Note: This is a reference cited in *AP 42, Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources.* AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

Background Report Reference

AP-42 Section Number: 10.6.1

Background Report Section: 4

Reference Number: 69

Title: Results of the January 26 and 27, 1993 Removal Efficiency Enginering Tests At The Louisiana-Pacific Waferboard Plant In Montrose, Colorado

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March 1993

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RESULTS OF THE JANUARY 26 AND 27, 1993 REMOVAL EFFICIENCY ENGINEERING TESTS AT THE LOUISIANA PACIFIC WAFERBOARD PLANT IN MONTROSE, COLORADO

Submitted to:

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Attention:

Sue Somers

Approved by:

Daniel J. Despen
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Report Number 3-8023E
March 18, 1993
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1 INTRODUCTION

On January 26 and 27, 1993 Interpoll Laboratories personnel conducted removal efficiency engineering tests in conjunction with the air emission compliance tests on the Dryer at the Louisiana Pacific Corporation (LP) Waferboard Plant located in Montrose, Colorado. On-site testing was performed by D. Van Hoever, E. Trowbridge, J. Bergstrom and R. Madison. Coordination between testing activities and plant operation was provided by Sue Somers of LP.

The Wafer Dryer tested is a Model 1260 TNW/L dryer manufactured by MEC Company. It is equipped with a pneumatic injection system for firing wood fines and has a design heat input capacity of 40 10^6BTU/HR. Particulate emissions from the Wafer Dryer are controlled by a primary cyclone followed by a secondary multicyclone also manufactured by MEC Company in series with an E-Tube wet electrostatic precipitator manufactured by Geoenergy, Inc. Cleaned flue gas is emitted to the atmosphere by a 103-foot high radial steel stack which has a diameter of 48 inches.

Particulate evaluations were performed simultaneously at the Scrubber Inlet and Stack in accordance with EPA Methods 2-5, CFR Title 40, Part 60, Appendix A (revised July 1, 1992). A preliminary determination of the gas linear velocity profile was made at each test location before the first particulate determination to allow selection of the appropriate nozzle diameter for isokinetic sample withdrawal. Interpoll Labs sampling trains which meet or exceed specifications in the above-cited reference were used to isokinetically extract particulate samples by means of heated glass-lined probes. Wet catch samples were collected in the back half of the Method 5 sampling trains and analyzed in accordance with EPA Method 202.

Formaldehyde samples were collected simultaneously at the Scrubber Inlet and Stack using EPA Method 0011 (SW 846 3rd Ed.). The samples were

collected isokinetically using Method 5 sampling trains with an aqueous acidic 2,4-dinitrophenylhydrazine absorbing solution and analyzed by high performance liquid chromatography.

Total gaseous hydrocarbon concentrations were determined instrumentally at the Scrubber Inlet and Stack using Ratfisch Model RS55 heated flame ionization detectors (HFIDs) calibrated against propane in air standards. The THC concentrations were 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.

Integrated flue gas samples were extracted simultaneously with each of the above-referenced sampling trains at the dryer test site using a specially designed gas sampling system. Integrated flue gas samples were collected in 44-liter Tedlar bags housed in a protective aluminum container. After sampling was complete, the bags were sealed and returned to the laboratory for Orsat analysis. Prior to sampling, the Tedlar bags are leak checked at 15 IN.HG. vacuum with an in-line rotameter. Bags with any detectable inleakage are discarded. The integrated flue gas samples were analyzed for carbon monoxide in accordance with EPA Method 10 (NDIR).

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 removal efficiency test are summarized in Table 1. The particulate results have been calculated using the dry catch only ("a" Table) and again with the dry plus wet catch ("b" Table). As will be noted, the particulate removal efficiency averaged 91.2% (dry catch only) and 82.2% (dry + wet catch).

A summary of the formaldehyde removal efficiency test is presented in Table 2. The formaldehyde removal efficiency averaged 35.7%.

The results of the Total Hydrocarbons removal efficiency test are summarized in Table 3. The total hydrocarbon removal efficiency averaged 22.4%.

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 these facts and a complete review of the data and results, it is our opinion that the results reported herein are accurate and closely reflect the actual values which existed at the time the test was performed.

Table 1a Summary of the Results of the January 27, 1993 Particulate Removal Efficiency on the Dryer Scrubber at the Louisiana Pacific Plant in Montrose, Colorado.

ITEM	RUN 1		RUN 2		RUN 3	
	Inlet	Stack	Inlet	Stack	Inlet	Stack
Date of test	01-27-93	01-27-93	01-27-93	01-27-93	01-27-93	01-27-93
Time runs were done (HRS)	840/ 943	840/ 955	1035/1140	1035/1149	1225/1328	1225/1338
Process rate						
Volumetric flow						
actual (ACFM)	53534	54812	53505	54978	53687	54321
standard (DSCFM)	27018	32022	27134	32314	26925	31723
Gas temperature (DEG-F)	196	136	200	135	199	136
Moisture content (%V/V)	23.60	21.09	22.83	20.70	23.75	21.11
Gas composition (%V/V,dry)						
carbon dioxide	3.60	3.10	3.20	3.10	3.40	3.00
oxygen	17.10	17.60	17.50	17.60	17.20	17.70
carbon monoxide	0.00	0.00	0.00	0.00	0.00	0.00
nitrogen	79.30	79.30	79.30	79.30	79.40	79.30
Isokinetic variation (%)	100.5	98.6	99.1	99.4	100.0	99.8
Particulate concentration						
actual (GR/ACF)	0.0890	0.0060	0.0518	0.00534	0.0662	0.00589
standard (GR/DSCF)	0.1765	0.0102	0.1021	0.00908	0.1320	0.01009
Part. emission rate (LB/HR)	40.869	2.803	23.750	2.516	30.453	2.744
Part. removal efficiency (%)		93.14		89.41		90.99

Note: Dry Catch Only

Table 2. Summary of the **Formaldehyde** Removal Efficiency Test at the Louisiana Pacific Waferboard Plant in Montrose, Colorado.

Test/Run	Emission Rate (LB/HR) (Inlet)	(Outlet)	Removal Effic. (%)
(Dryer 1/26/93)			
1/1	1.08	0.66	38.9
1/2	1.11	0.69	37.8
1/3	1.32	0.92	30.3
Avg.	1.17	0.76	35.7

Table 3. Summary of the **Total Hydrocarbon** Removal Efficiency Test at the Louisiana Pacific Waferboard Plant in Montrose, Colorado.

Test/Run	Concentration (ppmC,w) (Inlet)	(Outlet)	Removal Effic. (%)
(Dryer 1/26/93)			
1/1	880	600	31.8
1/2	437	396	15.6
1/3	471	377	20.0
Avg.	596	458	22.4

Test/Run	Emission Rate (LB/HR) (Inlet)	(Outlet)	Removal Effic. (%)
(Dryer 1/26/93)			
1/1	58	45	22.4
1/2	29	30	(3.4)
1/3	31	28	9.68
Avg.	39	34	

Table 2. Summary of the **Formaldehyde** Removal Efficiency Test at the Louisiana Pacific Waferboard Plant in Montrose, Colorado.

Test/Run	Emission Rate (LB/HR) (Inlet)	(Outlet)	Removal Effic. (%)
(Dryer 1/26/93)			
1/1	1.08	0.66	38.9
1/2	1.11	0.69	37.8
1/3	1.32	0.92	30.3
Avg.	1.17	0.76	35.7

Table 3. Summary of the **Total Hydrocarbon** Removal Efficiency Test at the Louisiana Pacific Waferboard Plant in Montrose, Colorado.

Test/Run	Concentration (ppmC,w) (Inlet)	(Outlet)	Removal Effic. (%)
(Dryer 1/26/93)			
1/1	880	600	31.8
1/2	437	396	15.6
1/3	471	377	20.0
Avg.	596	458	22.4

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 volumetric flow rate determinations, particulate 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
Dryer Scrubber Inlet

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

	Run 1	Run 2	Run 3
Date of run	01-26-93	01-26-93	01-26-93
Dry basis (orsat)			
carbon dioxide.....	3.30	3.50	3.20
oxygen.....	17.40	17.20	17.50
nitrogen.....	79.30	79.30	79.30
Wet basis (orsat)			
carbon dioxide.....	2.54	2.70	2.44
oxygen.....	13.40	13.27	13.36
nitrogen.....	61.05	61.16	60.53
water vapor.....	23.01	22.87	23.67
Dry molecular weight.....	29.22	29.25	29.21
Wet molecular weight.....	26.64	26.68	26.56
Specific gravity.....	0.920	0.921	0.917
Water mass flow.....(LB/HR)	0.00	0.00	0.00
FO	1.061	1.057	1.062

Test No. 1
Dryer Stack

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

	Run 1	Run 2	Run 3
Date of run	01-25-93	01-25-93	01-25-93
Dry basis (orsat)			
carbon dioxide.....	3.20	3.10	3.00
oxygen.....	17.50	17.60	17.70
nitrogen.....	79.30	79.30	79.30
Wet basis (orsat)			
carbon dioxide.....	2.51	2.43	2.38
oxygen.....	13.71	13.82	14.05
nitrogen.....	62.13	62.27	62.95
water vapor.....	21.66*	21.47*	20.62*
Dry molecular weight.....	29.21	29.20	29.19
Wet molecular weight.....	26.78	26.80	26.88
Specific gravity.....	0.925	0.926	0.929

* Free or condensed water in the gas stream.

FO	1.062	1.065	1.067

Test No. 2
Dryer Scrubber Inlet

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

	Run 1	Run 2	Run 3
Date of run	01-27-93	01-27-93	01-27-93
Dry basis (orsat)			
carbon dioxide.....	3.60	3.20	3.40
oxygen.....	17.10	17.50	17.20
nitrogen.....	79.30	79.30	79.40
Wet basis (orsat)			
carbon dioxide.....	2.75	2.47	2.59
oxygen.....	13.07	13.50	13.11
nitrogen.....	60.59	61.20	60.54
water vapor.....	23.60	22.83	23.75
Dry molecular weight.....	29.26	29.21	29.23
Wet molecular weight.....	26.60	26.65	26.56
Specific gravity.....	0.919	0.921	0.918
Water mass flow.....(LB/HR)	23404	22518	23528
FO	1.056	1.062	1.088

Test No. 2
Dryer Stack

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

	Run 1	Run 2	Run 3
Date of run	01-27-93	01-27-93	01-27-93
Dry basis (orsat)			
carbon dioxide.....	3.10	3.10	3.00
oxygen.....	17.60	17.60	17.70
nitrogen.....	79.30	79.30	79.30
Wet basis (orsat)			
carbon dioxide.....	2.45	2.46	2.37
oxygen.....	13.89	13.96	13.96
nitrogen.....	62.58	62.88	62.56
water vapor.....	21.09*	20.70*	21.11*
Dry molecular weight.....	29.20	29.20	29.19
Wet molecular weight.....	26.84	26.88	26.83
Specific gravity.....	0.927	0.929	0.927
Water mass flow.....(LB/HR)	27070	25994	25662

* Free or condensed water in the gas stream.

FO	1.065	1.065	1.067

3.2 Results of Volumetric Flow Rate Determinations

Test No. 2
Dryer Scrubber Inlet

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

Date of Determination.....	01-27-93
Time of Determination.....(HRS)	750
Barometric pressure.....(IN.HG)	24.97
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	24
Shape of duct.....	Round
Stack diameter.....(IN)	41.5
Duct area.....(SQ.FT)	9.39
Direction of flow.....	UP
Static pressure.....(IN.WC)	-5.5
Avg. gas temp.....(DEG-F)	194
Moisture content.....(% V/V)	23.60
Avg. linear velocity.....(FT/SEC)	94.6
Gas density.....(LB/ACF)	.04579
Molecular weight.....(LB/LBMOLE)	29.26
Mass flow of gas.....(LB/HR)	146426
Volumetric flow rate.....	
actual.....(ACFM)	53292
dry standard.....(DSCFM)	26990

Test No. 1
Dryer Scrubber Inlet

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

Date of Determination.....	01-26-93
Time of Determination.....(HRS)	843
Barometric pressure.....(IN.HG)	25.13
Pitot tube coefficient.....	.84
Number of sampling ports.....	2
Total number of points.....	24
Shape of duct.....	Round
Stack diameter.....(IN)	41.5
Duct area.....(SQ.FT)	9.39
Direction of flow.....	UP
Static pressure.....(IN.WC)	-5.5
Avg. gas temp.....(DEG-F)	195
Moisture content.....(% V/V)	23.01
Avg. linear velocity.....(FT/SEC)	90.3
Gas density.....(LB/ACF)	.04609
Molecular weight.....(LB/LBMOLE)	29.22
Mass flow of gas.....(LB/HR)	140676
Volumetric flow rate.....	
actual.....(ACFM)	50872
dry standard.....(DSCFM)	26092

3.3 Results of Particulate Determinations

Test No. 2
Dryer Scrubber Inlet

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

	Run 1	Run 2	Run 3
Date of run	01-27-93	01-27-93	01-27-93
Time run start/end.....(HRS)	840/ 943	1035/1140	1225/1328
Static pressure.....(IN.WC)	-5.50	-5.50	-5.50
Cross sectional area (SQ.FT)	9.39	9.39	9.39
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	186.0	186.0	196.0
desiccant.....(GRAMS)	26.0	15.0	16.0
total.....(GRAMS)	212.0	201.0	212.0
Total particulate material..			
.....collected(grams)	0.4169	0.2620	0.3080
Gas meter coefficient.....	1.0051	1.0051	1.0051
Barometric pressure..(IN.HG)	24.97	24.97	24.97
Avg. orif.pres.drop..(IN.WC)	1.13	1.11	1.13
Avg. gas meter temp..(DEF-F)	65.6	66.2	70.2
Volume through gas meter....			
at meter conditions...(CF)	38.30	37.95	38.30
standard conditions.(DSCF)	32.37	32.03	32.09
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.185	.185	.185
Avg.stack gas temp ..(DEG-F)	196	200	199
Volumetric flow rate.....			
actual.....(ACFM)	53534	53505	53687
dry standard.....(DSCFM)	27018	27134	26925
Isokinetic variation.....(%)	100.5	99.1	100.0
Particulate concentration...			
actual.....(GR/ACF)	0.10026	0.06397	0.07425
dry standard.....(GR/DSCF)	0.19874	0.12620	0.14811
Particle mass rate...(LB/HR)	46.025	29.352	34.182

Test No. 2
Dryer Stack

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

	Run 1	Run 2	Run 3
Date of run	01-27-93	01-27-93	01-27-93
Time run start/end.....(HRS)	840/ 955	1035/1149	1225/1338
Static pressure.....(IN.WC)	0.31	0.31	0.31
Cross sectional area (SQ.FT)	12.44	12.44	12.44
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	213.0	207.0	205.0
desiccant.....(GRAMS)	12.0	11.0	11.0
total.....(GRAMS)	225.0	218.0	216.0
Total particulate material..			
.....collected(grams)	0.0531	0.0536	0.0514
Gas meter coefficient.....	1.0073	1.0073	1.0073
Barometric pressure..(IN.HG)	24.97	24.97	24.97
Avg. orif.pres.drop..(IN.WC)	0.97	1.02	1.00
Avg. gas meter temp..(DEF-F)	56.6	62.6	69.6
Volume through gas meter....			
at meter conditions...(CF)	40.87	42.09	42.03
standard conditions.(DSCF)	35.20	35.84	35.32
Total sampling time....(MIN)	72.00	72.00	72.00
Nozzle diameter.....(IN)	.188	.188	.188
Avg.stack gas temp ..(DEG-F)	136	135	136
Volumetric flow rate.....			
actual.....(ACFM)	54812	54978	54321
dry standard.....(DSCFM)	32022	32314	31723
Isokinetic variation.....(%)	98.6	99.4	99.8
Particulate concentration...			
actual.....(GR/ACF)	0.01359	0.01356	0.01311
dry standard.....(GR/DSCF)	0.02328	0.02308	0.02246
Particle mass rate...(LB/HR)	6.388	6.391	6.107

3.4 Results of Formaldehyde Determinations

Test No. 1
Dryer Scrubber Inlet

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

	Run 1	Run 2	Run 3
Date of run	01-26-93	01-26-93	01-26-93
Time run start/end.....(HRS)	1040/1144	1300/1404	1505/1610
Static pressure.....(IN.WC)	-5.50	-5.50	-5.50
Cross sectional area (SQ.FT)	9.39	9.39	9.39
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	182.0	193.0	197.0
desiccant.....(GRAMS)	12.0	12.0	13.0
total.....(GRAMS)	194.0	205.0	210.0
Formaldehyde in sample..(uG)	9600	10000	12000
Gas meter coefficient.....	1.0051	1.0051	1.0051
Barometric pressure..(IN.HG)	25.13	25.13	25.13
Avg. orif.pres.drop..(IN.WC)	1.02	1.17	1.13
Avg. gas meter temp..(DEF-F)	67.8	77.6	81.9
Volume through gas meter....			
at meter conditions...(CF)	36.15	39.20	38.70
standard conditions.(DSCF)	30.61	32.60	31.92
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.185	.185	.185
Avg.stack gas temp ..(DEG-F)	196	197	199
Volumetric flow rate.....			
actual.....(ACFM)	50761	53348	52517
dry standard.....(DSCFM)	26002	27345	26554
Isokinetic variation.....(%)	98.8	100.0	100.9
CH2O concentration.....			
(GR/DSCF).....	0.0049	0.0047	0.0058
(MG/DSCM).....	11.11	10.87	13.32
(PPM-DRY).....	8.90	8.71	10.67
(PPM-WET).....	6.85	6.72	8.14
CH2O emission rate...(LB/HR)	1.08140	1.11275	1.32393

CH2O = Formaldehyde

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

Test No. 1
Dryer Stack

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

	Run 1	Run 2	Run 3
Date of run	01-26-93	01-26-93	01-26-93
Time run start/end.....(HRS)	1040/1142	1300/1402	1505/1609
Static pressure.....(IN.WC)	0.31	0.31	0.31
Cross sectional area (SQ.FT)	12.44	12.44	12.44
Pitot tube coefficient.....	.840	.840	.840
Water in sample gas			
condenser.....(ML)	0.0	0.0	0.0
impingers.....(GRAMS)	284.0	280.0	282.0
desiccant.....(GRAMS)	22.0	20.0	19.0
total.....(GRAMS)	306.0	300.0	301.0
Formaldehyde in sample..(uG)	7900	8100	11000
Gas meter coefficient.....	1.0073	1.0073	1.0096
Barometric pressure..(IN.HG)	25.12	25.12	25.12
Avg. orif.pres.drop..(IN.WC)	2.83	2.82	3.02
Avg. gas meter temp..(DEF-F)	44.3	63.6	70.0
Volume through gas meter....			
at meter conditions...(CF)	57.17	57.89	60.44
standard conditions.(DSCF)	51.02	49.76	51.47
Total sampling time....(MIN)	60.00	60.00	60.00
Nozzle diameter.....(IN)	.247	.247	.247
Avg.stack gas temp ..(DEG-F)	137	137	135
Volumetric flow rate.....			
actual.....(ACFM)	54786	54265	54518
dry standard.....(DSCFM)	31900	31689	32264
Isokinetic variation.....(%)	99.7	97.9	99.4
CH2O concentration.....			
(GR/DSCF).....	0.0024	0.0025	0.0033
(MG/DSCM).....	5.52	5.80	7.62
(PPM-DRY).....	4.42	4.64	6.10
(PPM-WET).....	3.46	3.65	4.84
CH2O emission rate...(LB/HR)	0.65843	0.68764	0.91969

CH2O = Formaldehyde

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

APPENDIX A

FIELD DATA SHEETS

INTERPOLL LABORATORIES - EPA METHOD 2 FIELD DATA SHEET

Job Louisiana Pacific (Montrose) Co

Source Dryer Scrubber Inlet

Test 2 Run 1 Date 1-27-93

Stack dimen. 41 1/2 IN.

Dry bulb ____ °F Wet bulb ____ °F

Manometer: ☒ Reg. ☐ Exp. ☐ Elec.

