APPENDIX A
DETAILED TEST DATA AND TEST RESULTS

TABLE A-1
TAMPA ELECTRIC COMPANY, BIG BEND STATION
SUMMARY OF MERCURY SPECIATION TEST DATA AND TEST RESULTS
UNIT NO. 3 INLET

TEST DATA:				
Test run number	1	2	3	
Location	Unit No.3 Inlet	Unit No.3 Inlet	Unit No.3 Inlet	
Test date	12/1/99	12/1/99	12/2/99	
Test time period	1125-1424	1645-1922	1130-1430	
PROCESS DATA:				
Unit Load, MW	437	431	437	
Coal feed rate, lb/hr.	326400	322400	324200	
Coal Btu content, Btu/lb.	11510	11560	11720	
Heat Input, 10^6 Btu/hr	4030	4034	4071	
SAMPLING DATA:				
Sampling duration, min.	120.0	120.0	120.0	
Nozzle diameter, in.	0.240	0.240	0.240	
Cross sectional nozzle area, sq.ft.	0.000314	0.000314	0.000314	
Barometric pressure, in. Hg	30.42	30.42	30.39	
Avg. orifice press. diff., in H_2O	1.58	1.61	1.51	
Avg. dry gas meter temp., deg F	75.2	77.0	78.6	
Avg. abs. dry gas meter temp., deg. R	535	537	539	
Total liquid collected by train, ml	163.9	164.1	156.8	
Std. vol. of H_2O vapor coll., cu.ft.	7.7	7.7	7.4	
Dry gas meter calibration factor	0.9961	0.9961	0.9961	
Sample vol. at meter cond., dcf	77.173	77.891	75.419	
Sample vol. at std. cond., dscf (1)	77.375	77.829	75.046	
Percent of isokinetic sampling	101.7	102.3	100.0	
Sample vol. at std. cond., dscm (1)	2.191	2.204	2.125	
GAS STREAM COMPOSITION DATA:				
CO_2, % by volume, dry basis	14.0	13.2	15.2	
O_2, % by volume, dry basis	4.1	4.4	3.5	
N_2, % by volume, dry basis	81.9	82.3	81.3	
Molecular wt. of dry gas, lb/lb mole	30.41	30.29	30.57	
H_2O vapor in gas stream, prop. by vol.	0.091	0.090	0.090	
Mole fraction of dry gas	0.909	0.910	0.910	
Molecular wt. of wet gas, lb/lb mole	29.28	29.18	29.45	
GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA:				
Static pressure, in. H_2O	-0.50	-0.55	-0.50	
Absolute pressure, in. Hg	30.38	30.38	30.35	
Avg. temperature, deg. F	311	311	313	
Avg. absolute temperature, deg.R	771	771	773	
Pitot tube coefficient	0.84	0.84	0.84	
Total number of traverse points	30	30	30	
Avg. gas stream velocity, ft./sec.	53.2	53.2	52.6	AVERAGE
Stack/duct cross sectional area, sq.ft.	420.000	420.000	420.000	
Avg. gas stream volumetric flow, wacf/min.	1340600	1340700	1326400	1335900
Avg. gas stream volumetric flow, dscf/min. (1)	848000	847700	836600	844100
MERCURY LABORATORY REPORT DATA:				
Particulate bound, ug	0.1700	0.1100	0.0490	
Oxidized, ug	10.0000	10.0000	8.8000	
Elemental, ug	4.9400	4.7000	4.4000	
Total catch, ug(3)	15.1100	14.8100	13.2490	
PARTICULATE BOUND MERCURY EMISSIONS:				
Conc., ug/m^3	0.08	0.05	0.02	0.050
Conc., ug/Nm^3 (2)	0.08	0.05	0.02	0.054
Emission rate, $lbs/10^{12}$ Btu.	0.06	0.04	0.02	0.04
Emission rate, lbs/hr	2.46E-04	1.58E-04	7.23E-05	1.59E-04
OXIDIZED MERCURY EMISSIONS:				
Conc., ug/m^3	4.56	4.54	4.14	4.41
Conc., ug/Nm^3 (2)	4.90	4.87	4.44	4.74
Emission rate, $lbs/10^{12}$ Btu.	3.60	3.57	3.19	3.45
Emission rate, lbs/hr	1.45E-02	1.44E-02	1.30E-02	1.40E-02
ELEMENTAL MERCURY EMISSIONS:				
Conc., ug/m^3	2.25	2.13	2.07	2.15
Conc., ug/Nm^3 (2)	2.42	2.29	2.22	2.31
Emission rate, $lbs/10^{12}$ Btu.	1.78	1.68	1.59	1.68
Emission rate, lbs/hr	7.16E-03	6.77E-03	6.49E-03	6.81E-03
TOTAL MERCURY EMISSIONS: (3)				
Conc., ug/m^3	6.90	6.72	6.24	6.62
Conc., ug/Nm^3 (2)	7.40	7.21	6.69	7.10
Emission rate, $lbs/10^{12}$ Btu.	5.44	5.29	4.80	5.17
Emission rate, lbs/hr	0.0219	0.0213	0.0195	0.0209

(1) Standard conditions = 68 deg. F. (20 deg. C.) and 29.92 inches Hg (760mm Hg).
(2) Nm3 = Normal cubic meter (32 deg. F. (0 deg. C.) and 29.92 inches Hg (760mm Hg)).
(3) Non-detects included in total mercury catch value.

TABLE A-2
TAMPA ELECTRIC COMPANY, BIG BEND STATION
SUMMARY OF MERCURY SPECIATION TEST DATA AND TEST RESULTS
UNIT NO. 3 OUTLET

TEST DATA:							
Test run number	1		2	3			
Location	Unit No.3 Outlet		Unit No.3 Outlet	Unit No.3 Outlet			
Test date	12/1/99		12/1/99	12/2/99			
Test time period	1125-1359		1645-1922	1131-1430			
PROCESS DATA:							
Unit Load, MW	437		431	437			
Coal feed rate, lb/hr.	326400		322400	324200			
Coal Btu content, Btu/lb.(as received)	11510		11560	11720			
Heat Input, 10^6 Btu/hr	4030		4034	4071			
SAMPLING DATA:							
Sampling duration, min.	120.0		120.0	120.0			
Nozzle diameter, in.	0.270		0.270	0.270			
Cross sectional nozzle area, sq.ft.	0.000398		0.000398	0.000398			
Barometric pressure, in. Hg	30.42		30.42	30.39			
Avg. orifice press. diff., in H_2O	1.72		1.63	1.68			
Avg. dry gas meter temp., deg F	87.8		89.8	87.8			
Avg. abs. dry gas meter temp., deg. R	548		550	548			
Total liquid collected by train, ml	262.5		190.1	248.0			
Std. vol. of H_2O vapor coll., cu.ft.	12.4		8.9	11.7			
Dry gas meter calibration factor	1.0098		1.0098	1.0098			
Sample vol. at meter cond., dcf	83.432		82.505	83.122			
Sample vol. at std. cond., dscf (1)	82.873		81.634	82.474			
Percent of isokinetic sampling	101.2		99.5	101.3			
Sample vol. at std. cond., dscm (1)	2.347		2.312	2.335			
GAS STREAM COMPOSITION DATA:							
CO_2, % by volume, dry basis	11.3		11.2	11.3			
O_2, % by volume, dry basis	7.3		7.2	7.1			
N_2, % by volume, dry basis	81.3		81.6	81.5			
Molecular wt. of dry gas, lb/lb mole	30.11		30.08	30.10			
H_20 vapor in gas stream, prop. by vol.	0.130		0.099	0.124			
Mole fraction of dry gas	0.870		0.901	0.876			
Molecular wt. of wet gas, lb/lb mole	28.54		28.89	28.60			
GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA:							
Static pressure, in. H_2O	-1.00		-1.05	-1.10			
Absolute pressure, in. Hg	30.35		30.34	30.31			
Avg. temperature, deg. F	126		125	125			
Avg. absolute temperature, deg.R	586		585	585			
Pitot tube coefficient	0.84		0.84	0.84			
Total number of traverse points	24		24	24			
Avg. gas stream velocity, ft./sec.	36.0		34.8	35.5			AVERAGE
Stack/duct cross sectional area, sq.ft.	652.950		652.950	652.950			
Avg. gas stream volumetric flow, wacf/min.	1410500		1362500	1391400			1388100
Avg. gas stream volumetric flow, dscf/min. (1)	1120700		1122700	1113900			1119100
MERCURY LABORATORY REPORT DATA:							
Particulate bound, ug	0.0930	<	0.0100	0.0500			
Oxidized, ug	0.3700		0.2000	0.4300			
Elemental, ug	3.9000		3.1000	3.7000			
Total catch, ug(3)	4.3630		3.3100	4.1800			
PARTICULATE BOUND MERCURY EMISSIONS:							
Conc., ug/m^3	0.040	<	0.004	0.021	<=	0.022	
Conc., ug/Nm^3 (2)	0.043	<	0.005	0.023	<=	0.023	
Emission rate, lbs/10^{12} Btu.	4.13E-02	<	4.51E-03	2.19E-02	<=	2.26E-02	
Emission rate, lbs/hr	1.66E-04	<	1.82E-05	8.93E-05	<=	9.13E-05	
OXIDIZED MERCURY EMISSIONS:							
Conc., ug/m^3	0.16		0.09	0.18		0.14	
Conc., ug/Nm^3 (2)	0.17		0.09	0.20		0.15	
Emission rate, lbs/10^{12} Btu.	0.16		0.09	0.19		0.15	
Emission rate, lbs/hr	6.62E-04		3.64E-04	7.68E-04		5.98E-04	
ELEMENTAL MERCURY EMISSIONS:							
Conc., ug/m^3	1.66		1.34	1.58		1.53	
Conc., ug/Nm^3 (2)	1.78		1.44	1.70		1.64	
Emission rate, lbs/10^{12} Btu.	1.73		1.40	1.62		1.58	
Emission rate, lbs/hr	6.98E-03		5.64E-03	6.61E-03		6.41E-03	
TOTAL MERCURY EMISSIONS: (3)							
Conc., ug/m^3	1.86		1.43	1.79		1.69	
Conc., ug/Nm^3 (2)	1.99		1.54	1.92		1.82	
Emission rate, lbs/10^{12} Btu.	1.94		1.49	1.83		1.75	
Emission rate, lbs/hr	7.80E-03		6.02E-03	7.47E-03		7.10E-03	
TOTAL MERCURY REMOVAL EFFICIENCY:	64.37%		71.78%	61.77%		65.97%	

(1) Standard conditions = 68 deg. F. (20 deg. C.) and 29.92 inches Hg (760mm Hg).
(2) Nm3 = Normal cubic meter (32 deg. F. (0 deg. C.) and 29.92 inches Hg (760mm Hg)).
(3) Non-detects included in total mercury catch value.

APPENDIX B
PROCESS OPERATIONS, FACILITY CEMS, ESP AND FGD

Big Bend 3 - Inlet
Test Run 1
6 Minute Readings
12/1/99

			Inlet Duct CEM CO_2	Inlet Duct CEM NO_X		Inlet Duct CEM SO_2	
Record#	DATE	TIME	%	ppm	lb/mmBTU	ppm	lb/mmBTU
1	12/1/99	112500	14.38	420.67	0.631	2296.36	4.77
2	12/1/99	113100	14.37	425.81	0.638	2279.94	4.75
3	12/1/99	113700	14.35	425.82	0.638	2278.59	4.74
4	12/1/99	114300	14.39	425.39	0.635	2285.09	4.75
5	12/1/99	114900	14.38	421.01	0.629	2274.89	4.73
6	12/1/99	115500	14.34	420.52	0.630	2265.09	4.72
7	12/1/99	120100	14.36	437.53	0.655	2264.82	4.71
8	12/1/99	120700	14.15	423.50	0.643	2218.35	4.69
9	12/1/99	121300	14.44	436.70	0.650	2271.49	4.70
10	12/1/99	121900	14.09	425.91	0.649	2202.60	4.67
11	12/1/99	122500	14.25	425.72	0.642	2230.67	4.68
12	12/1/99	123100	14.35	442.82	0.664	2257.05	4.71
13	12/1/99	123700	14.14	437.94	0.665	2225.73	4.70
14	12/1/99	124300	14.21	439.35	0.664	2242.04	4.71
15	12/1/99	124900	14.12	422.20	0.643	2225.55	4.71
16	12/1/99	125500	14.18	422.85	0.641	2243.65	4.73
17	12/1/99	130100	14.14	421.90	0.641	2244.34	4.74
18	12/1/99	130700	14.11	419.96	0.639	2240.07	4.74
19	12/1/99	131300	14.21	424.77	0.642	2260.18	4.75
20	12/1/99	131900	14.11	429.41	0.654	2242.92	4.75
21	12/1/99	132500	14.06	416.39	0.636	2235.34	4.75
22	12/1/99	133100	14.16	421.89	0.639	2243.59	4.73
23	12/1/99	133700	13.50	389.34	0.608	2029.18	4.42
24	12/1/99	134300	11.09	354.16	0.708	1864.30	5.26
25	12/1/99	134900	13.70	426.10	0.668	2179.55	4.75
26	12/1/99	135500	14.01	427.46	0.656	2225.74	4.75
27	12/1/99	140100	14.18	427.87	0.649	2244.60	4.73
28	12/1/99	140700	14.24	433.59	0.654	2260.05	4.74
29	12/1/99	141300	14.18	439.24	0.665	2238.79	4.72
30	12/1/99	141900	14.49	438.24	0.650	2303.26	4.75
Average			14.09	424.13	0.65	2229.13	4.73

Big Bend 3 - Outlet
Test Run 1
6 Minute Readings
12/1/99

			Gross Generation	Net Generation	Main Steam Flow	Main Steam Temp	Stack Opacity	Stack Flow	Stack CEM SO_2		Stack CEM CO_2	FGD SO_2 Removal Efficiency
Record #	DATE	TIME	MW	MW	lbs/hr	F	%	ACFM	ppm	lb/mmBTU	%	%
1	12/1/99	112500	436	427	2847	1007	13.13	1382.83	34.53	0.11	9.64	97.75
2	12/1/99	113100	433	427	2825	1007	12.75	1405.01	30.92	0.10	9.68	98.00
3	12/1/99	113700	431	427	2795	1006	12.11	1405.98	33.21	0.10	9.55	97.81
4	12/1/99	114300	445	429	2879	1010	12.15	1388.55	30.67	0.10	9.55	97.98
5	12/1/99	114900	436	430	2874	1003	12.02	1378.12	27.41	0.09	9.59	98.20
6	12/1/99	115500	444	428	2922	1001	12.40	1343.86	28.13	0.09	9.61	98.16
7	12/1/99	120100	435	428	2874	1000	12.71	1332.95	34.45	0.11	9.76	97.75
8	12/1/99	120700	430	428	2849	996	11.77	1353.95	25.63	0.08	9.53	98.29
9	12/1/99	121300	442	429	2923	999	12.66	1394.43	30.15	0.13	8.24	97.15
10	12/1/99	121900	444	430	2923	1001	11.97	1412.02	23.14	0.09	7.52	97.99
11	12/1/99	122500	446	430	2922	1002	12.08	1398.58	26.11	0.08	9.49	98.25
12	12/1/99	123100	430	427	2823	1002	12.66	1411.12	29.58	0.09	9.71	98.07
13	12/1/99	123700	431	424	2803	1003	12.37	1410.19	28.18	0.09	9.64	98.15
14	12/1/99	124300	430	421	2795	1004	12.23	1404.48	32.52	0.10	9.76	97.88
15	12/1/99	124900	430	418	2779	1005	11.57	1396.51	26.93	0.08	9.61	98.22
16	12/1/99	125500	431	417	2781	1006	11.80	1374.86	24.75	0.08	9.65	98.39
17	12/1/99	130100	435	417	2834	1011	11.78	1362.44	25.67	0.08	9.60	98.31
18	12/1/99	130700	431	419	2789	1006	11.54	1367.80	27.62	0.09	9.63	98.19
19	12/1/99	131300	430	422	2801	1004	12.12	1393.92	26.11	0.08	9.65	98.30
20	12/1/99	131900	436	424	2826	1003	12.46	1389.65	26.56	0.08	9.75	98.29
21	12/1/99	132500	437	427	2835	1005	10.90	1377.32	25.15	0.08	9.58	98.36
22	12/1/99	133100	446	428	2893	1010	11.53	1364.24	26.89	0.08	9.65	98.24
23	12/1/99	133700	444	429	2879	1006	11.70	1368.68	31.96	0.10	9.82	97.80
24	12/1/99	134300	438	430	2859	1006	11.84	1373.60	24.93	0.08	9.66	98.54
25	12/1/99	134900	438	430	2858	1005	11.79	1383.58	33.95	0.10	10.01	97.88
26	12/1/99	135500	443	429	2881	1010	11.39	1402.50	32.18	0.09	10.23	98.02
27	12/1/99	140100	444	427	2895	1005	11.55	1382.88	27.37	0.08	10.32	98.33
28	12/1/99	140700	437	428	2857	1007	12.05	1374.63	29.27	0.08	10.34	98.23
29	12/1/99	141300	444	427	2873	1010	11.67	1391.94	32.30	0.09	10.39	98.03
30	12/1/99	141900	439	430	2864	1007	11.60	1391.54	32.41	0.09	10.49	98.04
Average			437	426	2852	1005	12.01	1383.94	28.96	0.09	9.65	98.09

Big Bend 3 - Inlet
Test Run 2
6 Minute Readings
12/1/99

			Inlet Duct CEM CO_2	Inlet Duct CEM NO_X		Inlet Duct CEM SO_2	
Record#	DATE	TIME	%	ppm	lb/mmBTU	ppm	lb/mmBTU
55	12/1/99	164900	14.71	439.00	0.642	2349.85	4.77
56	12/1/99	165500	14.75	440.25	0.642	2366.01	4.79
57	12/1/99	170100	14.63	430.25	0.632	2337.21	4.78
58	12/1/99	170700	14.72	413.35	0.603	2347.96	4.76
59	12/1/99	171300	14.76	405.82	0.591	2357.47	4.77
60	12/1/99	171900	14.64	402.18	0.590	2337.51	4.77
61	12/1/99	172500	14.64	408.94	0.600	2337.64	4.77
62	12/1/99	173100	14.76	430.02	0.626	2363.61	4.78
63	12/1/99	173700	14.06	393.60	0.592	2132.94	4.46
64	12/1/99	174300	11.41	352.13	0.682	1925.92	5.26
65	12/1/99	174900	14.18	408.17	0.619	2280.82	4.81
66	12/1/99	175500	14.20	406.35	0.615	2260.41	4.76
67	12/1/99	180100	14.67	420.16	0.616	2342.09	4.77
68	12/1/99	180700	14.55	411.32	0.608	2308.20	4.74
69	12/1/99	181300	14.73	406.38	0.593	2337.93	4.74
70	12/1/99	181900	14.76	402.70	0.586	2347.13	4.75
71	12/1/99	182500	14.66	402.18	0.590	2332.23	4.76
72	12/1/99	183100	14.66	407.93	0.598	2340.10	4.77
73	12/1/99	183700	14.64	411.95	0.605	2338.49	4.77
74	12/1/99	184300	14.73	408.27	0.596	2353.24	4.78
75	12/1/99	184900	14.68	402.52	0.589	2345.42	4.77
76	12/1/99	185500	14.73	414.09	0.604	2362.58	4.79
77	12/1/99	190100	14.75	411.81	0.600	2375.24	4.81
78	12/1/99	190700	14.80	410.81	0.597	2392.34	4.83
79	12/1/99	191300	14.88	414.97	0.600	2417.33	4.86
80	12/1/99	191900	14.77	416.38	0.606	2391.54	4.84
Average			14.52	410.44	0.61	2322.35	4.79

Big Bend 3 - Outlet
Test Run 2
6 Minute Readings
12/1/99

			Gross Generation	Net Generation	Main Steam Flow	Main Steam Temp	Stack Opacity	Stack Flow	Stack CEM SO_2		Stack CEM CO_2	FGD SO_2 Removal Efficiency
Record #	DATE	TIME	MW	MW	lbs/hr	F	%	ACFM	ppm	lb/mmBTU	%	%
55	12/1/99	164900	432	423	2828	1000	9.87	1404.68	31.63	0.09	10.85	98.18
56	12/1/99	165500	421	411	2758	1005	10.71	1404.32	35.67	0.10	10.83	97.96
57	12/1/99	170100	427	416	2759	1005	10.75	1407.20	37.63	0.11	10.70	97.80
58	12/1/99	170700	432	422	2782	1007	9.80	1375.21	27.84	0.08	10.50	98.34
59	12/1/99	171300	447	429	2893	1012	10.45	1338.83	29.23	0.08	10.55	98.26
60	12/1/99	171900	454	435	2945	1013	10.87	1325.15	33.69	0.10	10.43	97.97
61	12/1/99	172500	449	436	2924	1011	10.79	1344.40	31.40	0.09	10.52	98.13
62	12/1/99	173100	441	427	2878	1006	11.63	1388.37	33.99	0.10	10.66	98.01
63	12/1/99	173700	435	427	2812	1010	11.88	1398.91	36.81	0.10	10.59	97.67
64	12/1/99	174300	438	428	2845	1008	11.85	1406.37	38.96	0.11	10.63	97.93
65	12/1/99	174900	430	423	2789	1010	11.72	1394.74	35.28	0.10	10.59	97.92
66	12/1/99	175500	425	417	2760	1008	11.20	1377.71	31.60	0.09	10.45	98.11
67	12/1/99	180100	421	411	2738	1008	11.63	1381.40	41.57	0.12	10.70	97.57
68	12/1/99	180700	418	405	2721	1008	11.07	1391.47	31.19	0.09	10.47	98.12
69	12/1/99	181300	422	405	2733	1008	10.85	1381.16	35.52	0.10	10.51	97.87
70	12/1/99	181900	427	406	2749	1007	10.66	1355.17	35.59	0.10	10.50	97.87
71	12/1/99	182500	422	407	2734	1007	10.76	1343.19	32.08	0.09	10.49	98.09
72	12/1/99	183100	420	409	2708	1006	11.19	1357.40	33.18	0.10	10.49	98.01
73	12/1/99	183700	430	410	2767	1007	10.88	1358.27	36.04	0.10	10.49	97.84
74	12/1/99	184300	431	412	2771	1010	10.79	1377.47	36.09	0.10	10.50	97.86
75	12/1/99	184900	430	414	2758	1010	10.62	1367.87	31.57	0.09	10.45	98.11
76	12/1/99	185500	432	416	2773	1010	11.20	1354.60	34.08	0.10	10.59	98.00
77	12/1/99	190100	431	417	2805	1013	11.00	1367.99	35.83	0.10	10.53	97.88
78	12/1/99	190700	430	418	2766	1009	10.93	1364.53	39.39	0.11	10.50	97.68
79	12/1/99	191300	430	418	2786	1011	11.61	1370.04	42.63	0.12	10.58	97.53
80	12/1/99	191900	432	419	2778	1011	10.94	1361.99	37.34	0.11	10.58	97.83
Average			431	418	2791	1008	10.99	1373.02	34.84	0.10	10.56	97.94

Big Bend 3 - Inlet
Test Run 3
6 Minute Readings
12/02/99

			Inlet Duct CEM CO_2	Inlet Duct CEM NO_x		Inlet Duct CEM SO_2	
Record#	DATE	TIME	%	ppm	lb/mmBTU	ppm	lb/mmBTU
81	12/2/1999	113000	14.27	411.52	0.618	2237.50	4.66
82	12/2/1999	113600	14.34	400.39	0.600	2244.68	4.68
83	12/2/1999	114200	14.35	400.63	0.600	2244.08	4.67
84	12/2/1999	114800	14.49	397.05	0.589	2271.91	4.69
85	12/2/1999	115400	14.50	408.46	0.605	2273.19	4.69
86	12/2/1999	120000	14.50	406.11	0.602	2263.64	4.67
87	12/2/1999	120600	14.50	410.09	0.608	2254.77	4.65
88	12/2/1999	121200	14.58	424.09	0.625	2277.74	4.67
89	12/2/1999	121800	14.39	414.84	0.620	2229.56	4.63
90	12/2/1999	122400	14.41	393.60	0.588	2248.22	4.65
91	12/2/1999	123000	14.49	403.63	0.597	2267.05	4.67
92	12/2/1999	123600	14.37	403.27	0.603	2250.95	4.68
93	12/2/1999	124200	14.56	420.42	0.620	2289.73	4.70
94	12/2/1999	124800	14.51	424.47	0.628	2267.64	4.67
95	12/2/1999	125400	14.50	425.86	0.631	2266.51	4.67
96	12/2/1999	130000	14.56	422.16	0.623	2276.81	4.67
97	12/2/1999	130600	14.46	420.01	0.624	2254.29	4.66
98	12/2/1999	131200	14.54	422.86	0.625	2276.47	4.68
99	12/2/1999	131800	14.42	410.53	0.612	2251.59	4.67
100	12/2/1999	132400	14.61	413.70	0.608	2281.42	4.67
101	12/2/1999	133000	14.60	432.90	0.638	2282.85	4.68
102	12/2/1999	133600	14.43	421.83	0.628	2253.39	4.67
103	12/2/1999	134200	14.58	435.62	0.642	2280.73	4.67
104	12/2/1999	134800	14.45	432.02	0.643	2253.07	4.66
105	12/2/1999	135400	14.64	428.21	0.628	2302.64	4.70
106	12/2/1999	140000	14.54	439.62	0.650	2280.79	4.69
107	12/2/1999	140600	14.62	439.98	0.647	2295.86	4.69
108	12/2/1999	141200	14.44	419.90	0.625	2256.20	4.67
109	12/2/1999	141800	14.67	428.66	0.628	2304.88	4.70
110	12/2/1999	142400	14.57	439.35	0.648	2279.53	4.69
111	12/2/1999	143000	14.60	435.93	0.640	2298.48	4.68
Average			14.50	418.96	0.62	2268.26	4.67

Big Bend 3 - Outlet
Test Run 3
6 Minute Readings
12/2/99

			Gross Generation	Net Generation	Main Steam Flow	Main Steam Temp	Stack Opacity	Stack Flow	Stack CEM SO_2		Stack CEM CO_2	FGD SO_2 Removal Efficiency
Record #	DATE	TIME	MW	MW	lbs/hr	F	%	ACFM	ppm	lb/mmBTU	%	%
81	12/2/1999	113000	423	417	2742	1013	16.92	1414.02	41.64	0.12	10.33	97.43
82	12/2/1999	113600	432	418	2789	1014	16.53	1382.45	43.91	0.13	10.35	97.28
83	12/2/1999	114200	431	423	2801	1012	16.25	1367.43	47.85	0.14	10.35	97.05
84	12/2/1999	114800	433	428	2808	1012	16.48	1366.42	43.25	0.13	10.34	97.33
85	12/2/1999	115400	446	430	2868	1014	16.59	1374.59	49.94	0.14	10.42	96.95
86	12/2/1999	120000	441	432	2860	1011	16.37	1368.18	44.35	0.13	10.40	97.28
87	12/2/1999	120600	424	419	2735	1010	16.72	1372.59	49.06	0.14	10.54	97.01
88	12/2/1999	121200	426	411	2739	1014	17.36	1386.54	51.11	0.15	10.50	96.87
89	12/2/1999	121800	431	419	2761	1012	16.56	1371.47	41.32	0.12	10.27	97.41
90	12/2/1999	122400	439	427	2834	1014	16.20	1355.87	44.46	0.13	10.24	97.20
91	12/2/1999	123000	447	428	2892	1013	16.95	1339.09	43.89	0.13	10.46	97.32
92	12/2/1999	123600	445	427	2891	1013	16.21	1345.46	43.69	0.13	10.32	97.31
93	12/2/1999	124200	440	429	2855	1012	17.16	1352.90	51.65	0.15	10.55	96.89
94	12/2/1999	124800	438	427	2838	1012	17.13	1368.57	44.05	0.13	10.55	97.32
95	12/2/1999	125400	438	423	2830	1013	17.16	1396.04	47.44	0.14	10.51	97.11
96	12/2/1999	130000	430	422	2777	1012	17.14	1381.03	43.60	0.12	10.56	97.37
97	12/2/1999	130600	431	426	2772	1013	17.26	1383.53	42.55	0.12	10.47	97.38
98	12/2/1999	131200	447	428	2862	1014	17.55	1382.72	46.78	0.13	10.46	97.14
99	12/2/1999	131800	440	427	2851	1009	16.90	1389.53	39.24	0.11	10.45	97.60
100	12/2/1999	132400	444	429	2857	1015	17.41	1354.24	44.28	0.13	10.59	97.33
101	12/2/1999	133000	445	427	2881	1013	17.63	1371.99	49.82	0.14	10.70	97.03
102	12/2/1999	133600	440	429	2837	1012	17.51	1392.89	39.96	0.12	10.40	97.54
103	12/2/1999	134200	449	429	2899	1013	17.89	1379.27	45.25	0.13	10.58	97.26
104	12/2/1999	134800	446	427	2892	1012	17.67	1378.49	46.88	0.13	10.48	97.14
105	12/2/1999	135400	432	426	2817	1011	18.52	1389.49	45.63	0.13	10.45	97.23
106	12/2/1999	140000	435	428	2813	1014	18.42	1379.16	45.13	0.13	10.58	97.29
107	12/2/1999	140600	445	427	2877	1013	18.29	1387.59	42.45	0.12	10.43	97.40
108	12/2/1999	141200	441	426	2861	1013	17.49	1374.60	40.28	0.12	10.38	97.51
109	12/2/1999	141800	440	425	2856	1012	18.04	1361.72	42.42	0.12	10.54	97.44
110	12/2/1999	142400	426	421	2755	1008	18.14	1371.18	46.47	0.13	10.53	97.18
111	12/2/1999	143000	422	417	2723	1016	17.98	1382.73	41.52	0.12	10.53	97.48
Average			437	425	2825	1013	17.24	1374.90	44.83	0.13	10.46	97.26

Mercury Emissions Testing 12-01-99

Run #1

Initial MWH 174368 @ 1125

Final MWH 175682 @ 1424

Run #2

Inital MWH 176569 @ 1645

Final MWH 177724 @ 1922

Run #3 12-02-99

Initial MWH 184916 @ 1130

Final MWH 186264 @ 1432

BIG BEND STATION

Test #1

UNIT #3 PRECIPITATOR LOG

DATE: 12/01/99

	11:30			12:00			12:30			1:00			1:30			2:00		
	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.
GROUP:LOWER																		
1	238	64		260	93		260	89		261	93		262	90		265	98	
2	214	68		220	75		212	63		218	71		213	67		209	60	
3	172	31		181	38		172	30		176	35		172	32		164	33	
4	200	46		190	41		180	33		203	49		190	41		205	50	
5	165	16		168	15		162	10		169	19		146	13		172	21	
6	210	16		213	17		189	03		228	36		227	34		233	37	
7	230	40		230	46		235	47		241	55		227	35		238	45	
8	186	17		170	06		190	17		206	33		180	25		190	21	
GROUP:UPPER																		
1	222	69		244	92		255	111		250	96		241	88		251	103	
2	258	86		250	98		249	95		256	81		247	73		257	98	
3	287	53		288	51		282	46		290	56		273	46		281	48	
4	90	3.0		90	2.0		104	03		90	03		83	03		120	03	
5	230	74		225	62		255	96		260	101		210	60		249	85	
6	230	57		231	41		254	49		285	65		235	45		247	44	
7	263	04		250	03		230	03		237	03		243	03		262	03	
8	180	03		182	03		186	03		158	03		180	03		180	03	
ASH SILOS–S BOILER–B TAGGED–T	BLOWERS: A S B S C S D S 12.1%			BLOWERS: A S B S C S D S 13.4%			BLOWERS: A S B S C S D S 11.6%			BLOWERS: A S B S C S D S 11.0%			BLOWERS: A S B S C S D S 12.2%			BLOWERS: A S B S C S D S 12.0%		
	OPACITY: 434			OPACITY: 453			OPACITY: 438			OPACITY: 430			OPACITY: 435			OPACITY: 440		
	LOAD:			LOAD:			LOAD:			LOAD:			LOAD:			LOAD:		

BIG BEND STATION

Test #1

Every 30 min

UNIT #3 PRECIPITATOR LOG

DATE: 12/01/99

	2:30			3:00			3:30			4:00			4:30			5:00		
	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.
GROUP:LOWER																		
1	264	93																
2	270	72																
3	174	34																
4	183	39																
5	142	10																
6	205	12																
7	270	30																
8	144	09																
GROUP:UPPER																		
1	240	93																
2	250	78																
3	280	44																
4	70	03																
5	220	62																
6	257	46																
7	244	03																
8	165	03																

ASH
SILOS–S
BOILER–B
TAGGED–T

BLOWERS: A S, B S, C S, D S	BLOWERS: A, B, C, D	BLOWERS: A, B, C, D	BLOWERS: A, B, C, D	BLOWERS: A, B, C, D	BLOWERS: A, B, C, D
13.5% ~~14.9%~~					
OPACITY: 437	OPACITY:	OPACITY:	OPACITY:	OPACITY:	OPACITY:
LOAD:	LOAD:	LOAD:	LOAD:	LOAD:	LOAD:

BIG BEND STATION

Test #2

UNIT #3 PRECIPITATOR LOG

DATE: 12-1-99

	4:45			5:15			5:45			6:15			6:45			7:15		
	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.
GROUP:LOWER																		
1	252	87		260	92		255	84		259	99		260	90		255	87	
2	213	71		200	68		220	75		211	67		220	76		213	77	
3	172	36		178	39		175	37		177	35		175	35		169	37	
4	200	50		210	57		188	41		200	47		193	41		190	44	
5	173	23		172	28		170	21		170	23		114	16		174	23	
6	217	25		231	30		213	21		220	25		220	27		208	17	
7	150	27		110	16		206	19		210	40		223	39		201	21	
8	198	23		200	26		168	8		100	10		183	10		196	19	
GROUP:UPPER																		
1	276	78		224	76		242	94		270	132		246	91		250	95	
2	255	82		246	77		247	77		260	83		254	83		264	87	
3	290	57		240	59		240	59		242	58		288	52		256	55	
4	115	3		88	3		95	3		101	3		89	3		101	3	
5	251	82		236	75		230	70		260	103		230	60		249	75	
6	264	53		262	58		245	47		278	61		210	40		217	39	
7	220	3		214	3		242	3		200	6		236	3		271	4	
8	150	3		147	5		183	3		160	3		187	3		183	3	
ASH SILOS–S BOILER–B TAGGED–T	BLOWERS: A S B S C S D S			BLOWERS: A S B S C S D S			BLOWERS: A S B S C S D S			BLOWERS: A S B S C S D S			BLOWERS: A S B S C S D S			BLOWERS: A S B S C S D S		
	OPACITY: 11.2			OPACITY: 11.0			OPACITY: 11.2			OPACITY: 9.8			OPACITY: 11.2			OPACITY: 10.6		
	LOAD: 456			LOAD: 427			LOAD: 428			LOAD: 422			LOAD: 430			LOAD: 429		

BIG BEND STATION

Test #2

Every 30 min

UNIT #3 PRECIPITATOR LOG

DATE: 12/01/99

	3:00			3:30			4:00			4:30			5:00			5:30		
	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.
GROUP:LOWER																		
1	262	95		230	70													
2	200	48		190	48													
3	170	29		154	15													
4	163	20		173	30													
5	142	3		163	17													
6	203	8		209	28													
7	232	40		225	51													
8	181	8		73	9													
GROUP:UPPER																		
1	250	112		219	121													
2	241	70		230	77													
3	237	42		261	49													
4	110	3		92	00													
5	226	66		236	101													
6	245	42		273	86													
7	200	3		281	29													
8	186	3		200	4													

ASH
SILOS–S
BOILER–B
TAGGED–T

BLOWERS: A 5 B 5 C 5 D 5 13.7	BLOWERS: A 5 B 5 C 5 D 5	BLOWERS: A 5 B 5 C 5 D 5	BLOWERS: A B C D	BLOWERS: A B C D	BLOWERS: A B C D
OPACITY:	OPACITY: 12.9	OPACITY:	OPACITY:	OPACITY:	OPACITY:
LOAD: 445	LOAD: 278	LOAD:	LOAD:	LOAD:	LOAD:

BIG BEND STATION

Test #3

UNIT #3 PRECIPITATOR LOG

DATE: 12/2/99

	11:30			12:00			12:30			1:00			1:30			2:00		
	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.
GROUP:LOWER																		
1	247	100		244	90		251	108		224	64		241	74		240	98	
2	206	63		209	67		219	79		210	72		212	73		220	89	
3	172	28		169	25-		160	17		165	22		166	21		167	24	
4	178	33		183	35-		164	31		178	29		173	24		144	12	
5	162	17		160	10		171	16		157	05-		121	03		143	04	
6	210	26		203	20		201	22		200	08		201	15-		206	20	
7	224	45-		215	25-		230	45-		222	40		220	33		220	35-	
8	195-	20		208	16		193	13		195-	18		191	14		180	06	
GROUP:UPPER																		
1	220	83		214	62		190	43		222	99		211	71		196	44	
2	237	74		235-	68		232	64		226	58		233	70		237	78	
3	290	62		266	40		291	62		284	56		285	58		280	52	
4	74	03		76	01		135-	03		71	03		133	03		89	03	
5	249	101		222	62		218	72		220	74		210	58		203	58	
6	256	63		242	45-		244	57		240	45-		238	48		220	42	
7	260	05-		246	03		253	03		210	03		230	03		242	03	
8	190	03		176	03		167	03		176	03		183	03		165-	03	
ASH SILOS–S BOILER–B TAGGED–T	BLOWERS: A S B S C S D S		17.1 %	BLOWERS: A S B S C S D S		17.1 %	BLOWERS: A S B S C S D S		17.2%	BLOWERS: A S B S C S D S		16.8%	BLOWERS: A S B S C S D S		19.3 %	BLOWERS: A S B S C S D S		18.4%
	OPACITY:		423 MW	OPACITY:		450 MW	OPACITY:		440 MW	OPACITY:		440 MW	OPACITY:		448 MW	OPACITY:		431 MW
	LOAD:			LOAD:			LOAD:			LOAD:			LOAD:			LOAD:		

BIG BEND STATION

Test #3

UNIT #3 PRECIPITATOR LOG

DATE: 12/2/99

	2:30																	
	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.	VOLTS	AMPS	OFF/ MAN.
GROUP:LOWER																		
1	211	46																
2	217	85																
3	163	20																
4	168	22																
5	161	10																
6	199	14																
7	215	34																
8	188	14																
GROUP:UPPER																		
1	208	68																
2	232	73																
3	265	43																
4	79	03																
5	230	81																
6	240	52																
7	247	03																
8	188	03																

ASH SILOS–S BOILER–B TAGGED–T	BLOWERS: A S B S C S D S 17.0 %	BLOWERS: A B C D	BLOWERS: A B C D	BLOWERS: A B C D	BLOWERS: A B C D	BLOWERS: A B C D
	OPACITY: 426 MW	OPACITY:	OPACITY:	OPACITY:	OPACITY:	OPACITY:
	LOAD:	LOAD:	LOAD:	LOAD:	LOAD:	LOAD:

APPENDIX C
RAW TEST DATA

TABLE A-1
TAMPA ELECTRIC COMPANY, BIG BEND STATION
ONTARIO HYDRO METHOD DATA INPUTS
UNIT NO. 3 INLET

Test Data			
Run number	1	2	3
Location	Unit No.3 Inlet	Unit No.3 Inlet	Unit No.3 Inlet
Date	12/1/99	12/1/99	12/2/99
Time period	1125-1424	1645-1922	1130-1430
Operator	TLB	TLB	TLB
Process Data			
Unit Load, MW	437	431	437
Coal feed rate, lb/hr.	326400	322400	324200
Coal Btu content, Btu/lb.(as received)	11510	11560	11720
Heat Input, 10^6 Btu/hr	4030	4034	4071
Inputs For Calcs.			
Sq. rt. delta P	0.796027	0.79443	0.78823
Delta H	1.57730	1.61233	1.50760
Stack temp. (deg.F)	310.50	311.00	312.90
Meter temp. (deg.F)	75.15	77.03	78.60
Sample volume (act.)	77.173	77.891	75.419
Barometric press. (in.Hg)	30.42	30.42	30.39
Volume H_2O imp. (ml)	148.5	142.4	141.4
Weight chnge sil. gel (g)	15.4	21.7	15.4
% CO_2	14.0	13.2	15.2
% O_2	4.1	4.4	3.5
% N	81.9	82.3	81.3
Area of stack (sq.ft.)	420.00	420.00	420.00
Sample time (min.)	120.00	120.00	120.00
Static pressure (in.H_2O)	-0.50	-0.55	-0.50
Nozzle dia. (in.)	0.240	0.240	0.240
Meter box cal.	0.9961	0.9961	0.9961
Cp of pitot tube	0.84	0.84	0.84
Traverse points	30	30	30
Mercury Laboratory Report Data			
Particulate bound, ug	0.1700	0.1100	0.0490
Oxidized, ug	10.0000	10.0000	8.8000
Elemental, ug	4.9400	4.7000	4.4000
Total mercury catch, ug	15.1100	14.8100	13.2490

Note: Non-detects included in total mercury catch value.

TABLE A-2
TAMPA ELECTRIC COMPANY, BIG BEND STATION
ONTARIO HYDRO METHOD DATA INPUTS
UNIT NO. 3 OUTLET

Test Data				
Run number	1		2	3
Location	Unit No.3 Outlet		Unit No.3 Outlet	Unit No.3 Outlet
Date	12/1/99		12/1/99	12/2/99
Time period	1125-1359		1645-1922	1131-1430
Operator	JW/KA		JW/KA	JW/KA
Process Data				
Unit Load, MW	437		431	437
Coal feed rate, lb/hr.	326400		322400	324200
Coal Btu content, Btu/lb.(as received)	11510		11560	11720
Heat Input, 10^6 Btu/hr	4030		4034	4071
Inputs For Calcs.				
Sq. rt. delta P	0.609300		0.59260	0.60200
Delta H	1.71750		1.62500	1.67710
Stack temp. (deg.F)	126.30		125.40	125.00
Meter temp. (deg.F)	87.79		89.80	87.80
Sample volume (act.)	83.432		82.505	83.122
Barometric press. (in.Hg)	30.42		30.42	30.39
Volume H_2O imp. (ml)	242.0		170.9	222.1
Weight chnge sil. gel (g)	20.5		19.2	25.9
% CO_2	11.3		11.2	11.3
% O_2	7.3		7.2	7.1
% N	81.3		81.6	81.5
Area of stack (sq.ft.)	652.95		652.95	652.95
Sample time (min.)	120.00		120.00	120.00
Static pressure (in.H_2O)	-1.00		-1.05	-1.10
Nozzle dia. (in.)	0.270		0.270	0.270
Meter box cal.	1.0098		1.0098	1.0098
Cp of pitot tube	0.84		0.84	0.84
Traverse points	24		24	24
Mercury Laboratory Report Data				
Particulate bound, ug	0.0930	<	0.0100	0.0500
Oxidized, ug	0.3700		0.2000	0.4300
Elemental, ug	3.9000		3.1000	3.7000
Total mercury catch, ug	4.3630		3.3100	4.1800

Note: Non-detects included in total mercury catch value.

Sample and Velocity Traverse Point Data Sheet - Method 1

Client TECO
Loaction/Plant BIG BEND
Source FGD E

Operator
Date 11/30/99
W.O. Number

Duct Type	☐ Circular	☒ Rectangular Duct	Indicate appropriate type
Traverse Type	☑ Particulate Traverse	☐ Velocity Traverse	

Distance from far wall to outside of port (in.) = C	196.5
Port Depth (in.) = D	16.5
Depth of Duct, diameter (in.) = C-D	180"
Area of Duct (ft^2)	420
Total Traverse Points	30
Total Traverse Points per Port	5

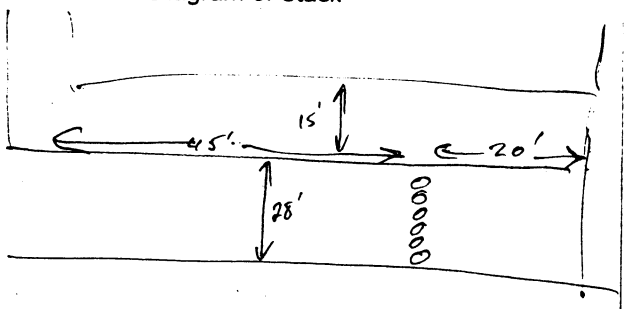
Rectangular Ducts Only	
Width of Duct, rectangular duct only (in.)	28'
Total Ports (rectangular duct only)	6

Flow Disturbances	
Upstream - A (ft)	~20'
Downstream - B (ft)	~45'
Upstream - A (duct diameters)	
Downstream - B (duct diameters)	

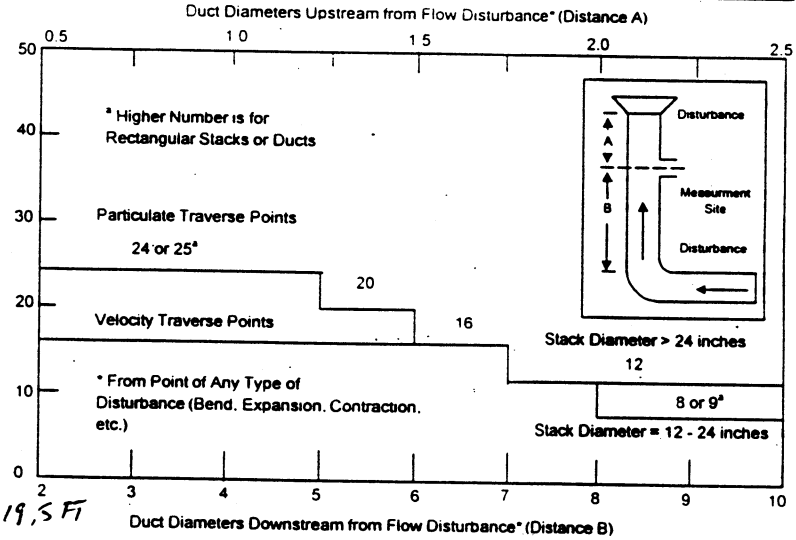
Traverse Point Locations

Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)	
1	10	18	34.5	34 1/2
2	~~3~~ 30	54	70.5	70 1/2
3	50	90	106.5	106 1/2
4	~~7~~ 70	126	142.5	142 1/2
5	90	162	178.5	178 1/2
6				
7				
8				
9				
10				
11				
12				

Diagram of Stack



Equivalent Diameter = (2*L*W)/(L+W) = 234" or 19.5 Ft



Traverse Point Location Percent of Stack -Circular

Traverse Point	Number of Traverse Points 1	2	3	4	5	6	7	8	9	10	11	12
1		14.6		6.7		4.4		3.2		2.6		2.1
2		85.4		25		14.6		10.5		8.2		6.7
3				75		29.6		19.4		14.6		11.8
4				93.3		70.4		32.3		22.6		17.7
5						85.4		67.7		34.2		25
6						95.6		80.6		65.8		35.6
7								89.5		77.4		64.4
8								96.8		85.4		75
9										91.8		82.3
10										97.4		88.2
11												93.3
12												97.9

Traverse Point Location Percent of Stack -Rectangular

Traverse Point	Number of Traverse Points 1	2	3	4	5	6	7	8	9	10	11	12
1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2		75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4				87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
6						91.7	78.6	68.8	61.1	55.0	50.0	45.8
7							92.9	81.3	72.2	65.0	59.1	54.2
8								93.8	83.3	75.0	68.2	62.5
9									94.4	85.0	77.3	70.8
10										95.0	86.4	79.2
11											95.5	87.5
12												95.8

Rectangular Stack Points & Matrix

9	3 x 3
12	4 x 3
16	4 x 4
20	5 x 4
25	5 x 5
30	6 x 5
36	6 x 6
42	7 x 6
49	7 x 7

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Determination of Stack Gas Velocity - Method 2

Client: TECO | Operator: TB | Pitot Coeff (Cp): .84
Location/Plant: BIG BEND | Date: 11-30-99 | Stack Area, ft² (As): 406.3
Source: UNIT 3 INLET | W.O. Number: | Pitot Tube/Thermo ID: P151

Run Number	1		
Time	1500		
Barometric Press, in Hg (Pb)	30.57		
Static Press, in H_2O (Pstatic)	-.15		
Source Moisture, % (BWS)			
O_2, %			
CO_2, %			

Cyclonic Flow Determination		Traverse Location		Leak Check good? (Y) N		Leak Check good? Y/N		Leak Check good? Y/N	
Delta P at 0°	Angle yeilding zero Delta P	Port	Point	Delta P	Source Temp, F° (Ts)	~~Delta P~~ PORT	~~Source Temp, F°~~ POINT (Ts)	Delta P	Source Temp, F° (Ts)
0.01	0	A	1	.69	315	F	1	.65	317
0.03	5		2	.64	319		2	.65	317
0.01	0		3	.63	317		3	.62	317
0.00	0		4	.60	318		4	.58	317
0.00	0		5	.58	318		5	.57	317
-0.02	5	B	1	.67	318				
-0.01	0		2	.66	318				
0.00	0		3	.63	317				
0.0	0		4	.64	318				
0.02	5		5	.62	319				
0.00	0	C	1	.68	315				
0.01	0		2	.68	318				
0.04	5		3	.63	318				
0.02	5		4	.63	319				
0.02	5		5	.59	319				
-0.03	5	D	1	.72	318				
0.00	0		2	.70	319				
0.01	0		3	.66	317				
0.01	0		4	.63	318				
0.00	0		5	.65	315				
0.02	5	E	1	.69	317				
0.03	5		2	.71	317				
0.02	5		3	.67	317				
0.02	5		4	.64	317				
0.01	0		5	.63	315				
Avg Angle	2.2	Avg Delta P & Temp		.645	317.5				
		avg $\sqrt{\text{DeltaP}}$		.803					
Average gas stream velocity, ft/sec.									
Vol. flow rate @ actual conditions, wacf/min									
Vol. flow rate at standard conditions, dscf/min									

$$MWd = (0.32 * O_2) + (0.44 * CO_2) + (0.28 * (100 - (CO_2 + O_2)))$$

$$MWs = (MWd * (1 - (BWS/100))) + (18 * (BWS/100))$$

$$Tsa = Ts + 460$$

$$Ps = Pb + (Pstatic/13.6)$$

$$Vs = 85.49 * Cp * avg\sqrt{DeltaP} * \sqrt{Tsa/(Ps * MWs)}$$

$$Qs(act) = 60 * Vs * As$$

$$Qs(std) = 17.64 * (1 - (BWS/100)) * (Ps/Tsa) * Qs(act)$$

where:
MWd = Dry molecular weight source gas, lb/lb-mole.
MWs = Wet molecular weight source gas, lb/lb-mole.
Tsa = Source Temperature, absolute(oR)
Ps = Absolute stack static pressure, inches Hg.
Vs = Average gas stream velocity, ft/sec.
Qs(act) = Volumetric flow rate of wet stack gas at actual,
Qs(std) = Volumetric flow rate of dry stack gas at standard conditions, dscf/min

Comments _____

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Determination of Moisture Content in Stack Gases - Method 4

Client: TECO
Location/Plant: RIG BEND
Source: UNIT 3 INLET
W.O. Number: _____

Operator: TB
Meter Box ID: 15
Temperature °C or °F: °F

Date: 11-30-99
Meter Box Y: .9961
Sample Volume, ft³ or L: FT³

Run Number		Sample Time (min)	Meter Volume, Vm	Meter Temp (or ambient temp for rotometer) Inlet	Outlet	Meter Press, Delta H (in H_2O)	Impinger Volume, ml	Silica Gel Weight, g	Corrected Volume, Vm(std)	Leak Rate Check
PRELIM										Initial .005 @ 15
	End Test	1525	555.390	85	76	2.0	230	311		Final .005 @ 5
Baro Press., Pb (in Hg)	Start Test	1600	527.000	72	71	2.0	200	300	Moisture Volume, Vw(std)	Percent Moisture (%), BWS
30.27	Avg. or Total	35 MIN	28.390	76		2.0	30	11		6.38

Run Number		Sample Time (min)	Meter Volume, Vm	Meter Temp (or ambient temp for rotometer) Inlet	Outlet	Meter Press, Delta H (in H_2O)	Impinger Volume, ml	Silica Gel Weight, g	Corrected Volume, Vm(std)	Leak Rate Check
										Initial
	End Test									Final
Baro Press., Pb (in Hg)	Start Test								Moisture Volume, Vw(std)	Percent Moisture (%), BWS
	Avg. or Total									

Run Number		Sample Time (min)	Meter Volume, Vm	Meter Temp (or ambient temp for rotometer) Inlet	Outlet	Meter Press, Delta H (in H_2O)	Impinger Volume, ml	Silica Gel Weight, g	Corrected Volume, Vm(std)	Leak Rate Check
										Initial
	End Test									Final
Baro Press., Pb (in Hg)	Start Test								Moisture Volume, Vw(std)	Percent Moisture (%), BWS
	Avg. or Total									

$$Vm(std) = \frac{17.64 * Y * Vm * (Pb + (deltaH / 13.6))}{(Tm + 460)}$$

if Tm is C° than $Tm = (Tmc * 1.8) + 32$

if Vm is liters than $Vm = Vml * 28.32$

$$Vw(std) = (0.04707 * Vwc) + (0.04715 * Wwsg)$$

$$BWS = \left(\frac{Vw(std)}{Vw(std) + Vm(std)}\right) * 100$$

WHERE:
Vm(std)= Sample volume corrected to standard temp and pressure, scf or L
Vm= Actual sample volume, calculated, scf
Vml= Actual sample volume, calculated, Liters
Y= Dry gas meter calibration factor.
Pb= Barometric pressure, in. Hg
delta H= Meter pressure, in H2O
Tm= Average temperature of meter (DGM is used) or rotomter, degrees °
Tmc= Average temperature of meter (DGM is used) or rotomter, degrees °
Vw(std)= Volume of water vapor at standard conditions, scf or L
Vwc= Volume of water condensed, mL
Wwsg= Weight of Silica Gel, g
Bws= Water vapor in gas stream, percen

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Use either ft³ or liters in calculations. DO NOT MIX CUBIC FEET AND LITERS IN ANY CALCULATION.

