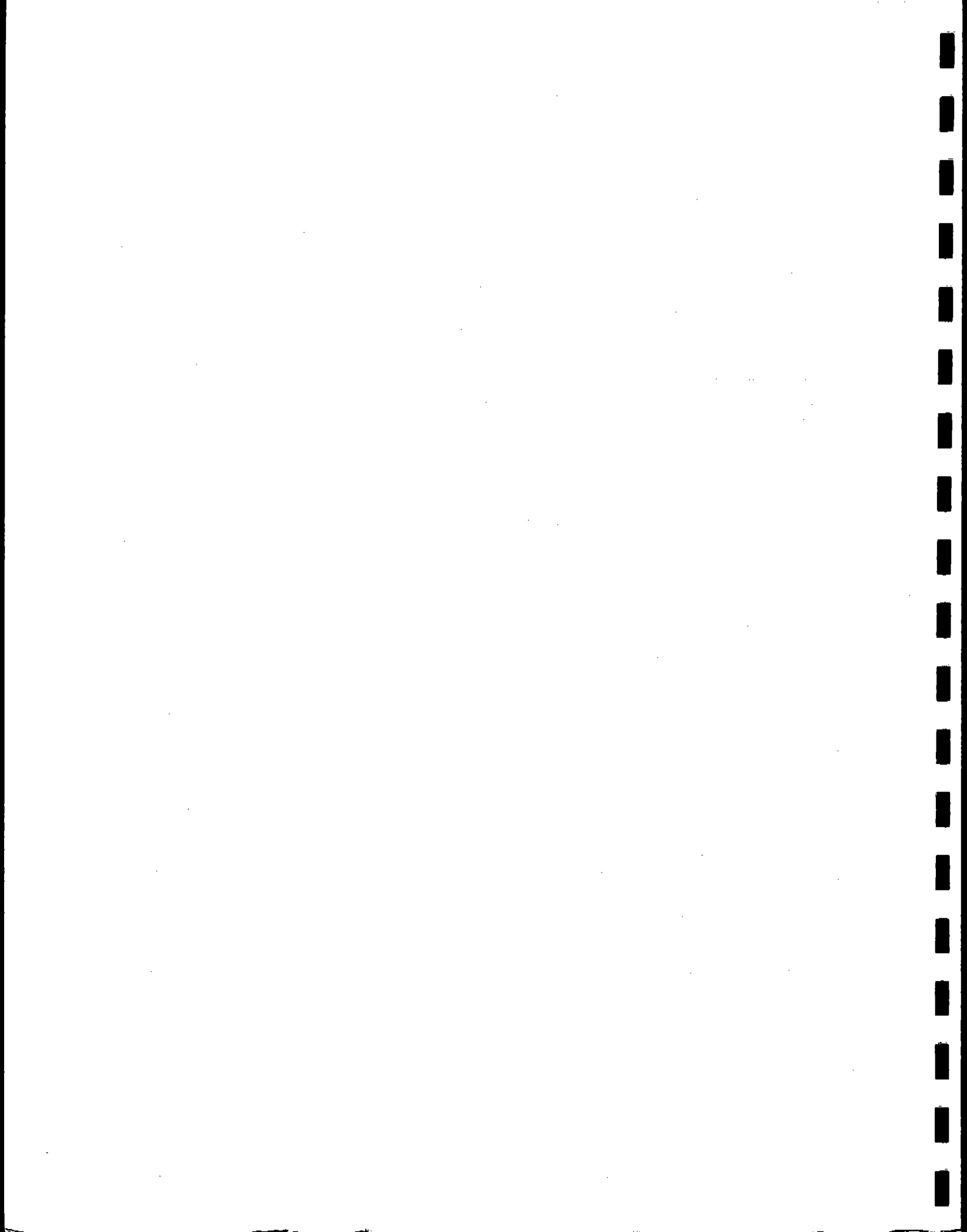
Job Lo.P. Wania La. Source Face Dryer
Team Leader DB Test Site Stack
Date Submitted 4-9-92 Date of Test 4-9-92
Test No. 19 No. of Runs Completed 3
Date of Analysis 4-15-92 Technician C. Helgeson

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>19</u> Run <u>1 - 2</u> Log Number <u>5244-154</u> Comments <u>2 of 2</u>	Filter No. <u>4199</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9362</u> g Filter+Sample Wt. <u>.9777</u> g Sample Wt. <u>0.0415</u> g
2	Test <u>19</u> Run <u>2 - 2</u> Log Number <u>-159</u> Comments <u>2 of 2</u>	Filter No. <u>4200</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9551</u> g Filter+Sample Wt. <u>.9924</u> g Sample Wt. <u>0.0373</u> g
3	Test _____ Run _____ Log Number _____ Comments _____	Filter No. _____ Filter Type _____ Filter Tare Wt. _____ g Filter+Sample Wt. _____ g Sample Wt. _____ 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
	0.0415	0.0373			

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	0.1778	0.1714	0.1233		



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EPA Method 5 Data Reporting Sheet
Impinger Catch/Wisconsin Protocol

Job L.P. Urania, La. Source Face Dryer
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-8-92
Test No. 15 No. of Runs Completed 3
Date of Analysis _____ Technician _____

	Solvent Phase	Aqueous Phase
0	Test <u>15</u> Run <u>0</u> Field Blank Log Number <u>5794-122</u> Comments _____	Dish No. <u>46</u> Dish Tare Wt. <u>46.2235</u> g Dish+Sample Wt. <u>46.2239</u> g Sample Wt. <u>0.0004</u> g
1	Test <u>15</u> Run <u>1</u> Log Number <u>5794-125</u> Comments _____	Dish No. <u>57</u> Dish Tare Wt. <u>47.9197</u> g Dish+Sample Wt. <u>47.9221</u> g Sample Wt. <u>0.0024</u> g
2	Test <u>15</u> Run <u>2</u> Log Number <u>-128</u> Comments _____	Dish No. <u>58</u> Dish Tare Wt. <u>50.2245</u> g Dish+Sample Wt. <u>50.2272</u> g Sample Wt. <u>0.0027</u> g
3	Test <u>15</u> Run <u>3</u> Log Number <u>-131</u> Comments _____	Dish No. <u>117</u> Dish Tare Wt. <u>47.3724</u> g Dish+Sample Wt. <u>47.3757</u> g Sample Wt. <u>0.0033</u> g
4	Test _____ Run _____ Log Number _____ Comments _____	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

Results Solvent Phase:

Field Blk.	Run 1	Run 2	Run 3	Blank Solvent Wt. <u>0.0004</u> g	Run 4	Run 5
	<u>0.0056</u>	<u>0.0042</u>	<u>0.0058</u>			

Results Aqueous Phase:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	<u>0.0020</u>	<u>0.0023</u>	<u>0.0029</u>		

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EPA Method 5 Data Reporting Sheet
Probe/Cyclone Wash

Job L.P. Livonia Source Face Dryer
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-8-92
Test No. 15 No. of Runs Completed 3
Date of Analysis 4-15-92 Technician C. Holgeson
Transport Leakage ☒ None ☐ _____ ml Solvent Acetone

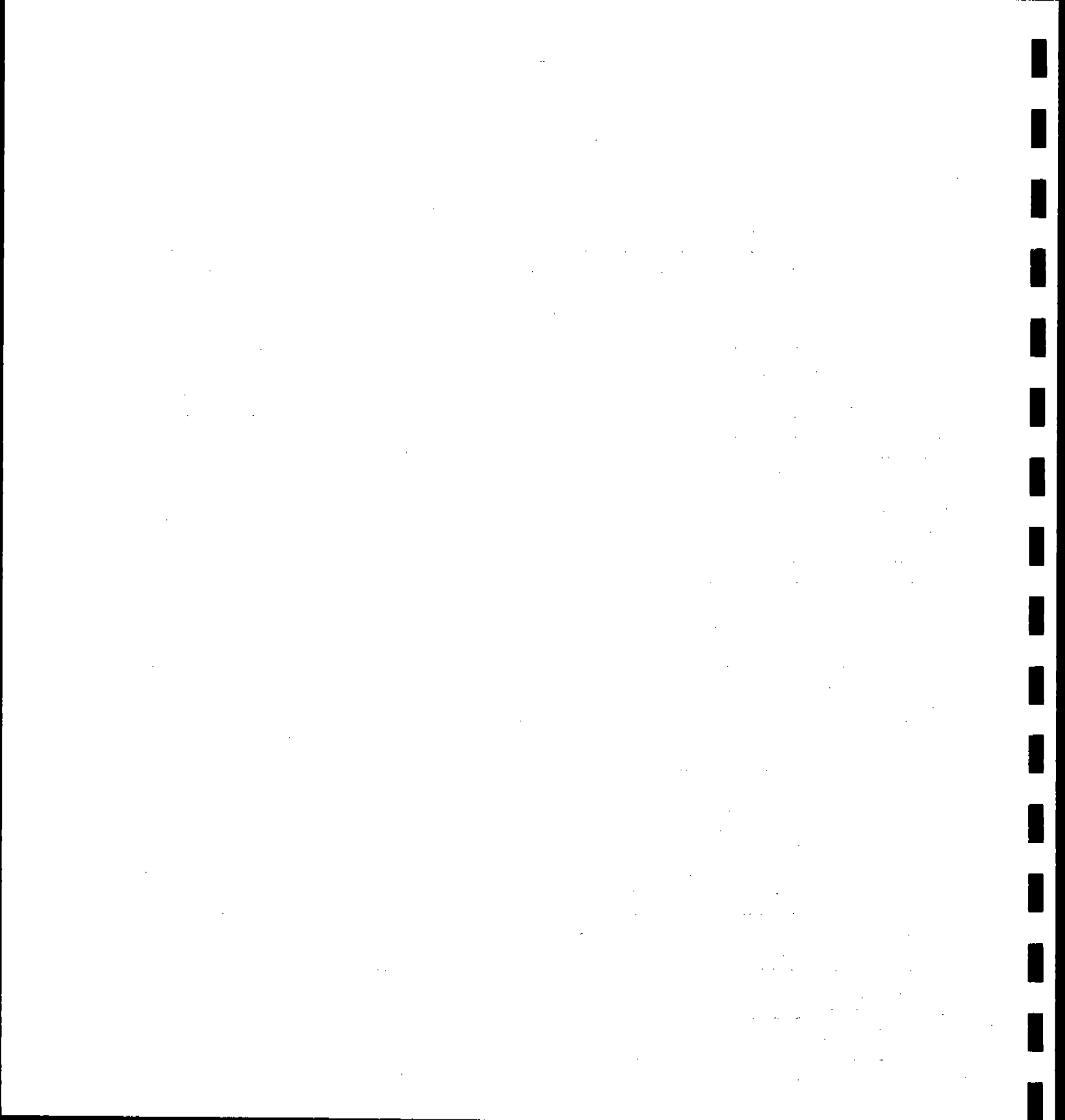
0	Test <u>15</u> Run <u>0</u> Field Blank Log Number <u>5794-120</u> Vol. of Solvent <u>90</u> ml *Solvent Residue <u>333</u> ug/ml	Dish No. <u>15</u> Dish Tare Wt. <u>49.2405</u> g Dish+Sample Wt. <u>49.2408</u> g Sample Wt. <u>0.0003</u> g
1	Test <u>15</u> Run <u>1</u> Vol. of Solvent <u>50</u> ml Log Number <u>-123</u> Comments _____	Dish No. <u>27</u> Dish Tare Wt. <u>52.4440</u> g Dish+Sample Wt. <u>52.4615</u> g Sample Wt. <u>0.0175</u> g
2	Test <u>15</u> Run <u>2</u> Vol. of Solvent <u>40</u> ml Log Number <u>-126</u> Comments _____	Dish No. <u>55</u> Dish Tare Wt. <u>47.7788</u> g Dish+Sample Wt. <u>47.7899</u> g Sample Wt. <u>0.0111</u> g
3	Test <u>15</u> Run <u>3</u> Vol. of Solvent <u>60</u> ml Log Number <u>-129</u> Comments _____	Dish No. <u>57</u> Dish Tare Wt. <u>50.0199</u> g Dish+Sample Wt. <u>50.0344</u> g Sample Wt. <u>0.0145</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 333 ug/ml = [(Sample Wt. 0.0003 g) (10⁶)] / Vol. of Sol. 90 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>0.0173</u>	<u>0.0110</u>	<u>0.0193</u>		
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EPA Method 5 Data Reporting Sheet
Filter Gravimetrics

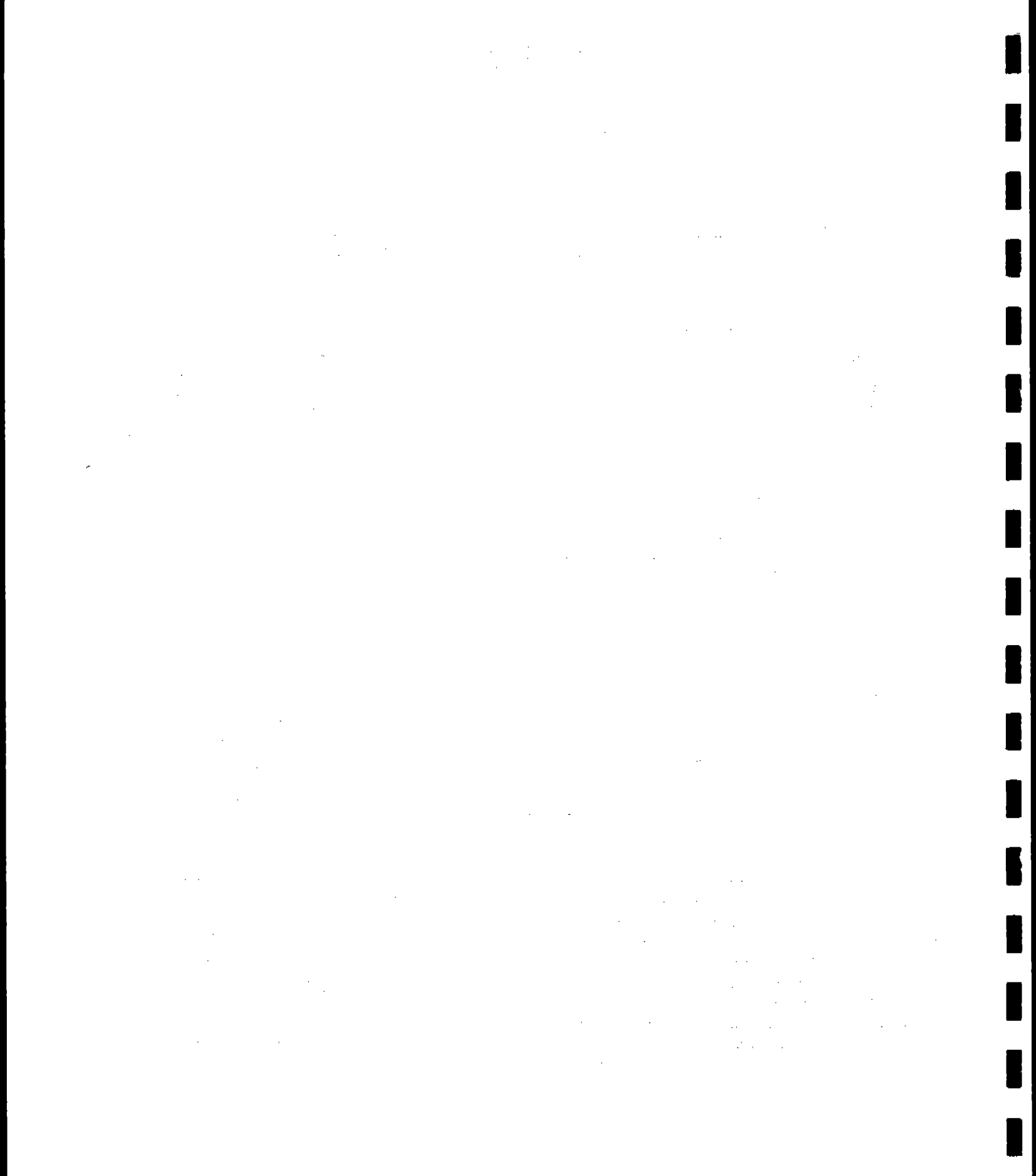
Job L.P. Urania La. Source Face Dryer
Team Leader DB Test Site Stack
Date Submitted 4-8-92 Date of Test 4-8-92
Test No. 15 No. of Runs Completed 3
Date of Analysis 4-15-92 Technician C. Helgeson

0	Test <u>15</u> Run <u>0</u> Field Blank Log Number <u>5794-121</u> Comments _____	Filter No. <u>4167</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9605</u> g Filter+Sample Wt. <u>.9605</u> g Sample Wt. <u>0.0000</u> g
1	Test <u>15</u> Run <u>1</u> Log Number <u>-124</u> Comments _____	Filter No. <u>4162</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9542</u> g Filter+Sample Wt. <u>1.0464</u> g Sample Wt. <u>0.0922</u> g
2	Test <u>15</u> Run <u>2</u> Log Number <u>-127</u> Comments _____	Filter No. <u>4163</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9531</u> g Filter+Sample Wt. <u>1.0426</u> g Sample Wt. <u>0.0895</u> g
3	Test <u>15</u> Run <u>3 A</u> Log Number _____ Comments <u>1042-130</u>	Filter No. <u>4165</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9484</u> g Filter+Sample Wt. <u>1.0159</u> g Sample Wt. <u>0.0675</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

	0.0922	0.0895	0.0675		
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Interpoll Laboratories
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EPA Method 5 Data Reporting Sheet
Filter Gravimetrics

Job LP. Irania, La. Source Face Dryer
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-8-92
Test No. 15 No. of Runs Completed 3
Date of Analysis 4-15-92 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>Run</u> _____ Log Number _____ Comments _____	Filter No. _____ Filter Type _____ Filter Tare Wt. _____ g Filter+Sample Wt. _____ g Sample Wt. _____ g
2	Test <u>Run</u> _____ Log Number _____ Comments _____	Filter No. _____ Filter Type _____ Filter Tare Wt. _____ g Filter+Sample Wt. _____ g Sample Wt. _____ g
3	Test <u>15</u> Run <u>3</u> <u>B</u> Log Number <u>5794-194</u> Comments <u>2 of 2</u>	Filter No. <u>4194</u> Filter Type <u>4" GF</u> Filter Tare Wt. <u>.9505</u> g Filter+Sample Wt. <u>.9879</u> g Sample Wt. <u>0.0374</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

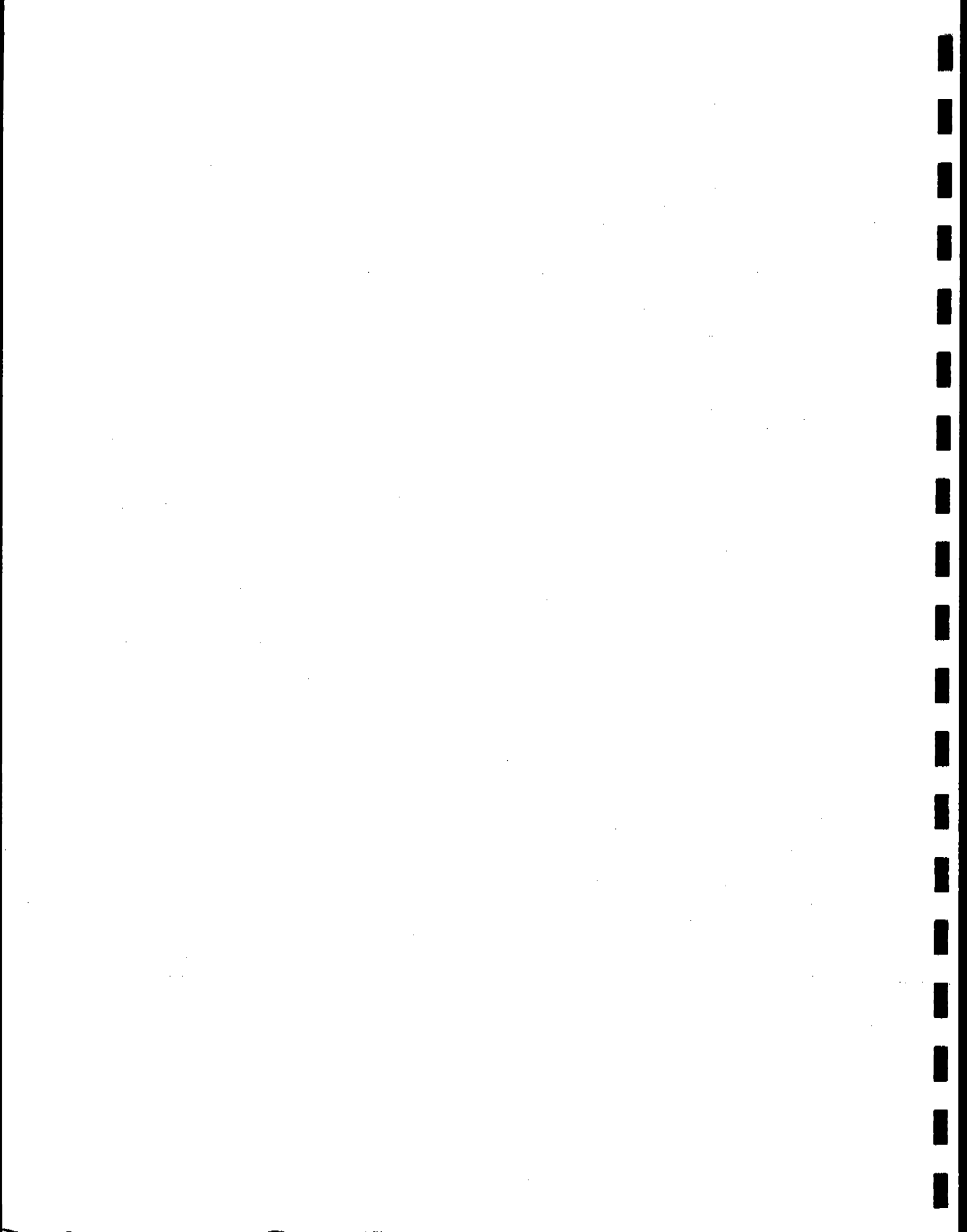
Results:

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

			0.0374		
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Field Blk. Run 1 Run 2 Run 3 Run 4 Run 5

	0.1171	0.1070	0.1324		
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EPA Method 5 Data Reporting Sheet
Impinger Catch/Wisconsin Protocol

Job L.P. Urania, La Source Cord Dryer
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-9-92
Test No. 22 No. of Runs Completed 3
Date of Analysis 5-5-92 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>22 Run 1</u> Log Number <u>5794-174</u> Comments _____	Dish No. <u>405</u> Dish Tare Wt. <u>48.4905</u> g Dish+Sample Wt. <u>48.5010</u> g Sample Wt. <u>0.0105</u> g
2	Test <u>22 Run 2</u> Log Number <u>-178</u> Comments _____	Dish No. <u>507</u> Dish Tare Wt. <u>47.8414</u> g Dish+Sample Wt. <u>47.8579</u> g Sample Wt. <u>0.0165</u> g
3	Test <u>22 Run 3</u> Log Number <u>-182</u> Comments _____	Dish No. <u>512</u> Dish Tare Wt. <u>49.3547</u> g Dish+Sample Wt. <u>49.3713</u> g Sample Wt. <u>0.0166</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

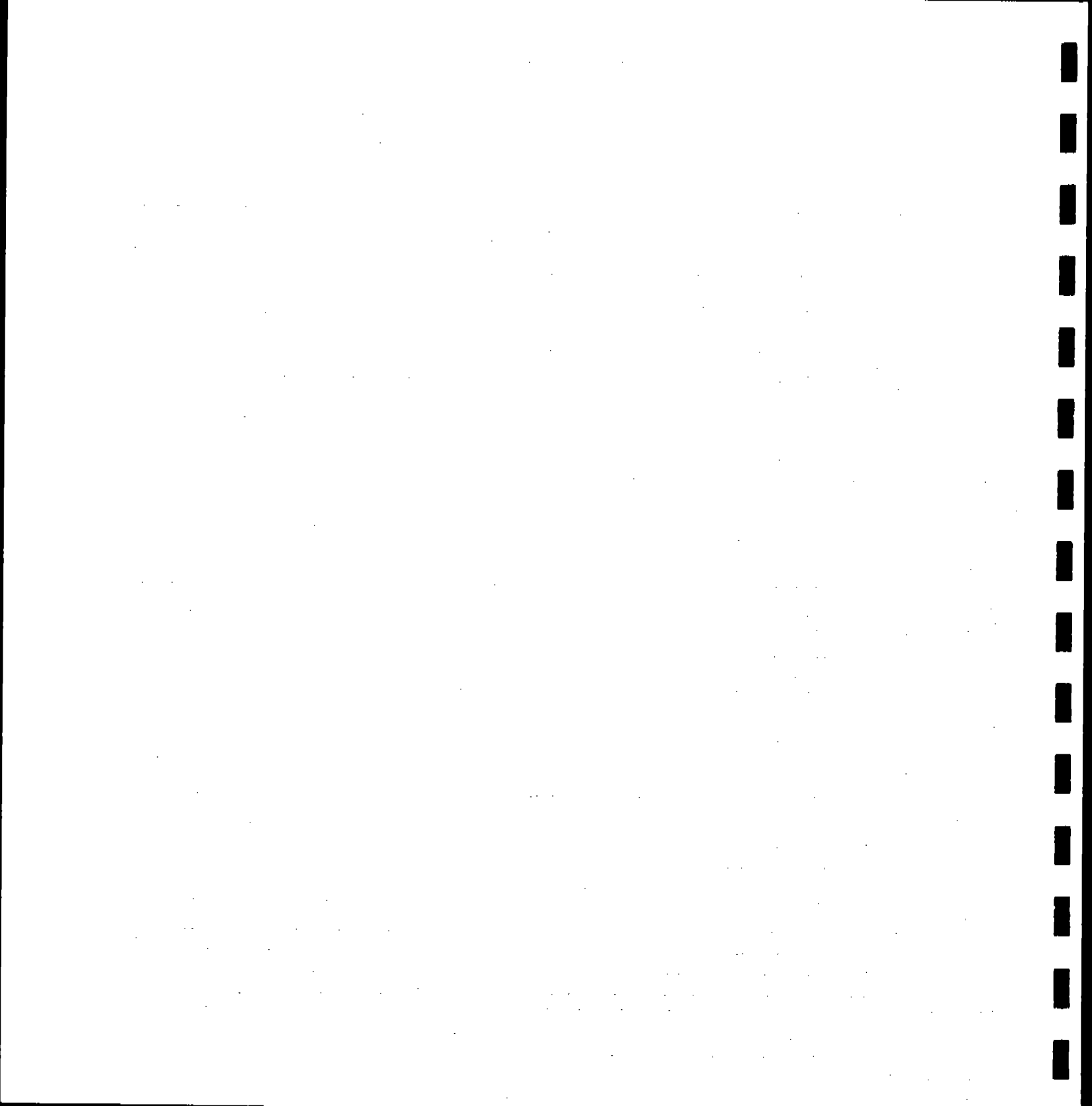
Results Solvent Phase:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	0.0101	0.0161	0.0162		