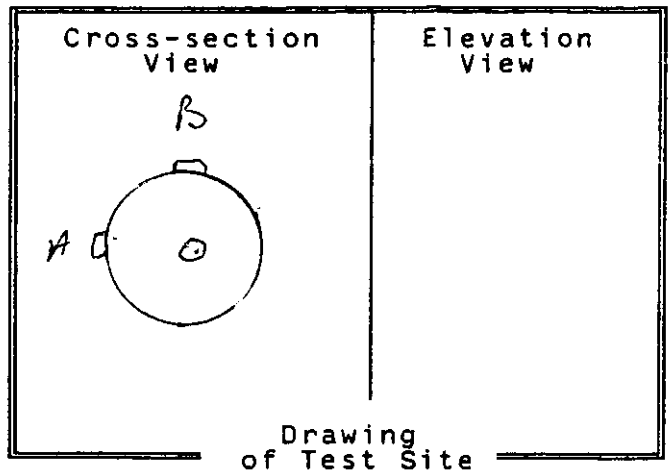
Barometric pressure 24.97 in Hg

Static pressure -5.50 in WC

Operators Ethridge - K. Madison

Pitot No. 22V-4 C_p .840

Part



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: 0750 hrs	
A	1	.021	.87	6.87	.80	192
	2	.067	2.78	8.78	1.50	
	3	.118	4.90	10.90	2.10	
	4	.177	7.35	13.35	2.10	
	5	.250	10.38	16.38	2.20	
	6	.356	14.77	20.77	2.10	
	7	.644	26.73	32.73	2.10	
	8	.750	31.13	37.13	1.80	
	9	.823	34.15	40.15	1.80	
	10	.882	36.60	42.60	1.80	
	11	.933	38.72	44.72	1.80	
	12	.979	40.63	46.63	1.70	
B	1				1.00	194
	2				1.10	
	3				1.40	
	4				1.50	
	5				1.60	
	6				1.65	
	7				1.80	
	8				2.10	
	9				2.20	
	10				2.10	
	11				2.10	
	12				1.80	
Temp. meas. device & S/N: PDT-12					Time end: 0800 hrs	

R or nothing = reg. manometer; S= expanded; E=electronic A-1 S-3921

INTERFOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job LP/MONTROSE
Source DRYER - SCRUBBER INLET
Method 5 Filter holder: 4" GLASS

Date 1-22-93 Test 2 Run 1
No. of traverse points 24
Filter type: 4" GLASS FIBER

Sample Train Leak Check:

Pretest: < 0.02 cfm at 15 in. Hg. (vac) ☒
Postest: 0 cfm at 15 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 5001

Recovery solvent(s)
☒ acetone
☐ other(s)

No. of probe wash bottles: 1
Sample recovered by: ET

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1		100	
Impinger No. 2	386	100	186
Impinger No. 3		0	
Condenser			
Desiccant	1392	1366	26
Total			212

Integrated Gas Sampling Data:

Bag Pump No. 23B Box No. 26 Bag No. 1

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

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

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

Sampling rate: 400 cc/min Operator: ET

S/N of O_2 Analyzer used to monitor train outlet: ___

CF-023

S-0046RR

CF-011

INTERPOLL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job LP/MONTROSE
Source DRYER SCRUBBER INLET
Date 1-27-93 Test 2 Run 1

Operators ET-km
Meter Box No. 6 ΔH@ 1.83 IN WC
Gasmeter coeff. 1.0051

Pitot No. 22V-4 Cp .840
Bar. Press. 24.97 inHg H2O x
Nozzle No. 6-3 Nozzle Dia .193 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Orifice Meter (inWC)	Dec. Vol. (cf)	VAC. inHg	Temperatures (°F) Stack	Probe	Oven	Impg.	Gas/In	Gas/Out	Oxygen (%v/v)
	0840	141.00											
A 12	2.5	142.62	1.70	1.11	2.59	7.0	193	250	241	36	60	59	
11	5	144.25	1.80	1.15	4.19	7.2	195				61	59	
10	7.5	145.84	1.80	1.15	5.80	7.2	193	252	240	38	61	60	
9	10	147.42	1.80	1.15	7.40	7.6	197				64	61	
8	12.5	149.02	1.80	1.15	9.01	8.0	197	255	258	38	65	61	
7	15	150.68	1.90	1.22	0.67	8.8	195				66	62	
6	17.5	152.46	2.20	1.41	2.45	10.0	199	252	240	39	67	63	
5	20	154.22	2.20	1.41	4.24	10.3	197				67	63	
4	22.5	156.00	2.10	1.35	5.98	10.3	197	256	237	42	68	63	
3	25	157.72	2.10	1.35	7.73	10.5	195				69	64	
2	27.5	159.22	1.50	.97	9.22	8.0	195	250	238	44	69	64	
1	30	160.46	1.00	.65	0.43	6.0	194				69	64	
B 12	32.5	162.05	1.80	1.16	2.06	10.0	195	253	241	40	69	64	
11	35	163.80	2.10	1.35	3.81	12.0	197				70	65	
10	37.5	165.58	2.20	1.42	5.60	13.0	198	250	237	42	70	65	
9	40	167.30	2.10	1.35	7.36	13.5	197				70	65	
8	42.5	169.02	2.10	1.35	9.11	14.0	197	252	235	42	70	65	
7	45	170.68	1.80	1.16	0.73	14.0	199				70	65	
6	47.5	172.24	1.70	1.10	2.31	13.9	198	254	238	44	70	65	
5	50	173.82	1.60	1.03	3.85	13.7	197				70	65	
4	52.5	175.28	1.50	.97	5.33	12.5	197	251	240	44	70	65	
3	55	176.74	1.40	.90	6.77	11.5	197				70	65	
2	57.5	178.05	1.10	.71	8.04	9.5	197	247	236	42	71	66	
1	60	179.30	1.00	.65	9.25	9.0	195				71	66	
	(0943)												
	θ = 60	Vm = 38.30		ΔH 1.13							Avg. =	65.6	

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job LP/MONTROSE
Source DRYER SCRUBBER INLET
Method 5 Filter holder: 4" GLASS

Date 1-27-93 Test 2 Run 2
No. of traverse points 24
Filter type: 4" GLASS FIBER

Sample Train Leak Check:

Pretest: < 0.02 cfm at 15 in. Hg. (vac) ☒
Postest: 0 cfm at 10 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 5002

Recovery solvent(s)
☒ acetone
☐ other(s)

No. of probe wash bottles: 1
Sample recovered by: ET

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1		100	
Impinger No. 2	386	100	186
Impinger No. 3		0	
Condenser			
Desiccant	1445	1430	15
Total			201

Integrated Gas Sampling Data:

Bag Pump No. 23B Box No. 26 Bag No. 2

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

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

Time start: 1036 (HRS) Time end: 1139 (HRS)

Sampling rate: 400 cc/min Operator: ET

S/N of O_2 Analyzer used to monitor train outlet: ___

CF-023

S-0046RR

INTERPOLL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job LP/MONTROSE
Source DRYER SCRUBBER INLET
Date 1-27-93 Test 2 Run 2

Operators ET-RM
Meter Box No. 6 ^H@ 1.83 IN WC
Gasmeter coeff. 1.0051

Pitot No. 22V-4 Cp .840
Bar. Press. 24.97 inHg H2O x
Nozzle No. 6-3 Nozzle Dia .185 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Orifice Meter (inWC)	Des. Vol. (cf)	VAC. inHg	Temperatures (°F) Stack	Probe	Oven	Impg.	Gas/In	Gas/Out	Oxygen (xv/v)
	1035	179.60											
B 12	2.5	181.24	1.80	1.14	1.20	7.5	199	245	237	38	61	60	
11	5	182.83	1.80	1.13	2.80	7.8	199				61	60	
10	7.5	184.55	2.20	1.38	4.56	9.0	199	247	240	41	65	60	
9	10	186.28	2.10	1.32	6.28	9.4	200				66	62	
8	12.5	188.00	2.10	1.32	8.01	9.7	202	251	242	43	67	64	
7	15	189.72	2.00	1.26	9.70	9.5	203				68	64	
6	17.5	191.30	1.70	1.07	1.26	8.8	202	254	245	45	69	65	
5	20	192.80	1.60	1.01	2.78	8.0	202				68	65	
4	22.5	194.30	1.50	.95	4.25	7.9	201	250	239	44	69	65	
3	25	195.70	1.40	.89	5.67	7.7	200				67	64	
2	27.5	196.90	1.10	.70	6.93	7.5	198	245	240	42	66	64	
1	30	198.12	1.00	.63	8.13	7.5	198				66	64	
A 12	32.5	199.70	1.70	1.07	9.69	6.0	200	245	241	40	64	61	
11	35	201.34	1.80	1.14	1.29	6.1	197				66	62	
10	37.5	202.95	1.80	1.14	2.89	6.2	200	251	246	42	68	62	
9	40	204.60	1.80	1.14	4.50	6.2	200				68	62	
8	42.5	206.18	1.80	1.14	6.10	6.2	201	248	239	43	70	64	
7	45	207.80	1.90	1.21	7.76	6.5	200				70	64	
6	47.5	209.58	2.10	1.33	9.50	7.0	199	245	237	44	72	66	
5	50	211.35	2.20	1.40	1.29	7.5	199				75	68	
4	52.5	213.10	2.10	1.35	3.04	7.5	199	242	239	45	75	68	
3	55	214.85	2.10	1.35	4.80	7.5	198				75	69	
2	57.5	216.30	1.50	.96	6.24	5.9	198	240	237	45	72	68	
1	60	217.55	1.00	.64	7.50	4.5	198				72	68	
	(1140)												
	θ = 60	Vm = 37.95		^H = 1.11							Avg. = 66.2		

S-0037R

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job LP/MONTROSE Date 1-27-93 Test 2 Run 3
Source DRYER SCRUBBER INLET No. of traverse points 24
Method 5 Filter holder: 4" GLASS Filter type: 4" GLASS FIBER

Sample Train Leak Check:

Pretest: < 0.02 cfm at 15 in. Hg. (vac) ☒
Postest: 0 cfm at 15 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 5003

Recovery solvent(s)
☒ acetone
☐ other(s)

No. of probe wash bottles: 1
Sample recovered by: ET

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1		100	
Impinger No. 2	346	100	196
Impinger No. 3		0	
Condenser			
Desiccant	1408	1392	16
Total			212

Integrated Gas Sampling Data:

Bag Pump No. 23B Box No. 26 Bag No. 3

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

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

Time start: 1226 (HRS) Time end: 1327 (HRS)

Sampling rate: 400 cc/min Operator: ET

S/N of O_2 Analyzer used to monitor train outlet: ___

CF-023

S-0046RR

CF-011

INTERPOLL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job LP/MONTROSE
Source DRYER SCRUBBER INLET
Date 1-27-93 Test 2 Run 3

Operators ET-RM
Meter Box No. 6 ^H@ 1.83 IN WC
Gasmeter coeff. 1.0051

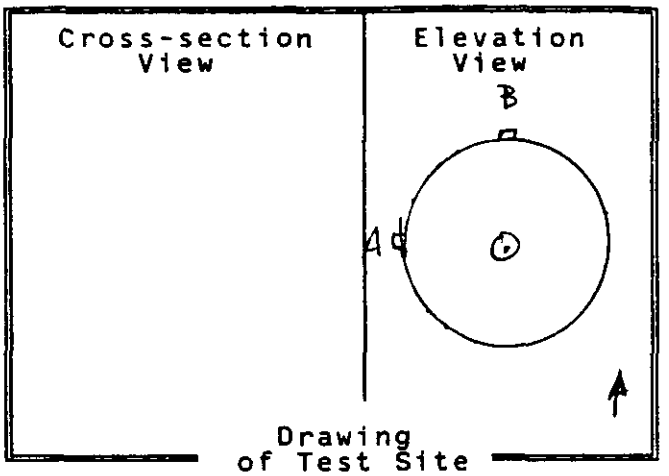
Pitot No. 224-4 Cp .84
Bar. Press. 24.97 inHg H2O x
Nozzle No. 6-3 Nozzle Dia .185 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Orifice Meter (inWC)	Des. Vol. (cf)	VAC. inHg	Temperatures (°F) Stack	Probe	Oven	Impg.	Gas/In	Gas/Out	Oxygen (xv/v)
	1225	217.80											
A 12	2.5	219.40	1.70	1.08	9.36	8.0	199	250	243	40	63	62	
11	5	220.99	1.80	1.14	0.96	8.5	198				67	64	
10	7.5	222.60	1.80	1.14	2.57	8.5	199	251	247	40	68	66	
9	10	224.20	1.80	1.14	4.18	8.5	199				70	68	
8	12.5	225.82	1.80	1.15	5.80	8.8	199	253	245	42	72	69	
7	15	227.50	1.90	1.22	7.47	9.5	199				73	69	
6	17.5	229.26	2.20	1.41	9.26	11.0	199	247	240	43	73	70	
5	20	231.02	2.20	1.41	1.06	11.2	200				74	70	
4	22.5	232.75	2.10	1.35	2.81	11.4	200	245	237	42	75	71	
3	25	234.50	2.10	1.35	4.57	11.6	199				75	71	
2	27.5	236.08	1.50	.96	6.06	11.0	199	248	238	42	75	71	
1	30	237.30	1.00	.64	7.28	7.0	198				75	71	
B 12	32.5	238.93	1.80	1.16	8.91	12.0	199	252	240	40	75	71	
11	35	240.65	2.10	1.35	0.67	13.4	200				72	69	
10	37.5	242.36	2.20	1.40	2.46	14.5	201	250	238	42	72	69	
9	40	244.15	2.10	1.34	4.21	14.8	201				72	69	
8	42.5	245.86	2.10	1.34	5.96	14.9	200	252	237	42	73	70	
7	45	247.55	1.80	1.15	7.59	14.5	199				73	70	
6	47.5	249.15	1.70	1.09	9.17	14.5	198	250	240	44	72	70	
5	50	250.65	1.60	1.03	0.71	14.6	198				72	68	
4	52.5	252.10	1.50	.96	2.19	14.7	198	253	238	43	70	68	
3	55	253.60	1.40	.89	3.62	14.5	199				70	68	
2	57.5	254.85	1.10	.70	4.88	14.9	198	248	236	40	71	68	
1	60	256.10	1.00	.64	6.10	14.0	198				71	69	
	(1328)												
	θ = 60	Vm = 38.30		^H = 1.13							Avg. = 70.2		

S-0037R

INTERPOLL LABORATORIES - EPA METHOD 2 FIELD DATA SHEET

Job L.P. / MONTROSE
Source DRYER Stack
Test 2 Run 0 Date 1/27/93
Stack dimen. 47.75 IN.
Dry bulb ____ °F Wet bulb ____ °F
Manometer: ☒ Reg. ☐ Exp. ☐ Elec.
Barometric pressure 24.97 in Hg
Static pressure .31 in WC
Operators D. VAN Hoever & J. Bergstrom
Pitot No. 1/23-6 Cp .84



Particulate

Traverse Point No.	Fraction of Diameter	Distance from Stack Wall (in)	Distance from End of Port (in)	Velocity Pressure (in WC)	Temperature of gas (°F)
		Port length: 6 in.		Time start: hrs	
A 1	.021	1.0	9.		
2	.067	3.20	9.20		
3	.118	5.63	11.63		
4	.177	8.45	14.45		
5	.25	11.93	17.93		
6	.356	16.99	23		
7	.644	30.75	36.75		
8	.750	35.81	41.81		
9	.823	39.3	45.3		
10	.882	42.12	48.12		
11	.933	44.55	50.55		
12	.979	46.74	52.74		
B 1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
Temp. meas. device & S/N:				Time end: hrs	

R or nothing = reg. manometer; S= expanded; E=electronic A-8 S-3921

INTERFOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / MONTROSE Date 1/27/93 Test 2 Run 1
Source DRYER STACK No. of traverse points 24
Method 5 Filter holder: glass Filter type: glass fiber

Sample Train Leak Check:

Pretest: 0.02 cfm at 15 in. Hg. (vac) ☒
Postest: 0 cfm at 6.5 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 4984

Recovery solvent(s)
☒ acetone
☐ other(s)

No. of probe wash bottles: 1
Sample recovered by: DKH

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1			
Impinger No. 2	413	200	213
Impinger No. 3			
Condenser			
Desiccant	1242	1230	12
Total			225

Integrated Gas Sampling Data:

Bag Pump No. 23A Box No. 30 Bag No. 1

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

Pretest leak check: 0 cc/min at 14 in. Hg.

Time start: 0845 (HRS) Time end: 0955 (HRS)

Sampling rate: 400 cc/min Operator: DKH

S/N of O_2 Analyzer used to monitor train outlet: 4

CF-023

INTERPOLL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job: L.P. / MONTROSE
Source: DRYER STACK
Date: 4/27/93 Test 2 Run 1

Operators: DVH + J.B
Meter Box No.: 8 ΔH@ 1.86 IN WC
Gasmeter coeff.: 1.0073

Pitot No.: V23-6 Cp .84
Bar. Press.: 24.97 inHg H2O .22 %
Nozzle No.: 1-3 Nozzle Dia .187 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Orifice Meter (inWC)	Des. Vol. (cf)	VAC. inHg	Temperatures (°F) Stack	Probe	Oven	Impg.	Gas/In	Gas/Out	Oxygen (%v/v)
	0840	792.52											
A 12	3	795.27	1.30	1.06	5.28	2.5	137	254	251	40	51	50	
11	6	797.06	1.40	1.14	7.12	2.5	137				52	50	
10	9	798.92	1.40	1.14	8.95	2.5	138				54	51	
9	12	800.77	1.35	1.10	0.76	2.5	138	257	253	40	56	52	
8	15	802.61	1.30	1.07	2.54	2.5	136				57	52	
7	18	804.37	1.15	.95	4.22	2	136				58	53	
6	21	805.75	1.05	.82	5.79	2	136	254	257	41	58	53	
5	24	807.40	1.10	.91	7.43	2	135				58	53	
4	27	809.11	1.15	.95	9.12	2	135				60	54	
3	30	810.85	1.15	.95	0.80	2	137	256	253	41	60	54	
2	33	812.51	1.15	.95	2.49	2	136				60	54	
1	36	814.04	.96	.80	4.03	2	135				60	54	
B 12	39	815.80	1.15	.95	5.72	2	135	258	254	40	58	55	
11	42	817.59	1.25	1.03	7.48	2	136				60	55	
10	45	819.26	1.25	1.04	9.24	2	134				60	55	
9	48	821.02	1.25	1.04	1.00	2	134	260	251	40	61	55	
8	51	822.80	1.25	1.03	2.76	2	137				61	55	
7	54	824.47	1.10	.91	4.41	2	136				61	56	
6	57	826.17	1.15	.96	6.11	2	135	257	257	40	62	56	
5	60	827.86	1.15	.96	7.80	2	135				61	56	
4	63	829.60	1.10	.91	9.46	2	135				62	56	
3	66	831.11	1.10	.91	1.11	2	136	254	255	40	62	57	
2	69	832.77	1.10	.92	2.77	2	133				63	57	
1	72	834.39	1.03	.86	4.38		136				63	57	
	0955												
	θ = 72	Vm = 40.87		ΔH = .97							Avg. = 56.6		

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P./MONTROSE Date 1/27/93 Test 2 Run 2
Source DRYER STACK No. of traverse points 24
Method 5 Filter holder: glass Filter type: glass fiber

Sample Train Leak Check:

Pretest: ≤ 0.02 cfm at 15 in. Hg. (vac) ☒
Postest: 0 cfm at 6 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: 4986

Recovery solvent(s)
☑ acetone
☐ other(s)

No. of probe wash bottles: 1
Sample recovered by: DCH

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1			
Impinger No. 2	407	200	207
Impinger No. 3			
Condenser			
Desiccant	1355	1344	11
Total			218

Integrated Gas Sampling Data:

Bag Pump No. 23A Box No. 30 Bag No. 2

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

Pretest leak check: 0 cc/min at 14 in. Hg.

Time start: 1040 (HRS) Time end: 1149 (HRS)

Sampling rate: 300 cc/min Operator: DCH

S/N of O_2 Analyzer used to monitor train outlet: 4

CF-023

CF-011

INTERPOLL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job L.P. / MONTROSE
Source DRYER STACK
Date 1/27/93 Test 2 Run 2

Operators DWH + JB
Meter Box No. 6 ΔH@ 1.80 IN WC
Gasmeter coeff. 1.0073

Pitot No. V23-6 Cp .84
Bar. Press. 24.97 inHg H2O 22 %
Nozzle No. 7-3 Nozzle Dia .188 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Orifice Meter (inWC)	Des. Vol. (cf)	VAC. inHg	Temperatures (°F) Stack	Probe	Oven	Impg.	Gas/In	Gas/Out	Oxygen (%v/v)
	1035	834.79											
B 12	3	836.54	1.20	1.01	6.52	2.5	137	247	253	41	56	56	
11	6	838.37	1.22	1.03	8.27	2.5	137				60	57	
10	9	840.14	1.30	1.11	0.8	2.5	134				61	58	
9	12	841.89	1.25	1.07	1.88	2.5	133	256	254	40	63	58	
8	15	843.70	1.25	1.07	3.68	2.5	133				64	59	
7	18	845.52	1.25	1.07	5.47	2.5	133				64	59	
6	21	847.38	1.25	1.07	7.27	2.5	133	257	253	41	65	59	
5	24	848.94	1.10	.94	8.95	2	137				65	60	
4	27	850.65	1.10	.93	0.63	2	139				64	59	
3	30	852.31	1.10	.93	2.31	2	135	255	253	40	65	59	
2	33	853.95	1.10	.94	3.99	2	135				65	60	
1	36	855.60	1.01	.86	5.61	2	136				65	60	
A 12	39	857.40	1.30	1.11	7.44	2.5	136	257	251	40	64	61	
11	42	859.35	1.45	1.25	9.38	3	133				65	59	
10	45	861.27	1.40	1.20	1.28	3	135				65	60	
9	48	863.14	1.35	1.16	3.14	3	134	260	254	41	66	61	
8	51	865.01	1.35	1.16	5.02	3	133				66	60	
7	54	866.77	1.20	1.02	6.78	2.5	137				68	62	
6	57	868.43	1.0	.86	8.40	2.5	133	260	253	40	68	63	
5	60	870.21	1.10	.95	0.10	2.5	133				68	63	
4	63	871.80	1.15	.99	1.83	2.5	135				68	63	
3	66	873.65	1.15	.99	3.56	2.5	135				68	63	
2	69	875.34	1.10	.94	5.26	2.5	136				69	64	
1	72	876.88	.93	.80	6.82		136				69	64	
	(1149)												
	θ = 72	Vm = 42.09		ΔH = 1.02							Avg. = 62.6		

S-0037R

INTERFOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P./MONTROSE Date 11/27/93 Test 2 Run 3
Source DRYER STACK No. of traverse points 24
Method 5 Filter holder: Glass Filter type: Glass Fiber

Sample Train Leak Check:

Pretest: < 0.02 cfm at 15 in. Hg. (vac) ☒
Postest: 0 cfm at 8 in. Hg. (vac) ☒

Particulate Catch Data:

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

☒ acetone
☐ other(s)

No. of probe wash bottles: 1
Sample recovered by: DHH

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1			
Impinger No. 2	405	200	205
Impinger No. 3			
Condenser			
Desiccant	1253	1242	11
Total			216

Integrated Gas Sampling Data:

Bag Pump No. 23A Box No. 30 Bag No. 3

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

Pretest leak check: 0 cc/min at 14 in. Hg.