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ISOKINETIC FIELD DATA SHEET

Ontario Hydro Method - Mercury

Client	TAMPA ELECTRIC COMPAN
W.O.#	12281.00.001
Project ID	TEBB
Mode/Source ID	UNIT 3
Samp. Loc. ID	FGD INLET
Run No.ID	1
Test Method ID	OHM
Date ID	29NOV1999
Source/Location	UNIT 3 FGD INLET
Sample Date	12-1-99
Baro. Press (in Hg)	30.42
Operator	TLB

Stack Conditions	Assumed	Actual
% Moisture	6.4	
Impinger Vol (ml)		148.5
Silica gel (g)		15.4
CO2, % by Vol	14	14.0
O2, % by Vol	4.5	4.13
Temperature (°F)	318	
Meter Temp (°F)	70	
Static Press (in H_2O)	-1.5	-.5
Ambient Temp (°F)	60°	

Meter Box ID	15
Meter Box Y	0.9961
Meter Box Del H	2.0355
Probe ID / Length	15'
Probe Material	~~Boro~~ Teflon
Pitot / Thermocouple ID	P156
Pitot Coefficient	0.84
Nozzle ID	
Avg Nozzle Dia (in)	.240
Area of Stack (ft^2)	406.8
Sample Time	120 Min
Total Traverse Pts	30

Leak Checks	Initial	Mid-Point	Final
Sample Train (ft^3)	.014		.013
Leak Check @ (in Hg)	15		10"
Pitot good	yes / no	yes / no	yes / no
Orsat good	yes / no	yes / no	yes / no

K Factor 2.48

Temp Check	Pre-Test Set	Post-Test Set
Meter Box Temp	61	65
Reference Temp	60	65
Pass/Fail (+/- 2°)	~~Pass~~ / Fail	~~Pass~~ / Fail
Temp Change Response	yes / no	yes / no

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (planit time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft^3)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (°F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)	HEATED LINE °F	COMMENTS
	0	1105			553.363									
A 1	4		0.40	0.99	555.4	306	65	64	301	307	52	3	253	
2	8		0.58	1.44	557.8	309	66	64	303	307	48	3	251	
3	12		0.55	1.36	560.2	309	68	65	303	308	47	3	251	11.57 ✓
4	16		0.55	1.36	562.6	309	70	65	304	308	47	3	250	
5	20	1145	0.53	1.31	564.933	309	72	66	304	305	47	3	252	
	0	1156	—	—	566.072	—	—	—	—	—	—	—		
B 1	4		0.65	1.61	567.5	311	74	68	308	304	48	4	255	
2	8		0.59	1.46	570.2	311	76	69	307	307	46	4	253	
3	12		0.63	1.56	572.6	311	76	69	309	307	46	4	253	12.65 ✓
4	16		0.63	1.56	575.1	312	77	69	305	308	46	4	253	
5	20	1216	0.67	1.666	577.758	310	78	70	305	310	46	4	250	
	0	1236	—	—	578.022	—	—	—	—	—	—	—		
C 1	4		0.62	1.54	580.5	312	73	71	307	311	55	5	254	
2	8		0.64	1.59	583.1	313	76	71	307	311	47	5	254	
3	12		0.66	1.64	585.7	312	77	72	309	311	47	6	254	13.21 ✓
4	16		0.70	1.74	588.4	312	78	72	311	309	47	6	254	
5	20	1256	0.73	1.81	591.210	313	80	73	309	310	47	6	252	
	0	1300	—	—	591.350	—	—	—	—	—	—	—		
D 1	4		0.58	1.44	593.7	310	76	73	310	311	51	6	257	
2	8		0.66	1.64	596.3	311	78	74	310	307	49	6	255	
3	12		0.75	1.86	599.2	312	78	74	311	307	47	7	255	13.56 ✓
4	16		0.76	1.93	602.1	314	80	75	307	309	47	7	253	
5	20	1320	0.74	1.84	604.914	314	81	75	308	310	48	7	253	
			Avg Sqrt Delta P ✓	Avg Delta H ✓	Total Volume ✓	Avg Ts ✓	Avg Tm		Min/Max	Min/Max	Max Temp	Max Vac	Min/Max Temp	
			0.796027	1.5773	77.173	310.5	74.5 ✓		301/311	304/311	56	7	251/265	
				Avg Sqrt Del H 1.254	Comments: LEAK CHECKS: 75.15						Ontario Hydro Method			

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PORT A: PRE: .014@15" | PORT B PRE: .010@10" | PORT C PRE: .008@10" | PORT D PRE: .011@10"

ISOKINETIC FIELD DATA SHEET — Ontario Hydro Method - Mercury

Client: TAMPA ELECTRIC COMPANY | Operator: TLB
Source: UNIT 3 | Run No.: 1
Sample Loc.: FGD INLET | Date: 12-1-99 | K Factor: 2.46

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPING EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS
	0	1340			605.216									
1	4		0.63	1.56	607.6	310	78	78	305	310	56	6	251	
2	8		0.59	1.46	610.3	312	81	81	305	308	51	5	251	
3	12		0.58	1.44	612.8	311	81	81	307	305	46	5	253	12.944
4	16		0.68	1.69	615.6	311	82	82	307	308	48	5	253	
5	20	1400	0.68	1.69	618.165	312	83	83	307	306	46	5	253	
	0	1404	—	—	618.300	—	—	—	—	—	—	—		
1	4		0.65	1.61	620.9	305	80	78	306	306	52	5	255	
2	8		0.68	1.69	623.6	306	81	78	308	307	50	6	254	
3	12		0.71	1.76	626.3	306	83	79	310	310	52	6	254	13.2
4	16		0.62	1.54	628.9	306	83	78	310	311	50	5	254	
5	20	1424	0.62	1.54	631.500	310	83	78	309	310	51	5	255	
			Avg Sqrt Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm		Min/Max	Min/Max	Max Temp	Max Vac	Max Temp	
				Avg Sqrt Del H										

E

F

WESTON MANAGERS DESIGNERS/CONSULTANTS

Comments: LEAK CHECKS:

PORT E PRE: .010 @ 10" | PORT F PRE: .011 @ 10"
POST: .007 @ 10" | POST: .013 @ 10"

ISOKINETIC FIELD DATA SHEET

Ontario Hydro Method - Mercury

Page 1 of 1

		Stack Conditions	Assumed	Actual
Client	TAMPA ELECTRIC COMPAN	% Moisture	6.4	
W.O.#	12281.001.001	Impinger Vol (ml)		446.5, 440.5
Project ID	TEBB	Silica gel (g)		15.4 dry
Mode/Source ID	UNIT 3	CO2, % by Vol	14	13.23
Samp. Loc. ID	FGD INLET	O2, % by Vol	4.5	4.43
Run No.ID	2	Temperature (°F)	TB 310	
Test Method ID	OHM	Meter Temp (°F)	50	
Date ID	29NOV1999	Static Press (in H_2O)	-.15	-.155
Source/Location	UNIT 3 FGD INLET			
Sample Date	11-1-99			
Baro. Press (in Hg)	30.42			
Operator	TLB	Ambient Temp (°F)	60°	

Meter Box ID	15
Meter Box Y	TB 9961
Meter Box Del H	2.0355
Probe ID / Length	15'
Probe Material	Boro TEFLON
Pitot / Thermocouple ID	P156 7
Pitot Coefficient	0.84
Nozzle ID	
Avg Nozzle Dia (in)	.240
Area of Stack (ft²)	406.8
Sample Time	120 MIN
Total Traverse Pts	30

Leak Checks

	Initial	Mid-Point	Final
Sample Train (ft³)	.010		.006
Leak Check @ (in Hg)	15		10
Pitot good	yes / no	yes / no	yes / no
Orsat good	yes / no	yes / no	yes / no

Temp Check

	Pre-Test Set	Post-Test Set
Meter Box Temp	62	59
Reference Temp	64	57
Pass/Fail (+/- 2°)	Pass / Fail	Pass / Fail
Temp Change Response	yes no	yes no

K Factor 2.55

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPING EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS
	0	1645			631.945									
A 1	4		0.55	1.40	634.1	302	72	71	296	299	56	5	250	
2	8		0.58	1.48	636.5	304	73	71	297	300	54	5	250	
3	12		0.60	1.53	639.2	310	78	75	304	302	55	5	253	11.866 ✓
4	16		0.54	1.38	641.4	310	80	76	300	302	54	4	252	
5	20	1705	0.54	1.38	643.811	310	82	76	300	305	53	4	253	
	0	1711	—	—	643.910	—	—	—	—	—	—	—		
B 1	4		0.58	1.48	646.3	308	79	74	304	310	57	4	251	
2	8		0.62	1.58	649.0	311	81	75	306	309	55	4	255	
3	12		0.60	1.53	651.5	311	81	75	306	310	53	4	257	13.185 ✓
4	16		0.69	1.76	654.3	312	82	75	306	310	54	5	254	
5	20	1731	0.73	1.86	657.095	314	82	76	306	312	54	5	254	
	0	1740	—	—	657.276	—	—	—	—	—	—	—		
C 1	4		0.60	1.53	659.6	315	78	75	304	310	58	4	250	
2	8		0.60	1.53	662.5	316	79	75	307	311	57	4	250	
3	12		0.64	1.62	665.0	316	81	75	307	314	56	5	250	13.267 ✓
4	16		0.69	1.76	667.8	316	82	75	309	314	56	5	253	
5	20	1800	0.71	1.81	670.543	316	82	75	309	314	57	5	253	
	0	1804	—	—	670.620	—	—	—	—	—	—	—		
D 1	4		0.60	1.53	673.1	313	78	74	304	310	58	4	251	
2	8		0.62	1.58	675.7	314	79	74	304	310	58	4	251	
3	12		0.60	1.53	678.3	313	80	74	306	310	58	4	250	12.939 ✓
4	16		0.67	1.71	681.9	313	81	75	307	311	59	5	251	
5	20	1824	0.64	1.63	683.559	313	82	75	306	311	59	5	250	
			Avg Sqrt Delta P ✓	Avg Delta H ✓	Total Volume ✓	Avg Ts ✓	Avg Tm ✓		Min/Max	Min/Max	Max Temp	Max Vac	Min/Max Temp	
			0.79443	1.61833	77.891	311.0	77.03		296/309	299/314	63	5	250/257	
				Avg Sqrt Del H										
				1.269										

WESTON MANAGERS DESIGNERS/CONSULTANTS

Comments: LEAK CHECK:

PORT A PRE: .010 @ 5" | PORT B PRE: .006 @ 8" | PORT C PRE: .010 @ 10" | PORT D PRE: .006 @ 10"

Ontario Hydro Method

ISOKINETIC FIELD DATA SHEET — Ontario Hydro Method - Mercury

Client: TAMPA ELECTRIC COMPANY | Operator: TLB
Source: UNIT 3 | Run No.: 2
Sample Loc.: FGD INLET | Date: 12-1-99 | K Factor: 2.55

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft^3)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPING EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS
	0	1836			683.745									
E 1	4		0.60	1.53	686.3	307	76	74	304	311	59	5	251	
2	8		0.56	1.43	688.7	308	77	74	306	309	59	5	254	
3	12		0.59	1.50	691.3	310	78	74	306	312	59	5	252	12.966 ✓
4	16		0.65	1.66	694.0	312	79	75	306	312	59	5	252	
5	20	1858	0.70	1.79	696.711	314	80	75	308	311	59	5	254	
	0	1902	—	—	696.833	—	—	—	—	—	—	—		
F 1	4		0.72	1.84	699.6	308	79	75	307	311	61	5	250	
2	8		0.70	1.79	702.3	308	80	75	304	310	61	5	252	
3	12		0.71	1.81	705.1	308	80	75	304	310	62	5	252	13.668 ✓
4	16		0.65	1.73	707.9	307	81	75	304	311	62	5	252	
5	20	1922	0.64	1.63	710.501	311	82	75	305	311	63	5	251	
			Avg Sqrt Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm		Min/Max	Min/Max	Max Temp	Max Vac	Max Temp	
				Avg Sqrt Del H	Comments:									

WESTON MANAGERS DESIGNERS/CONSULTANTS

LEAK CHECK

PORT E PRE: .010 @ 10" | PORT F PRE: .007 @ 7"

ISOKINETIC FIELD DATA SHEET

Ontario Hydro Method - Mercury

Client	TAMPA ELECTRIC COMPAN
W.O.#	12281.001.001
Project ID	TEBB
Mode/Source ID	UNIT 3
Samp. Loc. ID	FGD INLET
Run No.ID	3
Test Method ID	OHM
Date ID	29NOV1999
Source/Location	UNIT 3 FGD INLET
Sample Date	13-2-99
Baro. Press (in Hg)	30.39
Operator	TLB

Stack Conditions	Assumed	Actual
% Moisture	9	
Impinger Vol (ml)		141.4
Silica gel (g)		15.4
CO2, % by Vol	14	15.2
O2, % by Vol	4.5	3.53
Temperature (°F)	310	
Meter Temp (°F)	75	
Static Press (in H_2O)	-.5	
Ambient Temp (°F)	68°F	

Meter Box ID	15
Meter Box Y	.9961
Meter Box Del H	2.0355
Probe ID / Length	15'
Probe Material	~~Boro~~ TEFLON
Pitot / Thermocouple ID	P156
Pitot Coefficient	0.84
Nozzle ID	
Avg Nozzle Dia (in)	.340
Area of Stack (ft^2)	406.8
Sample Time	120 MIN
Total Traverse Pts	30

Leak Checks	Initial	Mid-Point	Final
Sample Train (ft^3)	.010		.007
Leak Check @ (in Hg)	15		15
Pitot good	(yes) / no	yes / no	(yes) / no
Orsat good	(yes) / no	yes / no	(yes) / no

K Factor 2.47

Temp Check	Pre-Test Set	Post-Test Set
Meter Box Temp	63	70
Reference Temp	63	69
Pass/Fail (+/- 2°)	Pass / Fail	~~Pass~~ / Fail
Temp Change Response	(yes) / no	(yes) / no

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft^3)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS
	0	1130			711.098									
A 1	4		0.54	1.31	713.4	309	67	65	302	299	62	3	258	
2	8		0.52	1.26	715.7	311	70	66	302	298	54	3	256	
3	12		0.52	1.26	717.9	310	72	67	306	298	52	3	256	11.407
4	16		0.48	1.19	720.2	310	74	67	304	300	52	3	252	
5	20	1150	0.52	1.26	722.505	311	75	68	300	300	52	3	252	
	0	1153	—	—	722.711	—	—	—	—	—	—	—	—	
B 1	4		0.58	1.40	725.1	310	76	71	302	298	55	4	251	
2	8		0.58	1.40	727.6	312	78	71	302	301	53	4	250	
3	12		0.60	1.45	730.1	313	80	72	305	302	52	4	250	12.634
4	16		0.70	1.69	732.7	314	82	73	303	303	53	4	253	
5	20	1213	0.646	1.65	735.345	314	83	74	305	303	52	4	253	
	0	1223	—	—	735.472	—	—	—	—	—	—	—	—	
C 1	4		0.60	1.45	737.9	312	78	75	302	306	58	4	258	
2	8		0.55	1.33	740.2	312	81	76	304	305	54	4	256	
3	12		0.65	1.57	742.8	313	80	76	305	301	53	4	255	12.866
4	16		0.74	1.79	745.5	314	84	77	305	307	53	5	257	
5	20	1243	0.76	1.84	748.338	315	85	78	308	306	52	5	252	
	0	1247	—	—	748.492	—	—	—	—	—	—	—	—	
D 1	4		0.61	1.48	751.0	314	83	79	310	307	57	4	252	
2	8		0.64	1.55	753.5	315	85	79	310	307	55	4	254	
3	12		0.70	1.69	756.2	316	85	80	309	309	54	5	254	13.604
4	16		0.67	1.62	758.8	316	86	79	307	309	53	5	254	
5	20	1307	0.70	1.69	761.496	317	87	80	307	307	54	5	254	
			Avg Sqrt Delta P ~~0.6099~~ ✓	Avg Delta H 1.5076 ✓	Total Volume ✓ 75.419	Avg Ts ✓ 312.9	Avg Tm ✓ 78.16		Min/Max 300/310	Min/Max 298/309	Max Temp 65	Max Vac 5	Max Temp 350/258	

0.788225 Avg Sqrt Del H 1.2260

Comments: LEAK CHECK

Ontario Hydro Method

PORT A PRE: .010 @15" | PORT B PRE: .006 @10" | PORT C PRE: .008 @10" POST: .011 @10" | PORT D PRE: .011 @10"

WESTON MANAGERS DESIGNERS/CONSULTANTS

ISOKINETIC FIELD DATA SHEET

Ontario Hydro Method - Mercury

Client: TAMPA ELECTRIC COMPANY
Source: UNIT 3
Sample Loc.: FGD INLET
Operator: TLB
Run No.: 3
Date: 12-2-99
K Factor: 2.42

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPING EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS
	0	1326			761.696									
E 1	4		0.58	1.40	764.1	310	81	79	307	302	63	4	254	
2	8		0.58	1.40	766.6	313	83	80	305	304	57	4	251	
3	12		0.58	1.40	769.0	314	84	80	305	306	54	4	250	12.662 ✓
4	16		0.67	1.62	771.6	316	85	80	310	307	54	5	252	
5	20	1346	0.71	1.72	774.355	318	86	81	310	307	54	5	255	
	0	1410	—	—	774.486	—	—	—	—	—	—	—	—	
F 1	4		0.60	1.45	776.9	309	81	80	304	305	65	4	253	
2	8		0.72	1.74	779.7	310	83	81	304	307	58	5	254	
3	12		0.66	1.60	782.3	313	86	81	305	305	55	5	254	12.846 ✓
4	16		0.60	1.45	784.8	312	87	82	308	305	54	5	256	
5	20	1430	0.65	1.57	787.332	314	88	82	308	307	55	5	253	

Avg Sqrt Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Max Temp	Max Vac	Max Temp

Avg Sqrt Del H:

Comments: LEAK CHECK
PORT E PRE: .008@10" | PORT F PRE: .007@10"
PST: [illegible] | PST: [illegible]

WESTON MANAGERS DESIGNERS/CONSULTANTS

SAMPLE RECOVERY FIELD DATA

Method Ontario Hydro Mercury Method

Client TECO

Location/Plant BIG BEND

W.O. # 12281-001-001

Source & Location Inlet Unit 3

Run No. 1

Sample Date 12/1/99 Recovery Date 12/1/99

Sample I.D. TEBB-UNIT3-FGDINLET-1-OHM-29NOV1999 Analyst [illegible] Filter Number W277

	Impinger 1	2	3	4	5	6	~~Imp. Total~~ 7	TOTAL LIQ	~~Silica Gel Total~~
Contents									
Final	753.8	696.8	606.2	715.2	684.9	719.1	707.8		315.4
Initial	651.1	672.4	600.0	702.6	682.6	718.7	707.9		300.0
Gain	102.7	24.4	6.2	12.6	2.3	0.4	-.1	148.5	15.4

Impinger Color 1-4 Clear, 5&6 slightly brown, 7 purple

Silica Gel Condition Good

Labeled? ✓

Sealed? ✓

Run No. 2

Sample Date 12/1/99 Recovery Date 12/1/99

Sample I.D. TEBB-UNIT3-FGDINLET-2-OHM-29NOV1999 Analyst _____ Filter Number W279

	Impinger 1	2	3	4	5	6	~~Imp. Total~~ 7	TOTAL LIQ	~~Silica Gel Total~~
Contents									
Final	806.5	639.8	757.3	631.0	608.3	702.4	723.7		321.7
Initial	705.5	617.5	753.3	617.4	606.4	702.8	723.7	✓	300.0
Gain	101.0	22.3	4.0	13.6	1.9	-.4	0	142.4	21.7

Impinger Color 1-4 Clear Colorless, 5-6 Slight Brown, 7 Purple

Silica Gel Condition 1/2 Blue

Labeled? ✓

Sealed? ✓

Run No. 3

Sample Date 12/2/99 Recovery Date 12/2/99

Sample I.D. TEBB-UNIT3-FGDINLET-~~3-OHM~~-29NOV1999 Analyst _____ Filter Number W282

	Impinger 1	2	3	4	5	6	~~Imp. Total~~ 7	TOTAL LIQ	~~Silica Gel Total~~
Contents									
Final	753.7	693.2	598.8	715.9	749.3	720.3	711.6		315.4
Initial	654.9	668.9	593.3	704.2	747.7	720.4	712.0		300.0
Gain	98.8	24.3	5.5	11.7	1.6	-0.1	-0.4	141.4	15.4

Impinger Color 1-4 Clear Colorless, 5-6 Slight Brown, 7 Purple

Silica Gel Condition 1/2 Blue

Labeled? ✓

Sealed? ✓

Check COC for Sample IDs of Media Blanks

WESTON MANAGERS ENGINEERS CONSULTANTS

Source Gas Analysis Data Sheet - Method 3

Client TECO

Location/Plant Big Bend Unit 3

Source Inlet

Analyst _____

Date 12/1/99

Analytical Method ~~(circle one)~~ Orsat

Run Number One

Leak Check Good? (circle one) (Yes) No

12/1/99

Analysis Number	Analysis Time	Percent CO_2 (A)	Percent Total (B)	Percent O_2 (B - A)	Percent N_2 (100 - B)
1		14.0	18.2	4.2	
2		14.2	18.2	4.0	
3		14.0	18.2	4.2	
	Average	14.0		4.13	

Run Number Two

Leak Check Good? (circle one) Yes No

12/1/99

Analysis Number	Analysis Time	Percent CO_2 (A)	Percent Total (B)	Percent O_2 (B - A)	Percent N_2 (100 - B)
1		13.2	17.6	4.4	
2		13.3	17.8	4.5	
3		13.2	17.6	4.4	
	Average	13.23		4.43	

Run Number Three

Leak Check Good? (circle one) Yes No

12/2/99

Analysis Number	Analysis Time	Percent CO_2 (A)	Percent Total (B)	Percent O_2 (B - A)	Percent N_2 (100 - B)
1		15.2	18.8	3.6	
2		15.2	18.6	3.4	
3		15.2	18.8	3.6	
	Average	15.2		3.53	

Acceptable differences for repeat analysis:

if CO_2 > 4% than +/- 0.3%

if CO_2 < or = 4% than +/- 0.2%

if O_2 > or = 15% than +/- 0.2%

if O_2 < 15% than +/- 0.3%

Ambient Check

Oxygen 20.8

Carbon Dioxide 0.0

Report all values to the nearest 0.1 percent

Comments _____

Method3

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SAMPLE RECOVERY FIELD DATA

Method Ontario Hydro Mercury Method

Client TECO

Location/Plant Big Bend Unit 3

W.O. #

Source & Location

Run No. INLET Blank

Sample Date 12/1/99

Recovery Date 12/1/99

Sample I.D. TEBB-UNIT3-FGDINLET-BT-OHM-29NOV1999

Analyst

Filter Number

	Impinger								
	1	2	3	4	5	6	~~Imp. Total~~ 7	Total LiQ 7	Silica Gel ~~Total~~
Contents									
Final	742.0	729.4	725.5	670.5	626.9	678.4	626.9		300.2
Initial	742.0	729.5	725.2	670.4	626.9	678.6	626.9		300.0
Gain	Ø	-0.1	0.3	0.1	Ø	-0.2	Ø	0.1	0.2

Impinger Color 1-4 clear 5-7 purple

Labeled? ✓

Silica Gel Condition 100% Blue

Sealed? ✓

Run No. OUTLET Blank

Sample Date 12/2/99

Recovery Date 12/2/99

Sample I.D.

Analyst

Filter Number

	Impinger								
	1	2	3	4	5	6	~~Imp. Total~~ 7	Total LiQ	Silica Gel ~~Total~~
Contents									
Final	734.8	738.4	725.9	672.7	630.4	672.3	633.4		300.0
Initial	735.0	738.4	725.5	672.6	630.5	672.2	633.5		300.0
Gain	-0.2	Ø	0.4	0.1	-0.1	0.1	-0.1	Ø	Ø

Impinger Color 1-4 clear colorless 5-7 purple

Labeled? ✓

Silica Gel Condition 100% Blue

Sealed? ✓

Run No.

Sample Date

Recovery Date

Sample I.D.

Analyst

Filter Number

	Impinger								
	1	2	3	4	5	6	~~Imp. Total~~ 7	Total LiQ	Silica Gel ~~Total~~
Contents									
Final									
Initial									
Gain									

Impinger Color

Labeled?

Silica Gel Condition

Sealed?

Check COC for Sample IDs of Media Blanks

WESTON MANAGERS DESIGNERS/CONSULTANTS

Sample and Velocity Traverse Point Data Sheet - Method 1

Client: Tampa Electric
Location/Plant: Big Bend
Source: Unit 3 Stack

Operator: AA
Date: 11-30-05

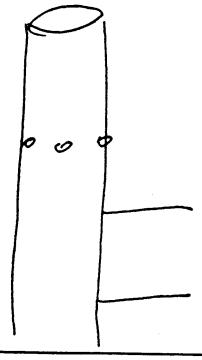
Duct Type	☒ Circular	☐ Rectangular Duct	Indicate appropriate type
Traverse Type	☒ Particulate Traverse	☐ Velocity Traverse	

Distance from far wall to outside of port (in.) = C	~~346~~ 360 / ~~137 1/8~~
Port Depth (in.) = D	14
Depth of Duct, diameter (in.) = C-D	346
Area of Duct (ft²)	~~6529~~ ~~6601.2~~
Total Traverse Points	24
Total Traverse Points per Port	6

Flow Disturbances	
Upstream - A (ft)	2.5'
Downstream - B (ft)	86'
Upstream - A (duct diameters)	8.5
Downstream - B (duct diameters)	3

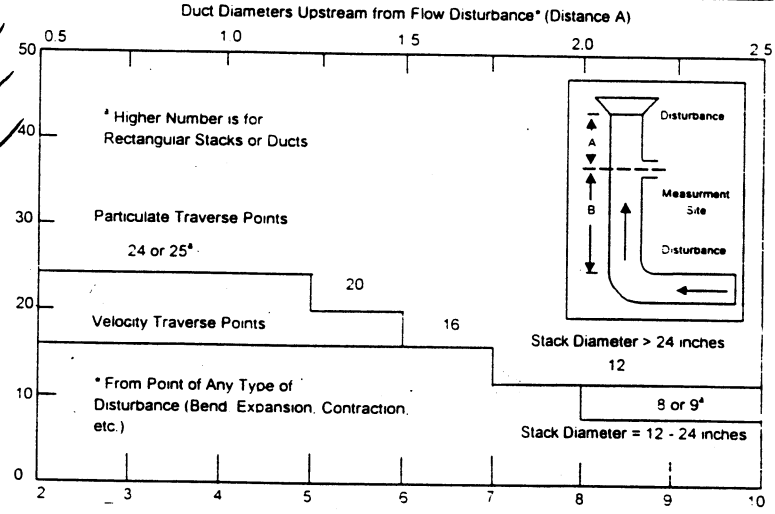
Rectangular Ducts Only	
Width of Duct, rectangular duct only (in.)	
Total Ports (rectangular duct only)	

Diagram of Stack



Traverse Point Locations

Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	2.1	7 1/4	21 1/4
2	6.7	23 1/8	37 1/8
3	11.8	40 7/8	54 7/8
4	17.7	61 1/4	75 1/4
5	25	86 1/2	100 1/2
6	35.6	123 1/8	137 1/8
7			
8			
9			
10			
11			
12			



Equivalent Diameter = (2*L*W)/(L+W)

Traverse Point Location Percent of Stack -Circular

Traverse Point	Number of Traverse Points 1	2	3	4	5	6	7	8	9	10	11	12
1		14.6		6.7		4.4		3.2		2.6		2.1
2		85.4		25		14.6		10.5		8.2		6.7
3				75		29.6		19.4		14.6		11.8
4				93.3		70.4		32.3		22.6		17.7
5						85.4		67.7		34.2		25
6						95.6		80.6		65.8		35.6
7								89.5		77.4		64.4
8								96.8		85.4		75
9										91.8		82.3
10										97.4		88.2
11												93.3
12												97.9

Traverse Point Location Percent of Stack -Rectangular

Traverse Point	Number of Traverse Points 1	2	3	4	5	6	7	8	9	10	11	12
1		25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2		75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
3			83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4				87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
5					90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
6						91.7	78.6	68.8	61.1	55.0	50.0	45.8
7							92.9	81.3	72.2	65.0	59.1	54.2
8								93.8	83.3	75.0	68.2	62.5
9									94.4	85.0	77.3	70.8
10										95.0	86.4	79.2
11											95.5	87.5
12												95.8

Rectangular Stack Points & Matrix
9 - 3 x 3
12 - 4 x 3
16 - 4 x 4
20 - 5 x 4
25 - 5 x 5
30 - 6 x 5
36 - 6 x 6
42 - 7 x 6
49 - 7 x 7

WESTON MANAGERS DESIGNERS/CONSULTANTS

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Determination of Stack Gas Velocity - Method 2

Client: Tampa Electric | Operator: IA | Pitot Coeff (Cp): .84
Location/Plant: Big Bend | Date: 12-1-99 | Stack Area, ft² (As): 652
Source: Unit 3 Stack | W.O. Number: | Pitot Tube/Thermo ID: P157

Run Number	Prelim		
Time			
Barometric Press, in Hg (Pb)	30.42		
Static Press, in H_20 (Pstatic)	-1.00		
Source Moisture, % (BWS)			
O_2, %			
CO_2, %			

Cyclonic Flow Determination		Traverse Location		Leak Check good? Y / N		Leak Check good? Y / N		Leak Check good? Y / N	
Delta P at 0°	Angle yeilding zero Delta P	Port	Point	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)
		A	1	.32	126				
0	2		2	.35	127				
			3	.40	126				
			4	.42	127				
.013	3		5	.41	127				
			6	.27	126				
0	1	B	1	.33	126				
			2	.38	126				
0	2		3	.35	126				
			4	.39	126				
.013	3		5	.32	127				
			6	.27	127				
.013	3	C	1	.30	126				
			2	.36	126				
.014	4		3	.42	126				
			4	.45	126				
0	1		5	.44	126				
			6	.46	126				
.013	3	D	1	.32	126				
			2	.40	126				
.013	3		3	.46	125				
			4	.45	125				
.025	5		5	.41	125				
			6	.36	125				
Avg Angle	2.73	Avg Delta P & Temp		.3767	126.0				
		avg √DeltaP		.6119					
Average gas stream velocity, ft/sec.									
Vol. flow rate @ actual conditions, wacf/min									
Vol. flow rate at standard conditions, dscf/min									

$$MWd = (0.32 * O_2) + (0.44 * CO_2) + (0.28 * (100 - (CO_2 + O_2)))$$

$$MWs = (MWd * (1 - (BWS/100))) + (18 * (BWS/100))$$

$$Tsa = Ts + 460$$

$$Ps = Pb + (Pstatic/13.6)$$

$$Vs = 85.49 * Cp * avg\sqrt{DeltaP} * \sqrt{Tsa/(Ps * MWs)}$$

$$Qs(act) = 60 * Vs * As$$

$$Qs(std) = 17.64 * (1 - (BWS/100)) * (Ps/Tsa) * Qs(act)$$

Comments _____

where:
MWd = Dry molecular weight source gas, lb/lb-mole.
MWs = Wet molecular weight source gas, lb/lb-mole.
Tsa = Source Temperature, absolute(oR)
Ps = Absolute stack static pressure, inches Hg.
Vs = Average gas stream velocity, ft/sec.
Qs(act) = Volumetric flow rate of wet stack gas at actual,
Qs(std) = Volumetric flow rate of dry stack gas at standard conditions, dscf/min

WESTON MANAGERS DESIGNERS/CONSULTANTS

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ISOKINETIC FIELD DATA SHEET

Ontario Hydro Method - Mercury

Page ____ of ____

		Stack Conditions					
Client	TAMPA ELECTRIC		Assumed	Actual	Meter Box ID	WC-14	
W.O.#	12281.001.001.0001				Meter Box Y	1.0098	
Project ID	TECOBB	% Moisture	12		Meter Box Del H	1.9408	
Mode/Source ID	UNIT 3	Impinger Vol (ml)		242	Probe ID / Length	10'	
Samp. Loc. ID	STK	Silica gel (g)		20.5	Probe Material	Boro	
Run No.ID	1	CO2, % by Vol	11	11.33	Pitot / Thermocouple ID		
Test Method ID	OHM	O2, % by Vol	8	7.33	Pitot Coefficient	0.84	
Date ID	1NOV1999	Temperature (°F)	120		Nozzle ID	WC.270	
Source/Location	UNIT 3 Stack	Meter Temp (°F)	84		Avg Nozzle Dia (in)	.270	
Sample Date	12/1/99	Static Press (in H_2O)	-.5	-1.0	Area of Stack (ft^2)	652'	
Baro. Press (in Hg)	30.43				Sample Time	120	
Operator	JW, KA	Ambient Temp (°F)	75		Total Traverse Pts	24	

Leak Checks	Initial	Mid-Point	Final
Sample Train (ft^3)	0.012		0.1017
Leak Check @ (in Hg)	12		10
Pitot good	(yes) / no	yes / no	(yes) / no
Orsat good	(yes) / no	yes / no	(yes) / no
Temp Check	Pre-Test Set		Post-Test Set
Meter Box Temp			
Reference Temp			
Pass/Fail (+/- 2°)	Pass / Fail		Pass / Fail
Temp Change Response	yes / no		yes / no

K Factor 4.6

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft^3)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS
	0	1125			714.300									
A 1	5		.33	1.52	717.62	127	79	79	252	259	67	4.5	260	
2	10		.34	1.56	720.188	128	80	79	253	260	61	4.5	252	
3	15		.39	1.79	724.38	128	86	79	254	258	60	5	255	
4	20		.43	1.98	728.04	128	88	81	255	257	59	5	256	
5	25		.40	1.84	731.62	127	91	83	256	255	61	5	255	
20.264 6	30	1155	.26	1.20	734.564/734.900	126	93	84	255	257	62	4	255	L/C Good .009
B 1	35	1208	.34	1.56	738.23	126	86	84	257	256	65	5	256	
2	40		.36	1.66	741.66	126	89	84	255	254	64	5	251	
3	45		.35	1.61	745.11	126	90	84	254	255	62	5	257	
4	50		.36	1.66	748.52	126	93	84	256	257	61	5	253	
5	55		.33	1.52	751.78	126	95	85	255	256	61	5	254	
19.723 6	60	1208	.26	1.2	754.623/754.850	126	97	87	254	257	62	4	255	L/C Good .011
C 1	65	1248	.32	1.47	758.26	125	87	84	255	256	65	5	254	
2	70		.37	1.70	761.65	125	91	85	256	255	60	5	255	
3	75		.40	1.84	765.26	126	92	85	255	257	60	5.5	256	
4	80		.43	1.98	769.04	126	96	87	255	258	61	6	255	
5	85		.44	2.02	772.80	126	96	87	254	255	62	6	252	
21.772 6	90		.45	2.07	776.622/777.200	126	96	87	255	256	62	6	254	L/C Good .010
D 1	95	1329	.33	1.52	780.54	126	88	86	257	255	61	5	255	
2	100		.38	1.75	784.01	126	91	86	258	257	61	5	256	
3	105		.45	2.07	787.84	127	93	87	256	256	60	6	255	
4	110		.47	2.16	791.75	126	95	87	255	252	60	6	253	
5	115		.42	1.93	795.46	126	96	88	253	255	61	6	255	
21.673 6	120	1359	.35	1.61	798.873	126	96	88	257	259	61	5.5	253	
			Avg Sqrt Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm		Min/Max	Min/Max	Max Temp	Max Vac	Max Temp	
			.6093	1.7175	83.342	126.3	91 / 84.6		252 / 258	252 / 260	67	5	251 / 260	
				Avg Sqrt Del H	Comments:									
				1.3068	83.432									

87.79 W278 Filter

Ontario Hydro Method
ISO = 100.8
Moist = 13.1
Flow = 1,114,891

WESTON MANAGERS DESIGNERS/CONSULTANTS

J.C.K. P.E.M.

ISOKINETIC FIELD DATA SHEET

Ontario Hydro Method - Mercury

		Stack Conditions	Assumed	Actual				
Client	TAMPA ELECTRIC				Meter Box ID	WC-14		
W.O.#	12281.001.001.0001				Meter Box Y	1.0098		
Project ID	TECOBB	% Moisture	13		Meter Box Del H	1.9408	**Leak Checks**	Initial	Mid-Point	Final
Mode/Source ID	UNIT 3	Impinger Vol (ml)		222/1009	Probe ID / Length	10'	Sample Train (ft^3)	0.010		0.011
Samp. Loc. ID	STK	Silica gel (g)		259 MR	Probe Material	Boro	Leak Check @ (in Hg)	11		8
Run No.ID	2	CO2, % by Vol	11	11.20	Pitot / Thermocouple ID		Pitot good	(yes) / no	yes / no	(yes) / no
Test Method ID	OHM	O2, % by Vol	8	7.20	Pitot Coefficient	0.84	Orsat good	(yes) / no	yes / no	(yes) / no
Date ID	1NOV1999	Temperature (°F)	126		Nozzle ID	WC.270	**Temp Check**	Pre-Test Set		Post-Test Set
Source/Location	UNIT 3 Stack	Meter Temp (°F)			Avg Nozzle Dia (in)	.270	Meter Box Temp			
Sample Date	12/1/99	Static Press (in H_2O)	-1.0	-1.05	Area of Stack (ft^2)	6.52	Reference Temp			
Baro. Press (in Hg)	~~30.13~~ 30.42				Sample Time	120	Pass/Fail (+/- 2°)	Pass / Fail		Pass / Fail
Operator	[illegible]	Ambient Temp (°F)	78		Total Traverse Pts	24	Temp Change Response	yes / no		yes / no

K Factor 4.6

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft^3)	STACK TEMP (°F)	DGM INLET TEMP (°F)	OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPING EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS	Plant Volume collected
	0	1645			803.900										
D 1	5		~~.42~~ .35	~~1.61~~ 1.61	807.26	123	83	82	258	257	65	3.5	256		
2	10		.37	1.7	810.72	125	85	83	255	258	60	3.5	255		
3	15		.45	2.07	814.57	125	88	84	256	259	59	4	256		
4	20		.42	1.93	818.18	126	91	85	253	257	59	4	256		
5	25		.40	1.84	821.75	126	92	85	256	255	59	4	257		
6	30	1715	.33	1.52	825.104/825.500	125	93	85	258	257	59	4	255	L/C Good 0.007	21.20
C 1	35	1729	.36	1.66	828.10	125	86	83	253	254	60	4	253		
2	40		.39	1.79	832.63	126	91	85	255	253	61	3.5	254		
3	45		.43	1.98	836.38	126	94	87	257	255	61	4	255		
4	50		.45	2.07	840.24	126	97	88	258	254	62	4	257		
5	55		.42	1.93	844.0	126	98	88	255	257	62	4	253		
6	60	1759	.32	1.47	847.24/847.700	125	98	88	252	259	60	3.5	255	L/C Good 0.010	21.74
D 1	65	1810	.30	1.38	850.90	126	91	88	256	258	65	4	254		
2	70		.30	1.38	854.08	125	94	88	257	255	61	4	255		
3	75		.34	1.56	857.38	126	96	89	259	257	61	4	253		
4	80		.33	1.52	860.75	126	96	89	255	256	62	4	254		
5	85		.32	1.47	864.24	126	97	89	255	253	62	4	255		
6	90	1840	.22	1.01	867.105/867.900	125	96	89	257	259	62	3.5	254	L/C Good 0.010	19.42
A 1	95	1852	.31	1.43	871.10	125	88	86	253	252	66	3	255		
2	100		.33	1.52	874.53	125	92	87	256	255	61	3	256		
3	105		.34	1.56	877.97	126	95	88	257	256	61	3	253		
4	110		.35	1.61	881.40	125	96	88	255	258	62	3	254		
5	115		.37	1.70	884.99	125	96	88	258	258	61	3	255		
6	120	1922	.28	1.29	888.027	125	97	88	253	254	61	3	253		20.12
			Avg Sqrt Delta P .5926	Avg Delta H 1.625	Total Volume 82.505	Avg Ts 125.4	Avg Tm 92.9/88.7 = 90.8		Min/Max 257/259	Min/Max 252/259	Max Temp 66	Max Vac 4	Max Temp 253/257		
				Avg Sqrt Del H 1.2708	Comments:										

WESTON MANAGERS DESIGNERS/CONSULTANTS

Ck. PED.

W280 Filter

89.8 ✓

Ontario Hydro Method

ISOKINETIC FIELD DATA SHEET

Ontario Hydro Method - Mercury

Client	TAMPA ELECTRIC
W.O.#	12281.001.001.0001
Project ID	TECOBB
Mode/Source ID	UNIT 3
Samp. Loc. ID	STK
Run No.ID	3
Test Method ID	OHM
Date ID	1 DEC 99 1NOV1999 ESE
Source/Location	UNIT 3 Stack
Sample Date	2-DEC-1999
Baro. Press (in Hg)	30.19 30.34
Operator	JW, KA, TB

Stack Conditions

	Assumed	Actual
% Moisture	13	
Impinger Vol (ml)		222.1
Silica gel (g)		25.9
CO2, % by Vol	11	11.33
O2, % by Vol	8	7.13
Temperature (°F)	125	
Meter Temp (°F)		
Static Press (in H_2O)	-1.0	-1.1
Ambient Temp (°F)	72	

Meter Box ID	WC-14
Meter Box Y	1.0098
Meter Box Del H	1.9408
Probe ID / Length	10'
Probe Material	Boro
Pitot / Thermocouple ID	
Pitot Coefficient	0.84
Nozzle ID	WC 270
Avg Nozzle Dia (in)	.270
Area of Stack (ft^2)	652
Sample Time	120
Total Traverse Pts	24

K Factor 4.6

Leak Checks	Initial	Mid-Point	Final
Sample Train (ft^3)	.016		0.008
Leak Check @ (in Hg)	13		12
Pitot good	(yes) / no	yes / no	(yes) / no
Orsat good	(yes) / no	yes / no	(yes) / no
Temp Check	Pre-Test Set		Post-Test Set
Meter Box Temp			
Reference Temp			
Pass/Fail (+/- 2°)	Pass / Fail		Pass / Fail
Temp Change Response	yes / no		yes / no

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft^3)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS	
	0	1131			913.000										
A 1	5		.35	1.61	916.46	125	83	82	259	258	64	5	253		Volume per Port
2	10		.33	1.52	919.74	126	85	83	257	255	58	4.5	254		
3	15		.37	1.70	923.13	125	89	84	258	256	59	5	255		
4	20		.35	1.61	926.53	125	91	84	256	254	59	5	255		
5	25		.28	1.29	929.54	125	92	85	259	255	59	4	254		
6	30	1201	.31	1.43	932.774/934.05	125	93	85	255	257	59	4.5	253	LC Good 0.010	19.774
B 1	35	1219	.26	1.20	937.60	124	83	82	256	255	63	4	254		
2	40		.35	1.61	941.0	125	88	84	253	256	60	5	256		
3	45		.32	1.47	944.25	125	91	84	255	259	59	5	252		
4	50		.37	1.70	947.74	125	93	85	254	253	59	5	254		
5	55		.34	1.56	951.17	125	93	85	253	257	60	5	255		
6	60	1249	.32	1.47	953.837/954.2	125	95	86	257	255	61	5	254	LK Good 0.009	19.78
C 1	65	1304	.37	1.70	957.75	124	84	83	253	257	65	5.5	252		
2	70		.36	1.66	961.26	125	88	84	257	256	60	5.5	253		
3	75		.37	1.70	964.78	125	91	84	255	259	61	5.5	251		
4	80		.41	1.89	968.47	126	93	85	254	255	62	6	254		
5	85		.50	2.3	972.5	125	95	86	257	254	63	7	255		
6	90	1334	.48	2.21	976.443/978.2	125	96	86	258	256	63	6.5	254	WC Good 0.012	22.24
D 1	95	1400	.34	1.56	984.58	125	86	84	255	252	65	5.5	255		
2	100		.32	1.47	987.88	126	91	86	251	258	64	5	257		
3	105		.35	1.61	991.26	126	93	86	253	255	62	5.5	257		
4	110		.45	2.07	995.10	125	95	87	255	259	62	6.5	256		
5	115		.42	1.93	998.76	125	96	87	256	257	63	6	255		
6	120	1430	.43	1.98	1002.518	125	96	88	256	255	63	6.5	254		21.31
			Avg Sqrt Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm		Min/Max	Min/Max	Max Temp	Max Vac	Max Temp		
			.6020	1.6771	23.122	125	87.8		251/259	252/259	65	7	251/257		
				Avg Sqrt Del H 1.2911											

Comments: W281 Filter

Ontario Hydro Method

CK. PEH.

WESTON MANAGERS DESIGNERS/CONSULTANTS

SAMPLE RECOVERY FIELD DATA

Method Ontario Hydro Mercury Method

Client TECO

Location/Plant Big Bend

W.O. # 12291-701-001

Source & Location STACK (Unit 3)

Run No. 1 — Sample Date 12/1/99 — Recovery Date 12/1/99

Sample I.D. TECOBB-UNIT3-STK-1-OHM-1NOV1999 — Analyst D. Mc. — Filter Number W278

	Impinger 1	2	3	4	5	6	~~Imp. Total~~ 7	TOTAL LIQ	Silica Gel ~~Total~~
Contents									
Final	760.7	653.1	736.5	691.6	618.4	624.4	675.0		320.5
Initial	688.5	593.2	728.8	689.1	618.3	624.6	675.2		300.0
Gain	172.2 ✓	59.9 ✓	7.7 ✓	2.5 ✓	0.1 ✓	-0.2 ✓	-0.2 ✓	242 ✓	20.5 ✓

Impinger Color 1-4 Clear Colorless 5-7 Purple — Labeled? ✓

Silica Gel Condition 1/2 Blue — Sealed? ✓

Run No. 2 — Sample Date 12/1/99 — Recovery Date 12/1/99

Sample I.D. TECOBB-UNIT3-STK-2-OHM-1NOV1999 — Analyst — Filter Number W280

	Impinger 1	2	3	4	5	6	~~Imp. Total~~ 7	TOTAL LIQ	Silica Gel ~~Total~~
Contents									
Final	743.3	723.4	708.6	626.7	717.4	690.6	676.0		319.7
Initial	613.0	689.7	700.4	625.5	718.7	691.2	676.6		300
Gain	130.3 ✓	33.7 ✓	8.2 ✓	1.2 ✓	-1.3 ✓	-.6 ✓	-.6 ✓	170.9 ✓	19.7 ✓

Impinger Color 1-4 Clear Colorless 5-7 Purple — Labeled? ✓

Silica Gel Condition 1/2 Blue — Sealed? ✓

Run No. 3 — Sample Date 12/2/99 — Recovery Date 12/2/99

Sample I.D. TECOBB-UNIT3-STK-3-OHM-1NOV1999 — Analyst — Filter Number W281

	Impinger 1	2	3	4	5	6	~~Imp. Total~~ 7	TOTAL LIQ	Silica Gel ~~Total~~
Contents									
Final	830.3	666.1	739.3	694.4	615.6	630.5	675.2		325.9
Initial	683.0	600.6	731.5	690.7	615.8	631.3	676.4		300.0
Gain	147.3 ✓	65.5 ✓	7.8 ✓	3.7 ✓	-0.2 ✓	-0.8 ✓	-1.2 ✓	222.1 ✓	25.9

Impinger Color 1-4 Clear Colorless 5-7 Purple — Labeled? ✓

Silica Gel Condition 1/2 Blue — Sealed? ✓

Check COC for Sample IDs of Media Blanks

WESTON MANAGERS DESIGN/ENGINEERING CONSULTANTS

Source Gas Analysis Data Sheet - Method 3

Client TECO

Location/Plant Big Bend Unit 3

Source Stack Outlet

Analyst KA

Date 12/1/99

Analytical Method ~~(circle one)~~ ORSAT

Run Number ONE

Leak Check Good? (circle one) Yes No

12/1/99

Analysis Number	Analysis Time	Percent CO_2 (A)	Percent Total (B)	Percent O_2 (B - A)	Percent N_2 (100 - B)
1		11.2	18.4	7.2	
2		11.4	18.8	7.4	
3		11.4	18.8	7.4	
	Average	11.33 ✓	18.7	7.33 ✓	

Run Number TWO

Leak Check Good? (circle one) Yes No

12/1/99

Analysis Number	Analysis Time	Percent CO_2 (A)	Percent Total (B)	Percent O_2 (B - A)	Percent N_2 (100 - B)
1		11.2	18.4	7.2	
2		11.2	18.4	7.2	
3		11.4	18.6	7.2	
	Average	11.20 ✓	18.5	7.20 ✓	

Run Number Three

Leak Check Good? (circle one) Yes No

12/2/99

Analysis Number	Analysis Time	Percent CO_2 (A)	Percent Total (B)	Percent O_2 (B - A)	Percent N_2 (100 - B)
1		11.4	18.4	7.0	
2		11.4	18.6	7.2	
3		11.2	18.0	7.2	
	Average	11.33 ✓		7.13 ✓	

Acceptable differences for repeat analysis:

if CO_2 > 4% than +/- 0.3%

if CO_2 < or = 4% than +/- 0.2%

if O_2 > or = 15% than +/- 0.2%

if O_2 < 15% than +/- 0.3%

Ambient Check

Oxygen 20.8

Carbon Dioxide 0.0

Report all values to the nearest 0.1 percent

Comments

WESTON MANAGERS DESIGNERS/CONSULTANTS

Method3

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APPENDIX D
LABORATORY ANALYTICAL REPORTS

COAL SAMPLES ANALYTICAL REPORT

PHILIP
ANALYTICAL SERVICES

INDUSTRIAL HYGIENE ENVIRONMENTAL TESTING

• EPA/NVLAP 101262-0 • NY DOH 10903 • NJ DEP 77678
• AIHA ACCREDITATION NO. 100439 • PA DER 06-353

December 23, 1999

Jeff O'Neill
Roy F. Weston, Inc.
One Weston Way
Bldg. 5-1
West Chester PA 19380

Laboratory Project: 188757
Client Reference: TECO-Big Bend/WO #12281.001.001
Coal Analysis

Dear Mr. O'Neill:

The samples which were logged in on 10-DEC-99 have been analyzed as requested. The analytical results are enclosed in the attached report.

Please note that any unused portion of the samples will be disposed after 21-JAN-00, unless you have requested otherwise.

Thank you for the opportunity to provide these services to you. If you have any questions concerning this report, please contact a Client Services representative at 610/921-8833.

Sincerely,

Fred Usbeck, CIH
Director, Laboratory Services

4418 POTTSVILLE PIKE, READING, PENNSYLVANIA 19605 610-921-8833 FAX 610-921-9667

PHILIP
ANALYTICAL SERVICES

INDUSTRIAL HYGIENE ENVIRONMENTAL TESTING

• EPA/NVLAP 101262-0 • NY DOH 10903 • NJ DEP 77678
• AIHA ACCREDITATION NO. 100439 • PA DER 06-353

ANALYTICAL REPORT

Client: Roy F. Weston, Inc.

Report to: Jeff O'Neill
Roy F. Weston, Inc.
One Weston Way
Bldg. 5-1
West Chester PA 19380

Project: 188757
Received: 10-DEC-99
Reported: 23-DEC-99

PURCHASE ORDER: 0008271

Project Description: TECO-Big Bend/WO #12281.001.001
Coal Analysis

	AS RECEIVED BASIS	DRY BASIS	UNITS	METHOD	DATE	ANALYST
TECO-BB-Coal-Run 1						
Lab Sample: 1386355						
sampled: 01-DEC-99						
Moisture, Total	9.55		%	D 3302	10-DEC-99	GLB
Chlorine, Total	0.16	0.18	%	E776/300.0	20-DEC-99	DRK
SHORT PROX - COAL						
Ash	9.97	11.0	%	D 3174	17-DEC-99	VJO
Sulfur	2.85	3.15	%	D 4239	22-DEC-99	VJO
Heating Value	11510	12730	BTU/lb	D 3286	21-DEC-99	VJO
Mercury, Total	0.160	0.177	mg/kg	7471	20-DEC-99	JLP
TECO-BB-Coal-Run 2						
Lab Sample: 1386356						
sampled: 01-DEC-99						
Moisture, Total	9.58		%	D 3302	10-DEC-99	GLB
Chlorine, Total	0.16	0.18	%	E776/300.0	20-DEC-99	DRK
SHORT PROX - COAL						
Ash	9.59	10.6	%	D 3174	17-DEC-99	VJO
Sulfur	2.91	3.22	%	D 4239	21-DEC-99	VJO
Heating Value	11560	12790	BTU/lb	D 3286	21-DEC-99	VJO
Mercury, Total	0.102	0.113	mg/kg	7471	20-DEC-99	JLP
TECO-BB-Coal-Run 3						
Lab Sample: 1386357						
sampled: 02-DEC-99						
Moisture, Total	9.69		%	D 3302	10-DEC-99	GLB
Chlorine, Total	0.15	0.17	%	E776/300.0	20-DEC-99	DRK

PHILIP
ANALYTICAL SERVICES

INDUSTRIAL HYGIENE ENVIRONMENTAL TESTING

• EPA/NVLAP 101262-0 • NY DOH 10903 • NJ DEP 77678
• AIHA ACCREDITATION NO. 100439 • PA DER 06-353

Client: Roy F. Weston, Inc.
Project: 188757

TECO-BB-Coal-Run 3
Lab Sample: 1386357 - continued

	AS RECEIVED BASIS	DRY BASIS	UNITS	METHOD	DATE	ANALYS
SHORT PROX - COAL						
Ash	9.19	10.2	%	D 3174	17-DEC-99	VJO
Sulfur	2.78	3.08	%	D 4239	22-DEC-99	VJO
Heating Value	11720	12980	BTU/lb	D 3286	22-DEC-99	VJO
Mercury, Total	0.113	0.125	mg/kg	7471	20-DEC-99	JLP

< Indicates less than the limit of quantitation.

Philip Analytical Services
Quality Assurance Protocol

PAS Sample#: 1386355,1386356,1386357

Client Name: Roy F. Weston

PAS Project #: 188757

Job ID :

Units: %,BTU/lb

O1 SUMMARY FORM

Sample # & Parameter	Matrix Spike				Matrix Spike Duplicate				Laboratory Control Sample		
	Sample Conc.	Spike Conc.	Matrix Spike Conc.	Matrix Spike Recovery	Matrix Spike Dup Conc.	Matrix Spike Dup Recovery	Precision RPD	Method Blank	Spikes Conc.	Found Conc.	Recovery

Sample # & Parameter	Matrix Spike				Duplicate			Laboratory Control Sample			Method Blank	Detection Limits
	Sample Conc.	Spike Conc.	Matrix Spike Conc.	Matrix Spike Recovery	Sample Conc.	Sample Duplicate Conc.	Precision RPD	Spikes Conc.	Found Conc.	Recovery		
1386357-Ash					10.1	10.1	0	11.8	11.8	100	N/A	0.01
1386357-Sulfur					3.05	2.98	2.3	1.78	1.83	103	N/A	0.01
1386357-Heating Value					12953	12902	0.4	13370	13346	100	N/A	50
1386357-Chlorine					0.17	0.18	5.7	1.98	1.82	92	0.01	0.01

Matrix Spike	75 - 125
Laboratory Control Sample	80 - 120
Duplicate	0 - 20

Philip Quality Assurance Protocol - QAT Sample/Duplicate

Philip #	1386357
Batch#	121799D

Philip Report #	188757
Client Name	Roy F. Weston

	MATRIX SPIKE(mg/kg)				SAMPLE DUPLICATE(mg/kg)			METHOD BLANK	LABORATORY CONTROL SAMPLE(mg/L)		
Parameter	Sample Conc	Spike Conc	Matrix Spike Conc	Recovery %	Sample Conc	Duplicate Conc	Precision RPD %	mg/L	Spike Conc	Found Conc	Recovery %
Mercury	0.113	0.400	0.458	86	0.113	0.109	4	< 0.0002	0.00200	0.00191	96

^ 12/22/99 + page 1

Western
188757
#1386355

SAMPLE ID:		INPUT AIR DRY	AS RECEIVED	DRY BASIS
AIR DRY LOSS:	%	8.51	8.51	****
MOISTURE:	%	1.14	1.04	****
VOLATILE MATTER:	%	0.00	0.00	0.00
FIXED CARBON:	%	****	80.47	88.97
ASH:	%	10.90	9.97	11.03
PROXIMATE TOTAL:	%	****	100.00	100.00
HEATING VALUE:	BTU/LB	12586	11510	12730
SULFUR:	%	3.12	2.85	3.16
CARBON:	%	0.00	0.00	0.00
HYDROGEN EXCL WATER:	%	0.00	-0.12	-0.13
HYDROGEN INCL WATER:	%	0.00	0.95	****
NITROGEN:	%	0.00	0.00	0.00
CHLORINE:	%	0.18	0.16	0.18
OXYGEN EXCL WATER:	%	****	77.57	85.77
OXYGEN INCL WATER:	%	85.80	86.06	****
ULT TOTAL EXCL WATER:	%	****	100.00	100.00
ULT TOTAL INCL WATER:	%	100.00	100.00	****

>7.55

^ 12/22/99 + page 1

Weston
188757
#1386356

SAMPLE ID:		INPUT AIR DRY	AS RECEIVED	DRY BASIS
AIR DRY LOSS:	%	8.69	8.69 > 9.58	****
MOISTURE:	%	0.97	0.89	****
VOLATILE MATTER:	%	0.00	0.00	0.00
FIXED CARBON:	%	****	80.84	89.40
ASH:	%	10.50	9.59	10.60
PROXIMATE TOTAL:	%	****	100.00	100.00
HEATING VALUE:	BTU/LB	12662	11560	12790
SULFUR:	%	3.19	2.91	3.22
CARBON:	%	0.00	0.00	0.00
HYDROGEN EXCL WATER:	%	0.00	-0.10	-0.11
HYDROGEN INCL WATER:	%	0.00	0.97	****
NITROGEN:	%	0.00	0.00	0.00
CHLORINE:	%	0.18	0.16	0.18
OXYGEN EXCL WATER:	%	****	77.86	86.10
OXYGEN INCL WATER:	%	86.13	86.36	****
ULT TOTAL EXCL WATER:	%	****	100.00	100.00
ULT TOTAL INCL WATER:	%	100.00	100.00	****

^ 12/22/99 + page 1

SAMPLE		INPUT AIR DRY	AS RECEIVED	DRY BASIS
AIR DRY LOS:	%	8.99	8.99	****
MOISTUI E:	%	0.77	0.70	****
VOLATILE MATTI R:	%	0.00	0.00	0.00
FIXED CARBO I:	%	****	81.12	89.82
AS H:	%	10.10	9.19	10.18
PROXIMATE TOT L:	%	****	100.00	100.00
HEATING VALU E:	BTU/LB	12883	11720	12980
SULFU R:	%	3.05	2.78	3.07
CARBO N:	%	0.00	0.00	0.00
HYDROGEN EXCL WATI R:	%	0.00	-0.08	-0.09
HYDROGEN INCL WATI R:	%	0.00	1.01	****
NITROGI N:	%	0.00	0.00	0.00
CHLORII E:	%	0.17	0.15	0.17
OXYGEN EXCL WATI R:	%	****	78.27	86.66
OXYGEN INCL WATI R:	%	86.68	86.87	****
ULT TOTAL EXCL WATI R:	%	****	100.00	100.00
ULT TOTAL INCL WATI R:	%	100.00	100.00	****

Winston
188757
138635

79.69

AIR DRY MOISTURE LOSS

Date In	Weighed By	Pan #	Pan Wt. (g)	Original Pan & Sample Weight (g)	Original Sample Weight (g)	Date Out	Weighed By	Final Pan & Sample Wt. (g)	AIR DRY LOSS		Sample		Special
12/6/99	GB	A	244.5	271.4		12/7	GB	265.9					
		B	242.1	275.5				269.5					
		C	233.5	264.3				255.2					
		D	238.6	269.6				262.9					
		E	238.9	268.4				262.3					
		F	247.6	270.6				264.6					
		G	250.2	284.4				276.7					
12/9/99	GB	F	365.6	637.0	271.4	12/13	GB	548.5					
													S/G
12/9/99	GB	43	117.2	~~52~~ 543.0	425.8	12/10/99	D2K	452.1	10.9	21.3	Penobscot	1386126	S/G
		I	360.7	711.8	351.1		587.6	~~309.4~~	124.4	35.4		6127	S/G
		25	123.5	373.6	250.1			309.4	64.2	25.7		6128	S/G
													S/G
12/10/99	GB	X1	429.7	1375.6	945.9	12/13	GB	1295.1	80.5	8.51	Weston	1386355	S/G
					[illegible]			[illegible]	[illegible]	[illegible]		[illegible]	S/G
		2	428.9	1357.6	928.7			1274.1	83.5	8.99		6357	S/G
													S/G
12/11/99	GB	3	421.5	1068.2		12/13	GB	1040.1			PAS	1386401	S/G
		4	428.0	1056.4				1034.9				6402	S/G
		5	461.7	1126.5				1101.1				6403	S/G
													S/G
12/11/99	GB	6	434.4	1601.6	1167.2	12/13	GB	1448.0	153.6	13.2	Kimberly	1386436	S/G
													S/G

Moisture

American
PN 188349
1384340

Sample #	Tare wt. of Dish (g)	Wet Wt. Sample + Dish (g)	Dry Wt. Sample + Dish	% Moistur
1384338	244.5	271.4	265.9	20.4
1384339	242.1	275.5	269.5	18.0
1384340	233.5	264.3	255.2	29.5
1384341	238.6	269.6	262.9	21.6
1384342	238.9	268.4	262.3	20.7
1384343	247.6	270.6	264.6	26.1
1384344	250.2	284.4	276.7	22.5

Coal/RDF Proximate Analysis

DATE: 12/17/99

Signature: V. O'Neill

CLIENT ☆	Central	Western	→		→	Kimberly	Metro →	
Laboratory Number	98	1386355	1386356	1386357	1386357 (DUP)	1386436	1386554	1386555
all weights in grams								
% Air-dry Loss		8.51	8.69	8.99		13.2		
Weight of Crucible and Sample	22.8200	19.2460	22.8577	18.8892	21.1543	20.5406	21.6743	18.3315
Weight of Crucible	21.7927	18.3043	21.9116	17.6769	20.2497	19.3566	20.6159	17.1603
Weight of Sample	1.0273	.9417	.9461	1.2123	.9046	1.1840	1.0584	1.1712
Weight of Crucible and Sample	22.8200	19.2460	22.8577	18.8892	21.1543	20.5406	21.6743	18.3315
Weight after 105 deg. C	22.8141	19.2353	22.8485	18.8799	21.1464	20.5351	21.6069	18.2190
Weight loss (moisture)	.0059	.0107	.0092	.0093	.0079	.0055	.0674	.1125
% Residual Moisture	0.57	1.14 ~~11.4~~	0.97	0.77	0.87	0.46	6.37	9.60
Weight of Crucible and Sample	21.0957					22.1965		
Weight of Crucible ①	20.4999					② 21.1253		
Weight of Sample	.5958					1.0712		
Weight of Crucible and Sample	21.0957					22.1965		
Weight after 950 deg. C for 7 min.	20.9440					22.1136		
Weight loss (Volatiles)	.1517					.0829		
% Volatiles	25.46					7.74		
% Residual Moisture	.57					.46		
% Volatile Matter	24.9					7.28		
Weight after 750 deg. C	21.9143	18.4073	22.0113	17.7993	20.3408	19.7396	20.8505	17.4036
Weight of Crucible	21.7927	18.3043	21.9116	17.6769	20.2497	19.3566	20.6159	17.1603
Weight of Ash	.1216	.1630	.0997	.1224	.0911	.3830	.2346	.2433
% Ash	11.8	10.9	10.5	10.1	10.1	32.2	22.2	20.8
% Sulfur		3.12	3.19	3.05		1.92		
BTU per pound		12658	12735	12953		9295		
BTU sulfur correction		72	73	70		44		
BTU per pound, corrected		12586	12662	12883		9251		
BTU per pound, Moisture Ash Free								

Date	Lab No.	Client	BTU/LBS	BTU/LBS Sulfur	BTU/Ga	Remarks	Operat
2/14/99	1385206	Rdg. Hosp.	19362			188516	
	1385207	"	19250			"	
	1385208	"	19403			"	
	1385209	"	19301			"	
	1385872	Aroostook	1964			188663	
	1385919	APCC	18445		151,12	188664	
	1385922	"	18296		147,22	188666	
	1385923	"	18294		149,89	"	
	1386510	Ridgewood	7445			188805	
	1386511	"	8068			"	
	1386512	"	7737			"	
Dup	1385919	APCC	18481			188664	
	1385714	Pas Labs	4210			188670	
	1385715	"	6772			"	
	1385716	"	6735			"	
	1385717	"	19219			"	
	1385718	"	19045			"	
	1385719	"	19248			"	
Dup.	1385719	"	19294			"	
	1386554	Metco	8163			188814	
	~~1386555~~	"				"	
	~~1386556~~	"				"	
Dup.	~~1386556~~	"				"	
2/21/99	1386126	Penobscot	7139			188717	
	1386127	"	4094			"	
	1386128	"	7255			"	
	1386355	Weston	12658			188757	
	1386356	"	12735			"	
	1386357	"	12953			"	
Dup	1386357	"	12902			"	
	1386436	Kimberly Clark	9295			188785	
	1386609	Maine Env.	14999			188826	
	1386802	Ryegate	8130			188888	
	1386803	"	8229			"	
	1386555	Metco	7908			188814	
	1386556	"	8175			"	
Dup.	1386556	"	8155			"	
	1386906	Penobscot	7557			188916	
	1386907	"	6372			"	
	1386908	"	9405			"	
	1387323	US Nels	13771			189026	
	1387324	"	13920			"	
	1387325	"	13986			"	
	1386264	Weston	15684			188738	

ID CODE [illegible] WT0.2[illegible] CAL#[illegible]
SULFUR 1.53%
STANDARD 1.67%
12:26 12/22/99

ID CODE C00000001 WT0.306 CAL#2
SULFUR 1.63%
STANDARD 1.67%
12:40 12/22/99

ID CODE C00000002 WT0.297 CAL#2
SULFUR 1.71%
STANDARD 1.67%
12:49 12/22/99

ID CODE C00000003 WT0.303 CAL#2
STANDARD 1.67%
12:53 12/22/99

ID CODE C00000004 WT0.305 CAL#2
SULFUR 1.65%
STANDARD 1.67%
13:00 12/22/99

ID CODE C00000098 WT0.308 CAL#1
SULFUR 1.63%
13:03 12/22/99

ID CODE C01386355 WT0.269 CAL#1
Winston SULFUR 2.12%
13:06 12/22/99

ID CODE C01386356 WT0.280 CAL#1
SULFUR 1.19%
13:09 12/22/99

ID CODE C01386357 WT0.810 CAL#1
188757 SULFUR 3.05%
13:10 12/22/99

ID CODE C01386357 WT0.286 CAL#1
SULFUR 2.98%
13:14 12/22/99

ID CODE C01386436 WT0.301 CAL#1
Kmart SULFUR 1.92%
188785 13:16 12/22/99

ID CODE C01387326 WT0.276 CAL#1
SULFUR 1.38%
13:19 12/22/99

ID CODE C01386334 WT0.316 CAL#1
SULFUR .953%
13:22 12/22/99

ID CODE C01386330 WT0.291 CAL#1
SULFUR .941%
13:25 12/22/99

CHLORINE, BOMBING

TITRATION

DATE/ TIME	SAMPLE #	SAMPLE WT. (g)	ANALYST	DATE/ TIME	$AgNO_3$ (ml)	mv readings	1st DERIV-ATIVE	2nd DERIV-ATIVE	END POINT (ml)	NORMALITY of $AgNO_3$ and Standardization Reference	BLANK CORRECT	% CHLORINE	ANALYST
2/14/99	1385719 188220	50/0.4753	R&D.										
	1386355 188757	50/0.4718			17.2	mg/l	× 50/0.4718 × .0001 = 0.18%	Chlorine					
	1386356	50/0.4787			17.1	mg/l	× 50/0.4787 × .0001 = 0.18%	Chlorine					
	1386357	50/0.4-			16.0	mg/l	× 50/[illegible] × .0001 = 0.17%	Chlorine					
lup	1386357	50/0.4841			17.3	mg/l	× 50/0.4841 × .0001 = 0.18%	Chlorine					

188757

188639 1889
188650 1889
188583 1888
188886 188
188933
188946
188830
188836

Data Package Cover Sheet for Atomic Absorption Spectroscopy by Automated Cold Vapor Analysis

Date of Analysis: 12/20/99	Element: HG
Analyst: JLB	Time of Analysis: 1022
Data Validated by: DRK 12/22/99	Instrument: Leeman PS 200

Calibration Standard Preparation Records

Preparation Record is in Notebook #	Date of Preparation
360-32-25 to 360-33-165	12/17/99

Quality Control Sample Preparation Records

Name	Preparation is in Notebook #	Date of Preparation
QCS/ICV	360-33-7	12/17/99
IPC/CCV	360-33-6	12/17/99

I Certify that all QA/QC results were acceptable and that there were no problems except as noted.

