APPENDIX

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SAMPLE CALCULATIONS

A

SAMPLE CALCULATIONS

The tables presenting the results are generated electronically from raw data. It may not be possible to exactly duplicate these results using a calculator. The reference method data, results and all calculations are carried to sixteen decimal places throughout. The final table is formatted to an appropriate number of significant figures.

1. Volume of water collected (wscf)

$$V_{wstd} = (0.04707)(V_{lc})$$

Where:

V_{lc}	total volume of liquid collected in impingers and silica gel (ml)
V_{wstd}	volume of water collected at standard conditions (ft^3)
0.04707	conversion factor (ft^3/ml) inefficient

2. Volume of gas metered, standard conditions (dscf)

$$V_{mstd} = \frac{(17.64)(V_m)\left(P_{bar} + \frac{\Delta H}{13.6}\right)(Y_d)}{(460 + T_m)}$$

Where:

P_{bar}	barometric pressure (in. Hg)
T_m	average dry gas meter temperature (°F)
V_m	volume of gas sample through the dry gas meter at meter conditions (ft^3)
V_{mstd}	volume of gas sample through the dry gas meter at standard conditions (ft^3)
Y_d	gas meter correction factor (dimensionless)
ΔH	average pressure drop across meter box orifice (in. H_2O)
17.64	conversion factor (°R/in. Hg)
13.6	conversion factor (in. H_2O/in. Hg)
460	°F to °R conversion constant

3. Sample gas pressure (in. Hg)

$$P_s = P_{bar} + \left(\frac{P_g}{13.6}\right)$$

Where:

P_{bar}	barometric pressure (in. Hg)
P_g	sample gas static pressure (in. H_2O)
P_s	absolute sample gas pressure (in. Hg)
13.6	conversion factor (in. H_2O/in. Hg)

4. Actual vapor pressure (in. Hg)[1]

$$P_v = P_s$$

Where:

P_v	vapor pressure, actual (in. Hg)
P_s	absolute sample gas pressure (in. Hg)

[1] For effluent gas temperatures over 212°F, P_v is assumed to be equal to P_s.

SAMPLE CALCULATIONS (CONTINUED)

5. Moisture content (%)

$$B_{wo} = \frac{V_{wstd}}{V_{mstd} + V_{wstd}}$$

Where:

B_{wo}	proportion of water vapor in the gas stream by volume (%)
V_{mstd}	volume of gas sample through the dry gas meter at standard conditions (ft^3)
V_{wstd}	volume of water collected at standard conditions (ft^3)

6. Saturated moisture content (%)

$$B_{ws} = \frac{(P_v)}{(P_s)}$$

Where:

B_{ws}	proportion of water vapor in the gas stream by volume at saturated conditions (%)
P_s	absolute sample gas pressure (in. Hg)
P_v	vapor pressure, actual (in. Hg)

Whichever moisture value is smaller is used for B_{wo} in the following calculations.

7. Molecular weight of dry gas stream (lb/lb·mole)

$$M_d = M_{CO_2}\frac{(CO_2)}{(100)} + M_{O_2}\frac{(O_2)}{(100)} + M_{CO+N_2}\frac{(CO+N_2)}{(100)}$$

Where:

M_d	dry molecular weight of sample gas (lb/lb·mole)
M_{CO_2}	molecular weight of carbon dioxide (lb/lb·mole)
M_{O_2}	molecular weight of oxygen (lb/lb·mole)
M_{CO+N_2}	molecular weight of carbon monoxide and nitrogen (lb/lb·mole)
CO_2	proportion of carbon dioxide in the gas stream by volume (%)
O_2	proportion of oxygen in the gas stream by volume (%)
$CO+N_2$	proportion of carbon monoxide and nitrogen in the gas stream by volume (%)
100	conversion factor (%)

8. Molecular weight of sample gas (lb/lb·mole)

$$M_s = (M_d)(1 - B_{wo}) + (M_{H_2O})(B_{wo})$$

Where:

B_{wo}	proportion of water vapor in the gas stream by volume
M_d	dry molecular weight of sample gas (lb/lb·mole)
M_{H_2O}	molecular weight of water (lb/lb·mole)
M_s	molecular weight of sample gas, wet basis (lb/lb·mole)

SAMPLE CALCULATIONS (CONTINUED)

9. Velocity of sample gas (ft/sec)

$$V_s = (K_p)(C_p)\left(\overline{\sqrt{\Delta P}}\right)\left(\sqrt{\frac{(\overline{T_s}+460)}{(M_s)(P_s)}}\right)$$

Where:

K_p	velocity pressure constant $\left(\frac{ft}{sec}\left[\frac{(lb/lb\cdot mole)(in.\ Hg)}{(°R)(in.\ H_2O)}\right]\right)$
C_p	pitot tube coefficient
M_s	molecular weight of sample gas, wet basis (lb/lb·mole)
P_s	absolute sample gas pressure (in. Hg)
T_s	average sample gas temperature (°F)
V_s	sample gas velocity (ft/sec)
$\overline{\sqrt{\Delta P}}$	average square roots of velocity heads of sample gas (in. H_2O)
460	°F to °R conversion constant

10. Total flow of sample gas (acfm)

$$Q_a = (60)(A_s)(V_s)$$

Where:

A_s	cross sectional area of sampling location (ft^2)
Q_a	volumetric flow rate at actual conditions (acfm)
V_s	sample gas velocity (ft/sec)
60	conversion factor (sec/min)

11. Total flow of sample gas (dscfm)

$$Q_{std} = \frac{(Q_a)(P_s)(17.64)(1-B_{wo})}{(\overline{T_s}+460)}$$

Where:

B_{wo}	proportion of water vapor in the gas stream by volume
P_s	absolute sample gas pressure (in. Hg)
Q_a	volumetric flow rate at actual conditions (acfm)
Q_{std}	volumetric flow rate at standard conditions, dry basis (dscfm)
T_s	average sample gas temperature (°F)
17.64	conversion factor (°R/in. Hg)
460	°F to °R conversion constant

SAMPLE CALCULATIONS (CONTINUED)

Three-Dimensional Traverse

12. Static Pressure (in. H_2O)

$$P_g = (P_1 - P_{atm})_{average} - (P_1 - P_2)_{average}$$

Where:

P_1-P_{atm}	stagnation pressure differential (in. H_2O)
P_1-P_2	velocity pressure differential (in. H_2O)
P_g	sample gas static pressure (in. H_2O)

13. Sample gas pressure (in. Hg)

$$P_s = (P_{bar}) - \frac{(P_g)}{(13.6)}$$

Where:

P_{bar}	barometric pressure (in. Hg)
P_g	sample gas static pressure (in. H_2O)
P_s	absolute sample gas pressure (in. Hg)
13.6	conversion factor (in. H_2O/in. Hg)

14. Gas Density (lb/ft^3)

$$\rho = \frac{(P_s)(M_s)(14.696)(144)}{(29.921)(1,545)(T_s + 460)}$$

Where:

P_s	absolute stack gas pressure (in. Hg)
M_s	molecular weight of stack gas, wet basis (lb/lb·mole)
T_s	average stack temperature (°F)
ρ	gas density (lb/ft^3)
14.696	conversion factor (psi/atm.)
144	conversion factor (in^2/ ft^2)
29.921	conversion factor (in. Hg/atm.)
1,545	conversion factor (ft·lb/lbmole·°R)

SAMPLE CALCULATIONS (CONTINUED)

15. Pitch angle (calculated for each point)

$$\chi = \frac{(P_4 - P_5)}{(P_1 - P_2)}$$

Where:

P_1-P_2	velocity pressure differential (in. H_2O)
P_4-P_5	pitch angle pressure differential (in. H_2O)
χ	relative pitch angle differential pressure

16. Pitch angle (°)

$$X = a_0 + a_1 x + a_2 x^2 + a_3 x^3 + a_4 x^4$$

Where:

X	pitch angle (°)
χ	relative pitch angle differential pressure
a_i	regression coefficients determined from 4th order polynomial curve fit of wind tunnel calibration data for the 3-D probe.

17. Resultant angle from above (calculated for each point)

$$R = \mathrm{ar}\cos[\cos(\text{pitch angle})\cos(\text{yaw angle})]$$

Where:

R	resultant angle

18. Velocity coefficient (C_p) determination (calculated for each point)

$$C_p = b_0 + b_1 x + b_2 x^2 + b_3 x^3 + b_4 x^4 + b_5 x^5 + b_6 x^6 + b_7 x^7 + b_8 x^8$$

Where:

C_p	velocity correction coefficient (dimensionless)
b_i	regression coefficients determined from 8th order polynomial curve fit of wind tunnel calibration data for the 3-D probe.

19. Velocity of stack (calculated for each point)[1]

$$V_s = (18.29)(\cos(R))\sqrt{\frac{(C_p)(P_1 - P_2)}{(\rho)}}$$

Where:

P_1-P_2	velocity pressure differential (in. H_2O)
ρ	gas density (lb/ft^3)
V_s	stack gas velocity (ft/sec)
C_p	Velocity Correction Coefficient (dimensionless)
R	resultant angle

[1] Only the velocity component parallel to duct axis (preferred direction of flow) is shown

SAMPLE CALCULATIONS (CONTINUED)

20. Percent isokinetic (%)

$$I = \frac{(0.09450)(\overline{T_s} + 460)(V_{mstd})}{(P_s)(V_s)\left(\frac{(D_n)^2(\pi)}{(144)(4)}\right)(\Theta)(1 - B_{wo})}$$

Where:

D_n	diameter of nozzle (in)
B_{wo}	proportion of water vapor in the gas stream by volume
I	percent of isokinetic sampling (%)
P_s	absolute sample gas pressure (in. Hg)
T_s	average sample gas temperature (°F)
V_{mstd}	volume of gas sample through the dry gas meter at standard conditions (ft^3)
V_s	sample gas velocity (ft/sec)
Θ	total sampling time (min)
0.09450	constant
460	°F to °R conversion constant

SAMPLE CALCULATIONS (CONTINUED)

21. Mercury concentration (µg/dscm)

$$C_{\mu g/dscm} = \frac{(m_n)}{(V_{mstd})}(35.31)$$

Where:

$C_{\mu g/dscm}$	concentration (µg/dscm)
m_n	net mass of metal collected (µg)
V_{mstd}	volume of gas sample through the dry gas meter at standard conditions (ft^3)
35.31	conversion factor (ft^3/m^3)

22. Mercury concentration (µg/dscm corrected to 7% O_2)

$$C_{\mu g/dscm\ @\ 7\%\ O_2} = \frac{(C_{\mu g/dscm})(20.9 - 7.0)}{(20.9 - O_2)}$$

Where:

$C_{\mu g/dscm}$	concentration (µg/dscm)
$C_{\mu g/dscm\ @\ 7\%\ O_2}$	concentration (µg/dscm corrected to 7% O_2)
O_2	proportion of oxygen in the gas stream by volume (%)
20.9	proportion of oxygen in ambient air by volume (%)

23. Mercury concentration (µg/dscm corrected to 12% CO_2)

$$C_{\mu g/dscm\ @\ 12\%\ CO_2} = (C_{\mu g/dscm})\frac{(12)}{(CO_2)}$$

Where:

$C_{\mu g/dscm}$	concentration (µg/dscm)
$C_{\mu g/dscm\ @\ 12\%\ CO_2}$	concentration (µg/dscm corrected to 12% CO_2)
CO_2	proportion of carbon dioxide in the gas stream by volume (%)

24. Mercury inlet loading to the APC System (lb/hr)

$$E_{inlet} = (Q_{Coal})(C_{Hg})(1000)(1 - (C_{H2O}/100))/1e^6$$

Where:

E_{inlet}	mercury loading to the inlet of the APC System (lb/hr)
Q_{Coal}	total coal feed rate (Klb/hr)
C_{Hg}	concentration of mercury in coal feed (mg/Kg, dry basis)
1000	conversion factor (lb/Klb)
C_{H2O}	percent moisture in coal feed (%)
1e6	conversion factor (ppm)

SAMPLE CALCULATIONS (CONTINUED)

25. Mercury emission (lb/hr)

$$E_{lb/hr} = \frac{(C_{\mu g/dscm})(Q_{std})(60)}{(453,590)(1,000)(35.31)}$$

Where:

$C_{\mu g/dscm}$	concentration (μg/dscm)
Q_{std}	volumetric flow rate at standard conditions, dry basis (dscfm)
$E_{lb/hr}$	emission rate (lb/hr)
60	conversion factor (min/hr)
35.31	conversion factor (ft^3/m^3)
1,000	conversion factor (μg/mg)
453,590	conversion factor (mg/lb)

26. Removal efficiency (%)

$$\varepsilon = \frac{(E_{inlet} - E_{outlet})}{(E_{inlet})}(100)$$

Where:

E_{inlet}	emissions at the inlet (lb/hr)
E_{outlet}	emissions at the outlet (lb/hr)
ε	removal efficiency (%)
100	conversion factor (%)

PARAMETERS

B

MECKLENBURG COGENERATION FACILITY
CAE Project No: 8493
SDA Inlet

3-D Traverse - Parameters

Run No.	**1**
Load (MW)	Varied
Date (1999)	October 11
Start Time (approx.)	15:00
Stop Time (approx.)	15:45

Gas Condition Data Entry [1]

P_b	Barometric pressure (in. Hg)	29.65
B_{wo}	Moisture in sample (% by volume)	9.48
O_2	Oxygen (dry volume %)	4.1
CO_2	Carbon Dioxide (dry volume %)	14.9
A_s	Sample location area (ft^2)	74.25

Testing Information

Probe Serial No:	2600
Num of ports: [2]	7
Num of points/port:	4

Port	Point	Temp (°F)	Yaw Angle	P_1-P_{atm}	P_1-P_2	P_4-P_5
1	1	300	5	4.80	0.15	0.01
1	2	302	7	5.00	0.20	0.02
1	3	302	10	5.00	0.30	0.03
1	4	304	12	5.00	0.35	0.03
2	1	294	0	5.00	0.30	0.04
2	2	307	7	4.70	0.37	0.03
2	3	303	10	4.70	0.30	0.04
2	4	305	8	3.90	0.37	0.03
3	1	295	50	5.00	0.12	0.04
3	2	304	15	3.30	0.32	0.02
3	3	300	13	2.00	0.21	0.00
3	4	298	11	2.60	0.30	-0.03
4	1	300	5	3.00	0.30	0.03
4	2	300	7	3.20	0.22	0.03
4	3	300	7	5.50	0.27	0.03
4	4	300	10	4.80	0.36	0.02
5	1	300	13	6.50	0.55	0.03
5	2	285	17	7.00	0.40	0.04
5	3	292	13	6.50	0.39	0.02
5	4	287	5	6.70	0.52	0.03
6	1	NA	NA	NA	NA	NA
6	2	NA	NA	NA	NA	NA
6	3	NA	NA	NA	NA	NA
6	4	NA	NA	NA	NA	NA
7	1	299	2	7.00	0.26	0.03
7	2	280	3	7.00	0.41	0.04
7	3	293	5	6.30	0.55	0.02
7	4	293	5	6.80	0.32	0.02
Average		298	10.00	5.05	0.33	0.03

[1] Gas conditions are based on average oxygen, carbon dioxide and moisture values from measurements obtained on October 12 and 13, 1999.