Time start: 1230 (HRS) Time end: 1338 (HRS)

Sampling rate: 300 cc/min Operator: DHH

S/N of O_2 Analyzer used to monitor train outlet: ∅

CF-023

INTERPOLL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job: L.P. MONTROSE
Source: DRYER STACK
Date: 1/27/93 Test: 2 Run: 3

Operators: DVH & T.R.
Meter Box No.: 8 ΔH@: 1.96 IN WC
Gasmeter coeff.: 1.0073

Pitot No.: V23-6 Cp: .84
Bar. Press.: 24.97 inHg H2O 27 %
Nozzle No.: 7-3 Nozzle Dia.: .188 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Orifice Meter (inWC)	Dec. Vol. (cf)	VAC. inHg	Temperatures (°F) Stack	Probe	Oven	Impg.	Gas/In	Gas/Out	Oxygen (%v/v)
	1225	877.50											
A 12	3	879.33	1.25	1.06	9.28	2.5	140	249	251	44	62	62	
11	6	881.24	1.40	1.19	1.18	3	140				66	63	
10	9	883.15	1.35	1.15	3.04	3	140				68	64	
9	12	884.97	1.35	1.16	4.92	3	138	251	254	45	69	65	
8	15	886.80	1.35	1.17	6.80	3	135				70	65	
7	18	888.56	1.15	1.0	8.54	2.5	134				71	66	
6	21	890.25	1.05	.91	0.21	2.5	135	254	253	44	72	66	
5	24	891.98	1.10	.95	1.92	2.5	134				72	66	
4	27	893.65	1.10	.95	3.62	2.5	135				72	67	
3	30	895.36	1.15	1.0	5.37	2.5	135	256	254	42	73	67	
2	33	897.18	1.15	1.0	7.12	2.5	135				73	67	
1	36	898.76	.96	.83	8.72	2.5	134				73	67	
B 12	39	900.49	1.10	.96	0.43	2.5	134	256	257	43	72	67	
11	42	902.25	1.20	1.04	2.21	2.5	136				73	68	
10	45	904.01	1.20	1.04	4.00	2.5	136				74	68	
9	48	905.85	1.20	1.04	5.79	2.5	135	254	258	45	74	69	
8	51	907.66	1.20	1.04	7.58	2.5	136				74	69	
7	54	909.40	1.08	.94	9.27	2.5	138				74	69	
6	57	910.03	1.10	.95	0.99	2.5	137	257	255	46	74	69	
5	60	912.75	1.10	.96	2.70	2.5	135				74	69	
4	63	914.47	1.10	.96	4.42	2.5	134				75	69	
3	66	916.16	1.10	.96	6.14	2.5	135	256	254	46	75	69	
2	69	917.90	1.05	.92	7.81	2.5	134				75	70	
1	72	919.53	1.03	.90	9.48		134				76	70	
	1338												
	θ = 72	Vm = 42.03		ΔH = 1.0							Avg. = 69.6		

INTERPOLL LABORATORIES - EPA METHOD 2 FIELD DATA SHEET

Job Louisiana Pacific / Mount Rose, Colorado

Source Dryer - Scrubber Inlet

Test 1 Run 1 Date 1-26-93

Stack dimen. 41 1/2 IN.

Dry bulb 145 °F Wet bulb 145 °F

Manometer: ☒ Reg. ☐ Exp. ☐ Elec.

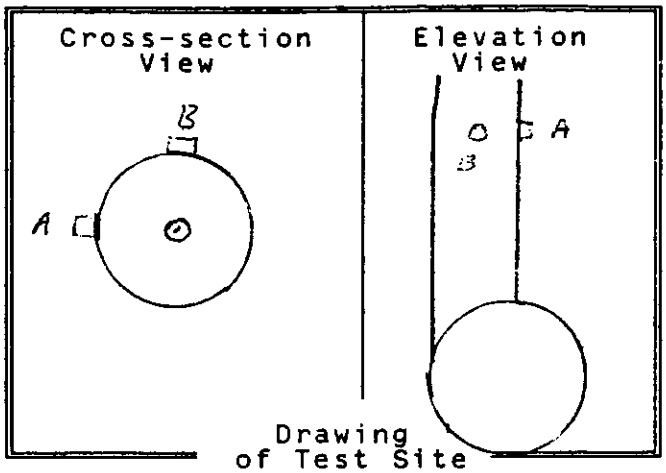
Barometric pressure 25.13 in Hg

Static pressure -5.5 in WC

Operators E. Throwbridge - R. Madison

Pitot No. 92V-4 C_p .840

Formaldehyde



Drawing of Test Site

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: 0843 hrs	
A	1	.021	.87	6.87	.65	195
	2	.067	2.78	8.78	.70	
	3	.118	4.90	10.90	1.80	
	4	.177	7.35	13.35	2.10	
	5	.250	10.38	16.38	2.20	
	6	.356	14.77	20.77	2.10	
	7	.644	26.73	32.73	1.80	
	8	.750	31.13	37.13	1.70	
	9	.823	34.15	40.15	1.70	
	10	.882	36.60	42.60	1.70	
	11	.933	38.72	44.72	1.80	
	12	.979	40.63	46.63	1.70	
B	1				.80	195
	2				.80	
	3				1.10	
	4				1.30	
	5				1.60	
	6				1.70	
	7				2.00	
	8				2.10	
	9				2.10	
	10				2.10	
	11				2.00	
	12				1.60	
Temp. meas. device & S/N: PDT-12					Time end: 0900 hrs	

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

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job LP/MONTROSE
Source DRYER - SCRUBBER INLET
Method SCR/1 Filter holder: 4" GLASS

Date 1-26-93 Test 1 Run 1
No. of traverse points 24
Filter type: 4" GLASS FIBER

Sample Train Leak Check:

Pretest: < 0.02 cfm at 15 in. Hg. (vac) ☑
Postest: 0 cfm at 7.5 in. Hg. (vac) ☑

Particulate Catch Data:

No.s of filters used: _____

Recovery solvent(s)

☒ acetone _____
☒ other(s) MC

No. of probe wash bottles: 1
Sample recovered by: ET

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1		100	
Impinger No. 2		100	182
Impinger No. 3		0	
Condenser			
Desiccant	1472	1460	12
Total			194

Integrated Gas Sampling Data:

Bag Pump No. 23 B Box No. 5 Bag No. 1

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

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

Time start: 1041 (HRS) Time end: 1142 (HRS)

Sampling rate: 400 cc/min Operator: EI

S/N of O_2 Analyzer used to monitor train outlet: ____

CF-023

S-0046RR

CF-011

INTERPOLL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job LP/INPUTCO
Source DRYER - SCRUBBER INLET
Date 1-28-93 Test 1 Run 1

Operators ETHRIDGE - R. MADISON
Meter Box No. 6 ΔH@ 1.83 IN WC
Gasmeter coeff. 1.0051

Pitot No. 22V-4 Cp .848
Bar. Press. 25.13 inHg H2O x
Nozzle No. C-3 Nozzle Dia .155 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Orifice Meter (inWC)	Dec. Vol. (cf)	VAC. inHg	Temperatures (°F) Stack	Probe	Oven	Impg.	Gas/In	Gas/Out	Oxygen (%v/v)
	1040	26.00											
B 12	2.5	27.32	1.20	.76	7.30	3.5	194	240	237	33	58	58	
11	5	28.66	1.30	.81	8.65	4.0	194				60	58	
10	7.5	30.06	1.40	.88	0.05	4.4	194	241	235	42	61	58	
9	10	31.50	1.50	.94	1.50	5.0	192				62	59	
8	12.5	33.00	1.60	1.00	2.99	5.5	195	244	237	52	63	59	
7	15	34.48	1.60	1.00	4.49	5.6	197				67	62	
6	17.5	35.97	1.60	1.01	5.99	6.0	197	245	238	52	67	62	
5	20	37.60	1.80	1.13	7.59	5.8	197				70	64	
4	22.5	39.08	1.60	1.01	9.10	5.2	197	249	235	42	70	64	
3	25	40.50	1.30	.82	0.47	4.0	197				71	65	
2	27.5	41.64	1.00	.63	1.67	3.2	195	251	230	42	70	63	
1	30	42.81	.95	.60	2.83	3.1	195				72	65	
A 12	32.5	44.44	1.80	1.15	4.45	5.2	195	249	231	39	73	68	
11	35	46.07	1.80	1.15	6.06	5.5	197				71	65	
10	37.5	47.67	1.80	1.14	7.67	5.6	198	239	231	41	73	70	
9	40	49.28	1.80	1.15	9.28	5.6	198				72	66	
8	42.5	50.90	1.80	1.15	0.89	5.7	196	241	230	43	74	66	
7	45	52.50	1.70	1.09	2.46	5.5	195				73	66	
6	47.5	54.20	2.10	1.35	4.21	6.7	190	240	232	45	77	72	
5	50	55.98	2.20	1.40	6.00	7.0	201				77	70	
4	52.5	57.77	2.20	1.41	7.80	7.0	198	248	230	40	78	72	
3	55	59.58	2.10	1.35	9.55	7.0	198				77	71	
2	57.5	61.05	1.50	.96	1.04	5.0	195	248	236	40	78	72	
1	60	62.15	.82	.53	2.14	3.0	195				78	72	
	(1144)												
	θ = 60	Vm = 36.15		ΔH 1.02							Avg. = 67.8		

S-0037R

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job AP-MONTROSE
Source DRYER SCRUBBER INLET
Method 5 0011 Filter holder: 4" GLASS

Date 1-26-93 Test 1 Run 2
No. of traverse points 24
Filter type: 4" GLASS

Sample Train Leak Check:

Pretest: ≤ 0.02 cfm at 15 in. Hg. (vac) ☑
Postest: 0 cfm at 8 in. Hg. (vac) ☑

Particulate Catch Data:

No.s of filters used:

Recovery solvent(s)

☒ acetone
☐ other(s)

No. of probe wash bottles: 1
Sample recovered by: ET

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1		100	
Impinger No. 2	393	100	193
Impinger No. 3		0	
Condenser			
Desiccant	1484	1472	12
Total			205

Integrated Gas Sampling Data:

Bag Pump No. 238 Box No. 5 Bag No. 2

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

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

Time start: 1301 (HRS) Time end: 1403 (HRS)

Sampling rate: 400 cc/min Operator: ET

S/N of O_2 Analyzer used to monitor train outlet: ___

CF-023

S-0046RR

INTERPOLL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job LP/MONTROSE
Source DRYER SCRUBBER INLET
Date 1-28-93 Test 1 Run 2

Operators E.T. - R.M.
Meter Box No. 6 ΔH@ 1.83 IN WC
Gasmeter coeff. 1.0057

Pitot No. 22V-4 Cp .84
Bar. Press. 25.13 inHg H2O X
Nozzle No. 6-3 Nozzle Dia .185 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Orifice Meter (inWC)	Dec. Vol. (cf)	VAC. inHg	Temperatures (°F) Stack	Probe	Oven	Impg.	Gas/In	Gas/Out	Oxygen (%v/v)
	1300	62.50											
A 12	2.5	64.20	1.80	1.20	4.16	5.5	195	240	250	54	71	71	
11	5	65.78	1.80	1.18	5.80	5.5	198				73	70	
10	7.5	67.40	1.80	1.18	7.44	5.5	196	248	245	51	75	71	
9	10	69.01	1.80	1.19	9.08	5.9	195				76	71	
8	12.5	70.68	1.80	1.19	0.73	6.0	195	249	240	48	78	72	
7	15	72.45	2.10	1.39	2.51	7.0	195				79	73	
6	17.5	74.34	2.20	1.45	4.34	7.5	197	254	242	45	79	73	
5	20	76.12	2.20	1.45	6.16	7.6	196				80	74	
4	22.5	77.90	2.10	1.39	7.95	7.6	196	252	240	46	81	74	
3	25	79.67	2.10	1.39	9.74	7.6	196				81	74	
2	27.5	81.26	1.50	1.00	1.26	5.8	195	250	237	45	81	74	
1	30	82.39	.85	.56	2.40	3.5	195				81	75	
B 12	32.5	84.10	1.90	1.26	4.10	6.4	197	242	232	40	81	75	
11	35	85.86	2.10	1.39	5.89	7.0	199				82	76	
10	37.5	87.70	2.10	1.39	7.68	7.1	199	254	251	44	83	76	
9	40	89.48	2.20	1.46	9.51	8.0	198				83	76	
8	42.5	91.25	2.10	1.39	1.30	7.8	200	255	247	42	83	77	
7	45	93.02	1.80	1.19	2.97	7.2	200				83	77	
6	47.5	94.54	1.60	1.06	4.53	7.0	198	250	241	42	83	77	
5	50	96.11	1.60	1.06	6.10	7.0	197				83	77	
4	52.5	97.65	1.50	1.00	7.63	6.5	194	245	239	44	84	78	
3	55	99.12	1.40	.93	9.10	6.0	196				84	78	
2	57.5	100.46	1.10	.73	0.41	5.2	195	240	235	45	85	78	
1	60	101.70	1.00	.67	1.65	5.0	195				85	78	
	(1404)												
	θ = 60	Vm = 39.20		ΔH = 1.17							Avg. = 77.6		

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job LP/MONTROSE
Source DRYER SCRUBBER INLET
Method 5001 Filter holder: 4" GLASS

Date 1-26-93 Test 1 Run 3
No. of traverse points 24
Filter type: 4" GLASS

Sample Train Leak Check:

Pretest: ≤ 0.02 cfm at 15 in. Hg. (vac) ☒
Postest: 0 cfm at 8 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used:

Recovery solvent(s)

☒ acetone
☐ other(s)

No. of probe wash bottles: 1
Sample recovered by: ET

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1		100	
Impinger No. 2	397	100	197
Impinger No. 3		0	
Condenser			
Desiccant	1432	1419	13
Total			210

Integrated Gas Sampling Data:

Bag Pump No. 23B Box No. 5 Bag No. 3

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

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

Time start: 1506 (HRS) Time end: 1609 (HRS)

Sampling rate: 400 cc/min Operator: ET

S/N of O_2 Analyzer used to monitor train outlet: ___

CF-023

S-0046RR

CF-011

INTERPOLL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job LP/MONTROSE
Source DRYER SCRUBBER INLET
Date 1-26-93 Test 1 Run 3

Operators ET-RM
Meter Box No. 6 ^H@ 1.83 IN WC
Gasmeter coeff. 1.0051

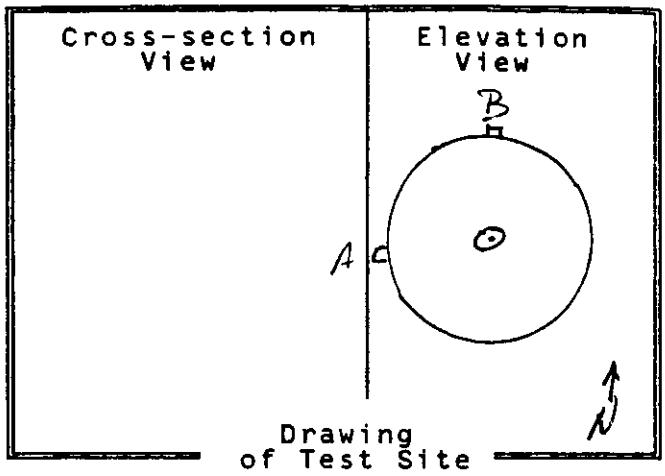
Pitot No. 22V-4 Cp .840
Bar. Press. 25.13 inHg H2O x
Nozzle No. 6-3 Nozzle Dia .185 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Orifice Meter (inWC)	Des. Vol. (cf)	VAC. inHg	Temperatures (°F) Stack	Probe	Oven	Impg.	Gas/In	Gas/Out	Oxygen (xv/v)
	1505	102.10											
B 12	2.5	103.70	1.60	1.06	3.66	5.0	197	245	260	36	76	74	
11	5	105.48	2.10	1.38	5.44	6.0	198				76	74	
10	7.5	107.27	2.10	1.38	7.22	6.0	197	250	246	38	79	75	
9	10	109.02	2.10	1.39	9.00	6.1	198				81	76	
8	12.5	110.85	2.20	1.46	0.84	6.8	198	256	250	40	83	77	
7	15	112.62	2.00	1.33	2.59	6.5	198				83	77	
6	17.5	114.23	1.60	1.06	4.15	5.2	200	252	254	42	84	79	
5	20	115.80	1.60	1.06	5.73	5.2	200				84	79	
4	22.5	117.32	1.50	1.00	7.25	5.0	200	256	250	45	85	79	
3	25	118.80	1.50	1.00	8.77	5.0	200				85	79	
2	27.5	120.07	1.00	.67	0.01	3.5	198	251	244	42	85	79	
1	30	121.25	.95	.63	1.23	3.5	197				85	79	
A 12	32.5	122.90	1.70	1.13	2.85	5.8	198	245	253	38	85	79	
11	35	124.55	1.70	1.13	4.47	5.8	201				86	80	
10	37.5	126.16	1.80	1.20	6.14	6.0	200	242	250	40	87	81	
9	40	127.80	1.70	1.14	7.77	6.0	199				87	81	
8	42.5	129.52	1.80	1.20	9.44	6.3	200	240	254	42	87	81	
7	45	131.10	1.80	1.20	1.11	6.3	199				88	81	
6	47.5	132.90	2.10	1.40	2.92	8.0	200	245	243	45	88	81	
5	50	134.72	2.20	1.47	4.77	8.2	200				88	82	
4	52.5	136.54	2.20	1.47	6.62	8.2	201	242	249	42	88	82	
3	55	138.23	1.70	1.14	8.25	7.0	199				88	82	
2	57.5	139.55	1.00	.67	9.51	4.5	195	240	251	40	88	82	
1	60	140.80	.95	.64	0.73	4.2	195				88	82	
	(1610)												
	θ = 60	Vm = 38.70		^H = 1.13							Avg. = 81.9		

S-0037R

INTERPOLL LABORATORIES - EPA METHOD 2 FIELD DATA SHEET

Job L.P. / Montrose
Source Dryer Stack
Test 1 Run D Date 1/25/93
Stack dimen. 47.75" IN.
Dry bulb ____ °F Wet bulb ____ °F
Manometer: ☒ Reg. ☐ Exp. ☐ Elec.
Barometric pressure 25.17 in Hg
Static pressure +.31 in WC
Operators D. Van Hoever & T. Bergstrom
Pitot No. V23-6 C_p .84
Formaldehyde



Drawing of Test Site

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: 0935 hrs	
A 1	.021	1.00	7.00	.93	
2	.067	3.20	9.20	1.20	
3	.118	5.63	11.63	1.30	
4	.177	8.45	14.45	1.15	
5	.250	11.93	17.93	1.10	
6	.356	16.99	23.00	1.05	
7	.644	30.75	36.75	1.15	
8	.750	35.81	41.81	1.35	
9	.823	39.30	45.30	1.40	138°
10	.882	42.12	48.12	1.40	
11	.933	44.55	50.55	1.40	
12	.979	46.74	52.74	1.25	
B 1				1.0	
2				1.10	
3				1.05	
4				1.10	
5				1.10	
6				1.10	
7				1.10	
8				1.20	
9				1.25	
10				1.25	
11				1.20	
12				1.10	
Temp. meas. device & S/N: PDT #18				Time end: 0948 hrs	

R or nothing = (reg.) manometer; S= expanded; E=electronic A-22 S-3921

INTERPOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / MONTROSE
Source DRYER STACK
Method 0011 Filter holder: NA

Date 1/26/93 Test 1 Run 1
No. of traverse points 24
Filter type: NA

Sample Train Leak Check:

Pretest: < 0.02 cfm at 15 in. Hg. (vac) ☒
Postest: 0 cfm at 7 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: NA

Recovery solvent(s)
☐ acetone
☒ other(s) $MECl_2$ & DI H_2O

No. of probe wash bottles: 1
Sample recovered by: DVH & J.B

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1			
Impinger No. 2	484	200	284
Impinger No. 3			
Condenser			
Desiccant	1300	1278	22
Total			306

Integrated Gas Sampling Data:

Bag Pump No. 23A Box No. 1 Bag No. 1

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

Pretest leak check: 0 cc/min at 14 in. Hg.

Time start: 1045 (HRS) Time end: 1142 (HRS)

Sampling rate: 400 cc/min Operator: DVH

S/N of O_2 Analyzer used to monitor train outlet: 4

CF-023

INTERPOLL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job L.P. / MONTROSE
Source DRYER STACK
Date 1/26/93 Test : Run 1

Operators DVH & J.B
Meter Box No. 8 ΔH@ 1.96 IN WC
Gasmeter coeff. 1.0073

Pitot No. V23-6 Cp .84
Bar. Press. 25.12 inHg H2O 24 %
Nozzle No. 7-4 Nozzle Dia .247 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Orifice Meter (inWC)	Dec. Vol. (cf)	VAC. inHg	Temperatures (°F) Stack	Probe	Oven	Impg.	Gas/In	Gas/Out	Oxygen (%v/v)
	1040	615.60											
B 12	2.5	617.90	1.20	2.77	7.96	4	137	251	261	39	51	51	16.0
11	5	620.29	1.20	2.96	0.41	4.5	136				51	46	15.6
10	7.5	622.73	1.20	2.96	2.85	4.5	136				50	46	15.3
9	10	625.20	1.20	2.94	5.28	5	139				50	45	15.2
8	12.5	627.60	1.20	2.76	7.63	4.5	138				49	44	15.4
7	15	629.88	1.05	2.42	9.83	4.5	136	250	255	40	49	43	16.2
6	17.5	632.23	1.15	2.76	2.18	5	136				49	43	16.3
5	20	634.57	1.10	2.64	4.48	5	136				49	43	16.0
4	22.5	636.80	1.10	2.64	6.78	5	137				49	42	16.1
3	25	639.20	1.10	2.63	9.08	5	137				49	43	16.1
2	27.5	641.50	1.10	2.64	1.37	5	137	251	253	40	49	43	15.6
1	30	643.66	1.05	2.52	3.62	5	137				49	42	15.5
A 12	32.5	646.16	1.30	3.11	6.11	6	137				49	43	16.2
11	35	648.74	1.40	3.35	8.70	6	137				49	43	16.2
10	37.5	651.34	1.40	3.34	1.28	6	139	253	251	39	48	42	16.8
9	40	653.91	1.40	3.33	3.86	6	139				49	42	16.2
8	42.5	656.46	1.40	3.34	6.44	6	138				50	44	16.6
7	45	658.87	1.15	2.75	8.79	5	139	256	260	39	49	43	16.5
6	47.5	661.09	1.05	2.52	1.04	4.5	136				49	42	15.5
5	50	663.40	1.10	2.65	3.34	5	134				49	42	17.5
4	52.5	665.77	1.20	2.87	5.74	5	138	257	261	43	49	42	17.2
3	55	668.11	1.20	2.87	8.13	5	138				49	42	16.6
2	57.5	670.44	1.10	2.64	0.43	5	136				49	42	16.9
1	60	672.77	1.02	2.45	2.64		136				49	42	17.1
	(1142)												
	θ = 60	Vm = 57.17		ΔH = 2.83							Avg. =	44.3	

INTERFOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / MONTROSE
Source DRYER STACK
Method 0011 Filter holder: NA

Date 1/26/93 Test 1 Run 2
No. of traverse points 24
Filter type: NA

Sample Train Leak Check:

Pretest: < 0.02 cfm at 15 in. Hg. (vac) ☒
Postest: 0 cfm at 7 in. Hg. (vac) ☐

Particulate Catch Data:

No.s of filters used:

Recovery solvent(s)

☐ acetone
☒ other(s) $MECL_2$ & DI H_2O

No. of probe wash bottles: 1
Sample recovered by: DWH

Condensate Data:

Item	Weight(g)		
	Final	Tare	Difference
Impinger No. 1			
Impinger No. 2	480	200	280
Impinger No. 3			
Condenser			
Desiccant	1200	1180	20
Total			300

Integrated Gas Sampling Data:

Bag Pump No. 23A Box No. 1 Bag No. 2

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

Pretest leak check: 0 cc/min at 14 in. Hg.