Jennifer L. Lai 12/20/

Signature of Analyst and Date

```
RunProt: ENVIRON
RunFold: 122099HG Seq: 0     Batch:
                  Prnt: R/T On
                  Rev: 4.0     09:28:24 20 Dec 1999 Xmit: Off  Gas:     0.30 LPM
                                                    User:              A/S: On
  Idle
```

AUTOSAMPLER:	Rack entry	Rack RACK#1	
cup	ID	Extended id	Weight Volume Macro
1	ICV/QCS	5.00 UG/L 12/17	1.0000 1.0000
2	0.20 UG/L	LOW REPORT LIMIT	1.0000 1.0000
3	LRB#1-DW	12/17 245.1	1.0000 1.0000
4	LFB#1-DW	2.00 UG/L 12/17	1.0000 1.0000
5	1385803		1.0000 1.0000
6	1385803	50/100	1.0000 1.0000
7	1385845		1.0000 1.0000
8	1385845	50/100	1.0000 1.0000
9	1385509		1.0000 1.0000
10	1385509 D		1.0000 1.0000
11	1385509 MS	2.00 UG/L	1.0000 1.0000
12	1385509MSD	2.00 UG/L	1.0000 1.0000
13	LRB#2-WW	245.1 12/17	1.0000 1.0000
14	LFB#2-WW	2.00 UG/L 12/17	1.0000 1.0000
15	1386797		

PgDn

```
Cup 1  extended ID: 5.00 UG/L 12/17          Cell entry down Ins to switch
```

```
RunProt: ENVIRON
RunFold: 122099HG Seq: 0     Batch:
                  Prnt: R/T On
                  Rev: 4.0     09:28:25 20 Dec 1999 Xmit: Off  Gas:     0.30 LPM
                                                    User:               A/S: On
  Idle
```

PgUp

AUTOSAMPLER: Rack entry Rack RACK#1

cup	ID	Extended id	Weight	Volume	Macro
16	1386954		1.0000	1.0000	
17	1387009		1.0000	1.0000	
18	1387010		1.0000	1.0000	
19	1387011		1.0000	1.0000	
20	1387011 D		1.0000	1.0000	
21	1387011 MS	2.00 UG/L	1.0000	1.0000	
22	1387011MSD	2.00 UG/L	1.0000	1.0000	
23	LRB#3-TCLP	7470 12/17	1.0000	1.0000	
24	LFB#3-TCLP	7470 2.00 UG/L	1.0000	1.0000	
25	1386623	TCLP 20/100	1.0000	1.0000	
26	1386636	TCLP 20/100	1.0000	1.0000	
27	1386636 D	TCLP 20/100	1.0000	1.0000	
28	1386636 MS	TCLP 2UG/L 20/100	1.0000	1.0000	
29	1386636MSD	TCLP 2 UG/L 20/100	1.0000	1.0000	
30	LRB#4	SOLID 7471 12/17	1.0000	1.0000	

PgDn

```
Cup 16 extended ID:                                  Cell entry down Ins to switch
```

```
RunProt: ENVIRON
RunFold: 122099HG Seq: 0     Batch:
                  Prnt: R/T On
                  Rev: 4.0     09:28:26 20 Dec 1999 Xmit: Off  Gas:     0.30 LPM
  Idle                                                 User:            A/S: On
```

PgUp

AUTOSAMPLER: Rack entry Rack RACK#1

cup	ID	Extended id	Weight	Volume	Macro
31	LFB#4	12/17 2.00 UG/L	1.0000	1.0000	
32	1386892	0.55G/100	1.0000	1.0000	
33	1386893	0.51G/100	1.0000	1.0000	
34	1386894	0.57G/100	1.0000	1.0000	
35	1386895	0.23G/100	1.0000	1.0000	
36	1386896	0.54G/100	1.0000	1.0000	
37	1386897	0.55G/100	1.0000	1.0000	
38	1386898	0.52G/100	1.0000	1.0000	
39	1386899	0.50G/100	1.0000	1.0000	
40	1386900	0.51G/100	1.0000	1.0000	
41	1386900 D	0.52G/100	1.0000	1.0000	
42	1386900 MS	0.54G/100	1.0000	1.0000	
43	1386900MSD	0.53G/100	1.0000	1.0000	
44	1386901	0.28G/100	1.0000	1.0000	

PgDn

```
Cup 31 extended ID: 12/17 2.00 UG/L          Cell entry down Ins to switch
```

```
RunProt: ENVIRON      Err: Analyzer needs maintenance
RunFold: 122099HG Seq: 189  Batch:
                  Prnt: R/T On
                  Rev: 4.0     17:01:03 20 Dec 1999 Xmit: Off  Gas:     0.30 LPM
                                                    User:              A/S: On
  Idle
```

```
AUTOSAMPLER:  Rack entry    Rack RACK#2   Range  1-44 Clear seQ Undo eXit
cup ID          Extended id              Weight Volume Macro
 1 1386902      0.56G/100                1.0000 1.0000
 2 1386903      0.52G/100                1.0000 1.0000
 3 1387125      1.03G/100                1.0000 1.0000
 4 1386401      0.63G/100                1.0000 1.0000
 5 1386402      0.56G/100                1.0000 1.0000
 6 1386403      0.50G/100                1.0000 1.0000
 7 1386355      0.53G/100                1.0000 1.0000
 8 1386356      0.56G/100                1.0000 1.0000
 9 1386357      0.46G/100                1.0000 1.0000
10 1386357 D    0.47G/100                1.0000 1.0000
11 1386357 MS   0.50G/100 2.00 UG/L      1.0000 1.0000
12 1386357MSD   0.47G/100 2.00 UG/L      1.0000 1.0000
13 NIST 1633B   0.62G/100                1.0000 1.0000
14 1387125      1:5 1.03G/100            1.0000 1.0000
15 1387125      SER DIL1:25 1.03/100 1.0000 1.0000
                                                                    PgDn
```

```
                                                  Full column entry Ins to switch
Press <Tab> key to clear messages at top
```

```
RunProt: ENVIRON      Err: Analyzer needs maintenance
RunFold: 122099HG Seq: 189  Batch:
                  Prnt: R/T On
                  Rev: 4.0     17:01:04 20 Dec 1999 Xmit: Off  Gas:     0.30 LPM
                                                    User:               A/S: On
  Idle
```

```
 AUTOSAMPLER:  Rack entry   Rack RACK#2   Range  1-44 Clear seQ Undo eXit    PgUp
cup ID         Extended id          Weight Volume Macro
16 1386900     PS 0.51G/100 2.00 UG1.0000 1.0000
17                                  1.0000 1.0000
18                                  1.0000 1.0000
19                                  1.0000 1.0000
20                                  1.0000 1.0000
21                                  1.0000 1.0000
22                                  1.0000 1.0000
23                                  1.0000 1.0000
24                                  1.0000 1.0000
25                                  1.0000 1.0000
26                                  1.0000 1.0000
27                                  1.0000 1.0000
28                                  1.0000 1.0000
29                                  1.0000 1.0000
30                                  1.0000 1.0000
                                                                          PgDn
```

```
                                                  Full column entry Ins to switch
```

RunProt: ENVIRON
RunFold: 122099HG Seq: 0 Batch:
Prnt: R/T On
Rev: 4.0 08:44:28 20 Dec 1999 Xmit: Off Gas: LPM
Idle User: A/S: On

INSTRUMENT: Scheduled Maintenance

		Uses left	Last service	Next service
replace:	Pump tubing	409	14-Dec-99	24-Dec-99
	Waste drain tubing	902	12-Nov-99	27-Oct-00
	Liquid/gas separator	113	07-Sep-99	11-Oct-00
	pump head	10000	N/A	N/A
	Hg lamp	N/A	30-Aug-99	27-Jan-00
	Reductant bottle	400	20-Dec-99	17-Jun-00
	process tubing	113	N/A	N/A
Clean optical cell		600	N/A	N/A

* - needs maintenance

```
RunProt: ENVIRON
RunFold: 122099HG Seq: 15   Batch:
                  Prnt: R/T On
                  Rev: 4.0    10:16:56 20 Dec 1999 Xmit: Off  Gas:     0.30 LPM
                                                   User:              A/S: On
  Idle
```

```
UTILITY: Diagnostics  Tip X      0 1   99
Aper test             Tip Y      0 1    3
Test optic            Tip Z     95 1    2
Tip home              Gas       -3
Out port
In port
Run pcode
Cal A/S
```

aperture 8

acceptable Range = -100 to

```
Sensors on solenoid Enter for test Ins for motor More tests
Pcode halt 0      @ 344
```

```
RunProt: ENVIRON
RunFold: 122099HG Seq: 15   Batch:
                  Prnt: R/T On
                  Rev: 4.0    10:17:02 20 Dec 1999 Xmit: Off  Gas:    0.30 LPM
  Idle                                             User:              A/S: On
```

```
UTILITY:  Diagnostics  Tip X      0 1   99
Aper test              Tip Y      0 1    3
Test optic             Tip Z     95 1    2
Tip home               Gas       -3
Out port                                          Smpl. intensity    1167038 } <10%
In port                                           Ref. intensity     1172439 } diff
Run pcode
Cal A/S
```

```
Sensors on soLenoid Enter for test Ins for motor More tests
Pcode halt 0      @ 142
```

10:22:07 20 Dec 1999 Folder: 122099HG
Protocol: ENVIRON

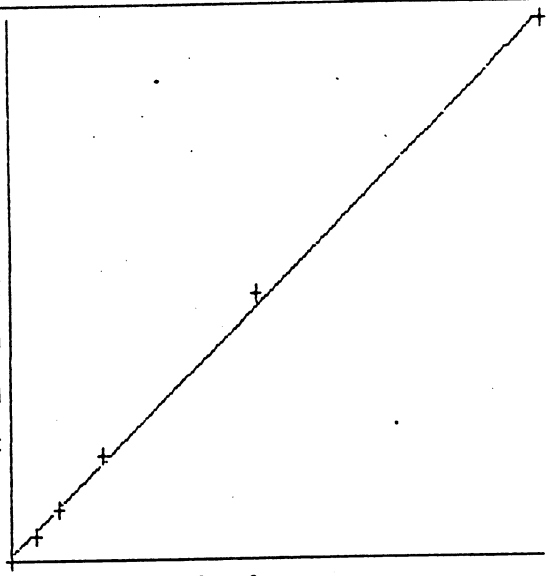
Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Standard: 1 Rep: 1				Seq:	15	10:22:07 20 Dec 1999 HG		
Hg	.000	ug/l	550					
*** Standard: 1 Rep: 2				Seq:	16	10:23:59 20 Dec 1999 HG		
Hg	.000	ug/l	513					
*** Standard: 2 Rep: 1				Seq:	17	10:25:48 20 Dec 1999 HG		
Hg	.500	ug/l	26420					
*** Standard: 2 Rep: 2				Seq:	18	10:27:49 20 Dec 1999 HG		
Hg	.500	ug/l	25960					
*** Standard: 3 Rep: 1				Seq:	19	10:29:50 20 Dec 1999 HG		
Hg	1.00	ug/l	50286					
*** Standard: 3 Rep: 2				Seq:	20	10:32:01 20 Dec 1999 HG		
Hg	1.00	ug/l	51017					
*** Standard: 4 Rep: 1				Seq:	21	10:34:12 20 Dec 1999 HG		
Hg	2.00	ug/l	97018					
*** Standard: 4 Rep: 2				Seq:	22	10:36:26 20 Dec 1999 HG		
Hg	2.00	ug/l	96278					
*** Standard: 5 Rep: 1				Seq:	23	10:38:40 20 Dec 1999 HG		
Hg	5.00	ug/l	257518					
*** Standard: 5 Rep: 2				Seq:	24	10:41:02 20 Dec 1999 HG		
Hg	5.00	ug/l	256266					
*** Standard: 6 Rep: 1				Seq:	25	10:43:21 20 Dec 1999 HG		
Hg	10.0	ug/l	552027					
*** Standard: 6 Rep: 2				Seq:	26	10:45:47 20 Dec 1999 HG		
Hg	10.0	ug/l	556944					

RunProt: ENVIRON
RunFold: 122899HG Seq: 27 Batch:
Prnt: R/T On
Rev: 4.0 10:46:14 20 Dec 1999 Xmit: Off Gas: 0.30 LPM
Idle User: A/S: On

CALIBRATION: Line proto: ENVIRON

	Hg Conc.	Calc.	Dev.	Accepted ->linear
S1	.000	.128	.128	Quadratic
S2	.500	.591	.091	Wtdlinear
S3	1.00	1.03	.033	
S4	2.00	1.86	-.137	Accept
S5	5.00	4.76	-.244	
S6	10.0	10.1	.129	

A .0000000 r .999177
B 1.80551e-5 C 1.18098e-1



	Mean	%RSD		
S1	531	4.92	550	513
S2	26198	1.24	26420	25968
S3	50651	1.02	50286	51017
S4	96648	0.54	97018	96278
S5	256892	0.34	257518	256266
S6	554485	0.63	552027	556944

New cal coefficients stored

10:48:13 20 Dec 1999 Folder: 122099HG
Protocol: ENVIRON

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Check Standard: 4 Ck4IPC/CCV Seq: 27 10:48:13 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		94.9	4.75	5.00	ug/l	.000

12/20/99 gp

*** Check Standard: 4 Ck4IPC/CCV Seq: 28 10:50:55 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		91.8	4.59	5.00	ug/l	.000

*** Check Standard: 4 Ck4IPC/CCV Seq: 29 10:53:21 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		95.6	4.78	5.00	ug/l	.000

$\bar{x}$ = 0.00479 mg/L 95%R

*** Check Standard: 3 Ck3IPC/CCV Seq: 30 10:55:41 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		95.9	4.80	5.00	ug/l	.000

*** Check Standard: 2 Ck2ICB/CCB Seq: 31 10:58:01 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		113000	.113	.000	ug/l	.000

$\bar{x}$ = <0.0002 mg/L

*** Check Standard: 1 Ck1ICB/CCB Seq: 32 10:59:49 20 Dec 1999 HG

Line	Flag	Found	Range(+/-)	Units	SD/RSD
Hg		.128	.200	ug/l	.000

*** Sample ID: ICV/QCS Seq: 33 11:01:33 20 Dec 1999 HG

5.00 UG/L 12/17

Hg	5.42	ug/l	.000	5.42	

$\bar{x}$ = 0.00541 mg/L 108%R

*** Sample ID: ICV/QCS Seq: 34 11:03:52 20 Dec 1999 HG

5.00 UG/L 12/17

Hg	5.40	ug/l	.000	5.40	

*** Sample ID: 0.20 UG/L Seq: 35 11:06:06 20 Dec 1999 HG

LOW REPORT LIMIT

Hg	.275	ug/l	.000	.275	

Acceptable range = 40 - 160%

$\bar{x}$ = 0.00028 mg/L 140%R

*** Sample ID: 0.20 UG/L Seq: 36 11:07:56 20 Dec 1999 HG

LOW REPORT LIMIT

Hg	.292	ug/l	.000	.292	

*** Sample ID: 0.20 UG/L Seq: 37 11:10:01 20 Dec 1999 HG

LOW REPORT LIMIT

Hg	.310	ug/l	.000	.310	

$\bar{x}$ = 0.00029 mg/L 145%R

*** Sample ID: 0.20 UG/L Seq: 38 11:11:55 20 Dec 1999 HG

LOW REPORT LIMIT

Hg	.285	ug/l	.000	.285	

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: LRE#1-DW					Seq: 39	11:13:50 20 Dec 1999 HG		
			12/17 245.1					
Hg	.122	ug/l	.000	.122		$\bar{x}$ = <0.0002mg/L		
*** Sample ID: LRB#1-DW					Seq: 40.	11:15:34 20 Dec 1999 HG		
			12/17 245.1					
Hg	.128	ug/l	.000	.128				
*** Sample ID: LFB#1-DW					Seq: 41	11:17:18 20 Dec 1999 HG		
			2.00 UG/L 12/17					
Hg	2.01	ug/l	.000	2.01		$\bar{x}$ = 0.00200mg/L	100 %R	
*** Sample ID: LFB#1-DW					Seq: 42	11:19:24 20 Dec 1999 HG		
			2.00 UG/L 12/17					
Hg	2.00	ug/l	.000	2.00				
*** Sample ID: 1385803					Seq: 43	11:21:32 20 Dec 1999 HG		
Hg	2.95	ug/l	.000	2.95		$\bar{x}$ = 2.94 ug/L		
*** Sample ID: 1385803					Seq: 44	11:23:39 20 Dec 1999 HG		
Hg	2.94	ug/l	.000	2.94				
*** Sample ID: 1385803					Seq: 45	11:25:46 20 Dec 1999 HG		
			50/100					
Hg	1.53	ug/l	.000	1.53		$\bar{x}$ = 1.54 x 100/50 = 3.08 ug/L		
*** Sample ID: 1385803					Seq: 46	11:27:53 20 Dec 1999 HG		
			50/100					
Hg	1.54	ug/l	.000	1.54				
*** Sample ID: 1385845					Seq: 47	11:29:55 20 Dec 1999 HG		
Hg	3.71	ug/l	.000	3.71		$\bar{x}$ = 3.73 ug/L		
*** Sample ID: 1385845					Seq: 48	11:32:11 20 Dec 1999 HG		
Hg	3.75	ug/l	.000	3.75				
*** Sample ID: 1385845					Seq: 49	11:34:29 20 Dec 1999 HG		
			50/100					
Hg	1.92	ug/l	.000	1.92		$\bar{x}$ = 1.93 ug/L x 100/50 = 3.86 ug		
*** Sample ID: 1385845					Seq: 50	11:36:35 20 Dec 1999 HG		
			50/100					
Hg	1.93	ug/l	.000	1.93				

Folder: 122099HG
11:38:51 20 Dec 1999 Protocol: ENVIRON

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: 1385509					Seq: 51	11:38:51 20 Dec 1999 HG		
Hg	.117	ug/l	.000	.117				
*** Sample ID: 1385509					Seq: 52	11:40:36 20 Dec 1999 HG		
Hg	.112	ug/l	.000	.112				
*** Sample ID: 1385509 D					Seq: 53	11:42:20 20 Dec 1999 HG		
Hg	.125	ug/l	.000	.125				
*** Sample ID: 1385509 D					Seq: 54	11:44:05 20 Dec 1999 HG		
Hg	.122	ug/l	.000	.122				
*** Sample ID: 1385509 MS					Seq: 55	11:45:51 20 Dec 1999 HG		
				2.00 UG/L				
Hg	2.14	ug/l	.000	2.14				
*** Sample ID: 1385509 MS					Seq: 56	11:47:38 20 Dec 1999 HG		
				2.00 UG/L				
Hg	2.12	ug/l	.000	2.12				
*** Sample ID: 1385509MSD					Seq: 57	11:50:14 20 Dec 1999 HG		
				2.00 UG/L				
Hg	2.14	ug/l	.000	2.14				
*** Sample ID: 1385509MSD					Seq: 58	11:52:23 20 Dec 1999 HG		
				2.00 UG/L				
Hg	2.15	ug/l	.000	2.15				
*** Sample ID: LRE#2-WW					Seq: 59	11:54:33 20 Dec 1999 HG		
				245.1 12/17				
Hg	.110	ug/l	.000	.110				
*** Sample ID: LRE#2-WW					Seq: 60	11:56:16 20 Dec 1999 HG		
				245.1 12/17				
Hg	.123	ug/l	.000	.123				

*** Check Standard: 4 Ck4IPC/CCV				Seq: 61	12:13:01 20 Dec 1999 HG
Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		95.1	4.75	5.00	ug/l	.000

*** Check Standard: 3 Ck3IPC/CCV				Seq: 62	12:15:19 20 Dec 1999 HG
Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		94.7	4.74	5.00	ug/l	.000

Folder: 122099HG
Protocol: ENVIRON

12:17:32 20 Dec 1999

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Check Standard: 2 Ck2ICB/CCB Seq: 63 12:17:32 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		120000	.120	.000	ug/l	.000

$\bar{x}$ = <0.0002mg/L

*** Check Standard: 1 Ck1ICB/CCB Seq: 64 12:19:18 20 Dec 1999 HG

Line	Flag	Found	Range(+/-)	Units	SD/RSD
Hg		.117	.200	ug/l	.000

*** Sample ID: LFE#2-WW Seq: 65 12:21:04 20 Dec 1999 HG

2.00 UG/L 12/17

Hg 2.01 ug/l .000 2.01

$\bar{x}$ = 0.00201mg/L (101%)

*** Sample ID: LFE#2-WW Seq: 66 12:23:14 20 Dec 1999 HG

2.00 UG/L 12/17

Hg 2.01 ug/l .000 2.01

*** Sample ID: 1386797 Seq: 67 12:25:22 20 Dec 1999 HG

Hg .355 ug/l .000 .355

$\bar{x}$ = 0.00036mg/L

*** Sample ID: 1386797 Seq: 68 12:27:20 20 Dec 1999 HG

Hg .355 ug/l .000 .355

*** Sample ID: 1386954 Seq: 69 12:29:17 20 Dec 1999 HG

Hg .116 ug/l .000 .116

$\bar{x}$ = <0.0002mg/L

*** Sample ID: 1386954 Seq: 70 12:31:01 20 Dec 1999 HG

Hg .139 ug/l .000 .139

*** Sample ID: 1387009 Seq: 71 12:32:45 20 Dec 1999 HG

Hg .167 ug/l .000 .167

$\bar{x}$ = <0.0002mg/L

*** Sample ID: 1387009 Seq: 72 12:34:33 20 Dec 1999 HG

Hg .163 ug/l .000 .163

*** Sample ID: 1387010 Seq: 73 12:36:22 20 Dec 1999 HG

Hg .164 ug/l .000 .164

$\bar{x}$ = <0.0002mg/L

*** Sample ID: 1387010 Seq: 74 12:38:07 20 Dec 1999 HG

Hg .158 ug/l .000 .158

Folder: 122099HG
Protocol: ENVIRON

12:39:51 20 Dec 1999

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: 1387011				Seq: 75	12:39:51 20 Dec 1999 HG			
Hg	.117	ug/l	.000	.117				
*** Sample ID: 1387011				Seq: 76	12:41:36 20 Dec 1999 HG			
Hg	.123	ug/l	.000	.123				
*** Sample ID: 1387011 D				Seq: 77	12:43:21 20 Dec 1999 HG			
Hg	.123	ug/l	.000	.123				
*** Sample ID: 1387011 D				Seq: 78	12:45:07 20 Dec 1999 HG			
Hg	.122	ug/l	.000	.122				
*** Sample ID: 1387011 MS				Seq: 79	12:46:52 20 Dec 1999 HG			
				2.00 UG/L				
Hg	2.00	ug/l	.000	2.00				
*** Sample ID: 1387011 MS				Seq: 80	12:48:58 20 Dec 1999 HG			
				2.00 UG/L				
Hg	1.96	ug/l	.000	1.96				
*** Sample ID: 1387011MSD				Seq: 81	12:51:06 20 Dec 1999 HG			
				2.00 UG/L				
Hg	1.96	ug/l	.000	1.96				
*** Sample ID: 1387011MSD				Seq: 82	12:53:13 20 Dec 1999 HG			
				2.00 UG/L				
Hg	1.97	ug/l	.000	1.97				
*** Sample ID: LRB#3-TCLP				Seq: 83	12:55:22 20 Dec 1999 HG			
				7470 12/17				
Hg	.113	ug/l	.000	.113				
*** Sample ID: LRB#3-TCLP				Seq: 84	12:57:07 20 Dec 1999 HG			
				7470 12/17				
Hg	.121	ug/l	.000	.121				

*** Check Standard: 4 Ck4IPC/CCV				Seq: 85	12:58:51 20 Dec 1999 HG
Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		93.0	4.65	5.00	ug/l	.000

*** Check Standard: 3 Ck3IPC/CCV				Seq: 86	13:01:09 20 Dec 1999 HG
Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		93.9	4.69	5.00	ug/l	.000

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Check Standard: 2 Ck2ICB/CCB Seq: 87 13:03:30 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		117000	.117	.0000	ug/l	.0000

$\bar{x}$ = <0.0002mg/L

*** Check Standard: 1 Ck1ICB/CCB Seq: 88 13:05:16 20 Dec 1999 HG

Line	Flag	Found	Range(+/-)	Units	SD/RSD
Hg		.123	.200	ug/l	.0000

*** Sample ID: LFE#3-TCLP Seq: 89 13:07:01 20 Dec 1999 HG

7470 2.00 UG/L

Hg	1.68	ug/l	.0000	1.68	

See analysis, pg. # 684 JH 12/22/99

*** Sample ID: LFE#3-TCLP Seq: 90 13:09:08 20 Dec 1999 HG

12/20/99 7470 2.00 UG/L

Hg	1.68	ug/l	.0000	1.68	

*** Sample ID: 1386623 Seq: 91 13:11:14 20 Dec 1999 HG

TCLP 20/100

Hg	.118	ug/l	.0000	.118	

$\bar{x}$ = <0.0002mg/L × $\frac{100}{20}$ = <0.001 mg

*** Sample ID: 1386623 Seq: 92 13:13:00 20 Dec 1999 HG

TCLP 20/100

Hg	.124	ug/l	.0000	.124	

*** Sample ID: 1386636 Seq: 93 13:14:45 20 Dec 1999 HG

TCLP 20/100

Hg	.126	ug/l	.0000	.126	

$\bar{x}$ = <0.0002mg/L × $\frac{100}{20}$ = <0.001m

*** Sample ID: 1386636 Seq: 94 13:16:30 20 Dec 1999 HG

TCLP 20/100

Hg	.125	ug/l	.0000	.125	

*** Sample ID: 1386636 Dup Seq: 95 13:18:16 20 Dec 1999 HG

TCLP 20/100

Hg	.129	ug/l	.0000	.129	

$\bar{x}$ = <0.0002mg/L × $\frac{100}{20}$ = <0.001mg/L

*** Sample ID: 1386636 Dup Seq: 96 13:20:01 20 Dec 1999 HG

TCLP 20/100

Hg	.129	ug/l	.0000	.129	

*** Sample ID: 1386636 MS Seq: 97 13:21:47 20 Dec 1999 HG

TCLP 2UG/L 20/100

Hg	2.17	ug/l	.0000	2.17	

MS T.V. = 0.00200mg/L × $\frac{100}{20}$ = 0.010

$\bar{x}$ = 0.00217mg/L × $\frac{100}{20}$ = 0.0109mg/L

109%

*** Sample ID: 1386636 MS Seq: 98 13:23:55 20 Dec 1999 HG

TCLP 2UG/L 20/100

Hg	2.17	ug/l	.0000	2.17	

13:26:04 20 Dec 1999 Folder: 122099HG
Protocol: ENVIRON

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Sample ID: 1386636MSD Seq: 99 13:26:04 20 Dec 1999 HG
TCLP 2 UG/L 20/100
Hg 2.13 ug/l .000 2.13
$\bar{x}$ = 0.00213 mg/l × 100/20 = 0.0107 mg/l (107% R)

*** Sample ID: 1386636MSD Seq: 100 13:28:14 20 Dec 1999 HG
TCLP 2 UG/L 20/100
Hg 2.13 ug/l .000 2.13

*** Sample ID: LRB#4 Seq: 101 13:30:26 20 Dec 1999 HG
SOLID 7471 12/17
Hg .138 ug/l .000 .138
$\bar{x}$ = <0.0002 mg/l

*** Sample ID: LRB#4 Seq: 102 13:32:12 20 Dec 1999 HG
SOLID 7471 12/17
Hg .139 ug/l .000 .139

*** Sample ID: LFB#4 Seq: 103 13:33:57 20 Dec 1999 HG
12/17 2.00 UG/L
Hg 1.91 ug/l .000 1.91
$\bar{x}$ = 0.00191 mg/l (96% R)

*** Sample ID: LFB#4 Seq: 104 13:36:06 20 Dec 1999 HG
12/17 2.00 UG/L
Hg 1.91 ug/l .000 1.91

*** Sample ID: 1386892 Seq: 105 13:38:13 20 Dec 1999 HG D.L = 0.0
0.55G/100
Hg 5.50 ug/l .000 5.50
$\bar{x}$ = 0.00546 mg/l × 100/0.55 = 0.993 mg/kg

*** Sample ID: 1386892 Seq: 106 13:40:29 20 Dec 1999 HG
0.55G/100
Hg 5.43 ug/l .000 5.43

*** Sample ID: 1386893 Seq: 107 13:42:46 20 Dec 1999 HG
0.51G/100
Hg .396 ug/l .000 .396
$\bar{x}$ = 0.000399 mg/l × 100/0.51 = 0.078 mg

*** Sample ID: 1386893 Seq: 108 13:44:42 20 Dec 1999 HG
0.51G/100
Hg .405 ug/l .000 .405

*** Check Standard: 4 Ck4IPC/CCV Seq: 109 13:46:40 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		92.7	4.63	5.00	ug/l	.000

$\bar{x}$ = 0.00463 mg/l (92% R)

*** Check Standard: 3 Ck3IPC/CCV Seq: 110 13:48:57 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		92.5	4.62	5.00	ug/l	.000

13:51:14 20 Dec 1999 Folder: 122099HG
Protocol: ENVIRON

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Check Standard: 2 Ck2ICB/CCB Seq: 111 13:51:14 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		114000	.114	.000	ug/l	.000

$\bar{x}$ = (<0.0002 mg/L)

*** Check Standard: 1 Ck1ICB/CCB Seq: 112. 13:53:01 20 Dec 1999 HG

Line	Flag	Found	Range(+/-)	Units	SD/RSD
Hg		.128	.200	ug/l	.000

*** Sample ID: 1386894 Seq: 113 13:54:47 20 Dec 1999 HG D.L.=0.036

0.57G/100

Hg .226 ug/l .000 .226

$\bar{x}$ = 0.00022 mg/L × 100/0.57 = 0.039 mg/

*** Sample ID: 1386894 Seq: 114 13:56:35 20 Dec 1999 HG

0.57G/100

Hg .222 ug/l .000 .222

*** Sample ID: 1386895 Seq: 115 13:58:25 20 Dec 1999 HG D.L.=0.0

0.23G/100

Hg .508 ug/l .000 .508

$\bar{x}$ = 0.00050 mg/L × 100/0.23 = 0.21 m

*** Sample ID: 1386895 Seq: 116 14:00:24 20 Dec 1999 HG

0.23G/100

Hg .499 ug/l .000 .499

*** Sample ID: 1386896 Seq: 117 14:02:21 20 Dec 1999 HG

0.54G/100

Hg .479 ug/l .000 .479

$\bar{x}$ = 0.00048 mg/L × 100/0.54 = 0.089 m

*** Sample ID: 1386896 Seq: 118 14:04:17 20 Dec 1999 HG

0.54G/100

Hg .475 ug/l .000 .475

*** Sample ID: 1386897 Seq: 119 14:06:14 20 Dec 1999 HG

0.55G/100

Hg .285 ug/l .000 .285

$\bar{x}$ = 0.00028 mg/L × 100/0.55 = 0.051 m

*** Sample ID: 1386897 Seq: 120 14:08:05 20 Dec 1999 HG

0.55G/100

Hg .284 ug/l .000 .284

*** Sample ID: 1386898 Seq: 121 14:09:56 20 Dec 1999 HG

0.52G/100

Hg 1.66 ug/l .000 1.66

$\bar{x}$ = 0.00165 mg/L × 100/0.52 = 0.317 m

*** Sample ID: 1386898 Seq: 122 14:12:03 20 Dec 1999 HG

0.52G/100

Hg 1.64 ug/l .000 1.64

Folder: 122099HG
Protocol: ENVIRON

14:14:14 20 Dec 1999

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Sample ID: 1386899 Seq: 123 14:14:14 20 Dec 1999 HG

0.50G/100

Hg 1.60 ug/l .000 1.60

$\bar{x} = 0.00160 mg/L \times \frac{100}{0.50} = 0.320 mg$

*** Sample ID: 1386899 Seq: 124 14:16:16 20 Dec 1999 HG

0.50G/100

Hg 1.60 ug/l .000 1.60

Sample not homogenous

*** Sample ID: 1386900 Seq: 125 14:18:27 20 Dec 1999 HG

0.51G/100

Hg 3.77 ug/l .000 3.77

$\bar{x} = 0.00379 mg/L \times \frac{100}{0.51} = 0.743$

*** Sample ID: 1386900 Seq: 126 14:20:45 20 Dec 1999 HG

0.51G/100

Hg 3.81 ug/l .000 3.81

*** Sample ID: 1386900 D lp Seq: 127 14:23:03 20 Dec 1999 HG

0.52G/100

Hg 3.04 ug/l .000 3.04

$\bar{x} = 0.00305 mg/L \times \frac{100}{0.52} = 0.586 mg$

24 %RPD

*** Sample ID: 1386900 D lp Seq: 128 14:25:13 20 Dec 1999 HG

0.52G/100

Hg 3.06 ug/l .000 3.06

Sample homogenous

*** Sample ID: 1386900 MS matrix spk Seq: 129 14:27:24 20 Dec 1999 HG

0.54G/100

Hg 9.12 ug/l .000 9.12

MS T.V. = $0.00200 mg/L \times \frac{100}{0.54} = 0.370 mg$

$\bar{x} = 0.0091 mg/L \times \frac{100}{0.54} = 1.69 mg/kg$ (25%)

*** Sample ID: 1386900 MS Seq: 130 14:29:43 20 Dec 1999 HG

0.54G/100

Hg 9.07 ug/l .000 9.07

See pg # 684.

*** Sample ID: 1386900MSD matrix spk dup Seq: 131 14:32:03 20 Dec 1999 HG

0.53G/100

Hg 6.28 ug/l .000 6.28

MSD T.V. = $0.00200 mg/L \times \frac{100}{0.53} = 0.377 mg/kg$

$\bar{x} = 0.00630 mg/L \times \frac{100}{0.53} = 1.19 mg/kg$

*** Sample ID: 1386900MSD Seq: 132 14:34:24 20 Dec 1999 HG

0.53G/100

Hg 6.31 ug/l .000 6.31

118 %R

*** Check Standard: 4 Ck4IPC/CCV Seq: 133 14:36:41 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		92.6	4.63	5.00	ug/l	.000

$\bar{x} = 0.00464 mg/L$ (93%R)

*** Check Standard: 3 Ck3IPC/CCV Seq: 134 14:38:58 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		93.0	4.65	5.00	ug/l	.000

Folder: 122099HG
Protocol: ENVIRON

14:41:15 20 Dec 1999

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Check Standard: 2 Ck2ICB/CCB Seq: 135 14:41:15 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		113000	.113	.000	ug/l	.000

$\bar{x}$ = (<0.0002mg/L)

*** Check Standard: 1 Ck1ICB/CCB Seq: 136 14:43:02 20 Dec 1999 HG

Line	Flag	Found	Range(+/-)	Units	SD/RSD
Hg		.121	.200	ug/l	.000

*** Sample ID: 1386901 Seq: 137 14:44:49 20 Dec 1999 HG D.L. = 0.0

0.28G/100

Hg 2.30 ug/l .000 2.30

$\bar{x}$ = 0.00228mg/L × 100/0.28 = 0.814

*** Sample ID: 1386901 Seq: 138 14:46:58 20 Dec 1999 HG

0.28G/100

Hg 2.25 ug/l .000 2.25

*** Sample ID: 1386902 Seq: 139 14:49:09 20 Dec 1999 HG

0.56G/100

Hg 2.03 ug/l .000 2.03

$\bar{x}$ = 0.00203mg/L × 100/0.56 = 0.363

*** Sample ID: 1386902 Seq: 140 14:51:26 20 Dec 1999 HG

0.56G/100

Hg 2.03 ug/l .000 2.03

*** Sample ID: 1386903 Seq: 141 14:53:41 20 Dec 1999 HG

0.52G/100

Hg .862 ug/l .000 .862

$\bar{x}$ = 0.000858mg/L × 100/0.52 = 0.165

*** Sample ID: 1386903 Seq: 142 14:55:46 20 Dec 1999 HG

0.52G/100

Hg .853 ug/l .000 .853

*** Sample ID: 1387125 Seq: 143 14:57:48 20 Dec 1999 HG

1.03G/100

Hg 41.1 ug/l .000 41.1

12/22/99 GR

*** Sample ID: 1387125 Seq: 144 15:00:26 20 Dec 1999 HG

see dilution on pg. 684

1.03G/100

Hg 41.0 ug/l .000 41.0

*** Sample ID: 1386401 Seq: 145 15:03:14 20 Dec 1999 HG

0.63G/100

Hg .739 ug/l .000 .739

$\bar{x}$ = 0.00076mg/L × 100/0.63 = 0.121

*** Sample ID: 1386401 Seq: 146 15:05:16 20 Dec 1999 HG

0.63G/100

Hg .785 ug/l .000 .785

Line	Conc.	Units	SD/RSD	1	2	3	4	5
*** Sample ID: 1386402				Seq: 147	15:07:24 20 Dec 1999 HG			
				0.56G/100				
Hg	.915	ug/l	.000	.915				
$\bar{x} = 0.00092 mg/l \times \frac{100}{0.56} = 0.164$								
*** Sample ID: 1386402				Seq: 148	15:09:33 20 Dec 1999 HG			
				0.56G/100				
Hg	.922	ug/l	.000	.922				
*** Sample ID: 1386403				Seq: 149	15:11:37 20 Dec 1999 HG			
				0.50G/100				
Hg	.929	ug/l	.000	.929				
$\bar{x} = 0.00093 mg/l \times \frac{100}{0.50} = 0.186 mg$								
*** Sample ID: 1386403				Seq: 150	15:13:47 20 Dec 1999 HG			
				0.50G/100				
Hg	.945	ug/l	.000	.945				
*** Sample ID: 1386355				Seq: 151	15:15:49 20 Dec 1999 HG			
				0.53G/100				
Hg	.854	ug/l	.000	.854				
$\bar{x} = 0.00085 mg/l \times \frac{100}{0.53} = 0.160$								
*** Sample ID: 1386355				Seq: 152	15:17:51 20 Dec 1999 HG			
				0.53G/100				
Hg	.844	ug/l	.000	.844				
*** Sample ID: 1386356				Seq: 153	15:19:55 20 Dec 1999 HG			
				0.56G/100				
Hg	.573	ug/l	.000	.573				
$\bar{x} = 0.00057 mg/l \times \frac{100}{0.56} = 0.102 m$								
*** Sample ID: 1386356				Seq: 154	15:21:56 20 Dec 1999 HG			
				0.56G/100				
Hg	.573	ug/l	.000	.573				
*** Sample ID: 1386357				Seq: 155	15:23:55 20 Dec 1999 HG			
				0.46G/100				
Hg	.528	ug/l	.000	.528				
$\bar{x} = 0.00052 mg/l \times \frac{100}{0.46} = 0.113 mg$								
*** Sample ID: 1386357				Seq: 156	15:25:54 20 Dec 1999 HG			
				0.46G/100				
Hg	.515	ug/l	.000	.515				

*** Check Standard: 4 Ck4IPC/CCV Seq: 157 15:27:56 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		93.1	4.66	5.00	ug/l	.000

93%R

$\bar{x} = 0.00466 mg/l$

*** Check Standard: 3 Ck3IPC/CCV Seq: 158 15:30:14 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		92.9	4.65	5.00	ug/l	.000

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Check Standard: 2 Ck2ICB/CCB Seq: 159 15:32:30 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		123000	.123	.000	ug/l	.000

$\bar{x}$ = <0.0002mg/Le

*** Check Standard: 1 Ck1ICB/CCB Seq: 160 15:34:17 20 Dec 1999 HG

Line	Flag	Found	Range(+/-)	Units	SD/RSD
Hg		.124	.200	ug/l	.000

*** Sample ID: 1386357 Dup Seq: 161 15:36:04 20 Dec 1999 HG

0.47G/100

Hg	.514	ug/l	.000	.514	

$\bar{x}$ = 0.00051mg/Le × 100/0.47 = 0.109mg/kg

*** Sample ID: 1386357 D Seq: 162 15:38:07 20 Dec 1999 HG

0.47G/100

Hg	.515	ug/l	.000	.515	

*** Sample ID: 1386357 MS Matrix Spk Seq: 163 15:40:04 20 Dec 1999 HG

0.50G/100 2.00 UG/L

Hg	2.30	ug/l	.000	2.30	

Matrix Spk Dup T.V. = 0.0020mg/Le × 100/0.50

$\bar{x}$ = 0.00229mg/Le × 100/0.50 = 0.458mg/kg

*** Sample ID: 1386357 MS Seq: 164 15:42:15 20 Dec 1999 HG

0.50G/100 2.00 UG/L

Hg	2.28	ug/l	.000	2.28	

86%

*** Sample ID: 1386357MSD Matrix Spk Dup Seq: 165 15:44:25 20 Dec 1999 HG

0.47G/100 2.00 UG/L

Hg	2.24	ug/l	.000	2.24	

Matrix spk Dup T.V. = 0.0020mg/Le × 100/0.47 = 0.

$\bar{x}$ = 0.00222mg/Le × 100/0.47 = 0.472mg/kg

84%

*** Sample ID: 1386357MSD Seq: 166 15:46:40 20 Dec 1999 HG

0.47G/100 2.00 UG/L

Hg	2.21	ug/l	.000	2.21	

2%

*** Sample ID: NIST 1633B Seq: 167 15:48:52 20 Dec 1999 HG

0.62G/100

Hg	2.27	ug/l	.000	2.27	

12/20/99 gb

*** Sample ID: NIST 1633B Seq: 168 15:51:02 20 Dec 1999 HG

0.62G/100

Hg	2.28	ug/l	.000	2.28	

*** Check Standard: 4 Ck4IPC/CCV Seq: 169 15:53:07 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		92.9	4.65	5.00	ug/l	.000

93%R

$\bar{x}$ = 0.00466mg/Le

*** Check Standard: 3 Ck3IPC/CCV Seq: 170 15:55:19 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		93.2	4.66	5.00	ug/l	.000

Folder: 122099HG
Protocol: ENVIRON

15:57:36 20 Dec 1999

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Check Standard: 2 Ck2ICB/CCB Seq: 171 15:57:36 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		118000	.118	.000	ug/l	.000

$\bar{x}$ = <0.0002 mg/l

*** Check Standard: 1 Ck1ICB/CCB Seq: 172 15:59:25 20 Dec 1999 HG

Line	Flag	Found	Range(+/-)	Units	SD/RSD
Hg		.125	.200	ug/l	.000

*** Sample ID: LFB#3-TCLP Repoured into cup. Seq: 173 16:15:47 20 Dec 1999 HG
7470 2.00 UG/L

Hg	1.81	ug/l	.000	1.81

$\bar{x}$ = 0.00182 mg/l 91% R

*** Sample ID: LFB#3-TCLP Seq: 174 16:17:54 20 Dec 1999 HG
7470 2.00 UG/L

Hg	1.82	ug/l	.000	1.82

*** Sample ID: 1386900 MS Refiltered Seq: 175 16:20:01 20 Dec 1999 HG
0.54G/100

Hg	8.74	ug/l	.000	8.74

MS T.V. = 0.00200 mg/l × 100/0.54 = 0.370 mg/l

$\bar{x}$ = 0.00872 mg/l × 100/0.54 = 1.61 mg/kg 236%

*** Sample ID: 1386900 MS Seq: 176 16:22:20 20 Dec 1999 HG
0.54G/100

Hg	8.70	ug/l	.000	8.70

*** Sample ID: 1386900 Post Spk Seq: 177 16:29:59 20 Dec 1999 HG
PS 0.51G/100 ~~2.00 UG~~ 12/20/99 JP

Hg	4.80	ug/l	.000	4.80

Post Spk T.V. = 0.0010 mg/l × 100/0.51

$\bar{x}$ = 0.00481 mg/l × 100/0.51 = 0.943 mg/kg 103

post spk 1 ded 2 of 2 ug/l Hg std 10 ml el. volume JP.

*** Sample ID: 1386900 Post Spk Seq: 178 16:32:13 20 Dec 1999 HG
PS 0.51G/100 ~~2.00 UG~~ 12/20/99 JP

Hg	4.83	ug/l	.000	4.83

*** Sample ID: NIST 1633B Seq: 179 16:35:44 20 Dec 1999 HG
0.62G/100

Hg	1.13	ug/l	.000	1.13

T.V. = 0.141 mg/kg

$\bar{x}$ = 0.00112 mg/l × 100/0.62 = 0.181 mg/kg

*** Sample ID: NIST 1633B Seq: 180 16:37:49 20 Dec 1999 HG
0.62G/100

Hg	1.12	ug/l	.000	1.12

*** Sample ID: 1387125 Seq: 181 16:39:54 20 Dec 1999 HG
1:5 1.03G/100

Hg	9.26	ug/l	.000	9.26

D.L. = 0.0

$\bar{x}$ = 0.00930 mg/l × 100/1.03 × 5 = 4.51 m

*** Sample ID: 1387125 Seq: 182 16:42:09 20 Dec 1999 HG
1:5 1.03G/100

Hg	9.33	ug/l	.000	9.33

Folder: 122099HG
Protocol: ENVIRON

16:44:29 20 Dec 1999

Line	Conc.	Units	SD/RSD	1	2	3	4	5

*** Sample ID: 1387125 Seq: 183 16:44:29 20 Dec 1999 HG
SER DIL1:25 1.03/100

Hg	2.01	ug/l	.000	2.01	

$\bar{x} = 0.00201 mg/l \times \frac{100}{1.03} \times 25 = 4.88 mg$

*** Sample ID: 1387125 Seq: 184 16:46:35 20 Dec 1999 HG (8% diff)
SER DIL1:25 1.03/100

Hg	2.01	ug/l	.000	2.01	

*** Check Standard: 4 Ck4IPC/CCV Seq: 185 16:52:54 20 Dec 1999 HG (93.2)

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		92.8	4.64	5.00	ug/l	.000

$\bar{x} = 0.00465 mg/l$

*** Check Standard: 3 Ck3IPC/CCV Seq: 186 16:55:09 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		93.0	4.65	5.00	ug/l	.000

*** Check Standard: 2 Ck2ICB/CCB Seq: 187 16:57:18 20 Dec 1999 HG

Line	Flag	%Rcv.	Found	True	Units	SD/RSD
Hg		115000	.115	.000	ug/l	.000

$\bar{x} = < 0.0002 mg/l$

*** Check Standard: 1 Ck1ICB/CCB Seq: 188 16:59:04 20 Dec 1999 HG

Line	Flag	Found	Range(+/-)	Units	SD/RSD
Hg		.126	.200	ug/l	.000

ONTARIO HYDRO SAMPLES ANALYTICAL REPORT

Lab Tracking Number

188621

Chain-of-Custody Record/Lab Work Request

WESTON

Page____of____

Client	TAMPA ELECTRIC, BIG BEND		
Work Order Number	12281.001.001.0001	Phone Number	610-701-7201
Contact Person	Jeff ONeill	Turn Around Time	Standard

Lab ID	Field Sample ID	Sample Collection Date	Analysis		Filter ID #		Sample Check-off
	TECOBB - UNIT 3 - STK - 1 - OHM - 1NOV1999 - FHHNO3	12/1/99	OHM				
	TECOBB - UNIT 3 - STK - 1 - OHM - 1NOV1999 - FILT		OHM		W278		
	TECOBB - UNIT 3 - STK - 1 - OHM - 1NOV1999 - BHKCL		OHM				
	TECOBB - UNIT 3 - STK - 1 - OHM - 1NOV1999 - BHHNO3		OHM				
	TECOBB - UNIT 3 - STK - 1 - OHM - 1NOV1999 - BHKMNO4		OHM				
	TECOBB - UNIT 3 - STK - 2 - OHM - 1NOV1999 - FHHNO3		OHM				
	TECOBB - UNIT 3 - STK - 2 - OHM - 1NOV1999 - FILT		OHM		W280		
	TECOBB - UNIT 3 - STK - 2 - OHM - 1NOV1999 - BHKCL		OHM				
	TECOBB - UNIT 3 - STK - 2 - OHM - 1NOV1999 - BHHNO3		OHM				
	TECOBB - UNIT 3 - STK - 2 - OHM - 1NOV1999 - BHKMNO4		OHM				
	TECOBB - UNIT 3 - STK - 3 - OHM - 1NOV1999 - FHHNO3	12/2/99	OHM				
	TECOBB - UNIT 3 - STK - 3 - OHM - 1NOV1999 - FILT		OHM		W281		
	TECOBB - UNIT 3 - STK - 3 - OHM - 1NOV1999 - BHKCL		OHM				
	TECOBB - UNIT 3 - STK - 3 - OHM - 1NOV1999 - BHHNO3		OHM				
	TECOBB - UNIT 3 - STK - 3 - OHM - 1NOV1999 - BHKMNO4		OHM				
	TECOBB - UNIT 3 - STK - SB - OHM - 1NOV1999 - KCl		OHM				
	TECOBB - UNIT 3 - STK - SB - OHM - 1NOV1999 - FILT		OHM				
	TECOBB - UNIT 3 - STK - SB - OHM - 1NOV1999 - KMNO4		OHM				
	TECOBB - UNIT 3 - STK - SB - OHM - 1NOV1999 - HNO3/H2O		OHM				
	TECOBB - UNIT 3 - STK - SB - OHM - 1NOV1999 - HNO3 (OHM)		OHM				
	TECOBB - UNIT 3 - STK - BT - OHM - 1NOV1999 - FHHNO3		OHM				
	TECOBB - UNIT 3 - STK - BT - OHM - 1NOV1999 - FILT		OHM				
	TECOBB - UNIT 3 - STK - BT - OHM - 1NOV1999 - BHKCL		OHM				
	TECOBB - UNIT 3 - STK - BT - OHM - 1NOV1999 - BHHNO3		OHM				
	TECOBB - UNIT 3 - STK - BT - OHM - 1NOV1999 - BHKMNO4		OHM				
	TECOBB - UNIT 3 - STK - SB - OHM - 1NOV1999 - 10% HNO3		OHM				

Notes: OHM - Speciated Mercury Analysis per Ontario Hydro Method

Relinquished By	Received By	Date	Time	Lab Use Only	
[signature]	D. Bartsch	12/6/99	10:50 pm	Shipper	Air Bill #
	J. Mast	12/6/99	16:45	Opened By	Date/Time
				Temp °C	Condition
				Custody Seals: Yes No None N/A	

Laboratory Comments:

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PHILIP
ANALYTICAL SERVICES

INDUSTRIAL HYGIENE ENVIRONMENTAL TESTING

• EPA/NVLAP 101262-0 • NY DOH 10903 • NJ DEP 77678
• AIHA ACCREDITATION NO. 100439 • PA DER 06-353

January 27, 2000

Jeff O'Neill
Roy F. Weston, Inc.
One Weston Way
Bldg. 5-1
West Chester PA 19380

Laboratory Project: 188621
Client Reference: Tampa Electric Co. WO#12281.001.001
Ontario Hydro Method

Dear Mr. O'Neill:

The samples which were logged in on 07-DEC-99 have been analyzed as requested. The analytical results are enclosed in the attached report.

Please note that any unused portion of the samples will be disposed after 15-JAN-00, unless you have requested otherwise.

Thank you for the opportunity to provide these services to you. If you have any questions concerning this report, please contact a Client Services representative at 610/921-8833.

Sincerely,

Fred Usbeck, CIH
Director, Laboratory Services

4418 POTTSVILLE PIKE. READING. PENNSYLVANIA 19605 610-921-8833 FAX 610-921-9667

Lab Tracking Number

188621

Chain-of-Custody Record/Lab Work Request

WESTON

Client	TAMPA ELECTRIC, BIG BEND		
Work Order Number	12281.001.001.0001	Phone Number	610-701-7201
Contact Person	Jeff ONeill	Turn Around Time	Standard

Lab ID	Field Sample ID	Sample Collection Date	Analysis		Analyses Requested/Other Info: Filter ID #		Sample Check-off
	TECOBB - UNIT 3 - STK - 1 - OHM - 1NOV1999 - FHHNO3	12/1/99	OHM				
	TECOBB - UNIT 3 - STK - 1 - OHM - 1NOV1999 - FILT		OHM		W278		
	TECOBB - UNIT 3 - STK - 1 - OHM - 1NOV1999 - BHKCL		OHM				
	TECOBB - UNIT 3 - STK - 1 - OHM - 1NOV1999 - BHHNO3		OHM				
	TECOBB - UNIT 3 - STK - 1 - OHM - 1NOV1999 - BHKMNO4		OHM				
	TECOBB - UNIT 3 - STK - 2 - OHM - 1NOV1999 - FHHNO3		OHM				
	TECOBB - UNIT 3 - STK - 2 - OHM - 1NOV1999 - FILT		OHM		W280		
	TECOBB - UNIT 3 - STK - 2 - OHM - 1NOV1999 - BHKCL		OHM				
	TECOBB - UNIT 3 - STK - 2 - OHM - 1NOV1999 - BHHNO3		OHM				
	TECOBB - UNIT 3 - STK - 2 - OHM - 1NOV1999 - BHKMNO4		OHM				
	TECOBB - UNIT 3 - STK - 3 - OHM - 1NOV1999 - FHHNO3	12/2/99	OHM				
	TECOBB - UNIT 3 - STK - 3 - OHM - 1NOV1999 - FILT		OHM		W281		
	TECOBB - UNIT 3 - STK - 3 - OHM - 1NOV1999 - BHKCL		OHM				
	TECOBB - UNIT 3 - STK - 3 - OHM - 1NOV1999 - BHHNO3		OHM				
	TECOBB - UNIT 3 - STK - 3 - OHM - 1NOV1999 - BHKMNO4		OHM				
	TECOBB - UNIT 3 - STK - SB - OHM - 1NOV1999 - KCl		OHM				
	TECOBB - UNIT 3 - STK - SB - OHM - 1NOV1999 - FILT		OHM				
	TECOBB - UNIT 3 - STK - SB - OHM - 1NOV1999 - KMNO4		OHM				
	TECOBB - UNIT 3 - STK - SB - OHM - 1NOV1999 - HNO3/H2O2		OHM				
	TECOBB - UNIT 3 - STK - SB - OHM - 1NOV1999 - HNO3 (OHM)		OHM				
	TECOBB - UNIT 3 - STK - BT - OHM - 1NOV1999 - FHHNO3		OHM				
	TECOBB - UNIT 3 - STK - BT - OHM - 1NOV1999 - FILT		OHM				
	TECOBB - UNIT 3 - STK - BT - OHM - 1NOV1999 - BHKCL		OHM				
	TECOBB - UNIT 3 - STK - BT - OHM - 1NOV1999 - BHHNO3		OHM				
	TECOBB - UNIT 3 - STK - BT - OHM - 1NOV1999 - BHKMNO4		OHM				
	TECOBB - UNIT 3 - STK - SB - OHM - 1NOV1999 - 10% HNO3		OHM				

Notes: OHM - Speciated Mercury Analysis per Ontario Hydro Method

Relinquished By	Received By	Date	Time	Lab Use Only	
	D. Bartsch	12/6/99	10 50 am	Shipper	Air Bill #
	G. Mast	12/6/99	16:45	Opened By	Date/Time
				Temp °C	Condition
				Custody Seals: Yes No None N/A	

Laboratory Comments:

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Lab Tracking Number

188621

Chain-of-Custody Record/Lab Work Request

WESTON

Client	TAMPA ELECTRIC COMPANY, TAMPA FL		
Work Order Number	12281.001.001	Phone Number	610-701-7201
Contact Person	Jeff ONeill	Turn Around Time	Standard

Lab ID	Field Sample ID	Sample Collection Date	Analysis		FILTER ID #		Sample Check-off
	TEBB - UNIT 3 - FGD INLET - 1 - OHM - 29NOV1999 - FHHNO3	12/1/99	OHM				
	TEBB - UNIT 3 - FGD INLET - 1 - OHM - 29NOV1999 - FILT		OHM		W277		
	TEBB - UNIT 3 - FGD INLET - 1 - OHM - 29NOV1999 - BHKCL		OHM				
	TEBB - UNIT 3 - FGD INLET - 1 - OHM - 29NOV1999 - BHHNO3		OHM				
	TEBB - UNIT 3 - FGD INLET - 1 - OHM - 29NOV1999 - BHKMNO4		OHM				
	TEBB - UNIT 3 - FGD INLET - 2 - OHM - 29NOV1999 - FHHNO3		OHM				
	TEBB - UNIT 3 - FGD INLET - 2 - OHM - 29NOV1999 - FILT		OHM		W279		
	TEBB - UNIT 3 - FGD INLET - 2 - OHM - 29NOV1999 - BHKCL		OHM				
	TEBB - UNIT 3 - FGD INLET - 2 - OHM - 29NOV1999 - BHHNO3		OHM				
	TEBB - UNIT 3 - FGD INLET - 2 - OHM - 29NOV1999 - BHKMNO4		OHM				
	TEBB - UNIT 3 - FGD INLET - 3 - OHM - 29NOV1999 - FHHNO3	12/2/99	OHM				
	TEBB - UNIT 3 - FGD INLET - 3 - OHM - 29NOV1999 - FILT		OHM		W282		
	TEBB - UNIT 3 - FGD INLET - 3 - OHM - 29NOV1999 - BHKCL		OHM				
	TEBB - UNIT 3 - FGD INLET - 3 - OHM - 29NOV1999 - BHHNO3		OHM				
	TEBB - UNIT 3 - FGD INLET - 3 - OHM - 29NOV1999 - BHKMNO4		OHM				
	~~TEBB - UNIT 3 - FGD INLET - SB - OHM - 29NOV1999 - KCl~~		OHM				
	~~TEBB - UNIT 3 - FGD INLET - SB - OHM - 29NOV1999 - FILT~~		OHM				
	~~TEBB - UNIT 3 - FGD INLET - SB - OHM - 29NOV1999 - KMN~~		OHM				
	~~TEBB - UNIT 3 - FGD INLET - SB - OHM - 29NOV1999 - HNO3~~		OHM				
	~~TEBB - UNIT 3 - FGD INLET - SB - OHM - 29NOV1999 - HNO3~~		OHM				
	TEBB - UNIT 3 - FGD INLET - BT - OHM - 29NOV1999 - FHHNO3	12/1/99	OHM				
	TEBB - UNIT 3 - FGD INLET - BT - OHM - 29NOV1999 - FILT		OHM				
	TEBB - UNIT 3 - FGD INLET - BT - OHM - 29NOV1999 - BHKC		OHM				
	TEBB - UNIT 3 - FGD INLET - BT - OHM - 29NOV1999 - BHHNO3		OHM				
	TEBB - UNIT 3 - FGD INLET - BT - OHM - 29NOV1999 - BHKMNO4		OHM				

Notes: OHM - Speciated Mercury Analysis per Ontario Hydro Method

Relinquished By	Received By	Date	Time	Lab Use Only	
John Mills	D Bartsch	12/6/99	10 54 AM	Shipper	Air Bill #
	A. Mast	12/6/99	11:15	Opened By	Date/Time
				Temp °C	Condition
				Custody Seals: Yes No None N/A	

Laboratory Comments:

Copyright Roy F Weston Inc Jan 1999PV

PHILIP ANALYTICAL SERVICES

Chain of Custody Record

4418 Pottsville Pike · Reading, PA 19605
phone: (610) 921-8833 fax: (610) 921-9667

Sample Containers

Bottle Type (G P IH) ⇨	G												
# of Containers ⇨	1												
Preserved? (Y/N) ⇨	N												

Report Results To:

PO # 5002-188621 Job ID

Name Pam Peters

Company PAS/Reading

Mailing Address see above

City State ZIP

Telephone # Fax #

Sub: PAS/Burlington

Send Invoice To:

Name Telephone #

Company SMY Dept.

Mailing Address

City State ZIP

Credit Card # Exp. Date

Analysis Requested

Mercury by Ontario Hydro Method

Page 1 of 4

PAS Quote#

Sampled by:

	SAMPLE DESCRIPTION	Air Vol. (L or min)	Matrix Type	Date Sampled	Time Sampled		Comments/Hazards/ Location Details
1	1385720-188621	FHHNO3/FIH	Stack 1	12/1/99	—	X	Due: 16-DEC-99
2	1385721-	BHKCl			—	X	
3	1385722-	BHHNO3			—	X	
4	1385723-	BHKMNO4			—	X	
5	1385724-	FHHNO3/FIH			—	X	
6	1385725-	BHKCl	Stack 2		—	X	
7	1385726-	BHHNO3			—	X	
8	1385727-	BHKMNO4			—	X	
9	1385728-	FHHNO3/FIH	Stack 3	12/2/99	—	X	
10	1385729-	BHKCl			—	X	

Special Instructions (including Data Deliverables and Turn Around Time): Include all Raw Data + "01" Summary Form

Samples relinquished to shipper or courier by:		Date 12/7/99	Time 16:30
Samples received by:		Date	Time

Samples Relinquished by:	Samples Relinquished to:	Date	Time
Samples Relinquished by:	Samples Relinquished to Laboratory:	Date	Time

Method of Shipment/Delivery: UPS FED-EX PAS Courier Client drop off Other _____

Samples Rec'd. on Ice? (Y N n/a) Temp. Blank _____ Sample Temp. _____
Samples rec'd intact?(Y N) Custody seals intact?(Y N n/a) ID on samples match COC?(Y N)
VOC Samples have zero headspace?(Y N n/a) Samples properly preserved? (Y N n/a)

Notes :

PHILIP ANALYTICAL SERVICES

Chain of Custody Record

4418 Pottsville Pike Reading, PA 19605
phone: (610) 921-8833 fax: (610) 921-9667

Sample Container Information

Bottle Type (G P IH)	G
# of Containers	1
Preserved? (Y/N)	N

Report Results To:

PO # 5002 – 188621 Job ID
Name Pam Peters
Company PAS/Reading
Mailing Address see above
City State ZIP
Telephone # Fax #

Sub: PAS/Burlington

Send Invoice To:

Name Telephone #
Company SAME Dept.
Mailing Address
City State ZIP
Credit Card # Exp. Date

Analysis Requested

Mercury by Ontario Hydro Method

Page 2 of 4

PAS Quote#

Sampled by:

	SAMPLE DESCRIPTION	Air Vol. (L or min)	Matrix Type	Date Sampled	Time Sampled	Mercury by Ontario Hydro Method	Comments/Hazards/ Location Details
1	1385730-188621	BHHNO3	cont. Stack 3	12/2/99	—	X	Due: 16-DEC-99
2	1385731-	BHKMNO4		↓	—	X	
3	1385732-	FHHNO3/FIH		12/1/99	—	X	
4	1385733-	BHKCL	Stack BT		—	X	
5	1385734-	BHHNO3			—	X	
6	1385735-	BHKMNO4		↓	—	X	
7	1385736-	FHHNO3/FIH		12/1/99	—	X	
8	1385737-	BHKCL	Stack 1		—	X	
9	1385738-	BHHNO3			—	X	
10	1385739-	BHKMNO4		↓	—	X	

Special Instructions (including Data Deliverables and Turn Around Time): Include all Raw Data + "01" Summary Form

		Date	Time
Samples relinquished to shipper or courier by:	J. Mast	12/7/99	16:30
Samples received by:			

		Date	Time
Samples Relinquished by:	Samples Relinquished to:		
Samples Relinquished by:	Samples Relinquished to Laboratory:		

Method of Shipment/Delivery: UPS FED-EX PAS Courier Client drop off Other _____

Samples Rec'd. on Ice? (Y N n/a) Temp. Blank _____ Sample Temp. _____
Samples rec'd intact?(Y N) Custody seals intact?(Y N n/a) ID on samples match COC?(Y N)
VOC Samples have zero headspace?(Y N n/a) Samples properly preserved? (Y N n/a)

Notes :

PHILIP ANALYTICAL SERVICES

Chain of Custody Record

4418 Pottsville Pike Reading, PA 19605
phone: (610) 921-8833 fax: (610) 921-9667

Sample Container Information

Bottle Type (G P IH) ⇨	G												
# of Containers ⇨	1												
Preserved? (Y/N) ⇨	N												

Report Results To:

PO # 5002-188621 Job ID

Name Pam Peters

Company PAS/Reading

Mailing Address See above

City State ZIP

Telephone # Fax #

Sub: PAS/Burlington

Send Invoice To:

Name Telephone #

Company SAIC Dept.