[2] Port 6 was not tested due to obstructions that prevented the probe from entering the port.

MECKLENBURG COGENERATION FACILITY
CAE Project No: 8493
SDA Inlet

3-D Traverse - Parameters

Run No.		**1**
Load (MW)		Varied
Date (1999)		October 11
Start Time (approx.)		15:00
Stop Time (approx.)		15:45
Probe Serial No:		2600
Gas Conditions [1]		
P_b	Barometric pressure (in. Hg)	29.65
B_{wo}	Moisture in sample (% by volume)	9.48
O_2	Oxygen (dry volume %)	4.1
CO_2	Carbon Dioxide (dry volume %)	14.9
A_s	Sample location area (ft^2)	74.25
Calculated Values		
	Static Pressure (in. H_2O)	4.73
M_d	MW of sample gas, dry (lb/lb-mole)	30.55
M_s	MW of sample gas, wet (lb/lb-mole)	29.36
r	Density (lb/ft^3)	0.0532
Calculated Results		
Q_a	Volumetric flow rate (acfm)	187,900
Q_{std}	Volumetric flow rate (dscfm)	138,000
Calculated Results-High Load (ports 5 and 7) [2, 3]		
V_s	Velocity of stack gas (ft/s)	49.00
Q_a	Volumetric flow rate (acfm)	218,300
Q_{std}	Volumetric flow rate (dscfm)	138,000

Traverse Point	χ	Pitch Angle	Resultant Angle	C_p	Velocity (ft/s)
1-01	0.067	6.40	8.1	0.950	29.63
1-02	0.100	8.64	11.1	0.949	33.90
1-03	0.100	8.64	13.2	0.949	41.19
1-04	0.086	7.68	14.2	0.949	44.30
2-01	0.133	10.89	10.9	0.951	41.59
2-02	0.081	7.36	10.1	0.949	46.25
2-03	0.133	10.89	14.7	0.951	40.96
2-04	0.081	7.36	10.9	0.949	46.15
3-01	0.333	24.07	54.1	1.039	16.43
3-02	0.063	6.12	16.2	0.950	41.99
3-03	0.000	1.97	13.1	0.956	34.60
3-04	-0.100	-4.42	11.8	0.970	41.87
4-01	0.100	8.64	10.0	0.949	41.67
4-02	0.136	11.10	13.1	0.952	35.33
4-03	0.111	9.39	11.7	0.949	39.31
4-04	0.056	5.65	11.5	0.951	45.45
5-01	0.055	5.58	14.1	0.951	55.60
5-02	0.100	8.64	19.0	0.949	46.19
5-03	0.051	5.37	14.0	0.951	46.84
5-04	0.058	5.79	7.6	0.950	55.24
6-01					
6-02					
6-03					
6-04					
7-01	0.115	9.68	9.9	0.950	38.81
7-02	0.098	8.48	9.0	0.949	48.85
7-03	0.036	4.37	6.6	0.952	56.99
7-04	0.063	6.12	7.9	0.950	43.30
Average		7.68	13.5	0.955	42.19
Std Dev			9.0	0.0	8.5
RMS Dev			67.0%	1.9%	20.2%

[1] Gas conditions are based on average oxygen, carbon dioxide and moisture values from measurements obtained on October 12 and 13, 1999.

[2] Port 6 was not tested due to obstructions that prevented the probe from entering the port.

[3] Boiler load was in transition during testing of ports 1 through 4. High load volumetric flow rates were determined for the period while the unit was stable and operating at high load (ports 5 and 7).

MECKLENBURG COGENERATION FACILITY
CAE Project No: 8493
Baghouse Outlet

3D Traverse - Field Data Printouts

Run No.	**1**
Load (MW)	Low
Date (1999)	October 12
Start Time (approx.)	08:00
Stop Time (approx.)	08:39

Gas Condition Data Entry [1]

P_b	Barometric pressure (in. Hg)	29.90
B_{wo}	Moisture in sample (% by volume)	13.61
O_2	Oxygen (dry volume %)	4.70
CO_2	Carbon Dioxide (dry volume %)	14.50
A_s	Sample location area (ft^2)	72.33

Testing Information

Probe Serial No:	2600
Num of ports:	7
Num of points/port:	4

Port	Point	Temp (°F)	Yaw Angle	P_1-P_{atm}	P_1-P_2	P_4-P_5
1	1	150	3	-6.00	0.15	0.00
1	2	156	2	6.20	0.16	0.00
1	3	157	4	6.00	0.16	0.00
1	4	155	0	6.60	0.15	0.00
2	1	156	7	7.20	0.18	0.00
2	2	157	6	6.10	0.18	0.00
2	3	158	10	6.10	0.18	0.00
2	4	158	2	6.00	0.16	0.00
3	1	157	9	6.40	0.18	0.00
3	2	158	9	6.80	0.17	0.00
3	3	158	7	6.30	0.20	0.00
3	4	158	10	6.20	0.18	0.00
4	1	157	25	6.00	0.22	0.00
4	2	158	11	6.50	0.22	0.00
4	3	159	15	6.60	0.23	0.00
4	4	158	10	6.60	0.19	0.00
5	1	157	17	6.50	0.23	0.00
5	2	158	11	6.50	0.24	0.00
5	3	159	14	6.10	0.22	0.00
5	4	159	12	6.00	0.29	0.00
6	1	157	16	6.40	0.23	0.00
6	2	159	11	6.70	0.25	0.00
6	3	159	16	6.50	0.27	0.00
6	4	159	13	5.90	0.30	0.00
7	1	156	23	6.20	0.20	0.00
7	2	158	15	6.80	0.24	0.00
7	3	159	15	6.60	0.28	0.00
7	4	159	10	6.60	0.26	0.00
	Average	157	10.82	5.94	0.21	0.00

[1] Gas conditions are based on average oxygen, carbon dioxide and moisture values from measurements obtained on October 12 and 13, 1999.

MECKLENBURG COGENERATION FACILITY
CAE Project No: 8493
Baghouse Outlet

3-D Traverse - Parameters

Run No.		1
Load (MW)		Low
Date (1999)		October 12
Start Time (approx.)		08:00
Stop Time (approx.)		08:39
Probe Serial No:		2600
Gas Conditions [1]		
P_b	Barometric pressure (in. Hg)	29.90
B_{wo}	Moisture in sample (% by volume)	13.61
O_2	Oxygen (dry volume %)	4.7
CO_2	Carbon Dioxide (dry volume %)	14.5
A_s	Sample location area (ft^2)	72.33
Calculated Values		
	Static Pressure (in. H_2O)	5.73
M_d	MW of sample gas, dry (lb/lb-mole)	30.51
M_s	MW of sample gas, wet (lb/lb-mole)	28.81
ρ	Density (lb/ft^3)	0.0648
Calculated Results		
Q_a	Volumetric flow rate (acfm)	136,100
Q_{std}	Volumetric flow rate (dscfm)	101,800

Traverse Point	χ	Pitch Angle	Resultant Angle	C_p	Velocity (ft/s)
1-01	0.000	1.97	3.6	0.956	27.17
1-02	0.000	1.97	2.8	0.956	28.08
1-03	0.000	1.97	4.5	0.956	28.03
1-04	0.000	1.97	2.0	0.956	27.20
2-01	0.000	1.97	7.3	0.956	29.58
2-02	0.000	1.97	6.3	0.956	29.64
2-03	0.000	1.97	10.2	0.956	29.35
2-04	0.000	1.97	2.8	0.956	28.08
3-01	0.000	1.97	9.2	0.956	29.43
3-02	0.000	1.97	9.2	0.956	28.60
3-03	0.000	1.97	7.3	0.956	31.18
3-04	0.000	1.97	10.2	0.956	29.35
4-01	0.000	1.97	25.1	0.956	29.86
4-02	0.000	1.97	11.2	0.956	32.34
4-03	0.000	1.97	15.1	0.956	32.54
4-04	0.000	1.97	10.2	0.956	30.15
5-01	0.000	1.97	17.1	0.956	32.21
5-02	0.000	1.97	11.2	0.956	33.78
5-03	0.000	1.97	14.1	0.956	31.97
5-04	0.000	1.97	12.2	0.956	37.00
6-01	0.000	1.97	16.1	0.956	32.38
6-02	0.000	1.97	11.2	0.956	34.47
6-03	0.000	1.97	16.1	0.956	35.08
6-04	0.000	1.97	13.1	0.956	37.49
7-01	0.000	1.97	23.1	0.956	28.91
7-02	0.000	1.97	15.1	0.956	33.24
7-03	0.000	1.97	15.1	0.956	35.90
7-04	0.000	1.97	10.2	0.956	35.27
Average		1.97	11.1	0.956	31.37
Std Dev			5.6	0.0	3.0
RMS Dev			50.6%	0.0%	9.5%

[1] Gas conditions are based on average oxygen, carbon dioxide and moisture values from measurements obtained on October 12 and 13, 1999.

MECKLENBURG COGENERATION FACILITY
CAE Project No: 8493
Baghouse Outlet

3D Traverse - Field Data Printouts

Run No.	**2**
Load (MW)	Mid
Date (1999)	October 12
Start Time (approx.)	09:30
Stop Time (approx.)	10:50

Gas Condition Data Entry [1]

P_b	Barometric pressure (in. Hg)	29.90
B_{wo}	Moisture in sample (% by volume)	13.61
O_2	Oxygen (dry volume %)	4.70
CO_2	Carbon Dioxide (dry volume %)	14.50
A_s	Sample location area (ft^2)	72.33

Testing Information

Probe Serial No:	2600
Num of ports:	7
Num of points/port:	4

Port	Point	Temp (°F)	Yaw Angle	P_1-P_{atm}	P_1-P_2	P_4-P_5
1	1	154	12	-12.60	0.14	0.11
1	2	156	10	-12.80	0.14	0.11
1	3	156	4	-12.60	0.11	0.10
1	4	156	6	-12.60	0.10	0.10
2	1	150	10	-12.60	0.20	0.00
2	2	153	9	-12.60	0.12	0.00
2	3	153	8	-12.50	0.13	0.00
2	4	152	6	-12.60	0.15	0.00
3	1	154	11	-12.50	0.25	0.05
3	2	155	12	-12.20	0.20	0.05
3	3	155	6	-12.00	0.15	0.05
3	4	155	8.00	-12.00	0.10	0.00
4	1	161	16	-11.90	0.15	0.10
4	2	161	15	-11.70	0.17	0.10
4	3	161	14	-11.70	0.25	0.08
4	4	161	12	-11.60	0.48	0.08
5	1	162	16	-12.00	0.10	0.20
5	2	162	15	-11.60	0.22	0.20
5	3	162	16	-11.40	0.57	0.19
5	4	162	15	-11.60	1.00	0.19
6	1	161	12	-11.00	0.77	0.05
6	2	161	7	-10.60	0.73	0.06
6	3	161	11	-10.80	0.75	0.06
6	4	161	9	-10.80	0.69	0.05
7	1	161	29	-11.00	0.24	0.07
7	2	161	14	-10.90	0.45	0.07
7	3	161	16	-10.50	0.90	0.05
7	4	161	13	-10.00	1.20	0.05
Average		158	11.86	-11.74	0.37	0.08

[1] Gas conditions are based on average oxygen, carbon dioxide and moisture values from measurements obtained on October 12 and 13, 1999.

MECKLENBURG COGENERATION FACILITY
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3-D Traverse - Parameters

Run No.	**2**
Load (MW)	Mid
Date (1999)	October 12
Start Time (approx.)	09:30
Stop Time (approx.)	10:50
Probe Serial No:	2600

Gas Conditions [1]

P_b	Barometric pressure (in. Hg)	29.90
B_{wo}	Moisture in sample (% by volume)	13.61
O_2	Oxygen (dry volume %)	4.7
CO_2	Carbon Dioxide (dry volume %)	14.5
A_s	Sample location area (ft^2)	72.33

Calculated Values

	Static Pressure (in. H_2O)	-12.11
M_d	MW of sample gas, dry (lb/lb-mole)	30.51
M_s	MW of sample gas, wet (lb/lb-mole)	28.81
ρ	Density (lb/ft^3)	0.0619

Calculated Results

Q_a	Volumetric flow rate (acfm)	168,500
Q_{std}	Volumetric flow rate (dscfm)	120,500

Traverse Point	χ	Pitch Angle	Resultant Angle	C_p	Velocity (ft/s)
1-01	0.809	39.63	41.1	1.380	24.00
1-02	0.786	39.88	40.9	1.400	24.60
1-03	0.909	36.69	36.9	1.222	21.56
1-04	1.000	31.06	31.6	1.112	20.88
2-01	0.000	1.97	10.2	0.956	31.64
2-02	0.000	1.97	9.2	0.956	24.58
2-03	0.000	1.97	8.2	0.956	25.65
2-04	0.000	1.97	6.3	0.956	27.68
3-01	0.200	15.39	18.8	0.967	34.21
3-02	0.250	18.72	22.1	0.989	30.30
3-03	0.333	24.07	24.8	1.039	26.36
3-04	0.000	1.97	8.2	0.956	22.50
4-01	0.667	39.09	41.7	1.341	24.60
4-02	0.588	36.93	39.5	1.231	25.97
4-03	0.320	23.23	26.9	1.031	33.28
4-04	0.167	13.15	17.7	0.957	47.46
5-01 [2]	2.000				
5-02	0.909	36.69	39.2	1.222	29.53
5-03	0.333	24.07	28.6	1.039	49.67
5-04	0.190	14.72	20.9	0.963	67.42
6-01	0.065	6.28	13.5	0.950	61.14
6-02	0.082	7.44	10.2	0.949	60.24
6-03	0.080	7.29	13.2	0.949	60.41
6-04	0.072	6.79	11.3	0.950	58.37
7-01	0.292	21.43	35.5	1.013	29.52
7-02	0.156	12.40	18.6	0.955	45.67
7-03	0.056	5.65	16.9	0.951	65.05
7-04	0.042	4.72	13.8	0.952	76.30
	Average	17.60	22.4	1.050	38.84
	Std Dev		11.9	0.1	17.0
	RMS Dev		52.9%	13.8%	43.7%

[1] Gas conditions are based on average oxygen, carbon dioxide and moisture values from measurements obtained on October 12 and 13, 1999.