Time start: 1304 (HRS) Time end: 1402 (HRS)

Sampling rate: 400 cc/min Operator: DWH

S/N of O_2 Analyzer used to monitor train outlet: 4

CF-023

CF-011

INTERPOLL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job: L.P. MONTROSE
Source: DRYER STACK
Date: 1/26/93 Test: 1 Run: 2

Operators: DUH + J.B
Meter Box No.: 8 ^H@ 1.96 IN WC
Gasmeter coeff.: 1.0073

Pitot No.: V23-6 Cp: .84
Bar. Press.: 25.12 inHg H2O: 22 x
Nozzle No.: 7-4 Nozzle Dia: .247 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Orifice Meter (inWC)	Des. Vol. (cf)	VAC. inHg	Temperatures (°F) Stack	Probe	Oven	Impg.	Gas/In	Gas/Out	Oxygen (xv/v)
	1300	673.10											
A 12	2.5	675.58	1.30	3.10	5.58	5	137	249	263	42	60	60	16.5
11	5	678.13	1.40	3.42	8.23	5	140				60	59	16.5
10	7.5	680.73	1.35	3.16	0.78	5	141				59	57	16.3
9	10	683.31	1.30	3.03	3.27	5	142	254	263	43	58	55	16.0
8	12.5	685.80	1.30	3.03	5.76	5	139				58	54	15.7
7	15	688.18	1.15	2.69	8.10	4.5	138				58	53	15.9
6	17.5	690.38	1.0	2.34	0.28	4.5	137	257	261	43	57	53	16.0
5	20	692.70	1.10	2.57	2.57	4.5	138				57	52	15.7
4	22.5	694.92	1.10	2.56	4.86	4.5	138				57	51	15.7
3	25	697.19	1.15	2.67	7.19	4.5	139	260	263	48	57	51	15.6
2	27.5	699.40	1.10	2.56	9.47	4.5	138				60	55	15.2
1	30	701.60	1.05	2.46	1.72	4.5	138				64	60	15.5
B 12	32.5	704.10	1.15	2.72	4.09	4.5	138	261	263	46	65	61	17.1
11	35	706.53	1.20	2.84	6.51	5	138				70	63	17.3
10	37.5	708.96	1.20	2.87	8.96	5	136				73	67	16.4
9	40	711.40	1.20	2.88	1.41	5	137	260	261	45	74	67	15.8
8	42.5	713.93	1.25	3.06	3.92	5	138				74	68	16.9
7	45	716.39	1.10	2.68	6.29	5	131				75	68	17.8
6	47.5	718.86	1.10	2.91	8.76	5	133	257	260	43	75	68	16.8
5	50	721.36	1.10	2.90	1.23	5	134				75	69	16.7
4	52.5	723.77	1.10	2.91	3.71	5	132				75	69	17.2
3	55	726.24	1.05	2.78	6.13	5	132	259	261	45	75	69	17.6
2	57.5	728.61	1.05	2.78	8.55	5	133				76	69	17.0
1	60	730.99	1.05	2.78	0.97	5	133				76	70	16.6
	1402												
	θ = 60	Vm = 57.89		^H = 2.82							Avg. = 63.6		

w = 2

← w = 20

S-0037R

INTERFOLL LABORATORIES EPA METHOD 5/17 SAMPLE LOG SHEET

Job L.P. / MONTROSE Date 1/26/93 Test 1 Run 3
Source DRYER 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) ☒
Postest: 0 cfm at 7.5 in. Hg. (vac) ☒

Particulate Catch Data:

No.s of filters used: NA

Recovery solvent(s)
☐ acetone
☒ other(s) $MECl_2$ + DI H_2O

No. of probe wash bottles: 1
Sample recovered by: DAH

Condensate Data:

Item	Weight (g)		
	Final	Tare	Difference
Impinger No. 1			
Impinger No. 2	482	200	282
Impinger No. 3			
Condenser			
Desiccant	1209	1190	19
Total			301

Integrated Gas Sampling Data:

Bag Pump No. 23A Box No. 1 Bag No. 3

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

Pretest leak check: 0 cc/min at 14 in. Hg.

Time start: 1510 (HRS) Time end: 1609 (HRS)

Sampling rate: 400 cc/min Operator: DAH

S/N of O_2 Analyzer used to monitor train outlet: 4

CF-023

INTERPOLL LABORATORIES EPA METHOD 5 FIELD DATA SHEET

Job L.P. / MONTROSE
Source DRYER STACK
Date 1/26/99 Test 1 Run 3

Operators DWH & TJB
Meter Box No. 8 ΔH@ .0073 IN WC
Counter cont. 196

Pitot No. V23-6 Cp .84
Bar. Press. 25.12 inHg H2O 22 %
Nozzle No. 7-4 Nozzle Dia. .247 IN.

Traverse Point No.	Sampling Time (min)	Sample Volume (cf)	Velocity Head (inWC)	Orifice Meter (inWC)	Des. Vol. (cf)	VAC. inHg	Temperatures (°F) Stack	Probe	Oven	Impg.	Gas/In	Gas/Out	Oxygen (%v/v)
	1505	731.20											
B 12	2.5	733.67	1.10	2.73	3.57	4	137	254	257	41	66	66	16.5
11	5	736.10	1.25	3.12	6.12	4.5	136				68	67	16.2
10	7.5	738.60	1.25	3.12	8.67	4.5	137				70	67	16.4
9	10	741.24	1.30	3.24	1.27	5	138	257	257	41	71	68	16.4
8	12.5	743.84	1.25	3.13	3.83	4.5	138				73	69	16.7
7	15	746.22	1.05	2.65	6.19	4.5	135				73	69	16.9
6	17.5	748.70	1.10	2.78	8.60	4.5	134	260	253	41	74	69	15.8
5	20	751.80	1.10	2.78	1.02	4.5	134				75	70	17.0
4	22.5	753.50	1.10	2.91	3.50	5	133				76	70	17.3
3	25	755.91	1.10	2.91	6.98	5	133	261	252	41	76	71	17.5
2	27.5	758.36	1.10	2.92	8.46	5	132				77	71	17.6
1	30	760.91	1.05	2.79	0.89	5	132				77	71	17.4
A 12	32.5	763.51	1.35	3.58	3.64	6	132	263	257	40	76	71	17.5
11	35	766.31	1.40	3.69	6.42	6	135				77	72	17.4
10	37.5	769.05	1.40	3.68	9.21	6.5	138				77	72	17.2
9	40	771.64	1.30	3.14	1.79	6.5	139				77	72	17.0
8	42.5	774.41	1.30	3.16	4.37	6.5	135	261	258	40	77	72	17.1
7	45	776.88	1.15	2.80	6.80	5	135				78	72	17.0
6	47.5	779.27	1.05	2.72	9.20	5	137				78	73	16.0
5	50	781.69	1.10	2.86	1.66	5	135				79	73	16.6
4	52.5	784.11	1.15	2.99	4.18	5.5	135	260	257	43	79	73	17.0
3	55	786.69	1.15	2.99	6.69	5.5	135				79	73	16.8
2	57.5	789.21	1.15	2.99	9.21	5.5	134				79	74	17.0
1	60	791.64	1.03	2.69	1.60	5	134				79	74	17.1
	1609												
	θ = 60	Vm = 60.44		ΔH = 3.02							Avg. = 70		

w=2

w=2

w=2

APPENDIX B

INTERPOLL LABORATORIES ANALYTICAL DATA

Interpoll Laboratories
(612) 786-6020

EPA Method 3 Data Reporting Sheet
Orsat Analysis

Job: L.P. Montrose
Team Leader: DWH
Date Submitted: 2-1-93
Test No.: 1
Date of Analysis: 2-1-93

Source: Dryer Stack
Test Site: Stack
Date of Test: 1-26-93
No. of Runs Completed: 2
Technician: C. Hickson

Test/ Run	Sample Log Number and Type	No. of An.	Buret Readings (ml) Zero Pt.	After CO_2	After O_2	Conc. CO_2 %v/v Dry	Conc. O_2 %v/v Dry	F_o
1/1	8023-13	1	0.00	3.20	20.70	3.20	17.50	1.06
		2	0.00	3.20	20.70	3.20	17.50	1.06
	☑ B ☐ F	Avg				3.20	17.50	
1/2	-14	1	0.00	3.10	20.70	3.10	17.60	1.06
		2	0.00	3.10	20.70	3.10	17.60	1.06
	☑ B ☐ F	Avg				3.10	17.60	
1/3	-15	1	0.00	3.00	20.70	3.00	17.70	1.07
		2	0.00	3.00	20.70	3.00	17.70	1.07
	☑ B ☐ F	Avg				3.00	17.70	
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	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	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
Wood/Wood Bark	1.000-1.130

ISC-04-RP

Interpoll Laboratories
(612) 786-6020

EPA Method 3 Data Reporting Sheet
Orsat Analysis

Job L.P. Montrose
Team Leader DCH
Date Submitted 2-1-93
Test No. 2
Date of Analysis 2-1-93

Source Dryer
Test Site Stack
Date of Test 1-27-93
No. of Runs Completed 3
Technician C. Hakeem

Test/ Run	Sample Log Number and Type	No. of An.	Buret Readings (ml) Zero Pt.	After CO_2	After O_2	Conc. CO_2 %v/v Dry	Conc. O_2 %v/v Dry	F_o
2/1	8023-37	1	0.00	3.10	20.70	3.10	17.60	1.06
		2	0.00	3.10	20.70	3.10	17.60	1.06
	☑ B ☐ F	Avg				3.10	17.60	
2/2	-41	1	0.00	3.10	20.70	3.10	17.60	1.06
		2	0.00	3.10	20.70	3.10	17.60	1.06
	☑ B ☐ F	Avg				3.10	17.60	
2/3	-45	1	0.00	3.00	20.70	3.00	17.70	1.07
		2	0.00	3.00	20.70	3.00	17.70	1.07
	☑ B ☐ F	Avg				3.00	17.70	
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	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	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
Wood/Wood Bark	1.000-1.130

LSC-04-BR

Interpoll Laboratories
(612) 786-6020

EPA Method 3 Data Reporting Sheet
Orsat Analysis

Job: L.P. Montrose
Team Leader: C.T.
Date Submitted: 2-1-93
Test No.: 1
Date of Analysis: 2-1-93

Source: Dryer
Test Site: Scrubber Inlet
Date of Test: 1-26-93
No. of Runs Completed: 3
Technician: C. Helgeson

Test/ Run	Sample Log Number and Type	No. of An.	Buret Readings (ml) Zero Pt.	After CO_2	After O_2	Conc. CO_2 %v/v Dry	Conc. O_2 %v/v Dry	F_o
1/1	8023-05	1	0.00	3.30	20.70	3.30	17.40	1.06
		2	0.00	3.30	20.70	3.30	17.40	1.06
	☑ B ☐ F	Avg				3.30	17.40	
1/2	-06	1	0.00	3.50	20.70	3.50	17.20	1.06
		2	0.00	3.50	20.70	3.50	17.20	1.06
	☑ B ☐ F	Avg				3.50	17.20	
1/3	-07	1	0.00	3.20	20.70	3.20	17.50	1.06
		2	0.00	3.20	20.70	3.20	17.50	1.00
	☑ B ☐ F	Avg				3.20	17.50	
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	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	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
Wood/Wood Bark	1.000-1.130

LSC-04-BR

Interpoll Laboratories
(612) 786-6020

EPA Method 3 Data Reporting Sheet
Orsat Analysis

Job: L.P. Montrose
Team Leader: CT
Date Submitted: 2-1-93
Test No.: 2
Date of Analysis: 2-1-93

Source: Dryer
Test Site: Scrubber Inlet
Date of Test: 1-27-93
No. of Runs Completed: 3
Technician: C. Helgeson

Test/ Run	Sample Log Number and Type	No. of An.	Buret Readings (ml) Zero Pt.	After CO_2	After O_2	Conc. CO_2 %v/v Dry	Conc. O_2 %v/v Dry	F_o
2/1	8023-22	1	0.00	3.60	20.70	3.60	17.10	1.06
		2	0.00	3.60	20.70	3.60	17.10	1.06
	☑ B ☐ F	Avg				3.60	17.10	
2/2	-26	1	0.00	3.20	20.70	3.20	17.50	1.06
		2	0.00	3.20	20.70	3.20	17.50	1.06
	☑ B ☐ F	Avg				3.20	17.50	
2/3	-30	1	0.00	3.40	20.60	3.40	17.20	1.09
		2	0.00	3.40	20.60	3.40	17.20	1.09
	☑ B ☐ F	Avg				3.40	17.20	
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	Avg						
		1						
		2						
	☐ B ☐ F	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	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
B-4Wood/Wood Bark	1.000-1.130

LSC-04-BR

Interpoll Laboratories
(612) 786-6020

EPA Method 5 Data Reporting Sheet
Impinger Catch/Minnesota Protocol

Job L.P. / Montrose
Team Leader ET
Date Submitted 2-1-93
Test No. 2
Date of Analysis 2-8-93

Source Dryer
Test Site Scrubber Inlet
Date of Test 1-27-93
No. of Runs Completed 3
Technician C. Helgeson

0	Test 2 Run 0 Field Blank Log Number 8023-18 Comments	Dish No. 8 Dish Tare Wt. 46.9780 g Dish+Sample Wt. 46.9783 g Sample Wt. 0.0003 g
1	Test 2 Run 1 Log Number -21 Comments	Dish No. 10 Dish Tare Wt. 47.5489 g Dish+Sample Wt. 47.5959 g Sample Wt. 0.0470 g
2	Test 2 Run 2 Log Number -25 Comments	Dish No. 12 Dish Tare Wt. 48.1495 g Dish+Sample Wt. 48.1998 g Sample Wt. 0.0503 g
3	Test 2 Run 3 Log Number -29 Comments	Dish No. 19 Dish Tare Wt. 48.9600 g Dish+Sample Wt. 48.9939 g Sample Wt. 0.0339 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

Blank Solvent Wt. 0.0003 g

Results:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	0.0467	0.0500B-5	0.0336		

LSC-03.GR

Interpoll Laboratories
(612) 786-6020

EPA Method 5 Data Reporting Sheet
Probe/Cyclone Wash

Job L.P. Montrose
Team Leader ET
Date Submitted 2-1-93
Test No. 2
Date of Analysis 2-8-93
Transport Leakage [X] None [ ] _____ ml

Source Dryer
Test Site Scrubber Inlet
Date of Test 1-27-93
No. of Runs Completed 3
Technician C. Helgeson
Solvent Acetone

0	Test 2 Run 0 Field Blank Log Number 8023-16 Vol. of Solvent 125 ml *Solvent Residue 2.4 ug/ml	Dish No. 9 Dish Tare Wt. 47.9753 g Dish+Sample Wt. 47.9756 g Sample Wt. 0.0003 g
1	Test 2 Run 1 Vol. of Solvent 190 ml Log Number -19 Comments	Dish No. 26 Dish Tare Wt. 48.3846 g Dish+Sample Wt. 48.6118 g Sample Wt. 0.2272 g
2	Test 2 Run 2 Vol. of Solvent 195 ml Log Number -23 Comments	Dish No. 36 Dish Tare Wt. 43.5637 g Dish+Sample Wt. 43.6286 g Sample Wt. 0.0649 g
3	Test 2 Run 3 Vol. of Solvent 130 ml Log Number -27 Comments	Dish No. 52 Dish Tare Wt. 49.8060 g Dish+Sample Wt. 49.8757 g Sample Wt. 0.0697 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 2.4 ug/ml = [(Sample Wt. 0.0003 g)(10⁶)]/Vol. of Sol. 125 ml
EPA-M5 Acetone Residue Blank Spec. < 7.8 ug/ml

Results:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	0.2267	0.0644	0.0694		

B-6

LSC-01YR

Interpoll Laboratories
(612) 786-6020

EPA Method 5 Data Reporting Sheet
Filter Gravimetrics

Job: L.P. / Montrose
Team Leader: ET
Date Submitted: 2-1-93
Test No.: 2
Date of Analysis: 2-8-93

Source: Dryer
Test Site: Scrubber Inlet
Date of Test: 1-27-93
No. of Runs Completed: 3
Technician: C. Helgeson

0	Test 2 Run 0 Field Blank Log Number 8023-17 Comments	Filter No. 5005 Filter Type 4" GF Filter Tare Wt. .8894 g Filter+Sample Wt. .8895 g Sample Wt. 0.0001 g	
1	Test 2 Run 1 Log Number -20 Comments	Filter No. 5001 Filter Type 4" GF Filter Tare Wt. .8939 g Filter+Sample Wt. 1.0374 g Sample Wt. 0.1435 g	
2	Test 2 Run 2 Log Number -24 Comments	Filter No. 5002 Filter Type 4" GF Filter Tare Wt. .8948 g Filter+Sample Wt. 1.0424 g Sample Wt. 0.1476 g	
3	Test 2 Run 3 Log Number -28 Comments	Filter No. 5003 Filter Type 4" GF Filter Tare Wt. .8974 g Filter+Sample Wt. 1.1024 g Sample Wt. 0.2050 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
	0.1435	0.1476	0.2050		

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	0.4169	0.2620	0.3080		

LSC-02PR

Interpoll Laboratories
(612) 786-6020

EPA Method 5 Data Reporting Sheet
Impinger Catch/Minnesota Protocol

Job: L.P. / Montrose
Source: Dryer
Team Leader: DVH
Test Site: Stack
Date Submitted: 2-1-93
Date of Test: 1-27-92
Test No.: 2
No. of Runs Completed: 3
Date of Analysis: 2-8-93
Technician: C. Helgeson

0	Test ____ Run 0 Field Blank Log Number ____ Comments ____	Dish No. ____ Dish Tare Wt. ____ g Dish+Sample Wt. ____ g Sample Wt. ____ g	
1	Test 2 Run 1 Log Number 8023-36 Comments ____	Dish No. 201 Dish Tare Wt. 42.2305 g Dish+Sample Wt. 42.2606 g Sample Wt. 0.0301 g	
2	Test 2 Run 2 Log Number -40 Comments ____	Dish No. 203 Dish Tare Wt. 46.8695 g Dish+Sample Wt. 46.9023 g Sample Wt. 0.0328 g	
3	Test 2 Run 3 Log Number -44 Comments ____	Dish No. 405 Dish Tare Wt. 48.4905 g Dish+Sample Wt. 48.5191 g Sample Wt. 0.0286 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	

Blank Solvent Wt. 0.0003 g

Results:

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	0.0298	0.0325	0.0283		

B-8

LSC-03.GR

Interpoll Laboratories
(612) 786-6020

EPA Method 5 Data Reporting Sheet
Probe/Cyclone Wash

Job: LP/Montrose
Team Leader: DVH
Date Submitted: 2-1-93
Test No.: 2
Date of Analysis: 2-6-93
Transport Leakage [X] None [ ] _____ ml

Source: Dryer
Test Site: Stack
Date of Test: 1-27-93
No. of Runs Completed: 3
Technician: B. Dale
Solvent: Acetone

0	Test ____ Run 0 Field Blank Log Number ____ Vol. of Solvent ____ ml *Solvent Residue 2.4 ug/ml	Dish No. ____ Dish Tare Wt. ____ g Dish+Sample Wt. ____ g Sample Wt. ____ g
1	Test 2 Run 1 Vol. of Solvent 250 ml Log Number 8023-34 Comments ____	Dish No. 33 Dish Tare Wt. 47.9414 g Dish+Sample Wt. 47.9516 g Sample Wt. 0.0102 g
2	Test 2 Run 2 Vol. of Solvent 250 ml Log Number -38 Comments ____	Dish No. 34 Dish Tare Wt. 47.2502 g Dish+Sample Wt. 47.2563 g Sample Wt. 0.0061 g
3	Test 2 Run 3 Vol. of Solvent 210 ml Log Number -42 Comments ____	Dish No. 37 Dish Tare Wt. 49.4978 g Dish+Sample Wt. 49.5063 g Sample Wt. 0.0085 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
	0.0096	0.0055	0.0080		

LSC-01YR

Interpoll Laboratories
(612) 786-6020

EPA Method 5 Data Reporting Sheet
Filter Gravimetrics

Job: L. P. MONTROSE
Team Leader: DUH
Date Submitted: 2-1-93
Test No.: 2
Date of Analysis: 2-8-93

Source: DRYER
Test Site: STACK
Date of Test: 1-27-93
No. of Runs Completed: 3
Technician: JS

0	Test ____ Run 0 Field Blank Log Number ____ Comments ____	Filter No. ____ Filter Type ____ Filter Tare Wt. ____ g Filter+Sample Wt. ____ g Sample Wt. ____ g
1	Test 2 Run 1 Log Number 8023-35 Comments ____	Filter No. 4984 Filter Type 4" GF Filter Tare Wt. .8929 g Filter+Sample Wt. .9066 g Sample Wt. .0137 g
2	Test 2 Run 2 Log Number -39 Comments ____	Filter No. 4986 Filter Type 4" GF Filter Tare Wt. .8871 g Filter+Sample Wt. .9027 g Sample Wt. .0156 g
3	Test 2 Run 3 Log Number -43 Comments ____	Filter No. 4989 Filter Type 4" GF Filter Tare Wt. .8968 g Filter+Sample Wt. .9119 g Sample Wt. .0151 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
	0.0137	0.0156	0.0151		

Field Blk.	Run 1	Run 2	Run 3	Run 4	Run 5
	0.0531	0.0536	0.0514		

LSC-02PR

INTERPOLL LABORATORIES, INC.
(612)786-6020

Louisiana-Pacific, Montrose
Laboratory Log No. 8023

Results of Formaldehyde Analysis[1]

Test: 1

Source: Dryer Scrubber Inlet

Sample Type: Impinger Catch

Sample Log No.	Sample Description	Formaldehyde Total ug
8023-01	Run 0 (Field Blank)	10
8023-02	Run 1	9600
8023-03	Run 2	10000
8023-04	Run 3	12000

Sincerely,

INTERPOLL LABORATORIES, INC.

