Appendix 1
Testing Parameters / Sample Calculations

Pacificorp : Jim Bridger Power Plant
Unit #4 Inlet
03-28-00 to 03-29-00
Ontario Hydro Method - Mercury Speciation

Field Data	Run #1	Run #3	Run #4	Averages
date	03-28-00	03-28-00	03-29-00	
start time	09:16 AM	03:55 PM	08:01 AM	
stop time	11:24 AM	06:03 PM	10:11 AM	
sample volume (ft3)	71.993	67.442	66.401	68.612
sampling time (minutes)	120	120	120	120
stack temp. (oF)	297	294	293	295
meter temp. (oF)	46	48	39	44
barometric pressure (mbar)	777	777	784	779
barometric pressure (" Hg)	22.95	22.95	23.16	23.02
stack pressure (inches water)	7.8	7.8	7.8	7.8
moisture (grams)	132.1	114.0	117.4	121.2
oxygen (%)	5.8	6.0	5.8	5.9
carbon dioxide (%)	13.4	13.8	13.7	13.6
delta H	0.94	0.84	0.85	0.9
(delta p)^1/2	0.815	0.771	0.776	0.787
meter box Y	1.009	1.009	1.009	1.009
delta H@	1.73	1.73	1.73	1.73
pitot tube constant	0.82	0.82	0.82	0.82
nozzle diameter (inches)	0.220	0.220	0.220	0.220
stack diameter (inches) (De, 23' x 20' 4" actual)	292.82	292.82	292.82	292.82

Laboratory Data					Solution/Filter Blank (ug)
mass particulate, beaker (grams)	0.00955	0.01255	0.00450	0.0111	
mass particulate, filter (grams)	0.06290	0.07800	0.05070	0.0639	0.00000
mass Hg (micrograms) (fronthalf)	0.069	0.570	0.100	0.246	< 0.060
mass Hg (micrograms) (KCl)	3.5	2.6	2.4	2.8	< 0.00
mass Hg (micrograms) (KMnO4)	6.9	7.0	5.7	6.5	< 0.04
mass Hg (micrograms) (H2O2)	0.38	< 0.25	< 0.25	0.32	< 0.05

Calculations				
sample volume (dscf)	58.30	54.36	54.97	55.88
moisture volume (scf)	6.22	5.37	5.53	5.70
moisture content (%/100)	0.096	0.090	0.091	0.093
molecular weight (dry)	30.38	30.45	30.42	30.42
molecular weight (actual)	29.18	29.33	29.29	29.27
gas velocity (ft/sec)	60.0	56.5	56.6	57.7
gas flow (acfm)	1,682,623	1,585,501	1,589,644	1,619,256
gas flow (dscfm)	833,785	794,972	803,388	810,715
% isokinetic	103.3	101.0	101.1	101.8
Particulate Emissions				
particulate emissions (gr/dscf)	0.019	0.026	0.015	0.020
particulate emissions (lb/hr)	137	175	107	140
Particulate Bound Hg Emissions				
Hg emissions (ug/dscm)	0.04	0.37	0.06	0.16
Hg emissions (lb/hr)	0.0001	0.0011	0.0002	0.0005
Oxidized Hg Emissions				
Hg emissions (ug/dscm)	2.1	1.7	1.5	1.8
Hg emissions (lb/hr)	0.007	0.005	0.005	0.005
Elemental Hg Emissions				
Hg emissions (ug/dscm)	4.4	4.7	3.8	4.3
Hg emissions (lb/hr)	0.014	0.014	0.012	0.013
Total Hg Emissions				
Hg emissions (ug/dscm)	6.6	6.8	5.4	6.3
Hg emissions (lb/hr)	0.021	0.020	0.016	0.019

Pacificorp : Jim Bridger Power Plant
Unit #4 Outlet
03-28-00 to 03-29-00
Ontario Hydro Method - Mercury Speciation

Field Data	Run #1	Run #3	Run #4	Averages
date	03-28-00	03-28-00	03-29-00	
start time	09:00 AM	03:55 PM	08:00 AM	
stop time	11:27 AM	06:03 PM	10:14 AM	
sample volume (ft3)	83.993	83.387	80.562	82.647
sampling time (minutes)	120	120	120	120
stack temp. (oF)	129	128	129	129
meter temp. (oF)	63	66	56	62
barometric pressure (mbar)	777	777	784	779
barometric pressure (" Hg)	22.95	22.95	23.16	23.02
stack pressure (inches water)	-0.10	-0.10	-0.10	-0.10
moisture (grams)	208.2	228.4	214.9	217.2
oxygen (%)	5.8	5.8	5.8	5.8
carbon dioxide (%)	13.4	13.4	13.7	13.5
delta H	1.40	1.30	1.30	1.3
(delta p)^1/2	0.633	0.624	0.626	0.627
meter box Y	1.018	1.018	1.018	1.018
delta H@	1.86	1.86	1.86	1.86
pitot tube constant	0.83	0.83	0.83	0.83
nozzle diameter (inches)	0.257	0.257	0.257	0.257
stack diameter (inches)	393.50	393.50	393.50	393.50

Laboratory Data					Solution/Filter Blank (ug)
mass particulate, beaker (grams)	0.00565	0.00570	0.00810	0.00648	
mass particulate, filter (grams)	0.01535	0.01835	0.01550	0.01640	0.00000
mass Hg (micrograms) (fronthalf)	0.100	0.072	0.051	0.086	< 0.06
mass Hg (micrograms) (KCl)	0.40	0.46	0.31	0.43	< 0.00
mass Hg (micrograms) (KMnO4)	10.0	10.0	9.0	10.0	< 0.04
mass Hg (micrograms) (H2O2)	0.60	< 0.25	< 0.25	< 0.37	< 0.05

Calculations				
sample volume (dscf)	66.49	65.61	65.20	65.77
moisture volume (scf)	9.80	10.75	10.12	10.22
moisture content (%/100)	0.128	0.141	0.134	0.135
molecular weight (dry)	30.38	30.38	30.42	30.39
molecular weight (actual)	28.79	28.63	28.76	28.73
gas velocity (ft/sec)	42.4	41.9	41.7	42.0
gas flow (acfm)	2,148,497	2,122,787	2,114,777	2,128,687
gas flow (dscfm)	1,287,278	1,256,017	1,270,987	1,271,427
% isokinetic	101.0	102.1	100.3	101.1
Particulate Emissions				
particulate emissions (gr/dscf)	0.0049	0.0057	0.0056	0.0054
particulate emissions (lb/hr)	53.7	60.8	60.8	58.5
Particulate Bound Hg Emissions				
Hg emissions (ug/dscm)	0.053	0.039	0.028	0.040
Hg emissions (lb/hr)	0.00026	0.00018	0.00013	0.00019
Oxidized Hg Emissions				
Hg emissions (ug/dscm)	0.212	0.248	0.168	0.209
Hg emissions (lb/hr)	0.00102	0.00116	0.00080	0.00100
Elemental Hg Emissions				
Hg emissions (ug/dscm)	5.6	5.5	5.0	5.4
Hg emissions (lb/hr)	0.027	0.026	0.024	0.026
Total Hg Emissions				
Hg emissions (ug/dscm)	5.9	5.8	5.2	5.6
Hg emissions (lb/hr)	0.028	0.027	0.025	0.027

Pacificorp : Jim Bridger Power Plant
Unit #4
03-28-00 to 03-29-00
Ontario Hydro Method - Mercury Speciation
Speciated Mercury and Particulate Matter Control Efficiency

	Run #1	Run #3	Run #4	Averages
Inlet				
particulate (gr/dscf)	0.019	0.026	0.015	0.020
particulate bound Hg (ug/dscm)	0.04	0.37	0.06	0.16
oxidized Hg (ug/dscm)	2.1	1.7	1.5	1.8
elemental Hg (ug/dscm)	4.4	4.7	3.8	4.3
total Hg (ug/dscm)	6.6	6.8	5.4	6.3
Outlet				
particulate (gr/dscf)	0.0049	0.0057	0.0056	0.0054
particulate bound Hg (ug/dscm)	0.053	0.039	0.028	0.040
oxidized Hg (ug/dscm)	0.212	0.248	0.168	0.209
elemental Hg (ug/dscm)	5.6	5.5	5.0	5.4
total Hg (ug/dscm)	5.9	5.8	5.2	5.6
Pollution Control Efficiency				
particulate	74.2%	78.1%	62.7%	71.7%
particulate bound Hg	-32.5%	89.5%	53.3%	36.8%
oxidized Hg	89.9%	85.4%	88.8%	88.0%
elemental Hg	-27.3%	-17.0%	-31.6%	-25.3%
total Hg	10.6%	14.7%	3.7%	9.7%

Ontario Hydro Mercury Speciation
Bridger Outlet Run #1

Sample Calculations

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

$$= \frac{(17.64)\cdot(83.993)\cdot(1.018)\cdot\left[(22.95) + \frac{(1.40)}{13.6}\right]}{[(63) + 460]}$$

$$= 66.49$$

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

$$= (0.04707)\cdot(208.2)$$

$$= 9.80$$

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

$$= \frac{(9.80)}{[(66.49) + (9.80)]}$$

$$= 0.128$$

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

$$= (0.440)\cdot(13.4) + (0.320)\cdot(5.8) + (0.280)\cdot[(80.8) + (0.0)]$$

$$= 30.38$$

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

$$= (30.38)\cdot[1 - (0.128)] + (18.0)\cdot(0.128)$$

$$= 28.79$$

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

$$= (85.49)\cdot(0.83)\cdot(0.633)\cdot\sqrt{\frac{(129) + 460}{\left[(22.95) + \frac{(-0.10)}{(13.6)}\right]\cdot(28.79)}}$$

$$= 42.4$$

Ontario Hydro Mercury Speciation
Bridger Outlet Run #1

Sample Calculations (continued)

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

$$= (60)\cdot\frac{\pi\cdot\left[\frac{(393.5)}{12}\right]^2}{4}\cdot(42.4)$$

$$= 2{,}148{,}497$$

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

$$= (60)\cdot[1-(0.128)]\cdot(42.4)\cdot\frac{\pi\cdot\left[\frac{(393.5)}{12}\right]^2}{4}\cdot\frac{(528)\cdot\left[(22.95)+\frac{(-0.10)}{(13.6)}\right]}{[(129)+460]\cdot(29.92)}$$

$$= 1{,}287{,}278$$

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

$$= \frac{(0.021)\cdot(1{,}287{,}278)\cdot(60)}{(66.49)\cdot(453.5)}$$

$$= 0.0049$$

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

$$= \frac{(0.021)}{(66.49)}\cdot(15.43)$$

$$= 0.0049$$

Ontario Hydro Mercury Speciation
Bridger Outlet Run #1

Sample Calculations (continued)

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

$$= \frac{(100)\cdot[(129)+460]\cdot\left\{(0.002669)\cdot(208.2)+\left[\frac{(83.993)\cdot(1.018)}{[(63)+460]}\right]\cdot\left[(22.95)+\frac{(1.40)}{13.6}\right]\right\}}{(60)\cdot(120.0)\cdot(42.4)\cdot\left[(22.95)+\frac{(-0.10)}{13.6}\right]\cdot\frac{\left\{\pi\cdot\left[\frac{(0.257)}{12}\right]^2\right\}}{4}}$$

$$= 101.0\%$$

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)

Appendix 2
Field and Laboratory Data

Field Data

Job #: PAC 9401	Date: 3/28/00	CO2 (%): ~~14~~ 13.4	O2 (%): 5.8
Location: Unit 4 Inlet	Operator: MH	Assumed Moisture (%): 8	Barometric Pressure (mbar): ~~759~~ 777
Run # 1	Probe ID: P-144	Ambient Temperature (oF): 35	Probe Material: Teflon
Meter Box Yd: 1.009	Pitot Tube Coefficient: 0.82	Probe Length (ft): 22	Filter Temperature (oF): Stack
Sample Box ID:	Meter Box ID: M5-8	Probe Temperature (oF):	Moisture (grams):
Meter DH@: 1.73	K Factor: 1.395	Nozzle Diameter (in): 0.220	Start Time: 09:16
Pre-Test Pitot Leak Check: ✓	Post-Test Pitot Leak Check: ✓	Static Pressure (" H2O): +7.8	Stop Time:
Pre-Test Pump Leak Check: 0.00/13" Hg	Post-Test Pump Leak Check: 0.00/13" Hg	Filter ID:	Method: OHM

Air Pollution Testing, Inc.

Schematic of Stack Cross Section

1 of 2

✓

Traverse Point	Sampling Time (minutes)	Vacuum (" Hg)	Velocity Head (" H2O)	Orifice Setting (" H2O)	Meter Volume (ft3) Initial Volume 191.073	Stack Temp. (oF)	Probe Temp. (oF)	Filter Temp. (oF)	Meter Temp. Inlet (oF)	Meter Temp. Outlet (oF)	Condenser Temp. (oF)	Trap Exit Temp. (oF)	Notes:
1-1	5	7	1.0	1.4	194.8	295	280	Stack	41	41	39	—	94.8
2	10	6	0.94	1.3	198.3	295	277		42	41	40		98.3
3	15	5	0.72	1.0	201.4	295	278		42	42	40		01.4
4	20	5	0.80	1.1	204.7	297	270		44	42	41		04.7
5	25	5	0.82	1.1	208.0	297	273		46	42	42		08.0
6	30	5	0.71	0.99	211.1	298	276		47	43	42		11.1
2-1	35	5	0.81	1.1	214.4	297	279		47	43	40		14.4
2	40	5	0.63	0.88	217.3	297	283		48	44	41		17.3
3	45	4	0.50	0.70	220.0	295	277		48	44	41		19.9
4	50	3.5	0.38	0.53	222.4	298	277		48	44	41		22.3
5	55	6	0.86	1.2	225.7	296	274		48	44	41		25.8
6	60	7	1.0	1.4	229.4	296	270		49	45	41		29.4
3-1	65	5	0.82	1.1	232.7	297	271		49	45	40		32.7
2	70	5	0.82	1.1	235.9	298	275		49	45	40		36.0
3	75	4.5	0.51	0.71	238.6	297	274		50	45	42		38.5
4	80	3	0.27	0.38	240.6	297	277		49	45	41		40.5
number	total	maximum	12.46 average root	15.99 average	difference	4745 average	minimum	minimum	1442 average		maximum	maximum	

K_1 = ~~.728~~ .731

Stack ID (inches): 292.82

Job #: PAC9401	Date: 3/28/00	CO2 (%): 13.4	O2 (%): 5.8
Location: Unit 4 Inlet	Operator: MH	Assumed Moisture (%): 8	Barometric Pressure (mbar): 777
Run # 1	Probe ID: D-144	Ambient Temperature (oF): 35	Probe Material: Teflon
Meter Box Yd: 1.009	Pitot Tube Coefficient: 0.82	Probe Length (ft): 22	Filter Temperature (oF): Stack
Sample Box ID: –	Meter Box ID: M5-8	Probe Temperature (oF):	Moisture (grams): 132.1
Meter DH@: 1.73	K Factor: 1.4	Nozzle Diameter (in): 0.220	Start Time: 09:16
Pre-Test Pitot Leak Check: ✓	Post-Test Pitot Leak Check: ✓	Static Pressure (" H2O): 7.8	Stop Time: 11:24
Pre-Test Pump Leak Check: 0.00/13" Hg	Post-Test Pump Leak Check: 0.00/13" Hg	Filter ID:	Method: OHM

Air Pollution Testing, Inc.

Schematic of Stack Cross Section

2 of 2

118.4

$K_t = .731$

Stack ID (inches):

Traverse Point	Sampling Time (minutes)	Vacuum (" Hg)	Velocity Head (" H2O)	Orifice Setting (" H2O)	Meter Volume (ft3) Initial Volume 240.6	Stack Temp. (oF)	Probe Temp. (oF)	Filter Temp. (oF)	Meter Temp. Inlet (oF)	Meter Temp. Outlet (oF)	Condenser Temp. (oF)	Trap Exit Temp. (oF)	Notes:
5	85	6	0.78	1.1	243.8	297	271	Stack	48	45	41	–	43.7
6	90	6	0.76	1.1	247.0	297	272	↓	48	45	41		47.0
4-1	95	5	0.61	0.85	249.9	298	275	↓	48	45	40		49.9
2	100	6	0.80	1.1	253.1	299	276	↓	49	46	40		53.2
3	105	5.5	0.53	0.74	255.9	298	276	↓	50	47	40		55.8
4	110	4	0.34	0.48	258.1	298	277	↓	51	47	41		58.0
5	115	4	0.45	0.63	260.6	299	276	↓	51	47	41		60.5
6	120	4	0.47	0.66	263.066	299	277	↓	51	47	41		63.1
number	total	maximum	average root	average	difference	average	minimum	minimum	average		maximum	maximum	
24	120	7	0.773	0.944	21.993	297	270	Stack	46		42	–	

0.8145 JMP

ORSAT RESULTS

CO_2 13.4 19.2 = 5.8 O_2

CO_2 13.4 19.2 = 5.8 O_2

Job #: PAC 9401	Date: 3/28/00	CO2 (%): 13.4	O2 (%): 5.8
Location: Unit 4 Inlet	Operator: MH	Assumed Moisture (%): 9	Barometric Pressure (mbar): 777
Run # 3	Probe ID: P-144	Ambient Temperature (oF): 35	Probe Material: Teflon
Meter Box Yd: 1.009	Pitot Tube Coefficient: 0.82	Probe Length (ft): 22	Filter Temperature (oF): Stack
Sample Box ID: –	Meter Box ID: M5-8	Probe Temperature (oF):	Moisture (grams):
Meter DH@: 1.73	K Factor: 1.387	Nozzle Diameter (in): 0.220	Start Time: 15:55
Pre-Test Pitot Leak Check: ✓	Post-Test Pitot Leak Check: ✓	Static Pressure (" H2O): +7.8	Stop Time: 18:03
Pre-Test Pump Leak Check: 0.00/10" Hg	Post-Test Pump Leak Check: 0.00/10" Hg	Filter ID:	Method: OHM

Air Pollution Testing, Inc.

Schematic of Stack Cross Section

1 of 2

K_I = .729

Stack ID (inches):

Traverse Point	Sampling Time (minutes)	Vacuum (" Hg)	Velocity Head (" H2O)	Orifice Setting (" H2O)	Meter Volume (ft3) Initial Volume 330.557	Stack Temp. (oF)	Probe Temp. (oF)	Filter Temp. (oF)	Meter Temp. Inlet (oF)	Meter Temp. Outlet (oF)	Condenser Temp. (oF)	Trap Exit Temp. (oF)	Notes: 34.3
1-1	5	7.5	1.0	1.4	334.2	291	271	Stack	45	45	41	–	
2	10	7	0.87	1.2	337.6	292	275		46	46	40		37.6
3	15	4.5	0.48	0.67	340.1	290	270		47	46	40		40.1
4	20	5	0.70	0.97	343.1	290	273		47	46	42		43.2
5	25	6	0.81	1.1	346.3	291	268		49	47	42		46.4
6	30	6	0.81	1.1	349.6	293	269		51	48	41		49.6
2-1	35	6	0.74	1.0	352.7	294	274		52	49	41		52.7
2	40	6	0.74	1.0	355.9	295	276		54	50	41		55.8
3	45	5	0.62	0.86	358.8	292	274		55	50	41		58.8
4	50	5	0.50	0.70	361.4	290	270		55	50	42		61.4
5	55	5	0.58	0.81	364.2	290	271		55	51	43		64.2
6	60	3.5	0.29	0.40	366.128 / 366.293	293	271		55	51	43		66.2
3-1	65	6	0.76	1.1	369.5	294	273		53	52	41		69.5
2	70	6	0.81	1.1	372.8	294	276		52	51	41		72.8
3	75	5	0.53	0.74	375.4	292	268		49	49	40		75.5
4	80	4	0.42	0.58	377.5	293	269		46	47	40		77.8
	total	maximum	average root	average	difference	average	minimum	minimum	1589	average	maximum	maximum	

Job #: PAC9401	Date: 3/28/00	CO2 (%): 13.4	O2 (%): 5.8
Location: Unit 4 Inlet	Operator: MH	Assumed Moisture (%): 9	Barometric Pressure (mbar): 777
Run # 3	Probe ID: P-144	Ambient Temperature (oF): 35	Probe Material: Teflon
Meter Box Yd: 1.009	Pitot Tube Coefficient: 0.82	Probe Length (ft): 22	Filter Temperature (oF): Stack
Sample Box ID: –	Meter Box ID: M5-8	Probe Temperature (oF):	Moisture (grams): 114.8
Meter DH@: 1.73	K Factor: 1.387	Nozzle Diameter (in): 0.220	Start Time: 15:55
Pre-Test Pitot Leak Check: ✓	Post-Test Pitot Leak Check: ✓	Static Pressure (" H2O): +7.8	Stop Time: 18:03
Pre-Test Pump Leak Check: 0.00/10"Hg	Post-Test Pump Leak Check: 0.00/10"Hg	Filter ID:	Method: OHM

Air Pollution Testing, Inc.

Schematic of Stack Cross Section

2 of 2

Traverse Point	Sampling Time (minutes)	Vacuum (" Hg)	Velocity Head (" H2O)	Orifice Setting (" H2O)	Meter Volume (ft3) Initial Volume 377.9	Stack Temp. (oF)	Probe Temp. (oF)	Filter Temp. (oF)	Meter Temp. Inlet (oF)	Meter Temp. Outlet (oF)	Condenser Temp. (oF)	Trap Exit Temp. (oF)	Notes:
5	85	4	0.41	0.57	380.2	294	268	Stack	46	46	39	–	80.2
6	90	4	0.32	0.44	382.2	295	272		44	44	39		82.3
4-1	95	4.5	0.55	0.76	384.9	297	274		44	44	40		84.9
2	100	5	0.67	0.93	387.8	297	274		45	45	40		87.9
3	105	5	0.50	0.70	390.4	298	271		46	45	40		90.4
4	110	5	0.59	0.82	393.3	298	273		46	46	40		93.2
5	115	4.5	0.45	0.63	395.7	297	276		46	45	39		95.7
6	120	4.5	0.45	0.63	398.164	297	274		46	45	39		98.1
		maximum	average root	average	difference	average	minimum	minimum	average		maximum	maximum	
		=	0.771	0.842	67.442	294		Stack	48		43	–	

Stack ID (inches): 292.82

ORSAT

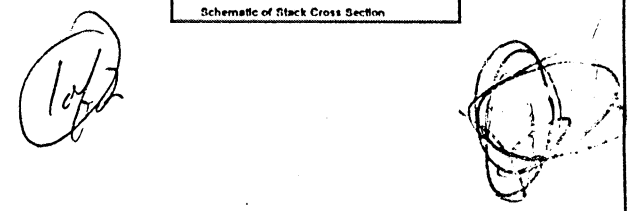
CO_2 = 13.8 19.8 = 6.0 O_2

CO_2 = 13.8 19.8 = 6.0 O_2

Job #: PAC 9401	Date: 3/29/00	CO2 (%): 13.5	O2 (%): 5.8
Location: Unit 4 Inlet	Operator: MH	Assumed Moisture (%): 9.4	Barometric Pressure (mbar): 754
Run # 48	Probe ID: P-144	Ambient Temperature (oF): 35	Probe Material: Teflon
Meter Box Yd: 1.009	Pitot Tube Coefficient: 0.82	Probe Length (ft): 22	Filter Temperature (oF): Stack
Sample Box ID: –	Meter Box ID: M5-8	Probe Temperature (oF):	Moisture (grams):
Meter DH@: 1.73	K Factor: 1.357	Nozzle Diameter (in): 0.220	Start Time: 08:01
Pre-Test Pitot Leak Check: ✓	Post-Test Pitot Leak Check: ✓	Static Pressure (" H2O): +7.8	Stop Time: 10:11
Pre-Test Pump Leak Check: 0.00/12" Hg	Post-Test Pump Leak Check:	Filter ID:	Method: OHM

Air Pollution Testing, Inc.

Schematic of Stack Cross Section



K_I = .712

Stack ID (inches): 292.82"

Traverse Point	Sampling Time (minutes)	Vacuum (" Hg)	Velocity Head (" H2O)	Orifice Setting (" H2O)	Meter Volume (ft3) Initial Volume 400.064	Stack Temp. (oF)	Probe Temp. (oF)	Filter Temp. (oF)	Meter Temp. Inlet (oF)	Meter Temp. Outlet (oF)	Condenser Temp. (oF)	Trap Exit Temp. (oF)	Notes:
4-1	5	3	0.50	0.68	402.7	295	274	Stack	31	31	36	–	02.6
2	10	4	0.72	0.98	405.7	294	270		35	33	41		05.7
3	15	4	0.59	0.80	408.5	295	278		36	34	41		08.4
4	20	3	0.40	0.54	410.7	294	275		38	34	41		10.7
5	25	4	0.48	0.65	413.1	295	269		40	36	41		13.2
6	30	3.5	0.44	0.60	415.4	295	271		41	36	40		15.5
3-1	35	4	0.69	0.94	418.4	296	273		41	37	41		18.3
2	40	5	0.85	1.2	421.7	295	273		42	38	41		21.7
3	45	4	0.53	0.72	424.3	293	277		42	38	40		24.3
4	50	3	0.41	0.56	426.5	294	272		42	38	40		26.6
5	55	3.5	0.48	0.65	429.0	293	271		42	38	39		29.0
6	60	3	0.39	0.53	431.161 / 431.284	294	272		42	38	39		31.2 31.097
2-1	65	4	0.66	0.90	434.2	294	270		41	38	39		34.2
2	70	5	0.78	1.1	437.3	295	271		42	38	41		37.3
3	75	3.5	0.50	0.68	439.8	291	274		42	39	40		39.8
4	80	3.5	0.50	0.68	442.3	291	272		43	39	39		42.3
...er	total	maximum	11.86 average root	12.21 average	difference	4294 average	minimum	minimum	1225 average		maximum	maximum	

Job #: PAC 9401	Date: 3/29/00	CO2 (%): 13.7	O2 (%): 5.8
Location: Unit 4 Inlet	Operator: MH	Assumed Moisture (%): 9	Barometric Pressure (mbar): 784
Run # 4	Probe ID: P-144	Ambient Temperature (oF): 35	Probe Material: Teflon
Meter Box Yd: 1.009	Pitot Tube Coefficient: 0.82	Probe Length (ft): 22	Filter Temperature (oF): Stack
Sample Box ID: –	Meter Box ID: M5-8	Probe Temperature (oF):	Moisture (grams): 117.4
Meter DH@: 1.73	K Factor: 1.357	Nozzle Diameter (in): 0.220	Start Time: 08:01
Pre-Test Pitot Leak Check: ✓	Post-Test Pitot Leak Check: ✓	Static Pressure (" H2O): +7.8	Stop Time: 10:11
Pre-Test Pump Leak Check: 0.00 12" Hg	Post-Test Pump Leak Check: 0.00 19" Hg	Filter ID:	Method: OHM

Air Pollution Testing, Inc.

Schematic of Stack Cross Section

2 of 2

Traverse Point	Sampling Time (minutes)	Vacuum (" Hg)	Velocity Head (" H2O)	Orifice Setting (" H2O)	Meter Volume (ft3) Initial Volume 442.3	Stack Temp. (oF)	Probe Temp. (oF)	Filter Temp. (oF)	Meter Temp. Inlet (oF)	Meter Temp. Outlet (oF)	Condenser Temp. (oF)	Trap Exit Temp. (oF)	Notes: Stack ID (inches):
5	85	4	0.59	0.80	445.0	291	271	Stack	43	39	42	–	45.0
6	90	3	0.28	0.38	447.0	294	276		44	40	42		46.9
1-1	95	6	1.0	1.4	450.6	292	272		43	40	42		50.6
2	100	6	0.88	1.2	454.0	292	275		43	40	41		53.9
3	105	4	0.57	0.78	456.7	291	271		43	40	43		56.7
4	110	6	0.83	1.2	460.0	290	273		43	40	42		60.0
5	115	6	0.85	1.2	463.3	293	269		42	39	42		63.3
6	120	6	0.85	1.2	466.588	295	270		42	39	42		66.6
number	total	maximum	average root	average	difference	average	minimum	minimum	average		maximum	maximum	
24	120	6	0.776	0.849	66.40	293		Stack	39		43	–	

ORSAT

CO_2 = 13.7 19.5 = 5.8 O_2

CO_2 = 13.7 19.5 = 5.8 O_2

Job #:	Date: 3/28/00	CO2 (%): 13.4	O2 (%): 5.8
Location: Unit #4 STACK	Operator: TG/EM	Assumed Moisture (%): 12.7	Barometric Pressure (mbar): 777
Run # 1	Probe ID: P-147	Ambient Temperature (oF):	Probe Material: GLASS
Meter Box Yd: 1.018	Pitot Tube Coefficient: .83	Probe Length (ft): 12	Filter Temperature (oF): 250
Sample Box ID:	Meter Box ID: MS-11	Probe Temperature (oF): 250	Moisture (grams): 208.2
Meter DH@: 1.86	K Factor: 3.403	Nozzle Diameter (in): 0.257	Start Time: 09:00
Pre-Test Pitot Leak Check: ✓	Post-Test Pitot Leak Check:	Static Pressure (" H2O): -0.1	Stop Time: 11:27
Pre-Test Pump Leak Check: 0.00 @ 10"	Post-Test Pump Leak Check: 0.01 @ 8"	Filter ID:	Method: Ontario Hydro

$K_I = 1.104$

Air Pollution Testing, Inc.

Schematic of Stack Cross Section

Stack ID (inches): 393.5

Traverse Point	Sampling Time (minutes)	Vacuum (" Hg)	Velocity Head (" H2O)	Orifice Setting (" H2O)	Meter Volume (ft3) Initial Volume 765.20	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	.46	1.6	772.80	128	250	231	54	52	44	.765	772.85	T_s=130 T_m=60
2	20	2	.51	1.7	780.70	128	250	239	57	53	42	.788	780.68	
3	30	2	.42	1.4	787.80	130	250	244	60	57	48	.715	787.85	
2-1	40	2	.40	1.4	794.76	130	250	246	63	57	55	.698	794.78	
2	50	2	.44	1.5	802.08	131	250	246	63	60	42	.732	802.08	
3	60	2	.42	1.4	809.10	133	249	244	63	60	41	.715	809.23	
3-1	70	2	.29	.99	815.32	127	250	245	65	63	49	.594	815.05	
2	80	2	.32	1.1	821.75	130	250	245	70	65	42	.625	821.57	
3	90	2	.29	.99	827.65	130	250	245	69	68	40	.595	827.70	
4-1	100	2	.39	1.3	834.50	122	250	244	71	70	46	.689	834.54	
2	110	2	.45	1.5	841.90	130	250	244	69	68	45	.746	841.91	
3	120	2	.43	1.5	849.193	131	251	246	67	67	45	.700		
number	total	maximum	average sqrt	average	difference	average	minimum	minimum	average		maximum			
	120	2	.632	1.4	83.993	129	249	231	63		49			

ORSAT

CO_2 = 13.4 19.2 = O_2 5.8

CO_2 = 13.4 19.2 = O_2 5.8

Job #: PAC 9401	Date: 3/28/00	CO2 (%): 13.4	O2 (%): 5.8
Location: Unit #4 Stack	Operator: TO	Assumed Moisture (%): 12.7	Barometric Pressure (mbar): 777
Run #: 3	Probe ID: P-147	Ambient Temperature (oF): 45	Probe Material: Glass
Meter Box Yd: 1.018	Pitot Tube Coefficient: 0.83	Probe Length (ft): 12	Filter Temperature (oF): 250
Sample Box ID:	Meter Box ID: M5-11	Probe Temperature (oF): 250	Moisture (grams): 228.0
Meter DH@: 1.86	K Factor: 3.436	Nozzle Diameter (in): 0.257	Start Time: 13:55
Pre-Test Pitot Leak Check: ✓	Post-Test Pitot Leak Check:	Static Pressure (" H2O): 0.1	Stop Time: 1808
Pre-Test Pump Leak Check: 0.00810"	Post-Test Pump Leak Check: 0.00010"	Filter ID: 002010	Method: Ontario Hydro

Air Pollution Testing, Inc.

Schematic of Stack Cross Section

$K_I = 1.114$

Stack ID (inches):

Traverse Point	Sampling Time (minutes)	Vacuum ("Hg)	Velocity Head ("H2O)	Orifice Setting ("H2O)	Meter Volume (ft3) Initial Volume 939.663	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	.48	1.6	947.28	124	250	236	60	63	49	.772	947.38
2	20	2	.49	1.7	955.0	132	250	246	67	66	35	.779	955.08
3	30	2	.46	1.6	962.85	134	250	246	68	65	34	.772	962.72
2-1	40	2	.36	1.2	969.50	115	252	250	66	65	36	.668	969.53
2	50	2	.42	1.4	976.70	125	248	246	68	67	38	.722	976.72
3	60	2	.40	.14	983.90	134	250	247	67	65	36	.705	983.75
3-1	70	2	.27	.93	990.15	115	251	249	67	66	46	.579	990.09
2	80	2	.30	1.0	996.15	126	250	246	66	67	37	.610	996.25
3	90	2	.29	1.0	002.28	136	250	247	66	65	38	.600	002.15
4-1	100	2	.33	1.1	008.52	130	250	247	65	64	42	.640	008.68
2	110	2	.47	1.6	016.16	130	250	247	65	64	41	.764	016.16
3	120	2	.43	1.5	023.45	135	249	241	64	65	40	.730	023.46
number	total	maximum	average	average	difference	average	minimum	minimum	average	maximum			
-	120	2	.6240	1.3	83.787	128	248	236	66	49	-	-	

ORSAT

CO_2 = 13.4 19.2 = O_2 5.8

CO_2 = 13.4 19.2 = O_2 5.8

Job #: PAC 9401	Date: 3/29/00	CO2 (%): 13.7	O2 (%): ~~5.4~~ 5.8
Location: Unit #4 STACK	Operator: TG	Assumed Moisture (%): 14	Barometric Pressure (mbar): 784
Run # 4	Probe ID: P-147	Ambient Temperature (oF): 40	Probe Material: GLASS
Meter Box Y#: 1.018	Pitot Tube Coefficient: 0.83	Probe Length (ft): 12	Filter Temperature (oF): 250
Sample Box ID: -	Meter Box ID: M5-11	Probe Temperature (oF): 250	Moisture (grams): 214.9
Meter DH@: 1.86	K Factor: 3.289	Nozzle Diameter (in): 0.257	Start Time: 08:00
Pre-Test Pitot Leak Check: ✓	Post-Test Pitot Leak Check:	Static Pressure (" H2O): -0.1	Stop Time: 10:14
Pre-Test Pump Leak Check: 0.00@11"	Post-Test Pump Leak Check: 0.00@10"	Filter ID: 002069	Method: ONTARIO HYDRO

Air Pollution Testing, Inc.

Schematic of Stack Cross Section

KI 1.074

T_s=130 T_m=55

Stack ID (inches): 393.5

Traverse Point	Sampling Time (minutes)	Vacuum (" Hg)	Velocity Head (" H2O)	Orifice Setting (" H2O)	Meter Volume (ft3) Initial Volume 023.663	Stack Temp. (oF)	Probe Temp. (oF)	Filter Temp. (oF)	Meter Temp. Inlet (oF)	Meter Temp. Outlet (oF)	Condenser Temp. (oF)	KI (cfm)	Pv
4-1	10	2	.41	1.3	030.50	110	250	233	48	46	34	.668	30.54
2	20	2	.46	1.5	037.73	126	250	244	49	46	36	.728	37.78
3	30	2	.44	1.4	044.785	131	250	246	51	48	37	.712	44.85
3-1	40	2	.19	.62	049.58	125	250	245	54	51	42	.468	49.47
2	50	2	.32	1.00	055.60	125	250	246	55	53	42	.608	55.60
3	60	2	.30	.99	061.49	132	250	247	57	54	41	.588	61.49
2-1	70	2	.37	1.2	68.00	133	249	235	60	56	44	.653	68.02
2	80	2	.42	1.4	074.98	132	246	248	60	56	40	.696	74.96
3	90	2	.42	1.4	081.95	135	249	246	62	57	42	.696	81.94
1-1	100	2	.44	1.4	088.06	130	250	245	62	61	46	.712	89.07
2	110	2	.51	1.7	096.75	129	250	248	65	61	45	.767	96.73
3	120	2	.48	1.6	104.225	134	248	248	65	62	45	.744	104.19
number	total	maximum	average	average	difference	average	minimum	minimum	average	maximum			
	120	2	.6255	1.3	80.562	128.5	248	233	56	46			

ORSAT

13.7 + 19.5

13.7 + 19.5

Laboratory Data

PHILIP SERVICES

INORGANIC DATA PACKAGE
FOR
AIR POLLUTION TESTING

Project # PAC9401

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

Submission #0D0121

Prepared by: Shari Typer – CSR Initial : _____
Approved by : Dr. Ron McLeod - Principal Scientist Initial : _____

1. CASE NARRATIVE

PROJECT NARRATIVE

PHILIP Analytical Services (Burlington ON)
Philip Project: AN000265
Philip Submission #:0D0121

Client: Air Pollution Testing
Client Project: PAC9401

I. SAMPLE RECEIPT/ANALYSIS

a) Sample Listing

Philip ID	Client Sample ID	Date Sampled	Date Received	Date Prepped	Run Date
Draft ASTM Mercury Speciation Method (October 27, 1999 Revision)- Front Half Outlet					
014679 00	Method Blank	00/03/28	00/04/05	00/04/24	00/04/24
014680 00	28 Reagent Blank	00/03/28	00/04/05	00/04/24	00/04/24
014681 00	27 Outlet Blank	00/03/27	00/04/05	00/04/24	00/04/24
014682 00	27 Outlet-R1	00/03/27	00/04/05	00/04/24	00/04/24
014683 00	27 Outlet-R3	00/03/27	00/04/05	00/04/24	00/04/24
014684 00	27 Outlet-R4	00/03/27	00/04/05	00/04/24	00/04/24
Draft ASTM Mercury Speciation Method (October 27, 1999 Revision)- Front Half Inlet					
014679 00	Method Blank	00/03/28	00/04/05	00/04/24	00/04/24
014680 00	28 Reagent Blank	00/03/28	00/04/05	00/04/24	00/04/24
014685 00	27 Inlet-Blank	00/03/27	00/04/05	00/04/24	00/04/24
014686 00	27 Inlet-R1	00/03/27	00/04/05	00/04/24	00/04/24
014687 00	27 Inlet-R3	00/03/27	00/04/05	00/04/24	00/04/24
014688 00	27 Inlet-R4	00/03/27	00/04/05	00/04/24	00/04/24
Draft ASTM Mercury Speciation Method (October 27, 1999 Revision)- Hydroxylamine					
014679 00	Method Blank	00/03/28	00/04/05	00/04/19	00/04/19
014680 00	28 Reagent Blank	00/03/28	00/04/05	00/04/19	00/04/19
Draft ASTM Mercury Speciation Method (October 27, 1999 Revision)- KCl Impingers/Rinses					
014679 00	Method Blank	00/03/28	00/04/05	00/04/19	00/04/19
014680 00	28 Reagent Blank	00/03/28	00/04/05	00/04/19	00/04/19
014681 00	27 Outlet Blank	00/03/27	00/04/05	00/04/19	00/04/19
014682 00	27 Outlet-R1	00/03/27	00/04/05	00/04/19	00/04/19
014683 00	27 Outlet-R3	00/03/27	00/04/05	00/04/19	00/04/19
014684 00	27 Outlet-R4	00/03/27	00/04/05	00/04/19	00/04/19
014685 00	27 Inlet-Blank	00/03/27	00/04/05	00/04/19	00/04/19
014686 00	27 Inlet-R1	00/03/27	00/04/05	00/04/19	00/04/19
014687 00	27 Inlet-R3	00/03/27	00/04/05	00/04/19	00/04/19
014688 00	27 Inlet-R4	00/03/27	00/04/05	00/04/19	00/04/19

Draft ASTM Mercury Speciation Method (October 27, 1999 Revision)- KMNO4 Impingers/Rinses

014679	00	Method Blank	00/03/28	00/04/05	00/04/20	00/04/20
014680	00	28 Reagent Blank	00/03/28	00/04/05	00/04/20	00/04/20
014681	00	27 Outlet Blank	00/03/27	00/04/05	00/04/20	00/04/20
014682	00	27 Outlet-R1	00/03/27	00/04/05	00/04/20	00/04/20
014683	00	27 Outlet-R3	00/03/27	00/04/05	00/04/20	00/04/20
014684	00	27 Outlet-R4	00/03/27	00/04/05	00/04/20	00/04/20
014685	00	27 Inlet-Blank	00/03/27	00/04/05	00/04/20	00/04/20
014686	00	27 Inlet-R1	00/03/27	00/04/05	00/04/20	00/04/20
014687	00	27 Inlet-R3	00/03/27	00/04/05	00/04/20	00/04/20
014688	00	27 Inlet-R4	00/03/27	00/04/05	00/04/20	00/04/20

Draft ASTM Mercury Speciation Method (October 27, 1999 Revision)- HNO3/H202 Impingers/Rinses

014679	00	Method Blank	00/03/28	00/04/05	00/04/12	00/04/12
014680	00	28 Reagent Blank	00/03/28	00/04/05	00/04/12	00/04/12
014681	00	27 Outlet Blank	00/03/27	00/04/05	00/04/12	00/04/12
014682	00	27 Outlet-R1	00/03/27	00/04/05	00/04/12	00/04/12
014683	00	27 Outlet-R3	00/03/27	00/04/05	00/04/12	00/04/12
014684	00	27 Outlet-R4	00/03/27	00/04/05	00/04/12	00/04/12
014685	00	27 Inlet-Blank	00/03/27	00/04/05	00/04/12	00/04/12
014686	00	27 Inlet-R1	00/03/27	00/04/05	00/04/12	00/04/12
014687	00	27 Inlet-R3	00/03/27	00/04/05	00/04/12	00/04/12
014688	00	27 Inlet-R4	00/03/27	00/04/05	00/04/12	00/04/12

