Appendix 1

Testing Parameters / Sample Calculations

Pacificorp
Wyodak Station
Inlet
9-29-99 through 9-30-99
Ontario Hydro Method - Mercury Speciation

Field Data	Run #1	Run #2	Run #3	Averages
date	29-Sep-99	30-Sep-99	30-Sep-99	
start time	05:56 PM	08:11 AM	12:13 PM	
stop time	08:36 PM	11:09 AM	02:51 PM	
sample volume (ft3)	48.378	53.175	49.864	50.472
sampling time (minutes)	120	120	120	120
stack temp. (oF)	324	317	320	320
meter temp. (oF)	65	50	57	57
barometric pressure (mbar)	866	876	876	873
barometric pressure (" Hg)	25.58	25.88	25.88	25.78
stack pressure (inches water)	-16.0	-16.0	-16.0	-16.0
moisture (grams)	92.3	113.4	103.3	103.0
oxygen (%)	8.0	8.0	7.4	7.8
carbon dioxide (%)	12.0	12.0	12.6	12.2
delta H	0.44	0.52	0.48	0.5
(delta p)^1/2	0.901	0.832	0.798	0.844
meter box Y	1.016	1.016	1.016	1.016
delta H@	1.65	1.65	1.65	1.65
pitot tube constant	0.82	0.82	0.82	0.82
nozzle diameter (inches)	0.177	0.192	0.192	0.187
stack diameter (inches) (De, 22' x 26' actual)	323.84	323.84	323.84	323.84

Laboratory Data					Solution/Filter Blank (ug)
mass particulate, beaker (grams)	0.5585	0.2629	-- *	0.4107	
mass particulate, filter (grams)	5.1726	7.1641	7.6047	6.6471	
mass Hg (micrograms) (filter)	2.1	3.0	2.2	2.4	-- **
mass Hg (micrograms) (probe rinse)	0.088	< 0.010	< 0.010	0.036	< 0.01
mass Hg (micrograms) (KCl)	3.4	4.6	3.4	3.8	< 0.10
mass Hg (micrograms) (KMnO4)	9.8	9.0	11	9.9	< 0.03
mass Hg (micrograms) (H2O2)	< 0.25	0.28	-- *	0.27	< 0.25

Calculations				
sample volume (dscf)	42.30	48.47	44.81	45.20
moisture volume (scf)	4.34	5.34	4.86	4.85
moisture content (%/100)	0.093	0.099	0.098	0.097
molecular weight (dry)	30.24	30.24	30.31	30.26
molecular weight (actual)	29.10	29.03	29.11	29.08
gas velocity (ft/sec)	66.4	60.7	58.3	61.8
gas flow (acfm)	2,277,866	2,082,856	2,000,396	2,120,373
gas flow (dscfm)	1,134,766	1,052,563	1,008,072	1,065,134
% isokinetic	104.0	109.2	105.4	106.2
Particulate Emissions				
particulate emissions (gr/dscf)	2.09	2.36	2.62	2.36
particulate emissions (lb/hr)	20,318	21,313	22,610	21,414
Particulate Bound Hg Emissions				
Hg emissions (ug/dscm)	1.8	2.2	1.7	1.9
Hg emissions (lb/hr)	0.0078	0.0086	0.0066	0.0077
Oxidized Hg Emissions				
Hg emissions (ug/dscm)	2.8	3.4	2.7	3.0
Hg emissions (lb/hr)	0.012	0.013	0.010	0.012
Elemental Hg Emissions				
Hg emissions (ug/dscm)	8.4	6.8	8.7	7.9
Hg emissions (lb/hr)	0.036	0.027	0.033	0.032
Total Hg Emissions				
Hg emissions (ug/dscm)	13.1	12.3	13.1	12.8
Hg emissions (lb/hr)	0.055	0.049	0.049	0.051

* - sample arrived at laboratory broken
** - the inlet filters were not digested

Pacificorp
Wyodak Station
Outlet
9-29-99 through 9-30-99
Ontario Hydro Method - Mercury Speciation

Field Data	Run #1	Run #2	Run #3	Averages
date	29-Sep-99	30-Sep-99	30-Sep-99	
start time	05:55 PM	08:10 AM	12:13 PM	
stop time	08:51 PM	10:55 AM	02:57 PM	
sample volume (ft3)	82.976	69.383	70.090	74.150
sampling time (minutes)	120	120	120	120
stack temp. (oF)	180	179	177	179
meter temp. (oF)	77	66	69	71
barometric pressure (mbar)	866	876	876	873
barometric pressure (" Hg)	25.58	25.88	25.88	25.78
stack pressure (inches water)	-0.40	-0.40	-0.40	-0.40
moisture (grams)	236.4	204.0	197.7	212.7
oxygen (%)	8.0	8.0	8.0	8.0
carbon dioxide (%)	12.0	12.0	12.0	12.0
delta H	1.35	0.96	1.00	1.1
(delta p)^1/2	1.199	1.195	1.213	1.202
meter box Y	1.005	1.005	1.005	1.005
delta H@	1.81	1.81	1.81	1.81
pitot tube constant	0.84	0.84	0.84	0.84
nozzle diameter (inches)	0.192	0.177	0.177	0.182
stack diameter (inches)	264.40	264.40	264.40	264.40

Laboratory Data					Solution/Filter Blank (ug)
mass particulate, beaker (grams)	0.0122	0.0138	0.0148	0.0136	
mass particulate, filter (grams)	0.0003	0.0289	0.0170	0.0154	
mass Hg (micrograms) (filter)	0.038	0.024	0.024	0.031	0.013
mass Hg (micrograms (probe rinse)	< 0.050	< 0.050	< 0.050	< 0.050	< 0.01
mass Hg (micrograms) (KCl)	0.095	0.20	0.31	0.15	< 0.10
mass Hg (micrograms) (KMnO4)	14	12	12	13	< 0.03
mass Hg (micrograms) (H2O2)	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25

Calculations				
sample volume (dscf)	70.35	60.68	60.96	63.99
moisture volume (scf)	11.13	9.60	9.31	10.01
moisture content (%/100)	0.137	0.137	0.132	0.135
molecular weight (dry)	30.24	30.24	30.24	30.24
molecular weight (actual)	28.57	28.57	28.62	28.58
gas velocity (ft/sec)	80.6	79.8	80.8	80.4
gas flow (acfm)	1,844,457	1,826,514	1,849,314	1,840,095
gas flow (dscfm)	1,122,054	1,125,671	1,148,840	1,132,188
% isokinetic	99.1	100.3	98.7	99.4
Particulate Emissions				
particulate emissions (gr/dscf)	0.0027	0.0109	0.0080	0.0072
particulate emissions (lb/hr)	26.3	104.7	79.2	70.1
Particulate Bound Hg Emissions				
Hg emissions (ug/dscm)	0.038	0.036	0.035	0.036
Hg emissions (lb/hr)	0.00016	0.00015	0.00015	0.00015
Oxidized Hg Emissions				
Hg emissions (ug/dscm)	0.048	0.116	0.180	0.115
Hg emissions (lb/hr)	0.00020	0.00049	0.00077	0.00049
Elemental Hg Emissions				
Hg emissions (ug/dscm)	7.2	7.1	7.1	7.1
Hg emissions (lb/hr)	0.030	0.030	0.031	0.030
Total Hg Emissions				
Hg emissions (ug/dscm)	7.2	7.3	7.3	7.3
Hg emissions (lb/hr)	0.030	0.031	0.032	0.031

Pacificorp
Wyodak Station
9-29-99 through 9-30-99
Ontario Hydro Method - Mercury Speciation
Speciated Mercury and Particulate Matter Control Efficiency

	Run #1	Run #2	Run #3	Averages
Inlet				
particulate (gr/dscf)	2.09	2.36	2.62	2.36
particulate bound Hg (ug/dscm)	1.8	2.2	1.7	1.9
oxidized Hg (ug/dscm)	2.8	3.4	2.7	3.0
elemental Hg (ug/dscm)	8.4	6.8	8.7	7.9
total Hg (ug/dscm)	13.1	12.3	13.1	12.8
Outlet				
particulate (gr/dscf)	0.0027	0.0109	0.0080	0.0072
particulate bound Hg (ug/dscm)	0.038	0.036	0.035	0.036
oxidized Hg (ug/dscm)	0.048	0.116	0.180	0.115
elemental Hg (ug/dscm)	7.2	7.1	7.1	7.1
total Hg (ug/dscm)	7.2	7.3	7.3	7.3
Pollution Control Efficiency				
particulate	99.9%	99.5%	99.7%	99.7%
particulate bound Hg	97.9%	98.4%	97.9%	98.1%
oxidized Hg	98.3%	96.6%	93.3%	96.1%
elemental Hg	14.3%	-4.4%	18.4%	9.7%
total Hg	45.0%	40.7%	44.3%	43.4%

Ontario Hydro Mercury Speciation
Wyodak Scrubber Stack Run #1

Sample Calculations

$$\text{sample volume (scf)} = \frac{(17.64)\cdot V_M \cdot Y_D \cdot \left(P_B + \frac{\Delta H}{13.6}\right)}{T_M + 460}$$

$$= \frac{(17.64)\cdot(82.976)\cdot(1.005)\cdot\left[(25.58) + \frac{(1.35)}{13.6}\right]}{[(77)+460]}$$

$$= 70.35$$

$$\text{moisture volume (scf)} = (0.04707)\cdot V_{LC}$$

$$= (0.04707)\cdot(236.4)$$

$$= 11.13$$

$$\text{moisture content (\%/100)} = \frac{V_{W(STD)}}{(V_{M(STD)} + V_{W(STD)})}$$

$$= \frac{(11.13)}{[(70.35)+(11.13)]}$$

$$= 0.137$$

$$\text{molecular weight, dry (grams/mole)} = (0.440)\cdot(\%CO_2) + (0.320)\cdot(\%O_2) + (0.280)\cdot(\%N_2 + \%CO)$$

$$= (0.440)\cdot(12.0) + (0.320)\cdot(8.0) + (0.280)\cdot[(80.0)+(0.0)]$$

$$= 30.24$$

$$\text{molecular weight, actual (grams/mole)} = M_D\cdot(1 - B_{WS}) + (18.0)\cdot B_{WS}$$

$$= (30.24)\cdot[1-(0.137)] + (18.0)\cdot(0.137)$$

$$= 28.57$$

$$\text{gas velocity (ft/sec)} = (85.49)\cdot C_P \cdot \sqrt{\Delta P}_{AVG} \cdot \sqrt{\frac{T_S + 460}{\left[P_B + \frac{P_S}{(13.6)}\right]\cdot M_A}}$$

$$= (85.49)\cdot(0.84)\cdot(1.199)\cdot\sqrt{\frac{(180)+460}{\left[(25.58) + \frac{(-0.40)}{(13.6)}\right]\cdot(28.57)}}$$

$$= 80.6$$

Ontario Hydro Mercury Speciation
Wyodak Scrubber Stack Run #1

Sample Calculations (continued)

$$\text{gas flow (acfm)} = (60)\cdot\frac{\pi\cdot\left(\frac{D_S}{12}\right)^2}{4}\cdot V_S$$

$$= (60)\cdot\frac{\pi\cdot\left[\frac{(264.40)}{12}\right]^2}{4}\cdot(80.6)$$

$$= 1{,}844{,}457$$

$$\text{gas flow (dscfm)} = (60)\cdot(1-B_{WS})\cdot V_S\cdot\frac{\pi\cdot\left(\frac{D_S}{12}\right)^2}{4}\cdot\frac{T_{STD}\cdot\left[P_B+\frac{P_S}{(13.6)}\right]}{(T_S+460)\cdot P_{STD}}$$

$$= (60)\cdot[1-(0.137)]\cdot(80.6)\cdot\frac{\pi\cdot\left[\frac{(264.40)}{12}\right]^2}{4}\cdot\frac{(528)\cdot\left[(25.58)+\frac{(-0.40)}{(13.6)}\right]}{[(180)+460]\cdot(29.92)}$$

$$= 1{,}122{,}054$$

$$\text{particulate emissions (lb/hr)} = \frac{M_T\cdot F_{DSCFM}\cdot[60\,(\text{min}/hr)]}{V_{M(STD)}\cdot[453.5\,(g/lb)]}$$

$$= \frac{(0.0125)\cdot(1{,}122{,}054)\cdot(60)}{(70.35)\cdot(453.5)}$$

$$= 26.3$$

$$\text{particulate emissions (gr/dscf)} = \frac{M_T}{V_{M(STD)}}\cdot[15.43\,(grains/gram)]$$

$$= \frac{(0.0125)}{(70.35)}\cdot(15.43)$$

$$= 0.0027$$

Ontario Hydro Mercury Speciation
Wyodak Scrubber Stack Run #1

Sample Calculations (continued)

$$\% \text{ isokinetic} = \frac{(100)\cdot(T_S+460)\cdot\left[(0.002669)\cdot V_{LC}+\left(\frac{V_M\cdot Y_D}{(T_M+460)}\right)\cdot\left(P_B+\frac{\Delta H}{13.6}\right)\right]}{(60)\cdot\Theta\cdot V_S\cdot\left(P_B+\frac{P_S}{13.6}\right)\cdot\frac{\left[\pi\cdot\left(\frac{D_N}{12}\right)^2\right]}{4}}$$

$$= \frac{(100)\cdot[(180)+460]\cdot\left\{(0.002669)\cdot(236.4)+\left[\frac{(82.976)\cdot(1.005)}{[(77)+460]}\right]\cdot\left[(25.58)+\frac{(1.35)}{13.6}\right]\right\}}{(60)\cdot(120.0)\cdot(80.6)\cdot\left[(25.58)+\frac{(-0.40)}{13.6}\right]\cdot\frac{\left\{\pi\cdot\left[\frac{(0.192)}{12}\right]^2\right\}}{4}}$$

$$= 99.1\%$$

Variables

B_{WS} - moisture content of the gas (wet volume percent/100)

%CO - carbon monoxide content of the gas (dry volume percent)

$\%CO_2$ - carbon dioxide content of the gas (dry volume percent)

D_S - diameter of the stack (inches)

F_{ACFM} - gas flow (actual cubic feet per minute)

F_{DSCFM} - gas flow (dry standard cubic feet per minute, where standard = 29.92 inches Hg and 68°F)

$F_{LB/HR}$ - gas flow (pounds per hour)

ΔH - pressure differential at dry gas meter exit orifice (inches water)

M_A - molecular weight of the wet gas (grams per mole)

M_D - molecular weight of the dry gas (grams per mole)

M_T - total mass particulate recovered (grams)

$\%N_2$ - nitrogen content of the gas (dry volume percent)

$\%O_2$ - oxygen content of the gas (dry volume percent)

$\sqrt{\Delta P_{AVG}}$ - average square root of the stack gas pitot differential pressure (inches water)

P_B - barometric pressure (inches mercury)

P_S - stack pressure relative to barometric presure (inches water)

Ontario Hydro Mercury Speciation
Wyodak Scrubber Stack Run #1

Variables (continued)

P_{STD} - standard pressure (29.92 inches mercury)

Θ - total sampling time (minutes)

T_M - average dry gas meter temperature (°F)

T_S - average stack temperature (°F)

T_{STD} - standard temperature (528 °R)

V_{LC} - volume of moisture collected as a liquid (milliliters)

V_M - volume indicated on dry gas meter (uncorrected actual cubic feet)

V_{MSTD} - volume of gas through dry gas meter (corrected dry standard cubic feet)

V_S - stack gas velocity (feet per second)

V_{WSTD} - volume of moisture collected as a gas at standard conditions (standard cubic feet)

Y_D - dry gas meter calibration factor (unitless)

2

Appendix 2

Field and Laboratory Data

Job #: PA < 9137	Date: 7/29/11	CO2 (%): 12.0	O2 (%): 8.0
Location: Inlet	Operator: DAS	Assumed Moisture (%): 9	Barometric Pressure (mbar): 866
Run # 1	Probe ID: P-22	Ambient Temperature (oF): 70	Probe Material: teflon
Meter Box Y#: 1.016	Pitot Tube Coefficient: 0.82 – P144	Probe Length (ft): 22	Filter Temperature (oF): —
Sample Box ID: face plate	Meter Box ID: M5-7	Probe Temperature (oF): 250°F	Moisture (grams): 92.3
Meter DH@: 1.65	K Factor: ~~0.562~~ 0.544	Nozzle Diameter (in): 0.177	Start Time: 17:56
Pre-Test Pitot Leak Check: ✓	Post-Test Pitot Leak Check: ✓	Static Pressure (" H2O): -16.0	Stop Time: 20:36
Pre-Test Pump Leak Check: 0.0 @ 21" Hg	Post-Test Pump Leak Check: 0.00 @ 25" Hg	Filter ID: 994065m-T30	Method: Ontario Hydro

Schematic of Stack Cross Section

Dc = 323.84

1 of 2

8 ports
3'3" spaced

Stack ID (inches): ~~35~~ 60

Traverse Point	Sampling Time (minutes)	Vacuum (" Hg)	Velocity Head (" H2O)	Orifice Setting (" H2O)	Meter Volume (ft3) Initial Volume 685.287	Stack Temp. (oF)	Probe Temp. (oF)	Filter Temp. (oF)	Meter Temp. Inlet (oF)	Meter Temp. Outlet (oF)	Condenser Temp. (oF)	Ki (cfm) 0.446 0.439	Pv	
1-1	5	5.0	0.85	0.38	687.2	309	252	stack	70	70	42		87.3	
2	10	7.0	0.45	0.2	688.7	328	254	stack	70	70	41		88.7	
3	15	9.0	0.54	0.30	690.2	325	250	stack	70	69	40		90.3	
2-1	20	9.0	0.59	0.32	692.2	330	256	stack	69	69	40		92.0	
2	25	10.0	0.53	0.29	693.9	327	256	stack	70	69	41		93.8	
3	30	12.0	0.76	0.41	696.0	322	255	stack	69	70	42		96.0	
3-1	35	15	0.54	0.33	697.6	330	255	stack	68	69	42			* 699.828
2	40	21	0.91	0.50	699.~~4~~ 2~~4~~	335	256	stack	69	69	42		99.7	* pause test to change filters – re leak check
3	45	5.0	0.95	0.52	702.1	328	250	stack	67	67	43		01.9	
4-1	50	6.0	0.89	0.48	704.4	324	258	stack	67	66	40		04.2	
2	55	7.0	0.90	0.49	706.5	327	256	stack	67	66	40		06.5	
3	60	7.0	0.83	0.45	708.6	325	258	stack	66	65	40		08.5	
5-1	65	6.0	0.92	0.50	710.7	321	256	stack	64	65	39		710.7	
2	70	8.0	0.85	0.46	712.7	326	250	stack	65	65	39		712.7	
3	75	8.0	0.95	0.52	715.0	321	252	stack	65	65	39		714.8	
number	total	maximum	average root	average	difference	average	minimum	minimum	average		maximum			

Job #: PAL9137	Date: 9/27/99	CO2 (%): 12	O2 (%): 8
Location: Inlet	Operator: DAS	Assumed Moisture (%): 9	Barometric Pressure (mbar): 866
Run # 1	Probe ID: P-22	Ambient Temperature (oF): 60	Probe Material: teflon
Meter Box Y#: 1.616	Pitot Tube Coefficient: P-144 0.82	Probe Length (ft): 22	Filter Temperature (oF): Stack
Sample Box ID: frit plate	Meter Box ID: MS-7	Probe Temperature (oF): 250	Moisture (grams): 92.3
Meter DH@: 1.65	K Factor: 0.544	Nozzle Diameter (in): 0.177	Start Time: 17:56
Pre-Test Pitot Leak Check: ✓	Post-Test Pitot Leak Check: ✓	Static Pressure ("H2O): -16.0	Stop Time: 20:36
Pre-Test Pump Leak Check: 0.00@21"Hg	Post-Test Pump Leak Check: 0.00@25"Hg	Filter ID: 914065M ~~T28~~ T-30	Method: Dataram Hydro

Schematic of Stack Cross Section

2 of 2

Stack ID (inches): 32x84

Traverse Point	Sampling Time (minutes)	Vacuum ("Hg)	Velocity Head ("H2O)	Orifice Setting ("H2O)	Meter Volume (ft3) Initial Volume 715.0	Stack Temp. (oF)	Probe Temp. (oF)	Filter Temp. (oF)	Meter Temp. Inlet (oF)	Meter Temp. Outlet (oF)	Condenser Temp. (oF)	Ki (cfm)	Pv
6-1	80	9.0	0.84	0.46	717.6	332	256	stack	64	63	40		17.0
2	85	8.5	0.92	0.50	719.7	323	257	stack	63	62	40		19.7
3	90	9.5	0.98	0.53	721.8	320	259	stack	63	62	40		21.9
7-1	95	8.0	0.91	0.50	724.0	321	257	stack	62	61	40		23.9
2	100	10.0	0.95	0.52	726.1	322	254	stack	62	60	40		26.1
3	105	12.0	0.97	0.53	728.4	319	256	stack	61	60	39		28.3
8-1	110	12.0	0.91	0.50	730.5	321	260	stack	60	59	39		30.4
2	115	13.0	0.84	0.46	732.3	317	260	stack	60	59	39		
3	120	15.0	0.91	0.50	734.665	313	260	stack	60	59	39		
number	total	maximum	average root	average	difference	average	minimum	minimum	average	maximum			
	120	21	0.901	~~0.444~~ 0.444	48.978	324	250	309	65	42			

~~0.4~~ for check of test

Job #: PAC 9137	Date: 9/30/99	CO2 (%): ~~12.5~~ (12.0)	O2 (%): 8.0
Location: Wyolak Inlet	Operator: DAS	Assumed Moisture (%): 9.2	Barometric Pressure (mbar): 876
Run #: 2	Probe ID: P-22	Ambient Temperature (oF): 60	Probe Material: teflon
Meter Box Y#: 1.016	Pitot Tube Coefficient: P-144 0.82	Probe Length (ft): 22	Filter Temperature (oF): stack
Sample Box ID: faceplate	Meter Box ID: MS-7	Probe Temperature (oF): 250	Moisture (grams): 113.4
Meter DH@: 1.65	K Factor: 0.744	Nozzle Diameter (in): 0.192	Start Time: 8:11
Pre-Test Pitot Leak Check: ✓	Post-Test Pitot Leak Check: ✓	Static Pressure (" H2O): -16.0	Stop Time: 11:09
Pre-Test Pump Leak Check: 0.00 @ 21" Hg	Post-Test Pump Leak Check: 0.00 @ 21" Hg	Filter ID: 944064m T-33	Method: Ontario Hydro

Schematic of Stack Cross Section

1 of 2

	1	2	3
Fyrite			
O_2	~~8.5~~	8.0	8.0
CO_2	~~10.5~~	12.3	12.2
		*	*

Traverse Point	Sampling Time (minutes)	Vacuum ("Hg)	Velocity Head ("H2O)	Orifice Setting ("H2O)	Meter Volume (ft3) Initial Volume 736.378	Stack Temp. (oF)	Probe Temp. (oF)	Filter Temp. (oF)	Meter Temp. Inlet (oF)	Meter Temp. Outlet (oF)	Condenser Temp. (oF)	Ki (cfm) 0.508	Pv	
8-1	5	6.0	0.76	0.56	739.0	312	250	stack	45	45	40		38.5	
2	10	6.0	0.74	0.55	741.2	313	256	stack	45	45	39		41.2	
3	15	5.0	0.56	0.42	743.5	320	258	stack	47	46	39			
7-1	20	5.0	0.60	0.45	745.5	321	256	stack	47	46	39		45.5	
2	25	6.0	0.78	0.58	748.0	314	254	stack	48	48	40		47.7	
3	30	7.0	0.71	0.53	750.2	313	252	stack	49	46	40		50.1	
6-1	35	6.0	0.65	0.48	752.1	310	256	stack	50	47	40		52.2	
2	40	6.0	0.82	0.61	754.5	319	254	stack	50	47	40		54.4	
3	45	7.0	0.93	0.69	756.9	319	250	stack	52	53	40		56.9	
5-1	50	6.0	0.56	.42	759.0	312	251	stack	49	48	40		8.8	
2	55	6.0	0.53	0.39	761.0	323	256	stack	50	48	40			
3	60	6.0	0.87	0.65	~~763.372~~ 763.443	320	252	stack	50	48	40		3.3	leak check good — subtract 0.12 cf
4-1	65	6.0	0.84	0.62	765.9	317	254	stack	50	48	40		5.8	
2	70	6.0	0.57	0.42	767.9	322	256	stack	51	51	40		7.8	
3	75	8.0	0.91	0.67	770.4	322	254	stack	51	49	42		0.3	
number	total	maximum	average root	average	difference	average	minimum	minimum	average		maximum			

Stack ID (inches): 323.84

Job #: PA-9137	Date: 9/30/99	CO2 (%): 12.3 (12.0)	O2 (%): 8.0
Location: Wydot Inlet	Operator: DAS	Assumed Moisture (%): 9.2	Barometric Pressure (mbar): 876
Run # 2	Probe ID: P-22	Ambient Temperature (oF): 65	Probe Material: teflon
Meter Box Yd: 1.016	Pitot Tube Coefficient: P-144 0.82	Probe Length (ft): 22	Filter Temperature (oF): stack
Sample Box ID: tact plate	Meter Box ID: M5-7	Probe Temperature (oF): 250	Moisture (grams):
Meter DH@: 1.65	K Factor: .744	Nozzle Diameter (in): 0.192	Start Time: 113.4 8:11
Pre-Test Pitot Leak Check: ✓	Post-Test Pitot Leak Check: ✓	Static Pressure (" H2O): -16.0	Stop Time: 11:09
Pre-Test Pump Leak Check: 0.00@ 21 "Hg	Post-Test Pump Leak Check: 0.00@ 21 "Hg	Filter ID: 494065 T-33	Method: Ontario Hydro

Schematic of Stack Cross Section

2 of 2

Stack ID (inches): 323.84

Traverse Point	Sampling Time (minutes)	Vacuum ("Hg)	Velocity Head ("H2O)	Orifice Setting ("H2O)	Meter Volume (ft3) Initial Volume 770.4	Stack Temp. (oF)	Probe Temp. (oF)	Filter Temp. (oF)	Meter Temp. Inlet (oF)	Meter Temp. Outlet (oF)	Condenser Temp. (oF)	Ki (cfm)	Pv
3-1	80	7.0	0.63	0.47	772.6	309	252	stack	52	49	40		
2	85	7.5	0.62	0.46	774.6	325	251	stack	52	49	41		4.6
3	90	8.0	0.77	0.57	776.9	320	256	stack	53	50	40		6.8
2-1	95	7.0	0.60	0.45	779.1	312	258	stack	52	50	41		8.8
2	100	7.0	0.65	0.48	781.2	318	255	stack	53	50	41		
3	105	8.5	0.60	0.45	783.2	313	255	stack	54	50	40		
1-1	110	7.0	0.57	.42	785.2	318	254	stack	52	51	40		5.1
2	115	7.0	0.59	0.44	787.2	313	252	stack	53	51	40		7.1
3	120	10.0	0.86	0.64	789.673	320	256	stack	53	52	40		
			7.2645										
number	total	maximum	average root	average	difference	average	minimum	minimum	average		maximum		
			0.8315	.518	53.175	317			49.5				

Job #: PAC 9137	Date: 7-20-99	CO2 (%): 12	O2 (%): 8
Location: Lloyd Inlet	Operator: DRS	Assumed Moisture (%): 42	Barometric Pressure (mbar): 876
Run #: 3	Probe ID: P-22	Ambient Temperature (oF): 65	Probe Material: teflon
Meter Box Y#: 1.016	Pitot Tube Coefficient: 0.82 P-144	Probe Length (ft): 22	Filter Temperature (oF): Stack
Sample Box ID: freeplate	Meter Box ID: M5-7	Probe Temperature (oF): 250	Moisture (grams): 103.3
Meter DH@: 1.65	K Factor: 0.748	Nozzle Diameter (in): 0.192	Start Time: 12:13
Pre-Test Pitot Leak Check: ✓	Post-Test Pitot Leak Check: ✓	Static Pressure ("H2O): -16.0	Stop Time: 14:51
Pre-Test Pump Leak Check: 0.00822" Hg	Post-Test Pump Leak Check: 0.00815" Hg	Filter ID: 194066	Method: Ontario Hydro

Schematic of Stack Cross Section

Stack ID (inches): 323.84

Traverse Point	Sampling Time (minutes)	Vacuum ("Hg)	Velocity Head ("H2O)	Orifice Setting ("H2O)	Meter Volume (ft3) Initial Volume 790.673	Stack Temp. (oF)	Probe Temp. (oF)	Filter Temp. (oF)	Meter Temp. Inlet (oF)	Meter Temp. Outlet (oF)	Condenser Temp. (oF)	Ki (cfm) .51	Pv
1-1	5	4	0.58	0.43	792.9	312	256	stack	52	52	41		
2	10	5	0.75	0.56	795.2	318	254	stack	53	52	41		95.1
3	15	5.5	0.87	0.65	797.7	315	256	stack	53	52	40		7.5
2-1	20	5.0	0.52	0.37	799.9	320	255	stack	53	52	40		
2	25	5.5	0.65	0.48	801.9	320	252	stack	54	53	41		802.0
3	30	6.0	0.42	0.31	803.6	315	256	stack	55	53	41		803.6
3-1	35	5.5	0.56	0.42	805.6	312	254	stack	55	54	40		5.5
2	40	6.0	0.78	0.58	807.8	318	253	stack	57	54	40		7.9
3	45	5.5	0.60	0.45	810.2	324	254	stack	58	54	42		9.8
4-1	50	5.0	0.57	0.43	812.4	315	254	stack	57	55	42		12.1
2	55	5.5	0.64	0.48	814.3	329	255	stack	58	55	42		14.4
3	60	6.0	0.85	0.64	816.7	326	250	stack	58	56	42		16.7
5-1	65	5.0	0.57	0.43	818.5	315	251	stack	58	56	42		18.6
2	70	5.0	0.46	0.34	820.1	332	256	stack	58	57	42		20.2
3	75	6.0	0.83	0.62	822.5	328	256	stack	59	57	41		22.4
number	total	maximum	average root	average	difference	average	minimum	minimum	average		maximum		

Job #: PAC 9137	Date: 9-30-99	CO2 (%): 12.5	O2 (%): 7.5
Location: Wyodak Inlet	Operator: DAS	Assumed Moisture (%): 9.2	Barometric Pressure (mbar): 876
Run #: 3	Probe ID: P-22	Ambient Temperature (oF): 70	Probe Material: teflon
Meter Box Y#: 1.016	Pitot Tube Coefficient: P-144 0.82	Probe Length (ft): 22	Filter Temperature (oF): stack
Sample Box ID: freeplate	Meter Box ID: MS-7	Probe Temperature (oF): 250	Moisture (grams): 103.3
Meter DH@: 1.65	K Factor: .748	Nozzle Diameter (in): 0.192	Start Time: 1213
Pre-Test Pitot Leak Check: ✓	Post-Test Pitot Leak Check: ✓	Static Pressure ("H2O): -16.0	Stop Time: 14:51
Pre-Test Pump Leak Check: 0.00@22" Hg	Post-Test Pump Leak Check: 0.00@15" Hg	Filter ID: 994066 T-32	Method: Ontario Hydro

Schematic of Stack Cross Section

Fyrite

	O_2	CO_2
1	8	12.5
2	7.5	12.5
3	7.5	12.5
	7.5	12.5

Stack ID (inches): 323.84

	Traverse Point	Sampling Time (minutes)	Vacuum ("Hg)	Velocity Head ("H2O)	Orifice Setting ("H2O)	Meter Volume (ft3) Initial Volume 822.3	Stack Temp. (oF)	Probe Temp. (oF)	Filter Temp. (oF)	Meter Temp. Inlet (oF)	Meter Temp. Outlet (oF)	Condenser Temp. (oF)	Ki (cfm)	Pv	
5	6-1	80	5.0	0.57	0.43	824.4	321	255	stack	59	57	43		24.4	13:44
5	2	85	5.5	0.73	0.55	826.5	327	252	stack	60	58	43		26.6	
10	3	90	6.0	0.86	0.64	828.9	320	256	stack	61	58	42			
15	7-1	95	5.0	0.48	0.36	830.9	318	255	stack	59	59	43		30.7	
20	2	100	6.0	0.59	0.44	832.8	324	255	stack	61	59	43		32.8	
25	3	105	6.0	0.61	0.45	834.8	318	251	stack	62	60	44		34.8	14:15 pause to resynchronize traps
30	8-1	110	5.0	0.51	0.38	836.5	312	259	stack	60	61	44		36.6	14:35 - restart
35	2	115	6.0	0.75	0.56	838.5	329	258	stack	60	60	44		38.7	
40	3	120	6.0	0.71	0.53	840.537	318	260	stack	61	60	42		40.6	
	number	total	maximum	average root	average	difference	average	minimum	minimum	average		maximum			
				0.798	0.4813	49.864	320.3			56.8					

Air Pollution Testing, Inc.

Schematic of Stack Cross Section

Job #: PAC 9137	Date: 9-29-99	CO2 (%): 12	O2 (%): 8
Location: outlet	Operator: MH MP	Assumed Moisture (%): 14	Barometric Pressure (mbar): 866
Run # 1	Probe ID: P-177	Ambient Temperature (oF): 70	Probe Material: glass
Meter Box Y#: 1.005	Pitot Tube Coefficient: ~~0.82~~ 0.84	Probe Length (ft): 8	Filter Temperature (oF): ≈250
Sample Box ID: —	Meter Box ID: MS-1	Probe Temperature (oF): ≈250	Moisture (grams): ~~209~~ 236.4
Meter DH@: 1.81	K Factor: 0.93	Nozzle Diameter (in): 0.192	Start Time: 1755
Pre-Test Pitot Leak Check: ✓	Post-Test Pitot Leak Check: ✓	Static Pressure (" H2O): -0.40	Stop Time: 2051
Pre-Test Pump Leak Check: 0.00/12"Hg	Post-Test Pump Leak Check: 0.00/12"Hg	Filter ID: 99073006	Method: Ontario Hydro

$K_I = 0.58$ Stack ID (inches): 264.40

Traverse Point	Sampling Time (minutes)	Vacuum (" Hg)	Velocity Head (" H2O)	Orifice Setting (" H2O)	Meter Volume (ft3) Initial Volume 826.523	Stack Temp. (oF)	Probe Temp. (oF)	Filter Temp. (oF)	Meter Temp. Inlet (oF)	Meter Temp. Outlet (oF)	Condenser Temp. (oF)	Kl (cfm)	Pv	
1-1	10	2	1.1	1.0	832.6	184	250	253	74	73	52	.6083	32.6	
2	20	3	1.5	1.4	839.7	182	249	253	81	75	46	.7104	39.7	
3	30	3	1.6	1.5	~~847.023~~ 847.137	181	251	252	85	76	47	.7336	47.0	20.502
2-1	40	2	0.95	0.88	852.7	178	243	250	76	76	53	.5653	52.7	
2	50	3	1.5	1.4	859.9	179	249	249	78	75	48	.7104	59.8	
3	60	3	1.6	1.5	~~867.248~~ 867.361	180	250	253	82	75	48	.7336	67.2	20.111
3-1	70	3	1.6	1.5	874.6	178	245	250	77	76	53	.7336	74.5	
2	80	3	1.5	1.4	881.6	179	246	247	80	76	49	.7104	81.7	
3	90	3	1.6	1.5	~~888.907~~ 888.996	181	249	259	82	76	47	.7336	88.9	~~20.911~~ 21.546
4-1	100	2.5	1.3	1.2	895.5	177	250	252	77	76	50	.6613	95.5	
2	110	3	1.5	1.4	902.5	178	253	255	79	75	48	.7104	02.6	
3	120	3	1.6	1.5	909.813	178	252	251	82	76	46	.7336	09.8	20.817
number	total	maximum	~~number~~ average	~~average~~	difference	average	minimum	minimum	average		maximum			
12	120	3	1.1989	1.343	82.341	180	243	247	77		53	—	—	

~~82.976~~ 82.976

Job #: PTC 7121	Date: 4-30-94	CO2 (%): ~~8~~ (1) (2)	O2 (%): ~~14~~ (8) (2)
Location: Outlet	Operator: MH MP	Assumed Moisture (%): 13.5	Barometric Pressure (mbar): 876
Run # 2	Probe ID: P-177	Ambient Temperature (oF): 60	Probe Material: glass
Meter Box Yd: 1.005	Pitot Tube Coefficient: ~~0.82~~ 0.84	Probe Length (ft): 8	Filter Temperature (oF): ≈250
Sample Box ID: —	Meter Box ID: MS-1	Probe Temperature (oF): ≈250	Moisture (grams): 204
Meter Dh@: 1.81	K Factor: 0.67	Nozzle Diameter (in): 0.177	Start Time: 08:10 08:56 09:42 10:25
Pre-Test Pitot Leak Check: ✓	Post-Test Pitot Leak Check: ✓	Static Pressure ("H2O): -0.40	Stop Time: 08:40 09:26 10:12 10:55
Pre-Test Pump Leak Check: 0.00/9"Hg	Post-Test Pump Leak Check: 0.00/9"Hg	Filter ID: ~~99073008~~ 99073009	Method: Ontario Hydro

Schematic of Stack Cross Section

K_I = 0.48

Stack ID (inches): 264.4

Traverse Point	Sampling Time (minutes)	Vacuum ("Hg)	Velocity Head ("H2O)	Orifice Setting ("H2O)	Meter Volume (ft3) Initial Volume 910.048	Stack Temp. (oF)	Probe Temp. (oF)	Filter Temp. (oF)	Meter Temp. Inlet (oF)	Meter Temp. Outlet (oF)	Condenser Temp. (oF)	Ki (cfm)	Pv	
H-1	10	2	0.93	0.62	914.7	184	251	256	58	57	54	.4629	14.6	
2	20	2	1.5	1.0	920.7	182	249	254	61	58	39	.5879	20.6	
3	30	2	1.6	1.1	926.889 / 927.052	178	255	258	66	60	38	.6072	26.8	16.841
3-1	40	2	1.5	1.0	932.9	178	248	251	62	61	43	.5879	32.9	
2	50	2	1.6	1.1	939.1	179	252	256	67	63	40	.6072	39.0	
3	60	2	1.7	1.1	945.459 / 945.607	178	259	258	71	64	40	.6258	45.4	18.407
2-1	70	2	1.2	0.80	950.9	177	251	256	68	65	42	.5258	50.9	
2	80	2.5	1.5	1.0	956.8	177	258	254	72	66	41	.5879	56.8	
3	90	2.5	1.5	1.0	962.669 / 962.805	178	259	256	73	67	39	.5879	62.8	17.062
1-1	100	2	1.3	0.87	968.3	177	249	252	70	68	42	.5473	68.3	
2	110	2.5	1.5	1.0	974.2	177	260	258	72	68	42	.5879	74.2	
3	120	2.5	1.4	0.94	979.578	178	258	259	74	68	41	.5679	79.9	
number	total	maximum	average root	average	difference	average	minimum	minimum	average		maximum			
12	120	2.5	1.1951	0.9608	69.383	179	248	251	~~77~~ 66		54	—	—	

Job #: PAC 4127	Date: 9-30-99	CO2 (%): 12	O2 (%): 8
Location: Outlet	Operator: MH MP	Assumed Moisture (%): 14	Barometric Pressure (mbar): 876
Run # 3	Probe ID: P-177	Ambient Temperature (oF): 60	Probe Material: glass
Meter Box Y#: 1.005	Pitot Tube Coefficient: ~~0.82~~ 0.84	Probe Length (ft): 8	Filter Temperature (oF): ≈ 250
Sample Box ID: —	Meter Box ID: MS-1	Probe Temperature (oF): ≈ 250	Moisture (grams): 197.7
Meter DH@: 1.81	K Factor: 0.67	Nozzle Diameter (in): 0.177	Start Time: 12:13 13:03 13:46 14:27
Pre-Test Pitot Leak Check: ✓	Post-Test Pitot Leak Check: ✓	Static Pressure ("H2O): -0.40	Stop Time: 12:43 13:33 14:16 14:57
Pre-Test Pump Leak Check: 0.00/7" Hg	Post-Test Pump Leak Check: 0.00/6" Hg	Filter ID:	Method: Ontario Hydro

Schematic of Stack Cross Section

K_I: 0.48

Stack ID (inches): 264.4

Traverse Point	Sampling Time (minutes)	Vacuum ("Hg)	Velocity Head ("H2O)	Orifice Setting ("H2O)	Meter Volume (ft3) Initial Volume 980.066	Stack Temp. (oF)	Probe Temp. (oF)	Filter Temp. (oF)	Meter Temp. Inlet (oF)	Meter Temp. Outlet (oF)	Condenser Temp. (oF)	Ki (cfm)	Pv	
1-1	10	2	1.4	0.94	985.9	176	248	256	62	62	51	.5679	85.8	
2	20	2	1.6	1.1	992.0	177	254	251	65	62	46	.6072	92.0	
3	30	2	1.6	1.1	998.021 ~~998.122~~	177	259	259	68	63	44	.6072	98.1	17.955
2-1	40	2	1.4	0.94	1003.9	177	253	252	66	64	50	.5679	03.8	
2	50	2	1.6	1.1	1010.0	178	249	258	70	65	43	.6072	10.0	
3	60	2	1.7	1.1	1016.146 ~~1016.281~~	178	258	257	73	67	44	.6258	16.3	18.024
3-1	70	2	1.4	0.94	1022.0	178	247	260	71	68	52	.5679	22.0	
2	80	2	1.5	1.0	1027.9	177	253	250	75	69	46	.5879	27.9	
3	90	2	1.6	1.1	1034.002 ~~1034.139~~	177	256	252	78	70	45	.6072	34.0	17.721
4-1	100	2	0.86	0.58	1038.6	178	248	254	74	72	54	.4451	38.6	
2	110	2	1.5	1.0	1044.5	177	254	258	77	72	45	.5879	44.5	
3	120	2	1.6	1.1	1050.529	177	251	259	78	73	46	.6072	50.6	16.390
														70.463
														0.101
														0.135 0.137
number	total	maximum	average root	average	difference	average	minimum	minimum	average	maximum				
12	120	2	1.2129	1.00	70.09	177	247	250	69	54	—	—		

Moisture Gain Tracking

Pacificorp
Mercury Testing
Gillete, Wyoming

Onatrio Hydro Method

Inlet

Run #1 9/29/99

ID	Tare (grams)	Final (grams)	Gain (grams)
Impinger #1 - KCL	746.8	813.4	66 6
Impinger #2 - KCL	754.8	766.9	12 1
Impinger #3 - KCL	779.4	780.1	0 7
Impinger #4 - HNO3/H2O2	771.0	772.7	1 7
Impinger #5 - KMnO4	717.9	718.1	0 2
Impinger #6 - KMnO4	732.5	732.6	0 1
Impinger #7 - KMnO4	763.9	764.9	1 0
Impinger #8 - Silica	752.6	762.5	9 9
Filter ID	994065M	**Total**	**92.3**
Timble ID	T-30		

Run #2

ID	Tare (grams)	Final (grams)	Gain (grams)
Impinger #1 - KCL	770.3	858.1	87 8
Impinger #2 - KCL	771.9	785.9	14 0
Impinger #3 - KCL	774.2	776.3	2 1
Impinger #4 - HNO3/H2O2	767.2	769.7	2 5
Impinger #5 - KMnO4	766.9	767.2	0 3
Impinger #6 - KMnO4	765.5	765.1	-0 4
Impinger #7 - KMnO4	706.4	706.5	0 1
Impinger #8 - Silica	726.3	733.3	7 0
Filter ID	994064m	**Total**	**113.4**
Timble ID	T-33		