Wayne A. Olson, Manager
Organic Chemistry Group

WAO/cg

[1]Analysis performed by EPA Method 0011.

INTERPOLL LABORATORIES, INC.
(612)786-6020

Louisiana-Pacific, Montrose
Laboratory Log No. 8023

Results of Formaldehyde Analysis[1]

Test: 1
Source: Dryer Stack
Sample Type: Impinger Catch

Sample Log No.	Sample Description	Formaldehyde Total ug
8023-08	Run 0 (Field Blank)	6.8
8023-09	(Field Spike)	5.2
8023-10	Run 1	7900
8023-11	Run 2	8100
8023-12	Run 3	11000

Sincerely,

INTERPOLL LABORATORIES, INC.

Wayne A. Olson, Manager
Organic Chemistry Group

WAO/cg

[1]Analysis performed by EPA Method 0011.

Interpoll Laboratories
(612) 786-6020

Chain of Custody
Sample Deposition Sheet

Job LP/Montrose
Team Leader S Trowbridge
Date Submitted
Test No. 1

Source Dryer - [illegible] Scrubber
Test Site Inlet
Date of Test 1-26-92
No. of Runs Completed 3

No. of Samples	Type of Sample	Analysis Required	Comments
	Probe Wash: ☐Acetone ☐D.I. Water	☐As per EPA M-5 ☐Other	
	Filter: ☐4" G.F. ☐S.S. Thimble ☐2.5" G.F. ☐47 mm G.F.	☐As per EPA M-5 ☐As per EPA M-17 ☐Other	
✓	Impinger Catch: ☐D.I. Water ☐3% H_2O_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	S-0011
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

S-278RRRR

Interpoll Laboratories
(612) 786-6020

Chain of Custody
Sample Deposition Sheet

Job LP/MONTROSE
Team Leader E Trowbridge
Date Submitted
Test No. 2

Source Dryer
Test Site Scrubber Inlet
Date of Test 1-27-93
No. of Runs Completed 3

No. of Samples	Type of Sample	Analysis Required	Comments
4	Probe Wash: ☒ Acetone ☐ D.I. Water	☒ As per EPA M-5 ☐ Other	
4	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	
4	Impinger Catch: ☒ D.I. Water ☐ 3% H_2O_2 ☐ 4M5 Hg Only ☐ 4M5 Metals ☐ 1.0 N NaOH ☐ Other	☒ ~~MN~~ COLO 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

S-278RRRR

Interpoll Laboratories
(612) 786-6020

Chain of Custody
Sample Deposition Sheet

Job L.P. / MONTROSE
Team Leader D.H.
Date Submitted 1/
Test No. 1

Source DRYER STACK
Test Site 11
Date of Test 1/26/93
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 _____	
5	Impinger Catch: [ ] D.I. Water [ ] 3% H_2O_2 [ ] 4M5 Hg Only [ ] 4M5 Metals [ ] 1.0 N NaOH [X] Other 2-4 DNPH	[ ] MN Protocol [ ] WI Protocol [ ] EPA M-6 or 8 [ ] Acid Gases [X] Formaldehyde - 0011 [ ] Metals [ ] Other _____	
3	Integrated Gas sample	[X] 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 [X] Dryer [ ] Other _____
2) Fuel: [ ] Coal [X] Wood [ ] Gas [ ] Oil [ ] RDF [ ] Other _____
3) Is sample combustible? [X] No [ ] Yes
4) Does sample need special handling? [X] No [ ] Yes If yes, explain _____

S-278RRRR

Interpoll Laboratories
(612) 786-6020

Chain of Custody
Sample Deposition Sheet

Job: S.P. / MONTROSE
Team Leader: Dirt
Date Submitted: 2/1/93
Test No.: 2

Source: DRYER
Test Site: STACK
Date of Test: 1/27/93
No. of Runs Completed: 3

No. of Samples	Type of Sample	Analysis Required	Comments
4	Probe Wash: ☒ Acetone ☐ D.I. Water	☒ As per EPA M-5 ☐ Other	
4	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	
4	Impinger Catch: ☒ D.I. Water ☐ 3% H_2O_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 Colorado	
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

S-278RRRR

APPENDIX C

THC STRIPCHARTS

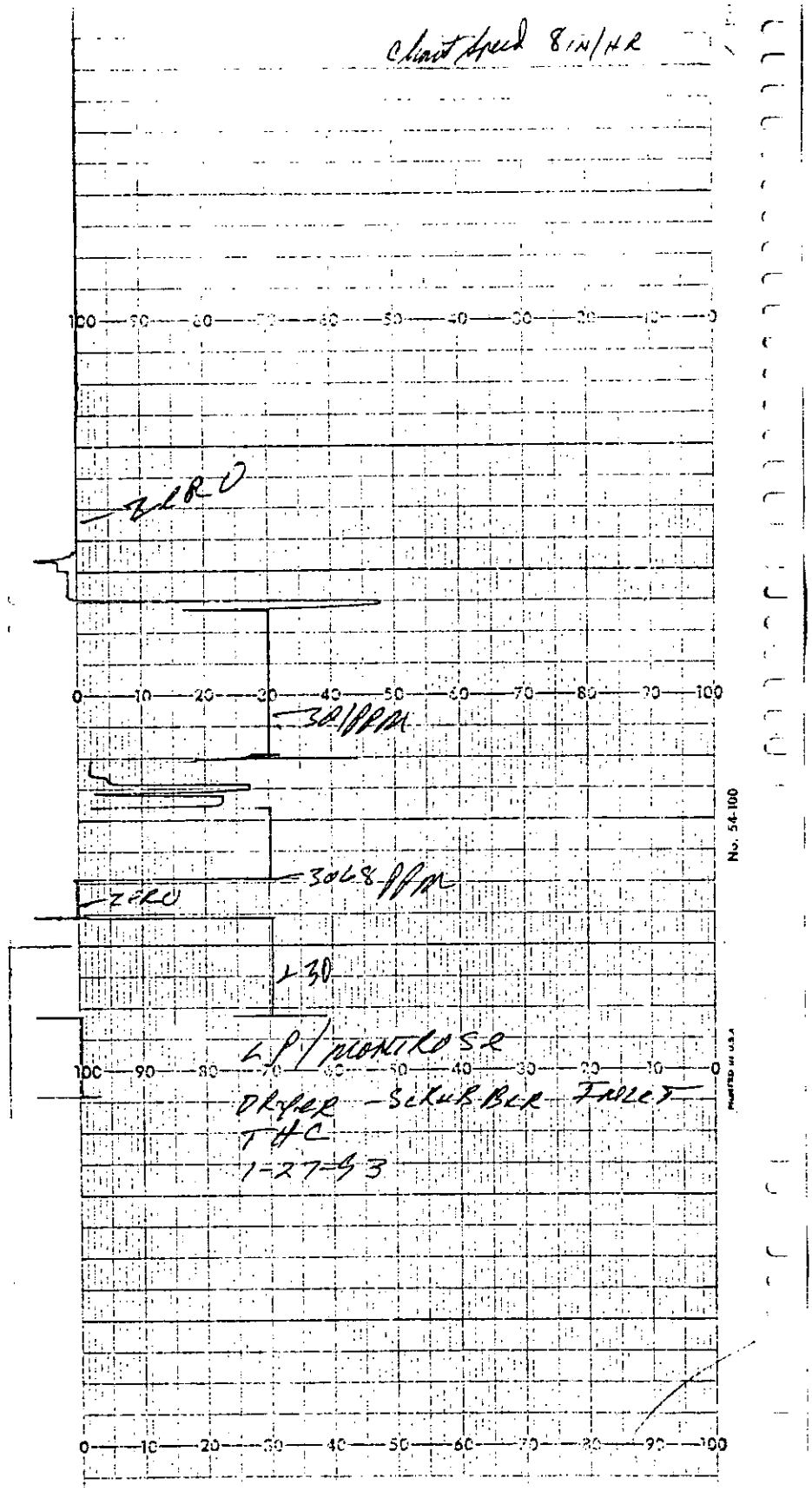
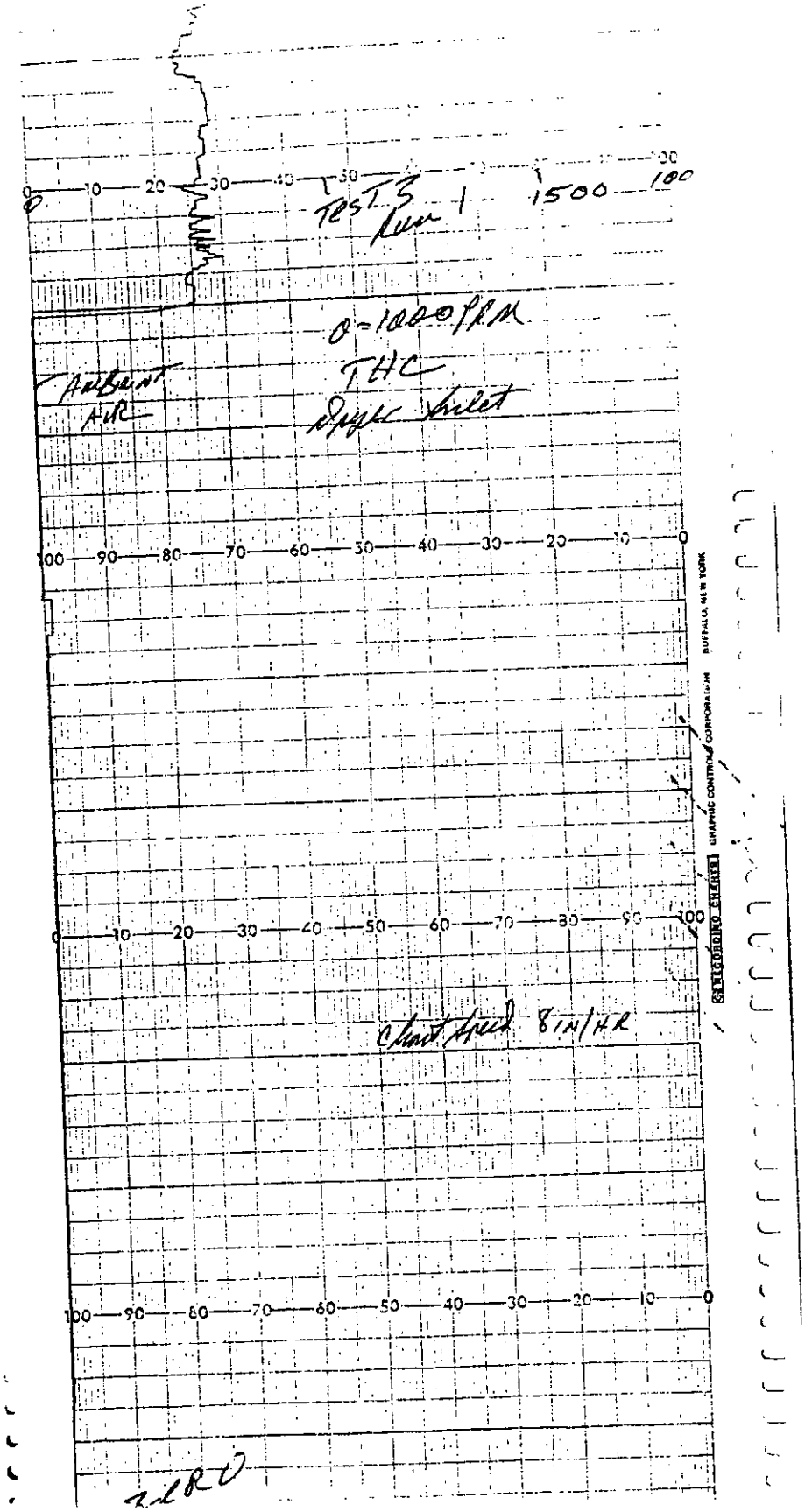
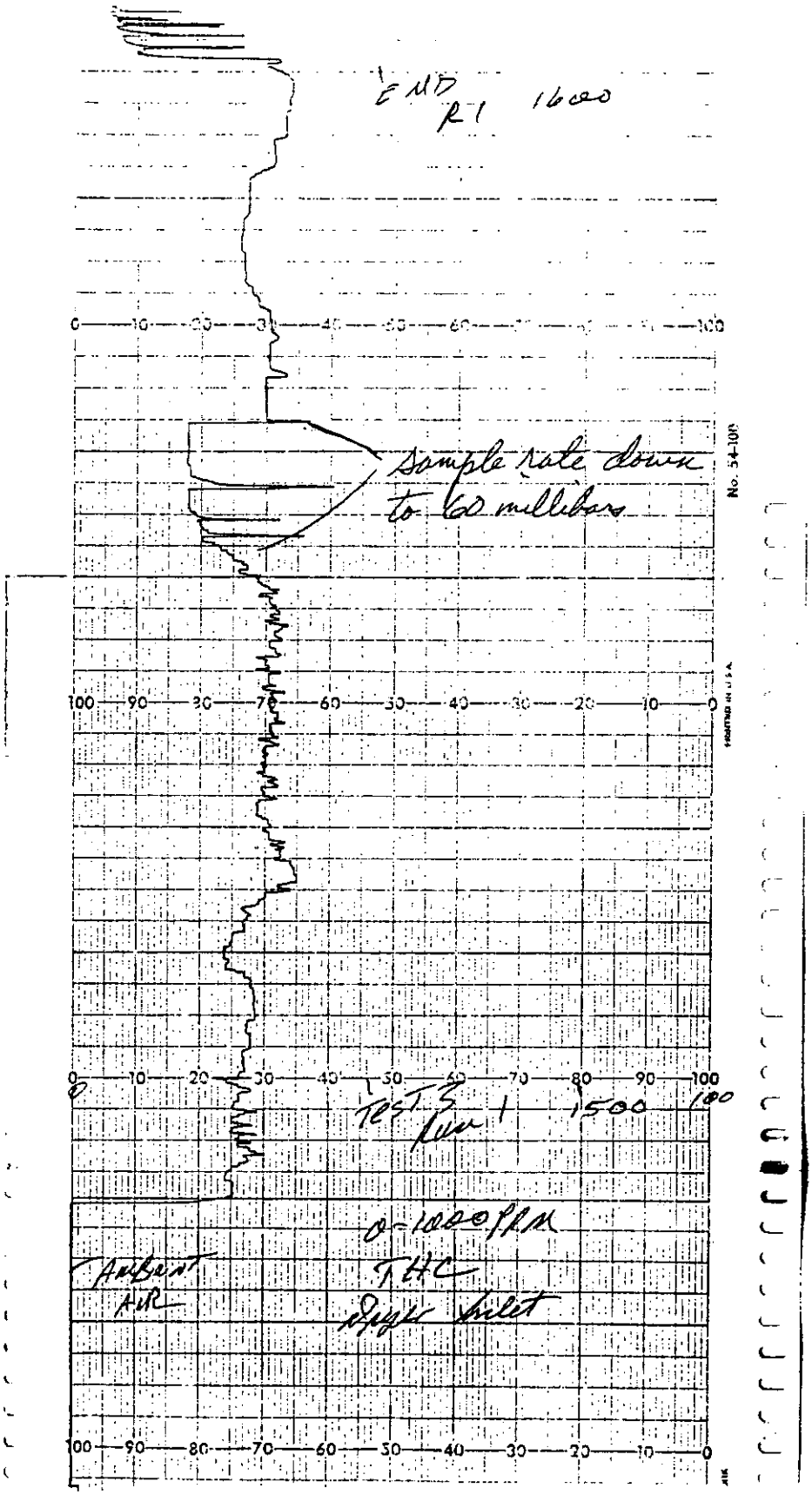
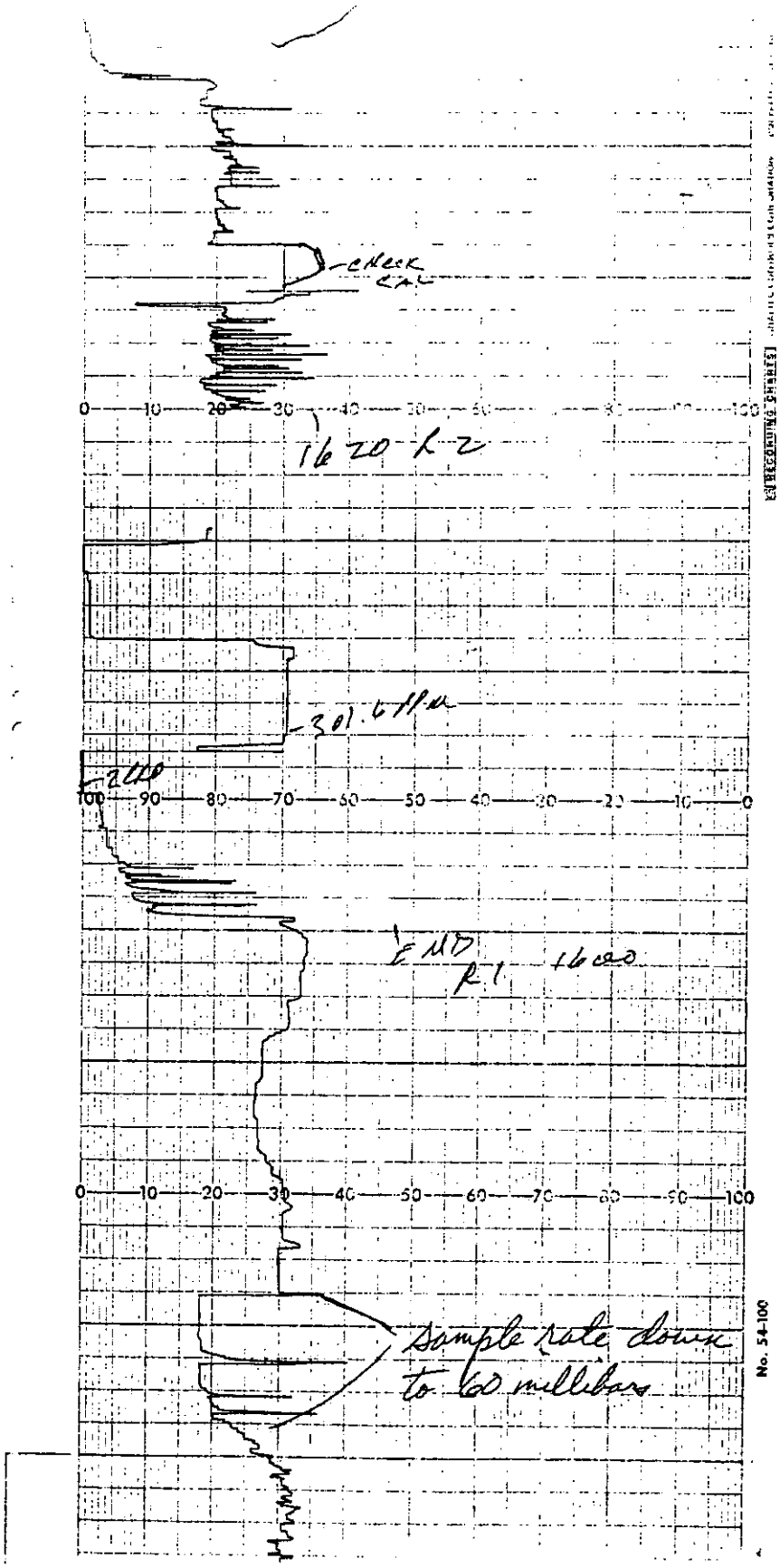