Draft ASTM Mercury Speciation Method (October 27, 1999 Revision)- HNO3 Rinse

014680	00	28 Reagent Blank	00/03/28	00/04/05	00/04/24	00/04/24
014689	00	HNO3 Post Rinse	00/03/27	00/04/05	00/04/24	00/04/24

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 within recommended hold times

b) Instrument Calibration: all within control limits

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

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

May 8th, 2000
Date

2. ANALYTICAL DATA REPORT

PHILIP SERVICES

Certificate of Analysis

CLIENT INFORMATION		LABORATORY INFORMATION	
Attention:	Karl Breuer	**Contact:**	Ron McLeod
Client Name:	Air Pollution Testing	**Project:**	AN000265
Project:	PAC9401	**Date Received:**	00/04/05
Project Desc:	'Ontario Hydro' Mercury Analysis	**Date Reported:**	00/04/25
Address:	12421 West 49th Avenue Unit 1 Wheat Ridge CO 80033	**Submission No.:**	0D0121
		Sample No.:	014679-014689
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:

Certified by: _____

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

PASC - Certificate of Analysis

			Method Blank	Blank Spike #1	Blank Spike #1	Blank Spike #2	Blank Spike #2	28 Reagent Blank	27 Outlet Blank
	Client ID:		Method Blank	Blank Spike #1	Blank Spike #1	Blank Spike #2	Blank Spike #2	28 Reagent Blank	27 Outlet Blank
	Lab No.:		014679 00	014679 00	014679 00	014679 00	014679 00	014680 00	014681 00
	Date Sampled:		-	-	-	-	-	00/03/28	00/03/27
Component	**MDL**	**Units**			% Recoveries		% Recoveries		
Mercury - filter-(FH Outlet)	0.010	ug	<	0.10	100	0.10	100	<	0.020
Mercury - filter - (FH Inlet)	0.010	"	<	0.096	96	0.10	100	<0.060	-
Mercury - hydroxylamine	0.010	"	<	0.10	100	0.10	100	<	-
Mercury - KCl	0.030	"	<	0.31	100	0.31	100	<	<0.10
Mercury - KMnO4	0.030	"	<0.31	0.31	100	0.31	100	<0.043	<0.10
Mercury - H202	0.010	"	<	0.10	100	0.097	97	<0.050	<0.25
Mercury - probe rinse	0.010	"	-	-	-	-	-	<	-

00007

PASC - Certificate of Analysis

	Client ID:		27 Outlet-R1	27 Outlet-R1	27 Outlet-R1	27 Outlet-R1	27 Outlet-R1	27 Outlet-R1	27 Outlet-R3	27 Outlet-R4
	Lab No.:		014682 00	014682 00	014682 00	014682 00	014682 00	014682 00	014683 00	014684 00
	Date Sampled:		00/03/27	00/03/27	00/03/27	00/03/27	00/03/27	00/03/27	00/03/27	00/03/27
Component	**MDL**	**Units**		Duplicate	M. Spike	MS % Rec.	MS Dup	MSD % Rec.		
Mercury - filter-(FH Outlet)	0.010	ug	0.10	0.096	0.21	110	0.20	100	0.072	0.051
Mercury - filter - (FH Inlet)	0.010	"	-	-	-	-	-	-	-	-
Mercury - hydroxylamine	0.010	"	-	-	-	-	-	-	-	-
Mercury - KCl	0.030	"	0.40	0.37	1.5	110	1.5	110	0.46	0.31
Mercury - KMnO4	0.030	"	10.0	10.0	20	97	20	100	10	9.0
Mercury - H202	0.010	"	0.60	0.55	3.1	100	3.1	99	<0.25	<0.25
Mercury - probe rinse	0.010	"	-	-	-	-	-	-	-	-

00008

PASC - Certificate of Analysis

			27	27	27	27	27	27	27	27
	Client ID:		Inlet-Blank	Inlet-R1	Inlet-R1	Inlet-R1	Inlet-R1	Inlet-R1	Inlet-R1	Inlet-R3
	Lab No.:		014685 00	014686 00	014686 00	014686 00	014686 00	014686 00	014686 00	014687 00
	Date Sampled:		00/03/27	00/03/27	00/03/27	00/03/27	00/03/27	00/03/27	00/03/27	00/03/27
Component	**MDL**	**Units**			Duplicate	M. Spike	MS % Rec.	MS Dup	MSD % Rec.	
Mercury - filter-(FH Outlet)	0.010	ug	-	-	-	-	-	-	-	-
Mercury - filter - (FH Inlet)	0.010	"	<0.070	0.069	0.073	0.83	110	0.83	110	0.57
Mercury - hydroxylamine	0.010	"	-	-	-	-	-	-	-	-
Mercury - KCl	0.030	"	<0.10	3.5	-	-	-	-	-	2.6
Mercury - KMnO4	0.030	"	<0.10	6.9	-	-	-	-	-	7.0
Mercury - H202	0.010	"	<0.25	0.38	-	-	-	-	-	<0.25
Mercury - probe rinse	0.010	"	-	-	-	-	-	-	-	-

00009

PASC - Certificate of Analysis

	Client ID:		27 Inlet-R4	HNO3 Post Rinse
	Lab No.:		014688 00	014689 00
	Date Sampled:		00/03/27	00/03/27
Component	**MDL**	**Units**		
Mercury - filter-(FH Outlet)	0.010	ug	-	-
Mercury - filter - (FH Inlet)	0.010	"	0.10	-
Mercury - hydroxylamine	0.010	"	-	-
Mercury - KCl	0.030	"	2.4	-
Mercury - KMnO4	0.030	"	5.7	-
Mercury - H202	0.010	"	<0.25	-
Mercury - probe rinse	0.010	"	-	<

00010

Batch Code:	**04241NFT**
Mercury - filter	014679 00
	014680 00
	014681 00
	014682 00
	014683 00
	014684 00
Run Date:	00/04/24
Date of Sample Prep:	00/04/24

Batch Code:	**04242NFB**
Mercury - filter - bulk	014679 00
	014680 00
	014685 00
	014686 00
	014687 00
	014688 00
Run Date:	00/04/24
Date of Sample Prep:	00/04/24

Batch Code:	**04191NKC**
Mercury - hydroxylamine	014679 00
	014680 00
Run Date:	00/04/19
Date of Sample Prep:	00/04/19

Batch Code:	**04191NKC**
Mercury - KCl	014679 00
	014680 00
	014681 00
	014682 00
	014683 00
	014684 00
	014685 00
	014686 00
	014687 00
	014688 00
Run Date:	00/04/19
Date of Sample Prep:	00/04/19

PASC - Summary of Analysis Pre. Dates

Batch Code:	**04201BMN**
Mercury - KMnO4	014679 00
	014680 00
	014681 00
	014682 00
	014683 00
	014684 00
	014685 00
	014686 00
	014687 00
	014688 00
Run Date:	00/04/20
Date of Sample Prep:	00/04/20

Batch Code:	**04121BPO**
Mercury - H202	014679 00
	014680 00
	014681 00
	014682 00
	014683 00
	014684 00
	014685 00
	014686 00
	014687 00
	014688 00
Run Date:	00/04/12
Date of Sample Prep:	00/04/12

Batch Code:	**04241NFT**
Mercury - probe rinse	014680 00
	014689 00
Run Date:	00/04/24
Date of Sample Prep:	00/04/24

3. RAW DATA

Zenon Number	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
014679	APT-CO	MB R456	Mercury -	PV	-0.010	-99999.0	0.101	101.	0.101	101.	00/04/24	1NFT	00/04/24	MG01	27.	19.	
014680	APT-CO	28 Reagent Blank	Mercury -	PV	-0.010						00/04/24	1NFT	00/04/24	MG01	27.	19.	
014681	APT-CO	27 Outlet Blank	Mercury -	PV	0.020						00/04/24	1NFT	00/04/24	MG01	28.	19.	
014682	APT-CO	27 Outlet-R1	Mercury -	PV	0.101	0.096	0.205	107.	0.201	102.	00/04/24	1NFT	00/04/24	MG01	28.	19.	
014683	APT-CO	27 Outlet-R3	Mercury -	PV	0.072						00/04/24	1NFT	00/04/24	MG01	28.	19.	
014684	APT-CO	27 Outlet-R4	Mercury -	PV	0.051						00/04/24	1NFT	00/04/24	MG01	28.	19.	
BL0424	INTERNAL		Mercury -	PV	0.010	-99999.0	0.101	101.	0.101	101.	00/04/24	1NFT	00/04/24	MG01	$$$	$$$	

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

00014

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
014679	APT-CO	MB R456	Mercury -	PV	-0.010	-99999.0	0.096	96.	0.100	100.	00/04/24	2NFB	00/04/24	MG01	27.	19.	
014680	APT-CO	28 Reagent Blank	Mercury -	PV	-0.060						00/04/24	2NFB	00/04/24	MG01	27.	19.	
014685	APT-CO	27 Inlet-Blank	Mercury -	PV	-0.070						00/04/24	2NFB	00/04/24	MG01	28.	19.	
014686	APT-CO	27 Inlet-R1	Mercury -	PV	0.069	0.073	0.833	109.	0.830	109.	00/04/24	2NFB	00/04/24	MG01	28.	19.	
014687	APT-CO	27 Inlet-R3	Mercury -	PV	0.567						00/04/24	2NFB	00/04/24	MG01	28.	19.	
014688	APT-CO	27 Inlet-R4	Mercury -	PV	0.103						00/04/24	2NFB	00/04/24	MG01	28.	19.	
BL0424	INTERNAL		Mercury -	PV	-0.010	-99999.0	0.096	96.	0.100	100.	00/04/24	2NFB	00/04/24	MG01	$$$	$$$	

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

00015

Lenon 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
014680	APT-CO	28 Reagent Blank	Mercury -	PV	-0.010						00/04/24	1NFT	00/04/24	MG01	27.	19.	
014689	APT-CO	HNO3 Post Rinse	Mercury -	PV	-0.010						00/04/24	1NFT	00/04/24	MG01	28.	19.	
3L0424	INTERNAL		Mercury -	PV	-0.010	-99999.0	0.101	101.	0.101	101.	00/04/24	1NFT	00/04/24	MG01	$$$	$$$	

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

00016

LDC AUTOSAMPLER RUN LOG (MERC 080017

1/3

Date: 00.04.24 W Run Code: M-G01 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			WS 378			
13			ORG. REF			
14			BL0424	INFT.		
15			"			
16			BL0424 S			
17			"			
18			BL0424 DS			
19			"			
20			14682			
21			"			
22			14682 D			
23			"			
24			14682 S			
25			"			
26			14682 DS			
27			"			
28			14679			
29			"			
30			14680			
31			"			
32			14681			
33			"			
34			CCV			
35			B			
36			D4			
37			14683			
38			"			
39			14684			
40			"			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41			14689			
42			"			
43			14680	PROBE-RINSE		
44			"			
45			BL0424	2NFB		
46			"			
47			BL0424 S			
48			"			
49			BL0424 DS			
50			"			
51			14686			
52			"			
53			14686 D			
54			"			
55			14686 S			
56			"			
57			CCV			
58			B			
59			D4			
60			14686 DS			
61			"			
62			14679			
63			"			
64			14680			
65			"			
66			14685			
67			"			
68			14687			
69			"			
70			14688			
71			"			
72			BL0424	1BIT		
73			BL0424 S			
74			BL0424 DS			
75	10	1/2	15165			
76	↓	↓	15165 D			
77			15165 S			
78			15165 DS			
79			CCV			
80			B			

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.

00018

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG, DGHGLEACH, DG29*

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
8	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 shaken and bulked
- ✓ Rack order checked

	#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
	9	ICV (Init. Calib. Verif.)	INFT	20 ml	30 ml	1 X	1.5 ppb = 600 ul of MES-ZENO 30/QCA (Ref Std)
	10	BL 0424	"	"	"	"	(Processed Blank)
	11	BL 0424 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm IV Working Cal Std
	12	BL 0424 DS					(Duplicate Blank Spike)
1	13	14682	"	"	"	"	FINALVOL 100 ml 3
1	14	D	"	"	"	"	(Duplicate sample)
1	15	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm IV Working Cal Std
1	16	DS	"	"	"	"	(Duplicate Spiked sample)
2	17	14679	"	"	"	"	
3	18	80	"	"	"	"	FILTER ALONE
4	19	81	"	"	"	"	
5	20	83	"	"	"	"	
6	21	84	"	"	"	"	
7	22	~~14680~~ 000424 MN	"	"	"	"	
8	23	14650	"	"	"	"	PROBE RINSE FRACTION ALONE
9	23	14689	"	"	"	"	'POST RINSE' FRACTION
10	24		"	"	"	"	
	25	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of MES-ZENO 30/QCA (Ref Std)
	26	BL 0424	ZNFB	20 ml	30 ml	"	(Processed Blank)
	27	BL 0424 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm IV Working Cal Std
	28	BL 0424 DS					(Duplicate Blank Spike)
1	29	14686	"	"	"	"	FINALVOL 700
1	30	D	"	"	"	"	(Duplicate sample)
1	31	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm IV Working Cal Std
1	32	DS	"	"	"	"	(Duplicate Spiked sample)
2	33	14679	"	"	"	"	100
3	34	85	"	"	"	"	700
4	35	87	"	"	"	"	700
5	36	88	"	"	"	"	700
6	37	80	"	"	"	"	THIMBLE FILTER ALONE 600
7	38		"	"	"	"	
8	39		"	"	"	"	
9	40		"	"	"	"	
10	41		"	"	"	"	
	42	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of MES-ZENO 30/QCA (Ref Std)

Comments DIGESTED 8 HRS IN WATERBATH @ 85°C WITH HF + AQUA REGIA PRIOR TO MERCURY DIGEST

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

Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C

DG29HGI, DG29HGF, DG101AA1, DG101AA2

Philip Analytical Services-Burlington

00019

	#	Sample I.D.	B.Code	Init.Vol.	F.Vol.	Dil	Comment
	43	BL		"	"	"	(Processed Blank)
	44	BL S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm IV Working Cal Std
	45	BL DS					(Duplicate Blank Spike)
1	46		"	"	"	"	
1	47	D	"	"	"	"	(Duplicate sample)
1	48	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm IV Working Cal Std
1	49	DS	"	"	"	"	(Duplicate Spiked sample)
2	50		"	"	"	"	
3	51		"	"	"	"	
4	52		"	"	"	"	
5	53		"	"	"	"	
6	54		"	"	"	"	
7	55		"	"	"	"	
8	56		"	"	"	"	
9	57		"	"	"	"	
10	58		"	"	"	"	
	57	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of MES-ZENO 30/QCA (Ref Std)

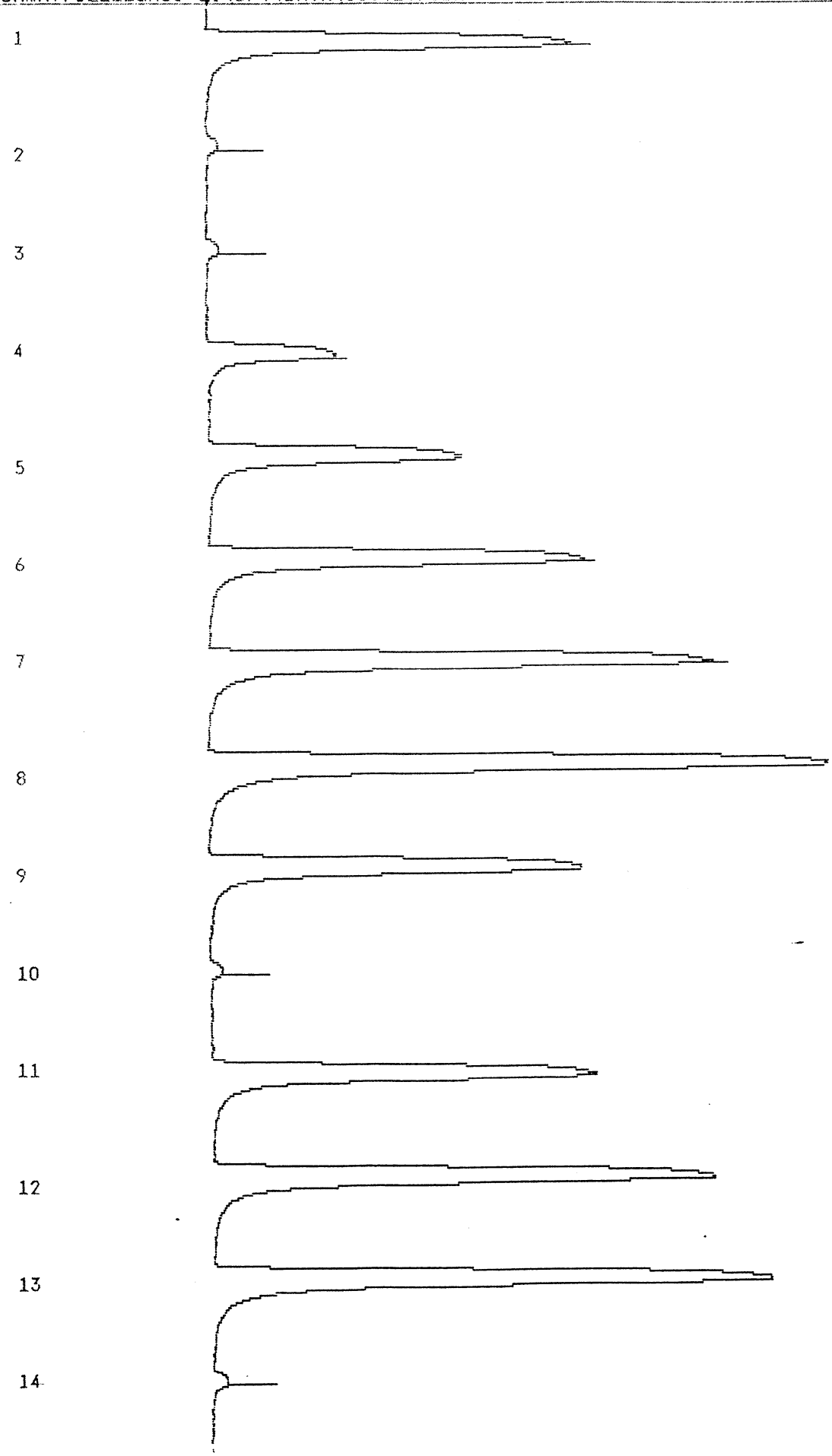
Procedure/Methodology:

1 Prepare 25 ppm Intermediate Calibration Standard (if required) by pipetting 625 ul., of 1000 ppm Stock to 25 ml final volume of 2% HNO_3
2 Prepare 0.05 ppm Working standard daily by pipetting 200 ul., of 25 ppm Intermediate to 100 ml final volume of 2% HNO_3
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 Include one External Reference Material sample per run
7 Incude one Organic Mercury Control Standard per run
8 Transfer a 20 ml. aliquot of well mixed sample into the designated falcon tube
9 Spike the tubes as indicated in the comment sector of the digestion sheet
10 Add 0.5 ml. of conc. Nitric Acid (HNO_3), and 1 ml. of conc. Sulphuric acid, (H_2SO_4), to each tube
11 Add 3 ml. Of 6% $KMnO_4$, purple colour must remain for at least 15 minutes
12 Add 1.5 ml. of 5% potassium persulphate, ($K_2S_2O_8$), to each tube
13 Mix samples, cap loosely and place in a water bath @ 95 degrees C for 2 hours
14 Remove tubes and allow to cool to room temperature
15 Add 1.0 ml. 20% Hydroxylamine Hydrochloride to each tube
16 Recap tubes and shake until $KMnO_4$ is destroyed and sample becomes colourless
17 Dilute the sample to a final volume of 30 ml.

Supplier/Lot Information	Supplier	Lot	Expiry Date
Stock Calibration Standard	Inorganic Ventures	PHG 02023	01/04/01
Intermediate Cal Standard	Internal	00/04/05 A	00/05/05
Stock Reference Standard	High Purity	836309	00 Feb
External Reference Material	SPEX	conc. 12 (00.04.18)	00.06.18
Organic Mercury Control Standard	Aldrich	06811 AR	01/02/07
6% potassium permangaaate	Internal	00.04.04 B	00.06.04
5% potassium persulphate	Internal	00.03.30	00.05.30
20% hydroxylamine hydrochloride	Internal	00.04.13A	00.06.13
HNO_3	Anachemia	1100010	00.05.13
H_2SO_4	Anachemia	319090	00.06.19
Bath Temps: 1 195°C	Time ON: 1:30 pm	Time OFF: 3:30 pm	
Prepared By: AB	Date: 00.04.24	Checked by:	

RUN DATE: 04-25-2000 CHART DATE: 04-25-2000

CHART SPEED: 60 Q:\DP4\DATA\000424W.DAT



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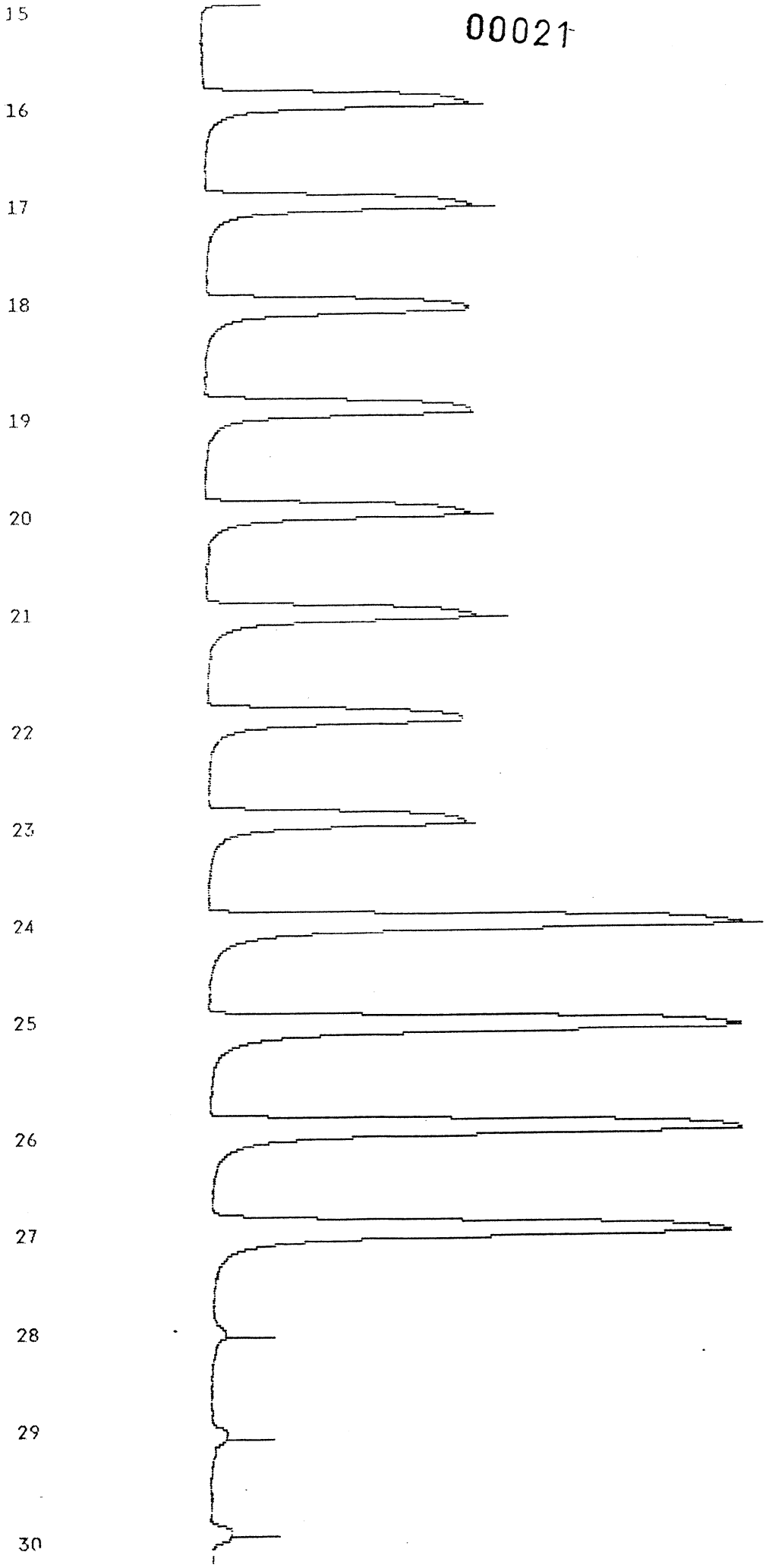

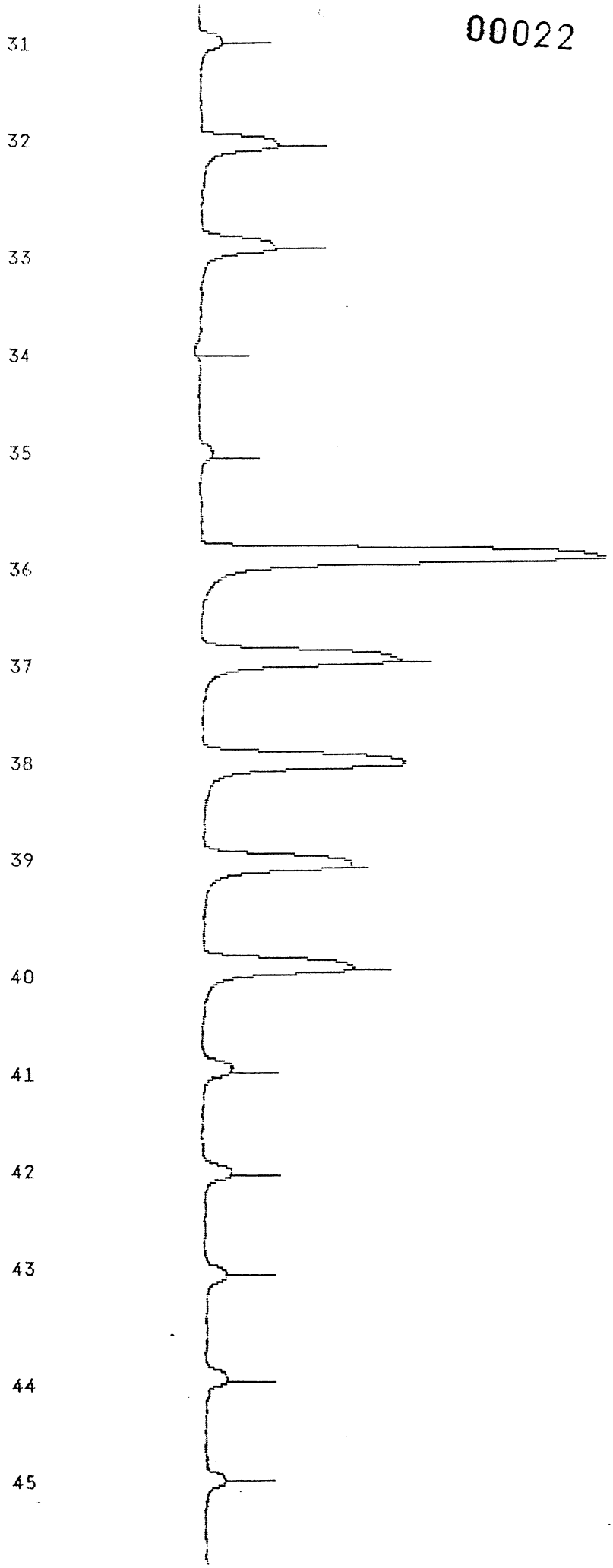
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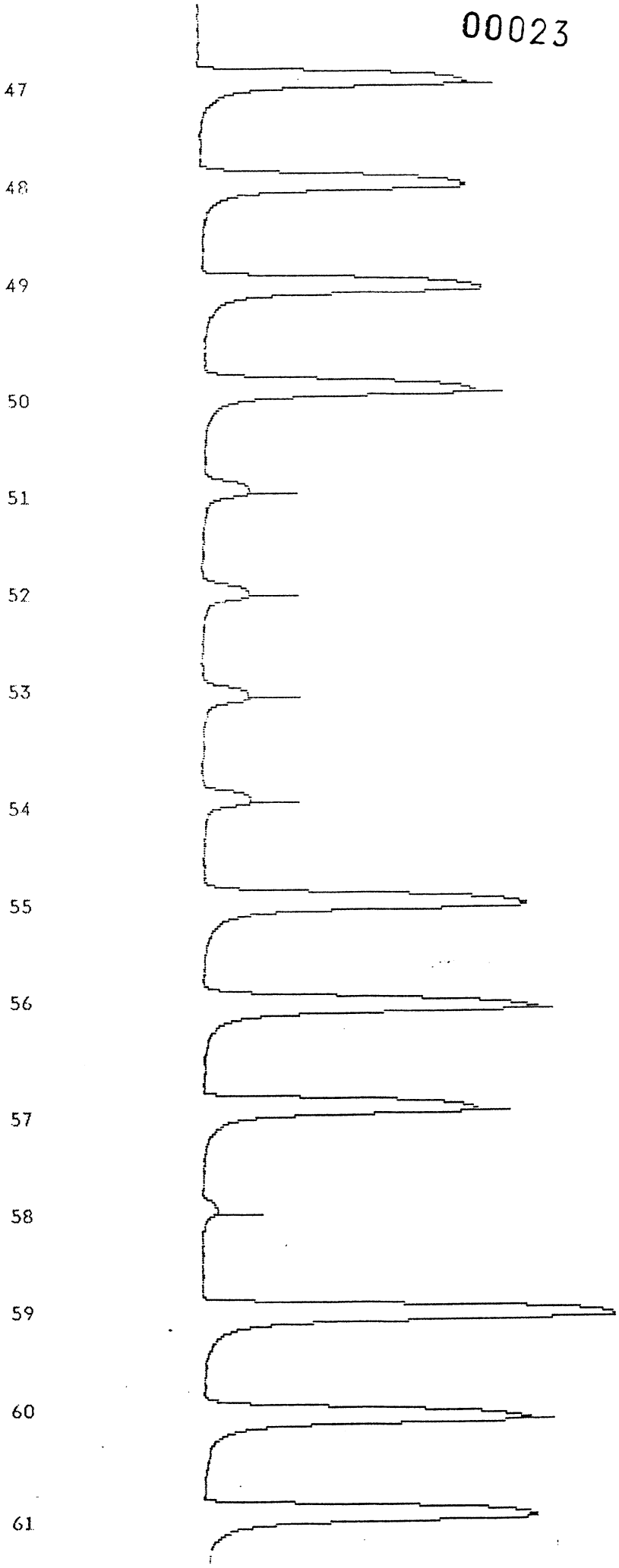
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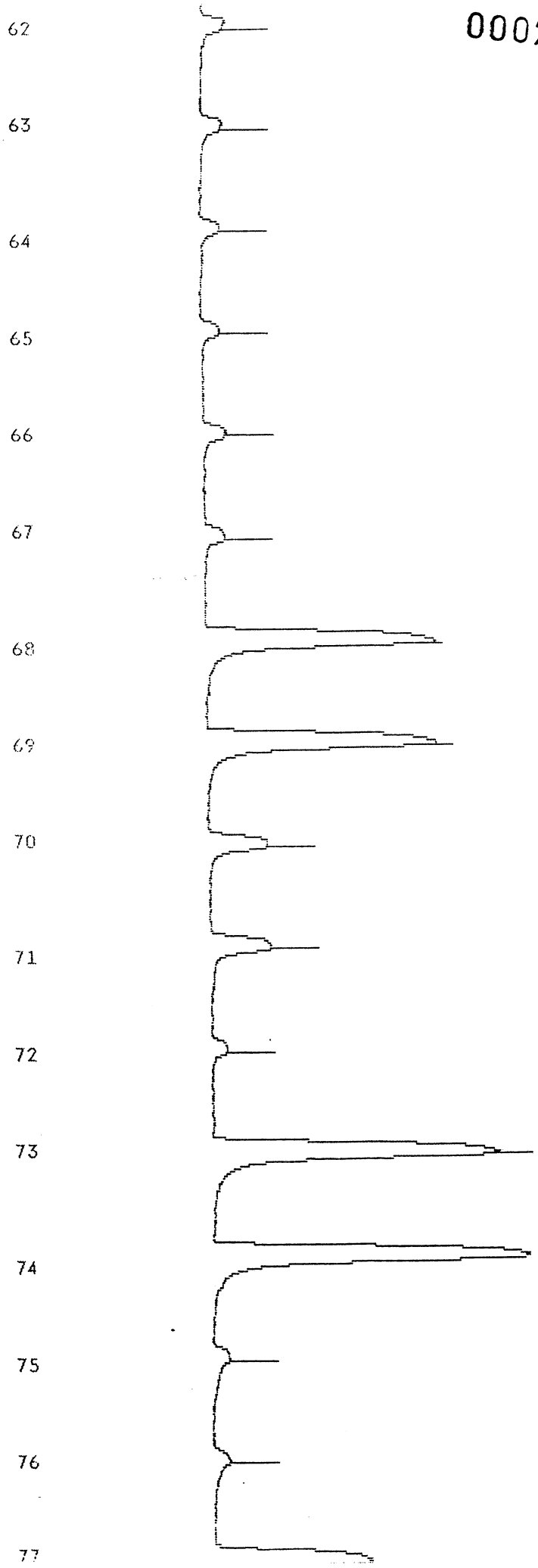
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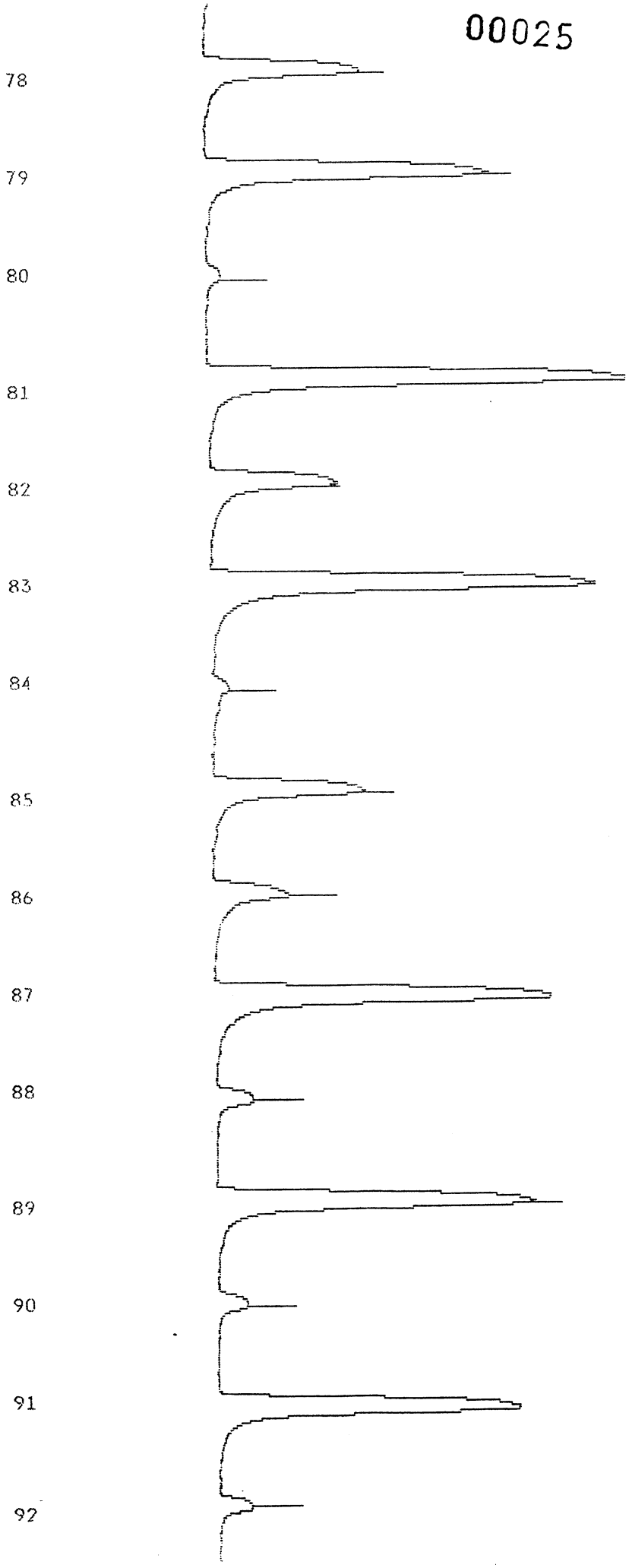
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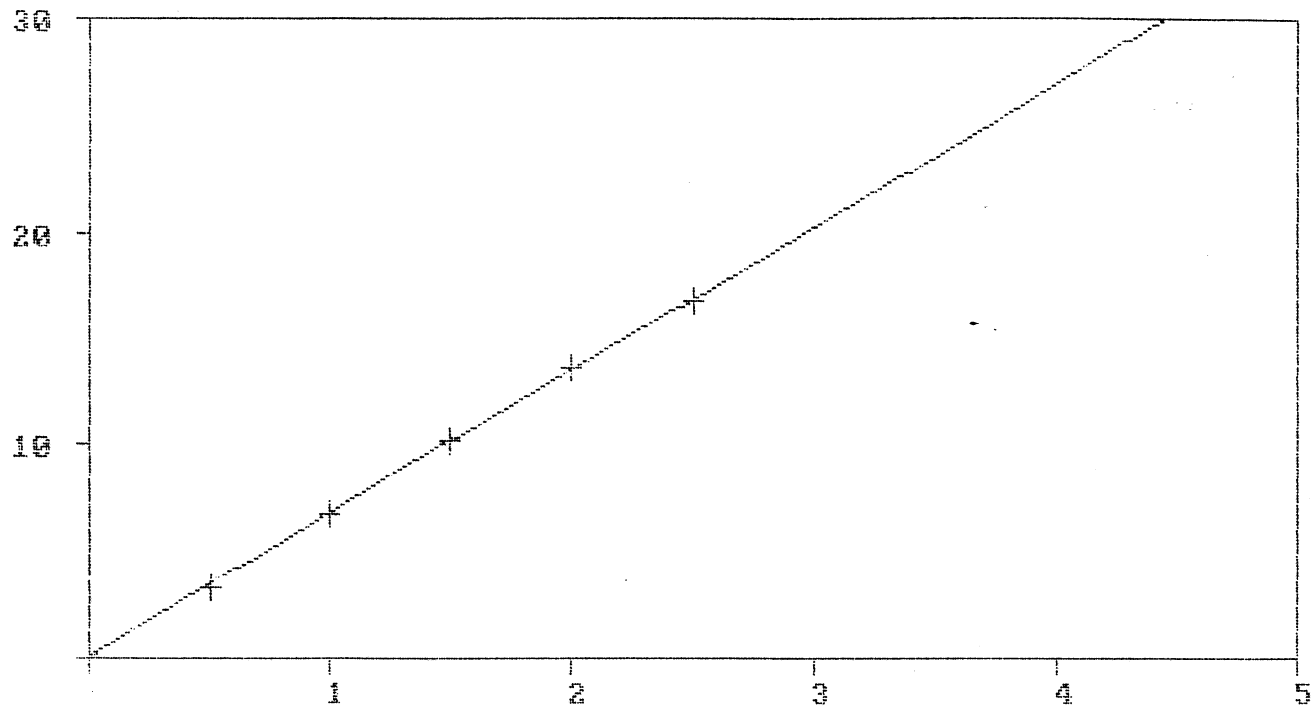
CHANNEL NAME: LDC
RUN NAME: 000424W



DATA TYPE: FIA CALIBRATION ORDER: 1
INTERCEPT = 0.10 SLOPE = 6.70225

CORRELATION: .9999205

CHANNEL NAME: LDC
RUN DATE: 04-25-2000
SAMPLE TABLE NAME: 000424W
METHOD NAME: HGWATER

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA		CONCENTRATION µg/L	EF
1	PRIMER	1	1	10.0		1.472	s
2	DUMMY	1	1	0.2		0.011	I
3	S1: 0	1	1	0.2		0.011	I
4	S2: .5	1	1	3.4		0.488	
5	S3: 1	1	1	6.8		0.994	
6	S4: 1.5	1	1	10.1		1.497	
7	S5: 2	1	1	13.6		2.018	
8	S6: 2.5	1	1	16.8		2.492	
9	ICV	1	1	9.9		1.468	98%
10	B	1	1	0.0		-0.015	b
11	D4	1	1	10.1		1.497	d
12	WS 378	1	1	13.3	TMG	1.974	99%
13	ORG REF	1	1	14.8		2.189	110%
14	BL0424-1NFT 14679	1	1	0.0	<0.01	-0.008	I
15	BL0424-1NFT	1	1	0.1		-0.000	I
16	BL0424S	1	1	6.9	0.101	1.009	109%
17	BL0424S	1	1	6.9		1.009	
18	BL0424DS	1	1	6.8	0.101	0.998	101%
19	BL0424DS	1	1	6.9		1.016	
20	14682	1	1	6.8	0.101	0.998	
21	14682	1	1	6.9		1.013	
22	14682D	1	1	6.5	0.096	0.962	
23	14682D	1	1	6.5		0.958	