Mailing Address

City State ZIP

Credit Card # Exp. Date

Analysis Requested

Mercury by Ontario Hydro Method

Page 3 of 4

PAS Quote#

Sampled by:

	SAMPLE DESCRIPTION	Air Vol. (L or min)	Matrix Type	Date Sampled	Time Sampled		Comments/Hazards/ Location Details
1	1385740-188621	BHHNO3/F/H	Stack 2	12/1/99	—	X	Due: 16-DEC-99
2	1385741-	BHKCl			—	X	
3	1385742-	BHHNO3			—	X	
4	1385743-	BHKMNO4			—	X	
5	1385744-	HNO3/F/H	Stack 3	12/2/99	—	X	
6	1385745-	BHKCl			—	X	
7	1385746-	BHHNO3			—	X	
8	1385747-	BHKMNO4			—	X	
9	1385748-	HNO3/F/H	Stack SB	12/2/99	—	X	
10	1385749-	KCl			—	X	

Special Instructions (including Data Deliverables and Turn Around Time): Include all Raw Data + "01" Summary Form

Samples relinquished to shipper or courier by:	Date	Time
J. Mast	12/7/99	16:30
Samples received by:	**Date**	**Time**

Samples Relinquished by:	Samples Relinquished to:	Date	Time
Samples Relinquished by:	**Samples Relinquished to Laboratory:**	**Date**	**Time**

Method of Shipment/Delivery: UPS FED-EX PAS Courier Client drop off Other _____

Samples Rec'd. on Ice? (Y N n/a) Temp. Blank _____ Sample Temp. _____
Samples rec'd intact?(Y N) Custody seals intact?(Y N n/a) ID on samples match COC?(Y N)
VOC Samples have zero headspace?(Y N n/a) Samples properly preserved? (Y N n/a)

Notes :

PHILIP
ANALYTICAL SERVICES

Chain of Custody Record

4418 Pottsville Pike Reading, PA 19605
phone: (610) 921-8833 fax: (610) 921-9667

Sample Container Information

Bottle Type (G P IH)	G										
# of Containers	1										
Preserved? (Y/N)	N										

Report Results To:

PO # 5002 – 188621 Job ID
Name Pam Peters
Company PAS/Reading
Mailing Address See above
City State ZIP
Telephone # Fax #

Sub: PAS/Burlington

Send Invoice To:

Name Telephone #
Company SMT Dept.
Mailing Address
City State ZIP
Credit Card # Exp. Date

Analysis Requested

Mercury by Ontario Hydro Method

Page 4 of 4

PAS Quote#

	SAMPLE DESCRIPTION	Air Vol. (L or min)	Matrix Type	Date Sampled	Time Sampled		Comments/Hazards/ Location Details
Sampled by:							
1	1385750-188621	KMNO4	aqueous/stack	12/2/99	—	X	Due: 16-DEC-99
2	1385751-	HNO3/H2O	SB		—	X	
3	1385752-	FHHNO3/H2O2			—	X	
4	1385753-	BHKCl	stack		—	X	
5	1385754-	BHHNO3	BT		—	X	
6	1385755-	BHKMNO4			—	X	
7	1385756-	10%HNO3	SB stack		—	X	
8							
9							
10							

Special Instructions (including Data Deliverables and Turn Around Time): Include all Raw Data + "01" ~~Data~~ Summary Form

Samples relinquished to shipper or courier by:	Date	Time
J. Mast	12/7/99	16:30
Samples received by:	Date	Time

Samples Relinquished by:	Samples Relinquished to:	Date	Time
Samples Relinquished by:	Samples Relinquished to Laboratory:	Date	Time

Method of Shipment/Delivery: UPS FED-EX PAS Courier Client drop off Other _____

Samples Rec'd. on Ice? (Y N n/a) Temp. Blank _____ Sample Temp. _____
Samples rec'd intact?(Y N) Custody seals intact?(Y N n/a) ID on samples match COC?(Y N)
VOC Samples have zero headspace?(Y N n/a) Samples properly preserved? (Y N n/a)

Notes :

PHILIP SERVICES

Weston
Tampa Electric

DATA PACKAGE
FOR
Philip Analytical
Project # 188621

Philip Analytical Services
5555 North Service Road
Burlington, Ontario
L7L 5H7
905-332-8788

Submission # 960360

Approved by : Ada Blythe – Project Manager

Initial

1.0 CASE NARRATIVE

PROJECT NARRATIVE

PHILIP Analytical Services (Burlington ON)
Philip Project: 188621
Philip Submission #:9L0360

Client: Philip Analytical Services Inc
Client Project:

I. SAMPLE RECEIPT/ANALYSIS

a) Sample Listing

Philip ID	Client Sample ID	Date Sampled	Date Received	Date Prepped	Run Date
Mercury-Ontario Hydro-Front Half					
74132 99	Unit 3 Stack-SB	99/12/02	99/12/08	00/01/10	00/01/10
74133 99	Unit 3 Stack-BT	99/12/02	99/12/08	00/01/10	00/01/10
74134 99	Unit 3 Stack-R1	99/12/01	99/12/08	00/01/10	00/01/10
74135 99	Unit 3 Stack-R2	99/12/01	99/12/08	00/01/10	00/01/10
74136 99	Unit 3 Stack-R3	99/12/01	99/12/08	00/01/10	00/01/10
74137 99	Unit 3 FGD Inlet-BT	99/12/01	99/12/08	00/01/10	00/01/10
74138 99	Unit 3 FGD Inlet-R1	99/12/01	99/12/08	00/01/10	00/01/10
74139 99	Unit 3 FGD Inlet-R2	99/12/01	99/12/08	00/01/10	00/01/10
74140 99	Unit 3 FGD Inlet-R3	99/12/02	99/12/08	00/01/10	00/01/10
Mercury-Ontario Hydro-KCl					
74132 99	Unit 3 Stack-SB	99/12/02	99/12/08	00/01/07	00/01/07
74133 99	Unit 3 Stack-BT	99/12/02	99/12/08	00/01/07	00/01/07
74134 99	Unit 3 Stack-R1	99/12/01	99/12/08	00/01/07	00/01/07
74135 99	Unit 3 Stack-R2	99/12/01	99/12/08	00/01/07	00/01/07
74136 99	Unit 3 Stack-R3	99/12/01	99/12/08	00/01/07	00/01/07
74137 99	Unit 3 FGD Inlet-BT	99/12/01	99/12/08	00/01/07	00/01/07
74138 99	Unit 3 FGD Inlet-R1	99/12/01	99/12/08	00/01/07	00/01/07
74139 99	Unit 3 FGD Inlet-R2	99/12/01	99/12/08	00/01/07	00/01/07
74140 99	Unit 3 FGD Inlet-R3	99/12/02	99/12/08	00/01/07	00/01/07
Mercury-Ontario Hydro-Permanganate					
74132 99	Unit 3 Stack-SB	99/12/02	99/12/08	00/01/09	00/01/09
74133 99	Unit 3 Stack-BT	99/12/02	99/12/08	00/01/09	00/01/09
74134 99	Unit 3 Stack-R1	99/12/01	99/12/08	00/01/09	00/01/09
74135 99	Unit 3 Stack-R2	99/12/01	99/12/08	00/01/09	00/01/09
74136 99	Unit 3 Stack-R3	99/12/01	99/12/08	00/01/09	00/01/10
74137 99	Unit 3 FGD Inlet-BT	99/12/01	99/12/08	00/01/09	00/01/09
74138 99	Unit 3 FGD Inlet-R1	99/12/01	99/12/08	00/01/09	00/01/09
74139 99	Unit 3 FGD Inlet-R2	99/12/01	99/12/08	00/01/09	00/01/09
74140 99	Unit 3 FGD Inlet-R3	99/12/02	99/12/08	00/01/09	00/01/09
Mercury-Ontario Hydro-Nitric Peroxide					
74132 99	Unit 3 Stack-SB	99/12/02	99/12/08	00/01/07	00/01/07

74133 99	Unit 3 Stack-BT	99/12/02	99/12/08	00/01/07	00/01/07
74134 99	Unit 3 Stack-R1	99/12/01	99/12/08	00/01/07	00/01/07
74135 99	Unit 3 Stack-R2	99/12/01	99/12/08	00/01/07	00/01/07
74136 99	Unit 3 Stack-R3	99/12/01	99/12/08	00/01/07	00/01/07
74137 99	Unit 3 FGD Inlet-BT	99/12/01	99/12/08	00/01/07	00/01/07
74138 99	Unit 3 FGD Inlet-R1	99/12/01	99/12/08	00/01/07	00/01/07
74139 99	Unit 3 FGD Inlet-R2	99/12/01	99/12/08	00/01/07	00/01/07
74140 99	Unit 3 FGD Inlet-R3	99/12/02	99/12/08	00/01/07	00/01/07

b) Shipping Problems: none encountered

c) Documentation Problems: none encountered

II. SAMPLE PREP:
No problems encountered

III. SAMPLE ANALYSIS:
See also comments within the appropriate Certificate of Analysis.

a) Hold Times: all within recommended hold times

b) Instrument Calibration: all within control limits

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. In addition, I certify, that to the best of my knowledge and belief, the data as reported are true and accurate. Release of the data contained in this data package has been authorized by the cognizant laboratory official or his/her designee, as verified by this signature.

Ada Blythe, Project Manager

00/01/26
Date

2.0 RAW DATA
a) DATA SUMMARY

- Method blank
- Surrogate recoveries
- Date analysed and prepped

PHILIP SERVICES

Certificate of Analysis

CLIENT INFORMATION

Attention:	Pamela Peters
Client Name:	Philip Analytical Services Inc
Project:	Misc.
Project Desc:	
Address:	4418 Pottsville Pike Reading, Pennsylvania 19605
Fax Number:	610 921-8407
Phone Number:	610 921-8833

LABORATORY INFORMATION

Contact:	Ada Blythe, B.Sc., C.Chem.
Project:	AN970416
Date Received:	99/12/08
Date Reported:	00/01/11
Submission No.:	9L0360
Sample No.:	074131-074140

NOTES: ***"-" = not analysed "<" = less than Method Detection Limit (MDL) 'NA' = no data available***
LOQ can by determined for all analytes by multiplying the appropriate MDL X 3.33
Solids data is based on dry weight except for biota analyses.
Organic analyses are not corrected for extraction recovery standards except for isotope dilution methods, (i.e. CARB 429 PAH, all PCDD/F and DBD/DBF analyses)

Methods used by PASC are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Nineteenth Edition. Other methods are based on the principles of MISA or EPA methodologies. New York State: ELAP Identification Number 10756.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. Any and all use of these test results shall be limited to the actual cost of the pertinent analysis done. There is no other warranty expressed or implied. Your samples will be retained at PASC for a period of three weeks from receipt of data or as per contract.

COMMENTS:

Certified by:

PHILIP ANALYTICAL SERVICES
5555 North Service Road, Burlington, Ontario, Canada L7L 5H7 Tel: (905) 332-8788 Fax: (905) 332-9169

PASC - Certificate of Analysis

			Method Blank	Blank Spike #1	Blank Spike #1	Blank Spike #2	Blank Spike #2	Unit 3 Stack-SB	Unit 3 Stack-BT	Unit 3 Stack-R1	Unit 3 Stack-R1
Client ID:											
Lab No.:			074131 99	074131 99	074131 99	074131 99	074131 99	074132 99	074133 99	074134 99	074134 99
Date Sampled:			-	-	-	-	-	99/12/02	99/12/02	99/12/01	99/12/01
Component	**MDL**	**Units**			% Recoveries		% Recoveries				Duplicate
Mercury - filter	0.010	ug	<	0.10	100	0.099	99	0.086	0.063	0.093	0.094
Mercury - KCl	0.030	"	<0.10	0.32	110	0.31	100	<0.10	<0.10	0.37	0.38
Mercury - KMnO4	0.030	"	<	0.30	100	0.30	100	<0.10	<0.10	3.9	3.9
Mercury - H202	0.010	"	<	0.10	100	0.10	100	<0.25	<0.25	<0.25	<0.25

00304

PASC - Certificate of Analysis

			Unit 3	Unit 3	Unit 3	Unit 3	Unit 3	Unit 3	Unit 3 FGD	Unit 3 FGD	Unit 3 FGD	Unit 3 FGD
Client ID:			Stack-R1	Stack-R1	Stack-R1	Stack-R1	Stack-R2	Stack-R3	Inlet-BT	Inlet-R1	Inlet-R2	Inlet-R3
Lab No.:			074134 99	074134 99	074134 99	074134 99	074135 99	074136 99	074137 99	074138 99	074139 99	074140 99
Date Sampled:			99/12/01	99/12/01	99/12/01	99/12/01	99/12/01	99/12/01	99/12/01	99/12/01	99/12/01	99/12/02
Component	**MDL**	**Units**	M. Spike	MS % Rec.	MS Dup	MSD % Rec.						
Mercury - filter	0.010	ug	0.19	97	0.19	95	<	0.050	<	0.17	0.11	0.049
Mercury - KCl	0.030	"	1.5	110	1.5	110	0.20	0.43	<0.10	10	10	8.8
Mercury - KMnO4	0.030	"	7.8	96	7.8	96	3.1	3.7	<0.10	4.6	4.7	4.4
Mercury - H202	0.010	"	2.6	110	2.4	98	<0.25	<0.25	<0.25	0.34	<0.25	<0.25

00005

Batch Code:	**0110MNF3**	
Mercury - filter	074131 99	
	074132 99	
	074133 99	
	074134 99	
	074135 99	
	074136 99	
	074137 99	
	074138 99	
	074139 99	
	074140 99	
Run Date:	00/01/10	
Date of Sample Prep:	00/01/10	
Batch Code:	**01073NKC**	
Mercury - KCl	074131 99	
	074132 99	
	074133 99	
	074134 99	
	074135 99	
	074136 99	
	074137 99	
	074138 99	
	074139 99	
	074140 99	
Run Date:	00/01/07	
Date of Sample Prep:	00/01/07	
Batch Code:	**01093NMN**	**01093NMN**
Mercury - KMnO4	074131 99	074136 99
	074132 99	
	074133 99	
	074134 99	
	074135 99	
	074137 99	
	074138 99	
	074139 99	
	074140 99	
Run Date:	00/01/09	00/01/10
Date of Sample Prep:	00/01/09	00/01/09
Batch Code:	**01073GPO**	
Mercury - H202	074131 99	
	074132 99	
	074133 99	
	074134 99	
	074135 99	
	074136 99	
	074137 99	

	074138 99
	074139 99
	074140 99
Run Date:	00/01/07
Date of Sample Prep:	00/01/07

3.0 RAW DATA

Zenon Number	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
074131	PHIL-PAR	MB R456	Mercury -	PV	-0.010	-99999.0	0.100	100.	0.099	99.	00/01/10	MNF3	00/01/10	MG02	39.	33.	*BLKIMP*
074132	PHIL-PAR	Unit 3 Stack-SB	Mercury -	PV	0.086						00/01/10	MNF3	00/01/10	MG02	39.	33.	
074133	PHIL-PAR	Unit 3 Stack-BT	Mercury -	PV	0.063						00/01/10	MNF3	00/01/10	MG02	39.	33.	
074134	PHIL-PAR	Unit 3 Stack-R1	Mercury -	PV	0.093	0.094	0.190	97.	0.189	95.	00/01/10	MNF3	00/01/10	MG02	40.	33.	
074135	PHIL-PAR	Unit 3 Stack-R2	Mercury -	PV	-0.010						00/01/10	MNF3	00/01/10	MG02	40.	33.	
074136	PHIL-PAR	Unit 3 Stack-R3	Mercury -	PV	0.050						00/01/10	MNF3	00/01/10	MG02	40.	33.	
074137	PHIL-PAR	Unit 3 FGD Inlet-BT	Mercury -	PV	-0.010						00/01/10	MNF3	00/01/10	MG02	40.	33.	
074138	PHIL-PAR	Unit 3 FGD Inlet-R1	Mercury -	PV	0.173						00/01/10	MNF3	00/01/10	MG02	40.	33.	
074139	PHIL-PAR	Unit 3 FGD Inlet-R2	Mercury -	PV	0.110						00/01/10	MNF3	00/01/10	MG02	40.	33.	
074140	PHIL-PAR	Unit 3 FGD Inlet-R3	Mercury -	PV	0.049						00/01/10	MNF3	00/01/10	MG02	39.	33.	
BL0110	INTERNAL		Mercury -	PV	-0.010	-99999.0	0.100	100.	0.099	99.	00/01/10	MNF3	00/01/10	MG02	$$$	$$$	*BLKIMP*

11 Tests for OHFLT with an MDL of 0.010 ug Validated By CMB Control Chart Updated N/A IO Requirements met N/A

80008

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 00.01.10(WA) Run Code: MG02 Matrix: IMP.

Analyst: MG Units: ~~ug/L~~ µg (see comments) MDL: 0.01

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV ← S2			
10			B (Std 1)			
11			D4 (Std 4)			
12			BL0110	MNF1		
13			"			
14			BL0110 S			
15			"			
16			BL0110 D			
17			"			
18			73486			
19			"			
20			73486 D			
21			"			
22			73486 S			
23			"			
24			73486 DS			
25			"			
26			73483			
27			"			
28			73484			
29			"			
30			73485			
31			"			
32			CCV			
33			B			
34			D4			
35			73487			
36			"			
37			73488			
38			"			
39			73489			
40			"			
41			73490			
42			"			
43			73491			
44			"			
45			73492			
46			"			
47			* BL0110	MNF3		
48			"			
49			BL0110 S			
50			"			
51			BL0110 DS			
52			"			
53			74134			
54			"			
55			CCV			
56			B			
57			D4			
58			74134 D			
59			"			
60			74134 S			
61			"			
62			74134 DS			
63			"			
64			74131			
65			"			
66			74132			
67			"			
68			74133			
69			"			
70			74135			
71			"			
72			74136			
73			"			
74			74137			
75			"			
76			74138			
77			"			
78			CCV			
79			B			
80			D4			

* SAMPLE MISSED; RERUN ON 0111 RESULT WAS < 0.01.

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

~~60000~~ CCV = 1.0 mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 00.01.10(wA) Run Code: MG02 Matrix: IMP

Analyst: MG Units: ug (see comments) MDL: 0.01

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.6		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.6		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.6		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12						
13						
14						
15						
16						
17						
18						
19						
20						
81 X			74139			
22			"			
23			74140			
24			"			
25			CCV			
26			B			
27			D4			
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41						
42						
43						
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Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

01000 CCV = 1.0 mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

EPA 7470 WATER PREPARATION LOG - MERCURY

00019G7470HG
DGHGLEACH, DG29HG***

Calibration Solutions:

#	I.D.	*Conc.	Spike	**Conc. Entered
1	Blank/Dummy	0 ppb	None	0.0
2	Standard 1	0 ppb	None	0.0
3	Standard 2	0.33	200 ul of 0.05 ppm IV working standard	0.5
4	Standard 3	0.67	400 ul of 0.05 ppm IV working standard	1.0
5	Standard 4	1.0	600 ul of 0.05 ppm IV working standard	1.5
6	Standard 4	1.0	600 ul of 0.05 ppm IV working standard	1.5
7	Standard 5	1.33	800 ul of 0.05 ppm IV working standard	2.0
7	Standard 6	1.67	1000 ul of 0.05 ppm IV working standard	2.5

Check List

- ✓ Digest Code/labels
- ✓ Samples poured out
- ~~Acids added~~
- ~~Reagents added~~
- ✓ ~~Samples spiked~~ BLANKS SPIKED
- ~~Bath at 95 degrees C~~
- ~~Samples digested~~
- ~~Hydroxylamine HCl added~~
- ~~Samples bulked and mixed~~
- ✓ Rack order checked

	#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
	9	ICV (Cont. Calib. Verif.)	MNF1	20 ml	30 ml	1 X	1.5 ppb = 600 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	10	BL 0110	"	"	"	"	(Processed Blank)
	11	BL 0110 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	12	134134	"	"	"	"	DGOH PRO FINALVOL 100 mL
1	13	D	"	"	"	"	(Duplicate sample)
1	14	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	15	DS	"	"	"	"	(Duplicate Spiked sample)
2	16	13	"	"	"	"	
3	17	15	"	"	"	"	
4	18	16	"	"	"	"	
5	19	17	"	"	"	"	
6	20	18	"	"	"	"	
7	21	19	"	"	"	"	
8	22	20	"	"	"	"	
9	23	21	"	"	"	"	
10	24	22	"	"	"	"	
	25	CCV (Cont. Calib. Verif.)	MNF3	20 ml	30 ml	1 X	1.0 ppb = 400 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	26	BL 0110	"	"	"	"	(Processed Blank)
	27	BL 0110 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	28	134134	"	"	"	"	DGOH FLT FINALVOL 100 mL
1	29	D	"	"	"	"	(Duplicate sample)
1	30	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	31	DS	"	"	"	"	(Duplicate Spiked sample)
2	32	31	"	"	"	"	
3	33	32	"	"	"	"	
4	34	33	"	"	"	"	
5	35	35	"	"	"	"	
6	36	36	"	"	"	"	
7	37	37	"	"	"	"	
8	38	38	"	"	"	"	
9	39	39	"	"	"	"	
10	40	40	"	"	"	"	

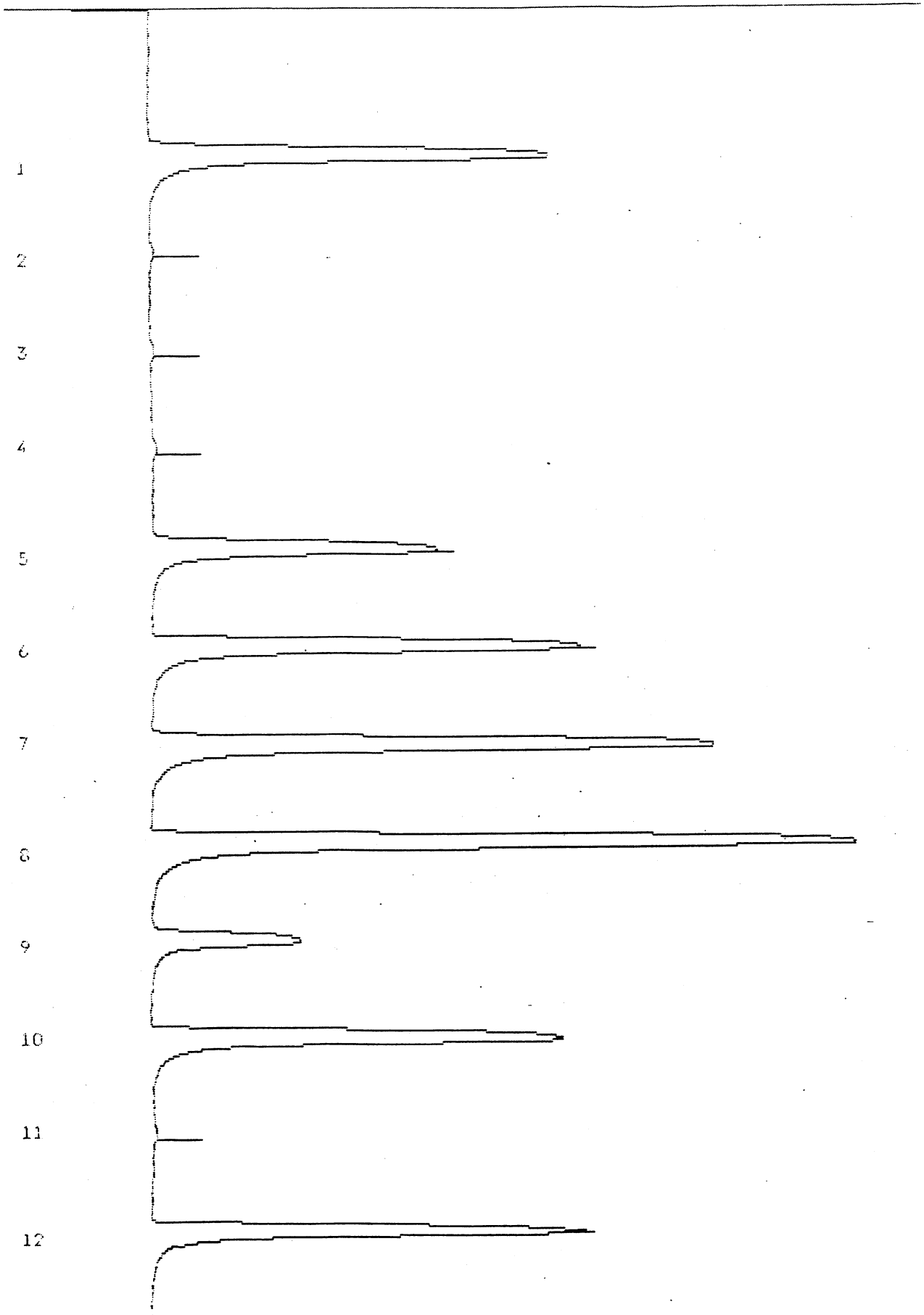
Notes: Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C STANDARDS UNDIGESTED + DG29HGI, DG29HGF, DG101AA1, DG101AA2 MATRIX MATCHED WITH

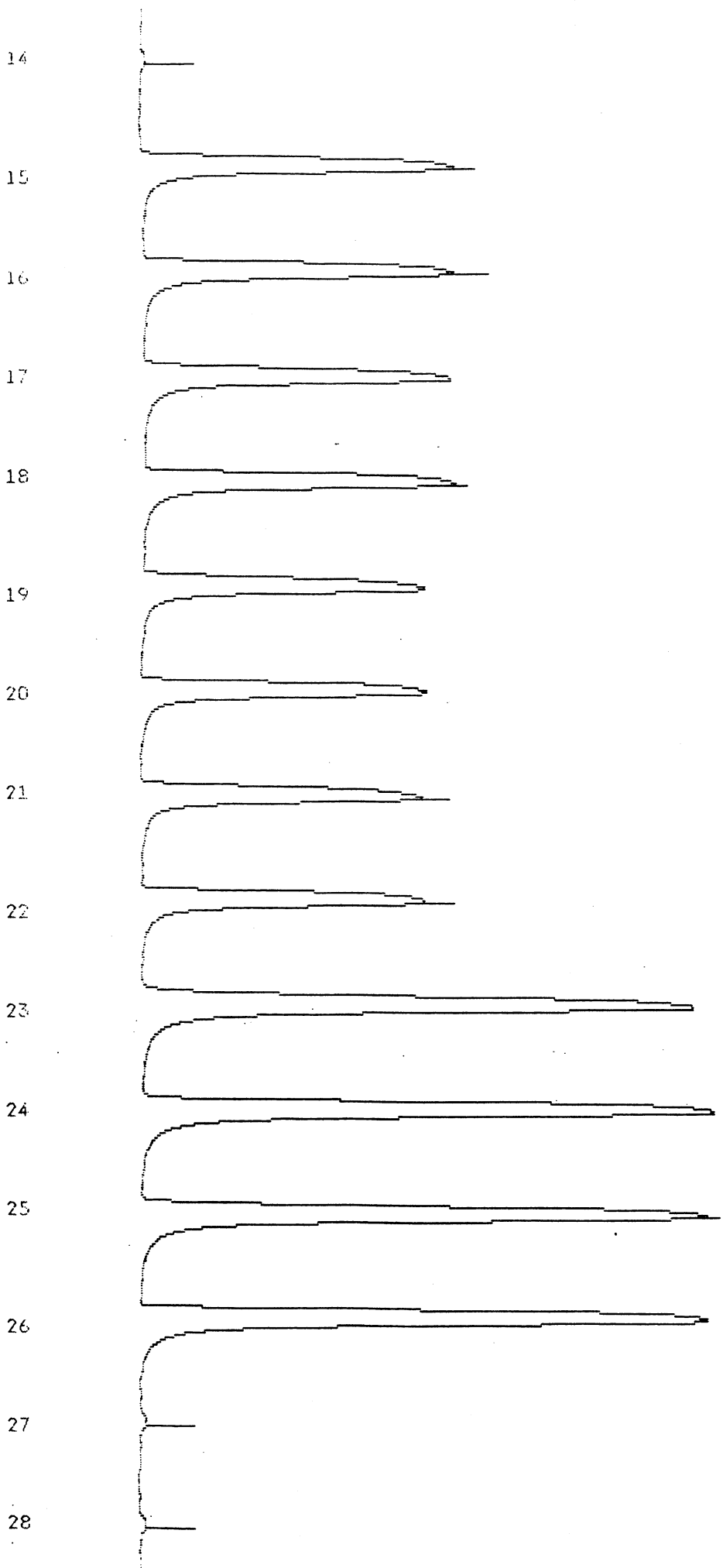
Include External Reference Material (EPA WS 378 or SPEX CertiPrep TM - WS) per run — Prepare 0.05 ppm standards daily

HNO3 Lot No. | H2SO4 Lot No. | Bath Temps / / °C

Prepared By: [signature] Date: 06/01/10 Checked by: [signature]

RUN DATE: 01-10-2000 CHART DATE: 01-11-2000
CHART SPEED: 30
DATA FILE NAME: C:\OP4\DATA\000110WA.DAT

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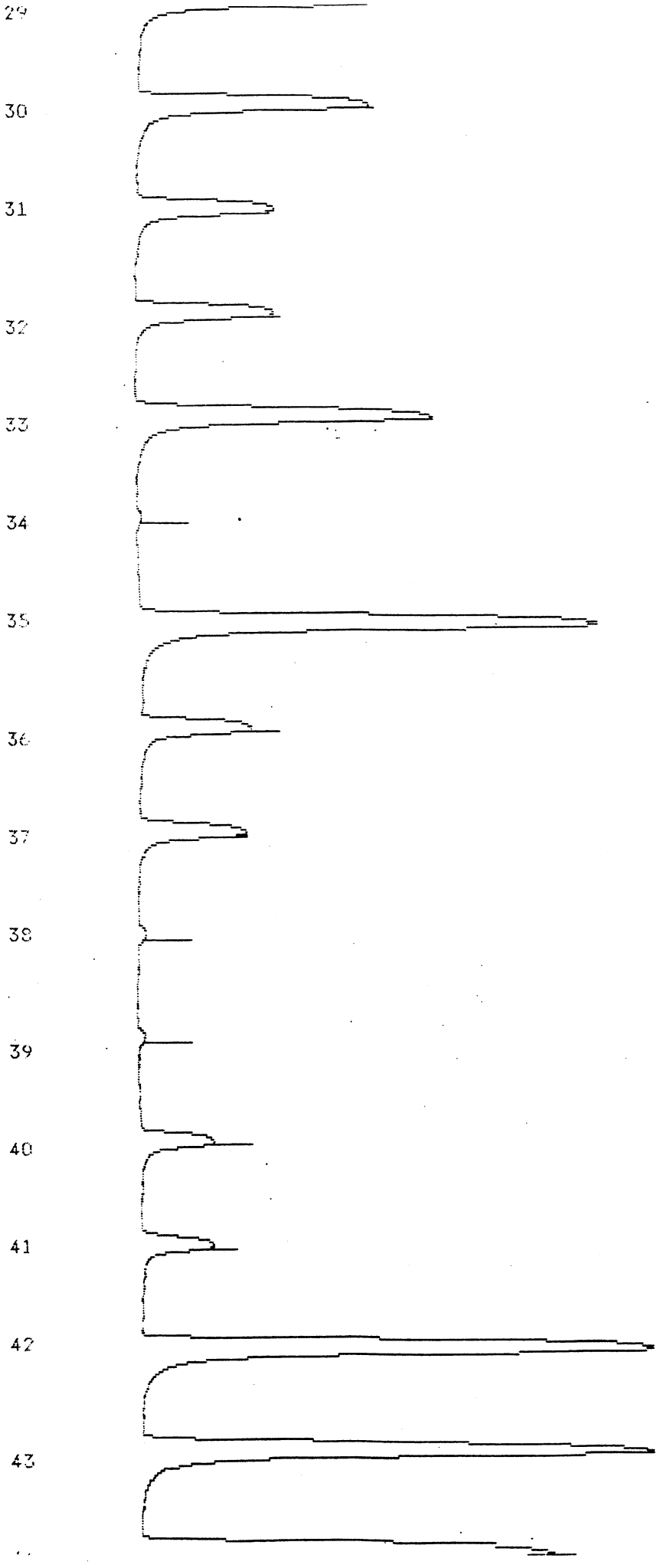
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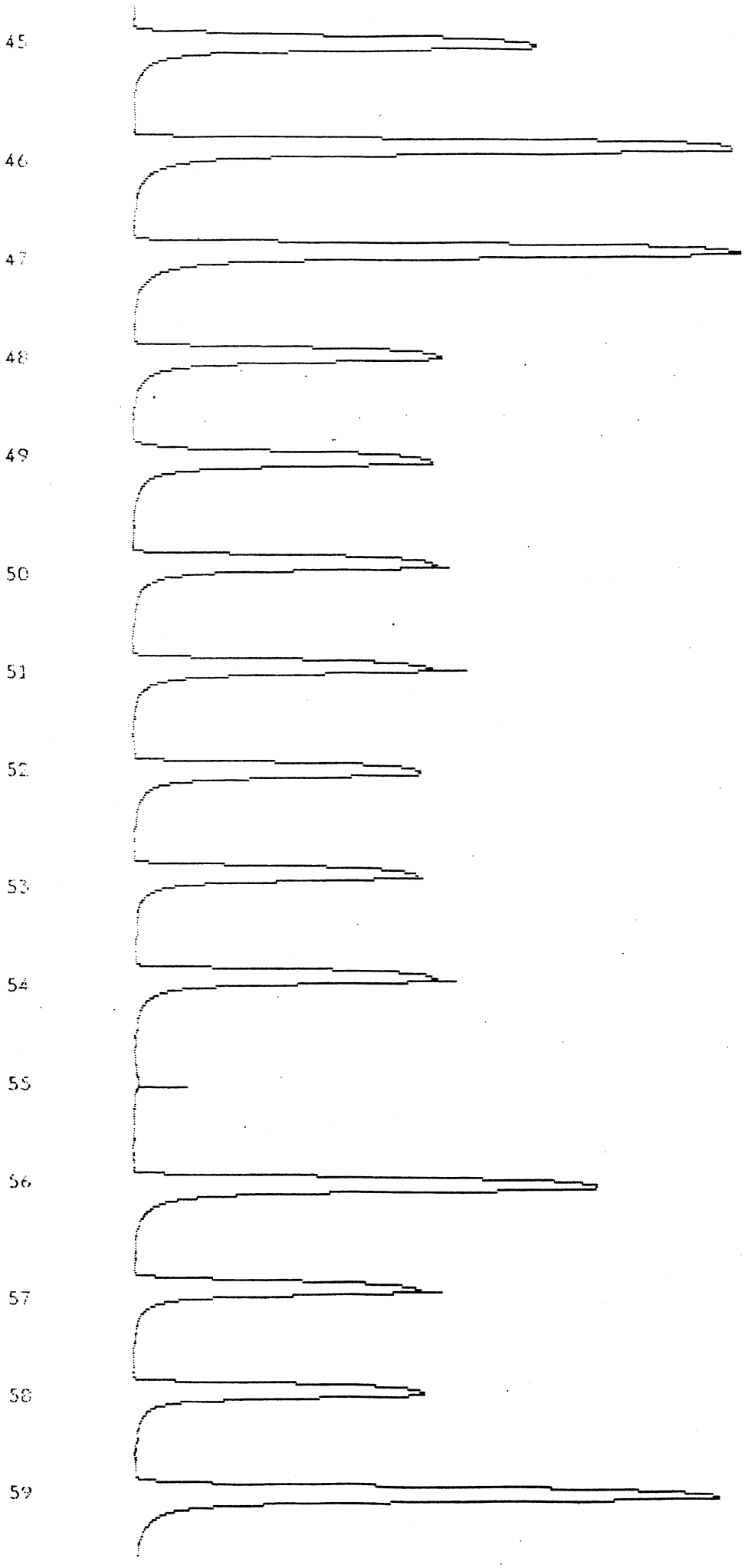
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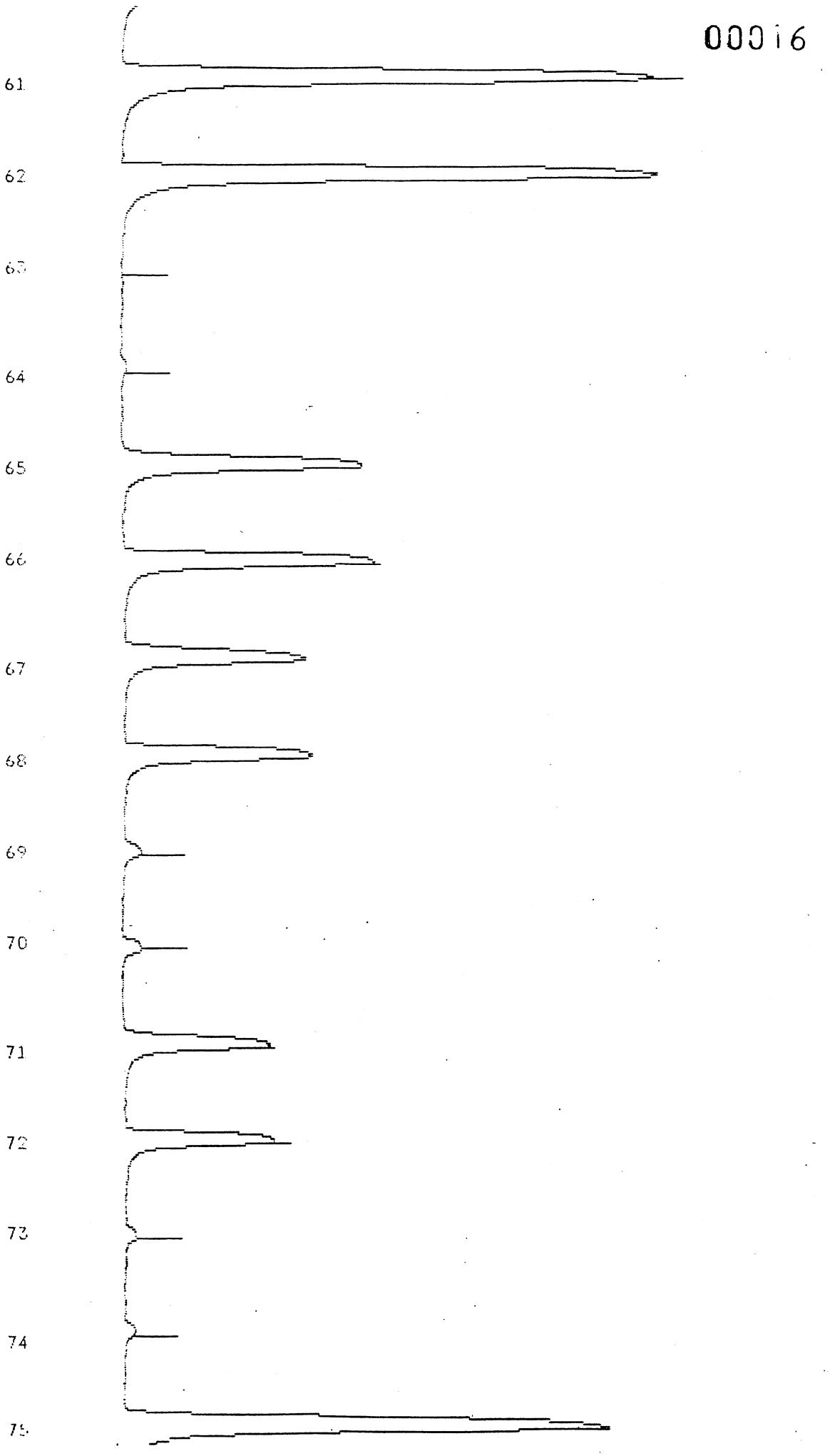
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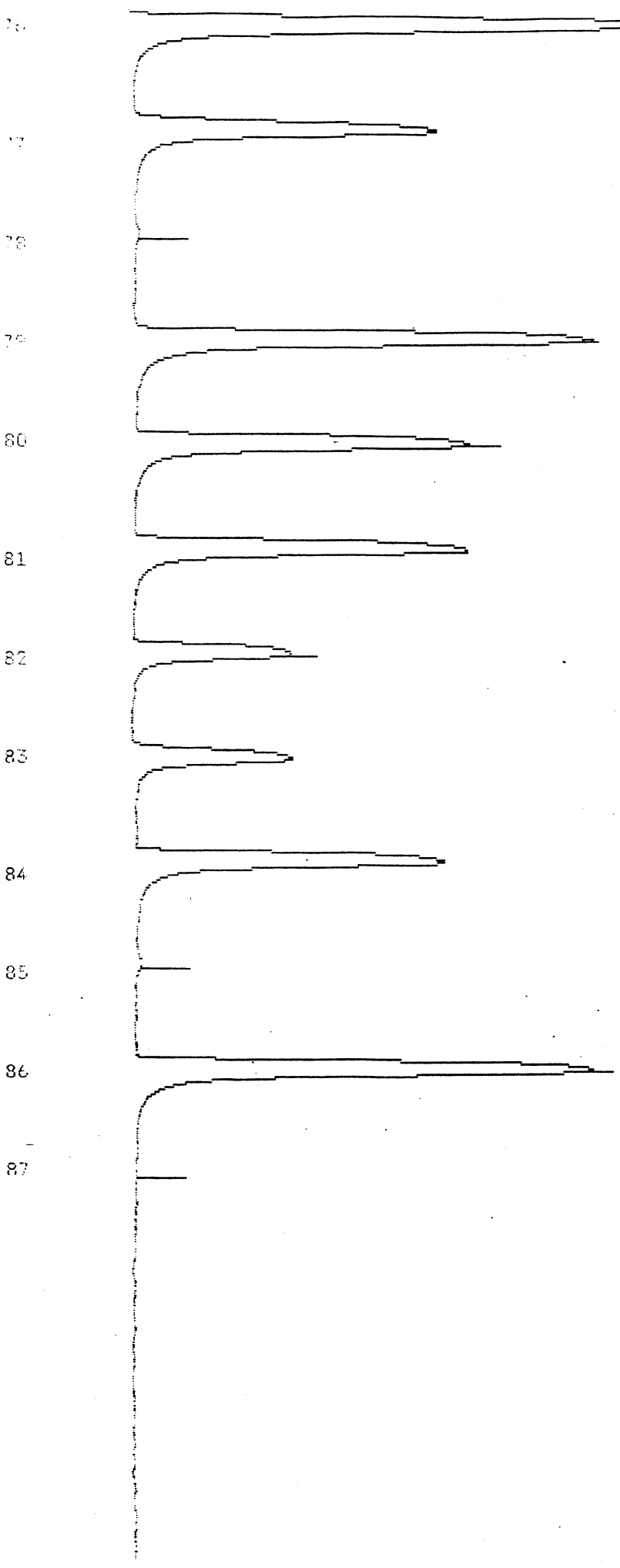
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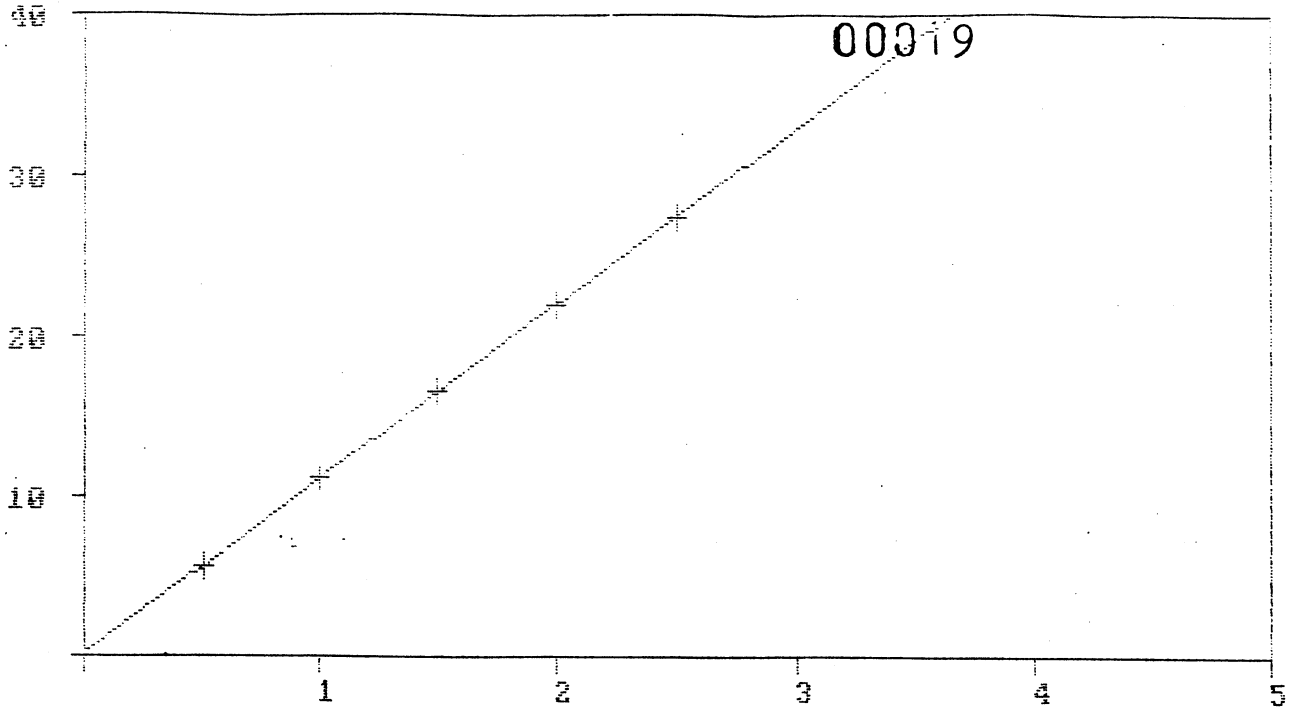
29	73484	1	1	8.4	0.045	0.751	
30	73484	1	1	8.4		0.751	
31	73485	1	1	4.8	0.043	0.427	s
32	73485	1	1	4.8		0.427	
33	CCV	1	1	10.8		0.975	98%
34	B	1	1	0.0		-0.017	b
35	D4	1	1	16.7		1.513	d
36	73487	1	1	3.8	0.033	0.333	
37	73487	1	1	3.7		0.324	
38	73488	1	1	0.0	<0.01	-0.012	I
39	73488	1	1	0.1		-0.003	I
40	73489	1	1	2.5	0.021	0.216	
41	73489	1	1	2.4		0.207	
42	73490	1	1	18.5	0.168	1.681	
43	73490	1	1	18.5		1.678	
44	73491	1	1	14.8	0.134	1.345	
45	73491	1	1	14.7		1.334	
46	73492	1	1	21.7	0.199	1.976	s
47	73492	1	1	22.0		2.001	
48	BL0110S-MNF3	1	1	11.2	0.100	1.007	100%
49	BL0110S-MNF3	1	1	10.9		0.987	
50	BL0110DS	1	1	11.1	0.099	1.004	99.1%
51	BL0110DS	1	1	10.9		0.984	
52	74134	1	1	10.4	0.093	0.940	
53	74134	1	1	10.2		0.919	
54	CCV	1	1	10.9		0.980	98
55	B	1	1	0.0		-0.017	b
56	D4	1	1	16.7		1.513	d
57	74134D	1	1	10.3	0.094	0.931	
58	74134D	1	1	10.5		0.942	
59	74134S	1	1	21.1	0.190	1.918	97%
60	74134S	1	1	20.8		1.889	
61	74134DS	1	1	20.6	0.189	1.869	95%
62	74134DS	1	1	20.9		1.902	
63	74131	1	1	0.0	<0.01	-0.017	I
64	74131	1	1	0.0		-0.012	I
65	74132	1	1	9.4	0.086	0.841	
66	74132	1	1	9.7		0.872	
67	74133	1	1	6.9	0.063	0.617	
68	74133	1	1	7.2		0.640	
69	74135	1	1	0.5	<0.01	0.030	I
70	74135	1	1	0.5		0.030	
71	74136	1	1	5.6	0.050	0.498	
72	74136	1	1	5.6		0.501	
73	74137	1	1	0.3	<0.01	0.010	I
74	74137	1	1	0.2		0.006	I
75	74138	1	1	18.9	0.173	1.719	
76	74138	1	1	19.2		1.741	s
77	CCV	1	1	10.9		0.987	99%
78	B	1	1	0.0		-0.017	b
79	D4	1	1	16.7		1.513	d
80	74139	1	1	12.1	0.110	1.092	
81	74139	1	1	12.2		1.103	
82	74140	1	1	5.6	0.049	0.494	
83	74140	1	1	5.6		0.494	
84	CCV	1	1	11.2		1.009	101%
85	B	1	1	0.0		-0.017	b
86	D4	1	1	16.7		1.513	d

INTERCEPT: 0.18 LINEAR COEF: 10.90668

CORRELATION COEF: .9999581



DATA TYPE: FIA
CALIBRATION ORDER: 1
INTERCEPT = 0.18
SLOPE = 10.90668

CORRELATION: .9999581

CHANNEL NAME: LDC
RUN DATE: 01-10-2000
SAMPLE TABLE NAME: 000110WA
METHOD NAME: HG-W-20

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA		CONCENTRATION (PPb)		EF
1	PRIMER	1	1	15.8		1.428		s
2	DUMMY	1	1	0.1		-0.008		I
3	S1: 0	1	1	0.1		-0.010		I
4	NO CUP	1	1	0.1		-0.003		I
5	S3: 1	1	1	11.1		1.004		
6	S4: 1.5	1	1	16.7		1.513		
7	S5: 2	1	1	22.0		1.999		
8	S6: 2.5	1	1	27.4		2.491		
9	S2: .5	1	1	5.7		0.503		
10	ICV	1	1	15.9		1.441	96%	
11	B	1	1	0.0	TMG	-0.017		b
12	D4	1	1	16.7		1.513		d
13	BL0110-MNF1 73483	1	1	0.0	<0.01	-0.012		I
14	BL0110-MNF1	1	1	0.0		-0.012		I
15	BL0110S	1	1	11.3	0.101	1.020	101%	
16	BL0110S	1	1	11.2		1.013		s
17	BL0110DS	1	1	11.1	0.101	1.002	101%	
18	BL0110DS	1	1	11.2		1.009		
19	73486	1	1	10.3	0.093	0.924		
20	73486	1	1	10.3		0.926		
21	73486D	1	1	10.2	0.092	0.919		
22	73486D	1	1	10.2		0.922		
23	73486S	1	1	20.0	0.185	1.819	92%	
24	73486S	1	1	20.6		1.875		
25	73486DS	1	1	20.3	0.185	1.849	92%	
26	73486DS	1	1	20.4		1.858		

Zenon Number	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
073483	PHIL-PAR	CD R	Mercury -	PV	-0.100	-99999.0	0.311	103.	0.308	103.	00/01/07	1NKC	00/01/07	MG02	51	31	
[redacted]																	
BL0107	INTERNAL		Mercury -	PV	-0.030	-99999.0	0.311	103.	0.308	103.	00/01/07	1NKC	00/01/07	MG02	$$$	$$$	
[redacted]																	
BL0107	INTERNAL		Mercury -	PV	-0.030	-99999.0	0.305	101.	0.309	103.	00/01/07	2NKC	00/01/07	MG02	$$$	$$$	
074131	PHIL-PAR	MB R456	Mercury -	PV	-0.100	-99999.0	0.315	105.	0.313	104.	00/01/07	3NKC	00/01/07	MG02	36.	30.	
074132	PHIL-PAR	Unit 3 Stack-SB	Mercury -	PV	-0.100						00/01/07	3NKC	00/01/07	MG02	36.	30.	
074133	PHIL-PAR	Unit 3 Stack-BT	Mercury -	PV	-0.100						00/01/07	3NKC	00/01/07	MG02	36.	30.	
074134	PHIL-PAR	Unit 3 Stack-R1	Mercury -	PV	0.370	0.383	1.492	111.	1.466	109.	00/01/07	3NKC	00/01/07	MG02	37.	30.	
074135	PHIL-PAR	Unit 3 Stack-R2	Mercury -	PV	0.200						00/01/07	3NKC	00/01/07	MG02	37.	30.	
074136	PHIL-PAR	Unit 3 Stack-R3	Mercury -	PV	0.434						00/01/07	3NKC	00/01/07	MG02	37.	30.	
074137	PHIL-PAR	Unit 3 FGD Inlet-BT	Mercury -	PV	-0.100						00/01/07	3NKC	00/01/07	MG02	37.	30.	
074138	PHIL-PAR	Unit 3 FGD Inlet-R1	Mercury -	PV	10.335						00/01/07	3NKC	00/01/07	MG02	37.	30.	
074139	PHIL-PAR	Unit 3 FGD Inlet-R2	Mercury -	PV	10.465						00/01/07	3NKC	00/01/07	MG02	37.	30.	
074140	PHIL-PAR	Unit 3 FGD Inlet-R3	Mercury -	PV	8.846						00/01/07	3NKC	00/01/07	MG02	36.	30.	
BL0107	INTERNAL		Mercury -	PV	-0.030	-99999.0	0.315	105.	0.313	105.	00/01/07	3NKC	00/01/07	MG02	$$$	$$$	

32 Tests for OHKCL with an MDL of 0.030 ug Validated By CMS Control Chart Updated N/A IO Requirements met N/A

00020

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 00.01.07(WA) Run Code: MG02 Matrix: WP

Analyst: MG Units: µg (see comments) MDL:

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.6		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.6		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.6		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12			WS 378			
13			ORG. REF			
14			BL0107	4NIB		
15			"			
16			BL0107 S			
17			"			
18			BL0107 DS			
19			"			
20	2		69886			
21	↓		"			
22			69886 D			
23			"			
24			69886 S			
25			"			
26			69886 DS			
27			"			
28			69885			
29			"			
30		1/2	69887			
31		↓	"			
32		1/4	69888			
33		↓	"			
34			CCV			
35			B			
36			D4			
37			70235			
38			"			
39		1/4	70236			
40		↓	"			
41			70237			
42			"			
43		1/5	70238			
44		↓	"			
45			BL0107	5NKC		
46			"			
47			BL0107 S			
48			"			
49			BL0107 DS			
50			"			
51		1/4	65836			
52		↓	"			
53			65836 D			
54			"			
55			65836 S			
56			"			
57			CCV			
58			B			
59			D4			
60		1/4	65836 DS			
61		↓	"			
62			65835			
63			"			
64			65837			
65			"			
66			65838			
67			"			
68			BL0107	1NKC		
69			"			
70			BL0107 S			
71			"			
72			BL0107 DS			
73			"			
74			73486			
75			"			
76			73486 D			
77			"			
78			73486 S			
79			"			
80			CCV			

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

ICV = 1.5 mg/kg, CCV = 1.0 mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

00022

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 00.01.07 (WA) Run Code: MG02 Matrix: 149

Analyst: MG Units: 49 (see comments) MDL:

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12						
13						
14						
15						
16						
17						
18						
19						
20						
21			B			
22			D4			
23			73486 DS			
24			"			
25			73484			
26			"			
27			73485			
28			"			
29			73487			
30			"			
31			73488			
32			"			
33			73489			
34			"			
35		1/10	73490			
36			"			
37			73491			
38			"			
39			73492			
40			"			
41			BL0107	2NKC		
42			"			
43			CCV			
44			B			
45			D4			
46			BL0107S			
47			"			
48			BL0107 DS			
49			"			
50			73508			
51			"			
52			73508 D			
53			"			
54			73508 S			
55			"			
56			73508 DS			
57			"			
58			73507			
59			"			
60			73509			
61			"			
62			73510			
63			"			
64			73511			
65			"			
66			CCV			
67			B			
68			D4			
69			73512			
70			"			
71			73513			
72			"			
73			73514			
74			"			
75		1/10	73515			
76		↓	"			
77			BL0107	3NKC		
78			"			
79			BL0107S			
80			"			

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

ICV = 1.5 mg/kg, CCV = 1.0 mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.01.07 Run Code: MG02 Matrix: IMP

Analyst: MG Units: µg (see comments) MDL: 0.03

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.6		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.6		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.6		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12						
13						
14						
15						
16						
17						
18						
19						
20						
21			BL0107 DS			
22			"			
23			74134			
24			"			
25			74134 D			
26			"			
27			74134 S			
28			"			
29			CCV			
30			B			
31			D4			
32			74134 DS			
33			"			
34			74132			
35			"			
36			74133			
37			"			
38			74135			
39			"			
40			74136			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41			74136			
42			74137			
43			"			
44		1/10	74138			
45			"			
46			74139			
47			"			
48			74140			
49			"			
50		1/10	73485			
51			"			
52			WS 378			
53			ORG. REF			
54			CCV			
55			B			
56			D4			
57						
58						
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78						
79						
80						

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

ICV = 1.5 mg/kg, CCV = 1.0 mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

	#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
	41	CCV (Cont. Calib. Verif.)	3N KC	20 ml	30 ml	1 X	1.0 ppb = 400 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	42	BL 0107	"	"	"	"	(Processed Blank) 74131
	43	BL 0107 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	44	74134	"	"	"	"	IMPVKC1 1000 mL
1	45	D	"	"	"	"	(Duplicate sample)
1	46	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	47	DS	"	"	"	"	(Duplicate Spiked sample)
2	48	74132	"	"	"	"	
3	49	33	"	"	"	"	
4	50	35	"	"	"	"	
5	51	36	"	"	"	"	
6	52	37	"	"	"	"	
7	53	38	"	"	"	"	
8	54	39	"	"	"	"	
9	55	40	"	"	"	"	
10	56		"	"	"	"	

Comments

* concentration based on 30 ml final volume, ** concentration based on 20 ml final volume

*** group of several Method 29 testcodes

Dilution factor of 1.5 is corrected by entering the calibration concentrations listed above

Procedure/Methodology:

1 Prepare 25 ppm Intermediate stock (if required) by pipetting 625 ul., of 1000 ppm Stock to 25 ml final volume of 2% HNO3
2 Prepare 0.05 ppm Working stock daily by pipetting 200 ul., of 25 ppm Stock to 100 ml final volume of 2% HNO3
3 Using the LIMS Screen "SCNDIG" enter the required samples into LIMS
4 Using the labeling program, "DIGLBL", retreive the "SCNDIG" list and create labels for the required samples.
5 Label the falcon tubes appropriately
6 Transfer a 20 ml. aliquot of well mixed sample into the designated falcon tube
7 Spike the tubes as indicated in the comment sector of the digestion sheet
8 Add 0.5 ml. of conc. Nitric Acid (HNO3), and 1 ml. of conc. Sulphuric acid, (H2SO4), to each tube
9 Add 3 ml. Potassium Permanganate (KMnO4), colour should remain for at least 15 minutes
10 Add 1.5 ml. of Potassium persulphate, (K2S2O8), to each tube
11 Mix samples, cap loosely and place in a water bath @ 95 degrees C for 2 hours
12 Remove tubes and allow to cool to room temperature
13 Add 1.0 ml. 20% Hydroxylamine Hydrochloride to each tube
14 Recap tubes and shake until the Potassium Permanganate (KMnO4) is destroyed and sample becomes colourless
15 Dilute the sample to a final volume of 30 ml., cap and mix well

REFERENCE STANDARDS/SPIKING SOLUTIONS:

Source: Inorganic Ventures Standard, see standard tracking binder for current lot and expiry date information

ICV/CCV STANDARDS:

Source: High Purity MESS-ZENO 30/QCA Standard, see standard tracking binder for current lot

INTERNAL REFERENCE STANDARD: (2 ppb In 10% HNO3)

Source: EPA WS 378 or SPEX CertiPrep Trace Metal - Water Supply, see standard tracking binder for current source, lot and expiry date information.