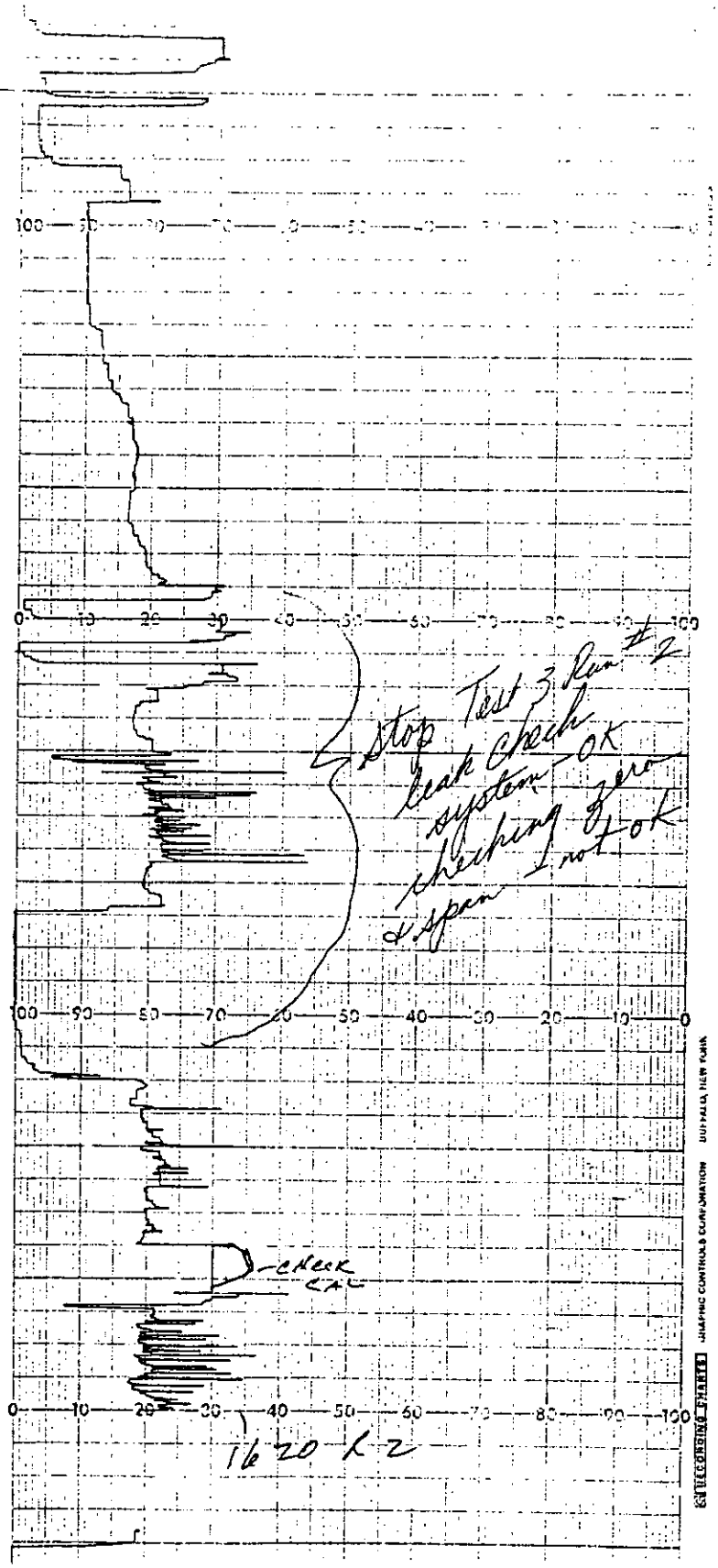
Chart Speed 8 IN/HR
ZERO
30 PPM
3068 PPM
ZERO
+30
LP/MONTROSE
DRYER - SCRUBBER INLET
THC
1-27-93
No. 54-100

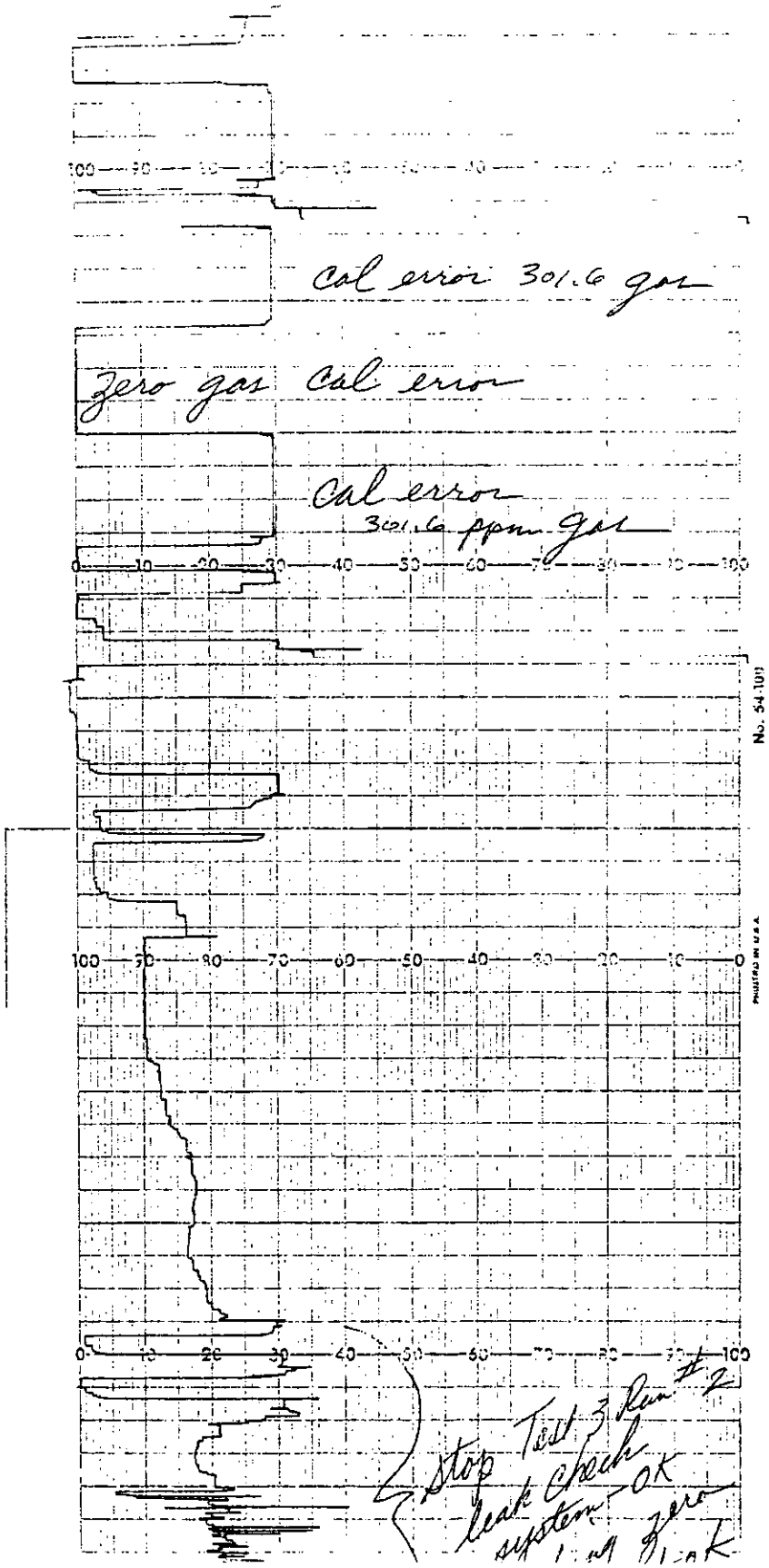

Test 5
Run 1
1500
0-1000 PPM
THC
Dryer Inlet
Ambient Air
Chart Speed 8 IN/HR
GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
RECORDING CHART

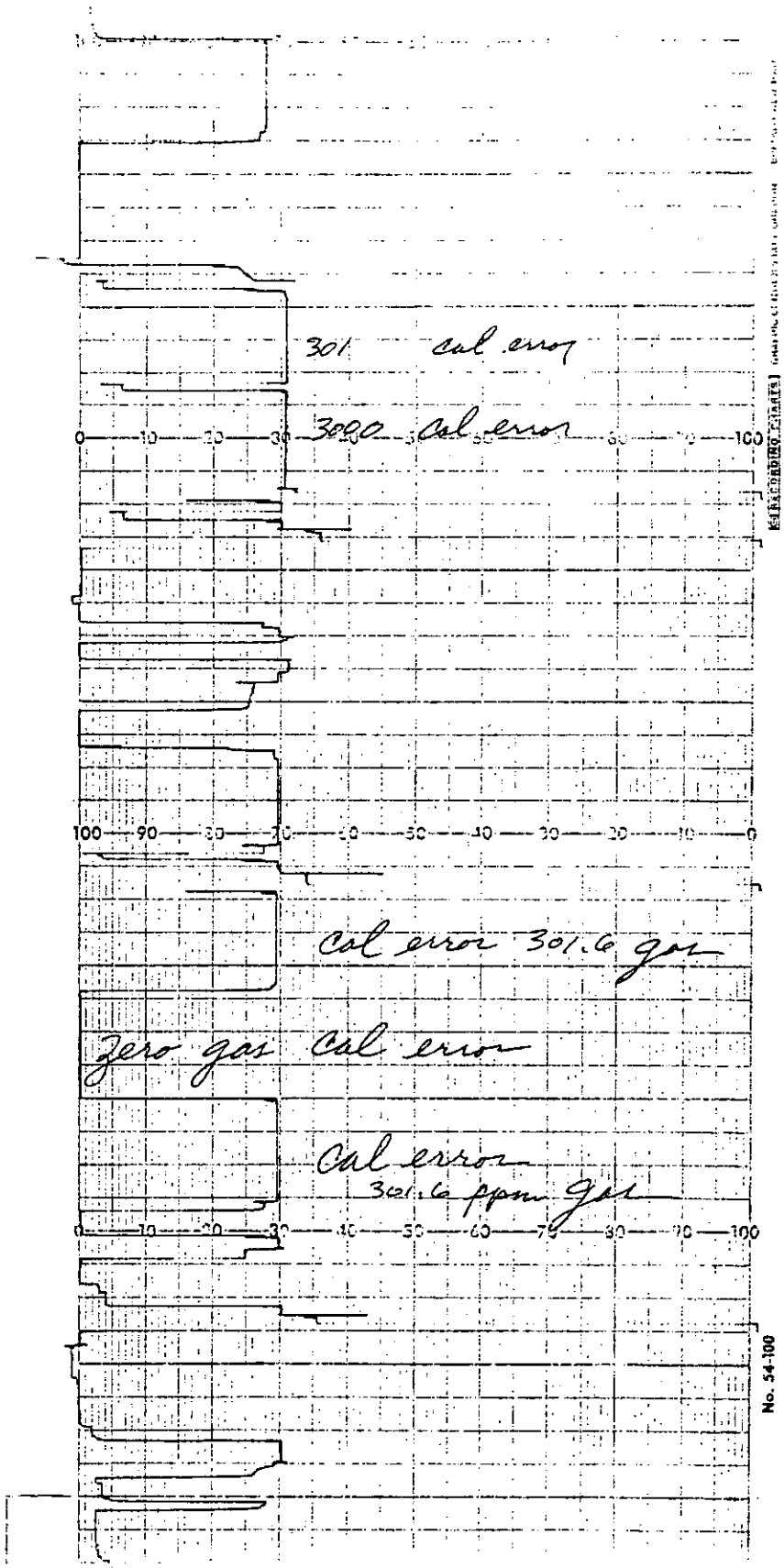

END R-1 1600
Sample rate down to 60 millibars
TEST 3 Run 1 1500
0-1000 PPM THC Dryer Inlet
Ambient AIR

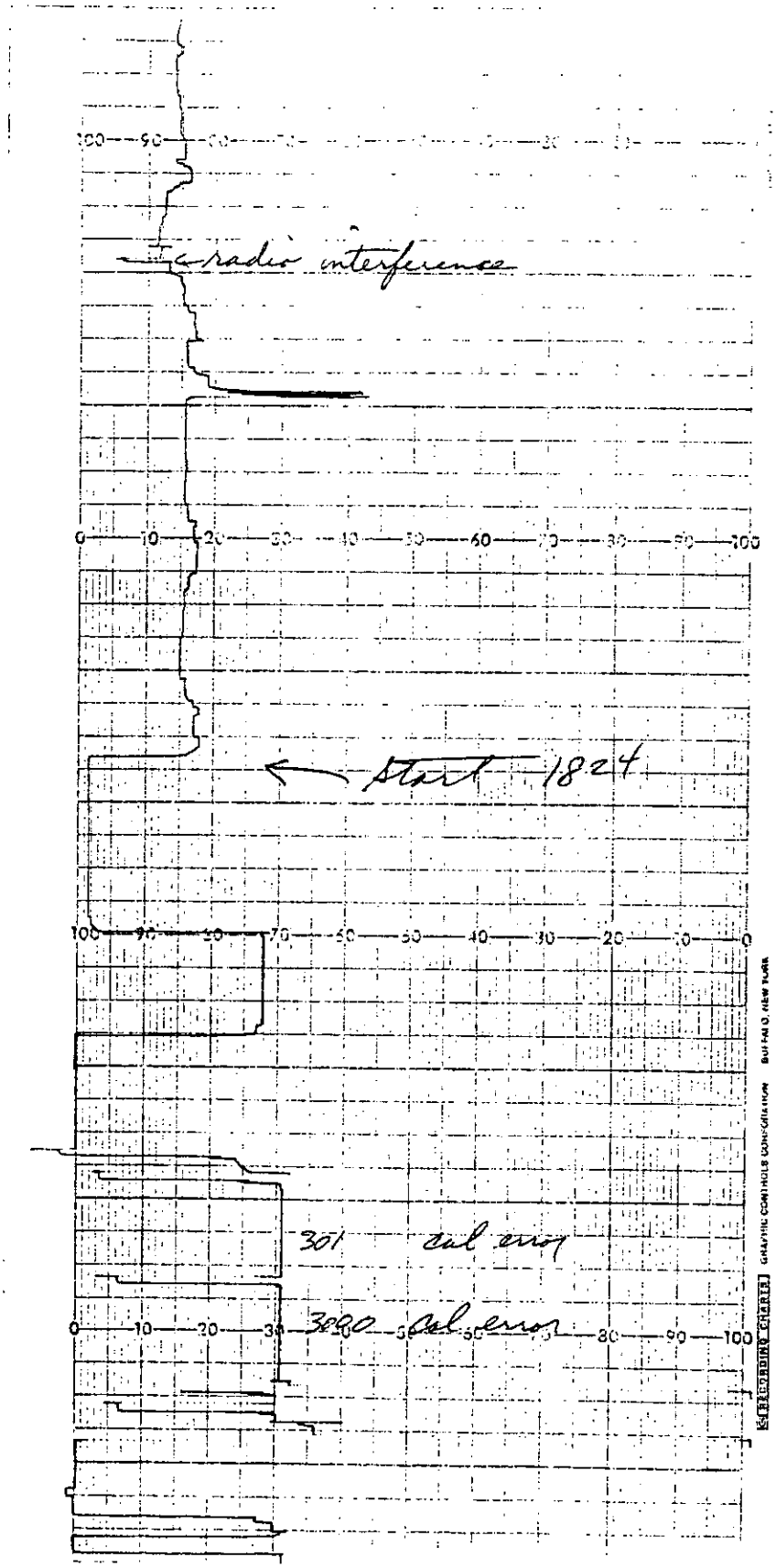


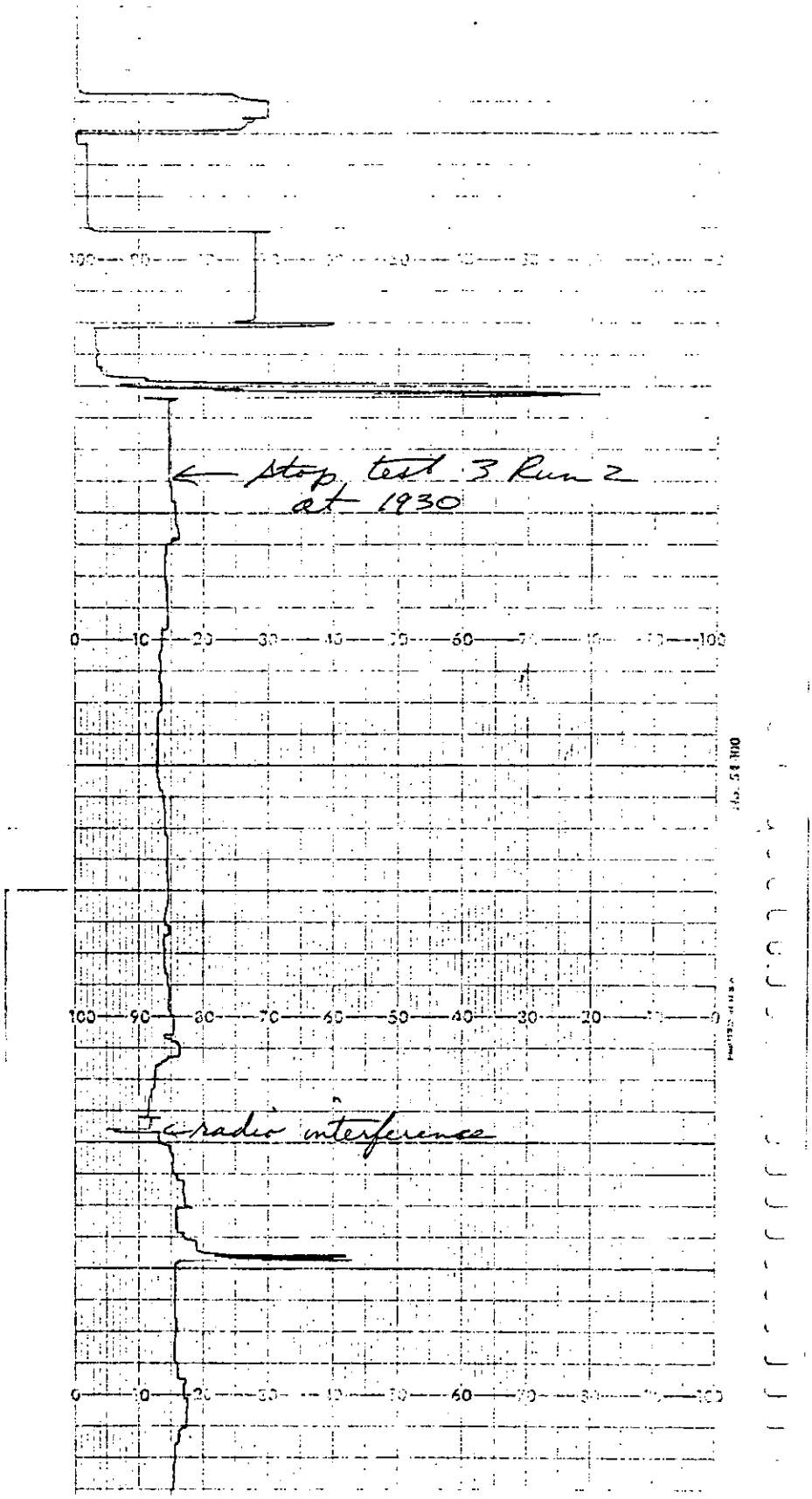
CHECK CAL
0 10 20 30 40 50 60 80 90 100
1620 R2
301.6 ppm
2000
100 90 80 70 60 50 40 30 20 10 0
END R1 1600
0 10 20 30 40 50 60 70 80 90 100
Sample rate down to 60 millibars
No. 54-100

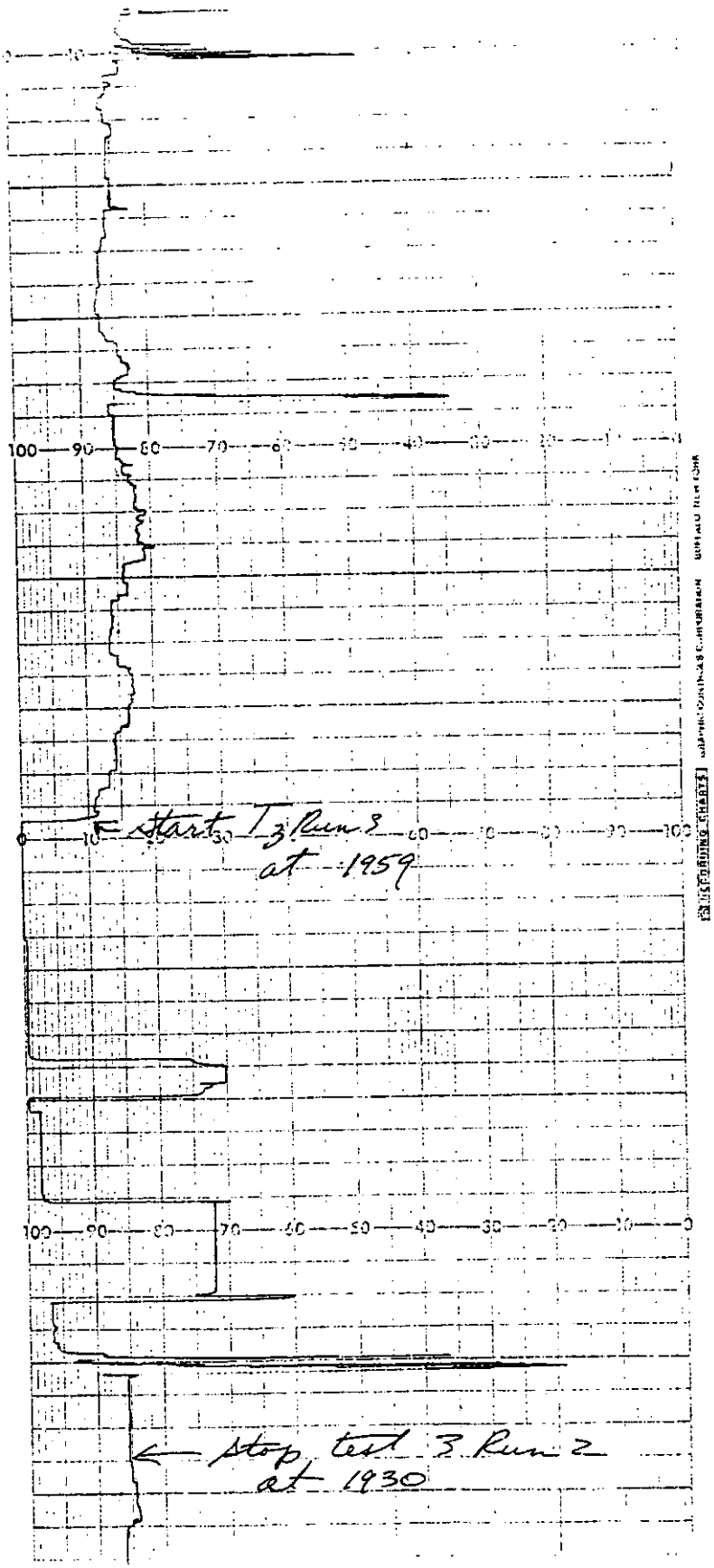

Stop Test 3 Run #2
leak check
system OK
checking zero
& span not ok
CHECK
CAL
1620 R2
RECORDING CHARTS GRAPHIC CONTROLS CORPORATION BUFFALO, NEW YORK