00027

25	14682S	1	1	13.8		2.047		
26	14682DS	1	1	13.7	0.201	2.033	102%	
27	14682DS	1	1	13.4		1.978		
28	14679	1	1	0.0	<0.01	-0.015	I	
29	14679	1	1	0.0		-0.008	I	
30	14680	1	1	0.2	<0.01	0.014	I	
31	14680	1	1	0.2		0.018	s	
32	14681	1	1	1.5	0.020	0.207		
33	14681	1	1	1.4		0.200		
34	CCV (CUP SKIP	1	1	0.0		-0.015	(ALL OTHER QCs ARE OK) mb	
35	B	1	1	0.0		-0.015	b	
36	D4	1	1	10.1		1.497	d	
37	14683	1	1	4.9	0.072	0.714		
38	14683	1	1	4.9		0.717		
39	14684	1	1	3.5	0.051	0.502		
40	14684	1	1	3.6		0.524		
41	14689	1	1	0.4	<0.01	0.043	I	
42	14689	1	1	0.3		0.032		
43	14680-PR	1	1	0.1	<0.01	0.003	I	
44	14680-PR	1	1	0.1		-0.004	I	
45	BL0424-2NFB 14679	1	1	0.0	<0.01	-0.008	I	
46	BL0424-2NFB	1	1	0.1		-0.000	s	
47	BL0424S	1	1	6.6	0.096	0.969	96%	
48	BL0424S	1	1	6.5		0.951		
49	BL0424DS	1	1	6.9	0.100	1.009	100%	
50	BL0424DS	1	1	6.7		0.983		
51	14686	1	1	0.7	0.069	0.094		
52	14686	1	1	0.8		0.098		
53	14686D	1	1	0.8	0.073	0.102		
54	14686D	1	1	0.8		0.105		
55	14686S	1	1	8.0	0.833	1.173	109%	
56	14686S	1	1	8.2		1.206		
57	CCV	1	1	6.6		0.976	98%	
58	B	1	1	0.0		-0.015	b	
59	D4	1	1	10.1		1.497	d	
60	14686DS	1	1	8.0	0.830	1.177	109%	
61	14686DS	1	1	8.1		1.195	s	
62	14679	1	1	0.3	<0.01	0.025	I	
63	14679	1	1	0.1		0.007	I	
64	14680	1	1	0.1	<0.06	-0.004	I	
65	14680	1	1	0.0		-0.008	I	
66	14685	1	1	0.1	<0.07	0.007	I	
67	14685	1	1	0.1		-0.000	I	
68	14687	1	1	5.6	0.567	0.816		
69	14687	1	1	5.5		0.805		
70	14688	1	1	1.1	0.103	0.145		
71	14688	1	1	1.1		0.149		
72	BL0424-1BIT 15164	1	1	0.0	<0.01	-0.008	I	
73	BL0424S	1	1	6.9	0.101	1.013	101%	
74	BL0424DS	1	1	7.6	0.113	1.126	113%	
75	15165	20	1	0.1	<0.110	-0.007	~~101%~~ mb	
76	15165D	20	1	0.1	<0.110	-0.080	s	
77	15165S	20	1	3.7	1.170	10.632	106%	
78	15165DS	20	1	3.5	1.122	10.195	101%	
79	CCV	1	1	6.7		0.991	99%	
80	B	1	1	0.0		-0.015	b	
81	D4	1	1	10.1		1.497	d	
82	15166	10	1	2.8	0.489	4.077		
83	15166 PS	10	1	9.3	1.639	13.660	95%	
84	15167	20	1	0.0	<0.102	-0.153	I	
85	15167PS	20	1	3.4	1.010	9.904	99%	
86	15168	10	1	1.4	0.232	2.000		
87	15168PS	10	1	8.1	1.378	11.875	99%	
88	15169	10	1	0.5	<0.090	0.616		
89	15169PS	10	1	7.5	0.997	11.073	105%	

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
014679	APT-CO	MB R456	Mercury -	PV	-0.0100	-99999.0	0.1020	101.	0.0970	97.	00/04/12	1BPO	00/04/12	MG02	15.	7.	*BLKIMP*
014680	APT-CO	28 Reagent Blank	Mercury -	PV	-0.0500						00/04/12	1BPO	00/04/12	MG02	15.	7.	*DDL*
014681	APT-CO	27 Outlet Blank	Mercury -	PV	-0.2500						00/04/12	1BPO	00/04/12	MG02	16.	7.	*DDL*
014682	APT-CO	27 Outlet-R1	Mercury -	PV	0.5950	0.5520	3.1450	103.	3.0500	99.	00/04/12	1BPO	00/04/12	MG02	16.	7.	*DDL*
014683	APT-CO	27 Outlet-R3	Mercury -	PV	-0.2500						00/04/12	1BPO	00/04/12	MG02	16.	7.	*DDL*
014684	APT-CO	27 Outlet-R4	Mercury -	PV	-0.2500						00/04/12	1BPO	00/04/12	MG02	16.	7.	*DDL*
014685	APT-CO	27 Inlet-Blank	Mercury -	PV	-0.2500						00/04/12	1BPO	00/04/12	MG02	16.	7.	*DDL*
014686	APT-CO	27 Inlet-R1	Mercury -	PV	0.3770						00/04/12	1BPO	00/04/12	MG02	16.	7.	
014687	APT-CO	27 Inlet-R3	Mercury -	PV	-0.2500						00/04/12	1BPO	00/04/12	MG02	16.	7.	*DDL*
014688	APT-CO	27 Inlet-R4	Mercury -	PV	-0.2500						00/04/12	1BPO	00/04/12	MG02	16.	7.	*DDL*
BL0412	INTERNAL		Mercury -	PV	-0.2500	-99999.0	0.1020	101.	0.0970	97.	00/04/12	1BPO	00/04/12	MG02	$$$	$$$	*BLKIMP*

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

00028

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 00.04.12 NA 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			WS 378			
13			ORG-REF.			
14			BL0412	1NOH		
15			"			
16			BL0412 S			
17			"			
18			BL0412 DS			
19			"			
20	20	~~10~~ 1mL	11972			
21	↓		"			
22			11972 D			
23			"			
24			11972 S			
25			"			
26			11972 DS			
27	↓		"			
28			11973			
29			"			
30			11973 D			
31			"			
32	4		11974			
33	↓		"			
34			CCV			
35			B			
36			D4			
37	4		11974 D			
38	↓		"			
39			11975			
40			"			
41			11975 D			
42			"			
43	10		11976			
44	↓		"			
45			11976 D			
46			"			
47			11977			
48			"			
49			11977 D			
50	↓		"			
51			BL0412	163C		
52			"			
53			BL0412 S			
54			"			
55			BL0412DS			
56			"			
57			CCV			
58			B			
59			D4			
60		½	14199			
61		↓	"			
62			14199 D			
63			"			
64			14199 S			
65			"			
66			14199 DS			
67			"			
68			14196			
69			"			
70			14197			
71			"			
72			14198			
73			"			
74		½	14200			
75		↓	"			
76			14202			
77			"			
78			14205			
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: 00.04.12 WA Run Code: HG02 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						
13						
14						
15						
16						
17						
18						
19						
20						
81 ~~21~~			B			
22			D4			
23			14206			
24			"			
25			14207			
26			"			
27			BL0412	3B3C		
28			"			
29			BL0412S			
30			"			
31			BL0412 DS			
32			"			
33			14211			
34			"			
35			14211 D			
36			"			
37			14211 S			
38			"			
39			14211 DS			
40			"			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41			14212			
42			"			
43			CCV			
44			B			
45			D4			
46			14213			
47			"			
48			14270			
49			"			
50			BL0412	3BPO		
51			"			
52			BL0412S			
53			"			
54			BL0412DS			
55			"			
56	10		14682			
57			"			
58			14682 D			
59			"			
60			14682 S			
61			"			
62			14682 DS			
63			"			
64			14680			
65			"			
66			CCV			
67			B			
68			D4			
69	10		14681			
70			"			
71			14683			
72			"			
73			14684			
74			"			
75			14685			
76			"			
77			14686			
78			"			
79			14687			
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.

00031

3/3

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 00·04·12 WA Run Code: MG03 Matrix: MP

Analyst: MG Units: µg (see comments) MDL: 0.05/0.03

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12						
13						
14						
15						
16						
17						
18						
19						
20						
141 ~~21~~		10	14688			
22		↓	"			
23			WS 378			
24			ORG. REF			
25			CCV			
26			B			
27			D4			
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41						
42						
43						
44						
45						
46						
47						
48						
49						
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51						
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Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

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

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

00032

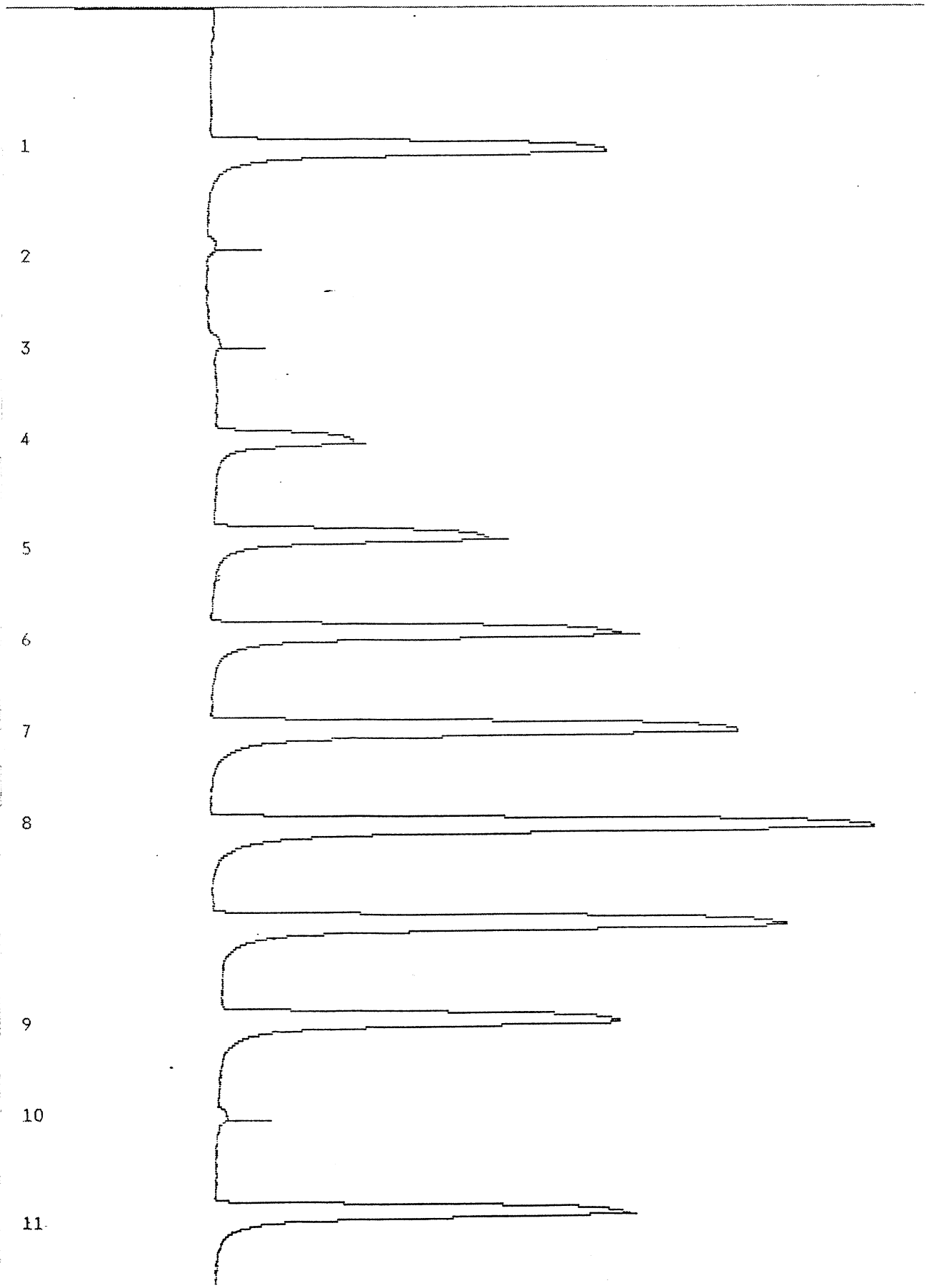
	#	Sample I.D.	B.Code	Init.Vol.	F.Vol.	Dil	Comment
	43	BL 0412	BPO	"	"	"	(Processed Blank) 14679MB
	44	BL 0412 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm IV Working Cal Std
	45	BL 0412 DS					(Duplicate Blank Spike)
1	46	14682	"	"	"	"	FV=250ml
1	47	D	"	"	"	"	(Duplicate sample)
1	48	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm IV Working Cal Std
1	49	DS	"	"	"	"	(Duplicate Spiked sample)
2	50	14680	"	"	"	"	FV=50ml
3	51	14681	"	"	"	"	FV=250ml
4	52	14683	"	"	"	"	
5	53	14684	"	"	"	"	
6	54	85	"	"	"	"	
7	55	86	"	"	"	"	
8	56	87	"	"	"	"	
9	57	88	"	"	"	"	
10	58		"	"	"	"	
	57	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of MES-ZENO 30/QCA (Ref Std)

Procedure/Methodology:

1 Prepare 25 ppm Intermediate Calibration Standard (if required) by pipetting 625 ul., of 1000 ppm Stock to 25 ml final volume of 2% HNO_3
2 Prepare 0.05 ppm Working standard daily by pipetting 200 ul., of 25 ppm Intermediate to 100 ml final volume of 2% HNO_3
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 Include one External Reference Material sample per run
7 Incude one Organic Mercury Control Standard per run
8 Transfer a 20 ml. aliquot of well mixed sample into the designated falcon tube
9 Spike the tubes as indicated in the comment sector of the digestion sheet
10 Add 0.5 ml. of conc. Nitric Acid (HNO_3), and 1 ml. of conc. Sulphuric acid, (H_2SO_4), to each tube
11 Add 3 ml. Of 6% $KMnO_4$, purple colour must remain for at least 15 minutes
12 Add 1.5 ml. of 5% potassium persulphate, ($K_2S_2O_8$), to each tube
13 Mix samples, cap loosely and place in a water bath @ 95 degrees C for 2 hours
14 Remove tubes and allow to cool to room temperature
15 Add 1.0 ml. 20% Hydroxylamine Hydrochloride to each tube
16 Recap tubes and shake until $KMnO_4$ is destroyed and sample becomes colourless
17 Dilute the sample to a final volume of 30 ml.

Supplier/Lot Information	Supplier	Lot	Expiry Date
Stock Calibration Standard	Inorganic Ventures	P-HG02023	01/04/01
Intermediate Cal Standard	Internal	00/04/05A	00/05/05
Stock Reference Standard	High Purity	836309	00 FEB.
External Reference Material	SPEX	CONC-12 00/03/23	00/05/23
Organic Mercury Control Standard	Aldrich	06811 HR	01/02/07
6% potassium permanganate	Internal	00/04/04C	00/06/04
5% potassium persulphate	Internal	00/03/30	00/05/30
20% hydroxylamine hydrochloride	Internal	00/03/30	00/05/30
HNO_3	Anachemia	110001O	00/05/13
H_2SO_4	Anachemia	319090	00/06/04
Bath Temps: 1 195°C	Time ON: 12:45pm	Time OFF: 2:45pm	to boil no extraction
Prepared By: AB	Date: 00-04-12	Checked by:	

RUN DATE: 04-12-2000 CHART DATE: 04-13-2000
CHART SPEED: 30
DATA FILE NAME: C:\DP4\DATA\000412WA.DAT



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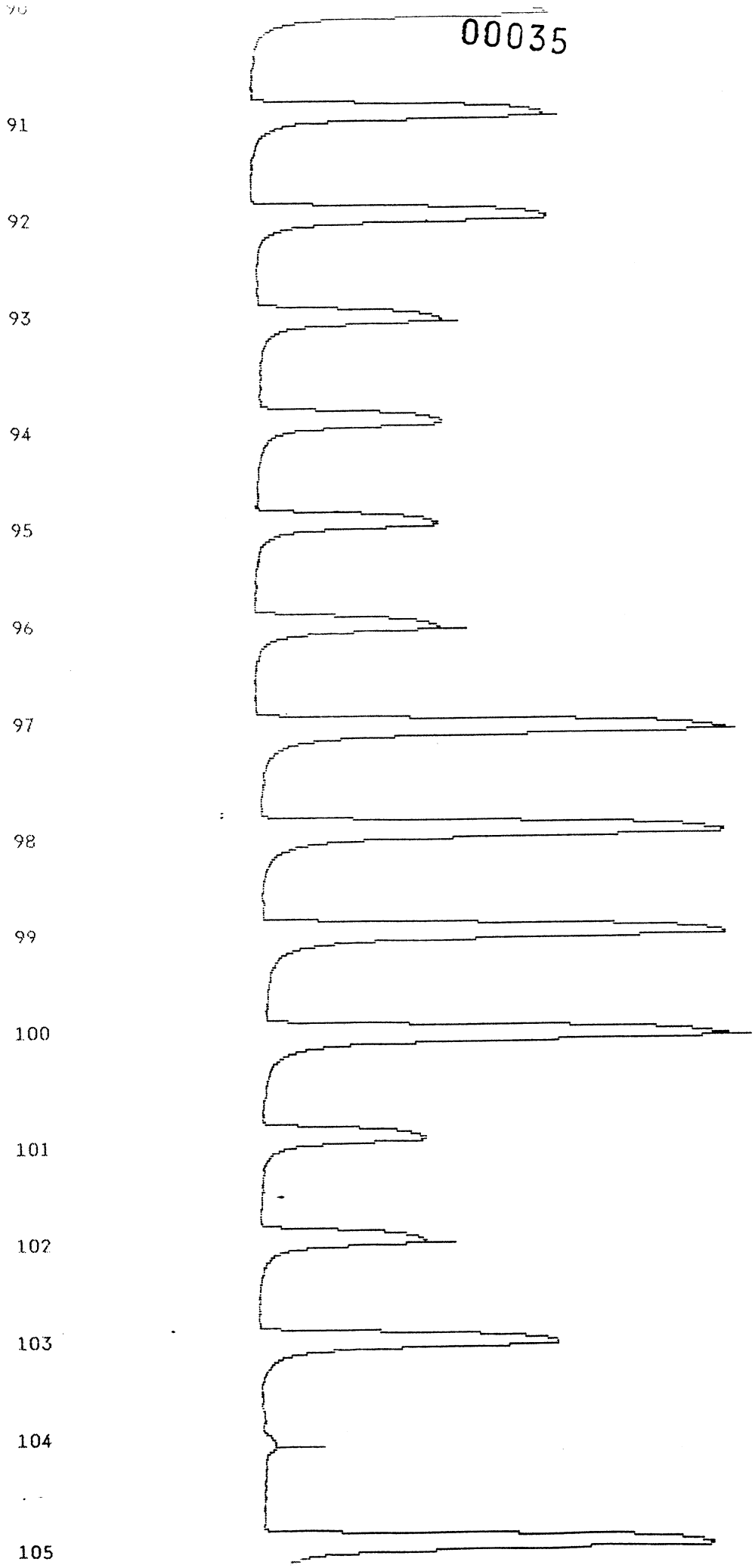
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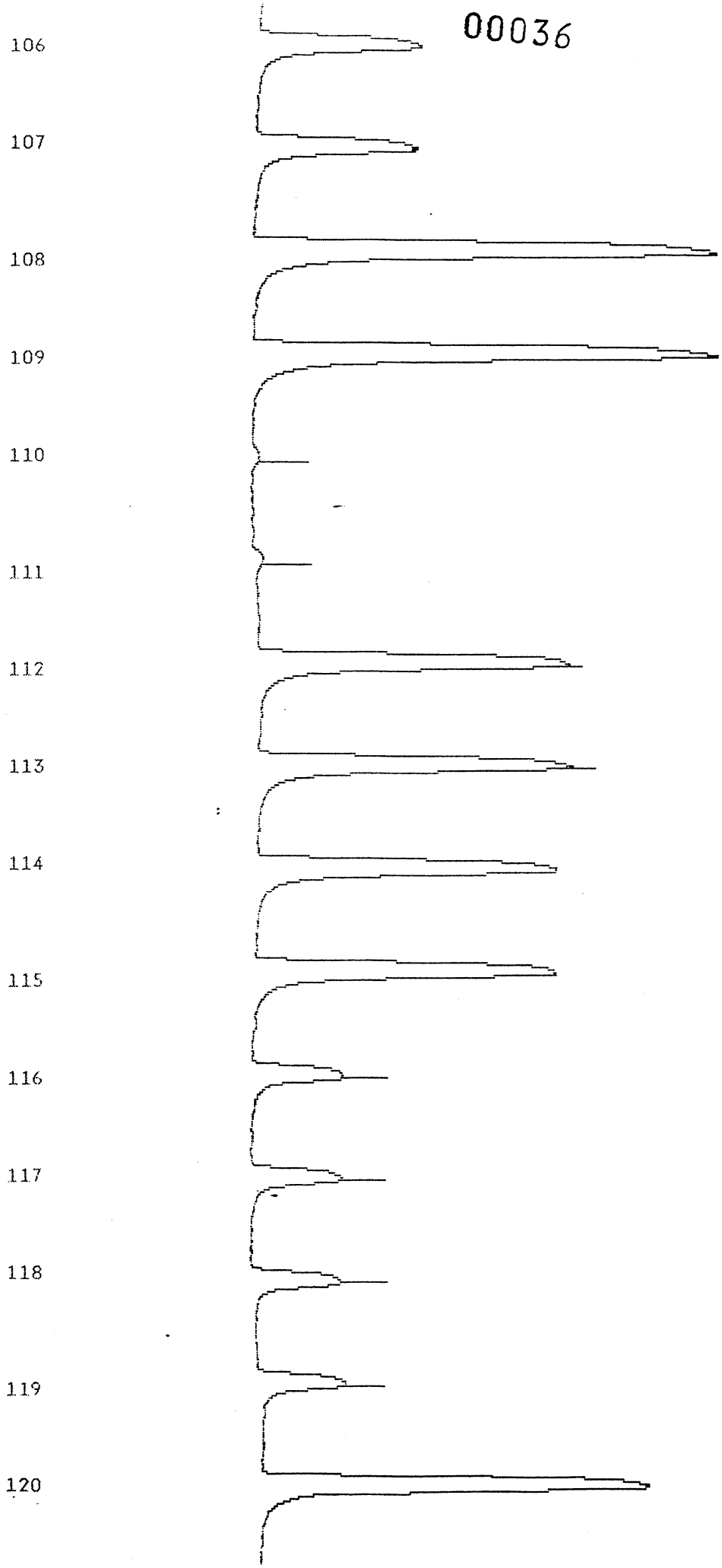
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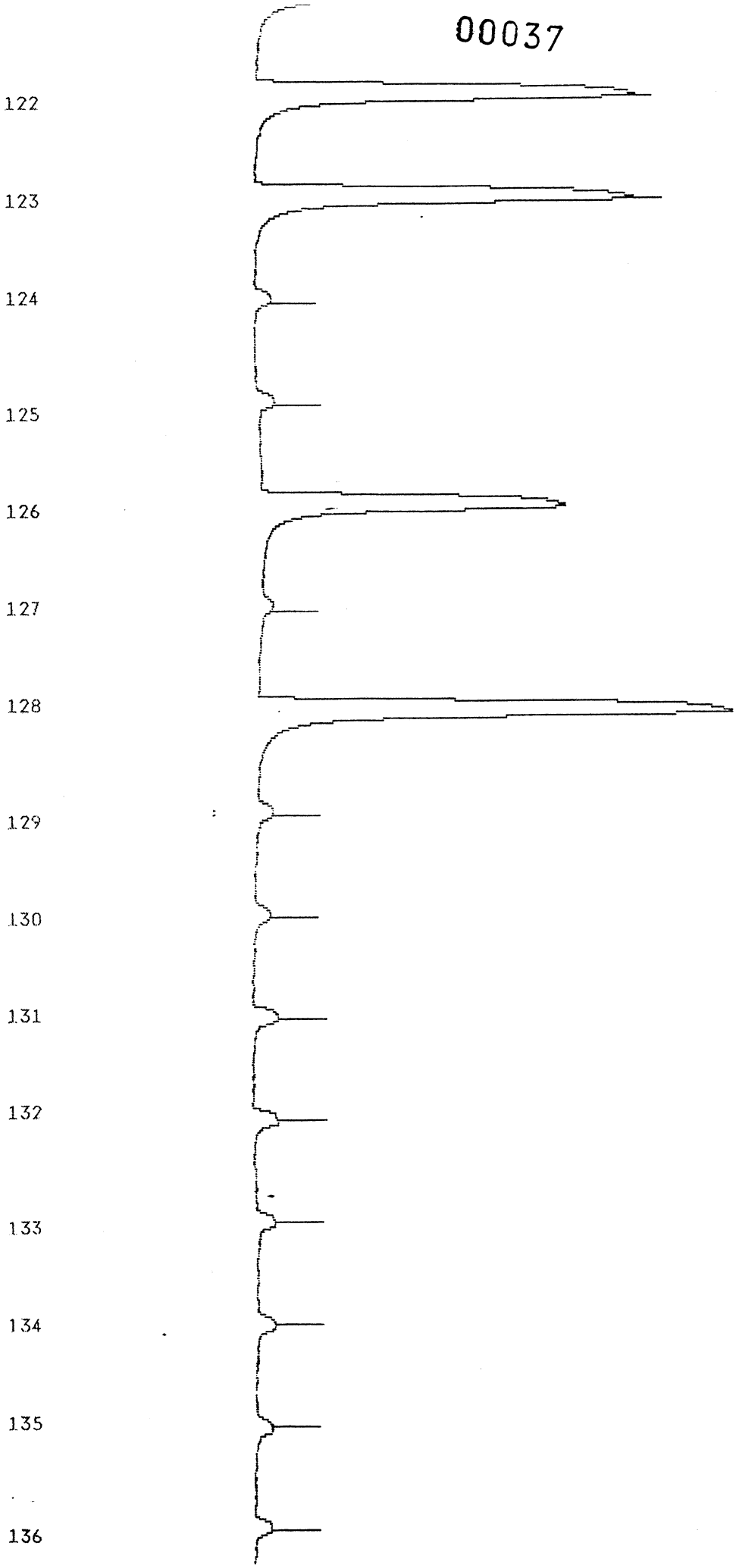
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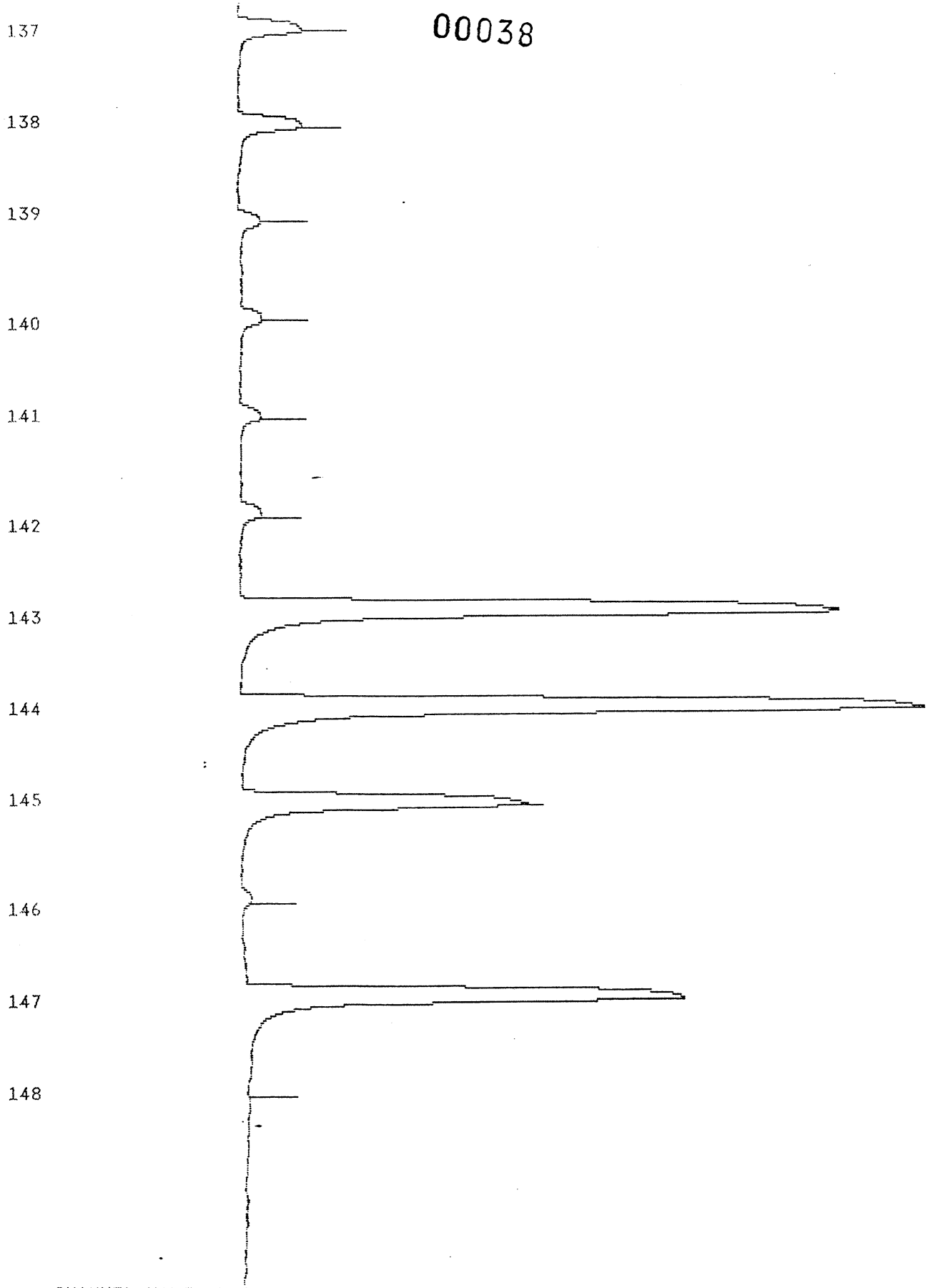
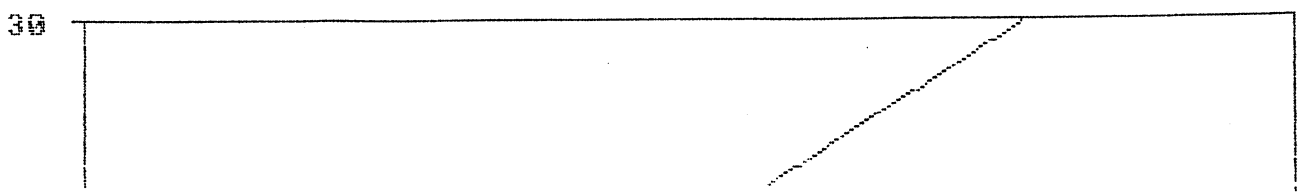


CHANNEL NAME: LDC
RUN NAME: 000412WA



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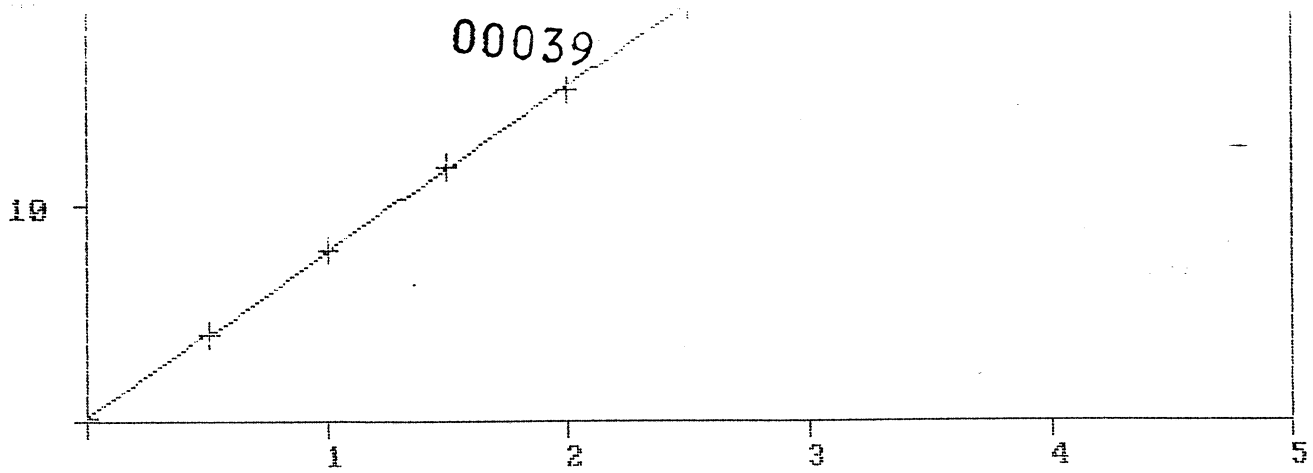

DATA TYPE: FIA
CALIBRATION ORDER: 1
INTERCEPT = 0.21
SLOPE = 7.686028

CORRELATION: .9998788

CHANNEL NAME: LDC
RUN DATE: 04-12-2000
SAMPLE TABLE NAME: 000412WA
METHOD NAME: HGWATER

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA	µg/L	CONCENTRATION	EF
1	PRIMER	1	1	11.8		1.504	s
2	DUMMY	1	1	0.2		-0.005	I
3	S1: 0	1	1	0.1		-0.008	I
4	S2: .5	1	1	4.0		0.494	
5	S3: 1	1	1	8.0		1.012	
6	S4: 1.5	1	1	11.9		1.523	
7	S5: 2	1	1	15.5		1.984	
8	S6: 2.5	1	1	19.4		2.495	
9	ICV	1	1	11.5		1.466	98%
10	B	1	1	0.0		-0.027	b
11	D4	1	1	11.9		1.523	d
12	WS 378	1	1	16.6		2.136	
13	ORG REF	1	1	18.9		2.432	
14	BL0412-1NOH	1	1	0.0	µg/L	-0.027	I
15	BL0412-1NOH	1	1	0.1		-0.018	s
16	BL0412S	1	1	7.9	0.999	0.996	100%
17	BL0412S	1	1	7.9		0.999	
18	BL0412DS	1	1	7.6	0.961	0.964	96%
19	BL0412DS	1	1	7.6		0.958	
20	11972	20	1	6.3	15.818	15.723	
21	11972	20	1	6.3		15.913	
22	11972D	20	1	6.4	16.199	16.167	
23	11972D	20	1	6.4		16.231	
24	11972S	20	1	14.3	36.724	36.565	104%
25	11972S	20	1	14.4		36.883	
26	11972DS	20	1	14.2	35.771	36.438	99%
27	11972DS	20	1	13.7		35.103	
28	11973	1	1	0.2	<0.05	-0.005	I
29	11973	1	1	0.1		-0.011	I
30	11973D	1	1	0.0	<0.05	-0.021	s
31	11973D	1	1	0.0		-0.024	I
32	11974	4	1	12.7	6.512	6.512	
33	11974	4	1	12.7		6.512	
34	CCV	1	1	7.9		1.005	101%
35	B	1	1	0.0		-0.027	b

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37	11974D				0.401		
38	11974D	4	1	12.6		6.436	
39	11975	1	1	0.2	<0.05	0.001	I
40	11975	1	1	0.2		-0.005	I
41	11975D	1	1	0.2	<0.05	0.005	I
42	11975D	1	1	0.2		-0.005	I
43	11976	10	1	4.0	4.875	4.906	
44	11976	10	1	3.9		4.843	
45	11976D	10	1	3.5	4.287	4.271	s
46	11976D	10	1	3.5		4.303	
47	11977	10	1	0.4	<0.50	0.204	I
48	11977	10	1	0.3		0.109	I
49	11977D	10	1	0.2	<0.50	-0.018	I
50	11977D	10	1	0.2		0.014	I
51	BL0412-1B3C 14196	1	1	0.0	<0.05	-0.024	I
52	BL0412-1B3C	1	1	0.0		-0.024	I
53	BL0412S	1	1	7.7	0.484	0.974	97%
54	BL0412S	1	1	7.6		0.961	
55	BL0412DS	1	1	6.8	0.458	0.856	92%
56	BL0412DS	1	1	7.7		0.974	
57	CCV	1	1	7.7		0.970	97%
58	B	1	1	0.0		-0.027	b
59	D4	1	1	11.9		1.523	d
60	14199	2	1	9.7	1.234	2.475	s
61	14199	2	1	9.7		2.462	
62	14199D	2	1	9.5	1.199	2.424	
63	14199D	2	1	9.3		2.373	
64	14199S	2	1	13.5	1.733	3.453	103%
65	14199S	2	1	13.6		3.479	
66	14199DS	2	1	13.3	1.709	3.415	99%
67	14199DS	2	1	13.4		3.421	
68	14196	1	1	0.0	<0.05	-0.027	I
69	14196	1	1	0.0		-0.027	I
70	14197	1	1	0.0	<0.05	-0.027	I
71	14197	1	1	0.0		-0.024	I
72	14198	1	1	0.2	<0.05	-0.002	I
73	14198	1	1	0.2		-0.005	I
74	14200	2	1	11.6	1.485	2.951	
75	14200	2	1	11.7		2.989	s
76	14202	2	1	10.5	1.325	2.672	
77	14202	2	1	10.3		2.627	
78	14205	1	1	2.6	0.153	0.310	
79	14205	1	1	2.5		0.303	
80	CCV	1	1	7.6		0.964	96%
81	B	1	1	0.0		-0.027	b
82	D4	1	1	11.9		1.523	d
83	14206	1	1	3.2	0.197	0.386	
84	14206	1	1	3.3		0.402	
85	14207	1	1	2.3	0.137	0.268	
86	14207	1	1	2.3		0.278	
87	BL0412-2B3C	1	1	0.0	<0.05	-0.027	I
88	BL0412-2B3C	1	1	0.0		-0.027	I
89	BL0412S	1	1	7.7	0.485	0.974	97%
90	BL0412S	1	1	7.6		0.964	s
91	BL0412DS	1	1	7.5	0.483	0.955	97%
92	BL0412DS	1	1	7.7		0.977	
93	14211	1	1	4.7	0.292	0.586	
94	14211	1	1	4.7		0.580	
95	14211D	1	1	4.7	0.292	0.580	
96	14211D	1	1	4.7		0.586	
97	14211S	1	1	12.3	0.784	1.574	98%
98	14211S	1	1	12.2		1.561	
99	14211DS	1	1	12.2	0.780	1.558	98%
100	14211DS	1	1	12.2		1.561	
101	14212	1	1	4.2	0.261	0.516	

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103	CCV							
104	B	1		0.0		-0.027	b	
105	D4	1	1	11.9		1.523	s	
106	14213	1	1	4.1	0.251	0.503		
107	14213	1	1	4.1		0.500		
108	14270	1	1	12.1	0.770	1.542		
109	14270	1	1	12.0		1.536		
110	BL0412-3BPO 14679	1	1	0.0	<0.01	-0.027	I	
111	BL0412-3BPO	1	1	0.0		-0.027	I	
112	BL0412S	1	1	8.0	0.102	1.015		101%
113	BL0412S	1	1	8.1		1.021		
114	BL0412DS	1	1	7.7	0.097	0.970		97%
115	BL0412DS	1	1	7.7		0.974		
116	14682	10	1	2.1	0.595	2.428		
117	14682	10	1	2.0		2.333		
118	14682D	10	1	1.9	0.552	2.206		
119	14682D	10	1	1.9		2.206		
120	14682S	10	1	9.8	3.145	12.532		103%
121	14682S	10	1	9.9		12.627		
122	14682DS	10	1	9.6	3.050	12.182		99%
123	14682DS	10	1	9.6		12.214		
124	14680	10	1	0.2	<0.05	-0.050	I	
125	14680	10	1	0.1		-0.082	I	
126	CCV	1	1	7.6		0.964		96%
127	B	1	1	0.0		-0.027	b	
128	D4	1	1	11.9		1.523	d	
129	14681	10	1	0.1	<0.250	-0.113	I	
130	14681	10	1	0.2		-0.050	I	
131	14683	10	1	0.4	<0.250	0.236	I	
132	14683	10	1	0.4		0.236	I	
133	14684	10	1	0.2	<0.250	-0.018	I	
134	14684	10	1	0.2		-0.050	I	
135	14685	10	1	0.1	<0.250	-0.082	s	
136	14685	10	1	0.2		-0.018	I	
137	14686	10	1	1.4	0.377	1.507		
138	14686	10	1	1.4		1.507		
139	14687	10	1	0.2	<0.250	-0.018	I	
140	14687	10	1	0.2		-0.018	I	
141	14688	10	1	0.3	<0.250	0.077	I	
142	14688	10	1	0.3		0.077	I	
143	WS 378	1	1	16.3		2.095		105
144	ORG REF	1	1	18.7		2.406		120%
145	CCV	1	1	7.6		0.964		96%
146	B	1	1	0.0		-0.027	b	
147	D4	1	1	11.9		1.523	d	

INTERCEPT: 0.21 LINEAR COEF: 7.686028
CORRELATION COEF: .9998788

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
014679	APT-CO	MB R456	Mercury -	PV	-0.010	-99999.0	0.103	103.	0.102	102.	00/04/19	1NKC	00/04/19	MG01	22.	14.	*BLKIMP*
014680	APT-CO	28 Reagent Blank	Mercury -	PV	-0.010						00/04/19	1NKC	00/04/19	MG01	22.	14.	
BL0419	INTERNAL		Mercury -	PV	-0.010	-99999.0	0.103	103.	0.102	102.	00/04/19	1NKC	00/04/19	MG01	$$$	$$$	*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

00042

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
014679	APT-CO	MB R456	Mercury -	PV	-0.030	-99999.0	0.310	103.	0.306	102.	00/04/19	1NKC	00/04/19	MG01	22.	14.	
014680	APT-CO	28 Reagent Blank	Mercury -	PV	-0.030						00/04/19	1NKC	00/04/19	MG01	22.	14.	
014681	APT-CO	27 Outlet.Blank	Mercury -	PV	-0.100						00/04/19	1NKC	00/04/19	MG01	23.	14.	
014682	APT-CO	27 Outlet-R1	Mercury -	PV	0.399	0.369	1.453	107.	1.455	107.	00/04/19	1NKC	00/04/19	MG01	23.	14.	
014683	APT-CO	27 Outlet-R3	Mercury -	PV	0.463						00/04/19	1NKC	00/04/19	MG01	23.	14.	
014684	APT-CO	27 Outlet-R4	Mercury -	PV	0.313						00/04/19	1NKC	00/04/19	MG01	23.	14.	
014685	APT-CO	27 Inlet-Blank	Mercury -	PV	-0.100						00/04/19	1NKC	00/04/19	MG01	23.	14.	
014686	APT-CO	27 Inlet-R1	Mercury -	PV	3.505						00/04/19	1NKC	00/04/19	MG01	23.	14.	
014687	APT-CO	27 Inlet-R3	Mercury -	PV	2.557						00/04/19	1NKC	00/04/19	MG01	23.	14.	
014688	APT-CO	27 Inlet-R4	Mercury -	PV	2.373						00/04/19	1NKC	00/04/19	MG01	23.	14.	
BL0419	INTERNAL		Mercury -	PV	-0.030	-99999.0	0.310	103.	0.306	102.	00/04/19	1NKC	00/04/19	MG01	$$$	$$$	

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

00043

LDC AUTOSAMPLER RUN LOG (MERCURY) 044

1/3

Date: 00.04.19W Run Code: MG01 Matrix: INP.