All reagents used are of a grade suitable for mercury analyses

EPA 7470 WATER PREPARATION LOG - MERCURY

00025

DG7470HG
DGHGLEACH, DG29HG***

Calibration Solutions:

#	I.D.	*Conc.	Spike	**Conc. Entered
1	Blank/Dummy	0 ppb	None	0.0
2	Standard 1	0 ppb	None	0.0
3	Standard 2	0.33	200 ul of 0.05 ppm IV working standard	0.5
4	Standard 3	0.67	400 ul of 0.05 ppm IV working standard	1.0
5	Standard 4	1.0	600 ul of 0.05 ppm IV working standard	1.5
6	Standard 4	1.0	600 ul of 0.05 ppm IV working standard	1.5
7	Standard 5	1.33	800 ul of 0.05 ppm IV working standard	2.0
7	Standard 6	1.67	1000 ul of 0.05 ppm IV working standard	2.5

Check List

- ✓ Digest Code/labels
- ✓ Samples poured out
- ✓ Acids added
- ✓ Reagents added
- ✓ Samples spiked
- ✓ Bath at 95 degrees C
- ✓ Samples digested
- ✓ Hydroxylamine HCl added
- ✓ Samples bulked and mixed
- ✓ Rack order checked

	#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
	9	ICV (Init. Calib. Verif.)	1NKC	20 ml	30 ml	1 X	1.5 ppb = 600 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	10	BL 0107	"	"	"	"	(Processed Blank)
	11	BL 0107 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	12	73486	"	"	"	"	IMPVKCl 1000 mL
1	13	D	"	"	"	"	(Duplicate sample)
1	14	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	15	DS	"	"	"	"	(Duplicate Spiked sample)
2	16	73484	"	"	"	"	
3	17	85	"	"	"	"	
4	18	87	"	"	"	"	
5	19	88	"	"	"	"	
6	20	89	"	"	"	"	
7	21	90	"	"	"	"	
8	22	91	"	"	"	"	
9	23	92	"	"	"	"	
10	24	~~93~~ NN	"	"	"	"	
	25	CCV (Cont. Calib. Verif.)	2NKC	20 ml	30 ml	1 X	1.0 ppb = 400 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	26	BL 0107	"	"	"	"	(Processed Blank)
	27	BL 0107 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	28	73508	"	"	"	"	IMPVKCl 1000 mL
1	29	D	"	"	"	"	(Duplicate sample)
1	30	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	31	DS	"	"	"	"	(Duplicate Spiked sample)
2	32	73507	"	"	"	"	
3	33	509	"	"	"	"	
4	34	510	"	"	"	"	
5	35	511	"	"	"	"	
6	36	512	"	"	"	"	
7	37	513	"	"	"	"	
8	38	514	"	"	"	"	
9	39	515	"	"	"	"	
10	40		"	"	"	"	

Notes: Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C
DG29HGI, DG29HGF, DG101AA1, DG101AA2

Include External Reference Material (EPA WS 378 or SPEX CertiPrep TM - WS) per run

Prepare 0.05 ppm standards daily

HNO3 Lot. No. 119091	H2SO4 Lot. No. 318020	Bath Temps. 1 195°C

Prepared By: M Alapiros Date: 000107 Checked by: M Alapiros

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG
000226
DGHGLEACH, DG29HG***

Calibration Solutions:

#	I.D.	*Conc.	Spike	**Conc. Entered
1	Blank/Dummy	0 ppb	None	0.0
2	Standard 1	0 ppb	None	0.0
3	Standard 2	0.33	200 ul of 0.05 ppm IV working standard	0.5
4	Standard 3	0.67	400 ul of 0.05 ppm IV working standard	1.0
5	Standard 4	1.0	600 ul of 0.05 ppm IV working standard	1.5
6	Standard 4	1.0	600 ul of 0.05 ppm IV working standard	1.5
7	Standard 5	1.33	800 ul of 0.05 ppm IV working standard	2.0
7	Standard 6	1.67	1000 ul of 0.05 ppm IV working standard	2.5

Check List
- Digest Code/labels
- Samples poured out
- Acids added
- Reagents added
- Samples spiked
- Bath at 95 degrees C
- Samples digested
- Hydroxylamine HCl added
- Samples bulked and mixed
- Rack order checked

	#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
	9	ICV (Init. Calib. Verif.)	4A16	20 ml	30 ml	1 X	1.5 ppb = 600 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	10	BL 0107	"	"	"	"	(Processed Blank)
	11	BL 0107 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	12	69886	"	"	"	"	FINALVOL 300 mL
1	13	D	"	"	"	"	(Duplicate sample)
1	14	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	15	DS	"	"	"	"	(Duplicate Spiked sample)
2	16	69885	"	"	"	"	
3	17	87	"	"	"	"	
4	18	88	"	"	"	"	
5	19	70235	"	"	"	"	
6	20	36	"	"	"	"	
7	21	37	"	"	"	"	
8	22	38	"	"	"	"	
9	23	69884	"	"	"	"	
10	24		"	"	"	"	
	25	CCV (Cont. Calib. Verif.)		20 ml	30 ml	1 X	1.0 ppb = 400 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	26	BL	"	"	"	"	(Processed Blank)
	27	BL S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	28		"	"	"	"	
1	29	D	"	"	"	"	(Duplicate sample)
1	30	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	31	DS	"	"	"	"	(Duplicate Spiked sample)
2	32		"	"	"	"	
3	33		"	"	"	"	
4	34		"	"	"	"	
5	35		"	"	"	"	
6	36		"	"	"	"	
7	37		"	"	"	"	
8	38		"	"	"	"	
9	39		"	"	"	"	
10	40		"	"	"	"	

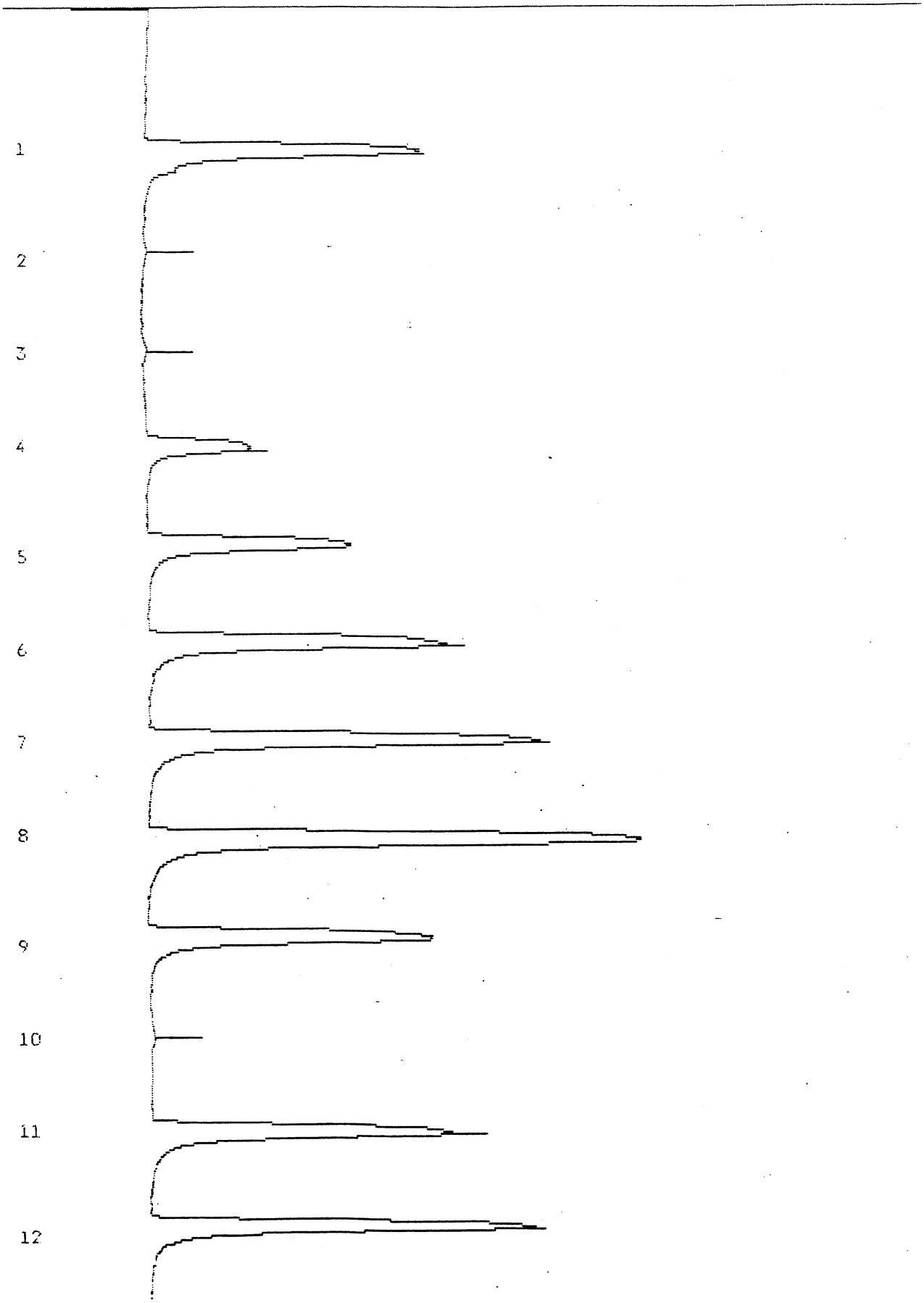
Notes: Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C
DG29HGI, DG29HGF, DG101AA1, DG101AA2

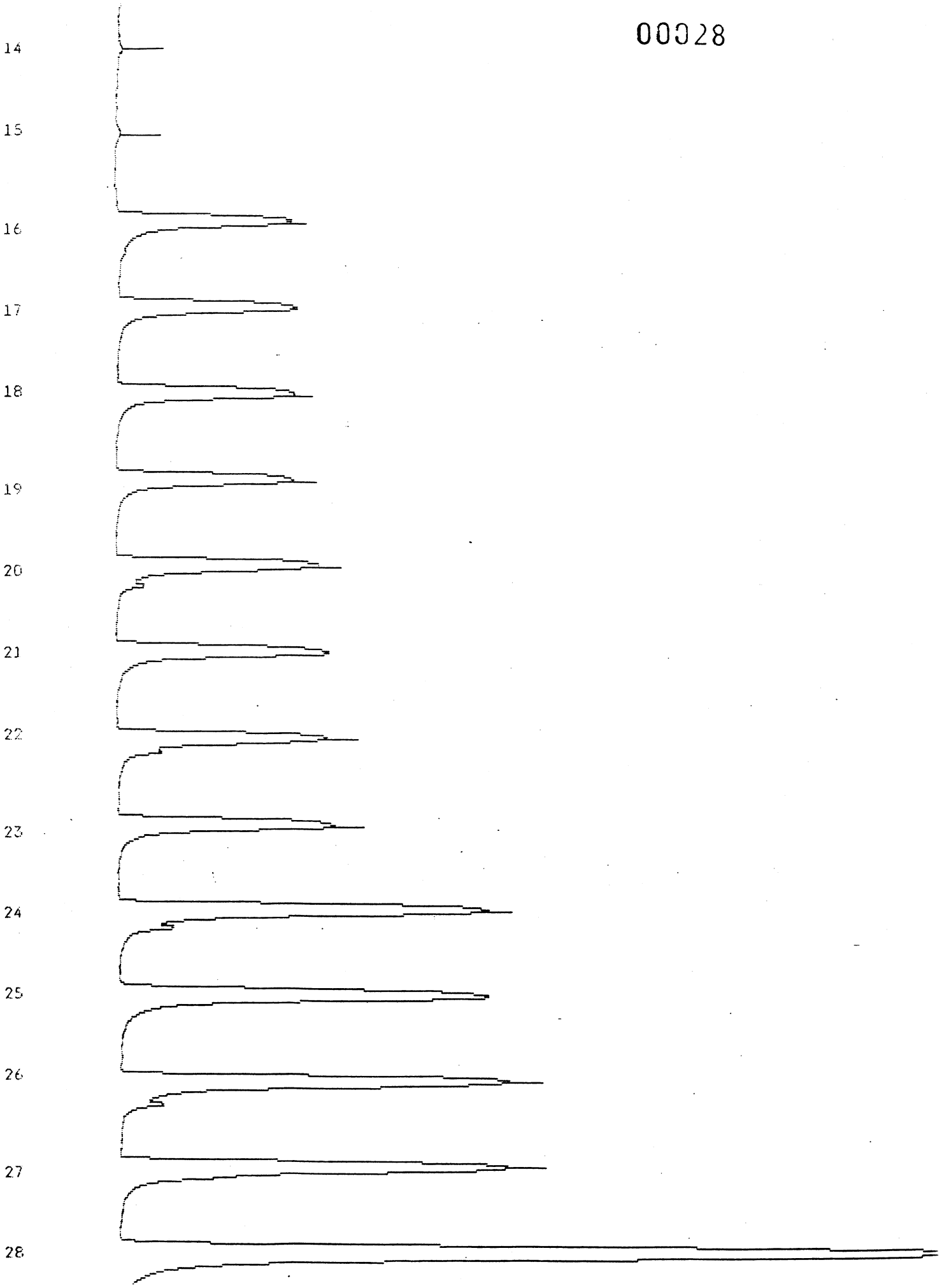
Include External Reference Material (EPA WS 378 or SPEX CertiPrep TM - WS) per run — Prepare 0.05 ppm standards daily

HNO3 Lot No. 119091 | H2SO4 Lot No. 313012.0 | Bath Temps: 1 196°C

Prepared By: [signature] Date: 6/01/07 Checked by: [signature]

RUN DATE: 01-07-2000 CHART DATE: 01-08-2000
CHART SPEED: 30
DATA FILE NAME: C:\DP4\DATA\000107WA.DAT

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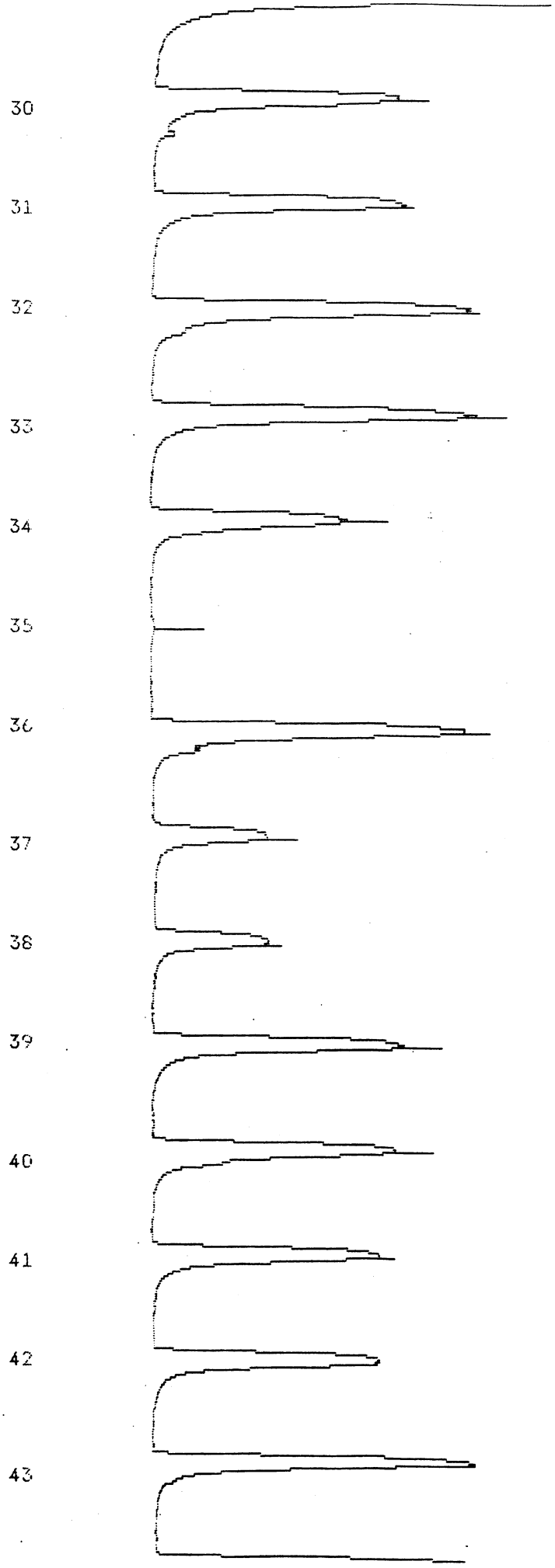
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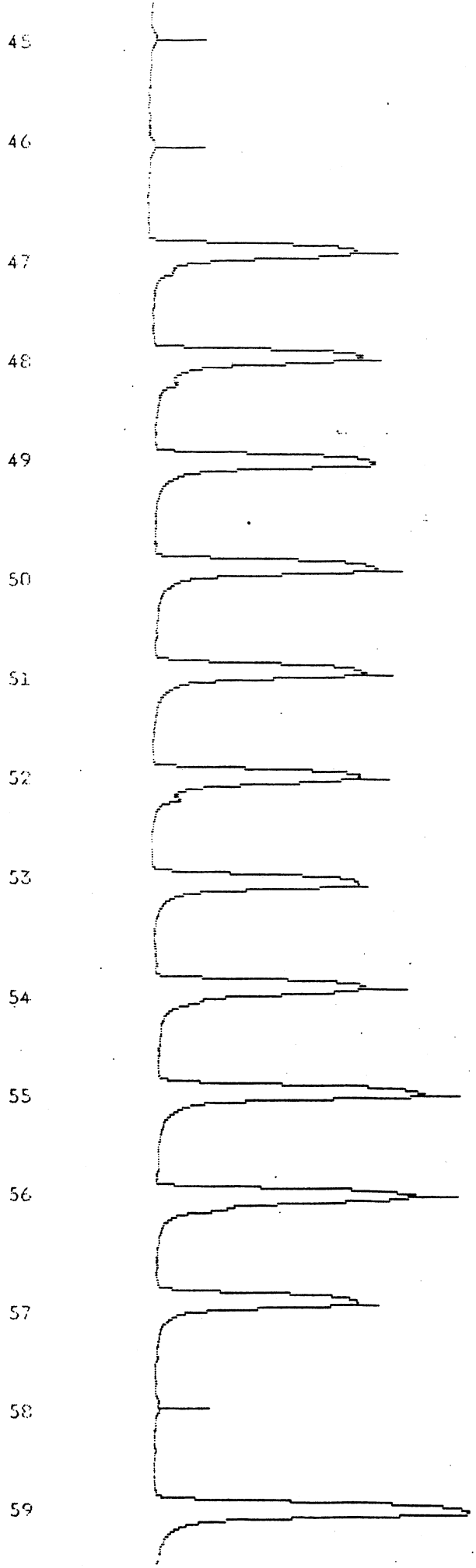
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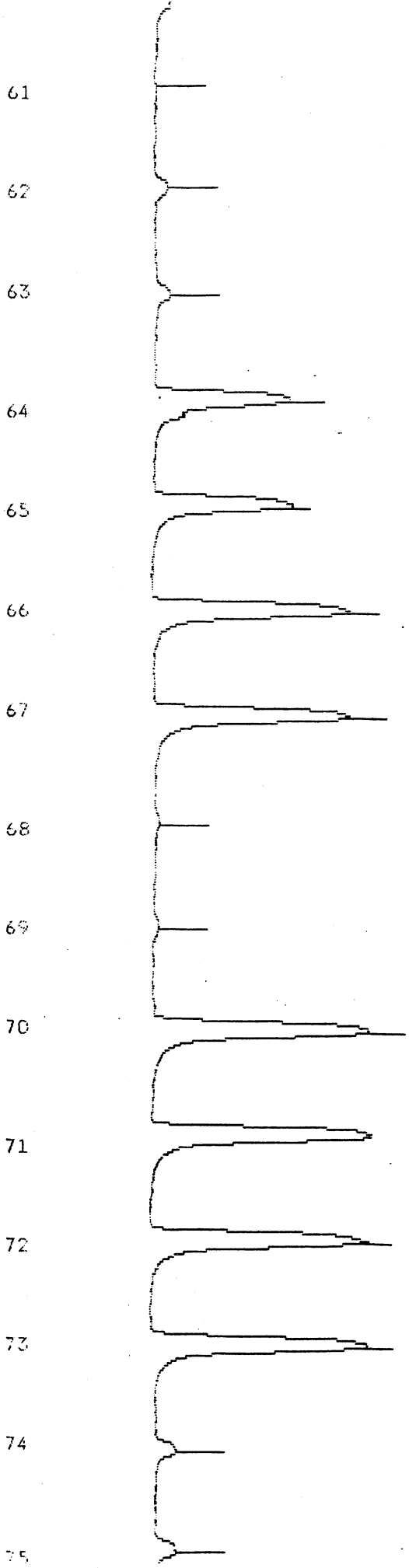
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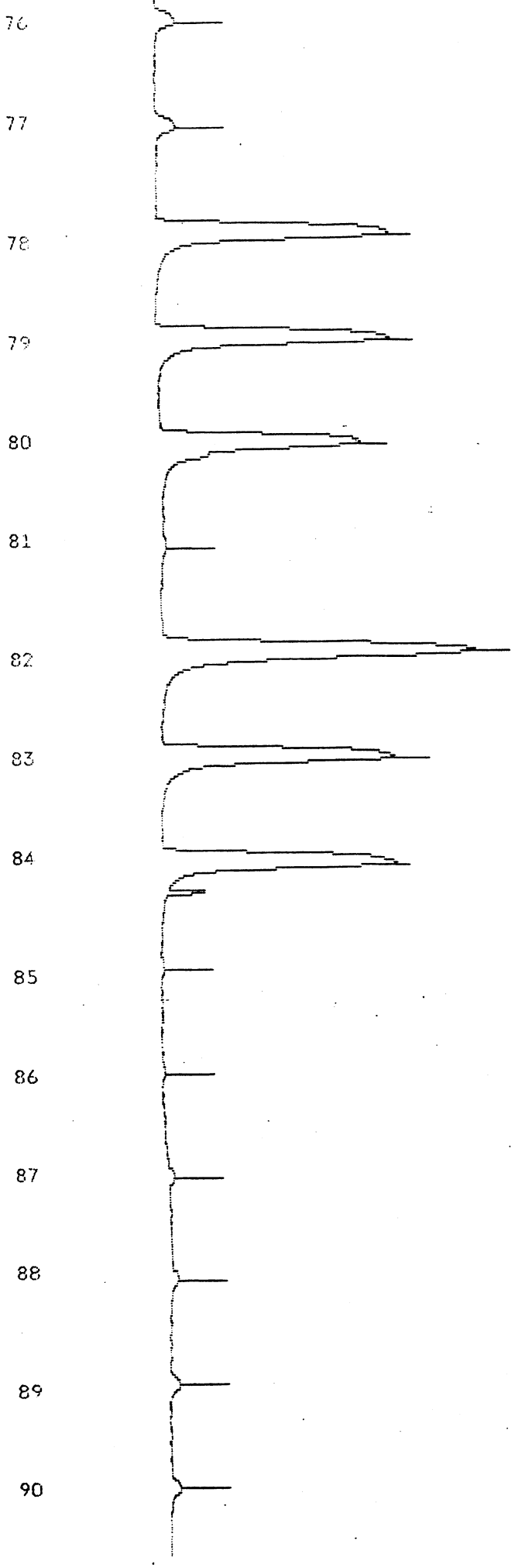
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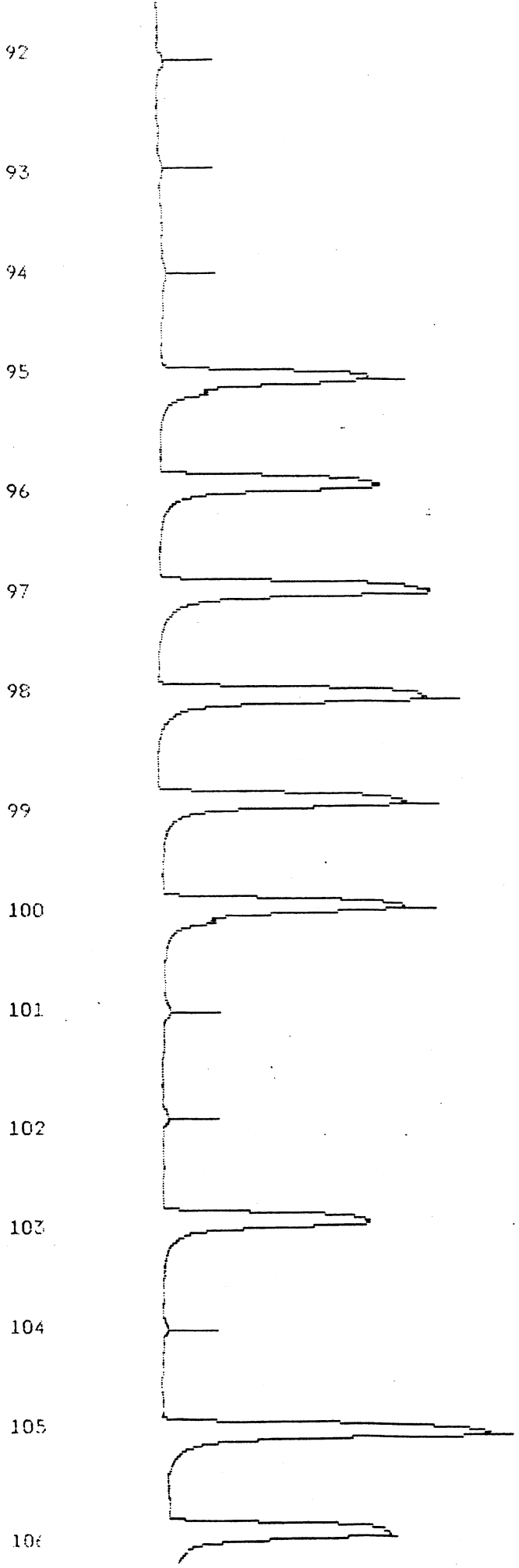
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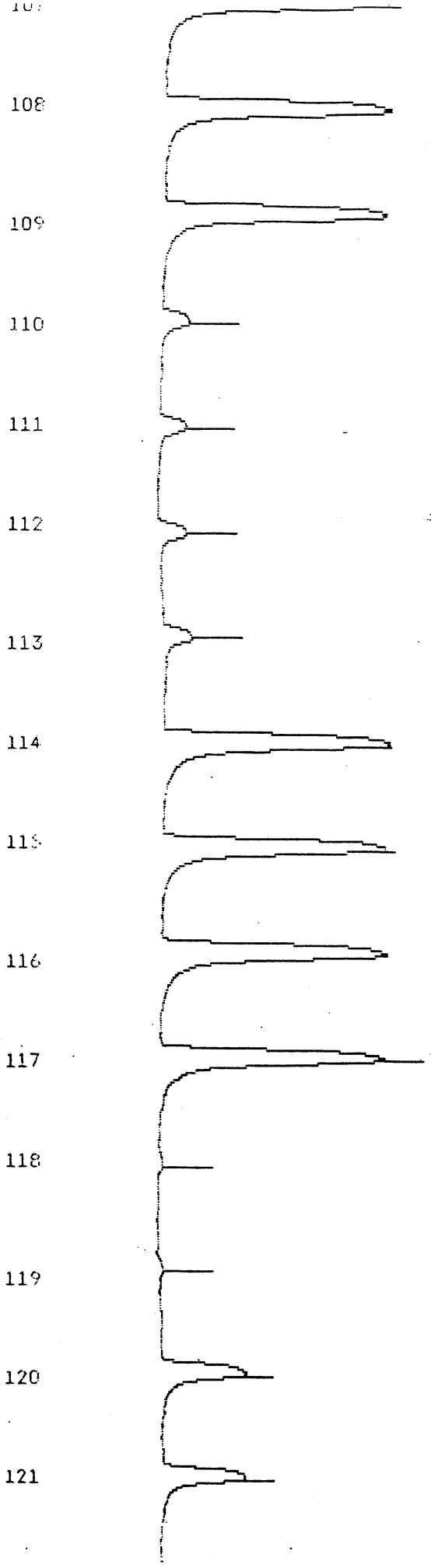
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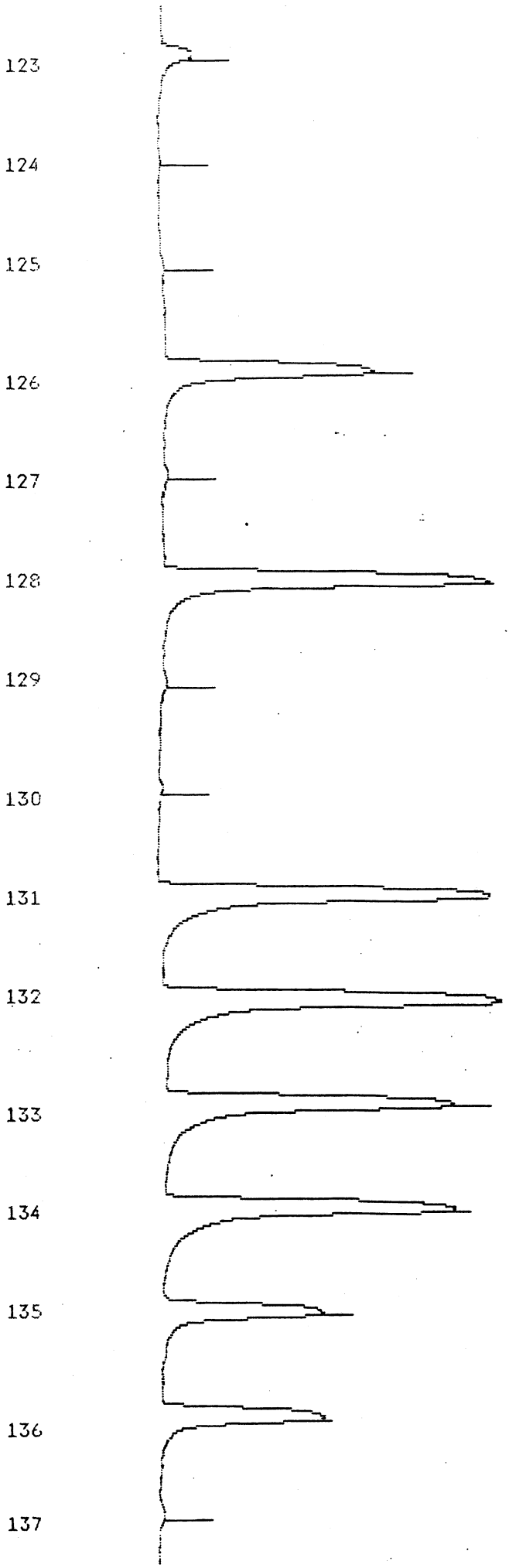
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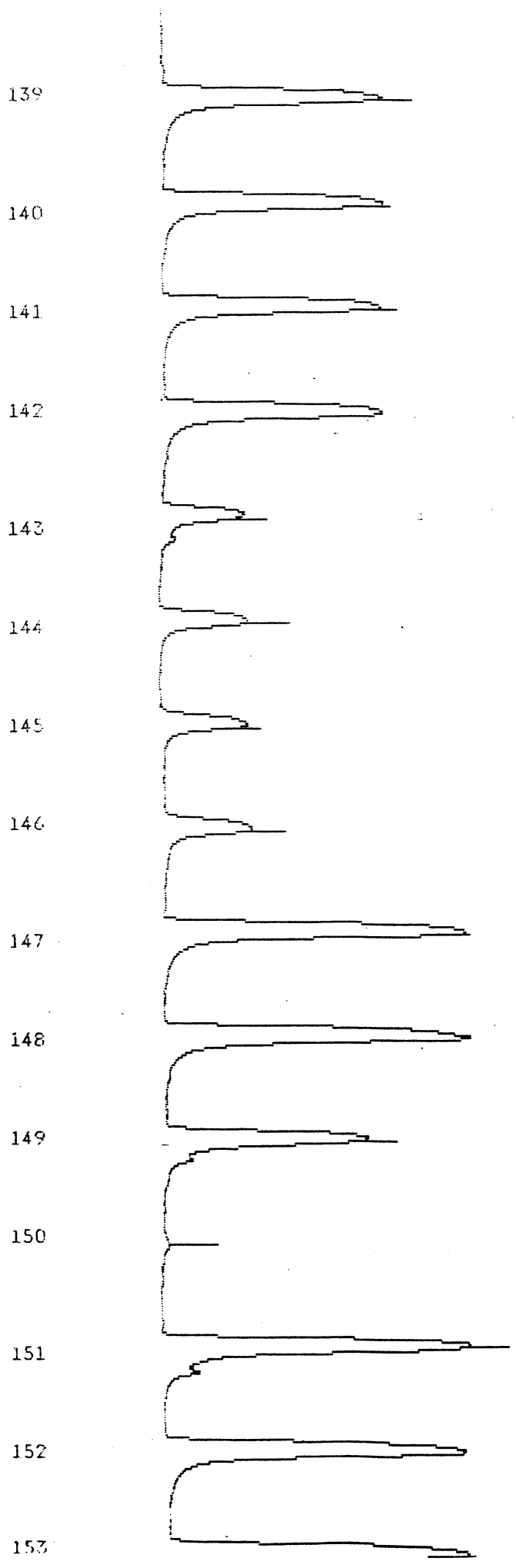
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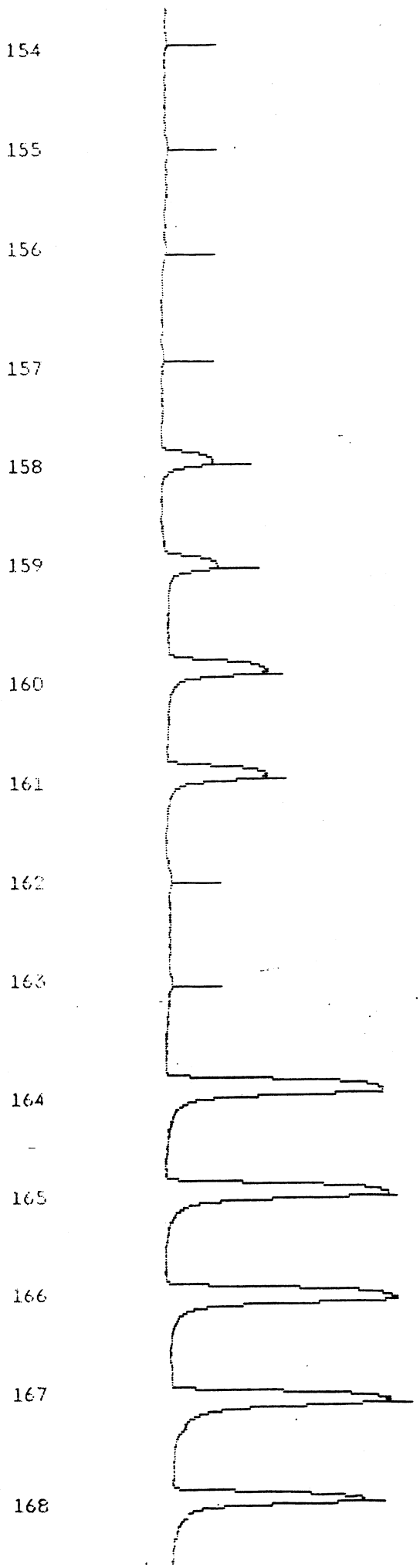
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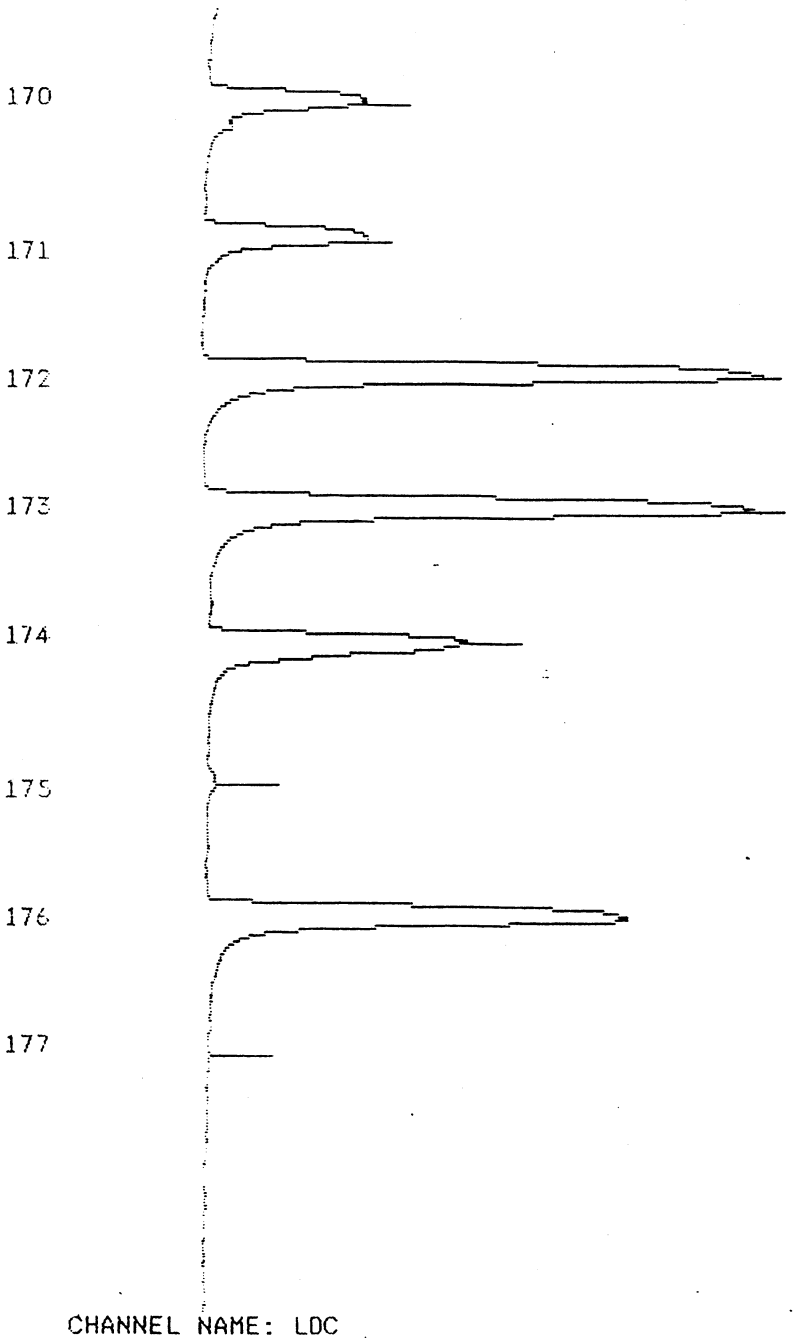
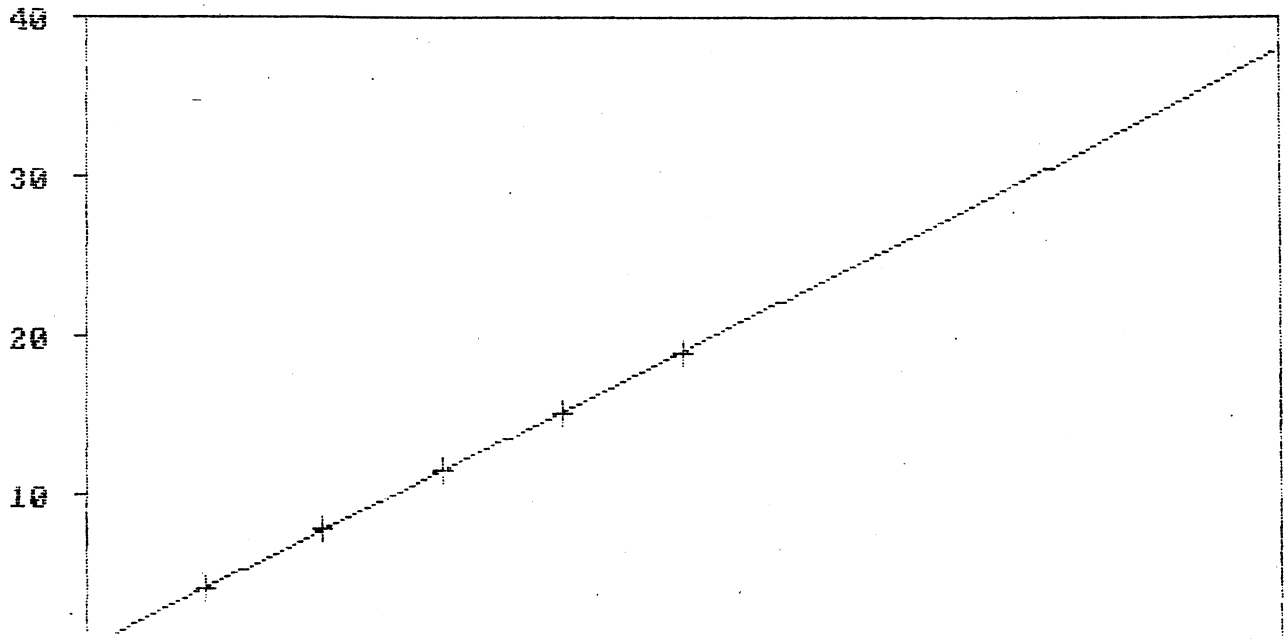


CHANNEL NAME: LDC
RUN NAME: 000107WA



DATA TYPE: FIA
INTERCEPT = 0.19

CALIBRATION ORDER: 1 00039
SLOPE = 7.539508

CORRELATION: .9999012

CHANNEL NAME: LOC
RUN DATE: 01-07-2000
SAMPLE TABLE NAME: 000107WA
METHOD NAME: HGWATER

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA	Total µg	CONCENTRATION (ppb)	EF	
1	PRIMER	1	1	10.8		1.406	s	
2	DUMMY	1	1	0.1		-0.013	I	
3	S1: 0	1	1	0.1		-0.013	I	
4	S2: .5	1	1	4.0		0.502		
5	S3: 1	1	1	7.9		1.017		
6	S4: 1.5	1	1	11.6		1.510		
7	S5: 2	1	1	15.1		1.983		
8	S6: 2.5	1	1	19.0		2.501		
9	ICV	1	1	10.9		1.425	95%	
10	B	1	1	0.0		-0.026	b	
11	D4	1	1	11.6		1.510	d	
12	WS 378	1	1	15.1		1.976	99%	
13	ORG REF	1	1	15.0		1.963	98%	
14	BL0107-4N1B 69884	1	1	0.1	<0.03	-0.016	I	
15	BL0107-4N1B	1	1	0.1		-0.016	I	
16	BL0107S	1	1	7.7	0.302	0.998		
17	BL0107S	1	1	7.8		1.014	101%	
18	BL0107DS	1	1	7.8	0.304	1.014		
19	BL0107DS	1	1	7.8		1.011	101%	
20	69886	2	1	9.0	0.721	2.346	M	
21	69886	2	1	9.5		2.462		
22	69886D	2	1	9.4	0.744	2.430		
23	69886D	2	1	9.7		2.527		
24	69886S	2	1	16.5	1.295	4.315		
25	69886S	2	1	16.5		4.315	93%	
26	69886DS	2	1	17.3	1.362	4.529		
27	69886DS	2	1	17.3		4.548	105%	
28	69885	1	1	39.4		5.202	R	RERUN @ END MS
29	69885	1	1	39.6		5.221	R	
30	69887	2	1	8.9	0.706	2.307		
31	69887	2	1	9.2		2.397	s	
32	69888	4	1	11.8	1.858	6.142		
33	69888	4	1	12.0		6.246		
34	CCV	1	1	7.2		0.930	93%	
35	B	1	1	0.0		-0.026	b	
36	D4	1	1	11.6		1.510	d	
37	70235	1	1	4.1	MS 0.155	0.519		
38	70235	1	1	4.1	~~0.155~~	0.515		
39	70236	4	1	9.3	1.423	4.821		
40	70236	4	1	9.0		4.665		
41	70237	1	1	8.4	0.323	1.089		
42	70237	1	1	8.2		1.066		
43	70238	5	1	11.8	2.289	7.726		
44	70238	5	1	11.6		7.532	M	
45	BL0107-5NKC	1	1	0.0	<0.03	-0.026	I	
46	BL0107-5NKC	1	1	0.0		-0.022	s	
47	BL0107S	1	1	7.6	0.295	0.978		
48	BL0107S	1	1	7.7		0.991	99%	
49	BL0107DS	1	1	8.1	0.317	1.053	105%	

53	65836D	4	1	7.6	3.934	3.927	
54	65836D	4	1	7.6		3.940	
55	65836S	4	1	9.8	5.035	5.106	107%
56	65836S	4	1	9.5		4.963	
57	CCV	1	1	7.4		0.949	95%
58	B	1	1	0.0		-0.026	b
59	D4	1	1	11.6		1.510	d
60	65836DS	4	1	9.7	5.067	5.067	110%
61	65836DS	4	1	0.0		-0.102	CUP MISSED RERUN ON O
62	65835	1	1	0.3	<0.100	0.010	I
63	65835	1	1	0.3		0.020	I
64	65837	1	1	4.8	0.627	0.612	
65	65837	1	1	5.0		0.642	
66	65838	1	1	7.2	0.925	0.930	
67	65838	1	1	7.1		0.920	
68	BL0107-1NKC 73483	1	1	0.0	<0.03	-0.019	I
69	BL0107-1NKC	1	1	0.0		-0.022	I
70	BL0107S	1	1	7.9	0.311	1.021	103%
71	BL0107S	1	1	8.1		1.050	
72	BL0107DS	1	1	8.0	0.308	1.040	103%
73	BL0107DS	1	1	7.8		1.014	
74	73486	1	1	0.5	<0.100	0.039	
75	73486	1	1	0.6		0.049	
76	73486D	1	1	0.6	<0.100	0.059	s
77	73486D	1	1	0.6		0.049	
78	73486S	1	1	8.6	1.116	1.111	107%
79	73486S	1	1	8.6		1.121	
80	CCV	1	1	7.4		0.959	96%
81	B	1	1	0.0		-0.026	b
82	D4	1	1	11.6		1.510	d
83	73486DS	1	1	8.6	1.125	1.118	107%
84	73486DS	1	1	8.7		1.131	
85	73484	1	1	0.0	<0.100	-0.026	I
86	73484	1	1	0.0		-0.026	I
87	73485	1	1	0.1	<0.100	-0.013	I
88	73485	1	1	0.1		-0.006	I
89	73487	1	1	0.2	<0.100	0.004	I
90	73487	1	1	0.3		0.010	I
91	73488	1	1	0.1	<0.100	-0.009	s
92	73488	1	1	0.1		-0.013	I
93	73489	1	1	0.0	<0.100	-0.026	I
94	73489	1	1	0.0		-0.026	I
95	73490	10	1	7.5	9.931	9.720	
96	73490	10	1	7.8		10.141	
97	73491	10	1	9.8	12.635	12.765	
98	73491	10	1	9.6		12.505	
99	73492	10	1	8.8	11.323	11.469	
100	73492	10	1	8.6		11.177	
101	BL0107-2NKC	1	1	0.1	<0.03	-0.016	I
102	BL0107-2NKC	1	1	0.0		-0.019	I
103	CCV	1	1	7.4		0.953	95%
104	B	1	1	0.0		-0.026	b
105	D4	1	1	11.6		1.510	d
106	BL0107S	1	1	7.8	0.305	1.014	101%
107	BL0107S	1	1	7.9		1.017	
108	BL0107DS	1	1	8.0	0.309	1.037	103%
109	BL0107DS	1	1	7.9		1.021	
110	73508	1	1	0.8	<0.100	0.081	
111	73508	1	1	0.7		0.072	
112	73508D	1	1	0.7	<0.100	0.065	
113	73508D	1	1	0.8		0.075	
114	73508S	1	1	8.0	1.028	1.034	95%
115	73508S	1	1	7.9		1.021	

119	73507	1	1	0.0		-0.026	I
120	73509	1	1	2.8	0.348	0.341	
121	73509	1	1	2.8		0.340	s
122	73510	1	1	0.9	<0.100	0.097	
123	73510	1	1	0.9		0.097	
124	73511	1	1	0.0	<0.100	-0.026	I
125	73511	1	1	0.0		-0.026	I
126	CCV	1	1	7.5		0.969	97%
127	B	1	1	0.0		-0.026	b
128	D4	1	1	11.6		1.510	d
129	73512	1	1	0.0	<0.100	-0.026	I
130	73512	1	1	0.0		-0.026	I
131	73513	1	1	11.8	1.557	1.539	
132	73513	1	1	12.1		1.574	
133	73514	1	1	10.2	1.338	1.328	
134	73514	1	1	10.4		1.348	
135	73515	10	1	5.7	7.372	7.355	
136	73515	10	1	5.8		7.388	s
137	BL0107-3NKC 74131	1	1	0.0	<0.03	-0.026	I
138	BL0107-3NKC	1	1	0.0		-0.026	I
139	BL0107S	1	1	8.1	0.315	1.046	105%
140	BL0107S	1	1	8.1		1.053	
141	BL0107DS	1	1	8.0	0.313	1.040	104%
142	BL0107DS	1	1	8.1		1.046	
143	74134	1	1	2.9	0.370	0.357	
144	74134	1	1	3.1		0.383	
145	74134D	1	1	3.1	0.383	0.379	
146	74134D	1	1	3.1		0.386	
147	74134S	1	1	11.3	1.492	1.477	111%
148	74134S	1	1	11.6		1.506	
149	CCV	1	1	7.6		0.978	98%
150	B	1	1	0.0		-0.026	b
151	D4	1	1	11.6		1.510	M
152	74134DS	1	1	11.3	1.466	1.471	109%
153	74134DS	1	1	11.2		1.461	
154	74132	1	1	0.0	<0.100	-0.026	I
155	74132	1	1	0.0		-0.026	I
156	74133	1	1	0.0	<0.100	-0.026	I
157	74133	1	1	0.0		-0.026	I
158	74135	1	1	1.6	0.200	0.191	
159	74135	1	1	1.8		0.208	
160	74136	1	1	3.5	0.434	0.434	
161	74136	1	1	3.5		0.434	
162	74137	1	1	0.0	<0.100	-0.026	I
163	74137	1	1	0.0		-0.026	I
164	74138	10	1	7.9	10.335	10.238	
165	74138	10	1	8.1		10.432	
166	74139	10	1	8.3	10.465	10.789	s
167	74139	10	1	7.8		10.141	
168	74140	10	1	6.9	8.846	8.943	
169	74140	10	1	6.8		8.748	
170	73485	10	1	4.2	1.629 ~~5.429~~ MS	5.315	1.629 MS
171	73485	10	1	4.4		5.542	
172	WS 378	1	1	15.6		2.041	102%
173	ORG REF	1	1	15.1		1.983	99%
174	CCV	1	1	7.1		0.910	91%
175	B	1	1	0.0		-0.026	b
176	D4	1	1	11.6		1.510	d

INTERCEPT: 0.19 LINEAR COEF: 7.539508
CORRELATION COEF: .9999012

Printed by MGAS LDCA DATA TO BE VALIDATED (METVAL') Analyzed by MGAS

Zenon Number	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
073483	PHIL-PAR	CD R	Mercury -	PV	-0.100	-99999.0	0.311	103.	0.308	103.	00/01/07	1NKC	00/01/07	MG02	51.	31.	
[redacted]																	
BL0107	INTERNAL		Mercury -	PV	-0.030	-99999.0	0.311	103.	0.308	103.	00/01/07	1NKC	00/01/07	MG02	$$$	$$$	
[redacted]																	
BL0107	INTERNAL		Mercury -	PV	-0.030	-99999.0	0.305	101.	0.309	103.	00/01/07	2NKC	00/01/07	MG02	$$$	$$$	
074131	PHIL-PAR	MB R456	Mercury -	PV	-0.100	-99999.0	0.315	105.	0.313	104.	00/01/07	3NKC	00/01/07	MG02	36.	30.	
074132	PHIL-PAR	Unit 3 Stack-SB	Mercury -	PV	-0.100						00/01/07	3NKC	00/01/07	MG02	36.	30.	
074133	PHIL-PAR	Unit 3 Stack-BT	Mercury -	PV	-0.100						00/01/07	3NKC	00/01/07	MG02	36.	30.	
074134	PHIL-PAR	Unit 3 Stack-R1	Mercury -	PV	0.370	0.383	1.492	111.	1.466	109.	00/01/07	3NKC	00/01/07	MG02	37.	30.	
074135	PHIL-PAR	Unit 3 Stack-R2	Mercury -	PV	0.200						00/01/07	3NKC	00/01/07	MG02	37.	30.	
074136	PHIL-PAR	Unit 3 Stack-R3	Mercury -	PV	0.434						00/01/07	3NKC	00/01/07	MG02	37.	30.	
074137	PHIL-PAR	Unit 3 FGD Inlet-BT	Mercury -	PV	-0.100						00/01/07	3NKC	00/01/07	MG02	37.	30.	
074138	PHIL-PAR	Unit 3 FGD Inlet-R1	Mercury -	PV	10.335						00/01/07	3NKC	00/01/07	MG02	37.	30.	
074139	PHIL-PAR	Unit 3 FGD Inlet-R2	Mercury -	PV	10.465						00/01/07	3NKC	00/01/07	MG02	37.	30.	
074140	PHIL-PAR	Unit 3 FGD Inlet-R3	Mercury -	PV	8.846						00/01/07	3NKC	00/01/07	MG02	37.	30.	
BL0107	INTERNAL		Mercury -	PV	-0.030	-99999.0	0.315	105.	0.313	105.	00/01/07	3NKC	00/01/07	MG02	36.	30.	
													00/01/07	MG02	$$$	$$$	

32 Tests for OHKCL with an MDL of 0.030 ug Validated By CMS Control Chart Updated N/A IO Requirements met N/A

LDC AUTOSAMPLER RUN LOG (MERCURY) 00043

Date: 00.01.07(WA) Run Code: MG02 Matrix: IMP

Analyst: MG Units: µg (see comments) MDL:

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.6		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.6		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12			WS 378			
13			ORG. REF			
14			BL0107	4NIB		
15			"			
16			BL0107 S			
17			"			
18			BL0107 DS			
19			"			
20	2		69886			
21	↓		"			
22			69886 D			
23			"			
24			69886 S			
25			"			
26			69886 DS			
27			"			
28			69885			
29			"			
30		1/2	69887			
31		↓	"			
32		1/4	69888			
33		↓	"			
34			CCV			
35			B			
36			D4			
37			70235			
38			"			
39		1/4	70236			
40		↓	"			
41			70237			
42			"			
43		1/5	70238			
44		↓	"			
45			BL0107	5NKC		
46			"			
47			BL0107 S			
48			"			
49			BL0107 DS			
50			"			
51		1/4	65836			
52		↓	"			
53			65836 D			
54			"			
55			65836 S			
56			"			
57			CCV			
58			B			
59			D4			
60		1/4	65836 DS			
61		↓	"			
62			65835			
63			"			
64			65837			
65			"			
66			65838			
67			"			
68			BL0107	1NKC		
69			"			
70			BL0107 S			
71			"			
72			BL0107 DS			
73			"			
74			73486			
75			"			
76			73486 D			
77			"			
78			73486 S			
79			"			
80			CCV			

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

ICV = 1.5 mg/kg, CCV = 1.0 mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

LDC AUTOSAMPLER RUN LOG (MERCURY)

00044

Date: 00.01.07 (WA) Run Code: MG02 Matrix: WP

Analyst: MG Units: ug (see comments) MDL:

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12						
13						
14						
15						
16						
17						
18						
19						
20						
21			B			
22			D4			
23			73486 DS			
24			"			
25			73484			
26			"			
27			73485			
28			"			
29			73489			
30			"			
31			73488			
32			"			
33			73489			
34			"			
35		1/10	73490			
36			"			
37			73491			
38			"			
39			73492			
40			"			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41			BL0107	2NKC		
42			"			
43			CCV			
44			B			
45			D4			
46			BL0107S			
47			"			
48			BL0107 DS			
49			"			
50			73508			
51			"			
52			73508 D			
53			"			
54			73508 S			
55			"			
56			73508 DS			
57			"			
58			73507			
59			"			
60			73509			
61			"			
62			73510			
63			"			
64			73511			
65			"			
66			CCV			
67			B			
68			D4			
69			73512			
70			"			
71			73513			
72			"			
73			73514			
74			"			
75		1/10	73515			
76		↓	"			
77			BL0107	3NKC		
78			"			
79			BL0107-S			
80			"			

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

ICV = 1.5 mg/kg, CCV = 1.0 mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

00045

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.01.07 Run Code: HG02 Matrix: IMP.

Analyst: MG Units: µg (see comments) MDL: 0.03

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.6		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.6		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.6		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12						
13						
14						
15						
16						
17						
18						
19						
20						
21			BL0107 DS			
22			"			
23			74134			
24			"			
25			74134 D			
26			"			
27			74134 S			
28			"			
29			CCV			
30			B			
31			D4			
32			74134 DS			
33			"			
34			74132			
35			"			
36			74133			
37			"			
38			74135			
39			"			
40			74136			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41			74136			
42			74137			
43			"			
44		1/10	74138			
45			"			
46			74139			
47			"			
48			74140			
49			"			
50		1/10	73485			
51			"			
52			WS 378			
53			ORG. REF			
54			CCV			
55			B			
56			D4			
57						
58						
59						
60						
61						
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77						
78						
79						
80						

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

ICV = 1.5 mg/kg, CCV = 1.0 mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

	#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
	41	CCV (Cont. Calib. Verif.)	3N4C	20 ml	30 ml	1 X	1.0 ppb = 400 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	42	BL 2107	"	"	"	"	(Processed Blank) 74131
	43	BL 2107 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	44	74134	"	"	"	"	IMPVKC1 1000 mL
1	45	D	"	"	"	"	(Duplicate sample)
1	46	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	47	DS	"	"	"	"	(Duplicate Spiked sample)
2	48	74132	"	"	"	"	
3	49	33	"	"	"	"	
4	50	35	"	"	"	"	
5	51	36	"	"	"	"	
6	52	37	"	"	"	"	
7	53	38	"	"	"	"	
8	54	39	"	"	"	"	
9	55	40	"	"	"	"	
10	56		"	"	"	"	

Comments

* concentration based on 30 ml final volume, ** concentration based on 20 ml final volume

*** group of several Method 29 testcodes

Dilution factor of 1.5 is corrected by entering the calibration concentrations listed above

Procedure/Methodology:

1 Prepare 25 ppm Intermediate stock (if required) by pipetting 625 ul., of 1000 ppm Stock to 25 ml final volume of 2% HNO3
2 Prepare 0.05 ppm Working stock daily by pipetting 200 ul., of 25 ppm Stock to 100 ml final volume of 2% HNO3
3 Using the LIMS Screen "SCNDIG" enter the required samples into LIMS
4 Using the labeling program, "DIGLBL", retreive the "SCNDIG" list and create labels for the required samples.
5 Label the falcon tubes appropriately
6 Transfer a 20 ml. aliquot of well mixed sample into the designated falcon tube
7 Spike the tubes as indicated in the comment sector of the digestion sheet
8 Add 0.5 ml. of conc. Nitric Acid (HNO3), and 1 ml. of conc. Sulphuric acid, (H2SO4), to each tube
9 Add 3 ml. Potassium Permanganate (KMnO4), colour should remain for at least 15 minutes
10 Add 1.5 ml. of Potassium persulphate, (K2S2O8), to each tube
11 Mix samples, cap loosely and place in a water bath @ 95 degrees C for 2 hours
12 Remove tubes and allow to cool to room temperature
13 Add 1.0 ml. 20% Hydroxylamine Hydrochloride to each tube
14 Recap tubes and shake until the Potassium Permanganate (KMnO4) is destroyed and sample becomes colourless
15 Dilute the sample to a final volume of 30 ml., cap and mix well

REFERENCE STANDARDS/SPIKING SOLUTIONS:

Source: Inorganic Ventures Standard, see standard tracking binder for current lot and expiry date information

ICV/CCV STANDARDS:

Source: High Purity MESS-ZENO 30/QCA Standard, see standard tracking binder for current lot

INTERNAL REFERENCE STANDARD: (2 ppb in 10% HNO3)

Source: EPA WS 378 or SPEX CertiPrep Trace Metal - Water Supply, see standard tracking binder for current source, lot and expiry date information.

All reagents used are of a grade suitable for mercury analyses

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG
DGHGLEACH, DG29HG***

Calibration Solutions:

#	I.D.	*Conc.	Spike	**Conc. Entered
1	Blank/Dummy	0 ppb	None	0.0
2	Standard 1	0 ppb	None	0.0
3	Standard 2	0.33	200 ul of 0.05 ppm IV working standard	0.5
4	Standard 3	0.67	400 ul of 0.05 ppm IV working standard	1.0
5	Standard 4	1.0	600 ul of 0.05 ppm IV working standard	1.5
6	Standard 4	1.0	600 ul of 0.05 ppm IV working standard	1.5
7	Standard 5	1.33	800 ul of 0.05 ppm IV working standard	2.0
7	Standard 6	1.67	1000 ul of 0.05 ppm IV working standard	2.5

Check List

- ✓ Digest Code/labels
- ✓ Samples poured out
- ✓ Acids added
- ✓ Reagents added
- ✓ Samples spiked
- ✓ Bath at 95 degrees C
- ✓ Samples digested
- ✓ Hydroxylamine HCl added
- ✓ Samples bulked and mixed
- ✓ Rack order checked

	#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
	9	ICV (Init. Calib. Verif.)	1NKC	20 ml	30 ml	1 X	1.5 ppb = 600 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	10	BL 0107	"	"	"	"	(Processed Blank)
	11	BL 0107 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	12	73486	"	"	"	"	IMPVKCl 1000 mL
1	13	D	"	"	"	"	(Duplicate sample)
1	14	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	15	DS	"	"	"	"	(Duplicate Spiked sample)
2	16	73484	"	"	"	"	
3	17	85	"	"	"	"	
4	18	87	"	"	"	"	
5	19	88	"	"	"	"	
6	20	89	"	"	"	"	
7	21	90	"	"	"	"	
8	22	91	"	"	"	"	
9	23	92	"	"	"	"	
10	24	~~93~~ NN	"	"	"	"	
	25	CCV (Cont. Calib. Verif.)	2NKC	20 ml	30 ml	1 X	1.0 ppb = 400 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	26	BL 0107	"	"	"	"	(Processed Blank)
	27	BL 0107 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	28	73508	"	"	"	"	IMPVKCl 1000 mL
1	29	D	"	"	"	"	(Duplicate sample)
1	30	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	31	DS	"	"	"	"	(Duplicate Spiked sample)
2	32	73507	"	"	"	"	
3	33	509	"	"	"	"	
4	34	510	"	"	"	"	
5	35	511	"	"	"	"	
6	36	512	"	"	"	"	
7	37	513	"	"	"	"	
8	38	514	"	"	"	"	
9	39	515	"	"	"	"	
10	40		"	"	"	"	

Notes: Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C
DG29HGI, DG29HGF, DG101AA1, DG101AA2

Include External Reference Material (EPA WS 378 or SPEX CertiPrep TM - WS) per run

Prepare 0.05 ppm standards daily

HND3 Lot. No. 169021	H2SO4 Lot. No. 318020	Bath Temps. 195°C

Prepared By: M. Alapinos Date: 000107 Checked by: M. Alapinos

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG
DGHGLEACH, DG29HG***

Calibration Solutions:

#	I.D.	*Conc.	Spike	**Conc. Entered
1	Blank/Dummy	0 ppb	None	0.0
2	Standard 1	0 ppb	None	0.0
3	Standard 2	0.33	200 ul of 0.05 ppm IV working standard	0.5
4	Standard 3	0.67	400 ul of 0.05 ppm IV working standard	1.0
5	Standard 4	1.0	600 ul of 0.05 ppm IV working standard	1.5
6	Standard 4	1.0	600 ul of 0.05 ppm IV working standard	1.5
7	Standard 5	1.33	800 ul of 0.05 ppm IV working standard	2.0
7	Standard 6	1.67	1000 ul of 0.05 ppm IV working standard	2.5

Check List
- Digest Code/labels
- Samples poured out
- Acids added
- Reagents added
- Samples spiked
- Bath at 95 degrees C
- Samples digested
- Hydroxylamine HCl added
- Samples bulked and mixed
- Rack order checked

	#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
	9	ICV (Init. Calib. Verif.)	4N1B	20 ml	30 ml	1 X	1.5 ppb = 600 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	10	BL 0107	"	"	"	"	(Processed Blank)
	11	BL 0107 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	12	69886	"	"	"	"	FINALVOL 300 mL
1	13	D	"	"	"	"	(Duplicate sample)
1	14	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	15	DS	"	"	"	"	(Duplicate Spiked sample)
2	16	69885	"	"	"	"	
3	17	87	"	"	"	"	
4	18	88	"	"	"	"	
5	19	70235	"	"	"	"	
6	20	36	"	"	"	"	
7	21	37	"	"	"	"	
8	22	38	"	"	"	"	
9	23	69884	"	"	"	"	
10	24		"	"	"	"	
	25	CCV (Cont. Calib. Verif.)		20 ml	30 ml	1 X	1.0 ppb = 400 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	26	BL	"	"	"	"	(Processed Blank)
	27	BL S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	28		"	"	"	"	
1	29	D	"	"	"	"	(Duplicate sample)
1	30	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	31	DS	"	"	"	"	(Duplicate Spiked sample)
2	32		"	"	"	"	
3	33		"	"	"	"	
4	34		"	"	"	"	
5	35		"	"	"	"	
6	36		"	"	"	"	
7	37		"	"	"	"	
8	38		"	"	"	"	
9	39		"	"	"	"	
10	40		"	"	"	"	

Notes: Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C
DG29HGI, DG29HGF, DG101AA1, DG101AA2

Include External Reference Material (EPA WS 378 or SPEX CertiPrep TM - WS) per run

Prepare 0.05 ppm standards daily

HNO3 Lot. No. 119091	H2SO4 Lot. No. 318020	Bath Temps. 1 195°C

Prepared By: [signature] Date: 000107 Checked by: [signature]

RUN DATE: 01-07-2000 CHART DATE: 01-08-2000 00049
CHART SPEED: 30
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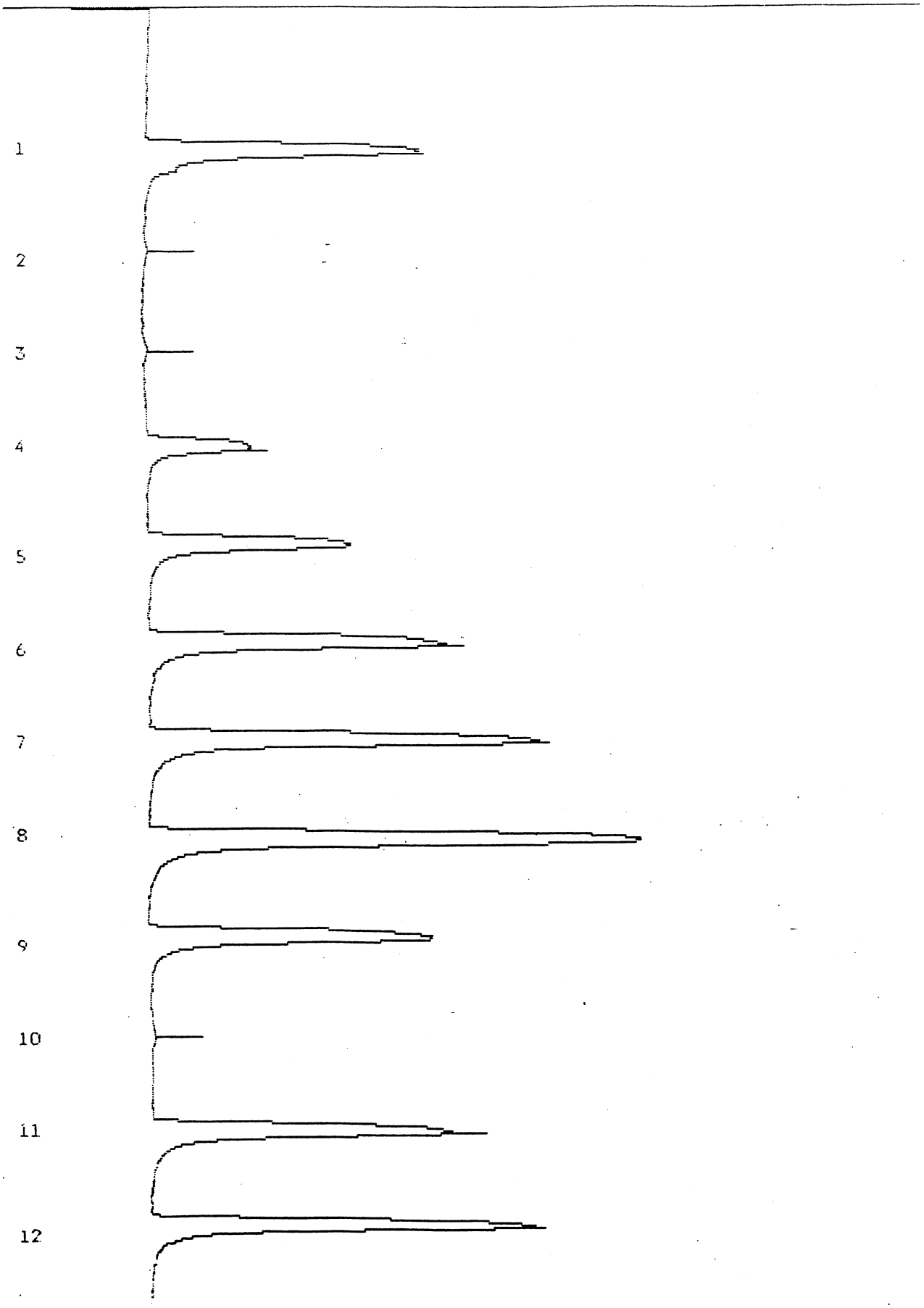