Blank Solvent Wt. 0.0004g

Results Aqueous Phase:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	0.0200	0.0251	0.0161		



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EPA Method 5 Data Reporting Sheet
Probe/Cyclone Wash 10-21-92
PM-10

Job LP Urania La Source Cond Dryer
Team Leader DB Test Site Stack
Date Submitted 4-13-92 Date of Test 4-9-92
Test No. 22 No. of Runs Completed 3
Date of Analysis 4-15-92 Technician C. Hebesor
Transport Leakage ☐ None ☒ ml Solvent Acetone

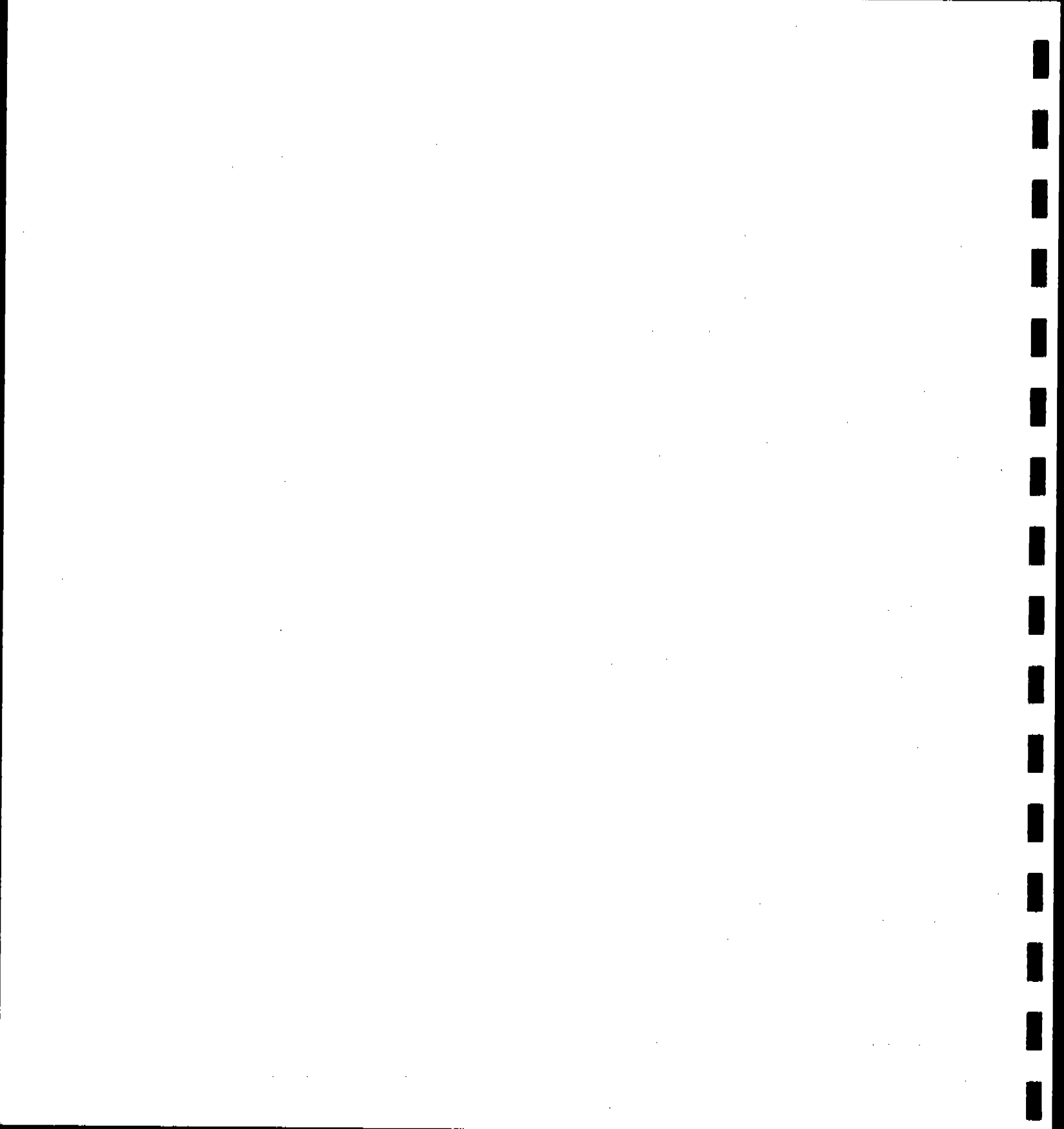
0	Test <u> </u> Run <u>0</u> Field Blank Log Number <u> </u> Vol. of Solvent <u> </u> ml *Solvent Residue <u>3.33</u> ug/ml	Dish No. <u> </u> Dish Tare Wt. <u> </u> g Dish+Sample Wt. <u> </u> g Sample Wt. <u> </u> g
1	Test <u>22</u> Run <u>1</u> Vol. of Solvent <u>60</u> ml Log Number <u>5794-172</u> Comments <u> </u>	Dish No. <u>1</u> Dish Tare Wt. <u>51.9699</u> g Dish+Sample Wt. <u>51.9808</u> g Sample Wt. <u>0.0109</u> g
2	Test <u>22</u> Run <u>2</u> Vol. of Solvent <u>50</u> ml Log Number <u>-176</u> Comments <u> </u>	Dish No. <u>3A</u> Dish Tare Wt. <u>57.8079</u> g Dish+Sample Wt. <u>57.8164</u> g Sample Wt. <u>0.0085</u> g
3	Test <u>22</u> Run <u>3</u> Vol. of Solvent <u>40</u> ml Log Number <u>-180</u> Comments <u> </u>	Dish No. <u>5</u> Dish Tare Wt. <u>50.6820</u> g Dish+Sample Wt. <u>50.6931</u> g Sample Wt. <u>0.0111</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. { 7.3 ug/ml

Results:

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

	0.0107	0.0083	0.0110		
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EPA Method 5 Data Reporting Sheet
Filter Gravimetrics
PM-10

Job L.P. Urbana La. Source Core Dryer
Team Leader DB Test Site Sfack
Date Submitted 4-13-92 Date of Test 4-9-92
Test No. 22 No. of Runs Completed 3
Date of Analysis 4-15-92 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>22</u> Run <u>1</u> Log Number <u>5794-173</u> Comments <u> </u>	Filter No. <u>4201</u> Filter Type <u>4"6F</u> Filter Tare Wt. <u>.9426</u> g Filter+Sample Wt. <u>1.0137</u> g Sample Wt. <u>0.0711</u> g
2	Test <u>22</u> Run <u>2</u> Log Number <u>-177</u> Comments <u> </u>	Filter No. <u>4202</u> Filter Type <u>4"6F</u> Filter Tare Wt. <u>.9553</u> g Filter+Sample Wt. <u>1.0494</u> g Sample Wt. <u>0.0941</u> g
3	Test <u>22</u> Run <u>3</u> Log Number <u>-181</u> Comments <u> </u>	Filter No. <u>4245</u> Filter Type <u>4"6F</u> Filter Tare Wt. <u>.9857</u> g Filter+Sample Wt. <u>1.0921</u> g Sample Wt. <u>0.1064</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
	0.0711	0.0941	0.1064		

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	0.1119	0.1436	0.1497		

Job Name L.P. / Urania
Source MOI. BOILER
Date of Analysis 4-15-92
Technician R. Gidner

NDIR Analyzer: Fug: ACS Model 3300
 Mon. Lab Model 8310
 ✓ Dosibi Model 3003
 Range: 0 - 200 ppm
 Flow rate: 1000 cc/min

Protect Calibration		
	Conc.	Reading
Zero gas:	0.00 ppm	0.00 ppm
Upscale gas:	38.6 ppm	38.0 ppm
Upscale gas:	150 ppm	150 ppm
Upscale gas:	ppm	ppm
Upscale gas:	ppm	ppm
		Vendor: Linde
		Vendor: Linde
		Vendor: Scott
		Vendor: ppm

Post-test Calibration		
Conc.	Reading	
Zero gas: 0.00 ppm	0.00 ppm	Vendor: <u>Linde</u>
Upscale gas: 38.0 ppm	38.0 ppm	Vendor: <u>Linde</u>
Upscale gas: 150 ppm	149.9 ppm	Vendor: <u>Scott</u>
Upscale gas: _____ ppm	_____ ppm	Vendor: _____

[illegible][illegible]

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 Dosabi 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 spooled immediately before and after sample analysis. Additional checks may be performed between sample analyses if required.

EPA Method 10 NDIR Analysis

Job Name LP/Urania
Source NO. 3 BOLLER
Date of Analysis 4-13-92
Technician R. Williams

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NDIR Analyzer:      Fug: ACS Model: 3300
                   Mon. Lab Model: 8310
                   Dasibi Model: 3003
                   Range: 0 - 200 _____ ppm
                   Flow rate: 1000 cc/min

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Pretest Calibration		
Conc.	Reading	
Zero gas: 0.00 ppm	0.00 ppm	Vendor: Linde
Upscale gas: 38.0 ppm	38.0 ppm	Vendor: Linde
Upscale gas: 150 ppm	150 ppm	Vendor: Scott
Upscale gas: _____ ppm	_____ ppm	Vendor: _____

Post-test Calibration					
	Conc.		Reading		
Zero gas:	0.00	ppm	0.00	ppm	Vendor: <u>Linde</u>
Upscale gas:	38.0	ppm	38.0	ppm	Vendor: <u>Linde</u>
Upscale gas:	150	ppm	149.9	ppm	Vendor: <u>Scott</u>
Upscale gas:		ppm		ppm	Vendor: _____

[illegible][illegible]

Note 1: If sample dilution is required the sample is diluted with CO-free gas prior to analysis.

Note 2: The Fuji 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.

CO₂ removal prior to analysis is not required.

Note 3: The analyzer must be zeroed and spunned immediately before and after sample analysis. Additional checks may be performed between sample analyses if required.

EPA Method 10 NDIR Analysis

Job Name A.P. / Urania, LA NDIR Analyzer: ☒ Fugl ACS Model 3300
 Source West Barker, 700 E Barker, Lake Ridge, Face Arger ☐ Mon. Lab Model 8310
 Date of Analysis 4-8-92 ☐ Dasibi Model 3003
 Technician Mark Baehler Range: 0 - 500 ppm
 Flow rate: 1000 cc/min

Pretest Calibration				Post-test Calibration			
Sample Description Test/Run	Conc.	Reading	Vendor	Cyl. Number	Conc.	Reading	Vendor
Zero gas:	0 ppm	0 ppm			Zero gas:	ppm	
Upscale gas:	237 ppm	240 ppm			Upscale gas:	ppm	
Upscale gas:	245 ppm	243 ppm			Upscale gas:	ppm	
Upscale gas:	ppm	ppm			Upscale gas:	ppm	

Pretest Calibration				Post-test Calibration			
Sample Description Test/Run	Conc.	Reading	Vendor	Cyl. Number	Conc.	Reading	Vendor
Zero gas:	0 ppm	0 ppm			Zero gas:	ppm	
Upscale gas:	237 ppm	240 ppm			Upscale gas:	ppm	
Upscale gas:	245 ppm	243 ppm			Upscale gas:	ppm	
Upscale gas:	ppm	ppm			Upscale gas:	ppm	

Pretest Calibration				Post-test Calibration			
Sample Description Test/Run	Conc.	Reading	Vendor	Cyl. Number	Conc.	Reading	Vendor
Zero gas:	0 ppm	0 ppm			Zero gas:	ppm	
Upscale gas:	237 ppm	240 ppm			Upscale gas:	ppm	
Upscale gas:	245 ppm	243 ppm			Upscale gas:	ppm	
Upscale gas:	ppm	ppm			Upscale gas:	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.

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S-305R
(1/90)

EPA Method 10 NDIR Analysis

Job Name L.P. / Urania
Source Face / Over
Date of Analysis 4-13-92
Technician R. G. G. G.

NDIR Analyzer: Fugl ACS Model 3300
Mon. Lab Model 8310
Dasibi Model 3003
Range: 0 - 200 ppm
Flow rate: 1000 cc/min

Pretest Calibration			
Conc.	Reading	Vendor:	
Zero gas: 0.00 ppm	0.00	ppm	Linde
Upscale gas: 38.0 ppm	38.0	ppm	Linde
Upscale gas: 150 ppm	150	ppm	Scott
Upscale gas: _____ ppm	_____	ppm	_____

Post-test Calibration			
Conc.	Reading	Vendor:	
Zero gas: 0.00 ppm	0.00	ppm	Linde
Upscale gas: 38.0 ppm	38.0	ppm	Linde
Upscale gas: 150 ppm	149.9	ppm	Scott
Upscale gas: _____ ppm	_____	ppm	_____

Sample Description Test/Run	Sample Log Number	CO Conc. (ppm, Dry)	
		Dilution Factor	Reading Actual ppm
186 19/1	5794-156	1	169 169
19/2	-161	1	66.5 66.5
19/3	-165	1	49.5 49.5

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.

S-305R

Job Name L.P. Urania
Source Face dryer
Date of Analysis 4-13-92
Technician R. Carlson

NDIR Analyzer: Fugl ACS Model I 3300
Mon. Lab Model I 8310
✓ Dosibi Model 3003
Range: 0 - 200 ppm
Flow rate: 1000 cc/min

Pretest Calibration		
Conc.	Reading	
Zero gas: 0.00 ppm	0.00 ppm	Vendor: <u>Linde</u>
Upscale gas: 38.0 ppm	38.0 ppm	Vendor: <u>Linde</u>
Upscale gas: 150 ppm	150 ppm	Vendor: <u>Scott</u>
Upscale gas: _____ ppm	_____ ppm	Vendor: _____

Post-test Calibration		
	Conc.	Reading
Zero gas:	0.00 ppm	
Upscale gas:	380 ppm	
Upscale gas:	150 ppm	
Upscale gas:		

[illegible][illegible]

Note 1: If sample dilution is required the sample is diluted with CO-free gas prior to analysis.

Note 2: The Fuji 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 spooled immediately before and after sample analysis. Additional ZCO, COO, and trace CO₂ removal prior to analysis is not required.

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S-305R
(1/90)

EPA Method 10 NDIR Analysis

Job Name L.P. / Ucaranig
Source Card Boyer
Date of Analysis 7-13-92
Technician R. Gaden

NDIR Analyzer: Fugl ACS Model 3300
Mon. Lab Model 8310
✓ Dasibi Model 3003
Range: 0 - 200 ppm
Flow rate: 1000 cc/min

Pretest Calibration		
Conc.	Reading	
Zero gas: 0.00 ppm	0.00	Vendor: <u>Linde</u>
Upscale gas: 38.0 ppm	38.0	Vendor: <u>Linde</u>
Upscale gas: 150 ppm	150	Vendor: <u>Scott</u>
Upscale gas: _____ ppm	_____	Vendor: _____

Post-test Calibration		
Conc.	Reading	
Zero gas: 0.00 ppm	0.00	Vendor: <u>Linde</u>
Upscale gas: 38.0 ppm	38.0	Vendor: <u>Linde</u>
Upscale gas: 150 ppm	150	Vendor: <u>Scott</u>
Upscale gas: _____ ppm	_____	Vendor: _____

Sample Description Test/Run	Sample Log Number	CO Conc. (ppm, Dry)	
		Dilution Factor	Actual ppm
22/1	5794-175	1	53.5
22/2	-179	1	78.7
22/3	-183	1	84.5

Sample Description Test/Run	Sample Log Number	CO Conc. (ppm, Dry)	
		Dilution Factor	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.

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Louisiana Pacific/Urania, LA
Laboratory Log No. 5794

Results of Formaldehyde Analysis

Test: 2
Source: No. 1 Press Vent Stack
Sample Type: Impinger Catch

Sample Log No.	Sample Description	Formaldehyde ^a
		Total ug
5794-13	Run 1	2800
5794-14	Run 2	2900
5794-15	Run 3	2700

^aEPA Method 0011

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Louisiana Pacific/Urania, LA
Laboratory Log No. 5794

Results of Formaldehyde Analysis

Test: 5
Source: No. 2 Press Vent Stack
Sample Type: Impinger Catch

Sample Log No.	Sample Description	Formaldehyde ^a
		Total ug
5794-25	Run 1	2500
5794-26	Run 2	3000
5794-27	Run 3	3400

^aEPA Method 0011

INTERPOLL LABORATORIES, INC.
(612)786-6020

Louisiana Pacific/Urania, LA
Laboratory Log No. 5794

Results of Formaldehyde Analysis

Test: 8
Source: No. 3 Press Vent Stack
Sample Type: Impinger Catch

Sample Log No.	Sample Description	Formaldehyde ^a
		Total ug
5794-37	Run 1	3100
5794-38	Run 2	2500
5794-39	Run 3	2500

^aEPA Method 0011

INTERPOLL LABORATORIES, INC.
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Louisiana Pacific/Urania, LA
Laboratory Log No. 5794

Results of Formaldehyde Analysis

Test: 11
Source: No. 4 Press Vent Stack
Sample Type: Impinger Catch

Sample Log No.	Sample Description	Formaldehyde ^a
		Total ug
5794-49	Run 1	1300
5794-50	Run 2	970
5794-51	Run 3	880

^aEPA Method 0011

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Louisiana Pacific/Urania, LA
Laboratory Log No. 5794

Results of Formaldehyde Analysis

Test: 16
Source: Core Dryer Stack
Sample Type: Impinger Catch

Sample Log No.	Sample Description	Formaldehyde ^a
		Total ug
5794-133	Field Spike	620
5794-134	Run 1	9400
5794-135	Run 2	11000
5794-136	Run 3	8600

^aEPA Method 0011

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Louisiana Pacific/Urania, LA
Laboratory Log No. 5794

Results of Formaldehyde Analysis

Test: 20
Source: Face Dryer Stack
Sample Type: Impinger Catch

Sample Log No.	Sample Description	Formaldehyde ^a
		Total ug
5794-166	Run 1	1800
5794-167	Run 2	2300
5794-168	Run 3	940

^aEPA Method 0011

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Louisiana Pacific/Urania, LA
Laboratory Log No. 5794

Results of Formaldehyde Analysis

Test: 24
Source: Aspirator Stack
Sample Type: Impinger Catch

		Formaldehyde ^a
<u>Sample Log No.</u>	<u>Sample Description</u>	<u>Total ug</u>
5794-184	Run 1	200

^aEPA Method 0011

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Chain of Custody
Sample Deposition Sheet

Job L.P. / URANIA Source No. 1 PRESS VENT
Team Leader M. KOENIGER Test Site STALK
Date Submitted _____ Date of Test 1/4/92
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 _____	
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 _____	
3 + BLANK	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 AND</u> <u>ADDED TO ANAL</u> <u>HELP</u>
<u>Ambient</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 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-278RRRR

Interpoll Laboratories
(612) 786-6020

Chain of Custody
Sample Deposition Sheet

Job A.P. / Urania, LA Source No. 1 Press Vent
Team Leader M. Kappel Test Site Stack
Date Submitted _____ Date of Test 4-4-92
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 ☐ 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 _____	_____
—	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 Wood 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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Chain of Custody
Sample Deposition Sheet

Job L.P. / URANIA, LA. Source NO. 2 PRESS VENT
Team Leader M. K. HLEA Test Site STACK
Date Submitted _____ Date of Test 7/4/92
Test No. 4 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 & M.L.L. LVS. ADDED TO BACK HALF.</u>
<u>AMBIENT</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 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-278RRRR

Interpoll Laboratories
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Chain of Custody
Sample Deposition Sheet

Job A.P. / Urania, IA Source Wood Press Vent
 Team Leader M. Kaehler Test Site Stack
 Date Submitted _____ Date of Test 4-4-92
 Test No. 5 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</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 Wood 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. / ^{URANIA}URANIA, LA. Source NO. 3 PRESS VENT
Team Leader M. KASHLER Test Site STACK
Date Submitted _____ Date of Test 4/6/92
Test No. 7 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 + MECL AND ADDED TO BACK HALF.</u>
<u>amb, 2 NT</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 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-278RRRR

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Chain of Custody
Sample Deposition Sheet

Job A.P. / Ucania, AA Source No. 3 Press Vent
Team Leader Mike Kaeher Test Site Stack
Date Submitted _____ Date of Test 4-6-92
Test No. 8 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 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</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 Wood 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. / URANIA, LA. Source No. 4 PRESS VENT
Team Leader M. KAENZLER Test Site STALK
Date Submitted _____ Date of Test 4/6/92
Test No. 10 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 + M₂Cl₂ AND ADDED TO BACK HALF.</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 _____

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Chain of Custody
Sample Deposition Sheet

Job L.P. / Urania, LA Source No. 4 Press Vent
Team Leader M. Kaehler Test Site Stack
Date Submitted _____ Date of Test 4-6-92
Test No. 11 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 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</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 Wood Piles
- 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. / URANIA, LA.
Team Leader M. KAHLER
Date Submitted _____
Test No. 15

Source FACE DRYER
Test Site STACIL
Date of Test 7/8/92
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>METHOD 201 (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>METHOD 201 (PM-10)</u>	
3 + BLANK	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 201 (PM-10)</u>	
0	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 NATURAL
- 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. Urania, LA Source Core Dryer
Team Leader Mikaehler Test Site Stach
Date Submitted _____ Date of Test 6-8-92
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 _____	_____
3414	Impinger Catch: ☐ D.I. Water ☐ 3% H ₂ O ₂ ☐ 4MS Hg Only ☐ 4MS Metals ☐ 1.0 N NaOH ☒ Other <u>2-4 DATA</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 Wood Dryer
- 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

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Chain of Custody
Sample Deposition Sheet

Job L.P. / Urania, LA Source Core Dryer
Team Leader M. Kaehler Test Site Stack
Date Submitted _____ Date of Test 4-8-92
Test No. 18 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>Michigan</u>	<u>202 Back half</u>
3	Integrated Gas sample	☒ As per EPA M-3 ☒ As per EPA M-10 ☐ Other _____	
1	Oxides of Nitrogen (NO _x)	☐ As per EPA M-7A ☐ Other _____	Date _____ Time (HRS) _____
1	☐ Fuel Sample ☐ Aggregate	☐ Attached fuel Form #S-0163RRR	
1	Particle Size	☐ X-Ray Sedigraph ☐ Bahco Method ☐ Other _____	
1	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. / URANIA, LA. Source FACE DRYER STACK
Team Leader M. KAHLER Test Site STACK
Date Submitted _____ Date of Test 4/9/92
Test No. 19 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 _____	
5 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 _____	2 FILTERS USED FOR RUNS 1 & 2
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>	IMPINGERS RINSED WITH D.I. H ₂ O + MCL ₂ AND ADDED TO ROCK HOLE
3 AT	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 NATURAL
- 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 A.P. / Urania, A.A. Source Face Dryer
 Team Leader M. Kaealer Test Site Stack
 Date Submitted _____ Date of Test 4-9-92
 Test No. 20 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 _____	
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 _____

Interpoll Laboratories
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Chain of Custody
Sample Deposition Sheet

Job L.P. / Urania, LA Source Core Dryer
 Team Leader D. Brennan Test Site Stack
 Date Submitted _____ Date of Test 9-9-92
 Test No. 22 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>201</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>201</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 <u>201</u> ☐ Other _____	
	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.R. / Umana, LA Source Aspirator
Team Leader M. Kachler Test Site Stack
Date Submitted 4- Date of Test 4-9-92
Test No. 23 No. of Runs Completed 1

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 _____	
1	Impinger Catch: ☐ D.I. Water ☐ 3% H ₂ O ₂ ☐ 4M5 Hg Only ☐ 4M5 Metals ☐ 1.0 N NaOH ☒ Other <u>L-4 DUPH</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>Amb. ent</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 _____
- 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 _____

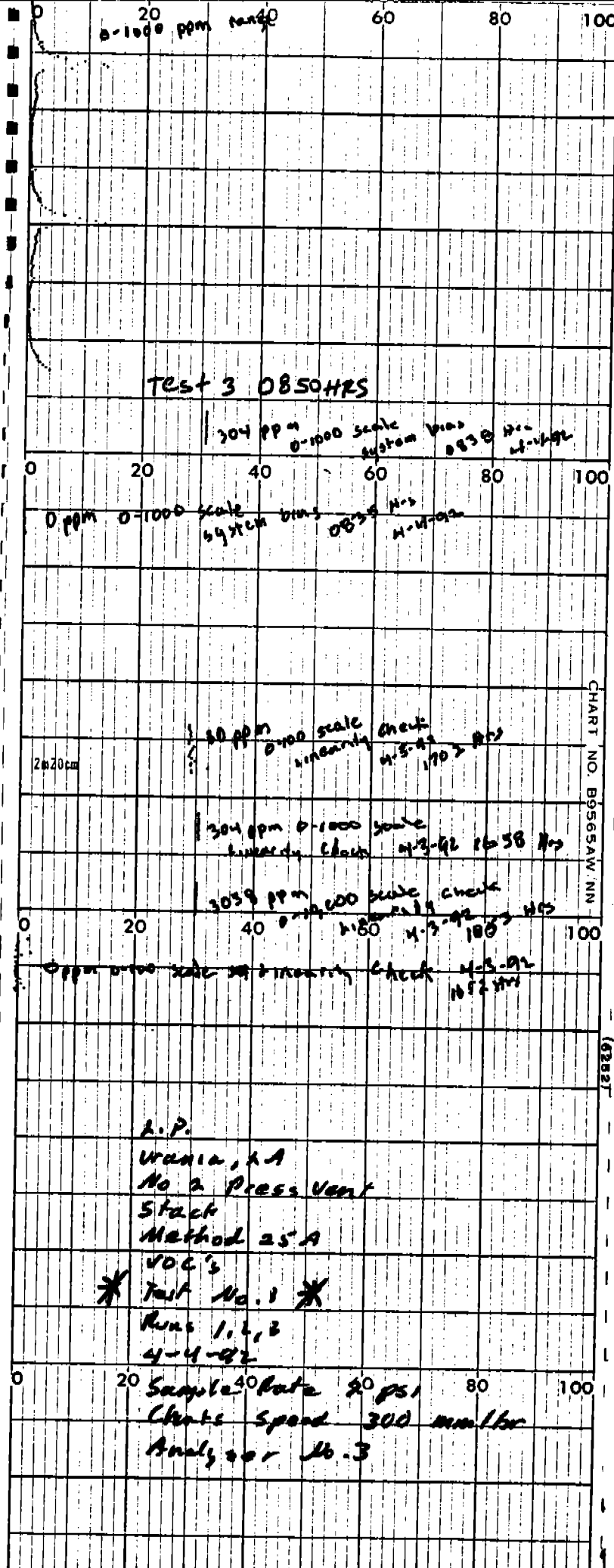


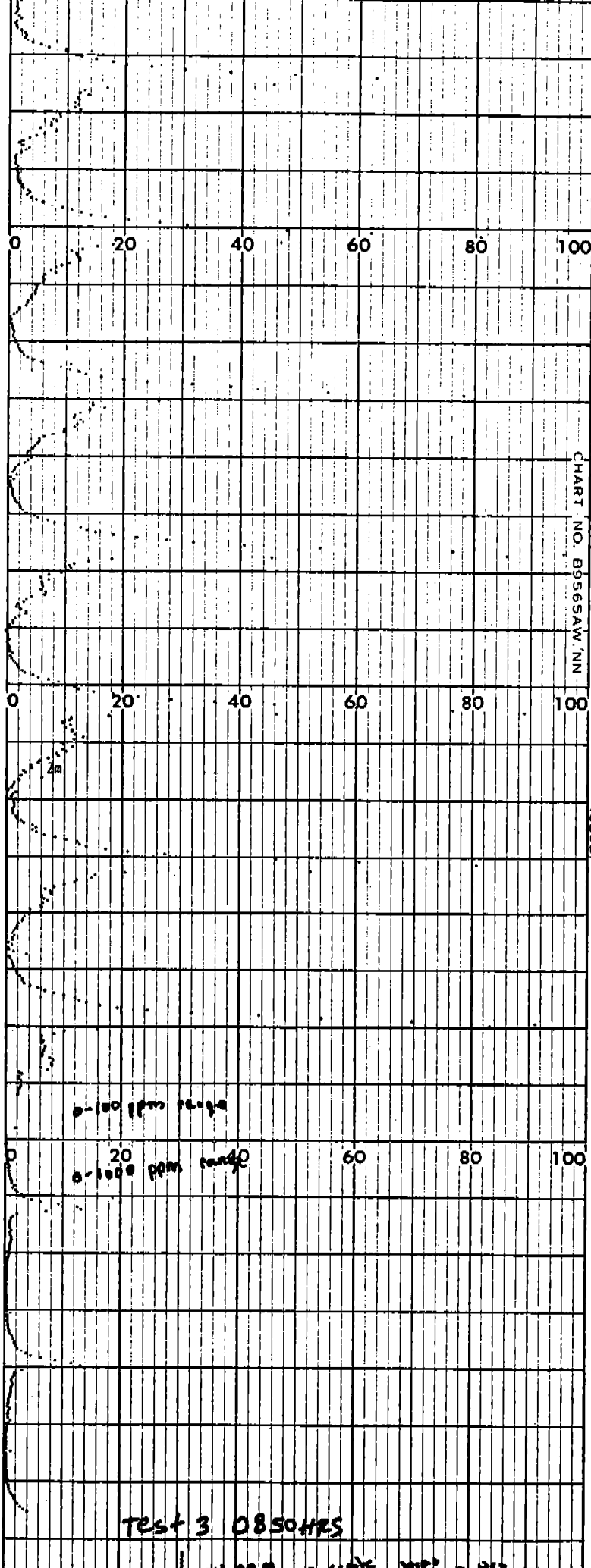
0850HRS
T₃ R₁ →
START

Louisiana
Pacific-
Urania

4-4-92

No. 2
Press
Vent
stack





Louisiana
Pacific -
Warrior

Test # 3
(Cont.)