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

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
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			BL0419	1B1B		
15			"			
16			BL0419 S			
17			"			
18			BL0419 DS			
19			"			
20	2		14199			
21			"			
22			14199 D			
23			"			
24			14199 S			
25			"			
26			14199 DS			
27			"			
28			14196			
29			"			
30			14197			
31			"			
32			14198			
33			"			
34			CCV			
35			B			
36			D4			
37			14200			
38			"			
39			14202			
40			"			
41			14205			
42			"			
43			14206			
44			"			
45			14207			
46			"			
47			BL0419	2B1B		
48			"			
49			BL0419 S			
50			"			
51			BL0419 DS			
52			"			
53	2		14211			
54			"			
55			14211D			
56			"			
57			CCV			
58			B			
59			D4			
60	2		14211 S			
61			"			
62			14211 DS			
63			"			
64			14212			
65			"			
66			14213			
67			"			
68			14270			
69			"			
70			BL0419	INKC		
71			"			
72			BL0419S			
73			"			
74			BL0419S			
75			"			
76			14682			
77			"			
78			14682 D			
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) 00045

2/3

Date: 00.04.19 W Run Code: MG01 Matrix: IMP.

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

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
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			14682 S			
24			"			
25			14682 DS			
26			"			
27			14680			
28			"			
29			14681			
30			"			
31			14683			
32			"			
33			14684			
34			"			
35			14685			
36			"			
37		½	14686			
38		↓	"			
39		½	14687			
40		↓	"			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41		½	14688			
42		↓	"			
43			CCV			
44			B			
45			D4			
46			14680	HYX		
47			"			
48			BL0419	STA1		
49			BL0419 S			
50			15420			
51			20 D			
52			20 S			
53			15707			
54			08			
55			09			
56			13			
57			14			
58			16603			
59			04			
60			05			
61			07			
62			CCV			
63			B			
64			D4			
65			BL0419	STA2		
66			BL0419 S			
67			16606			
68			06 D			
69			06 S			
70			16132			
71			126			
72			16270			
73			272			
74			15544			
75			16526			
76			27			
77			28			
78			29			
79			CCV			
80			B			

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.

00046

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG, DGHGLEACH, DG29*

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
8	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 shaken and bulked
- ✓ Rack order checked

	#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
	9	ICV (Init. Calib. Verif.)	1NKC	20 ml	30 ml	1 X	1.5 ppb = 600 ul of MES-ZENO 30/QCA (Ref Std)
	10	BL 0419	"	"	"	"	(Processed Blank)
	11	BL 0419 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm IV Working Cal Std
	12	BL 0419 DS					(Duplicate Blank Spike)
1	13	14682	"	"	"	"	1000 mls
1	14	D	"	"	"	"	(Duplicate sample)
1	15	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm IV Working Cal Std
1	16	DS	"	"	"	"	(Duplicate Spiked sample)
2	17	14680	"	"	"	"	150 mls
3	18	81	"	"	"	"	1000 mls
4	19	83	"	"	"	"	
5	20	84	"	"	"	"	
6	21	85	"	"	"	"	
7	22	86	"	"	"	"	
8	23	87	"	"	"	"	
9	23	88	"	"	"	"	
10	24	14680 - HYX	"	"	"	"	HYDROX. HCl FRACTION 100 mls
	25	CCV (Conc. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of MES-ZENO 30/QCA (Ref Std)
	26	BL 0419	2NAS	20 ml	30 ml	"	(Processed Blank)
	27	BL 0419 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm IV Working Cal Std
	28	BL 0419 DS					(Duplicate Blank Spike)
1	29	9460	"	2 mls	"	10X	ampule solution prep'd to 100x DILUTION
1	30	D	"	"	"	"	(Duplicate sample)
1	31	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm IV Working Cal Std
1	32	DS	"		"		(Duplicate Spiked sample)
2	33	9461	"	.200	"	100X	ampule solution prep'd to 10x dilution
3	34		"	"	"	"	as per client instructions.
4	35		"	"	"	"	
5	36		"	"	"	"	
6	37		"	"	"	"	
7	38		"	"	"	"	
8	39		"	"	"	"	
9	40		"	"	"	"	
10	41		"	"	"	"	
	42	CCV (Conc. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of MES-ZENO 30/QCA (Ref Std)

Comments

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

Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C

DG29HGI, DG29HGF, DG101AA1, DG101AA2

Philip Analytical Services-Burlington

00047

	#	Sample I.D.	B.Code	Init.Vol.	F.Vol.	Dil	Comment
	43	BL		"	"	"	(Processed Blank)
	44	BL S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm IV Working Cal Std
	45	BL DS					(Duplicate Blank Spike)
1	46		"	"	"	"	
1	47	D	"	"	"	"	(Duplicate sample)
1	48	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm IV Working Cal Std
1	49	DS	"	"	"	"	(Duplicate Spiked sample)
2	50		"	"	"	"	
3	51		"	"	"	"	
4	52		"	"	"	"	
5	53		"	"	"	"	
6	54		"	"	"	"	
7	55		"	"	"	"	
8	56		"	"	"	"	
9	57		"	"	"	"	
10	58		"	"	"	"	
	57	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of MES-ZENO 30/QCA (Ref Std)

Procedure/Methodology:

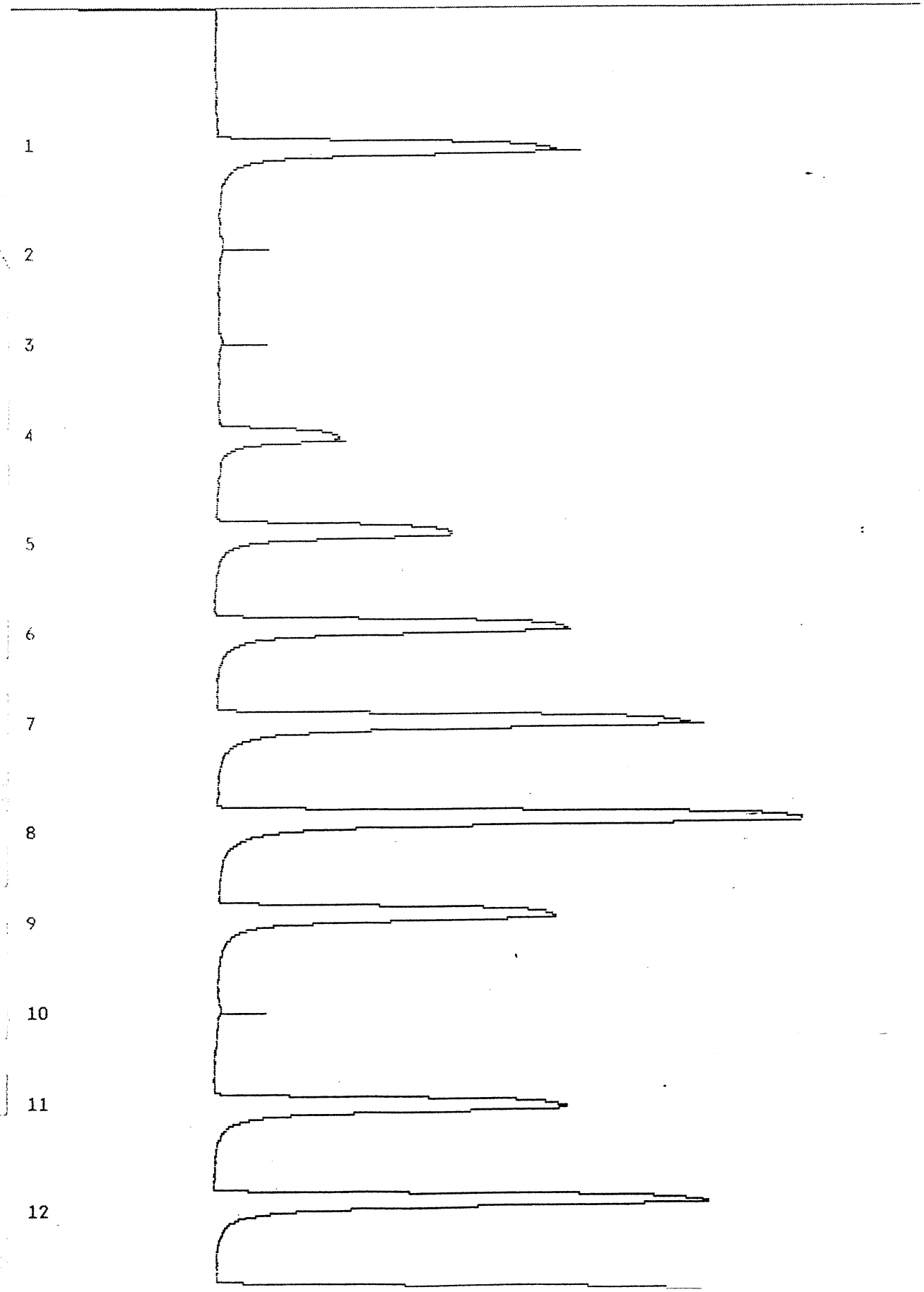
1 Prepare 25 ppm Intermediate Calibration Standard (if required) by pipetting 625 ul., of 1000 ppm Stock to 25 ml final volume of 2% HNO_3
2 Prepare 0.05 ppm Working standard daily by pipetting 200 ul., of 25 ppm Intermediate to 100 ml final volume of 2% HNO_3
3 Using the LIMS Screen "SCNDIG" enter the 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 Include one External Reference Material sample per run
7 Incude one Organic Mercury Control Standard per run
8 Transfer a 20 ml. aliquot of well mixed sample into the designated falcon tube
9 Spike the tubes as indicated in the comment sector of the digestion sheet
10 Add 0.5 ml. of conc. Nitric Acid (HNO_3), and 1 ml. of conc. Sulphuric acid, (H_2SO_4), to each tube
11 Add 3 ml. Of 6% $KMnO_4$, purple colour must remain for at least 15 minutes
12 Add 1.5 ml. of 5% potassium persulphate, ($K_2S_2O_8$), to each tube
13 Mix samples, cap loosely and place in a water bath @ 95 degrees C for 2 hours
14 Remove tubes and allow to cool to room temperature
15 Add 1.0 ml. 20% Hydroxylamine Hydrochloride to each tube
16 Recap tubes and shake until $KMnO_4$ is destroyed and sample becomes colourless
17 Dilute the sample to a final volume of 30 ml.

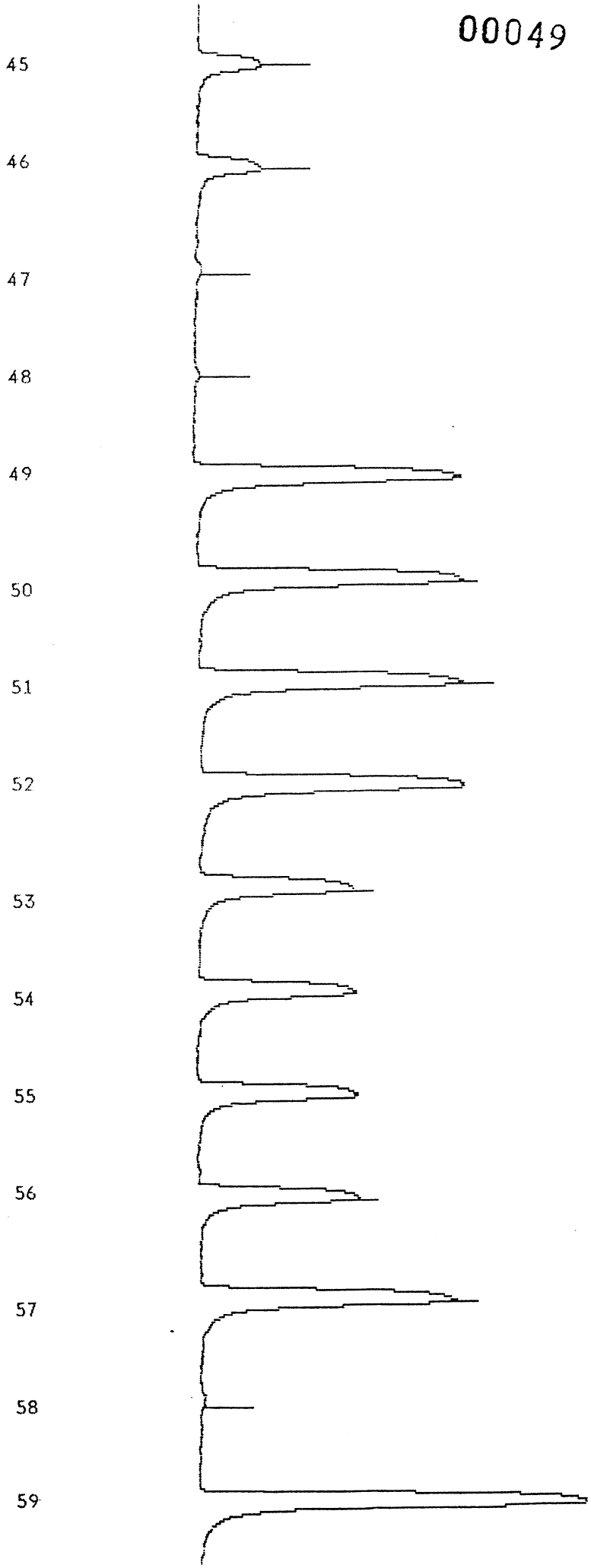
Supplier/Lot Information	Supplier	Lot	Expiry Date
Stock Calibration Standard	Inorganic Ventures	P H602023	01/04/01
Intermediate Cal Standard	Internal	00 04 05 A	00 05 05
Stock Reference Standard	High Purity	836309	00 FEB
External Reference Material	SPEX	CONC 17	00 06 14
Organic Mercury Control Standard	Aldrich	06811 HR	01 02 07
6% potassium permanganate	Internal	00 04 04 B	00 06 04
5% potassium persulphate	Internal	00 05 30	00 05 30
20% hydroxylamine hydrochloride	Internal	00 04 13 A	00 06 13
HNO_3	Anachemia	100010	00 05 13
H_2SO_4	Anachemia	319090	
Bath Temps: 1 / 1 95° C	Time ON: 3:50	Time OFF: 5:50 pm	
Prepared By: [illegible]	Date: 00 04 19	Checked by: [illegible]	

Philip Analytical Services-Burlington

00048

RUN DATE: 04-19-2000 CHART DATE: 04-19-2000
CHART SPEED: 30
DATA FILE NAME: C:\DP4\DATA\000419W.DAT

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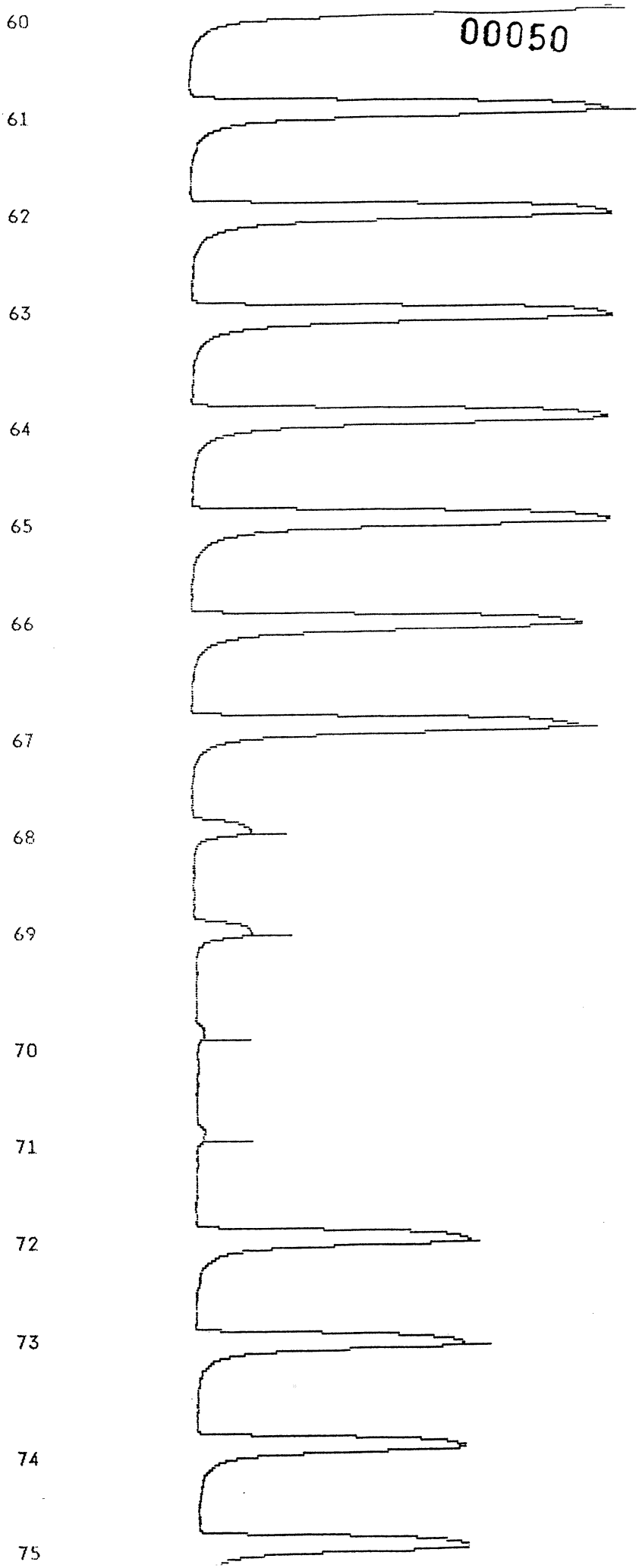
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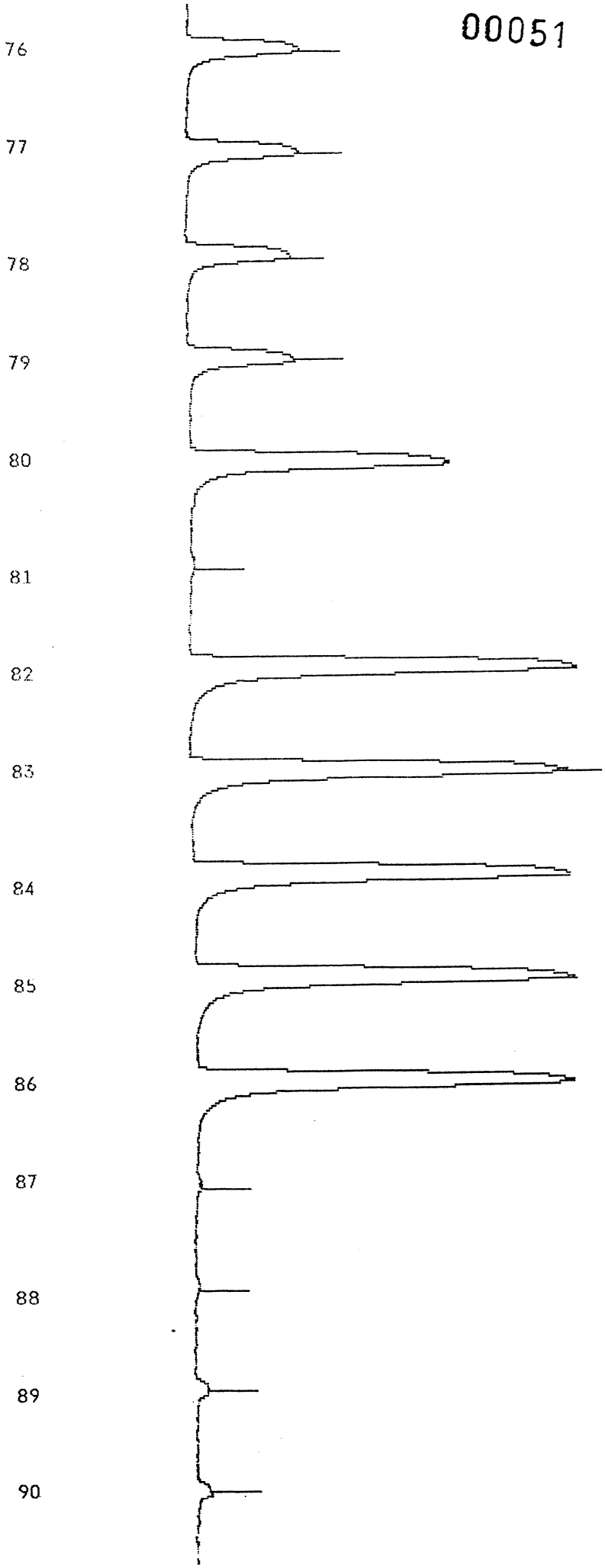
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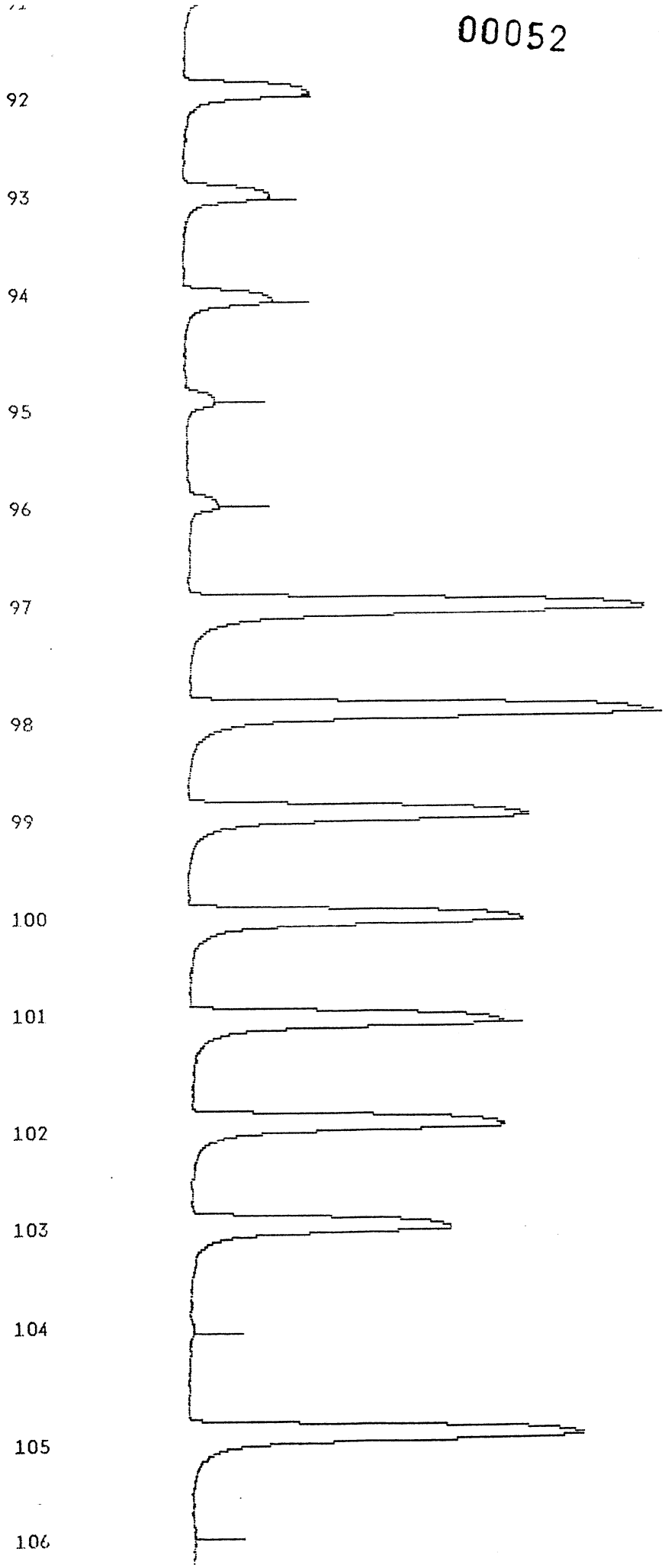
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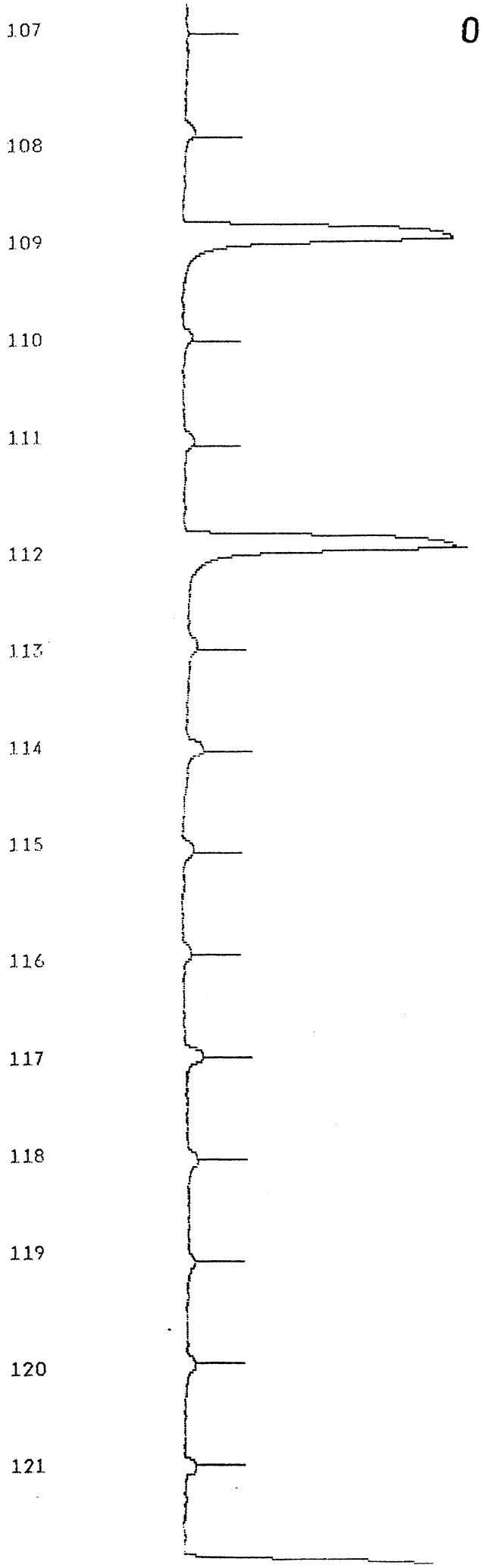
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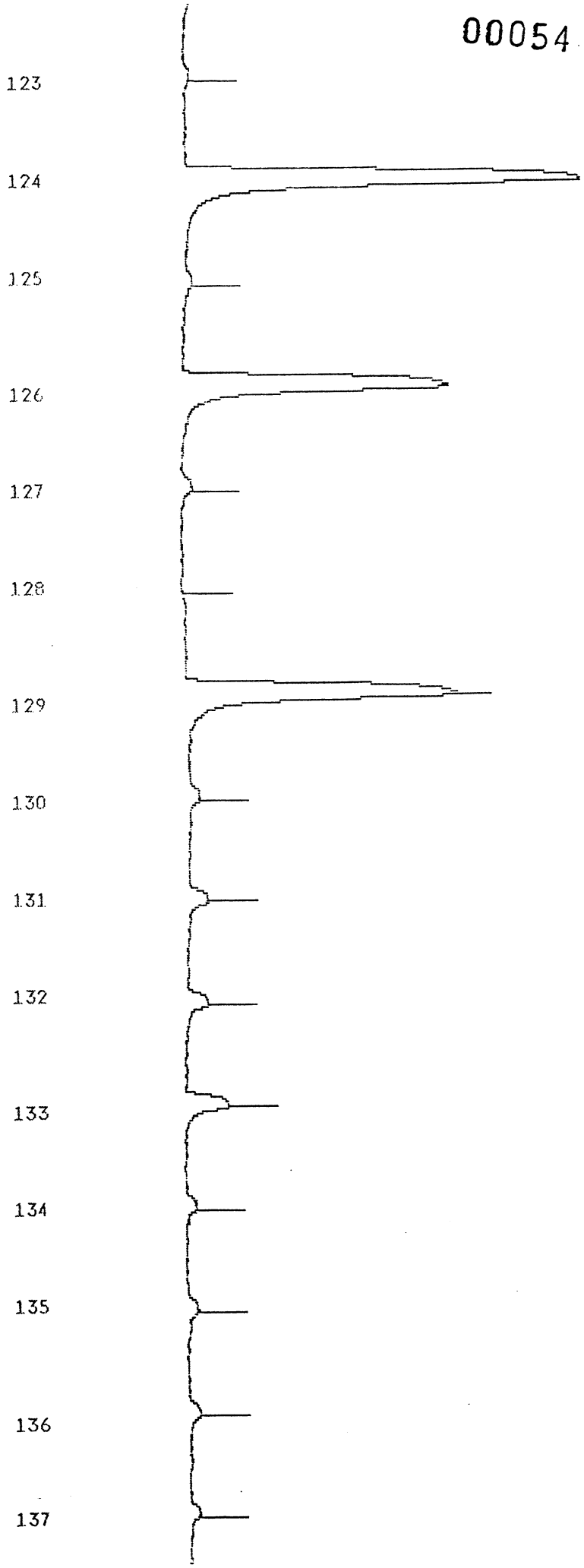
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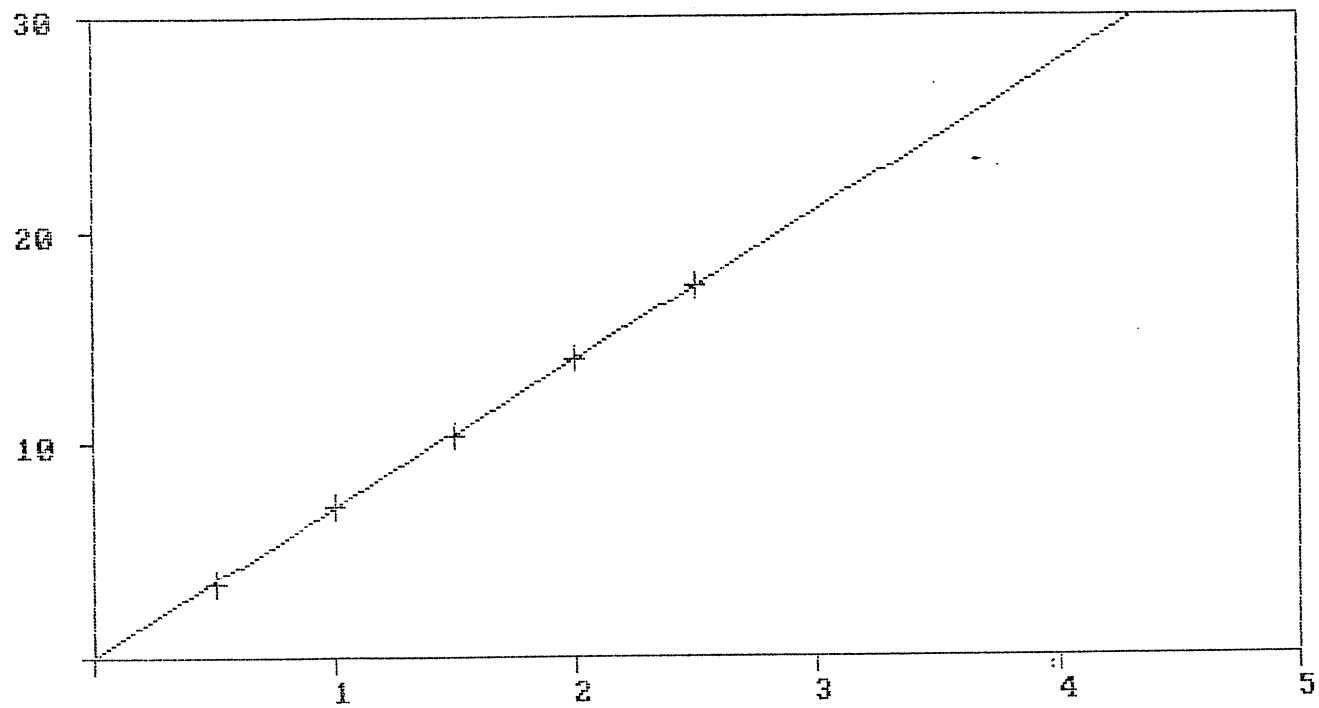
00055

CHANNEL NAME: LDC
RUN NAME: 000419W



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INTERCEPT = 0.06

CALIBRATION ORDER: 1
SLOPE = 6.929705

CORRELATION: .9999918

CHANNEL NAME: LDC
RUN DATE: 04-19-2000
SAMPLE TABLE NAME: 000419W
METHOD NAME: HGWATER

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA		CONCENTRATION µg/L	EF
1	PRIMER	1	1	10.1		1.451	s
2	DUMMY	1	1	0.1		0.006	I
3	S1: 0	1	1	0.1		0.003	I
4	S2: .5	1	1	3.5		0.499	
5	S3: 1	1	1	7.0		1.000	
6	S4: 1.5	1	1	10.4		1.493	
7	S5: 2	1	1	13.9		2.004	
8	S6: 2.5	1	1	17.4		2.501	
9	ICV	1	1	9.9		1.419	95%
10	B	1	1	0.0		-0.008	b
11	D4	1	1	10.4		1.493	d
12	WS 378	1	1	14.5		2.082	104%
13	ORG REF	1	1	15.0	TMG	2.152	107%
14	BL0419-1B1B 14196	1	1	0.0	<0.03	-0.008	I
15	BL0419-1B1B	1	1	0.0		-0.005	I
16	BL0419S	1	1	7.3	0.312	1.042	103%
17	BL0419S	1	1	7.2		1.035	

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20	14199	2	1	0.5	<0.06	0.139	I	
21	14199	2	1	0.6		0.153	I	
22	14199D	2	1	0.6	<0.06	0.153		
23	14199D	2	1	0.6		0.160		
24	14199S	2	1	7.9	0.676	2.260		105%
25	14199S	2	1	7.8		2.246		
26	14199DS	2	1	7.8	0.671	2.246		104%
27	14199DS	2	1	7.8		2.225		
28	14196	2	1	0.0	<0.03	-0.016	I	
29	14196	1	1	0.1		0.003	I	
30	14197	1	1	0.0	<0.03	-0.005	I	
31	14197	1	1	0.0		-0.005	s	
32	14198	1	1	0.1	<0.03	0.013	I	
33	14198	1	1	0.2		0.017	I	
34	CCV	1	1	6.9		0.989		99%
35	B	1	1	0.0		-0.008	b	
36	D4	1	1	10.4		1.493	d	
37	14200	1	1	1.7	0.070	0.235		
38	14200	1	1	1.7		0.232		
39	14202	1	1	0.9	0.037	0.115		
40	14202	1	1	1.0		0.129		
41	14205	1	1	5.3	0.230	0.764		
42	14205	1	1	5.4		0.771		
43	14206	1	1	1.5	0.065	0.214		
44	14206	1	1	1.6		0.217		
45	14207	1	1	1.5	0.064	0.207		
46	14207	1	1	1.6		0.217	s	
47	BL0419-2B1B	1	1	0.0	<0.03	-0.005	I	
48	BL0419-2B1B	1	1	0.0		-0.005	I	
49	BL0419S	1	1	7.2	0.306	1.024		102%
50	BL0419S	1	1	7.1		1.017		
51	BL0419DS	1	1	7.1	0.303	1.010		101%
52	BL0419DS	1	1	7.1		1.010		
53	14211	2	1	4.1	0.349	1.161		
54	14211	2	1	4.1		1.168		
55	14211D	2	1	4.3	0.364	1.224		
56	14211D	2	1	4.2		1.203		
57	CCV	1	1	6.9		0.982		98%
58	B	1	1	0.0		-0.008	b	
59	D4	1	1	10.4		1.493	d	
60	14211S	2	1	11.2	0.963	3.219		101%
61	14211S	2	1	11.1		3.198	s	
62	14211DS	2	1	11.2	0.966	3.219		101%
63	14211DS	2	1	11.2		3.219		
64	14212	1	1	11.1	0.481	1.588		
65	14212	1	1	11.3		1.616		
66	14213	1	1	10.4	0.446	1.490		
67	14213	1	1	10.3		1.483		
68	14270	1	1	1.4	0.059	0.196		
69	14270	1	1	1.4		0.196		
70	BL0419-1NKC 14679	1	1	0.1	<0.03	0.003	I	
71	BL0419-1NKC	1	1	0.1		0.010	I	
72	BL0419S	1	1	7.3	0.310	1.046		103%
73	BL0419S	1	1	7.1		1.017		
74	BL0419DS	1	1	7.1	0.306	1.017		102%
75	BL0419DS	1	1	7.2		1.024		
76	14682	1	1	2.8	0.399	0.397	s	
77	14682	1	1	2.8		0.401		
78	14882D	1	1	2.6	0.369	0.365		
79	14882D	1	1	2.6		0.373		
80	CCV	1	1	6.9		0.993		99%
81	B	1	1	0.0		-0.008	b	
82	D4	1	1	10.4		1.493	d	
83	14682S	1	1	10.1	1.453	1.451		107

00057

86	14682DS	1	1	10.1		1.451	104%	
87	14680	1	1	0.0	<0.03	-0.005	I	
88	14680	1	1	0.0		-0.008	I	
89	14681	1	1	0.2	<0.100	0.020	I	
90	14681	1	1	0.2		0.027	I	
91	14683	1	1	3.3	0.463	0.464	s	
92	14683	1	1	3.2		0.461		
93	14684	1	1	2.2	0.313	0.306		
94	14684	1	1	2.3		0.320		
95	14685	1	1	0.6	<0.100	0.080	I	
96	14685	1	1	0.6		0.084		
97	14686	2	1	12.1	3.505	3.487		
98	14686	2	1	12.3		3.522		
99	14887	2	1	9.0	2.557	2.585		
100	14887	2	1	8.8		2.528		
101	14688	2	1	8.3	2.373	2.373		
102	14688	2	1	8.3		2.373		
103	CCV	1	1	6.8		0.979	98%	
104	B	1	1	0.0		-0.008	b	
105	D4	1	1	10.4		1.493	d	
106	14680-HYX	1	1	0.0	<0.01	-0.008	s	
107	14680-HYX	1	1	0.0		-0.008	I	
108	BL0419-STA1 15694, 15712	1	1	0.2		0.024	I	
109	BL0419S	1	1	7.2		1.032	103	
110	15420	1	1	0.1		0.013	I	
111	15420D	1	1	0.1		0.013	I	
112	15420S	1	1	7.2		1.024	102%	
113	15707	1	1	0.2		0.017	I	
114	15708	1	1	0.3		0.038	I	
115	15709	1	1	0.2		0.017	I	
116	15713	1	1	0.1		0.010	I	
117	15714	1	1	0.3		0.041	I	
118	16603	1	1	0.2		0.024	I	
119	16604	1	1	0.0		-0.001	I	
120	16605	1	1	0.1		0.010	I	
121	16607	1	1	0.2		0.017	s	
122	CCV	1	1	6.9		0.982	98%	
123	B	1	1	0.0		-0.008	b	
124	D4	1	1	10.4		1.493	d	
125	BL0419-STA2 16130	1	1	0.1		0.003	I	
126	BL0419S	1	1	7.0		1.007	101%	
127	16606	1	1	0.2		0.017	I	
128	16606D	1	1	0.0		-0.008	I	
129	16606S	1	1	7.2		1.024	102%	
130	16132	1	1	0.1		0.013	I	
131	16126	1	1	0.4		0.045	I	
132	16270	1	1	0.4		0.045	I	
133	16272	1	1	0.9		0.122		
134	15544	1	1	0.1		0.010	I	
135	16526	1	1	0.2		0.017	I	
136	16527	1	1	0.1		0.013	s	
137	16528	1	1	0.1		0.006	I	
138	16529	1	1	0.1		0.013	I	
139	CCV	1	1	7.1		1.021	102%	
140	B	1	1	0.0		-0.008	b	
141	D4	1	1	10.4		1.493	d	
142	BL0419-STA3	1	1	0.5		0.069	I	
143	BL0419S	1	1	7.4		1.063		
144	16530	1	1	0.1		0.006	I	
145	16530D	1	1	0.2		0.017	I	
146	16530S	1	1	7.3		1.039		
147	16531	1	1	0.1		0.013	I	
148	16532	1	1	1.9		0.260		
149	16533	1	1	0.3		0.031	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
014679	APT-CO	MB R456	Mercury -	PV	-0.308	-99999.0	0.308	103.	0.305	101.	00/04/20	1BMN	00/04/20	MG02	23.	15.	
014680	APT-CO	28 Reagent Blank	Mercury -	PV	-0.043						00/04/20	1BMN	00/04/20	MG02	23.	15.	*DDL*
014681	APT-CO	27 Outlet Blank	Mercury -	PV	-0.100						00/04/20	1BMN	00/04/20	MG02	24.	15.	*DDL*
014682	APT-CO	27 Outlet-R1	Mercury -	PV	9.967	9.983	19.638	97.	20.058	101.	00/04/20	1BMN	00/04/20	MG02	24.	15.	
014683	APT-CO	27 Outlet-R3	Mercury -	PV	10.372						00/04/20	1BMN	00/04/20	MG02	24.	15.	
014684	APT-CO	27 Outlet-R4	Mercury -	PV	9.033						00/04/20	1BMN	00/04/20	MG02	24.	15.	
014685	APT-CO	27 Inlet-Blank	Mercury -	PV	-0.100						00/04/20	1BMN	00/04/20	MG02	24.	15.	*DDL*
014686	APT-CO	27 Inlet-R1	Mercury -	PV	6.915						00/04/20	1BMN	00/04/20	MG02	24.	15.	
014687	APT-CO	27 Inlet-R3	Mercury -	PV	6.993						00/04/20	1BMN	00/04/20	MG02	24.	15.	
014688	APT-CO	27 Inlet-R4	Mercury -	PV	5.669						00/04/20	1BMN	00/04/20	MG02	24.	15.	