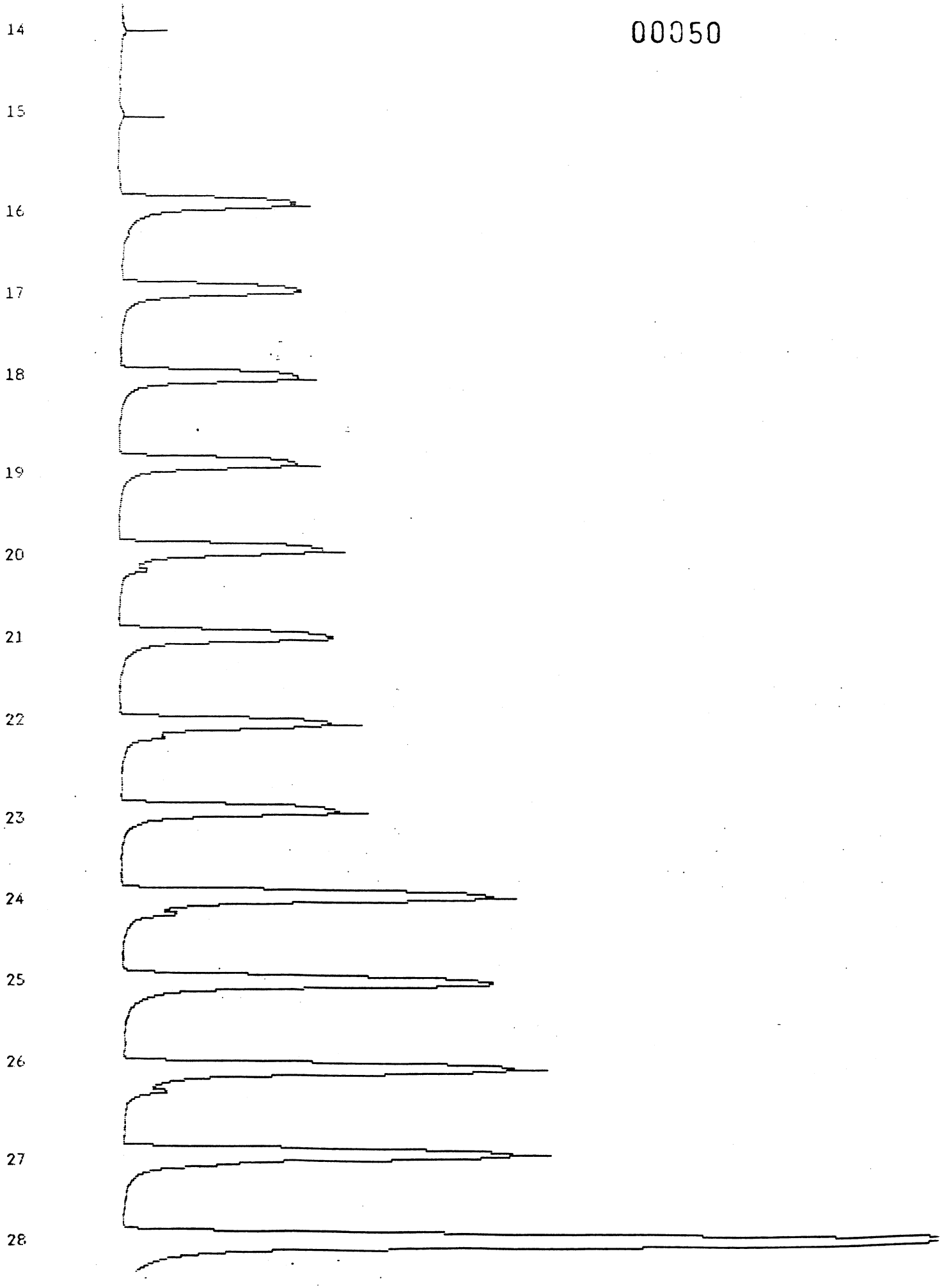
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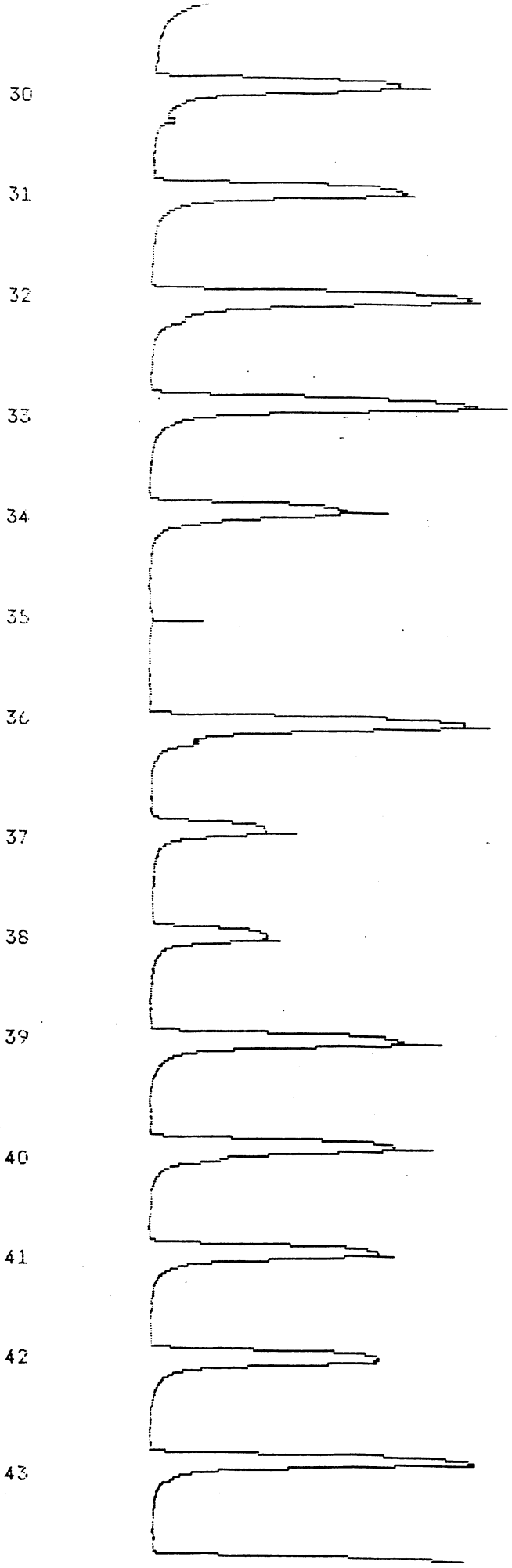
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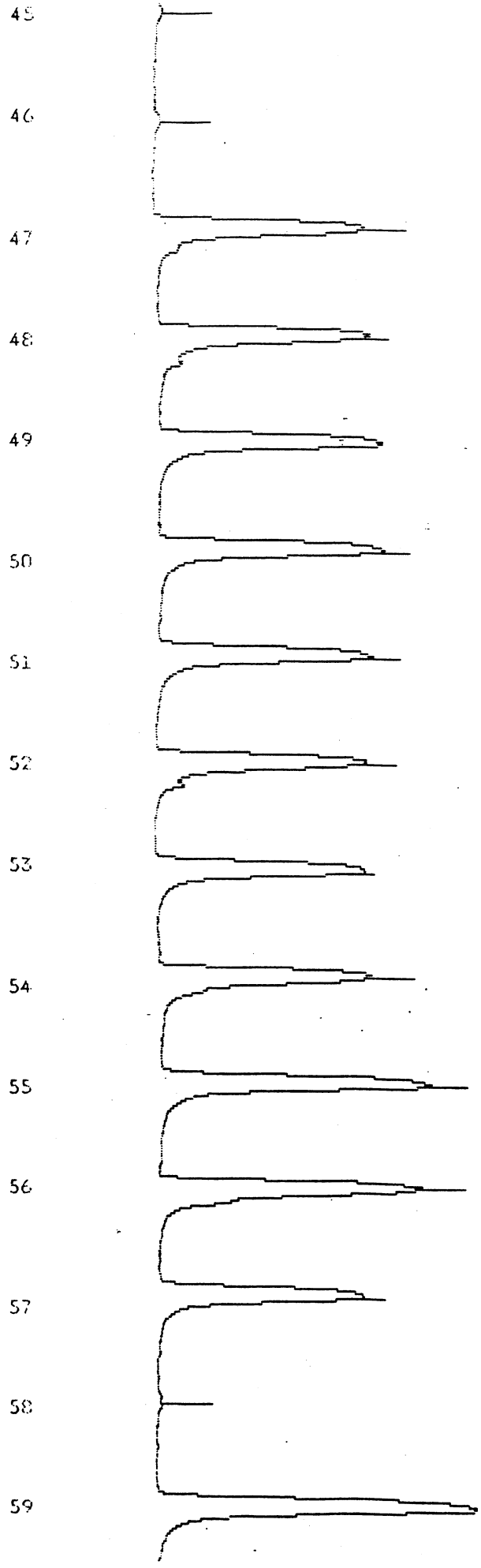
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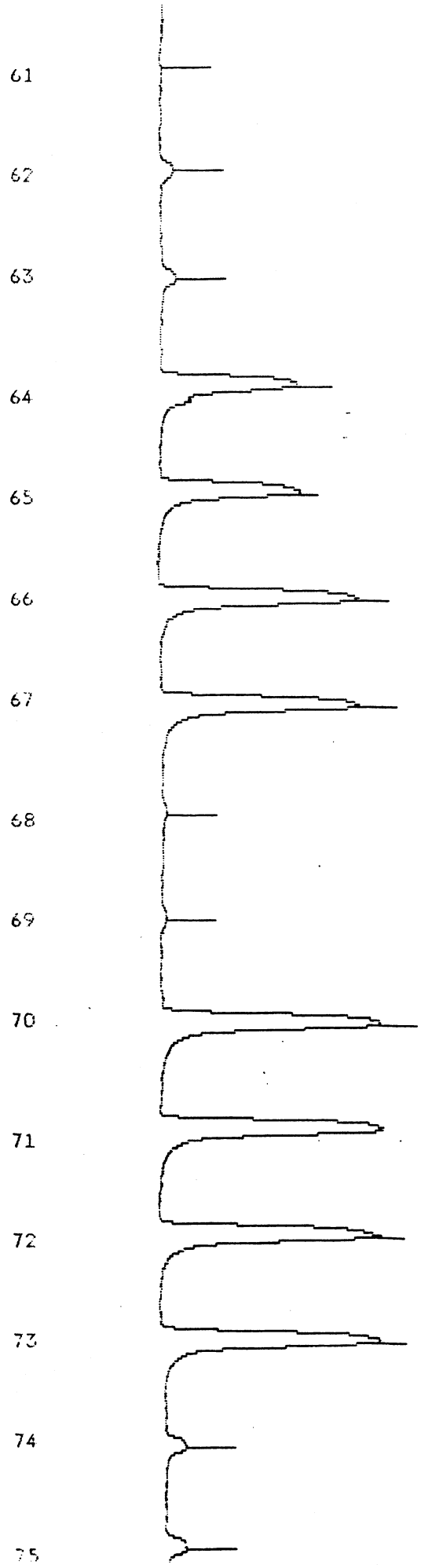
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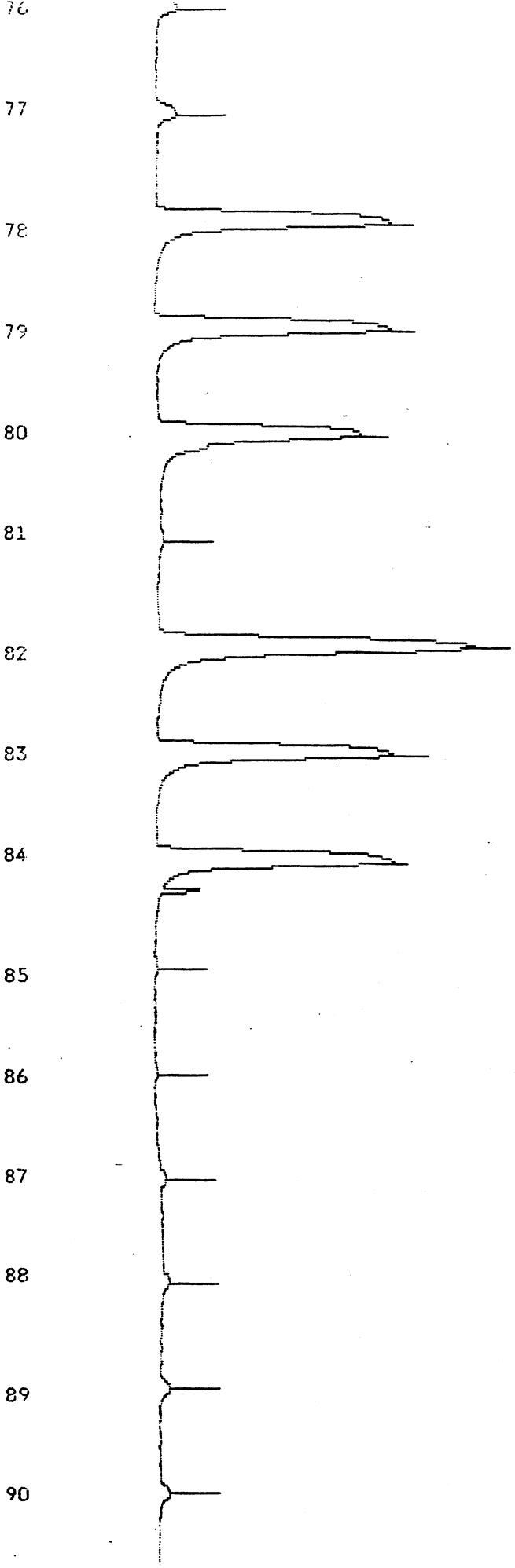
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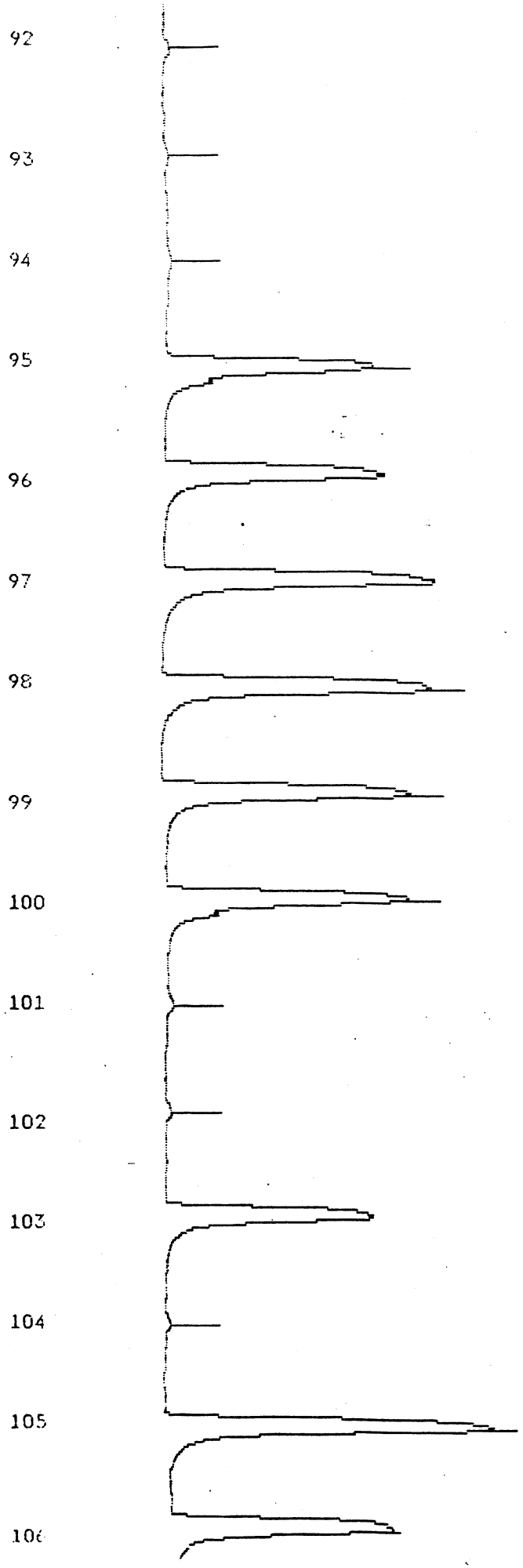
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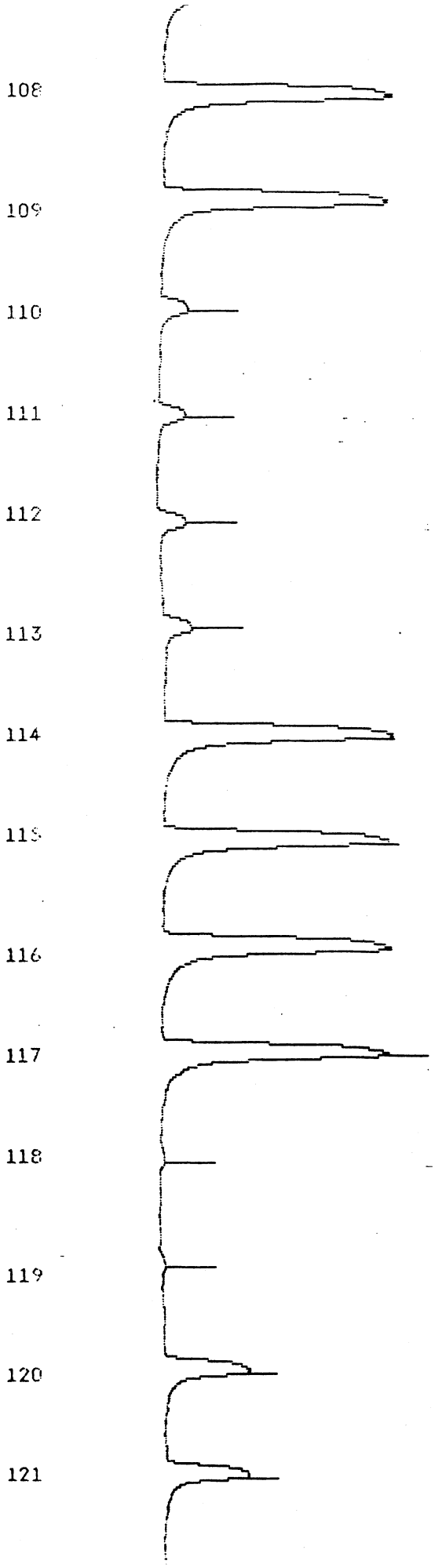
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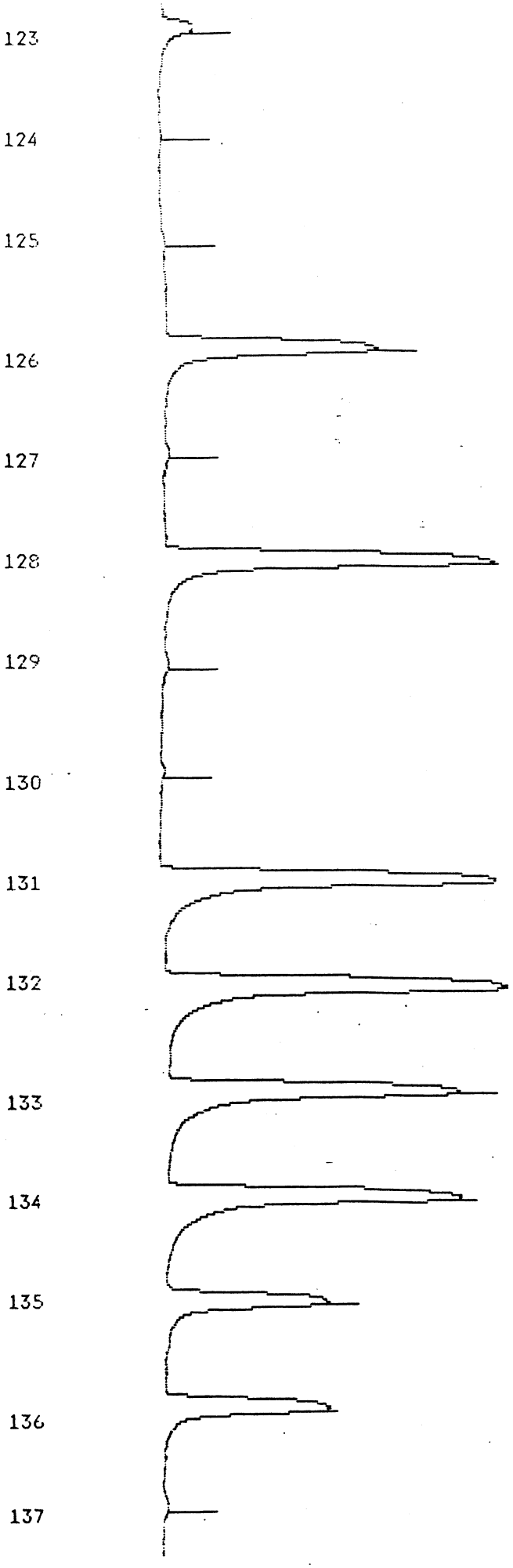
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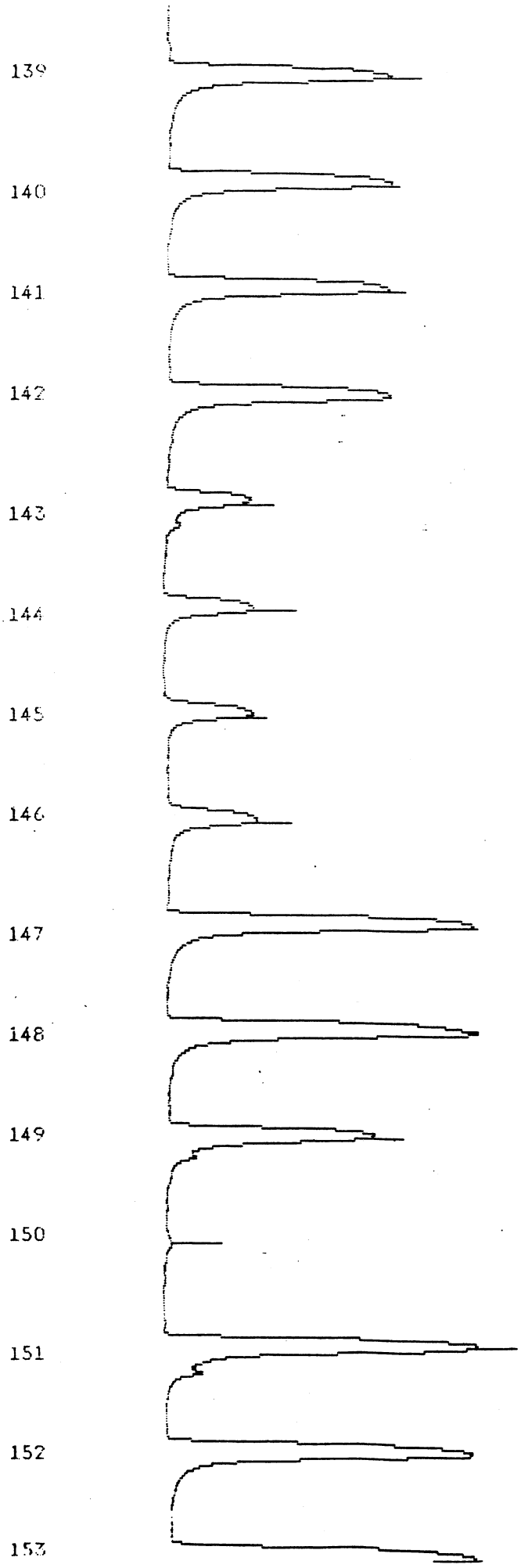
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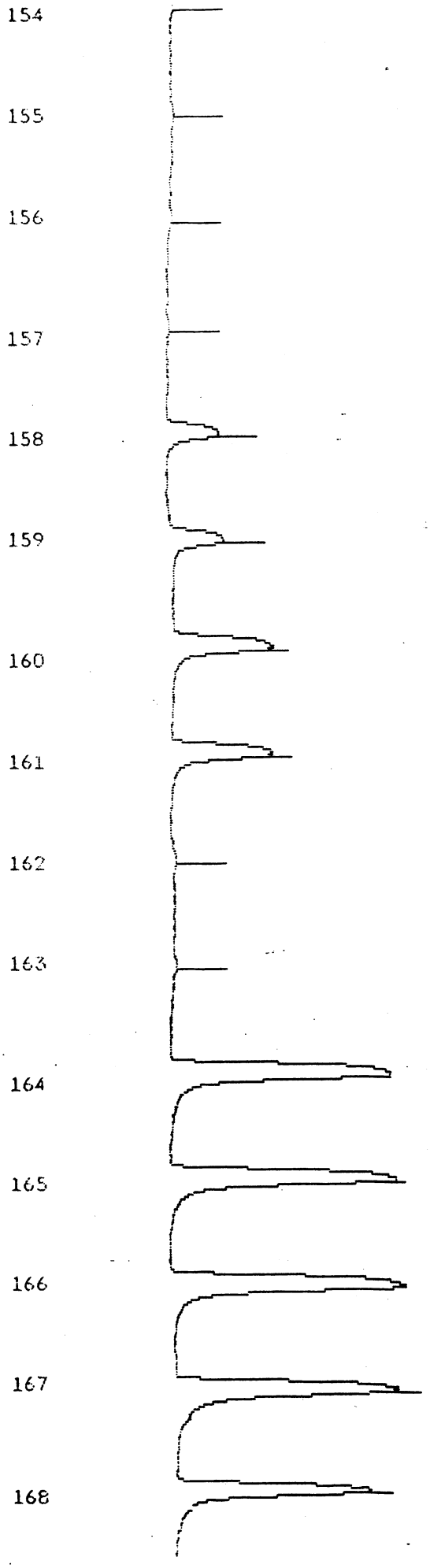
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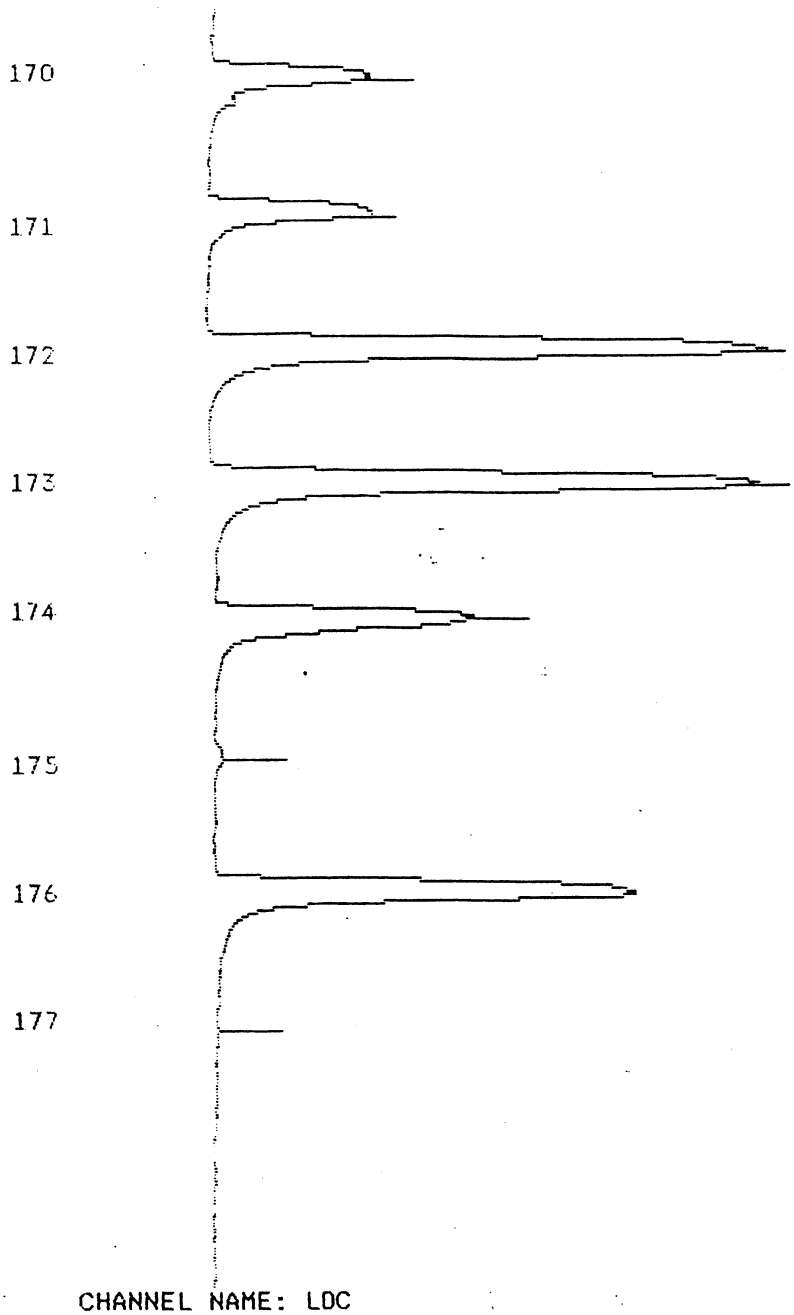
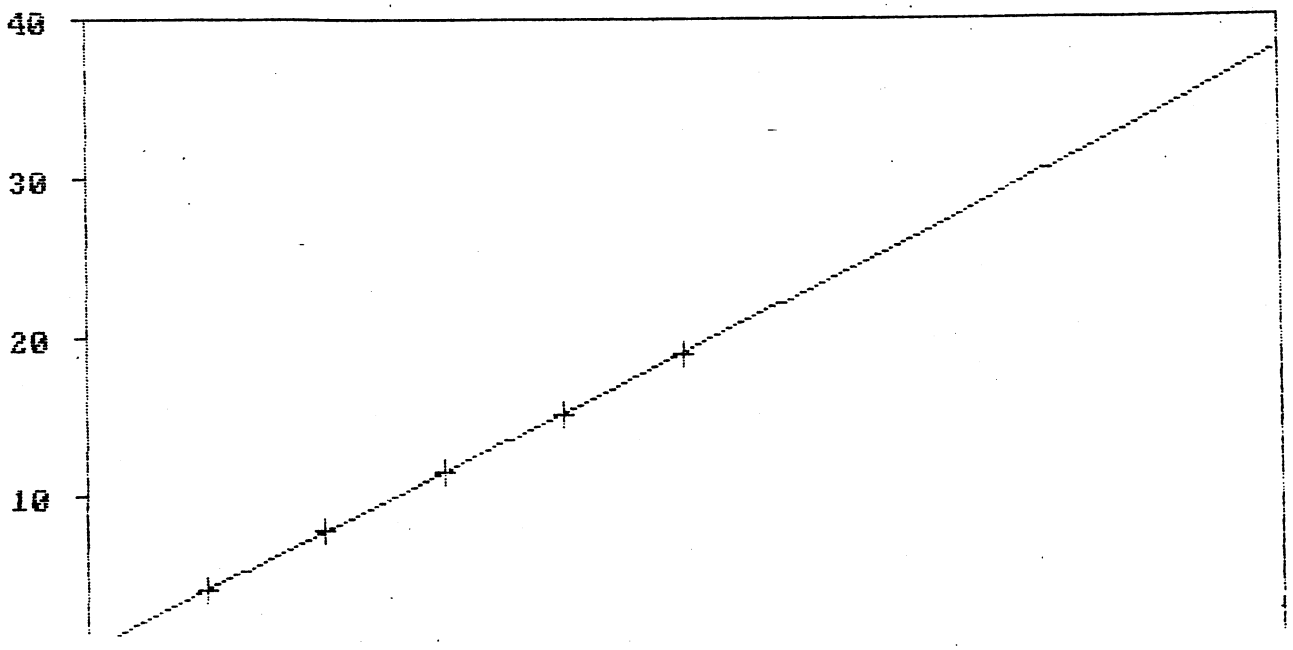


CHANNEL NAME: LDC
RUN NAME: 000107WA



DATA TYPE: FIA CALIBRATION ORDER: 1

INTERCEPT = 0.19 SLOPE = 7.539508

CORRELATION: .9999012

00061

CHANNEL NAME: LOC
RUN DATE: 01-07-2000
SAMPLE TABLE NAME: 000107WA
METHOD NAME: HGWATER

ppb

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA	Total µg	CONCENTRATION	EF	
1	PRIMER	1	1	10.8		1.406	s	
2	DUMMY	1	1	0.1		-0.013	I	
3	S1: 0	1	1	0.1		-0.013	I	
4	S2: .5	1	1	4.0		0.502		
5	S3: 1	1	1	7.9		1.017		
6	S4: 1.5	1	1	11.6		1.510		
7	S5: 2	1	1	15.1		1.983		
8	S6: 2.5	1	1	19.0		2.501		
9	ICV	1	1	10.9		1.425	95%	
10	B	1	1	0.0		-0.026	b	
11	D4	1	1	11.6		1.510	d	
12	WS 378	1	1	15.1		1.976	99%	
13	ORG REF	1	1	15.0		1.963	98%	
14	BL0107-4N1B 69884	1	1	0.1	<0.03	-0.016	I	
15	BL0107-4N1B	1	1	0.1		-0.016	I	
16	BL0107S	1	1	7.7	0.302	0.998	101%	
17	BL0107S	1	1	7.8		1.014		
18	BL0107DS	1	1	7.8	0.304	1.014	101%	
19	BL0107DS	1	1	7.8		1.011		
20	69886	2	1	9.0	0.721	2.346	M	
21	69886	2	1	9.5		2.462		
22	69886D	2	1	9.4	0.744	2.430		
23	69886D	2	1	9.7		2.527		
24	69886S	2	1	16.5	1.295	4.315	93%	
25	69886S	2	1	16.5		4.315		
26	69886DS	2	1	17.3	1.362	4.529	105%	
27	69886DS	2	1	17.3		4.548		
28	69885	1	1	39.4		5.202	R	RERUN @ END mt
29	69885	1	1	39.6		5.221	R	
30	69887	2	1	8.9	0.706	2.307		
31	69887	2	1	9.2		2.397	s	
32	69888	4	1	11.8	1.858	6.142		
33	69888	4	1	12.0		6.246		
34	CCV	1	1	7.2		0.930	93%	
35	B	1	1	0.0		-0.026	b	
36	D4	1	1	11.6		1.510	d	
37	70235	1	1	4.1	MS 0.155 ~~0.155~~	0.519		
38	70235	1	1	4.1		0.515		
39	70236	4	1	9.3	1.423	4.821		
40	70236	4	1	9.0		4.665		
41	70237	1	1	8.4	0.323	1.089		
42	70237	1	1	8.2		1.066		
43	70238	5	1	11.8	2.289	7.726		
44	70238	5	1	11.6		7.532	M	
45	BL0107-5NKC	1	1	0.0	<0.03	-0.026	I	
46	BL0107-5NKC	1	1	0.0		-0.022	s	
47	BL0107S	1	1	7.6	0.295	0.978	99%	
48	BL0107S	1	1	7.7		0.991		
49	BL0107DS	1	1	8.1	0.317	1.053	105%	

120	73509	1	1	2.8	0.344	0.347		
121	73509	1	1	2.8		0.340	s	
122	73510	1	1	0.9	<0.100	0.097		
123	73510	1	1	0.9		0.097		
124	73511	1	1	0.0	<0.100	-0.026	I	
125	73511	1	1	0.0		-0.026	I	
126	CCV	1	1	7.5		0.969		97%
127	B	1	1	0.0		-0.026	b	
128	D4	1	1	11.6		1.510	d	
129	73512	1	1	0.0	<0.100	-0.026	I	
130	73512	1	1	0.0		-0.026	I	
131	73513	1	1	11.8	1.557	1.539		
132	73513	1	1	12.1		1.574		
133	73514	1	1	10.2	1.338	1.328		
134	73514	1	1	10.4		1.348		
135	73515	10	1	5.7	7.372	7.355		
136	73515	10	1	5.8		7.388	s	
137	BL0107-3NKC 74131	1	1	0.0	<0.03	-0.026	I	
138	BL0107-3NKC	1	1	0.0		-0.026	I	
139	BL0107S	1	1	8.1	0.315	1.046		105%
140	BL0107S	1	1	8.1		1.053		
141	BL0107DS	1	1	8.0	0.313	1.040		
142	BL0107DS	1	1	8.1		1.046		104%
143	74134	1	1	2.9	0.370	0.357		
144	74134	1	1	3.1		0.383		
145	74134D	1	1	3.1	0.383	0.379		
146	74134D	1	1	3.1		0.386		
147	74134S	1	1	11.3	1.492	1.477		111%
148	74134S	1	1	11.6		1.506		
149	CCV	1	1	7.6		0.978		98%
150	B	1	1	0.0		-0.026	b	
151	D4	1	1	11.6		1.510	M	
152	74134DS	1	1	11.3	1.466	1.471		109%
153	74134DS	1	1	11.2		1.461		
154	74132	1	1	0.0	<0.100	-0.026	I	
155	74132	1	1	0.0		-0.026	I	
156	74133	1	1	0.0	<0.100	-0.026	I	
157	74133	1	1	0.0		-0.026	I	
158	74135	1	1	1.6	0.200	0.191		
159	74135	1	1	1.8		0.208		
160	74136	1	1	3.5	0.434	0.434		
161	74136	1	1	3.5		0.434		
162	74137	1	1	0.0	<0.100	-0.026	I	
163	74137	1	1	0.0		-0.026	I	
164	74138	10	1	7.9	10.335	10.238		
165	74138	10	1	8.1		10.432		
166	74139	10	1	8.3	10.465	10.789	s	
167	74139	10	1	7.8		10.141		
168	74140	10	1	6.9	8.846	8.943		
169	74140	10	1	6.8		8.748		
170	73485	10	1	4.2	1.629 ~~5.429~~ MS	5.315		1.629 MS
171	73485	10	1	4.4		5.542		
172	WS 378	1	1	15.6		2.041		102%
173	ORG REF	1	1	15.1		1.983		99%
174	CCV	1	1	7.1		0.910		91%
175	B	1	1	0.0		-0.026	b	
176	D4	1	1	11.6		1.510	d	

INTERCEPT: 0.19 LINEAR COEF: 7.539508
CORRELATION COEF: .9999012

54	65836O	4	1	7.6		3.940		
55	65836S	4	1	9.8	5.038	5.106	107%	
56	65836S	4	1	9.5		4.963		
57	CCV	1	1	7.4		0.949	95%	
58	B	1	1	0.0		-0.026	b	
59	D4	1	1	11.6		1.510	d	
60	65836DS	4	1	9.7	5.067	5.067	110%	
61	65836DS	4	1	0.0		-0.102	CLIP MISSED RERUN ON OIL	
62	65835	1	1	0.3	<0.100	0.010	I	
63	65835	1	1	0.3		0.020	I	
64	65837	1	1	4.8	0.627	0.612		
65	65837	1	1	5.0		0.642		
66	65838	1	1	7.2	0.925	0.930		
67	65838	1	1	7.1		0.920		
68	BL0107-1NKC 73483	1	1	0.0	<0.03	-0.019	I	
69	BL0107-1NKC	1	1	0.0		-0.022	I	
70	BL0107S	1	1	7.9	0.311	1.021	103%	
71	BL0107S	1	1	8.1		1.050		
72	BL0107DS	1	1	8.0	0.308	1.040	103%	
73	BL0107DS	1	1	7.8		1.014		
74	73486	1	1	0.5	<0.100	0.039		
75	73486	1	1	0.6		0.049		
76	73486D	1	1	0.6	<0.100	0.059	s	
77	73486D	1	1	0.6		0.049		
78	73486S	1	1	8.6	1.116	1.111	107%	
79	73486S	1	1	8.6		1.121		
80	CCV	1	1	7.4		0.959	96%	
81	B	1	1	0.0		-0.026	b	
82	D4	1	1	11.6		1.510	d	
83	73486DS	1	1	8.6	1.125	1.118	107%	
84	73486DS	1	1	8.7		1.131		
85	73484	1	1	0.0	<0.100	-0.026	I	
86	73484	1	1	0.0		-0.026	I	
87	73485	1	1	0.1	<0.100	-0.013	I	
88	73485	1	1	0.1		-0.006	I	
89	73487	1	1	0.2	<0.100	0.004	I	
90	73487	1	1	0.3		0.010	I	
91	73488	1	1	0.1	<0.100	-0.009	s	
92	73488	1	1	0.1		-0.013	I	
93	73489	1	1	0.0	<0.100	-0.026	I	
94	73489	1	1	0.0		-0.026	I	
95	73490	10	1	7.5	9.931	9.720		
96	73490	10	1	7.8		10.141		
97	73491	10	1	9.8	12.635	12.765		
98	73491	10	1	9.6		12.505		
99	73492	10	1	8.8	11.323	11.469		
100	73492	10	1	8.6		11.177		
101	BL0107-2NKC	1	1	0.1	<0.03	-0.016	I	
102	BL0107-2NKC	1	1	0.0		-0.019	I	
103	CCV	1	1	7.4		0.953	95%	
104	B	1	1	0.0		-0.026	b	
105	D4	1	1	11.6		1.510	d	
106	BL0107S	1	1	7.8	0.305	1.014	101%	
107	BL0107S	1	1	7.9		1.017		
108	BL0107DS	1	1	8.0	0.309	1.037	103%	
109	BL0107DS	1	1	7.9		1.021		
110	73508	1	1	0.8	<0.100	0.081		
111	73508	1	1	0.7		0.072		
112	73508D	1	1	0.7	<0.100	0.065		
113	73508D	1	1	0.8		0.075		
114	73508S	1	1	8.0	1.028	1.034	95%	
115	73508S	1	1	7.9		1.021		

Zenon Number	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
073483	PHIL-PAR	CD R	Mercury -	PV	-0.0100	-99999.0	0.1000	100.	0.1000	100.	00/01/07	1GPO	00/01/07	MG01	51.	31.	*BLKIMP*
[redacted]																	
BL0107	INTERNAL		Mercury -	PV	-0.0100	-99999.0	0.1000	100.	0.1000	100.	00/01/07	1GPO	00/01/07	MG01	$$$	$$$	*BLKIMP*
[redacted]																	
BL0107	INTERNAL		Mercury -	PV	-0.0100	-99999.0	0.1020	102.	0.1010	101.	00/01/07	2GPO	00/01/07	MG01	$$$	$$$	*BLKIMP*
074131	PHIL-PAR	MB R456	Mercury -	PV	-0.0100	-99999.0	0.1000	100.	0.1010	101.	00/01/07	3GPO	00/01/07	MG01	36.	30.	*BLKIMP*
074132	PHIL-PAR	Unit 3 Stack-SB	Mercury -	PV	-0.2500						00/01/07	3GPO	00/01/07	MG01	36.	30.	*DDL*
074133	PHIL-PAR	Unit 3 Stack-BT	Mercury -	PV	-0.2500						00/01/07	3GPO	00/01/07	MG01	36.	30.	*DDL*
074134	PHIL-PAR	Unit 3 Stack-R1	Mercury -	PV	-0.2500	-0.2500	2.6120	105.	2.4460	98.	00/01/07	3GPO	00/01/07	MG01	37.	30.	*DDL*
074135	PHIL-PAR	Unit 3 Stack-R2	Mercury -	PV	-0.2500						00/01/07	3GPO	00/01/07	MG01	37.	30.	*DDL*
074136	PHIL-PAR	Unit 3 Stack-R3	Mercury -	PV	-0.2500						00/01/07	3GPO	00/01/07	MG01	37.	30.	*DDL*
074137	PHIL-PAR	Unit 3 FGD Inlet-BT	Mercury -	PV	-0.2500						00/01/07	3GPO	00/01/07	MG01	37.	30.	*DDL*
074138	PHIL-PAR	Unit 3 FGD Inlet-R1	Mercury -	PV	0.3400						00/01/07	3GPO	00/01/07	MG01	37.	30.	
074139	PHIL-PAR	Unit 3 FGD Inlet-R2	Mercury -	PV	-0.2500						00/01/07	3GPO	00/01/07	MG01	37.	30.	*DDL*
074140	PHIL-PAR	Unit 3 FGD Inlet-R3	Mercury -	PV	-0.2500						00/01/07	3GPO	00/01/07	MG01	36.	30.	*DDL*
BL0107	INTERNAL		Mercury -	PV	-0.0100	-99999.0	0.1000	100.	0.1010	101.	00/01/07	3GPO	00/01/07	MG01	$$$	$$$	*BLKIMP*

32 Tests for OHPOX with an MDL of 0.010 ug Validated By CMS Control Chart Updated N/A IO Requirements met N/A

00063

TOSAMPLER RUN LOG (MERCURY)

0.01.07 Run Code: MG01 Matrix: INP

BT/MG Units: ug (see comments) MDL: 0.01

Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
	Primer (ICV)			
	Dummy (Blk)			
	Std 1 (S1)	0.0		
	Std 2 (S2)	0.6		
	Std 3 (S3)	1.0		
	Std 4 (S4)	1.6		
	Std 5 (S5)	2.0		
	Std 6 (S6)	2.6		
	ICV			
	B (Std 1)			
	D4 (Std 4)			
	BL0107	1GPO		
	"			
	BL0107S			
	"			
	BL0107DS			
	"			
10X	073486			
	"			
	073486D			
	"			
	073486S			
	"			
	073486DS			
	"			
	073484			
	"			
	073485			
	"			
	073487			
V	"			
	CCV			
	B			
	D4			
10X	073488			
	"			
	073489			
	"			
	073490			
V	"			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41		10X	073491			
42			"			
43			073492			
44			"			
45	6X		0734865			
46	↓	V	"			
47			BL0107	2GPO		
48			"			
49			BL0107S			
50			"			
51			BL0107DS			
52			"			
53		10X	073508			
54		↓	"			
55			CCV			
56			B			
57			D4			
58		10X	073508D			
59			"			
60			073508S			
61			"			
62			073508DS			
63			"			
64			073507			
65			"			
66			073509			
67			"			
68			073510			
69			"			
70			073511			
71			"			
72			073512			
73			"			
74			073513			
75			"			
76			073514			
77		V	"			
78			~~073~~ CCV			
79			B			
80			D4			

ients: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

ICV = 1.5 mg/kg, CCV = 1.0 mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

00065

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 00.01.07 Run Code: HG01 Matrix: IMP

Analyst: HG/BT Units: µg (see comments) MDL: 0.01

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.6		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.6		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.6		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12						
13						
14						
15						
16						
17						
18						
19						
20						
21		10X	073515			
22		V	"			
23			BL0107	36PD		
24			"			
25			BL0107S			
26			"			
27			BL0107DS			
28		10X	"			
29			074134			
30			"			
31			074134D			
32			"			
33			074134S			
34			"			
35			074134DS			
36			"			
37			074132			
38			"			
39			074133			
40		V	"			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41			CCV			
42			B			
43			D4			
44		10X	074135			
45			"			
46			074136			
47			"			
48			074137			
49			"			
50			074138			
51			"			
52			074139			
53			"			
54			074140			
55		V	"			
56			CCV			
57			B			
58			D4			
59						
60						
61						
62						
63						
64			~~CCV~~ MA			
65			~~B~~			
66			~~D4~~.			
67						
68						
69						
70						
71						
72						
73						
74						
75						
76						
77						
78						
79						
80						

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

ICV = 1.5 mg/kg, CCV = 1.0 mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

EPA 7470 WATER PREPARATION LOG - MERCURY

00266

DGHGLEACH, DG29HG***

Calibration Solutions:

#	I.D.	*Conc.	Spike	**Conc. Entered
1	Blank/Dummy	0 ppb	None	0.0
2	Standard 1	0 ppb	None	0.0
3	Standard 2	0.33	200 ul of 0.05 ppm IV working standard	0.5
4	Standard 3	0.67	400 ul of 0.05 ppm IV working standard	1.0
5	Standard 4	1.0	600 ul of 0.05 ppm IV working standard	1.5
6	Standard 4	1.0	600 ul of 0.05 ppm IV working standard	1.5
7	Standard 5	1.33	800 ul of 0.05 ppm IV working standard	2.0
7	Standard 6	1.67	1000 ul of 0.05 ppm IV working standard	2.5

Check List
- Digest Code/labels
- Samples poured out
- Acids added
- Reagents added
- Samples spiked
- Bath at 95 degrees C
- Samples digested
- Hydroxylamine HCl added
- Samples bulked and mixed
- Rack order checked

	#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
	9	ICV (Init. Calib. Verif.)	1GPO	20 ml	30 ml	1 X	1.5 ppb = 600 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	10	BL 0107	"	"	"	"	(Processed Blank)
	11	BL 0107 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	12	73486	"	1ml	15ml	10X	Final Volume = 250 ul
1	13	D	"	"	"	"	(Duplicate sample)
1	14	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	15	DS	"	"	"	"	(Duplicate Spiked sample)
2	16	73484	"	"	"	"	
3	17	85	"	"	"	"	
4	18	87	"	"	"	"	
5	19	88	"	"	"	"	
6	20	89	"	"	"	"	
7	21	90	"	"	"	"	
8	22	91	"	"	"	"	
9	23	92	"	"	"	"	
10	24		"	"	"	"	
	25	CCV (Cont. Calib. Verif.)	2GPO	20 ml	30 ml	1 X	1.0 ppb = 400 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	26	BL 0107	"	"	"	"	(Processed Blank) ~~250 ul~~
	27	BL 0107 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	28	73508	"	1ml	15ml	10X	250 ml
1	29	D	"	"	"	"	(Duplicate sample)
1	30	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std.Interm.
1	31	DS	"	"	"	"	(Duplicate Spiked sample)
2	32	73507	"	"	"	"	
3	33	09	"	"	"	"	
4	34	10	"	"	"	"	
5	35	11	"	"	"	"	
6	36	12	"	"	"	"	
7	37	13	"	"	"	"	
8	38	14	"	"	"	"	
9	39	15	"	"	"	"	
10	40		"	"	"	"	

Notes: Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C
DG29HGI, DG29HGF, DG101AA1, DG101AA2

Include External Reference Material (EPA WS 378 or SPEX CertiPrep TM - WS) per run

Prepare 0.05 ppm standards daily

HNO3 Lot. No. 119091 | H2SO4 Lot. No. 319020 | Bath Temps. 195 °C

Prepared By: 00-01-07 CMB Date: CMB 00/01/07 Checked by: CMB

00367

#		Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
	41	CCV (Cont. Calib. Ver(f.)	36PO	20 ml	30 ml	1 X	1.0 ppb = 400 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	42	BL 0107	"	"	"	"	(Processed Blank) 74131
	43	BL 0107 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	44	74134	"	1ml	15ml	10x	F.V. = 250 ml
1	45	D	"	↓	↓	↓	(Duplicate sample)
1	46	S	"	↓	↓	↓	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	47	DS	"	↓	↓	↓	(Duplicate Spiked sample)
2	48	74132	"	↓	↓	↓	↓
3	49	33	"	↓	↓	↓	↓
4	50	34	"	↓	↓	↓	↓
5	51	36	"	↓	↓	↓	↓
6	52	37	"	↓	↓	↓	↓
7	53	38	"	↓	↓	↓	↓
8	54	39	"	↓	↓	↓	↓
9	55	40	"	↓	↓	↓	↓
10	56		"	"	"	"	

Comments

* concentration based on 30 ml final volume, ** concentration based on 20 ml final volume

*** group of several Method 29 testcodes

Dilution factor of 1.5 is corrected by entering the calibration concentrations listed above

Procedure/Methodology:

1 Prepare 25 ppm Intermediate stock (if required) by pipetting 625 ul., of 1000 ppm Stock to 25 ml final volume of 2% HNO3
2 Prepare 0.05 ppm Working stock daily by pipetting 200 ul., of 25 ppm Stock to 100 ml final volume of 2% HNO3
3 Using the LIMS Screen "SCNDIG" enter the required samples into LIMS
4 Using the labeling program, "DIGLBL", retreive the "SCNDIG" list and create labels for the required samples.
5 Label the falcon tubes appropriately
6 Transfer a 20 ml. aliquot of well mixed sample into the designated falcon tube
7 Spike the tubes as indicated in the comment sector of the digestion sheet
8 Add 0.5 ml. of conc. Nitric Acid (HNO3), and 1 ml. of conc. Sulphuric acid, (H2SO4), to each tube
9 Add 3 ml. Potassium Permanganate (KMnO4), colour should remain for at least 15 minutes
10 Add 1.5 ml. of Potassium persulphate, (K2S2O8), to each tube
11 Mix samples, cap loosely and place in a water bath @ 95 degrees C for 2 hours
12 Remove tubes and allow to cool to room temperature
13 Add 1.0 ml. 20% Hydroxylamine Hydrochloride to each tube
14 Recap tubes and shake until the Potassium Permanganate (KMnO4) is destroyed and sample becomes colourless
15 Dilute the sample to a final volume of 30 ml., cap and mix well

REFERENCE STANDARDS/SPIKING SOLUTIONS:

Source: Inorganic Ventures Standard, see standard tracking binder for current lot and expiry date information

ICV/CCV STANDARDS:

Source: High Purity MESS-ZENO 30/QCA Standard, see standard tracking binder for current lot

INTERNAL REFERENCE STANDARD: (2 ppb in 10% HNO3)

Source: EPA WS 378 or SPEX CertiPrep Trace Metal - Water Supply, see standard tracking binder for current source, lot and expiry date information.

All reagents used are of a grade suitable for mercury analyses

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CHART SPEED: 30
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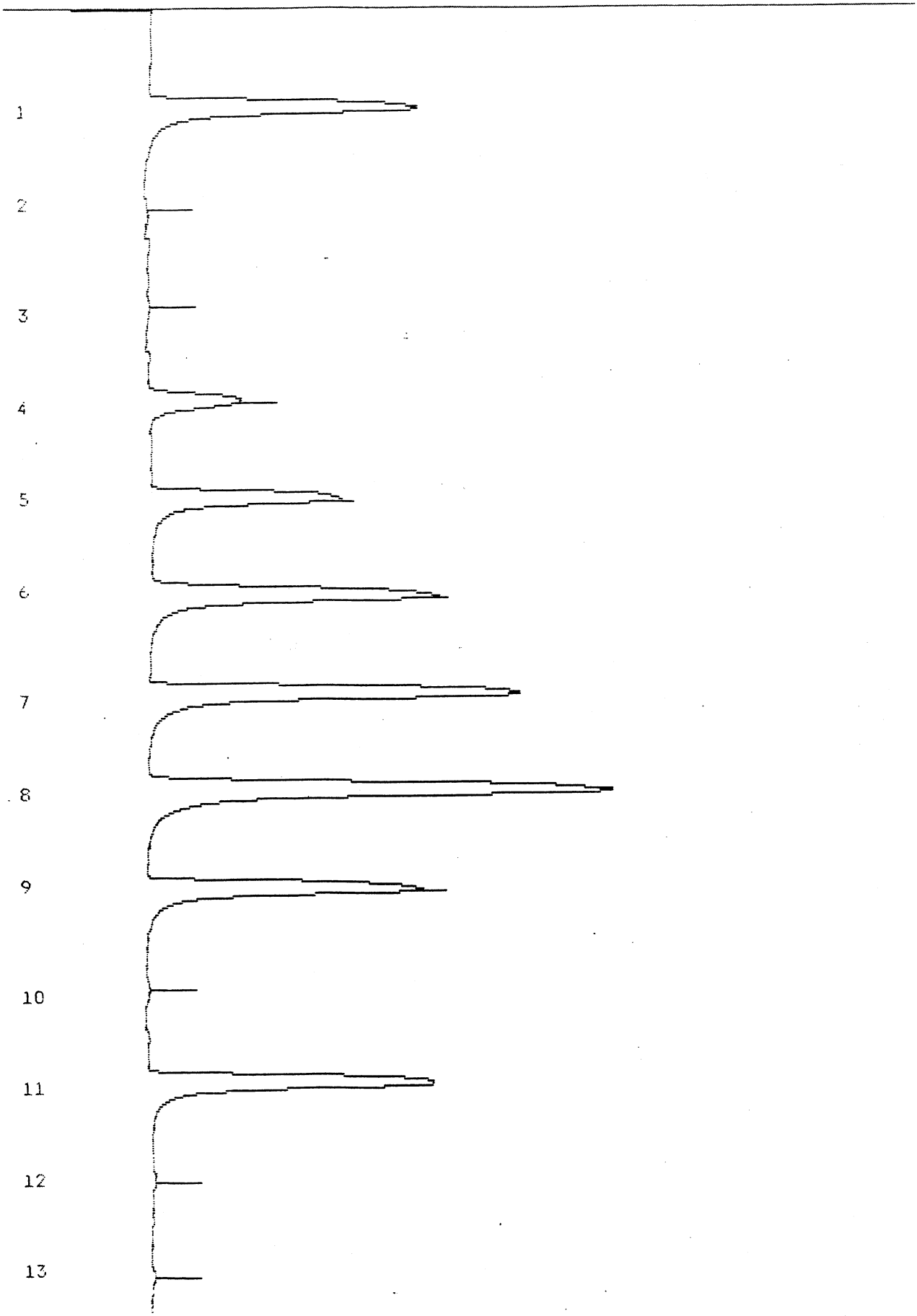