4-4-92

No. 2 Press
Unit

LP-
Urania

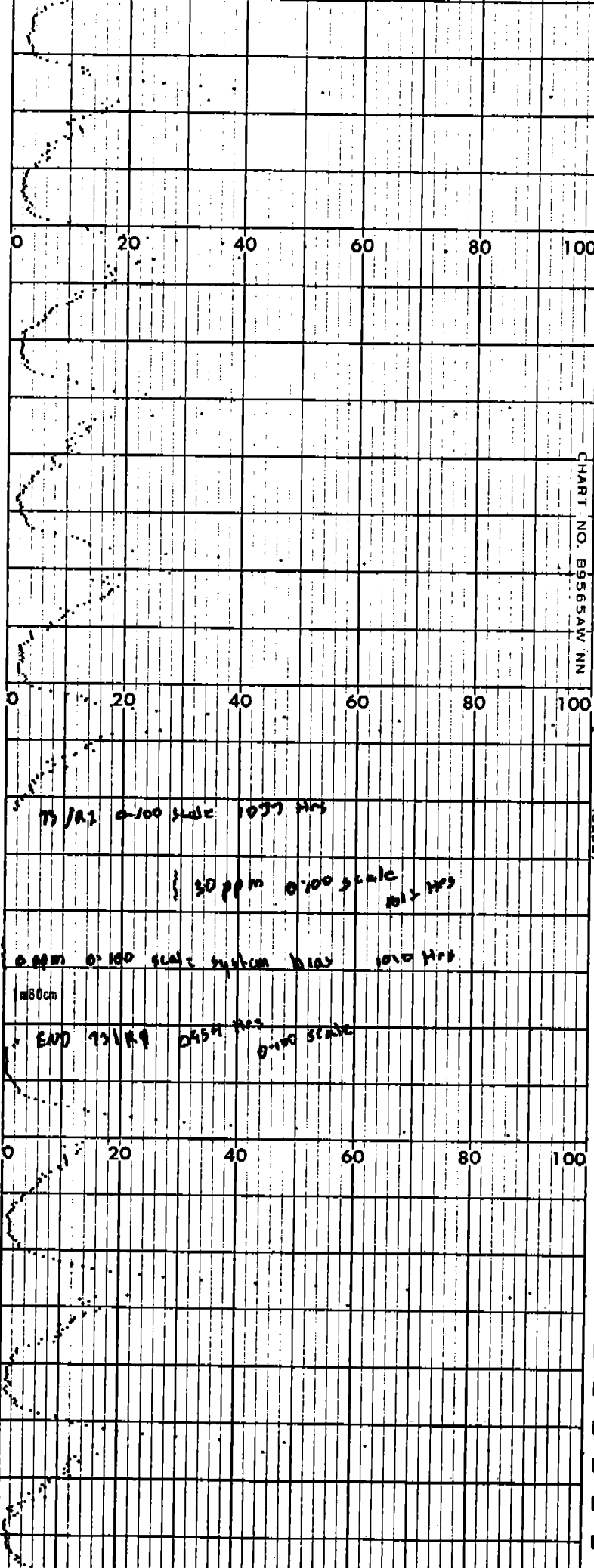
No. 2
Pread
vent

1037 HRS

T₃R₂ START

(4-4-92)

T₃R₁ ⇒
END
0954 HRS



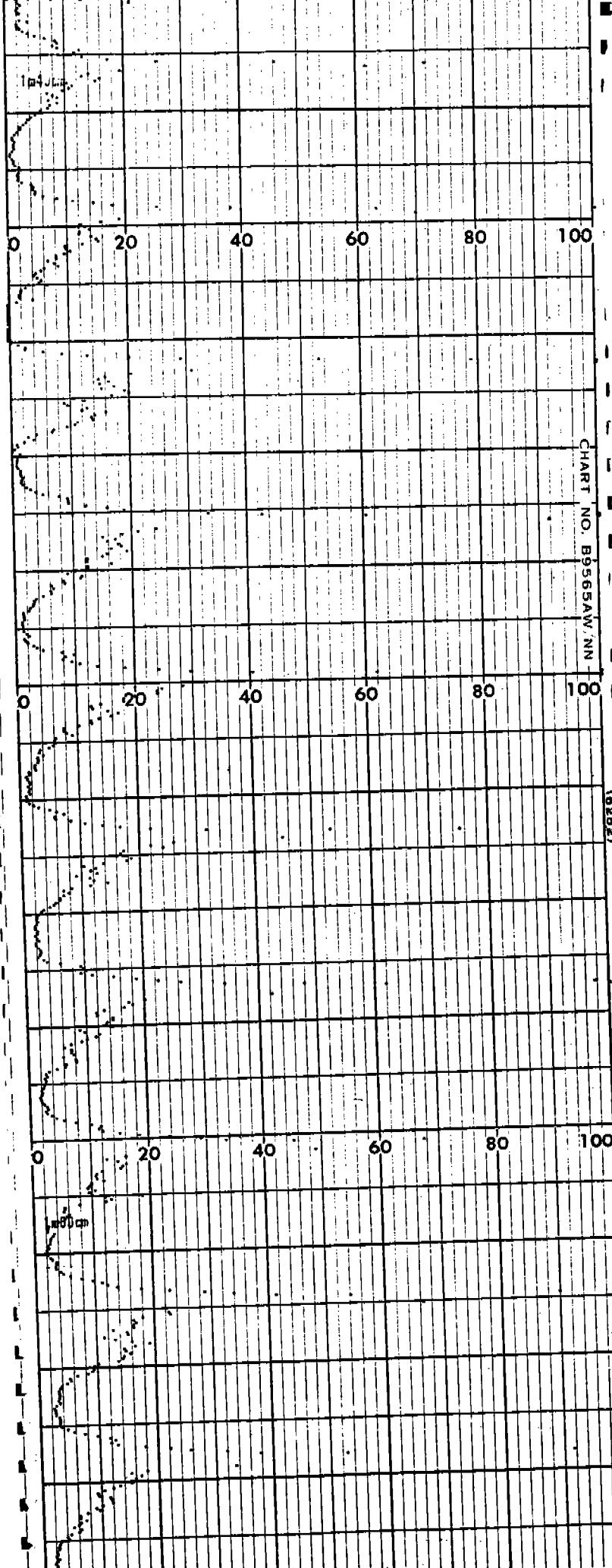
Tot 2 END

no. 2
gross
unit

LP-Urania

Tot 3
Run 2
(cont.)

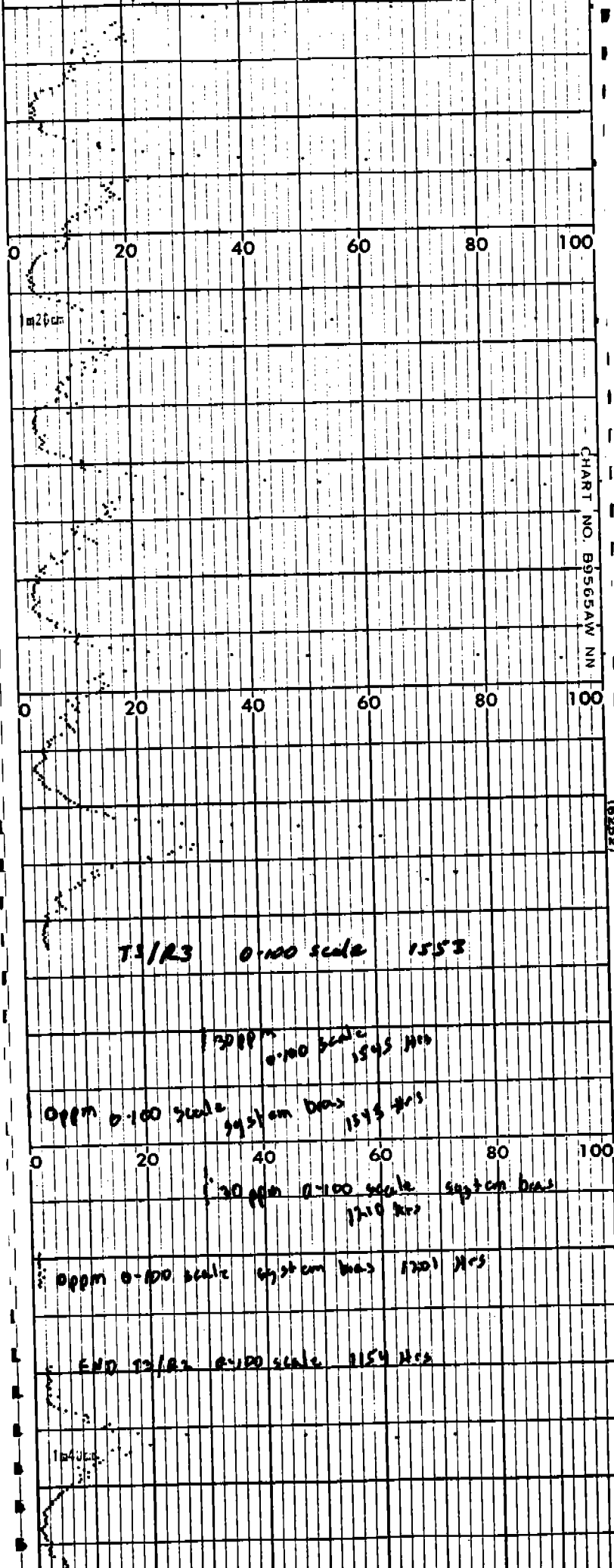
4-4-92



LP-
Waria

1553HRS

T₃R₃ →
START



1154HRS

T₃R₂ →
END

1723 HRS

T₆R₁ ⇒
START

0 20 40 60 80 100
T₆R₁ 0-100 scale 1723 Hrs
* No. 1 Press Vent
Stack
4-4-92

30 ppm 0-100 scale
1705 Hrs

0 ppm 0-100 scale system bias 1700 Hrs

T₃R₃ ⇒
END

0 20 40 60 80 100
T₃R₃ 0-100 scale 1655 Hrs

CHART NO. B9565AW/NN

LP-
Urania
(cont.)

4-4-92

No. 2
Press
Vent

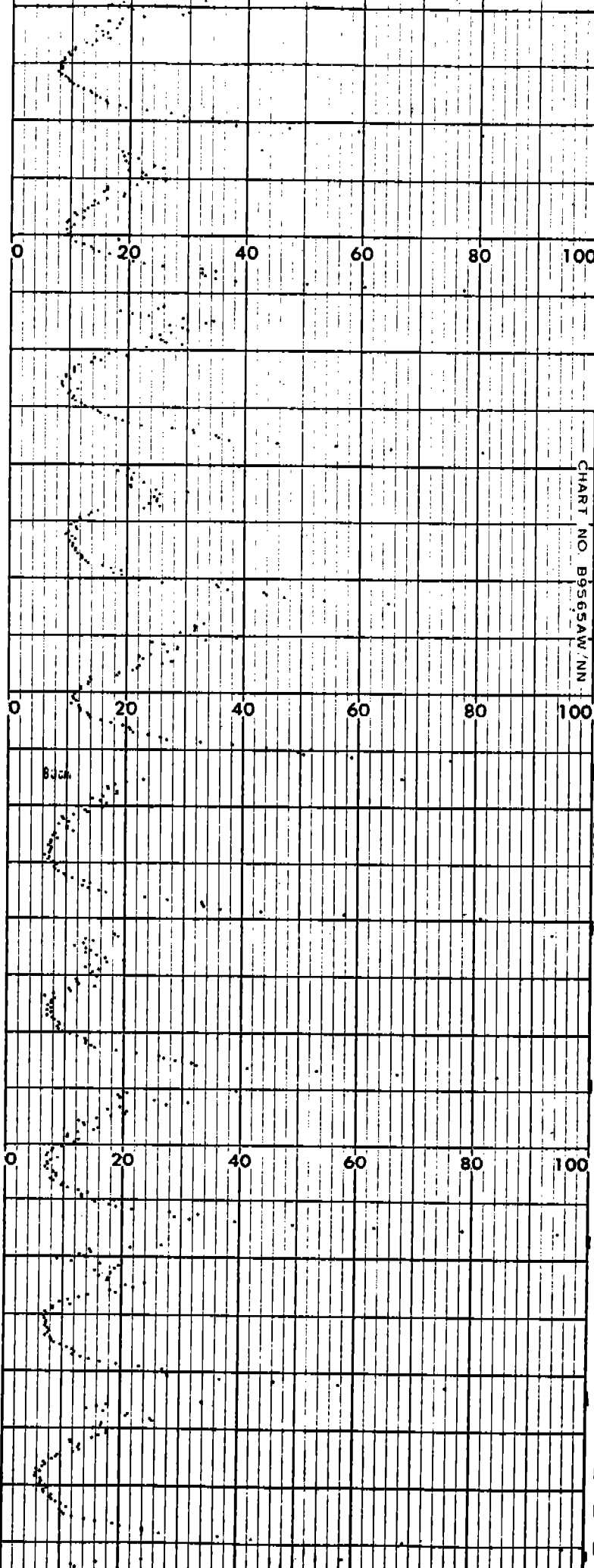
0 20 40 60 80 100

LP-
Urania

Total
Run 1
(cont.)

4-4-92

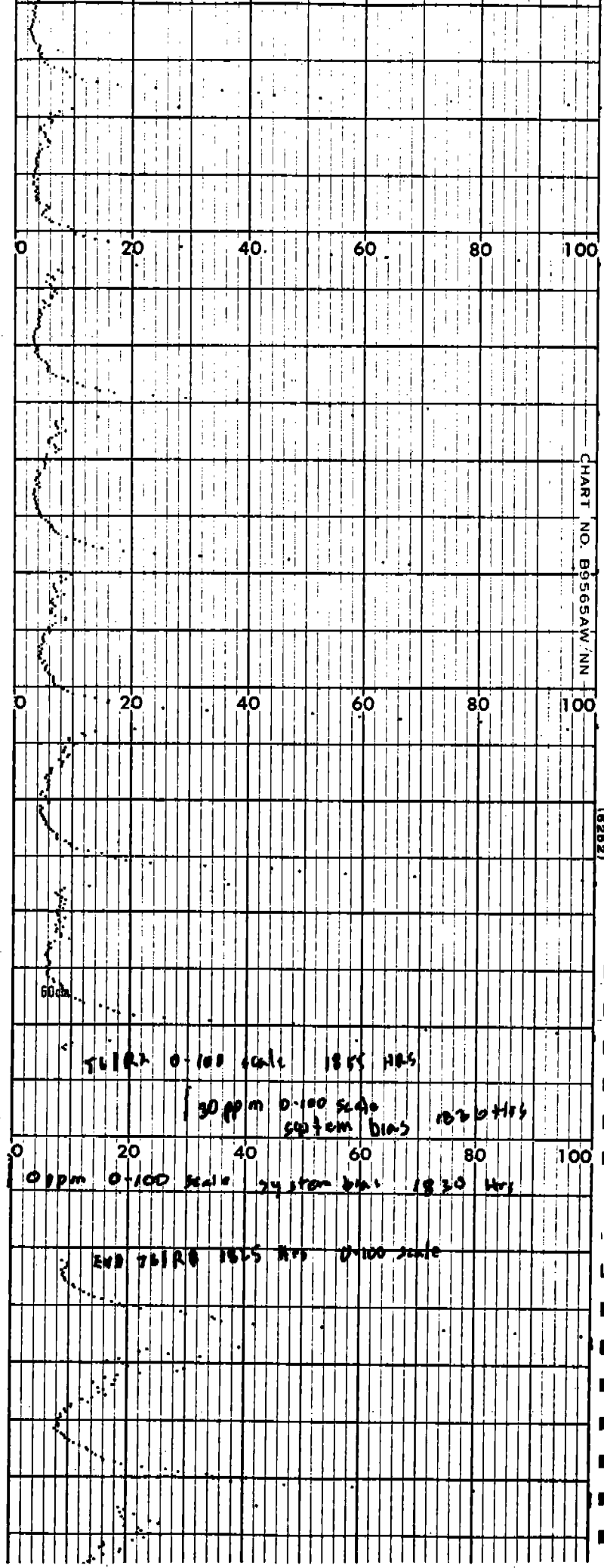
No. 1
Price
Unit



NO. 1
 Press
 Unit

1855 HRS
 $T_{6R2} \rightarrow$
 START

1825 HRS
 $T_{6R1} \rightarrow$
 END



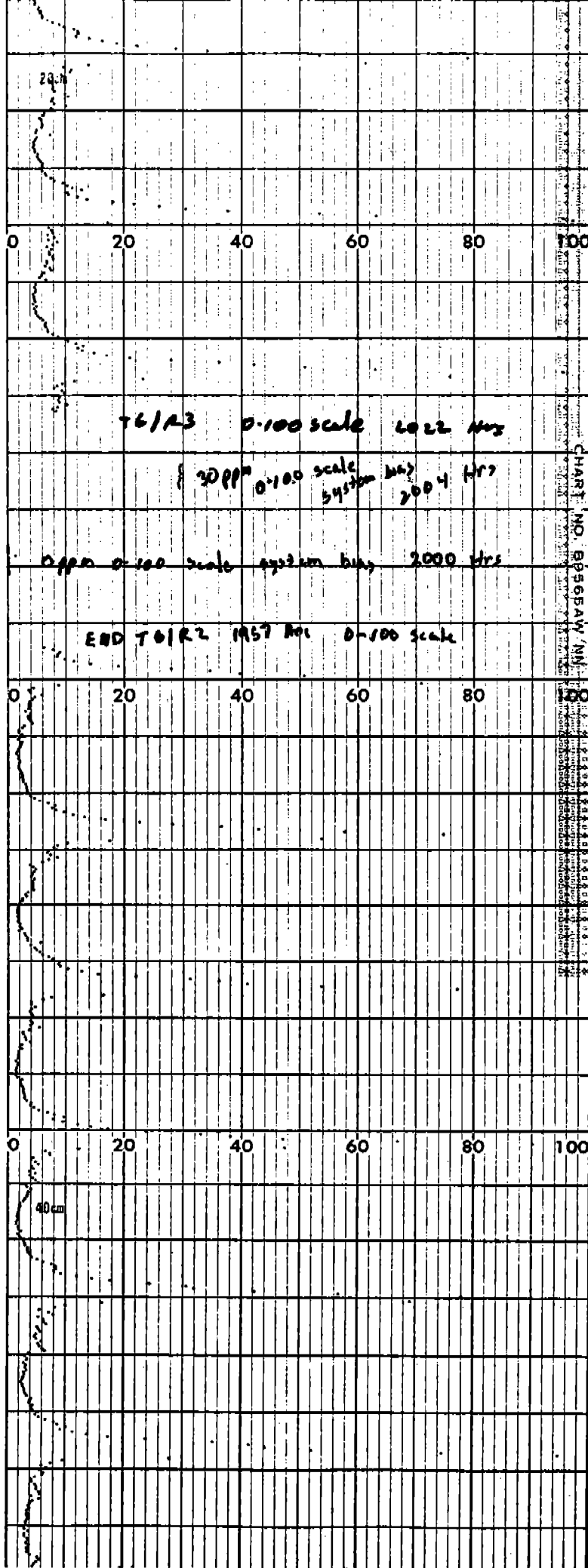
2022 HRS
T₆R₃ →
START

1957 HRS
T₆R₂ →
END

LP

Urania
(cont.)

No. 1
Press
Unit



2123 HK

T₆R₃
END

END T₆L₃ 0-20 plate 2123 MS

0 20 40 60 80 100

0 cm

CHART NO. B9565A W.N.N.