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

00058

LDC AUTOSAMPLER RUN LOG (MERCURY) 00059

1/3

Date: 00.04.20 WA Run Code: MG02 Matrix: IMP.

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

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12			WS 378			
13			ORG. REF.			
14			BL0420	IBMN		
15			"			
16			BL0420 S			
17			"			
18			BL0420 DS			
19			"			
20	10		14682			
21			"			
22			14682 D			
23			"			
24			14682 S			
25			"			
26			14682 DS			
27			"			
28			14680			
29			"			
30			14681			
31			"			
32			14683			
33			"			
34			CCV			
35			B			
36			D4			
37	10		14684			
38			"			
39			14685			
40			"			
41	10		14686			
42			"			
43			14687			
44			"			
45			14688			
46			"			
47			BL0420	INAS		
48			"			
49			BL0420 S			
50			"			
51			BL0420 DS			
52			"			
53			15844			
54			"			
55			15844 D			
56			"			
57			CCV			
58			B			
59			D4			
60			15844 S			
61			"			
62			15844 DS			
63			"			
64			15841			
65			"			
66	200		15842			
67			"			
68			15843			
69			"			
70		1/5	12897			
71			"			
72			CCV			
73			B			
74			D4			
75			BL0420	2BIT		
76			BL0420 S			
77			BL0420DS			
78	10		15165			
79			165 D			
80			165 S			

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.

00060

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG, DGHGLEACH, DG29*

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
8	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 shaken and bulked
- ✓ Rack order checked

	#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
	9	ICV (Init. Calib. Verif.)	1BMN	20 ml	30 ml	1 X	1.5 ppb = 600 ul of MES-ZENO 30/QCA (Ref Std)
	10	BL 0420	"	"	"	"	(Processed Blank) 14679MB.
	11	BL 0420 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm IV Working Cal Std
	12	BL 0420 DS					(Duplicate Blank Spike)
1	13	14682	"	2ml	30ml	10X	FV=1000ml (6ml of 6% KMnO4 add
1	14	D	"	"	"	"	(Duplicate sample)
1	15	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm IV Working Cal Std
1	16	DS	"	"	"	"	(Duplicate Spiked sample)
2	17	14680	"	2ml	30ml	10X	FV=43ml
3	18	14681	"	"	"	"	FV=1000ml
4	19	83	"	"	"	"	
5	20	84	"	"	"	"	
6	21	85	"	"	"	"	
7	22	86	"	"	"	"	
8	23	87	"	"	"	"	
9	23	88	"	"	"	"	
10	24		"	"	"	"	
	25	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of MES-ZENO 30/QCA (Ref Std)
	26	BL 0420	2BET	20 ml	30 ml	"	(Processed Blank) 15164MB.
	27	BL 0420 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm IV Working Cal Std
	28	BL 0420 DS					(Duplicate Blank Spike)
1	29	15165	"	2ml	30ml	10X	FV= 110ml (Double 6% KMnO4 added) i.e. (2x volume add
1	30	D	"	"	"	"	(Duplicate sample)
1	31	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm IV Working Cal Std
1	32	DS	"	"	"	"	(Duplicate Spiked sample)
2	33	15166	"	"	"	"	FV= 120ml
3	34	167	"	"	"	"	= 102ml
4	35	168	"	"	"	"	= 116ml
5	36	169	"	"	"	"	= 90ml
6	37	170	"	"	"	"	= 92ml
7	38	171	"	"	"	"	= 96ml
8	39	172	"	"	"	"	= 94ml
9	40	173	"	"	"	"	= 92ml
10	41	174	"	"	"	"	= 96ml
	42	CCV (Cont. Calib. Verif.)	-	20 ml	30 ml	1 X	1.0 ppb = 400 ul of MES-ZENO 30/QCA (Ref Std)

Comments

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

Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C

DG29HGI, DG29HGF, DG101AA1, DG101AA2

Philip Analytical Services-Burlington

00061

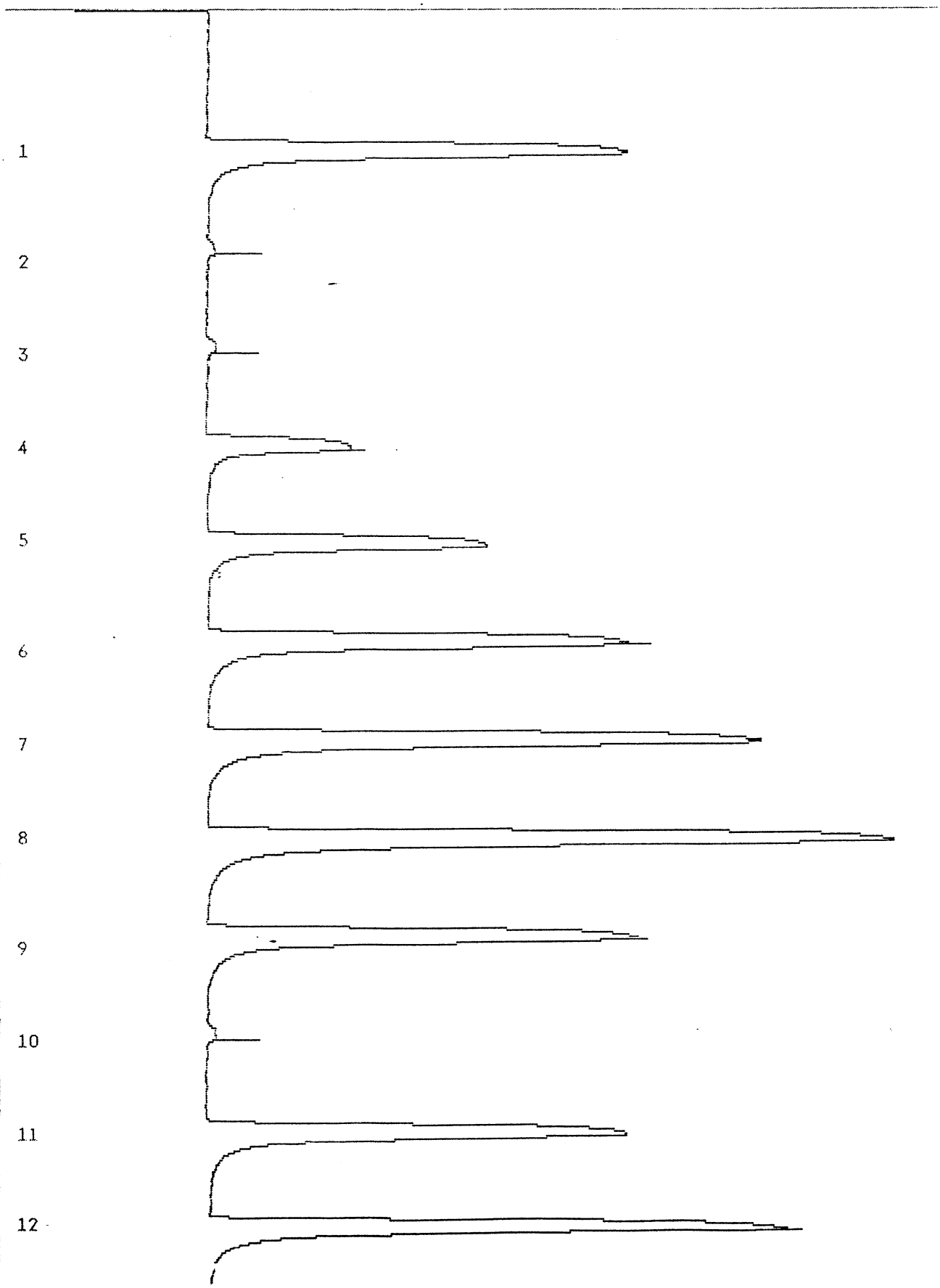
	#	Sample I.D.	B.Code	Init. Vol.	F. Vol.	Dil	Comment
	43	BL 0420	3BIT	"	"	"	(Processed Blank) 15177 MB, 15912 MB
	44	BL 0420 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm IV Working Cal Std
	45	BL 0420 DS					(Duplicate Blank Spike)
1	46	15178	"	2ml	30ml	10X	FV= 114ml
1	47	D	"	"	"	"	(Duplicate sample)
1	48	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm IV Working Cal Std
1	49	DS	"	"	"	"	(Duplicate Spiked sample)
2	50	15175	"	10ml	30ml	2X	FV= 100ml
3	51	176	"	10ml	30ml	2X	FV = 100ml
4	52	15913	"	2ml	30ml	10X	FV= 115ml
5	53	914	"	"	"	10X	= 116ml
6	54	915	"	10ml	30ml	2X	= 115ml
7	55		"	"	"	"	
8	56		"	"	"	"	
9	57		"	"	"	"	
10	58		"	"	"	"	
	57	CCV (Cont. Calib. Verif.)	"	20 ml	30 ml	1 X	1.0 ppb = 400 ul of MES-ZENO 30/QCA (Ref Std)

Procedure/Methodology:

1 Prepare 25 ppm Intermediate Calibration Standard (if required) by pipetting 625 ul., of 1000 ppm Stock to 25 ml final volume of 2% HNO_3
2 Prepare 0.05 ppm Working standard daily by pipetting 200 ul., of 25 ppm Intermediate to 100 ml final volume of 2% HNO_3
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 Include one External Reference Material sample per run
7 Incude one Organic Mercury Control Standard per run
8 Transfer a 20 ml. aliquot of well mixed sample into the designated falcon tube
9 Spike the tubes as indicated in the comment sector of the digestion sheet
10 Add 0.5 ml. of conc. Nitric Acid (HNO_3), and 1 ml. of conc. Sulphuric acid, (H_2SO_4), to each tube
11 Add 3 ml. Of 6% $KMnO_4$, purple colour must remain for at least 15 minutes
12 Add 1.5 ml. of 5% potassium persulphate, ($K_2S_2O_8$), to each tube
13 Mix samples, cap loosely and place in a water bath @ 95 degrees C for 2 hours
14 Remove tubes and allow to cool to room temperature
15 Add 1.0 ml. 20% Hydroxylamine Hydrochloride to each tube
16 Recap tubes and shake until $KMnO_4$ is destroyed and sample becomes colourless
17 Dilute the sample to a final volume of 30 ml.

Supplier/Lot Information	Supplier	Lot	Expiry Date
Stock Calibration Standard	Inorganic Ventures	PHG-02023	01/04/01
Intermediate Cal Standard	Internal	00/04/05 A	00/05/05
Stock Reference Standard	High Purity	836309	00 Feb
External Reference Material	SPEX	conc-12 (00.04.18)	00.06.18
Organic Mercury Control Standard	Aldrich	06811 HR	01/02/07
6% potassium permanganate	Internal	00.04.04 B	00.06.04
5% potassium persulphate	Internal	00.03.30	00.05.30
20% hydroxylamine hydrochloride	Internal	00.04.13 A	00.06.13
HNO_3	Anachemia	110010	00.05.13
H_2SO_4	Anachemia	519090	00.06.19
Bath Temps: 1 195°C	Time ON: 11:00 AM	Time OFF: 1:00 pm	
Prepared By: AB	Date: 00.04.20	Checked by:	

RUN DATE: 04-20-2000 CHART DATE: 04-23-2000
CHART SPEED: 30
DATA FILE NAME: C:\DP4\DATA\000420WA.DAT



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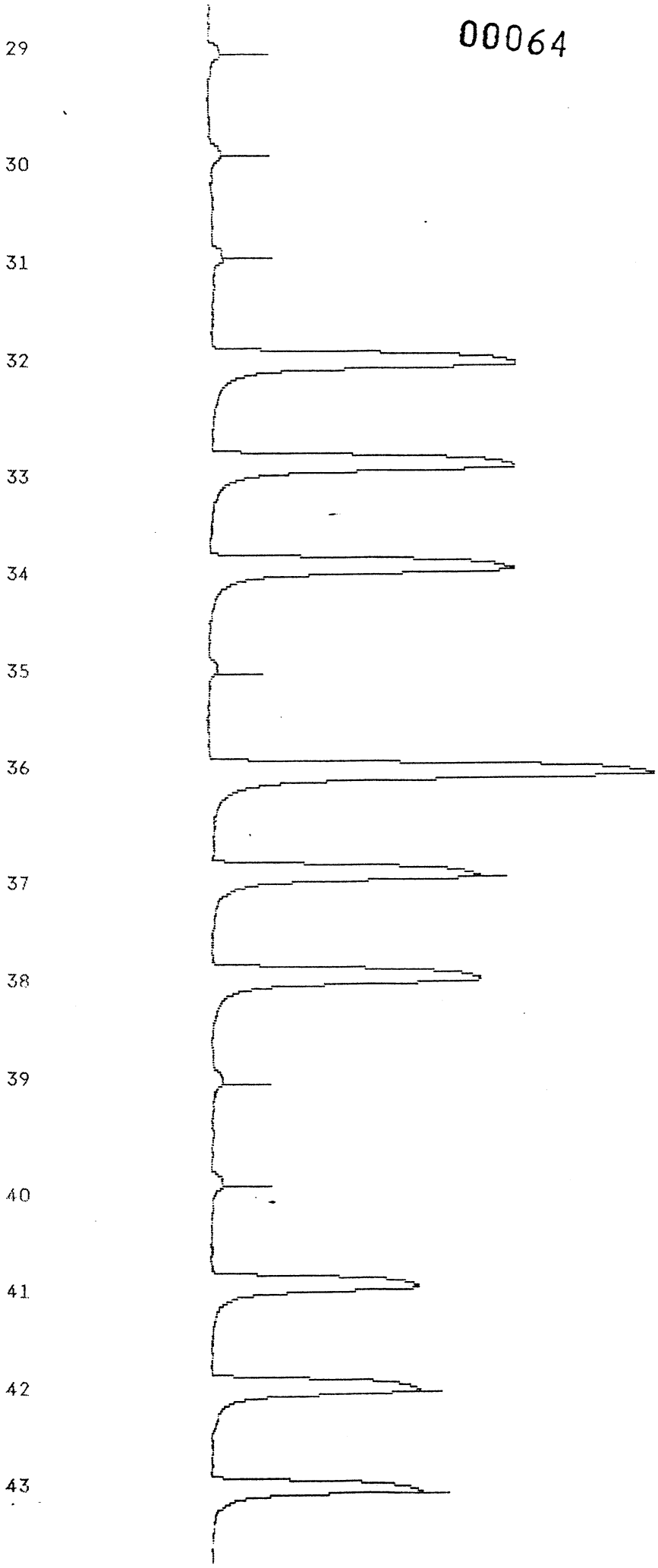
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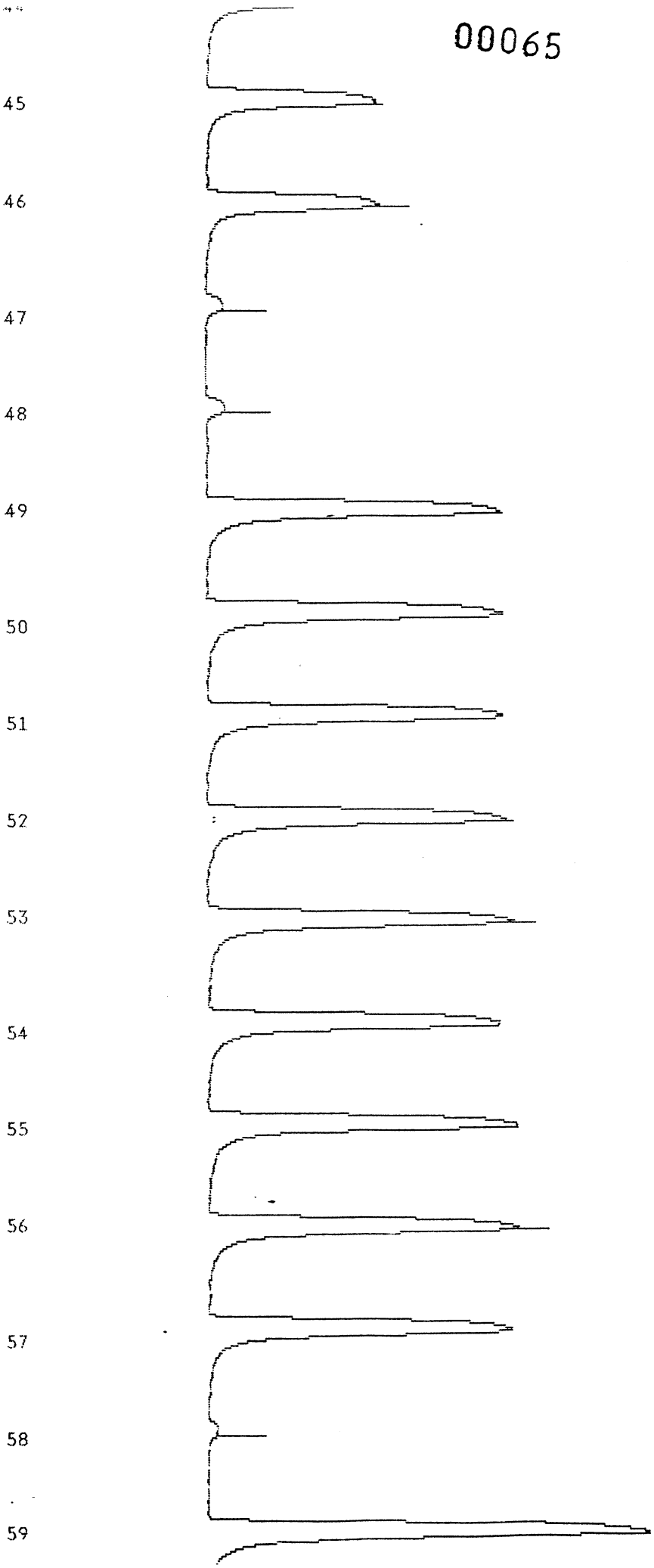
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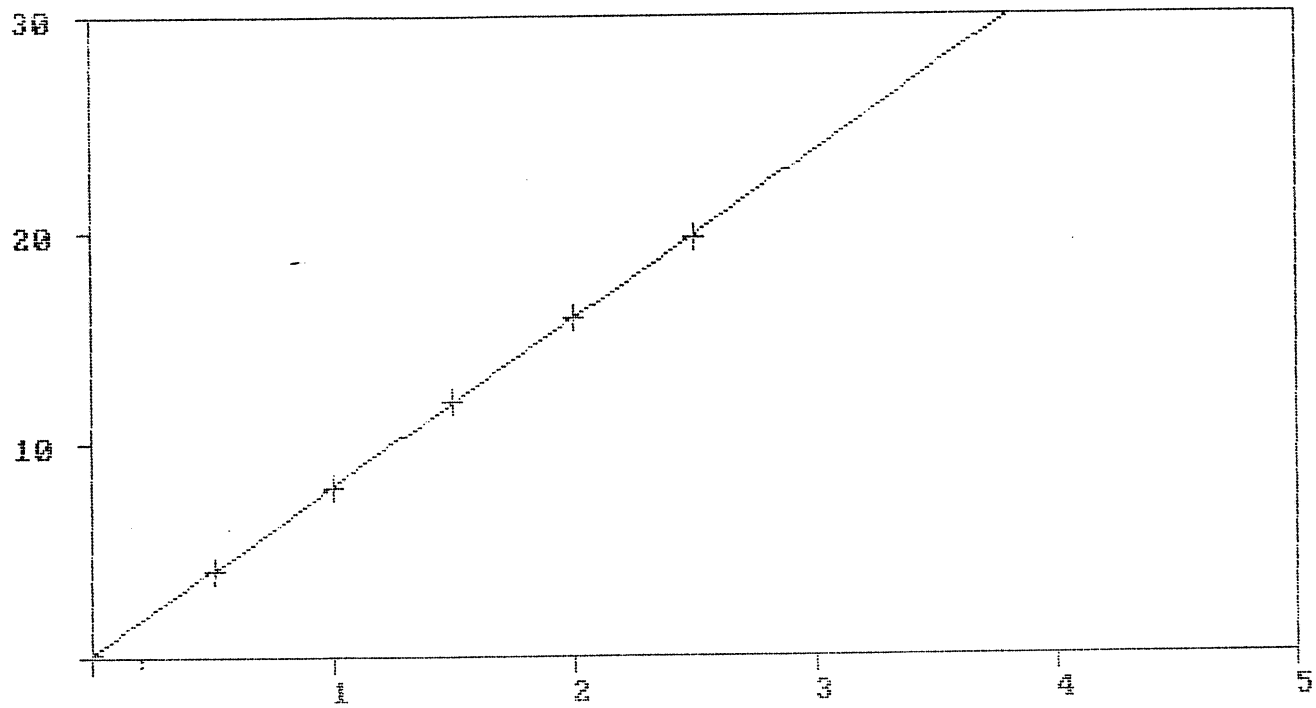
00066

CHANNEL NAME: LDC
RUN NAME: 000420WA



DATA TYPE: FIA
INTERCEPT = 0.16

CALIBRATION ORDER: 1
SLOPE = 7.840921

CORRELATION: .9999715

CHANNEL NAME: LDC
RUN DATE: 04-20-2000
SAMPLE TABLE NAME: 000420WA
METHOD NAME: HGWATER

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA	CONCENTRATION µg/L	EF
1	PRIMER	1	1	12.3	1.546	s
2	DUMMY	1	1	0.1	-0.005	I
3	S1: 0	1	1	0.1	-0.005	I
4	S2: .5	1	1	4.1	0.503	
5	S3: 1	1	1	8.0	0.995	
6	S4: 1.5	1	1	12.0	1.512	
7	S5: 2	1	1	15.8	2.001	
8	S6: 2.5	1	1	19.7	2.493	
9	ICV	1	1	12.2	1.540 103%	
10	B	1	1	0.0	-0.020	b
11	D4	1	1	12.0	1.512	d
12	WS 378	1	1	16.6	2.091 105%	
13	ORG REF	1	1	17.8	2.244 112%	
14	BL0420-1BMN 14679	1	1	0.0	-0.017	I
15	BL0420-1BMN	1	1	0.0	-0.017	I

TµG
<0.03

00067

17	BL0420S	1	1	8.2	0.308	1.029	103%
18	BL0420DS	1	1	8.1		1.014	
19	BL0420DS	1	1	8.1	0.305	1.017	101%
20	14682	10	1	8.1	9.967	10.138	
21	14682	10	1	7.8		9.796	
22	14682D	10	1	8.0	9.983	10.014	
23	14682D	10	1	8.0		9.951	
24	14682S	10	1	15.6	19.638	19.700	97%
25	14682S	10	1	15.5		19.575	
26	14682DS	10	1	15.8	20.058	20.011	101%
27	14682DS	10	1	15.9		20.104	
28	14680	10	1	0.0	<0.043	-0.171	I
29	14680	10	1	0.1		-0.108	I
30	14681	10	1	0.1	<0.100	-0.108	I
31	14681	10	1	0.1		-0.108	s
32	14863	10	1	8.3	10.372	10.419	
33	14863	10	1	8.3		10.325	
34	CCV	1	1	8.2		1.029	103%
35	B	1	1	0.0		-0.020	b
36	D4	1	1	12.0		1.512	d
37	14684	10	1	7.2	9.033	9.017	
38	14684	10	1	7.3		9.048	
39	14685	10	1	0.0	<0.100	-0.139	I
40	14685	10	1	0.0		-0.139	I
41	14686	10	1	5.6	6.915	6.930	
42	14686	10	1	5.6		6.899	
43	14687	10	1	5.6	6.993	6.993	
44	14687	10	1	5.6		6.993	
45	14688	10	1	4.6	5.669	5.622	
46	14688	10	1	4.6		5.716	s
47	BL0420-1NAS	1	1	0.2		0.008	I
48	BL0420-1NAS	1	1	0.3		0.014	I
49	BL0420S	1	1	8.0		1.001	
50	BL0420S	1	1	8.1		1.011	
51	BL0420DS	1	1	8.1		1.017	
52	BL0420DS	1	1	8.1		1.017	
53	15844	1	1	8.3		1.039	
54	15844	1	1	8.0		1.004	
55	15844D	1	1	8.4		1.057	
56	15844D	1	1	8.4		1.054	
57	CCV	1	1	8.3		1.033	103%
58	B	1	1	0.0		-0.020	b
59	D4	1	1	12.0		1.512	d
60	15844S	1	1	16.8		2.126	
61	15844S	1	1	16.8		2.116	s
62	15844DS	1	1	16.8		2.119	
63	15844DS	1	1	16.7		2.113	
64	15841	1	1	1.7		0.192	
65	15841	1	1	1.7		0.195	
66	15842	200	1	8.6		215.222	
67	15842	200	1	8.5		212.108	
68	15843	1	1	4.2		0.516	
69	15843	1	1	4.1		0.503	
70	12897	5	1	16.4		10.333	
71	12897	5	1	16.5		10.426	
72	CCV	1	1	8.3		1.036	103%
73	B	1	1	0.0		-0.020	b
74	D4	1	1	12.0		1.512	d
75	BL0420S-2BTT	1	1	7.9		0.983	
76	BL0420DS	1	1	8.0		1.001	s
77	BL0420~~DS~~ mb	1	1	0.0		-0.017	I
78	15165	10	1	0.5		0.390	I
79	15165D	10	1	0.4		0.297	I
80	15165S	10	1	8.2		10.294	
81	15165DS	10	1	8.4		10.543	

4. SHIPPING/RECEIVING DOCUMENTS

Airbills (No. of shipments)
Chain-of-Custody Records
Sample Log-In Sheets
Miscellaneous Shipping/Receiving Records (describe or list)
NOTICE OF SAMPLE RECEIPT.

US ~~00089~~ LOG IN SHEET

APT

Lab Name: Philip Analytical Services Corporation, Burlington Laboratory

Received By (Print Name): K. Caruso

Received By (Signature):

Client Project ID:

REMARKS:

Condition of Samples/Sample Shipment:

Samples rec'd intact -

Custody Seal(s) Present ___ Absent ✓

Chain of Custody Records Present ✓ Absent ___

Airbill Present ✓ Absent ___

This portion can be removed for Recipient's records.
Airbill N 818712196613

This portion can be removed for Recipient's records.
3/30/00 FedEx Tracking Number 818712196646

This portion can be removed for Recipient's records.
Comc 3/30/00 FedEx Tracking Number 818712196635

This portion can be removed for Recipient's records.
Compa 3/30/00 FedEx Tracking Number 818712196624

Comme Karl Brever Phone 303 420-5949

Company AIR POLLUTION TESTING INC

Does Ad 12421 W 49TH AVE UNIT 1

Records Dept/Floor/Suite/Room

LAKEWOOD RIDGE State CO ZIP 80033

Date Rec External Billing Reference DAC 6401

3 31 00

Time Received 12:00 p

Temperature of Coolers

Cooler ID	Temperature
4 coolers	~~[illegible]~~
	16°C/16°C/16°C/16°C

Relinquished By: E. Jones

Date:

Logbook No:

Logbook Page No.

November 18, 1998 (GB)

Sample Reception Forms

Page ___ of ___

US SAMPLE LOG IN SHEET

APT

Lab Name: Philip Analytical Services Corporation, Burlington Laboratory

Received By (Print Name): K. Grum

Received By (Signature):

Client Project ID:

REMARKS:

Condition of Samples/Sample Shipment:

Samples rec'd intact.

Custody Seal(s)	Present ___	Absent ✓
Chain of Custody Records	Present ✓	Absent ___
Airbill	Present ✓	Absent ___

This portion can be removed for Recipient's records.

4/4/00 FedEx Tracking Number 818712196977

Airbill N

Name Karl Brewer Phone 303 420-5949

Company AIR POLLUTION TESTING INC

Address 12421 W 49TH AVE UNIT 1

Dept./Floor/Suite/Room

WHEAT RIDGE State CO ZIP 80033

Internal Billing Reference

Does Information on Custody Records and Samples Agree? Yes ✓ No ___

Date Received at Lab 4-5-00

Time Received 12:00 pm

Temperature of Coolers

Cooler ID:	Temperature

Relinquished By: E Jones

Date: 4-5-00

Logbook No: ___

Logbook Page No. ___

Quality Control Samples

Inlet Train Blanks (3/27/00)

14685

27INBL-THIMBLE
27INBL-FILTER
27INBL-F1/2 ACETONE (B150-1596)
27INBL-HNO_3
27INBL-HNO_3, KCl, $KMnO_4$
27INBL-HNO_3, H_2O_2
27INBL-HNO_3, $KMnO_4$, H_2SO_4

1LCG×2, 500AG×2, 250AG, GPD, Beaker

Outlet Train Blanks (3/27/00)

14681.

27OBL-FILTER
27OBL-F1/2 ACETONE (B150-1597)
27OBL-HNO_3
27OBL-HNO_3, KCl, $KMnO_4$
27OBL-HNO_3, H_2O_2
27OBL-HNO_3, $KMnO_4$, H_2SO_4

1LCG×2, 500AG, 250AG, GPD, Beaker

Reagent Blanks (3/28/00)

14680.

28RB-FILTERS
28RB-HNO_3
28RB-KCl
28RB-$KMnO_4$
28RB-HNO_3, H_2O_2
28RB-NH_2OH*HCl
28RB-ACETONE (B150-1598)

500AG, 250AG×5, Beaker, plastic bag

Post Rinse (3/28/00)

14689 HNO_3 Post Rinse – 500AG.

MB-14679.

Outlet

Run 1 (3/27/00)

14682.

27OR1C1
27OR1C2A (B150-1591)
27OR1C2
27OR1C3
27OR1C4
27OR1C5

1LCG×2, 500Ab, 250Ab, GPD, Beaker.

Run 3 (3/27/00)

14683

27OR3C1
27OR3C2A (B150-1593)
27OR3C2
27OR3C3
27OR3C4
27OR3C5

1LCG×2, 500Ab, 250Ab, GPD, Beaker.

Run 4 (Note: Run 4 was collected March 28th and was incorrectly named)

14684.

27OR4C1
27OR4C2A (B150-1595)
27OR4C2
27OR4C3
27OR4C4
27OR4C5

"

Sample Tracking
Ontario Hydro Method - Mercury Analysis

Container #1A - Thimble Filter
Container #1 - Filter
Container #2A - Acetone Probe Rinse
Container #2 - Nitric Acid Probe 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	Inlet(IN)or Outlet(O)	Run#	Container#
27	IN	R1	C1A

Inlet

Run 1 (3/27/00)

14686.
27INR1C1A
27INR1C1
27INR1C2A (B150-1590)
27INR1C2
27INR1C3
27INR1C4
27INR1C5

1LCG×2, 500AG×2, 250AG, GPP, Beaker.

Run 3 (3/27/00)

14867.
27INR3C1A
27INR3C1
27INR3C2A (B150-1592)
27INR3C2
27INR3C3
27INR3C4
27INR3C5

"

Run 4 (Note: Run 4 was collected on March 28th and was incorrectly named)

14868.
27INR4C1A
27INR4C1
27INR4C2A (B150-1594)
27INR4C2
27INR4C3
27INR4C4
27INR4C5

"

AIR
POLLUTION
TESTING, INC.
DENVER, SALT LAKE CITY

Chain of Custody

April 4, 2000

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, Unit 1
Wheat Ridge, CO 80033
(303) 420-5949

RE: Samples for Ontario Hydro Mercury Analysis
APT Project #PAC9401

Dear Ron:

Enclosed are the filters and evaporated acetone probe wash samples that were excluded from the March 30th shipment for project #PAC9401. I am including the sample tracking list that has been revised to include the beaker numbers and the acetone reagent blank which was inadvertently left off of the original sample tracking list. I have highlighted the samples which are included in this shipment. I am also including the filter gravimentric analysis data as you previously requested.

Sincerely,

Karl Breuer
Lab Manager

Relinquished by	Date/Time	Received by:	Date/Time
	4/4/00 - 1505	- PASL	April 5/2000 12:00

DENVER OFFICE
12421 W. 49th Ave., Unit 1
Wheat Ridge, CO 80033
(303) 420-5949
FAX (303) 420-5920
(800) 268-6213

AIR
POLLUTION
TESTING, INC.
DENVER, SALT LAKE CITY

Chain of Custody

March 30, 2000

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, Unit 1
Wheat Ridge, CO 80033

RE: Samples for Ontario Hydro Mercury Analysis
APT Project #PAC9401

Dear Ron:

Enclosed are samples to be analyzed by the Ontario Hydro Method. The acetone probe rinses and filters are excluded from this shipment, but will be sent following our gravimetric analysis. Please feel free to contact me or Paul Ottenstein if you have any questions.

Sincerely,

Karl Breuer
Lab Manager

Relinquished by	Date/Time	Received by:	Date/Time
	3/30/00 - 1557		000331 12:00

DENVER OFFICE
12421 W. 49th Ave., Unit 1
Wheat Ridge, CO 80033
(303) 420-5949
FAX (303) 420-5920
(800) 268-6213

Sample Tracking
Ontario Hydro Method - Mercury Analysis

Container #1A - Thimble Filter
Container #1 - Filter
Container #2A - Acetone Probe Rinse
Container #2 - Nitric Acid Probe 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	Inlet(IN)or Outlet(O)	Run#	Container#
27	IN	R1	C1A

Inlet

Run 1 (3/27/00)

27INR1C1A
27INR1C1
27INR1C2A
27INR1C2
27INR1C3
27INR1C4
27INR1C5

Run 3 (3/27/00)

27INR3C1A
27INR3C1
27INR3C2A
27INR3C2
27INR3C3
27INR3C4
27INR3C5

Run 4 (Note: Run 4 was collected on March 28th and was incorrectly named)

27INR4C1A
27INR4C1
27INR4C2A
27INR4C2
27INR4C3
27INR4C4
27INR4C5

Outlet

Run 1 (3/27/00)

27OR1C1
27OR1C2A
27OR1C2
27OR1C3
27OR1C4
27OR1C5

Run 3 (3/27/00)

27OR3C1
27OR3C2A
27OR3C2
27OR3C3
27OR3C4
27OR3C5

Run 4 (Note: Run 4 was collected March 28th and was incorrectly named)

27OR4C1
27OR4C2A
27OR4C2
27OR4C3
27OR4C4
27OR4C5

Quality Control Samples

Inlet Train Blanks (3/27/00)

27INBL-THIMBLE
27INBL-FILTER
27INBL-F1/2 ACETONE
27INBL-HNO_3
27INBL-HNO_3, KCl, $KMnO_4$
27INBL-HNO_3, H_2O_2
27INBL-HNO_3, $KMnO_4$, H_2SO_4

Outlet Train Blanks (3/27/00)

27OBL-FILTER
27OBL-F1/2 ACETONE
27OBL-HNO_3
27OBL-HNO_3, KCl, $KMnO_4$
27OBL-HNO_3, H_2O_2
27OBL-HNO_3, $KMnO_4$, H_2SO_4

Reagent Blanks (3/28/00)

28RB-FILTERS
28RB-HNO_3
28RB-KCl
28RB-$KMnO_4$
28RB-HNO_3, H_2O_2
28RB-NH_2OH*HCl

Post Rinse (3/28/00)

HNO_3 Post Rinse

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:	2/17/00	1422	2.8257				
Description:		2/18/00	1231	2.8255				
APT Sample ID:								
Identification: T-74Q								

Project Code:	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #:	Test Date:	2/17/00	1425	3.1739				
Description:		2/18/00	1233	3.1740				
APT Sample ID:								
Identification: T-75Q								

Project Code:	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #:	Test Date:	2/17/00	1427	3.1891				
Description:		2/18/00	1234	3.1893				
APT Sample ID:								
Identification: T-76Q								

Project Code:	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #:	Test Date:	2/17/00	1430	3.2954				
Description:		2/18/00	1236	3.2954				
APT Sample ID:								
Identification: T-77Q								

Project Code: PAC	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #:	Test Date: 3/16/00	3/15/00	2354	3.3247				
Description:		3/16/00	1108	3.3248				
APT Sample ID: Proof								
Identification: T-78Q								

Project Code: DAC9401	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: 4	Test Date: 3/28/00	3/15/00	2356	3.2160	4/3/00	~~3~~/911	3.2659	
Description: Thimble Filter		3/16/00	1109	3.2162	4/3/00	1536	3.2660	0.04985
APT Sample ID: 27INR4C1A								
Identification: T-79Q								

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 :	3/15/00	2359	3.1143				
Description :		3/16/00	1113	3.1145				
APT Sample ID :								
Identification : T-80 Q								

Project Code :	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # :	Test Date :	3/16/00	0000	3.0761				
Description :		3/16/00	1114	3.0763				
APT Sample ID :								
Identification : T-81 Q								

Project Code :	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # :	Test Date :	3/16/00	0001	3.3623				
Description :		3/16/00	1115	3.3626				
APT Sample ID :								
Identification : T-82 Q								

Project Code :	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # :	Test Date :	3/16/00	0003	3.4884				
Description :		3/16/00	1116	3.4884				
APT Sample ID :								
Identification : T-83 Q								

Project Code : PAC9401	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # :	Test Date : 3/27/00	3/16/00	0004	3.3251	4/3/00	915	3.3266	
Description : Thimble Filter Blank		3/16/00	1117	3.3251	4/3/00	1528	3.3271	0.00175
APT Sample ID : 27INBL-Thimble								
Identification : T-84 Q								

Project Code : PAC9401	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # : 3	Test Date : 3/27/00	3/16/00	0005	3.3037	4/3/00	917	3.3844	
Description : Thimble Filter		3/16/00	1118	3.3041	4/3/00	1529	3.3821	0.0780
APT Sample ID : 27INR3C1A					4/4/00	852	3.3817	
Identification : T-85 Q								

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 :	3/16/00	0007	2.9518				
Description :		3/16/00	1119	2.9513				
APT Sample ID :								
Identification : T-86 Q								

Project Code : PAC9401	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # : 1	Test Date : 3/27/00	3/16/00	0008	3.3169	4/3/00	924	3.3716	
Description : Thimble Filter		3/16/00	1120	3.3170	4/3/00	1530	3.3703	
APT Sample ID : 27IN RICIA					4/4/00	854	3.3698	0.0531
Identification : T-87 Q								

Project Code :	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # :	Test Date :	3/16/00	0009	3.1491				
Description :		3/16/00	1121	3.1492				
APT Sample ID :								
Identification : T-88 Q								

Project Code :	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # :	Test Date :	3/16/00	0011	3.1874				
Description :		3/16/00	1122	3.1875				
APT Sample ID :								
Identification : T-89 Q								

Project Code :	Stack ID :	Date	Time	Tare	Date	Time	Final	Net
Run # :	Test Date :	3/16/00	0013	3.2551				
Description :		3/16/00	1123	3.2550				
APT Sample ID :								
Identification : T-90 Q								

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

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

		Date	Time	Tare	Date	Time	Final	Net
Project Code :	Stack ID :							
Run # :	Test Date :	2/14/00	1048	0.1060				
Description :		2/17/00	1338	0.1055				
APT Sample ID :								
Identification : 004012Q								

		Date	Time	Tare	Date	Time	Final	Net
Project Code : PAC	Stack ID :							
Run # :	Test Date : 3/16/00	3/16/00	0020	0.1185				
Description :		3/16/00	1030	0.1186				
APT Sample ID : Proof								
Identification : 004013Q								

		Date	Time	Tare	Date	Time	Final	Net
Project Code :	Stack ID :							
Run # :	Test Date :	3/16/00	0021	0.1157				
Description :		3/16/00	1029	0.1161				
APT Sample ID :								
Identification : 004014Q								

		Date	Time	Tare	Date	Time	Final	Net
Project Code :	Stack ID :							
Run # :	Test Date :	3/16/00	0022	0.1162				
Description :		3/16/00	1027	0.1165				
APT Sample ID :								
Identification : 004015Q								