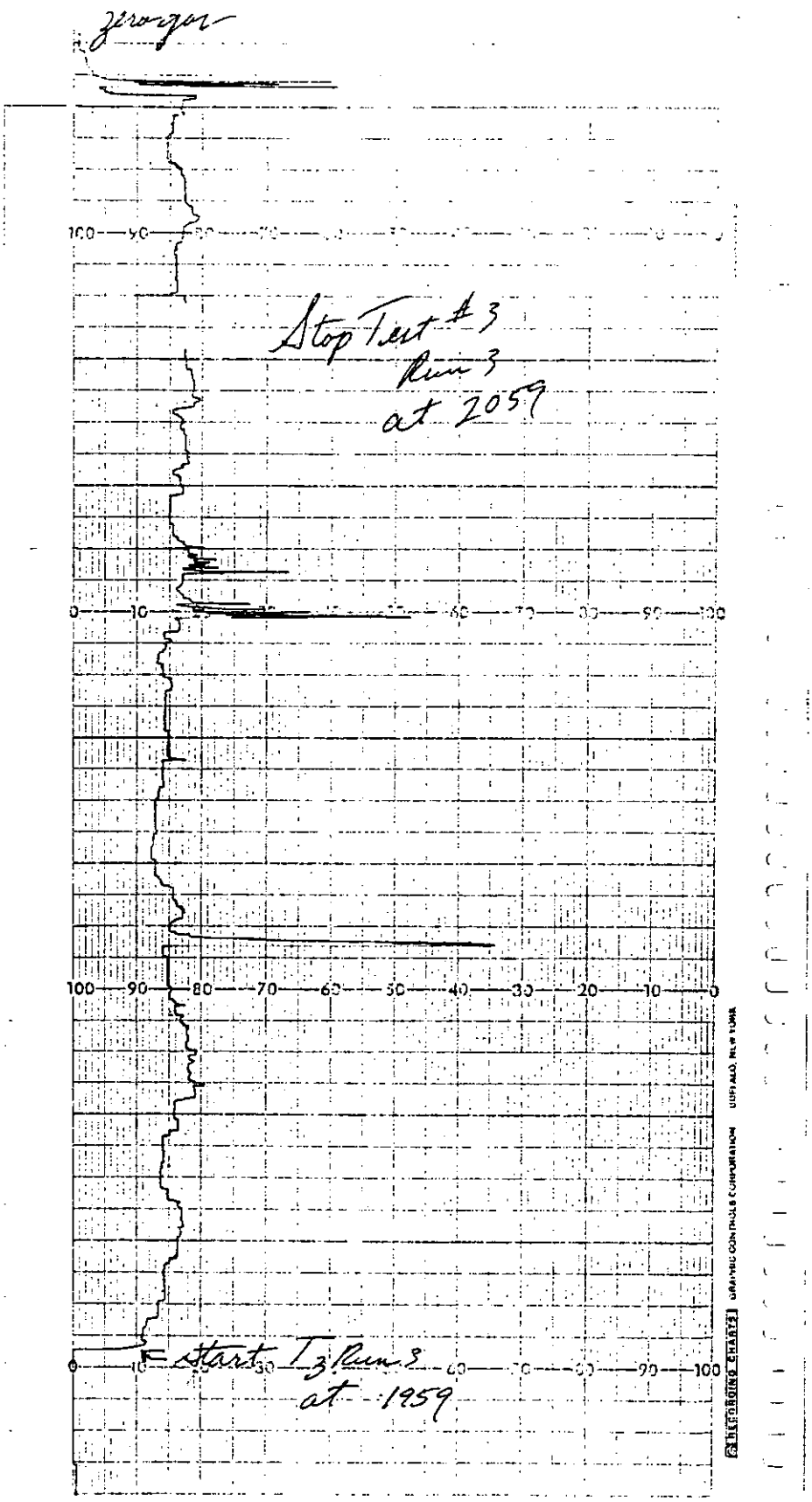

Cal error 301.6 gas
Zero gas Cal error
Cal error
301.6 ppm gas
Stop Test 3 Run #2
leak check
system OK
zero

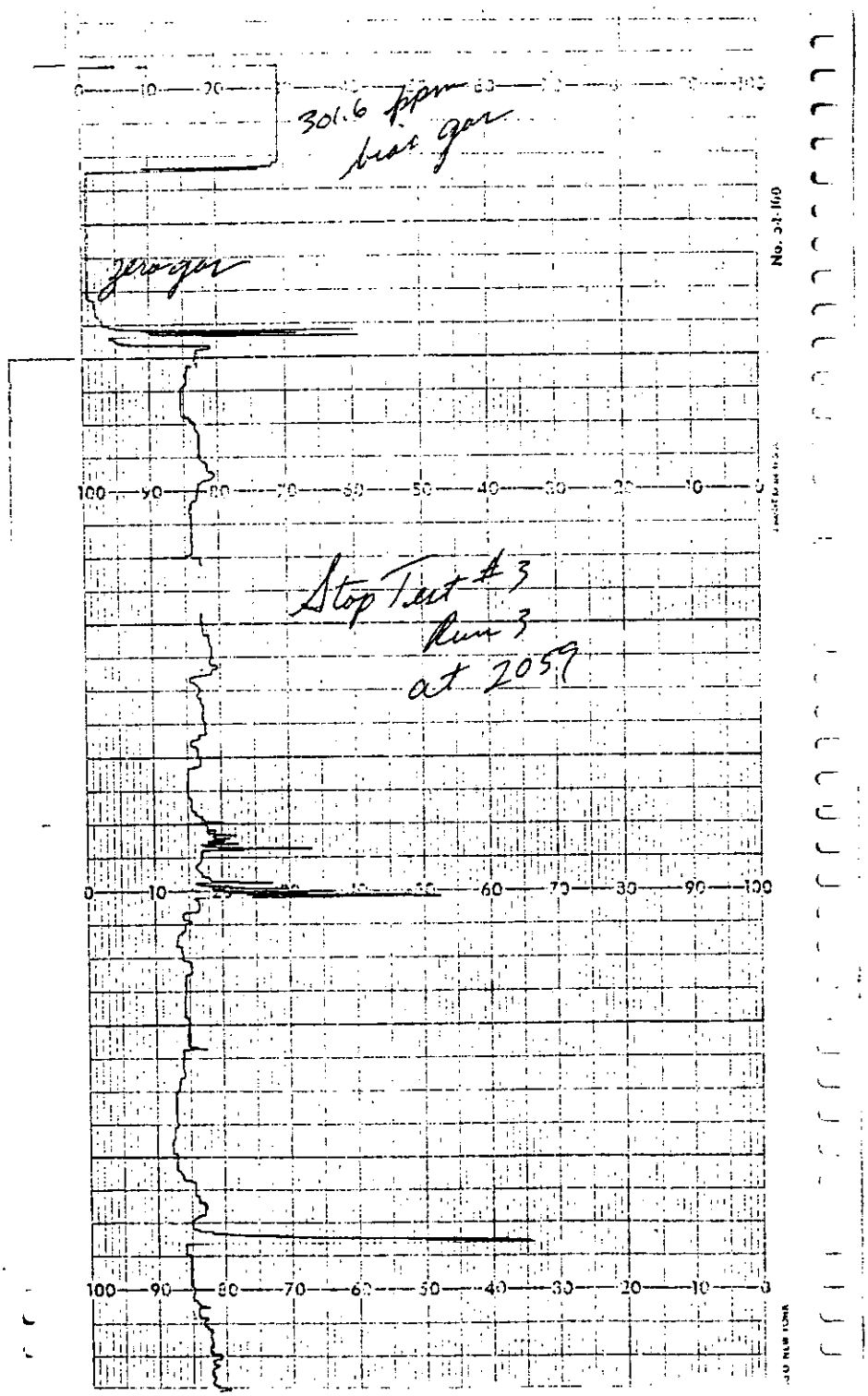

301 cal error
3000 cal error
0 10 20 30 40 50 60 70 100
100 90 80 70 60 50 40 30 20 10 0
cal error 301.6 gas
zero gas cal error
cal error
301.6 ppm gas
0 10 20 30 40 50 60 70 80 90 100
No. 54-100

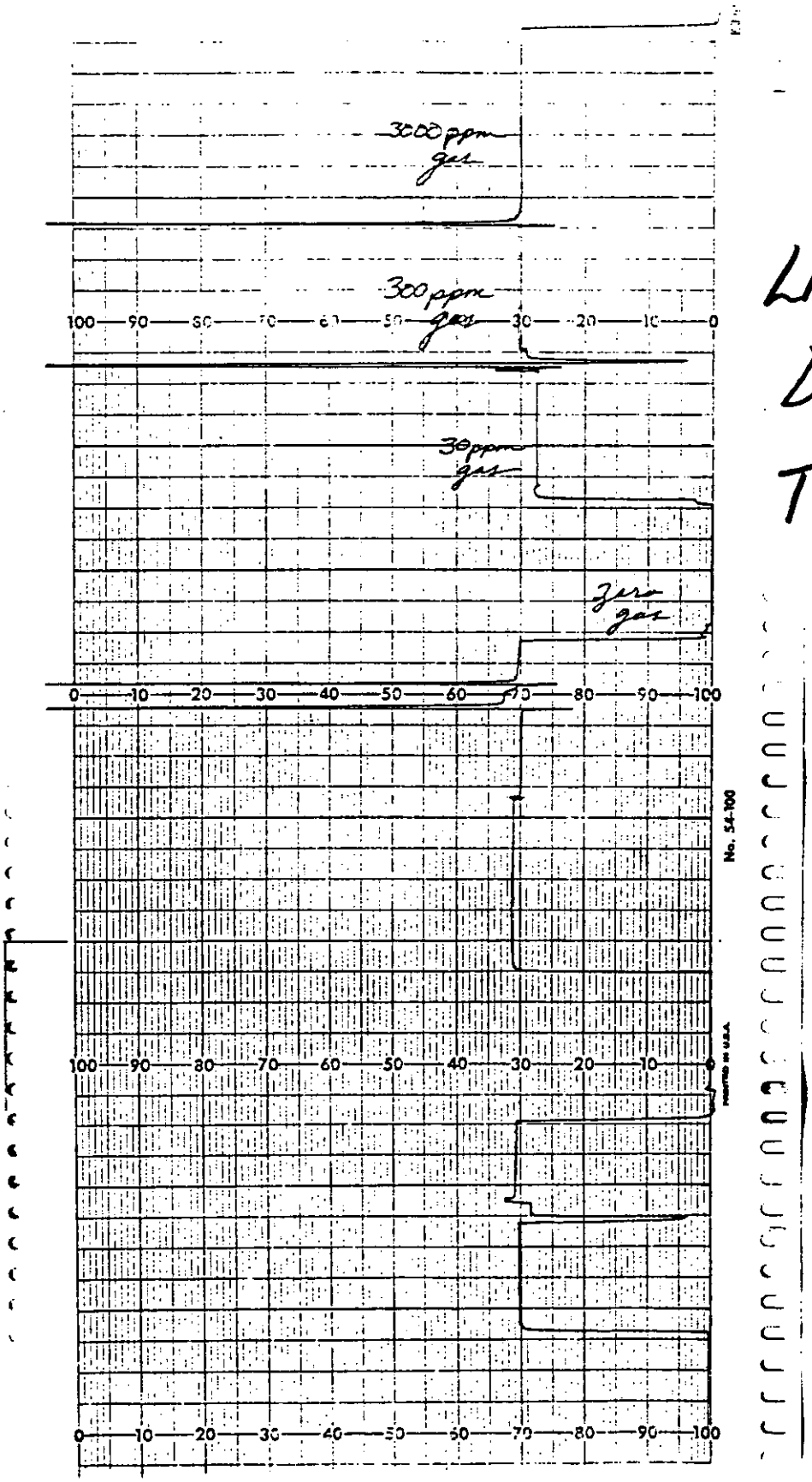

radio interference
Start 1824
301 cal error
3090 cal error


← stop test 3 Run 2
at 1930
← radio interference

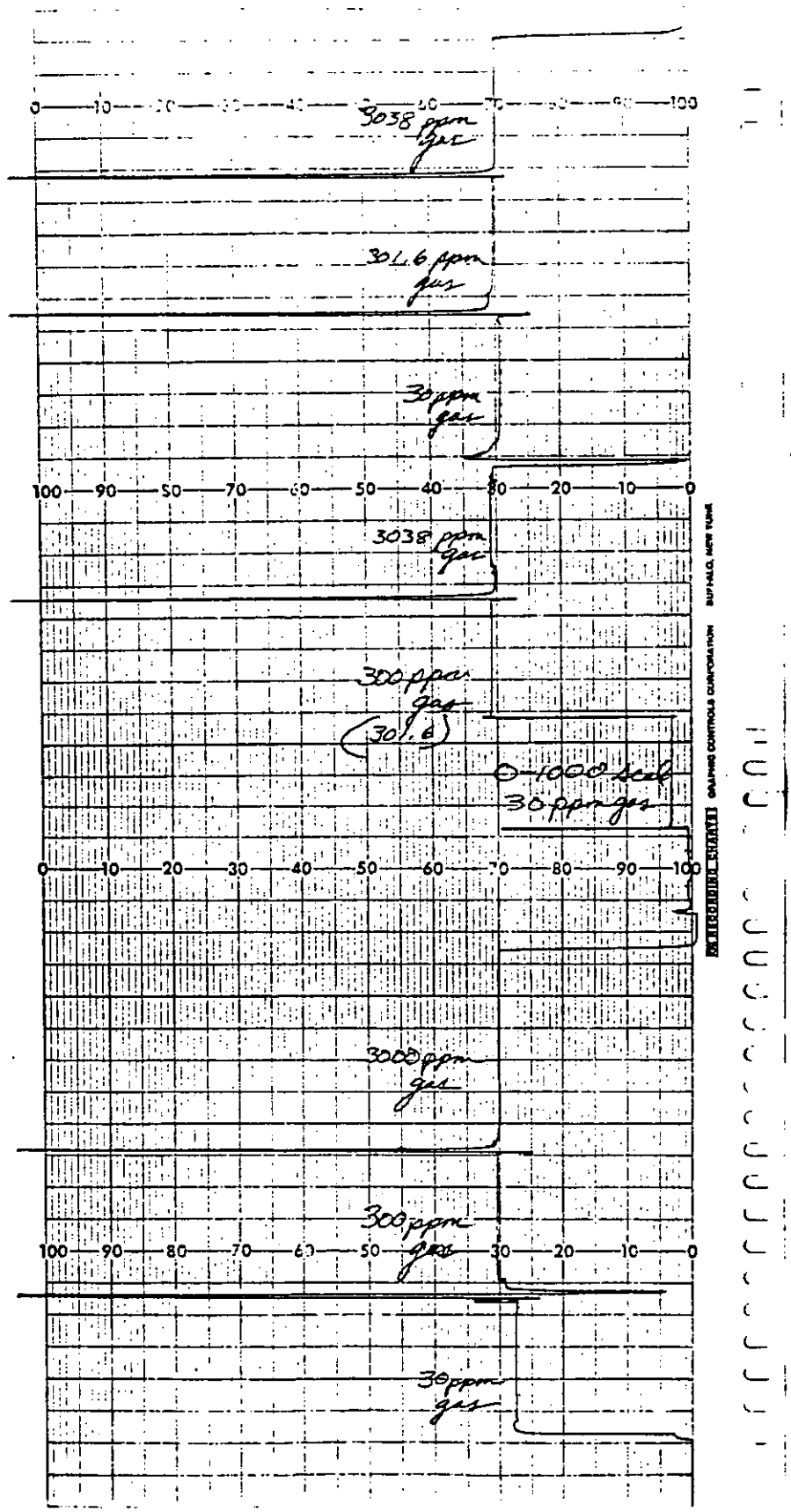

100 90 80 70 60 50 40 30 20 10 0
Start T3 Run 3
at 1959
100 90 80 70 60 50 40 30 20 10 0
Stop test 3 Run 2
at 1930


zero gas
Stop Test #3
Run 3
at 2059
Start T3 Run 3
at 1959
100 90 80 70 60 50 40 30 20 10 0
GRAPHIC CONTROLS CORPORATION BUFFALO, NEW YORK
RECORDING CHARTS