Run #3

ID	Tare (grams)	Final (grams)	Gain (grams)
Impinger #1 - KCL	738.2	826.4	88 2
Impinger #2 - KCL	725.0	734.1	9 1
Impinger #3 - KCL	719.1	720.0	0 9
Impinger #4 - HNO3/H2O2	718.8	721.2	2 4
Impinger #5 - KMnO4	744.2	743.6	-0 6
Impinger #6 - KMnO4	753.7	754.2	0 5
Impinger #7 - KMnO4	722.3	722.3	0 0
Impinger #8 - Silica	762.3	765.1	2 8
Filter ID	994066m	**Total**	**103.3**
Timble ID	T-32		

Train Blank

ID	Tare (grams)	Final (grams)	Gain (grams)
Impinger #1 - KCL	760.7	760.7	0 0
Impinger #2 - KCL	749.8	749.8	0 0
Impinger #3 - KCL	789.8	789.8	0 0
Impinger #4 - HNO3/H2O2	767.2	767.2	0 0
Impinger #5 - KMnO4	744.5	744.5	0 0
Impinger #6 - KMnO4	729.0	729.0	0 0
Impinger #7 - KMnO4	737.1	737.1	0 0
Impinger #8 - Silica	752.6	752.6	0 0
Filter ID	994062m	**Total**	**0**
Timble ID	t-27		

Moisture Gain Tracking

Pacificorp
Mercury Testing
Gillete, Wyoming

Onatrio Hydro Method

Outlet

Run #1 9/29/99

ID	Tare (grams)	Final (grams)	Gain (grams)
Impinger #1 - KCL	739.8	919.9	180.1
Impinger #2 - KCL	759.7	803.2	43.5
Impinger #3 - KCL	750.6	754.8	4.2
Impinger #4 - HNO3/H2O2	743.0	745.7	2.7
Impinger #5 - KMnO4	753.4	753.6	0.2
Impinger #6 - KMnO4	727.6	726.7	-0.9
Impinger #7 - KMnO4	691.5	691.1	-0.4
Impinger #8 - Silica	790.4	797.4	7.0
Filter ID	99073006	**Total**	**236.4**

Run #2

ID	Tare (grams)	Final (grams)	Gain (grams)
Impinger #1 - KCL	762.1	927.1	165.0
Impinger #2 - KCL	728.9	753.9	25.0
Impinger #3 - KCL	762.1	767.7	5.6
Impinger #4 - HNO3/H2O2	793.6	795.4	1.8
Impinger #5 - KMnO4	772.3	772.1	-0.2
Impinger #6 - KMnO4	798.5	798.0	-0.5
Impinger #7 - KMnO4	701.9	702.7	0.8
Impinger #8 - Silica	717.7	724.2	6.5
Filter ID	99073008	**Total**	**204.0**

Run #3

ID	Tare (grams)	Final (grams)	Gain (grams)
Impinger #1 - KCL	715.1	880.7	165.6
Impinger #2 - KCL	787.1	811.1	24.0
Impinger #3 - KCL	697.2	701.1	3.9
Impinger #4 - HNO3/H2O2	724.5	725.6	1.1
Impinger #5 - KMnO4	745.1	745.9	0.8
Impinger #6 - KMnO4	753.0	752.6	-0.4
Impinger #7 - KMnO4	749.6	749.8	0.2
Impinger #8 - Silica	798.2	800.7	2.5
Filter ID	0	**Total**	**197.7**

APT

Air Pollution Testing, Inc.
EPA Method 3 Data Sheet

Project Code:	PAC9137
Facility:	Wyodak
Stack ID:	Unit #1 – Inlet

Barometric Press.:	866/876/871
Orsat ID:	0-2
Leak Check:	good

Run #: 1 Date: 9/29/99

Notes:

	CO2	CO2 + O2	O2
1st	12.0	20.0	8.0
2nd	12.0	20.1	8.1
3rd	12.0	20.0	8.0
Average	12.0	20.0	8.0

Run #: 2 Date: 9/30/99

Notes:

	CO2	CO2 + O2	O2
1st	12.0	20.0	8.0
2nd	12.1	20.1	8.0
3rd	12.0	20.0	8.0
Average	12.0	20.0	8.0

Run #: 3 Date: 9/30/99

Notes:

	CO2	CO2 + O2	O2
1st	12.3	20.2	7.9
2nd	12.6	20.0	7.4
3rd	12.5	~~19.8~~	~~7.3~~
Average	12.6	20.0	~~7.5~~ 7.4

Run #: Date:

Notes:

	CO2	CO2 + O2	O2
1st			
2nd			
3rd			
Average			

Run #: Date:

Notes:

	CO2	CO2 + O2	O2
1st			
2nd			
3rd			
Average			

Analyst: David Sherrod Date: 9/29-30/99

APT

Air Pollution Testing, Inc.
EPA Method 3 Data Sheet

Project Code:	PAC9137
Facility:	Wyodak
Stack ID:	Unit #1 — Outlet

Barometric Press.:	866 / 876 / 876
Orsat ID:	O-2
Leak Check:	good

Run #: 1	Date: 9/29/99
Notes:	

	CO2	CO2 + O2	O2
1st	12.0	20.0	8.0
2nd	12.0	20.0	8.0
3rd	12.0	20.0	8.0
Average	12.0	20.0	8.0

Run #: 2	Date: 9/30/99
Notes:	

	CO2	CO2 + O2	O2
1st	12.0	20.0	8.0
2nd	12.0	20.0	8.0
3rd	12.0	20.0	8.0
Average	12.0	20.0	8.0

Run #: 3	Date: 9/30/99
Notes:	

	CO2	CO2 + O2	O2
1st	12.0	20.0	8.0
2nd	12.0	20.0	8.0
3rd	12.0	20.0	8.0
Average	12.0	20.0	8.0

Run #:	Date:
Notes:	

	CO2	CO2 + O2	O2
1st			
2nd			
3rd			
Average			

Run #:	Date:
Notes:	

	CO2	CO2 + O2	O2
1st			
2nd			
3rd			
Average			

Analyst: David Hurst Date: 9/29-30/99

PHILIP SERVICES

INORGANIC DATA PACKAGE
FOR
AIR POLLUTION TESTING

Project # PAC9137

Philip Analytical Services Corporation
5555 North Service Road
Burlington, ON L7L 5H7

Submission #9J0219

Prepared by: Janice Joseph - CSR Initial : _____
Approved by : Dr. Ron McLeod - Principal Scientist Initial : _____

1. CASE NARRATIVE

PROJECT NARRATIVE

PHILIP Analytical Services (Burlington ON)
Philip Project: AN991147
Philip Submission #:9J0219

Client: Air Pollution Testing
Client Project: PAC9137

I. SAMPLE RECEIPT/ANALYSIS

a) Sample Listing

Philip ID	Client Sample ID	Date Sampled	Date Received	Date Prepped	Run Date
Probe Rinse Residue via EPA Method 5					
057930 99	Method Blank	99/09/29	99/10/05	99/10/27	99/11/02
057931 99	30RB	99/09/30	99/10/05	99/10/27	99/11/02
057932 99	29ITB	99/09/29	99/10/05	99/10/27	99/11/02
057933 99	29IR1	99/09/29	99/10/05	99/10/27	99/11/02
057934 99	30IR2	99/09/30	99/10/05	99/10/27	99/11/02
057936 99	29OR1	99/09/29	99/10/05	99/10/27	99/11/02
057937 99	30OR2	99/09/30	99/10/05	99/10/27	99/11/02
057938 99	30OR3	99/09/30	99/10/05	99/10/27	99/11/02
Filter Particulates via EPA Method 5					
057931 99	30RB	99/09/30	99/10/05	99/10/26	99/10/30
057932 99	29ITB	99/09/29	99/10/05	99/10/26	99/10/30
057933 99	29IR1	99/09/29	99/10/05	99/10/26	99/10/30
057934 99	30IR2	99/09/30	99/10/05	99/10/26	99/10/30
057935 99	30IR3	99/09/30	99/10/05	99/10/26	99/10/30
057936 99	29OR1	99/09/29	99/10/05	99/10/26	99/10/30
057937 99	30OR2	99/09/30	99/10/05	99/10/26	99/10/30
057938 99	30OR3	99/09/30	99/10/05	99/10/26	99/10/30
Draft ASTM Mercury Speciation Method (September1, 1999 Revision)- Front Half					
057930 99	Method Blank	99/09/29	99/10/05	99/11/16	99/11/17
057931 99	30RB	99/09/30	99/10/05	99/11/16	99/11/17
057932 99	29ITB	99/09/29	99/10/05	99/11/16	99/11/17
057936 99	29OR1	99/09/29	99/10/05	99/11/16	99/11/17
057937 99	30OR2	99/09/30	99/10/05	99/11/16	99/11/17
057938 99	30OR3	99/09/30	99/10/05	99/11/16	99/11/17
057933 99	29IR1	99/09/29	99/10/05	99/11/16	99/11/17
057934 99	30IR2	99/09/30	99/10/05	99/11/16	99/11/17
057935 99	30IR3	99/09/30	99/10/05	99/11/16	99/11/17

Draft ASTM Mercury Speciation Method (September1, 1999 Revision)- Hydroxylamine

057930 99	Method Blank	99/09/29	99/10/05	99/10/15	99/10/15
057931 99	30RB	99/09/30	99/10/05	99/10/15	99/10/15

Draft ASTM Mercury Speciation Method (September1, 1999 Revision)- KCl Impingers/Rinses

057930 99	Method Blank	99/09/29	99/10/05	99/10/19	99/10/19
057931 99	30RB	99/09/30	99/10/05	99/10/19	99/10/19
057932 99	29ITB	99/09/29	99/10/05	99/10/19	99/10/19
057933 99	29IR1	99/09/29	99/10/05	99/10/19	99/10/19
057934 99	30IR2	99/09/30	99/10/05	99/10/19	99/10/19
057935 99	30IR3	99/09/30	99/10/05	99/10/19	99/10/19
057936 99	29OR1	99/09/29	99/10/05	99/10/19	99/10/19
057937 99	30OR2	99/09/30	99/10/05	99/10/19	99/10/19
057938 99	30OR3	99/09/30	99/10/05	99/10/19	99/10/19

Draft ASTM Mercury Speciation Method (September1, 1999 Revision)- KMNO4 Impingers/Rinses

057930 99	Method Blank	99/09/29	99/10/05	99/10/19	99/10/19
057931 99	30RB	99/09/30	99/10/05	99/10/19	99/10/19
057932 99	29ITB	99/09/29	99/10/05	99/10/19	99/10/19
057933 99	29IR1	99/09/29	99/10/05	99/10/19	99/10/19
057934 99	30IR2	99/09/30	99/10/05	99/10/19	99/10/19
057935 99	30IR3	99/09/30	99/10/05	99/10/19	99/10/19
057936 99	29OR1	99/09/29	99/10/05	99/10/19	99/10/19
057937 99	30OR2	99/09/30	99/10/05	99/10/19	99/10/19
057938 99	30OR3	99/09/30	99/10/05	99/10/19	99/10/19

Draft ASTM Mercury Speciation Method (September1, 1999 Revision)- HNO3/H202 Impingers/Rinses

057930 99	Method Blank	99/09/29	99/10/05	99/10/15	99/10/15
057931 99	30RB	99/09/30	99/10/05	99/10/15	99/10/15
057932 99	29ITB	99/09/29	99/10/05	99/10/15	99/10/15
057933 99	29IR1	99/09/29	99/10/05	99/10/15	99/10/15
057934 99	30IR2	99/09/30	99/10/05	99/10/15	99/10/15
057935 99	30IR3	99/09/30	99/10/05	99/10/15	99/10/15
057936 99	29OR1	99/09/29	99/10/05	99/10/15	99/10/15
057937 99	30OR2	99/09/30	99/10/05	99/10/15	99/10/15
057938 99	30OR3	99/09/30	99/10/05	99/10/15	99/10/15

Draft ASTM Mercury Speciation Method (September1, 1999 Revision) - Probe Rinse

057930 99	Method Blank	99/09/29	99/10/05	99/11/16	99/11/17
057931 99	30RB	99/09/30	99/10/05	99/11/16	99/11/17
057932 99	29ITB	99/09/29	99/10/05	99/11/16	99/11/17
057933 99	29IR1	99/09/29	99/10/05	99/11/16	99/11/17
057934 99	30IR2	99/09/30	99/10/05	99/11/16	99/11/17
057935 99	30IR3	99/09/30	99/10/05	99/11/16	99/11/17
057936 99	29OR1	99/09/29	99/10/05	99/11/16	99/11/17
057937 99	30OR2	99/09/30	99/10/05	99/11/16	99/11/17
057938 99	30OR3	99/09/30	99/10/05	99/11/16	99/11/17

Run Date is defined as the date of injection of the last calibration standard (12 hour or less) prior to the samples analyzed within that run sequence. Therefore the time of calibration injection that defines the

run date is always within 12 hours of the time of sample injection.

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 impingers portions were analyzed within this recommended hold time of 45 days. The filter and rinses were analyzed 48-9 days following sampling while the ash portions were analyzed within the recommended hold times. Since the front half portions of the sample are within the 'heated zone' of the sampling train and since volatile mercury would have been stripped from this section, there should be no compromise to data quality for this exceedance. Note that it is concern for the 'volatile' Hg portions that the recommended hold time of 45 days was targeted. Fly ash is well known to provide Hg in a stable solid matrix. The solid NIST reference material 1633b is a fly ash and is recognized as stable to certified levels for periods of years.

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.

Ronald A. McLeod, Principal Sci., Ph.D.,C.Chem.

99112
Date

2. ANALYTICAL DATA REPORT

PHILIP SERVICES

Certificate of Analysis

CLIENT INFORMATION		LABORATORY INFORMATION	
Attention:	David Stewart	**Contact:**	Ron McLeod
Client Name:	Air Pollution Testing	**Project:**	AN991147
Project:	PAC9137	**Date Received:**	99/10/05
Project Desc:	Stack Emissions	**Date Reported:**	99/11/18
Address:	12421 West 49th Avenue Unit 1 Wheat Ridge CO 80033	**Submission No.:**	9J0219
		Sample No.:	057930-057938
Fax Number:	303-420-5920		
Phone Number:	303-420-5949		

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: Revision 99/12/01: 057935 99

*Entire sample and filter digested/analyzed
**A 0.5g sub-sample of the ash was analyzed and reported based on the total particulate catch. The filter(s) were not included in the digest.
***Matrix interference
****Bottle 2A and bottle 4 received broken

Certified by: R.A. McLeod

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

PASC - Certificate of Analysis

			Method	Blank	Blank	Blank	Blank				
	Client ID:		Blank	Spike #1	Spike #1	Spike #2	Spike #2	30RB	29ITB	29IR1	29IR1
	Lab No.:		057930 99	057930 99	057930 99	057930 99	057930 99	057931 99	057932 99	057933 99	057933 99
	Date Sampled:		-	-	-	-	-	99/09/30	99/09/29	99/09/29	99/09/29
Component	**MDL**	**Units**			% Recoveries		% Recoveries				Duplicate
Probe Rinse Residue	0.1	mg	-0.2	-	-	-	-	0.5	0.6	558.5	-
Filter Particulates		"	-	-	-	-	-	-1.7	-1.3	5172.6	-
Mercury - filter*	0.010	ug	<	0.10	100	-	-	0.013	-	-	-
Mercury - filter**	0.010	"	<	0.10	100	-	-	-	-	2.1	2.1
Mercury - hydroxylamine	0.010	"	<	0.098	98	0.097	97	<	-	-	-
Mercury - KCl	0.030	"	<	0.29	96	0.30	99	<0.10	<0.10	3.4	3.3
Mercury - KMnO4	0.030	"	<	0.29	97	0.29	97	<	<	9.8	9.8
Mercury - H202	0.010	"	<	0.10	100	0.10	100	<0.25	<0.25	<0.25	<0.25
Mercury - probe rinse	0.010	"	<	0.096	96	0.095	95	<	<	0.077	0.099

00037

PASC - Certificate of Analysis

	Client ID:		29IR1	29IR1	29IR1	29IR1	30IR2	30IR3	29OR1	30OR2	30OR3
	Lab No.:		057933 99	057933 99	057933 99	057933 99	057934 99	057935 99	057936 99	057937 99	057938 99
	Date Sampled:		99/09/29	99/09/29	99/09/29	99/09/29	99/09/30	99/09/30	99/09/29	99/09/30	99/09/30
Component	**MDL**	**Units**	M. Spike	MS % Rec.	MS Dup	MSD % Rec.					
Probe Rinse Residue	0.1	mg	-	-	-	-	262.9	NA****	12.2	13.8	14.8
Filter Particulates		"	-	-	-	-	7164.1	7604.7	0.3	28.9	17.0
Mercury - filter*	0.010	ug	-	-	-	-	-	-	0.038	0.024	0.024
Mercury - filter**	0.010	"	4.0	95	3.9	91	3.0	2.2	0.038	-	-
Mercury - hydroxylamine	0.010	"	-	-	-	-	-	-	-	-	-
Mercury - KCl	0.030	"	6.5	95	6.5	95	4.6	3.4	0.095	0.20	0.31
Mercury - KMnO4	0.030	"	23	99	23	98	9.0	11	14	12	12
Mercury - H202	0.010	"	2.8	100	2.8	110	0.28	NA****	<0.25	<0.25	<0.25
Mercury - probe rinse	0.010	"	0.19	110	0.20	120	<	<	<0.050***	<0.050***	<0.050***

8000

PASC - Summary of Analysis Pre. Dates

00009

Batch Code:	**1027MSA1**
Probe Rinse Residue	057930 99
	057931 99
	057932 99
	057933 99
	057934 99
	057936 99
	057937 99
	057938 99
Run Date:	99/11/02
Date of Sample Prep:	99/10/27
Batch Code:	**1026MSA1**
Filter Particulates	057931 99
	057932 99
	057933 99
	057934 99
	057935 99
	057936 99
	057937 99
	057938 99
Run Date:	99/10/30
Date of Sample Prep:	99/10/26
Batch Code:	**1116MSF1**
Mercury - filter*	057930 99
	057931 99
	057932 99
	057936 99
	057937 99
	057938 99
Run Date:	99/11/17
Date of Sample Prep:	99/11/16
Batch Code:	**1116MSF1**
Mercury - filter**	057930 99
	057933 99
	057934 99
	057935 99
	057936 99
Run Date:	99/11/17
Date of Sample Prep:	99/11/16
Batch Code:	**1015MGA1**
Mercury - hydroxylamine	057930 99
	057931 99
Run Date:	99/10/15
Date of Sample Prep:	99/10/15

Batch Code:	**10192NKC**
Mercury - KCl	057930 99
	057931 99
	057932 99
	057933 99
	057934 99
	057935 99
	057936 99
	057937 99
	057938 99
Run Date:	99/10/19
Date of Sample Prep:	99/10/19

Batch Code:	**10191NM4**
Mercury - KMnO4	057930 99
	057931 99
	057932 99
	057933 99
	057934 99
	057935 99
	057936 99
	057937 99
	057938 99
Run Date:	99/10/19
Date of Sample Prep:	99/10/19

Batch Code:	**10153NPO**
Mercury - H202	057930 99
	057931 99
	057932 99
	057933 99
	057934 99
	057935 99
	057936 99
	057937 99
	057938 99
Run Date:	99/10/15
Date of Sample Prep:	99/10/15

Batch Code:	**1116MNP1**
Mercury - probe rinse	057930 99
	057931 99
	057932 99
	057933 99
	057934 99
	057935 99
	057936 99
	057937 99
	057938 99

PASC - Summary of Analysis Pre. Dates

Run Date:	99/11/17	06011
Date of Sample Prep:	99/11/16	

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
057930	APT-CO	MB R456	Mercury -	PV	-0.010	-99999.0	0.103	103.			99/11/16	MSF1	99/11/17	MG01	48.	42.	
057931	APT-CO	30RB	Mercury -	PV	0.013						99/11/16	MSF1	99/11/17	MG01	47.	42.	
057932	APT-CO	29ITB	Mercury -	PV	-99999.0						99/11/16	MSF1	99/11/17	MG01	48.	42.	*THIMBLE NOT ANLAYZED
057936	APT-CO	29OR1	Mercury -	PV	0.038						99/11/16	MSF1	99/11/17	MG01	48.	42.	
057937	APT-CO	30OR2	Mercury -	PV	0.024						99/11/16	MSF1	99/11/17	MG01	47.	42.	
057938	APT-CO	30OR3	Mercury -	PV	0.024						99/11/16	MSF1	99/11/17	MG01	47.	42.	
BL1116	INTERNAL		Mercury -	PV	-0.010	-99999.0	0.103	103.			99/11/16	MSF1	99/11/17	MG01	$$$	$$$	

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

00012

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
057930	APT-CO	MB R456	Mercury -	PV	-0.010	-99999.0	0.103	103.			99/11/16	MSF1	99/11/17	MG01	48.	42.	
057933	APT-CO	29IR1	Mercury -	PV	2.125	2.122	4.015	95.	3.933	91.	99/11/16	MSF1	99/11/17	MG01	48.	42.	*PDS*
057934	APT-CO	30IR2	Mercury -	PV	3.033						99/11/16	MSF1	99/11/17	MG01	47.	42.	
057935	APT-CO	30IR3	Mercury -	PV	2.240						99/11/16	MSF1	99/11/17	MG01	47.	42.	

4 Tests for OHFLTB with an MDL of 0.010 ug Validated By CMZgo Control Chart Updated N/A IO Requirements met N/A

00013

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.11.17(w) Run Code: MG01 Matrix: IMP

Analyst: MG 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)	0.5		
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			BL1117	10 FT		
13			"			
14			BL1117 S			
15			"			
16		½	57933			
17			"			
18			57933 D			
19			"			
20			57933 S			
21			"			
22			57933 DS			
23			"			
24			57391			
25			"			
26			57934			
27			"			
28			57935			
29			"			
30			57936			
31			"			
32			CCV			
33			B			
34			D4			
35			57937			
36			"			
37			57938			
38			"			
39			BL1117	2GFT		
40			"			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41			BL1117 S			
42			"			
43			BL1117 DS			
44			"			
45			53687			
46			"			
47			53687 D			
48			"			
49			53687 S			
50			"			
51			53687 DS			
52			"			
53			53685a			
54			"			
55			CCV			
56			B			
57			D4			
58						
59						
60						
61						
62						
63						
64						
65						
66						
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

00015 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.)	MGF1	20 ml	30 ml	1 X	1.5 ppb = 600 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	10	BL 1117	"	"	"	"	(Processed Blank)
	11	BL 1117 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
* 1	12	57933	"	"	"	"	F. Volume : 100 ml
1	13	O	"	"	"	"	(Duplicate sample)
1	14	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	15	OS	"	"	"	"	(Duplicate Spiked sample)
2	16	57391	"	"	"	"	
* 3	17	57934	"	"	"	"	
* 4	18	35	"	"	"	"	
5	19	36	"	"	"	"	
6	20	37	"	"	"	"	
7	21	38	"	"	"	"	
8	22		"	"	"	"	
9	23		"	"	"	"	
10	24		"	"	"	"	
	25	CCV (Cont. Calib. Verif.)	MGF1	20 ml	30 ml	1 X	1.0 ppb = 400 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	26	BL 1117	"	"	"	"	(Processed Blank)
	27	BL 1117 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	28	53687	"	"	"	"	F-volume = 500 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	53685 a	"	"	"	"	
3	33	85 b	"	"	"	"	
4	34	85 c	"	"	"	"	
5	35	86	"	"	"	"	
6	36	88	"	"	"	"	
7	37	89	"	"	"	"	
8	38		"	"	"	"	
9	39		"	"	"	"	
10	40		"	"	"	"	

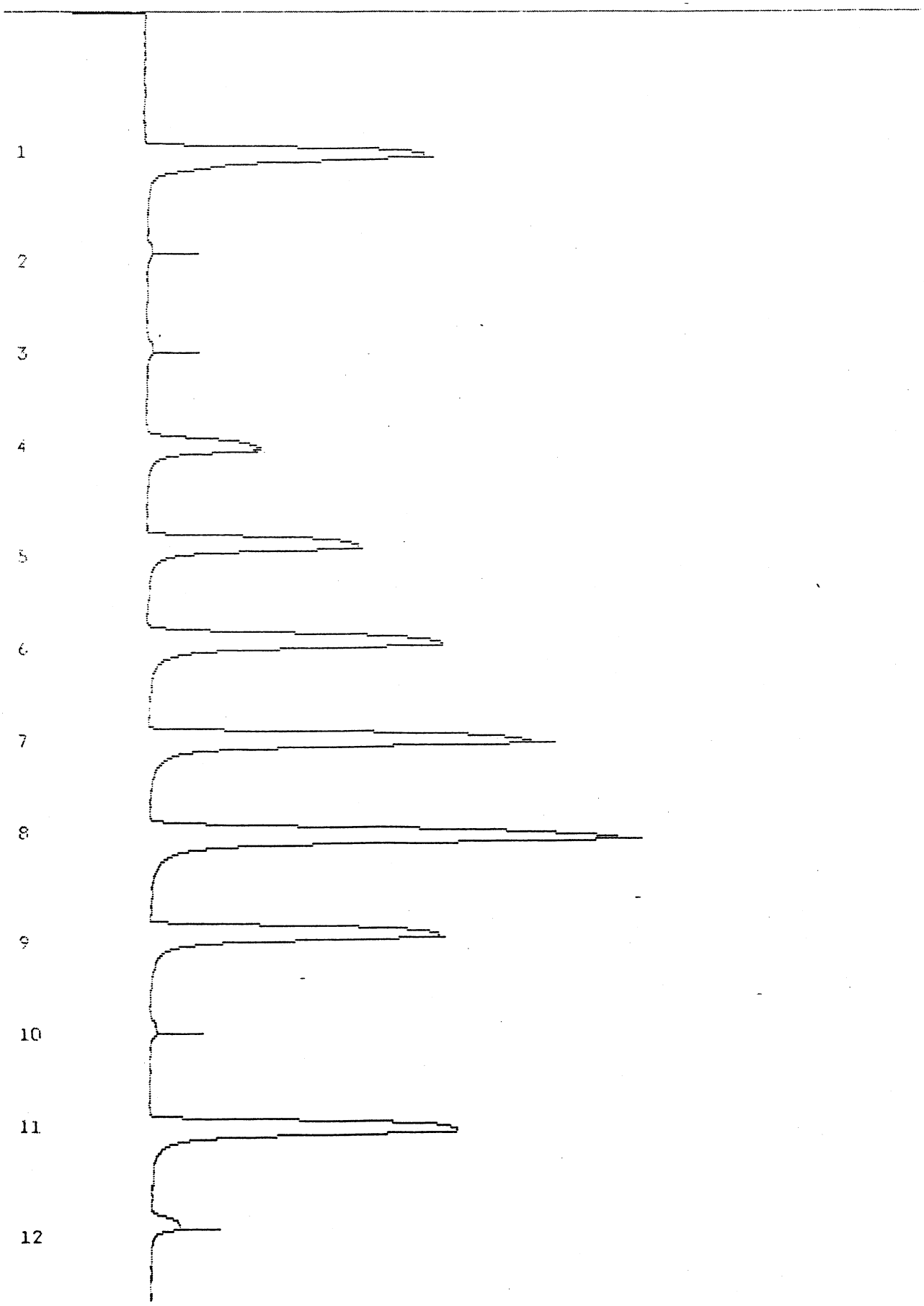
Notes: Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C
DG29HGI, DG29HGF, DG101AA1, DG101AA2

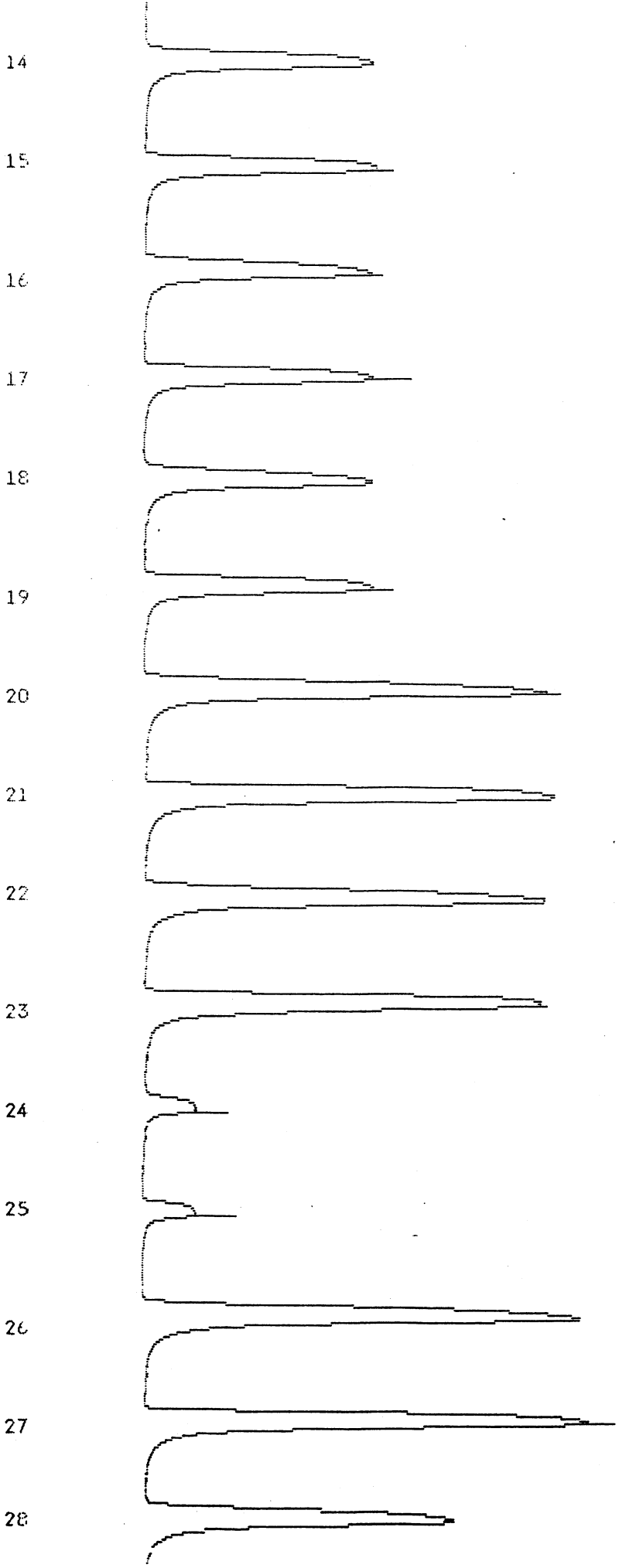
Include External Reference Material (EPA WS 378 or SPEX CertiPrep TM - WS) per run — Prepare 0.05 ppm standards daily

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

Prepared By: CMB | Date: 99-11-17 | Checked by: CMB

RUN DATE: 11-17-1999 CHART DATE: 11-17-1999
CHART SPEED: 30
DATA FILE NAME: C:\DP4\DATA\991117W.DAT

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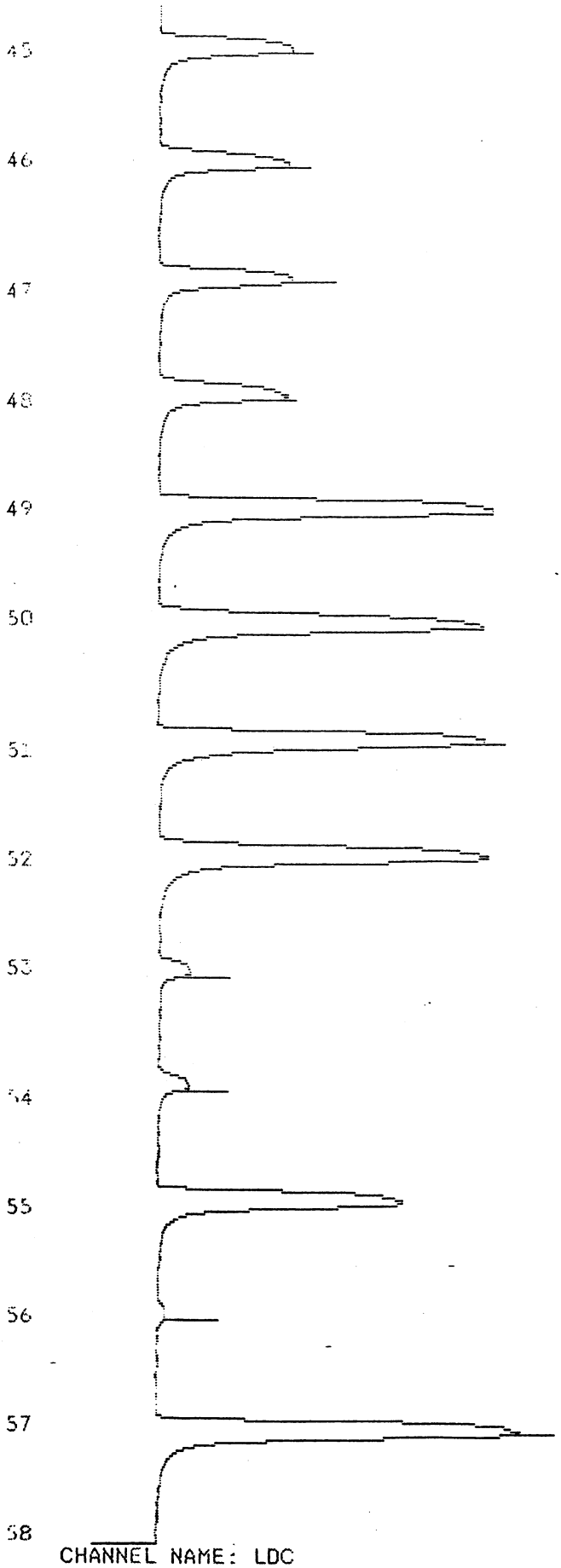
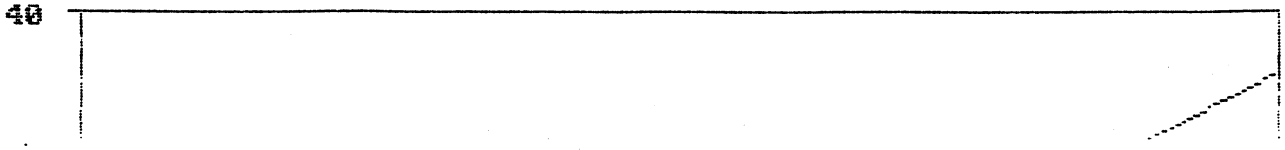
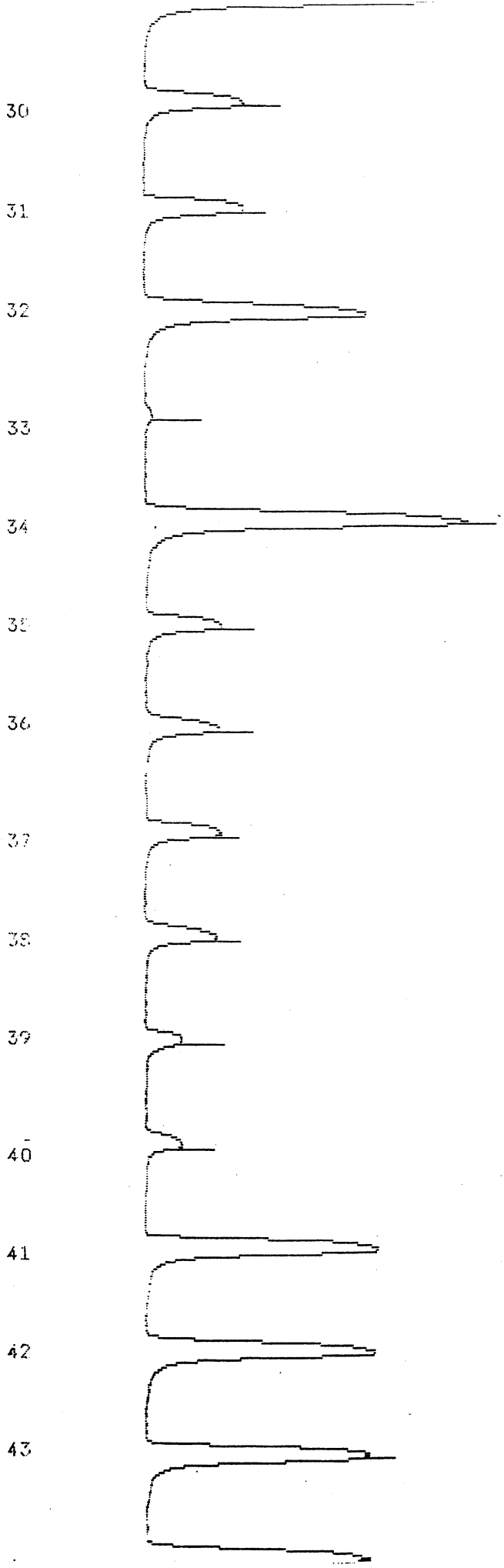


CHANNEL NAME: LDC
RUN NAME: 991117W

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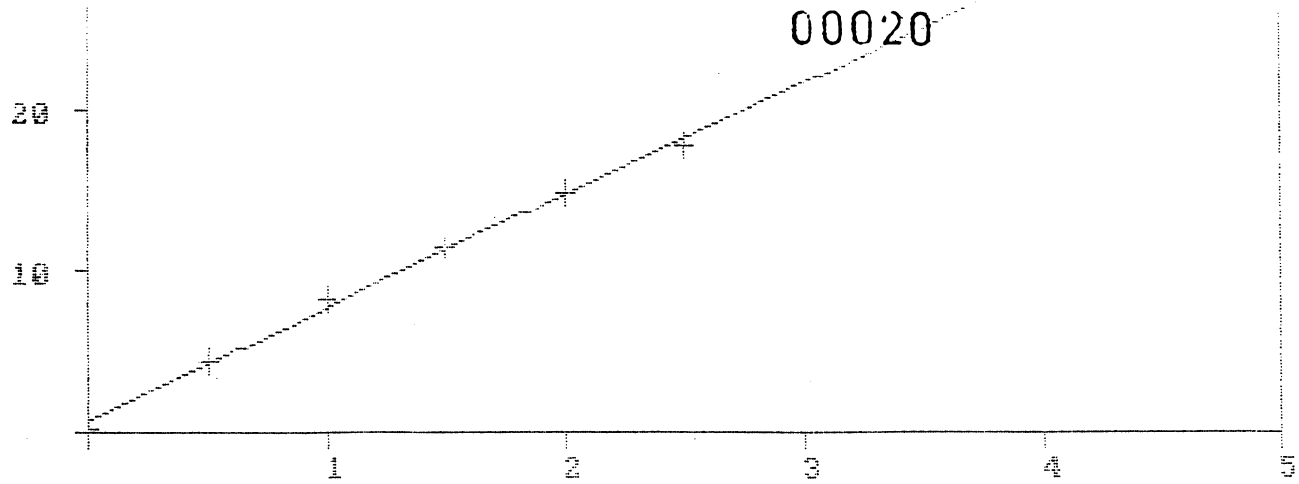


DATA TYPE: FIA CALIBRATION ORDER: 1
INTERCEPT = 0.67 SLOPE = 7.017617

CORRELATION: .9981868

CHANNEL NAME: LDC
RUN DATE: 11-17-1999
SAMPLE TABLE NAME: 991117W
METHOD NAME: HGWATER

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA	Tot. µg	CONCENTRATION µg/L	EF
1	PRIMER	1	1	11.0		1.471	s
2	DUMMY	1	1	0.1		-0.078	i
3	S1: 0	1	1	0.1		-0.078	i
4	S2: .5	1	1	4.4		0.528	
5	S3: 1	1	1	8.1		1.064	
6	S4: 1.5	1	1	11.5		1.541	
7	S5: 2	1	1	14.7		2.003	
8	S6: 2.5	1	1	17.8		2.442	
9	ICV	1	1	10.8		1.450	97%
10	B	1	1	0.0		-0.095	b
11	D4	1	1	11.5		1.541	d
12	BL1117-1GFT 57930	1	1	0.8	<0.01	0.020	
13	BL1117-1GFT	1	1	0.8		0.020	
14	BL1117S	1	1	7.8	0.103	1.015	
15	BL1117S	1	1	8.0		1.046	
16	57933	2	1	7.9	2.125	2.051	s
17	57933	2	1	7.9		2.058	
18	57933D	2	1	7.8	2.122	2.044	
19	57933D	2	1	7.9		2.058	
20	57933S	2	1	14.2	4.015	3.847	95%
21	57933S	2	1	14.4		3.916	
22	57933DS	2	1	14.2	3.933	3.847	91%
23	57933DS	2	1	13.8		3.756	
24	57931 MS	1	1	1.6	0.013	0.128	
25	57931 MS	1	1	1.6		0.135	
26	57934	1	1	15.5	3.033	2.108	
27	57934	1	1	15.6		2.125	
28	57935	1	1	10.9	2.240	1.457	
29	57935	1	1	11.1		1.488	
30	57936	1	1	3.3	0.038	0.375	
31	57936	1	1	3.3		0.378	s
32	CCV	1	1	7.9		1.029	108%
33	B	1	1	0.0		-0.095	b
34	D4	1	1	11.5		1.541	d

37	57936	1	1	2.4		0.246	
38	57938	1	1	2.3	000821	0.232	
39	BL1117-20FT	1	1	1.1	<0.01	0.055	
40	BL1117-20FT	1	1	1.1		0.055	
41	BL1117S	1	1	8.1	0.105	1.060	105%
42	BL1117S	1	1	8.0		1.046	
43	BL1117DS	1	1	7.7	0.100	1.001	100%
44	BL1117DS	1	1	7.7		1.005	
45	53687	1	1	4.0	0.236	0.476	
46	53687	1	1	4.0		0.469	a
47	576870	1	1	4.0	0.235	0.476	
48	576870	1	1	3.9		0.462	
49	53687S	1	1	10.5	0.690	1.405	91%
50	53687S	1	1	10.2		1.353	
51	536870S	1	1	10.2	0.683	1.363	90%
52	536870S	1	1	10.3		1.370	
53	53685 A	1	1	0.8	<0.05	0.016	
54	53685 A	1	1	0.7		0.009	i
55	CCV	1	1	7.5		0.973	97%
56	B	1	1	0.0		-0.095	b
57	D4	1	1	11.5		1.541	d

INTERCEPT: 0.67 LINEAR COEF. 7.017617

CORRELATION COEF: .9981868

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
057930	APT-CO	MB R456	Mercury -	PV	-0.030	-99999.0	0.291	97.	0.290	97.	99/10/19	1NM4	99/10/19	MG03	20.	14.	
057931	APT-CO	30RB	Mercury -	PV	-0.030						99/10/19	1NM4	99/10/19	MG03	19.	14.	
057932	APT-CO	29ITB	Mercury -	PV	-0.030						99/10/19	1NM4	99/10/19	MG03	20.	14.	
057933	APT-CO	29IR1	Mercury -	PV	22.096	22.011	51.613	99.	51.442	98.	99/10/19	1NM4	99/10/19	MG03	20.	14.	*POST SPIKE*
057934	APT-CO	30IR2	Mercury -	PV	20.141						99/10/19	1NM4	99/10/19	MG03	19.	14.	
057935	APT-CO	30IR3	Mercury -	PV	25.572						99/10/19	1NM4	99/10/19	MG03	19.	14.	
057936	APT-CO	29OR1	Mercury -	PV	31.279						99/10/19	1NM4	99/10/19	MG03	20.	14.	
057937	APT-CO	30OR2	Mercury -	PV	27.361						99/10/19	1NM4	99/10/19	MG03	19.	14.	
057938	APT-CO	30OR3	Mercury -	PV	26.381						99/10/19	1NM4	99/10/19	MG03	19.	14.	
BL1019	INTERNAL		Mercury -	PV	-0.030	-99999.0	0.291	97.	0.290	97.	99/10/19	1NM4	99/10/19	MG03	$$$	$$$	

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

00022

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.10.19 Run Code: MG03 Matrix: IMP.