[2] This point is not included in the calculation of the pitch and resultant angle. Since the P4 -P5 measurement (0.20) is higher than the P1-P2 measurement (0.10) a pitch angle of -383° is calculated. In order to prevent a significant bias to the averag pitch and resultant angles this point is not included in 3-D angle calculations.

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3D Traverse - Field Data Printouts

Run No.	**3**
Load (MW)	High
Date (1999)	October 12
Start Time (approx.)	12:15
Stop Time (approx.)	12:52

Gas Condition Data Entry [1]

P_b	Barometric pressure (in. Hg)	29.90
B_{wo}	Moisture in sample (% by volume)	13.61
O_2	Oxygen (dry volume %)	4.70
CO_2	Carbon Dioxide (dry volume %)	14.50
A_s	Sample location area (ft^2)	72.33

Testing Information

Probe Serial No:	2600
Num of ports:	7
Num of points/port:	4

Port	Point	Temp (°F)	Yaw Angle	P_1-P_{atm}	P_1-P_2	P_4-P_5
1	1	157	1	-19.00	0.28	0.12
1	2	157	1	-18.50	0.34	0.14
1	3	159	5	-18.60	0.27	0.11
1	4	158	1	-18.50	0.19	0.04
2	1	158	8	-17.60	0.42	0.13
2	2	159	3	-17.00	0.32	0.11
2	3	159	5	-18.60	0.27	0.10
2	4	159	5	-18.60	0.25	0.10
3	1	159	13	-18.70	0.52	0.20
3	2	160	12	-18.60	0.48	0.20
3	3	161	16	-18.80	0.70	0.16
3	4	160	0	-18.60	0.21	0.16
4	1	160	11	-18.00	0.58	0.00
4	2	160	17	-17.40	0.55	0.04
4	3	160	7	18.20	0.45	0.04
4	4	160	0	18.80	0.25	0.06
5	1	161	20	18.60	0.77	0.04
5	2	162	14	18.20	0.65	0.04
5	3	162	11	18.60	0.60	0.03
5	4	161	13	17.60	0.60	0.02
6	1	160	15	17.40	0.72	0.02
6	2	160	17	17.20	0.75	0.03
6	3	160	18	18.20	0.63	0.03
6	4	160	13	18.10	0.46	0.04
7	1	160	27	18.40	0.76	0.02
7	2	160	18	17.80	0.90	0.00
7	3	161	8	17.60	0.81	0.00
7	4	161	18	18.00	0.61	0.00
Average		160	10.61	-0.14	0.51	0.07

[1] Gas conditions are based on average oxygen, carbon dioxide and moisture values from measurements obtained on October 12 and 13, 1999.

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Baghouse Outlet

3-D Traverse - Parameters

Run No.		**3**
Load (MW)		High
Date (1999)		October 12
Start Time (approx.)		12:15
Stop Time (approx.)		12:52
Probe Serial No:		2600
Gas Conditions [1]		
P_b	Barometric pressure (in. Hg)	29.90
B_{wo}	Moisture in sample (% by volume)	13.61
O_2	Oxygen (dry volume %)	4.7
CO_2	Carbon Dioxide (dry volume %)	14.5
A_s	Sample location area (ft^2)	72.33
Calculated Values		
	Static Pressure (in. H_2O)	-0.65
M_d	MW of sample gas, dry (lb/lb-mole)	30.51
M_s	MW of sample gas, wet (lb/lb-mole)	28.81
ρ	Density (lb/ft^3)	0.0635
Calculated Results		
Q_a	Volumetric flow rate (acfm)	204,400
Q_{std}	Volumetric flow rate (dscfm)	150,000

Traverse Point	χ	Pitch Angle	Resultant Angle	C_p	Velocity (ft/s)
1-01	0.429	29.66	29.7	1.096	34.94
1-02	0.412	28.73	28.7	1.087	38.68
1-03	0.407	28.48	28.9	1.084	34.38
1-04	0.211	16.10	16.1	0.971	29.94
2-01	0.310	22.57	23.9	1.024	43.53
2-02	0.344	24.71	24.9	1.046	38.09
2-03	0.370	26.32	26.8	1.062	34.71
2-04	0.400	28.06	28.5	1.080	33.15
3-01	0.385	27.17	29.9	1.071	46.95
3-02	0.417	29.00	31.2	1.090	44.90
3-03	0.229	17.30	23.4	0.979	55.13
3-04	0.762	40.00	40.0	1.410	30.25
4-01	0.000	1.97	11.2	0.956	53.02
4-02	0.073	6.80	18.3	0.950	49.80
4-03	0.089	7.89	10.5	0.949	46.63
4-04	0.240	18.06	18.1	0.984	34.22
5-01	0.052	5.41	20.7	0.951	58.09
5-02	0.062	6.05	15.2	0.950	55.03
5-03	0.050	5.28	12.2	0.951	53.58
5-04	0.033	4.17	13.6	0.952	53.31
6-01	0.028	3.80	15.5	0.953	57.94
6-02	0.040	4.61	17.6	0.952	58.45
6-03	0.048	5.12	18.7	0.951	53.22
6-04	0.087	7.76	15.1	0.949	46.30
7-01	0.026	3.70	27.2	0.953	54.92
7-02	0.000	1.97	18.1	0.956	63.99
7-03	0.000	1.97	8.2	0.956	63.21
7-04	0.000	1.97	18.1	0.956	52.68
	Average	14.45	21.1	1.010	47.11
	Std Dev		7.6	0.1	10.2
	RMS Dev		35.8%	9.5%	21.7%

[1] Gas conditions are based on average oxygen, carbon dioxide and moisture values from measurements obtained on October 12 and 13, 1999.

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3D Traverse - Field Data Printouts

Run No.	**4**
Load (MW)	High
Date (1999)	October 13
Start Time (approx.)	08:15
Stop Time (approx.)	09:17

Gas Condition Data Entry [1]

P_b	Barometric pressure (in. Hg)	29.90
B_{wo}	Moisture in sample (% by volume)	13.61
O_2	Oxygen (dry volume %)	4.70
CO_2	Carbon Dioxide (dry volume %)	14.50
A_s	Sample location area (ft^2)	72.33

Testing Information

Probe Serial No:	2600
Num of ports:	7
Num of points/port:	4

Port	Point	Temp (°F)	Yaw Angle	P_1-P_{atm}	P_1-P_2	P_4-P_5
1	1	152	11	20.50	0.50	0.05
1	2	154	4	19.70	0.23	0.05
1	3	155	8	19.60	0.23	-0.02
1	4	155	8	19.60	0.15	-0.04
2	1	155	13	21.00	0.43	0.08
2	2	155	4	20.60	0.35	0.05
2	3	156	8	21.00	0.30	0.02
2	4	156	8	20.00	0.16	0.01
3	1	156	10	19.60	0.43	0.12
3	2	157	10	19.60	0.47	0.05
3	3	157	10	19.60	0.38	0.07
3	4	157	9	20.00	0.37	0.08
4	1	157	13	19.80	0.73	0.15
4	2	157	13	20.40	0.60	0.17
4	3	157	14	20.80	0.34	0.10
4	4	157	13	21.00	0.23	-0.02
5	1	156	20	20.60	0.95	0.20
5	2	157	16	19.60	0.70	0.10
5	3	157	17	19.40	0.72	0.05
5	4	157	18	19.40	0.22	-0.03
6	1	157	18	19.60	0.80	0.15
6	2	157	19	19.60	0.85	0.14
6	3	158	15	19.00	0.90	-0.03
6	4	157	14	19.40	0.45	-0.01
7	1	156	26	19.40	0.43	0.08
7	2	156	23	19.00	0.70	0.07
7	3	157	17	19.80	0.85	0.08
7	4	157	16	20.00	0.66	0.07
Average		156	13.39	19.91	0.50	0.06

[1] Gas conditions are based on average oxygen, carbon dioxide and moisture values from measurements obtained on October 12 and 13, 1999.

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3-D Traverse - Parameters

Run No.	**4**
Load (MW)	High
Date (1999)	October 13
Start Time (approx.)	08:15
Stop Time (approx.)	09:17
Probe Serial No:	2600

Gas Conditions [1]

P_b	Barometric pressure (in. Hg)	29.90
B_{wo}	Moisture in sample (% by volume)	13.61
O_2	Oxygen (dry volume %)	4.7
CO_2	Carbon Dioxide (dry volume %)	14.5
A_s	Sample location area (ft^2)	72.33

Calculated Values

	Static Pressure (in. H_2O)	19.41
M_d	MW of sample gas, dry (lb/lb-mole)	30.51
M_s	MW of sample gas, wet (lb/lb-mole)	28.81
ρ	Density (lb/ft^3)	0.0670

Calculated Results

Q_a	Volumetric flow rate (acfm)	195,600
Q_{std}	Volumetric flow rate (dscfm)	151,500

Traverse Point	χ	Pitch Angle	Resultant Angle	C_p	Velocity (ft/s)
1-01	0.100	8.64	14.0	0.949	47.23
1-02	0.217	16.55	17.0	0.974	31.96
1-03	-0.087	-3.61	8.8	0.968	32.95
1-04	-0.267	-14.03	16.1	1.013	26.46
2-01	0.186	14.45	19.3	0.962	42.87
2-02	0.143	11.54	12.2	0.952	39.87
2-03	0.067	6.40	10.2	0.950	37.11
2-04	0.063	6.12	10.1	0.950	27.12
3-01	0.279	20.62	22.8	1.006	42.82
3-02	0.106	9.07	13.5	0.949	45.89
3-03	0.184	14.33	17.4	0.962	40.75
3-04	0.216	16.48	18.7	0.973	40.15
4-01	0.205	15.76	20.3	0.969	55.71
4-02	0.283	20.89	24.5	1.008	50.01
4-03	0.294	21.59	25.5	1.015	37.44
4-04	-0.087	-3.61	13.5	0.968	32.42
5-01	0.211	16.10	25.5	0.971	61.25
5-02	0.143	11.54	19.6	0.952	54.33
5-03	0.069	6.58	18.2	0.950	55.49
5-04	-0.136	-6.64	19.1	0.977	30.94
6-01	0.188	14.55	23.0	0.963	57.07
6-02	0.165	13.01	22.9	0.956	58.68
6-03	-0.033	-0.20	15.0	0.960	63.44
6-04	-0.022	0.52	14.0	0.959	45.02
7-01	0.186	14.45	29.5	0.962	39.55
7-02	0.100	8.64	24.5	0.949	52.40
7-03	0.094	8.24	18.8	0.949	60.05
7-04	0.106	9.05	18.3	0.949	53.08
	Average	9.18	18.3	0.967	45.07
	Std Dev		5.2	0.0	10.8
	RMS Dev		28.3%	2.1%	23.9%

[1] Gas conditions are based on average oxygen, carbon dioxide and moisture values from measurements obtained on October 12 and 13, 1999.

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VELOCITY AND MOISTURE PARAMETERS

Run No.		1A High Load	1B High Load	Average
Date (1999)		October 12	October 12	
Start Time (approx.)		12:44	18:00	
Stop Time (approx.)		13:02	18:15	
Sampling Conditions				
Y_d	Dry gas meter correction factor	0.9980	0.9980	
C_p	Pitot tube coefficient	0.84	0.84	
P_g	Static pressure (in. H_2O)	-6.7	-6.2	
A_s	Sample location area (ft^2)	74.26	74.26	
P_{bar}	Barometric pressure (in. Hg)	29.90	29.90	
D_n	Nozzle diameter (in.)	0.000	0.000	
O_2	Oxygen (dry volume %)	4.4	4.4	
CO_2	Carbon dioxide (dry volume %)	14.8	14.8	
V_{lc}	Liquid collected (ml)	100.3	100.3	
V_m	Volume metered, meter conditions (ft^3)	49.76	49.76	
T_m	Dry gas meter temperature (°F)	95	95	
T_s	Sample temperature (°F)	305	305	
ΔH	Meter box orifice pressure drop (in. H_2O)	0.43	0.43	
Θ	Total sampling time (min)	140	140	
Flow Results				
V_{wstd}	Volume of water collected (ft^3)	4.72	4.72	
V_{mstd}	Volume metered, standard (ft^3)	47.27	47.27	
P_s	Sample gas pressure, absolute (in. Hg)	29.41	29.44	
P_v	Vapor pressure, actual (in. Hg)	29.41	29.44	
B_{wo}	Moisture in sample (% by volume)	9.08	9.08	
B_{ws}	Saturated moisture (% by volume)	100.00	100.00	
$\sqrt{\Delta P}$	Velocity head ($\sqrt{}$in. H_2O)	0.729	0.699	0.714
M_d	MW of sample gas, dry (lb/lb-mole)	30.54	30.54	
M_s	MW of sample gas, wet (lb/lb-mole)	29.40	29.40	
V_s	Velocity of sample (ft/sec)	49.2	47.2	
Q_a	Volumetric flow rate, actual (acfm)	219,300	210,300	**214,800**
Q_{std}	Volumetric flow rate, standard (dscfm)	135,200	129,800	**132,500**

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VELOCITY AND MOISTURE PARAMETERS

Run No.		2A High Load	2B/3A High Load	Average
Date (1999)		October 13	October 13	
Start Time (approx.)		08:25	12:55	
Stop Time (approx.)		08:41	13:13	
Sampling Conditions				
Y_d	Dry gas meter correction factor	0.9980	0.9980	
C_p	Pitot tube coefficient	0.84	0.84	
P_g	Static pressure (in. H_2O)	-6.4	-6.2	
A_s	Sample location area (ft^2)	74.26	74.26	
P_{bar}	Barometric pressure (in. Hg)	29.85	29.85	
D_n	Nozzle diameter (in.)	0.000	0.000	
O_2	Oxygen (dry volume %)	4.0	4.0	
CO_2	Carbon dioxide (dry volume %)	15.0	15.0	
V_{lc}	Liquid collected (ml)	115.4	115.4	
V_m	Volume metered, meter conditions (ft^3)	53.06	53.06	
T_m	Dry gas meter temperature (°F)	82	82	
T_s	Sample temperature (°F)	303	305	
ΔH	Meter box orifice pressure drop (in. H_2O)	0.49	0.49	
Θ	Total sampling time (min)	140	140	
Flow Results				
V_{wstd}	Volume of water collected (ft^3)	5.43	5.43	
V_{mstd}	Volume metered, standard (ft^3)	51.48	51.48	
P_s	Sample gas pressure, absolute (in. Hg)	29.38	29.39	
P_v	Vapor pressure, actual (in. Hg)	29.38	29.39	
B_{wo}	Moisture in sample (% by volume)	9.55	9.55	
B_{ws}	Saturated moisture (% by volume)	100.00	100.00	
$\sqrt{\Delta P}$	Velocity head ($\sqrt{\text{in. } H_2O}$)	0.755	0.793	0.774
M_d	MW of sample gas, dry (lb/lb-mole)	30.56	30.56	
M_s	MW of sample gas, wet (lb/lb-mole)	29.36	29.36	
V_s	Velocity of sample (ft/sec)	51.0	53.6	
Q_a	Volumetric flow rate, actual (acfm)	227,400	239,000	**233,200**
Q_{std}	Volumetric flow rate, standard (dscfm)	139,700	146,500	**143,100**