0 20 40 60 80 100

LP.
Urania
(cont.)
4-4-92

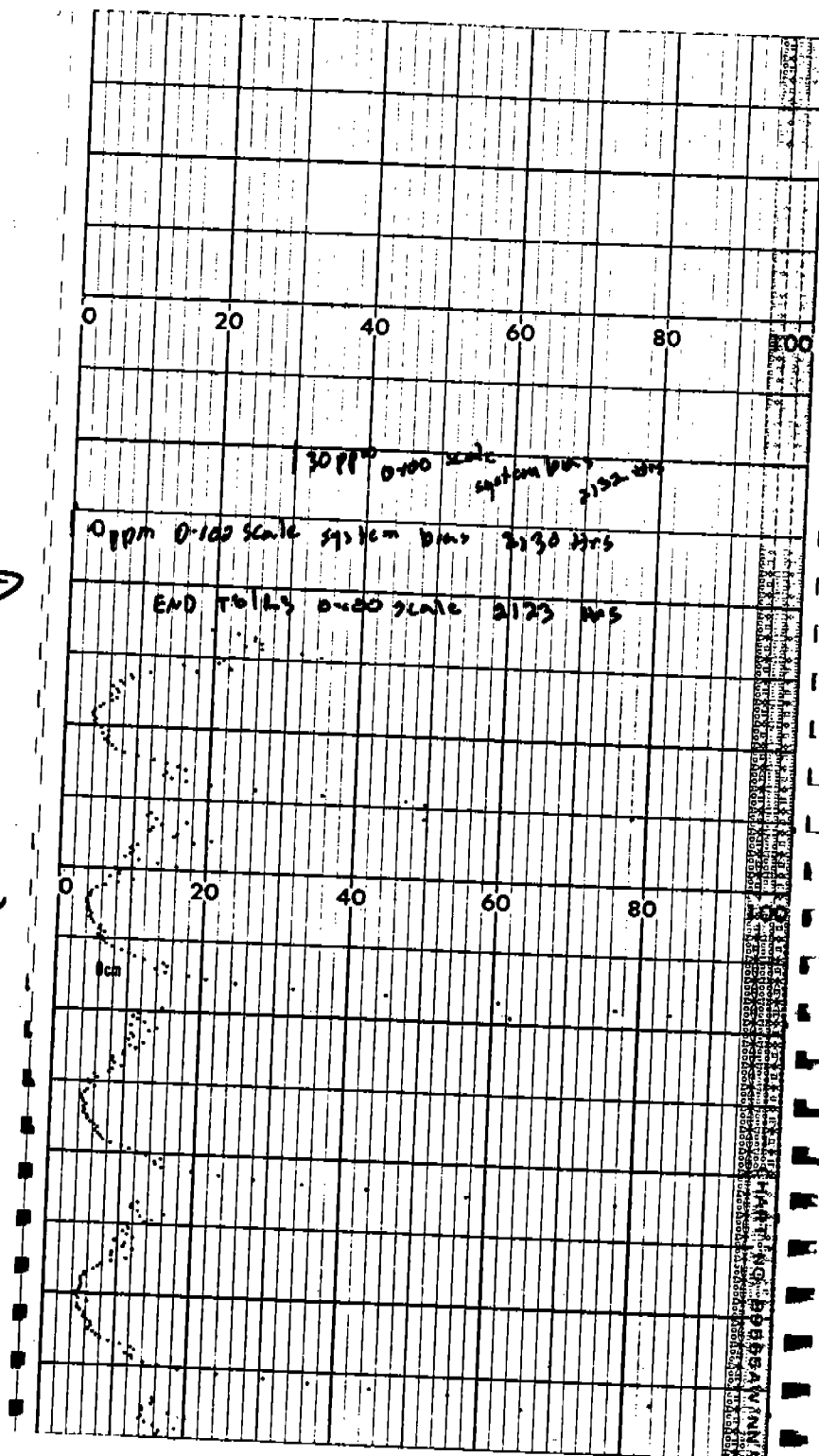
No. 1
Prise
Vent

0 20 40 60 80 100

20 cm

2123 HRS →
 T₆R₃
 END

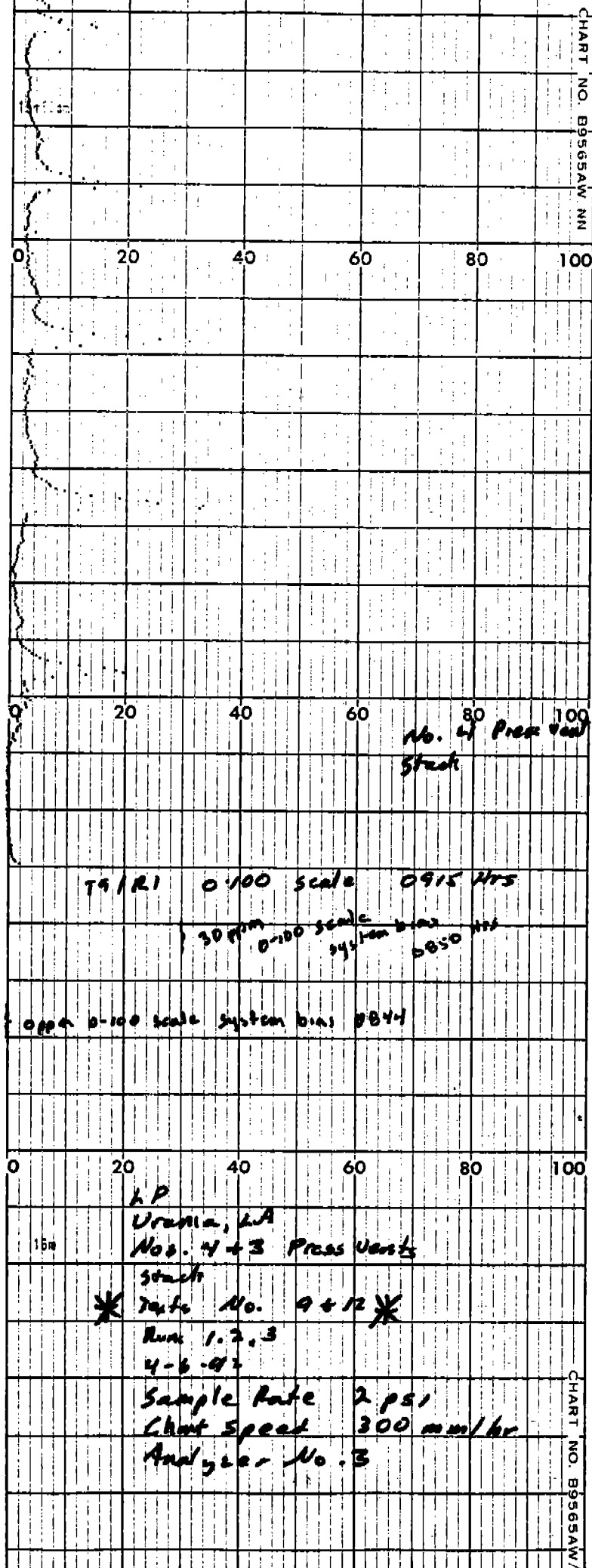
No. 1 Pres
 Vent



No. 4
Press Vent

0915 HRS
T₉R₁ →
START

LP-
Urania
4-6-92



1056 HRS

T₉R₂ →
START

1019 HRS

T₉R₁ →
END

LP-

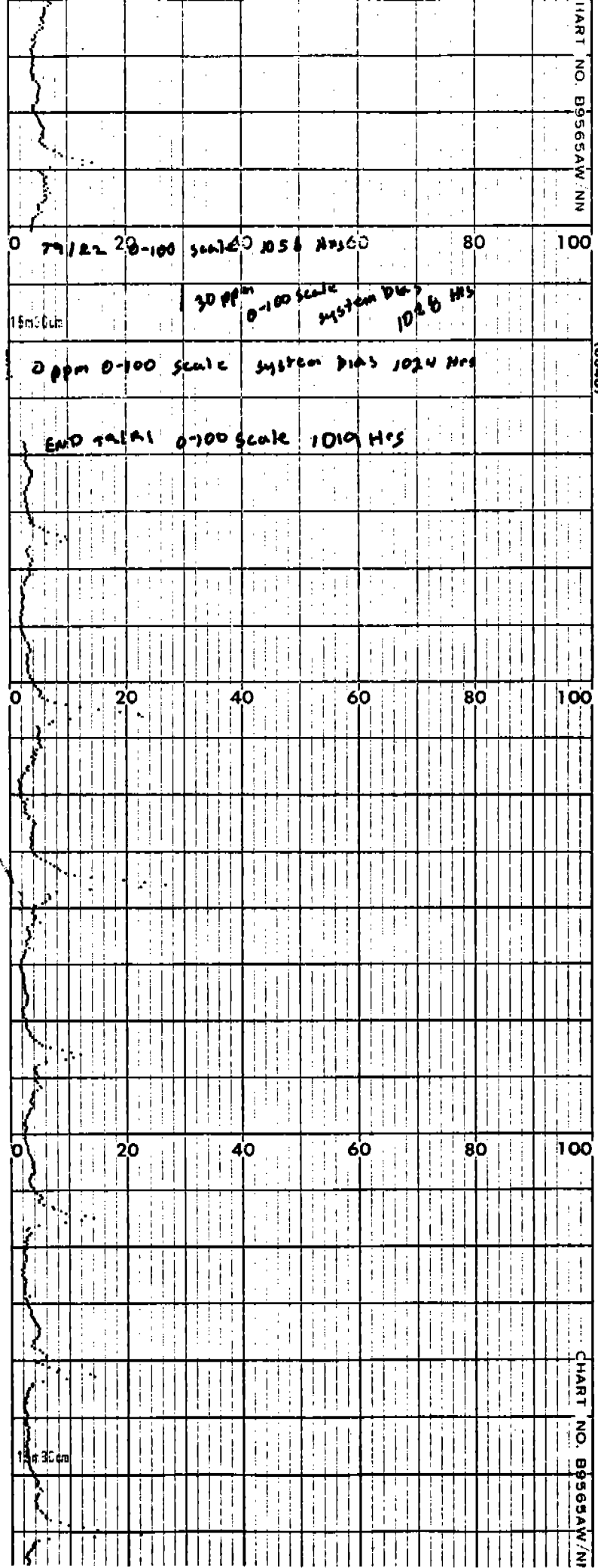
Urania

(cont.)

4-6-92

No. 4

Prevent



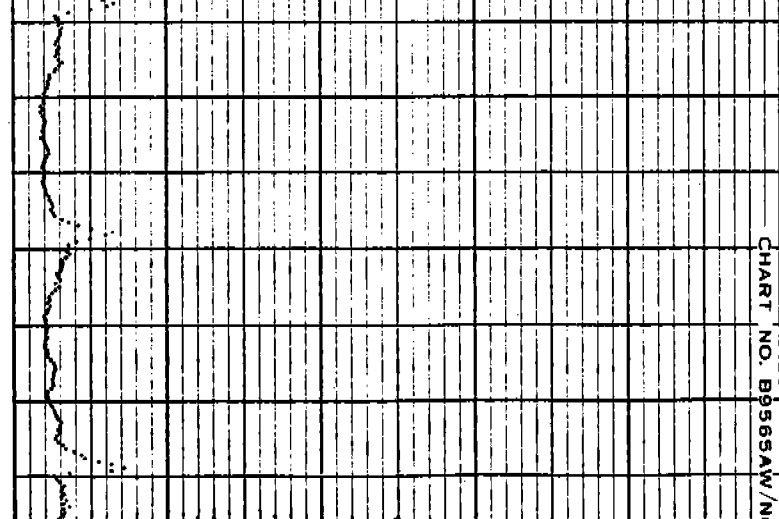
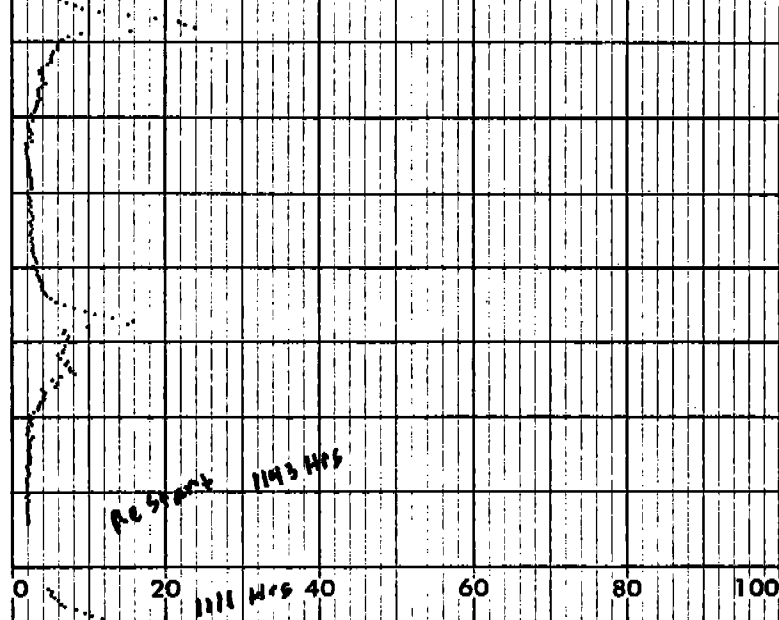
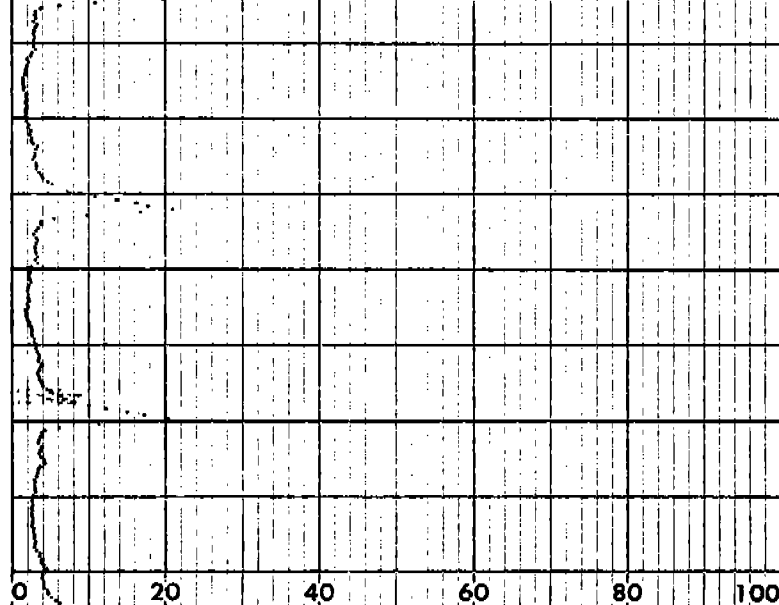
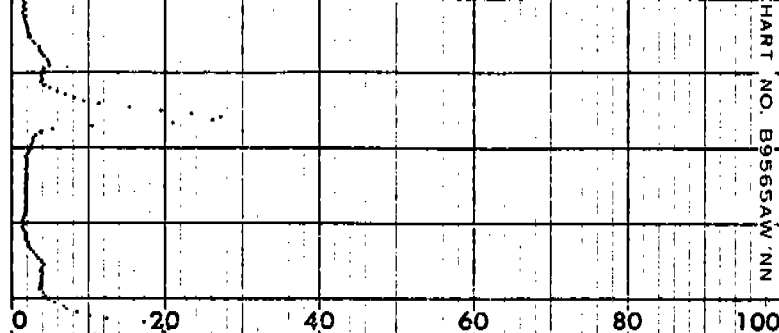
LP-
Urania

T₉R₂
(cont.)

4-6-92

70.4

Free
Vent

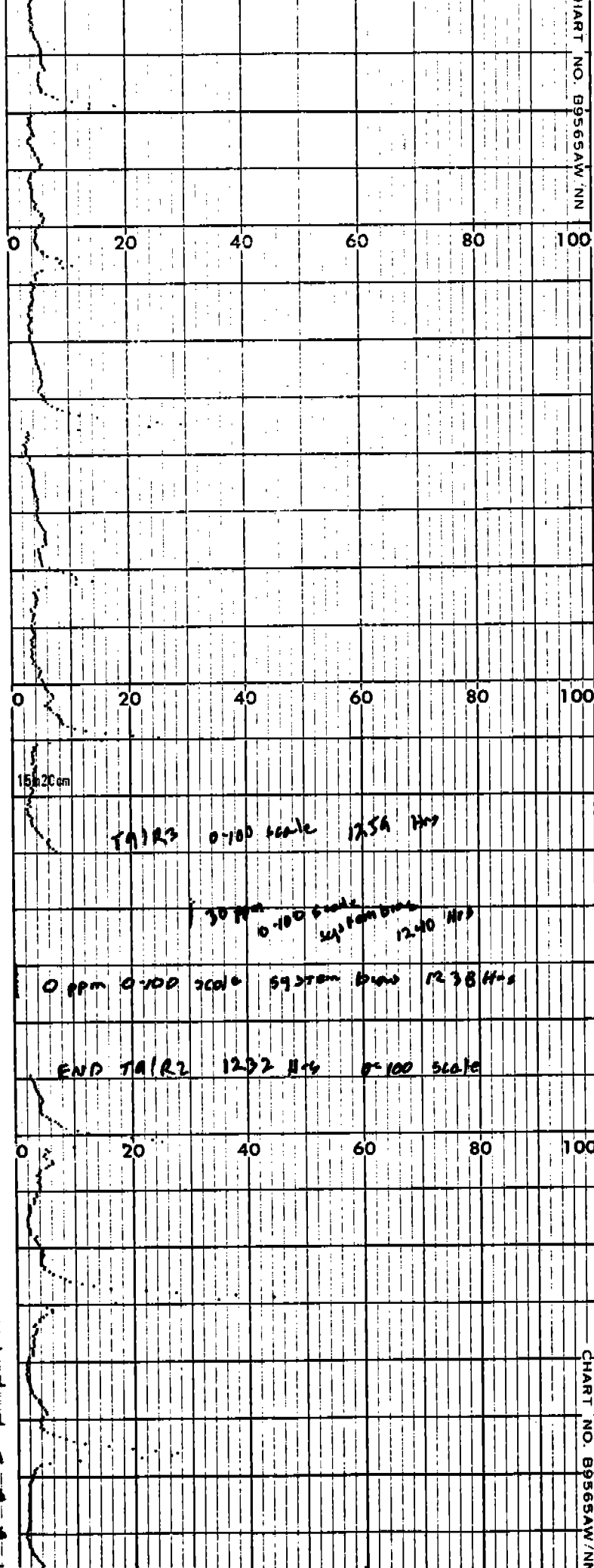


LP-
Urania
(cont.)
4-6-92

1259 HRS
T₉R₃ →
START

1232
T₉R₂ →
END

No. 4
PR100
Vent



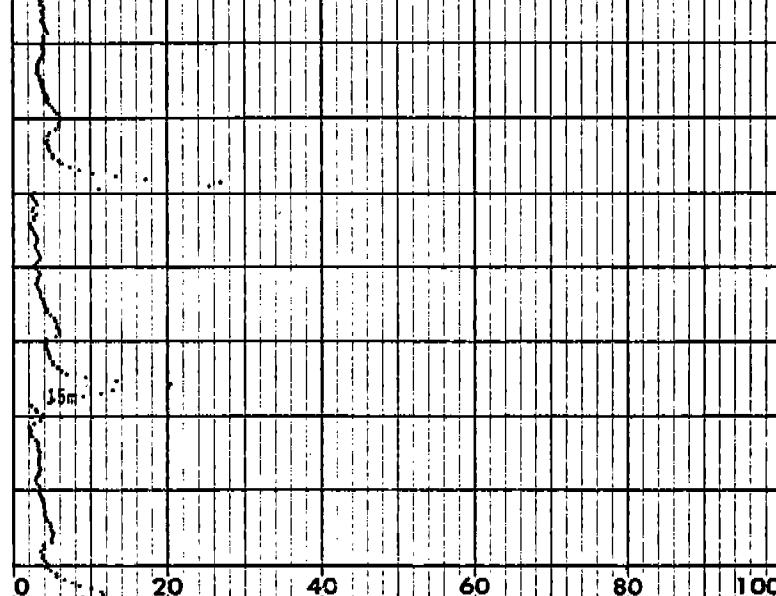
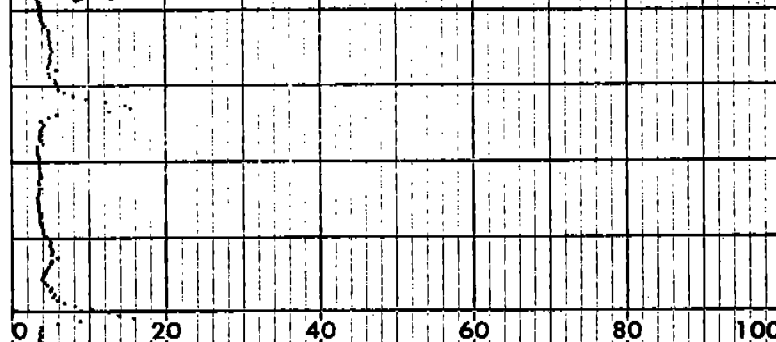
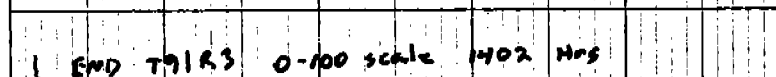
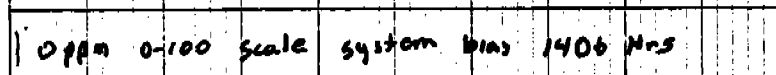
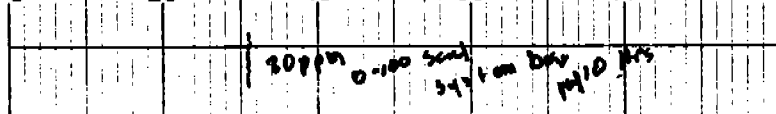
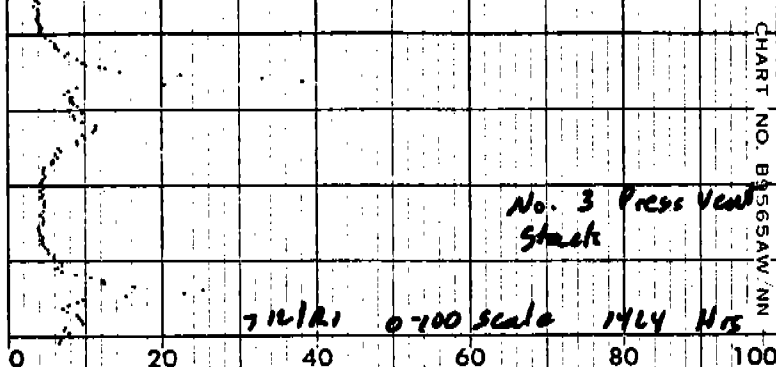
No. 3
Press
Vent

1424 HRS
T₁₂R₁ →
START

1402 HRS
T₉R₃ →
END

LP-
Urania

No. 4
Press
Vent



LP-
Urania

Test #12
Run 1
(cont.)

No. 3
Press
Vent

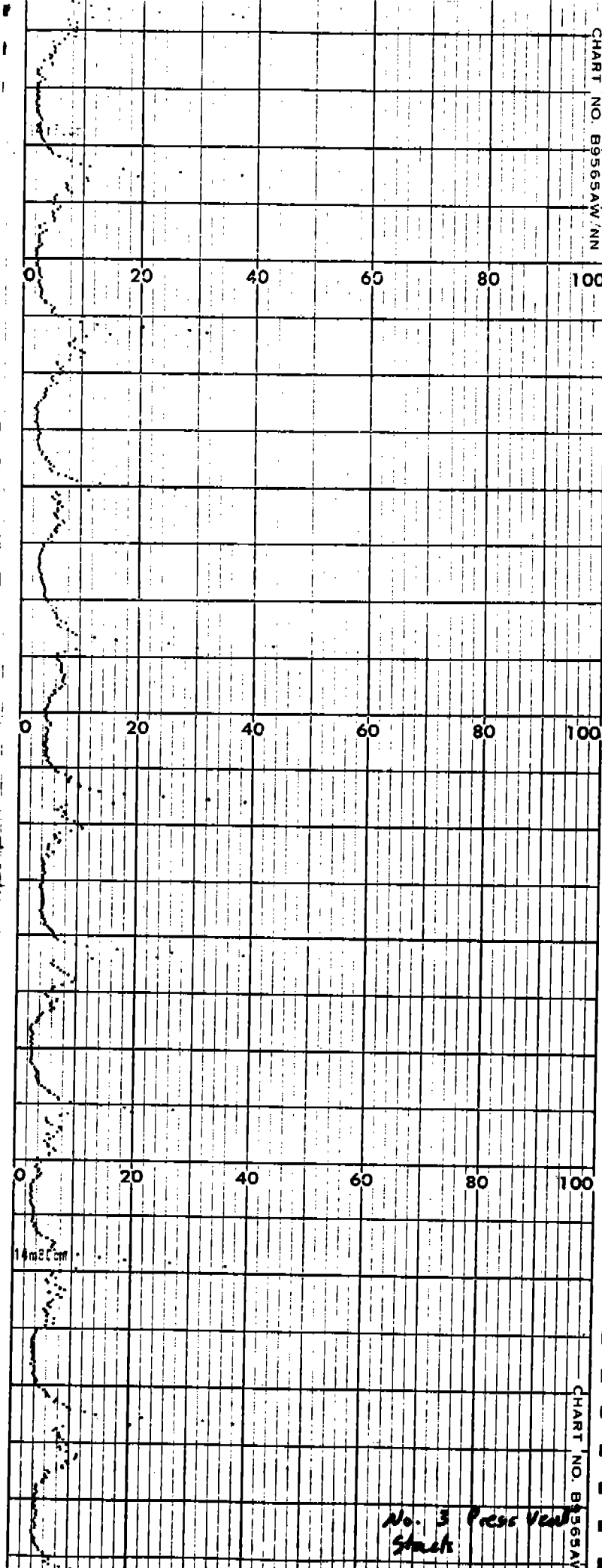


CHART NO. B9565AW/NN

(6040)

CHART NO. B9565AW/

0 20 40 60 80 100

0 20 40 60 80 100

0 20 40 60 80 100

Yno 3
Yno
VERT

LP-
Wania
4-6-92
(cont.)

1556 HRS
T_{12R2} →
START

1526 HRS
T_{12R1} →
END

T₁₂/R₂ 0-100 scale 1556 Hrs

30 ppm 0-100 scale system bias 1530 Hrs

0 ppm 0-100 scale system bias 1530 Hrs

END T₁₂/R₁ 0-100 scale 1526 Hrs

1720 HRS
T₁₂R₃ →
START

1659 HRS
T₁₂R₂ →
END

470.3 gms
VENT

LP

Urania
(cont.)

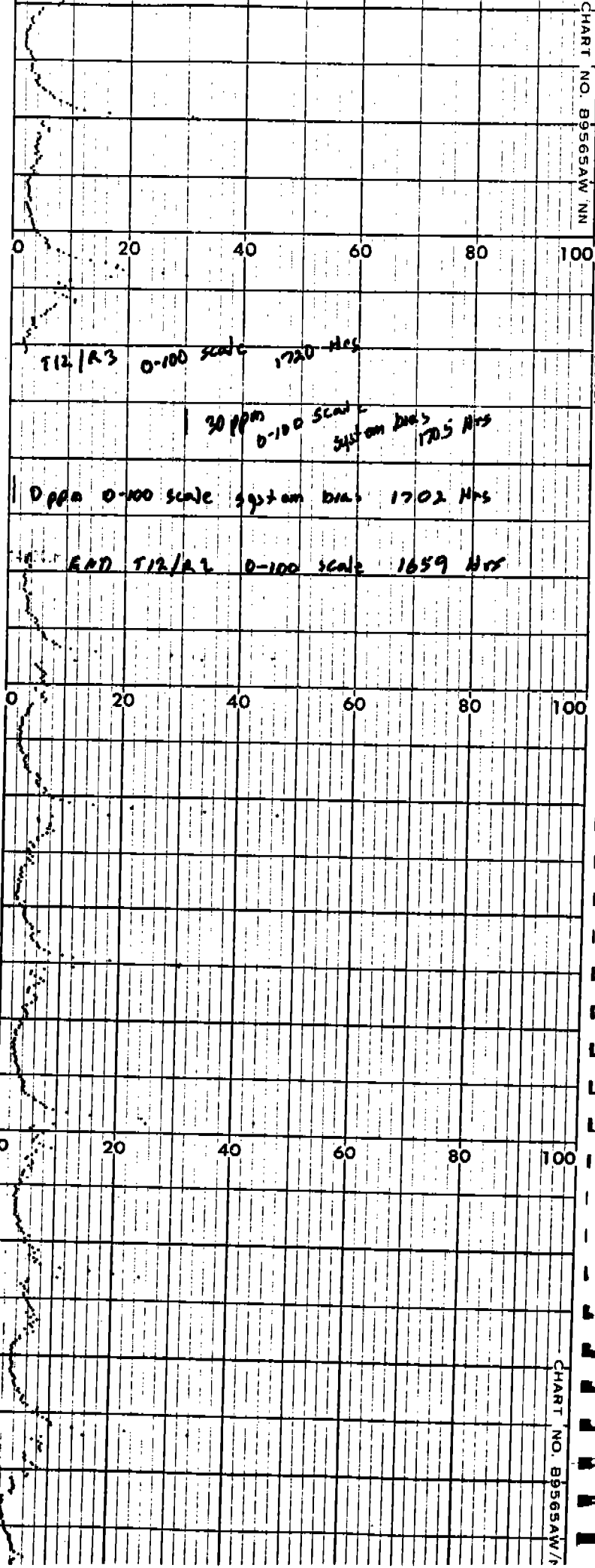


CHART NO. D9565AW/NN

1832 Hrs
1824 Hrs
Line Down

0 20 40 60 80 100

60487

LP
Urania

1809 Hrs
1800 Hrs
Line Down

0 20 40 60 80 100

Test 12
Run 3
(cont.)