Analyst: MG Units: µg (see comments) MDL: 0.05

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			WS 378			
13			ORG. REF.			
14			BL1019	IN3C		
15			"			
16			BL1019			
17			"			
18			BL1019 DS			
19			"			
20		1/4	60852			
21			"			
22			60852 D			
23			"			
24			60852 S			
25			"			
26			60852 DS			
27			"			
28		1/20	60852 DS			
29			"			
30			60849			
31			"			
32			60850			
33			"			
34			CCV			
35			B			
36			D4			
37			60851			
38			"			
39		1/4	60853			
40			"			
41		1/10	60854			
42			"			
43			60855			
44			"			
45			60856			
46			"			
47			60857			
48			"			
49			BL1019	IN M4		
50			"			
51			BL1019 S			
52			"			
53			BL1019 DS			
54			"			
55		1/40	57933			
56			"			
57			CCV			
58			B			
59			D4			
60		1/40	57933 D			
61			"			
62			57933 S			
63			"			
64			57933 DS			
65			"			
66			57931			
67			"			
68			57932			
69			"			
70		1/20	57934			
71			"			
72			57935			
73			"			
74			57936			
75			"			
76			57937			
77			"			
78			57938			
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.

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
057930	APT-CO	MB R456	Mercury -	PV	-0.030	-99999.0	0.289	96.	0.297	99.	99/10/19	2NKC	99/10/19	MG03	20.	14.	
057931	APT-CO	30RB	Mercury -	PV	-0.100						99/10/19	2NKC	99/10/19	MG03	19.	14.	
057932	APT-CO	29ITB	Mercury -	PV	-0.100						99/10/19	2NKC	99/10/19	MG03	20.	14.	
057933	APT-CO	29IR1	Mercury -	PV	7.537	7.504	14.660	95.	14.660	95.	99/10/19	2NKC	99/10/19	MG03	20.	14.	*POST SPIKE*
057934	APT-CO	30IR2	Mercury -	PV	10.263						99/10/19	2NKC	99/10/19	MG03	19.	14.	
057935	APT-CO	30IR3	Mercury -	PV	7.673						99/10/19	2NKC	99/10/19	MG03	19.	14.	
057936	APT-CO	29OR1	Mercury -	PV	0.213						99/10/19	2NKC	99/10/19	MG03	20.	14.	
057937	APT-CO	30OR2	Mercury -	PV	0.449						99/10/19	2NKC	99/10/19	MG03	19.	14.	
057938	APT-CO	30OR3	Mercury -	PV	0.692						99/10/19	2NKC	99/10/19	MG03	19.	14.	
BL1019	INTERNAL		Mercury -	PV	-0.030	-99999.0	0.289	96.	0.297	99.	99/10/19	2NKC	99/10/19	MG03	$$$	$$$	

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

00023

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.10.19 Run Code: HG03 Matrix: IMP./WATER

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)	0.5		
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 ~~21~~			B			
22			D4			
23			BL1019	ZNKC		
24			"			
25			BL1019 S			
26			"			
27			BL1019 DS			
28			"			
29		1/5	57933			
30			"			
31			57933 D			
32			"			
33			57933 S			
34			"			
35			57933 DS			
36			"			
37			57931			
38			"			
39			57932			
40			"			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41		1/4	57934			
42		↓	"			
43			CCV			
44			B			
45			D4			
46		1/4	57935			
47		↓	"			
48			57936			
49			"			
50			57937			
51			"			
52			57938			
53			"			
54			CCV			
55			B			
56			D4			
57			BL1019	ABA1		
58			BL1019 S			
59			59840			
60			840 D			
61			840 S			
62			842			
63			844			
64			846			
65			58696			
66			58747			
67			60183			
68			185			
69			187			
70			189			
71			WS 378			
72			ORG. REF			
73			CCV			
74			B			
75			D4			
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.

00026

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.)	INM4	20 ml	30 ml	1 X	1.5 ppb = 600 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	10	BL 1019	"	"	"	"	(Processed Blank) 57930 MB
	11	BL 1019 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	12		"	"	"	"	
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	57931	"	"	"	"	IMPVMN4 500ml
3	17	32	"	"	"	"	
4	18	33	"	"	"	"	
5	19	34	"	"	"	"	
6	20	35	"	"	"	"	
7	21	36	"	"	"	"	
8	22	37	"	"	"	"	
9	23	38	"	"	"	"	
10	24		"	"	"	"	
	25	CCV (Cont. Calib. Verif.)	ZNKC	20 ml	30 ml	1 X	1.0 ppb = 400 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	26	BL 1019	"	"	"	"	(Processed Blank) 57930 MB
	27	BL 1019 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	57931	"	"	"	"	IMPVKCl 1000ml
3	33	32	"	"	"	"	
4	34	33	"	"	"	"	
5	35	34	"	"	"	"	
6	36	35	"	"	"	"	
7	37	36	"	"	"	"	
8	38	37	"	"	"	"	
9	39	38	"	"	"	"	
10	40		"	"	"	"	

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

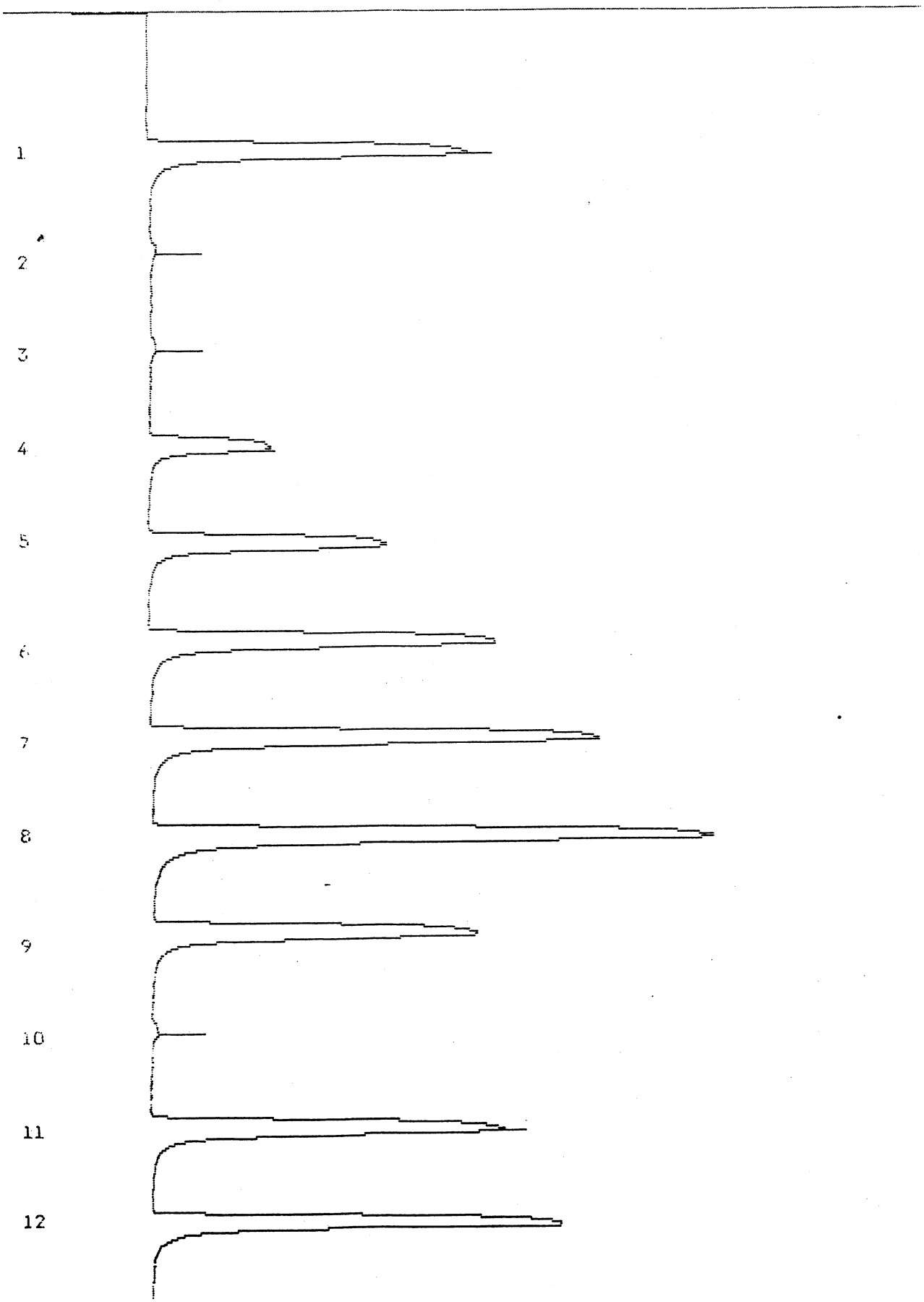
Include External Reference Material (EPA WS 378 or SPEX CertiPrep TM - WS) per run

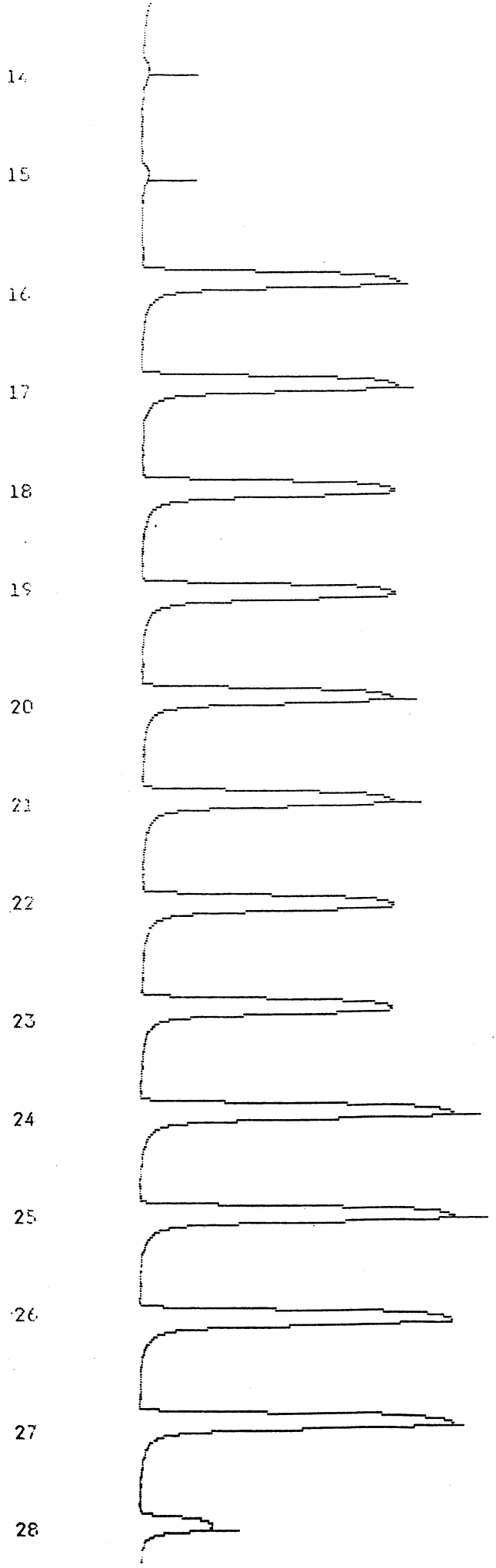
Prepare 0.05 ppm standards daily

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

Prepared By: [illegible] Date: 1/10/19 Checked by: [illegible]

RUN DATE: 10-19-1999 CHART DATE: 10-19-1999
CHART SPEED: 30
DATA FILE NAME: C:\DP4\DATA\991019W.DAT

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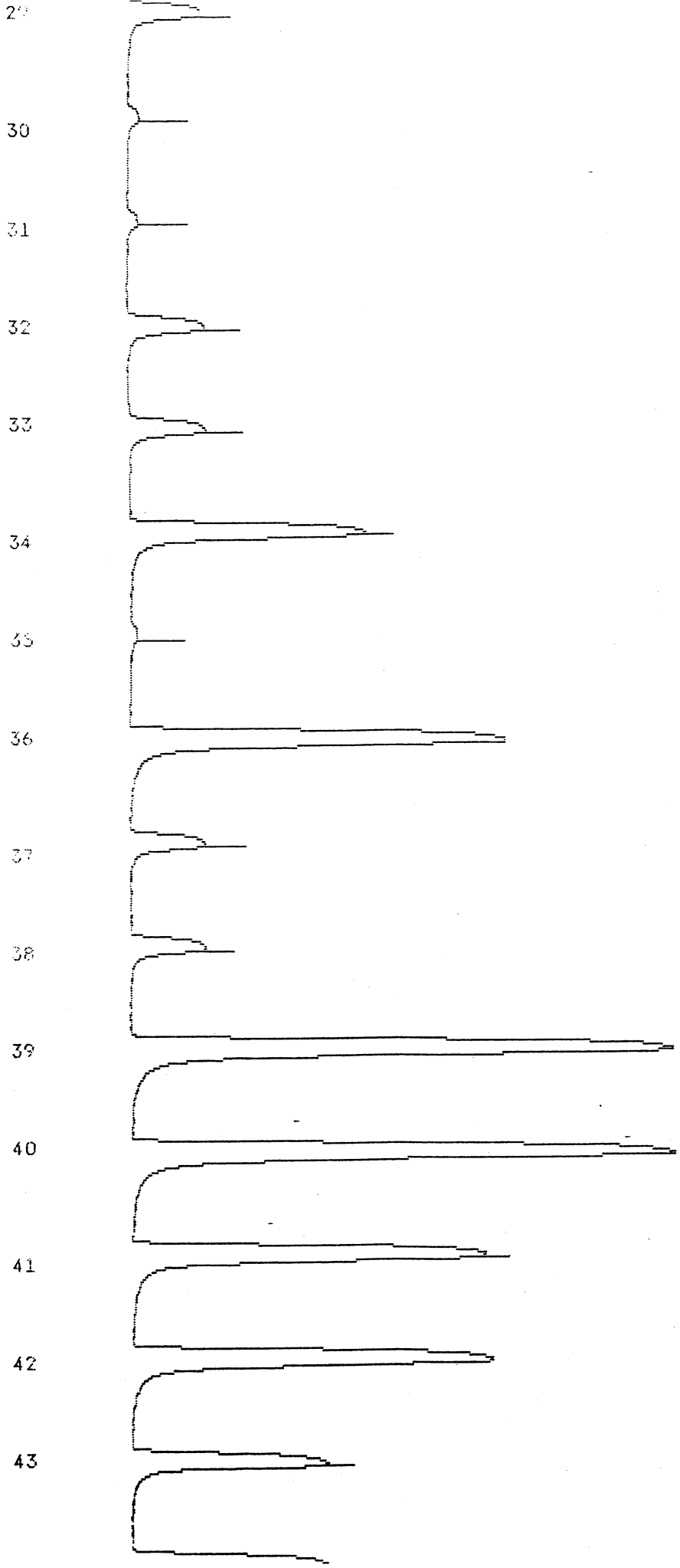
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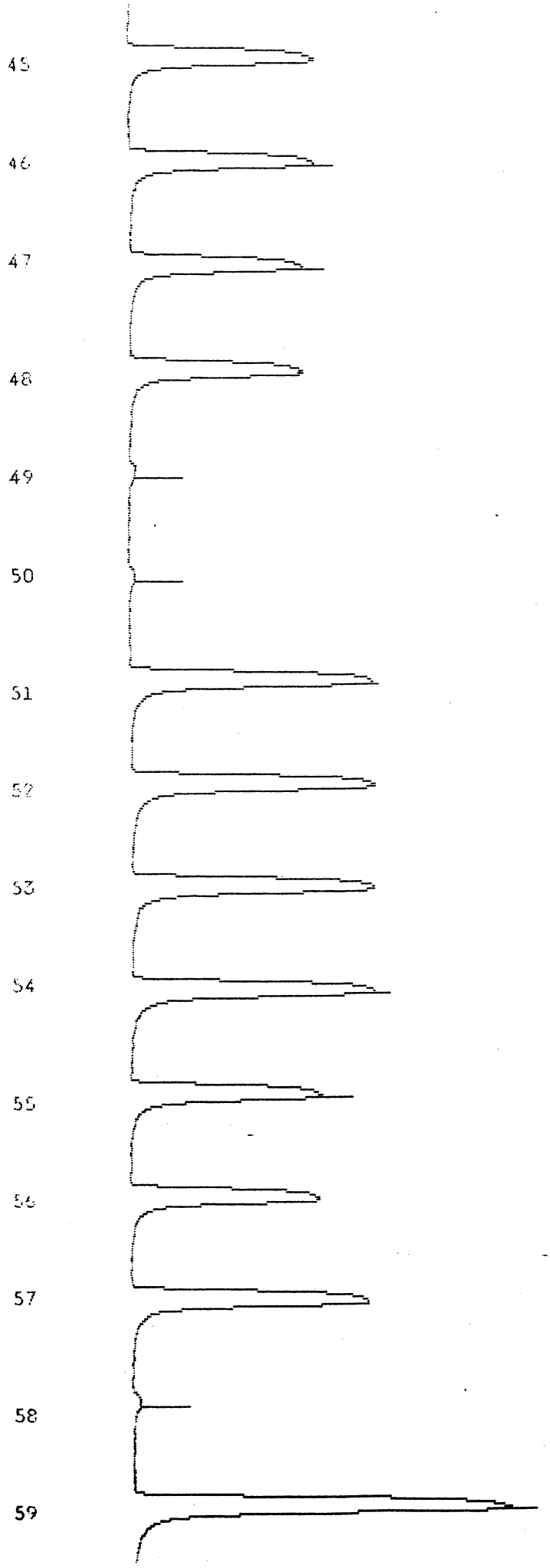
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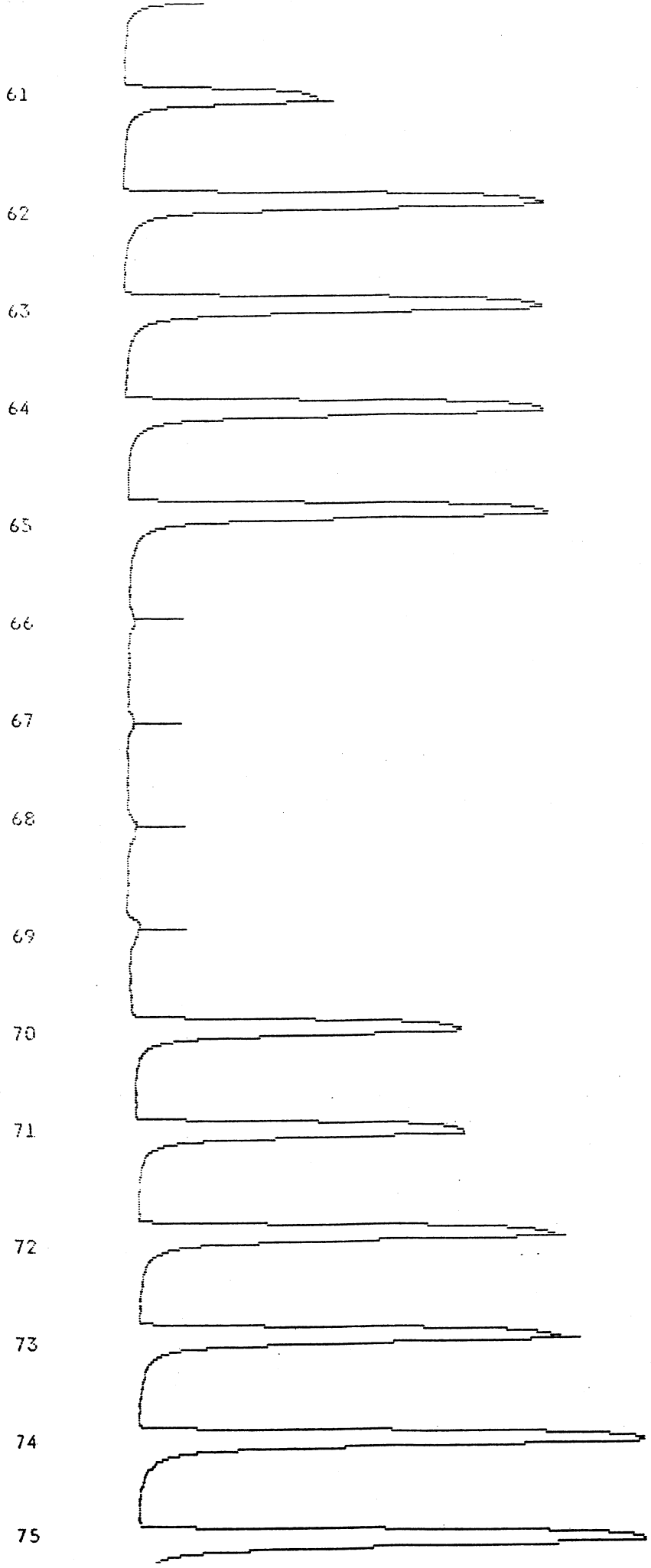
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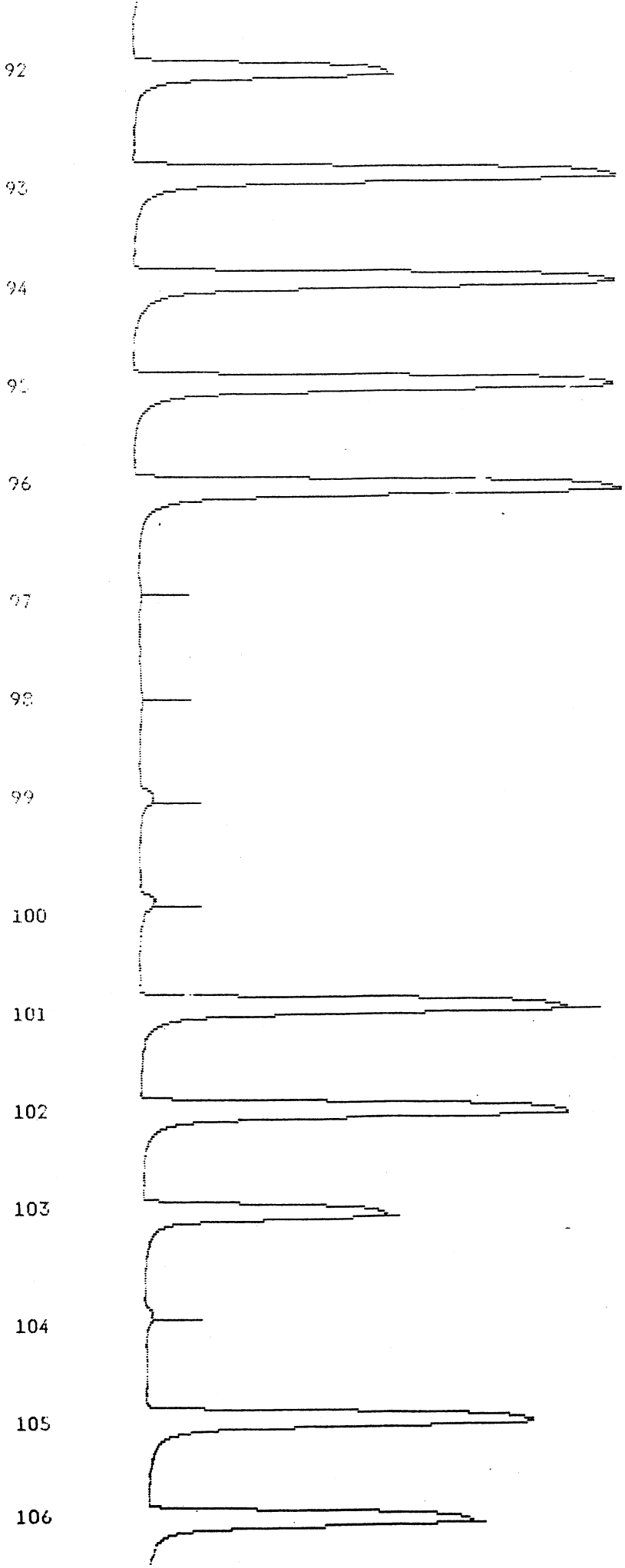
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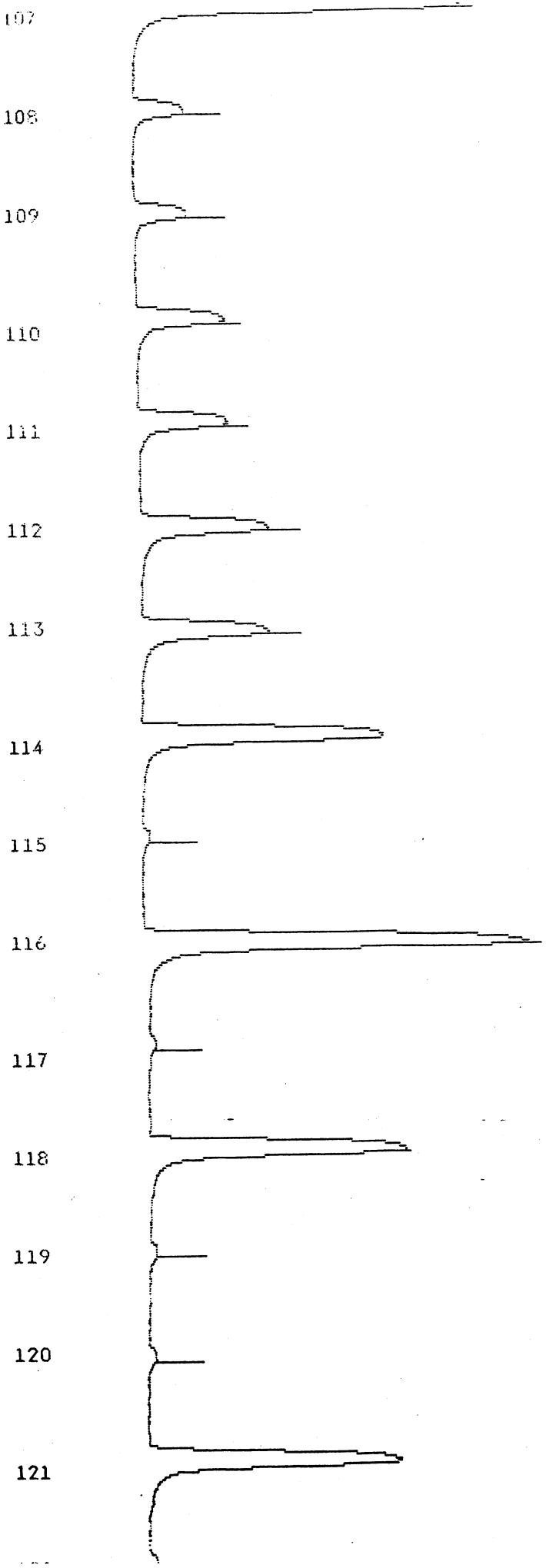

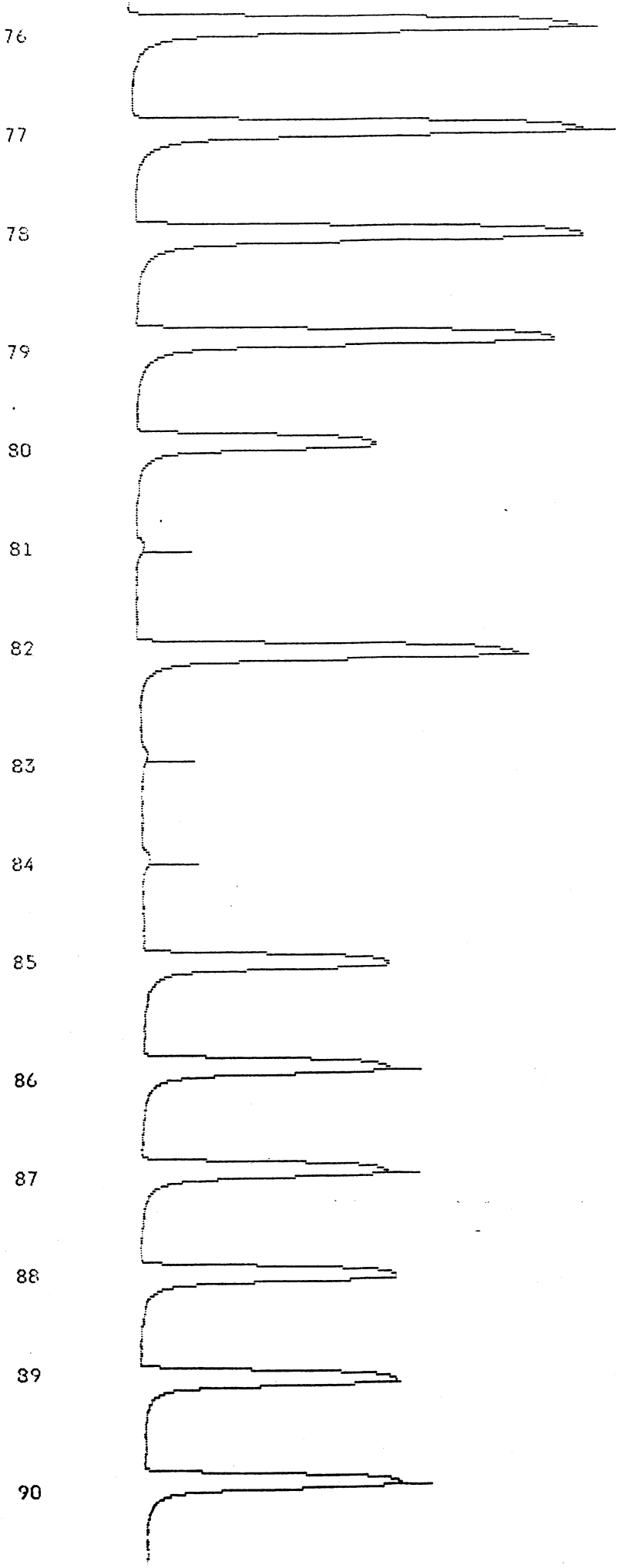
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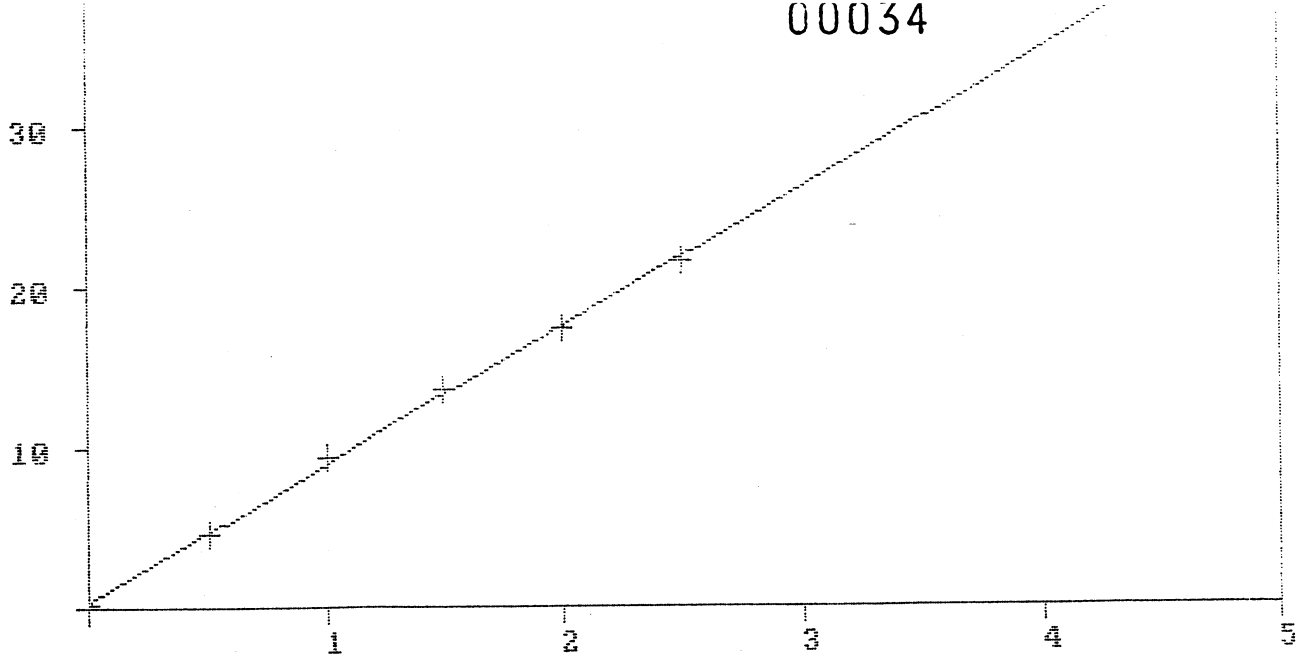


DATA TYPE: FIA
INTERCEPT = 0.33

CALIBRATION ORDER: 1
SLOPE = 8.600035

CORRELATION: .9994708

CHANNEL NAME: LDC
RUN DATE: 10-19-1999
SAMPLE TABLE NAME: 991019W
METHOD NAME: HGWATER

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA		CONCENTRATION		EF
1	PRIMER	1	1	12.5		1.418		s
2	DUMMY	1	1	0.2		-0.019		I
3	S1: 0	1	1	0.1		-0.024		I
4	S2: .5	1	1	4.5		0.487		
5	S3: 1	1	1	9.3		1.043		
6	S4: 1.5	1	1	13.5		1.534		
7	S5: 2	1	1	17.3		1.977		
8	S6: 2.5	1	1	21.7		2.483		
9	ICV	1	1	12.6		1.424	95%	
10	B	1	1	0.0		-0.039		b
11	D4	1	1	13.5		1.534		d
12	WS 378	1	1	15.7		1.790	90%	
13	ORG REF	1	1	18.5		2.117	105%	
14	BL1019-1N3C 60849	1	1	0.0	<0.05	-0.039		I
15	BL1019-1N3C	1	1	0.0		-0.036		I
16	BL1019S	1	1	9.1	0.510	1.018	102%	
17	BL1019S	1	1	9.1		1.023		
18	BL1019DS	1	1	9.0	0.502	1.003	100%	
19	BL1019DS	1	1	9.0		1.003		
20	60852	4	1	8.8	1.987	3.957		
21	60852	4	1	8.9		3.991		
22	60852D	4	1	8.9	1.996	4.002		
23	60852D	4	1	8.9		3.980		
24	60852S	4	1	11.1	2.518	5.013	105%	
25	60852S	4	1	11.2		5.059		
26	60852DS	4	1	11.1	2.513	5.025	104%	
27	60852DS	4	1	11.1		5.025		
28	60852DS Dil. check	20	1	2.3		4.678	7% RPD	

32	60850	1	1	2.5	0.0129	0.257		
33	60850	1	1	2.6		0.259		
34	CCV	1	1	8.4		0.932	93%	
35	B	1	1	0.0		-0.039		b
36	D4	1	1	13.5		1.534		d
37	60851	1	1	2.4	0.122	0.245		
38	60851	1	1	2.4		0.242		
39	60853	4	1	19.4	4.443	8.886		
40	60853	4	1	19.4		8.886		
41	60854	10	1	12.6	7.204	14.208		
42	60854	10	1	12.9		14.606		
43	60855	1	1	6.8	0.378	0.756		
44	60855	1	1	6.8		0.756		
45	60856	1	1	6.5	0.357	0.717		
46	60856	1	1	6.4		0.711		s
47	60857	1	1	6.0	0.331	0.660		
48	60857	1	1	6.0		0.663		
49	BL1019-1NM4	1	1	0.0	<0.03	-0.039		I
50	BL1019-1NM4	1	1	0.0		-0.039		I
51	BL1019S	1	1	8.6	0.291	0.967	97%	
52	BL1019S	1	1	8.7		0.975		
53	BL1019DS	1	1	8.6	0.290	0.967	97%	
54	BL1019DS	1	1	8.6		0.964		
55	57933	60	1	6.7	22.096	44.362		
56	57933	60	1	6.6		44.021		
57	CCV	1	1	8.4		0.941	94%	
58	B	1	1	0.0		-0.039		b
59	D4	1	1	13.5		1.534		d
60	57933D	60	1	6.6	22.011	43.680		
61	57933D	60	1	6.7		44.362		s
62	57933S	60	1	15.1	51.613	103.140	99%	
63	57933S	60	1	15.1		103.310		
64	57933DS	60	1	15.0	51.442	102.629	98%	
65	57933DS	60	1	15.1		103.140		
66	57931	1.5	1	0.0	<0.03	-0.058		I
67	57931	1.5	1	0.0		-0.058		I
68	57932	1.5	1	0.1	<0.03	-0.037		I
69	57932	1.5	1	0.2		-0.020		I
70	57934	30	1	11.9	20.141	40.325		
71	57934	30	1	11.9		40.240		
72	57935	30	1	14.9	25.572	50.803		
73	57935	30	1	15.1		51.485		
74	57936	30	1	18.2	31.279	62.388		
75	57936	30	1	18.3		62.729		
76	57937	30	1	16.0	27.361	54.637		s
77	57937	30	1	16.0		54.807		
78	57938	30	1	16.0	26.381	54.722		
79	57938	30	1	14.9		50.803		
80	CCV	1	1	8.4		0.941	94%	
81	B	1	1	0.0		-0.039		b
82	D4	1	1	13.5		1.534		d
83	BL1019-2NKC	1	1	0.0	<0.03	-0.039		I
84	BL1019-2NKC	1	1	0.0		-0.039		I
85	BL1019S	1	1	8.6	0.289	0.964	96%	
86	BL1019S	1	1	8.6		0.964		
87	BL1019DS	1	1	8.6	0.297	0.967	99%	
88	BL1019DS	1	1	9.1		1.015		
89	57933	7.5	1	9.0	7.537	7.547		
90	57933	7.5	1	9.0		7.526		
91	57933D	7.5	1	8.9	7.504	7.504		s
92	57933D	7.5	1	8.9		7.504		
93	57933S	7.5	1	17.2	14.660	14.703	95%	
94	57933S	7.5	1	17.1		14.617		

00036

98	57931	1.5	1	0.0		0.058	I
99	57932	1.5	1	0.3	<0.100	-0.007	I
100	57932	1.5	1	0.3		0.003	I
101	57934	6	1	15.1	10.263	10.280	
102	57934	6	1	15.0		10.246	
103	CCV	1	1	8.4		0.941	94%
104	B	1	1	0.0		-0.039	b
105	D4	1	1	13.5		1.534	d
106	57935	6	1	11.3	7.673	7.639	s
107	57935	6	1	11.4		7.707	
108	57936	1.5	1	1.5	0.213	0.210	
109	57936	1.5	1	1.6		0.215	
110	57937	1.5	1	2.9	0.449	0.440	
111	57937	1.5	1	3.0		0.457	
112	57938	1.5	1	4.3	0.692	0.696	
113	57938	1.5	1	4.3		0.687	
114	CCV	1	1	8.5		0.947	95%
115	B	1	1	0.0		-0.039	b
116	D4	1	1	13.5		1.534	d
117	BL1019-ABA1 59838,60181	1	1	0.0		-0.039	I
118	BL1019S	1	1	9.0		1.009	101%
119	59840	1	1	0.0		-0.039	I
120	59840D	1	1	0.0		-0.039	I
121	59840S	1	1	8.9		0.995	100%
122	59842	1	1	0.0		-0.033	I
123	59844	1	1	0.1		-0.027	I
124	59846	1	1	0.0		-0.036	I
125	58696	1	1	11.0		1.236	
126	58747	1	1	0.0		-0.039	I
127	60183	1	1	0.0		-0.039	I
128	60185	1	1	0.0		-0.039	I
129	60187	1	1	0.0		-0.039	I
130	60189	1	1	0.0		-0.039	I
131	WS 378	1	1	15.8		1.799	90%
132	ORG REF	1	1	18.7		2.131	107%
133	CCV	1	1	8.5		0.952	95%
134	B	1	1	0.0		-0.039	b
135	D4	1	1	13.5		1.534	d

INTERCEPT: 0.33 LINEAR COEF: 8.600035

CORRELATION COEF: .9994708

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
057930	APT-CO	MB R456	Mercury -	PV	-0.0100	-99999.0	0.1010	101.	0.1030	103.	99/10/15	3NPO	99/10/15	MG02	16.	10.	*BLKIMP*
057931	APT-CO	30RB	Mercury -	PV	-0.2500						99/10/15	3NPO	99/10/15	MG02	15.	10.	*DDL*
057932	APT-CO	29ITB	Mercury -	PV	-0.2500						99/10/15	3NPO	99/10/15	MG02	16.	10.	*DDL*
057933	APT-CO	29IR1	Mercury -	PV	-0.2500	-0.2500	2.7650	103.	2.8200	106.	99/10/15	3NPO	99/10/15	MG02	16.	10.	*DDL*
057934	APT-CO	30IR2	Mercury -	PV	0.2830						99/10/15	3NPO	99/10/15	MG02	15.	10.	*DDL*
057935	APT-CO	30IR3	Mercury -	PV	-0.2500						99/10/15	3NPO	99/10/15	MG02	15.	10.	*DDL*
057936	APT-CO	29OR1	Mercury -	PV	-0.2500						99/10/15	3NPO	99/10/15	MG02	16.	10.	*DDL*
057937	APT-CO	30OR2	Mercury -	PV	-0.2500						99/10/15	3NPO	99/10/15	MG02	15.	10.	*DDL*
057938	APT-CO	30OR3	Mercury -	PV	-0.2500						99/10/15	3NPO	99/10/15	MG02	15.	10.	*DDL*
BL1015	INTERNAL		Mercury -	PV	-0.0100	-99999.0	0.1010	101.	0.1030	103.	99/10/15	3NPO	99/10/15	MG02	$$$	$$$	*BLKIMP*

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

00037

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
057930	APT-CO	MB R456	Mercury -	PV	-0.010	-99999.0	0.098	98.	0.097	97.	99/10/15	MGA1	99/10/15	MG02	16.	10.	*BLKIMP*
057931	APT-CO	30RB	Mercury -	PV	-0.010						99/10/15	MGA1	99/10/15	MG02	15.	10.	
BL1015	INTERNAL		Mercury -	PV	-0.010	-99999.0	0.098	98.	0.097	97.	99/10/15	MGA1	99/10/15	MG02	$$$	$$$	*BLKIMP*

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

00038

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.10.15(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)	0.5		
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			WS 378			
13			ORG. REF.			
14			BL1015	1N3A.		
15			"			
16			BL1015S			
17			"			
18			BL1015 DS			
19			"			
20	5		56005			
21			"			
22			56005 D			
23			"			
24			56005 S			
25			"			
26			56005 DS			
27			"			
28	"		56006			
29			"			
30			56007			
31			"			
32			56008			
33			"			
34			CCV			
35			B			
36			D4			
37			56009			
38			"			
39			56010			
40			"			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41		~~MB~~	~~56011~~ 57931	-DHHYX		
42			"			
43			56012			
44			"			
45			56013			
46			"			
47			56014			
48			"			
49			BL1015	2N3B		
50			"			
51			BL1015 S			
52			"			
53			BL1015 DS			
54			"			
55		1/2	56005			
56		↓	"			
57			CCV			
58			B			
59			D4			
60		1/2	56005 D			
61			"			
62			56005 S			
63			"			
64			56005 DS			
65			"			
66		1/10	56005 DS			
67			"			
68			56004			
69			"			
70			56006			
71			"			
72			56007			
73			"			
74			56008			
75			"			
76			56009			
77			"			
78			56010			
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)

Date: 99.10.15 Run Code: MG02 Matrix: IMP/WATER

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)	0.5		
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			56611			
24			"			
25			56012			
26			"			
27			56013			
28			"			
29			56014			
30			"			
31			BL1015	3NP0		
32			"			
33			BL1015 S			
34			"			
35			BL1015 DS			
36			"			
37	10		57933			
38			"			
39			57933 D			
40			"			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41	10		57933 S			
42			"			
43			CCV			
44			B			
45			D4			
46	10		57933 DS			
47			"			
48			57931			
49			"			
50			57932			
51			"			
52			57934			
53			"			
54			57936			
55			"			
56			57937			
57			"			
58			57938			
59			"			
60			CCV			
61			B			
62			D4			
63			BL1015	ABB1		
64			BL1015 S			
65			57907			
66			907 D			
67			907 S			
68			909			
69			911			
70			913			
71			915			
72			917			
73			919			
74			921			
75			923			
76			925			
77			CCV			
78			B			
79			D4			
80			BL015	ABB2		