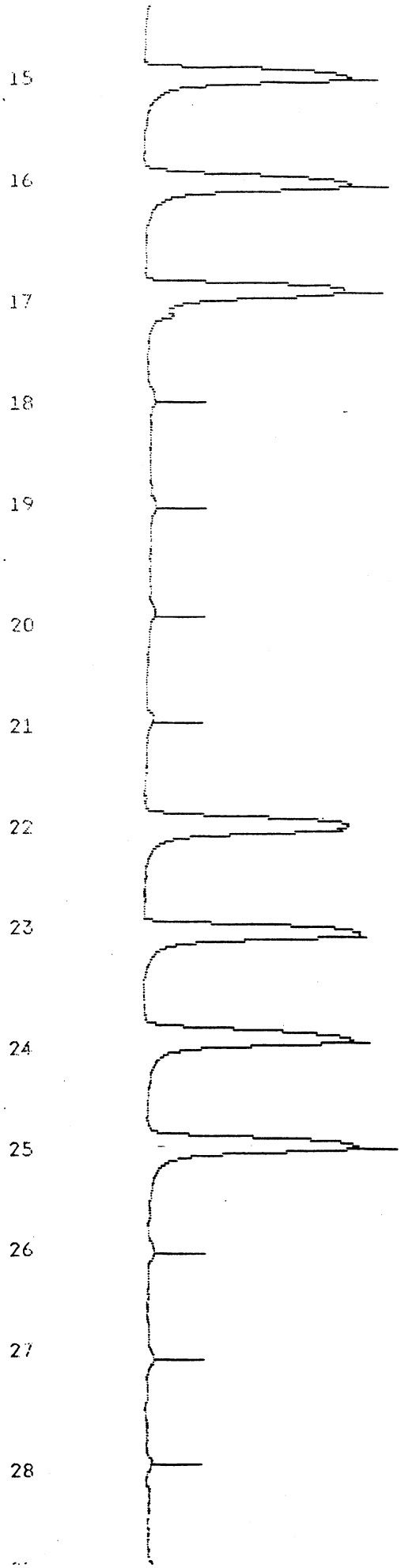
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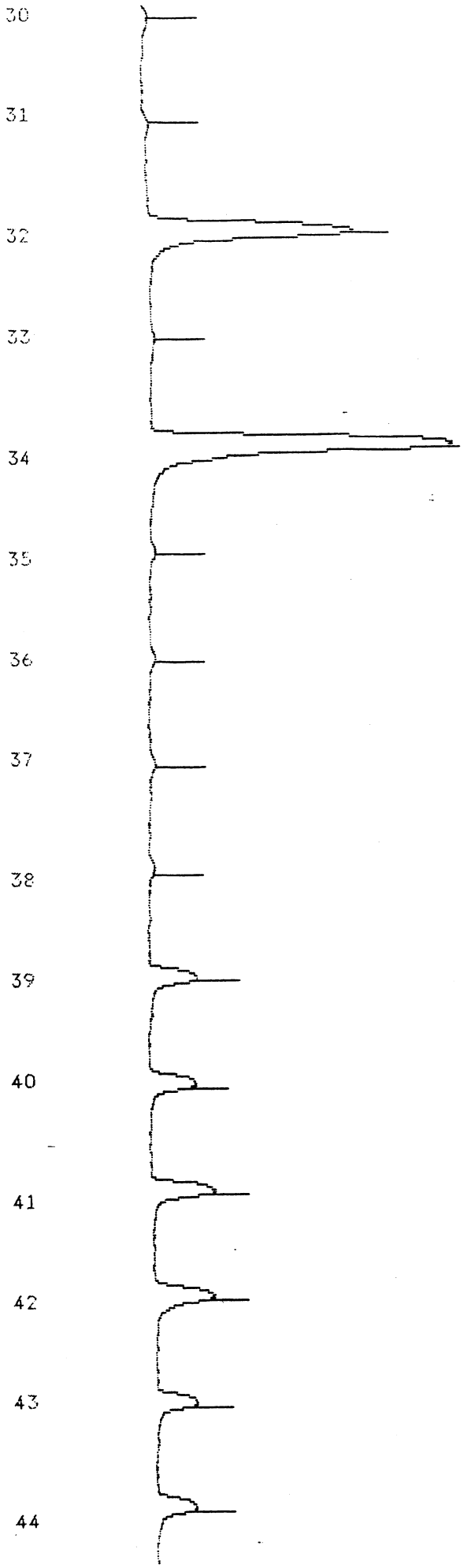
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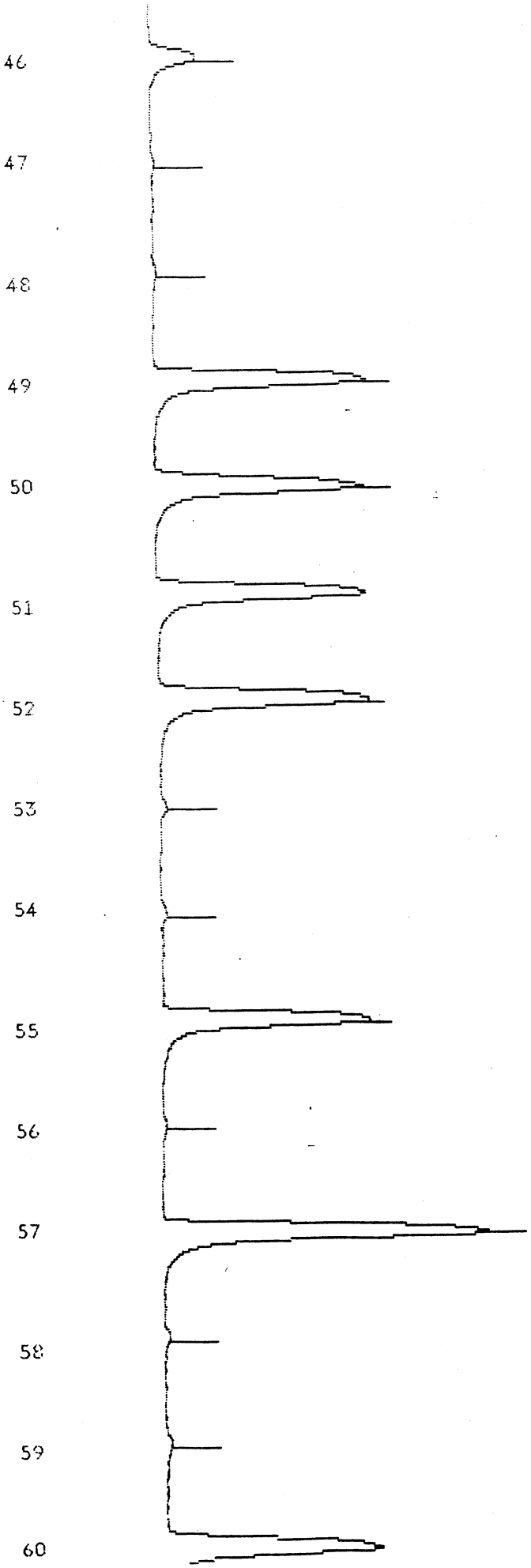
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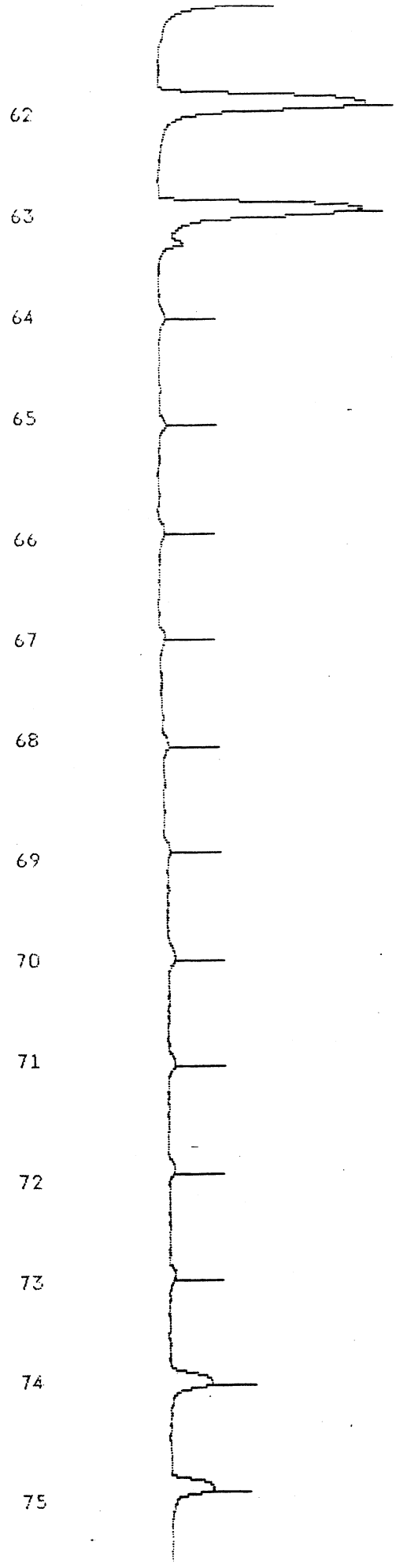
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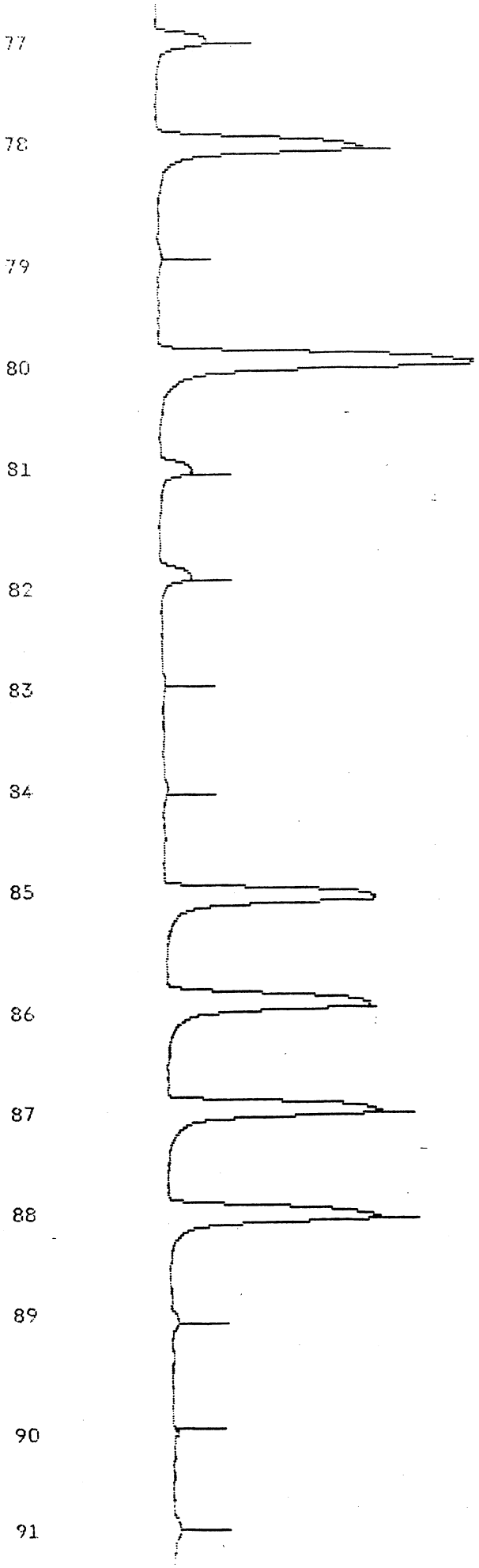
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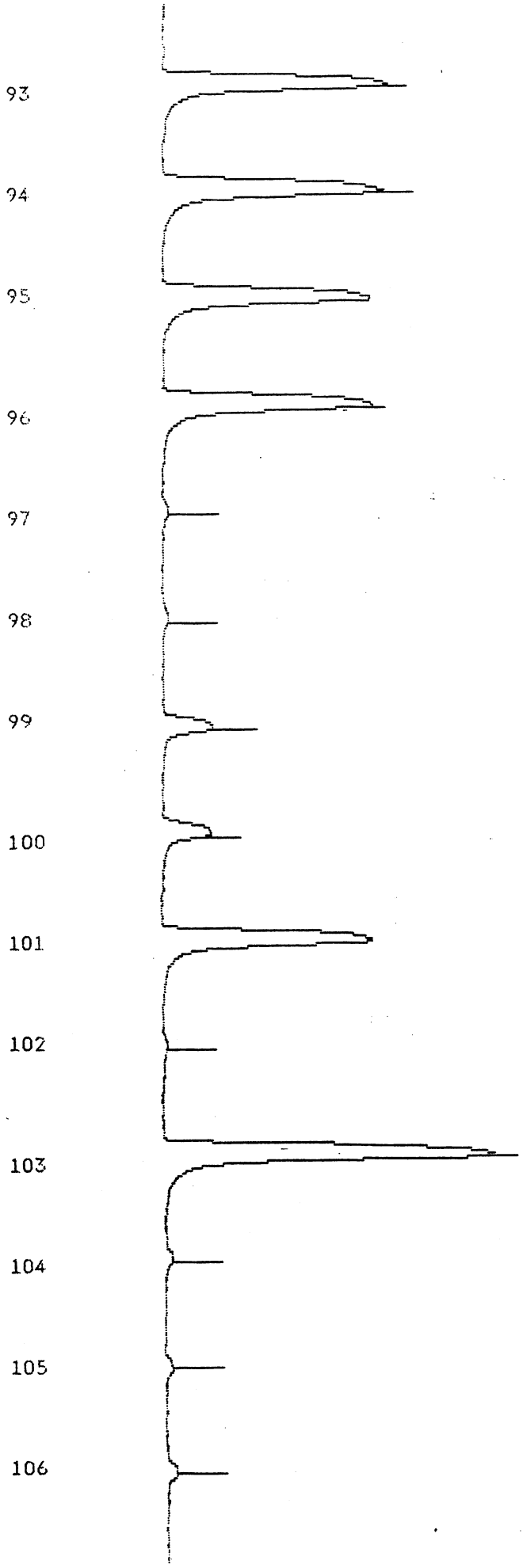
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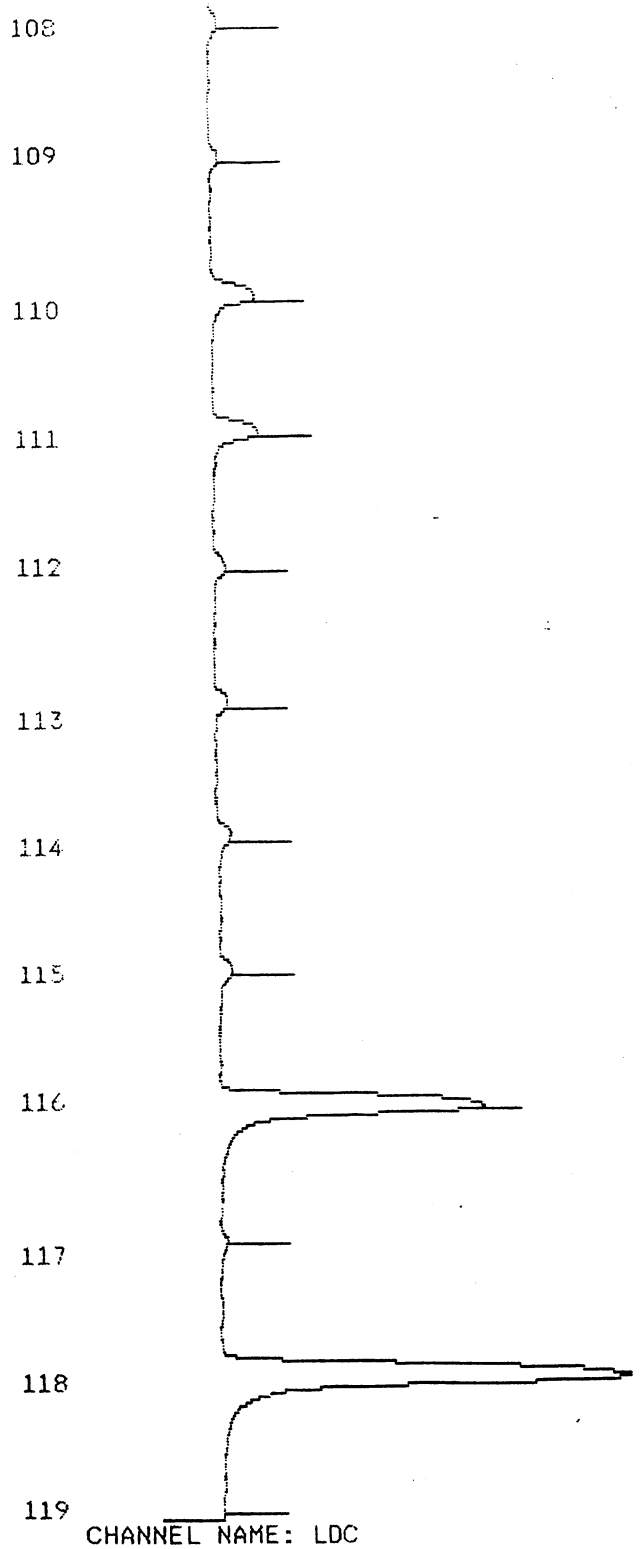

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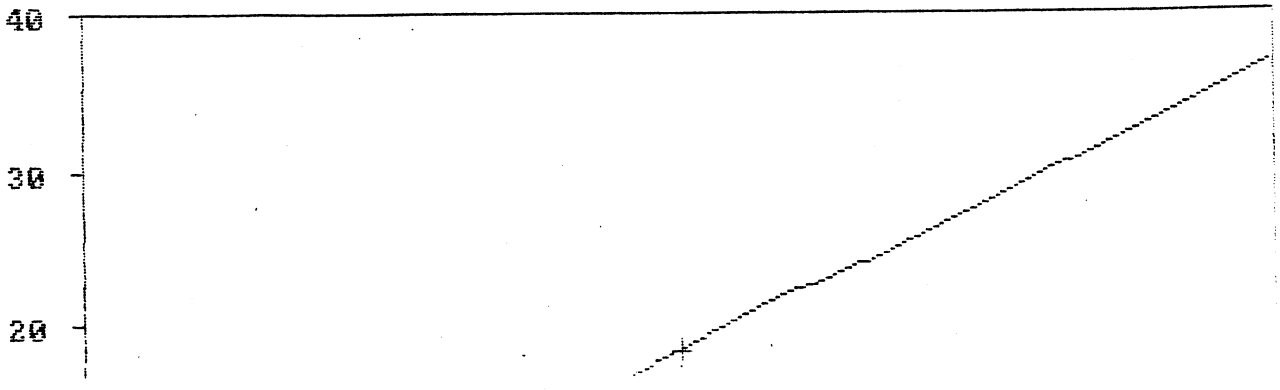
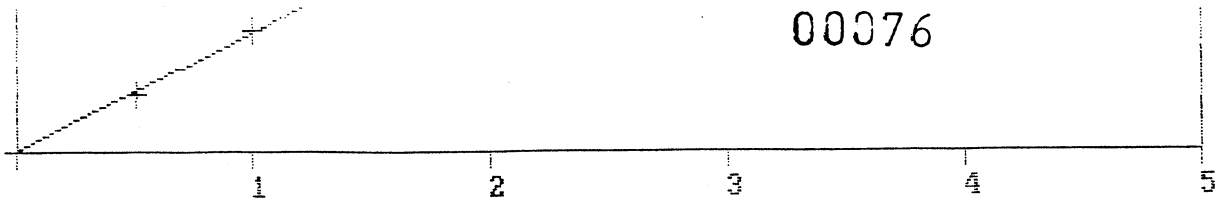
RUN NAME: 000107W





00376

DATA TYPE: FIA
INTERCEPT = -6.05

CALIBRATION ORDER: 1
SLOPE = 7.362288

CORRELATION: .9997364

CHANNEL NAME: LDC
RUN DATE: 01-07-2000
SAMPLE TABLE NAME: 000107W
METHOD NAME: HGWATER

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA	Total µg	CONCENTRATION (ppb)	EF	
1	PRIMER	1	1	10.8		1.455	s	
2	DUMMY	1	1	0.1		0.012	I	
3	S1: 0	1	1	0.0		-0.002	I	
4	S2: .5	1	1	3.6		0.476		
5	S3: 1	1	1	7.6		1.020		
6	S4: 1.5	1	1	11.3		1.531		
7	S5: 2	1	1	14.7		1.982		
8	S6: 2.5	1	1	18.4		2.493		
9	ICV	1	1	11.0		1.484		99%
10	B	1	1	0.0		-0.008	b	
11	D4	1	1	11.3		1.531	d	
12	BL0107-1GPO 73483	1	1	0.0	<0.01	-0.008	I	
13	BL0107-1GPO	1	1	0.0		-0.008	I	
14	BL0107S	1	1	7.3	0.100	0.980		100%
15	BL0107S	1	1	7.5		1.017		
16	BL0107DS	1	1	7.6	0.100	1.027		100%
17	BL0107DS	1	1	7.3		0.980		
18	73486	10	1	0.0	<0.2500	-0.016	I	
19	73486	10	1	0.0		-0.016	I	
20	73486D	10	1	0.0	<0.2500	-0.016	I	
21	73486D	10	1	0.1		0.017	I	
22	73486S	10	1	7.5	2.612	10.101		105%
23	73486S	10	1	8.0		10.797		
24	73486DS	10	1	7.7	2.604	10.366		104%
25	73486DS	10	1	7.8		10.466		
26	73484	10	1	0.1	<0.2500	0.017	I	
27	73484	10	1	0.1		0.051	I	
28	73485	10	1	0.1	<0.250	0.017	I	
29	73485	10	1	0.0		-0.016	I	
30	73487	10	1	0.1	<0.250	0.084	I	
31	73487	10	1	0.1		0.017	s	
32	CCV	1	1	7.7		1.033		103%
33	B	1	1	0.0		-0.008	b	
34	D4	1	1	11.3		1.531	d	
35	73488	10	1	0.1	<0.250	0.017	I	
36	73488	10	1	0.1		0.051	I	
37	73489	10	1	0.1	<0.250	0.051	I	
38	73489	10	1	0.1		0.017	I	
39	73490	10	1	1.6	0.523	2.107		
40	73490	10	1	1.6		2.074		
41	73491	10	1	2.2	0.701	2.903		

46	73486S	50	1	1.5			10.938	s
47	BL0107-2GPO	1	1	0.0	<0.0	00577	0.008	I
48	BL0107-2GPO	1	1	0.0			-0.008	I
49	BL0107S	1	1	7.6	0.102		1.027	102%
50	BL0107S	1	1	7.5			1.010	
51	BL0107DS	1	1	7.5	0.101		1.010	101%
52	BL0107DS	1	1	7.5			1.010	
53	73508	10	1	0.1	<0.250		0.017	I
54	73508	10	1	0.1			0.051	I
55	CCV	1	1	7.4			0.990	99%
56	B	1	1	0.0			-0.008	b
57	D4	1	1	11.3			1.531	d
58	73508D	10	1	0.1	<0.250		0.017	I
59	73508D	10	1	0.0			-0.016	I
60	73508S	10	1	7.5	2.554		10.068	102%
61	73508S	10	1	7.7			10.366	s
62	73408DS	10	1	7.3	2.430		9.802	97%
63	73408DS	10	1	7.2			9.636	
64	73407	10	1	0.1	<0.250		0.051	I
65	73407	10	1	0.1			0.051	I
66	73509	10	1	0.1	<0.250		0.017	I
67	73509	10	1	0.1			0.017	I
68	73410	10	1	0.0	<0.250		-0.016	I
69	73410	10	1	0.0			-0.016	I
70	73411	10	1	0.1	<0.250		0.084	I
71	73411	10	1	0.1			0.084	I
72	73412	10	1	0.1	<0.250		0.017	I
73	73412	10	1	0.1			0.017	I
74	73413	10	1	1.3	0.444		1.742	
75	73413	10	1	1.4			1.809	
76	73414	10	1	1.6	0.514		2.074	s
77	73414	10	1	1.6			2.041	
78	CCV	1	1	7.4			0.990	99%
79	B	1	1	0.0			-0.008	b
80	D4	1	1	11.3			1.531	d
81	73415	10	1	1.0	0.320		1.311	
82	73415	10	1	1.0			1.245	
83	BL0107-3GPO 74131	1	1	0.0	<0.700		-0.008	I
84	BL0107-3GPO	1	1	0.0			-0.008	I
85	BL0107S	1	1	7.6	0.100		1.020	100%
86	BL0107S	1	1	7.2			0.970	
87	BL0107DS	1	1	7.5	0.101		1.017	101%
88	BL0107DS	1	1	7.4			1.000	
89	74134	10	1	0.1	<0.250		0.051	I
90	74134	10	1	0.0			-0.016	I
91	74134D	10	1	0.1	<0.250		0.051	s
92	74134D	10	1	0.1			0.017	I
93	74034S	10	1	7.8	2.612		10.565	105%
94	74034S	10	1	7.7			10.333	
95	74134DS	10	1	7.3	2.446		9.769	98%
96	74134DS	10	1	7.3			9.802	
97	74132	10	1	0.1	<0.250		0.017	I
98	74132	10	1	0.0			-0.049	I
99	74133	10	1	1.6	0.502		2.041	
100	74133	10	1	1.5			1.974	
101	CCV	1	1	7.2			0.974	97%
102	B	1	1	0.0			-0.008	b
103	D4	1	1	11.3			1.531	d
104	74135	10	1	0.1	<0.250		0.051	I
105	74135	10	1	0.1			0.084	I
106	74136	10	1	0.2	<0.250		0.183	s
107	74136	10	1	0.2			0.250	I

112	74139	10	1	0.2	<0.250 0.178	I
113	74139	10	1	0.2	0.183	I
114	74140	10	1	0.2	<0.250 0.216	I
115	74140	10	1	0.2	0.150	I
116	CCV	1	1	7.2	0.970 97%	
117	B	1	1	0.0	-0.008	b
118	D4	1	1	11.3	1.531	d

INTERCEPT: 0.06 LINEAR COEF: 7.362288
CORRELATION COEF: .9997364

Zenon Number	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
073483	PHIL-PAR	CD-R-Method Blank	Mercury -	PV	-0.030	-99999.0	0.291	97.	0.291	97.	00/01/09	1NMN	00/01/10	MG01	53.	33.	
[redacted]																	
BL0109	INTERNAL		Mercury -	PV	-0.010	-99999.0	0.291	97.	0.291	97.	00/01/09	1NMN	00/01/10	MG01	$$$	$$$	
[redacted]																	
074136	PHIL-PAR	Unit 3 Stack-R3	Mercury -	PV	3.725						00/01/09	3NMN	00/01/10	MG01	39.	32.	

9 Tests for OHMN4 with an MDL of 0.030 ug Validated By CMB Control Chart Updated N/A IO Requirements met N/A

00079

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 00.01.10W Run Code: MG01 Matrix: IMP

Analyst: MG Units: µg (see comments) MDL: 0.03

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.6		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.6		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.6		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12			BL0109	INKAN		
13			"			
14			BL0109 S			
15			"			
16			BL0109 D			
17			"			
18			73486			
19			"			
20			73486 D			
21			"			
22			73486 S			
23			"			
24			73486 DS			
25			"			
26			73484			
27			"			
28			73485			
29			"			
30			73487			
31			"			
32			CCV			
33			B			
34			D4			
35		1/4	73491			
36		↓	"			
37			73514			
38		↓	"			
39		1/2	74136			
40			"			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
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Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

~~08000~~ CCV = 1.0 mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

RUN DATE: 01-10-2000 CHART DATE: 01-10-2000 00081
CHART SPEED: 30
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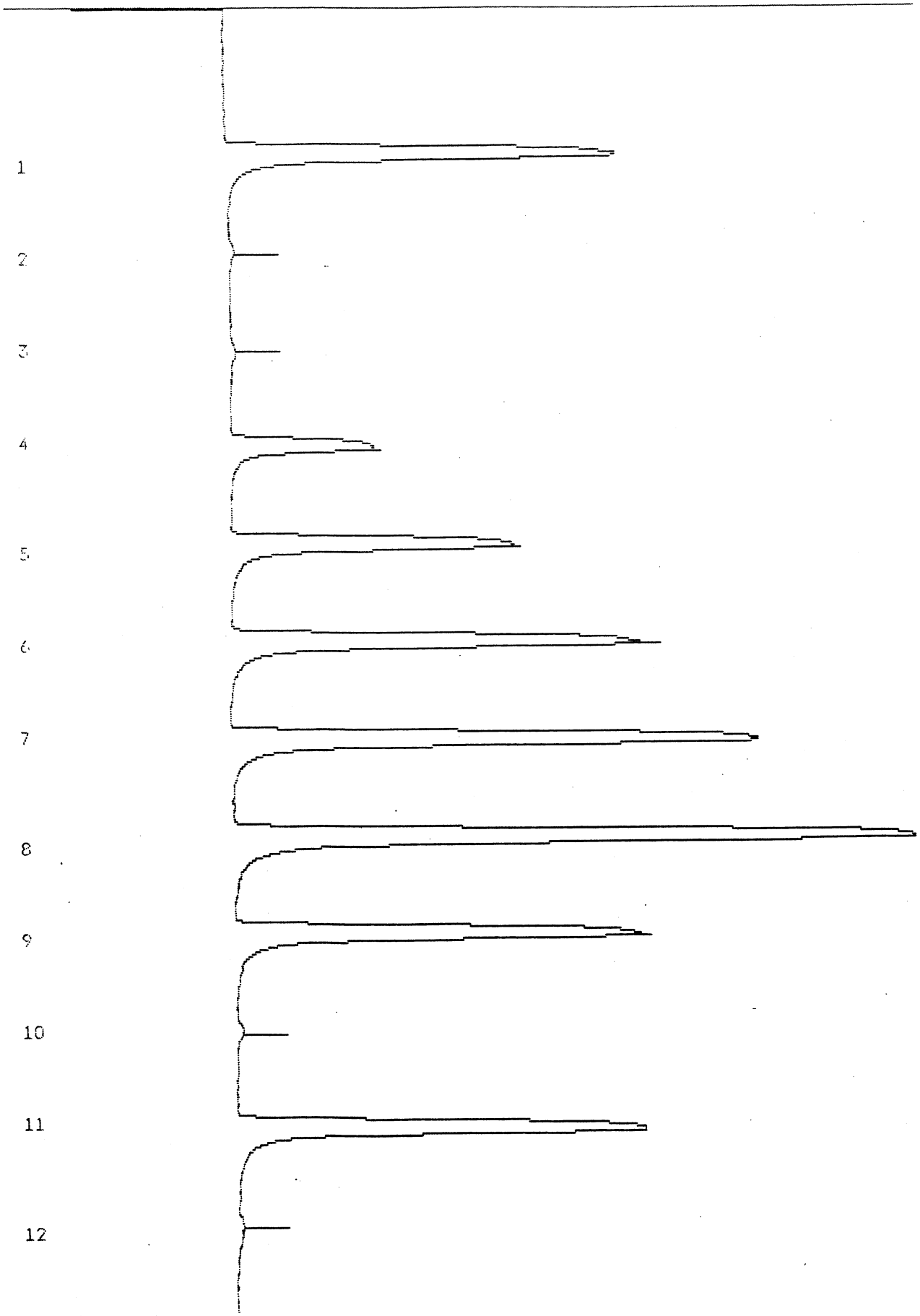

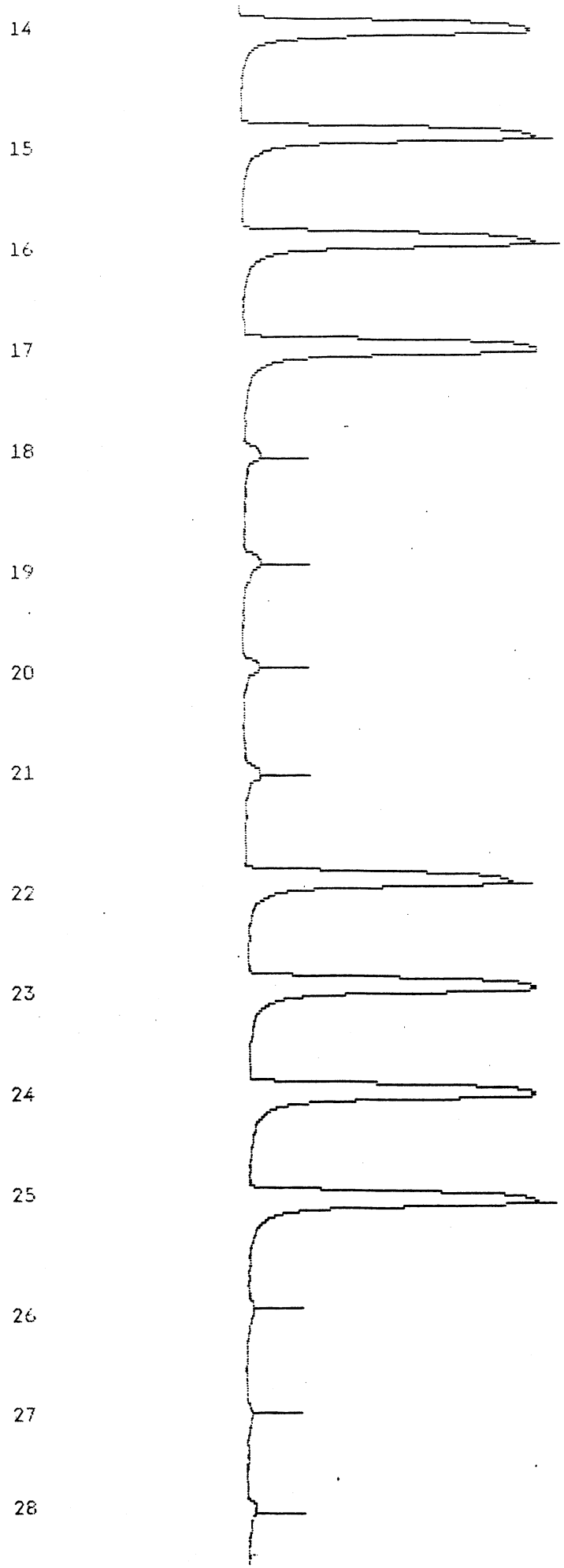
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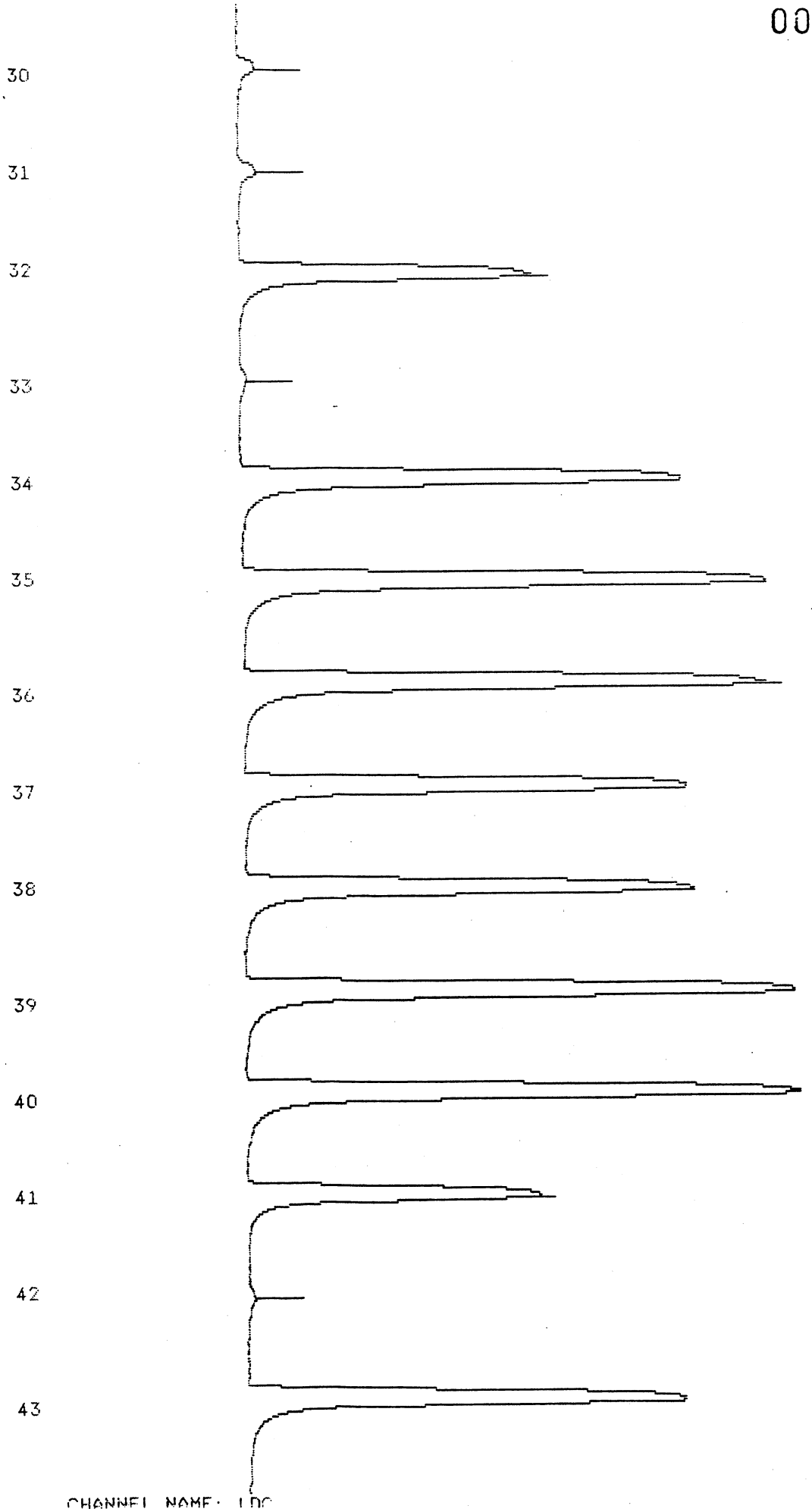
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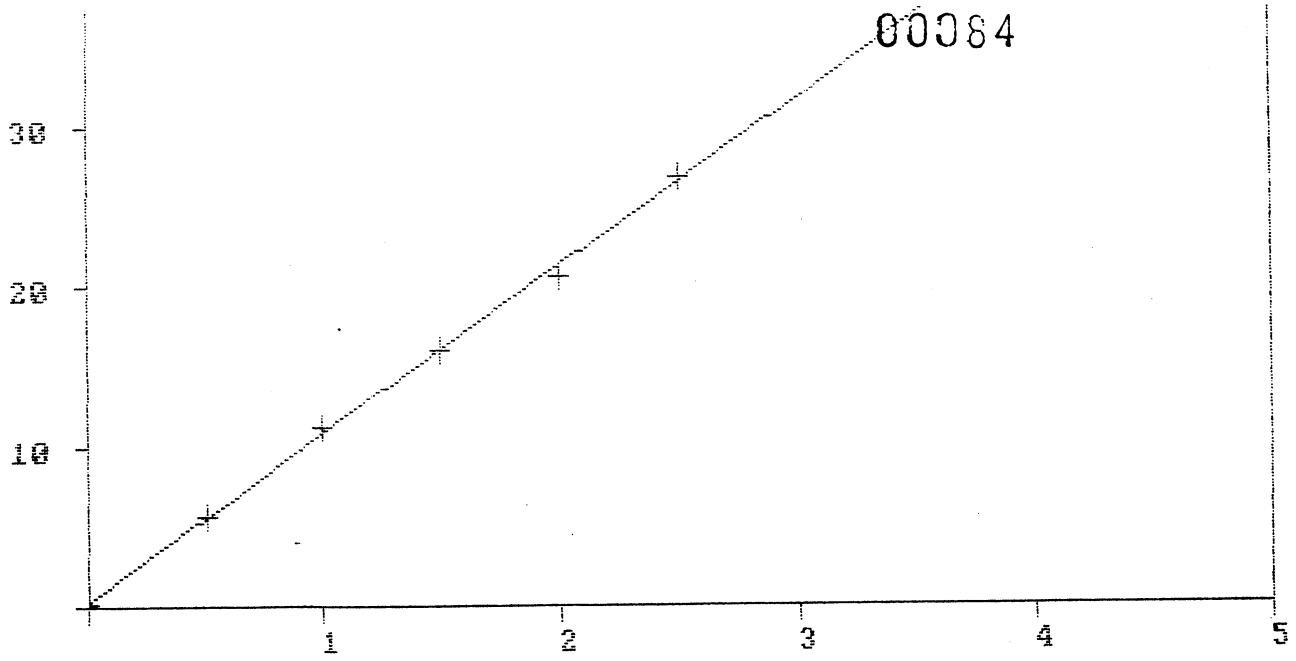
CHANNEL NAME: LDC



DATA TYPE: FIA
CALIBRATION ORDER: 1
INTERCEPT = 0.29
SLOPE = 10.49084

CORRELATION: .9992992

CHANNEL NAME: LDC
RUN DATE: 01-10-2000
SAMPLE TABLE NAME: 000110W
METHOD NAME: HG-W-20

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA	CONCENTRATION (PPb)		EF
1	PRIMER	1	1	15.5		1.448	s
2	DUMMY	1	1	0.1		-0.016	I
3	S1: 0	1	1	0.1		-0.016	I
4	S2: .5	1	1	5.7		0.514	
5	S3: 1	1	1	11.1		1.031	
6	S4: 1.5	1	1	16.0		1.494	
7	S5: 2	1	1	20.7		1.941	
8	S6: 2.5	1	1	26.9		2.535	
9	ICV	1	1	15.8		1.473	98%
10	B	1	1	0.0	TLG	-0.028	b
11	D4	1	1	16.0		1.494	d
12	BL0109-1NMN 73483	1	1	0.0	<0.300	-0.028	I
13	BL0109-1NMN	1	1	0.0		-0.028	I
14	BL0109S	1	1	10.5	0.291	0.971	97%
15	BL0109S	1	1	10.5		0.971	
16	BL0109DS	1	1	10.4	0.291	0.966	97%
17	BL0109DS	1	1	10.5		0.971	
18	73486	1	1	0.3	<0.100	0.005	I
19	73486	1	1	0.4		0.012	I
20	73486D	1	1	0.2	<0.100	-0.005	I
21	73486D	1	1	0.3		0.000	I
22	73486S	1	1	9.3	0.894	0.857	89%
23	73486S	1	1	10.1		0.931	
24	73486DS	1	1	9.9	0.919	0.915	92%
25	73486DS	1	1	10.0		0.922	
26	73484	1	1	0.0	<0.100	-0.028	I
27	73484	1	1	0.0		-0.028	I
28	73485	1	1	0.0		-0.028	I

32	CCV	1	1	10.5		0.973 98%
33	B	1	1	0.0		-0.028 b
34	D4	1	1	16.0		1.494 d
35	73491	4	1	18.9	7.086	7.104
36	73491	4	1	18.8		7.067
37	73514	4	1	15.9	6.015	5.968
38	73514	4	1	16.2		6.061
39	74136	2	1	19.7	3.725	3.701
40	74136	2	1	20.0		3.748
41	CCV	1	1	10.6		0.980 98%
42	B	1	1	0.0		-0.028 b
43	D4	1	1	16.0		1.494 d

00385

INTERCEPT: 0.29 LINEAR COEF: 10.49084

CORRELATION COEF: .9992992

Zenon Number	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
073483	PHIL-PAR	~~CD-R~~ Method Blank	Mercury -	PV	-0.030	-99999.0	0.291	97.	0.291	97.	00/01/09	1NMN	00/01/10	MG01	53.	33.	
073484	PHIL-PAR	RM BH Outlet-SB	Mercury -	PV	-0.100						00/01/09	1NMN	00/01/10	MG01	53.	33.	
073485	PHIL-PAR	RM BH Outlet-BT	Mercury -	PV	-0.100						00/01/09	1NMN	00/01/10	MG01	53.	33.	
073486	PHIL-PAR	RM BH Outlet-R1	Mercury -	PV	-0.100	-0.100	0.894	89.	0.919	92.	00/01/09	1NMN	00/01/10	MG01	53.	33.	
073487	PHIL-PAR	RM BH Outlet-R2	Mercury -	PV	-0.100						00/01/09	1NMN	00/01/10	MG01	53.	33.	
073491	PHIL-PAR	GEG ESP Stack-R2	Mercury -	PV	7.086						00/01/09	1NMN	00/01/10	MG01	53.	33.	
BL0109	INTERNAL		Mercury -	PV	-0.010	-99999.0	0.291	97.	0.291	97.	00/01/09	1NMN	00/01/10	MG01	$$$	$$$	
073514	PHIL-PAR	GEG ESP Inlet-R2	Mercury -	PV	6.015						00/01/09	2NMN	00/01/10	MG01	53.	33.	
074136	PHIL-PAR	Unit 3 Stack-R3	Mercury -	PV	3.725						00/01/09	3NMN	00/01/10	MG01	39.	32.	

9 Tests for OHMN4 with an MDL of 0.030 ug Validated By CMB Control Chart Updated N/A IO Requirements met N/A

Original

00087

[redacted]

Zenon Number	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
BL0109	INTERNAL		Mercury -	PV	-0.030	-99999.0	0.304	101.	0.304	101.	00/01/09	2NMN	00/01/09	MG01	$$$	$$$	
074131	PHIL-PAR MB R456		Mercury -	PV	-0.030	-99999.0	0.300	100.	0.300	100.	00/01/09	3NMN	00/01/09	MG01	38.	32.	
074132	PHIL-PAR Unit 3 Stack-SB		Mercury -	PV	-0.100						00/01/09	3NMN	00/01/09	MG01	38.	32.	
074133	PHIL-PAR Unit 3 Stack-BT		Mercury -	PV	-0.100						00/01/09	3NMN	00/01/09	MG01	38.	32.	
074134	PHIL-PAR Unit 3 Stack-R1		Mercury -	PV	3.923	3.914	7.770	96.	7.762	96.	00/01/09	3NMN	00/01/09	MG01	39.	32.	
074135	PHIL-PAR Unit 3 Stack-R2		Mercury -	PV	3.056						00/01/09	3NMN	00/01/09	MG01	39.	32.	
074137	PHIL-PAR Unit 3 FGD Inlet-BT		Mercury -	PV	-0.100						00/01/09	3NMN	00/01/09	MG01	39.	32.	
074138	PHIL-PAR Unit 3 FGD Inlet-R1		Mercury -	PV	4.568						00/01/09	3NMN	00/01/09	MG01	39.	32.	
074139	PHIL-PAR Unit 3 FGD Inlet-R2		Mercury -	PV	4.727						00/01/09	3NMN	00/01/09	MG01	39.	32.	
074140	PHIL-PAR Unit 3 FGD Inlet-R3		Mercury -	PV	4.390						00/01/09	3NMN	00/01/09	MG01	38.	32.	
BL0109	INTERNAL		Mercury -	PV	-0.030	-99999.0	0.300	100.	0.300	100.	00/01/09	3NMN	00/01/09	MG01	$$$	$$$	

23 Tests for OHMN4 with an MDL of 0.030 ug Validated By CMS Control Chart Updated N/A IO Requirements met N/A

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 00.01.09 Run Code: MG01 Matrix: IMP

Analyst: MG Units: ~~ug~~ (see comments) MDL: 0.03

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12			BL0109	INMN		
13			"			
14			BL0109 S			
15			"			
16			BL0109 DS			
17			"			
18			73486			
19			"			
20			73486 D			
21			"			
22			73486 S			
23			"			
24			73486 DS			
25			"			
26			73484			
27			"			
28			73485			
29			"			
30			73487			
31			"			
32			CCV			
33			B			
34			D4			
35			73488			
36			"			
37			73487			
38			"			
39		1/2	73490			
40		↓	"			
41		1/2	73491			
42			"			
43			73492			
44		↓	"			
45			BL0109	2NMN		
46			"			
47			BL0109 S			
48			"			
49			BL0109 DS			
50			"			
51			73508			
52			"			
53			73508 D			
54			"			
55			CCV			
56			B			
57			D4			
58			73508 S			
59			"			
60			73508 DS			
61			"			
62			73507			
63			"			
64			73509			
65			"			
66			73510			
67			"			
68			73511			
69			"			
70			73512			
71			"			
72		1/2	73513			
73			"			
74			73514			
75			"			
76			73515			
77		↓	"			
78			CCV			
79			B			
80			D4			

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 00.01.09 Run Code: MG01 Matrix: IMP

Analyst: MG Units: ~~ug~~ (see comments) MDL: 0.03

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.6		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.6		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.6		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12						
13						
14						
15						
16						
17						
18						
19						
20						
21			BL0109	3NHN		
22			"			
23			BL0109 S			
24			"			
25			BL0109 DS			
26			"			
27		1/4	74134			
28		↓	"			
29			74134 D			
30			"			
31			74134 S			
32			"			
33			74134 DS			
34		↓	"			
35			74132			
36			"			
37			74133			
38			"			
39		1/2	74135			
40			"			
41			CCV			
42			B			
43			D4			
44			74136			
45			"			
46			74137			
47			"			
48		1/2	74138			
49		↓	"			
50			74139			
51			"			
52			74140			
53		↓	"			
54			BL0109 S			
55			"			
56			73486 DS			
57			"			
58		1/4	73491			
59		↓	"			
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Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

RUN DATE: 01-09-2000 CHART DATE: 01-10-2000
CHART SPEED: 30
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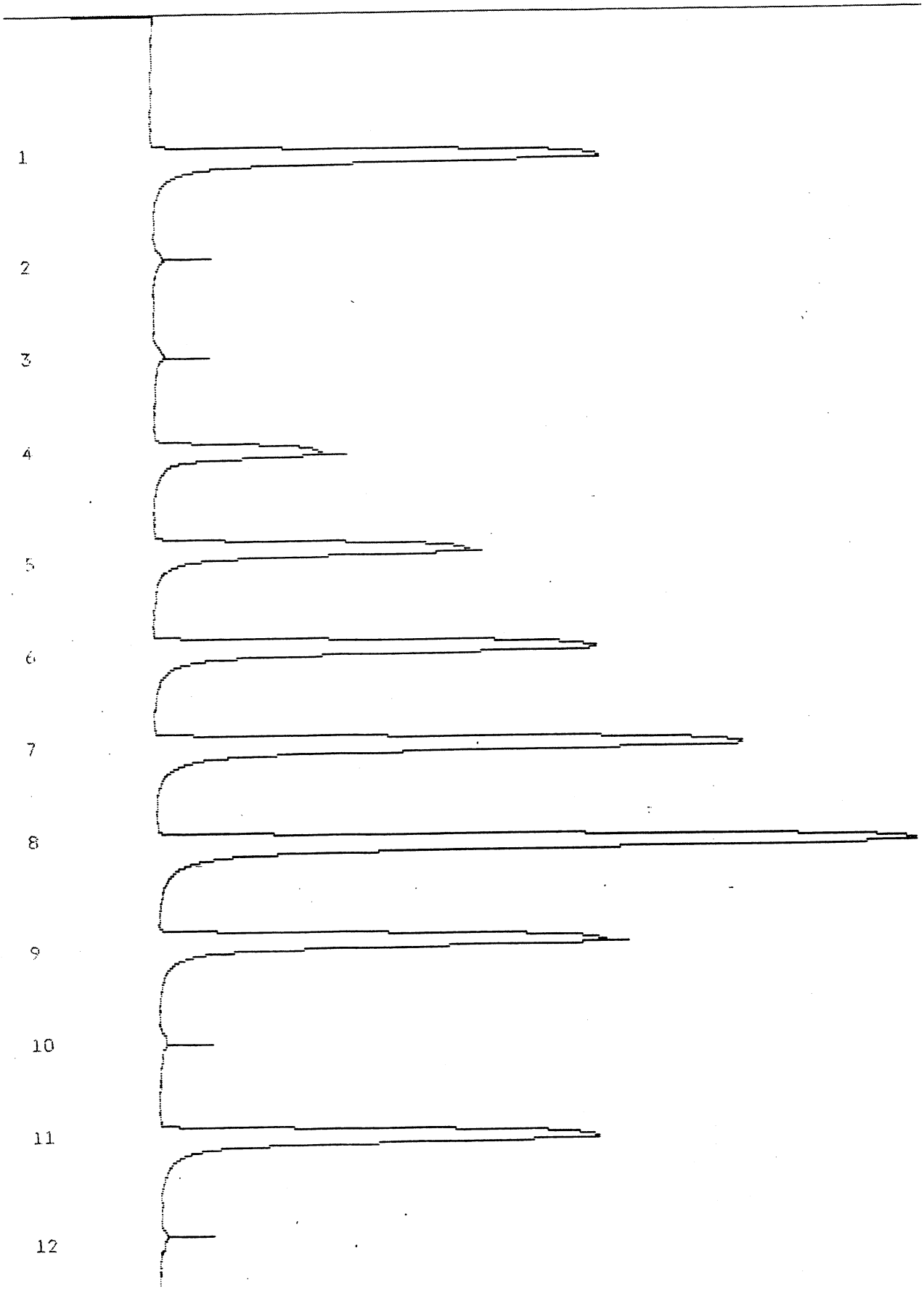

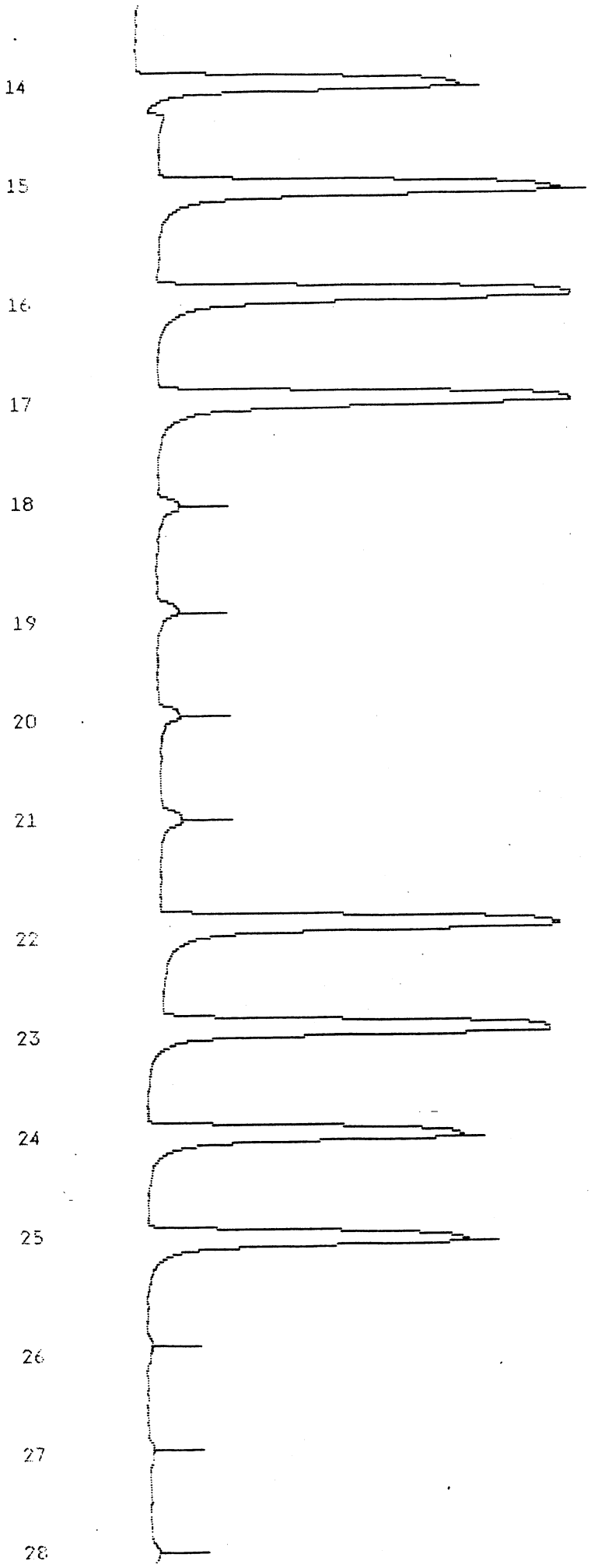
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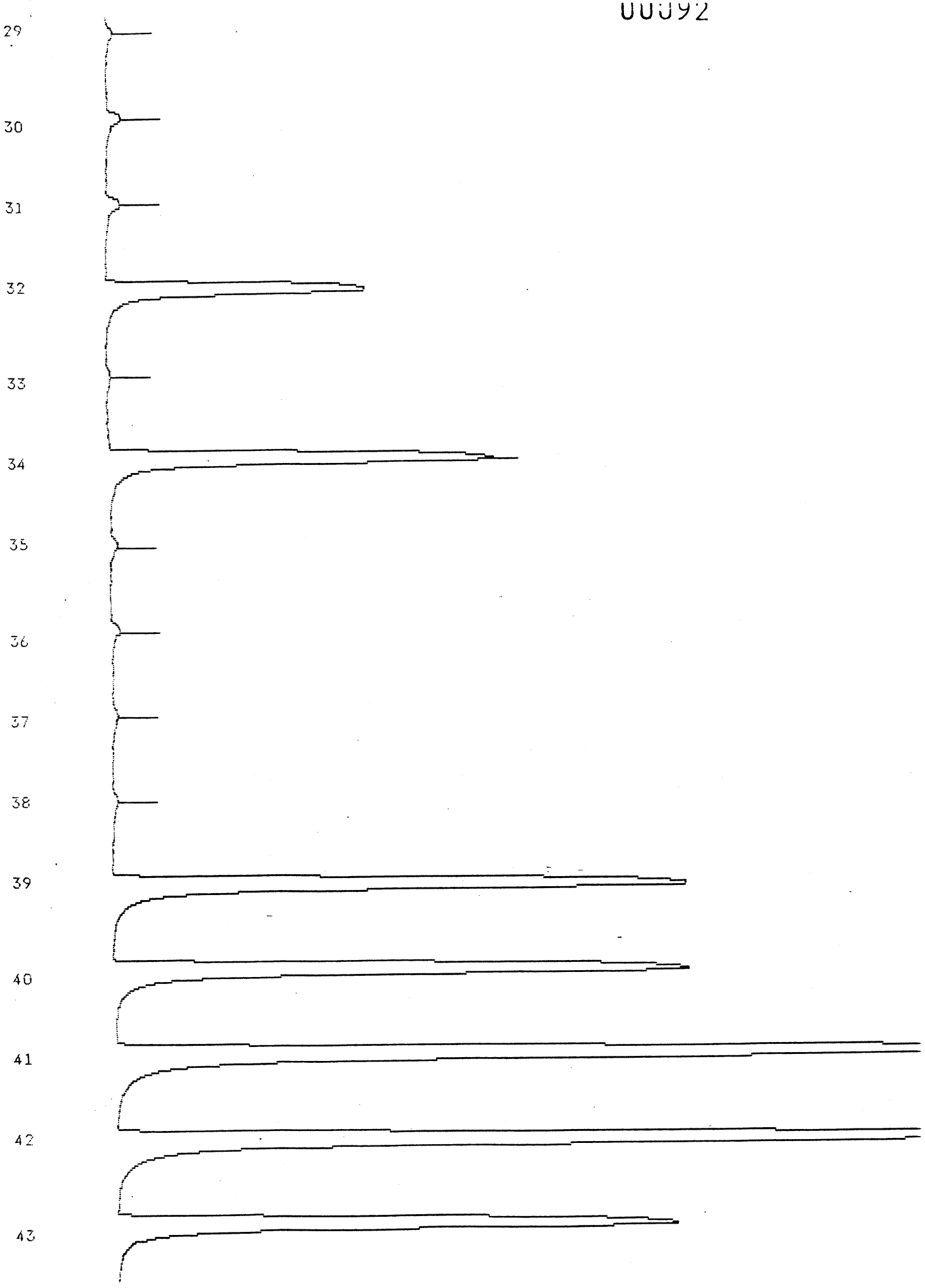
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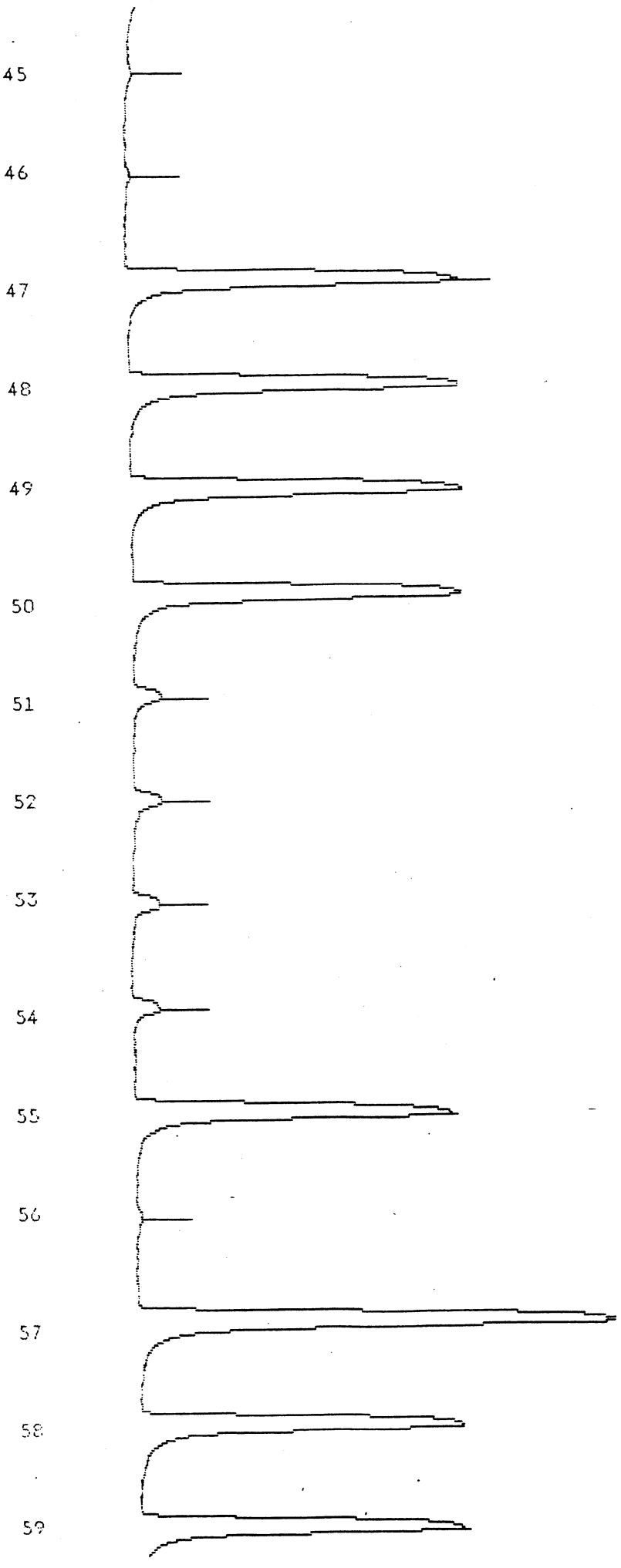
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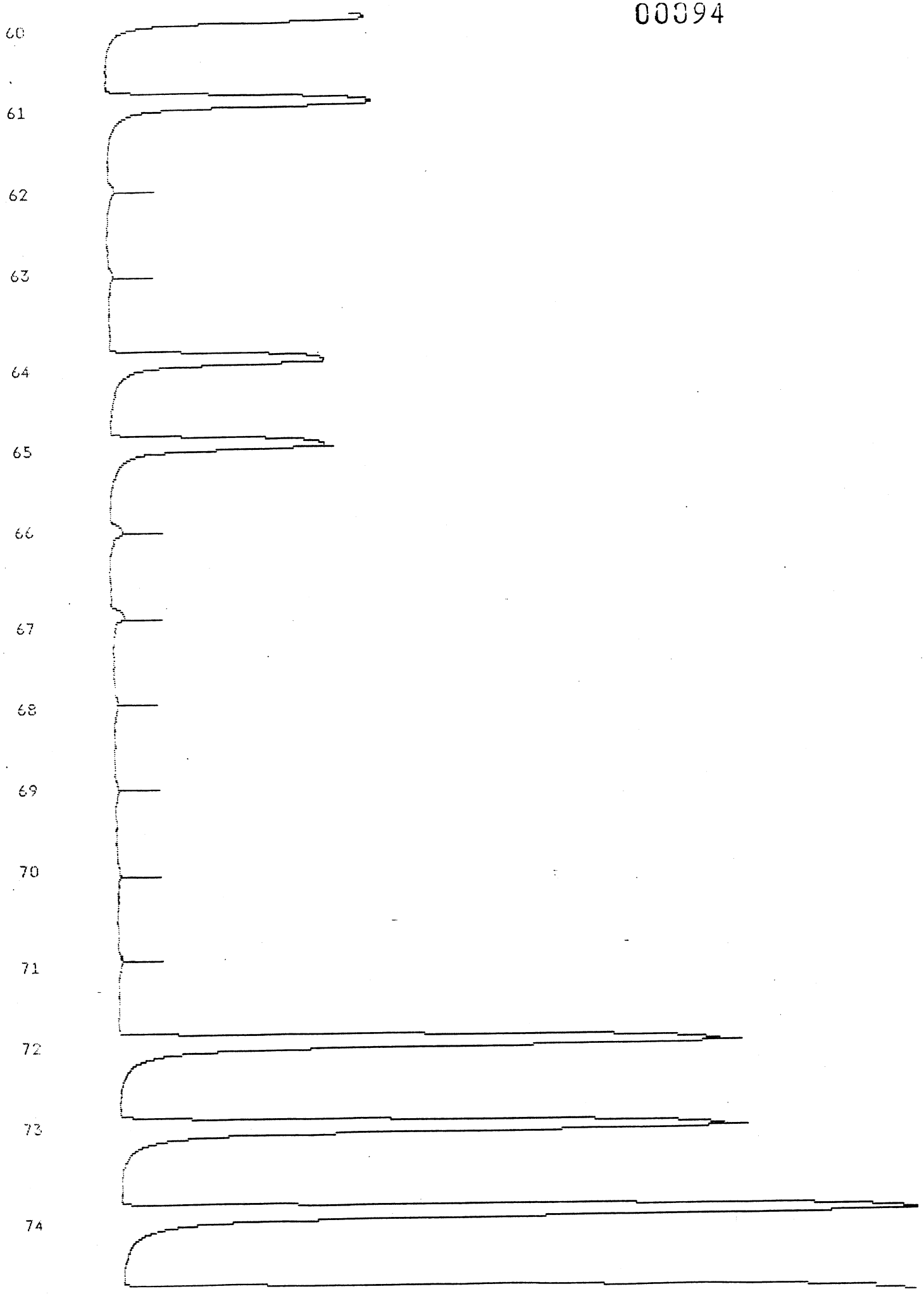
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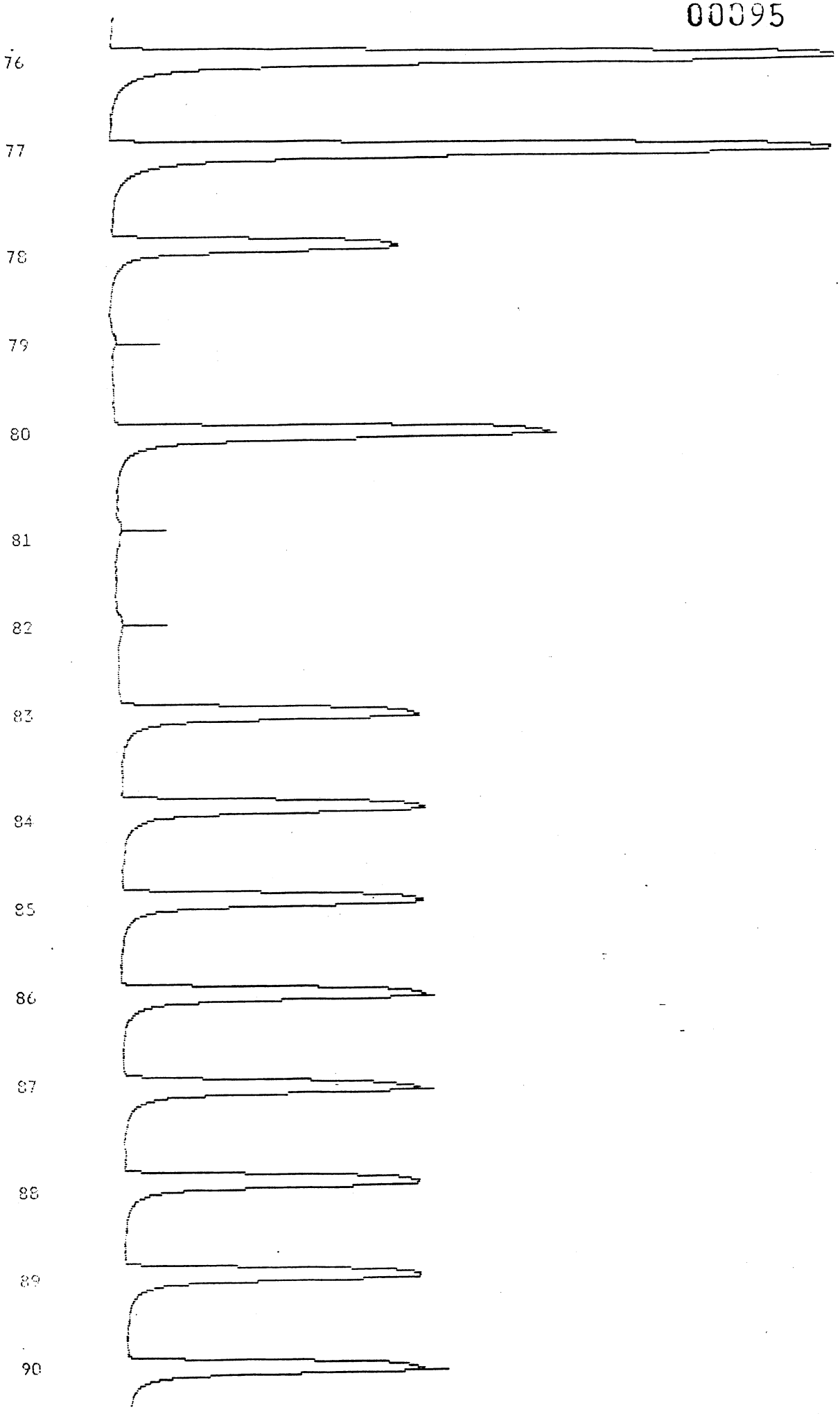
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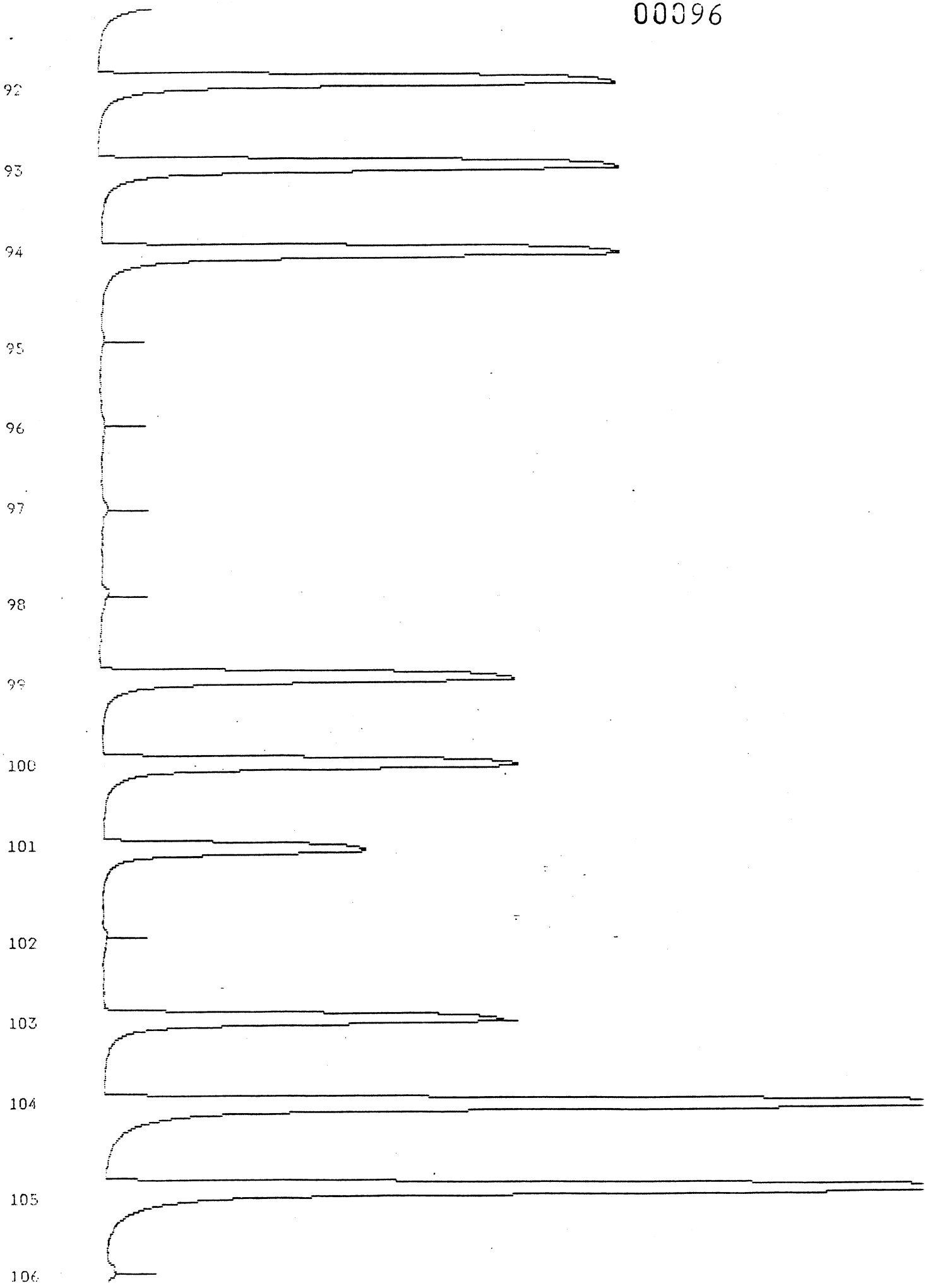
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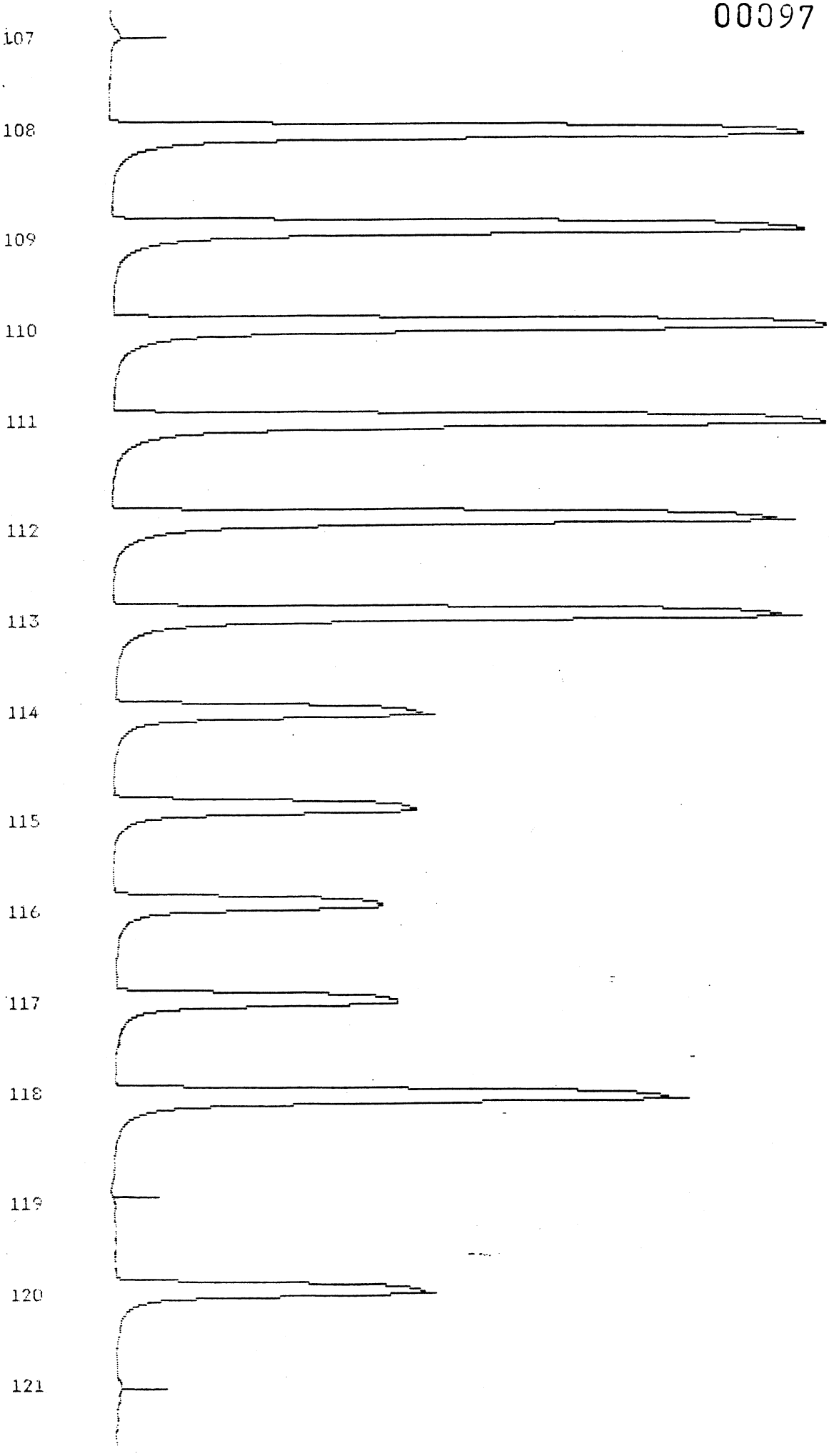
107
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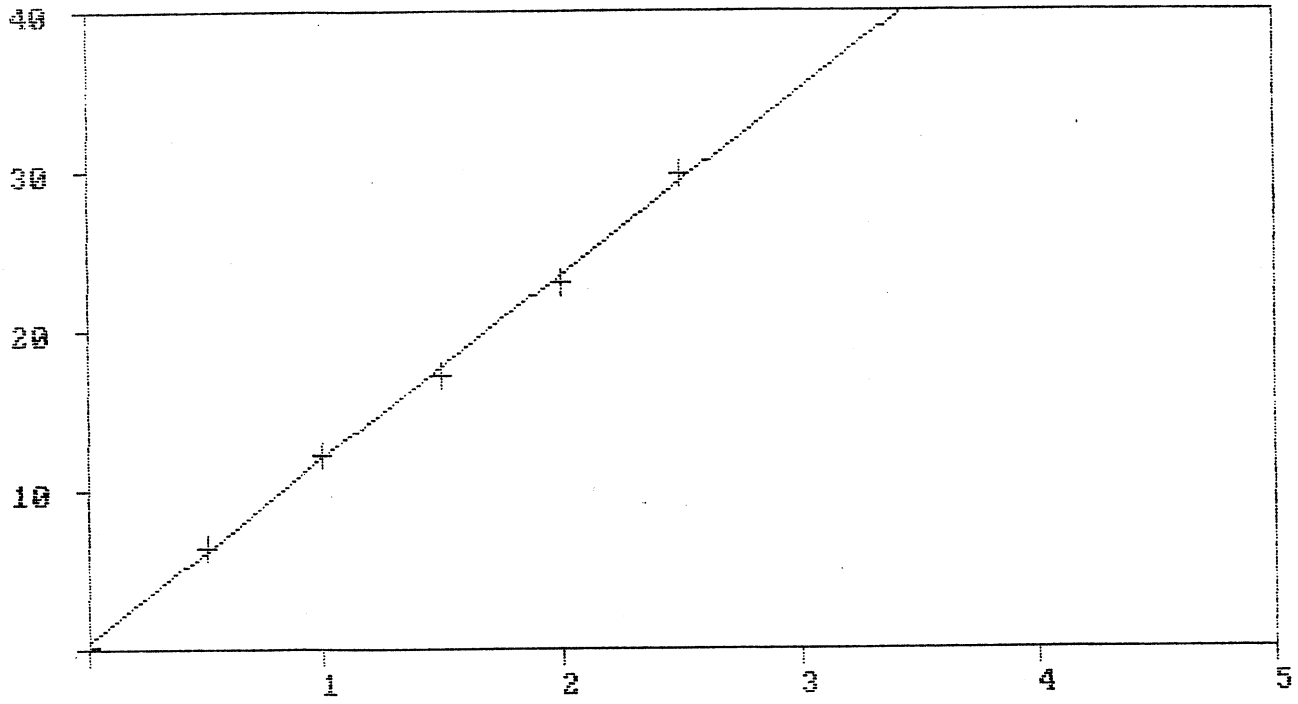
123