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VELOCITY AND MOISTURE PARAMETERS

Run No.		2B/3A High Load	3B High Load	Average
Date (1999)		October 13	October 13	
Start Time (approx.)		12:55	16:10	
Stop Time (approx.)		13:13	16:25	
Sampling Conditions				
Y_d	Dry gas meter correction factor	0.9980	0.9980	
C_p	Pitot tube coefficient	0.84	0.84	
P_g	Static pressure (in. H_2O)	-6.2	-6.4	
A_s	Sample location area (ft^2)	74.26	74.26	
P_{bar}	Barometric pressure (in. Hg)	29.85	29.85	
D_n	Nozzle diameter (in.)	0.000	0.000	
O_2	Oxygen (dry volume %)	4.0	4.0	
CO_2	Carbon dioxide (dry volume %)	15.0	15.0	
V_{lc}	Liquid collected (ml)	116.4	116.4	
V_m	Volume metered, meter conditions (ft^3)	52.33	52.33	
T_m	Dry gas meter temperature (°F)	87	87	
T_s	Sample temperature (°F)	305	300	
ΔH	Meter box orifice pressure drop (in. H_2O)	0.46	0.46	
Θ	Total sampling time (min)	140	140	
Flow Results				
V_{wstd}	Volume of water collected (ft^3)	5.48	5.48	
V_{mstd}	Volume metered, standard (ft^3)	50.38	50.38	
P_s	Sample gas pressure, absolute (in. Hg)	29.39	29.38	
P_v	Vapor pressure, actual (in. Hg)	29.39	29.38	
B_{wo}	Moisture in sample (% by volume)	9.81	9.81	
B_{ws}	Saturated moisture (% by volume)	100.00	100.00	
$\sqrt{\Delta P}$	Velocity head ($\sqrt{in.}$ H_2O)	0.793	0.658	0.726
M_d	MW of sample gas, dry (lb/lb-mole)	30.56	30.56	
M_s	MW of sample gas, wet (lb/lb-mole)	29.33	29.33	
V_s	Velocity of sample (ft/sec)	53.7	44.4	
Q_a	Volumetric flow rate, actual (acfm)	239,100	197,700	**218,400**
Q_{std}	Volumetric flow rate, standard (dscfm)	146,100	121,600	**133,850**

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MECKLENBURG COGENERATION FACILITY
CAE Project No: 8493
SDA Inlet

VELOCITY DATA COMPARISON
(SAMPLING POINTS VS. ENTIRE CROSS SECTION)

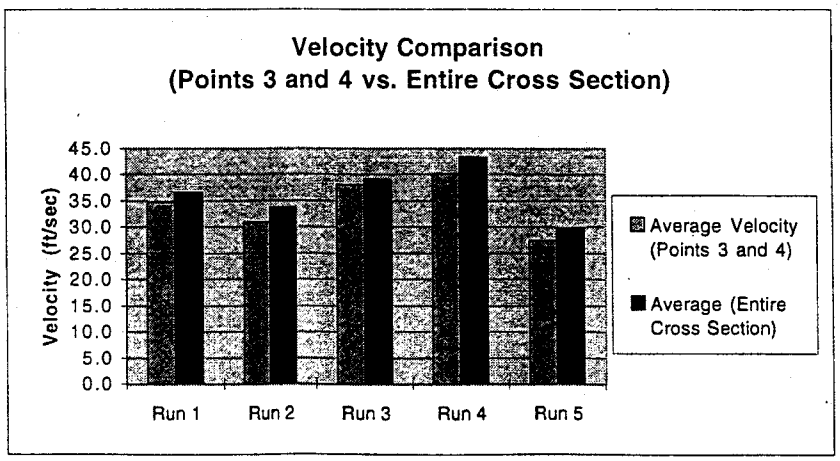
Velocity Data - Points 1 and 2

Port No.	Point No.	Run 1	Run 2	Run 3	Run 4	Run 5
1	1	44.1	13.6	54.5	68.1	47.5
1	2	31.3	32.2	36.9	50.6	36.2
2	1	57.1	47.6	59.9	62.0	37.1
2	2	34.8	33.4	35.5	50.5	29.4
3	1	46.8	47.7	50.3	50.2	40.3
3	2	49.6	58.0	64.5	61.2	48.6
4	1	36.5	31.2	33.9	43.3	28.9
4	2	34.6	51.7	52.9	51.5	38.5
5	1	48.7	42.4	41.8	51.6	37.6
5	2	21.6	33.7	29.0	23.0	29.6
6	1	62.3	50.3	24.8	41.7	28.8
6	2	24.9	19.5	30.8	33.7	20.1
7	1	27.4	30.1	28.2	40.2	18.0
7	2	18.8	21.4	22.8	24.8	14.7

Velocity Data - Points 3 and 4

Port No.	Point No.	Run 1	Run 2	Run 3	Run 4	Run 5
1	3	32.8	35.5	36.8	52.6	35.5
1	4	39.5	37.5	35.4	53.9	23.2
2	3	31.3	38.8	43.6	51.1	36.9
2	4	42.7	31.9	46.7	46.9	38.0
3	3	29.8	35.4	41.9	40.1	30.4
3	4	45.3	26.8	54.1	49.9	39.7
4	3	32.5	30.5	35.7	35.9	27.1
4	4	35.1	25.5	36.4	28.3	26.9
5	3	25.4	22.8	26.9	29.7	21.5
5	4	36.8	26.1	33.6	40.4	29.5
6	3	29.4	28.1	40.1	33.6	20.7
6	4	45.4	32.7	38.8	44.3	24.7
7	3	25.3	28.1	30.8	26.7	14.0
7	4	34.1	33.4	32.0	29.3	16.0

	Run 1	Run 2	Run 3	Run 4	Run 5	
Average Velocity (Points 3 and 4)	34.7	30.9	38.1	40.2	27.4	
Average (Entire Cross Section)	36.6	33.8	39.2	43.4	30.0	
Percent Difference (%)	-5.2	-8.4	-3.0	-7.4	-8.5	-6.5 %



MECKLENBURG COGENERATION FACILITY
CAE Project No: 8493
Scrubber Inlet

MERCURY
VELOCITY AND MOISTURE PARAMETERS

Run No.		1	2	3
Date (1999)		October 12	October 13	October 13
Start Time (approx.)		14:55	09:45	13:20
Stop Time (approx.)		17:40	12:25	15:54
Sampling Conditions				
Y_d	Dry gas meter correction factor	0.9980	0.9980	0.9980
C_p	Pitot tube coefficient	0.84	0.84	0.84
P_g	Static pressure (in. H_2O)	-6.6	-6.2	-6.4
A_s	Sample location area (ft^2)	74.25	74.25	74.25
P_{bar}	Barometric pressure (in. Hg)	29.90	29.85	29.85
D_n	Nozzle diameter (in.)	0.190	0.190	0.190
O_2	Oxygen (dry volume %)	4.4	4.0	4.0
CO_2	Carbon dioxide (dry volume %)	14.8	15.0	15.0
V_{lc}	Liquid collected (ml)	100.3	115.4	116.4
V_m	Volume metered, meter conditions (ft^3)	49.76	53.06	52.33
T_m	Dry gas meter temperature (°F)	95	82	87
T_s	Sample temperature (°F)	301	297	297
ΔH	Meter box orifice pressure drop (in. H_2O)	0.43	0.49	0.46
Θ	Total sampling time (min)	140	140	140
Flow Results				
V_{wstd}	Volume of water collected (ft^3)	4.72	5.43	5.48
V_{mstd}	Volume metered, standard (ft^3)	47.27	51.48	50.38
P_s	Sample gas pressure, absolute (in. Hg)	29.41	29.39	29.38
P_v	Vapor pressure, actual (in. Hg)	29.41	29.39	29.38
B_{wo}	Moisture in sample (% by volume)	9.08	9.54	9.81
B_{ws}	Saturated moisture (% by volume)	100.00	100.00	100.00
$\sqrt{\Delta P}$ [1]	Velocity head-Isokinetic calculation ($\sqrt{in.}$ H_2O)	0.708	0.754	0.731
$\sqrt{\Delta P}$	Velocity head-Flow calculations ($\sqrt{in.}$ H_2O)	0.714	0.774	0.726
M_d	MW of sample gas, dry (lb/lb-mole)	30.54	30.56	30.56
M_s	MW of sample gas, wet (lb/lb-mole)	29.40	29.36	29.33
V_s	Velocity of sample (ft/sec)	47.7	50.7	49.2
%I	Isokinetic sampling (%)	96.7	99.1	100.4
Q_a [2]	Volumetric flow rate, actual (acfm)	214,800	233,200	218,400
Q_{std} [2]	Volumetric flow rate, standard (dscfm)	132,500	143,100	133,850

1 Velocity head readings taken during mercury sampling were used for isokinetic calculations at each sample point.
2 Volumetric flow rates for mercury testing are obtained from pre- and post-test velocity traverses performed at all sample points.

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MECKLENBURG COGENERATION FACILITY
CAE Project No: 8493
Scrubber Inlet

MERCURY WEIGHT SHEET

Run No.	Detection Limit	Blank	1	2	3
Date (1999)			October 12	October 13	October 13
Start Time (approx.)			14:55	09:45	13:20
Stop Time (approx.)			17:40	12:25	15:54
Mercury Collected in Samples (µg)					
Filter and Front1/2 Rinses	0.010	<0.05	14.00	7.80	9.30
KCl - Impingers 1,2 and 3	0.030	<0.10	4.20	5.80	4.10
Acid. Perox. - Impinger 4	0.010	<0.25	<0.25	<0.25	<0.25
Acid. Permang. - Impingers 5, 6 and 7	0.030	1.10	8.70	0.32	0.60
Hydroxylamine Rinse -Impingers 5, 6, and 7	0.010	N/A	N/A	N/A	N/A
Particle-bound Mercury					
Filter and Front 1/2 Rinses					
$m_{n(ash+pr)}$ Matter collected (µg)			14.0	7.8	9.3
Oxidized Mercury					
Impingers 1,2,3					
$m_{n(KCl)}$ Matter collected (µg)			4.2	5.8	4.1
Elemental Mercury					
Impingers 4,5,6,7					
$m_{n(H2O2+KMnO4)}$ Matter collected (µg)			7.6	<0.25	<0.25
Total Mercury					
Entire Sample Set					
m_n Matter collected (µg)			25.8	13.6	13.4

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MECKLENBURG COGENERATION
CAE Project No: 8493
Unit 1 SDA Inlet

MERCURY PARAMETERS

Run No.		1	2	3	Average
Date (1999)		October 12	October 13	October 13	
Start Time (approx.)		14:55	09:45	13:20	
Stop Time (approx.)		17:40	12:25	15:54	
Gas Paramaters					
O_2	Oxygen (dry volume %)	4.4	4.0	4.0	**4.1**
CO_2	Carbon dioxide (dry volume %)	14.8	15.0	15.0	**14.9**
Q_{std}	Standard gas flow rate (dscfm) [1]	132,500	143,100	133,850	**136,500**
V_{mstd}	Volume metered, standard (ft^3)	47.27	51.48	50.38	
F_d	Dry Fuel Factor (dscf/10^6Btu)	9,681	9,744	9,665	**9,697**
Particle-bound Mercury					
$m_{n(ash+pr)}$	Matter collected (µg)	14.0000	7.8000	9.3000	**10.3667**
C	Concentration (µg/dscm)	10.4598	5.3504	6.5195	**7.4432**
C	Concentration at 7% O_2 (µg/dscm)	8.8116	4.4006	5.3622	**6.1915**
C	Concentration at 12% CO_2 (µg/dscm)	8.4809	4.2803	5.2156	**5.9923**
E	Emission rate (grams/sec)	6.54E-04	3.61E-04	4.12E-04	**4.76E-04**
E	Emission rate (lb/hr)	5.19E-03	2.87E-03	3.27E-03	**3.78E-03**
E	Emission rate (lb/10^6Btu)	8.01E-06	4.02E-06	4.86E-06	**5.63E-06**
Oxidized Mercury					
$m_{n(KCl)}$	Matter collected (µg)	4.2000	5.8000	4.1000	**4.7000**
C	Concentration (µg/dscm)	3.1379	3.9785	2.8742	**3.3302**
C	Concentration at 7% O_2 (µg/dscm)	2.6435	3.2723	2.3640	**2.7599**
C	Concentration at 12% CO_2 (µg/dscm)	2.5443	3.1828	2.2993	**2.6755**
E	Emission rate (grams/sec)	1.96E-04	2.69E-04	1.82E-04	**2.15E-04**
E	Emission rate (lb/hr)	1.56E-03	2.13E-03	1.44E-03	**1.71E-03**
E	Emission rate (lb/10^6Btu)	2.40E-06	2.99E-06	2.14E-06	**2.51E-06**
Elemental Mercury					
$m_{n(H2O2+KMnO4)}$	Matter collected (µg)	7.6000	<0.0500	<0.0500	**<2.5667**
C	Concentration (µg/dscm)	5.6782	<0.0343	<0.0351	**<1.9158**
C	Concentration at 7% O_2 (µg/dscm)	4.7834	<0.0282	<0.0288	**<1.6135**
C	Concentration at 12% CO_2 (µg/dscm)	4.6039	<0.0274	<0.0280	**<1.5531**
E	Emission rate (grams/sec)	3.55E-04	<2.32E-06	<2.21E-06	**<1.20E-04**
E	Emission rate (lb/hr)	2.82E-03	<1.84E-05	<1.76E-05	**<9.51E-04**
E	Emission rate (lb/10^6Btu)	4.35E-06	<2.58E-08	<2.62E-08	**<1.47E-06**
Total Mercury					
m_n	Matter collected (µg)	25.8000	13.6000	13.4000	**17.6000**
C	Concentration (µg/dscm)	19.2760	9.3289	9.3936	**12.6662**
C	Concentration at 7% O_2 (µg/dscm)	16.2385	7.6729	7.7261	**10.5458**
C	Concentration at 12% CO_2 (µg/dscm)	15.6292	7.4631	7.5149	**10.2024**
E	Emission rate (grams/sec)	1.21E-03	6.30E-04	5.93E-04	**8.10E-04**
E	Emission rate (lb/hr)	9.57E-03	5.00E-03	4.71E-03	**6.43E-03**
E	Emission rate (lb/10^6Btu)	1.48E-05	7.02E-06	7.01E-06	**9.59E-06**

[1] Flow rates were determined from pre- and post-test velocity traverses.