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.)	3NPO	20 ml	30 ml	1 X	1.0 ppb = 400 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	42	BL 1015	"	"	"	"	(Processed Blank)
	43	BL 1015 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	44	57135	"	1 mL	15 mL	10x	= FVPOX 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	57131	"				
3	49	32	"				
4	50	34	"				
5	51	35	"				NO H_2O_2 SUBMITTED FOR 57935
6	52	36	"				
7	53	37	"				
8	54		"	"	"	"	
9	55		"	"	"	"	
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

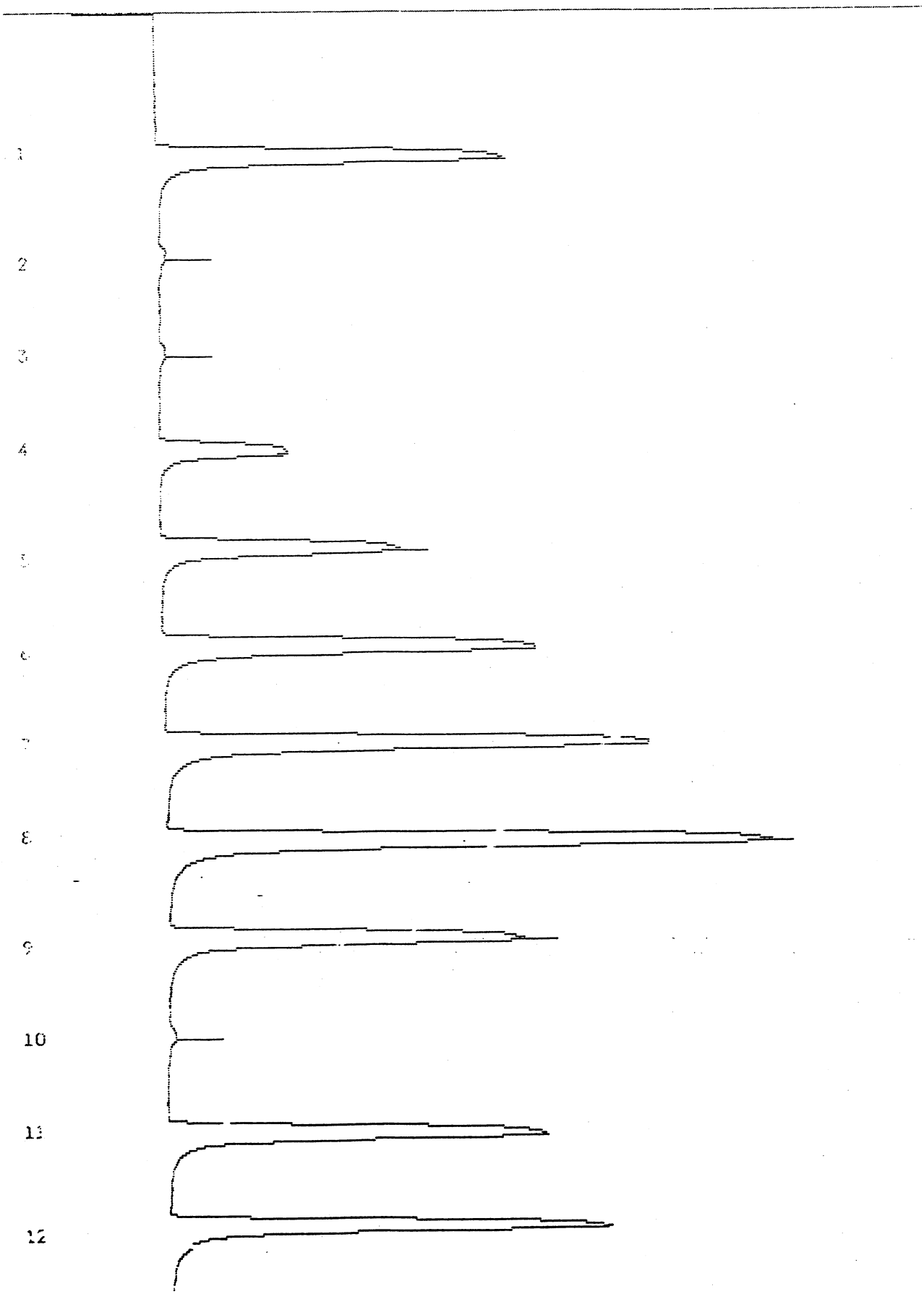
REFERENCE STANDARDS/SPIKING SOLUTIONS:
Source: Inorganic Ventures Standard, see standard tracking binder for current lot and expiry date information

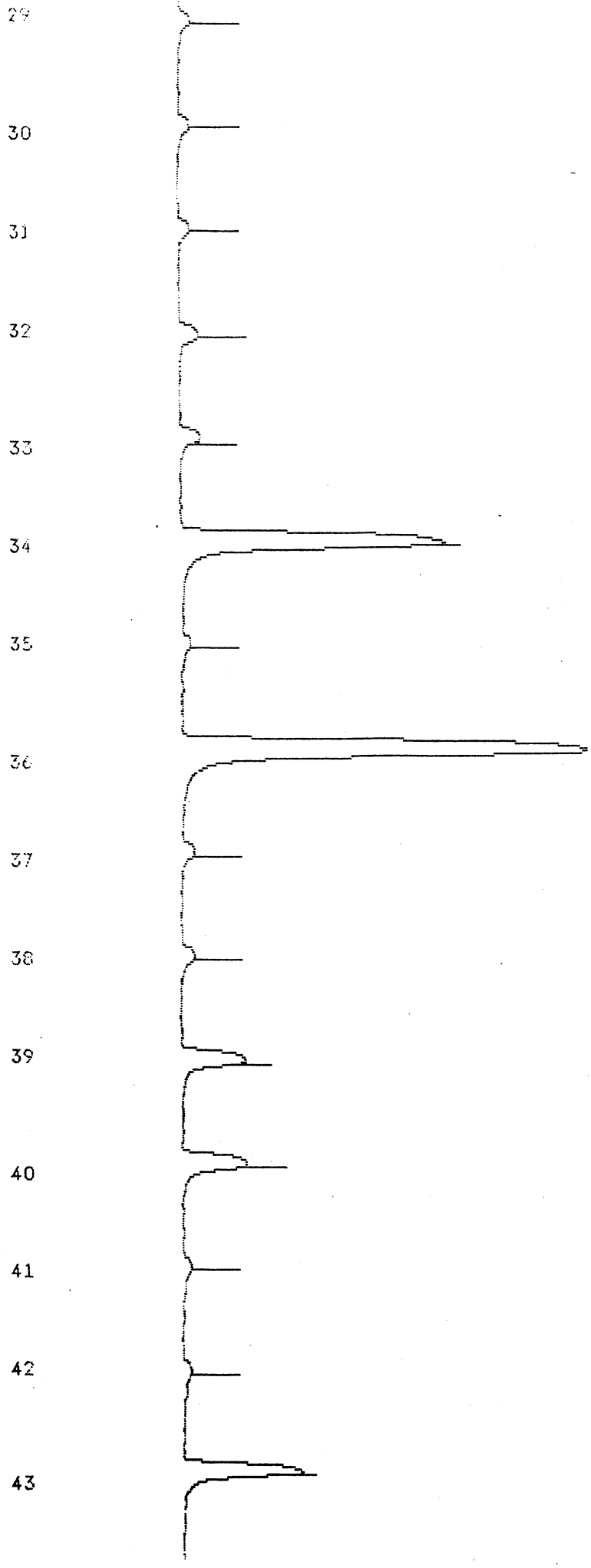
ICV/CCV STANDARDS:
Source: High Purity MESS-ZENO 30/QCA Standard, see standard tracking binder for current lot

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

RUN DATE: 10-15-1999 CHART DATE: 10-17-1999
CHART SPEED: 30
DATA FILE NAME: C:\DP4\DATA\991015WA.DAT

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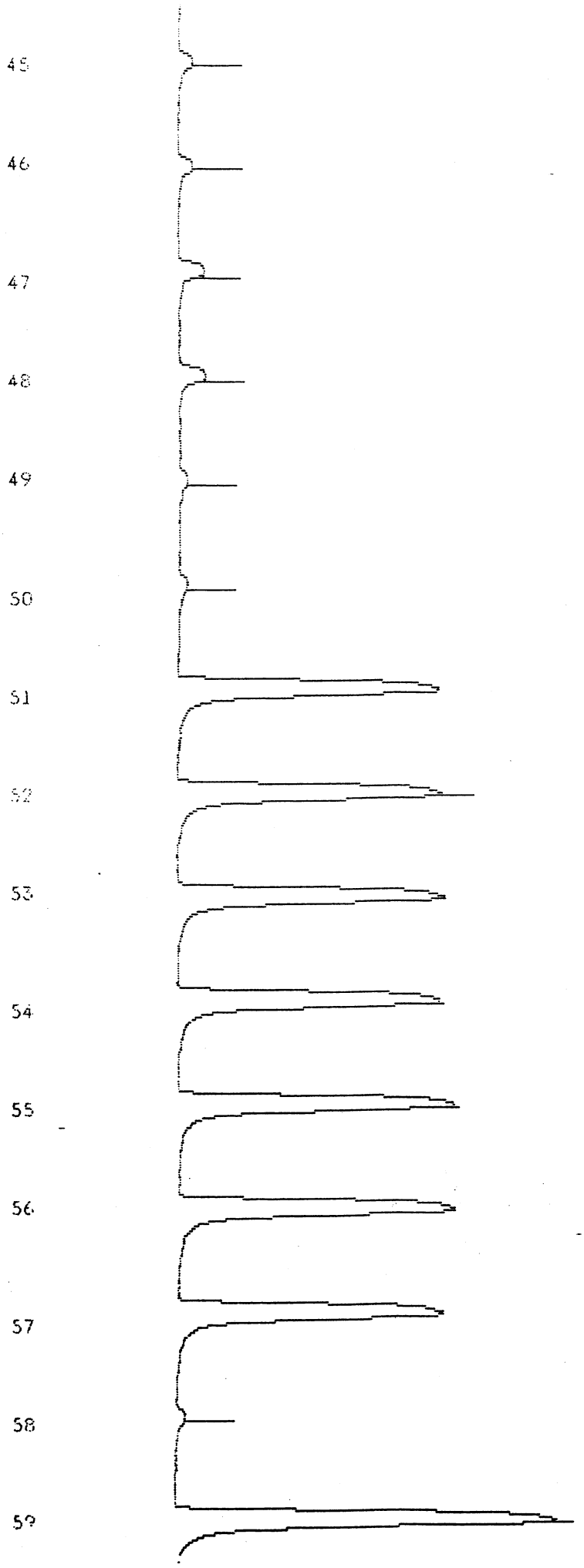
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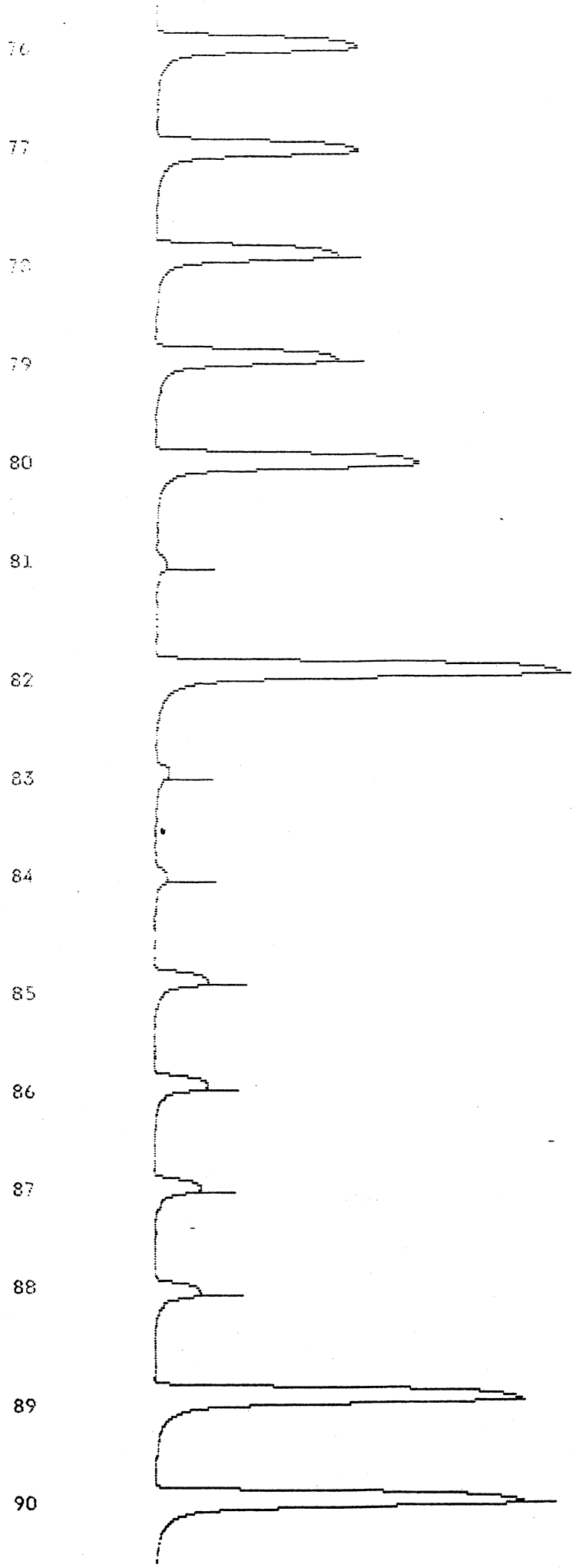
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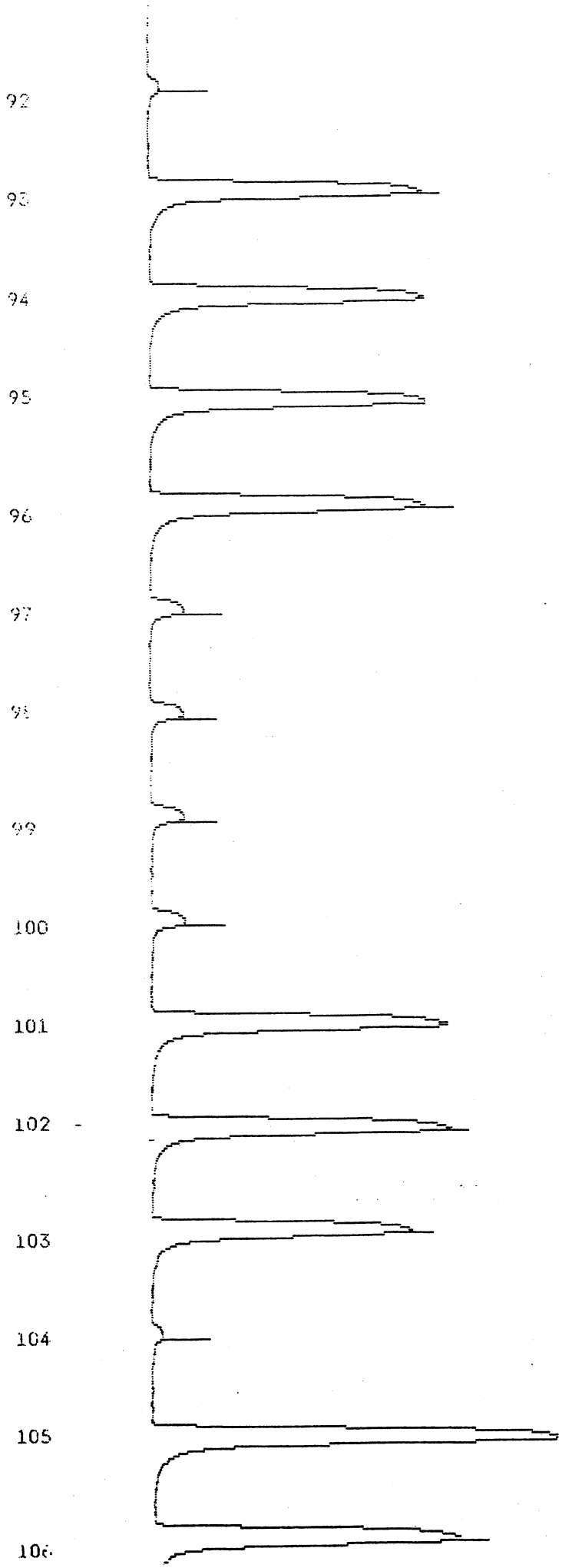
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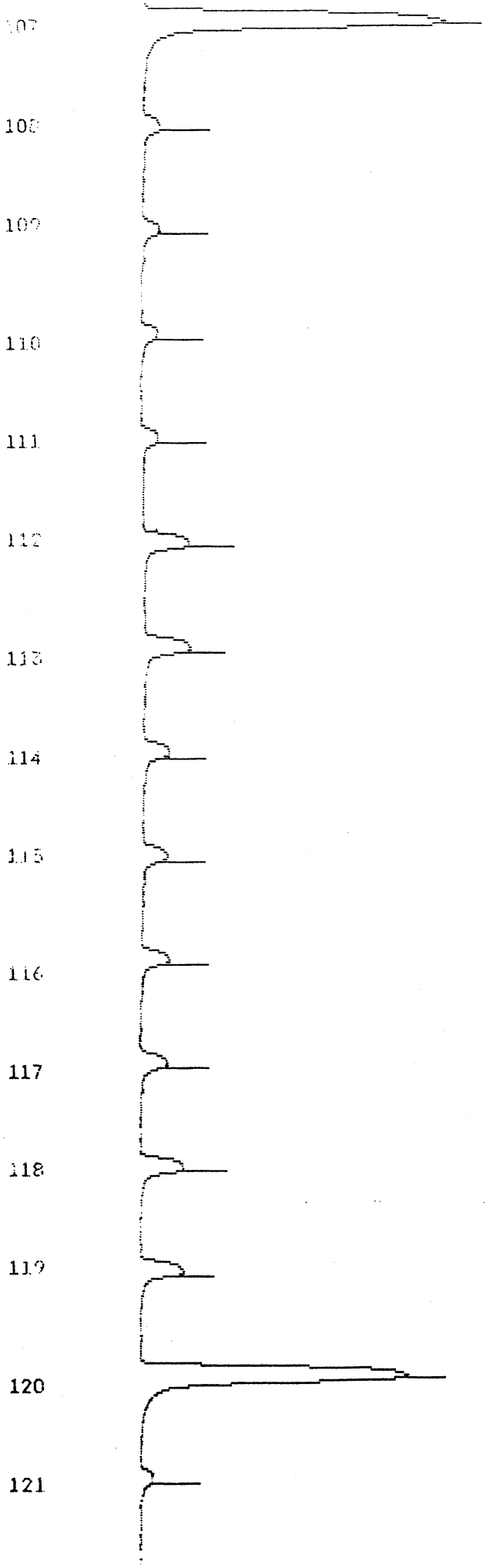
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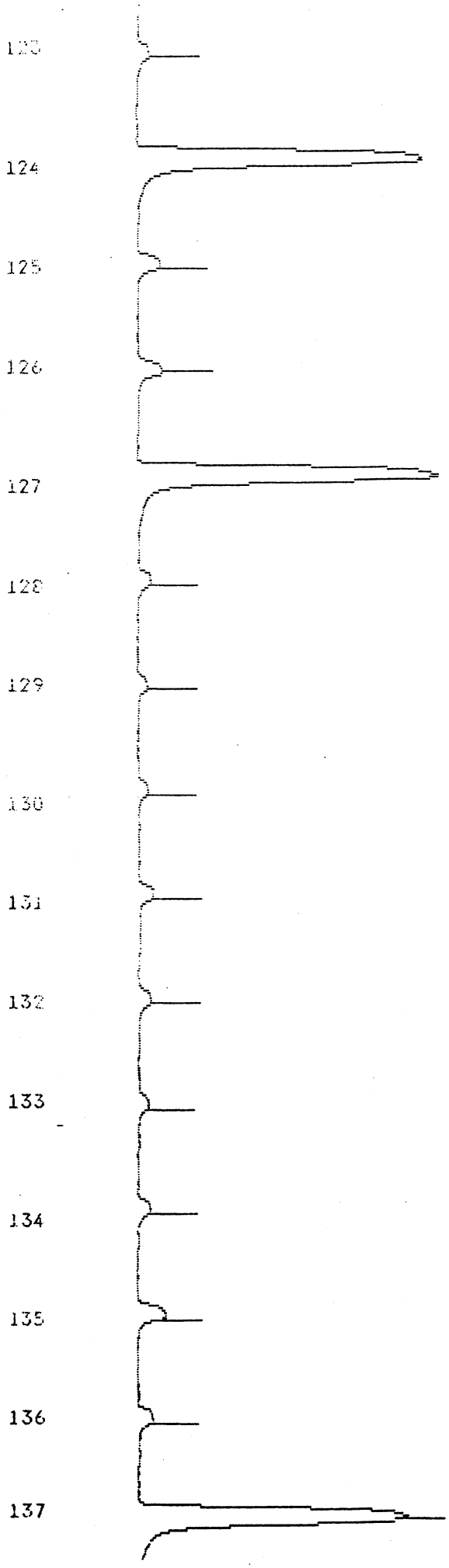
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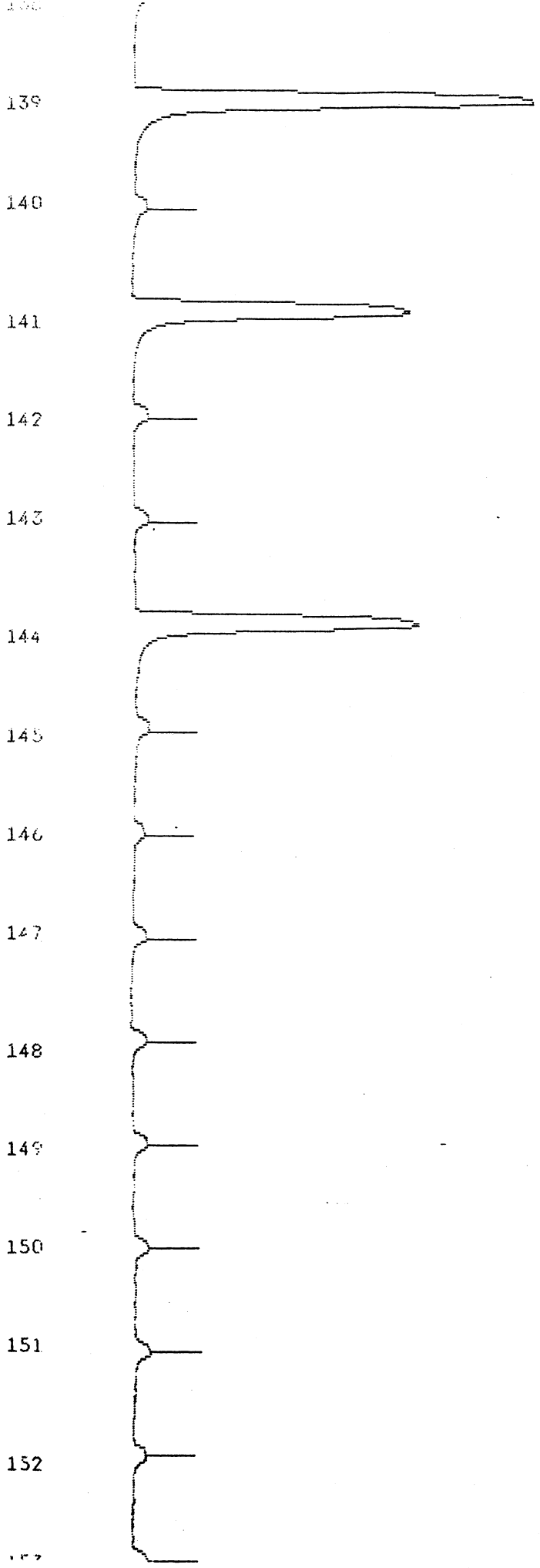
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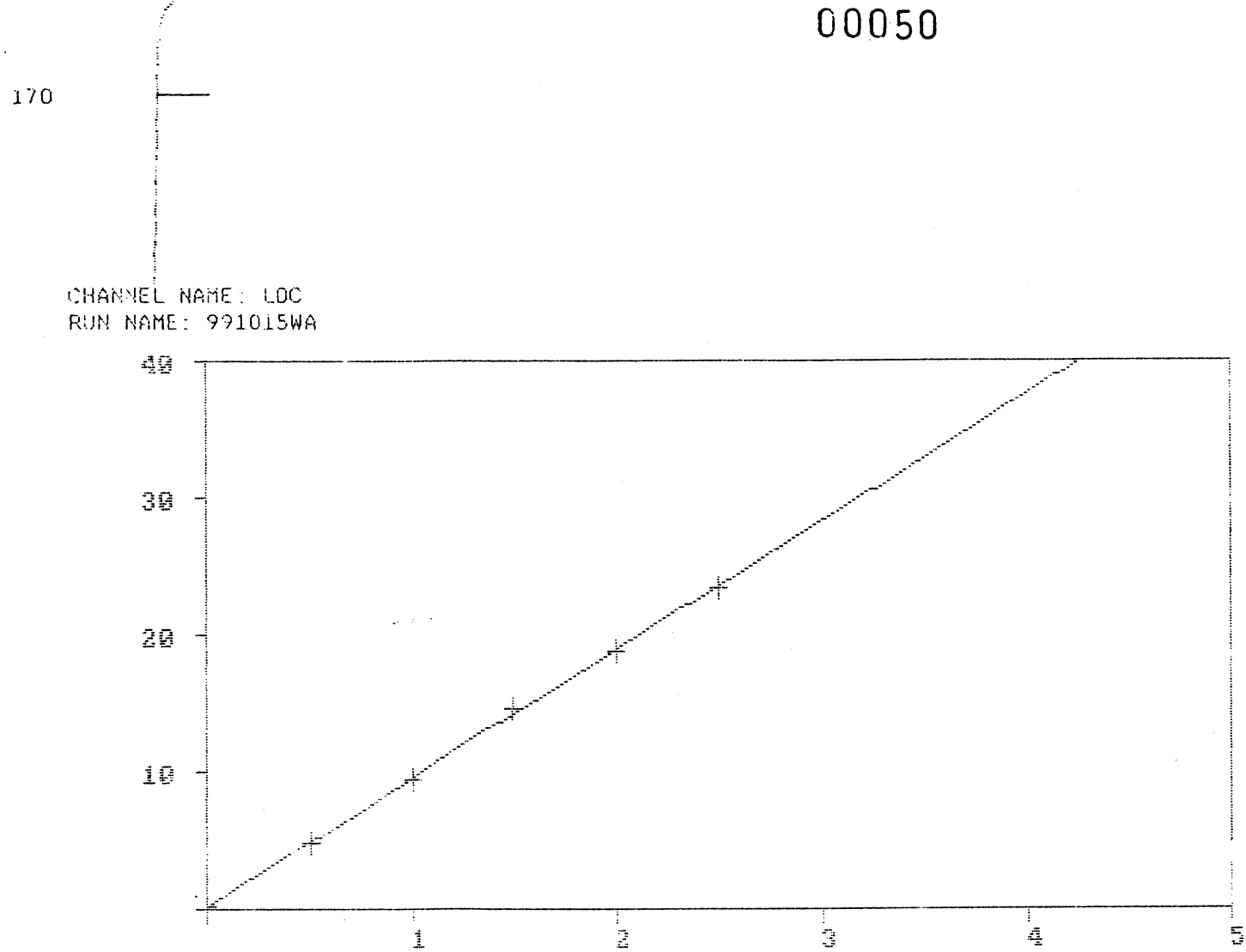

DATA TYPE: FIA CALIBRATION ORDER: 1
INTERCEPT = 0.16 SLOPE = 9.347985

CORRELATION: .9997704

CHANNEL NAME: LDC
RUN DATE: 10-15-1999
SAMPLE TABLE NAME: 991015WA
METHOD NAME: HGWATER

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA		CONCENTRATION (ppb)	EF
1	PRIMER	1	1	13.6		1.440	s
2	DUMMY	1	1	0.2		0.006	I
3	S1: 0	1	1	0.2		0.001	I
4	S2: .5	1	1	4.8		0.497	
5	S3: 1	1	1	9.3		0.978	
6	S4: 1.5	1	1	14.5		1.537	
7	S5: 2	1	1	18.9		1.999	
8	S6: 2.5	1	1	23.4		2.488	
9	ICV	1	1	13.7		1.443 96%	
10	B	1	1	0.0		-0.017	b
11	D4	1	1	14.5		1.537	d
12	WS 378	1	1	17.1	TUG	1.816 91%	
13	ORG REF	1	1	20.6		2.190 109%	
14	BL1015-1N3A	1	1	0.0	<0.01	-0.017	I

00051

18	BL1015DS	1	1	9.3		0.975	97%	
19	BL1015DS	1	1	9.2		0.962		
20	56005	5	1	0.0	<0.025	-0.074	I	
21	56005	5	1	0.0		-0.074	I	
22	56005D	5	1	0.0	<0.025	-0.074	I	
23	56005D	5	1	0.0		-0.087	I	
24	56005S	5	1	9.3	0.243	4.863	97%	
25	56005S	5	1	9.2		4.837		
26	56005DS	5	1	9.5	0.249	4.981	100%	
27	56005DS	5	1	9.5		4.968		
28	56006	1	1	0.1	<0.01	-0.010	I	
29	56006	1	1	0.1		-0.007	I	
30	56007	1	1	0.1	<0.01	-0.007	I	
31	56007	1	1	0.0		-0.012	s	
32	56008	1	1	0.4	<0.01	0.024	I	
33	56008	1	1	0.4		0.024		
34	CCV	1	1	9.4		0.988	99%	
35	B	1	1	0.0		-0.017	b	
36	D4	1	1	14.5		1.537	d	
37	56009	1	1	0.1	<0.01	-0.004	I	
38	56009	1	1	0.2		0.001	I	
39	56010	1	1	2.0	<0.01	0.197		
40	56010	1	1	2.0		0.197		
41	57931-OHHYX	1	1	0.0	<0.01	-0.017	I	
42	57931-OHHYX, 57930	1	1	0.0		-0.017	I	
43	56012	1	1	4.0	0.031	0.411		
44	56012	1	1	4.1		0.419		
45	56013	1	1	0.1	<0.01	-0.002	I	
46	56013	1	1	0.2		0.001	s	
47	56014	1	1	0.6	<0.01	0.051		
48	56014	1	1	0.7		0.056		
49	BL1015-2N3B 56004	1	1	0.0	<0.05	-0.017	I	
50	BL1015-2N3B	1	1	0.0		-0.015	I	
51	BL1015S	1	1	9.7	0.514	1.022	103%	
52	BL1015S	1	1	9.8		1.033		
53	BL1015DS	1	1	10.0	0.522	1.056	104%	
54	BL1015DS	1	1	9.8		1.030		
55	56005	2	1	10.4	1.093	2.186		
56	56005	2	1	10.4		2.186		
57	CCV	1	1	10.1		1.064	106%	
58	B	1	1	0.0		-0.017	b	
59	D4	1	1	14.5		1.537	d	
60	56005D	2	1	10.6	1.117	2.233		
61	56005D	2	1	10.6		2.233	s	
62	56005S	2	1	15.5	1.635	3.278	106%	
63	56005S	2	1	15.4		3.262		
64	56005DS	2	1	15.3	1.617	3.246	102%	
65	56005DS	2	1	15.2		3.220		
66	56005DS Dil. check	10	1	3.1		3.091	7% RPD	
67	56005DS	10	1	3.0		3.013		
68	56004	1	1	0.0	<0.05	-0.012	I	
69	56004	1	1	0.1		-0.010	I	
70	56006	1	1	18.6	0.980	1.971		
71	56006	1	1	18.4		1.947		
72	56007	1	1	22.0	1.167	2.331		
73	56007	1	1	22.0		2.336		
74	56008	1	1	3.8	0.196	0.393		
75	56008	1	1	3.8		0.390		
76	56009	1	1	7.2	0.374	0.748	s	
77	56009	1	1	7.2		0.748		
78	56010	1	1	6.3	0.332	0.662		
79	56010	1	1	6.4		0.664		
80	CCV	1	1	9.5		0.994	99%	

00052

84	56011	1	1	0.1		0.010	I	
85	56012	1	1	1.5	0.073	0.147		
86	56012	1	1	1.5		0.145		
87	56013	1	1	1.3	0.057	0.118		
88	56013	1	1	1.2		0.111		
89	56014	1	1	13.0	0.690	1.375		
90	56014	1	1	13.1		1.385		
91	BL1015-3NPO 57930	1	1	0.0	<0.01	-0.015	s	
92	BL1015-3NPO	1	1	0.0		-0.017	I	
93	BL1015S	1	1	9.6	0.101	1.007		101%
94	BL1015S	1	1	9.7		1.017		
95	BL1015DS	1	1	9.8	0.103	1.028		103%
96	BL1015DS	1	1	9.7		1.022		
97	57933	10	1	0.8	< 0.250	0.688		
98	57933	10	1	0.8		0.636		
99	57933D	10	1	0.8	< 0.250	0.688		
100	57933D	10	1	0.8		0.636		
101	57933S	10	1	10.5	2.765	11.033		103%
102	57933S	10	1	10.5		11.085		
103	CCV	1	1	9.1		0.957		96%
104	B	1	1	0.0		-0.017	b	
105	D4	1	1	14.5		1.537	d	
106	57933DS	10	1	10.7	2.820	11.294		106%
107	57933DS	10	1	10.7		11.268		
108	57931	10	1	0.1	<0.250	-0.017	I	
109	57931	10	1	0.2		0.061	I	
110	57932	10	1	0.1	<0.250	-0.017	I	
111	57932	10	1	0.2		0.009	I	
112	57934	10	1	1.2	0.283	1.132		
113	57934	10	1	1.2		1.132		
114	57936	10	1	0.5	<0.250	0.322		
115	57936	10	1	0.5		0.322		
116	57937	10	1	0.5	<0.250	0.401		
117	57937	10	1	0.5		0.374		
118	57938	10	1	1.1	<0.250	0.975		
119	57938	10	1	1.1		0.975		
120	CCV	1	1	9.5		1.001		100%
121	B	1	1	0.0		-0.017	b	
122	D4	1	1	14.5		1.537	d	
123	BL1015-ABB1	1	1	0.0		-0.017	I	
124	BL1015S	1	1	10.1		1.059		105%
125	57907	1	1	0.3		0.011		
126	57907D	1	1	0.3		0.019		
127	57907S	1	1	10.6		1.119		110%
128	57909	1	1	0.0		-0.012	I	
129	57911	1	1	0.0		-0.017	I	
130	57913	1	1	0.0		-0.017	I	
131	57915	1	1	0.1		-0.007	I	
132	57917	1	1	0.0		-0.017	I	
133	57919	1	1	0.0		-0.017	I	
134	57921	1	1	0.0		-0.012	I	
135	57923	1	1	0.5		0.040		
136	57925	1	1	0.1		-0.007	s	
137	CCV	1	1	9.5		0.996		100%
138	B	1	1	0.0		-0.017	b	
139	D4	1	1	14.5		1.537	d	
140	BL1015-ABB2	1	1	0.0		-0.015	I	
141	BL1015S	1	1	10.0		1.051		105%
142	57952	1	1	0.1		-0.004	I	
143	57952D	1	1	0.0		-0.012	I	
144	57952S	1	1	10.2		1.072		107%
145	57927	1	1	0.1		-0.010	I	
146	57929	1	1	0.0		-0.017	I	

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
057930	APT-CO	MB R456	Mercury -	PV	-0.010	-99999.0	0.096	96.	0.095	95.	99/11/16	MNP1	99/11/17	MG02	48.	42.	*BLKIMP*
057931	APT-CO	30RB	Mercury -	PV	-0.010						99/11/16	MNP1	99/11/17	MG02	47.	42.	
057932	APT-CO	29ITB	Mercury -	PV	-0.010						99/11/16	MNP1	99/11/17	MG02	48.	42.	
057933	APT-CO	29IR1	Mercury -	PV	0.077	0.099	0.188	105.	0.199	115.	99/11/16	MNP1	99/11/17	MG02	48.	42.	
057934	APT-CO	30IR2	Mercury -	PV	-0.010						99/11/16	MNP1	99/11/17	MG02	47.	42.	
057935	APT-CO	30IR3	Mercury -	PV	-0.010						99/11/16	MNP1	99/11/17	MG02	47.	42.	
057936	APT-CO	29OR1	Mercury -	PV	-0.050						99/11/16	MNP1	99/11/17	MG02	48.	42.	*DDL/INT*
057937	APT-CO	30OR2	Mercury -	PV	-0.050						99/11/16	MNP1	99/11/17	MG02	47.	42.	*DDL/INT*
057938	APT-CO	30OR3	Mercury -	PV	-0.050						99/11/16	MNP1	99/11/17	MG02	47.	42.	*DDL/INT*
BL1116	INTERNAL		Mercury -	PV	-0.010	-99999.0	0.096	96.	0.095	95.	99/11/16	MNP1	99/11/17	MG02	$$$	$$$	*BLKIMP*

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

00053

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.11.17 (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)	0.5		
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			WS 378			
13			ORG. REF.			
14			BL1117	1GPR		
15			"			
16			BL1117 S			
17			"			
18			BL1117 DS			
19			"			
20			57933			
21			"			
22			57933 D			
23			"			
24			57933 S			
25			"			
26			57933 DS			
27			"			
28			57931			
29			"			
30			57932			
31			"			
32			57934			
33			"			
34			CCV			
35			B			
36			D4			
37			57935			
38			"			
39		1/5	57936			
40		↓	"			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41		1/5	57937			
42		↓	"			
43			57938			
44			"			
45			57933			
46			"			
47			CCV			
48			B			
49			D4			
50			BL1117	ZNKC		
51			"			
52			BL1117 S			
53			"			
54			BL1117 DS			
55			"			
56		1/4	64673			
57		↓	"			
58			64673 D			
59			"			
60			64673 S			
61			"			
62			64673 DS			
63			"			
64			64670			
65			"			
66			64671			
67			"			
68			64674			
69			"			
70			CCV			
71			B			
72			D4			
73		1/2	64675			
74		↓	"			
75			64676			
76			"			
77			64678			
78			"			
79			64679			
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.