		Date	Time	Tare	Date	Time	Final	Net
Project Code :	Stack ID :							
Run # :	Test Date :	3/16/00	0023	0.1157				
Description :		3/16/00	1026	0.1163				
APT Sample ID :		3/22/00	1239	0.1162				
Identification : 004016Q								

		Date	Time	Tare	Date	Time	Final	Net
Project Code : PAC9401	Stack ID :							
Run # :	Test Date : 3/27/00	3/16/00	0024	0.1148	4/3/00	949	0.1152	
Description : Gelman Filter Blank		3/16/00	1025	0.1153	4/3/00	1557	0.1153	0.0002
APT Sample ID : 27INBL-Filter								
Identification : 004017Q								

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:	3/16/00	0026	0.1159				
Description:		3/16/00	1004	0.1165				
APT Sample ID:		3/22/00	1240	0.1167				
Identification: 004018Q								

Project Code: PAC9401	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: 1	Test Date: 3/27/00	3/16/00	0027	0.1173	4/3/00	946	0.1271	
Description: Gelman Filter		3/16/00	1003	0.1177	4/3/00	1558	0.1275	0.0098
APT Sample ID: 27INR1C1								
Identification: 004019Q								

Project Code:	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #:	Test Date:	3/16/00	0029	0.1158				
Description:		3/16/00	1002	0.1161				
APT Sample ID:								
Identification: 004020Q								

Project Code: PAC9401	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: 3	Test Date: 3/27/00	3/16/00	0030	0.1151	4/3/00	938	0.1153	
Description: Gelman Filter		3/16/00	1001	0.1155	4/3/00	1600	0.1153	0.0000
APT Sample ID: 27INR3C1								
Identification: 004021Q								

Project Code: PAC9401	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: 4	Test Date: 3/27/00	3/16/00	0031	0.1156	4/3/00	942	0.1167	
Description: Gelman Filter		3/16/00	1000	0.1160	4/3/00	1601	0.1166	0.00085
APT Sample ID: 27INR4C1								
Identification: 004022Q								

Project Code:	Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #:	Test Date:	3/16/00	0033	0.1177				
Description:		3/16/00	959	0.1180				
APT Sample ID:								
Identification: 004023Q								

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

Project Code: PAC9401 Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: 4 Test Date: 3/28/00	1/6/00	1346	0.3500	4/3/00	1005	0.3655	
Description: Metals Filter	1/7/00	848	0.3499	4/3/00	1607	0.3654	0.0155
APT Sample ID: 270R4C1							
Identification: 002009							

Project Code: Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: Test Date:	1/6/00	1348	0.3454				
Description:	1/7/00	849	0.3445				
APT Sample ID:	2/2/00	1512	0.3442				
Identification: 002010							

Project Code: PAC Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: Test Date: 3/16/00	1/6/00	1349	0.3415				
Description:	1/7/00	851	0.3413				
APT Sample ID: Proof							
Identification: 002011							

Project Code: Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: Test Date:	1/6/00	1351	0.3419				
Description:	1/7/00	852	0.3415				
APT Sample ID:	~~1/28/00~~	~~1036~~					
Identification: 002012							

Project Code: Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: Test Date:	1/6/00	1353	0.3427				
Description:	1/7/00	855	0.3419				
APT Sample ID:	1/28/00	1039	0.3429				
Identification: 002013	2/2/00	1513	0.3430				

Project Code: PAC9401 Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: Test Date: 3/27/00	1/6/00	1354	0.3447	4/3/00	955	0.3445	
Description: Metals Filter	1/7/00	856	0.3444	4/3/00	1604	0.3450	0.0002
APT Sample ID: 270BL-Filter							
Identification: 002014							

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

Project Code: PAC9401 Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: 1 Test Date: 3/27/00	1/6/00	1356	0.3457	4/3/00	959	0.3612	
Description: Metals Filter	1/7/00	920	0.3456	4/3/00	1605	0.3608	0.01535
APT Sample ID: 270R1C1							
Identification: 002015							

Project Code: Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: Test Date:	1/6/00	1357	0.3381				
Description:	1/7/00	921	0.3387				
APT Sample ID:	1/28/00	1040	0.3372				
Identification: 002016	2/2/00 2/14/00 3/22/00	1515 1330 1232	0.3385 0.3369 0.3372				

Project Code: Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: Test Date:	1/6/00	1358	0.3477				
Description:	1/7/00	923	0.3477				
APT Sample ID:							
Identification: 002017							

Project Code: Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: Test Date:	1/6/00	1401	0.3469				
Description:	1/7/00	924	0.3466				
APT Sample ID:							
Identification: 002018							

Project Code: Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: Test Date:	1/6/00	1402	0.3464				
Description:	1/7/00	925	0.3460				
APT Sample ID:							
Identification: 002019							

Project Code: Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: Test Date:	1/6/00	1404	0.3476				
Description:	1/7/00	926	0.3475				
APT Sample ID:							
Identification: 002020							

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

Project Code: PAC9401 Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: 3 Test Date: 3/27/00	1/6/00	1405	0.3392	4/3/00	1002	0.3585	
Description: Metals Filter	1/7/00	927	0.3400	4/3/00	1606	0.3586	0.01835
APT Sample ID: 270R3C1	2/2/00	1516	0.3404				
Identification: 002021							

Project Code: Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: Test Date:	1/6/00	1407	0.3496				
Description:	1/7/00	928	0.3495				
APT Sample ID:							
Identification: 002022							

Project Code: Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: Test Date:	1/6/00	1409	0.3495				
Description:	1/7/00	930	0.3496				
APT Sample ID:							
Identification: 002023							

Project Code: Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: Test Date:	1/6/00	1410	0.3455				
Description:	1/7/00	931	0.3452				
APT Sample ID:							
Identification: 002024							

Project Code: Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: Test Date:	1/6/00	1412	0.3485				
Description:	1/7/00	932	0.3483				
APT Sample ID:							
Identification: 002025							

Project Code: Stack ID:	Date	Time	Tare	Date	Time	Final	Net
Run #: Test Date:	1/6/00	1414	0.3396				
Description:	1/7/00	935	0.3405				
APT Sample ID:	2/2/00	1518	0.3410				
Identification: 002026							

** TX STATUS REPORT ** AS OF APR 07 2000 12:35 PAGE.01

PHILIP ANALYTICAL

	DATE	TIME	TO/FROM	MODE	MIN/SEC	PGS	JOB#	STATUS
10	04/07	12:34	13034205920	EC--S	00'26"	002	230	OK

NOTICE OF SAMPLE RECEIPT-PHILIP ANALYTICAL SERVICES

Attention: Karl Breuer
Client: Air Pollution Testing
Re Client Project: PAC9401
FAX #: 303-420-5920
Phone #: 303-420-5949

Samples for: 'OH 'Trains
were received in good condition unless indicated below.

SAMPLE LISTING

Philip ID #	Sample ID	Date Sampled	Date Received
014680	28 Reagent Blank	00/03/28	00/04/05
014681	27 Outlet Blank	00/03/27	00/04/05
014682	27 Outlet-R1	00/03/27	00/04/05
014683	27 Outlet-R3	00/03/27	00/04/05
014684	27 Outlet-R4	00/03/27	00/04/05
014685	27 Inlet-Blank	00/03/27	00/04/05
014686	27 Inlet-R1	00/03/27	00/04/05
014687	27 Inlet-R3	00/03/27	00/04/05
014688	27 Inlet-R4	00/03/27	00/04/05

Comments: _____

Date 00/04/07

NOTICE OF SAMPLE RECEIPT-PHILIP ANALYTICAL SERVICES

Attention: Karl Breuer
Client: Air Pollution Testing
Re Client Project: PAC9401
FAX #: 303-420-5920
Phone #: 303-420-5949

Samples for: 'OH 'Trains
were received in good condition unless indicated below.

SAMPLE LISTING

Philip ID #	Sample ID	Date Sampled	Date Received
014680	28 Reagent Blank	00/03/28	00/04/05
014681	27 Outlet Blank	00/03/27	00/04/05
014682	27 Outlet-R1	00/03/27	00/04/05
014683	27 Outlet-R3	00/03/27	00/04/05
014684	27 Outlet-R4	00/03/27	00/04/05
014685	27 Inlet-Blank	00/03/27	00/04/05
014686	27 Inlet-R1	00/03/27	00/04/05
014687	27 Inlet-R3	00/03/27	00/04/05
014688	27 Inlet-R4	00/03/27	00/04/05

Comments: _____

Date 00/04/07

NOTICE OF SAMPLE RECEIPT-PHILIP ANALYTICAL SERVICES

Attention: Karl Breuer
Client: Air Pollution Testing
Re Client Project: PAC9401
FAX #: 303-420-5920
Phone #: 303-420-5949

Samples for: ultra Hg fraction
were received in good condition unless
indicated below.

SAMPLE LISTING

Philip ID #	Sample ID	Date Sampled	Date Received
014689	HNO3 Post Rinse	00/03/27	00/04/05

Do you want this analysed.
Please confirm.

Comments: _____

Date 00/04/07

Appendix 3
Calibration Data

AIR POLLUTION TESTING, INC.

DRY GAS METER CALIBRATION DATA

GAS METER ID :	M5-11
DATE :	12-20-99
BARO. PRESS. (MBAR) :	833

Run #1	DH	Vmet	Tin	Tout	Vref	Tref	DP	Vac	Time
Start	0.5	529.765	68	68	304.752	69	0.15	5	01:00 PM
Stop	0.5	534.079	70	69	309.124	69	0.15	5	01:10 PM
Avg.	**0.5**	**4.314**	**69.0**	**68.5**	**4.372**	**69.0**	**0.15**	**5**	**10.0**

Run #2	DH	Vmet	Tin	Tout	Vref	Tref	DP	Vac	Time
Start	1.5	535.019	70	68	310.084	69	0.30	5	01:14 PM
Stop	1.5	542.237	71	69	317.405	69	0.30	5	01:24 PM
Avg.	**1.5**	**7.218**	**70.5**	**68.5**	**7.321**	**69.0**	**0.30**	**5**	**10.0**

Run #3	DH	Vmet	Tin	Tout	Vref	Tref	DP	Vac	Time
Start	3.0	544.273	71	69	319.486	69	0.53	4	01:27 PM
Stop	3.0	554.384	72	70	329.810	69	0.53	4	01:37 PM
Avg.	**3.0**	**10.111**	**71.5**	**69.5**	**10.324**	**69.0**	**0.53**	**4**	**10.0**

	Run #1	Run #2	Run #3	***Average***
Yref	1.006	1.006	1.006	***1.006***
Yd	1.017	1.016	1.019	***1.018***
DH@	1.77	1.90	1.91	***1.86***

Technician :

John Miller

AIR POLLUTION TESTING, INC.

DRY GAS METER CALIBRATION DATA

GAS METER ID :	M5-11
DATE :	04-24-00
BARO. PRESS. (MBAR) :	829

Run #1	DH	Vmet	Tin	Tout	Vref	Tref	DP	Vac	Time
Start	1.0	700.104	56	54	993.243	64	0.23	0.0	12:25 PM
Stop	1.0	706.068	58	55	999.375	64	0.23	0.0	12:35 PM
Avg.	**1.0**	**5.964**	**57.0**	**54.5**	**6.132**	**64.0**	**0.23**	**0.0**	**10.0**

Run #2	DH	Vmet	Tin	Tout	Vref	Tref	DP	Vac	Time
Start	1.0	706.068	58	55	999.375	64	0.23	0.0	12:36 PM
Stop	1.0	712.028	61	56	1005.508	64	0.23	0.0	12:46 PM
Avg.	**1.0**	**5.960**	**59.5**	**55.5**	**6.133**	**64.0**	**0.23**	**0.0**	**10.0**

Run #3	DH	Vmet	Tin	Tout	Vref	Tref	DP	Vac	Time
Start	1.0	712.028	61	56	1005.508	64	0.23	0.0	12:47 PM
Stop	1.0	717.962	63	58	1011.614	64	0.23	0.0	12:57 PM
Avg.	**1.0**	**5.934**	**62.0**	**57.0**	**6.106**	**64.0**	**0.23**	**0.0**	**10.0**

	Run #1	Run #2	Run #3	***Average***
Yref	1.006	1.006	1.006	*1.006*
Yd	1.015	1.019	1.023	***1.019***
DH@	1.83	1.82	1.83	***1.83***

THERMOCOUPLE CALIBRATION

Calibration Temperature Reading (F)	Pyrometer Reading (F)	Abs (Relative Difference) % (R)
75	73	0.4
250	252	0.3
860	863	0.2
Max Absolute Difference %		0.4

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 :		M5-8
DATE :	pre-test	16-Jun-99
BARO. PRESS. (MBAR) :		869

GAS METER CALIBRATION

Run #1	DH	Vmet	Tin	Tout	Vref	Tref	DP	Vac	Time
Start	3.00	1000.656	76	75	1008.434	76	0.34	5.0	04:10 PM
Stop	3.00	1008.916	78	77	1016.733	76	0.34	5.0	04:18 PM
Avg.	**3.00**	**8.260**	**77.0**	**76.0**	**8.299**	**76.0**	**0.34**	**5.0**	**8.0**

Run #2	DH	Vmet	Tin	Tout	Vref	Tref	DP	Vac	Time
Start	1.50	1009.458	78	77	1017.287	76	0.22	4.0	04:20 PM
Stop	1.50	1017.560	77	76	1025.378	76	0.22	4.0	04:31 PM
Avg.	**1.50**	**8.102**	**77.5**	**76.5**	**8.091**	**76.0**	**0.22**	**4.0**	**11.0**

Run #3	DH	Vmet	Tin	Tout	Vref	Tref	DP	VAC	Time
Start	0.50	1017.873	80	78	1025.684	75	0.14	3.0	04:32 PM
Stop	0.50	1024.158	82	79	1031.926	75	0.14	3.0	04:46 PM
Avg.	**0.50**	**6.285**	**81.0**	**78.5**	**6.242**	**75.0**	**0.14**	**3.0**	**14.0**

	Run #1	Run #2	Run #3	***Average***
Yref	1.012	1.012	1.012	***1.012***
Yd	1.008	1.008	1.012	***1.009***
DH@	1.80	1.79	1.61	***1.73***

THERMOCOUPLE CALIBRATION

Calibration Temperature Reading (F)	Pyrometer Reading (F)	Relative Difference % (R)
65	67	0.4
250	255	0.7
500	501	0.1
Max Absolute Difference %		0.7

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 :

Mike Hesselman

AIR POLLUTION TESTING, INC.

THERMOCOUPLE AND DRY GAS METER CALIBRATION DATA

GAS METER ID :	M5-8
DATE :	03-30-00
BARO. PRESS. (MBAR) :	831

GAS METER CALIBRATION

Run #1	DH	Vmet	Tin	Tout	Vref	Tref	DP	Vac	Time
Start	0.85	536.654	50	50	663.181	56	0.22	6.0	11:28 AM
Stop	0.85	542.535	51	51	669.019	57	0.22	6.0	11:38 AM
Avg.	**0.85**	**5.881**	**50.5**	**50.5**	**5.838**	**56.5**	**0.22**	**6.0**	**10.0**

Run #2	DH	Vmet	Tin	Tout	Vref	Tref	DP	Vac	Time
Start	0.85	542.535	52	52	669.019	57	0.23	6.0	11:41 AM
Stop	0.85	548.450	53	53	674.810	59	0.22	6.0	11:51 AM
Avg.	**0.85**	**5.915**	**52.5**	**52.5**	**5.791**	**58.0**	**0.23**	**6.0**	**10.0**

Run #3	DH	Vmet	Tin	Tout	Vref	Tref	DP	VAC	Time
Start	0.85	548.450	54	54	674.810	59	0.22	6.0	11:54 AM
Stop	0.85	554.350	60	55	680.748	59	0.22	6.0	12:04 PM
Avg.	**0.85**	**5.900**	**57.0**	**54.5**	**5.938**	**59.0**	**0.22**	**6.0**	**10.0**

	Run #1	Run #2	Run #3	***Average***
Yref	1.012	1.012	1.012	***1.012***
Yd	0.990	0.977	1.009	***0.992***
DH@	1.64	1.67	1.59	***1.64***

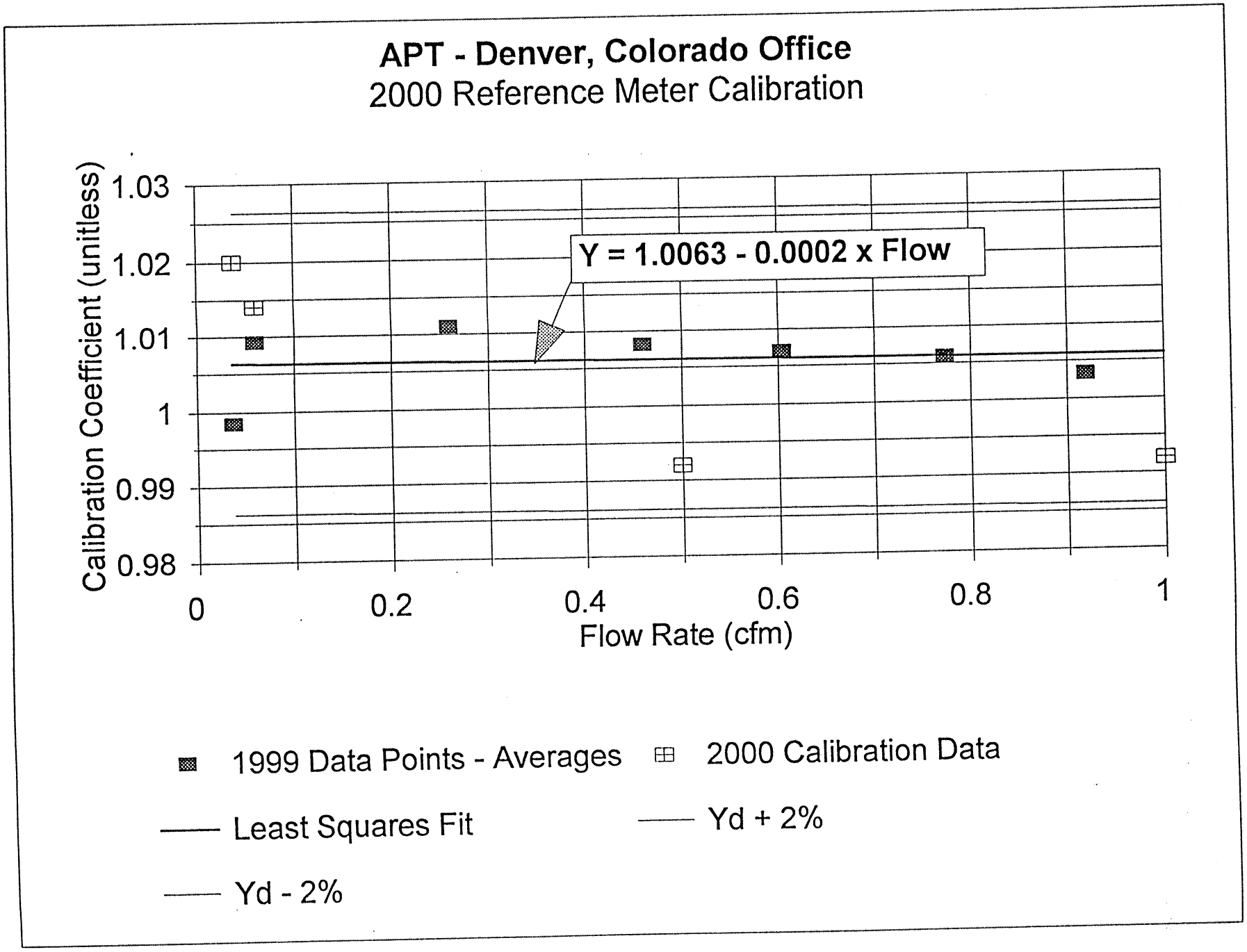
THERMOCOUPLE CALIBRATION

Calibration Temperature Reading (F)	Pyrometer Reading (F)	Relative Difference % (R)
46	44	-0.4
200	198	-0.3
293	291	-0.3
Max Absolute Difference %		0.5

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

Technician :

John Miller


APT - Denver, Colorado Office
2000 Reference Meter Calibration
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)
Y = 1.0063 - 0.0002 x Flow
1999 Data Points - Averages
2000 Calibration Data
Least Squares Fit
Yd + 2%
Yd - 2%

99 / 2000 Meter Calibration Data - Denver

ov (acfm)	2000 Data	Yd -avg	Yd - R1	Yd - R2	1999 Data Yd - R3	Yd Fit	Yd+2	Yd-2
00	0.992					1.006	1.026	0.986
0.92		1.003	1.000	1.000	1.010	1.006	1.026	0.986
77		1.006	1.004	1.004	1.010	1.006	1.026	0.986
60		1.007	1.004	1.005	1.012	1.006	1.026	0.986
0.50	0.992					1.006	1.026	0.986
0.46		1.008	1.007	1.004	1.013	1.006	1.026	0.986
.26		1.011	1.011	1.012	1.011	1.006	1.026	0.986
.06	1.014	1.009	1.010	1.003	1.014	1.006	1.026	0.986
0.04	1.020	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	

ENVIRONMENTAL SUPPLY COMPANY
2142 E. Geer Street, Durham, North Carolina 27704
(919) 956-9688 · FAX: (919) 682-0333

Quality - Service - Reliability

Date: 01/13/2000
DGM Model: S-275
DGM S/N: 839943

Reference Meter: Model M30 NIST traceable Mini-Buck bubble meter
S/N: 30366

Customer: Air Pollution Testing

Nominal Flow (liters/min)	DGM Initial (cf)	DGM final (cf)	Volume Total (cf)	Volume Total (liters)	DGM Temperature Initial (F)	DGM Temperature Final (F)	DGM Press. (in H20)	Ref. Meter Flow Rate (liters/min)	Time (min)	Ref. Volume (liters)	Meter Coeff. (Y)	Average Coeff. (Yavg)	% Diff.
2	510.250	511.620	1.370	38.798	67.30	67.60	0	2.035	19.350	39.377	1.015	1.014	-0.12%
2	511.660	514.005	2.345	66.410	67.60	68.00	0	1.971	34.100	67.211	1.012		0.17%
2	514.240	515.350	1.110	31.435	68.00	68.40	0	1.956	16.300	31.883	1.014		-0.05%
1	506.150	507.250	1.100	31.152	66.20	66.20	0	0.971	32.583	31.628	1.015	1.020	-0.15%
1	507.340	509.090	1.750	49.560	66.40	66.50	0	1.013	49.850	50.498	1.019		-0.51%
1	509.102	510.090	0.988	27.980	66.50	67.30	0	1.013	28.350	28.719	1.026		-1.25%

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

2-POINT REFERENCE CHECK

Date: 01/06/2000 Customer: Air Pollution Testing

DGM Model: S-275 DGM S/N: 839943 $Y=V_{ref(std)}/V_{m(std)}$

Flow Rate	Reference Volume (std)	Meter Volume (std)	Y	Yavg
.5 CFM	4.958	5.013	0.989	
	4.967	5.002	0.993	
	4.962	4.992	0.994	0.992
1 CFM	5.183	5.221	0.993	
	5.183	5.218	0.993	
	5.183	5.230	0.991	0.992

For the 2-point calibration check, the DGM coefficient (Y) must be within +/- 1.5% of the previous calibration coefficient.

Flow Rate	Y	Previous Y	% Difference
.5 CFM	0.992	1.007	1.490%
1 CFM	0.992	1.007	1.455%

Dry gas meter Serial Number 839943 was calibrated in accordance with the Code of Federal Regulations, Title 40, Part 60, Appendix A, Method 5, Section 7.1.2.2.

Signature Date 1/6/00

\\chris\envsupply\calibrat\secondary ref meter\APT-839943.xls

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

Meter Box Pair Test Calibration

C[illegible]or R.[illegible]berg

DATE: January 21, 1999

Dry Gas No : APT R.I. 839943				Meter Box ΔH@: NA						Meter Box Yd: 1.0070						Barometric Pressure: 24.40		
				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

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

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

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

VOST Meter Box Full Test Calibration

Operator: R. Lindberg

DATE: January 22, 1999

Meter Box No: APT R.I. 839943 | Meter Box ΔH@: NA | Meter Box Yd: 1.0038 | Barometric Pressure: 24.40

1 & 2 LITER PER MIN.				Standard Meter Gas Volume			Meter Box Gas Volume (liters)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)					
Q	ΔH	ΔP	Yds	Initial	Final	Vds	Initial	Final	Vd	Inlet	Outlet	Tds	Inlet	To	Td	Time	Yd	H@
0.04	-0.20	0.00	1.0000	0.000	1.172	1.172	0.000	33.186	33.186	64.0	64.0	64.0	63.0	63.0	63.0	24.44	0.9987	NA
0.04	-0.20	0.00	1.0000	0.000	1.056	1.056	0.000	30.015	30.015	64.0	64.0	64.0	63.0	63.0	63.0	21.52	0.9949	NA
0.03	-0.20	0.00	1.0000	0.000	1.019	1.019	0.000	28.769	28.769	67	67	67.0	66	66	66.0	26.95	1.0017	NA
0.06	-0.40	0.00	1.0000	0.000	1.019	1.019	0.000	28.543	28.543	64.0	64.0	64.0	63.0	63.0	63.0	14.04	1.0102	NA
0.06	-0.40	0.00	1.0000	0.000	1.021	1.021	0.000	28.797	28.797	64.0	64.0	64.0	63.0	63.0	63.0	14.12	1.0032	NA
0.06	-0.40	0.00	1.0000	0.000	1.080	1.080	0.000	030.128	30.128	67.0	67.0	67.0	66.0	66.0	66.0	14.47	1.0143	NA
																AVERAGE	1.0038	

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

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

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

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

note multiply Y_d formula by a conversion factor of 28.316

Vacuum Gauge

Standard (in. Hg)	Vacuum Gauge
NA	NA

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

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

Wind Tunnel Pitot Calibration

S-type Pitot ID:	147	Date:	12/21/98
Standard Pitot ID:	001	Personnel:	B. Allen
Cp(std):	0.99	Cp(actual):	0.83

A-SIDE

delta Pstd	delta Ps	Cp(s)	Deviation
(in. H20)	(in. H20)		
0.480	0.700	0.820	0.012
0.500	0.690	0.843	0.010
0.490	0.690	0.834	0.002
	AVERAGE	0.832	0.008
		Std deviation	0.012

B-SIDE

delta Pstd	delta Ps	Cp(s)	Deviation
(in. H20)	(in. H20)		
0.480	0.700	0.820	0.002
0.480	0.700	0.820	0.002
0.485	0.695	0.827	0.005
	AVERAGE	0.822	0.003
		Std deviation	0.004

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

Cp(A) - Cp(B) = 0.01 {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.

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Appendix 4
Operating Data and Coal Analysis Data

Enertec NTDAHS®
Average Values Report
03/28/00 14:46

Company: PacifiCorp
Plant: Route 377
City/St: Point of Rock, WY 82942
Source: BRIDGER_4

Period Start: 03/28/00 09:15
Period End: 03/28/00 11:28
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start	Average Unit Load4 MW	Average Barometer4 psi	Average Stk Temp 4 deg F	Average Moisture 4 %	Average Stk Flow 4 kcfm	Average Flow Corr4 kscfm	Average CO2 E4 %	Average O2 Dry 4 %
03/28/00 09:15	526.1	11.27	125.7	N/A	1847	1277	N/A	N/A
03/28/00 09:16	526.7	11.27	126.9	N/A	1825	1259	N/A	N/A
03/28/00 09:17	527.0	11.27	126.9	N/A	1825	1259	N/A	N/A
03/28/00 09:18	526.6	11.26	126.3	N/A	1899	1311	N/A	N/A
03/28/00 09:19	527.2	11.27	126.2	N/A	1923	1328	N/A	N/A
03/28/00 09:20	527.3	11.26	126.4	N/A	1859	1283	N/A	N/A
03/28/00 09:21	526.1	11.26	126.1	N/A	1861	1285	N/A	N/A
03/28/00 09:22	525.0	11.26	124.8	N/A	1867	1291	N/A	N/A
03/28/00 09:23	524.9	11.27	125.6	N/A	1862	1288	N/A	N/A
03/28/00 09:24	525.7	11.27	125.8	N/A	1847	1276	N/A	N/A
03/28/00 09:25	526.1	11.27	125.6	3.1	1847	1276	13.5	5.7
03/28/00 09:26	526.1	11.27	126.2	1.8	1847	1275	13.6	5.7
03/28/00 09:27	526.0	11.26	126.0	1.8	1858	1283	13.6	5.7
03/28/00 09:28	526.4	11.27	125.6	0.5	1870	1294	13.5	5.7
03/28/00 09:29	525.9	11.27	126.0	3.5	1902	1313	13.6	N/A
03/28/00 09:30	525.1	11.27	125.9	N/A	1913	1321	N/A	N/A
03/28/00 09:31	525.1	11.27	126.9	N/A	1869	1290	N/A	N/A
03/28/00 09:32	525.4	11.27	126.9	N/A	1854	1278	N/A	N/A
03/28/00 09:33	526.0	11.26	127.7	N/A	1876	1292	N/A	N/A
03/28/00 09:34	526.6	11.26	127.4	N/A	1884	1299	13.6	N/A
03/28/00 09:35	527.0	11.27	127.7	3.5	1872	1289	13.6	5.7
03/28/00 09:36	527.1	11.26	127.5	3.5	1872	1290	13.6	5.7
03/28/00 09:37	527.5	11.26	125.1	2.2	1909	1320	13.5	5.7
03/28/00 09:38	528.1	11.27	124.1	4.9	1909	1322	13.7	5.7
03/28/00 09:39	527.8	11.26	124.5	4.4	1933	1339	13.6	5.7
03/28/00 09:40	527.0	11.26	124.3	5.3	1926	1334	13.6	5.9
03/28/00 09:41	526.3	11.26	124.4	7.3	1905	1319	13.6	5.8
03/28/00 09:42	525.8	11.26	124.4	7.7	1893	1311	13.6	5.9
03/28/00 09:43	526.9	11.26	123.3	8.1	1853	1285	13.6	5.9
03/28/00 09:44	527.1	11.27	124.7	7.3	1861	1290	13.7	5.8
03/28/00 09:45	527.2	11.27	126.0	6.9	1869	1291	13.6	5.8
03/28/00 09:46	527.6	11.27	125.1	6.9	1847	1276	13.6	5.8
03/28/00 09:47	527.7	11.27	125.3	7.3	1824	1261	13.7	5.8
03/28/00 09:48	527.2	11.26	125.7	6.9	1840	1272	13.7	5.8
03/28/00 09:49	527.3	11.27	126.1	8.2	1846	1276	13.7	5.8
03/28/00 09:50	527.3	11.27	125.8	9.5	1866	1290	13.8	5.8
03/28/00 09:51	526.7	11.27	125.7	9.6	1872	1294	13.7	5.8
03/28/00 09:52	526.7	11.27	123.8	9.9	1847	1280	13.7	5.8
03/28/00 09:53	527.0	11.26	123.1	7.9	1847	1281	13.8	5.7
03/28/00 09:54	528.1	11.26	123.8	10.3	1771	1228	13.7	5.8
03/28/00 09:55	528.3	11.26	124.2	9.3	1791	1241	13.7	5.8
03/28/00 09:56	526.7	11.26	122.6	8.5	1847	1283	13.7	5.9
03/28/00 09:57	525.8	11.26	122.6	9.4	1842	1279	13.7	5.9
03/28/00 09:58	526.5	11.26	122.6	10.6	1828	1269	13.7	5.9
03/28/00 09:59	527.2	11.26	123.8	10.6	1835	1274	13.8	5.9
03/28/00 10:00	527.8	11.26	125.8	9.4	1857	1284	13.7	5.9
03/28/00 10:01	528.1	11.26	125.3	10.2	1858	1284	13.8	5.9
03/28/00 10:02	528.0	11.26	125.9	8.1	1858	1284	13.7	5.7
03/28/00 10:03	527.9	11.27	126.1	7.8	1873	1293	13.7	5.8
03/28/00 10:04	526.8	11.26	126.3	8.6	1889	1303	13.7	5.8
03/28/00 10:05	525.7	11.26	125.9	9.0	1868	1288	13.7	5.8
03/28/00 10:06	524.8	11.26	125.8	8.6	1861	1285	13.7	5.8
03/28/00 10:07	525.7	11.27	124.6	6.2	1833	1270	13.7	5.7
03/28/00 10:08	527.0	11.27	123.7	5.7	1824	1265	13.7	5.7
03/28/00 10:09	528.0	11.27	124.1	7.9	1824	1264	13.8	5.7
03/28/00 10:10	527.5	11.27	124.1	6.1	1824	1265	13.7	5.7
03/28/00 10:11	527.1	11.26	123.8	5.3	1824	1264	13.6	5.7
03/28/00 10:12	527.1	11.26	123.6	8.5	1851	1282	13.6	5.9
03/28/00 10:13	527.3	11.26	123.5	7.7	1877	1302	13.7	5.8
03/28/00 10:14	528.0	11.26	124.4	6.5	1861	1288	13.7	5.8
03/28/00 10:15	529.4	11.26	124.5	6.1	1855	1284	13.7	5.8
03/28/00 10:16	530.0	11.26	125.6	6.1	1886	1303	13.7	5.8

03/28/00 10:18	528.3	11.26	125.7	4.1	1861	1286	13.7	5.7
03/28/00 10:19	528.3	11.26	125.6	7.0	1861	1287	13.8	5.7
03/28/00 10:20	528.6	11.26	125.5	6.1	1853	1280	13.6	5.7
03/28/00 10:21	527.7	11.26	125.6	5.7	1849	1277	13.7	5.7
03/28/00 10:22	526.8	11.26	122.1	5.3	1836	1276	13.7	5.7
03/28/00 10:23	527.1	11.26	122.8	5.3	1827	1269	13.8	5.8
03/28/00 10:24	527.6	11.26	124.7	5.3	1802	1247	13.8	5.7
03/28/00 10:25	527.6	11.26	124.4	6.5	1844	1276	13.7	5.8
03/28/00 10:26	527.6	11.27	125.0	7.7	1886	1305	13.6	5.9
03/28/00 10:27	527.7	11.26	124.2	6.9	1860	1287	13.7	5.8
03/28/00 10:28	527.8	11.27	124.4	6.9	1847	1280	13.7	5.8
03/28/00 10:29	528.0	11.26	124.5	9.0	1838	1273	13.8	5.8
03/28/00 10:30	527.7	11.26	125.0	6.9	1811	1253	13.6	5.8
03/28/00 10:31	527.0	11.26	125.8	6.0	1852	1279	13.6	5.8
03/28/00 10:32	526.8	11.26	126.3	6.9	1892	1305	13.7	5.8
03/28/00 10:33	527.1	11.26	126.7	8.6	1886	1301	13.7	5.8
03/28/00 10:34	526.5	11.26	126.3	6.9	1880	1297	13.7	5.8
03/28/00 10:35	524.7	11.26	126.6	6.1	1899	1310	13.7	5.8
03/28/00 10:36	522.4	11.26	126.6	9.6	1905	1314	13.5	5.9
03/28/00 10:37	521.9	11.26	125.7	9.3	1865	1288	13.6	5.9
03/28/00 10:38	523.3	11.26	125.7	8.5	1865	1288	13.5	5.9
03/28/00 10:39	523.8	11.26	126.0	6.7	1898	1311	13.5	6.0
03/28/00 10:40	523.8	11.26	125.9	7.5	1898	1311	13.6	6.0
03/28/00 10:41	523.7	11.26	124.6	7.5	1857	1285	13.5	6.0
03/28/00 10:42	523.7	11.26	124.1	8.4	1853	1283	13.5	6.0
03/28/00 10:43	523.8	11.26	122.8	8.3	1840	1276	13.6	6.0
03/28/00 10:44	524.3	11.26	123.8	10.0	1844	1279	13.6	6.0
03/28/00 10:45	525.2	11.26	125.2	7.7	1859	1286	13.7	5.8
03/28/00 10:46	527.7	11.26	124.9	6.9	1864	1289	13.7	5.8
03/28/00 10:47	527.5	11.26	124.4	7.3	1880	1302	13.6	5.8
03/28/00 10:48	526.5	11.26	125.0	8.5	1879	1299	13.6	5.9
03/28/00 10:49	525.9	11.26	125.6	10.0	1877	1296	13.6	5.9
03/28/00 10:50	524.6	11.26	125.5	7.4	1872	1293	13.6	5.9
03/28/00 10:51	523.1	11.26	126.1	6.0	1870	1291	13.5	5.9
03/28/00 10:52	521.4	11.26	124.5	6.0	1867	1292	13.5	5.9
03/28/00 10:53	520.3	11.26	122.7	6.4	1866	1295	13.5	5.9
03/28/00 10:54	521.3	11.26	123.8	6.2	1865	1292	13.5	5.9
03/28/00 10:55	522.4	11.26	124.7	6.7	1855	1283	13.5	6.1
03/28/00 10:56	521.0	11.26	123.6	7.8	1823	1263	13.5	6.1
03/28/00 10:57	519.9	11.26	123.6	6.7	1828	1268	13.5	6.0
03/28/00 10:58	518.8	11.26	123.8	5.9	1842	1276	13.5	5.9
03/28/00 10:59	519.7	11.26	124.4	4.3	1839	1273	13.6	5.9
03/28/00 11:00	521.1	11.26	125.2	3.4	1835	1268	13.6	5.8
03/28/00 11:01	521.9	11.26	125.0	5.6	1857	1284	13.6	5.8
03/28/00 11:02	522.3	11.26	124.8	5.2	1878	1299	13.6	5.8
03/28/00 11:03	522.5	11.26	125.2	5.6	1880	1300	13.6	5.8
03/28/00 11:04	522.7	11.26	125.6	4.3	1880	1299	13.5	5.8
03/28/00 11:05	522.4	11.26	125.9	5.2	1868	1290	13.6	5.8
03/28/00 11:06	520.7	11.26	126.3	8.3	1864	1286	13.5	6.0
03/28/00 11:07	520.2	11.26	123.9	8.3	1877	1298	13.5	6.0
03/28/00 11:08	520.1	11.26	123.8	6.8	1881	1304	13.5	5.9
03/28/00 11:09	520.2	11.26	123.7	6.8	1881	1304	13.5	5.9
03/28/00 11:10	520.5	11.26	123.8	6.8	1881	1305	13.6	5.9
03/28/00 11:11	520.7	11.26	123.6	6.8	1881	1304	13.5	5.9
03/28/00 11:12	520.3	11.26	123.8	5.9	1877	1301	13.5	5.9
03/28/00 11:13	519.4	11.26	123.5	5.5	1865	1293	13.5	5.9
03/28/00 11:14	518.5	11.26	124.0	5.5	1849	1281	13.5	5.9
03/28/00 11:15	518.2	11.26	124.7	5.1	1832	1268	13.5	5.9
03/28/00 11:16	518.2	11.26	124.5	5.1	1816	1257	13.4	6.1
03/28/00 11:17	518.8	11.26	124.9	7.8	1811	1252	13.5	6.1
03/28/00 11:18	519.3	11.26	125.2	6.3	1850	1278	13.5	6.0
03/28/00 11:19	518.7	11.26	125.3	6.3	1889	1305	13.6	6.0
03/28/00 11:20	518.4	11.26	125.1	7.1	1906	1318	13.5	6.0
03/28/00 11:21	519.9	11.26	125.0	6.7	1912	1321	13.5	6.0
03/28/00 11:22	520.8	11.26	123.4	9.4	1846	1280	13.7	6.0
03/28/00 11:23	520.9	11.26	122.3	9.1	1846	1282	13.6	6.0
03/28/00 11:24	521.0	11.26	124.7	7.1	1857	1285	13.5	6.0
03/28/00 11:25	520.8	11.26	124.4	7.1	1844	1275	13.5	6.0
03/28/00 11:26	520.1	11.26	123.7	7.5	1806	1252	13.6	6.0
03/28/00 11:27	519.3	11.26	123.8	7.6	1804	1250	13.5	5.9
Final Average*	**524.9**	**11.26**	**125.0**	**6.9**	**1860**	**1287**	**13.6**	**5.8**
Maximum*	**530.0**	**11.27**	**127.7**	**10.6**	**1933**	**1339**	**13.8**	**6.1**
Minimum*	**518.2**	**11.26**	**122.1**	**0.5**	**1771**	**1228**	**13.4**	**5.7**

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

Enertec NTDAHS®
Average Values Report
03/28/00 14:45

Company: PacifiCorp
Plant: Route 377
City/St: Point of Rock, WY 82942
Source: BRIDGER_4