CHANNEL NAME: LDC
RUN NAME: 000109W



DATA TYPE: FIA
INTERCEPT = 0.44

CALIBRATION ORDER: 1
SLOPE = 11.51788

CORRELATION: .9991786

CHANNEL NAME: LDC
RUN DATE: 01-09-2000
SAMPLE TABLE NAME: 000109W
METHOD NAME: HG-W-20

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA	CONCENTRATION (ppb)	EF
1	PRIMER	1	1	17.6	1.496	s
2	DUMMY	1	1	0.3	-0.012	I
3	S1: 0	1	1	0.3	-0.017	I
4	S2: .5	1	1	6.5	0.525	
5	S3: 1	1	1	12.3	1.031	
6	S4: 1.5	1	1	17.3	1.468	
7	S5: 2	1	1	22.9	1.954	
8	S6: 2.5	1	1	29.5	2.539	
9	ICV	1	1	17.3	1.466 98%	
10	8	1	1	0.0	-0.042	b
11	STD4	1	1	17.0	1.442	
12	BL0109-1NMN VOID MB	1	1	0.0	-0.042	I
13	BL0109-1NMN 1	1	1	0.0	-0.042	I
14	BL01000	1	1	11.4	0.956	

Total µg 20.03

17	BL0109DS	1	1	14.9		1.021		0.00099 IS RERUN ON 0110.
18	73486	1	1	0.5		0.001		
19	73486	1	1	0.5		0.005	I	
20	73486D	1	1	0.4		-0.004	I	
21	73486D	1	1	0.5		0.001		
22	73486S	1	1	14.4		1.212		
23	73486S	1	1	14.2		1.199		
24	73486DS	1	1	11.3		0.945		
25	73486DS	1	1	11.5		0.965		
26	73484	1	1	0.0		-0.042	I	
27	73484	1	1	0.0		-0.042	I	
28	73485	1	1	0.1		-0.036	I	
29	73485	1	1	0.1		-0.031	I	
30	73487	1	1	0.4		-0.008	I	
31	73487	1	1	0.4		-0.006	s	
32	CCV	1	1	11.6		0.969		97%
33	B	1	1	0.0		-0.042	b	
34	STD4	1	1	17.1		1.453		
35	73488	1	1	0.2	<0.100	-0.027	I	
36	73488	1	1	0.2		-0.025	I	
37	73489	1	1	0.1	<0.100	-0.034	I	
38	73489	1	1	0.0		-0.040	I	
39	73490	2	1	25.6	4.387	4.395		
40	73490	2	1	25.5		4.378		
41	73491	2	1	41.3		7.125	R	OFF SCALE RERUN
42	73491	2	1	41.4		7.155	R	
43	73492	2	1	24.9	4.265	4.271		
44	73492	2	1	24.9		4.258		
45	BL0109-2NMN	1	1	0.0	<0.03	-0.042	I	
46	BL0109-2NMN	1	1	0.0		-0.042	s	
47	BL0109S	1	1	12.1	0.304	1.011		101%
48	BL0109S	1	1	12.1		1.014		
49	BL0109DS	1	1	12.1	0.304	1.018		101%
50	BL0109DS	1	1	12.0		1.005		
51	73508	1	1	0.7	<0.100	0.020		
52	73508	1	1	0.8		0.024		
53	73508D	1	1	0.6	<0.100	0.013		
54	73508D	1	1	0.7		0.018		
55	CCV	1	1	11.4		0.954		95%
56	B	1	1	0.0		-0.042	b	
57	D4	1	1	17.3		1.468	d	
58	73508S	1	1	11.7	0.981	0.984		96%
59	73508S	1	1	11.7		0.977		
60	73508DS	1	1	11.6	0.974	0.973		96%
61	73508DS	1	1	11.6		0.975	s	
62	73507	1	1	0.1	<0.100	-0.036	I	
63	73507	1	1	0.0		-0.042	I	
64	73509	1	1	9.4	0.779	0.779		
65	73509	1	1	9.4		0.779		
66	73510	1	1	0.4	<0.100	-0.010	I	
67	73510	1	1	0.4		-0.010	I	
68	73511	1	1	0.0	<0.100	-0.042	I	
69	73511	1	1	0.0		-0.042	I	
70	73512	1	1	0.0	<0.100	-0.042	I	
71	73512	1	1	0.0		-0.040	I	
72	73513	2	1	26.3	4.514	4.510		
73	73513	2	1	26.3		4.518		
74	73514	2	1	34.9		6.007	R	OFF SCALE RERUN
75	73514	2	1	34.6		5.960	R	
76	73515	2	1	29.3	5.005	5.026	s	
77	73515	2	1	29.0		4.983		
78	CCV	1	1	11.4		0.954		95%
79	B	1	1	0.0		-0.042	b	

83	BL0109S	1	1	11.9	0.300	0.994		100%
84	BL0109S	1	1	12.0		1.005		
85	BL0109DS	1	1	11.9	0.300	0.999		100%
86	BL0109DS	1	1	12.0		1.005		
87	74134	4	1	11.6	3.923	3.901		
88	74134	4	1	11.8		3.944		
89	74134D	4	1	11.7	3.914	3.909		
90	74134D	4	1	11.7		3.918		
91	74134S	4	1	22.8	7.770	7.791		96%
92	74134S	4	1	22.7		7.749		
93	74134DS	4	1	22.7	7.762	7.749		96%
94	74134DS	4	1	22.7		7.774		
95	74132	1	1	0.0	<0.100	-0.042	I	
96	74132	1	1	0.0		-0.042	I	
97	74133	1	1	0.1	<0.100	-0.036	I	
98	74133	1	1	0.1		-0.031	I	
99	74135	2	1	18.0	3.056	3.060		
100	74135	2	1	17.9		3.051		
101	CCV	1	1	11.3		0.945		95%
102	B	1	1	0.0		-0.042	b	
103	D4	1	1	17.3		1.468	d	
104	74136	1	1	37.8		3.262	R	OFF SCALE RERUN
105	74136	1	1	38.0		3.274	R	
106	74137	1	1	0.2	<0.100	-0.027	s	
107	74137	1	1	0.2		-0.025	I	
108	74138	2	1	26.7	4.568	4.574		
109	74138	2	1	26.6		4.561		
110	74139	2	1	27.5	4.727	4.727		
111	74139	2	1	27.5		4.727		
112	74140	2	1	25.6	4.390	4.390		
113	74140	2	1	25.6		4.390		
114	BL0109S	1	1	11.8		0.988		
115	BL0109S	1	1	11.6		0.969		
116	73486DS	1	1	10.2		0.849		
117	73486DS	1	1	10.7		0.894		
118	73491	4	1	21.1		7.203		
119	73491	4	1	0.0		-0.169	I	
120	CCV	1	1	11.7		0.977		98%
121	B	1	1	0.0		-0.042	b	
122	D4	1	1	17.3		1.468	d	

INTERCEPT: 0.48 LINEAR COEF: 11.4495

CORRELATION COEF: .9992617

5.0 SHIPPING/RECEIVING DOCUMENTS

Airbills (No. of Shipments)
Chain-of-Custody Records
Sample Log-In Sheets
Miscellaneous Shipping/Receiving Records (describe or list)

_____

_____

_____

_____

_____

_____

PHILIP
ANALYTICAL SERVICES

Chain of Custody Record

4418 Pottsville Pike Reading, PA 19605
phone: (610) 921-8833 fax: (610) 921-9667

Sample Container Information												
Bottle Type (G P IH)	G											
# of Containers	1											
Preserved? (Y/N)	N											

Report Results To:
PO # 5002-188621 Job ID
Name Pam Peters
Company PAS/Reading
Mailing Address see above
City State ZIP
Telephone # Fax #

Sub: PAS/Burlington

Send Invoice To:
Name Telephone #
Company SAME Dept.
Mailing Address
City State ZIP
Credit Card # Exp. Date

Analysis Requested

Mercury by Ontario Hydro Method

10

Page 1 of 4
PAS Quote#

Sampled by:

	SAMPLE DESCRIPTION	Air Vol. (L or min)	Matrix Type	Date Sampled	Time Sampled	Mercury by Ontario Hydro Method	Comments/Hazards/ Location Details
1	1385720-188621	FHHNO3/FiH	Stack 1	12/1/99	–	X	Due: 16-DEC-99
2	1385721-	BHKCl			–	X	[illegible] FGD Inlet-R1 Unit 3
3	1385722-	BHHNO3			–	X	ppd, SO2AG×2, ILAG×2 74138-
4	1385723-	BHKMNO4			–	X	
5	1385724-	FHHNO3/FiH			–	X	FGD Inlet-R2 Unit 3 74139-
6	1385725-	BHKCl			–	X	ppd, SO2AG×2, ILAG×2
7	1385726-	BHHNO3	Stack 2		–	X	
8	1385727-	BHKMNO4			–	X	
9	1385728-	FHHNO3/FiH	Post Stack 3	12/2/99	–	X	FGD Inlet-R3 Unit 3 74140-
10	1385729-	BHKCl			–	X	ppd, SO2AG×2, ILAG

Special Instructions (including Data Deliverables and Turn Around Time): 10 Include all Raw Data + "01" Summary Form

		Date	Time
Samples relinquished to shipper or courier by:	J. Mast	12/7/99	16:30
Samples received by:			

		Date	Time
Samples Relinquished by:	Samples Relinquished to:		
Samples Relinquished by:	Samples Relinquished to Laboratory: [signature] PASC	12/7/99	12:10

Method of Shipment/Delivery: UPS FED-EX PAS Courier Client drop off Other _____

Samples Rec'd. on Ice? (Y N n/a) Temp. Blank _____ Sample Temp. _____
Samples rec'd intact?(Y N) Custody seals intact?(Y N n/a) ID on samples match COC?(Y N)
VOC Samples have zero headspace?(Y N n/a) Samples properly preserved? (Y N n/a)

Notes :

PHILIP
ANALYTICAL SERVICES

Chain of Custody Record

4418 Pottsville Pike Reading, PA 19605
phone: (610) 921-8833 fax: (610) 921-9667

Sample Container Information												
Bottle Type (G P IH)	G											
# of Containers	1											
Preserved? (Y/N)	N											

Report Results To:
PO # 5002-188621 Job ID
Name Pam Peters
Company PAS/Reading
Mailing Address see above
City State ZIP
Telephone # Fax #

Send Invoice To:
Name Telephone #
Company SAME Dept.
Mailing Address
City State ZIP
Credit Card # Exp. Date

Sub: PAS/Burlington

Analysis Requested

Mercury by Ontario Hydro Method

AG-74131-

Page 3 of 4

PAS Quote#

Sampled by:

	SAMPLE DESCRIPTION	Air Vol. (L or min) FHHNO3/FILT	Matrix Type	Date Sampled	Time Sampled	Mercury by Ontario Hydro Method	Comments/Hazards/ Location Details
1	1385740-188621	~~BHHNO3~~	~~stack~~	12/1/99	—	X	Due: 16-DEC-99
2	1385741- BHKCl	~~BHKMNO4~~	~~stack~~		—	X	Unit 3 Stack-R2
3	1385742-	BHHNO3	stack 2		—	X	ppd, 500AC×2, 1LAC×2 74135-
4	1385743-	BHKMNO4			—	X	
5	1385744-	FHNO3/Filt		12/2/99	—	X	
6	1385745-	BHKCl	stack 3		—	X	Unit 3 Stack-R3 74136-
7	1385746-	BHHNO3			—	X	ppd, 500AC×2, 1LAC×2
8	1385747-	BHKMNO4			—	X	
9	1385748-	HNO3/Filt	Part	12/2/99	—	X	Unit 3 Stack-SB 74132-
10	1385749-	KCl	stack SB		—	X	

Special Instructions (including Data Deliverables and Turn Around Time): 10 Include all Raw Data + "01" Summary Form

		Date	Time
Samples relinquished to shipper or courier by:	J. Mast	12/7/99	16:30
Samples received by:			

		Date	Time
Samples Relinquished by:	Samples Relinquished to:		
Samples Relinquished by:	Samples Relinquished to Laboratory: [signature]	991208	12:10

Method of Shipment/Delivery: UPS FED-EX PAS Courier Client drop off Other _____

Samples Rec'd. on Ice? (Y N n/a) Temp. Blank _____ Sample Temp. _____
Samples rec'd intact?(Y N) Custody seals intact?(Y N n/a) ID on samples match COC?(Y N)
VOC Samples have zero headspace?(Y N n/a) Samples properly preserved? (Y N n/a)

Notes :

PHILIP
ANALYTICAL SERVICES

Chain of Custody Record

4418 Pottsville Pike Reading, PA 19605
phone: (610) 921-8833 fax: (610) 921-9667

Sample Container Information

Bottle Type (G P IH) ⇨	G											
# of Containers ⇨	1											
Preserved? (Y/N) ⇨	N											

Report Results To:
PO # 5002 – 188621 Job ID
Name Pam Peters
Company PAS/Reading
Mailing Address see above
City State ZIP
Telephone # Fax #

Sub: PAS/Burlington

Send Invoice To:
Name Telephone #
Company SAIC Dept.
Mailing Address
City State ZIP
Credit Card # Exp. Date

Analysis Requested

Mercury by Ontario Hydro Method

Page 4 of 4

PAS Quote#

Sampled by:

	SAMPLE DESCRIPTION	Air Vol. (L or min)	Matrix Type	Date Sampled	Time Sampled												Comments/Hazards/ Location Details
1	1385750-188621	KMNO4	Quartz Stock	12/2/99	—	X			SEE Attach 5 ; 1 fcl								Due: 16-DEC-99 ; 74132
2	1385751-	HNO3/H2O2	SB		—	X											
3	1385752-	FHHNO3/F-			—	X											
4	1385753-	BHKCl	Stock BT		—	X			Unit 3 Stack - BT 1 fcl SEE Attach 2, 1L Bottle								74133-
5	1385754-	BHHNO3			—	X											
6	1385755-	BHKMNO4			—	X											
7	1385756-	10% HNO3	SB Stock		—	X											
8																	
9																	
10																	

Special Instructions (including Data Deliverables and Turn Around Time): 7 Include all Raw Data + "01" ~~Data~~ Summary Form

Samples relinquished to shipper or courier by:	J. Mast	Date 12/7/99	Time 16:30
Samples received by:		Date	Time

Samples Relinquished by:	Samples Relinquished to:	Date	Time
Samples Relinquished by:	Samples Relinquished to Laboratory:	Date 12/8/99	Time 12:10

Method of Shipment/Delivery: UPS FED-EX PAS Courier Client drop off Other _____

Samples Rec'd. on Ice? (Y N n/a) Temp. Blank _____ Sample Temp. _____
Samples rec'd intact?(Y N) Custody seals intact?(Y N n/a) ID on samples match COC?(Y N)
VOC Samples have zero headspace?(Y N n/a) Samples properly preserved? (Y N n/a)

Notes :

PHILIP
ANALYTICAL SERVICES

Chain of Custody Record

4418 Pottsville Pike Reading, PA 19605
phone: (610) 921-8833 fax: (610) 921-9667

Sample Container Information

Bottle Type (G P IH) ⇨	G											
# of Containers ⇨	1											
Preserved? (Y/N) ⇨	N											

Report Results To:
PO # 5002 – 188621 Job ID
Name Pam Peters
Company PAS/Reading
Mailing Address see above
City State ZIP
Telephone # Fax #

Sub: PAS/Burlington

Send Invoice To:
Name Telephone #
Company SAIC Dept.
Mailing Address
City State ZIP
Credit Card # Exp. Date

Analysis Requested ⇨

Mercury by Ontario Hydro Method

Page 2 of 4

PAS Quote#

	Sampled by: SAMPLE DESCRIPTION	Air Vol. (L or min)	Matrix Type	Date Sampled	Time Sampled		Comments/Hazards/ Location Details
1	1385730-188621	BHHNO3	Combo Stack 3	12/2/99	—	X	Due: 16-DEC-99
2	1385731-	BHKMNO4		↓	—	X	
3	1385732-	FHHNO3/FIH		12/1/99	—	X	
4	1385733-	BHKCL	Stack BT		—	X	74137-
5	1385734-	BHHNO3			—	X	
6	1385735-	BHKMNO4		↓	—	X	
7	1385736-	FHHNO3/FIH	Stack 1	12/1/99	—	X	
8	1385737-	BHKCL			—	X	74134-
9	1385738-	BHHNO3			—	X	
10	1385739-	BHKMNO4		↓	—	X	

Special Instructions (including Data Deliverables and Turn Around Time): 10 Include all Raw Data + "01" Summary Form

Samples relinquished to shipper or courier by:	Date	Time
Q. Mast	12/7/99	16:30
Samples received by:	**Date**	**Time**

Samples Relinquished by:	Samples Relinquished to:	Date	Time
Samples Relinquished by:	**Samples Relinquished to Laboratory:**	**Date**	**Time**
		12/7/99	12:16

Method of Shipment/Delivery: UPS FED-EX PAS Courier Client drop off Other _____

Samples Rec'd. on Ice? (Y N n/a) Temp. Blank _____ Sample Temp. _____
Samples rec'd intact?(Y N) Custody seals intact?(Y N n/a) ID on samples match COC?(Y N)
VOC Samples have zero headspace?(Y N n/a) Samples properly preserved? (Y N n/a)

Notes :

Page ___ of ___

US SAMPLE LOG IN SHEET

PHILIP

READING

Lab Name: Philip Analytical Services Corporation, Burlington Laboratory

Received By (Print Name): K. Grigoro

Received By (Signature):

Client Project ID:

REMARKS:	Condition of Samples/Sample Shipment:
Custody Seal(s) Present ___ Absent ___	Samples received intact.
Chain of Custody Records Present ✓ Absent ___	
Airbill Present ✓ Absent ___	
Airbill (this portion can be removed for Recipient's records.) 12/3/99 FedEx Tracking Number 816978711146	
Airbill (this portion can be removed for Recipient's records.) 12/3/99 FedEx Tracking Number 816978711135	
Sender's Company Sample Mgmt. Phone 610 921-8800	
Company PHILIP ANALYTICAL SERVICES	
Address 4418 POTTSVILLE PIKE Dept./Floor/Suite/Room	
READING State PA ZIP 19605	
Does Internal Billing Reference Records and Samples Agree? Yes ✓ No ___	
Date Received at Lab 12-08-99	
Time Received 12:10	

Temperature of Coolers

Cooler ID:	Temperature
2 coolers	16°c/16°c

Relinquished By: L Jones

Date: 12-08-99

Logbook No: _____

Logbook Page No. _____

APPENDIX E
SAMPLE CALCULATIONS

SAMPLE CALCULATIONS FOR FLOW, MOISTURE AND ISO

Client: TEC - Big Bend Station	Plant: Tampa, FL
Test Number: Run 1	Test Date: 12/1/99
Test Location: Unit No.3 Outlet	Test Period: 1125-1359

1. Volume of dry gas sampled at standard conditions (68 deg F, 29.92 in. Hg), dscf.

$$Vm(std) = \frac{17.64 \times Y \times Vm \times \left(Pb + \frac{\text{delta H}}{13.6} \right)}{(Tm + 460)}$$

$$Vm(std) = \frac{17.64 \times 1.0098 \times 83.432 \times \left(30.42 + \frac{1.718}{13.6} \right)}{87.79 + 460} = 82.873$$

Where:

Vm(std) =	Volume of gas sample measured by the dry gas meter, corrected to standard conditions, dscf.
Vm =	Volume of gas sample measured by the dry gas meter at meter conditions, dcf.
Pb =	Barometric Pressure, in Hg.
delt H =	Average pressure drop across the orifice meter, in H_2O
Tm =	Average dry gas meter temperature , deg F.
Y =	Dry gas meter calibration factor.
17.64 =	Factor that includes ratio of standard temperature (528 deg R) to standard pressure (29.92 in. Hg), deg R/in. Hg.
13.6 =	Specific gravity of mercury.

2. Volume of water vapor in the gas sample corrected to standard conditions, scf.

$Vw(std) = (0.04707 \times Vwc) + (0.04715 \times Wwsg)$

$Vw(std) = (0.04707 \times 242.0) + (0.04715 \times 20.5) = 12.4$

Where:

Vw(std) =	Volume of water vapor in the gas sample corrected to standard conditions, scf.
Vwc =	Volume of liquid condensed in impingers, ml.
Wwsg =	Weight of water vapor collected in silica gel, g.
0.04707 =	Factor which includes the density of water (0.002201 lb/ml), the molecular weight of water (18.0 lb/lb-mole), the ideal gas constant 21.85 (in. Hg) (ft^3)/lb-mole)(deg R); absolute temperature at standard conditions (528 deg R), absolute pressure at standard conditions (29.92 in. Hg), ft^3/ml.
0.04715 =	Factor which includes the molecular weight of water (18.0 lb/lb-mole), the ideal gas constant 21.85 (in. Hg) (ft^3)/lb-mole)(deg R); absolute temperature at standard conditions (528 deg R), absolute pressure at standard conditions (29.92 in. Hg), and 453.6 g/lb, ft^3/g.

3. Moisture content

$$bws = \frac{Vw(std)}{Vw(std) + Vm(std)}$$

$$bws = \frac{12.358}{12.358 + 82.873} = 0.130$$

Where:

bws =	Proportion of water vapor, by volume, in the gas stream, dimensionless.

4. Mole fraction of dry gas.

Md = 1 - bws

Md = 1 - 0.130 = 0.870

Where:

Md = Mole fraction of dry gas, dimensionless.

5. Dry molecular weight of gas stream, lb/lb-mole.

MWd = (0.440 x % CO_2) + (0.320 x % O_2) + (0.280 x (% N_2 + % CO))

MWd = (0.440 x 11.3) + (0.320 x 7.3) + (0.280 x (81.3 + 0.00))

= 30.11

Where:

MWd =	Dry molecular weight , lb/lb-mole.
% CO2 =	Percent carbon dioxide by volume, dry basis.
% O_2 =	Percent oxygen by volume, dry basis.
% N_2 =	Percent nitrogen by volume, dry basis.
% CO =	Percent carbon monoxide by volume, dry basis.
0.440 =	Molecular weight of carbon dioxide, divided by 100.
0.320 =	Molecular weight of oxygen, divided by 100.
0.280 =	Molecular weight of nitrogen or carbon monoxide, divided by 100.

6. Actual molecular weight of gas stream (wet basis), lb/lb-mole.

MWs = (MWd x Md) + (18 x (1 - Md))

MWs = (30.11 x 0.870) +(18 (1 - 0.870)) = 28.54

Where:

MWs =	Molecular weight of wet gas, lb/lb-mole.
18 =	Molecular weight of water, lb/lb-mole.

7. Average velocity of gas stream at actual conditions, ft/sec.

$$Vs = 85.49 \times Cp \times ((\text{delt } p)^{1/2})avg \times \left(\frac{Ts\ (avg)}{Ps \times MWs} \right)^{1/2}$$

$$Vs = 85.49 \times 0.84 \times 0.609300 \times \left(\frac{586}{30.35 \times 28.54} \right)^{\wedge}1/2 = 36.0$$

Where:

Vs =	Average gas stream velocity, ft/sec.
85.49 =	Pitot tube constant, ft/sec x $\frac{(lb/lb\text{-}mole)(in.\ Hg)^{1/2}}{(deg\ R)(in\ H_2O)}$
Cp =	Pitot tube coefficient, dimensionless.
Ts =	Absolute gas stream temperature, deg R = Ts, deg F + 460.
Ps =	Absolute gas stack pressure, in. Hg. = Pb + $\frac{P(static)}{13.6}$
delt p =	Velocity head of stack, in. H_2O

8. Average gas stream volumetric flowrate at actual conditions, wacf/min.

Qs(act) = 60 x Vs x As

Qs(act) = 60 x 36.00 x 652.95 = 1410501

Where:

Qs(act) =	Volumetric flowrate of wet stack gas at actual conditions, wacf/min.
As =	Cross-sectional area of stack, ft^2.
60 =	Conversion factor from seconds to minutes.

9. Average gas stream dry volumetric flowrate at standard conditions, dscf/min.

$$Qs(std) = 17.64 \times Md \times \frac{Ps}{Ts} \times Qs(act)$$

$$Qs(std) = 17.64 \times 0.870 \times \frac{30.35}{586} \times 1410501$$

$$= 1120719$$

Where:

Qs(std) = Volumetric flowrate of dry stack gas at standard conditions, dscf/min.

10. Isokinetic variation calculated from intermediate values, percent.

$$I = \frac{17.327 \times Ts \times Vm(std)}{Vs \times O \times Ps \times Md \times (Dn)^2}$$

$$I = \frac{17.327 \times 586 \times 82.873}{36.00 \times 120 \times 30.35 \times 0.870 \times (0.270)\text{^}2} = 101.2$$

Where:

I = Percent of isokinetic sampling.
O = Total sampling time, minutes.
Dn = Diameter of nozzle, inches.
17.327 = Factor which includes standard temperature (528 deg R), standard pressure (29.92 in. Hg), the formula for calculating area of circle $D^{2/4}$, conversion of square feet to square inches (144), conversion of seconds to minutes (60), and conversion to percent (100),

$$\frac{(\text{in. Hg})(\text{in}^2)(\text{min})}{(\text{deg R})(\text{ft}^2)(\text{sec})}$$

SAMPLE CALCULATIONS FOR MERCURY

Client: TEC - Big Bend Station
Test Number: Run 1
Test Location: Unit No.3 Outlet

Plant: Tampa, FL
Test Date: 12/1/99
Test Period: 1125-1359

1. Total Mercury concentration, lb/dscf.

$$C_1 = \frac{W \times 2.2046 \times 10E\text{-}9}{Vm_{(std)}}$$

$$C_1 = \frac{4.36 \times 2.2046 \times 10E\text{-}9}{82.873}$$

$$= 1.16E\text{-}10$$

Where:

W = Weight of Total Mercury collected in sample in ug.
C_1 = Total Mercury concentration, lb/dscf.
$2.2046x10^{-9}$ = Conversion factor from ug to pounds.

2. Total Mercury concentration, ug/dscm

$$C_2 = \frac{W}{Vm_{(std)} \times 0.02832}$$

$$C_2 = \frac{4.363}{82.873 \times 0.02832}$$

$$= 1.86$$

Where:

C_2 = Total Mercury concentration, µg/dscm.
W = Total Mercury catch, µg.
0.02832 = Conversion factor from cubic feet to cubic meters.

3. Total Mercury concentration, ug/Nm3

$$C_3 = \frac{W}{Vm_{(std)} \times 0.02832 \times (16.44/17.64)}$$

$$C_3 = \frac{4.363}{82.873 \times 0.02832 \times (16.44/17.64)}$$

$$C_3 = 1.99$$

Where:

C_3	=	Total Mercury concentration, ug/Nm^3
W	=	Total Mercury catch, µg.
0.02832	=	Conversion factor from cubic feet to cubic meters.
16.44/17.64	=	Ratio of conversion factors for standard temperature and pressure and normal temperature.

4. Total Mercury mass emission rate, lbs/hr.

MR1 = C_1 x Qs(std) x 60

MR1 = 1.16E-10 x 1120719 x 60

MR1 = 7.80E-03

Where:

MR1	=	Total Mercury mass emission rate, lbs/hr.
60	=	Conversion factor from minutes to hours.

5. Total Mercury mass emission rate, lbs/10E+12 Btu.

MR2 = MR1/Heat Input

MR2 = 7.80E-03 / 4,030

MR2 = 1.94

Where:

MR2	=	Total Mercury mass emission rate, lbs/10E+12 Btu.
Heat Input	=	4,030 x 10E+6 Btu/hr

APPENDIX F
EQUIPMENT CALIBRATION RECORDS

PITOT TUBE IDENTIFICATION NUMBER: P156

TYPE S PITOT TUBE INSPECTION DATA FORM

PITOT TUBE ASSEMBLY LEVEL? ✓ (YES) _____ (NO)

PITOT TUBE OPENINGS DAMAGED? _____ (YES-EXPLAIN BELOW) ✓ (NO)

α_1 = 0° (<10) α_2 = 0° (<10)

β_1 = 0° (<5) β_2 = 0° (<5)

γ = 1° θ = 0° A = .95 in.

z = A sin γ = .01 in.; (<1/8 in.),

w = A sin θ = 0 in.; (<1/32 in.),

P_a = .475 in. P_b = .475 in.

D_t = .38 in. $P_a = P_b$? ✓ (YES) _____ (NO)

COMMENTS _____

CALIBRATION REQUIRED? _____ (YES) ✓ (NO)

INSPECTOR Tom Bruso DATE 12-22-96

PITOT TUBE IDENTIFICATION NUMBER: P151

TYPE S PITOT TUBE INSPECTION DATA FORM

PITOT TUBE ASSEMBLY LEVEL? ✓ (YES) _____ (NO)

PITOT TUBE OPENINGS DAMAGED? _____ (YES-EXPLAIN BELOW) ✓ (NO)

α_1 = 0° (<10) α_2 = 0° (<10)

β_1 = 0° (<5) β_2 = 0° (<5)

γ = 1° θ = 0° A = .94 in.

z = A sin γ = .01 in.; (<1/8 in.),

w = A sin θ = 0 in.; (<1/32 in.),

P_a = .47 in. P_b = .47 in.

D_t = .38 in. $P_a = P_b$? ✓ (YES) _____ (NO)

COMMENTS _____

CALIBRATION REQUIRED? _____ (YES) ✓ (NO)

INSPECTOR Tom Bunge DATE 12-22-98

WESTON

LONG/PRE DRY GAS METER CALIBRATION DATA FORM

Calibrator P. Mack

Date 9/27/99 Meter Box Number 15 pm Plant _____

Barometric pressure, P_b = 29.63 in. Hg Dry Gas Meter Number ~~1348734875~~ 1348735 Comments _____

Setting	Gas volume		Temperatures						
Orifice manometer	Wet test meter	Dry gas meter	Wet test meter	Dry gas meter					
(Δ H) in. H_2O	(V_w) ft^3	(V_d) ft^3	(t_w) °F	Inlet (td_i) °F	Outlet (td_o) °F	Avg (t_d) °F	Time (θ), min	Y_i	ΔH @$_i$ in. H_2O
0.5	5	302.253 297.222	71.5	78,79,79	76,76,77	77.5	13.0	1.004	1.8914
1.0	5	307.329 302.253	71.5	79,80,81	76,77,77	78.5	9.4	.9955	1.9836
1.5	10	317.504 307.329	71.5	81,83,84	78,78,79	80.5	15.8	.9957	2.0938
2.0	10	327.721 317.504	71.5	83,84,86	79,79,80	82	13.8	.9932	2.1238
3.0	10	337.990 327.721	71.5	86,91,92	80,81,82	85.5	11.2	.9921	2.0849
							Avg	Y .9961	Δ H @ 2.0355

If there is only one thermometer on the dry gas meter, record the temperature under td_o.

(ΔH) in. H_2O	$\frac{\Delta H}{13.6}$	$Y_i = \frac{V_w P_b (t_d + 460)}{V_d \left(P_b + \frac{\Delta H}{13.6}\right)(t_w + 460)}$	$\Delta H@i = \frac{0.0317 \Delta H}{P_b (t_d + 460)} \left[\frac{(t_w + 460)\Theta}{V_w}\right]^2$
0.5	0.0368	$\frac{(5)(29.63)(77.5+460)}{(5.031)(29.63+.0368)(71.5+460)}$	$\frac{(.0317)(.5)}{(29.63)(77.5+460)} \left[\frac{(71.5+460)(13.0)}{5}\right]^2$
1.0	0.0735	$\frac{(5)(29.63)(78.5+460)}{(5.076)(29.63+.0735)(71.5+460)}$	$\frac{(.0317)(1.0)}{(29.63)(78.5+460)} \left[\frac{(71.5+460)(9.4)}{5}\right]^2$
1.5	0.110	$\frac{(10)(29.63)(80.5+460)}{(10.175)(29.63+.110)(71.5+460)}$	$\frac{(.0317)(1.5)}{(29.63)(80.5+460)} \left[\frac{(71.5+460)(15.8)}{10}\right]^2$
2.0	0.147	$\frac{(10)(29.63)(82+460)}{(10.217)(29.63+.147)(71.5+460)}$	$\frac{(.0317)(2.0)}{(29.63)(82+460)} \left[\frac{(71.5+460)(13.8)}{10}\right]^2$
3.0	0.221	$\frac{(10)(29.63)(85.5+460)}{[illegible]}$	$\frac{(.0317)(3.0)}{[illegible]} \left[\frac{(71.5+460)(11.2)}{10}\right]^2$

WESTON

STACK TEMPERATURE SENSOR CALIBRATION DATA FORM

DATE 7/24/99
AMBIENT TEMPERATURE 72
CALIBRATION Ok, P. [illegible]

POTENTIOMETER NUMBER 2010 #15
BAROMETRIC PRESSURE 29.27
REFERENCE: THERMOCOUPLE SIMULATOR (ACCURACY ± 1°F)

REFERENCE TEMPERATURE °C	°F	TEMPERATURE READING FROM THERMOCOUPLE CHANNEL INPUT NUMBER 1	2	3	4	5	AVERAGE TEMPERATURE READING ①	TEMPERATURE DIFFERENCE ② (%)
0	32	31	31	31	31	31	31	1° - .20%
100	212	212	212	212	212	212	212	0° - 0%
500	932	933	933	933	933	933	933	1° - ~~[illegible]~~ .07%
1000	1832	1830	1830	1830	1830	1830	1830	2° - .09%

COMMENTS

① AVERAGE TEMPERATURE READING = MEAN OF THE TEMPERATURE READINGS FOR THE THERMOCOUPLE CHANNELS

② THE CHANNEL READINGS MUST AGREE WITHIN ± 5°F OR 3°C

ACCEPTABLE TEMPERATURE DIFFERNCE ≤ 1.5 = $\left(\frac{(\text{REF TEMP}^{\circ}\text{F} + 460) - (\text{TEST TEMP}^{\circ}\text{F} + 460)}{(\text{REF TEMP}^{\circ}\text{F} + 460)}\right) \times 100$

WESTON

LONG/PRE DRY GAS METER CALIBRATION DATA FORM

Calibrator P. Mack

Date 3/30/99 **Meter Box Number** 14 **Plant** _____

Barometric pressure, P_b = 29.83 **in. Hg** **Dry Gas Meter Number** 6848169 **Comments** _____

Setting	Gas volume		Temperatures						
Orifice manometer	Wet test meter	Dry gas meter	Wet test meter	Dry gas meter					
(Δ H) in. H_2O	(V_w) ft^3	(V_d) ft^3	(t_w) °F	Inlet (td_i) °F	Outlet (td_o) °F	Avg (t_d) °F	Time (θ), min	Y_i	ΔH @$_i$ in. H_2O
0.5	5	938.464 933.449	69	77, 79	74, 75	76	13.0	1.0089	1.8753
1.0	5	943.481 938.464	69	80, 82	76, 76	78.5	9.2	1.0130	1.8697
1.5	10	953.503 943.481	69.5	82, 87	76, 78	81	15.7	1.0097	2.0362
2.0	10	963.465 953.503	69.5	85, 89	79, 80	83	13.4	1.0162	1.9705
3.0	10	973.740 963.675	69.5	85, 90	80, 81	84	10.9	1.0082	1.9521
							Avg	Y 1.0088	ΔH @ 1.9408

If there is only one thermometer on the dry gas meter, record the temperature under td_o.

(ΔH) in. H_2O	$\frac{\Delta H}{13.6}$	$Y_i = \frac{V_w P_b (t_d + 460)}{V_d \left(P_b + \frac{\Delta H}{13.6}\right)(t_w + 460)}$	$\Delta H@i = \frac{0.0317 \Delta H}{P_b (t_d + 460)} \left[\frac{(t_w + 460)\theta}{V_w}\right]^2$
0.5	0.0368	$\frac{(5)(29.53)(76+460)}{(5.015)(29.83+.0368)(69+460)}$	$\frac{(.0317)(.5)}{(29.83)(76+460)}\left[\frac{(69+460)(13.0)}{5}\right]^2$
1.0	0.0735	$\frac{(5)(29.83)(78.5+460)}{(5.017)(29.83+.0735)(69+460)}$	$\frac{(.0317)(1.0)}{(29.83)(78.5+460)}\left[\frac{(69+460)(9.2)}{5}\right]^2$
1.5	0.110	$\frac{(10)(29.83)(81+460)}{(10.082)(29.83+.110)(69.5+460)}$	$\frac{(.0317)(1.5)}{(29.83)(81+460)}\left[\frac{(69.5+460)(15.7)}{10}\right]^2$
2.0	0.147	$\frac{(10)(29.83)(83+460)}{(10.102)(29.83+.147)(69.5+460)}$	$\frac{(.0317)(2.0)}{(29.83)(83+460)}\left[\frac{(69.5+460)(13.4)}{10}\right]^2$
3.0	0.221	$\frac{(10)(29.83)(84+460)}{(10.115)(29.83+.221)(69.5+460)}$	$\frac{(.0317)(3.0)}{(29.83)(84+460)}\left[\frac{(69.5+460)(10.9)}{10}\right]^2$

WESTON

STACK TEMPERATURE SENSOR CALIBRATION DATA FORM

DATE 23 FEB 99

AMBIENT TEMPERATURE [illegible]

CALIBRATION GP

POTENTIOMETER NUMBER NUTECH #14

BAROMETRIC PRESSURE 29.94

REFERENCE: THERMOCOUPLE SIMULATOR (ACCURACY ± 1°F)

REFERENCE TEMPERATURE °C	°F	TEMPERATURE READING FROM THERMOCOUPLE CHANNEL INPUT NUMBER 1	2	3	4	5	AVERAGE TEMPERATURE READING ①	TEMPERATURE DIFFERENCE ① (%)
0	32	34	34	34	34	34	34	2° - .41
100	212	214	214	214	214	214	214	2° - .30%
500	932	934	934	934	934	93~~3~~4 GP	934	2° - .14%
1000	1832	1831	1831	1831	1831	183~~3~~1 GP	1831	1° - .04%

COMMENTS

① AVERAGE TEMPERATURE READING = MEAN OF THE TEMPERATURE READINGS FOR THE THERMOCOUPLE CHANNELS

② THE CHANNEL READINGS MUST AGREE WITHIN ± 5°F OR 3°C

ACCEPTABLE TEMPERATURE DIFFERNCE ≤ 1.5 = $\left(\frac{(\text{REF TEMP}^\circ\text{F} + 460) - (\text{TEST TEMP}^\circ\text{F} + 460)}{(\text{REF TEMP}^\circ\text{F} + 460)}\right) \times 100$

Y Factor Calibration Check Calculation

FGD Inlet

MWd	= Dry molecular weight source gas, lb/lb-mole.	
0.32	= Molecular weight of oxygen, divided by 100.	
0.44	= Molecular weight of carbon dioxide, divided by 100.	
0.28	= Molecular weight of nitrogen or carbon monoxide, divided by 100.	
% CO_2	= Percent carbon dioxide by volume, dry basis.	15.2
% O_2	= Percent oxygen by volume, dry basis.	3.5

$$MWd = (0.32 * O_2) + (0.44 * CO_2) + (0.28 * (100 - (CO_2 + O_2)))$$

$$MWd = (0.32 * 3.5) + (0.44 * 15.2) + (0.28 * (100 - (15.2 + 3.5)))$$

$$MWd = (1.12) + (6.69) + (22.76)$$

MWd = 30.57

Tma	= Source Temperature, absolute(^{o}R)	
Tm	= Average dry gas meter temperature , deg F.	78.6

$$Tma = Ts + 460$$

$$Tma = 78.6 + 460$$

Tma = 538.6

Ps	= Absolute meter pressure, inches Hg.	
13.6	= Specific gravity of mercury.	
delta H	= Avg pressure drop across the orifice meter during sampling, in H2O	1.508
Pb	= Barometric Pressure, in Hg.	30.39

$$Pm = Pb + (delta\ H / 13.6)$$

$$Pm = 30.39 + (1.508 / 13.6)$$

Pm = 30.50

Yqa	= dry gas meter calibration check value, dimensionless.	
0.0319	= (29.92/528)(0.75)2 (in. Hg/°/R) cfm2.	
29	= dry molecular weight of air, lb/lb-mole.	
Vm	= Volume of gas sample measured by the dry gas meter at meter conditions, dcf.	75.419
Y	= Dry gas meter calibration factor (based on full calibration)	0.9961
Delta H@	= Dry Gas meter orifice calibration coefficient, in. H2O.	2.0355
avg$\sqrt{\text{Delta H}}$	= Avg SQRT press. drop across the orifice meter during sampling , in. H_2O	1.2278
O	= Total sampling time, minutes.	120

$$Yqa = (O / Vm) * \sqrt{ (0.0319 * Tma * 29) / (Delta\ H@ * Pm * MWd) } * avg\sqrt{ Delta\ H }$$

$$Yqa = (120 / 75.419) * \sqrt{ (0.0319 * 538.6 * 29) / (2.0355 * 30.50 * 30.572) } * 1.2278$$

$$Yqa = 1.591 * \sqrt{ 498.259 / 1{,}897.994 } * 1.2278$$

Yqa = 1.001

Diff	= Absolute difference between Yqa and Y	

$$Diff = ((Y - Yqa) / Y) * 100$$

$$Diff = ((0.9961 - 1.001) / 0.9961) * 100$$

Diff = 0.49

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Y Factor Calibration Check Calculation

FGD Outlet

MWd	= Dry molecular weight source gas, lb/lb-mole.	
0.32	= Molecular weight of oxygen, divided by 100.	
0.44	= Molecular weight of carbon dioxide, divided by 100.	
0.28	= Molecular weight of nitrogen or carbon monoxide, divided by 100.	
% CO_2	= Percent carbon dioxide by volume, dry basis.	11.3
% O_2	= Percent oxygen by volume, dry basis.	7.1

$$MWd = (0.32 * O_2) + (0.44 * CO_2) + (0.28 * (100 - (CO_2 + O_2)))$$

$$MWd = (0.32 * 7.1) + (0.44 * 11.3) + (0.28 * (100 - (11.3 + 7.1)))$$

$$MWd = (2.27) + (4.97) + (22.85)$$

MWd = 30.09

Tma	= Source Temperature, absolute(°R)	
Tm	= Average dry gas meter temperature , deg F.	87.8

$$Tma = Ts + 460$$

$$Tma = 87.8 + 460$$

Tma = 547.8

Ps	= Absolute meter pressure, inches Hg.	
13.6	= Specific gravity of mercury.	
delta H	= Avg pressure drop across the orifice meter during sampling, in H2O	1.6771
Pb	= Barometric Pressure, in Hg.	30.39

$$Pm = Pb + (delta\ H / 13.6)$$

$$Pm = 30.39 + (1.6771 / 13.6)$$

Pm = 30.51

Yqa	= dry gas meter calibration check value, dimensionless.	
0.0319	= (29.92/528)(0.75)2 (in. Hg/°/R) cfm2.	
29	= dry molecular weight of air, lb/lb-mole.	
Vm	= Volume of gas sample measured by the dry gas meter at meter conditions, dcf.	83.122
Y	= Dry gas meter calibration factor (based on full calibration)	1.0098
Delta H@	= Dry Gas meter orifice calibration coefficient, in. H2O.	1.9408
avg$\sqrt{\text{Delta H}}$	= Avg SQRT press. drop across the orifice meter during sampling , in. H_2O	1.295
O	= Total sampling time, minutes.	120

$$Yqa = (O / Vm) * \sqrt{ (0.0319 * Tma * 29) / (Delta\ H@ * Pm * MWd) } * avg\sqrt{Delta\ H}$$

$$Yqa = (120 / 83.122) * \sqrt{ (0.0319 * 547.8 * 29) / (1.9408 * 30.51 * 30.092) } * 1.295$$

$$Yqa = 1.444 * \sqrt{ 506.770 / 1,781.862 } * 1.295$$

Yqa = 0.997

Diff	= Absolute difference between Yqa and Y

$$Diff = ((Y - Yqa) / Y) * 100$$

$$Diff = ((1.0098 - 0.997) / 1.0098) * 100$$

Diff = 1.27

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NOZZLE CALIBRATION DATA FORM

Date 12-1-97 Calibrated by _____

Nozzle Identification Number	Nozzle Diameter, Inches[1]			ΔD,[2]	D_{avg}[3]
	D_1	D_2	D_3		
OUTLET	.3700	.3705	.3705	.0005 ✓	.3703 ✓
INLET	.340	.341	.340	.001 ✓	.340 ✓

Where:

[1] $D_{1,2,3}$ = Three different nozzle diameters, inches; each diameter must be measured to nearest 0.001 in.

[2] ΔD = Maximum difference between any two diameters, inches. ΔD must be $\leq$0.004 in.

[3] D_{avg} = Nozzle diameter = average of D_1, D_2, and D_3.

nozzle.frm

APPENDIX G
TECHNICAL SYSTEM AUDIT

PROCEDURAL CHECKLIST
FOR EPA METHODS 1, 2, 3 AND 4

METHOD 1 DETERMINATIONS

Date 11/30/99 Time _____ Operator Bibbs/Wallace Observer Mills

Stack diameter properly determined? INLET - OUTLET - yes
Distance to nearest upstream disturbance properly determined? _____

Number of stack diameters? OUTLET - 3 INLET ~2.5

Distance of nearest downstream disturbance properly determined? yes

Number of sampling points properly selected? yes
Points properly marked on pitot tube? yes
Verification of cyclonic flow acceptable? yes

METHOD 2 SAMPLING

Date 11/30/99 Time _____ Operator TB/JW Observer Mills

Equipment identity matches pretest calibration list? yes

Pitot tube, lines, and manometer assembled correctly? yes

Pitot tube and components mounted interference-free manner? yes
Differential pressure gauge has correct sensitivity? yes

Differential pressure gauge leveled and zeroed? yes

Pretest leak check? yes Cyclonic flow checked? yes
Orientation of pitot tube correct during traverse? yes
Sampling port adequately sealed around pitot tube? yes
Process operating at correct conditions? yes
Stable reading taken at each traverse point? yes
Static pressure measured? yes Method used? Rotate pitot 90° from flow + mea
Moisture content determined? yes Method used? M4 - 1 leg ~~INLET~~ STACK DATA - outlet
Orsat samples taken? yes If not, explain why: _____

Post-test leak-check performed? yes Leak check results: <.02 CFM
Data recorded properly? yes Calculations correct? yes

PROCEDURAL CHECKLIST
FOR EPA METHODS 1, 2, 3 AND 4

METHOD 3 SAMPLING

Date 11/30/99 - 12/2/99 Time _____ Operator T Briggs J Wallace Observer _____

Method: Single-point grab _____ Single-point integrated _____
Multi-point integrated yes
Is a filter used to remove particulate matter? NO BUT Did use Moisture Knockout
Sampling train leak checked? yes
Sampling train purged with stack gas prior to collecting the sample? yes

Sampling port properly sealed? yes

Sampling rate held constant? yes

METHOD 3 ANALYSIS

Molecular weight determination by Orsat: yes

Reagents at the proper level? yes Analyzer level? yes
Analyzer leak checked? yes Analyzed within 8 hours? yes
Sample line purged? yes Complete absorption of gases? yes
The analysis repeated until following analysis criteria met? yes

CO_2 - Any three analyses differ by:

a. ≤ 0.3% when CO_2 ≥ 4.0% OK

b. ≤ 0.2% when CO_2 ≤ 4.0% _____

O_2 - Any three analyses differ by:

a. ≤ 0.3% when O_2 ≤ 15.0% OK

b. ≤ 0.2% when O_2 ≥ 14.0% _____

All readings averaged and reported to nearest 0.1% yes

PROCEDURAL CHECKLIST
FOR EPA METHODS 1, 2, 3 AND 4

METHOD 4 SAMPLING

Prelim

Date 11/30/99 Time _____ Operator TB, GS Observer _____

Method conducted in conjunction with pollutant emission test? NO → Prelim
Impingers properly placed? yes

Impinger contents: 1st 100 ml DI 2nd 100 ml DI 3rd Empty
4th Silica Gel 5th ~~5th~~ ~~6th~~
Modifications? NO
Cooling System: Crushed ice yes Other _____
Sampling time per point 35 min Number of points Six 6

Probe heater on? NO Temperature _____ Stable? _____
Filter heater on? NO Temperature _____ Stable? _____

Crushed ice in ice bath around impingers? yes
Pretest leak check conducted? yes Leakage rate? .005 @ 15
Sampling rate constant? yes Isokinetic sampling? NO
All data recorded properly? yes
Post-leak check conducted? yes Leakage rate? .005 @ 5
Analysis - Impinger Contents:
Method: Volumetric yes
Glassware cleaned following protocol for concurrent emission test? N/A
Gravimetric? Silica Gel Trip balance calibrated? yes

Measurement of silica gel? yes Balance? yes Electronic
Color of silica gel? Blue Condition? Good
All analytical data recorded properly? _____

All readings averaged and reported to nearest 0.1%

TECHNICAL SYSTEM AUDIT CHECKLIST
~~TRACE METALS~~ SAMPLING
OHM

Date 12/1-12/2/99 Time _____ Operator T Ribbs / J Wallace Observer _____

Equipment Setup

Equipment identity matches pretest calibration list? yes

Probe nozzle: _____ Glass yes

Button-hook yes Elbow _____ Size _____

Cleaned according to sampling protocol? yes

Probe Liner: Borosilicate - outlet Quartz _____ Other Teflon - Inlet

Cleaned according to sampling protocol? yes

Probe heating system: yes

Checked? _____ Temperature Inlet ~ 315 outlet ~ 250 Stable? ✓

Pitot Tube: Type S yes Other _____

Properly attached to probe (no interference to nozzle)? yes

Modifications: _____

Pitot tube coefficient 0.84

Differential Pressure Gauge: Inclined manometers yes

Magnehelics _____ Ranges 0-10" _____

Cylone (inlet only): Borosilicate Glass N/A Other _____

Cleaned according to sampling protocol? _____

Filter Holder: Borosilicate Glass yes Other _____

Frit material: Borosilicate Glass _____ Stainless _____

Teflon ✓ Other _____

Gasket Material: Silicone _____ Other _____

Cleaned according to sampling protocol? yes

Filter Type(s): Quartz filters - outlet - Quartz Thimbles - Inlet

Impinger train: Number of impingers 8

Cleaned according to sampling protocol? yes

Contents: 1st - 3rd IN KCl ~~2nd~~ 4th 5% HNO_3/10% H_2O_2 ~~3rd~~ 5th - 7th 4% KMnO4 10%

8th Silica Gel 5th _____ 6th _____

Impinger Weights recorded? yes

Cooling System ice BATH

Proper connections? yes

Modifications _____

Silica Gel: Type 3-5 mesh Indicating New? _____ Used? ✓

Barometer: Mercury _____ Aneroid _____ Other Electronic

Gas Density Determination: Temperature sensor yes

Pressure gauge - Manometers + Meter Box orifice

Temperature sensor properly attached to probe? yes

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TECHNICAL SYSTEM AUDIT CHECKLIST
~~TRACE METALS~~ OHM SAMPLING

Date 12/1-12/2/99 Time _____ Operator _____ Observer Mills

Test Procedures

Recent Calibrations: Pitot tubes yes
Meter Box yes Thermocouples/thermometers yes
Filters checked visually for irregularities? yes
Filters properly centered? yes Labeled? ✓
Nozzle size properly selected? yes
All openings of sampling train plugged (pre-test and post-test) Glass Balls + Caps
Impingers properly assembled? yes
Pitot lines checked for leaks and plugging? yes
Meter box leveled? yes Manometers zeroed? yes
Delta H from most recent calibration yes
Calculator ~~Nomograph~~ setup correctly? yes K factor Inlet ~2.5 outlet ~4.6
Pretest leak check conducted? yes Leakage rate? all <.02 CFM
Care taken to avoid scraping port or stack wall? yes
Effective seal around probe when in-stack? yes
Probe moved to traverse points at proper time? yes
Leak check conducted during port change? Before yes After? yes
Nozzle and pitot tubes kept parallel to stack at all times? yes
Filter(s) changed during run? NO
Any particulate lost during filter change? NO
Data forms completed and data recorded properly? yes
Calculator ~~Nomograph~~ setting changed with significant change in the stack temperature? yes
Velocity pressure and orifice pressure recorded accurately? yes
Post-test leak check conducted? yes Leakage rate <.02 CFM
at inches of mercury _____
Orsat analysis? yes Stack + Inlet Integrated yes
Approximate stack temperature Inlet 315 out 130 Gas sample volume _____
Percent isokinetic calculated all Between 90% - 110%

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TECHNICAL SYSTEM AUDIT CHECKLIST
~~TRACE METALS~~ SAMPLING
OHM

Date 12/1 - 12/2/99 Time _____ Operator _____ Observer Mills

Sample Recovery

Brushes: Nylon bristle _____ Other TEFlon
Cleaned according to sampling protocol? yes
Wash Bottles: Glass _____ Polyethylene _____ Other TEFlon
Cleaned according to sampling protocol? yes
Storage containers: Borosilicate glass yes Other _____
Cleaned according to sampling protocol? yes
Cap material Teflon Leak free? yes
Petri dishes: Borosilicate glass - Sample Bottles Other _____
Cleaned according to sampling protocol? yes
Graduated cylinder: Borosilicate glass yes Other _____
Subdivisions of graduated cylinder ≤ 2 ml? yes
Cleaned according to sampling protocol? yes
Balance type Electronic Calibrated? ✓
Probe allowed to cool sufficiently? yes
Probe and sample train openings covered? yes
Clean-up area(s) used ON SITE WESTON TRAILER
Silica gel: Color? Blue Condition? Good
Probe handling: ~~Acetone rinse~~ _____ 0.1 N Nitric rinse yes
Particulate recovery: Probe nozzle ✓ Probe fitting ✓
Probe liner ✓ Front half of filter holder ✓
Blanks collected: Reagent(s) all required for ONTARIO HYDRO method
0.1 N Nitric _____ Acetone _____
Impinger rinses: 0.1 N Nitric _____ Other rinses As required by OHM
Recovery efficiency samples collected from this train? NO
Sample numbers: _____
Samples labeled and stored properly? yes
Liquid levels marked? yes
Filter handling: tweezers used? yes Surgical gloves? yes
Any particulate lost? NO
NOTE: The above TSA would also be applied to the EPA Method 12 test train.

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