RUN DATE: 11-17-1999 CHART DATE: 11-18-1999
CHART SPEED: 30
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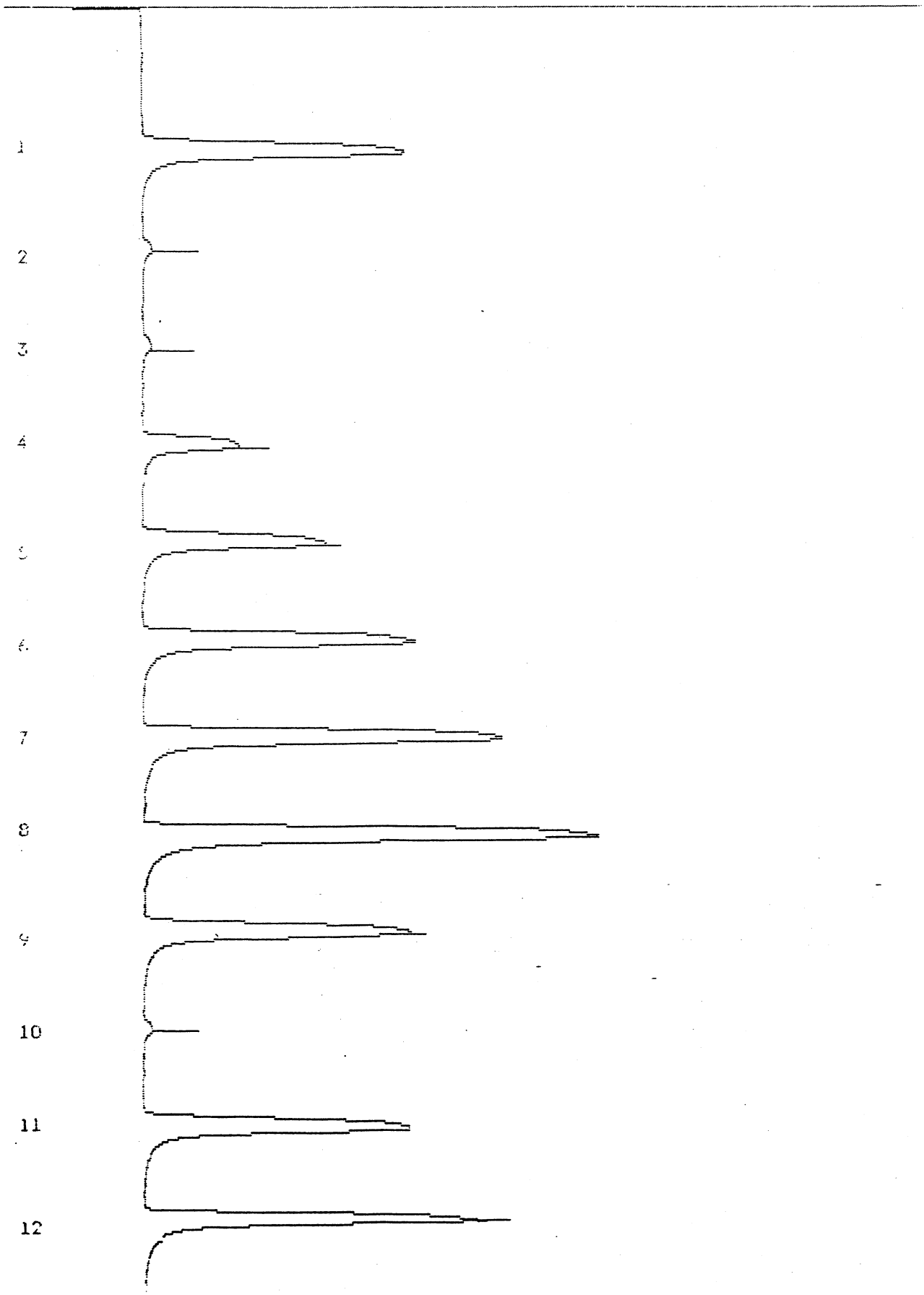

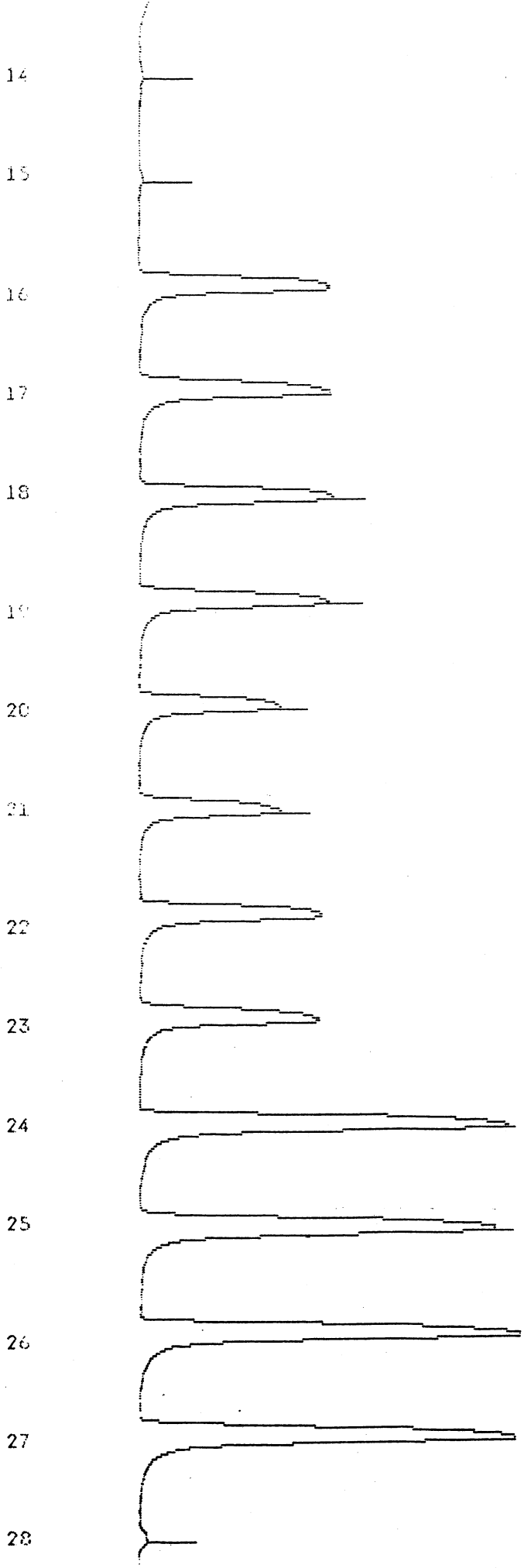
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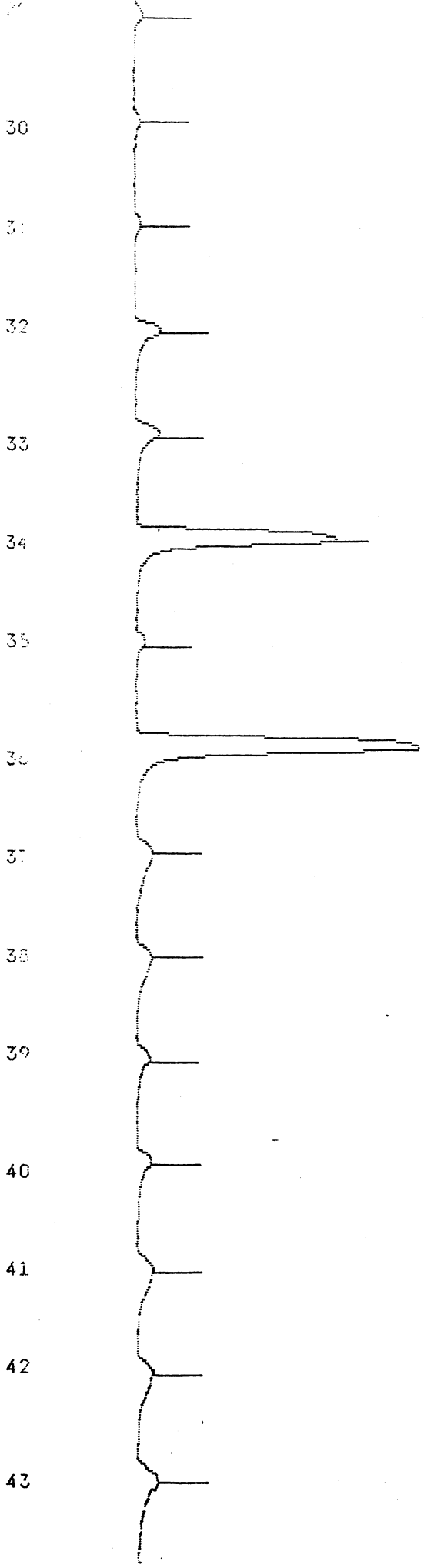
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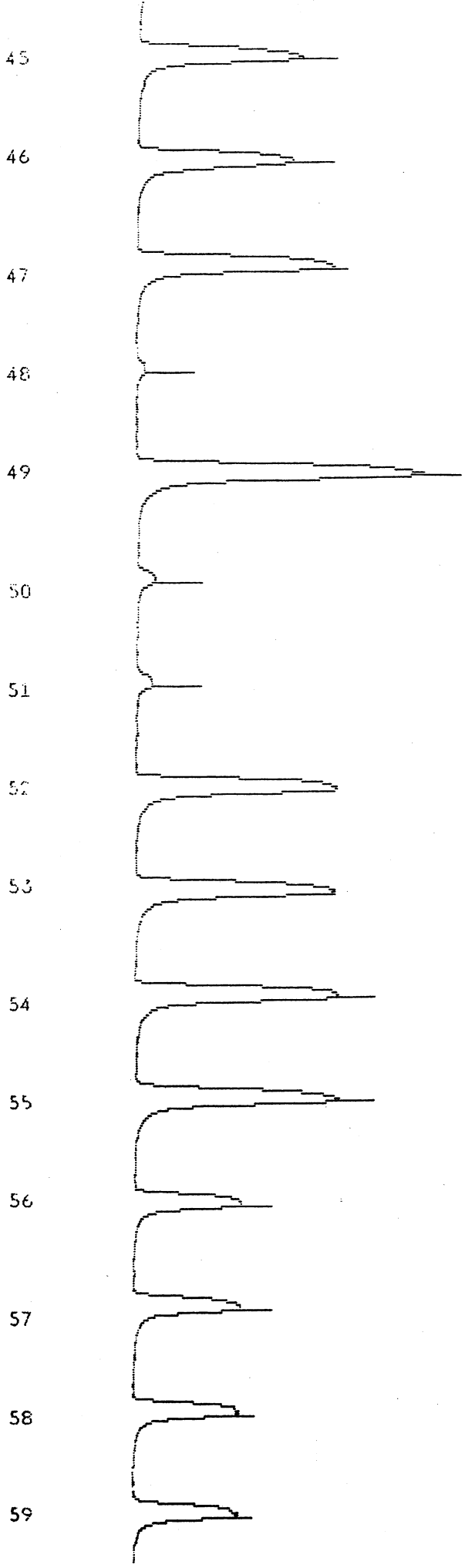
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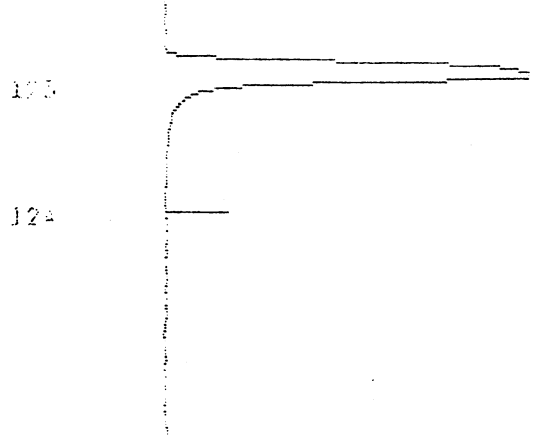
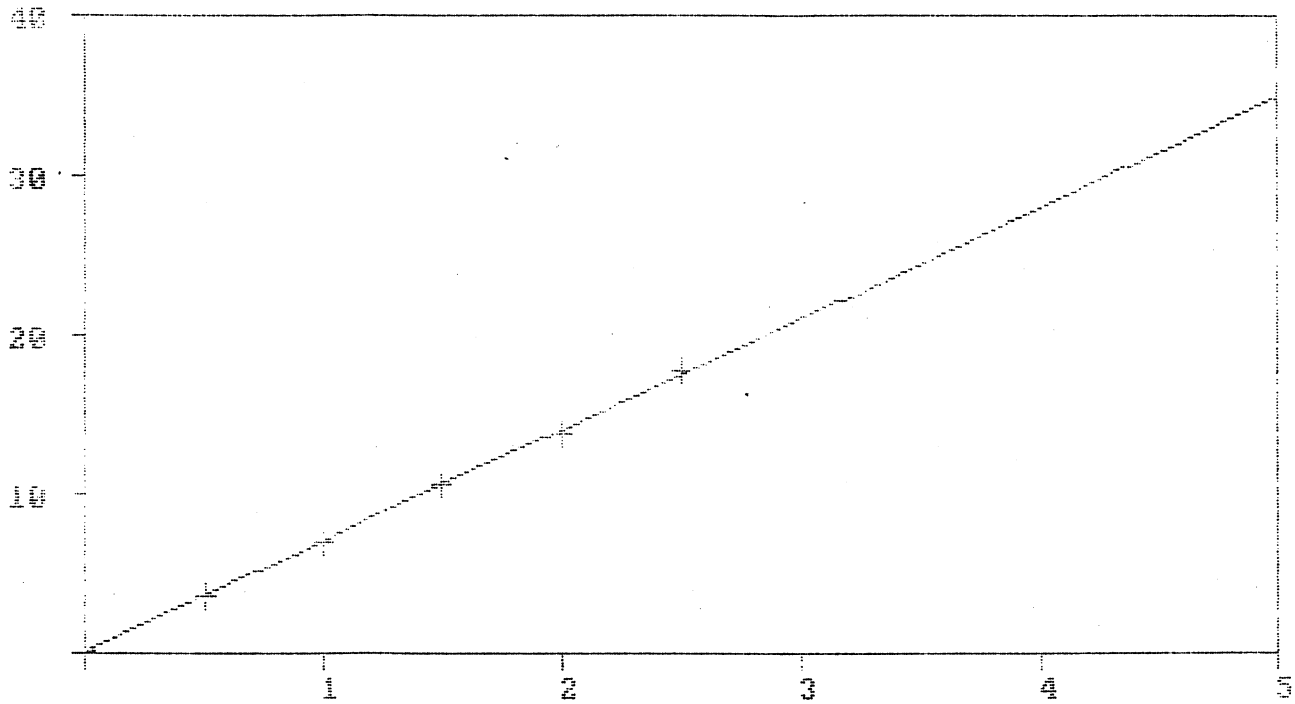


CHANNEL NAME: LDC
RUN NAME: 991117WA



DATA TYPE: FIA CALIBRATION ORDER: 1
INTERCEPT = 0.12 SLOPE = 6.950636

CORRELATION: .9997108

CHANNEL NAME: LDC
RUN DATE: 11-17-1999
SAMPLE TABLE NAME: 991117WA
METHOD NAME: HGWATER

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA	CONCENTRATION µg/L	EF
1	PRIMER	1	1	10.3	1.465	s
2	DUMMY	1	1	0.3	0.021	I
3	S1: 0	1	1	0.2	0.014	I
4	S2: .5	1	1	3.6	0.502	
5	S3: 1	1	1	7.0	0.987	
6	S4: 1.5	1	1	10.5	1.497	
7	S5: 2	1	1	13.8	1.967	
8	S6: 2.5	1	1	17.7	2.533	
9	ICV	1	1	10.3	1.468 98%	
10	B	1	1	0.0	-0.018	b
11	D4	1	1	10.5	1.497	d

00060

14	BL1117-MSF1	1	1	0.0	<0.01	0.016	I	
15	BL1117-MSF1	1	1	0.0		0.018	I	
16	BL1117S	1	1	6.7	0.096	0.952		96%
17	BL1117S	1	1	6.8		0.962		
18	BL1117DS	1	1	6.8	0.095	0.962		95%
19	BL1117DS	1	1	6.6		0.938		
20	57933	1	1	4.9		~~0.692~~		VOID: RERUN @ END
21	57933	1	1	4.9		~~0.688~~		
22	57933D	1	1	6.4	0.090	0.903		
23	57933D	1	1	6.3		0.896		
24	57933S	1	1	13.5	0.188	1.925		105%
25	57933S	1	1	12.9		1.841		
26	47933DS	1	1	14.0	0.199	1.995		115%
27	47933DS	1	1	13.9		1.988		
28	57931	1	1	0.0	<0.01	-0.018	I	
29	57931	1	1	0.0		-0.014	I	
30	57932	1	1	0.0	<0.01	-0.018	I	
31	57932	1	1	0.0		-0.018	s	
32	57934	1	1	0.6	<0.01	0.070	I	
33	57934	1	1	0.6		0.067	I	
34	CCV	1	1	7.1		1.008		101%
35	B	1	1	0.0		-0.018	b	
36	D4	1	1	10.5		1.497	d	
37	57935	1	1	0.3	<0.01	0.021	I	
38	57935	1	1	0.3		0.028	I	
39	57936	5	1	0.2	<0.05	0.034	I	
40	57936	5	1	0.2		0.087	I	
41	57937	5	1	0.2	<0.05	0.087	I	
42	57937	5	1	0.2		0.052	I	
43	57938	5	1	0.1	<0.05	0.017	I	
44	57938	5	1	0.0		-0.071	I	
45	57933	1	1	5.7	0.077	0.801		
46	57933	1	1	5.4		0.762	s	
47	CCV	1	1	7.1		1.001		100%
48	B	1	1	0.0		-0.018	b	
49	D4	1	1	10.5		1.497	d	
50	BL1117-2NKC	1	1	0.3	<0.03	0.031	I	
51	BL1117-2NKC	1	1	0.3		0.024	I	
52	BL1117S	1	1	7.2	0.301	1.022		101%
53	BL1117S	1	1	7.0		0.987		
54	BL1117DS	1	1	7.2	0.307	1.022		102%
55	BL1117DS	1	1	7.3		1.026		
56	64673	4	1	3.6	2.023	2.009		
57	64673	4	1	3.7		2.037		
58	64673D	4	1	3.6	1.995	2.023		
59	64673D	4	1	3.5		1.967		
60	64673S	4	1	5.4	3.028	3.063		101%
61	64673S	4	1	5.3		2.993	s	
62	64673DS	4	1	5.4	3.028	3.021		101%
63	64673DS	4	1	5.4		3.035		
64	64670	1	1	0.0	<0.100	-0.018	I	
65	64670	1	1	0.0		-0.018	I	
66	64671	1	1	0.0	<0.100	-0.018	I	
67	64671	1	1	0.0		-0.018	I	
68	64674	1	1	17.7	2.505	2.533		
69	64674	1	1	17.3		2.477		
70	CCV	1	1	7.1		1.005		101%
71	B	1	1	0.0		-0.018	b	
72	D4	1	1	10.5		1.497	d	
73	64675	2	1	9.5	2.705	2.691		
74	64675	2	1	9.6		2.719		
75	64676	2	1	0.0	<0.100	-0.035	I	RERUN ON NOV. 18 MB
76	64676	2	1	0.0		-0.035	s	
77	64678	1	1	0.7	<0.100	0.084		

4. SHIPPING/RECEIVING DOCUMENTS

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

500

FedEx USA Airbill

FedEx Tracking Number 8146 3474 1517

Form I.D. No. 0215

RECIPIENT: PEEL HERE

1 From This portion can be removed for Recipient's records.

Date 10/4/99 FedEx Tracking Number 814634741517

Sender's Name Karl Breuer Phone 303 420-5949

Company AIR POLLUTION TESTING INC

Address 12421 W 49TH AVE UNIT 1 Dept./Floor/Suite/Room

City WHEAT RIDGE State CO ZIP 80033

2 Your Internal Billing Reference

3 To Recipient's Name Ron McLeod Phone 905 332-8788

Company Philip Analytical

Address 297 Cayuga Rd. Dept./Floor/Suite/Room

We cannot deliver to P.O. boxes or P.O. ZIP codes.

To "HOLD" at FedEx location, print FedEx address here.

City Cheektowaga State NY ZIP 14225

8146 3474 1517

0106296620

4a Express Package Service — *Packages up to 150 lbs.* Delivery commitment may be later in some areas.

- [x] FedEx Priority Overnight — Next business morning
- [ ] FedEx Standard Overnight — Next business afternoon
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations
- [ ] FedEx 2Day* — Second business day
- [ ] FedEx Express Saver* — Third business day

* FedEx Letter Rate not available. Minimum charge: One-pound rate

4b Express Freight Service — *Packages over 150 lbs.* Delivery commitment may be later in some areas.

- [ ] FedEx 1Day Freight* — Next business day
- [ ] FedEx 2Day Freight — Second business day
- [ ] FedEx 3Day Freight — Third business day

* Call for Confirmation: _____

5 Packaging — * Declared value limit $500

- [ ] FedEx Letter*
- [ ] FedEx Pak*
- [x] Other Pkg. — Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling

- [ ] Saturday Delivery — Available for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
- [ ] Sunday Delivery — Available for FedEx Priority Overnight to select ZIP codes
- [ ] HOLD Weekday at FedEx Location — Not available with FedEx First Overnight
- [ ] HOLD Saturday at FedEx Location — Available for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods? (One box must be checked.)

- [x] No
- [ ] Yes — As per attached Shipper's Declaration
- [ ] Yes — Shipper's Declaration not required
- [ ] Dry Ice — Dry Ice, 9, UN 1845 _____ x _____ kg

Dangerous Goods cannot be shipped in FedEx packaging.

[ ] Cargo Aircraft Only

7 Payment Bill to: [ ] Other Acct. No.

- [x] Sender — Acct. No. in Section 1 will be billed.
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check

Total Packages	Total Weight	Total Charges
4		Credit Card Auth.

†Our liability is limited to $100 unless you declare a higher value. See the *FedEx Service Guide* for details.

8 *Sign to authorize delivery without obtaining signature.*

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

Questions? Call 1·800·Go·FedEx® (800-463-3339)

Visit our Web site at www.fedex.com

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359

00062

Chain of Custody

To: Philip Analytical Services
5555 North Service Road
Burlington, Ontario, Canada L7L 5H7
Attn: Ron McLeod

From: Karl Breuer
Air Pollution Testing, Inc.
12421 West 49th Avenue, Unit 2
Wheat Ridge, Colorado 80033
(303) 420-5949

RE: Samples for Ontario Hydro Method
Project # PAC9137

Dear Ron,

Enclosed are samples to be analyzed for the Ontario Hydro Method as indicated on the following pages. The filters and acetone probe washes are included with this shipment and I have included the filter tare weights for the gravimetric analysis. There are four coolers in this shipment. Please feel free to contact me or David Stewart if you have any questions.

Relinquished by:	Date/Time:	Received by:	Date/Time:
[signature]	10/4/99 - 3:15pm	[signature] PASL	991005 12:15

Sample Tracking
Ontario Hydro Method
Quality Control Samples-PAC9137-Wyodak Plant

Container #1A - Thimble Filter
Container #1 - 47 mm Filter
Container #2A - Acetone Probe Wash
Container #2 - Nitric Rinse
Container #3 - HNO_3, KCl, $KMnO_4$
Container #4 - HNO_3, H_2O_2
Container #5 - HNO_3, $KMnO_4$, H_2SO_4
Container #7 - HNO_3
Container #8 - KCl
Container #9 - HNO_3, H_2O_2
Container #10 - $KMnO_4$, H_2SO_4
Container #11 - NH_2OH-HCl
Container #12 - Filters

Sample ID Code

Date	Location	Blank Type	Container #
29	I	TB	1

MB - 57930

TB = Train Blank, RB = Reagent Blank

Blanks

PPO, 500AG×2, 250AG×2, 1LG×2

✓29ITB1A
✓29ITB1
✓29ITB2A
57932 ✓29ITB2
✓29ITB3
✓29ITB4
✓29ITB5
✓HNO_3 Proof Rinse - 57939.
✓30RB7
✓30RB8
✓30RB9
57931 ✓30RB10
✓30RB11
✓30RB12

500AG×6

Sample Tracking
Ontario Hydro Method
Inlet Samples-PAC9137- Wyodak Plant

Container #1A - Thimble Filter
Container #1 - 47 mm Filter
Container #2A - Acetone Probe Wash
Container #2 - Nitric Rinse
Container #3 - HNO_3, KCl, $KMnO_4$
Container #4 - HNO_3, H_2O_2
Container #5 - HNO_3, $KMnO_4$, H_2SO_4

Sample ID Code

Date	Location	Run#	Container #
29	I	R1	1

Inlet
Sample Tracking

Run1
✓29IR11A (2 filters)
✓29IR11 (2 filters)
57932 ✓29IR12A
✓29IR12
✓29IR13 (2 containers)
✓29IR14
✓29IR15

500AG×2, PPD×2, 250AG×2, 500AG, 1LLG×2, 500G

Run2
✓30IR21A
✓30IR21
57934 ✓30IR22A
✓30IR22
✓30IR23 (2 containers)
✓30IR24
✓30IR25

500AG×2, 200AG×2, PPO, 500CG, 1LCG×2

Run3
✓30IR31A
✓30IR31
57935 ✓30IR32A - rec'd broken - sample lost
✓30IR32
✓30IR33 (2 containers) - one container rec'd
30IR34 - rec'd broken - sample lost
✓30IR35

500AG, 250AG, PPO 1LCG×2

Sample Tracking
Ontario Hydro Method
Outlet Samples-PAC9137-Wyodak Plant

Container #1 - 82.6 mm Filter
Container #2A - Acetone Probe Wash
Container #2 - Nitric Rinse
Container #3 - HNO_3, KCl, $KMnO_4$
Container #4 - HNO_3, H_2O_2
Container #5 - HNO_3, $KMnO_4$, H_2SO_4

Sample ID Code

Date	Location	Run#	Container #
29	O	R1	1

Outlet
Sample Tracking

Run1

57936.
✓29OR11
✓29OR12A
✓29OR12
✓29OR13
✓29OR14
✓29OR15

GPO×2, 250AG×2, 500AG, 1LCG×2

Run2

37
✓30OR21
✓30OR22A
✓30OR22
✓30OR23
✓30OR24
✓30OR25

GPO×2, 250AG×2, 500AG, 1LCG×2

Run3

38
✓30OR31
✓30OR32A
✓30OR32
✓30OR33
✓30OR34
✓30OR35

GPO×2, 250AG×2, 500AG, 1LCG×2

47mm filter Tare Weights

Air Pollution Testing, Inc.
Gravimetric Laboratory Data Sheet
Analytical Balance A-160

Project Code:	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #:	Test Date:	7/23/99	1131	0.1153				
Description:		7/26/99	1045	0.1153				
APT Sample ID:								
Identification: 994058								

Project Code:	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #:	Test Date:	7/23/99	1132	0.1145				
Description:		7/26/99	1046	0.1147				
APT Sample ID:								
Identification: 994059								

Project Code:	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #:	Test Date:	7/23/99	1133	0.1150				
Description:		7/26/99	1047	0.1152				
APT Sample ID:								
Identification: 994060								

Project Code:	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #:	Test Date:	7/23/99	1134	0.1163				
Description:		7/26/99	1048	0.1163				
APT Sample ID:								
Identification: 994061								

Project Code:	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #:	Test Date:	9/19/99	1603	0.1075		-		
Description:		9/20/99	1423	0.1079				
APT Sample ID:								
Identification: 994062M		-						

Project Code:	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #:	Test Date:	9/19/99	1605	0.1068				
Description:		9/20/99	1424	0.1067				
APT Sample ID:								
Identification: 994063M								

47 mm filter Tare Weights

Air Pollution Testing, Inc.
Gravimetric Laboratory Data Sheet
Analytical Balance A-160

Project Code :	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # :	Test Date :	9/19/99	1607	0.1075				
Description :		9/20/99	1425	0.1072				
APT Sample ID :								
Identification : 994064M								

Project Code :	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # :	Test Date :	9/19/99	1609	0.1066				
Description :		9/19/99	1439	0.1063				
APT Sample ID :								
Identification : 994065M								

Project Code :	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # :	Test Date :	9/19/99	1611	0.1069				
Description :		9/20/99	1440	0.1068				
APT Sample ID :								
Identification : 994066M								

Project Code :	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # :	Test Date :	9/19/99	1612	0.1061				
Description :		9/20/99	1442	0.1054				
APT Sample ID :								
Identification : 994067M								

Project Code :	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # :	Test Date :	9/19/99	1615	0.1075				
Description :		9/20/99	1443	0.1075				
APT Sample ID :								
Identification : 994068M								

Project Code :	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # :	Test Date :	9/19/99	1616	0.1060				
Description :		9/20/99	1444	0.1057				
APT Sample ID :								
Identification : 994069M								

47mm filter Tare Weights

Air Pollution Testing, Inc.
Gravimetric Laboratory Data Sheet
Analytical Balance A-160

Project Code :	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # :	Test Date :	9/19/99	1619	0.1074				
Description :		9/20/99	1447	0.1076				
APT Sample ID :								
Identification : 994070M								

Project Code :	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # :	Test Date :	9/19/99	1620	0.1066				
Description :		9/20/99	1449	0.1062				
APT Sample ID :								
Identification : 994071M								

Project Code :	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # :	Test Date :							
Description :								
APT Sample ID :								
Identification :								

Project Code :	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # :	Test Date :							
Description :								
APT Sample ID :								
Identification :								

Project Code :	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # :	Test Date :							
Description :								
APT Sample ID :								
Identification :								

Project Code :	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # :	Test Date :							
Description :								
APT Sample ID :								
Identification :								

Thimble Filter Tare Weights 00070

Air Pollution Testing, Inc.
Gravimetric Laboratory Data Sheet
Analytical Balance A-160

Project Code:	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #:	Test Date:	2/26/99	1055	51.2234				
Description:		3/2/99	1005	51.2233				
APT Sample ID:								
Identification: T-26								

Project Code:	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #:	Test Date:	9/19/99	15:36	3.5904				
Description:		9/20/99	1407	3.5909				
APT Sample ID:								
Identification: T-27								

Project Code:	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #:	Test Date:	9/19/99	1539	3.6307				
Description:		9/20/99	1408	3.6309				
APT Sample ID:								
Identification: T-28								

Project Code:	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #:	Test Date:	9/19/99	1541	3.5410				
Description:		9/20/99	1410	3.5415				
APT Sample ID:								
Identification: T-29								

Project Code:	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #:	Test Date:	9/19/99	1543	3.2782				
Description:		9/20/99	1412	3.2782				
APT Sample ID:								
Identification: T-30								

Project Code:	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #:	Test Date:	9/19/99	1545	3.5035				
Description:		9/20/99	1413	3.5037				
APT Sample ID:								
Identification: T-31								

Thimble Filter tare weights

Air Pollution Testing, Inc.
Gravimetric Laboratory Data Sheet
Analytical Balance A-160

Project Code : Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # : Test Date :	9/19/99	1547	3.2326				
Description :	9/20/99	1415	3.2325				
APT Sample ID :							
Identification : T-32							

Project Code : Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # : Test Date :	9/19/99	1549	3.1603				
Description :	9/20/99	1416	3.1608				
APT Sample ID :							
Identification : T-33							

Project Code : Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # : Test Date :	9/19/99	1552	3.6177				
Description :	9/20/99	1418	3.6180				
APT Sample ID :							
Identification : T-34							

Project Code : Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # : Test Date :	9/19/99	1554	3.3441				
Description :	9/20/99	1419	3.3442				
APT Sample ID :							
Identification : T-35							

Project Code : Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # : Test Date :	9/19/99	1556	3.1013				
Description :	9/20/99	1420	3.1007				
APT Sample ID :							
Identification : T-36							

Project Code : Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # : Test Date :							
Description :							
APT Sample ID :							
Identification :							

Page ___ of ___

US SAMPLE LOG IN SHEET

AIR POLLUTION

Lab Name: Philip Analytical Services Corporation, Burlington Laboratory

Received By (Print Name): K. Carruro

Received By (Signature):

Client Project ID:

REMARKS:		Condition of Samples/Sample Shipment:
Custody Seal(s)	Present ✓ Absent ___	30IR32A rec'd broken.
		30IR34 rec'd broken.
Chain of Custody Records	Present ✓ Absent ___	
Airbill	Present ✓ Absent ___	
Airbill No.	8146 3474 1517	18°C
	7058	18°C
	Ex. 8125 8629 7036	18°C
	Ex. 8125 8629 7047	18°C
	Tracking Number for Customer	
Does Information on Custody Records and Samples Agree?	Yes ✓ No ___	
Date Received at Lab	5 10 99	
Time Received	12:15p	

Temperature of Coolers

Cooler ID:	Temperature
4 coolers	18°C 18°C 18°C 18°C

Relinquished By: E. Jones

Date: 5 10 99

Logbook No: ___

Logbook Page No

** TX STATUS REPORT ** AS OF OCT 14 1999 07:16 PAGE.01

PHILIP ANALYTICAL

	DATE	TIME	TO/FROM	MODE	MIN/SEC	PGS	JOB#	STATUS
29	10/14	07:15	13034205920	EC--S	00'36"	001	180	OK

NOTICE OF SAMPLE RECEIPT-PHILIP ANALYTICAL SERVICES

Attention: David Stewart
Client: Air Pollution Testing
Re Client Project: PAC9137
FAX #: 303-420-5920
Phone #: 303-420-5949

Samples for: Hg via OH Method
were received in good condition unless indicated below.

SAMPLE LISTING

Philip ID #	Sample ID	Date Sampled	Date Received
057931	30RB	99/09/30	99/10/05
057932	29ITB	99/09/29	99/10/05
057933	29IR1	99/09/29	99/10/05
057934	30IR2	99/09/30	99/10/05
057935	30IR3 *	99/09/30	99/10/05
057936	29OR1	99/09/29	99/10/05
057937	30OR2	99/09/30	99/10/05
057938	30OR3	99/09/30	99/10/05

* ① Comments: Both 2A and 4 received broken
* ② Only received one container 3

Date 99/10/07

NOTICE OF SAMPLE RECEIPT-PHILIP ANALYTICAL SERVICES

Attention: David Stewart
Client: Air Pollution Testing
Re Client Project: PAC9137
FAX #: 303-420-5920
Phone #: 303-420-5949

Samples for: Hg via OH Method
were received in good condition unless indicated below.

SAMPLE LISTING

Philip ID #	Sample ID	Date Sampled	Date Received
057931	30RB	99/09/30	99/10/05
057932	29ITB	99/09/29	99/10/05
057933	29IR1	99/09/29	99/10/05
057934	30IR2	99/09/30	99/10/05
057935	30IR3 *	99/09/30	99/10/05
057936	29OR1	99/09/29	99/10/05
057937	30OR2	99/09/30	99/10/05
057938	30OR3	99/09/30	99/10/05

* ① Comments: Both 2A and 4 received broken

* ② Only received one container 3

Date 99/10/07

3

Appendix 3

Calibration Data and Certificates

AIR POLLUTION TESTING, INC.

DRY GAS METER CALIBRATION DATA

GAS METER ID :	M5-1
DATE :	08-20-99
BARO. PRESS. (MBAR) :	838

Run #1	DH	Vmet	Tin	Tout	Vref	Tref	DP	Vac	Time
Start	3.0	902.754	82	79	501.329	80	0.6	4	11:45 AM
Stop	3.0	913.404	87	80	512.008	80	0.6	4	11:55 AM
Avg.	**3.0**	**10.650**	**84.5**	**79.5**	**10.679**	**80.0**	**0.6**	**4**	**10.0**

Run #2	DH	Vmet	Tin	Tout	Vref	Tref	DP	Vac	Time
Start	1.5	914.950	86	80	513.563	80	0.3	4	11:58 AM
Stop	1.5	922.388	86	81	520.989	80	0.3	4	12:08 PM
Avg.	**1.5**	**7.438**	**86.0**	**80.5**	**7.426**	**80.0**	**0.3**	**4**	**10.0**

Run #3	DH	Vmet	Tin	Tout	Vref	Tref	DP	Vac	Time
Start	0.5	924.368	85	82	522.976	80	0.2	3	12:15 PM
Stop	0.5	928.794	85	82	527.394	80	0.2	3	12:25 PM
Avg.	**0.5**	**4.426**	**85.0**	**82.0**	**4.418**	**80.0**	**0.2**	**3**	**10.0**

	Run #1	Run #2	Run #3	*Average*
Yref	1.006	1.006	1.006	***1.006***
Yd	1.002	1.005	1.009	***1.005***
DH@	1.81	1.87	1.75	***1.81***

Technician:

John Miller

AIR POLLUTION TESTING, INC.

THERMOCOUPLE AND DRY GAS METER CALIBRATION DATA

GAS METER ID :	M5-1
DATE :	10-22-99
BARO. PRESS. (MBAR) :	838

GAS METER CALIBRATION

Run #1	DH	Vmet	Tin	Tout	Vref	Tref	DP	Vac	Time
Start	1.0	342.632	62	60	228.487	66	0.24	5.0	02:55 PM
Stop	1.0	349.646	67	62	235.334	66	0.24	5.0	03:06 PM
Avg.	**1.0**	**7.014**	**64.5**	**61.0**	**6.847**	**66.0**	**0.24**	**5.0**	**11.0**

Run #2	DH	Vmet	Tin	Tout	Vref	Tref	DP	Vac	Time
Start	1.0	349.646	67	62	235.334	66	0.24	5.0	03:07 PM
Stop	1.0	356.022	69	63	241.554	66	0.24	5.0	03:17 PM
Avg.	**1.0**	**6.376**	**68.0**	**62.5**	**6.220**	**66.0**	**0.24**	**5.0**	**10.0**

Run #3	DH	Vmet	Tin	Tout	Vref	Tref	DP	VAC	Time
Start	1.0	356.022	69	63	241.554	66	0.24	5.0	03:18 PM
Stop	1.0	362.400	71	65	247.774	66	0.24	5.0	03:28 PM
Avg.	**1.0**	**6.378**	**70.0**	**64.0**	**6.220**	**66.0**	**0.24**	**5.0**	**10.0**

	Run #1	Run #2	Run #3	*Average*
Yref	1.006	1.006	1.006	***1.006***
Yd	0.973	0.977	0.980	***0.976***
DH@	1.74	1.74	1.74	***1.74***

THERMOCOUPLE CALIBRATION

Calibration Temperature Reading (F)	Pyrometer Reading (F)	Abs (Relative Difference) % (R)
60	56	0.8
250	250	0.0
400	398	0.2
Max Absolute Difference %		0.8

If max absolute difference is less than 1.5%, no adjustment is necessary per 40 CFR Part 60, App. A, Method 2, Sec 4.3

Technician:

Scott Patefield

AIR POLLUTION TESTING, INC.

THERMOCOUPLE AND DRY GAS METER CALIBRATION DATA

GAS METER ID :	M5-7 pre-test
DATE :	9-8-99
BARO. PRESS. (MBAR) :	838

GAS METER CALIBRATION

Run #1	DH	Vmet	Tin	Tout	Vref	Tref	DP	Vac	Time
Start	0.5	525.667	81	72	858.662	74	0.18	0.0	11:35 AM
Stop	0.5	532.955	81	72	866.000	74	0.18	0.0	11:51 AM
Avg.	**0.5**	**7.288**	**81.0**	**72.0**	**7.338**	**74.0**	**0.18**	**0.0**	**16.0**

Run #2	DH	Vmet	Tin	Tout	Vref	Tref	DP	Vac	Time
Start	1.0	508.588	71	70	841.384	74	0.27	0.0	11:11 AM
Stop	1.0	514.937	74	71	847.774	74	0.27	0.0	11:21 AM
Avg.	**1.0**	**6.349**	**72.5**	**70.5**	**6.390**	**74.0**	**0.27**	**0.0**	**10.0**

Run #3	DH	Vmet	Tin	Tout	Vref	Tref	DP	VAC	Time
Start	3.0	514.937	74	71	847.774	74	0.60	2.0	11:22 AM
Stop	3.0	525.667	81	72	858.662	74	0.60	2.0	11:32 AM
Avg.	**3.0**	**10.730**	**77.5**	**71.5**	**10.888**	**74.0**	**0.60**	**2.0**	**10.0**

	Run #1	Run #2	Run #3	*Average*
Yref	1.012	1.012	1.012	***1.012***
Yd	1.022	1.010	1.017	***1.016***
DH@	1.59	1.65	1.70	***1.65***

THERMOCOUPLE CALIBRATION

Calibration Temperature Reading (F)	Pyrometer Reading (F)	Relative Difference % (R)
65	64	-0.2
250	249	-0.1
500	499	-0.1
Max Absolute Difference %		0.2

If max absolute difference is less than 1.5%, no adjustment is necessary per 40 CFR Part 60, App. A, Method 2, Sec 4.3

Technician:

Scott Patefield

AIR POLLUTION TESTING, INC.

THERMOCOUPLE AND DRY GAS METER CALIBRATION DATA

GAS METER ID :	M5-7
DATE :	10-03-99
BARO. PRESS. (MBAR) :	838

GAS METER CALIBRATION

Run #1	DH	Vmet	Tin	Tout	Vref	Tref	DP	Vac	Time
Start	0.50'	739.236	65	65	211 409	66	0.14	21.0	02:00 PM
Stop	0.50	743.863	67	65	215.906	66	0.14	21.0	02:10 PM
Avg.	**0.50**	**4.627**	**66.0**	**65.0**	**4.497**	**66.0**	**0.14**	**21.00**	**10.0**

Run #2	DH	Vmet	Tin	Tout	Vref	Tref	DP	Vac	Time
Start	0.50	743.863	67	65	215.906	66	0.14	21.0	02:11 PM
Stop	0.50	748.469	69	66	220.392	66	0.14	21.0	02:21 PM
Avg.	**0.50**	**4.606**	**68.0**	**65.5**	**4.486**	**66.0**	**0.14**	**21.00**	**10.0**

Run #3	DH	Vmet	Tin	Tout	Vref	Tref	DP	VAC	Time
Start	0.50	748.469	69	66	220.392	66	0.14	21.0	02:22 PM
Stop	0.50	753.070	70	67	224.868	66	0.14	21.0	02:32 PM
Avg.	**0.50**	**4.601**	**69.5**	**66.5**	**4.476**	**66.0**	**0.14**	**21.00**	**10.0**

	Run #1	Run #2	Run #3	*Average*
Yref	1.006	1.006	1.006	***1.006***
Yd	0.975	0.980	0.981	***0.978***
DH@	1.65	1.65	1.66	***1.65***

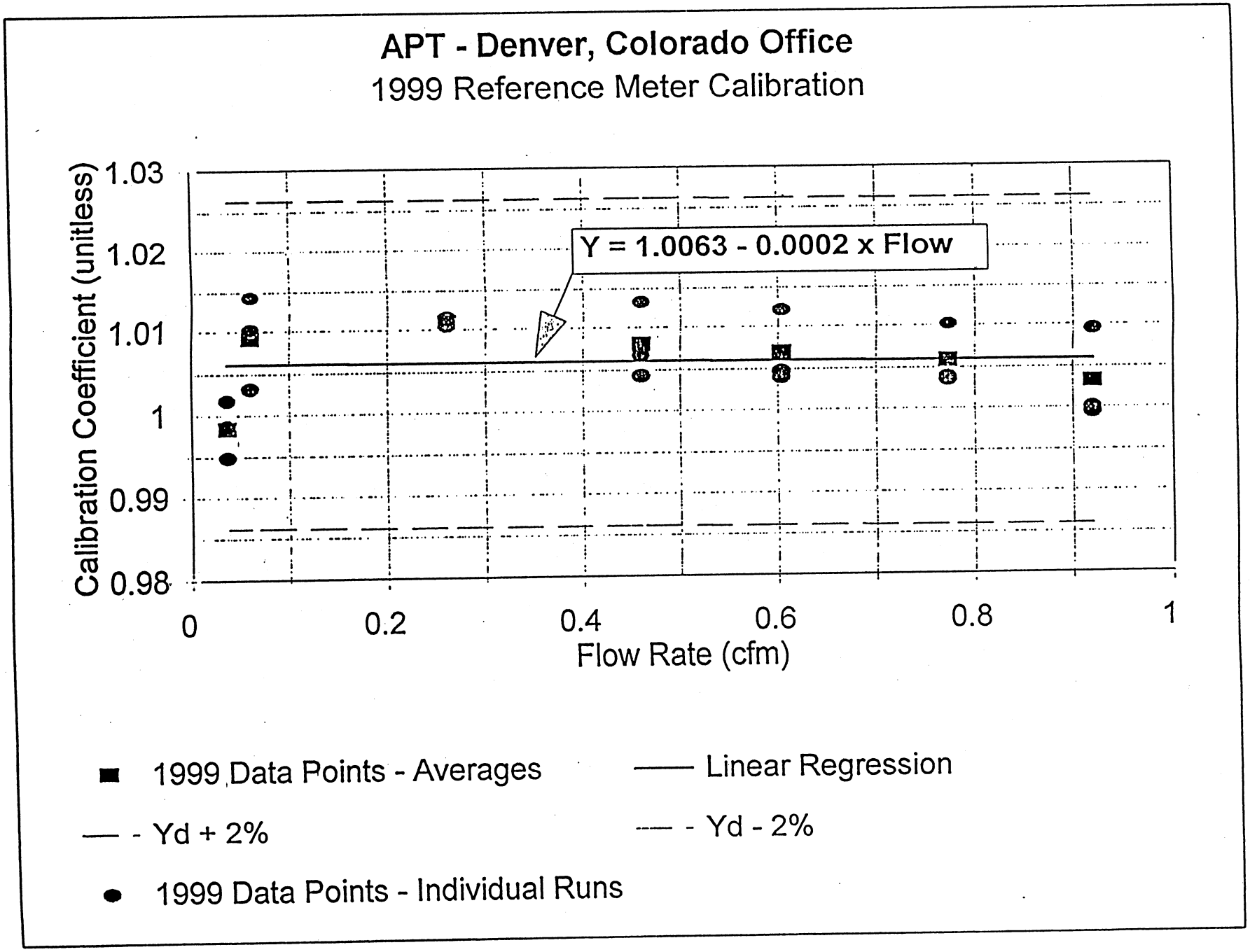
THERMOCOUPLE CALIBRATION

Calibration Temperature Reading (F)	Pyrometer Reading (F)	Relative Difference % (R)
80	79	-0.2
250	249	-0.1
1000	1000	0.0
Max Absolute Difference %		0.2

If max absolute difference is less than 1.5%, no adjustment is necessary per 40 CFR Part 60, App. A, Method 2, Sec 4.3

Technician :

John Miller


APT - Denver, Colorado Office
1999 Reference Meter Calibration
Y = 1.0063 - 0.0002 x Flow
Calibration Coefficient (unitless)
1.03
1.02
1.01
1
0.99
0.98
0
0.2
0.4
0.6
0.8
1
Flow Rate (cfm)
1999 Data Points - Averages
Linear Regression
- Yd + 2%
- Yd - 2%
1999 Data Points - Individual Runs

1999 Meter Calibration Data - Denver

flow (cfm)	Averages Yd	Individual Runs Yd	Yd	Yd	Yd Fit	Yd+2	Yd-2
0.92	1.003	1.000	1.000	1.010	1.006	1.026	0.986
0.77	1.006	1.004	1.004	1.010	1.006	1.026	0.986
0.60	1.007	1.004	1.005	1.012	1.006	1.026	0.986
0.46	1.008	1.007	1.004	1.013	1.006	1.026	0.986
0.26	1.011	1.011	1.012	1.011	1.006	1.026	0.986
0.06	1.009	1.010	1.003	1.014	1.006	1.026	0.986
0.04	0.998	0.999	0.995	1.002	1.006	1.026	0.986

Regression Output:

Constant		1.006268
Std Err of Y Est		0.004589
R Squared		0.00038
No. of Observations		7
Degrees of Freedom		5
X Coefficient(s)	-0.00024	
Std Err of Coef.	0.005455	

Dry Gas No : APT R.I. 839943				Meter Box ΔH@: NA						Meter Box Yd: 1.0070						Barometric Pressure:		
				Standard Meter Gas Volume			Meter Box Gas Volume (ft^3)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)					
Q	ΔH	ΔP	Y_{ds}	Initial	Final	V_{ds}	Initial	Final	V_d	Inlet	Outlet	T_{ds}	Inlet	T_o	T_d	Time	Y_d	H@
0.26	-0.60	0.00	1.0000	0.000	5.571	5.571	105.445	110.968	5.523	64.0	64.0	64.0	64.0	64.0	64.0	17.80	1.0105	NA
0.26	-0.60	0.00	1.0000	0.000	5.749	5.749	110.968	116.662	5.694	64.0	64.0	64.0	64.0	64.0	64.0	18.43	1.0115	NA
0.26	-0.60	0.00	1.0000	0.000	6.388	6.388	270.238	276.555	6.317	66.0	66.0	66.0	65.0	65.0	65.0	19.78	1.0111	NA
0.46	-1.20	0.00	1.0000	0.000	5.748	5.748	118.912	124.642	5.730	64.0	64.0	64.0	64.0	64.0	64.0	10.28	1.0068	NA
0.46	-1.20	0.00	1.0000	0.000	5.820	5.820	124.642	130.458	5.816	64.0	64.0	64.0	64.0	64.0	64.0	10.42	1.0043	NA
0.46	-1.20	0.00	1.0000	0.000	5.591	5.591	281.719	287.246	5.527	66.0	66.0	66.0	65.0	65.0	65.0	10.01	1.0133	NA
0.61	-1.80	0.00	1.0000	0.000	10.130	10.130	132.625	142.770	10.145	64.0	64.0	64.0	64.0	64.0	64.0	13.65	1.0040	NA
0.61	-1.80	0.00	1.0000	0.000	10.178	10.178	142.770	152.974	10.204	64.0	64.0	64.0	65.0	65.0	65.0	13.69	1.0048	NA
0.59	-1.80	0.00	1.0000	0.000	10.142	10.142	287.664	297.738	10.074	66.0	66.0	66.0	66.0	66.0	66.0	14.00	1.0122	NA
0.77	-2.60	0.00	1.0000	0.000	10.181	10.181	155.427	165.667	10.240	64.0	64.0	64.0	65.0	65.0	65.0	10.80	1.0040	NA
0.77	-2.60	0.00	1.0000	0.000	10.188	10.188	165.667	175.918	10.251	64.0	64.0	64.0	65.0	65.0	65.0	10.81	1.0036	NA
0.78	-2.60	0.00	1.0000	0.000	10.698	10.698	298.193	308.867	10.674	66.0	66.0	66.0	66.0	66.0	66.0	11.17	1.0102	NA
0.92	-3.20	0.00	1.0000	0.000	10.261	10.261	176.863	187.243	10.380	64.0	64.0	64.0	65.0	65.0	65.0	9.21	1.0001	NA
0.92	-3.20	0.00	1.0000	0.000	10.359	10.359	187.243	197.728	10.485	64.0	64.0	64.0	65.0	65.0	65.0	9.29	0.9995	NA
0.92	-3.20	0.00	1.0000	0.000	10.370	10.370	309.622	319.993	10.371	66.0	66.0	66.0	66.0	66.0	66.0	9.21	1.0096	NA
																AVERAGE	1.0070	NA

Nomenclature

P_b	Barometric Pressure (in. Hg)
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential (in. H_2O)
ΔP	Inlet Pressure Differential (in. H_2O)
V_d	Gas Meter Volume - Dry (ft^3)
V_{ds}	Standard Meter Volume - Dry (ft^3)
T_d	Average Meter Box Temperature (°F)
T_o	Outlet Meter Box Temperature (°F)
T_{ds}	Average Standard Meter Temperature (°F)
Y_d	Meter Correction Factor (unitless)
Y_{ds}	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential giving 0.75 cfm of air at 68°F and 29.92 in. Hg (in. H_2O)

Equations

$$Y_d = (Y_{ds})\left[\frac{V_{ds}}{V_d}\right]\left[\frac{T_d + 460}{T_{ds} + 460}\right]\left[\frac{P_b + \Delta P / 13.6}{P_b + \Delta H / 13.6}\right]$$

$$\Delta H@ = \frac{0.0319(\Delta H)}{P_b(T_o + 460)}\left[\frac{(T_{ds} + 460)\,\Theta}{(V_{ds})(Y_{ds})}\right]^2$$

$$Q = \frac{17.64\,(V_{ds})(P_b)}{(T_{ds} + 460)(\Theta)}$$

WET TEST METER CALIBRATION

Date: JAN. 14, 1999

Wet Test Meter Serial Number P-572

Calibrated By: Martin Hynes, M.E.