No. 3
Prevent

0 20 40 60 80 100

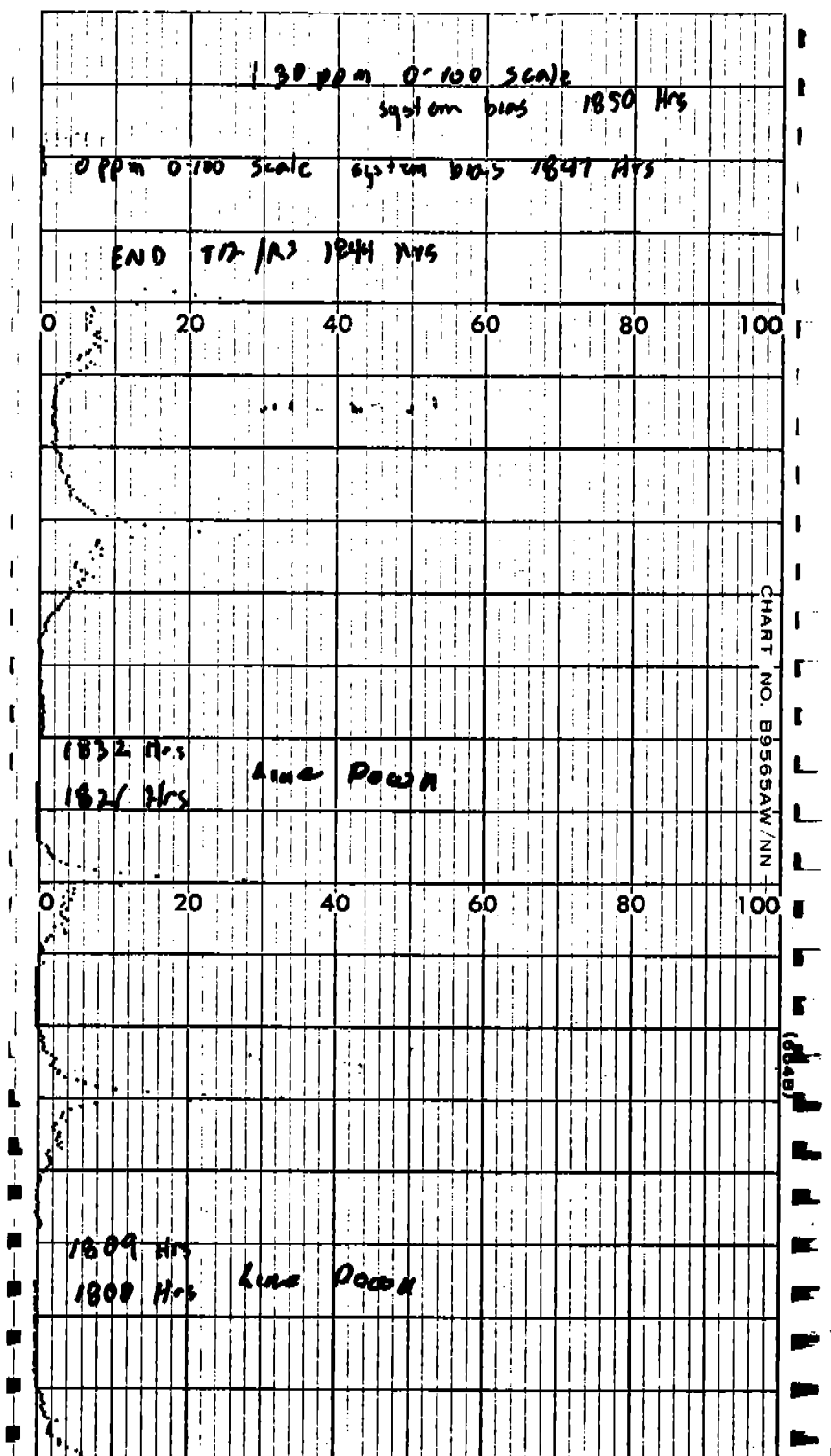
CHART NO. B9565AW/NN

T₁₂R₃ →
END

LP-
Urania
(cont.)

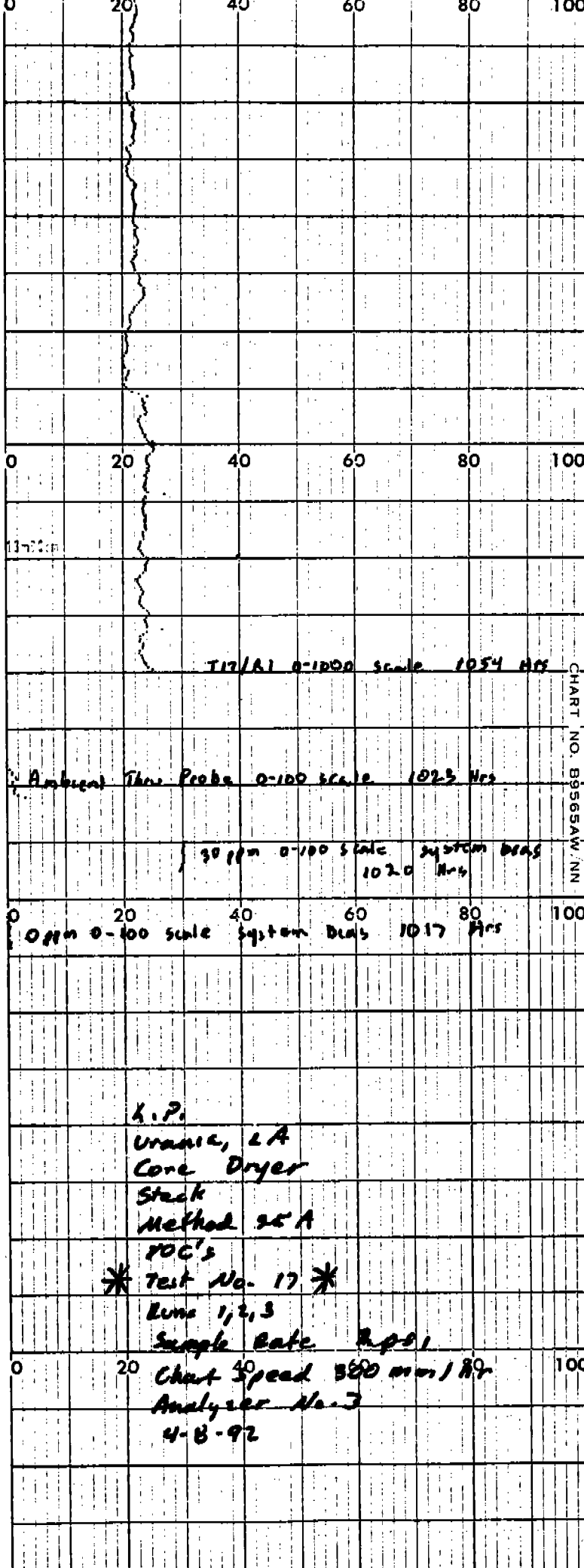
4-6-92

No. 3 Prod
Vent



1054 HRS
 T₁₇R, →
 START
 4-8-92

Y.P.
 Urania
 Core Dryer
 Stack

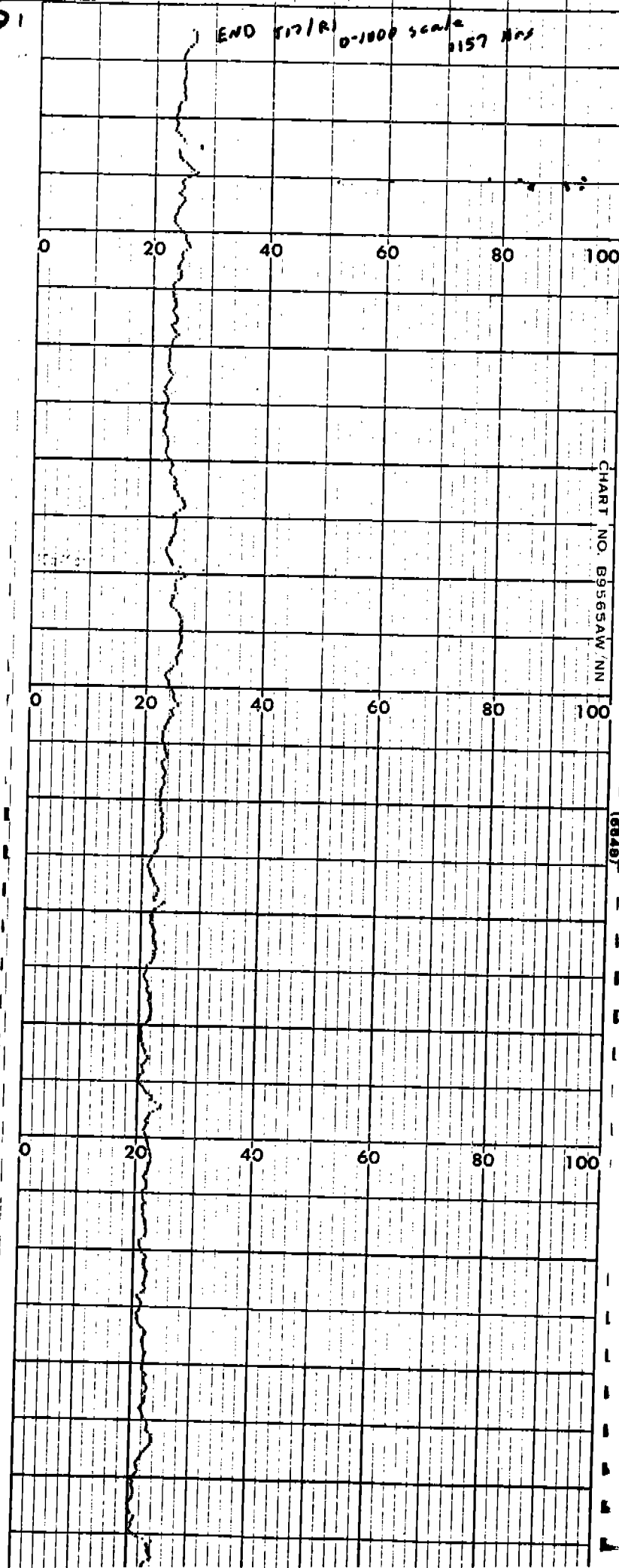


T17R, $\Rightarrow$
END

Core Dryer
Stack

LP-
Urania
(cont.)
4-8-92

Test 17
Run 1

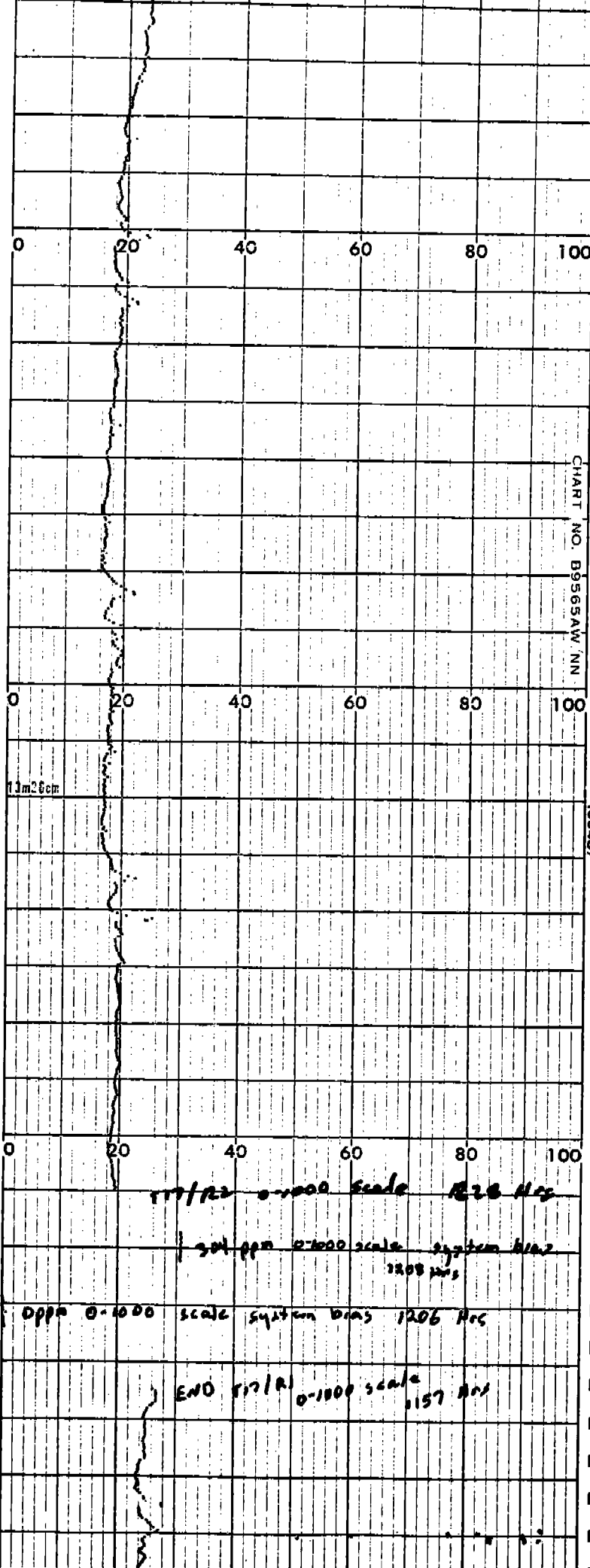


Core Dyer
Stack

LP-
Urania
(cont.)

1228 HRS
 $T_{17}R_2 \Rightarrow$
START

1157 HRS
 $T_{17}R_1 \Rightarrow$
END

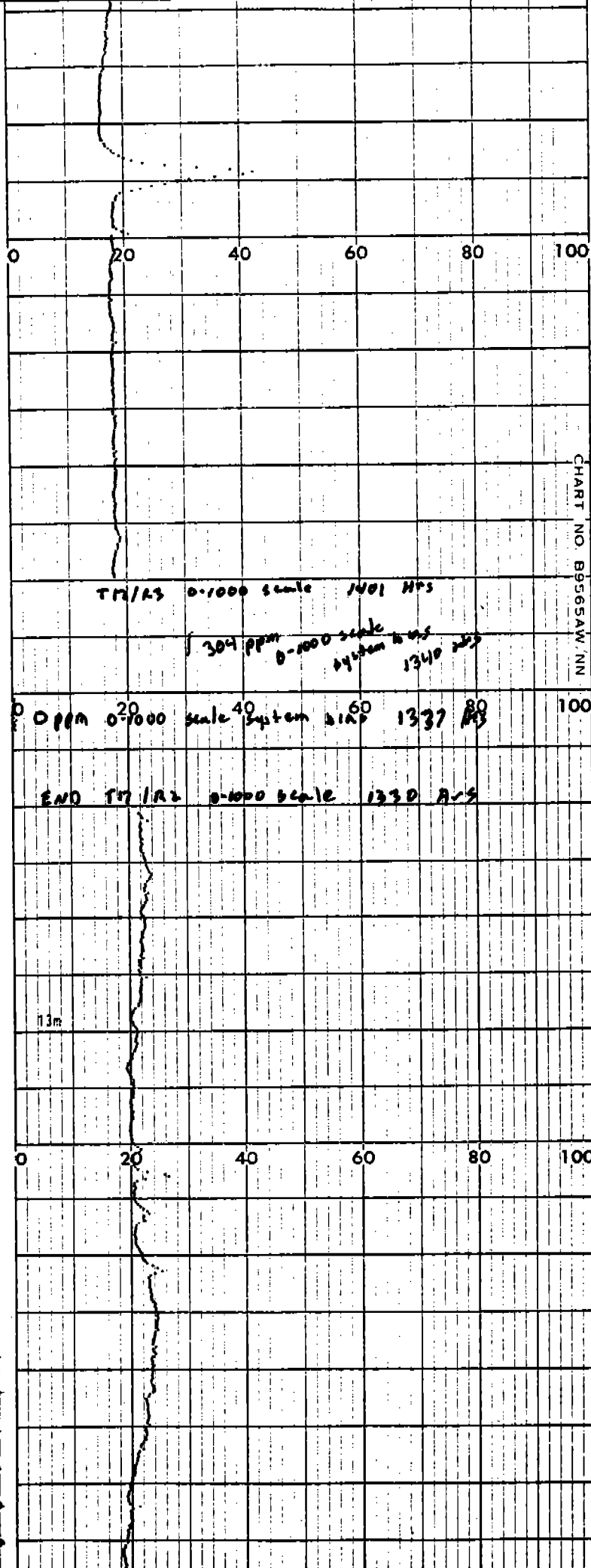


Core Dyer
Stack

1401 HRS
T_{17R3} →
START

1330 HRS
T_{17R2} →
END

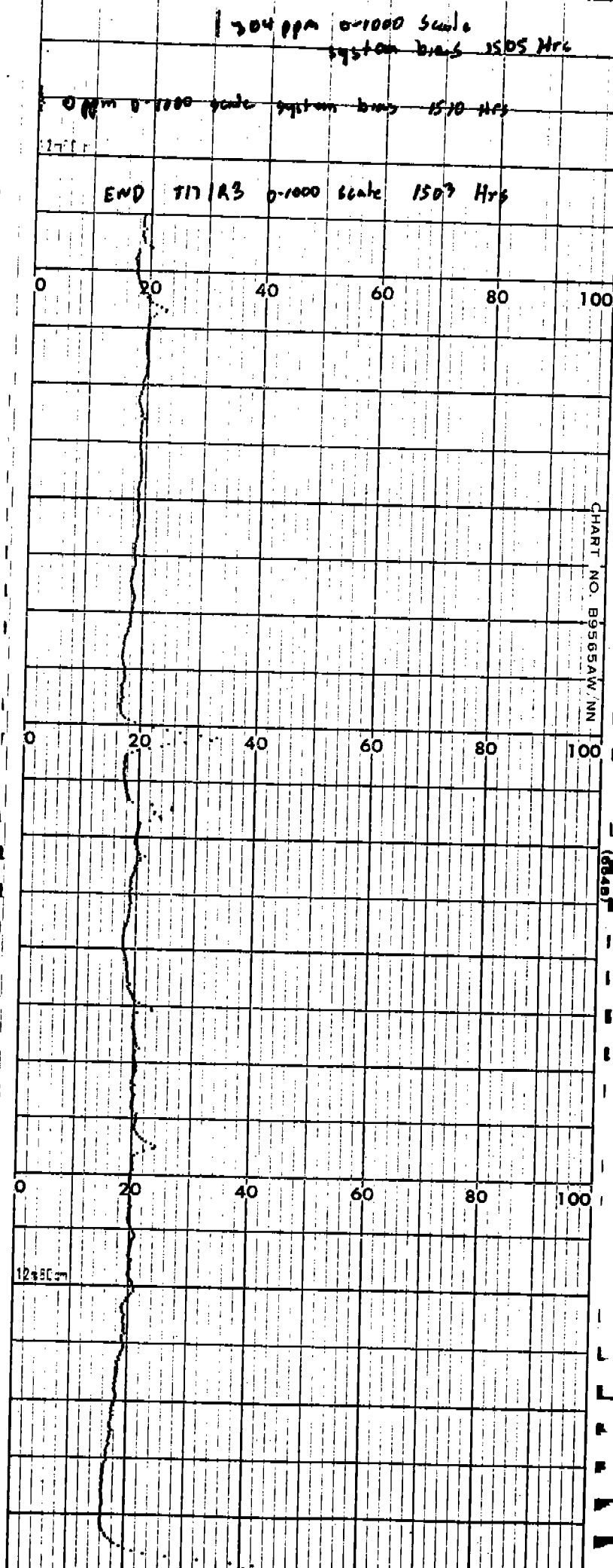
YP-
Urania



1503 HRS
 T₁₇R₃
 END

LP-
 Urania
 (cont.)

Core Dryer
 stack



0915 HRS

T₂₁ R₁

START

LP.

Urania

4-9-92

Face

Dryer

stack

0 20 40 60 80 100

0 20 40 60 80 100

12m40cm

121 221 0-1000 scale 0915 HRS

121 221 0-1000 scale system bias 0900 HRS

0 ppm 0-1000 scale system bias 0905 HRS

0 20 40 60 80 100

A.P.
Urania, CA
Face Dryer
stack

Method 25A

VOL's

* Test No. 21 *

Run 1, 6, 3

4-9-92

Sample Rate 2 ps

Chart Speed 300 mm/hr

Analyzer No. 3

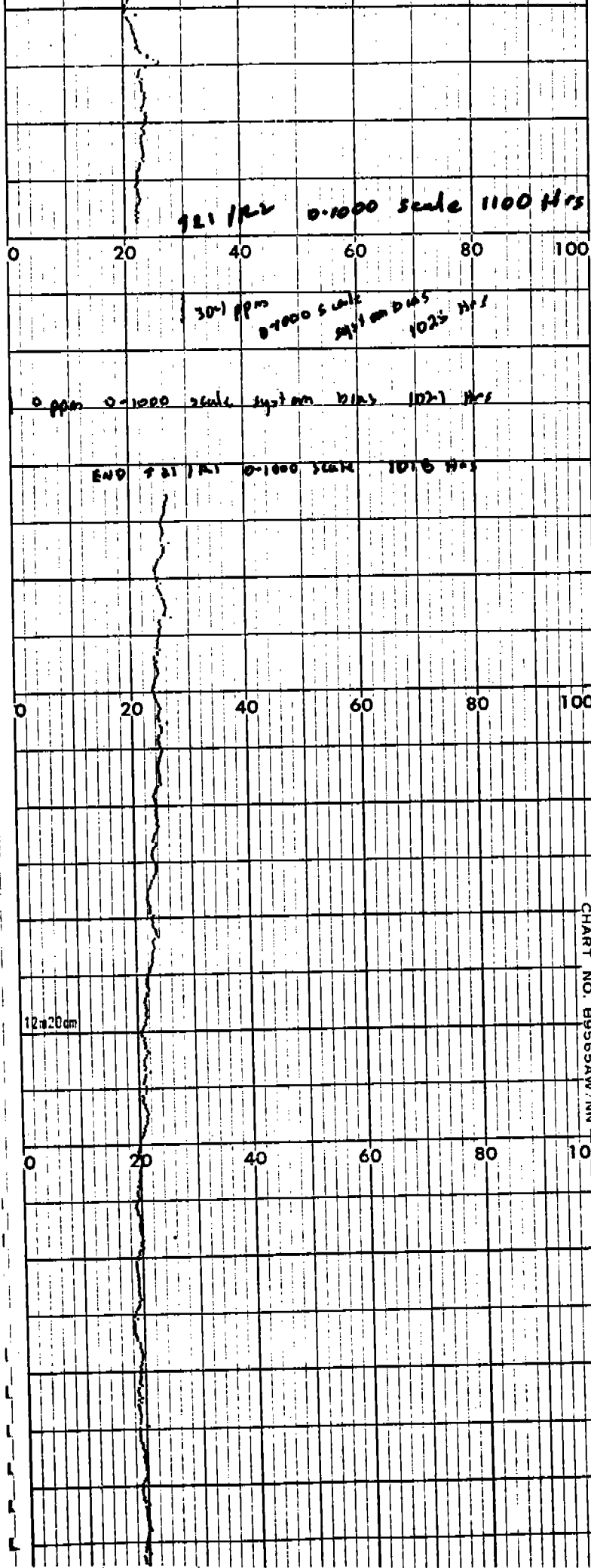
CHART NO. B9365AW/NN

(6440)

1100 HRS
T₂, R₂ →
START

1018 HRS
T₂, R₁ →
END

LP-
Wania
4-9-92
Face
Dryer
Stack



Test 21
Run 2
(Cont.)

LP-
Urania

Face
Dryer

4-9-92

0 20 40 60 80 100

0 20 40 60 80 100

0 20 40 60 80 100

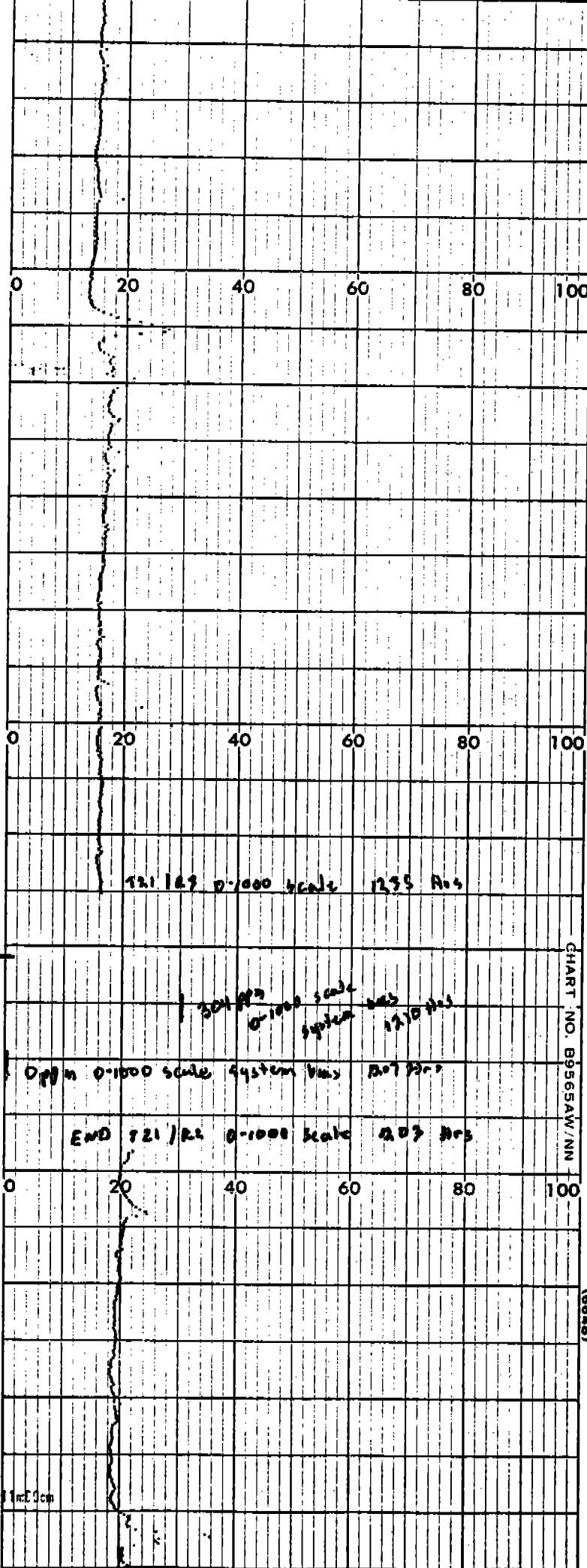
CHART NO. B9565AW/NN

(5848)

LP-
Urania
4-9-92

Face Dryer
T₂₁R₃ START

T₂₁R₂ →
END

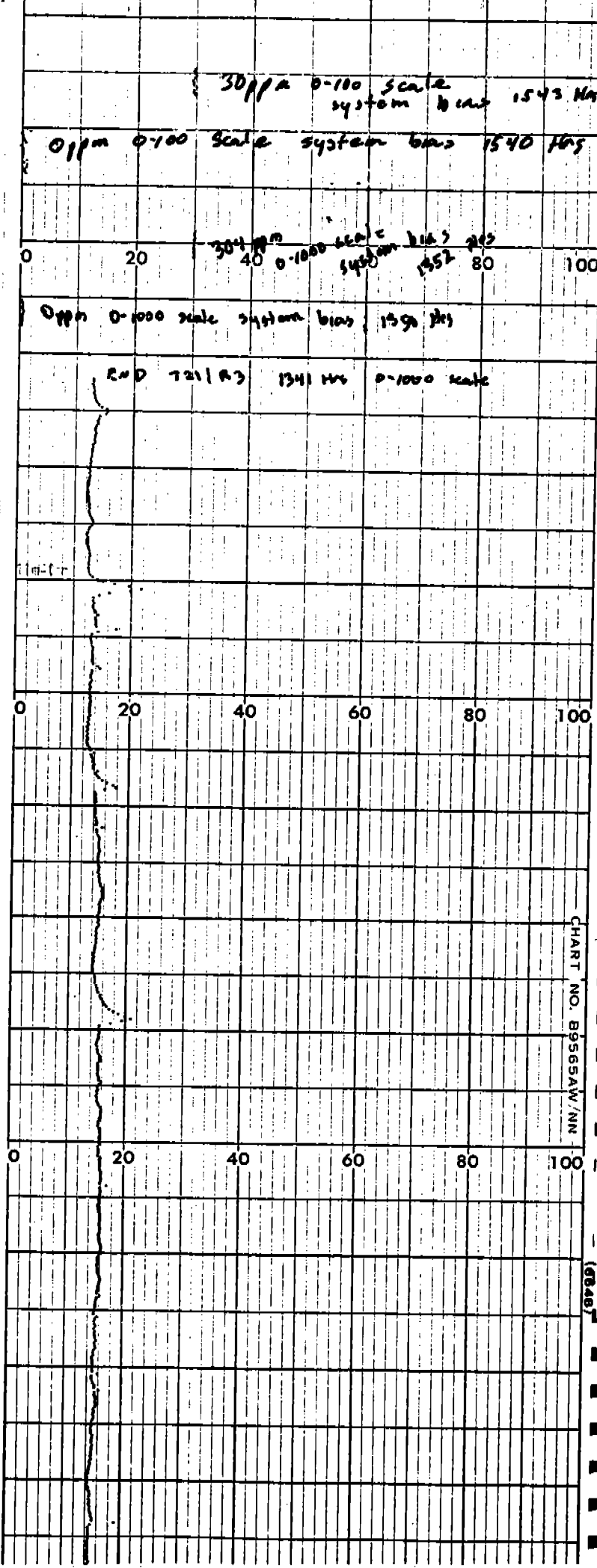


T₂₁R₃ →
END

LP
Urania
(cont.)