MECKLENBURG COGENERATION FACILITY
CAE Project No: 8493
Baghouse Outlet

MERCURY
VELOCITY AND MOISTURE PARAMETERS

Run No.		1	2	3
Date (1999)		October 12	October 13	October 13
Start Time (approx.)		14:55	09:45	13:20
Stop Time (approx.)		17:39	12:25	15:55
Sampling Conditions				
Y_d	Dry gas meter correction factor	1.0028	1.0028	1.0028
C_p	Pitot tube coefficient	0.84	0.84	0.84
P_g	Static pressure (in. H_2O)	-18.2	-18.5	-18.6
A_s	Sample location area (ft^2)	72.33	72.33	72.33
P_{bar}	Barometric pressure (in. Hg)	29.90	29.85	29.85
D_n	Nozzle diameter (in.)	0.199	0.200	0.200
O_2	Oxygen (dry volume %)	4.8	4.4	4.8
CO_2	Carbon dioxide (dry volume %)	14.4	14.8	14.2
V_{lc}	Liquid collected (ml)	206.3	219.4	221.9
V_m	Volume metered, meter conditions (ft^3)	67.97	67.79	66.75
T_m	Dry gas meter temperature (°F)	102	86	95
T_s	Sample temperature (°F)	168	166	165
ΔH	Meter box orifice pressure drop (in. H_2O)	0.73	0.77	0.71
Θ	Total sampling time (min)	140	140	140
Flow Results				
V_{wstd}	Volume of water collected (ft^3)	9.71	10.33	10.44
V_{mstd}	Volume metered, standard (ft^3)	64.11	65.66	63.67
P_s	Sample gas pressure, absolute (in. Hg)	28.56	28.49	28.48
P_v	Vapor pressure, actual (in. Hg)	11.65	11.06	10.90
B_{wo}	Moisture in sample (% by volume)	13.15	13.59	14.09
B_{ws}	Saturated moisture (% by volume)	40.80	38.82	38.25
$\sqrt{\Delta P}$	Velocity head ($\sqrt{}$in. H_2O)	0.843	0.860	0.851
M_d	MW of sample gas, dry (lb/lb-mole)	30.50	30.54	30.46
M_s	MW of sample gas, wet (lb/lb-mole)	28.85	28.84	28.71
V_s	Velocity of sample (ft/sec)	52.8	53.9	53.4
%I	Isokinetic sampling (%)	96.0	95.8	94.2
Q_a	Volumetric flow rate, actual (acfm)	229,300	233,900	231,900
Q_{std}	Volumetric flow rate, standard (dscfm)	159,800	162,300	160,100

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MECKLENBURG COGENERATION FACILITY
CAE Project No: 8493
Baghouse Outlet

MERCURY WEIGHT SHEET

Run No.	Detection Limit	Blank	1	2	3
Date (1999)			October 12	October 13	October 13
Start Time (approx.)			14:55	09:45	13:20
Stop Time (approx.)			17:39	12:25	15:55
Mercury Collected in Samples (µg)					
Filter and Front1/2 Rinses	0.01	<0.05	<0.05	<0.05	<0.05
KCl - Impingers 1,2 and 3	0.03	<0.10	0.12	0.12	<0.10
Acid. Perox. - Impinger 4	0.01	<0.25	<0.25	<0.25	<0.25
Acid. Permang. - Impingers 5, 6 and 7	0.03	<0.10	0.14	0.40	0.37
Hydroxylamine Rinse - Impingers 5, 6, and 7	0.01	N/A	N/A	N/A	N/A
Particle-bound Mercury					
Filter and Front 1/2 Rinses					
$m_{n(ash+pr)}$ Matter collected (µg)			<0.05	<0.05	<0.05
Oxidized Mercury					
Impingers 1,2,3					
$m_{n(KCl)}$ Matter collected (µg)			0.12	0.12	<0.10
Elemental Mercury					
Impingers 4,5,6,7					
$m_{n(H2O2+KMnO4)}$ Matter collected (µg)			0.14	0.40	0.37
Total Mercury					
Entire Sample Set					
m_n Matter collected (µg)			0.26	0.52	0.37

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MECKLENBURG COGENERATION
CAE Project No: 8493
Unit 1 Baghouse Outlet

MERCURY PARAMETERS

Run No.		1	2	3	Average
Date (1999)		October 12	October 13	October 13	
Start Time (approx.)		14:55	09:45	13:20	
Stop Time (approx.)		17:39	12:25	15:55	
Gas Paramaters					
O_2	Oxygen (dry volume %)	4.8	4.4	4.8	**4.7**
CO_2	Carbon dioxide (dry volume %)	14.4	14.8	14.2	**14.5**
Q_{std}	Standard gas flow rate (dscfm)	159,800	162,300	160,100	**160,700**
V_{mstd}	Volume metered, standard (ft^3)	64.11	65.66	63.67	
F_d	Dry Fuel Factor (dscf/10^6Btu)	9,681	9,744	9,665	
Particle-bound Mercury					
$m_{n(ash+pr)}$	Matter collected (µg)	<0.0100	<0.0100	<0.0100	**<0.0100**
C	Concentration (µg/dscm)	<0.0055	<0.0054	<0.0055	**<0.0055**
C	Concentration at 7% O_2 (µg/dscm)	<0.0048	<0.0045	<0.0048	**<0.0047**
C	Concentration at 12% CO_2 (µg/dscm)	<0.0046	<0.0044	<0.0047	**<0.0045**
E	Emission rate (grams/sec)	<4.15E-07	<4.12E-07	<4.19E-07	**<4.15E-07**
E	Emission rate (lb/hr)	<3.30E-06	<3.27E-06	<3.33E-06	**<3.30E-06**
E	Emission rate (lb/10^6Btu)	<4.32E-09	<4.14E-09	<4.34E-09	**<4.27E-09**
Oxidized Mercury					
$m_{n(KCl)}$	Matter collected (µg)	0.1200	0.1200	<0.0300	**<0.0900**
C	Concentration (µg/dscm)	0.0661	0.0645	<0.0166	**<0.0491**
C	Concentration at 7% O_2 (µg/dscm)	0.0571	0.0544	<0.0144	**<0.0419**
C	Concentration at 12% CO_2 (µg/dscm)	0.0551	0.0523	<0.0141	**<0.0405**
E	Emission rate (grams/sec)	4.98E-06	4.94E-06	<1.26E-06	**<3.73E-06**
E	Emission rate (lb/hr)	3.96E-05	3.92E-05	<9.98E-06	**<2.96E-05**
E	Emission rate (lb/10^6Btu)	5.19E-08	4.97E-08	<1.30E-08	**<3.82E-08**
Elemental Mercury					
$m_{n(H2O2+KMnO4)}$	Matter collected (µg)	0.1400	0.4000	0.3700	**0.3033**
C	Concentration (µg/dscm)	0.0771	0.2151	0.2052	**0.1658**
C	Concentration at 7% O_2 (µg/dscm)	0.0666	0.1812	0.1772	**0.1417**
C	Concentration at 12% CO_2 (µg/dscm)	0.0643	0.1744	0.1734	**0.1374**
E	Emission rate (grams/sec)	5.82E-06	1.65E-05	1.55E-05	**1.26E-05**
E	Emission rate (lb/hr)	4.62E-05	1.31E-04	1.23E-04	**1.00E-04**
E	Emission rate (lb/10^6Btu)	6.05E-08	1.66E-07	1.61E-07	**1.29E-07**
Total Mercury					
m_n	Matter collected (µg)	0.2600	0.5200	0.3700	**0.3833**
C	Concentration (µg/dscm)	0.1432	0.2797	0.2052	**0.2094**
C	Concentration at 7% O_2 (µg/dscm)	0.1236	0.2356	0.1772	**0.1788**
C	Concentration at 12% CO_2 (µg/dscm)	0.1193	0.2268	0.1734	**0.1732**
E	Emission rate (grams/sec)	1.08E-05	2.14E-05	1.55E-05	**1.59E-05**
E	Emission rate (lb/hr)	8.57E-05	1.70E-04	1.23E-04	**1.26E-04**
E	Emission rate (lb/10^6Btu)	1.12E-07	2.15E-07	1.61E-07	**1.63E-07**

CALIBRATION DATA

C

MECKLENBURG COGENERATION FACILITY
CAE Project No: 8493
SDA Inlet

Probe Calibration Data Entry Area

The Following Entries are for Calculating Theta, or Pitch Angle [1]

Probe	a_0	a_1	a_2	a_3	a_4
2600	1.9686E+00	6.5591E+01	1.4451E+01	-3.0069E+01	-2.0877E+01

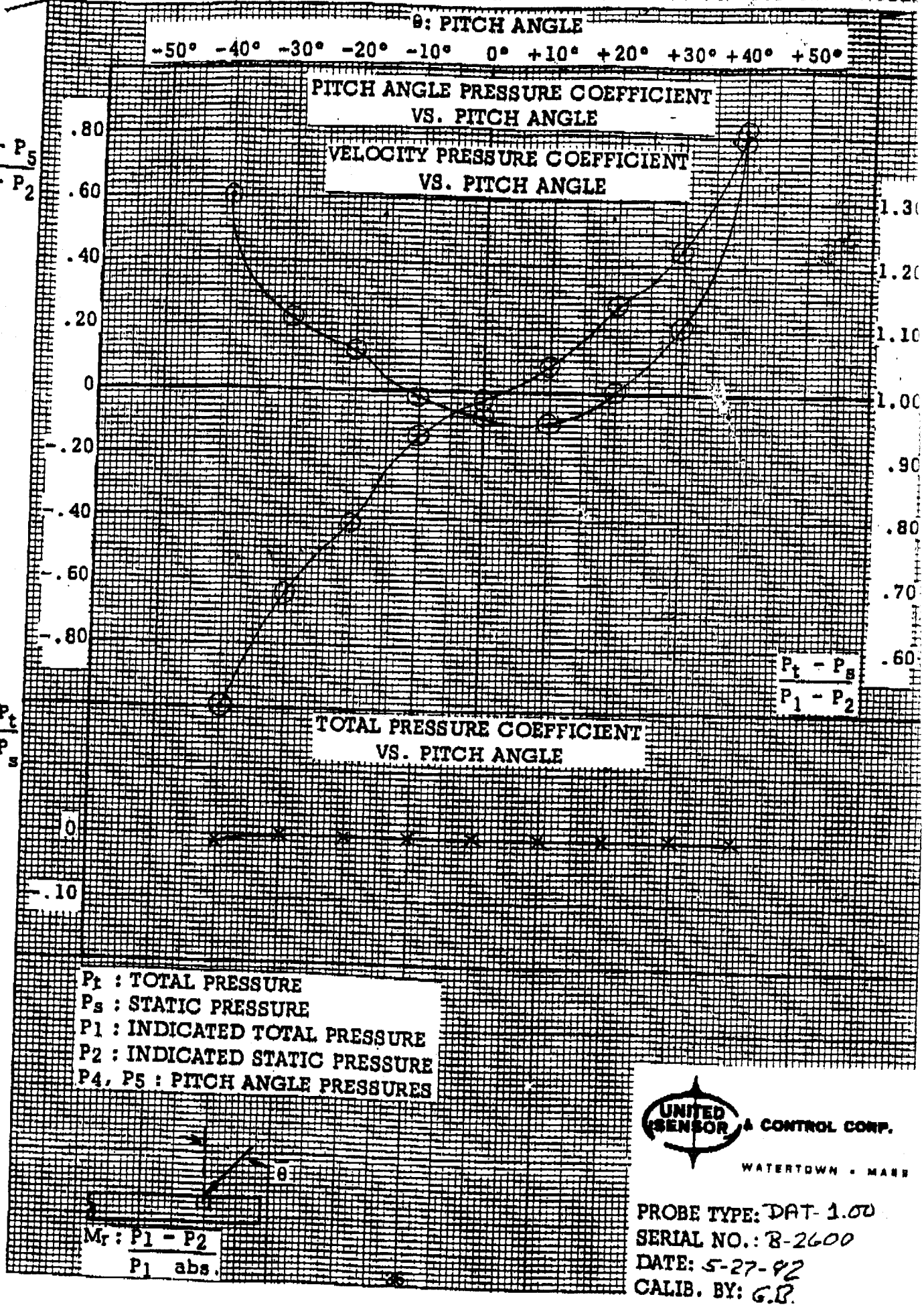
The Following Entries are for Calculating the Cp [2]

Probe	a_0	a_1	a_2	a_3	a_4	a_5	a_6	a_7	a_8
2600	9.6000E-01	-2.0774E-03	4.9772E-05	5.0694E-07	5.7795E-07	2.7778E-09	-7.8819E-10	-1.0913E-12	3.1498E-13

1 Theta (pitch angle) is calculated using a 4th order polynomial ($a_0 + a_1x + a_2x^2 + a_3x^3 + a_4x^4$), derived from a graph of wind tunnel calibr data (pitch angle coefficient (χ) vs. pitch angle).

2 The velocity coefficient (C_p) is calculated using a 8th order polynomial ($a_0 + a_1x + a_2x^2 + a_3x^3 + a_4x^4 + a_5x^5 + a_6x^6 + a_7x^7 + a_8x^8$) derived from a regression analysis of pitch angle vs. velocity correction coefficient (C_p).

CALIBRATION DATA FOR TYPE DA & DAT 3-DIMENSIONAL DIRECTIONAL PROBES



UNITED SENSOR & CONTROL CORP.
WATERTOWN • MASS

PROBE TYPE: DAT-1.00
SERIAL NO.: B-2600
DATE: 5-27-92
CALIB. BY: G.B.

SAMPLE PROBE CALIBRATION DATA

Probe Type: M5 I.D. number: 5G-120-7

Thermocouple Calibration

Reference Type: _____ Reference I.D. No: _____ Pyrometer I.D. No: _____ Degrees: F / C

Point No.	Target Temp.	Reference Temp	Indicated Temp	Temp Difference	% Difference	Specification
1	ice-32F					
2	ambient-70F					%Difference ≤ 1.5
3	hot oil-150F					
4	boiling H2O-212F					
5	hot oil-320F					

Does assembly meet specifications? YES / NO → If "NO" thermocouple must be replaced.

Geometric Pitot Calibration *diagrams on reverse*

Is pitot assembly in good repair? (YES) / NO If "NO" explain: _____

If repairs are required, pitot does not meet specification.