LOCATION: DENVER

Signature: Martin Hynes

Test Number	Manometer Reading* (H_2O")	Volume Metered (ft^3)	Volume Metered Vm (Lt)	Volume of Standard Vs (Lt)	Percent Error** (%)
1	0.2	1.0	28.316	28.296	0.07
2	0.2	1.0	28.316	28.239	0.27
3	0.2	1.0	28.316	28.278	0.14

*Manometer must be less than 0.4 in H2O

**Percent Error must be less than ±1.0

Percent Error=100(Vm-Vs)/Vs

Ambient conditions

Temp (^{0}F) 65

Barometric Pressure (in Hg) 24.85

Environmental Supply Company, Inc.
Quality Source Sampling Systems & Accessories

Wind Tunnel Pitot Calibration

S-type Pitot ID:	144	Date:	12/20/98
Standard Pitot ID:	001	Personnel:	B. Allen
Cp(std):	0.99	Cp(actual):	0.82

A-SIDE

delta Pstd	delta Ps	Cp(s)	Deviation
(in. H20)	(in. H20)		
0.470	0.680	0.823	0.004
0.475	0.680	0.827	0.000
0.475	0.675	0.830	0.003
	AVERAGE	0.827	0.003
		Std deviation	0.004

B-SIDE

delta Pstd	delta Ps	Cp(s)	Deviation
(in. H20)	(in. H20)		
0.470	0.710	0.805	0.003
0.475	0.705	0.813	0.004
0.470	0.705	0.808	0.000
	AVERAGE	0.809	0.003
		Std deviation	0.004

Cp(s) = Cp(std)*SQRT[delta P(std)/delta P(s)]

Cp(A) - Cp(B) = 0.02 {must be <0.01}

Deviation = Cp(s) - Cp {must be <0.01}

Standard deviation of the deviations must be less than 0.02 for both

2142 E. Geer Street, Durham, North Carolina 27704 800-STACKS-5 (782-2575) 919-956-9688 FAX: 919-682-0333

APT

Air Pollution Testing, Inc.
S-type Pitot Tube Geometric Calibration Data

All variables are as defined in *Code of Federal Regulations, Title 40, Part 60, Appendix A, Method 2*.

Date	10-4-99
Pitot ID	P-144
Inspector	John Miller

α^1 =	0°	$\alpha^1 \leq 10°$
α^2 =	0°	$\alpha^2 \leq 10°$
β^1 =	0°	$\beta^1 \leq 5°$
β^2 =	0°	$\beta^2 \leq 5°$
z =	0.00"	$z \leq 0.125"$
w =	0.00"	$w \leq 0.031"$

Pitot Constant = 0.82

Environmental Supply Company, Inc.
Quality Source Sampling Systems & Accessories

Wind Tunnel Pitot Calibration

S-type Pitot ID:	P-177	Date:	4/9/99
Standard Pitot ID:	001	Personnel:	BFA
Cp(std):	0.99	Cp(actual):	0.84

A-SIDE

delta Pstd	delta Ps	Cp(s)	Deviation
(in. H20)	(in. H20)		
0.465	0.635	0.847	0.002
0.460	0.632	0.845	0.000
0.460	0.635	0.843	0.002
	AVERAGE	0.845	0.002
		Std deviation	0.002

B-SIDE

delta Pstd	delta Ps	Cp(s)	Deviation
(in. H20)	(in. H20)		
0.460	0.635	0.843	0.001
0.460	0.635	0.843	0.001
0.460	0.630	0.846	0.002
	AVERAGE	0.844	0.001
		Std deviation	0.002

Cp(s) = Cp(std)*SQRT[delta P(std)/delta P(s)]

Cp(A) - Cp(B) = 0.00 {must be <0.01}

Deviation = Cp(s) - Cp {must be <0.01}

Standard deviation of the deviations must be less than 0.02 for both sides.

2142 I Geer Street, Durham, North Carolina 27704 800-STACKS-5 (782-2575) 919-956-9688 FAX: 919-682-0[illegible]

APT

Air Pollution Testing, Inc.
S-type Pitot Tube Geometric Calibration Data

All variables are as defined in *Code of Federal Regulations, Title 40, Part 60, Appendix A, Method 2*.

Date	10-4-99
Pitot ID	P-177
Inspector	John Miller

$\alpha^1 =$	0°	$\alpha^1 \leq 10°$
$\alpha^2 =$	0°	$\alpha^2 \leq 10°$
$\beta^1 =$	0°	$\beta^1 \leq 5°$
$\beta^2 =$	0°	$\beta^2 \leq 5°$
z =	0.00"	z ≤ 0.125"
w =	0.00"	w ≤ 0.031"

Pitot Constant = 0.84

4

Appendix 4

Operating Data and Coal Analysis Results

Enertec NTDAHS®
Average Values Report
09/30/99 12:30

Company: PacifiCorp
Plant: 48 Wyodak Road
City/St: Gillette, WY 82718
Source: WYODAK_1

Period Start: 09/30/99 08:10
Period End: 09/30/99 11:09
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start	Average Load MW	Average CO2 E %	Average O2 Dry %	Average Stk Temp deg F	Average Moisture %	Average Barometer psi	Average Flow kcfm	Average Flow Corr kcfm
09/30/99 08:10	382.9	11.6	8.2	188.5	12.2	12.55	1890	1314
09/30/99 08:11	382.7	11.6	8.2	188.5	12.2	12.54	1890	1314
09/30/99 08:12	382.5	11.5	8.2	188.5	12.2	12.54	1890	1314
09/30/99 08:13	382.3	11.5	8.3	188.5	13.3	12.55	1890	1314
09/30/99 08:14	382.2	11.5	8.3	188.5	13.3	12.55	1890	1314
09/30/99 08:15	383.4	11.5	8.2	187.6	12.2	12.55	1878	1307
09/30/99 08:16	385.0	11.6	8.2	185.7	12.6	12.55	1871	1306
09/30/99 08:17	385.5	11.6	8.2	185.8	13.4	12.55	1870	1305
09/30/99 08:18	384.2	11.6	8.2	186.4	13.4	12.55	1868	1303
09/30/99 08:19	383.6	11.5	8.1	186.3	11.1	12.55	1877	1309
09/30/99 08:20	383.9	11.5	8.1	186.0	11.8	12.55	1894	1321
09/30/99 08:21	383.8	11.6	8.2	186.0	13.4	12.55	1894	1322
09/30/99 08:22	383.7	11.5	8.3	185.7	14.5	12.55	1875	1309
09/30/99 08:23	383.2	11.5	8.3	185.6	14.5	12.55	1875	1309
09/30/99 08:24	382.6	11.6	8.3	185.3	14.5	12.55	1881	1314
09/30/99 08:25	382.1	11.5	8.3	185.3	14.5	12.55	1882	1315
09/30/99 08:26	382.0	11.5	8.3	185.2	14.1	12.55	1879	1312
09/30/99 08:27	382.0	11.5	8.2	185.1	13.4	12.55	1876	1311
09/30/99 08:28	382.4	11.5	8.2	185.1	12.2	12.55	1877	1312
09/30/99 08:29	383.5	11.6	8.2	185.0	12.8	12.55	1878	1313
09/30/99 08:30	384.0	11.6	8.2	184.9	13.4	12.55	1878	1312
09/30/99 08:31	383.4	11.5	8.3	184.4	14.5	12.55	1875	1312
09/30/99 08:32	382.4	11.5	8.3	184.5	13.3	12.55	1872	1310
09/30/99 08:33	381.6	11.5	8.3	184.7	13.3	12.55	1858	1299
09/30/99 08:34	381.6	11.4	8.4	184.7	14.3	12.55	1859	1300
09/30/99 08:35	381.9	11.5	8.3	183.8	13.6	12.55	1864	1305
09/30/99 08:36	382.6	11.5	8.3	183.8	13.3	12.55	1864	1305
09/30/99 08:37	382.6	11.5	8.3	183.6	13.3	12.55	1860	1303
09/30/99 08:38	381.4	11.5	8.4	183.5	14.3	12.55	1860	1303
09/30/99 08:39	380.8	11.4	8.4	183.5	14.3	12.55	1868	1309
09/30/99 08:40	380.5	11.4	8.4	183.5	14.3	12.55	1870	1310
09/30/99 08:41	380.7	11.5	8.4	183.5	14.3	12.55	1869	1309
09/30/99 08:42	381.1	11.5	8.4	183.5	14.3	12.55	1868	1309
09/30/99 08:43	381.5	11.5	8.4	183.5	13.8	12.55	1875	1314
09/30/99 08:44	381.4	11.5	8.3	183.5	13.3	12.55	1887	1322
09/30/99 08:45	380.6	11.4	8.3	183.4	13.3	12.55	1882	1319
09/30/99 08:46	380.7	11.4	8.3	182.8	12.6	12.55	1873	1314
09/30/99 08:47	381.8	11.5	8.3	182.8	13.6	12.55	1874	1314
09/30/99 08:48	382.8	11.5	8.3	183.2	13.3	12.55	1876	1316
09/30/99 08:49	382.3	11.6	8.3	183.2	13.7	12.55	1876	1315
09/30/99 08:50	381.8	11.6	8.3	182.8	14.2	12.55	1881	1319
09/30/99 08:51	381.3	11.6	8.3	182.9	14.5	12.55	1881	1319
09/30/99 08:52	381.5	11.5	8.3	183.1	14.5	12.55	1870	1311
09/30/99 08:53	382.4	11.6	8.3	183.2	14.5	12.55	1868	1309
09/30/99 08:54	382.1	11.7	8.3	182.5	14.3	12.55	1858	1303
09/30/99 08:55	381.2	11.6	8.3	181.8	13.3	12.55	1853	1302
09/30/99 08:56	381.3	11.5	8.3	181.9	13.5	12.54	1861	1307
09/30/99 08:57	381.6	11.6	8.2	182.3	12.2	12.55	1868	1311
09/30/99 08:58	381.6	11.6	8.2	182.2	12.2	12.54	1865	1308
09/30/99 08:59	381.0	11.5	8.2	181.9	12.2	12.54	1858	1305
09/30/99 09:00	380.6	11.5	8.3	181.9	13.1	12.55	1860	1306
09/30/99 09:01	381.4	11.6	8.3	181.6	13.3	12.55	1864	1310
09/30/99 09:02	382.1	11.6	8.3	181.6	14.3	12.55	1864	1309
09/30/99 09:03	382.8	11.6	8.3	181.4	13.3	12.54	1866	1311
09/30/99 09:04	383.0	11.7	8.1	181.3	11.6	12.54	1866	1311
09/30/99 09:05	383.0	11.7	8.2	181.4	11.6	12.55	1862	1309
09/30/99 09:06	382.3	11.7	8.2	181.5	12.6	12.54	1859	1306
09/30/99 09:07	382.2	11.6	8.2	181.7	12.2	12.55	1879	1320
09/30/99 09:08	381.7	11.6	8.3	181.8	13.3	12.54	1883	1322
09/30/99 09:09	381.1	11.6	8.3	181.8	13.3	12.54	1872	1314
09/30/99 09:10	381.2	11.5	8.3	182.1	13.3	12.54	1861	1307
09/30/99 09:11	382.3	11.6	8.3	182.1	13.3	12.54	1861	1306

09/30/99 09:12	382.3	11.6	8.3	182.1	13.3	12.54	1861	1307
09/30/99 09:13	381.8	11.6	8.3	182.1	13.3	12.54	1861	1307
09/30/99 09:14	381.6	11.6	8.3	181.6	13.3	12.55	1853	1302
09/30/99 09:15	380.9	11.6	8.3	181.3	13.3	12.55	1853	1302
09/30/99 09:16	381.5	11.6	8.3	181.4	13.3	12.55	1863	1309
09/30/99 09:17	382.3	11.6	8.3	181.7	13.0	12.54	1872	1314
09/30/99 09:18	382.8	11.6	8.2	181.6	12.2	12.55	1874	1317
09/30/99 09:19	382.4	11.7	8.2	181.5	12.5	12.55	1875	1317
09/30/99 09:20	381.8	11.6	8.2	181.5	12.2	12.54	1871	1315
09/30/99 09:21	381.6	11.6	8.3	181.5	13.3	12.54	1864	1310
09/30/99 09:22	381.7	11.6	8.3	181.5	13.3	12.54	1866	1311
09/30/99 09:23	381.9	11.6	8.3	181.6	13.3	12.55	1875	1318
09/30/99 09:24	382.6	11.6	8.3	181.6	13.3	12.54	1874	1316
09/30/99 09:25	382.3	11.7	8.2	181.5	12.8	12.55	1872	1316
09/30/99 09:26	381.4	11.6	8.3	181.5	13.3	12.54	1871	1315
09/30/99 09:27	380.9	11.6	8.3	181.8	13.3	12.55	1869	1313
09/30/99 09:28	381.6	11.6	8.3	181.8	13.3	12.55	1871	1314
09/30/99 09:29	382.4	11.7	8.3	182.1	13.3	12.54	1880	1320
09/30/99 09:30	382.8	11.7	8.2	182.1	12.2	12.54	1881	1320
09/30/99 09:31	382.9	11.7	8.3	181.4	13.3	12.55	1875	1317
09/30/99 09:32	382.3	11.6	8.3	181.3	13.3	12.55	1874	1317
09/30/99 09:33	382.4	11.6	8.3	182.0	13.3	12.55	1877	1318
09/30/99 09:34	382.0	11.7	8.3	182.4	12.8	12.55	1877	1317
09/30/99 09:35	380.6	11.7	8.2	182.2	12.8	12.55	1867	1311
09/30/99 09:36	380.3	11.7	8.2	181.9	13.1	12.55	1862	1307
09/30/99 09:37	381.5	11.6	8.2	181.9	12.6	12.54	1874	1316
09/30/99 09:38	382.4	11.6	8.3	181.9	13.3	12.55	1880	1320
09/30/99 09:39	382.7	11.7	8.2	181.8	12.2	12.55	1880	1320
09/30/99 09:40	382.6	11.7	8.2	181.0	12.8	12.54	1881	1323
09/30/99 09:41	381.6	11.7	8.2	180.9	12.4	12.54	1873	1317
09/30/99 09:42	381.9	11.7	8.2	180.6	13.4	12.54	1857	1306
09/30/99 09:43	382.8	11.7	8.2	180.6	13.4	12.54	1861	1309
09/30/99 09:44	383.1	11.7	8.2	181.0	13.4	12.55	1883	1324
09/30/99 09:45	383.2	11.7	8.2	180.9	13.4	12.54	1880	1321
09/30/99 09:46	384.0	11.8	8.2	180.7	13.4	12.54	1864	1311
09/30/99 09:47	384.0	11.8	8.2	180.6	13.2	12.54	1864	1311
09/30/99 09:48	384.1	11.8	8.1	180.9	12.3	12.54	1865	1311
09/30/99 09:49	382.9	11.7	8.1	181.0	11.3	12.54	1866	1312
09/30/99 09:50	382.8	11.7	8.1	180.9	11.1	12.54	1857	1305
09/30/99 09:51	383.5	11.8	8.1	180.9	11.1	12.54	1856	1305
09/30/99 09:52	384.2	11.8	8.1	180.8	11.1	12.54	1864	1311
09/30/99 09:53	384.5	11.8	8.1	180.7	12.7	12.54	1867	1313
09/30/99 09:54	383.9	11.8	8.1	180.7	12.3	12.55	1872	1317
09/30/99 09:55	383.1	11.7	8.2	180.7	14.6	12.55	1873	1318
09/30/99 09:56	382.7	11.7	8.3	180.5	15.4	12.55	1858	1308
09/30/99 09:57	383.7	11.7	8.2	180.5	13.4	12.54	1855	1306
09/30/99 09:58	384.1	11.8	8.2	180.7	13.4	12.55	1868	1314
09/30/99 09:59	384.5	11.8	8.1	181.0	12.3	12.54	1875	1318
09/30/99 10:00	385.1	11.8	8.1	181.0	12.3	12.55	1875	1318
09/30/99 10:01	384.8	11.7	8.1	181.0	11.1	12.55	1875	1318
09/30/99 10:02	383.9	11.7	8.1	180.9	11.7	12.55	1874	1317
09/30/99 10:03	383.1	11.7	8.1	180.7	12.3	12.54	1866	1312
09/30/99 10:04	382.6	11.7	8.3	180.7	14.1	12.54	1866	1312
09/30/99 10:05	383.1	11.7	8.3	180.9	14.5	12.55	1868	1313
09/30/99 10:06	384.2	11.8	8.3	180.9	14.3	12.54	1867	1313
09/30/99 10:07	384.2	11.8	8.3	180.7	14.5	12.54	1859	1307
09/30/99 10:08	383.3	11.8	8.2	180.6	13.4	12.54	1858	1307
09/30/99 10:09	382.6	11.8	8.1	180.9	12.3	12.54	1870	1315
09/30/99 10:10	382.1	11.7	8.1	181.1	11.5	12.54	1875	1319
09/30/99 10:11	381.3	11.7	8.1	181.0	11.1	12.54	1875	1318
09/30/99 10:12	380.9	11.7	8.3	181.0	13.3	12.54	1875	1318
09/30/99 10:13	382.2	11.7	8.3	181.0	13.3	12.55	1875	1318
09/30/99 10:14	383.3	11.7	8.3	181.0	14.5	12.54	1875	1318
09/30/99 10:15	382.9	11.7	8.3	181.0	14.3	12.54	1864	1310
09/30/99 10:16	382.0	11.7	8.3	181.0	14.5	12.54	1861	1308
09/30/99 10:17	381.5	11.7	8.3	181.1	14.5	12.54	1862	1309
09/30/99 10:18	381.7	11.6	8.3	181.2	14.5	12.54	1863	1309
09/30/99 10:19	382.0	11.7	8.3	181.4	13.3	12.54	1867	1311
09/30/99 10:20	382.7	11.7	8.3	181.9	13.3	12.54	1875	1316
09/30/99 10:21	382.1	11.7	8.3	181.9	13.1	12.54	1875	1316
09/30/99 10:22	380.7	11.6	8.3	181.3	13.3	12.54	1853	1302
09/30/99 10:23	380.2	11.6	8.3	181.3	13.3	12.54	1853	1302
09/30/99 10:24	380.9	11.6	8.3	181.4	13.3	12.54	1870	1314
09/30/99 10:25	381.6	11.7	8.3	181.5	12.8	12.54	1870	1313
09/30/99 10:26	381.3	11.7	8.3	181.1	12.6	12.54	1859	1306
09/30/99 10:27	380.4	11.7	8.3	180.6	13.3	12.54	1848	1300
09/30/99 10:28	380.7	11.6	8.3	180.5	13.3	12.54	1851	1302

09/30/99 10:29	380.5	11.7	8.3	180.1	13.3	12.54	1853	1304
09/30/99 10:30	380.5	11.7	8.3	180.1	13.1	12.54	1855	1305
09/30/99 10:31	381.1	11.7	8.3	181.0	13.3	12.54	1864	1310
09/30/99 10:32	381.1	11.7	8.3	181.0	13.3	12.54	1862	1309
09/30/99 10:33	380.8	11.7	8.3	180.7	13.3	12.54	1851	1301
09/30/99 10:34	380.4	11.6	8.3	180.7	13.6	12.54	1851	1301
09/30/99 10:35	380.2	11.6	8.3	180.1	13.3	12.54	1854	1304
09/30/99 10:36	380.4	11.7	8.3	179.8	13.3	12.54	1855	1306
09/30/99 10:37	380.7	11.6	8.3	180.3	13.3	12.54	1853	1304
09/30/99 10:38	381.2	11.7	8.3	180.4	12.9	12.54	1852	1303
09/30/99 10:39	381.5	11.7	8.3	180.5	12.2	12.54	1855	1305
09/30/99 10:40	381.1	11.7	8.3	180.6	13.3	12.54	1858	1307
09/30/99 10:41	380.7	11.6	8.3	180.6	13.3	12.54	1863	[illegible]
09/30/99 10:42	380.7	11.6	8.4	180.6	13.6	12.54	1868	1314
09/30/99 10:43	381.3	11.7	8.3	180.6	13.3	12.54	1867	1313
09/30/99 10:44	381.5	11.7	8.3	180.7	13.7	12.54	1858	1307
09/30/99 10:45	381.3	11.7	8.3	180.6	13.6	12.54	1855	1305
09/30/99 10:46	381.1	11.7	8.3	180.3	13.3	12.53	1842	1296
09/30/99 10:47	380.8	11.7	8.3	180.3	13.3	12.54	1842	1296
09/30/99 10:48	380.4	11.6	8.3	181.1	13.3	12.54	1848	1298
09/30/99 10:49	380.4	11.6	8.3	181.3	13.3	12.53	1848	1297
09/30/99 10:50	380.6	11.7	8.3	180.5	13.3	12.53	1878	1320
09/30/99 10:51	381.6	11.6	8.3	180.3	13.3	12.53	1878	1320
09/30/99 10:52	382.2	11.6	8.3	180.4	13.3	12.53	1874	1317
09/30/99 10:53	382.3	11.6	8.3	180.7	13.3	12.53	1866	1311
09/30/99 10:54	382.4	11.7	8.3	180.6	13.3	12.53	1862	1309
09/30/99 10:55	382.1	11.7	8.3	180.4	13.1	12.54	1859	1308
09/30/99 10:56	381.4	11.7	8.2	180.4	12.2	12.53	1861	1309
09/30/99 10:57	382.1	11.7	8.2	180.1	12.7	12.53	1868	1315
09/30/99 10:58	383.2	11.8	8.2	180.1	12.8	12.53	1868	1314
09/30/99 10:59	383.1	11.8	8.2	180.9	13.4	12.53	1869	1313
09/30/99 11:00	382.8	11.7	8.3	180.9	13.4	12.53	1869	1313
09/30/99 11:01	382.9	11.7	8.2	180.6	13.4	12.53	1856	1304
09/30/99 11:02	383.0	11.8	8.2	180.4	13.4	12.54	1853	1304
09/30/99 11:03	383.2	11.8	8.2	181.0	13.4	12.53	1869	1313
09/30/99 11:04	383.2	11.8	8.2	181.3	13.7	12.53	1877	1317
09/30/99 11:05	383.6	11.8	8.2	181.2	14.0	12.53	1881	1322
09/30/99 11:06	384.0	11.7	8.2	180.9	12.7	12.53	1887	1325
09/30/99 11:07	383.5	11.7	8.3	181.2	13.3	12.53	1883	1322
09/30/99 11:08	383.0	11.7	8.2	181.6	12.4	12.53	1875	1315
Final Average*	**382.2**	**11.6**	**8.3**	**182.1**	**13.2**	**12.54**	**1868**	**1311**
Maximum*	385.5	11.8	8.4	188.5	15.4	12.55	1894	1325
Minimum*	380.2	11.4	8.1	179.8	11.1	12.53	1842	1296

*Does not include Invalid Averaging Periods ("N/A")

Enertec NTDAHS®
Average Values Report
10/04/99 11:16

Company: PacifiCorp
Plant: 48 Wyodak Road
City/St: Gillette, WY 82718
Source: WYODAK_1

Period Start: 09/30/99 12:13
Period End: 09/30/99 14:57
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start	Average Load MW	Average CO2 E %	Average O2 Dry %	Average Stk Temp deg F	Average Moisture %	Average Barometer psi	Average Flow kcfm	Average Flow Corr kcfm
09/30/99 12:13	385.9	11.8	8.2	180.9	13.4	12.53	1869	1312
09/30/99 12:14	386.1	11.8	8.2	180.9	13.7	12.53	1869	1313
09/30/99 12:15	385.7	11.7	8.2	180.8	13.4	12.52	1878	1318
09/30/99 12:16	385.8	11.8	8.2	180.7	13.4	12.52	1886	1325
09/30/99 12:17	385.9	11.9	8.2	180.8	15.3	12.52	1882	1322
09/30/99 12:18	386.2	11.8	8.2	181.2	14.1	12.52	1861	1306
09/30/99 12:19	386.6	11.8	8.1	181.1	13.6	12.52	1861	1305
09/30/99 12:20	387.0	11.8	8.1	180.3	13.6	12.53	1876	1318
09/30/99 12:21	386.3	11.8	8.0	180.3	12.5	12.52	1876	1318
09/30/99 12:22	386.2	11.8	8.0	180.5	11.7	12.52	1868	1312
09/30/99 12:23	386.6	11.8	8.0	180.6	11.3	12.52	1864	1309
09/30/99 12:24	387.0	11.8	8.1	180.9	12.3	12.52	1859	1305
09/30/99 12:25	387.4	11.8	8.1	180.9	12.3	12.52	1859	1305
09/30/99 12:26	386.6	11.8	8.1	180.8	13.3	12.52	1868	1312
09/30/99 12:27	386.2	11.8	8.1	180.7	13.6	12.52	1873	1315
09/30/99 12:28	386.8	11.8	8.1	180.7	13.6	12.52	1874	1316
09/30/99 12:29	386.9	11.8	8.1	180.6	13.6	12.52	1874	1316
09/30/99 12:30	387.0	11.7	8.1	180.6	11.9	12.52	1874	1316
09/30/99 12:31	386.4	11.7	8.1	181.5	12.3	12.52	1875	1315
09/30/99 12:32	385.9	11.7	8.3	181.6	14.1	12.52	1874	1314
09/30/99 12:33	385.9	11.7	8.3	182.1	14.2	12.52	1871	1311
09/30/99 12:34	386.0	11.8	8.2	182.1	13.4	12.52	1872	1311
09/30/99 12:35	385.1	11.7	8.2	181.5	13.2	12.52	1879	1318
09/30/99 12:36	385.0	11.7	8.3	181.3	13.3	12.52	1880	1319
09/30/99 12:37	385.8	11.7	8.3	181.9	13.3	12.52	1878	1316
09/30/99 12:38	386.2	11.7	8.3	182.3	13.3	12.52	1877	1315
09/30/99 12:39	386.4	11.7	8.3	181.7	13.5	12.52	1876	1315
09/30/99 12:40	386.8	11.7	8.3	181.0	14.5	12.52	1875	1316
09/30/99 12:41	387.8	11.8	8.2	181.2	12.9	12.52	1876	1316
09/30/99 12:42	386.7	11.7	8.1	181.3	12.3	12.52	1877	1316
09/30/99 12:43	386.3	11.7	8.1	181.3	11.3	12.52	1878	1317
09/30/99 12:44	386.3	11.7	8.1	181.3	11.1	12.52	1880	1319
09/30/99 12:45	386.4	11.7	8.2	181.1	12.2	12.52	1881	1320
09/30/99 12:46	387.0	11.7	8.2	180.1	12.2	12.52	1883	1323
09/30/99 12:47	387.6	11.7	8.2	180.1	13.4	12.52	1883	1323
09/30/99 12:48	387.6	11.7	8.2	181.0	13.4	12.51	1876	1316
09/30/99 12:49	387.1	11.7	8.2	181.3	13.4	12.52	1875	1315
09/30/99 12:50	387.3	11.7	8.2	181.8	13.4	12.52	1887	1322
09/30/99 12:51	387.7	11.7	8.3	181.9	14.5	12.51	1887	1321
09/30/99 12:52	387.8	11.8	8.3	181.6	14.3	12.52	1883	1319
09/30/99 12:53	387.6	11.7	8.2	181.3	13.4	12.51	1878	1316
09/30/99 12:54	387.3	11.7	8.2	181.4	13.4	12.51	1870	1311
09/30/99 12:55	387.1	11.6	8.2	181.5	13.4	12.51	1866	1307
09/30/99 12:56	386.9	11.7	8.2	181.3	13.4	12.51	1873	1312
09/30/99 12:57	386.7	11.8	8.2	181.0	14.6	12.51	1880	1318
09/30/99 12:58	386.5	11.7	8.2	181.0	13.2	12.51	1875	1315
09/30/99 12:59	386.6	11.7	8.2	180.9	13.4	12.51	1871	1312
09/30/99 13:00	386.7	11.7	8.2	180.9	13.1	12.51	1873	1313
09/30/99 13:01	386.7	11.7	8.2	181.2	13.4	12.51	1880	1318
09/30/99 13:02	387.0	11.7	8.2	181.1	12.8	12.51	1882	1319
09/30/99 13:03	387.1	11.8	8.1	181.9	11.5	12.51	1891	1324
09/30/99 13:04	387.7	11.8	8.1	181.9	12.7	12.51	1891	1324
09/30/99 13:05	388.4	11.8	8.1	181.3	12.3	12.51	1869	1310
09/30/99 13:06	388.8	11.7	8.2	181.0	13.4	12.51	1864	1307
09/30/99 13:07	389.2	11.8	8.1	181.6	12.1	12.51	1887	1322
09/30/99 13:08	390.0	11.8	8.0	181.9	12.5	12.51	1891	1324
09/30/99 13:09	390.3	11.8	8.0	181.7	12.5	12.51	1879	1316
09/30/99 13:10	390.2	11.8	8.1	181.3	13.6	12.51	1866	1307
09/30/99 13:11	389.1	11.8	8.1	181.3	13.9	12.51	1866	1308
09/30/99 13:12	388.4	11.8	8.2	181.3	14.6	12.51	1866	1307
09/30/99 13:13	389.5	11.9	8.2	181.3	16.5	12.51	1866	1308
09/30/99 13:14	390.6	11.9	8.2	181.8	15.9	12.50	1883	1318

09/30/99 13:15	390.0	11.9	8.0	182.3	14.1	12.51	1886	1319
09/30/99 13:16	390.3	11.8	8.0	182.2	13.7	12.50	1886	1319
09/30/99 13:17	389.6	11.8	8.0	181.9	12.5	12.50	1885	1319
09/30/99 13:18	390.3	11.8	8.0	182.0	12.9	12.50	1888	1321
09/30/99 13:19	390.8	11.8	8.0	182.3	13.7	12.50	1893	1324
09/30/99 13:20	391.4	11.9	8.0	182.3	13.4	12.50	1893	1324
09/30/99 13:21	391.4	11.9	7.9	182.4	12.7	12.50	1882	1316
09/30/99 13:22	390.8	11.9	7.9	182.4	12.7	12.50	1882	1316
09/30/99 13:23	390.3	11.8	8.1	182.3	14.8	12.50	1893	1324
09/30/99 13:24	390.3	11.9	8.0	182.2	14.0	12.50	1893	1324
09/30/99 13:25	390.1	11.9	8.0	181.9	12.5	12.50	1867	1307
09/30/99 13:26	390.0	11.8	8.0	181.8	12.5	12.50	1862	1303
09/30/99 13:27	389.8	11.8	8.1	181.6	13.6	12.50	1872	1311
09/30/99 13:28	389.9	11.8	8.0	181.5	12.5	12.50	1874	1312
09/30/99 13:29	389.8	11.8	8.1	181.8	13.6	12.50	1880	1315
09/30/99 13:30	388.8	11.8	8.1	182.1	13.6	12.50	1882	1317
09/30/99 13:31	388.8	11.8	8.1	181.6	13.6	12.50	1874	1312
09/30/99 13:32	389.1	11.8	8.1	181.3	13.2	12.50	1870	1309
09/30/99 13:33	389.3	11.8	8.1	181.4	13.6	12.50	1873	1311
09/30/99 13:34	388.3	11.8	8.0	181.6	11.6	12.50	1875	1312
09/30/99 13:35	388.8	11.7	8.0	181.6	11.3	12.50	1875	1312
09/30/99 13:36	389.1	11.8	8.1	181.6	11.1	12.50	1875	1312
09/30/99 13:37	389.0	11.8	8.1	181.6	11.1	12.50	1875	1312
09/30/99 13:38	388.9	11.7	8.1	181.3	12.3	12.50	1874	1312
09/30/99 13:39	389.2	11.7	8.1	181.3	12.3	12.50	1874	1312
09/30/99 13:40	388.0	11.7	8.2	181.8	13.4	12.50	1873	1311
09/30/99 13:41	388.6	11.8	8.1	181.8	12.7	12.50	1873	1311
09/30/99 13:42	388.1	11.8	8.1	181.6	11.1	12.50	1879	1315
09/30/99 13:43	387.4	11.6	8.1	181.5	11.3	12.50	1879	1315
09/30/99 13:44	386.8	11.7	8.1	181.5	12.3	12.50	1872	1310
09/30/99 13:45	386.9	11.7	8.3	181.5	14.0	12.50	1872	1310
09/30/99 13:46	387.8	11.7	8.2	181.7	13.4	12.50	1881	1316
09/30/99 13:47	388.2	11.7	8.2	181.9	12.9	12.50	1885	1319
09/30/99 13:48	387.4	11.7	8.2	181.7	12.2	12.50	1875	1312
09/30/99 13:49	387.2	11.7	8.3	181.5	12.8	12.50	1872	1310
09/30/99 13:50	386.7	11.7	8.3	181.4	13.3	12.50	1874	1312
09/30/99 13:51	387.0	11.7	8.2	181.3	12.5	12.50	1876	1314
09/30/99 13:52	387.3	11.7	8.2	181.2	13.4	12.50	1865	1306
09/30/99 13:53	388.0	11.8	8.1	181.5	12.3	12.50	1854	1298
09/30/99 13:54	387.7	11.8	8.1	181.5	12.3	12.50	1855	1299
09/30/99 13:55	387.5	11.7	8.1	181.8	11.1	12.50	1857	1299
09/30/99 13:56	386.5	11.7	8.1	181.8	11.3	12.50	1859	1301
09/30/99 13:57	385.6	11.7	8.3	181.6	13.3	12.50	1875	1312
09/30/99 13:58	386.5	11.7	8.3	181.6	13.1	12.50	1875	1312
09/30/99 13:59	387.9	11.7	8.2	182.5	12.2	12.50	1884	1317
09/30/99 14:00	388.3	11.7	8.2	182.7	13.4	12.50	1886	1317
09/30/99 14:01	387.5	11.7	8.2	182.8	13.4	12.50	1880	1313
09/30/99 14:02	386.6	11.6	8.3	182.8	14.1	12.49	1876	1310
09/30/99 14:03	386.2	11.6	8.4	182.8	15.5	12.49	1874	1308
09/30/99 14:04	386.2	11.7	8.4	182.7	15.3	12.50	1872	1307
09/30/99 14:05	386.0	11.7	8.4	182.8	15.5	12.49	1874	1309
09/30/99 14:06	386.9	11.7	8.3	183.0	14.2	12.49	1876	1309
09/30/99 14:07	387.5	11.7	8.2	183.0	13.4	12.49	1877	1310
09/30/99 14:08	387.4	11.7	8.2	183.2	12.8	12.49	1866	1302
09/30/99 14:09	386.7	11.7	8.2	183.2	12.6	12.49	1866	1302
09/30/99 14:10	386.0	11.6	8.3	182.8	13.3	12.49	1880	1312
09/30/99 14:11	387.1	11.7	8.2	182.8	12.9	12.49	1880	1312
09/30/99 14:12	387.9	11.8	8.2	182.8	14.0	12.49	1880	1312
09/30/99 14:13	387.7	11.7	8.2	182.8	13.4	12.49	1880	1313
09/30/99 14:14	387.2	11.7	8.2	182.8	13.4	12.49	1880	1312
09/30/99 14:15	386.9	11.7	8.2	183.2	13.8	12.49	1883	1314
09/30/99 14:16	387.3	11.7	8.2	183.3	13.4	12.49	1884	1314
09/30/99 14:17	388.0	11.7	8.2	183.3	13.4	12.49	1892	1320
09/30/99 14:18	388.3	11.8	8.2	183.3	13.4	12.49	1893	1320
09/30/99 14:19	387.9	11.7	8.2	183.0	14.1	12.49	1879	1312
09/30/99 14:20	387.5	11.6	8.2	182.8	13.4	12.49	1877	1310
09/30/99 14:21	388.1	11.7	8.2	183.4	13.2	12.49	1888	1317
09/30/99 14:22	388.2	11.8	8.2	183.5	13.4	12.49	1890	1318
09/30/99 14:23	388.1	11.8	8.1	182.8	12.1	12.49	1884	1315
09/30/99 14:24	388.5	11.7	8.1	182.5	12.9	12.49	1881	1314
09/30/99 14:25	389.3	11.8	8.2	182.7	14.6	12.49	1888	1318
09/30/99 14:26	389.6	11.9	8.2	183.2	15.3	12.49	1896	1322
09/30/99 14:27	389.9	11.8	8.1	183.2	14.8	12.49	1893	1321
09/30/99 14:28	390.0	11.8	8.1	183.1	14.8	12.48	1882	1313
09/30/99 14:29	389.8	11.8	8.1	182.9	13.6	12.48	1882	1313
09/30/99 14:30	390.4	11.8	8.1	182.4	13.6	12.49	1882	1314
09/30/99 14:31	391.2	11.9	8.0	182.4	12.5	12.49	1882	1314

09/30/99 14:32	391.7	11.9	7.9	183.1	11.7	12.48	1875	1308
09/30/99 14:33	391.6	11.8	8.0	183.2	12.5	12.48	1875	1307
09/30/99 14:34	391.0	11.8	8.0	182.6	11.5	12.48	1870	1305
09/30/99 14:35	389.3	11.7	8.2	182.4	14.6	12.49	1870	1306
09/30/99 14:36	388.6	11.7	8.2	182.4	14.6	12.48	1865	1302
09/30/99 14:37	388.9	11.8	8.1	182.4	13.6	12.48	1863	1301
09/30/99 14:38	388.9	11.8	8.1	182.6	13.0	12.48	1871	1306
09/30/99 14:39	388.7	11.8	8.1	182.7	13.6	12.48	1879	1311
09/30/99 14:40	388.2	11.8	8.1	182.8	13.6	12.48	1880	1312
09/30/99 14:41	388.0	11.8	8.1	183.2	13.6	12.48	1886	1315
09/30/99 14:42	388.9	11.8	8.1	183.2	13.6	12.48	1886	1315
09/30/99 14:43	389.8	11.8	8.1	183.2	13.6	12.48	1886	1315
09/30/99 14:44	389.8	11.8	8.1	183.2	13.6	12.48	1886	1315
09/30/99 14:45	389.6	11.7	8.2	182.9	14.3	12.48	1881	1312
09/30/99 14:46	389.5	11.7	8.2	182.8	14.6	12.48	1880	1311
09/30/99 14:47	389.4	11.8	8.2	183.6	14.0	12.48	1893	1319
09/30/99 14:48	389.5	11.7	8.1	183.8	12.9	12.48	1895	1320
09/30/99 14:49	388.6	11.7	8.2	183.3	13.4	12.48	1888	1316
09/30/99 14:50	388.1	11.7	8.2	182.8	13.4	12.48	1885	1315
09/30/99 14:51	387.8	11.7	8.2	183.0	13.4	12.48	1891	1319
09/30/99 14:52	387.7	11.6	8.2	183.0	12.2	12.48	1898	1323
09/30/99 14:53	388.7	11.7	8.3	182.8	12.8	12.48	1895	1322
09/30/99 14:54	389.4	11.7	8.2	182.5	12.2	12.48	1890	1319
09/30/99 14:55	388.6	11.8	8.2	182.6	13.2	12.48	1888	1317
09/30/99 14:56	388.3	11.6	8.2	182.9	12.8	12.48	1882	1313
Final Average*	**388.0**	**11.8**	**8.2**	**182.0**	**13.2**	**12.50**	**1878**	**1314**
Maximum*	391.7	11.9	8.4	183.8	16.5	12.53	1898	1325
Minimum*	385.0	11.6	7.9	180.1	11.1	12.48	1854	1298

*Does not include Invalid Averaging Periods ("N/A")

Enertec NTDAHS®
Average Values Report
09/30/99 12:28

Company: PacifiCorp
Plant: 48 Wyodak Road
City/St: Gillette, WY 82718
Source: WYODAK_1