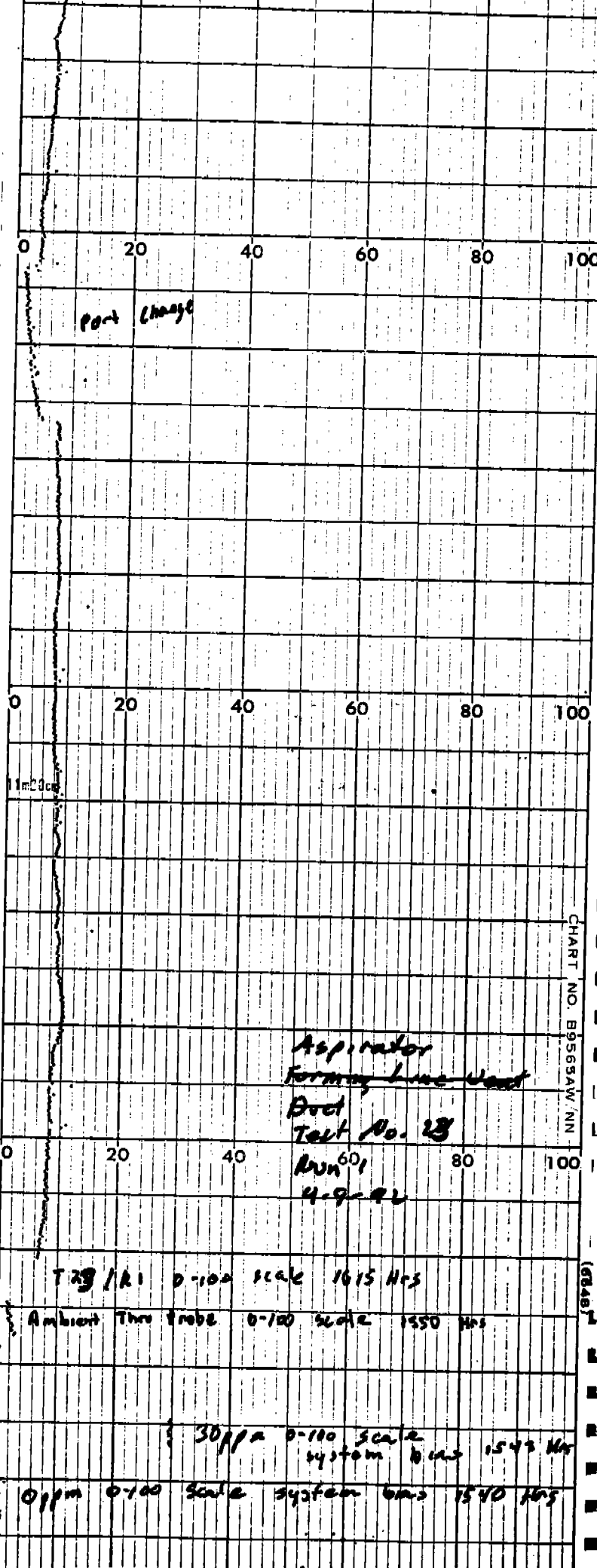
Face
Dryer

4-9-92



LP-Urania
Aspirator
Stack

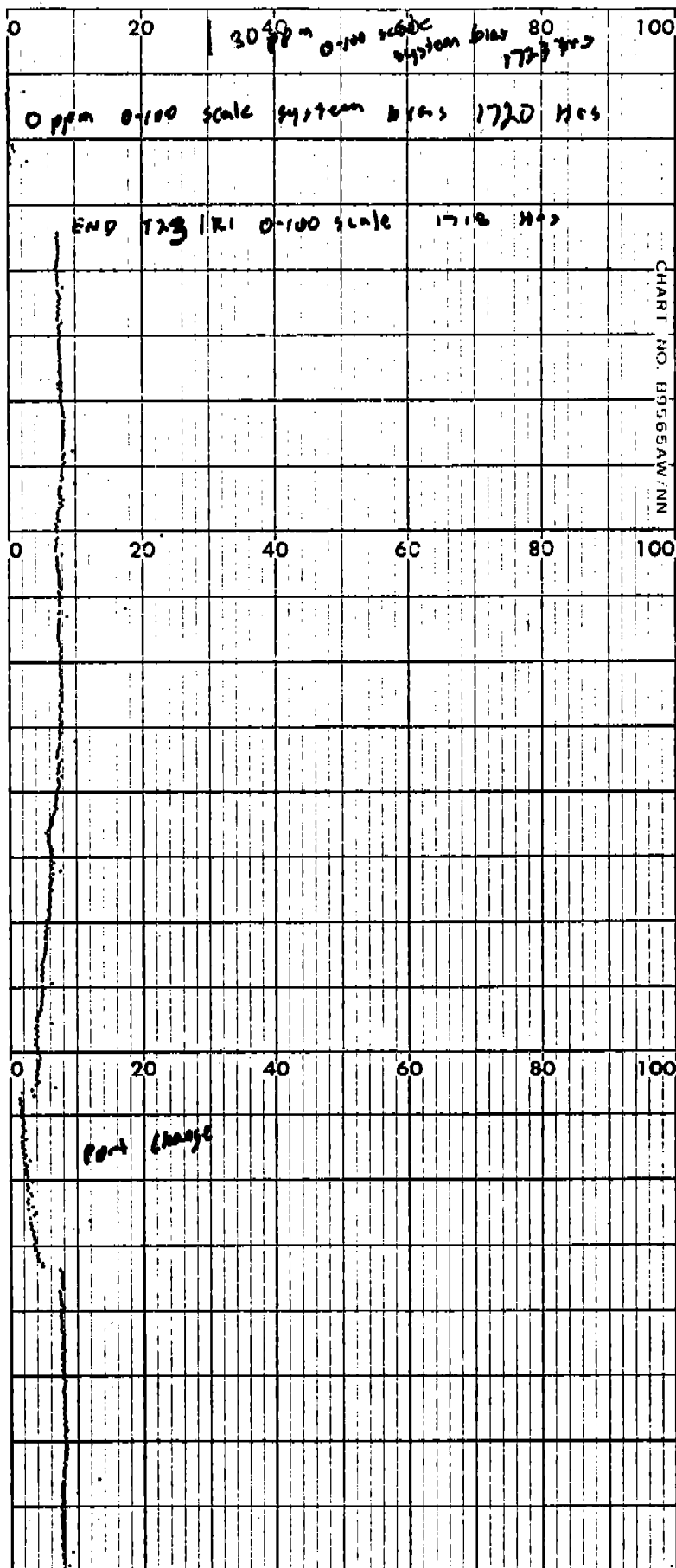
1615 HRS
T_{23R} →
START



1718HRS
T23R, →
END

LP-
Urania
(cont.)
4-9-92

Aspirator
Stack





TECHNICAL DATA

MAINS : 115V/60H

RECORDER OUTPUT : 0 - 5 V / 4-20mA

MODEL: X 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 ...

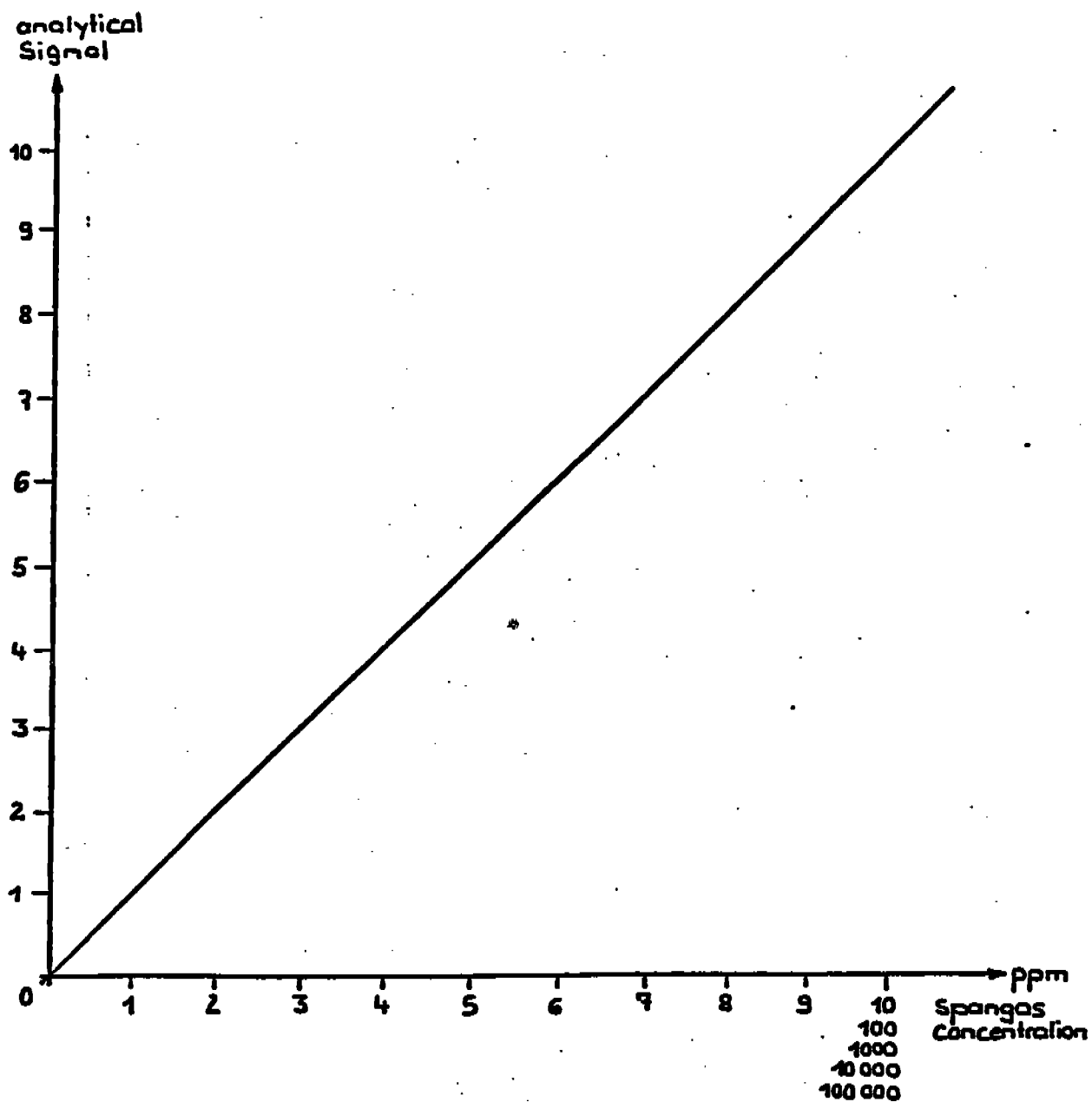
Pressure Setting: Sample/Spangas/Zerogas: 200 mbar

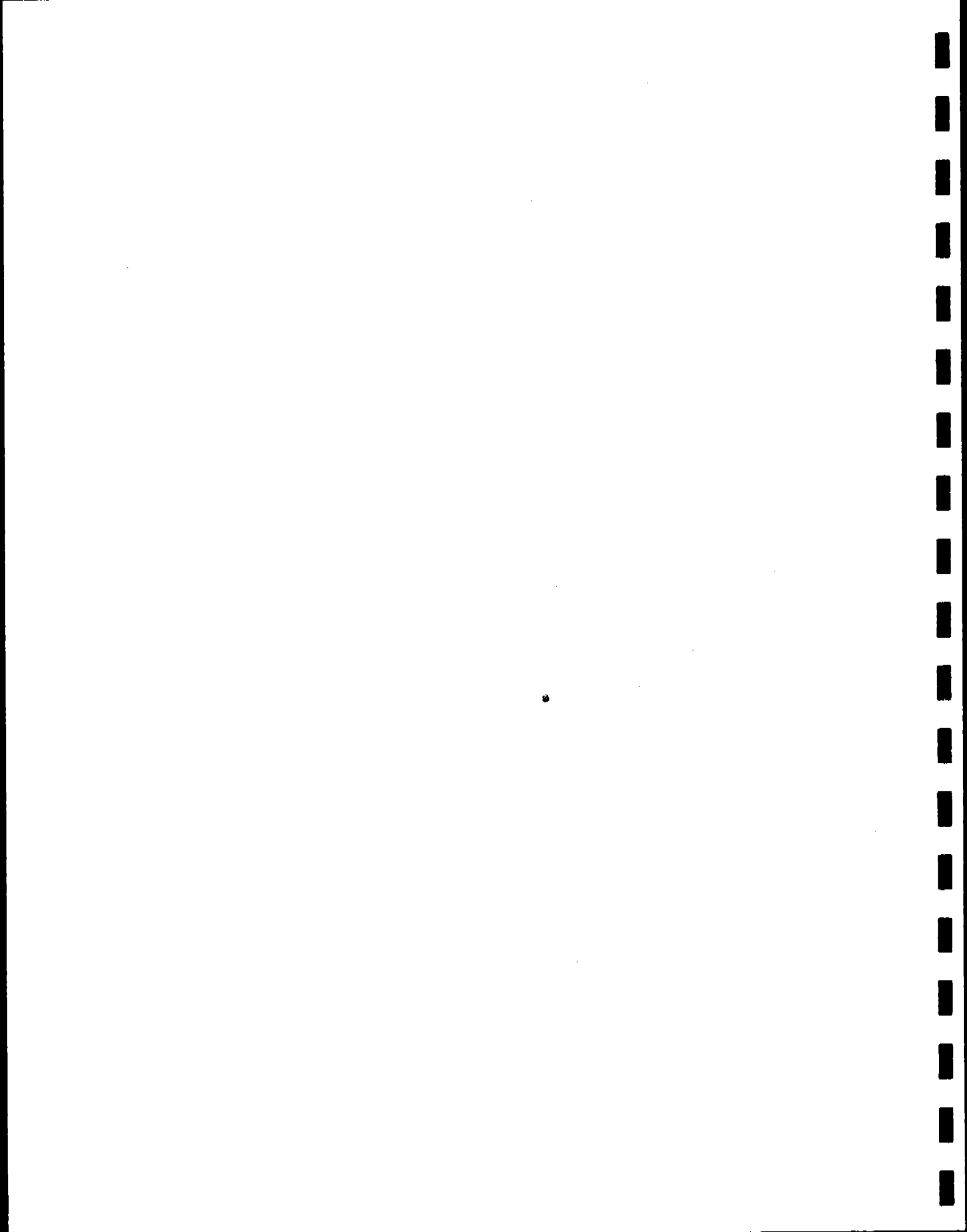
Fuel: Hydrogen : 0,35 bar

Combustion Air : 0,80 bar

Span Gases : 300 ppm C₁
 24.000 ppm C₁

CALIBRATION DIAGRAMM





INTERPOLL LABORATORIES
(612) 786-6020

System Bias Check

Job A.P. / Urania, LA
Test 346 Run 1,2,3 Date 4-4-92
Operator M. Leckler

Source No. 2 Press Vent, No. 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	0835	Zero gas	0	1	0	1	1000	
		Upscale	304	307	310	3	1000	
2	1010	Zero gas	0	1	0	1	100	
		Upscale	30	29	29	0	100	
3	1200	Zero gas	0	1	1	0	100	
		Upscale	30	29	30	1	100	
4	1443	Zero gas	0	1	0	1	100	
		Upscale	30	29	30	1	100	
5	1500	Zero gas	0	1	0	1	100	
		Upscale	30	29	28	1	100	
6	1830	Zero gas	0	1	0	1	100	
		Upscale	30	29	30	1	100	
7	2000	Zero gas	0	1	0	1	100	
		Upscale	30	29	29	0	100	
8	2127	Zero gas	0	1	0	1	100	
		Upscale	30	29	31	1	100	
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 2-A / Urania, LA

Source No. 4 Press Vent. / No. 3 Press Vent

Test 9+12 Run 1,2,3 Date 4-6-92

Site Stack

Operator M. Kachler

Run	Time (HRS)	***	Cylinder Value (ppm)	Analyzer Resp (ppm)		Diff. CE-SB (ppm)	Span Val (PPM)	% of span
				Cal Err	Sys Bias			
1	0845	Zero gas	0	1	0	1	100	
		Upscale	30	29	30	1	100	
2	1022	Zero gas	0	1	0	1	100	
		Upscale	30	29	30	1	100	
3	1236	Zero gas	0	1	0	1	100	
		Upscale	30	29	30	1	100	
4	1405	Zero gas	0	1	1	0	100	
		Upscale	30	29	31	2	100	
5	1530	Zero gas	0	1	0	1	100	
		Upscale	30	29	30	1	100	
6	1700	Zero gas	0	1	2	0	100	
		Upscale	30	29	30	1	100	
7	1845	Zero gas	0	1	0	1	100	
		Upscale	30	29	29	0	100	
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 L.P. 1000000000

Source Core Dryer

Test 10 Run 1,2,3 Date 4-8-92

Site Stad

Operator M. Kachler

Run	Time (HRS)	***	Cylinder Value (ppm)	Analyzer Resp (ppm)		Diff. CE-SB (ppm)	Span Val (PPM)	% of span
				Cal	Err			
1	1017	Zero gas	0	1	0	1	100	
		Upscale	30	29	30	1	100	
2	1204	Zero gas	0	1	2	1	1000	
		Upscale	304	307	308	1	1000	
3	1337	Zero gas	0	1	3	2	1000	
		Upscale	304	307	306	1	1000	
4	1510	Zero gas	0	1	3	2	1000	
		Upscale	304	307	306	1	1000	
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

Calibration Error Check & Drift Determination

Job LP/UraniaTest 17 Run _____ Date 4-8-92Operator M. Kishler

THC Calibration (Low Range):

Time (HRS) _____

***	Cylinder Value (ppm)	Analyzer Response (ppm)	Difference (ppm)	Span Value (ppm)	Percent of Span
Zero gas	0	1	1	100	
Low level	30	29	1	100	
Mid level	304	307	3	1000	
High level	3038	3043	5	10000	

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

Calibration Error Check & Drift Determination

Job LP/UraniaTest 21 Run Date 4-9-92Operator M. Kachler

THC Calibration (Low Range):

Time (HRS)

***	Cylinder Value (ppm)	Analyzer Response (ppm)	Difference (ppm)	Span Value (ppm)	Percent of Span
Zero gas	0	0	0	100	0
Low level	304	302	2	1000	
Mid level	3038	2996	42	10000	
High level	846	847	1	1000	

THC Calibration (High Range):

Time (HRS)

***	Cylinder Value (ppm)	Analyzer Response (ppm)	Difference (ppm)	Span Value (ppm)	Percent of Span
Zero gas	30	30	0	100	
Span	562	554	2	1000	

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 L.P. Urania Source Face Dryer
 Test 21 Run 1,2,3 Date 4-9-92 Site Stack
 Operator M. Kuchler

Run	Time (HRS)	***	Cylinder Value (ppm)	Analyzer Resp (ppm)		Diff. CE-SB (ppm)	Span Val (PPM)	% of span
				Cal Err	Sys Bias			
1	0905	Zero gas	0	0	0	1	1000	
		Upscale	304	307	309	2	1000	
2	1021	Zero gas	0	1	2	1	1000	
		Upscale	304	307	298	9	1000	
3	1345	Zero gas	0	1	3	2	1000	
		Upscale	304	307	300	7	1000	
4	1540	Zero gas	0	1	0	1	100	
		Upscale	30	29	30	1	100	
5	1720	Zero gas	0	1	0	1	100	
		Upscale	30	29	30	1	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

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.
ROSEVILLE, MN. 55113

Shipped From: Scott Michigan

Our Project #: 53359

Your P.O. #: 6033NW

Expiration Date: 8-18-93

Cylinder Number: BLN-001040

Cylinder Pressure: 1900 psig

1 OF 1 COMPONENT(S)

CERTIFICATE OF ANALYSIS - EPA PROTOCOL BASES

PERFORMED ACCORDING TO SECTION 3.0.4

Certified Per Traceability Procedure # 61

Protocol # 1

File # PQ-2217

Certified Accuracy 1% NBS Traceable

INSTRUMENTATION

REFERENCE STD

ANALYZED CYLINDER

LAST CALIBRATION DATE

INSTR/MODEL/SERIAL #

CONC.

CYLINDER NUMBER

SRM # (CRM #)

CERTIFIED CONC.

COMPONENT

ANALYTICAL PRINCIPLE

FLAME IONIZATION DETECTOR

BECKMAN

47.80 PPM

FF-26980

16678

30.07 PPM

PROPANE

BALANCE GAS: AIR

ANALYSIS

DATE: 2-18-92

ZERO	TEST	REFERENCE	RESULTS
GAS	GAS	BAS	RESULTS
(mV)	(mV)	CONC.	PPM
0.00	30.20	47.80 PPM	47.80
0.00	30.20	47.80	47.80
0.00	30.20	47.80	47.80

CALCULATED RESULTS
30.07
30.07
30.07

AVERAGE: 30.07 PPM

CALIBRATION CURVE

3rd DEGREE

SRM #	CONC.	SPLIT	DVM	FITTED PERCENT
(CRM #)	PPM	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
16648	47.80	HIGH	47.80	47.80 0.00

8M19 - GAS MANUFACTURER'S INTERNAL QUALITY CONTROL OF THIS COMPANY FOR GAS WHICH FAILS TO COMPLY WITH THE ANALYST SHALL BE REPLACED AT THE COMPANY'S EXPENSE WITHOUT FURTHER NOTICE.

Scott Specialty Gases



Scott Specialty Gases

a division of
Scott Environmental Technology, Inc.

1290 COMBERMERE STREET, TROY, MICHIGAN 48064 (313) 589-2950

Customer:

GENEX
2435 CLEVELAND AVENUE N.
ROBEVILLE, MN. 55113

*** CERTIFICATE OF ANALYSIS - EPA PROTOCOL BASED ***
PERFORMED ACCORDING TO SECTION 3.0.4
Certified Per Traceability
Procedure # 01
Protocol # 1

Certified Accuracy 1X NBS TRACEABLE

File # PU-2103

Cylinder Pressure 1900 psig

Expiration Date: 8-6-93

Cylinder Number: BLM-000633

1 OF 1 COMPONENTS

ANALYZED CYLINDER

COMPONENT: PROPANE
CERTIFIED CONC.: 304.3 PPM
SRM # (CRM #): 16698
CYLINDER NUMBER: CLN-000702
CONC.: 466.0 PPM
CLN-000694
95.00 PPM

BALANCE GAS: AIR

INSTRUMENTATION

INSTR/MODEL/SERIAL: BECKMAN 400 1002059
LAST CALIBRATION DATE: 1-23-92

ANALYTICAL PRINCIPLE:

FLAME IONIZATION DETECTOR

ANALYSIS

DATE: 2-6-92

TEST	RESULTS	REFERENCE	CONC.	(mV)	RESULTS	PPM
GAS	PPM	GAS	CONC.	(mV)	PPM	
0.00	65.70	466.0 PPM	100.00	466.0	466.0	
0.00	65.70	100.00	100.00	466.0	466.0	
0.00	65.70	100.00	100.00	466.0	466.0	

CALCULATED RESULTS: 304.3
304.3
304.3

AVERAGE: 304.3 PPM

CALIBRATION CURVE				2nd DEGREE	
SRM #	CONC.	SPLIT	DVM	FITTED PERCENT	
(CRM #)	PPM	PT (%)	(mV)	VALUE	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
16688	95.00	20	20.80	95.45	0.47
	0.0000	0	0.00	0.0000	0.00
	0	0	0	0.0000	0.00
	0	0	0	0.00	0.00
16688	95.00	LDN	20.80	95.45	0.47
16698	466.0	HIGH	100.00	466.0	0.00

*** MANUFACTURER'S INTERNAL STANDARD ***
ANALYST: J. P. Davis
APPROVED BY: Shapiro
This analysis was performed under contract to 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

*** CERTIFICATE OF ANALYSIS - EPA PROTOCOL GASES ***

PERFORMED ACCORDING TO SECTION 2.0.7.

Certified Per Traceability Procedure # 82

Protocol # 2

File # PO-2184

Certified Accuracy 2% ANALYTICAL UNCERTAINTY

1 OF 1 COMPONENTS

INSTRUMENTATION

REFERENCE STD

LAST CALIBRATION DATE

INSTR/MODEL/SERIAL #

CYLINDER NUMBER

CONC.

ANALYZED CYLINDER

CERTIFIED CONC.

303B PPM

SRM # (CRM #)

CLM-000702

CLM-000894

BECKMAN 400

1-23-92

ANALYTICAL PRINCIPLE

FLAME IONIZATION DETECTOR

BALANCE GAS: AIR

ANALYSIS

DATE: 2-6-92

ZERO GAS (mV)	TEST GAS (mV)	REFERENCE		RESULTS	
		CONC.	GAS	CONC.	PPM
0.00	65.60	466.0 PPM	100.00	466.0	466.0
0.00	65.60	100.00	100.00	466.0	466.0
0.00	65.60	100.00	100.00	466.0	466.0

CALCULATED RESULTS 303.8
SAMPLE GAS SPLIT @ 10% OF FULL CONC.
303.8 PPM DIVIDED BY 10% = 3038 PPM.