Period Start: 03/28/00 12:28
Period End: 03/28/00 14:40
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start	Average Unit Load4 MW	Average Barometer4 psi	Average Stk Temp 4 deg F	Average Moisture 4 %	Average Stk Flow 4 kcfm	Average Flow Corr4 kscfm	Average CO2 E4 %	Average O2 Dry 4 %
03/28/00 12:28	528.0	11.25	127.3	9.0	1882	1295	13.8	5.8
03/28/00 12:29	529.3	11.25	127.4	9.9	1903	1310	13.8	5.8
03/28/00 12:30	528.3	11.25	127.7	8.6	1909	1315	13.7	5.8
03/28/00 12:31	527.2	11.25	129.0	8.6	1861	1278	13.7	5.8
03/28/00 12:32	527.3	11.25	129.1	9.0	1845	1267	13.7	5.9
03/28/00 12:33	527.4	11.25	128.2	9.8	1898	1307	13.6	5.8
03/28/00 12:34	527.5	11.25	127.3	9.8	1916	1319	13.7	5.9
03/28/00 12:35	527.8	11.26	129.1	8.6	1863	1280	13.8	5.8
03/28/00 12:36	527.3	11.25	129.2	7.0	1846	1267	13.7	5.7
03/28/00 12:37	526.4	11.25	125.4	6.1	1829	1263	13.7	5.7
03/28/00 12:38	526.3	11.25	125.7	6.2	1824	1259	13.8	5.7
03/28/00 12:39	526.4	11.25	127.1	8.8	1810	1247	13.9	5.7
03/28/00 12:40	525.9	11.25	127.8	5.3	1821	1254	13.7	5.7
03/28/00 12:41	525.2	11.25	127.8	10.2	1825	1255	13.6	5.9
03/28/00 12:42	523.6	11.25	125.0	9.8	1835	1268	13.6	5.9
03/28/00 12:43	522.8	11.25	124.1	10.6	1835	1271	13.6	5.9
03/28/00 12:44	522.0	11.25	125.0	9.4	1860	1286	13.6	5.8
03/28/00 12:45	521.0	11.25	125.3	9.8	1860	1284	13.6	5.9
03/28/00 12:46	520.3	11.25	126.5	10.2	1848	1275	13.7	5.9
03/28/00 12:47	519.6	11.26	126.8	7.9	1846	1273	13.7	5.9
03/28/00 12:48	518.8	11.25	126.1	7.5	1844	1272	13.6	5.9
03/28/00 12:49	518.2	11.26	125.4	7.6	1865	1288	13.6	5.9
03/28/00 12:50	518.0	11.25	123.9	6.8	1857	1285	13.7	5.9
03/28/00 12:51	518.5	11.25	123.9	5.6	1857	1287	13.7	5.8
03/28/00 12:52	518.8	11.26	125.5	5.6	1913	1322	13.6	5.8
03/28/00 12:53	519.5	11.25	125.5	5.2	1913	1320	13.7	5.8
03/28/00 12:54	520.8	11.25	126.8	3.5	1861	1282	13.8	5.7
03/28/00 12:55	519.9	11.26	127.0	6.8	1855	1279	13.6	5.9
03/28/00 12:56	518.2	11.26	125.3	5.1	1837	1269	13.6	5.9
03/28/00 12:57	517.9	11.25	124.7	5.5	1829	1265	13.5	5.9
03/28/00 12:58	518.2	11.25	125.0	6.4	1810	1250	13.6	5.9
03/28/00 12:59	517.6	11.25	125.1	7.2	1830	1265	13.6	5.9
03/28/00 13:00	516.7	11.26	126.6	6.8	1892	1304	13.6	5.9
03/28/00 13:01	516.7	11.25	125.8	6.8	1891	1304	13.6	5.9
03/28/00 13:02	517.2	11.26	126.1	6.4	1890	1304	13.7	5.9
03/28/00 13:03	518.3	11.26	126.0	6.4	1874	1293	13.7	5.9
03/28/00 13:04	519.2	11.26	125.6	6.0	1857	1281	13.8	5.8
03/28/00 13:05	520.4	11.25	124.8	7.9	1834	1270	13.6	5.9
03/28/00 13:06	521.0	11.25	122.7	8.3	1827	1267	13.6	6.0
03/28/00 13:07	520.7	11.25	123.0	7.5	1827	1267	13.5	6.0
03/28/00 13:08	520.1	11.26	123.1	9.1	1827	1267	13.6	6.0
03/28/00 13:09	518.8	11.26	122.8	8.3	1827	1268	13.6	6.0
03/28/00 13:10	517.7	11.25	123.1	8.3	1845	1279	13.6	6.0
03/28/00 13:11	517.9	11.26	123.3	6.7	1864	1292	13.5	6.0
03/28/00 13:12	517.3	11.25	123.4	7.4	1872	1297	13.5	6.1
03/28/00 13:13	516.9	11.25	123.8	8.6	1879	1301	13.5	6.1
03/28/00 13:14	517.3	11.26	125.4	8.6	1875	1295	13.5	6.1
03/28/00 13:15	520.5	11.25	125.5	7.4	1873	1292	13.6	6.1
03/28/00 13:16	522.1	11.25	125.8	7.7	1866	1287	13.5	6.1
03/28/00 13:17	522.7	11.25	126.2	9.7	1863	1285	13.6	6.2
03/28/00 13:18	522.1	11.25	124.6	10.1	1850	1278	13.5	6.2
03/28/00 13:19	522.3	11.25	125.3	11.3	1850	1279	13.6	6.2
03/28/00 13:20	523.0	11.25	121.6	12.9	1824	1265	13.8	6.2
03/28/00 13:21	523.2	11.25	122.0	12.1	1824	1267	13.7	6.2
03/28/00 13:22	523.3	11.25	123.9	12.9	1882	1304	13.6	6.2
03/28/00 13:23	523.2	11.25	123.6	9.6	1873	1297	13.7	6.0
03/28/00 13:24	522.0	11.26	123.4	10.0	1846	1279	13.6	6.0
03/28/00 13:25	519.1	11.26	123.2	10.0	1836	1273	13.6	6.0
03/28/00 13:26	516.3	11.26	121.9	9.3	1808	1256	13.6	6.0
03/28/00 13:27	514.4	11.25	122.8	10.0	1840	1275	13.6	6.1
03/28/00 13:28	512.6	11.25	125.9	9.0	1870	1290	13.6	6.1
03/28/00 13:29	511.9	11.25	126.8	9.0	1863	1283	13.7	N/A

03/28/00 13:31	509.4	11.25	128.6	N/A	1858	1275	N/A	N/A
03/28/00 13:32	509.2	11.26	128.8	N/A	1872	1286	N/A	N/A
03/28/00 13:33	510.1	11.25	128.9	N/A	1862	1278	N/A	N/A
03/28/00 13:34	510.8	11.25	128.9	N/A	1857	1274	13.5	6.1
03/28/00 13:35	512.0	11.25	127.3	8.9	1843	1269	13.5	6.1
03/28/00 13:36	513.4	11.25	125.1	7.1	1838	1270	13.6	6.0
03/28/00 13:37	514.8	11.25	126.1	8.2	1852	1277	13.5	6.1
03/28/00 13:38	515.4	11.25	126.5	8.2	1857	1280	13.6	6.1
03/28/00 13:39	515.5	11.25	126.9	8.2	1854	1277	13.6	6.1
03/28/00 13:40	516.2	11.25	126.8	9.4	1863	1283	13.6	6.1
03/28/00 13:41	516.6	11.25	123.8	8.6	1890	1308	13.6	6.1
03/28/00 13:42	517.1	11.25	124.0	10.2	1877	1300	13.6	6.1
03/28/00 13:43	517.2	11.26	123.7	10.6	1838	1273	13.6	6.1
03/28/00 13:44	516.3	11.26	124.2	9.8	1851	1280	13.5	6.1
03/28/00 13:45	515.0	11.26	125.6	10.6	1888	1304	13.5	6.1
03/28/00 13:46	513.4	11.25	125.9	10.2	1882	1298	13.5	6.1
03/28/00 13:47	512.3	11.25	126.3	10.2	1874	1293	13.5	6.1
03/28/00 13:48	511.3	11.25	126.8	11.3	1886	1299	13.5	6.2
03/28/00 13:49	510.1	11.26	126.8	11.3	1896	1306	13.5	6.2
03/28/00 13:50	509.3	11.25	125.3	8.5	1882	1300	13.5	6.2
03/28/00 13:51	509.2	11.25	123.7	8.5	1867	1294	13.4	6.2
03/28/00 13:52	508.7	11.25	124.3	8.9	1857	1285	13.5	6.2
03/28/00 13:53	507.5	11.25	124.3	8.9	1854	1282	13.5	6.2
03/28/00 13:54	507.0	11.26	125.5	6.5	1883	1301	13.5	6.2
03/28/00 13:55	508.3	11.25	126.0	8.6	1883	1299	13.4	6.2
03/28/00 13:56	508.8	11.25	123.8	8.1	1856	1284	13.4	6.2
03/28/00 13:57	508.8	11.25	124.0	8.5	1865	1291	13.4	6.3
03/28/00 13:58	508.7	11.26	124.2	8.8	1890	1309	13.4	6.2
03/28/00 13:59	509.2	11.26	123.6	8.1	1875	1299	13.5	6.2
03/28/00 14:00	509.9	11.26	125.4	8.1	1831	1266	13.5	6.2
03/28/00 14:01	511.2	11.25	125.3	8.5	1838	1268	13.5	6.2
03/28/00 14:02	511.5	11.26	125.5	9.7	1857	1282	13.5	6.2
03/28/00 14:03	512.1	11.25	125.1	10.5	1864	1287	13.6	6.2
03/28/00 14:04	512.8	11.26	124.9	8.9	1870	1293	13.5	6.2
03/28/00 14:05	513.4	11.25	124.0	9.7	1873	1297	13.5	6.1
03/28/00 14:06	513.0	11.26	122.8	8.9	1875	1301	13.5	6.1
03/28/00 14:07	512.7	11.26	122.9	8.9	1876	1301	13.5	6.1
03/28/00 14:08	512.6	11.25	122.8	8.6	1875	1300	13.5	6.1
03/28/00 14:09	512.8	11.26	123.1	8.2	1875	1299	13.5	6.2
03/28/00 14:10	513.4	11.26	123.0	8.2	1867	1295	13.5	6.1
03/28/00 14:11	514.0	11.26	122.9	10.4	1844	1279	13.6	6.1
03/28/00 14:12	513.3	11.26	123.2	7.8	1867	1294	13.6	6.1
03/28/00 14:13	512.4	11.26	123.9	4.9	1890	1311	13.4	6.1
03/28/00 14:14	511.8	11.26	124.8	5.3	1877	1298	13.4	6.1
03/28/00 14:15	510.7	11.26	125.3	4.1	1873	1292	13.4	6.1
03/28/00 14:16	509.7	11.26	125.1	9.5	1875	1295	13.4	6.3
03/28/00 14:17	508.8	11.26	125.2	8.5	1875	1296	13.5	6.2
03/28/00 14:18	508.3	11.26	125.1	7.7	1870	1292	13.5	6.2
03/28/00 14:19	507.9	11.26	125.1	7.4	1868	1292	13.5	6.2
03/28/00 14:20	507.8	11.26	124.2	8.1	1850	1281	13.5	6.2
03/28/00 14:21	508.0	11.26	124.1	9.5	1851	1282	13.5	6.3
03/28/00 14:22	508.5	11.25	125.8	8.3	1875	1293	13.4	6.3
03/28/00 14:23	508.5	11.26	125.7	8.3	1875	1294	13.4	6.3
03/28/00 14:24	508.3	11.26	125.2	9.5	1876	1296	13.5	6.3
03/28/00 14:25	508.7	11.26	125.2	11.1	1880	1298	13.5	6.3
03/28/00 14:26	509.7	11.25	123.6	7.9	1890	1309	13.4	6.3
03/28/00 14:27	511.1	11.25	123.3	6.0	1879	1302	13.5	6.2
03/28/00 14:28	512.8	11.26	121.8	4.1	1868	1297	13.5	6.1
03/28/00 14:29	513.9	11.26	123.3	4.9	1872	1297	13.6	6.1
03/28/00 14:30	514.8	11.25	124.5	3.7	1876	1298	13.6	6.0
03/28/00 14:31	515.1	11.25	124.5	4.1	1865	1289	13.6	6.1
03/28/00 14:32	515.8	11.25	124.6	5.9	1854	1281	13.5	6.0
03/28/00 14:33	516.0	11.25	124.4	6.3	1857	1284	13.6	6.0
03/28/00 14:34	515.9	11.25	124.4	5.9	1857	1284	13.5	6.0
03/28/00 14:35	515.5	11.26	122.6	7.1	1814	1259	13.6	6.0
03/28/00 14:36	515.4	11.26	121.6	6.7	1815	1261	13.6	6.0
03/28/00 14:37	515.1	11.26	124.1	9.8	1842	1276	13.5	6.1
03/28/00 14:38	514.9	11.25	124.0	8.7	1843	1277	13.6	6.1
03/28/00 14:39	515.9	11.26	124.7	7.9	1847	1278	13.6	6.0
Final Average*	**516.3**	**11.25**	**125.1**	**8.2**	**1860**	**1285**	**13.6**	**6.0**
Maximum*	**529.3**	**11.26**	**129.2**	**12.9**	**1916**	**1322**	**13.9**	**6.3**
Minimum*	**507.0**	**11.25**	**121.6**	**3.5**	**1808**	**1247**	**13.4**	**5.7**

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

Enertec NTDAHS®
Average Values Report
03/28/00 18:04

Company: PacifiCorp
Plant: Route 377
City/St: Point of Rock, WY 82942
Source: BRIDGER_4

Period Start: 03/28/00 15:55
Period End: 03/28/00 18:03
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start	Average Unit Load4 MW	Average Barometer4 psi	Average Stk Temp 4 deg F	Average Moisture 4 %	Average Stk Flow 4 kcfm	Average Flow Corr4 kscfm	Average CO2 E4 %	Average O2 Dry 4 %
03/28/00 15:55	516.9	11.26	124.7	8.7	1841	1273	13.5	6.1
03/28/00 15:56	515.1	11.26	124.5	7.6	1838	1272	13.6	6.0
03/28/00 15:57	513.3	11.26	124.6	9.1	1836	1271	13.7	6.0
03/28/00 15:58	515.2	11.25	125.5	10.4	1895	1310	13.8	6.0
03/28/00 15:59	517.2	11.25	126.6	9.6	1914	1319	13.6	6.0
03/28/00 16:00	517.5	11.25	126.8	7.9	1912	1317	13.6	6.0
03/28/00 16:01	516.6	11.25	126.9	6.7	1911	1316	13.6	6.0
03/28/00 16:02	516.0	11.25	127.4	8.2	1895	1304	13.5	6.1
03/28/00 16:03	517.6	11.25	127.2	6.7	1895	1305	13.6	5.9
03/28/00 16:04	519.1	11.26	126.9	5.5	1832	1263	13.6	5.9
03/28/00 16:05	519.2	11.26	125.9	4.3	1832	1263	13.7	5.9
03/28/00 16:06	518.5	11.26	125.1	4.7	1866	1290	13.7	5.9
03/28/00 16:07	518.8	11.26	124.6	5.1	1866	1291	13.7	5.9
03/28/00 16:08	518.5	11.25	124.5	6.2	1866	1291	13.5	5.9
03/28/00 16:09	518.0	11.25	124.6	7.2	1866	1290	13.6	5.9
03/28/00 16:10	516.9	11.25	124.6	5.5	1866	1292	13.6	5.9
03/28/00 16:11	515.5	11.26	124.4	5.1	1868	1293	13.5	5.9
03/28/00 16:12	513.8	11.26	123.9	5.1	1851	1281	13.5	5.9
03/28/00 16:13	512.6	11.25	125.4	6.7	1800	1244	13.5	6.0
03/28/00 16:14	512.2	11.25	125.6	7.4	1820	1258	13.5	6.1
03/28/00 16:15	512.2	11.26	127.5	5.9	1879	1294	13.6	5.9
03/28/00 16:16	511.6	11.26	127.8	7.8	1868	1284	13.5	6.1
03/28/00 16:17	511.4	11.26	128.1	7.2	1833	1260	13.6	6.0
03/28/00 16:18	511.6	11.26	127.7	10.0	1836	1264	13.6	6.0
03/28/00 16:19	512.8	11.26	127.7	9.1	1840	1267	13.7	6.0
03/28/00 16:20	513.5	11.26	125.8	8.7	1803	1245	13.7	6.0
03/28/00 16:21	514.4	11.25	124.5	7.9	1791	1238	13.6	6.0
03/28/00 16:22	515.0	11.25	125.9	9.6	1850	1278	13.6	6.0
03/28/00 16:23	515.5	11.26	126.3	10.0	1850	1277	13.7	6.0
03/28/00 16:24	514.7	11.25	126.3	9.5	1856	1279	13.6	5.9
03/28/00 16:25	514.8	11.26	126.3	10.0	1842	1271	13.6	5.9
03/28/00 16:26	515.2	11.26	124.3	10.4	1800	1247	13.6	6.0
03/28/00 16:27	515.4	11.26	124.3	9.3	1813	1254	13.6	5.9
03/28/00 16:28	515.2	11.26	125.4	10.0	1851	1279	13.6	6.0
03/28/00 16:29	515.2	11.26	125.2	9.1	1854	1280	13.7	6.0
03/28/00 16:30	515.1	11.26	125.7	7.9	1862	1285	13.6	6.0
03/28/00 16:31	515.2	11.26	125.5	8.3	1855	1279	13.6	6.0
03/28/00 16:32	516.7	11.26	126.5	10.0	1833	1264	13.7	6.0
03/28/00 16:33	517.5	11.26	126.1	10.0	1854	1280	13.8	6.0
03/28/00 16:34	517.6	11.26	125.3	6.8	1875	1296	13.7	5.9
03/28/00 16:35	517.9	11.26	124.4	7.2	1872	1296	13.7	5.9
03/28/00 16:36	518.2	11.26	123.4	7.9	1868	1296	13.6	6.0
03/28/00 16:37	519.5	11.26	123.1	7.6	1843	1278	13.6	5.9
03/28/00 16:38	521.1	11.26	123.6	6.4	1819	1260	13.7	5.9
03/28/00 16:39	521.9	11.26	123.6	8.3	1828	1267	13.6	6.0
03/28/00 16:40	522.4	11.26	122.6	9.1	1839	1277	13.6	6.0
03/28/00 16:41	523.3	11.26	122.3	9.1	1790	1243	13.7	6.0
03/28/00 16:42	523.3	11.26	121.1	9.6	1774	1234	13.7	6.0
03/28/00 16:43	523.3	11.26	121.6	10.4	1787	1243	13.8	6.0
03/28/00 16:44	523.5	11.26	121.3	10.0	1791	1246	13.8	6.0
03/28/00 16:45	523.6	11.26	122.9	8.5	1815	1260	13.7	5.9
03/28/00 16:46	523.3	11.26	122.9	7.7	1815	1260	13.7	5.8
03/28/00 16:47	522.7	11.26	122.9	7.3	1780	1236	13.8	5.8
03/28/00 16:48	521.5	11.26	123.2	8.5	1804	1251	13.7	5.9
03/28/00 16:49	520.1	11.26	123.4	9.5	1874	1299	13.6	6.0
03/28/00 16:50	519.8	11.26	122.7	10.0	1841	1278	13.6	6.0
03/28/00 16:51	518.2	11.26	120.9	8.8	1807	1258	13.6	6.0
03/28/00 16:52	517.6	11.26	121.5	8.3	1792	1248	13.7	6.0
03/28/00 16:53	517.6	11.26	121.9	9.1	1776	1235	13.7	6.0
03/28/00 16:54	518.5	11.26	121.6	9.1	1816	1261	13.7	6.0
03/28/00 16:55	519.5	11.26	122.1	8.3	1829	1271	13.7	6.0
03/28/00 16:56	519.5	11.26	121.2	6.8	1810	1259	13.7	5.9

03/28/00 16:58	519.1	11.26	121.8	7.9	1771	1233	13.5	6.0
03/28/00 16:59	518.8	11.26	121.7	8.3	1784	1241	13.6	6.0
03/28/00 17:00	518.9	11.26	122.6	8.3	1854	1287	13.7	6.0
03/28/00 17:01	520.1	11.26	122.4	10.9	1850	1285	13.8	6.0
03/28/00 17:02	520.5	11.26	122.4	8.3	1837	1276	13.7	6.0
03/28/00 17:03	520.2	11.26	121.9	6.7	1836	1275	13.6	6.0
03/28/00 17:04	520.8	11.26	122.1	6.7	1836	1276	13.5	6.0
03/28/00 17:05	520.2	11.26	120.7	8.9	1823	1269	13.7	6.0
03/28/00 17:06	519.7	11.26	119.4	10.0	1819	1270	13.6	6.0
03/28/00 17:07	519.9	11.26	119.9	10.4	1818	1269	13.6	6.0
03/28/00 17:08	519.4	11.26	119.3	9.6	1818	1269	13.6	6.0
03/28/00 17:09	517.7	11.26	119.3	8.9	1818	1269	13.7	5.9
03/28/00 17:10	517.0	11.26	119.8	9.6	1818	1269	13.6	6.0
03/28/00 17:11	517.7	11.26	120.1	8.5	1877	1310	13.8	5.9
03/28/00 17:12	518.9	11.26	120.2	7.7	1877	1309	13.7	5.9
03/28/00 17:13	519.2	11.26	122.2	5.5	1880	1307	13.6	5.9
03/28/00 17:14	519.2	11.26	122.4	5.5	1879	1307	13.5	5.9
03/28/00 17:15	518.2	11.26	123.8	5.5	1834	1271	13.5	5.9
03/28/00 17:16	517.7	11.26	123.8	5.1	1831	1269	13.7	5.9
03/28/00 17:17	517.9	11.26	123.6	6.8	1824	1263	13.6	5.9
03/28/00 17:18	519.2	11.26	124.8	7.9	1828	1265	13.6	6.0
03/28/00 17:19	519.5	11.26	125.6	8.7	1836	1270	13.5	6.0
03/28/00 17:20	520.5	11.26	125.2	8.3	1837	1269	13.7	6.0
03/28/00 17:21	521.7	11.26	123.5	6.3	1840	1276	13.7	5.9
03/28/00 17:22	522.0	11.26	123.5	5.2	1825	1265	13.7	5.8
03/28/00 17:23	521.7	11.26	124.0	5.6	1811	1256	13.6	5.8
03/28/00 17:24	521.1	11.26	124.5	3.8	1846	1279	13.6	5.8
03/28/00 17:25	520.7	11.26	124.7	3.0	1881	1301	13.5	5.8
03/28/00 17:26	520.2	11.26	123.3	4.3	1855	1286	13.6	5.8
03/28/00 17:27	519.8	11.26	122.4	5.2	1861	1293	13.6	5.8
03/28/00 17:28	519.1	11.27	124.2	7.2	1906	1323	13.6	5.9
03/28/00 17:29	519.2	11.26	123.8	7.2	1888	1308	13.6	5.9
03/28/00 17:30	520.1	11.26	125.9	N/A	1833	1266	N/A	N/A
03/28/00 17:31	520.7	11.26	125.6	N/A	1845	1275	N/A	N/A
03/28/00 17:32	519.7	11.26	125.1	N/A	1879	1301	N/A	N/A
03/28/00 17:33	518.0	11.27	125.4	N/A	1859	1285	N/A	N/A
03/28/00 17:34	516.6	11.26	125.8	6.7	1838	1270	13.6	N/A
03/28/00 17:35	516.0	11.26	124.4	7.9	1847	1277	13.6	6.0
03/28/00 17:36	515.7	11.26	123.1	7.9	1856	1289	13.6	6.0
03/28/00 17:37	515.1	11.26	124.4	7.2	1868	1295	13.6	6.0
03/28/00 17:38	514.7	11.27	125.2	8.3	1872	1294	13.6	6.0
03/28/00 17:39	515.2	11.27	125.9	7.5	1862	1286	13.6	6.0
03/28/00 17:40	516.1	11.27	126.4	6.8	1859	1284	13.7	5.9
03/28/00 17:41	515.8	11.27	124.6	7.2	1901	1315	13.6	5.9
03/28/00 17:42	516.0	11.27	123.9	7.9	1916	1328	13.6	6.0
03/28/00 17:43	516.9	11.27	124.2	6.8	1842	1276	13.7	5.9
03/28/00 17:44	518.8	11.26	124.6	7.2	1829	1266	13.6	5.9
03/28/00 17:45	519.4	11.27	125.9	7.6	1791	1239	13.7	5.9
03/28/00 17:46	519.1	11.27	125.9	7.6	1812	1253	13.7	5.9
03/28/00 17:47	518.6	11.27	125.7	7.2	1875	1295	13.7	5.9
03/28/00 17:48	518.3	11.27	126.4	5.9	1871	1292	13.6	5.9
03/28/00 17:49	517.2	11.26	125.9	8.3	1858	1282	13.5	6.0
03/28/00 17:50	517.4	11.27	125.7	8.3	1860	1285	13.6	6.0
03/28/00 17:51	518.3	11.27	123.7	8.3	1865	1294	13.6	5.9
03/28/00 17:52	518.6	11.27	123.3	6.4	1866	1295	13.7	5.9
03/28/00 17:53	519.0	11.27	123.1	7.2	1868	1297	13.7	5.9
03/28/00 17:54	518.5	11.27	123.4	6.8	1853	1286	13.7	5.9
03/28/00 17:55	518.5	11.28	124.1	7.2	1839	1276	13.7	5.9
03/28/00 17:56	518.7	11.27	123.9	6.4	1853	1286	13.6	5.9
03/28/00 17:57	518.9	11.27	123.1	6.8	1867	1298	13.6	5.9
03/28/00 17:58	518.4	11.27	123.4	6.4	1905	1322	13.6	5.9
03/28/00 17:59	517.8	11.27	123.8	5.1	1918	1330	13.6	5.9
03/28/00 18:00	517.4	11.27	124.9	5.6	1838	1273	13.6	5.9
03/28/00 18:01	517.5	11.27	124.9	6.7	1811	1253	13.6	6.0
03/28/00 18:02	517.1	11.28	125.2	5.5	1852	1281	13.6	5.9
Final Average*	**518.0**	**11.26**	**124.1**	**7.6**	**1844**	**1278**	**13.6**	**5.9**
Maximum*	**523.6**	**11.28**	**128.1**	**10.9**	**1918**	**1330**	**13.8**	**6.1**
Minimum*	**511.4**	**11.25**	**119.3**	**3.0**	**1771**	**1233**	**13.5**	**5.8**

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

Enertec NTDAHS®
Average Values Report
03/29/00 10:15

Company: PacifiCorp
Plant: Route 377
City/St: Point of Rock, WY 82942
Source: BRIDGER_4

Period Start: 03/29/00 08:00
Period End: 03/29/00 10:14
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start	Average Unit Load4 MW	Average Barometer4 psi	Average Stk Temp 4 deg F	Average Moisture 4 %	Average Stk Flow 4 kcfm	Average Flow Corr4 kscfm	Average CO2 E4 %	Average O2 Dry 4 %
03/29/00 08:00	534.3	11.37	123.0	4.4	1831	1284	13.9	5.7
03/29/00 08:01	534.3	11.37	123.3	3.6	1824	1278	13.8	5.7
03/29/00 08:02	534.5	11.37	122.8	4.5	1800	1262	13.9	5.7
03/29/00 08:03	534.8	11.37	122.7	4.0	1799	1261	13.9	5.6
03/29/00 08:04	534.9	11.37	123.4	5.3	1804	1263	13.8	5.7
03/29/00 08:05	534.5	11.37	123.4	5.3	1804	1268	13.8	5.7
03/29/00 08:06	533.8	11.37	119.4	5.3	1827	1287	13.8	5.7
03/29/00 08:07	532.8	11.37	119.8	4.0	1827	1288	13.8	5.7
03/29/00 08:08	532.1	11.37	119.6	6.2	1827	1288	13.9	5.7
03/29/00 08:09	532.1	11.37	119.7	7.4	1827	1288	14.0	5.7
03/29/00 08:10	532.0	11.37	119.1	9.6	1826	1287	14.1	5.7
03/29/00 08:11	531.1	11.37	119.9	5.3	1809	1274	13.9	5.7
03/29/00 08:12	529.8	11.37	120.0	5.8	1809	1274	13.9	5.7
03/29/00 08:13	528.6	11.37	120.2	6.9	1808	1271	13.8	5.8
03/29/00 08:14	527.6	11.37	121.0	7.3	1808	1271	13.8	5.9
03/29/00 08:15	527.6	11.37	121.8	5.7	1866	1312	13.9	5.7
03/29/00 08:16	528.2	11.37	121.5	2.7	1867	1312	14.0	5.6
03/29/00 08:17	527.7	11.37	121.6	1.8	1871	1314	14.0	5.5
03/29/00 08:18	525.9	11.38	121.6	1.4	1865	1310	13.9	5.5
03/29/00 08:19	525.7	11.37	122.7	1.4	1846	1296	13.8	5.5
03/29/00 08:20	526.0	11.37	121.5	3.2	1853	1302	13.9	5.5
03/29/00 08:21	526.9	11.37	121.1	2.7	1859	1306	13.9	5.5
03/29/00 08:22	527.1	11.37	122.1	3.6	1854	1302	13.9	5.6
03/29/00 08:23	527.3	11.37	121.8	5.4	1852	1300	14.0	5.6
03/29/00 08:24	528.0	11.37	122.8	6.2	1818	1276	13.9	5.6
03/29/00 08:25	529.7	11.37	122.6	4.9	1820	1276	14.0	5.6
03/29/00 08:26	530.3	11.37	119.0	5.8	1826	1287	13.9	5.6
03/29/00 08:27	531.0	11.37	119.4	5.4	1828	1289	13.9	5.6
03/29/00 08:28	531.8	11.37	120.0	5.4	1836	1293	13.9	5.6
03/29/00 08:29	532.1	11.37	120.6	5.4	1836	1292	14.0	5.6
03/29/00 08:30	532.0	11.37	121.9	4.1	1835	1288	13.9	5.6
03/29/00 08:31	532.0	11.37	121.8	3.2	1846	1297	13.8	5.6
03/29/00 08:32	532.3	11.37	122.9	4.5	1857	1303	13.9	5.6
03/29/00 08:33	532.1	11.37	122.6	6.9	1861	1305	13.8	5.8
03/29/00 08:34	531.6	11.37	122.6	5.3	1862	1306	13.9	5.7
03/29/00 08:35	530.8	11.37	121.5	5.3	1865	1310	13.9	5.7
03/29/00 08:36	530.8	11.37	120.6	4.0	1867	1313	13.9	5.6
03/29/00 08:37	531.3	11.37	121.1	1.8	1841	1294	14.0	5.5
03/29/00 08:38	531.5	11.37	121.1	3.6	1832	1288	13.9	5.6
03/29/00 08:39	530.7	11.37	121.3	2.3	1850	1301	13.8	5.6
03/29/00 08:40	528.8	11.37	121.5	2.3	1850	1300	13.8	5.6
03/29/00 08:41	527.6	11.37	120.4	3.6	1824	1285	13.8	5.6
03/29/00 08:42	528.2	11.37	119.3	4.5	1824	1286	13.9	5.6
03/29/00 08:43	528.6	11.37	120.2	5.4	1877	1322	13.9	5.6
03/29/00 08:44	528.1	11.37	120.3	5.3	1877	1322	14.0	5.6
03/29/00 08:45	527.7	11.37	123.2	6.2	1848	1294	13.9	5.7
03/29/00 08:46	527.9	11.37	123.7	5.8	1855	1299	13.9	5.6
03/29/00 08:47	529.1	11.37	123.5	6.2	1877	1314	13.9	5.7
03/29/00 08:48	529.1	11.37	123.7	5.4	1860	1302	13.9	5.6
03/29/00 08:49	528.2	11.37	124.2	2.7	1843	1289	13.9	5.6
03/29/00 08:50	528.1	11.37	122.6	1.8	1861	1302	13.8	5.6
03/29/00 08:51	529.4	11.38	122.2	2.3	1879	1319	13.8	5.6
03/29/00 08:52	532.0	11.38	121.7	4.9	1852	1301	13.9	5.6
03/29/00 08:53	534.4	11.37	121.7	7.1	1823	1280	14.0	5.6
03/29/00 08:54	535.7	11.38	122.2	7.1	1833	1287	14.0	5.6
03/29/00 08:55	536.6	11.37	121.8	7.1	1836	1289	13.9	5.6
03/29/00 08:56	537.8	11.37	120.4	7.1	1844	1299	13.9	5.6
03/29/00 08:57	538.8	11.37	119.9	7.1	1847	1301	14.0	5.6
03/29/00 08:58	538.9	11.37	120.2	9.2	1807	1272	13.9	5.7
03/29/00 08:59	537.6	11.38	120.9	8.8	1806	1271	13.9	5.7
03/29/00 09:00	535.7	11.37	121.7	5.9	1822	1280	13.9	5.7
03/29/00 09:01	533.5	11.38	121.8	5.7	1823	1280	13.9	5.7

03/29/00 09:03	530.3	11.38	122.5	N/A	N/A	N/A	N/A	N/A	
03/29/00 09:04	529.7	11.37	123.0	N/A	N/A	N/A	N/A	N/A	
03/29/00 09:05	528.9	11.37	121.9	N/A	N/A	N/A	N/A	N/A	
03/29/00 09:06	526.4	11.37	120.6	N/A	N/A	N/A	N/A	N/A	
03/29/00 09:07	525.3	11.37	121.9	N/A	1812	1272	N/A	N/A	
03/29/00 09:08	524.7	11.37	122.6	N/A	1802	1264	N/A	N/A	
03/29/00 09:09	525.5	11.38	122.6	N/A	1802	1264	N/A	N/A	
03/29/00 09:10	526.0	11.37	122.6	N/A	1802	1264	N/A	N/A	
03/29/00 09:11	526.5	11.38	121.4	N/A	1826	1283	N/A	N/A	
03/29/00 09:12	526.2	11.37	120.4	N/A	1833	1291	N/A	N/A	
03/29/00 09:13	526.4	11.37	120.9	N/A	1831	1287	N/A	N/A	
03/29/00 09:14	527.0	11.37	121.7	N/A	1830	1285	N/A	N/A	
03/29/00 09:15	527.5	11.37	121.9	N/A	1796	1261	N/A	N/A	
03/29/00 09:16	528.2	11.37	121.8	N/A	1796	1260	N/A	N/A	
03/29/00 09:17	528.8	11.37	123.3	N/A	1835	1287	N/A	N/A	
03/29/00 09:18	528.0	11.37	122.9	N/A	1835	1285	N/A	N/A	
03/29/00 09:19	526.8	11.37	122.7	N/A	1861	1305	N/A	N/A	
03/29/00 09:20	526.1	11.37	122.6	N/A	1863	1306	N/A	N/A	
03/29/00 09:21	526.1	11.38	121.3	N/A	1843	1295	N/A	N/A	
03/29/00 09:22	526.3	11.37	122.0	N/A	1842	1293	N/A	N/A	
03/29/00 09:23	526.3	11.38	122.8	N/A	1839	1290	N/A	N/A	
03/29/00 09:24	525.2	11.37	122.8	N/A	1855	1300	N/A	N/A	
03/29/00 09:25	524.7	11.37	122.8	0.9	1871	1311	13.6		5.5
03/29/00 09:26	525.0	11.37	121.6	0.0	1860	1305	13.8		5.5
03/29/00 09:27	524.9	11.37	120.2	0.0	1849	1301	13.8		5.5
03/29/00 09:28	525.1	11.37	121.8	0.9	1831	1286	13.9		5.5
03/29/00 09:29	525.8	11.37	122.5	1.8	1825	1281	14.0		5.5
03/29/00 09:30	525.6	11.37	122.8	N/A	1860	1303	N/A	N/A	
03/29/00 09:31	525.3	11.37	122.9	N/A	1871	1311	N/A	N/A	
03/29/00 09:32	525.0	11.37	123.8	N/A	1863	1304	N/A	N/A	
03/29/00 09:33	525.1	11.37	123.8	N/A	1863	1304	N/A	N/A	
03/29/00 09:34	525.6	11.37	122.4	N/A	1842	1292	13.8	N/A	
03/29/00 09:35	524.4	11.37	121.8	0.9	1851	1300	13.9		5.5
03/29/00 09:36	522.7	11.38	120.0	1.4	1880	1324	13.8		5.5
03/29/00 09:37	521.6	11.37	121.4	1.8	1836	1291	13.9		5.5
03/29/00 09:38	521.0	11.38	122.2	1.8	1791	1256	13.9		5.5
03/29/00 09:39	521.5	11.37	123.3	1.8	1813	1269	13.9		5.5
03/29/00 09:40	521.4	11.37	123.9	7.0	1835	1284	13.9		5.7
03/29/00 09:41	520.7	11.37	122.6	8.2	1855	1300	13.7		5.8
03/29/00 09:42	520.3	11.37	121.6	7.0	1862	1309	13.9		5.7
03/29/00 09:43	520.4	11.37	122.1	7.8	1839	1291	13.8		5.7
03/29/00 09:44	520.6	11.37	122.4	7.4	1831	1283	13.9		5.7
03/29/00 09:45	521.5	11.37	123.1	7.0	1847	1295	13.9		5.7
03/29/00 09:46	521.9	11.37	123.5	7.6	1853	1298	13.9		5.7
03/29/00 09:47	522.1	11.38	123.4	5.3	1801	1263	13.9		5.7
03/29/00 09:48	522.1	11.37	123.2	7.0	1784	1251	13.9		5.7
03/29/00 09:49	522.7	11.38	124.1	7.0	1808	1266	13.9		5.7
03/29/00 09:50	524.0	11.38	124.4	7.9	1816	1270	13.9		5.7
03/29/00 09:51	524.7	11.38	121.7	7.0	1799	1265	13.9		5.7
03/29/00 09:52	524.4	11.37	121.7	7.8	1806	1268	13.8		5.8
03/29/00 09:53	524.2	11.37	122.8	7.8	1825	1281	13.8		5.8
03/29/00 09:54	525.0	11.37	122.5	7.0	1840	1291	13.9		5.7
03/29/00 09:55	525.9	11.38	122.8	7.0	1855	1300	13.9		5.7
03/29/00 09:56	525.9	11.38	122.0	8.6	1836	1289	13.9		5.8
03/29/00 09:57	526.0	11.38	121.3	8.6	1829	1287	13.9		5.8
03/29/00 09:58	526.8	11.37	122.3	9.0	1847	1297	13.9		5.8
03/29/00 09:59	527.5	11.38	122.5	7.8	1853	1300	13.9		5.8
03/29/00 10:00	527.7	11.38	122.6	8.2	1836	1288	13.9		5.8
03/29/00 10:01	526.8	11.37	122.9	8.6	1842	1290	13.9		5.8
03/29/00 10:02	525.5	11.38	123.4	6.5	1861	1304	13.9		5.6
03/29/00 10:03	525.9	11.37	124.0	5.8	1878	1315	13.9		5.6
03/29/00 10:04	526.2	11.37	123.9	6.2	1896	1326	13.9		5.7
03/29/00 10:05	526.4	11.37	123.1	5.8	1843	1290	13.9		5.6
03/29/00 10:06	526.1	11.37	122.2	5.4	1791	1258	13.9		5.6
03/29/00 10:07	526.3	11.38	121.6	3.6	1791	1259	13.8		5.6
03/29/00 10:08	526.4	11.38	121.9	4.5	1791	1259	13.8		5.6
03/29/00 10:09	526.0	11.37	121.9	3.6	1791	1258	13.8		5.6
03/29/00 10:10	525.7	11.37	121.9	3.6	1791	1258	13.8		5.6
03/29/00 10:11	525.5	11.37	120.4	4.2	1822	1282	13.8		5.6
03/29/00 10:12	526.0	11.37	119.3	3.6	1832	1292	13.9		5.4
03/29/00 10:13	525.5	11.37	120.4	4.9	1826	1287	14.0		5.6
Final Average*	**528.0**	**11.37**	**121.9**	**5.1**	**1836**	**1289**	**13.9**		**5.6**
Maximum*	**538.9**	**11.38**	**124.4**	**9.6**	**1896**	**1326**	**14.1**		**5.9**
Minimum*	**520.3**	**11.37**	**119.0**	**0.0**	**1784**	**1251**	**13.6**		**5.4**

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

Flue Gas desulfurization System Log Sheet for Mercury Testing On Unit 4

Date of Test 3-28-00

Test # 1

Start of Test, Time 0900

End of Test, Time

FGD Vessels in Service(Circle) 41 42 43

(Readings every 15 Min)	Start	15	30	45	60	75	90	120
North Bypass Damper Position(%Open)	Ø	—	—	—	—	—	—	—
South Bypass Damper Position (% Open)	Ø	—	—	—	—	—	—	—
North SO2 Damper Position(%Open)	Ø	—	—	—	—	—	—	—
South SO2 Damper Position(%Open)	Ø	—	—	—	—	—	—	—
41 Vessel Recycle pH	7.47	7.47	7.45	7.45	7.44	7.41	7.40	7.40
42 Vessel Recycle pH	7.26	7.23	7.17	7.13	7.10	7.09	7.10	7.11
43 Vessel Recycle pH	out of service	—	—	—	—	—	—	—
41 Absorber Differential (In. H20)	4.7	4.7	4.6	4.6	4.6	4.6	4.7	4.6
42 Absorber Differential (In. H20)	5.1	5.0	5.1	5.0	5.1	5.0	5.0	5.0
43 Absorber Differential (In. H20)	out of service	—	—	—	—	—	—	—
41 Vessel Recycle Density	1.19	1.182	1.18	1.174	1.178	1.18	1.182	1.182
42 Vessel Recycle Density	1.144	1.14	1.14	1.144	1.15	1.148	1.15	1.15
43 Vessel Recycle Density	out of service	—	—	—	—	—	—	—

Flue Gas desulfurization System Log Sheet for Mercury Testing On Unit 4

Date of Test 3-28-00

Test # 1 cont.