Period Start: 09/29/99 17:55
Period End: 09/29/99 20:36
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start	Average Load MW	Average CO2 E %	Average O2 Dry %	Average Stk Temp deg F	Average Moisture %	Average Barometer psi	Average Flow kcfm	Average Flow Corr kcfm
09/29/99 17:55	377.1	11.8	8.1	186.8	12.6	12.45	1853	1281
09/29/99 17:56	377.3	12.0	8.1	186.8	13.6	12.45	1854	1282
09/29/99 17:57	376.9	11.9	8.1	186.7	13.6	12.45	1854	1282
09/29/99 17:58	375.9	11.9	8.2	186.8	14.6	12.45	1859	1285
09/29/99 17:59	375.8	11.9	8.1	187.0	12.3	12.45	1864	1289
09/29/99 18:00	376.3	11.8	8.1	187.0	12.3	12.45	1867	1291
09/29/99 18:01	377.4	11.9	8.1	186.8	12.3	12.45	1872	1294
09/29/99 18:02	378.0	11.9	8.1	186.8	12.3	12.45	1870	1293
09/29/99 18:03	377.4	11.9	8.1	186.7	13.0	12.45	1867	1291
09/29/99 18:04	377.3	11.8	8.1	186.7	12.3	12.45	1867	1291
09/29/99 18:05	376.7	11.8	8.2	186.3	13.4	12.45	1875	1298
09/29/99 18:06	377.1	11.9	8.1	186.2	12.7	12.45	1875	1298
09/29/99 18:07	378.0	11.9	8.1	185.9	12.3	12.45	1868	1293
09/29/99 18:08	377.8	11.9	8.1	185.8	12.5	12.45	1864	1291
09/29/99 18:09	377.5	11.9	8.1	185.7	12.3	12.45	1870	1295
09/29/99 18:10	377.8	11.9	8.1	185.7	12.5	12.45	1874	1298
09/29/99 18:11	378.0	11.9	8.1	185.8	12.3	12.45	1873	1298
09/29/99 18:12	378.0	11.9	8.1	185.7	13.3	12.45	1873	1297
09/29/99 18:13	378.2	11.9	8.1	185.7	12.3	12.45	1873	1297
09/29/99 18:14	378.1	11.9	8.1	185.7	12.3	12.45	1873	1298
09/29/99 18:15	377.7	11.9	8.1	185.2	12.3	12.45	1863	1291
09/29/99 18:16	377.1	11.8	8.1	185.0	11.9	12.45	1861	1290
09/29/99 18:17	376.5	11.8	8.1	185.0	11.4	12.45	1864	1292
09/29/99 18:18	375.5	11.8	8.3	185.1	13.3	12.45	1866	1294
09/29/99 18:19	375.9	11.9	8.2	184.8	12.2	12.45	1865	1294
09/29/99 18:20	377.4	11.9	8.2	184.6	14.6	12.45	1864	1294
09/29/99 18:21	377.7	11.9	8.2	184.4	13.6	12.45	1862	1293
09/29/99 18:22	377.3	11.8	8.2	184.1	13.4	12.45	1859	1291
09/29/99 18:23	377.1	11.8	8.2	184.2	13.4	12.45	1859	1291
09/29/99 18:24	377.8	11.9	8.2	184.5	13.4	12.45	1859	1290
09/29/99 18:25	378.7	12.0	8.2	184.4	15.0	12.45	1864	1294
09/29/99 18:26	378.3	11.9	8.2	184.1	13.4	12.45	1876	1303
09/29/99 18:27	377.8	11.9	8.2	184.1	12.7	12.45	1876	1303
09/29/99 18:28	378.8	11.9	8.2	184.2	13.4	12.45	1872	1300
09/29/99 18:29	379.4	11.9	8.1	184.2	13.3	12.45	1872	1300
09/29/99 18:30	379.5	12.0	8.1	183.9	13.6	12.45	1872	1300
09/29/99 18:31	380.1	11.9	8.1	183.9	13.6	12.45	1872	1300
09/29/99 18:32	379.7	11.9	8.1	184.7	13.6	12.45	1875	1301
09/29/99 18:33	380.3	11.9	8.1	185.1	13.6	12.45	1877	1301
09/29/99 18:34	380.2	12.0	8.1	184.4	14.8	12.45	1853	1285
09/29/99 18:35	379.9	12.0	8.1	184.1	14.8	12.45	1847	1283
09/29/99 18:36	379.7	12.0	8.1	184.1	14.8	12.45	1857	1290
09/29/99 18:37	380.6	12.0	8.1	184.2	13.6	12.45	1866	1296
09/29/99 18:38	381.1	12.0	8.1	184.0	14.8	12.45	1861	1292
09/29/99 18:39	380.8	12.0	8.1	183.8	14.8	12.45	1851	1286
09/29/99 18:40	380.2	12.0	8.1	183.8	14.8	12.45	1852	1287
09/29/99 18:41	380.5	12.0	8.1	183.5	14.8	12.45	1857	1291
09/29/99 18:42	380.7	12.0	8.1	183.5	14.4	12.45	1858	1292
09/29/99 18:43	380.3	11.9	8.1	183.5	13.6	12.45	1864	1296
09/29/99 18:44	380.2	11.9	8.1	183.5	13.6	12.45	1864	1296
09/29/99 18:45	380.8	12.0	8.1	183.0	13.6	12.45	1854	1290
09/29/99 18:46	381.4	12.0	8.1	182.8	13.6	12.45	1850	1287
09/29/99 18:47	381.8	12.0	8.1	182.6	13.6	12.45	1859	1294
09/29/99 18:48	381.0	11.9	8.1	182.5	13.6	12.45	1864	1298
09/29/99 18:49	380.2	11.9	8.1	182.8	13.6	12.45	1864	1297
09/29/99 18:50	379.7	11.9	8.1	183.2	12.7	12.45	1863	1295
09/29/99 18:51	379.3	11.9	8.1	183.0	13.6	12.45	1862	1295
09/29/99 18:52	379.2	12.0	8.1	182.8	13.6	12.45	1862	1296
09/29/99 18:53	379.6	11.9	8.1	182.8	13.6	12.45	1862	1296
09/29/99 18:54	380.7	12.0	8.1	182.7	13.6	12.45	1863	1296
09/29/99 18:55	380.6	12.0	8.1	182.8	14.6	12.45	1863	1296
09/29/99 18:56	380.2	12.0	8.1	183.3	13.6	12.45	1864	1296

09/29/99 18:57	380.4	11.9	8.1	183.3	13.8	12.45	1866	1297
09/29/99 18:58	380.1	11.9	8.1	183.2	13.6	12.45	1870	1300
09/29/99 18:59	379.6	11.9	8.1	183.2	12.6	12.45	1870	1300
09/29/99 19:00	378.6	11.9	8.1	182.8	12.3	12.45	1869	1301
09/29/99 19:01	378.4	11.8	8.2	182.7	13.4	12.45	1870	1301
09/29/99 19:02	378.2	11.8	8.2	182.6	13.4	12.45	1851	1289
09/29/99 19:03	378.5	11.9	8.2	182.5	13.4	12.45	1851	1289
09/29/99 19:04	379.2	11.9	8.2	182.6	13.4	12.45	1855	1291
09/29/99 19:05	378.8	11.8	8.2	182.8	14.1	12.46	1856	1292
09/29/99 19:06	378.5	11.8	8.2	182.9	13.7	12.45	1863	1296
09/29/99 19:07	378.5	11.8	8.2	183.0	12.8	12.46	1869	1301
09/29/99 19:08	378.4	11.8	8.2	182.7	12.2	12.46	1863	1297
09/29/99 19:09	378.6	11.8	8.3	182.5	13.3	12.46	1860	1296
09/29/99 19:10	378.8	11.8	8.2	182.5	12.4	12.46	1861	1296
09/29/99 19:11	378.1	11.8	8.2	182.5	13.4	12.46	1860	1296
09/29/99 19:12	377.7	11.9	8.2	182.5	13.2	12.46	1861	1297
09/29/99 19:13	377.5	11.9	8.2	182.5	12.2	12.46	1860	1296
09/29/99 19:14	378.0	11.8	8.2	182.5	12.6	12.46	1860	1296
09/29/99 19:15	378.7	11.9	8.2	182.6	12.2	12.46	1867	1301
09/29/99 19:16	379.5	11.9	8.2	182.5	13.4	12.46	1870	1303
09/29/99 19:17	379.7	11.9	8.2	183.3	13.4	12.46	1881	1309
09/29/99 19:18	379.9	11.9	8.2	183.4	13.4	12.46	1880	1308
09/29/99 19:19	379.6	11.8	8.2	182.6	13.8	12.46	1858	1294
09/29/99 19:20	379.5	11.8	8.3	182.4	13.3	12.46	1846	1287
09/29/99 19:21	379.8	11.8	8.3	182.3	14.5	12.46	1845	1286
09/29/99 19:22	380.3	11.8	8.3	182.4	14.5	12.46	1844	1285
09/29/99 19:23	379.2	11.8	8.3	182.8	13.7	12.46	1867	1300
09/29/99 19:24	378.2	11.7	8.3	183.0	13.3	12.46	1872	1303
09/29/99 19:25	378.1	11.8	8.3	182.6	13.5	12.46	1863	1298
09/29/99 19:26	378.9	11.8	8.3	182.2	14.5	12.46	1859	1296
09/29/99 19:27	378.8	11.9	8.2	181.8	13.4	12.46	1858	1296
09/29/99 19:28	379.2	11.8	8.2	181.4	13.4	12.46	1857	1296
09/29/99 19:29	379.6	11.9	8.2	182.0	13.0	12.46	1865	1300
09/29/99 19:30	379.1	11.8	8.2	182.4	12.2	12.46	1866	1300
09/29/99 19:31	378.6	11.8	8.3	182.6	12.9	12.47	1867	1301
09/29/99 19:32	379.1	11.8	8.3	182.8	13.3	12.46	1870	1303
09/29/99 19:33	379.9	11.8	8.2	182.3	12.9	12.47	1869	1303
09/29/99 19:34	380.5	11.9	8.2	181.3	12.2	12.47	1868	1305
09/29/99 19:35	380.0	11.9	8.2	181.5	12.2	12.47	1868	1305
09/29/99 19:36	379.6	11.8	8.2	182.2	12.2	12.47	1866	1302
09/29/99 19:37	380.2	11.8	8.2	182.2	12.2	12.47	1866	1302
09/29/99 19:38	380.5	11.9	8.2	181.9	12.8	12.47	1854	1294
09/29/99 19:39	380.3	11.9	8.2	181.9	12.9	12.47	1857	1296
09/29/99 19:40	379.7	11.8	8.3	181.9	14.2	12.47	1869	1304
09/29/99 19:41	379.5	11.8	8.3	181.9	13.3	12.47	1869	1304
09/29/99 19:42	379.4	11.8	8.3	181.8	13.3	12.47	1866	1302
09/29/99 19:43	379.7	11.8	8.2	181.9	12.2	12.47	1862	1300
09/29/99 19:44	381.0	11.9	8.2	181.6	12.2	12.47	1865	1302
09/29/99 19:45	382.0	11.9	8.2	181.3	12.2	12.47	1866	1303
09/29/99 19:46	382.1	12.0	8.2	181.3	14.2	12.47	1862	1300
09/29/99 19:47	382.3	11.9	8.2	181.0	13.4	12.47	1842	1287
09/29/99 19:48	382.1	12.0	8.1	181.2	12.3	12.47	1845	1290
09/29/99 19:49	382.1	12.0	8.1	181.3	12.3	12.47	1861	1301
09/29/99 19:50	381.7	12.0	8.1	181.1	12.3	12.48	1859	1300
09/29/99 19:51	381.7	11.9	8.1	180.6	12.3	12.48	1857	1299
09/29/99 19:52	382.2	12.0	8.1	180.7	12.3	12.48	1862	1303
09/29/99 19:53	382.8	12.0	8.1	181.5	12.3	12.48	1874	1310
09/29/99 19:54	384.1	12.0	8.1	181.5	13.6	12.48	1874	1310
09/29/99 19:55	383.6	12.0	8.1	181.3	13.6	12.48	1846	1291
09/29/99 19:56	382.0	11.9	8.2	181.2	14.6	12.48	1846	1291
09/29/99 19:57	380.9	11.9	8.2	181.4	14.6	12.48	1860	1300
09/29/99 19:58	381.6	12.0	8.1	181.5	14.8	12.48	1861	1301
09/29/99 19:59	381.8	12.1	8.1	181.6	14.8	12.48	1849	1293
09/29/99 20:00	380.7	12.0	8.1	181.6	13.6	12.48	1844	1289
09/29/99 20:01	380.3	12.0	8.1	181.6	13.6	12.48	1851	1294
09/29/99 20:02	380.4	11.9	8.1	181.6	13.6	12.48	1854	1296
09/29/99 20:03	380.3	12.0	8.1	181.6	13.0	12.48	1856	1297
09/29/99 20:04	381.4	11.9	8.1	181.8	12.3	12.47	1860	1299
09/29/99 20:05	382.5	12.0	8.1	181.7	12.3	12.48	1861	1300
09/29/99 20:06	382.7	12.0	8.1	181.6	12.3	12.48	1862	1301
09/29/99 20:07	382.1	11.9	8.1	181.6	12.3	12.47	1862	1300
09/29/99 20:08	380.9	11.9	8.1	181.3	11.9	12.47	1857	1297
09/29/99 20:09	380.0	11.9	8.3	181.3	12.9	12.47	1857	1298
09/29/99 20:10	379.9	11.9	8.2	180.8	12.2	12.47	1851	1294
09/29/99 20:11	380.1	11.9	8.2	180.7	12.2	12.48	1851	1295
09/29/99 20:12	380.4	11.9	8.2	180.7	12.2	12.48	1851	1295
09/29/99 20:13	380.5	11.8	8.3	180.7	13.3	12.48	1851	1295

09/29/99 20:14	380.6	11.9	8.3	180.7	13.0	12.48	1851	1295
09/29/99 20:15	380.4	11.8	8.2	180.6	12.2	12.48	1859	1301
09/29/99 20:16	380.4	11.9	8.2	180.6	13.4	12.48	1860	1302
09/29/99 20:17	380.7	11.9	8.2	180.7	12.2	12.48	1860	1302
09/29/99 20:18	380.9	11.9	8.2	180.8	12.2	12.48	1860	1302
09/29/99 20:19	380.9	11.9	8.2	180.4	12.2	12.48	1844	1291
09/29/99 20:20	380.0	11.9	8.2	180.1	13.2	12.48	1836	1286
09/29/99 20:21	379.6	11.8	8.2	180.6	12.2	12.48	1846	1292
09/29/99 20:22	380.0	11.9	8.2	180.6	11.0	12.48	1848	1293
09/29/99 20:23	380.5	11.9	8.1	180.8	10.5	12.48	1852	1296
09/29/99 20:24	381.2	11.9	8.1	180.9	12.3	12.48	1856	1299
09/29/99 20:25	381.2	12.0	8.1	180.8	12.3	12.48	1856	1299
09/29/99 20:26	380.3	11.9	8.2	180.6	13.0	12.48	1857	1299
09/29/99 20:27	380.7	11.9	8.2	180.6	13.4	12.48	1856	1299
09/29/99 20:28	381.3	11.9	8.2	180.4	13.4	12.48	1853	1298
09/29/99 20:29	381.2	11.9	8.2	180.4	13.2	12.48	1853	1298
09/29/99 20:30	381.6	11.9	8.2	180.9	13.4	12.48	1852	1296
09/29/99 20:31	381.6	12.0	8.1	180.7	12.7	12.49	1852	1297
09/29/99 20:32	381.6	11.9	8.1	179.8	12.3	12.49	1857	1302
09/29/99 20:33	381.2	11.9	8.1	179.8	12.3	12.49	1856	1301
09/29/99 20:34	380.9	11.9	8.1	180.3	11.1	12.49	1837	1287
09/29/99 20:35	380.9	12.0	8.1	180.4	11.3	12.49	1837	1287
Final Average*	**379.6**	**11.9**	**8.2**	**182.8**	**13.1**	**12.46**	**1861**	**1296**
Maximum*	384.1	12.1	8.3	187.0	15.0	12.49	1881	1310
Minimum*	375.5	11.7	8.1	179.8	10.5	12.45	1836	1281

*Does not include Invalid Averaging Periods ("N A").

PRECIPITATOR
LOG SHEET FOR MERCURY TESTING

Date of Test: 9-29-99

Test #: Run #1

Test Run Start Time: 1755

Test Run End Time: 2036

Operator: Balek

TR's out of Service: 4A1, 5A2, 2C2, 2D1

Enter Time Precipitator Readings began: 1835 **Enter time Precipitator Readings were Complete:** 1845

TR	PRIMARY AMPS	DC VOLTS	LOAD AMPS	SPARK RATE
1A1	97	287	460	0
1A2	140	349	730	0
2A1	98	221	452	0
2A2	171	292	860	0
3A1	2	47	12	0
3A2	4	57	16	0
4A1				OOS
4A2	206	267	896	0
5A1	206	341	1078	0
5A2				OOS
1B1	147	245	334	0
1B2	54	222	224	0
2B1	175	350	742	0
2B2	170	321	890	0
3B1	2	54	12	0
3B2	2	48	8	0
4B1	3	58	14	0
4B2	5	65	14	0
5B1	206	298	1047	0
5B2	210	300	1038	0
1C1	80	249	388	1
1C2	79	244	428	16
2C1	175	297	770	0
2C2				OOS
3C1	3	57	14	0
3C2	2	55	12	1
4C1	3	70	24	0
4C2	3	57	18	0
5C1	214	350	1000	0
5C2	205	320	1016	0
1D1	139	335	790	0
1D2	107	350	372	2
2D1				OOS
2D2	90	255	382	0
3D1	4	53	18	1
3D2	2	48	12	0
4D1	9	61	40	0
4D2	3	53	12	0
5D1	207	314	1026	0
5D2	203	294	1020	0

PRECIPITATOR
LOG SHEET FOR MERCURY TESTING

Date of Test: 9-29-99

Test #: Run #1

Test Run Start Time: 1755

Test Run End Time: 2036

Operator: Balck

TR's out of Service: 4A1, 5A2, 2C2, 2D1

Enter Time Precipitator Readings began: 1905 **Enter time Precipitator Readings were Complete:** 1912

TR	PRIMARY AMPS	DC VOLTS	LOAD AMPS	SPARK RATE
1A1	101	295	472	0
1A2	142	350	722	0
2A1	95	224	452	0
2A2	170	295	894	0
3A1	2	47	14	0
3A2	4	55	16	0
4A1				005
4A2	210	275	894	0
5A1	206	341	1042	0
5A2				005
1B1	140	240	336	0
1B2	55	228	234	0
2B1	172	345	722	0
2B2	170	321	876	0
3B1	2	49	12	0
3B2	2	47	8	0
4B1	3	57	14	0
4B2	5	64	14	0
5B1	206	299	1020	0
5B2	207	299	1022	0
1C1	122	337	608	2
1C2	101	230	396	8
2C1	175	302	766	0
2C2				005
3C1	4	59	12	0
3C2	2	54	12	2
4C1	3	70	24	0
4C2	3	55	18	0
5C1	207	341	1002	0
5C2	211	323	1016	0
1D1	143	359	820	0
1D2	77	289	430	2
2D1				005
2D2	93	259	374	0
3D1	4	53	18	0
3D2	2	50	14	0
4D1	10	65	42	0
4D2	3	50	12	0
5D1	204	311	1014	0
5D2	211	302	980	0

PRECIPITATOR
LOG SHEET FOR MERCURY TESTING

Date of Test: 9-29-99

Test #: Run #1

Test Run Start Time: 1755

Test Run End Time: 2036

Operator: Balek

TR's out of Service: 4A1, 5A2, 2C2, 2D1

Enter Time Precipitator Readings began: 1933 **Enter time Precipitator Readings were Complete:** 1937

TR	PRIMARY AMPS	DC VOLTS	LOAD AMPS	SPARK RATE
1A1	100	295	464	0
1A2	140	350	735	0
2A1	101	297	476	0
2A2	168	291	890	0
3A1	2	44	12	0
3A2	4	54	14	0
4A1				OOS
4A2	210	270	896	0
5A1	211	348	1052	0
5A2				OOS
1B1	138	235	328	0
1B2	60	235	260	0
2B1	170	342	742	0
2B2	170	317	896	0
3B1	2	50	14	0
3B2	2	48	8	0
4B1	3	57	16	0
4B2	5	63	14	0
5B1	207	299	1024	0
5B2	205	293	1044	0
1C1	105	298	522	1
1C2	78	239	354	12
2C1	171	291	774	0
2C2				OOS
3C1	4	60	14	0
3C2	3	53	12	0
4C1	3	70	24	0
4C2	3	54	18	0
5C1	204	336	988	0
5C2	205	320	1022	0
1D1	143	355	814	0
1D2	83	297	450	1
2D1				OOS
2D2	97	263	376	0
3D1	4	53	18	0
3D2	2	48	14	0
4D1	9	61	38	0
4D2	3	50	12	0
5D1	209	314	1030	0
5D2	204	295	982	0

PRECIPITATOR
LOG SHEET FOR MERCURY TESTING

Date of Test: 9-30-99

Test #: Run #2

Test Run Start Time: 0810

Test Run End Time: 1109

Operator: Mossert

TR's out of Service: 4A1, 5A2, 2C2, 2D1

Enter Time Precipitator Readings began: 0830 **Enter time Precipitator Readings were Complete:** 0840

TR	PRIMARY AMPS	DC VOLTS	LOAD AMPS	SPARK RATE
1A1	97	282	460	Ø
1A2	141	348	706	Ø
2A1	95	228	450	Ø
2A2	175	294	890	Ø
3A1	2	46	14	Ø
3A2	4	56	12	Ø
4A1	— OOS —			
4A2	216	266	870	Ø
5A1	207	341	1066	Ø
5A2	— OOS —			
1B1	139	242	346	Ø
1B2	50	220	216	Ø
2B1	168	343	726	Ø
2B2	173	332	875	Ø
3B1	2	52	12	Ø
3B2	2	48	8	1
4B1	3	54	12	Ø
4B2	5	65	12	Ø
5B1	213	302	1014	Ø
5B2	211	300	1040	Ø
1C1	136	359	634	Ø
1C2	79	236	400	24
2C1	169	293	778	Ø
2C2	— OOS —			
3C1	3	58	12	Ø
3C2	2	57	12	Ø
4C1	3	74	24	Ø
4C2	2	52	18	Ø
5C1	205	331	984	Ø
5C2	203	317	1048	Ø
1D1	140	350	836	Ø
1D2	95	323	508	2
2D1	— OOS —			
2D2	92	270	384	Ø
3D1	3	52	16	Ø
3D2	2	48	12	Ø
4D1	9	60	36	Ø
4D2	3	47	12	Ø
5D1	205	310	1010	Ø
5D2	215	305	982	Ø

PRECIPITATOR
LOG SHEET FOR MERCURY TESTING

Date of Test: 9-30-99

Test #: Run #2

Test Run Start Time: _____

Test Run End Time: _____

Operator: Mesaert

TR's out of Service: 4A1, 5A2, 2C2, 2D1

Enter Time Precipitator Readings began: 0900 **Enter time Precipitator Readings were Complete:** 0910

TR	PRIMARY AMPS	DC VOLTS	LOAD AMPS	SPARK RATE
1A1	99	288	460	Ø
1A2	144	356	738	Ø
2A1	97	223	476	Ø
2A2	170	293	890	Ø
3A1	3	48	14	Ø
3A2	3	54	16	Ø
4A1	— OOS —			
4A2	214	274	896	Ø
5A1	211	349	1044	Ø
5A2	— OOS —			
1B1	139	241	224	Ø
1B2	49	221	220	Ø
2B1	170	347	736	Ø
2B2	168	322	874	Ø
3B1	2	49	14	Ø
3B2	2	52	8	3
4B1	3	59	12	Ø
4B2	4	61	12	Ø
5B1	211	302	1002	Ø
5B2	213	301	1016	Ø
1C1	143	365	684	2
1C2	94	248	424	9
2C1	170	289	772	Ø
2C2	— OOS —			
3C1	3	55	14	Ø
3C2	2	56	12	Ø
4C1	3	70	22	Ø
4C2	2	52	16	Ø
5C1	207	336	1020	Ø
5C2	213	327	1020	Ø
1D1	143	555	822	Ø
1D2	114	330	488	1
2D1	— OOS —			
2D2	90	265	390	Ø
3D1	4	55	16	Ø
3D2	2	47	12	Ø
4D1	10	63	36	Ø
4D2	3	49	12	Ø
5D1	209	318	1018	Ø
5D2	204	360	474	Ø

PRECIPITATOR
LOG SHEET FOR MERCURY TESTING

Date of Test: 9-30-99

Test #: Run # 2

Test Run Start Time: _____

Test Run End Time: _____

Operator: Meesert

TR's out of Service: 4A1, 5A2, 2C2, 2D1

Enter Time Precipitator Readings began: 0930 **Enter time Precipitator Readings were Complete:** 0940

TR	PRIMARY AMPS	DC VOLTS	LOAD AMPS	SPARK RATE
1A1	102	288	466	Ø
1A2	140	350	754	Ø
2A1	95	220	464	Ø
2A2	175	300	870	Ø
3A1	2	47	14	1
3A2	3	53	16	Ø
4A1	— OOS —			
4A2	206	266	914	Ø
5A1	213	353	1070	Ø
5A2	— OOS —			
1B1	137	239	344	Ø
1B2	51	219	230	Ø
2B1	170	346	724	Ø
2B2	170	321	896	Ø
3B1	2	50	12	Ø
3B2	2	50	8	Ø
4B1	3	58	12	Ø
4B2	4	63	12	Ø
5B1	205	296	1038	Ø
5B2	205	293	1042	Ø
1C1	143	353	678	2
1C2	82	240	450	10
2C1	168	288	752	Ø
2C2	— OOS —			
3C1	3	57	14	Ø
3C2	2	58	12	Ø
4C1	3	70	22	Ø
4C2	2	52	16	Ø
5C1	205	335	1036	Ø
5C2	204	321	1020	Ø
1D1	143	352	824	Ø
1D2	88	307	488	3
2D1	— OOS —			
2D2	92	261	372	Ø
3D1	3	51	18	Ø
3D2	2	48	12	Ø
4D1	9	60	38	Ø
4D2	3	50	10	Ø
5D1	205	315	1038	Ø
5D2	206	299	1012	Ø

PRECIPITATOR
LOG SHEET FOR MERCURY TESTING

Date of Test: 9-30-99

Test #: Run #2

Test Run Start Time: _____

Test Run End Time: _____

Operator: Messart

TR's out of Service: 4A1, 5A2, 2C2, 2D1

Enter Time Precipitator Readings began: 1000 **Enter time Precipitator Readings were Complete:** 1010

TR	PRIMARY AMPS	DC VOLTS	LOAD AMPS	SPARK RATE
1A1	97	280	460	Ø
1A2	142	349	740	Ø
2A1	101	228	450	Ø
2A2	173	297	872	Ø
3A1	2	45	14	Ø
3A2	4	54	14	Ø
4A1	— OOS —			
4A2	206	266	938	Ø
5A1	207	346	1076	Ø
5A2	— OOS —			
1B1	137	240	362	Ø
1B2	51	220	226	Ø
2B1	172	351	730	Ø
2B2	172	331	872	Ø
3B1	1	49	12	Ø
3B2	2	51	8	2
4B1	3	58	14	Ø
4B2	4	63	12	Ø
5B1	207	299	1020	Ø
5B2	205	291	1028	Ø
1C1	122	316	550	Ø
1C2	106	246	440	12
2C1	170	288	768	Ø
2C2	— OOS —			
3C1	3	57	14	Ø
3C2	2	55	12	Ø
4C1	3	70	20	Ø
4C2	3	54	16	Ø
5C1	205	340	1046	Ø
5C2	207	325	1050	Ø
1D1	120	314	706	Ø
1D2	85	307	452	1
2D1	— OOS —			
2D2	94	266	372	Ø
3D1	4	55	16	Ø
3D2	2	47	12	Ø
4D1	10	63	36	Ø
4D2	3	50	10	Ø
5D1	204	315	1036	Ø
5D2	205	297	1010	Ø

PRECIPITATOR
LOG SHEET FOR MERCURY TESTING

Date of Test: 9-30-99

Test #: Run #2

Test Run Start Time: _____

Test Run End Time: _____

Operator: Messent

TR's out of Service: 4A1, 5A2, 2C2, 2D1

Enter Time Precipitator Readings began: 1030 **Enter time Precipitator Readings were Complete:** 1040

TR	PRIMARY AMPS	DC VOLTS	LOAD AMPS	SPARK RATE
1A1	96	280	478	Ø
1A2	140	345	756	Ø
2A1	100	229	454	Ø
2A2	173	296	862	Ø
3A1	3	50	14	Ø
3A2	4	54	16	Ø
4A1	— OOS —			
4A2	206	267	940	Ø
5A1	208	347	1068	Ø
5A2	— OOS —			
1B1	136	236	336	Ø
1B2	59	234	258	Ø
2B1	169	347	740	Ø
2B2	170	321	886	Ø
3B1	2	48	12	Ø
3B2	2	48	8	Ø
4B1	3	54	12	Ø
4B2	4	63	12	Ø
5B1	202	298	1028	Ø
5B2	208	297	1036	Ø
1C1	140	348	666	Ø
1C2	99	247	440	8
2C1	167	285	744	Ø
2C2	— OOS —			
3C1	4	58	12	Ø
3C2	2	55	12	Ø
4C1	3	70	20	Ø
4C2	3	53	18	Ø
5C1	205	336	1016	Ø
5C2	211	326	1006	Ø
1D1	144	359	832	Ø
1D2	118	375	654	2
2D1	— OOS —			
2D2	93	261	368	Ø
3D1	4	53	16	1
3D2	2	48	12	Ø
4D1	9	60	36	Ø
4D2	3	4	12	Ø
5D1	208	319	1020	Ø
5D2	209	305	972	Ø

PRECIPITATOR
LOG SHEET FOR MERCURY TESTING

Date of Test: 9-30-99

Test #: Run #2

Test Run Start Time: _____

Test Run End Time: _____

Operator: Mesaert

TR's out of Service: 4A1, 5A2, 2C2, 2D1

Enter Time Precipitator Readings began: 1100 **Enter time Precipitator Readings were Complete:** 1110

TR	PRIMARY AMPS	DC VOLTS	LOAD AMPS	SPARK RATE
1A1	100	288	464	Ø
1A2	141	350	742	Ø
2A1	96	219	476	Ø
2A2	170	293	874	Ø
3A1	3	50	16	Ø
3A2	4	54	14	Ø
4A1	— OOS —			
4A2	205	265	892	Ø
5A1	207	345	1068	Ø
5A2	— OOS —			
1B1	139	240	344	Ø
1B2	52	223	256	Ø
2B1	170	346	730	Ø
2B2	175	332	878	Ø
3B1	1	48	12	Ø
3B2	2	52	8	Ø
4B1	3	54	12	Ø
4B2	4	63	12	Ø
5B1	203	298	1030	Ø
5B2	206	296	1034	Ø
1C1	122	320	590	1
1C2	80	238	508	11
2C1	170	288	758	Ø
2C2	— OOS —			
3C1	4	60	14	1
3C2	2	58	12	Ø
4C1	3	72	22	Ø
4C2	3	54	18	Ø
5C1	204	336	1040	Ø
5C2	206	324	1044	Ø
1D1	142	360	842	Ø
1D2	115	322	616	1
2D1	— OOS —			
2D2	94	261	374	Ø
3D1	3	51	16	Ø
3D2	2	47	12	Ø
4D1	9	61	36	Ø
4D2	3	48	12	Ø
5D1	207	322	1031	Ø
5D2	213	305	968	Ø

PRECIPITATOR
LOG SHEET FOR MERCURY TESTING

Date of Test: 9-30-99

Test #: Run #3

Test Run Start Time: 1213

Test Run End Time: 1457

Operator: Messert

TR's out of Service: 4A1, 5A2, 2C2, 2D1

Enter Time Precipitator Readings began: 1230 **Enter time Precipitator Readings were Complete:** 1240

TR	PRIMARY AMPS	DC VOLTS	LOAD AMPS	SPARK RATE
1A1	100	283	458	Ø
1A2	144	348	740	Ø
2A1	95	220	456	Ø
2A2	175	300	874	Ø
3A1	2	47	14	Ø
3A2	4	57	16	Ø
4A1	— OOS —			
4A2	210	270	894	Ø
5A1	207	345	1048	Ø
5A2	— OOS —			
1B1	146	246	330	Ø
1B2	52	222	244	Ø
2B1	172	353	728	Ø
2B2	170	324	890	Ø
3B1	1	48	12	Ø
3B2	2	50	10	2
4B1	3	55	14	Ø
4B2	4	60	12	Ø
5B1	203	298	1052	Ø
5B2	210	300	1054	Ø
1C1	89	258	442	1
1C2	82	237	378	8
2C1	171	291	752	Ø
2C2	— OOS —			
3C1	4	57	16	Ø
3C2	2	51	12	Ø
4C1	3	70	22	Ø
4C2	3	53	18	Ø
5C1	213	347	994	Ø
5C2	209	327	1022	Ø
1D1	142	355	812	Ø
1D2	101	335	544	1
2D1	— OOS —			
2D2	93	260	366	Ø
3D1	3	57	18	Ø
3D2	2	47	12	Ø
4D1	9	59	36	Ø
4D2	3	48	12	Ø
5D1	211	321	1010	Ø
5D2	209	301	968	Ø

PRECIPITATOR
LOG SHEET FOR MERCURY TESTING

Date of Test: 9-30-99

Test #: Run #3

Test Run Start Time: _____

Test Run End Time: _____

Operator: Messert

TR's out of Service: 4A1, 5A2, 2C2, 2D1

Enter Time Precipitator Readings began: 1300 **Enter time Precipitator Readings were Complete:** 1310

TR	PRIMARY AMPS	DC VOLTS	LOAD AMPS	SPARK RATE
1A1	98	287	478	Ø
1A2	147	353	752	Ø
2A1	102	231	462	Ø
2A2	173	296	874	Ø
3A1	2	50	14	Ø
3A2	4	59	16	Ø
4A1	— OOS —			
4A2	209	266	892	Ø
5A1	211	351	1052	Ø
5A2	— OOS —			
1B1	136	240	336	Ø
1B2	49	220	206	Ø
2B1	174	355	728	Ø
2B2	170	325	880	Ø
3B1	1	48	12	Ø
3B2	2	50	8	Ø
4B1	3	55	14	Ø
4B2	4	61	12	Ø
5B1	203	298	1050	Ø
5B2	206	295	100	Ø
1C1	125	325	568	1
1C2	76	231	408	6
2C1	168	288	770	Ø
2C2	— OOS —			
3C1	4	61	14	Ø
3C2	2	58	12	Ø
4C1	3	74	22	Ø
4C2	2	53	18	Ø
5C1	213	339	998	Ø
5C2	207	325	1020	Ø
1D1	142	361	832	Ø
1D2	94	324	510	2
2D1	— OOS —			
2D2	95	264	580	Ø
3D1	3	52	18	1
3D2	2	51	12	Ø
4D1	9	63	36	Ø
4D2	3	48	12	Ø
5D1	204	314	1012	Ø
5D2	204	297	1002	Ø

PRECIPITATOR
LOG SHEET FOR MERCURY TESTING

Date of Test: 9-30-99

Test #: Run #3

Test Run Start Time: _____

Test Run End Time: _____

Operator: Mossert

TR's out of Service: 4A1, 5A2, 2C2, 2D1

Enter Time Precipitator Readings began: 1330 **Enter time Precipitator Readings were Complete:** 1340

TR	PRIMARY AMPS	DC VOLTS	LOAD AMPS	SPARK RATE
1A1	101	290	462	Ø
1A2	143	351	742	Ø
2A1	97	217	474	Ø
2A2	173	288	862	Ø
3A1	5	52	24	Ø
3A2	7	61	30	Ø
4A1	— OOS —			
4A2	214	274	888	Ø
5A1	213	353	1052	Ø
5A2	— OOS —			
1B1	146	248	332	Ø
1B2	52	223	244	Ø
2B1	175	354	720	Ø
2B2	171	324	876	Ø
3B1	2	53	16	Ø
3B2	3	54	12	1
4B1	3	55	16	Ø
4B2	5	67	14	Ø
5B1	211	305	1030	Ø
5B2	210	299	1026	Ø
1C1	115	314	574	1
1C2	81	231	402	12
2C1	173	286	752	Ø
2C2	— OOS —			
3C1	12	69	34	Ø
3C2	7	63	30	Ø
4C1	3	73	26	Ø
4C2	5	59	24	Ø
5C1	207	340	1036	Ø
5C2	210	335	1040	Ø
1D1	144	361	822	Ø
1D2	83	295	452	1
2D1	— OOS —			
2D2	92	263	368	Ø
3D1	5	57	28	1
3D2	5	55	20	Ø
4D1	10	61	40	Ø
4D2	3	51	14	Ø
5D1	204	313	1010	Ø
5D2	205	297	1006	Ø

PRECIPITATOR

LOG SHEET FOR MERCURY TESTING

Date of Test: 9-30-99

Test #: Run #3

Test Run Start Time: _____

Test Run End Time: _____

Operator: Mossert

TR's out of Service: 4A1, 5A2, 2C2, 2D1

Enter Time Precipitator Readings began: 1400 **Enter time Precipitator Readings were Complete:** 1410

TR	PRIMARY AMPS	DC VOLTS	LOAD AMPS	SPARK RATE
1A1	97	294	478	Ø
1A2	143	354	736	Ø
2A1	101	231	464	Ø
2A2	169	290	864	Ø
3A1	178	340	790	Ø
3A2	208	348	958	Ø
4A1	— OOS —			
4A2	203	266	906	Ø
5A1	209	344	1040	Ø
5A2	— OOS —			
1B1	144	252	330	Ø
1B2	51	223	220	Ø
2B1	169	352	752	Ø
2B2	172	329	878	Ø
3B1	210	362	1042	Ø
3B2	164	311	816	2
4B1	207	363	992	Ø
4B2	206	381	990	Ø
5B1	211	302	1004	Ø
5B2	206	299	1084	Ø
1C1	135	354	646	2
1C2	96	240	418	11
2C1	170	291	776	Ø
2C2	— OOS —			
3C1	179	360	694	Ø
3C2	78	260	324	3
4C1	100	404	942	Ø
4C2	211	363	1062	Ø
5C1	213	346	992	Ø
5C2	213	336	1034	Ø
1D1	143	365	840	Ø
1D2	107	357	578	1
2D1	— OOS —			
2D2	92	260	374	Ø
3D1	179	369	884	Ø
3D2	109	267	450	Ø
4D1	179	340	890	Ø
4D2	186	344	910	Ø
5D1	212	318	1014	Ø
5D2	212	304	980	Ø

PRECIPITATOR
LOG SHEET FOR MERCURY TESTING

Date of Test: 9-30-99

Test #: Run #3

Test Run Start Time: _____

Test Run End Time: _____

Operator: Messert

TR's out of Service: 4A1, 5A2, 2C2, 2D1

Enter Time Precipitator Readings began: 1430 **Enter time Precipitator Readings were Complete:** 1440

TR	PRIMARY AMPS	DC VOLTS	LOAD AMPS	SPARK RATE
1A1	100	294	460	Ø
1A2	141	351	758	Ø
2A1	95	221	448	Ø
2A2	169	292	870	Ø
3A1	4	53	18	Ø
3A2	6	58	24	Ø
4A1	— OOS —			
4A2	210	279	912	Ø
5A1	207	345	1058	Ø
5A2	— OOS —			
1B1	135	240	334	Ø
1B2	50	225	212	Ø
2B1	174	356	730	Ø
2B2	169	326	888	Ø
3B1	3	52	20	Ø
3B2	2	53	12	Ø
4B1	7	65	32	Ø
4B2	32	96	112	Ø
5B1	208	301	1048	Ø
5B2	203	293	1040	Ø
1C1	118	325	582	Ø
1C2	79	228	488	8
2C1	174	298	760	Ø
2C2	— OOS —			
3C1	203	378	750	Ø
3C2	72	249	182	10
4C1	99	391	944	Ø
4C2	208	353	1054	Ø
5C1	206	336	1036	Ø
5C2	205	328	1044	Ø
1D1	144	359	818	Ø
1D2	109	358	596	1
2D1	— OOS —			
2D2	96	257	372	Ø
3D1	193	374	980	Ø
3D2	6	57	26	Ø
4D1	150	204	732	2
4D2	197	345	1032	Ø
5D1	207	313	1008	Ø
5D2	208	306	974	Ø

PRECIPITATOR
LOG SHEET FOR MERCURY TESTING

Date of Test: 9-30-99

Test #: Run #3

Test Run Start Time: _____

Test Run End Time: _____

Operator: Mesaalt

TR's out of Service: 4A1, 5A2, 2C2, 2D1

Enter Time Precipitator Readings began: 1500 **Enter time Precipitator Readings were Complete:** 1510

TR	PRIMARY AMPS	DC VOLTS	LOAD AMPS	SPARK RATE
1A1	97	287	472	ϕ
1A2	141	353	760	ϕ
2A1	97	223	460	ϕ
2A2	169	292	882	ϕ
3A1	3	50	18	ϕ
3A2	6	57	24	ϕ
4A1	— OOS —			
4A2	203	265	926	ϕ
5A1	207	345	1052	ϕ
5A2	— OOS —			
1B1	144	250	340	ϕ
1B2	49	219	222	ϕ
2B1	176	355	734	ϕ
2B2	169	329	884	ϕ
3B1	2	50	16	ϕ
3B2	2	48	10	ϕ
4B1	5	62	20	ϕ
4B2	6	64	20	ϕ
5B1	207	300	1044	ϕ
5B2	204	293	1064	ϕ
1C1	142	366	692	1
1C2	72	224	374	10
2C1	174	290	768	ϕ
2C2	— OOS —			
3C1	15	70	56	ϕ
3C2	26	104	82	4
4C1	4	72	36	ϕ
4C2	20	72	90	ϕ
5C1	205	338	996	ϕ
5C2	207	326	1040	ϕ
1D1	142	359	848	ϕ
1D2	90	313	480	2
2D1	— OOS —			
2D2	90	255	386	ϕ
3D1	7	64	34	ϕ
3D2	6	58	26	ϕ
4D1	11	62	42	ϕ
4D2	6	55	24	ϕ
5D1	209	317	1068	ϕ
5D2	207	300	960	ϕ

FLUE GAS DESULFURIZATION SYSTEM
LOG SHEET FOR MERCURY TESTING

Date of Test: 9-29-99

Test #: Run #1

Start of Test Time: 17:55

End of Test Time: 20:36

Operator: Pesonen / Balek

SDA Chambers in Service (Circle): (A) (B) (C)

Feed Slurry pH:	12.42	**Time:** 18:00	AP
Feed Slurry pH:	12.41	**Time:** 1830	AB all Balek
Feed Slurry pH:	12.39	**Time:** 1900	AB
Feed Slurry pH:	12.40	**Time:** 1930	AB
Feed Slurry pH:	12.44	**Time:** 2000	AB
Feed Slurry pH:	12.39	**Time:** 2030	AB
Feed Slurry pH:	12.38	**Time:** 2100	AB
Feed Slurry pH:	12.35	**Time:** 2130	AB

FLUE GAS DESULFURIZATION SYSTEM
LOG SHEET FOR MERCURY TESTING

Date of Test: 9-30-99

Test #: Run #2

Start of Test Time: 810

End of Test Time: 1109

Operator: Brenda Pennoyer

SDA Chambers In Service (cirle): (A) (B) (C)

Feed Slurry pH:	12.40	**Time:**	08:15
Feed Slurry pH:	12.36	**Time:**	08:45
Feed Slurry pH:	12.34	**Time:**	09:15
Feed Slurry pH:	12.34	**Time:**	09:45
Feed Slurry pH:	12.30	**Time:**	10:15
Feed Slurry pH:	12.28	**Time:**	10:45
Feed Slurry pH:	12.30	**Time:**	11:15
Feed Slurry pH:		**Time:**	
Feed Slurry pH:		**Time:**	

FLUE GAS DESULFURIZATION SYSTEM
LOG SHEET FOR MERCURY TESTING

Date of Test: 9-30-99

Test #: Run #3

Start of Test Time: 1213

End of Test Time: 1457

Operator: [illegible]

SDA Chambers In Service (cirle): A B C

Feed Slurry pH:	12.26	**Time:**	12:10
Feed Slurry pH:	12.29	**Time:**	12:40
Feed Slurry pH:	12.27	**Time:**	13:10
Feed Slurry pH:	12.28	**Time:**	13:40
Feed Slurry pH:	12.28	**Time:**	14:10
Feed Slurry pH:	12.32	**Time:**	14:40
Feed Slurry pH:	12.32	**Time:**	15:10
Feed Slurry pH:		**Time:**	
Feed Slurry pH:		**Time:**	