AVERAGE 1 303.8 PPM

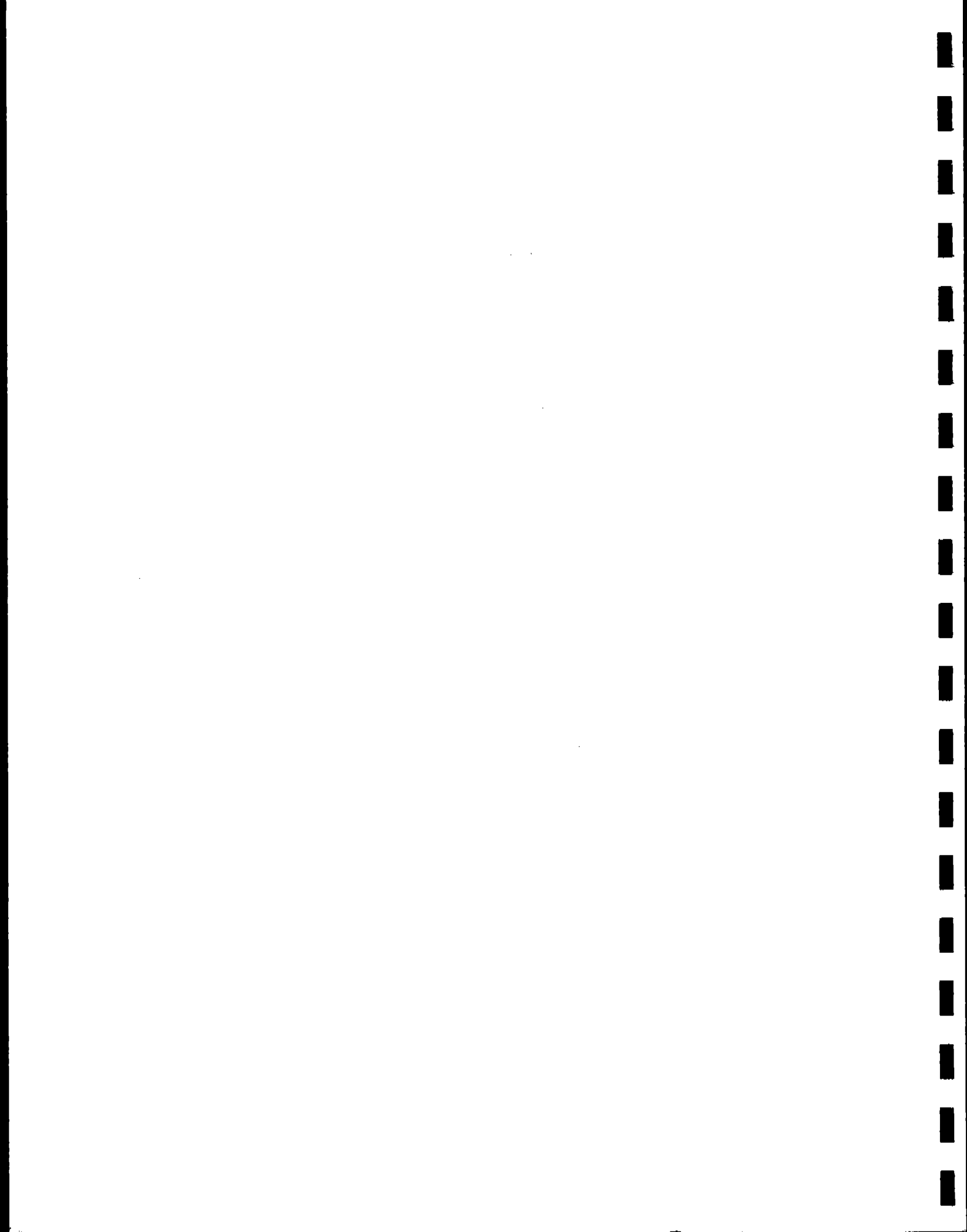
CALIBRATION CURVE

SRM # (CRM #)	CONC. PPM	SPLIT (%)	DVM PT (mV)	FITTED VALUE	PERCENT ERROR
1669B	466.0	100	100.00	466.0	0.00
	319.8	68	68.10	319.6	-0.08
	199.9	43	43.30	199.7	-0.10
1668B	95.00	20	20.80	95.43	0.47
	0.0000	0	0.00	0.0000	0.00
		0		0.0000	0.00
		0		0.00	0.00
1668B	95.00	LOW	20.80	95.43	0.47
1669B	466.0	HIGH	100.00	466.0	0.00

Shapiro

Approved By: *Y. P. Davis*

BM19 - GAS MANUFACTURER'S INTERMEDIATE WARNING: If this Company fails to supply with this analysis, it will be replaced thereof by the Company without extra cost.





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.

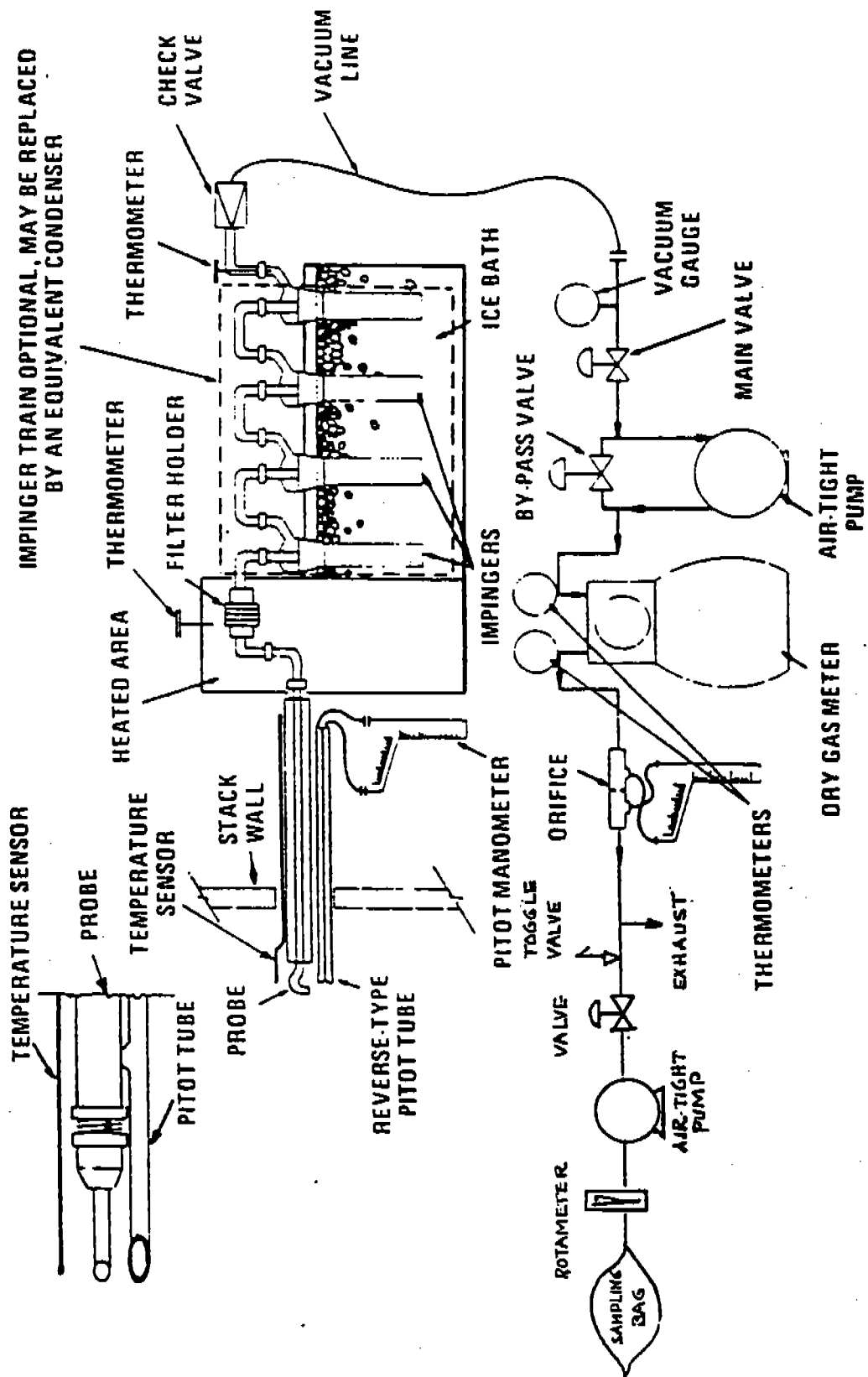
7. Desiccate for two hours in a sealed desiccator and final weigh. Report all results in grams. All weighings should be made to nearest 0.1 mg (four places).
8. The remaining liquid in the separatory funnel is then transferred to a tared beaker marked B and is evaporated to dryness at $220^{\circ}\text{F} \pm 10^{\circ}\text{F}$. 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.



METHOD 201A - DETERMINATION OF PM₁₀ 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 (PM₁₀) from stationary sources. The EPA recognizes that condensible emissions not collected by an in-stack method are also PM₁₀, and that emissions that contribute to ambient PM₁₀ levels are the sum of condensible emissions and emissions measured by an in-stack PM₁₀ method, such as this method or Method 201. Therefore, for establishing source contributions to ambient levels of PM₁₀, such as for emission inventory purposes, EPA suggests that source PM₁₀ measurement include both in-stack PM₁₀ 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 PM₁₀. 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 PM₁₀ 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^{-6} 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 PM_{10} flow rate, at actual cyclone conditions, is calculated as follows:

$$Q_s = \frac{T_s}{K_1 P_s} \left[Q_{s(std)} + \frac{V_{w(std)}}{\theta} \right]$$

$$T_s = \bar{T}_s + 466$$

$$\text{but } Q_{s(std)} = \frac{V_{w(std)}}{\theta}$$

$$K_1 = 17.64$$

Substituting gives:

$$Q_s = \frac{5.669 \times 10^{-2} (\bar{T}_s + 466)}{\theta P_s} [V_{w(std)} - .04707 (V_f - V_i)]$$

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 D_{50} 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 $9.0 \mu m \leq D_{50} \leq 11.0 \mu m$. The second is that no sampling points are outside Δp_{min} and Δp_{max} , or that $80 \text{ percent} \leq I \leq 120 \text{ percent}$ and no more than one sampling point is outside Δp_{min} and Δp_{max} . If D_{50} is less than $9.0 \mu m$, 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.

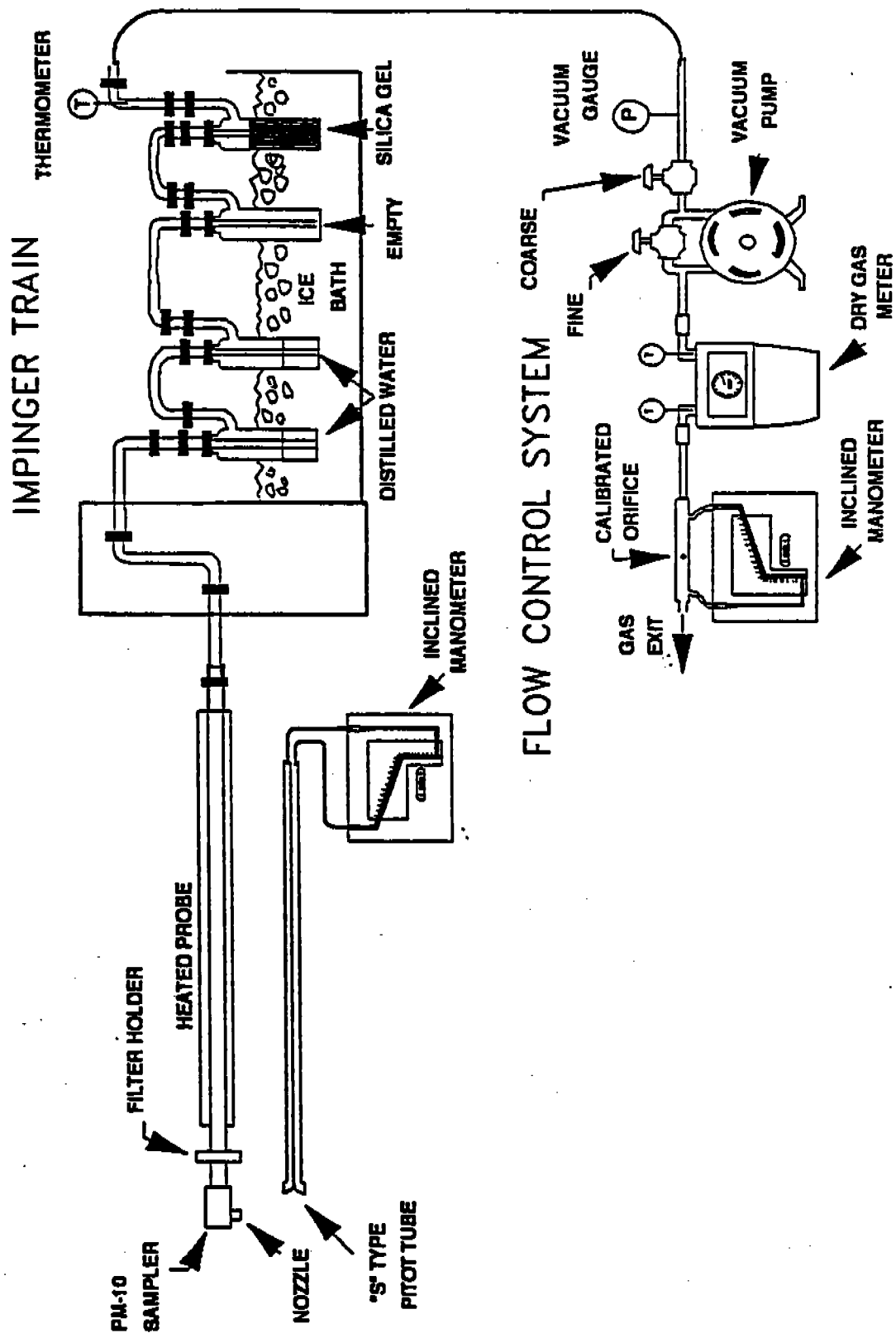
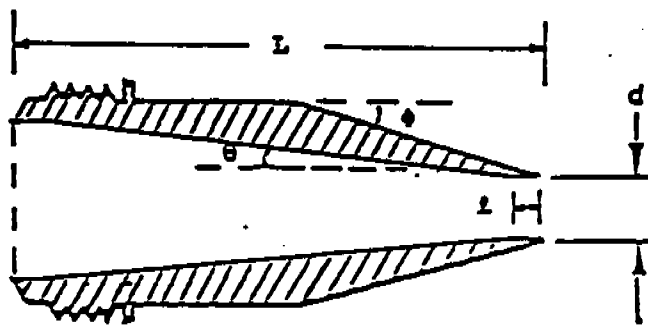


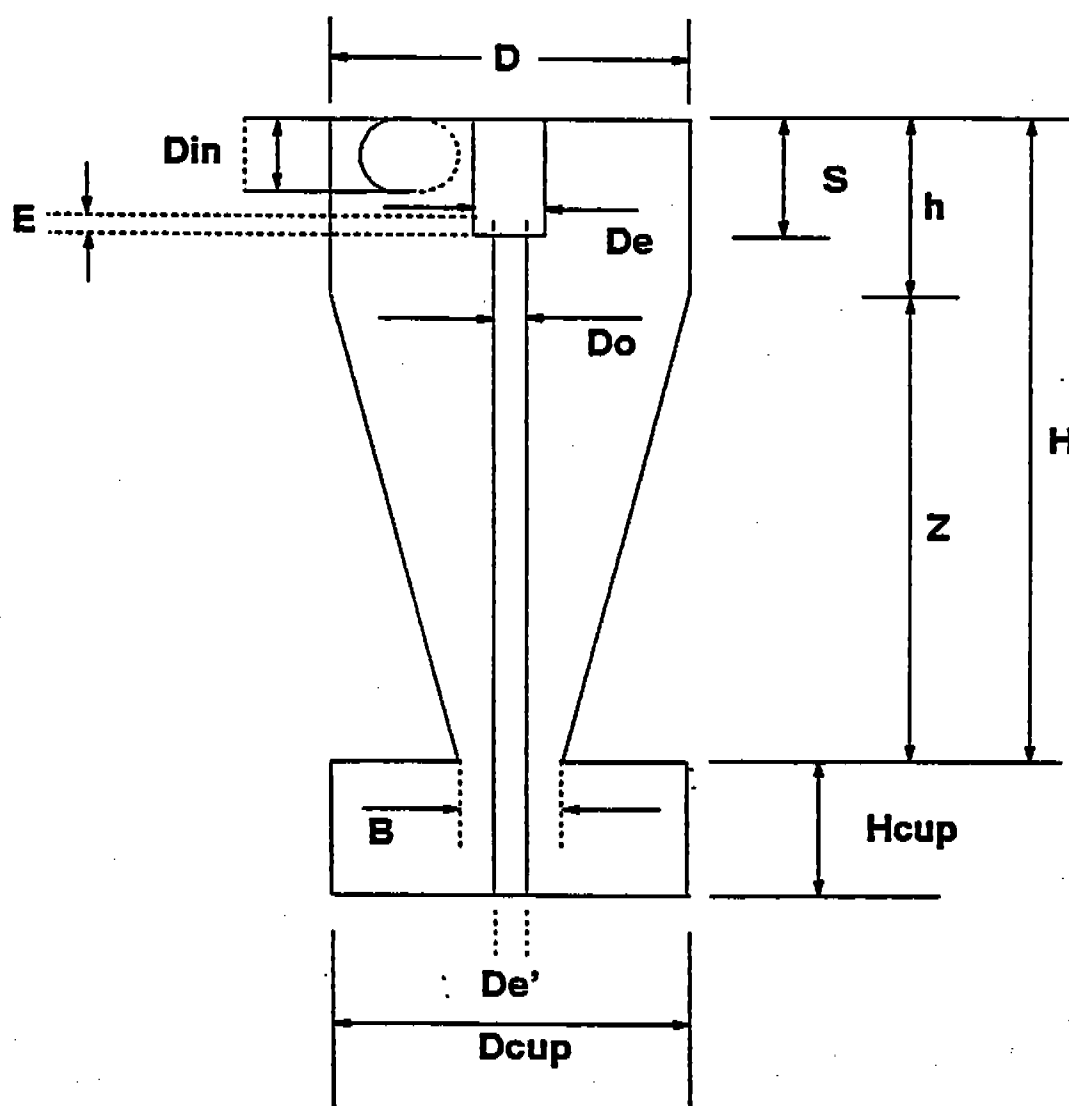
Figure 1. CSR Sampling Train



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±0.05
0.150	4	15	<0.05	2.553±0.05
0.164	5	15	<0.05	1.970±0.05
0.180	6	15	<0.05	1.572±0.05
0.197	6	15	<0.05	1.491±0.05
0.215	6	15	<0.05	1.45 ±0.05
0.233	6	15	<0.05	1.45 ±0.05
0.264	5	15	<0.05	1.45 ±0.05
0.300	4	15	<0.05	1.48 ±0.05
0.342	4	15	<0.05	1.45 ±0.05
0.390	3	15	<0.05	1.45 ±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_g , in. H₂O = _____
 Average stack temperature, t_s , °F = _____
 Meter temperature, t_m , °F = _____
 Orifice ΔH_g , 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:

$$P_s = P_{bar} + \frac{P_g}{13.6} = \text{_____ in. Hg}$$

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

$$\Delta H = \left[\frac{Q_s (1 - B_{ms}) P_s}{t_s + 460} \right]^2 \frac{(t_m + 460) M_d (1.083) \Delta H_g}{P_{bar}} = \text{_____ in. H}_2\text{O}$$

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, ft³/min, Q_p = _____
 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} .

$$R_{min} = 0.2457 + \left[0.3072 - \frac{0.2603 (\sqrt{Q_s}) \mu_s}{v_n^{1.5}} \right] = \text{_____}$$

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} .

$$R_{max} = 0.4457 + \left[0.5690 + \frac{0.2603 (\sqrt{Q_s}) \mu_s}{v_n^{1.5}} \right] = \text{_____}$$

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.

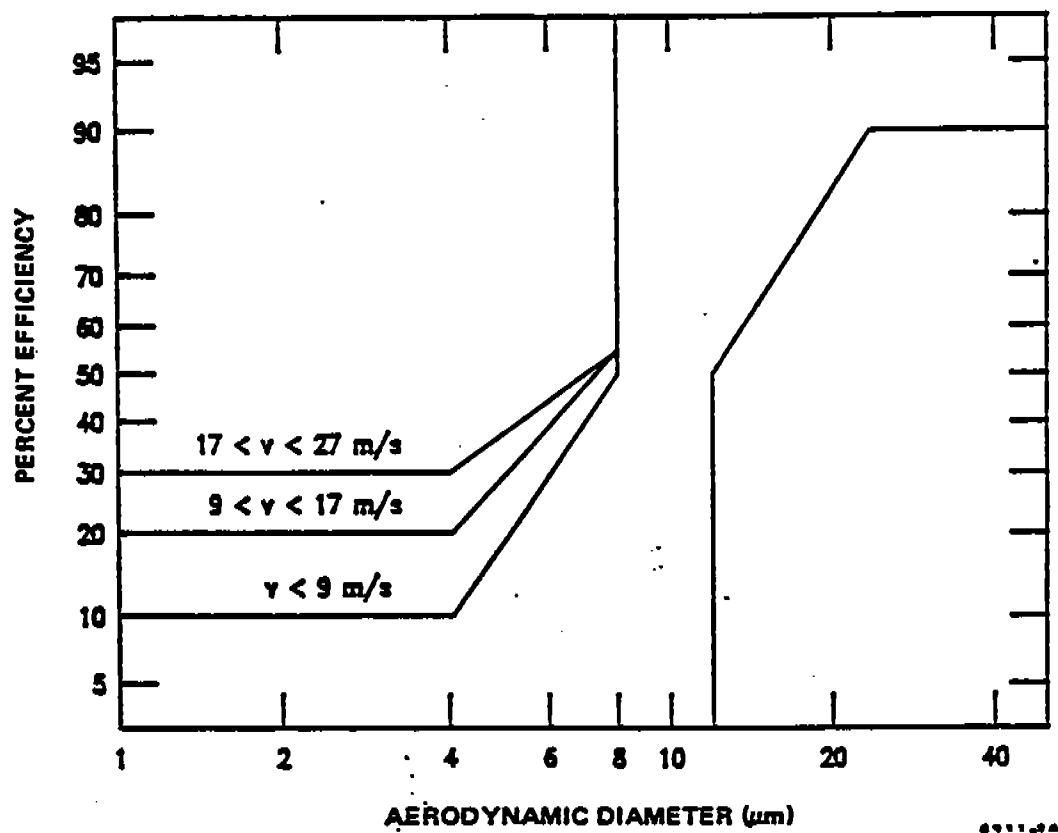


Figure 8. Efficiency envelope for the PM_{10} cyclone.

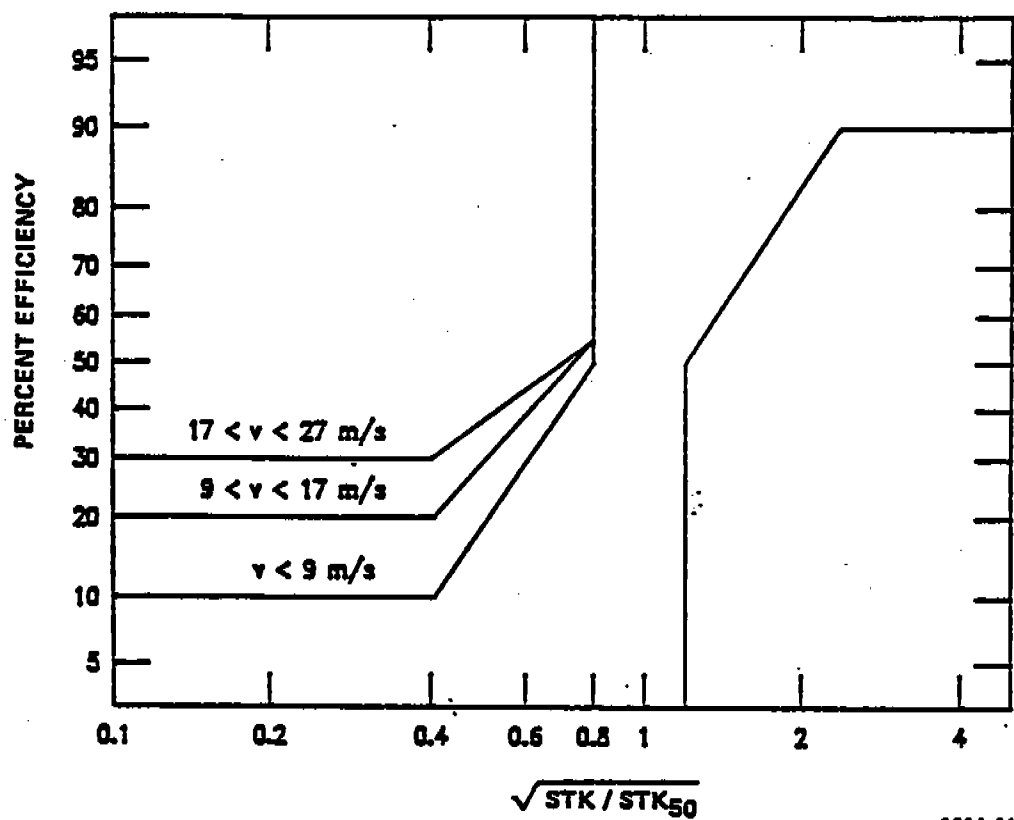


Figure 9. Efficiency envelope for first calibration stage.

(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 (H₂O) and carbon dioxide (CO₂) are 3.5 percent H₂O per 7 ppm CO and 10 percent CO₂ 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 H₂O per 25 ppm CO and 10 percent CO₂ 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.

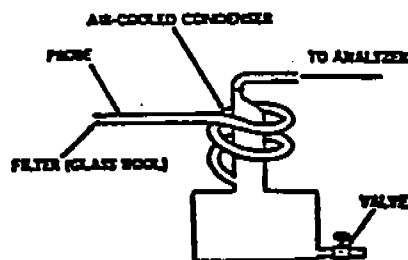


Figure 10-1. Continuous sampling tube.

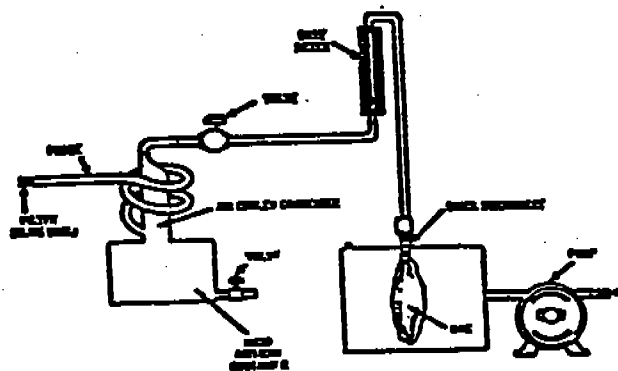


Figure 10-2. Integrated gas sampling tube.

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.

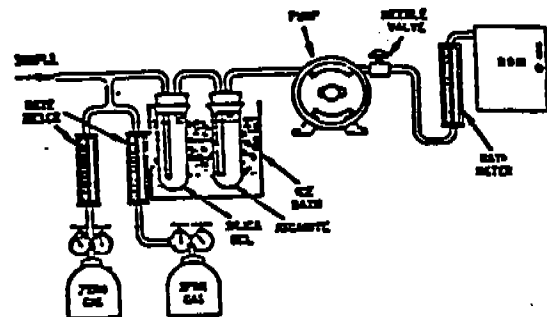


Figure 10-3. Analytical equipment.

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.

$$C_{CO \text{ stack}} = C_{CO \text{ NDIR}}(1 - F_{CO})$$

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} = 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 1635-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.