☒ **"S" Pitot**

Measurement		Specification
α1= 2	α2= 1	<10°
β1= 3	β2= 1	<5°
γ= 0	θ= 2	
Pa= .373	Pb= .373	Pa + Pb = A
A= .746	Dt= .250	

Calculations

z = A sin γ =	.000	<0.125"
w = A sin θ =	.0026	<0.03125"

Does assembly meet specifications? (YES) / NO

☐ **Standard Pitot**

Measurement		Specification
Tube O.D.	"	(D)
Static Hole I.D.	"	= 0.1 X (D)
Length,		
Tip to Static	"	≥ 6 X (D)
Static to Bend	"	≥ 8 X (D)

Does assembly meet specifications? YES / NO

If "YES" "S" pitot Cp=0.84; Std pitot Cp=0.99
If "NO" wind tunnel calibration is required.

Wind Tunnel Pitot Calibration

Reference Pitot I.D. No: _____ Reference Pitot Cp: _____

Pitot Side 'A':

Trial No.	Reference ΔP	Probe ΔP	Probe Cp*	Deviation from Average Cp*	Specification
1					Cp Deviations ≤ 0.01
2					
3					
		Side 'A' Average Probe Cp=			

Pitot Side 'B':

Trial No.	Reference ΔP	Probe ΔP	Probe Cp*	Deviation from Average Cp*	
1					Cp Deviations ≤ 0.01
2					
3					
		Side 'B' Average Probe Cp=			

** Probe Cp=(Reference Cp)√(Reference ΔP / Probe ΔP); Cp Deviation=Trial Probe Cp - Average Probe Cp*

Side 'A' Average Cp	-	Side 'B' Average Cp	=	Difference	|Difference| ≤ 0.01

Does assembly meet specifications? YES / NO → If "YES" Cp=Average of Side 'A' and 'B' Cp values.
If "NO" PITOT MUST BE REPLACED.

All specifications are from EPA-600/9-76-005, section 3.1

PROBE Cp = .84 Calibrated by: BO Date: 8-10-99

CS 010 Probe/Pitot Cal
EXCL/TRG.R1-2/9/94

Clean Air Engineering

SAMPLE PROBE CALIBRATION DATA

Probe Type: _____ I.D. number: 5G-120-2

Thermocouple Calibration

Reference Type: _____ Reference I.D. No: _____ Pyrometer I.D. No: _____ Degrees: F / C

Point No.	Target Temp.	Reference Temp	Indicated Temp	Temp Difference	% Difference
1	ice-32F				
2	ambient-70F				
3	hot oil-150F				
4	boiling H2O-212F				
5	hot oil-320F				

Specification: %Difference ≤ 1.5

Does assembly meet specifications? YES / NO → *If "NO" thermocouple must be replaced.*

Geometric Pitot Calibration *diagrams on reverse*

Is pitot assembly in good repair? (YES) / NO If "NO" explain: _____

If repairs are required, pitot does not meet specification.

☒ **"S" Pitot**

Measurement		Specification
α1= 1	α2= 1	<10°
β1= 4	β2= 1	<5°
γ= 0	θ= 2	
Pa= .348	Pb= .348	Pa + Pb = A
A= .696	Dt= .250	

Calculations

z = A sin γ = .0000 <0.125"

w = A sin θ = .024 <0.03125"

Does assembly meet specifications? (YES) *NO* → *If "YES" "S" pitot Cp=0.84; Std pitot Cp=0.99*
If "NO" wind tunnel calibration is required.

☐ **Standard Pitot**

Measurement		Specification
Tube O.D.	_____ "	(D)
Static Hole I.D.	_____ "	= 0.1 X (D)
Length,		
Tip to Static	_____ "	≥ 6 X (D)
Static to Bend	_____ "	≥ 8 X (D)

Does assembly meet specifications? YES / NO

Wind Tunnel Pitot Calibration

Reference Pitot I.D. No: _____ Reference Pitot Cp: _____

Pitot Side 'A':

Trial No.	Reference ΔP	Probe ΔP	Probe Cp*	Deviation from Average Cp*
1				
2				
3				

Side 'A' Average Probe Cp= _____

Specification: Cp Deviations ≤ 0.01

Pitot Side 'B':

Trial No.	Reference ΔP	Probe ΔP	Probe Cp*	Deviation from Average Cp*
1				
2				
3				

Side 'B' Average Probe Cp= _____

Specification: Cp Deviations ≤ 0.01

* *Probe Cp=(Reference Cp)√(Reference ΔP / Probe ΔP); Cp Deviation=Trial Probe Cp - Average Probe Cp*

Side 'A' Average Cp _____ - Side 'B' Average Cp _____ = Difference _____ |Difference| ≤ 0.01

Does assembly meet specifications? YES / NO → *If "YES" Cp=Average of Side 'A' and 'B' Cp values.*
If "NO" PITOT MUST BE REPLACED.

All specifications are from EPA-600/9-76-005, section 3.1

PROBE Cp = .84 Calibrated by: BD Date: 8-10-99

CS 010 Probe/Pitot Cal
EXCL/TRG.R1-2/9/94

Clean Air Engineering

Meter Box Full Test Calibration

Meter Box No: 68-C

Meter Box ΔH@: 1.9080

Meter Box Y_d: 0.9981

Calibration conducted by: Bill Dimitroff

Date of Calibration: 5/19/99

Barometric Pressure: 28.92

Signature

				Standard Meter Gas Volume (ft³)			Meter Box Gas Volume (ft³)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)				Calibration Results	
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vd Net	In	Out	Tds Avg.	In	To Out	Td Avg.	Time	Yd	ΔH@
0.371	0.5	-0.3	1.00	84.00	94.00	10.00	150.75	160.92	10.17	72	72	72	92.5	86	89.25	25.82	1.0131	1.9054
0.372	0.5	-0.3	1.00	94.00	109.00	15.00	160.92	176.27	15.35	72	72	72	96	90	93	38.70	1.0137	1.8891
0.686	1.7	-0.5	1.00	110.00	122.00	12.00	177.30	189.79	12.49	72	72	72	101.5	93.5	97.5	16.77	1.0012	1.8719
0.687	1.7	-0.5	1.00	122.00	132.00	10.00	189.79	200.30	10.51	72	72	72	103	94	98.5	13.95	0.9933	1.8642
0.889	3.0	-0.7	1.00	133.00	145.00	12.00	201.36	214.04	12.68	72	72	72	106	95.5	100.75	12.95	0.9882	1.9635
0.890	3.0	-0.7	1.00	145.00	162.00	17.00	214.04	232.20	18.16	72	72	72	107	96.5	101.75	18.32	0.9792	1.9537

Averages	0.9981	1.9080

Nomenclature

Pb	Barometric Pressure (in. Hg)
Q	Flow Rate (cfm)
ΔH	Orifice Pressure differential (in. H_2O)
ΔP	Inlet Pressure Differential (in. H_2O)
Vd	Gas Meter Volume - Dry (ft³)
Vds	Standard Meter Volume - Dry (ft³)
Td	Average Meter Box Temperature (°F)
To	Outlet Meter Box Temperature (°F)
Tds	Average Standard Meter Temperature (°F)
Yd	Meter Correction Factor (unitless)
Yds	Standard Meter correction Factor (unitless)
ΔH@	Orfice Pressure Differential giving 0.75 cfm of air at 68°F and 29.92 in. Hg (in. H_2O)

Equations

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

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

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

Vacuum Gauge		DGM Thermocouples		
Standard (in.Hg)	Gauge (in.Hg)	Standard (°F)	Inlet (°F)	Outlet (°F)
5	5			
10	10			
15	15			
20	20			
25	25			

Clean Air Engineering

Meter Full Cal.wks
4/22/1999 (JW)

Meter Box Post Test Calibration

Client: Mecklenburg

Operator: 10/18/99

Project No: 8493

Date: Bill Dimitroff

Meter Box No: 68-C

Meter Box Vacuum 11 in. H_2O

Full-Test Meter Box Yd: 0.9981

Barometric Pressure: 29.01

				Standard Meter Gas Volume			Meter Box Gas Volume (ft^3)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)				Calibration Results	
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vd Net	In	Out	Tds Avg.	In	To Out	Td Avg.	Θ Time	Yd	ΔH@
0.35	0.46	-0.2	1.0000	97.00	109.00	12.00	892.14	904.00	11.86	70	70	70	90.5	83	86.75	33.10	1.042	1.9909
0.351	0.46	-0.2	1.0000	109.00	120.00	11.00	904.00	915.33	11.33	70	70	70	95	88	91.5	30.30	1.0086	1.9673
0.35	0.46	-0.2	1.0000	120.00	130.00	10.00	915.33	925.84	10.51	70	70	70	96.5	91	93.75	27.60	0.9925	1.9644
																Averages	1.0144	1.9742

% Difference 1.6% ≤ 5%

Nomenclature

Pb	Barometric Pressure (in. Hg)
Q	Flow Rate (cfm)
ΔH	Orifice Pressure differential (in. H_2O)
ΔP	Inlet Pressure Differential (in. H_2O)
Vd	Gas Meter Volume - Dry (ft^3)
Vds	Standard Meter Volume - Dry (ft^3)
Td	Average Meter Box Temperature (°F)
To	Outlet Meter Box Temperature (°F)
Tds	Average Standard Meter Temperature (°F)
Yd	Meter Correction Factor (unitless)
Yds	Standard Meter correction Factor (unitless)
ΔH@	Orfice Pressure Differential giving 0.75 cfm of air at 68°F and 29.92 in. Hg (in. H_2O)

Equations

$$Yd = (Yds)\left[\frac{Vds}{Vd}\right]\left[\frac{Td+460}{Tds+460}\right]\left[\frac{Pb+\Delta P/13.6}{Pb+\Delta H/13.6}\right]$$

$$\Delta H@ = \frac{0.0319(\Delta H)}{Pb(To+460)}\left[\frac{(Tds+460)\Theta}{(Vds)(Yds)}\right]^2$$

$$Q = \frac{17.64(Vds)(Pb)}{(Tds+460)\Theta}$$

$$\%Difference = \frac{Yd(_{Post-Test}) - Yd(_{Full-Test})}{Yd(_{Full-Test})}$$

Clean Air Engineering

Meter Post Cal.wks
1/17/95

Meter Box - Pyrometer Calibration Sheet

Meter Box No.: **68-C**

Office: Pittsburgh

Calibrated by: Bill Dimitroff

Client: N/A

Date: 5/19/99

Job No.: N/A

Temperature Scale Used: [x] Fahrenheit [ ] Celsius

[x] Pre-test [ ] Post-test

Calibration Reference Setting for Fahrenheit/Celsius Scale	Pyrometer Reading for each Channel						
	1	2	3	4	5	6	7
50° F / 25°C	50	50	50	50	50	50	50
100° F / 50°C	100	100	100	100	100	100	100
150° F / 75°C	150	149	149	150	150	149	149
200° F / 100°C	201	200	201	201	201	200	200
250° F / 125°C	252	251	251	252	252	251	251
300° F / 150°C	302	302	301	301	301	301	301
350° F / 175°C	351	351	351	351	352	351	351
400° F / 200°C	400	400	399	400	401	400	400
450° F / 225°C	450	449	449	449	450	449	450
500° F / 250°C	500	499	499	499	499	499	499
550° F / 275°C	550	549	550	550	549	550	549
600° F / 300°C	601	601	600	600	600	601	600

Calibration Reference Information

Reference Used: Digimite (Digimite/Other)

Serial No.: T-119130

Calibrated By: PCS

Date Calibrated: 3/12/99

Calibration Report No.: 256073

Clean Air Engineering

Meter Box Full Test Calibration

Meter Box No: 68-E

Meter Box ΔH@: 1.8585

Meter Box Y_d: 1.0028

Calibration conducted by: Bill Dimitroff

Date of Calibration: 9/24/99

Barometric Pressure: 29.00

Signature

				Standard Meter Gas Volume			Meter Box Gas Volume (ft³)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)				Calibration Results	
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vd Net	In	Out	Tds Avg.	In	To Out	Td Avg.	Time	Yd	ΔH@
0.381	0.5	-0.3	1.00	16.00	28.00	12.00	233.52	245.94	12.42	72	72	72	97.5	92.5	95	30.32	1.0059	1.7983
0.374	0.5	-0.3	1.00	28.00	38.00	10.00	245.94	256.31	10.37	72	72	72	100	94.5	97.25	25.73	1.0080	1.8590
0.677	1.7	-0.4	1.00	47.00	102.00	55.00	265.60	323.92	58.32	72	72	72	103	95.5	99.25	78.13	0.9861	1.9228
0.685	1.7	-0.4	1.00	102.00	138.00	36.00	323.92	360.69	36.77	72	72	72	103.5	96.5	100	50.55	1.0251	1.8752
0.916	3.0	-0.6	1.00	154.00	164.00	10.00	377.51	388.01	10.50	72	72	72	105	98	101.5	10.50	0.9961	1.8454
0.914	3.0	-0.6	1.00	164.00	175.00	11.00	388.01	399.57	11.56	72	72	72	105.5	98	101.75	11.57	0.9957	1.8507

Averages	1.0028	1.8585

Nomenclature

Pb	Barometric Pressure (in. Hg)
Q	Flow Rate (cfm)
ΔH	Orifice Pressure differential (in. H_2O)
ΔP	Inlet Pressure Differential (in. H_2O)
Vd	Gas Meter Volume - Dry (ft³)
Vds	Standard Meter Volume - Dry (ft³)
Td	Average Meter Box Temperature (°F)
To	Outlet Meter Box Temperature (°F)
Tds	Average Standard Meter Temperature (°F)
Yd	Meter Correction Factor (unitless)
Yds	Standard Meter correction Factor (unitless)
ΔH@	Orfice Pressure Differential giving 0.75 cfm of air at 68°F and 29.92 in. Hg (in. H_2O)

Equations

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

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

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

Vacuum Gauge		DGM Thermocouples		
Standard (in.Hg)	Gauge (in.Hg)	Standard (°F)	Inlet (°F)	Outlet (°F)
5	5			
10	10			
15	15			
20	20			
25	25			

Meter Full Cal.wks
4/7/99

Meter Box Post Test Calibration

Client: Mecklenburg

Operator: Bill Dimitroff

Project No: 8493

Date: 10/15/99

Meter Box No: 68-E

Meter Box Vacuum 8 in. H_2O

Full-Test Meter Box Yd: 1.0028

Barometric Pressure: 29.1

				Standard Meter Gas Volume			Meter Box Gas Volume (ft^3)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)				Calibration Results	
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vd Net	In	Out	Tds Avg.	In	To Out	Td Avg.	Θ Time	Yd	ΔH@
0.488	0.78	-0.4	1.0000	50.00	61.00	11.00	639.87	650.98	11.11	68	68	68	95.5	87	91.25	21.90	1.0306	1.7273
0.487	0.78	-0.4	1.0000	61.00	74.00	13.00	650.98	664.39	13.41	68	68	68	98	90.5	94.25	25.97	1.0146	1.7276
0.484	0.78	-0.4	1.0000	74.00	88.00	14.00	664.39	679.04	14.65	68	68	68	99	93	96	28.15	1.0033	1.7428
																Averages	1.0162	1.7326