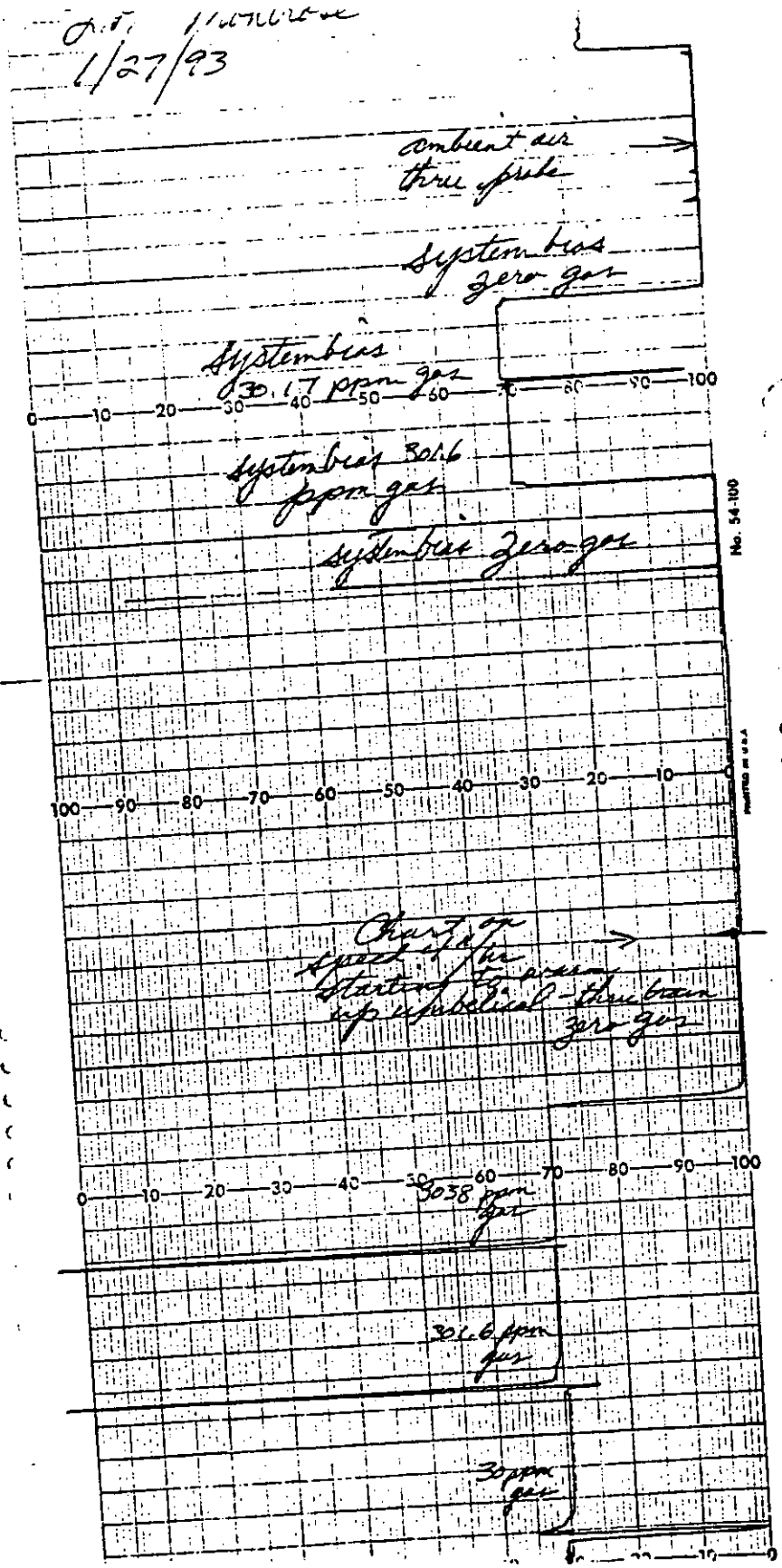

301.6 ppm
base gas
zero gas
Stop Test #3
Run 3
at 2059



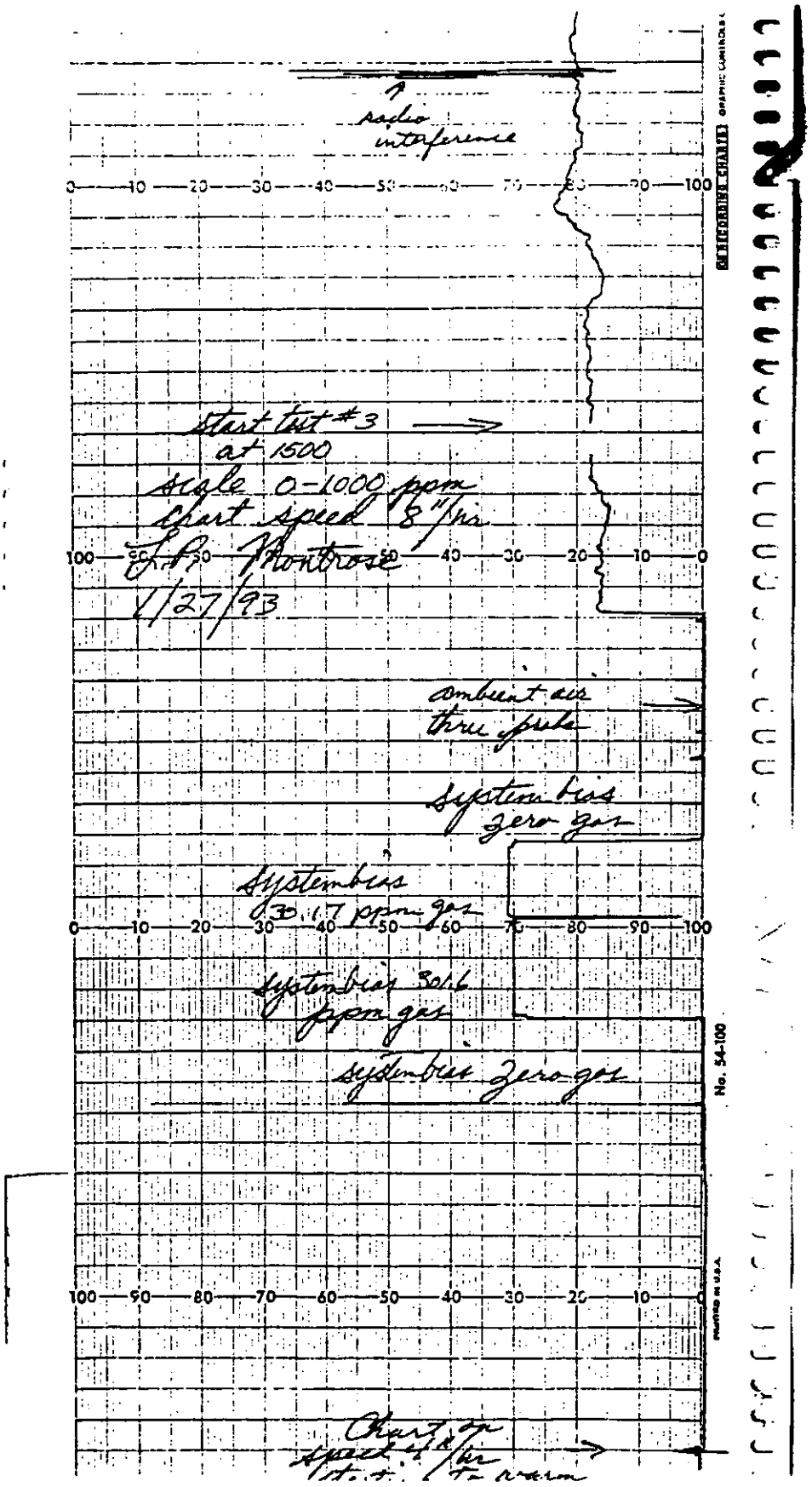
LP/Montrose
Dryer Stack
THC
1/27/93

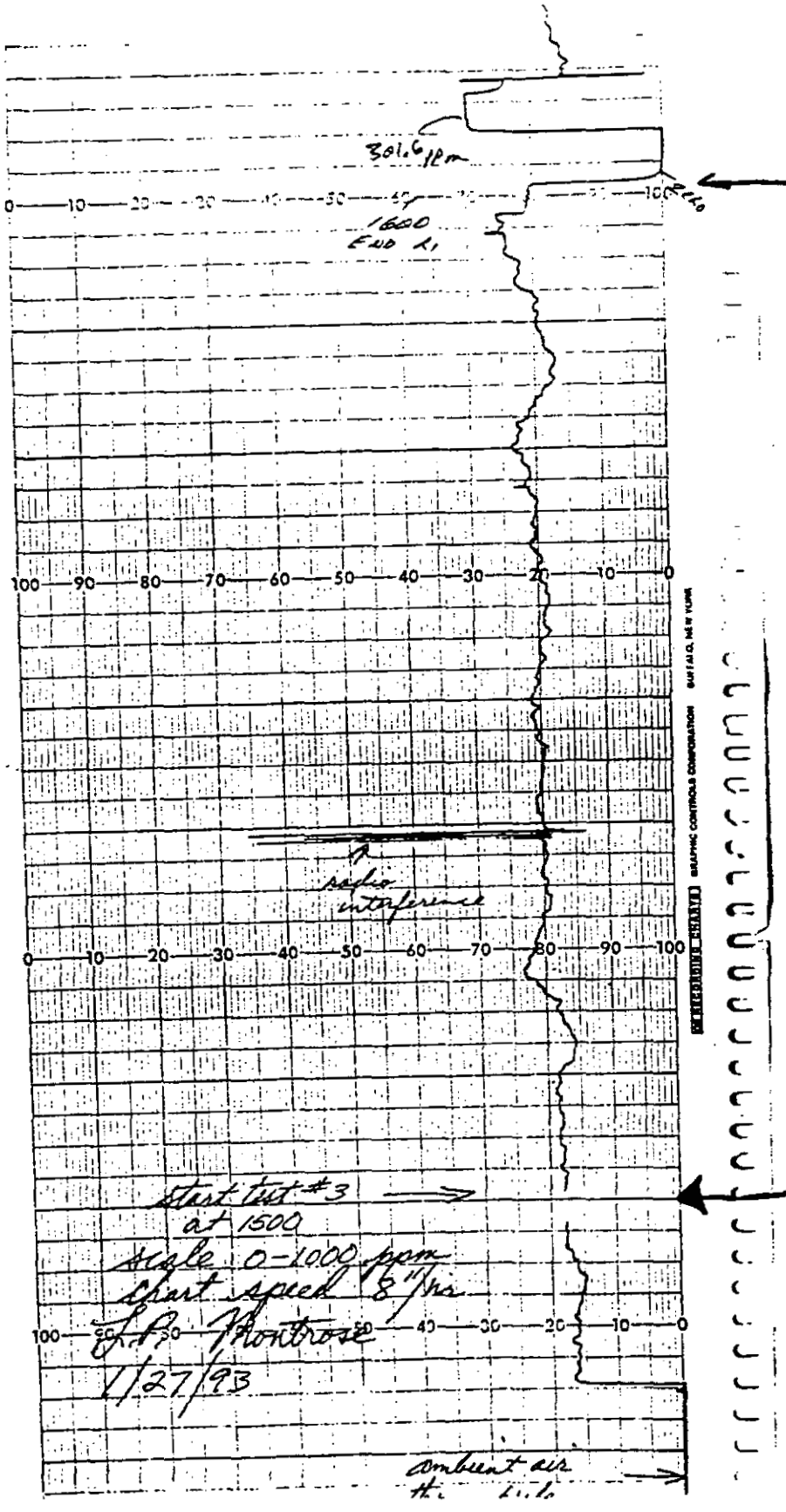


Calibration Data



Calibration data

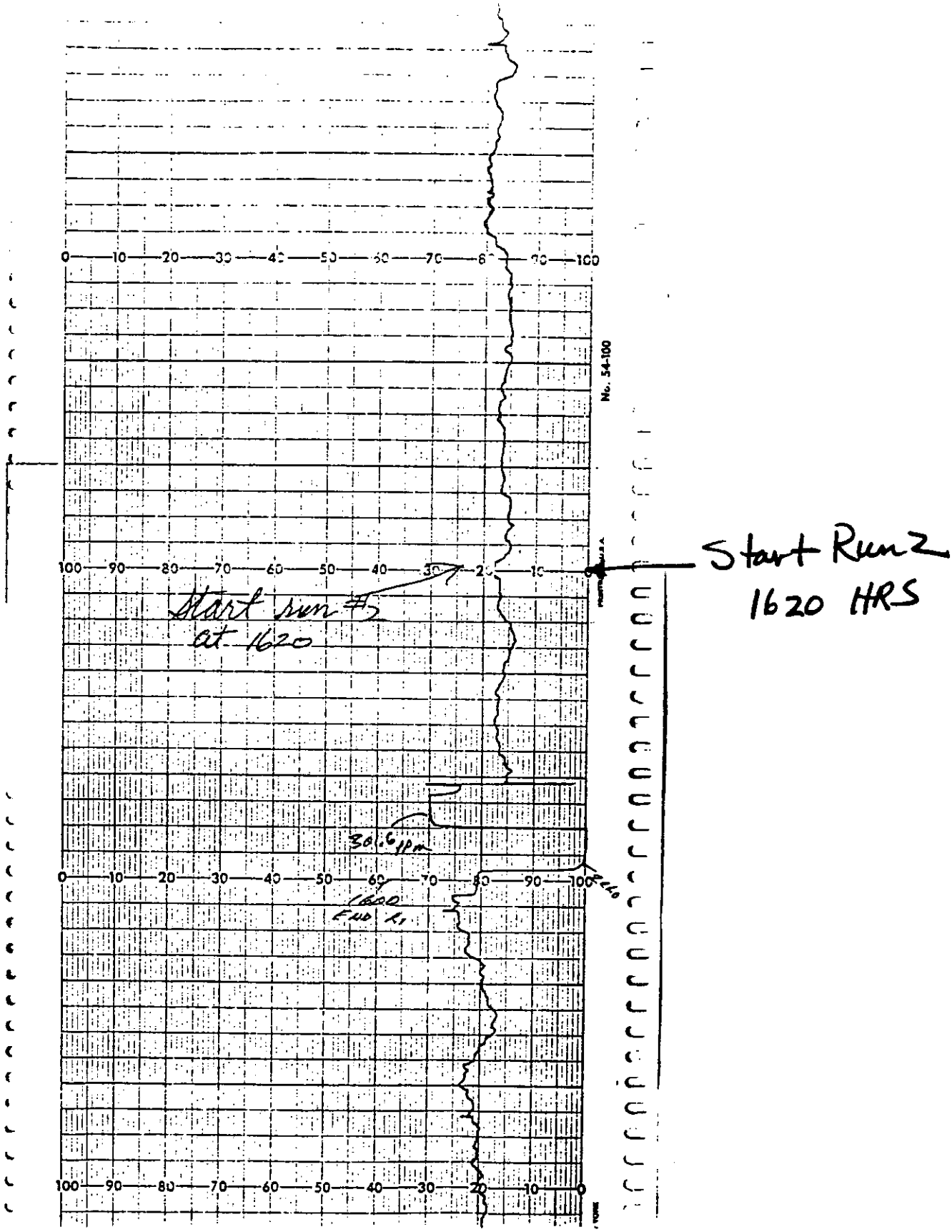

radio interference
0 10 20 30 40 50 60 70 80 90 100
start test #3 at 1500
scale 0-1000 ppm
chart speed 8"/hr
L.P. Montrose
1/27/93
100 90 80 70 60 50 40 30 20 10 0
ambient air thru probe
system bias zero gas
system bias 30.17 ppm gas
0 10 20 30 40 50 60 70 80 90 100
system bias 301.6 ppm gas
system bias zero gas
No. 54-100
100 90 80 70 60 50 40 30 20 10 0
Chart on speed 4"/hr
start to warm



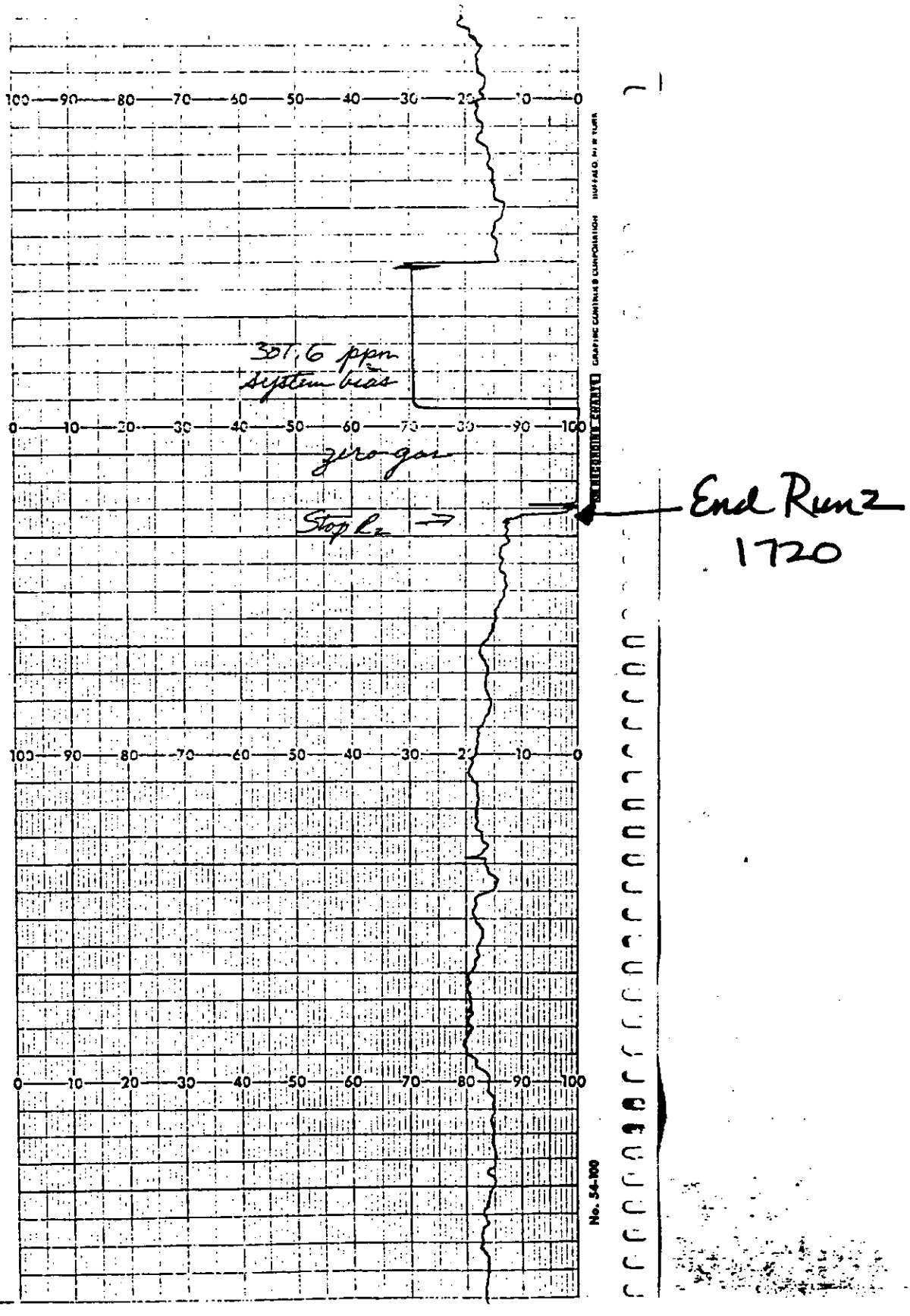
End Run 1
1600 HRS

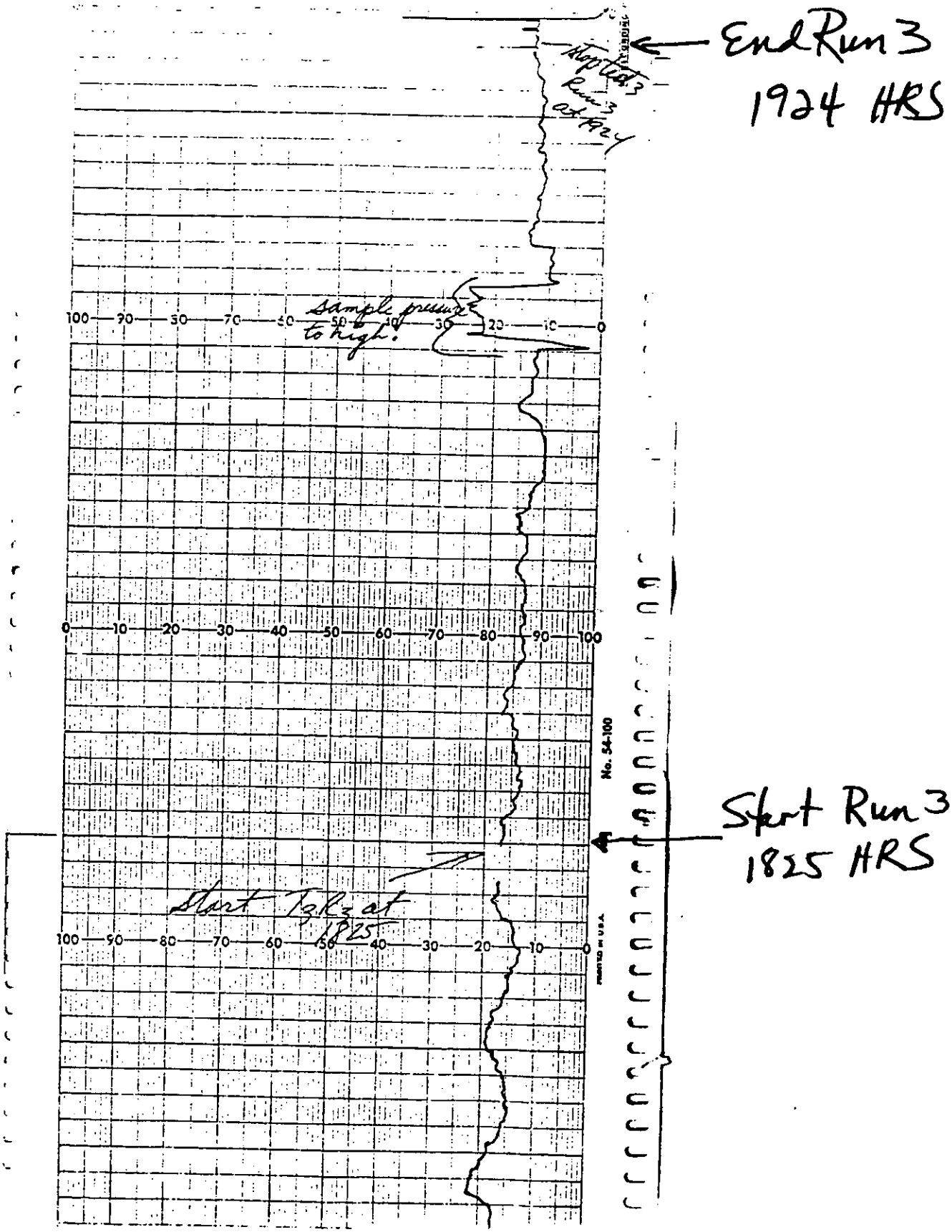
Start Run 1
1500 HRS

0-1000 ppm,
as propane



0 10 20 30 40 50 60 70 80 90 100
No. 54-100
100 90 80 70 60 50 40 30 20 10 0
Start run #2
at 1620
Start Run 2
1620 HRS
30.6 ppm
1600
END R1


100 90 80 70 60 50 40 30 20 10 0
307.6 ppm
system bias
0 10 20 30 40 50 60 70 80 90 100
zero gas
Stop L_2 →
End Run 2
1720
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
No. 54-100


End Run 3
1924 HRS
Stop test 3
Run 3
at 1924
sample pressure
to high.
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
No. 54-100
Start Run 3
1825 HRS
Start T3R3 at
1825
100 90 80 70 60 50 40 30 20 10 0
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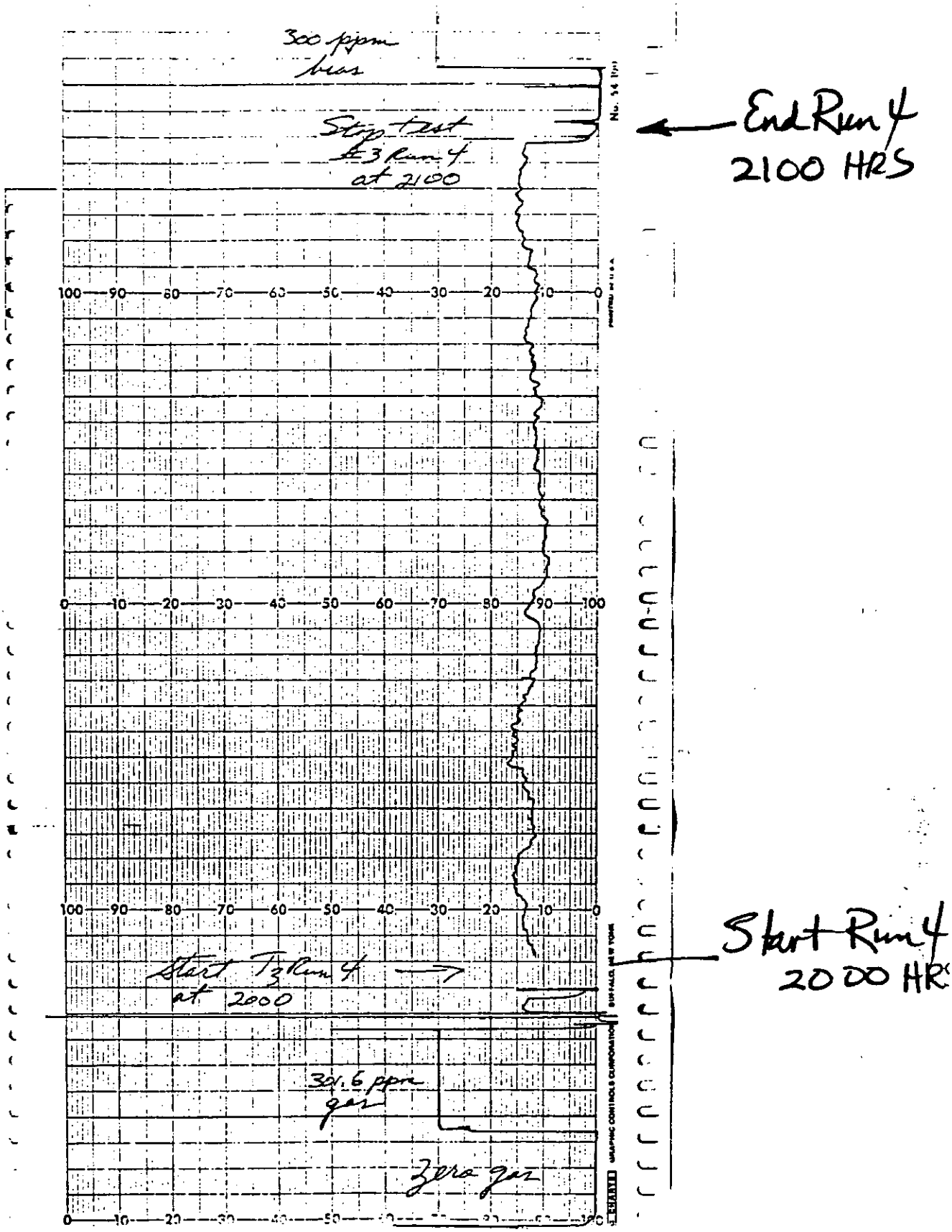
300 ppm bias
Stop test E3 Run 4 at 2100
End Run 4 2100 HRS
Start T3 Run 4 at 2000
Start Run 4 2000 HRS
301.6 ppm gas
Zero gas