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1.0 SCOPE AND APPLICATION

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, µg/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):

$$AIL = 0.1 \times [EAL \times SVOL \times FW / 22.4 \times (FW + 180) / FW] / (RVOL \times 1000)$$

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 500µL 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 = $C_d \times V \times DF \times$

$$\left(\frac{[\text{g/mole aldehyde}]}{[\text{g/mole DNPH derivative}]} \right) \times 10^{-3} \text{ mg/}\mu\text{g}$$

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:

$$C_z = K [\text{total formaldehyde, mg}] / V_{m(\text{std})}$$

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 FORM₁ Mass -

$$[(WF) (FORM_1 \text{ conc}) (100 - \%DRE)] / 100$$

where:

WF - mass flow rate of waste feed per h, g/h (lb/h)

FORM₁ - 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:

$$\text{Max FORM}_1 \text{ conc} = [\text{Max FORM}_1 \text{ Mass}] / DV_{\text{eff(std)}}$$

where:

DV_{eff(std)} - volumetric flow rate of exhaust gas, dscm (dscf)

FORM₁ 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.

$$[LDL_{\text{FORM}} \times 10] / [FORM_1 \text{ conc}] = V_{\text{thc}}$$

where:

LDL_{FORM} - detectable amount of FORM in entire sampling train

V_{thc} - 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 µL 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.

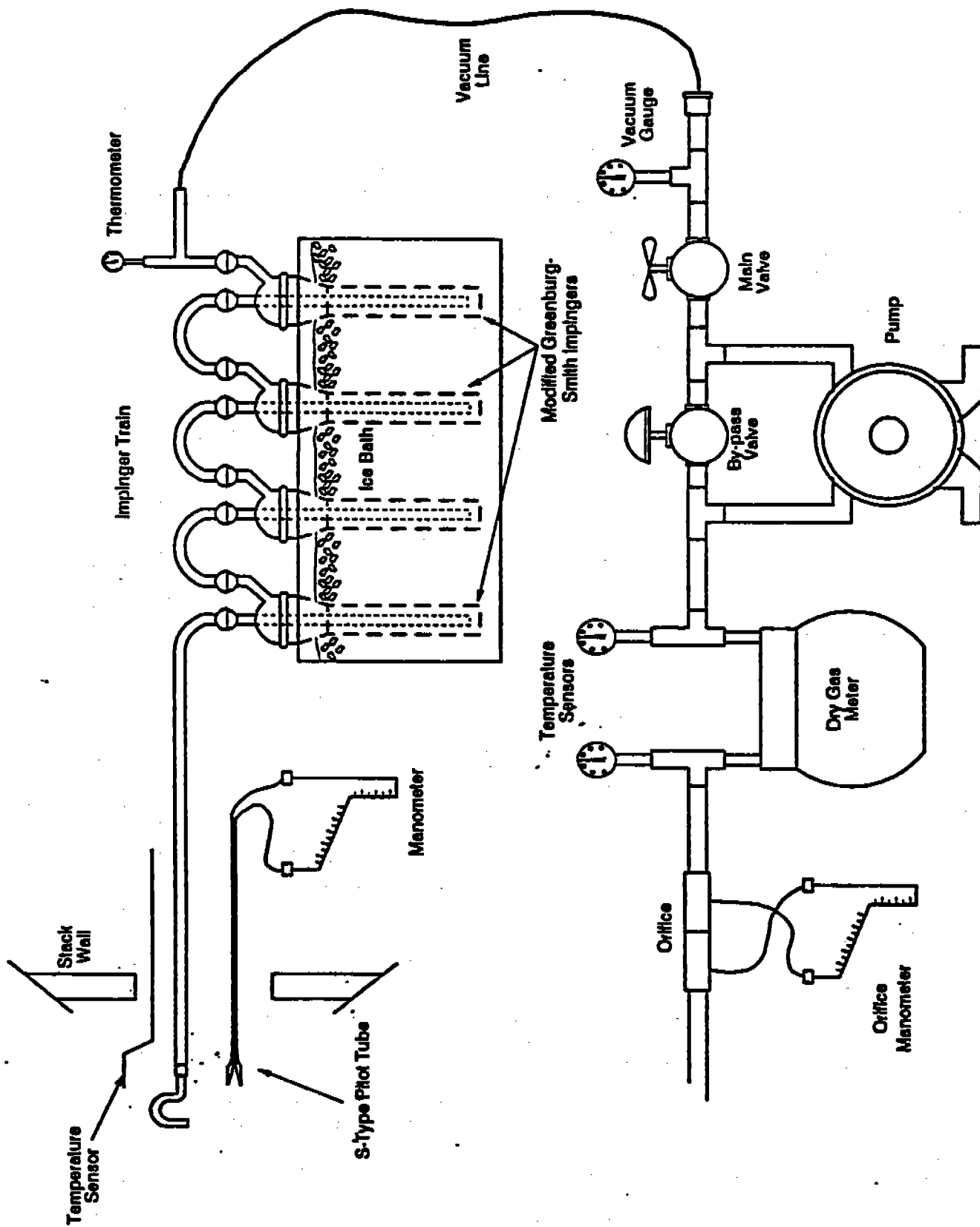
Table 3. Expected Method Performance for Formaldehyde

Parameter	Precision	¹ Accuracy ²	Detection Limit ³
Matrix: Dual trains	±15% RPD	±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

Plant _____

Location _____

Operator _____

Date _____

Run No. _____

Sample Box No. _____

Meter Box No. _____

Meter H@ _____

C Factor _____

Pilot Tube Coefficient C_p _____

Schematic of Stack Cross Section

Fiber No.

[illegible]

Figure 2. Field Data Sheet

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 (FIA). 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:

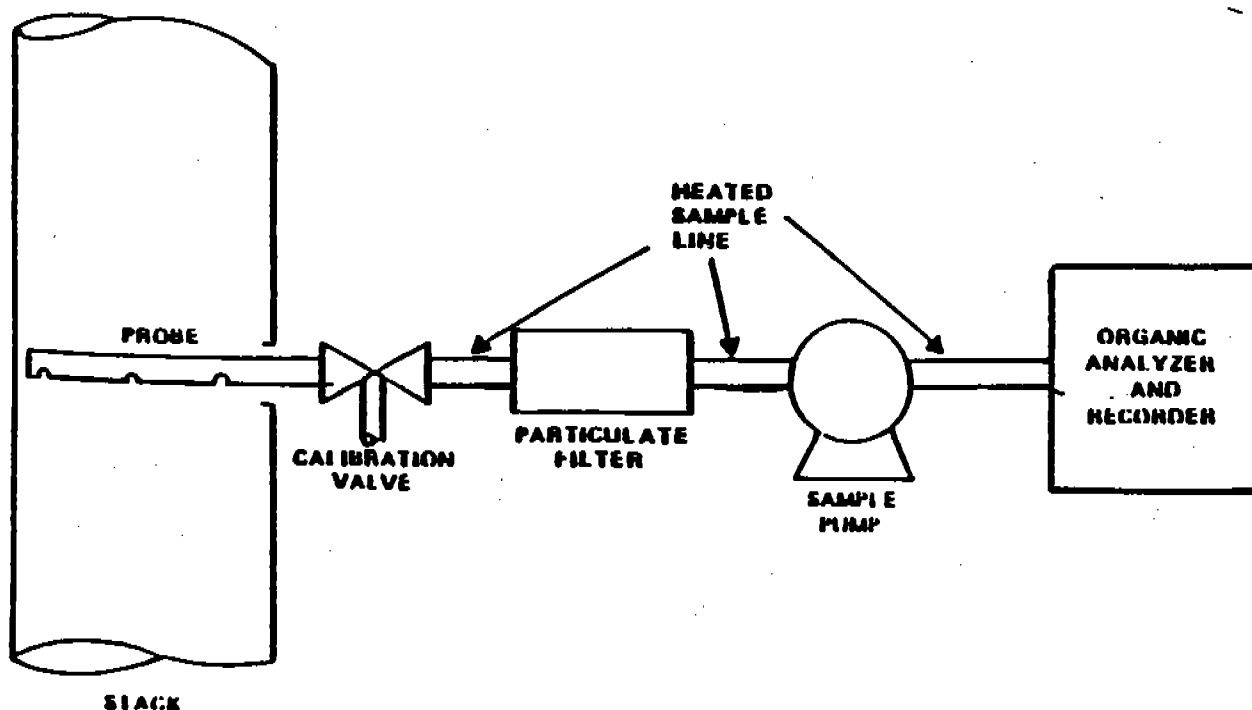


Figure 25A-1. Organic Concentration Measurement System.

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.

$$C_c = K C_{\text{meas}}$$

Eq. 25A-1

Where:

C_c = Organic concentration as carbon, ppmv.

C_{meas} = 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
Y	= 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
 $v_{p_{tdb}}$ = 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

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

$$V_{m(std)} = 17.65 V_m \gamma \left(\frac{P_{bar} + \overline{\Delta H}/13.6}{T_{m(avg)}} \right)$$

$$V_{w(std)} = 0.0472 V_{Is}$$

$$B_{ws} = \frac{V_{w(std)}}{V_{w(std)} + V_{m(std)}}$$

$$I = 0.0944 \left(\frac{T_{s(avg)} V_{m(std)}}{P_s V_s A_n \theta (1 - B_{ws})} \right)$$

$$C_s = \frac{15.43 M_p}{V_{m(std)}}$$

$$C_a = \frac{272.3 M_p P_s}{T_{s(avg)} (V_{w(std)} + V_{m(std)})}$$

$$(\dot{m}_p)_1 = 8.5714 \times 10^{-3} C_s Q_{s,d}$$

$$(\dot{m}_p)_2 = \frac{1.3228 \times 10^{-1} M_p A}{0 A_n}$$

$$\dot{m}_p = \frac{(\dot{m}_p)_1 + (\dot{m}_p)_2}{2}$$

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:

$$V_{m(std)} = 17.64 \gamma V_m \left(\frac{P_b + \frac{\Delta \bar{H}}{13.6}}{(\bar{t}_s + 460)} \right)$$

$$Q_s = \frac{5.669 \times 10^{-2} (\bar{t}_s + 460)}{\Theta P_s} [V_{m(std)} + 0.04707 (V_f - V_d)]$$

$$\mu = 152.418 + 0.2552 \bar{t}_s + 3.2355 \times 10^{-5} \bar{t}_s^2 \\ + 0.53147 B_{O_2} - 0.74143 MC$$

$$M_s = M_d \left(1 - \frac{MC}{100} \right) + 0.18 MC$$

$$D_{50} = 0.15625 \left(\frac{\bar{t}_s + 460}{M_s P_s} \right)^{0.2091} \left(\frac{\mu}{Q_s} \right)^{0.7091}$$

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_f = 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_c - orifice coefficient or pressure drop across calibrated orifice @ 0.75 DSCFM, IN.WC
 t_a - temperature of dry test meter, °F
 A_p^{N201A} - velocity pressure of gas stream as measured with S-type pitot attached to cyclone, IN.WC
 A_p^{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
 $\bar{t}_s$ - average stack gas temperature during test run, °F
 θ - total run time, minutes
 $V_{n(std)}$ - 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
 $\bar{t}_a$ - 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_a - 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.)
$\dot{m}$	= 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

$$m_t = \frac{m_a \times V_{\text{soln}}}{V_{\text{aliq}}}$$

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_{aliq} = 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

1971

8-17-71 2 78.00 1.00 79.00

EPA Method 5 Gas Metering System
Quality Control Check Data Sheet

Job L.P. / URBANIA, LA.

Date 4/3/92

Operator D. BRENDAN

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 29.78 in. Hg. $\tau =$.9991 ΔH_0 1.90 in. W.C.

Time (min)	Volume (CF)	Meter Temp. (°F)	
		Inlet	Outlet
	(138.00)		
2.5	139.90	86	78
5.0	141.79	87	79
7.5	143.68	88	80
10	145.571	88	80
	$V_m = 7.574$	Avg (t_m) = 83.75 °F	

Calculate Y_{en} as follows:

$$Y_{en} = \frac{1.786}{\tau V_m} \left[\frac{(t_m + 460)}{P_b} \right]^{0.5}$$

$$Y_{en} = \frac{1.786}{(.9991)(7.574)} \left[\frac{(83.75) + 460}{(29.78)} \right]^{0.5}$$

$$Y_{en} = \underline{1.0085}$$

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

EPA Method 5 Gas Metering System
Quality Control Check Data Sheet

Job LP. / ULRANIA, LA.

Date 1/6/92

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 29.81 in. Hg. $\tau =$.9991 ΔH_0 1.90 in. W.C.

Time (min)	Volume (CF)	Meter Temp. (°F)	
		Inlet	Outlet
1.0	(405.00)	77	66
2.5	406.88	77	66
5.0	408.77	78	67
7.5	410.66	81	69
10	412.538	82	69
15.0	$V_m = 7.538$	Avg (t_m) = °F	

Calculate Y_{en} as follows:

$$Y_{en} = \frac{1.786}{\tau V_m} \left[\frac{(t_m + 460)}{P_b} \right]^{0.5}$$

$$Y_{en} = \frac{1.786}{(.9991)(7.538)} \left[\frac{533.625}{(73.625) + 460} \right]^{0.5}$$

$$Y_{en} = \underline{1.0033}$$

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

EPA Method 5 Gas Metering System
Quality Control Check Data Sheet

Job L.P. / URAMIA, LA.

Date 4/7/92

Operator BOB ASCHENBACH

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 29.95 in. Hg. $\tau =$.9991 ΔH_0 1.90 in. W.C.

Time (min)	Volume (CF)	Meter Temp. (°F)	
		Inlet	Outlet
	(678.00)		
2.5	679.87	65	63
5.0	681.74	66	63
7.5	683.61	68	64
10	685.473	69	64
	$V_m = 7.473$	Avg (t _m) = 65.25°F	

Calculate Y_{en} as follows:

$$Y_{en} = \frac{1.786}{\tau V_m} \left[\frac{(t_m + 460)}{P_b} \right]^{0.5}$$

$$Y_{en} = \frac{1.786}{(.9991)(7.473)} \left[\frac{(65.25) + 460}{(29.25)} \right]^{0.5}$$

$$Y_{en} = \underline{1.0017}$$

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. / Urania, LA

Date 4-9-92

Operator M. Kachler

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 29.90 in. Hg. $\tau = \underline{1.0010}$ ΔH_0 1.75 in. W.C.

Time (min)	Volume (CF)	Meter Temp. ($^{\circ}$ F)	
		Inlet	Outlet
	(802.50)		
2.5	804.41	63	63
5.0	806.30	64	63
7.5	808.21	65	64
10	810.10	67	64
	$V_m = 7.600$	Avg (t_m) = <u>64.125</u> $^{\circ}$ F	

Calculate Y_{en} as follows:

$$Y_{en} = \frac{1.786}{\tau V_m} \left[\frac{(t_m + 460)}{P_b} \right]^{0.5}$$

$$Y_{en} = \frac{1.786}{(1.0010)(7.600)} \left[\frac{(64.125 + 460)}{(29.90)} \right]^{0.5}$$

$$Y_{en} = \underline{.9830}$$

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. / URANIA, LA.

Date 4/8/92

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 29.97 in. Hg. $\tau =$.9991 ΔH_0 1.90 in. W.C.

Time (min)	Volume (CF)	Meter Temp. (°F)	
		Inlet	Outlet
	(851.50)		
2.5	853.37	64	56
5.0	855.22	68	57
7.5	857.05	70	58
10	858.855	71	59
	$V_m = 7.355$	Avg (t_m) = 62.875 °F	

METER OK
for 4/8/92

Calculate Y_{en} as follows:

$$Y_{en} = \frac{1.786}{\tau V_m} \left[\frac{(t_m + 460)}{P_b} \right]^{0.5}$$

$$Y_{en} = \frac{1.786}{(.9991)(7.355)} \left[\frac{\frac{522.875}{(62.875) + 460}}{(29.97)} \right]^{0.5}$$

$$Y_{en} = \underline{1.015}$$

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

EPA Method 5 Gas Metering System
Quality Control Check Data Sheet

Job L.P. URANIA, LA.

Date 4/9/92

Operator D. BRENNAN

Module No. 3

Instructions: Operate the control module at a flow rate equal to $\dot{V}_{HE}$ for 10 minutes before attaching the umbilical. Record the following data:

Bar press 29.90 in. Hg. $\tau =$.9991 $\dot{V}_{HE}$ 1.90 in. W.C.

Time (min)	Volume (CF)	Meter Temp. (°F)	
		Inlet	Outlet
	(<u>979.00</u>)		
2.5	<u>980.89</u>	<u>83</u>	<u>73</u>
5.0		<u>85</u>	<u>74</u>
7.5	<u>984.66</u>	<u>86</u>	<u>74</u>
10	<u>986.532</u>	<u>87</u>	<u>75</u>
	$V_m =$ <u>7.532</u>	Avg (t_m) = <u>79.625</u> °F	

Calculate Y_{en} as follows:

$$Y_{en} = \frac{1.786}{\tau V_m} \left[\frac{(t_m + 460)}{P_b} \right]^{0.5}$$

$$Y_{en} = \frac{1.786}{(.9991)(7.532)} \left[\frac{539.625}{\frac{(79.625) + 460}{(29.90)}} \right]^{0.5}$$

$$Y_{en} = \underline{1.0083}$$

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

EPA Method 5 Gas Metering System
Quality Control Check Data Sheet

Job LP/URANIA

Date 4-3-92

Operator C. Mosser

Module No. 4

Instructions: Operate the control module at a flow rate equal to ΔH_e for 10 minutes before attaching the umbilical. Record the following data:

Bar press 29.78 in. Hg. $\tau = \underline{1.0098}$ ΔH_e 1.75 in. W.C.

Time (min)	Volume (CF)	Meter Temp. (°F)	
		Inlet	Outlet
1.0	(581.80)	66.75	
2.5	883.69	66	66
5.0	885.59	68	66
7.5	887.48	70	67
10	889.38	71	68
15.0	$V_m = 7.58$	Avg (t _m) = <u>67.75</u> °F	

Calculate Y_{en} as follows:

$$Y_{en} = \frac{1.786}{\tau V_m} \left[\frac{(t_m + 460)}{P_b} \right]^{0.5}$$

$$Y_{en} = \frac{1.786}{(1.0098)(7.58)} \left[\frac{(67.75) + 460}{(29.78)} \right]^{0.5}$$

$$Y_{en} = \underline{.982}$$

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. / Urania, LA

Date 4-6-92

Operator M. Kachler

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 29.81 in. Hg. $\tau =$ 1.0010 ΔH_0 1.75 in. W.C.

Time (min)	Volume (CF)	Meter Temp. (°F)	
		Inlet	Outlet
	(139.20)		
2.5	141.06	61	60
5.0	142.04	63	61
7.5	144.82	65	62
10	146.70	67	62
	$V_m = 7.50$	Avg (t_m) = 62.63 °F	

Calculate Y_{en} as follows:

$$Y_{en} = \frac{1.786}{\tau V_m} \left[\frac{(t_m + 460)}{P_b} \right]^{0.5}$$

$$Y_{en} = \frac{1.786}{(1.0010)(7.50)} \left[\frac{(62.63) + 460}{(29.81)} \right]^{0.5}$$

$$Y_{en} = \underline{0.996}$$

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. / Urania, LA

Date 4-7-92

Operator M. Kuehler

Module No. 4

Instructions: Operate the control module at a flow rate equal to ΔH_e for 10 minutes before attaching the umbilical. Record the following data:

Bar press 29.93 in. Hg. $\tau =$ 1.0010 ΔH_e 1.75 in. W.C.

Time (min)	Volume (CF)	Meter Temp. (°F)	
		Inlet	Outlet
<u>2.5</u>	<u>415.30</u>	<u>60</u>	<u>59</u>
<u>5.0</u>	<u>417.16</u>	<u>61</u>	<u>60</u>
<u>7.5</u>	<u>419.02</u>	<u>63</u>	<u>60</u>
<u>10</u>	<u>420.90</u>	<u>64</u>	<u>61</u>
	$V_m =$	$\text{Avg } (t_m) =$	$^{\circ}\text{F}$

Calculate Y_{en} as follows:

$$Y_{en} = \frac{1.786}{\tau V_m} \left[\frac{(t_m + 460)}{P_b} \right]^{0.5}$$

$$Y_{en} = \frac{1.786}{() ()} \left[\frac{() + 460}{()} \right]^{0.5}$$

$Y_{en} =$ _____

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

EPA Method 5 Gas Metering System
Quality Control Check Data Sheet

Job L.P. / Urania, LA

Date 4-8-92

Operator M. Kaehler

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 29.97 in. Hg. $\tau = \underline{1.0010}$ ΔH_0 1.75 in. W.C.

Time (min)	Volume (CF)	Meter Temp. (°F)	
		Inlet	Outlet
	(537.40)		
2.5	539.21	51	50
5.0	541.02	53	51
7.5	542.90	55	52
10	544.73	57	53
	$V_m = 9.33$	Avg (t_m) = 52.75 °F	

Calculate Y_{en} as follows:

$$Y_{en} = \frac{1.786}{\tau V_m} \left[\frac{(t_m + 460)}{P_b} \right]^{0.5}$$

$$Y_{en} = \frac{1.786}{(1.0010)(9.33)} \left[\frac{(52.75) + 460}{(29.97)} \right]^{0.5}$$

$$Y_{en} = \underline{1.007}$$

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) 786-6020

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
April 4, 1992	2-3534	3138.00		4206.23		1068.23	3189.94

* 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		Final Meter		Volume/Job (cu. ft.)	Total Volume* (cu. ft.)
		Reading		Reading			
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
April 4, 1992	2-3534	2881.80		3975.79		1093.99	3264.60

* Total volume through meter since last calibration.

3/18/92

Control Module No. 5

INTERPOLL LABORATORIES, INC.
METER CALIBRATION SHEET

Serial No. DTM 712852

Bar. Press. 29.21 in. Hg

Not Test Water No. AL-20

5 DOHLEIN Vd3 EPA METHOD 5

Technician D. BRENNAN

[illegible]

Positive leak check performed by D. REZNAW

Water was in tolerance

Water was not in tolerance $\square$: readjusted linkage

Water was not in tolerance ☒; changed dry test meters

Approved by K. Daniford Date 3/18/92

* Based on AL-20 wet test meter calibration in Nov. 1991 against Bell Prover (NBS Traceable) - Carl Poe Co.

S0102RR 11/91

Date 3/17/92

Bar. Press. 29.21 in. Hg

INTERPOLL LABORATORIES, INC.
METER CALIBRATION SHEET

9 OCHLEH YD3

Control Module No.

Serial No. DTM 964 553

Hot Test Meter No. AL-20

Technician D. BOENKOW

[illegible]

Positive leak check performed by D. BRENNAN
Meter was in tolerance

Water was not in tolerance ☒; readjusted linkage

Water was not in tolerance ☐; changed dry test meters

Approved by Dennis L. Dyer Date 3/17/92

* Based on AL-20 wet test meter calibration in Nov. 1991 against Bell Prover (NBS Traceable) - Carl Poe Co.

S0102RR 11/91

DIFFERENTIAL - INCHES H2O

WET TEST METER

PULSATION RANGE

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. P-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

11

99

CORRECT VOLUME * INDEX READING * PROOF * 100

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: 04-08-92

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	.189
2	.188
3	.188
Average:	.188

Interpoll Laboratories, Inc.

(612) 786-6020

Nozzle Calibration

Data Sheet

Date of Calibration: 04-04-92

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	.238
2	.239
3	.240
Average:	.239

Interpoll Laboratories, Inc.
(612) 786-6020

Nozzle Calibration
Data Sheet

Date of Calibration: 04-07-92

Nozzle Number 3-5

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	.308
2	.307
3	.304
Average:	.306

Interpoll Laboratories, Inc.
(612) 786-6020

Nozzle Calibration
Data Sheet

Date of Calibration: 04-08-92

Nozzle Number 8-3

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	.183
2	.183
3	.183
Average:	.183

Interpoll Laboratories, Inc.
(612) 786-6020

Nozzle Calibration
Data Sheet

Date of Calibration: 04-04-92

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	.241
2	.241
3	.241
Average:	.241

Interpoll Laboratories, Inc.
(612) 786-6020

Nozzle Calibration
Data Sheet

Date of Calibration: 04-07-92

Nozzle Number 8-5

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	.302
2	.300
3	.298
Average:	.300

Interpoll Laboratories, Inc.
(612) 786-6020

Nozzle Calibration
Data Sheet

Date of Calibration: 04-08-92

Nozzle : PM1-1

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	.133
2	.133
3	.133
Average:	.133

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	43.5	6.5	1.16
200	200	145.8	4.2	.64
300	300	294	6	.74
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	1603	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 Fluke
Model Fluke 51 Serial Number 5220020
Range 0-2100 °F Thermocouple Type K/J
Date of Calibration 7/29/91 Technician DKH

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	1	1	.22
100	100	98	2	.36
200	200	201	1	.15
300	300	300	0	0
400	400	398	2	.23
500	500	499	1	.10
600	600	601	1	.09
700	700	699	1	.09
800	800	801	1	.08
900	900	899	1	.07
1000	1000	1000	0	0
1100	1100	1100	0	0
1200	1200	1202	2	.12
1300	1300	1300	0	0
1400	1400	1402	2	.11
1500	1500	1500	0	0
1600	1600	1601	1	.05
1700	1700	1700	0	0
1800	1800	1801	1	.04
1900	1900	1899	1	.04
2000	2000	2001	1	.04
2100	2100	2098	2	.08
		Averages:		

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-Type Pitot Tube Inspection SheetPitot No. 24-5Pitot 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) .461 IN.

Alignment:

4. $\alpha_1 < 10^\circ$ 0
5. $\alpha_2 < 10^\circ$ 0
6. $B_1 < 5^\circ$.02
7. $B_2 < 5^\circ$.01
8. $Z < .125"$.01
9. $W < .0625"$.01

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:

3-2-92E. T. [Signature]

CFR Title 40 Part 60 Appendix A Method 2

S-Type Pitot Tube Inspection SheetPitot No. 4-29Pitot tube dimensions:

1. External tubing diameter (D_t) .316 IN.
2. Base to Side A opening plane (P_A) .463 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. $B_1 < 5^\circ$ 2
7. $B_2 < 5^\circ$ 1
8. $Z < .125"$.02
9. $W < .0625"$.01

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:

2-29-92E. T. Trawbridge

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. $B_1 < 50$ 1
7. $B_2 < 50$ 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. White

S-Type Pitot Tube Inspection SheetPitot No. 8-29Pitot 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) 460 IN.

Alignment:

4. $\alpha_1 < 10^\circ$ 0
5. $\alpha_2 < 10^\circ$ 1
6. $B_1 < 50$ 2
7. $B_2 < 50$ 3
8. $Z < .125^\circ$.02
9. $W < .0625^\circ$.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) 762 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:

2-28-92G. T. [Signature]

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. LBP
Aneroid Barometer No. 90222001 (Duke's)

Actual Mercury Barometer Read	Ambient Temp.	Temperature Correction Factor	Adjusted Mercury Barometer Read	Initial Aneroid Barometer Read	Difference (P _{ba} -P _{bm})
29.47	69'	+108	29.361	29.37	-.009

Has this barometer shown any consistent problems with calibration? Yes/No (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 Sheet

Date 3-20-92

Technician Mark Kaehler

Mercury Column Barometer No. Lab 1

Aneroid 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