% Difference 1.3% ≤ 5%

Nomenclature

Pb	Barometric Pressure (in. Hg)
Q	Flow Rate (cfm)
ΔH	Orifice Pressure differential (in. H_2O)
ΔP	Inlet Pressure Differential (in. H_2O)
Vd	Gas Meter Volume - Dry (ft^3)
Vds	Standard Meter Volume - Dry (ft^3)
Td	Average Meter Box Temperature (°F)
To	Outlet Meter Box Temperature (°F)
Tds	Average Standard Meter Temperature (°F)
Yd	Meter Correction Factor (unitless)
Yds	Standard Meter correction Factor (unitless)
ΔH@	Orfice Pressure Differential giving 0.75 cfm of air at 68°F and 29.92 in. Hg (in. H_2O)

Equations

$$Yd = (Yds)\left[\frac{Vds}{Vd}\right]\left[\frac{Td+460}{Tds+460}\right]\left[\frac{Pb+\Delta P/13.6}{Pb+\Delta H/13.6}\right]$$

$$\Delta H@ = \frac{0.0319(\Delta H)}{Pb(To+460)}\left[\frac{(Tds+460)\Theta}{(Vds)(Yds)}\right]^2$$

$$Q = \frac{17.64(Vds)(Pb)}{(Tds+460)\Theta}$$

$$\%Difference = \frac{Yd_{(Post-Test)} - Yd_{(Full-Test)}}{Yd_{(Full-Test)}}$$

Clean Air Engineering

Meter Post Cal.wks
1/17/95

Meter Box - Pyrometer Calibration Sheet

Meter Box No.: **68-E**

Office: Pittsburgh

Calibrated by: Bill Dimitroff

Client: N/A

Date: 9/25/99

Job No.:

Temperature Scale Used: [X] Fahrenheit [ ] Celsius

[X] Pre-test [ ] Post-test

Calibration Reference Setting for Fahrenheit/Celsius Scale	Pyrometer Reading for each Channel						
	1	2	3	4	5	6	7
50° F / 25°C	50	50	50	50	50	50	50
100° F / 50°C	99	99	99	99	99	99	99
150° F / 75°C	150	150	150	150	150	150	150
200° F / 100°C	201	200	201	201	201	200	201
250° F / 125°C	251	251	251	251	251	250	250
300° F / 150°C	301	301	301	301	301	301	301
350° F / 175°C	350	349	350	350	350	350	351
400° F / 200°C	399	398	398	398	398	398	398
450° F / 225°C	450	448	448	448	449	448	448
500° F / 250°C	498	497	497	497	498	498	498
550° F / 275°C	548	548	548	548	548	548	548
600° F / 300°C	599	600	599	599	599	599	599

Calibration Reference Information

Reference Used: Digimite (Digimite/Other)

Serial No.: T-119130

Calibrated By: PCS

Date Calibrated: 3/17/99

Calibration Report No.: 7-89613

Clean Air Engineering

Nozzle Calibration Sheet

Client: Mecklenburg Cogeneration

Job or Ref No: 8493

Calibrated by: TDR

Unit: 1

Date: 10/11/99

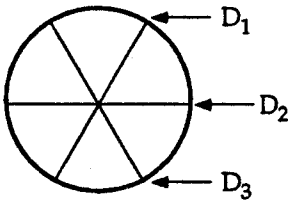
Runs: 1-3

Nozzle Identification	D_1 (inches)	D_2 (inches)	D_3 (inches)	ΔD (inches)	ΔD_{ave} (inches)
G-200-1	0.200	0.200	0.200	0.000	0.200
G-198-1	0.198	0.197	0.196	0.002	0.198
G-190-1	0.190	0.190	0.189	0.001	0.190
G-196-1	0.194	0.197	0.196	0.003	0.196
G-199-1	0.199	0.200	0.198	0.002	0.199

D_1, D_2, D_3 = three nozzle diameter measurements

ΔD = maximum difference between any two diameters
$\Delta D \leq 0.004$ inches*

ΔD_{avg} = average of D_1, D_2, D_3



* (40 CFR 60, Appendix A, Method 5, Section 5.1)

CS 006 Nozzle
CNVS/TRG.R0-8/6/93

FIELD DATA

D

3-D Probe V imetric Flow Traverse Data Sheet

Location: SDA INLET

Page 1 of 1

Client MECKLENBURG	Project No. 8493
Plant CLARKSVILLE	Unit 1
Date 10/11/99	Inlet/Outlet/Stack
Run 1	Start Time 1500
Load	Stop Time 1545
Data Recorder T. RODAK	
Probe Operator D. DRESKA / J. STROUD	

Cross-Section of Test Location

N / UP

Area (ft³)	Port Len (in.)	Gas Flow IN ~~OUT~~ of page
74.24	~~18~~ 14"	

Barometric Pressure 29.65	"Hg / mbar
Duct Diameters From Disturbance	
Downstream: 0.6	Upstream: 2.5
Probe Serial No. 2600	Instrument ID. 10578
Leak Check (✓) ✓	Ambient Temp. 65 °F
Source of Moisture Data	OH-Hg
Source of Molecular Weight Data	OH-Hg

Traverse Point Number	Stack Temp (°F)	Yaw Angle from 0°	P_1-P_{atm} (in. H_2O)	P_1-P_2 (in. H_2O)	P_4-P_5 (in. H_2O)	Notes
1-1	300	5	4.8	0.15	0.01	
2	302	7	5.0	0.20	0.02	
3	302	10	5.0	0.30	0.03	
4	304	12	5.0	0.35	0.03	
2-1	294	0	5.0	0.30	0.04	
2	307	7	4.7	0.37	0.03	
3	303	10	4.7	0.30	0.04	
4	305	8	3.9	0.37	0.03	
3-1	295	50	5.0	0.12	0.04	
2	304	15	3.3	0.32	0.02	
3	300	13	2.0	0.21	0	
4	298	11	2.6	0.30	-0.03	
4-1	300	5	3.0	0.30	0.03	
2	300	7	3.2	0.22	0.03	
3	300	7	5.5	0.27	0.03	
4	300	10	4.8	0.36	0.02	
5-1	300	13	6.5	0.55	0.03	
2	285	17	7.0	0.40	0.04	
3	292	13	6.5	0.39	0.02	
4	297	5	6.7	0.52	0.03	

Traverse Point Number	Stack Temp (°F)	Yaw Angle from 0°	P_1-P_{atm} (in. H_2O)	P_1-P_2 (in. H_2O)	P_4-P_5 (in. H_2O)	Notes
6-1						Access Problems ∴ port not tested
2						
3						
4						
7-1	299	2	7.0	0.26	0.03	
2	280	3	7.0	0.41	0.04	
3	293	5	6.3	0.55	0.02	
4	293	5	6.8	0.32	0.02	

DS 003 3D Probe Traverse
CNVS/TRG.R1-10/5/93

3-D Probe Volumetric Flow Traverse Data Sheet

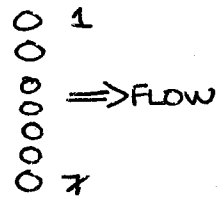
Location: BAGHOUSE OUTLET

Page 1 of 1

Client MECKLENBURG	Project No. 8493
Plant CLARKSVILLE	Unit 1
Date OCT 12, 1999	Inlet/Outlet/Stack
Run 1	Start Time 8:00
Load MINIMUM	Stop Time 8:39
Data Recorder D. DRASKA	
Probe Operator B. PRESKTA, B. DIMITROFF	

Cross-Section of Test Location

N / UP



Area (ft²)	Port Len (in.)	Gas Flow IN OUT of page
72.33	16	

Barometric Pressure 29.90	"Hg/mbar
Duct Diameters From Disturbance	
Downstream: 0.7	Upstream: 1.8
Probe Serial No. 2600	Instrument ID. 10578
Leak Check (✓) ✓	Ambient Temp. 70 °F
Source of Moisture Data Hg Testing	
Source of Molecular Weight Data Hg Testing	

LOW LOAD

Traverse Point Number	Stack Temp (°F)	Yaw Angle from 0°	P_1-P_{atm} (in. H_2O)	P_1-P_2 (in. H_2O)	P_4-P_5 (in. H_2O)	Notes
1-1	150	3	-6.0	.15	0	
2	156	2	6.2	.16	0	
3	157	4	6.0	.16	0	
4	155	0	6.6	.15	0	
2-1	156	7	7.2	.18	0	
2	157	6	6.1	.18	0	
3	158	10	6.1	.18	0	
4	158	2	6.0	.16	0	
3-1	157	9	6.4	.18	0	
2	158	9	6.8	.17	0	
3	158	7	6.3	.20	0	
4	158	10	6.2	.18	0	
4-1	157	25	6.0	.22	0	
2	158	11	6.5	.22	0	
3	159	15	6.6	.23	0	
4	158	10	6.6	.19	0	
5-1	157	17	6.5	.23	0	
2	158	11	6.5	.24	0	
3	159	14	6.1	.22	0	
4	159	12	6.0	.29	0	

Traverse Point Number	Stack Temp (°F)	Yaw Angle from 0°	P_1-P_{atm} (in. H_2O)	P_1-P_2 (in. H_2O)	P_4-P_5 (in. H_2O)	Notes
6-1	157	16	6.4	.23	0	
2	159	11	6.7	.25	0	$\bar{\theta}$ = 11.2
3	159	16	6.5	.27	0	Std Dev = 5.6
4	159	13	5.9	.30	0	
7-1	156	23	6.2	.20	0	
2	158	15	6.8	.24	0	
3	159	15	6.6	.28	0	
4	159	10	6.6	.26	0	

DS 003 3D Probe Traverse
CNVS/TRG.R3-2/7/94

4-845

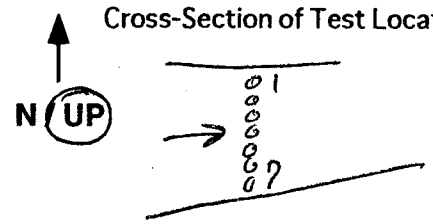
Clean Air Engineering

3-D Probe Volumetric Flow Traverse Data Sheet

Location: BH Outlet

Client Mecklenburg	Project No. 8493
Plant CLARKSVILLE	Unit 1
Date 10/12/99	Inlet/Outlet/Stack
Run 2	Start Time 9:30
Load MID Load	Stop Time 10:50
Data Recorder D. Draska	
Probe Operator B. PRESKTA, B. DIMITROFF	

Cross-Section of Test Location



Area (ft²)	Port Len (in.)	Gas Flow IN OUT of page
72.33	16	

Barometric Pressure 29.90	"Hg/mbar
Duct Diameters From Disturbance	
Downstream: 0.7	Upstream: 1.8
Probe Serial No. 2000	Instrument ID. 10578
Leak Check (✓) ✓	Ambient Temp. 70 °F
Source of Moisture Data OH-Hg	
Source of Molecular Weight Data OH-Hg	

Traverse Point Number	Stack Temp (°F)	Yaw Angle from 0°	P_1-P_{atm} (in. H_2O)	P_1-P_2 (in. H_2O)	P_4-P_5 (in. H_2O)	Notes
1-1	161	29	-11.0	.24	.07	
2	161	14	-10.9	.45	.07	
3	161	16	-10.5	.90	.05	
4	161	13	-10.0	1.2	.05	
6-1	161	12	-11.0	.77	.05	
2	161	7	-10.6	.73	.06	
3	161	11	-10.8	.75	.06	
4	161	9	-10.8	.69	.05	
5-1	162	16	-12.0	.10	.20	
2	162	15	-11.6	.22	.20	
3	162	16	-11.4	.57	.19	
4	162	15	-11.6	1.0	.19	
4-1	161	16	-11.9	.15	.10	
2	161	15	-11.7	.17	.10	
3	161	14	-11.7	.25	.08	
4	161	12	-11.6	.48	.08	
3-1	154	11	-12.5	.25	.05	
2	155	12	-12.2	.20	.05	
3	155	6	-12.0	.15	.05	
4	155	8	[illegible]	[illegible]	[illegible]	

Traverse Point Number	Stack Temp (°F)	Yaw Angle from 0°	P_1-P_{atm} (in. H_2O)	P_1-P_2 (in. H_2O)	P_4-P_5 (in. H_2O)	Notes
2-1	150	10	-12.6	.20	0	
2	153	9	-12.6	.12	0	
3	153	8	-12.5	.13	0	
4	152	6	-12.6	.15	0	
1-1	154	12	-12.6	.13	.11	
2	156	10	-12.8	.14	.11	
3	156	4	-12.6	.11	.10	
4	156	6	-12.6	.10	.10	

DS 003 3D Probe Traverse
CNVS/TRG.R3-2/7/94

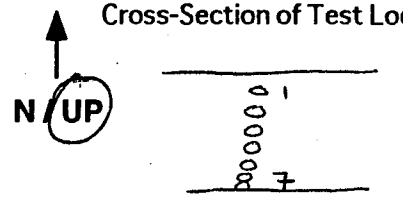
Clean Air Engineering

3-D Probe Volumetric Flow Traverse Data Sheet

Location: OUTLET

Client MECKLENBURG	Project No. 8493
Plant CHARKSVILLE	Unit 1
Date 10/12/99	Inlet/Outlet/Stack
Run 3	Start Time 1215
Load FULL LOAD	Stop Time 1252
Data Recorder D. DRESKA	
Probe Operator B. PRESKTA, B. DIMITROFF	

Cross-Section of Test Location



Area (ft²)	Port Len (in.)	Gas Flow IN / OUT of page
72.33	16	

Barometric Pressure 29.90	" Hg / mbar
Duct Diameters From Disturbance	
Downstream: 0.7	Upstream: 1.8
Probe Serial No. 2600	Instrument ID. 10578
Leak Check (✓) ✓	Ambient Temp. 70 °F
Source of Moisture Data	OH-Hg
Source of Molecular Weight Data	OH-Hg

Traverse Point Number	Stack Temp (°F)	Yaw Angle from 0°	P_1-P_{atm} (in. H_2O)	P_1-P_2 (in. H_2O)	P_4-P_5 (in. H_2O)	Notes
1-1	157	10	-19.0	.28	.12	
2	157	1.0	-18.5	.34	.14	
3	159	5.0	-18.6	.27	.11	
4	158	1.0	-18.5	.19	.04	
2-1	158	8	-17.6	.42	.13	
2-2	159	3	-17.0	.32	.11	
3	159	5	-18.6	.27	.10	
4	159	5	-18.6	.25	.10	
3-1	159	13	-18.7	.52	.20	
2	160	12	-18.6	.48	.20	
3	161	16	-18.8	.70	.16	
4	160	0	-18.6	.21	.16	
4-1	160	11	-18.0	.58	0	
2	160	17	-17.4	.55	.04	
3	160	7	18.2	.45	.04	
4	160	0	18.8	.25	.06	
5-1	161	20	18.6	.77	.04	
2	162	14	18.2	.65	.04	
3	162	11	18.6	.60	.03	
4	161	13	17.6	.60	.02	