COAL DATA SHEET
FOR MERCURY TESTING

Date of Test:	9-29-99
Test #:	Run #1
Test Run Start Time:	1755
Test Run Finish Time:	2036
Sample ID:	(1) Run 1- H-Belts (2) Run 1- Coal Stock Feeders
Sample Start Time:	1758
Sample End Time:	1810
Operator:	R. Williams.
Feed Rate:	228 tons/hr
Mass of Coal Burned during Test:	612 tons

Enertec NTDAHS®
Average Values Report
09/30/99 14:20

Company: PacifiCorp
Plant: 48 Wyodak Road
City/St: Gillette, WY 82718
Source: WYODAK_1

Period Start: 09/29/99 17:55
Period End: 09/29/99 20:36
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start	Average Coal Flow Ton/h
09/29/99 17:55	226.16
09/29/99 17:56	225.85
09/29/99 17:57	226.70
09/29/99 17:58	227.37
09/29/99 17:59	227.87
09/29/99 18:00	227.00
09/29/99 18:01	227.74
09/29/99 18:02	226.87
09/29/99 18:03	225.98
09/29/99 18:04	226.50
09/29/99 18:05	226.66
09/29/99 18:06	227.49
09/29/99 18:07	227.72
09/29/99 18:08	227.57
09/29/99 18:09	226.50
09/29/99 18:10	226.22
09/29/99 18:11	225.99
09/29/99 18:12	226.76
09/29/99 18:13	226.45
09/29/99 18:14	225.40
09/29/99 18:15	225.63
09/29/99 18:16	225.16
09/29/99 18:17	225.89
09/29/99 18:18	227.11
09/29/99 18:19	228.05
09/29/99 18:20	227.77
09/29/99 18:21	227.86
09/29/99 18:22	229.04
09/29/99 18:23	229.23
09/29/99 18:24	228.41
09/29/99 18:25	228.45
09/29/99 18:26	229.83
09/29/99 18:27	231.54
09/29/99 18:28	230.96
09/29/99 18:29	229.77
09/29/99 18:30	230.32
09/29/99 18:31	230.47
09/29/99 18:32	230.09
09/29/99 18:33	229.34
09/29/99 18:34	228.95
09/29/99 18:35	229.64
09/29/99 18:36	229.82
09/29/99 18:37	229.61
09/29/99 18:38	228.93
09/29/99 18:39	229.43
09/29/99 18:40	229.23
09/29/99 18:41	229.48
09/29/99 18:42	229.80

09/29/99	18:43	230.25
09/29/99	18:44	230.54
09/29/99	18:45	230.14
09/29/99	18:46	229.30
09/29/99	18:47	228.29
09/29/99	18:48	228.28
09/29/99	18:49	228.78
09/29/99	18:50	229.01
09/29/99	18:51	230.17
09/29/99	18:52	230.79
09/29/99	18:53	230.67
09/29/99	18:54	228.85
09/29/99	18:55	227.42
09/29/99	18:56	227.49
09/29/99	18:57	226.45
09/29/99	18:58	226.96
09/29/99	18:59	226.62
09/29/99	19:00	226.53
09/29/99	19:01	227.85
09/29/99	19:02	227.49
09/29/99	19:03	227.11
09/29/99	19:04	227.16
09/29/99	19:05	226.54
09/29/99	19:06	226.33
09/29/99	19:07	226.61
09/29/99	19:08	226.98
09/29/99	19:09	226.84
09/29/99	19:10	226.82
09/29/99	19:11	227.79
09/29/99	19:12	229.54
09/29/99	19:13	229.43
09/29/99	19:14	229.93
09/29/99	19:15	229.42
09/29/99	19:16	227.31
09/29/99	19:17	226.33
09/29/99	19:18	225.59
09/29/99	19:19	225.68
09/29/99	19:20	226.00
09/29/99	19:21	225.54
09/29/99	19:22	225.90
09/29/99	19:23	226.33
09/29/99	19:24	226.78
09/29/99	19:25	227.62
09/29/99	19:26	227.66
09/29/99	19:27	228.32
09/29/99	19:28	227.90
09/29/99	19:29	226.75
09/29/99	19:30	227.32
09/29/99	19:31	227.92
09/29/99	19:32	228.07
09/29/99	19:33	228.12
09/29/99	19:34	227.17
09/29/99	19:35	227.32
09/29/99	19:36	227.53
09/29/99	19:37	226.97
09/29/99	19:38	227.19
09/29/99	19:39	227.93
09/29/99	19:40	229.02
09/29/99	19:41	230.13
09/29/99	19:42	230.85
09/29/99	19:43	231.67
09/29/99	19:44	230.87

09/29/99	19:45	229.45
09/29/99	19:46	229.57
09/29/99	19:47	229.82
09/29/99	19:48	229.61
09/29/99	19:49	230.09
09/29/99	19:50	230.72
09/29/99	19:51	231.53
09/29/99	19:52	231.33
09/29/99	19:53	230.01
09/29/99	19:54	228.69
09/29/99	19:55	227.47
09/29/99	19:56	228.82
09/29/99	19:57	229.98
09/29/99	19:58	229.63
09/29/99	19:59	229.95
09/29/99	20:00	231.25
09/29/99	20:01	230.71
09/29/99	20:02	230.08
09/29/99	20:03	230.03
09/29/99	20:04	228.92
09/29/99	20:05	227.36
09/29/99	20:06	225.62
09/29/99	20:07	225.45
09/29/99	20:08	226.50
09/29/99	20:09	227.64
09/29/99	20:10	228.51
09/29/99	20:11	228.62
09/29/99	20:12	228.23
09/29/99	20:13	227.19
09/29/99	20:14	226.89
09/29/99	20:15	226.87
09/29/99	20:16	227.43
09/29/99	20:17	227.57
09/29/99	20:18	227.32
09/29/99	20:19	226.83
09/29/99	20:20	227.94
09/29/99	20:21	228.14
09/29/99	20:22	228.60
09/29/99	20:23	228.35
09/29/99	20:24	228.51
09/29/99	20:25	228.35
09/29/99	20:26	229.49
09/29/99	20:27	228.73
09/29/99	20:28	228.45
09/29/99	20:29	228.80
09/29/99	20:30	229.04
09/29/99	20:31	228.16
09/29/99	20:32	228.01
09/29/99	20:33	228.83
09/29/99	20:34	228.76
09/29/99	20:35	229.45
Final Average*		**228.21**
Maximum*		231.67
Minimum*		225.16

*Does not include Invalid Averaging Periods ("N/A")

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FAX: (307) 682-7951

PACIFICORP
WYODAK PLANT
48 WYODAK RD-GARNER LK RT
GILLETTE WY 82718
BERNADETTE HINSHAW

Sample Identification by
PACIFICORP

Kind of Sample : Coal

Sample ID # : #1-H-BELTS

Sample Taken at: WYODAK PLANT

Sample Taken by: PACIFICORP

Date Sampled : September 29, 1999

Date Received : September 30, 1999

Batch # (Cl) - NIST33099
Batch # (Hg) - NIST29499

ANALYSIS REPORT NO. 25-02925

MERCURY (ug/g)	TOTAL CHLORINE (ug/g)
0.05	<50

QUALITY CONTROL REPORT

Standard Reference Material - NIST 1630a

MERCURY (ug/g)	
Certified Value	: 0.106
Analysis (Original)	: 0.098
Analysis (Replicate)	: 0.095

TOTAL CHLORINE (ug/g)	
Certified Value	: 1144
Analysis	: 1121

Procedure: Total Chlorine per ASTM part 05.05, Method D4208-88
Mercury per ASTM part 05.05, Method D3684-94

Results : Results are reported as indicated on a dry coal basis.

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

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October 6, 1999

PACIFICORP
WYODAK PLANT
48 WYODAK RD-GARNER LK RT
GILLETTE WY 82718
DENNIS THORFINNSON

Sample identification by
PACIFICORP

Sample ID: 1 H-BELT

Kind of sample reported to us: COAL

Sample taken at: PACIFICORP

Sample taken by: PACIFICORP

Date sampled: September 29, 1999

Date received: October 1, 1999

Analysis report no. 44-30911

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	30.64	xxxxx
%Ash	6.32	9.11
Btu/lb	8149	11749
% Sulfur	0.55	0.80

% Air Dry Loss = 12.97
Moisture, Ash-Free Btu = 12927
Pounds of SO_2 per 10^6 Btu = 1.35
Pounds of Sulfur per 10^6 Btu = 0.67
Pounds of Ash per 10^6 Btu = 7.76

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

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PACIFICORP
WYODAK PLANT
48 WYODAK RD-GARNER LK RT
GILLETTE WY 82718
BERNADETTE HINSHAW

Sample Identification by
PACIFICORP

Kind of Sample : Coal

Sample ID # : #1 STOCKFEEDERS

Sample Taken at: WYODAK PLANT

Sample Taken by: PACIFICORP

Date Sampled : September 29, 1999

Date Received : September 30, 1999

Batch # (Cl) - NIST33099
Batch # (Hg) - NIST29499

ANALYSIS REPORT NO. 25-02926

MERCURY (ug/g)	TOTAL CHLORINE (ug/g)
0.03	<50

QUALITY CONTROL REPORT

Standard Reference Material - NIST 1630a

MERCURY (ug/g)	
Certified Value	0.106
Analysis (Original)	0.098
Analysis (Replicate)	0.095

TOTAL CHLORINE (ug/g)	
Certified Value	1144
Analysis	1121

Procedure: Total Chlorine per ASTM part 05.05, Method D4208-88
Mercury per ASTM part 05.05, Method D3684-94

Results : Results are reported as indicated on a dry coal basis.

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Powder River Basin Laboratory

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FAX: (307) 682-7951

October 6, 1999

PACIFICORP
WYODAK PLANT
48 WYODAK RD-GARNER LK RT
GILLETTE WY 82718
DENNIS THORFINNSON

Sample identification by
PACIFICORP

Sample ID: 1 STOCK FEEDER

Kind of sample reported to us: COAL

Sample taken at: PACIFICORP

Sample taken by: PACIFICORP

Date sampled: September 29, 1999

Date received: October 1, 1999

Analysis report no. 44-30912

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	29.67	xxxxx
%Ash	7.06	10.04
Btu/lb	8123	11550
% Sulfur	0.61	0.87

% Air Dry Loss = 11.73
Moisture, Ash-Free Btu = 12839
Pounds of SO_2 per 10^6 Btu = 1.50
Pounds of Sulfur per 10^6 Btu = 0.75
Pounds of Ash per 10^6 Btu = 8.69

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Randy J. Burton
Powder River Basin Laboratory

MEMBER ACIL

COAL DATA SHEET
FOR MERCURY TESTING

Date of Test: 9-30-99

Test #: Run #2

Test Run Start Time: 0810

Test Run Finish Time: 1109

Sample ID: (1) Run 2 - H-Belts
(2) Run 2 - Coal Stock Pile

Sample Start Time: 0828

Sample End Time: 0835

Operator: R. Wilm

Feed Rate: 228 tons/hr

Mass of Coal Burned during Test: 682 tons

Enertec NTDAHS®
Average Values Report
09/30/99 14:22

Company: PacifiCorp
Plant: 48 Wyodak Road
City/St: Gillette, WY 82718
Source: WYODAK_1

Period Start: 09/30/99 08:10
Period End: 09/30/99 11:09
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start	Average Coal Flow Ton/h
09/30/99 08:10	229.75
09/30/99 08:11	229.68
09/30/99 08:12	231.02
09/30/99 08:13	231.42
09/30/99 08:14	232.28
09/30/99 08:15	231.23
09/30/99 08:16	228.98
09/30/99 08:17	228.65
09/30/99 08:18	229.31
09/30/99 08:19	229.20
09/30/99 08:20	229.34
09/30/99 08:21	229.76
09/30/99 08:22	229.41
09/30/99 08:23	229.35
09/30/99 08:24	230.44
09/30/99 08:25	230.12
09/30/99 08:26	230.31
09/30/99 08:27	229.86
09/30/99 08:28	229.46
09/30/99 08:29	227.73
09/30/99 08:30	226.79
09/30/99 08:31	227.41
09/30/99 08:32	227.39
09/30/99 08:33	228.21
09/30/99 08:34	228.37
09/30/99 08:35	228.27
09/30/99 08:36	227.29
09/30/99 08:37	227.11
09/30/99 08:38	227.46
09/30/99 08:39	228.64
09/30/99 08:40	229.44
09/30/99 08:41	229.91
09/30/99 08:42	230.84
09/30/99 08:43	228.81
09/30/99 08:44	228.48
09/30/99 08:45	230.23
09/30/99 08:46	229.56
09/30/99 08:47	229.18
09/30/99 08:48	226.74
09/30/99 08:49	227.38
09/30/99 08:50	227.66
09/30/99 08:51	228.81
09/30/99 08:52	228.44
09/30/99 08:53	227.39
09/30/99 08:54	228.41
09/30/99 08:55	229.24
09/30/99 08:56	228.63
09/30/99 08:57	229.08

09/30/99	08:58	229.82
09/30/99	08:59	229.93
09/30/99	09:00	230.32
09/30/99	09:01	230.53
09/30/99	09:02	230.03
09/30/99	09:03	228.98
09/30/99	09:04	227.94
09/30/99	09:05	227.74
09/30/99	09:06	227.26
09/30/99	09:07	227.14
09/30/99	09:08	227.28
09/30/99	09:09	227.95
09/30/99	09:10	228.08
09/30/99	09:11	227.72
09/30/99	09:12	227.68
09/30/99	09:13	227.27
09/30/99	09:14	227.44
09/30/99	09:15	228.10
09/30/99	09:16	228.49
09/30/99	09:17	227.41
09/30/99	09:18	227.25
09/30/99	09:19	226.98
09/30/99	09:20	227.45
09/30/99	09:21	228.80
09/30/99	09:22	228.83
09/30/99	09:23	229.11
09/30/99	09:24	228.20
09/30/99	09:25	227.71
09/30/99	09:26	229.01
09/30/99	09:27	231.36
09/30/99	09:28	229.97
09/30/99	09:29	229.21
09/30/99	09:30	228.13
09/30/99	09:31	226.87
09/30/99	09:32	227.00
09/30/99	09:33	225.98
09/30/99	09:34	226.50
09/30/99	09:35	228.23
09/30/99	09:36	229.42
09/30/99	09:37	228.76
09/30/99	09:38	228.06
09/30/99	09:39	227.83
09/30/99	09:40	228.74
09/30/99	09:41	229.61
09/30/99	09:42	230.31
09/30/99	09:43	229.90
09/30/99	09:44	230.00
09/30/99	09:45	229.12
09/30/99	09:46	229.15
09/30/99	09:47	229.12
09/30/99	09:48	229.04
09/30/99	09:49	230.19
09/30/99	09:50	230.85
09/30/99	09:51	230.59
09/30/99	09:52	229.76
09/30/99	09:53	229.54
09/30/99	09:54	229.12
09/30/99	09:55	230.17
09/30/99	09:56	230.88
09/30/99	09:57	230.42
09/30/99	09:58	229.81
09/30/99	09:59	229.24

09/30/99	10:00	227.65
09/30/99	10:01	227.56
09/30/99	10:02	228.08
09/30/99	10:03	228.95
09/30/99	10:04	230.49
09/30/99	10:05	230.15
09/30/99	10:06	228.48
09/30/99	10:07	227.67
09/30/99	10:08	227.87
09/30/99	10:09	228.01
09/30/99	10:10	228.23
09/30/99	10:11	229.48
09/30/99	10:12	229.98
09/30/99	10:13	228.48
09/30/99	10:14	227.16
09/30/99	10:15	227.28
09/30/99	10:16	227.13
09/30/99	10:17	227.64
09/30/99	10:18	226.86
09/30/99	10:19	226.19
09/30/99	10:20	226.07
09/30/99	10:21	225.57
09/30/99	10:22	227.01
09/30/99	10:23	227.21
09/30/99	10:24	226.92
09/30/99	10:25	227.05
09/30/99	10:26	226.81
09/30/99	10:27	227.29
09/30/99	10:28	226.83
09/30/99	10:29	226.75
09/30/99	10:30	227.06
09/30/99	10:31	226.43
09/30/99	10:32	226.62
09/30/99	10:33	226.21
09/30/99	10:34	226.26
09/30/99	10:35	226.86
09/30/99	10:36	227.59
09/30/99	10:37	227.75
09/30/99	10:38	227.33
09/30/99	10:39	226.47
09/30/99	10:40	226.58
09/30/99	10:41	227.00
09/30/99	10:42	226.98
09/30/99	10:43	226.62
09/30/99	10:44	226.82
09/30/99	10:45	227.49
09/30/99	10:46	228.12
09/30/99	10:47	228.12
09/30/99	10:48	228.93
09/30/99	10:49	229.14
09/30/99	10:50	229.69
09/30/99	10:51	228.64
09/30/99	10:52	227.70
09/30/99	10:53	227.82
09/30/99	10:54	228.14
09/30/99	10:55	228.98
09/30/99	10:56	230.16
09/30/99	10:57	230.65
09/30/99	10:58	228.94
09/30/99	10:59	229.37
09/30/99	11:00	230.49

09/30/99 11:01	230.54
09/30/99 11:02	231.04
09/30/99 11:03	230.66
09/30/99 11:04	230.13
09/30/99 11:05	227.71
09/30/99 11:06	226.79
09/30/99 11:07	227.12
09/30/99 11:08	226.94
Final Average*	**228.51**
Maximum*	232.28
Minimum*	225.57

*Does not include Invalid Averaging Periods ("N/A")

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PACIFICORP
WYODAK PLANT
48 WYODAK RD-GARNER LK RT
GILLETTE WY 82718
BERNADETTE HINSHAW

Sample Identification by
PACIFICORP

Kind of Sample : Coal

Sample ID # : #2-H-BELTS

Sample Taken at: WYODAK PLANT

Sample Taken by: PACIFICORP

Date Sampled : September 29, 1999

Date Received : September 30, 1999

Batch # (Cl) - NIST33099
Batch # (Hg) - NIST30699

ANALYSIS REPORT NO. 25-02927

MERCURY (ug/g)	TOTAL CHLORINE (ug/g)
0.15	<50

QUALITY CONTROL REPORT

Standard Reference Material - NIST 1630a

MERCURY (ug/g)	
Certified Value	: 0.106
Analysis (Original)	: 0.087
Analysis (Replicate)	: 0.117

TOTAL CHLORINE (ug/g)	
Certified Value	: 1144
Analysis	: 1121

Procedure: Total Chlorine per ASTM part 05.05, Method D4208-88
Mercury per ASTM part 05.05, Method D3684-94

Results : Results are reported as indicated on a dry coal basis.

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Powder River Basin Laboratory

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October 6, 1999

PACIFICORP
WYODAK PLANT
48 WYODAK RD-GARNER LK RT
GILLETTE WY 82718
DENNIS THORFINNSON

Sample identification by
PACIFICORP

Sample ID: 2-H BELTS

Kind of sample reported to us: COAL

Sample taken at: PACIFICORP

Sample taken by: PACIFICORP

Date sampled: September 30, 1999

Date received: October 1, 1999

Analysis report no. 44-30913

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	30.15	xxxxx
%Ash	7.93	11.36
Btu/lb	8086	11576
% Sulfur	1.46	2.09

% Air Dry Loss = 13.08
Moisture, Ash-Free Btu = 13060
Pounds of SO_2 per 10^6 Btu = 3.61
Pounds of Sulfur per 10^6 Btu = 1.81
Pounds of Ash per 10^6 Btu = 9.81

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO

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PACIFICORP
WYODAK PLANT
48 WYODAK RD-GARNER LK RT
GILLETTE WY 82718
BERNADETTE HINSHAW

Sample Identification by
PACIFICORP

Kind of Sample : Coal

Sample ID # : #2A-H-BELTS

Sample Taken at: WYODAK PLANT

Sample Taken by: PACIFICORP

Date Sampled : September 29, 1999

Date Received : September 30, 1999

Batch # (Cl) - NIST33099
Batch # (Hg) - NIST30699

ANALYSIS REPORT NO. 25-02928

MERCURY (ug/g)	TOTAL CHLORINE (ug/g)
0.10	<50

QUALITY CONTROL REPORT

Standard Reference Material - NIST 1630a

MERCURY (ug/g)	
Certified Value	: 0.106
Analysis (Original)	: 0.087
Analysis (Replicate)	: 0.117

TOTAL CHLORINE (ug/g)	
Certified Value	: 1144
Analysis	: 1121

Procedure: Total Chlorine per ASTM part 05.05, Method D4208-88
Mercury per ASTM part 05.05, Method D3684-94

Results : Results are reported as indicated on a dry coal basis.

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Powder River Basin Laboratory

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October 6, 1999

PACIFICORP
WYODAK PLANT
48 WYODAK RD-GARNER LK RT
GILLETTE WY 82718
DENNIS THORFINNSON

Sample identification by
PACIFICORP

Sample ID: 2A-H BELTS

Kind of sample reported to us: COAL

Sample taken at: PACIFICORP

Sample taken by: PACIFICORP

Date sampled: September 30, 1999

Date received: October 1, 1999

Analysis report no. 44-30914

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	30.38	xxxxx
%Ash	6.11	8.77
Btu/lb	8212	11795
% Sulfur	0.57	0.82

% Air Dry Loss = 12.60
Moisture, Ash-Free Btu = 12929
Pounds of SO_2 per 10^6 Btu = 1.39
Pounds of Sulfur per 10^6 Btu = 0.69
Pounds of Ash per 10^6 Btu = 7.44

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Powder River Basin Laboratory

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November 16, 1999

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TEL: (307) 682-7817
FAX: (307) 682-7951

PACIFICORP
WYODAK PLANT
48 WYODAK RD-GARNER LK RT
GILLETTE WY 82718
BERNADETTE HINSHAW

Sample Identification by
PACIFICORP

Kind of Sample : Coal

Sample ID # : #2-STOCKFEEDERS

Sample Taken at: WYODAK PLANT

Sample Taken by: PACIFICORP

Date Sampled : September 29, 1999

Date Received : September 30, 1999

Batch # (Cl) - NIST29999
Batch # (Hg) - NIST29499

ANALYSIS REPORT NO. 25-02929

MERCURY (ug/g)	TOTAL CHLORINE (ug/g)
0.04	<50

QUALITY CONTROL REPORT

Standard Reference Material - NIST 1630a

MERCURY (ug/g)	
Certified Value	: 0.106
Analysis (Original)	: 0.105
Analysis (Replicate)	: 0.102

TOTAL CHLORINE (ug/g)	
Certified Value	: 1144
Analysis	: 1121

Procedure: Total Chlorine per ASTM part 05.05, Method D4208-88
Mercury per ASTM part 05.05, Method D3684-94

Results : Results are reported as indicated on a dry coal basis.

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Powder River Basin Laboratory

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FAX: (307) 682-7951

October 6, 1999

PACIFICORP
WYODAK PLANT
48 WYODAK RD-GARNER LK RT
GILLETTE WY 82718
DENNIS THORFINNSON

Sample identification by
PACIFICORP

Sample ID: 2-STOCK FEEDER

Kind of sample reported to us: COAL

Sample taken at: PACIFICORP

Sample taken by: PACIFICORP

Date sampled: September 30, 1999

Date received: October 1, 1999

Analysis report no. 44-30915

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	29.77	xxxxx
%Ash	6.60	9.40
Btu/lb	8201	11677
% Sulfur	0.59	0.84

% Air Dry Loss =	12.77
Moisture, Ash-Free Btu =	12889
Pounds of SO_2 per 10^6 Btu =	1.44
Pounds of Sulfur per 10^6 Btu =	0.72
Pounds of Ash per 10^6 Btu =	8.05

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

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PACIFICORP
WYODAK PLANT
48 WYODAK RD-GARNER LK RT
GILLETTE WY 82718
BERNADETTE HINSHAW

Sample Identification by
PACIFICORP

Kind of Sample : Coal

Sample ID # : 2A-STOCKFEEDERS

Sample Taken at: WYODAK PLANT

Sample Taken by: PACIFICORP

Date Sampled : September 29, 1999

Date Received : September 30, 1999

Batch # (Cl) - NIST29999
Batch # (Hg) - NIST29499

ANALYSIS REPORT NO. 25-02930

MERCURY (ug/g)	TOTAL CHLORINE (ug/g)
0.07	<50

QUALITY CONTROL REPORT

Standard Reference Material - NIST 1630a

MERCURY (ug/g)	
Certified Value	: 0.106
Analysis (Original)	: 0.105
Analysis (Replicate)	: 0.102

TOTAL CHLORINE (ug/g)	
Certified Value	: 1144
Analysis	: 1121

Procedure: Total Chlorine per ASTM part 05.05, Method D4208-88
Mercury per ASTM part 05.05, Method D3684-94

Results : Results are reported as indicated on a dry coal basis.

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

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October 6, 1999

PACIFICORP
WYODAK PLANT
48 WYODAK RD-GARNER LK RT
GILLETTE WY 82718
DENNIS THORFINNSON

Sample identification by
PACIFICORP

Sample ID: 2A-STOCK FEEDER

Kind of sample reported to us: COAL

Sample taken at: PACIFICORP

Sample taken by: PACIFICORP

Date sampled: September 30, 1999

Date received: October 1, 1999

Analysis report no. 44-30916

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	29.39	xxxxx
%Ash	6.62	9.37
Btu/lb	8271	11713
% Sulfur	0.62	0.88

% Air Dry Loss = 13.58
Moisture, Ash-Free Btu = 12924
Pounds of SO_2 per 10^6 Btu = 1.50
Pounds of Sulfur per 10^6 Btu = 0.75
Pounds of Ash per 10^6 Btu = 8.00

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

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COAL DATA SHEET
FOR MERCURY TESTING

Date of Test: 9-30-99

Test #: Run #3

Test Run Start Time: 1213

Test Run Finish Time: 1457

Sample ID: (1) Run 3- H-Belts
(2) Run3 - Coal Stock Feeders

Sample Start Time: 1214

Sample End Time: 1224

Operator: John A Hast.

Feed Rate: 2.33 tons/hr

Mass of Coal Burned during Test: 6.36 tons

COAL DATA SHEET
FOR MERCURY TESTING

Date of Test: 9-30-99

Test #: Run #3

Test Run Start Time: 1213

Test Run Finish Time: 1457

Sample ID: (1) Run 3 - H-Belts
(2) Run 3 - Coal Stock feeders

Sample Start Time: 1303

Sample End Time: 1315

Operator: John O Hart

Feed Rate: 233 tons/hr

Mass of Coal Burned during Test: 636 tons

Enertec NTDAHS®
Average Values Report
10/04/99 11:27

Company: PacifiCorp
Plant: 48 Wyodak Road
City/St: Gillette, WY 82718
Source: WYODAK_1

Period Start: 09/30/99 12:13
Period End: 09/30/99 14:57
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start	Average Coal Flow Ton/h
09/30/99 12:13	231.13
09/30/99 12:14	231.26
09/30/99 12:15	231.44
09/30/99 12:16	231.10
09/30/99 12:17	231.93
09/30/99 12:18	232.12
09/30/99 12:19	232.12
09/30/99 12:20	232.21
09/30/99 12:21	231.84
09/30/99 12:22	232.50
09/30/99 12:23	231.99
09/30/99 12:24	231.30
09/30/99 12:25	230.79
09/30/99 12:26	231.32
09/30/99 12:27	231.90
09/30/99 12:28	230.64
09/30/99 12:29	229.70
09/30/99 12:30	228.71
09/30/99 12:31	228.86
09/30/99 12:32	229.51
09/30/99 12:33	229.91
09/30/99 12:34	230.79
09/30/99 12:35	231.32
09/30/99 12:36	230.03
09/30/99 12:37	229.12
09/30/99 12:38	230.15
09/30/99 12:39	231.99
09/30/99 12:40	231.28
09/30/99 12:41	229.66
09/30/99 12:42	230.06
09/30/99 12:43	230.90
09/30/99 12:44	231.91
09/30/99 12:45	233.07
09/30/99 12:46	232.58
09/30/99 12:47	231.05
09/30/99 12:48	231.11
09/30/99 12:49	231.04
09/30/99 12:50	231.52
09/30/99 12:51	231.90
09/30/99 12:52	231.39
09/30/99 12:53	230.54
09/30/99 12:54	230.54
09/30/99 12:55	229.68
09/30/99 12:56	230.37
09/30/99 12:57	231.38
09/30/99 12:58	232.34
09/30/99 12:59	232.84
09/30/99 13:00	233.29

09/30/99	13:01	234.10
09/30/99	13:02	234.31
09/30/99	13:03	235.29
09/30/99	13:04	235.29
09/30/99	13:05	234.54
09/30/99	13:06	234.69
09/30/99	13:07	233.69
09/30/99	13:08	233.32
09/30/99	13:09	233.43
09/30/99	13:10	234.33
09/30/99	13:11	236.73
09/30/99	13:12	237.43
09/30/99	13:13	235.87
09/30/99	13:14	234.25
09/30/99	13:15	234.27
09/30/99	13:16	233.79
09/30/99	13:17	235.46
09/30/99	13:18	234.95
09/30/99	13:19	233.77
09/30/99	13:20	232.57
09/30/99	13:21	232.11
09/30/99	13:22	232.63
09/30/99	13:23	232.34
09/30/99	13:24	233.21
09/30/99	13:25	233.81
09/30/99	13:26	233.49
09/30/99	13:27	233.14
09/30/99	13:28	233.60
09/30/99	13:29	232.94
09/30/99	13:30	234.13
09/30/99	13:31	233.62
09/30/99	13:32	232.63
09/30/99	13:33	232.10
09/30/99	13:34	233.46
09/30/99	13:35	232.40
09/30/99	13:36	231.93
09/30/99	13:37	231.85
09/30/99	13:38	231.79
09/30/99	13:39	232.10
09/30/99	13:40	231.22
09/30/99	13:41	231.65
09/30/99	13:42	231.65
09/30/99	13:43	231.39
09/30/99	13:44	232.48
09/30/99	13:45	232.83
09/30/99	13:46	232.88
09/30/99	13:47	231.92
09/30/99	13:48	232.41
09/30/99	13:49	231.68
09/30/99	13:50	232.31
09/30/99	13:51	232.35
09/30/99	13:52	233.07
09/30/99	13:53	231.74
09/30/99	13:54	231.09
09/30/99	13:55	231.11
09/30/99	13:56	232.81
09/30/99	13:57	234.84
09/30/99	13:58	234.01
09/30/99	13:59	231.88
09/30/99	14:00	231.14
09/30/99	14:01	231.05
09/30/99	14:02	232.41

09/30/99	14:03	232.92
09/30/99	14:04	233.50
09/30/99	14:05	234.09
09/30/99	14:06	232.73
09/30/99	14:07	231.61
09/30/99	14:08	231.59
09/30/99	14:09	232.62
09/30/99	14:10	233.36
09/30/99	14:11	232.28
09/30/99	14:12	232.83
09/30/99	14:13	233.35
09/30/99	14:14	234.08
09/30/99	14:15	234.34
09/30/99	14:16	234.21
09/30/99	14:17	234.16
09/30/99	14:18	234.22
09/30/99	14:19	234.41
09/30/99	14:20	235.97
09/30/99	14:21	236.01
09/30/99	14:22	235.35
09/30/99	14:23	235.81
09/30/99	14:24	236.37
09/30/99	14:25	236.18
09/30/99	14:26	236.01
09/30/99	14:27	235.05
09/30/99	14:28	235.65
09/30/99	14:29	235.19
09/30/99	14:30	235.49
09/30/99	14:31	233.86
09/30/99	14:32	232.98
09/30/99	14:33	232.02
09/30/99	14:34	232.39
09/30/99	14:35	233.86
09/30/99	14:36	234.96
09/30/99	14:37	235.36
09/30/99	14:38	235.97
09/30/99	14:39	235.55
09/30/99	14:40	235.81
09/30/99	14:41	236.67
09/30/99	14:42	235.78
09/30/99	14:43	234.23
09/30/99	14:44	233.31
09/30/99	14:45	233.56
09/30/99	14:46	232.49
09/30/99	14:47	232.47
09/30/99	14:48	232.75
09/30/99	14:49	233.05
09/30/99	14:50	233.84
09/30/99	14:51	234.51
09/30/99	14:52	234.47
09/30/99	14:53	234.04
09/30/99	14:54	232.47
09/30/99	14:55	233.01
09/30/99	14:56	233.21
Final Average*		**232.87**
Maximum*		237.43
Minimum*		228.71

*Does not include Invalid Averaging Periods ("N/A")

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PACIFICORP
WYODAK PLANT
48 WYODAK RD-GARNER LK RT
GILLETTE WY 82718
BERNADETTE HINSHAW

Sample Identification by
PACIFICORP

Kind of Sample : Coal

Sample ID # : #3-STOCKFEEDERS

Sample Taken at: WYODAK PLANT

Sample Taken by: PACIFICORP

Date Sampled : September 30, 1999

Date Received : September 30, 1999

Batch # (Cl) - NIST29999
Batch # (Hg) - NIST29499

ANALYSIS REPORT NO. 25-02933

MERCURY (ug/g)	TOTAL CHLORINE (ug/g)
0.05	<50

QUALITY CONTROL REPORT

Standard Reference Material - NIST 1630a

MERCURY (ug/g)	
Certified Value	: 0.106
Analysis (Original)	: 0.105
Analysis (Replicate)	: 0.102

TOTAL CHLORINE (ug/g)	
Certified Value	: 1144
Analysis	: 1121

Procedure: Total Chlorine per ASTM part 05.05, Method D4208-88
Mercury per ASTM part 05.05, Method D3684-94

Results : Results are reported as indicated on a dry coal basis.

Respectfully submitted,
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October 6, 1999

PACIFICORP
WYODAK PLANT
48 WYODAK RD-GARNER LK RT
GILLETTE WY 82718
DENNIS THORFINNSON

Sample identification by
PACIFICORP

Sample ID: 3 -STOCK FEEDER

Kind of sample reported to us: COAL

Sample taken at: PACIFICORP

Sample taken by: PACIFICORP

Date sampled: September 30, 1999

Date received: October 1, 1999

Analysis report no. 44-30919

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	30.29	xxxxx
%Ash	6.76	9.70
Btu/lb	8114	11640
% Sulfur	0.56	0.81

% Air Dry Loss = 12.47
Moisture, Ash-Free Btu = 12890
Pounds of SO_2 per 10^6 Btu = 1.38
Pounds of Sulfur per 10^6 Btu = 0.69
Pounds of Ash per 10^6 Btu = 8.33

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Amanda Ra Wells

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PACIFICORP
WYODAK PLANT
48 WYODAK RD-GARNER LK RT
GILLETTE WY 82718
BERNADETTE HINSHAW

Sample Identification by
PACIFICORP

Kind of Sample : Coal

Sample ID # : #3-H-BELTS

Sample Taken at: WYODAK PLANT

Sample Taken by: PACIFICORP

Date Sampled : September 29, 1999

Date Received : September 30, 1999

Batch # (Cl) - NIST29999
Batch # (Hg) - NIST29499

ANALYSIS REPORT NO. 25-02931

MERCURY (ug/g)	TOTAL CHLORINE (ug/g)
0.07	<50

QUALITY CONTROL REPORT

Standard Reference Material - NIST 1630a

MERCURY (ug/g)	
Certified Value	: 0.106
Analysis (Original)	: 0.105
Analysis (Replicate)	: 0.102

TOTAL CHLORINE (ug/g)	
Certified Value	: 1144
Analysis	: 1121

Procedure: Total Chlorine per ASTM part 05.05, Method D4208-88
Mercury per ASTM part 05.05, Method D3684-94

Results : Results are reported as indicated on a dry coal basis.

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

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October 6, 1999

PACIFICORP
WYODAK PLANT
48 WYODAK RD-GARNER LK RT
GILLETTE WY 82718
DENNIS THORFINNSON

Sample identification by
PACIFICORP

Sample ID: 3 -H BELTS

Kind of sample reported to us: COAL

Sample taken at: PACIFICORP

Sample taken by: PACIFICORP

Date sampled: September 30, 1999

Date received: October 1, 1999

Analysis report no. 44-30917

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	29.79	xxxxx
%Ash	8.38	11.94
Btu/lb	7958	11335
% Sulfur	0.69	0.98

% Air Dry Loss = 11.61
Moisture, Ash-Free Btu = 12872
Pounds of SO_2 per 10^6 Btu = 1.73
Pounds of Sulfur per 10^6 Btu = 0.87
Pounds of Ash per 10^6 Btu = 10.53

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Amanda Ra Wullma

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PACIFICORP
WYODAK PLANT
48 WYODAK RD-GARNER LK RT
GILLETTE WY 82718
BERNADETTE HINSHAW

Sample Identification by
PACIFICORP

Kind of Sample : Coal

Sample ID # : #3A-STOCKFEEDER

Sample Taken at: WYODAK PLANT

Sample Taken by: PACIFICORP

Date Sampled : September 30, 1999

Date Received : September 30, 1999

Batch # (Cl) - NIST30099
Batch # (Hg) - NIST29499

ANALYSIS REPORT NO. 25-02934

MERCURY (ug/g)	TOTAL CHLORINE (ug/g)
0.06	<50

QUALITY CONTROL REPORT

Standard Reference Material - NIST 1630a

MERCURY (ug/g)	
Certified Value	0.106
Analysis (Original)	0.105
Analysis (Replicate)	0.102

TOTAL CHLORINE (ug/g)	
Certified Value	1144
Analysis	1115

Procedure: Total Chlorine per ASTM part 05.05, Method D4208-88
Mercury per ASTM part 05.05, Method D3684-94

Results : Results are reported as indicated on a dry coal basis.

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

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October 6, 1999

PACIFICORP
WYODAK PLANT
48 WYODAK RD-GARNER LK RT
GILLETTE WY 82718
DENNIS THORFINNSON

Sample identification by
PACIFICORP

Sample ID: 3A-STOCK FEEDER

Kind of sample reported to us: COAL

Sample taken at: PACIFICORP

Sample taken by: PACIFICORP

Date sampled: September 30, 1999

Date received: October 1, 1999

Analysis report no. 44-30920

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	29.91	xxxxx
%Ash	6.46	9.22
Btu/lb	8217	11724
% Sulfur	0.58	0.83

% Air Dry Loss = 10.30
Moisture, Ash-Free Btu = 12915
Pounds of SO_2 per 10^6 Btu = 1.41
Pounds of Sulfur per 10^6 Btu = 0.71
Pounds of Ash per 10^6 Btu = 7.86

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Amanda Ra Wells

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PACIFICORP
WYODAK PLANT
48 WYODAK RD-GARNER LK RT
GILLETTE WY 82718
BERNADETTE HINSHAW

Sample Identification by
PACIFICORP

Kind of Sample : Coal

Sample ID # : #3A-H-BELTS

Sample Taken at: WYODAK PLANT

Sample Taken by: PACIFICORP

Date Sampled : September 30, 1999

Date Received : September 30, 1999

Batch # (Cl) - NIST29999
Batch # (Hg) - NIST29499

ANALYSIS REPORT NO. 25-02932

MERCURY (ug/g)	TOTAL CHLORINE (ug/g)
0.09	<50

QUALITY CONTROL REPORT

Standard Reference Material - NIST 1630a

MERCURY (ug/g)	
Certified Value	: 0.106
Analysis (Original)	: 0.105
Analysis (Replicate)	: 0.102

TOTAL CHLORINE (ug/g)	
Certified Value	: 1144
Analysis	: 1121

Procedure: Total Chlorine per ASTM part 05.05, Method D4208-88
Mercury per ASTM part 05.05, Method D3684-94

Results : Results are reported as indicated on a dry coal basis.

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.
Powder River Basin Laboratory

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ADDRESS ALL CORRESPONDENCE TO:
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GILLETTE, WY 82716
TEL: (307) 682-7917
FAX: (307) 682-7951

October 6, 1999

PACIFICORP
WYODAK PLANT
48 WYODAK RD-GARNER LK RT
GILLETTE WY 82718
DENNIS THORFINNSON

Sample identification by
PACIFICORP

Sample ID: 3A-H BELTS

Kind of sample reported to us: COAL

Sample taken at: PACIFICORP

Sample taken by: PACIFICORP

Date sampled: September 30, 1999

Date received: October 1, 1999

Analysis report no. 44-30918

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	30.16	xxxxx
%Ash	7.21	10.33
Btu/lb	8078	11566
% Sulfur	0.68	0.97

% Air Dry Loss = 12.41
Moisture, Ash-Free Btu = 12898
Pounds of SO_2 per 10^6 Btu = 1.68
Pounds of Sulfur per 10^6 Btu = 0.84
Pounds of Ash per 10^6 Btu = 8.93

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Amanda Rx Wuller

MEMBER ACIL

Powder River Basin Laboratory

OVER 40 BRANCH LABORATORIES STRATEGICALLY LOCATED IN PRINCIPAL COAL MINING AREAS, TIDEWATER AND GREAT LAKES PORTS, AND RIVER LOADING FACILITIES

465
ginal Watermarked For Your Protection

TERMS AND CONDITIONS ON REVERSE

CHAIN OF CUSTODY RECORD

PLEASE PRINT OR TYPE ALL INFORMATION EXCEPT SIGNATURES

Received Date: _____ Cust. No.: _____
Login Date: _____ Login No.: _____
Shipped by: _____ Custody Seal: Yes/No
Shipping Bill #: _____ Intact: Yes/No
Signature Match? Yes/No
If no - Reason: _____
For Lab Use Only

ENERGY LABORATORIES, INC.
P.O. Box 30916 Billings, Montana 59107 — Walk-In: 800-735-2489; 1120 South 27th Street: Voice: 406-252-6325; Fax: 406-252-6069

ENERGY LABORATORIES, INC.
P.O. Box 3258, 2393 Salt Creek Highway, Casper, Wyoming 82602 — Walk-In: 888-235-0515; Voice: 307-235-0515; Fax: 307-234-1639

ENERGY LABORATORIES, INC.
1105 West First Street, Gillette, Wyoming 82716 — Voice: 307-686-7175; Fax: 307-682-4625

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P.O. Box 2470, 610 Farnwood, Rapid City, South Dakota 57709 — Walk-In: 888-672-1225; Voice: 605-342-1225; Fax: 605-342-1390

P.O.#:

Project Name / Address: Mercury Stack Testing

*Contact Name & Phone: Bernadette Hinshaw 687-4283

Sampler's Signature:

Invoice to: Pacificorp, Wyodak Plant, 1 & Wyodak Rd, Gillette, Wy 82716

Report to: Bernadette Hinshaw

Lab No. (For Lab Use Only)	DATE	TIME	SAMPLE I.D.	number of containers	Sample Type: A W S V U O (Air Water Soils/Solids Vegetation Urine Other)	Total Sulfur, % (dry)	Heating Value, Btu/lb (dry)	Ash, Percent (dry)	Mercury, ppm (dry)	Chlorine, ppm (dry)				Comments, Special Instructions, etc.
	9/29	6:00	Mercury Testing Run #1 - H-Brit	1	O	X	X	X	X	X				
	9/29	6:00	Mercury Testing Run #1 - Stack Sealers	1	O	X	X	X	X	X				
	9/30	9:45	Mercury Testing Run #2 - H Brits	1	O	X	X	X	X	X				
	9/30	9:45	Mercury Testing Run #2A - H Brits	1	O	X	X	X	X	X				
	9/30	9:30	Mercury Testing Run #2 - Stack Sealers	1	O	X	X	X	X	X				
	9/30	9:30	Mercury Testing Run #2A - Stack Sealers	1	O	X	X	X	X	X				
	9/30	12:25	Mercury Testing Run #3 - H Brits	1	O	X	X	X	X	X				
	9/30	1:20	Mercury Testing Run #3A - H Brits	1	O	X	X	X	X	X				
	9/30	12:25	Mercury Testing Run #3 - Stack Sealers	1	O	X	X	X	X	X				
	9/30	1:00	Mercury Testing Run #3A - Stack Sealers	1	O	X	X	X	X	X				

1. Relinquished (signature)	Date	Time	Received by: (signature)	2. Relinquished (signature)	Date	Time	Received for Laboratory by: (signature)
[illegible]	[illegible]	[illegible]					