Start of Test, Time 0900

End of Test, Time 1130

FGD Vessels in Service(Circle) 41 42 43

(Readings every 15 Min)	Start	15	30	45	60	75	90	120
North Bypass Damper Position(%Open)	Ø	—	—	—	—	—	—	—
South Bypass Damper Position (% Open)	Ø	—	—	—	—	—	—	—
North SO2 Damper Position(%Open)	Ø	—	—	—	—	—	—	—
South SO2 Damper Position(%Open)	Ø	—	—	—	—	—	—	—
41 Vessel Recycle pH	7.38	7.38	7.35					
42 Vessel Recycle pH	7.10	7.11	7.11					
43 Vessel Recycle pH	O.O.S.	—	—	—	—	—	—	—
41 Absorber Differential (In. H20)	4.6	4.6	4.5					
42 Absorber Differential (In. H20)	5.0	5.0	5.0					
43 Absorber Differential (In. H20)	O.O.S.	—	—	—	—	—	—	—
41 Vessel Recycle Density	1.19	1.192	1.194					
42 Vessel Recycle Density	1.154	1.154	1.154					
43 Vessel Recycle Density	O.O.S.	—	—	—	—	—	—	—

Flue Gas desulfurization System Log Sheet for Mercury Testing On Unit 4

Date of Test 3-28-00

Test # 2

Start of Test, Time 1230

End of Test, Time 1430

FGD Vessels in Service(Circle) (41) (42) 43

(Readings every 15 Min)	Start	15	30	45	60	75	90	120	135
North Bypass Damper Position(%Open)	Ø	—	—	—	—	—	—		
South Bypass Damper Position (% Open)	Ø	—	—	—	—	—	—	—	
North SO2 Damper Position(%Open)	Ø	—	—	—	—	—	—	—	
South SO2 Damper Position(%Open)	Ø	—	—	—	—	—	—	—	
41 Vessel Recycle pH	7.32	7.31	7.30	7.30	7.29	7.28	7.26	7.24	7.24
42 Vessel Recycle pH	7.13	7.14	7.13	7.13	7.13	7.12	7.11	7.13	7.12
43 Vessel Recycle pH	o.o.s.	—	—	—	—	—	—	—	
41 Absorber Differential (In. H20)	4.6	4.5	4.4	4.2	4.3	4.2	4.3	4.2	4.3
42 Absorber Differential (In. H20)	5.0	5.0	5.0	4.9	5.0	5.0	5.0	5.0	4.9
43 Absorber Differential (In. H20)	o.o.s.	—	—	—	—	—	—	—	
41 Vessel Recycle Density	1.21	1.20	1.19	1.18	1.178	1.174	1.17	1.17	1.17
42 Vessel Recycle Density	1.10	1.102	1.104	1.106	1.11	1.112	1.118	1.122	1.12
43 Vessel Recycle Density	o.o.s.	—	—	—	—	—	—	—	

Flue Gas desulfurization System Log Sheet for Mercury Testing On Unit 4

Date of Test 3-28-00

Test # 3

Start of Test, Time 1550

End of Test, Time

FGD Vessels in Service(Circle) 41 42 43

(Readings every 15 Min)	Start	15	30	45	60	75	90	120
North Bypass Damper Position(%Open)	Ø	—	—	—	—	—	—	
South Bypass Damper Position (% Open)	Ø	—	—	—	—	—	—	—
North SO2 Damper Position(%Open)	Ø	—	—	—	—	—	—	—
South SO2 Damper Position(%Open)	Ø	—	—	—	—	—	—	—
41 Vessel Recycle pH	7.21	7.20	7.20	7.19	7.20	7.20	7.22	7.24
42 Vessel Recycle pH	7.19	7.21	7.21	7.21	7.21	7.21	7.22	7.23
43 Vessel Recycle pH	o.o.s.	—	—	—	—	—	—	—
41 Absorber Differential (In. H20)	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
42 Absorber Differential (In. H20)	5.0	4.9	5.1	5.0	5.0	5.1	5.0	5.1
43 Absorber Differential (In. H20)	o.o.s.	—	—	—	—	—	—	—
41 Vessel Recycle Density	1.166	1.162	1.162	1.16	1.16	1.16	1.162	1.158
42 Vessel Recycle Density	1.14	1.132	1.14	1.144	1.146	1.148	1.15	1.15
43 Vessel Recycle Density	o.o.s.	—	—	—	—	—	—	—

Flue Gas desulfurization System Log Sheet for Mercury Testing On Unit 4

Date of Test 3-28-00

Test # 3 Cont.

Start of Test, Time 1550

End of Test, Time 1810

FGD Vessels in Service(Circle) (41) (42) 43

(Readings every 15 Min)	Start	15	30	45	60	75	90	120
North Bypass Damper Position(%Open)	Ø	—	—	—	—	—	—	—
South Bypass Damper Position (% Open)	Ø	—	—	—	—	—	—	—
North SO2 Damper Position(%Open)	Ø	—	—	—	—	—	—	—
South SO2 Damper Position(%Open)	Ø	—	—	—	—	—	—	—
41 Vessel Recycle pH	7.26	7.27						
42 Vessel Recycle pH	7.23	7.23						
43 Vessel Recycle pH	O.O.S.	—	—	—	—	—	—	—
41 Absorber Differential (In. H20)	4.2	4.3						
42 Absorber Differential (In. H20)	5.1	5.0						
43 Absorber Differential (In. H20)	O.O.S.	—	—	—	—	—	—	—
41 Vessel Recycle Density	1.16	1.162						
42 Vessel Recycle Density	1.152	1.154						
43 Vessel Recycle Density	O.O.S.	—	—	—	—	—	—	—

Flue Gas desulfurization System Log Sheet for Mercury Testing On Unit 4

Date of Test 3-29-00

Test # 4

Start of Test, Time 0800

End of Test, Time

FGD Vessels in Service(Circle) (41) (42) 43

(Readings every 15 Min)	Start	15	30	45	60	75	90	120
North Bypass Damper Position(%Open)	Ø	—						
South Bypass Damper Position (% Open)	Ø	—						
North SO2 Damper Position(%Open)	Ø	—						
South SO2 Damper Position(%Open)	Ø	—						
41 Vessel Recycle pH	7.21	7.23	7.23	7.23	7.23	7.23	7.21	7.21
42 Vessel Recycle pH	7.15	7.17	7.18	7.20	7.21	7.22	7.23	7.23
43 Vessel Recycle pH	O.O.S.	—						
41 Absorber Differential (In. H20)	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.3
42 Absorber Differential (In. H20)	5.1	5.1	5.1	5.1	5.0	5.1	5.0	5.1
43 Absorber Differential (In. H20)	O.O.S.	—						
41 Vessel Recycle Density	1.138	1.132	1.13	1.13	1.132	1.13	1.134	1.138
42 Vessel Recycle Density	1.172	1.172	1.174	1.174	1.174	1.174	1.176	1.174
43 Vessel Recycle Density	O.O.S.	—						

Flue Gas desulfurization System Log Sheet for Mercury Testing On Unit 4

Date of Test 3-29-00

Test # 4 cont.

Start of Test, Time 0800-1015

End of Test, Time

FGD Vessels in Service(Circle) 41 42 43

(Readings every 15 Min)	Start	15	30	45	60	75	90	120
North Bypass Damper Position(%Open)	Ø	—	—	—	—	—	—	—
South Bypass Damper Position (% Open)	Ø	—	—	—	—	—	—	—
North SO2 Damper Position(%Open)	Ø	—	—	—	—	—	—	—
South SO2 Damper Position(%Open)	Ø	—	—	—	—	—	—	—
41 Vessel Recycle pH	7.19	7.21						
42 Vessel Recycle pH	7.24	7.25						
43 Vessel Recycle pH	O.O.S.	—	—	—	—	—	—	—
41 Absorber Differential (In. H20)	4.4	4.3						
42 Absorber Differential (In. H20)	5.1	5.1						
43 Absorber Differential (In. H20)	O.O.S.	—	—	—	—	—	—	—
41 Vessel Recycle Density	1.144	1.148						
42 Vessel Recycle Density	1.176	1.174						
43 Vessel Recycle Density	O.O.S.	—	—	—	—	—	—	—

TEST 1 RUN 1

PRECIPITATOR LOG SHEET FOR MERCURY TESTING ON UNIT 4

Date or Test 3-28

Test # 1 Run 1

Start of Test, Time 0900

End of Test, Time 0920

Number of TR's Out of Service 1 - 46B

Inlet Damper Position: 41 100% 42 100% 43 100% 44 100% 45 100% 46 100%

Outlet Damper Position: 41 100% 42 75% 43 100% 44 100% 45 66% 46 40%

Precipitator Inlet Temperature 284 Precipitator Outlet Temperature 270

Precipitator-Load Center 405 reading 625 Load Center 406 reading 525

	Primary AMPS	DC Volts	Load AMPS	Spark Rate
TR41A	30	41	.17	32
TR41B	25	41	.16	32
TR41C	31	38	.17	29
TR41D	43	36	.30	29
TR41E	92	29	.82	30
TR42A	46	43	.43	30
TR42B	30	58	.39	59
TR42C	73	36	.30	31
TR42D	110	36	1.0	3
TR42E	126	34	1.0	0
TR43A	6	41	.03	30
TR43B	30	45	.19	30
TR43C	29	44	.21	40
TR43D	53	41	.42	32
TR43E	134	40	.93	21
TR44A	27	41	.71	30
TR44B	20	41	.13	32
TR44C	55	36	.36	21
TR44D	98	36	.78	28
TR44E	116	34	1.0	5
TR45A	23	45	.38	.29
TR45B	29	41	.20	.18
TR45C	35	39	.18	.30
TR45D	67	38	.58	.30
TR45E	113	36	1.0	2
TR46A	34	39	.23	26
TR46B	—	—	—	—
TR46C	25	37	.14	30
TR46D	52	36	.38	.30
TR46E	102	33	.64	.29

TEST 1 RUN 2

PRECIPITATOR LOG SHEET FOR MERCURY TESTING ON UNIT 4

Date or Test 3-28

Test # 1 RUN 2

Start of Test, Time 0940

End of Test, Time 1800

Number of TR's Out of Service 1 46B

Inlet Damper Position: 41 100% 42 100% 43 100% 44 100% 45 100% 46 100%

Outlet Damper Position: 41 100% 42 75% 43 100% 44 100% 45 66% 46 40%

Precipitator Inlet Temperature 284 Precipitator Outlet Temperature 270

Precipitator-Load Center 405 reading 650 Load Center 406 reading 500

	Primary AMPS	DC Volts	Load AMPS	Spark Rate
TR41A	35	43	.23	31
TR41B	36	43	.23	31
TR41C	33	38	.19	29
TR41D	52	36	.39	29
TR41E	108	30	.89	11
TR42A	48	42	.41	32
TR42B	59	36	.65	29
TR42C	63	38	.53	10
TR42D	110	36	1.0	1
TR42E	126	34	1.0	0
TR43A	7	36	.03	32
TR43B	32	45	.25	29
TR43C	55	43	.38	13
TR43D	68	39	.52	29
TR43E	135	41	1.0	6
TR44A	33	42	.73	31
TR44B	21	41	.15	13
TR44C	44	37	.28	29
TR44D	83	36	.65	28
TR44E	115	34	.99	5
TR45A	22	43	.36	10
TR45B	17	40	.10	30
TR45C	27	39	.16	29
TR45D	67	37	.53	31
TR45E	110	36	.78	26
TR46A	35	39	.20	31
TR46B	—	—	—	—
TR46C	21	46	.13	31
TR46D	29	46	.36	29
TR46E	94	31	.60	29

TEST 1 RUN 3

PRECIPITATOR LOG SHEET FOR MERCURY TESTING ON UNIT 4

Date or Test 3-28

Test # 1 RUN 3

Start of Test, Time 1020

End of Test, Time 1040

Number of TR's Out of Service 1 46B

Inlet Damper Position: 41 100% 42 100% 43 100% 44 100% 45 100% 46 100%

Outlet Damper Position: 41 100% 42 75% 43 100% 44 100% 45 66% 46 40%

Precipitator Inlet Temperature 284 Precipitator Outlet Temperature 270

Precipitator-Load Center 405 reading 550 Load Center 406 reading 550

	Primary AMPS	DC Volts	Load AMPS	Spark Rate
TR41A	27	41	.17	30
TR41B	27	42	.16	30
TR41C	22	37	.12	31
TR41D	38	35	.25	33
TR41E	83	29	.70	29
TR42A	47	43	.36	31
TR42B	43	37	.43	10
TR42C	59	37	.47	31
TR42D	111	36	1.0	12
TR42E	126	34	1.0	0
TR43A	5	37	.02	35
TR43B	27	45	.22	11
TR43C	6	27	.05	156
TR43D	44	41	.31	30
TR43E	113	39	.63	30
TR44A	31	42	.75	13
TR44B	24	42	.14	33
TR44C	52	36	.37	12
TR44D	100	37	.87	27
TR44E	116	34	.86	1
TR45A	27	43	.38	31
TR45B	31	41	.25	32
TR45C	35	40	.27	29
TR45D	73	37	.67	28
TR45E	113	36	1.0	1
TR46A	39	39	.24	32
TR46B	—	—	—	—
TR46C	26	37	.19	32
TR46D	61	37	.42	29
TR46E	120	34	.71	30

PRECIPITATOR LOG SHEET FOR MERCURY TESTING ON UNIT 4

Date or Test 3-28

Test # 81 Run 4

Start of Test, Time 1100

End of Test, Time 1120

Number of TR's Out of Service 1 4&B

Inlet Damper Position: 41 100% 42 100% 43 100% 44 100% 45 100% 46 100%

Outlet Damper Position: 41 100% 42 75% 43 100% 44 100% 45 66% 46 40%

Precipitator Inlet Temperature 286 Precipitator Outlet Temperature 270

Precipitator-Load Center 405 reading 500 Load Center 406 reading 525

	Primary AMPS	DC Volts	Load AMPS	Spark Rate
TR41A	25	41	.15	23
TR41B	24	41	.17	29
TR41C	31	37	.17	29
TR41D	47	36	.32	30
TR41E	88	29	.78	29
TR42A	41	43	.34	22
TR42B	48	38	.46	30
TR42C	71	38	.47	32
TR42D	110	35	1.0	5
TR42E	126	34	1.00	1
TR43A	5	34	.02	29
TR43B	27	44	.21	31
TR43C	36	42	.37	33
TR43D	52	41	.32	31
TR43E	123	39	.78	29
TR44A	26	41	.69	30
TR44B	21	41	.15	32
TR44C	50	37	.36	30
TR44D	88	35	.66	11
TR44E	108	34	.96	11
TR45A	21	43	.33	32
TR45B	28	40	.16	33
TR45C	26	39	.15	29
TR45D	63	37	.50	30
TR45E	107	34	.81	21
TR46A	32	39	.19	30
TR46B	—	—	—	—
TR46C	18	36	.12	33
TR46D	51	36	.38	30
TR46E	91	34	.54	30

PRECIPITATOR LOG SHEET FOR MERCURY TESTING ON UNIT 4

Date or Test 3-28

Test # #1 Run #5

Start of Test, Time 1130

End of Test, Time 1145

Number of TR's Out of Service 1 46B

Inlet Damper Position: 41 100% 42 100% 43 100% 44 100% 45 100% 46 100%

Outlet Damper Position: 41 100% 42 75% 43 100% 44 100% 45 66% 46 40%

Precipitator Inlet Temperature 288 Precipitator Outlet Temperature 270

Precipitator-Load Center 405 reading 550 Load Center 406 reading 500

	Primary AMPS	DC Volts	Load AMPS	Spark Rate
TR41A	27	41	.14	30
TR41B	25	40	.16	31
TR41C	23	36	.14	30
TR41D	38	35	.24	30
TR41E	81	28	.70	28
TR42A	43	43	.35	28
TR42B	49	38	.50	28
TR42C	67	38	.50	27
TR42D	110	36	1.0	13
TR42E	126	34	1.0	1
TR43A	4	37	.01	30
TR43B	27	44	.17	30
TR43C	43	43	.31	33
TR43D	51	40	.41	29
TR43E	116	39	.97	28
TR44A	30	43	.73	30
TR44B	26	42	.14	32
TR44C	59	37	.35	29
TR44D	98	36	.84	31
TR44E	116	34	1.0	0
TR45A	19	43	.37	30
TR45B	28	40	.18	11
TR45C	24	39	.15	30
TR45D	48	47	.36	30
TR45E	114	36	.88	16
TR46A	38	41	.23	12
TR46B	—	—	—	—
TR46C	17	38	.09	33
TR46D	39	37	.30	30
TR46E	103	35	.69	28

PRECIPITATOR LOG SHEET FOR MERCURY TESTING ON UNIT 4

Date or Test 3-28

Test # 2 Run #1

Start of Test, Time 1230

End of Test, Time 1245

Number of TR's Out of Service 1 46B

Inlet Damper Position: 41 100 % 42 100 % 43 100 % 44 100 % 45 100 % 46 100 %

Outlet Damper Position: 41 100 % 42 75 % 43 100 % 44 100 % 45 66 % 46 40 %

Precipitator Inlet Temperature 288 Precipitator Outlet Temperature 270

Precipitator-Load Center 405 reading 550 Load Center 406 reading 550

	Primary AMPS	DC Volts	Load AMPS	Spark Rate
TR41A	29	42	.17	32
TR41B	27	41	.17	32
TR41C	32	37	.17	30
TR41D	45	35	.34	29
TR41E	90	29	.80	29
TR42A	47	44	.42	30
TR42B	62	39	.57	27
TR42C	75	38	.61	32
TR42D	110	35	1.0	1
TR42E	126	34	1.0	0
TR43A	5	40	.02	30
TR43B	26	45	.18	31
TR43C	39	42	.30	35
TR43D	48	41	.39	30
TR43E	129	36	.70	19
TR44A	31	40	.71	32
TR44B	23	42	.15	31
TR44C	53	37	.36	12
TR44D	86	35	.76	29
TR44E	116	34	1.0	6
TR45A	21	44	.37	31
TR45B	26	39	.20	18
TR45C	35	39	.22	29
TR45D	70	36	.56	29
TR45E	113	37	1.0	2
TR46A	32	38	.17	20
TR46B	—	—	—	—
TR46C	23	37	.15	32
TR46D	53	37	.38	30
TR46E	96	33	.58	29

PRECIPITATOR LOG SHEET FOR MERCURY TESTING ON UNIT 4

Date or Test 3-28

Test # 2 Run 2

Start of Test, Time 1300

End of Test, Time 1315

Number of TR's Out of Service 1 4GB

Inlet Damper Position: 41 100% 42 100% 43 100% 44 100% 45 100% 46 100%

Outlet Damper Position: 41 100% 42 75% 43 100% 44 100% 45 66% 46 40%

Precipitator Inlet Temperature 280 Precipitator Outlet Temperature 270

Precipitator-Load Center 405 reading 550 Load Center 406 reading 525

	Primary AMPS	DC Volts	Load AMPS	Spark Rate
TR41A	29	41	.14	32
TR41B	23	41	.16	33
TR41C	37	37	.19	30
TR41D	51	37	.39	29
TR41E	93	29	.93	24
TR42A	49	44	.42	30
TR42B	53	38	.44	10
TR42C	73	40	.51	32
TR42D	110	36	1.0	2
TR42E	126	34	1.0	0
TR43A	5	41	.02	29
TR43B	31	45	.18	31
TR43C	29	43	.21	41
TR43D	71	42	.56	31
TR43E	128	41	1.0	10
TR44A	24	40	.66	30
TR44B	24	42	.15	21
TR44C	49	38	.28	33
TR44D	96	38	.78	29
TR44E	115	35	1.0	0
TR45A	24	44	.38	23
TR45B	29	39	.21	30
TR45C	32	39	.23	30
TR45D	76	37	.64	30
TR45E	113	36	1.0	7
TR46A	36	39	.22	32
TR46B	—	—	—	—
TR46C	28	37	.17	31
TR46D	51	36	.36	32
TR46E	102	35	.64	30

PRECIPITATOR LOG SHEET FOR MERCURY TESTING ON UNIT 4

Date or Test 3-28

Test # 2 Run 3

Start of Test, Time 1345

End of Test, Time 1405

Number of TR's Out of Service 1 466

Inlet Damper Position: 41 100 % 42 100 % 43 100 % 44 100 % 45 100 % 46 100 %

Outlet Damper Position: 41 100 % 42 75 % 43 100 % 44 100 % 45 66 % 46 40 %

Precipitator Inlet Temperature 281 Precipitator Outlet Temperature 265

Precipitator-Load Center 405 reading 675 Load Center 406 reading 600

	Primary AMPS	DC Volts	Load AMPS	Spark Rate
TR41A	35	39	.24	29
TR41B	25	45	.12	21
TR41C	36	39	.19	31
TR41D	50	37	.29	31
TR41E	91	29	.73	4
TR42A	34	42	.39	14
TR42B	40	38	.28	28
TR42C	64	39	.19	34
TR42D	110	36	1.0	8
TR42E	126	34	1.0	0
TR43A	5	32	.02	30
TR43B	27	45	.18	30
TR43C	45	42	.35	30
TR43D	62	41	.48	32
TR43E	129	40	.93	7
TR44A	43	43	.67	21
TR44B	22	41	.16	30
TR44C	65	37	.44	11
TR44D	111	38	.95	27
TR44E	116	34	1.0	0
TR45A	17	42	.36	30
TR45B	34	41	.25	31
TR45C	33	38	.24	30
TR45D	74	38	.60	28
TR45E	113	36	1.0	1
TR46A	41	41	.21	31
TR46B	—	—	—	—
TR46C	31	38	.20	31
TR46D	55	37	.42	29
TR46E	112	34	.65	30

PRECIPITATOR LOG SHEET FOR MERCURY TESTING ON UNIT 4

Date or Test 3-28

Test # 3 Run 1

Start of Test, Time 1550

End of Test, Time 1605

Number of TR's Out of Service 1 46B

Inlet Damper Position: 41 100% 42 100% 43 100% 44 100% 45 100% 46 100%

Outlet Damper Position: 41 100% 42 75% 43 100% 44 100% 45 66% 46 40%

Precipitator Inlet Temperature 282 Precipitator Outlet Temperature 260

Precipitator-Load Center 405 reading 675 Load Center 406 reading 550

	Primary AMPS	DC Volts	Load AMPS	Spark Rate
TR41A	37	43	.24	27
TR41B	34	43	.21	30
TR41C	37	39	.21	29
TR41D	54	37	.42	30
TR41E	91	29	.80	5
TR42A	44	43	.36	27
TR42B	59	38	.61	29
TR42C	65	37	.61	29
TR42D	110	36	1.0	8
TR42E	126	34	1.0	0
TR43A	16	39	.02	29
TR43B	33	45	.22	30
TR43C	54	41	.38	30
TR43D	64	41	.51	30
TR43E	137	41	1.0	12
TR44A	34	44	.77	31
TR44B	23	42	.16	29
TR44C	71	38	.46	28
TR44D	114	38	1.0	17
TR44E	116	34	1.0	0
TR45A	23	44	.40	29
TR45B	33	40	.23	32
TR45C	36	39	.23	30
TR45D	67	35	.59	29
TR45E	113	36	1.0	0
TR46A	37	39	.23	33
TR46B	—	—	—	—
TR46C	18	36	.10	30
TR46D	49	37	.31	30
TR46E	106	34	.66	32

PRECIPITATOR LOG SHEET FOR MERCURY TESTING ON UNIT 4

Date or Test 3-28

Test # 3 Run 2

Start of Test, Time 1625

End of Test, Time 1640

Number of TR's Out of Service 1 46B

Inlet Damper Position: 41 100% 42 100% 43 100% 44 100% 45 100% 46 100%

Outlet Damper Position: 41 100% 42 75% 43 100% 44 100% 45 66% 46 40%

Precipitator Inlet Temperature 284 Precipitator Outlet Temperature 265

Precipitator-Load Center 405 reading 625 Load Center 406 reading 575

	Primary AMPS	DC Volts	Load AMPS	Spark Rate
TR41A	42	42	.25	33
TR41B	34	43	.25	22
TR41C	43	39	.20	30
TR41D	57	38	.42	30
TR41E	106	30	1.0	11
TR42A	57	45	.46	32
TR42B	59	40	.36	20
TR42C	73	40	.54	37
TR42D	110	36	1.0	0
TR42E	126	35	1.0	0
TR43A	5	37	.02	28
TR43B	32	46	.23	23
TR43C	50	44	.36	36
TR43D	71	42	.50	28
TR43E	137	41	1.0	4
TR44A	29	43	.75	9
TR44B	23	41	.13	38
TR44C	63	37	.43	29
TR44D	96	34	.86	30
TR44E	116	34	.86	4
TR45A	25	45	.36	30
TR45B	30	40	.18	31
TR45C	33	39	.22	30
TR45D	64	37	.44	29
TR45E	113	36	.99	21
TR46A	31	38	.22	30
TR46B	—	—	—	—
TR46C	21	36	.12	32
TR46D	47	36	.34	29
TR46E	102	34	.62	30

PRECIPITATOR LOG SHEET FOR MERCURY TESTING ON UNIT 4

Date or Test 3-28

Test # 3 Run 3

Start of Test, Time 1710

End of Test, Time 1725

Number of TR's Out of Service 1 46B

Inlet Damper Position: 41 100% 42 100% 43 100% 44 100% 45 100% 46 100%

Outlet Damper Position: 41 100% 42 75% 43 100% 44 100% 45 46% 46 40%

Precipitator Inlet Temperature 282 Precipitator Outlet Temperature 265

Precipitator-Load Center 405 reading 600 Load Center 406 reading 550

	Primary AMPS	DC Volts	Load AMPS	Spark Rate
TR41A	29	41	.17	30
TR41B	23	39	.15	11
TR41C	25	38	.14	30
TR41D	44	36	.33	31
TR41E	71	28	.69	29
TR42A	50	41	.42	30
TR42B	53	37	.48	10
TR42C	62	38	.46	32
TR42D	86	34	.83	17
TR42E	126	34	1.0	0
TR43A	5	38	.02	29
TR43B	28	45	.20	10
TR43C	52	41	.33	51
TR43D	54	40	.33	29
TR43E	119	40	.96	29
TR44A	13	35	.67	29
TR44B	14	42	.12	31
TR44C	56	37	.37	26
TR44D	87	36	.72	24
TR44E	106	34	1.0	12
TR45A	23	41	.32	27
TR45B	30	40	.15	34
TR45C	24	38	.19	30
TR45D	61	37	.51	30
TR45E	113	36	1.0	15
TR46A	38	39	.23	29
TR46B	—	—	—	—
TR46C	27	38	.16	31
TR46D	48	36	.35	30
TR46E	104	34	.61	29

PRECIPITATOR LOG SHEET FOR MERCURY TESTING ON UNIT 4

Date or Test 3-29

Test # 3 Run 1

Start of Test, Time 0800

End of Test, Time 0820

Number of TR's Out of Service 1 46B

Inlet Damper Position: 41 100% 42 100% 43 100% 44 100% 45 100% 46 100%

Outlet Damper Position: 41 100% 42 75% 43 100% 44 100% 45 66% 46 40%

Precipitator Inlet Temperature 280 Precipitator Outlet Temperature 265

Precipitator-Load Center 405 reading 575 Load Center 406 reading 580

	Primary AMPS	DC Volts	Load AMPS	Spark Rate
TR41A	25	42	.16	31
TR41B	33	44	.21	29
TR41C	33	39	.19	31
TR41D	51	39	.37	30
TR41E	111	31	1.0	19
TR42A	49	43	.42	32
TR42B	70	41	.63	27
TR42C	53	37	.60	32
TR42D	111	37	1.0	1
TR42E	127	35	1.0	0
TR43A	5	37	.02	31
TR43B	27	46	.21	31
TR43C	8	26	.07	23
TR43D	62	43	.54	31
TR43E	137	42	1.0	22
TR44A	22	41	.61	30
TR44B	23	44	.10	25
TR44C	44	39	.26	31
TR44D	83	37	.66	30
TR44E	116	35	1.0	1
TR45A	21	44	.36	24
TR45B	27	40	.17	29
TR45C	27	38	.17	30
TR45D	58	38	.44	28
TR45E	101	36	.90	25
TR46A	30	39	.16	31
TR46B	—	—	—	—
TR46C	17	36	.08	33
TR46D	31	34	.20	31
TR46E	80	33	.46	30

PRECIPITATOR LOG SHEET FOR MERCURY TESTING ON UNIT 4

Date or Test 3-29

Test # 3 Run 2

Start of Test, Time 0830

End of Test, Time 0850

Number of TR's Out of Service 1 46B

Inlet Damper Position: 41 100 % 42 100 % 43 100 % 44 100 % 45 100 % 46 100 %

Outlet Damper Position: 41 100 % 42 75 % 43 100 % 44 100 % 45 66 % 46 40 %

Precipitator Inlet Temperature 281 Precipitator Outlet Temperature 270

Precipitator-Load Center 405 reading 475 Load Center 406 reading 500

	Primary AMPS	DC Volts	Load AMPS	Spark Rate
TR41A	27	41	.17	30
TR41B	19	44	.11	29
TR41C	35	39	.19	30
TR41D	50	37	.35	30
TR41E	110	31	1.0	26
TR42A	38	44	.35	12
TR42B	62	41	.57	29
TR42C	91	40	.69	34
TR42D	111	37	.84	0
TR42E	127	35	1.0	0
TR43A	16	39	.03	15
TR43B	33	46	.26	29
TR43C	9	5	.05	23
TR43D	59	43	.38	33
TR43E	126	41	.92	27
TR44A	26	42	.73	27
TR44B	22	42	.15	34
TR44C	57	35	.38	30
TR44D	98	37	.73	29
TR44E	116	35	1.0	2
TR45A	18	43	.36	30
TR45B	28	39	.19	30
TR45C	30	39	.19	31
TR45D	58	37	.44	30
TR45E	88	35	.80	16
TR46A				
TR46B	—	—	—	—
TR46C	22	36	.12	30
TR46D	37	36	.23	29
TR46E	85	31	.36	32

PRECIPITATOR LOG SHEET FOR MERCURY TESTING ON UNIT 4

Date or Test 3-29

Test # 3 Run 3

Start of Test, Time 0900

End of Test, Time 0920

Number of TR's Out of Service 1 46B

Inlet Damper Position: 41 100 % 42 100 % 43 100 % 44 100 % 45 100 % 46 100 %

Outlet Damper Position: 41 100 % 42 75 % 43 100 % 44 100 % 45 66 % 46 40 %

Precipitator Inlet Temperature 282 Precipitator Outlet Temperature 270

Precipitator-Load Center 405 reading 575 Load Center 406 reading 450

	Primary AMPS	DC Volts	Load AMPS	Spark Rate
TR41A	23	40	.12	11
TR41B	25	42	.14	32
TR41C	31	39	.16	30
TR41D	44	36	.31	30
TR41E	96	30	.85	29
TR42A	45	45	.41	17
TR42B	63	39	.55	29
TR42C	82	40	.64	34
TR42D	110	37	.99	1
TR42E	126	35	1.0	0
TR43A	6	39	.02	26
TR43B	36	47	.25	31
TR43C	49	43	.38	33
TR43D	67	43	.50	30
TR43E	138	41	1.0	3
TR44A	34	42	.62	29
TR44B	25	40	.15	32
TR44C	44	37	.35	30
TR44D	80	36	.68	30
TR44E	116	35	1.0	14
TR45A	20	44	.37	31
TR45B	28	41	.18	30
TR45C	25	38	.15	32
TR45D	59	37	.47	29
TR45E	113	37	1.0	23
TR46A	33	39	.23	29
TR46B	—	—	—	—
TR46C	26	37	.17	28
TR46D	46	37	.32	28
TR46E	96	34	.55	29

PRECIPITATOR LOG SHEET FOR MERCURY TESTING ON UNIT 4

Date or Test 3-29

Test # 3 Run 4

Start of Test, Time 0930

End of Test, Time 0950

Number of TR's Out of Service 1 46B

Inlet Damper Position: 41 100% 42 100% 43 100% 44 100% 45 100% 46 100%

Outlet Damper Position: 41 100% 42 75% 43 100% 44 100% 45 66% 46 40%

Precipitator Inlet Temperature 281 Precipitator Outlet Temperature 270

Precipitator-Load Center 405 reading 575 Load Center 406 reading 550

	Primary AMPS	DC Volts	Load AMPS	Spark Rate
TR41A	31	44	.22	28
TR41B	33	43	.22	31
TR41C	39	39	.23	29
TR41D	55	38	.38	30
TR41E	111	31	.81	12
TR42A	50	45	.40	30
TR42B	66	41	.57	29
TR42C	81	40	.55	31
TR42D	110	37	1.0	0
TR42E	127	35	1.0	0
TR43A	5	35	.02	31
TR43B	33	46	.22	31
TR43C	47	43	.34	33
TR43D	59	43	.38	32
TR43E	117	39	.81	1
TR44A	29	41	.72	30
TR44B	22	42	.13	37
TR44C	49	38	.39	31
TR44D	89	37	.78	30
TR44E	116	35	1.0	0
TR45A	19	44	.36	28
TR45B	18	39	.11	30
TR45C	21	39	.13	31
TR45D	55	37	.42	29
TR45E	104	36	.86	25
TR46A	28	39	.15	32
TR46B	—	—	—	—
TR46C	19	36	.12	31
TR46D	36	35	.23	29
TR46E	82	34	.50	29

PRECIPITATOR LOG SHEET FOR MERCURY TESTING ON UNIT 4

Date or Test 3-29

Test # 3 RUN 5

Start of Test, Time 1000

End of Test, Time 1020

Number of TR's Out of Service 1 46B

Inlet Damper Position: 41 100% 42 100% 43 100% 44 100% 45 100% 46 100%

Outlet Damper Position: 41 100% 42 75% 43 100% 44 100% 45 66% 46 40%

Precipitator Inlet Temperature 283 Precipitator Outlet Temperature 270

Precipitator-Load Center 405 reading 575 Load Center 406 reading 425

	Primary AMPS	DC Volts	Load AMPS	Spark Rate
TR41A	27	42	.16	31
TR41B	28	42	.15	30
TR41C	34	38	.17	31
TR41D	36	36	.27	32
TR41E	96	30	.84	28
TR42A	44	45	.42	32
TR42B	63	39	.60	30
TR42C	72	38	.53	34
TR42D	110	37	1.0	2
TR42E	126	35	1.0	0
TR43A	5	38	.02	33
TR43B	27	46	.22	31
TR43C	43	42	.40	32
TR43D	102	42	.45	29
TR43E	133	39	.99	13
TR44A	33	42	.75	30
TR44B	24	40	.17	33
TR44C	49	36	.31	18
TR44D	81	36	.63	29
TR44E	116	35	.99	18
TR45A	19	42	.32	30
TR45B	22	38	.15	31
TR45C	19	39	.15	31
TR45D	48	37	.33	30
TR45E	95	36	.71	29
TR46A	21	36	.13	25
TR46B	—	—	—	—
TR46C	19	36	.10	31
TR46D	33	36	.20	29
TR46E	82	33	.45	30

COMMERCIAL TESTING & ENGINEERING CO.

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HUNTINGTON, UT 84528
TEL: (435) 653-2311
FAX: (435) 653-2436

April 3, 2000

Job No.: 59 228931

Sample ID:

Date Rec'd: March 31, 2000

Date Sampled: March 29, 2000

Sampled By: PacifiCorp

BRIDGER UNIT 4
FEEDER DECK
0800-1014
EST. TOP SIZE 2"
1 BAG 24 LBS.

PACIFICORP FIELD OFFICE
P.O. Box 1005
Huntington UT 84528

MERCURY RUN AT CTE IN DENVER

PROXIMATE ANALYSIS OF COAL

	%Moisture	%Ash	%Volatile	%Fixed Carbon	Btu/lb	%Sulfur
As Rec'd	19.55	8.73	29.89	41.83	9632	0.56
Dry Basis		10.85	37.15	52.00	11973	0.69
M-A-Free					13430	

% AIR DRY MOISTURE LOSS: 14.03

SO2 LB/MILLION BTU @ 100% 1.16

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Huntington Laboratory

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FAX: (435) 653-2436

April 19, 2000

PACIFICORP FIELD OFFICE
P.O. Box 1005
Huntington UT 84528

Sample identification by

Kind of sample reported to us

Sample taken at

Sample taken by PacifiCorp

Date sampled March 29, 2000

Date received March 31, 2000

BRIDGER UNIT 4
FEEDER DECK
0800-1014
EST. TOP SIZE 2"
1 BAG 24 LBS.

MERCURY RUN AT CTE IN DENVER

Analysis report no. 59-228931

Mercury & Chlorine

Mercury, Hg	0.06
Chlorine, Cl	<100

Procedure: Mercury analysis by Double Gold Amalgation Cold Vapor Atomic Absorption.

Chlorine per ASTM Volume 05.05, Method D4208

Results: Results are reported in parts per million (ppm), on a dry basis.

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Huntington Laboratory

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FAX: (435) 653-2436

April 3, 2000

Job No.: 59 228932

Sample ID:

Date Rec'd: March 31, 2000

Date Sampled: March 28, 2000

Sampled By: PacifiCorp

BRIDGER UNIT 4
FEEDER DECK
1230-1440
EST. TOP SIZE 2"
1 BAG 22 LBS.

PACIFICORP FIELD OFFICE
P.O. Box 1005
Huntington UT 84528

MERCURY RUN CTE IN DENVER

PROXIMATE ANALYSIS OF COAL

	%Moisture	%Ash	%Volatile	%Fixed Carbon	Btu/lb	%Sulfur
As Rec'd	19.79	9.45	29.60	41.16	9469	0.59
Dry Basis		11.78	36.90	51.32	11805	0.73
M-A-Free					13381	

% AIR DRY MOISTURE LOSS: 13.87

SO2 LB/MILLION BTU @ 100% 1.25

Respectfully submitted,
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April 19, 2000

PACIFICORP FIELD OFFICE
P.O. Box 1005
Huntington UT 84528

Sample identification by

Kind of sample reported to us

Sample taken at

Sample taken by PacifiCorp

Date sampled March 28, 2000

Date received March 31, 2000

BRIDGER UNIT 4
FEEDER DECK
1230-1440
EST. TOP SIZE 2"
1 BAG 22 LBS.

MERCURY RUN CTE IN DENVER

Analysis report no. 59-228932

Mercury & Chlorine

Mercury, Hg	0.11
Chlorine, Cl	<100

Procedure: Mercury analysis by Double Gold Amalgation Cold Vapor Atomic Absorption.

Chlorine per ASTM Volume 05.05, Method D4208

Results: Results are reported in parts per million (ppm), on a dry basis.

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

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FAX: (435) 653-2436

April 4, 2000

Job No.: 59 228933

Sample ID:

Date Rec'd: March 31, 2000

Date Sampled: March 28, 2000

Sampled By: PacifiCorp

BRIDGER UNIT 4
FEEDER DECK
0900-1130
EST. TOP SIZE 2"
1 BAG 24 LBS.

PACIFICORP FIELD OFFICE
P.O. Box 1005
Huntington UT 84528

MERCURY RUN AT CTE AT DENVER

PROXIMATE ANALYSIS OF COAL

	%Moisture	%Ash	%Volatile	%Fixed Carbon	Btu/lb	%Sulfur
As Rec'd	19.03	9.58	29.46	41.93	9571	0.57
Dry Basis		11.83	36.38	51.79	11821	0.71
M-A-Free					13407	

% AIR DRY MOISTURE LOSS: 12.36

SO2 LB/MILLION BTU @ 100% 1.19

Respectfully submitted,
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April 19, 2000

PACIFICORP FIELD OFFICE
P.O. Box 1005
Huntington UT 84528

Sample identification by

Kind of sample reported to us

Sample taken at

Sample taken by PacifiCorp

Date sampled March 28, 2000

Date received March 31, 2000

BRIDGER UNIT 4
FEEDER DECK
0900-1130
EST. TOP SIZE 2"
1 BAG 24 LBS.

MERCURY RUN AT CTE AT DENVER

Analysis report no. 59-228933

Mercury & Chlorine

Mercury, Hg	0.08
Chlorine, Cl	<100

Procedure: Mercury analysis by Double Gold Amalgation Cold Vapor Atomic Absorption.

Chlorine per ASTM Volume 05.05, Method D4208

Results: Results are reported in parts per million (ppm), on a dry basis.

Respectfully submitted,
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April 4, 2000

Job No.: 59 228961

Sample ID:

Date Rec'd: April 3, 2000

Date Sampled: March 28, 2000

Sampled By: PacifiCorp

BRIDGER UNIT 4
FEEDER DECK
1555-1803
EST. TOP SIZE 2"
1 BAG 22 LBS.

PACIFICORP FIELD OFFICE
P.O. Box 1005
Huntington UT 84528

MERCURY RUN AT CTE IN DENVER

PROXIMATE ANALYSIS OF COAL

	%Moisture	%Ash	%Volatile	%Fixed Carbon	Btu/lb	%Sulfur
As Rec'd	19.51	9.22	29.75	41.52	9629	0.52
Dry Basis		11.45	36.96	51.59	11963	0.64
M-A-Free					13510	

% AIR DRY MOISTURE LOSS: 12.03

SO2 LB/MILLION BTU @ 100% 1.08

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

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April 19, 2000

PACIFICORP FIELD OFFICE
P.O. Box 1005
Huntington UT 84528

Sample identification by

Kind of sample reported to us

Sample taken at

Sample taken by PacifiCorp

Date sampled March 28, 2000

Date received April 3, 2000

BRIDGER UNIT 4
FEEDER DECK
1555-1803
EST. TOP SIZE 2"
1 BAG 22 LBS.

MERCURY RUN AT CTE IN DENVER

Analysis report no. 59-228961

Mercury & Chlorine

Mercury, Hg	0.08
Chlorine, Cl	<100

Procedure: Mercury analysis by Double Gold Amalgation Cold Vapor Atomic Absorption.

Chlorine per ASTM Volume 05.05, Method D4208

Results: Results are reported in parts per million (ppm), on a dry basis.

Respectfully submitted,
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