Traverse Point Number	Stack Temp (°F)	Yaw Angle from 0°	P_1-P_{atm} (in. H_2O)	P_1-P_2 (in. H_2O)	P_4-P_5 (in. H_2O)	Notes
6-1	160	15	17.4	.72	.02	
2	160	17	17.2	.75	.03	
3	160	18	18.2	.63	.03	
4	160	13	18.1	.46	.04	
7-1	160	27	18.4	.76	.02	
2	160	18	17.8	.90	0	
3	161	8	17.6	.81	0	
4	161	18	18.0	.61	0	

Clean Air Engineering

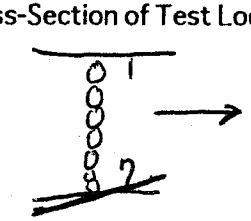
3-D Probe Volumetric Flow Traverse Data Sheet

Location: BH Outlet

Page 1 of 1

Client Mecklenberg	Project No. 8493
Plant Clarksville	Unit 1
Date 10/13/	Inlet/Outlet/Stack
Run 4	Start Time 845
Load HIGH	Stop Time 917
Data Recorder T. Rodiak	
Probe Operator B. Preksta, B Dimitroff	

Cross-Section of Test Location



Area (ft²)	Port Len (in.)	Gas Flow
12.33	18 16	IN OUT of page

Barometric Pressure 29.85	" Hg / mbar
Duct Diameters From Disturbance	
Downstream: 0.7	Upstream: 1.8
Probe Serial No. 2600	Instrument ID. 10578
Leak Check (✓) ✓	Ambient Temp. 70 °F
Source of Moisture Data Hg testing	
Source of Molecular Weight Data OH-Hg	

Traverse Point Number	Stack Temp (°F)	Yaw Angle from 0°	P_1-P_{atm} (in. H_2O)	P_1-P_2 (in. H_2O)	P_4-P_5 (in. H_2O)	Notes
1-1	152	11	20.50	0.50	0.05	
2	154	4	19.7	0.23	0.05	
3	155	8	19.6	0.23	-0.02	
4	155	8	19.6	0.15	-0.04	
2-1	155	13	21.0	0.43	0.08	
2	155	4	20.6	0.35	0.05	
3	156	8	21.0	0.30	0.02	
4	156	8	20.0	0.16	0.01	
3-1	156	10	19.6	0.43	0.12	
2	157	10	19.6	0.47	0.05	
3	157	10	19.6	0.38	0.07	
4	157	9	20.0	0.37	0.08	
4-1	157	13	19.8	0.23	0.15	
2	157	13	20.4	0.60	0.17	
3	157	14	20.8	0.34	0.10	
4	157	13	21.0	0.23	-0.02	
5 1	156	20	20.6	0.95	0.20	
2	157	16	19.6	0.70	0.10	
3	157	17	19.4	0.72	0.05	
4	157	18	19.4	0.22	-0.03	

Traverse Point Number	Stack Temp (°F)	Yaw Angle from 0°	P_1-P_{atm} (in. H_2O)	P_1-P_2 (in. H_2O)	P_4-P_5 (in. H_2O)	Notes
6-1	157	18	19.6	0.80	0.15	
2	157	19	19.6	0.85	0.14	
3	158	15	19.0	0.90	-0.03	
4	157	14	19.4	0.45	-0.01	
7-1	156	26	19.4	0.43	0.08	
2	156	23	19.0	0.70	0.07	
3	157	17	19.8	0.85	0.08	
4	157	16	20.0	0.66	0.07	

DS 003 3D Probe Traverse
CNVS/TRG.R3-2/7/94

Clean Air Engineering

TEST LOCATION: SDA INLET

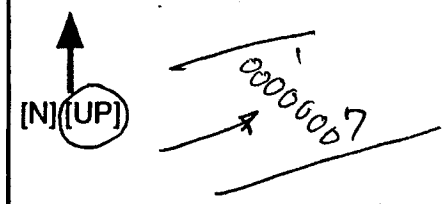
VELOCITY DETERMINATION FIELD DATA SHEET

PAGE 1 OF ___

UNIT: 1

Client Mecklenburg Co.	Project No. 8493
Plant Clarksville	Date 10/12/99
Meter Operator R. DORAN	
Probe Operator J. STROUD / T. RODAIC	
Source of Moisture and Molecular Weight Data: Ontario Hydro Method - Hg	

Cross-Section of Test Location



Amb. Temp. (°F) 78	Bar. Press. 29.9 [in. Hg] [mbar]
Pitot Cp 0.84	Probe I.D. No. TP-174-2
Duct Diameters from Disturbance: Downstream 0.6	Upstream 2.5
First point all the way [In] [Out]	Port Len. (in.) 18
Gas Flow ~~[In] [Out]~~ of page	
Duct Dimensions (in.) 117.5 x 91	

Run 1A	Load HIGH	Start Time 1244	Stop Time 1302	Static Press. (in. H_2O) −6.7	Post-Test Leak Check: Pass ☒ Fail ☐

Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in. H_2O)	Notes
1-1	312	0.65	
2	318	0.46	
3	325	0.48	
4	318	0.58	
2-1	315	0.84	
2	322	0.51	
3	316	0.46	
4	312	0.63	
3-1	310	0.69	
2	315	0.73	
3	309	0.44	
4	308	0.67	
4-1	304	0.54	
2	312	0.51	
3	308	0.48	
4	305	0.52	
Total		*	
Average			

Run 1A	Load HIGH	Start Time 1244	Stop Time 1302	Static Press. (in. H_2O) −6.7	Post-Test Leak Check: Pass ☒ Fail ☐

Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in. H_2O)	Notes
5-1	306	0.72	
2	303	0.32	
3	292	0.38	
4	291	0.55	
6-1	308	0.92	
2	301	0.37	
3	288	0.44	
4	289	0.68	
7-1	0.41	289	
2	0.28	293	
3	0.38	285	
4	0.51	288	
		*	

Run 1B	Load HIGH	Start Time 1800	Stop Time 1815	Static Press. (in. H_2O) −6.6	Post-Test Leak Check: Pass ☒ Fail ☐

Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in. H_2O)	Notes
1-1	320	0.20	
2	326	0.47	
3	323	0.52	
4	321	0.55	
2-1	314	0.70	
2	319	0.49	
3	316	0.57	
4	314	0.47	
3-1	318	0.70	
2	322	0.85	
3	315	0.52	
4	294	0.40	
4-1	313	0.46	
2	315	0.76	
3	309	0.45	
4	297	0.38	
		*	

Run 1B	Load HIGH	Start Time 1800	Stop Time 1815	Static Press. (in. H_2O) −6.6	Post-Test Leak Check: Pass ☒ Fail ☐

Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in. H_2O)	Notes
5-1	299	0.63	
2	302	0.50	
3	294	0.34	
4	290	0.39	
6-1	294	0.75	
2	297	0.29	
3	292	0.42	
4	289	0.49	
7-1	289	0.45	
2	289	0.32	
3	288	0.42	
4	286	0.50	
		*	

DS 002 Velocity
CNVS/TRG.R3-11/2/94

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering

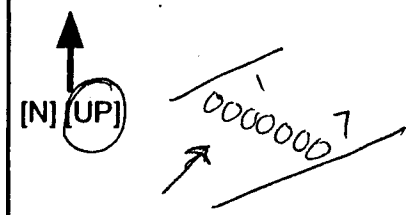
TEST LOCATION: SDA Inlet

VELOCITY DETERMINATION FIELD DATA SHEET

UNIT: 1

Client Mecklenburg Co.	Project No. 8493
Plant Clarksville, VA	Date 10/13/99
Meter Operator D. Dreska	
Probe Operator J. Stroud / T. Rodahl	
Source of Moisture and Molecular Weight Data: Ontario Hydro Method - Hg	

Cross-Section of Test Location



Amb. Temp. (°F) 70	Bar. Press. 29.85 [in. Hg] [mbar]
Pitot Cp 0.84	Probe I.D. No. TP-M4-2
Duct Diameters from Disturbance: Downstream 0.6	Upstream 2.5
First point all the way [In] [Out]	Port Len. (in.)
Gas Flow ~~[In]~~ ~~[Out]~~ of page	18
Duct Dimensions (in.) 117.5 X 91	

Run 2A	Load HIGH	Run 2A	Load HIGH	Run 3A	Load HIGH	Run 3A	Load HIGH
Start Time 835	Stop Time 841	Start Time 835	Stop Time 841	Start Time 1255	Stop Time 1313	Start Time 1255	Stop Time 1313
Static Press. (in. H_2O) −6.2		Static Press. (in. H_2O) −6.2		Static Press. (in. H_2O) −6.2		Static Press. (in. H_2O) −6.2	
Post-Test Leak Check: Pass ☒ Fail ☐		Post-Test Leak Check: Pass ☒ Fail ☐		Post-Test Leak Check: Pass ☒ Fail ☐		Post-Test Leak Check: Pass ☒ Fail ☐	

Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in. H_2O)	Notes	Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in. H_2O)	Notes	Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in. H_2O)	Notes	Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in. H_2O)	Notes
1-1	316	0.80		5-1	299	0.62		1-1	315	1.0		5-1	310	0.76	
2	321	0.54		2	300	0.43		2	323	0.74		2	308	0.34	
3	318	0.54		3	297	0.40		3	321	0.77		3	302	0.44	
4	314	0.52		4	294	0.50		4	318	0.79		4	297	0.60	
2-1	315	0.88		6-1	293	0.37		2-1	316	0.91		6-1	298	0.62	
2	321	0.52		2	288	0.46		2	318	0.74		2	300	0.50	
3	318	0.64		3	298	0.60		3	317	0.75		3	296	0.50	
4	307	0.69		4	297	0.58		4	312	0.69		4	292	0.66	
3-1	313	0.74		7-1	295	0.42		3-1	309	0.74		7-1	290	0.60	
2	311	0.95		2	295	0.34		2	313	0.90		2	289	0.57	
3	305	0.62		3	291	0.46		3	312	0.59		3	286	0.40	
4	304	0.80		4	285	0.48		4	301	0.74		4	284	0.44	
4-1	308	0.50						4-1	305	0.64					
2	308	0.78						2	307	0.76					
3	300	0.53						3	308	0.53					
4	299	0.54						4	302	0.42					
Total		*				*				*				*	
Average															

DS 002 Velocity
CNVS/TRG.R3-11/2/94

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering

TEST LOCATION: SDA INLET

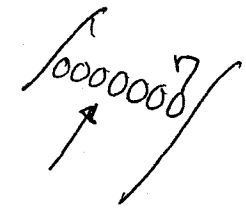
VELOCITY DETERMINATION FIELD DATA SHEET

UNIT: 1

Client Mecklenburg Co	Project No. 8493
Plant CLARKSVILLE, VA	Date 10/13/99
Meter Operator D. DRESICA	
Probe Operator J. STREUD	
Source of Moisture and Molecular Weight Data Ontario Hydro Method - Hg	

Cross-Section of Test Location

[N] [UP]



Amb. Temp. (°F) 65	Bar. Press. 29.85 [in. Hg] [mbar]
Pitot Cp 0.84	Probe I.D. No. TP-174-2
Duct Diameters from Disturbance Downstream 0.6	Upstream 2.5
First point all the way [In] [Out]	Port Len. (in.) 18
Gas Flow ~~[In] [Out]~~ of page	
Duct Dimensions (in.) 117.5 X 91	

Run 3B	Load High	Run 3B	Load High	Run	Load	Run	Load
Start Time 1610	Stop Time 1625	Start Time 1610	Stop Time 1625	Start Time	Stop Time	Start Time	Stop Time
Static Press. (in. H_2O) -6.4		Static Press. (in. H_2O) -6.4		Static Press. (in. H_2O)		Static Press. (in. H_2O)	
Post-Test Leak Check: Pass ☒ Fail ☐		Post-Test Leak Check: Pass ☒ Fail ☐		Post-Test Leak Check: Pass ☐ Fail ☐		Post-Test Leak Check: Pass ☐ Fail ☐	

Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in. H_2O)	Notes	Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in. H_2O)	Notes	Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in. H_2O)	Notes	Traverse Point Number	Stack Temp. t_s (°F)	Velocity Head ΔP's (in. H_2O)	Notes
1-1	310	0.70		5-1	294	0.56									
2	319	0.53		2	296	0.44									
3	318	0.52		3	292	0.32									
4	317	0.34		4	290	0.44									
2-1	327	0.54		6-1	291	0.43									
2	324	0.43		2	292	0.30									
3	319	0.54		3	287	0.31									
4	311	0.56		4	282	0.37									
3-1	294	0.60		7-1	286	0.27									
2	301	0.72		2	287	0.22									
3	304	0.45		3	281	0.21									
4	297	0.59		4	280	0.24									
4-1	295	0.43													
2	302	0.57													
3	305	0.40													
4	296	0.40													
Total		*				*				*				*	
Average															

DS 002 Velocity
CNVS/TRG.R3-11/2/94

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering

Orsat Readings

Client	Mecklenburg Cogen	Project Number	8493
Plant	Mecklenburg VA	Unit	1
Date	10/12-13/99	Fuel Type	coal
Orsat ID	#4	Leak Check?	✓

$$F_o = \frac{20.9 - \%O_2}{\%CO_2}$$

F_o = 1.083 to 1.230 (for bituminous coal)

Run Number	Location	Bag ID	Trial	Percent CO_2	Percent $CO_2 + O_2$	Percent O_2	F_o	Sample Time	Analysis Time	Analyst
1	Inlet	I-R1	1	14.8	19.2	4.4		~~945-1225~~	1820	RTD
			2	14.8	19.2	4.4		1455-1739		
			3	14.8	19.2	4.4				
			Avg.	14.8		4.4	1.11			
2	Inlet	I-R2	1	15.0	19.0	4.0		945-1225	1320	RTD
			2	15.0	19.0	4.0				
			3	15.0	19.0	4.0				
			Avg.	15.0		4.0	1.12			
3	Inlet	I-R3	1	15.0	19.0	4.0		1320-1554	1710	TDR
			2	15.0	19.0	4.0				
			3	15.0	19.0	4.0				
			Avg.	15.0		4.0	1.13			
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							

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(QC)

Impinger Weight Sheet

Client: Mecklenburg Cogen Facility Unit Name: 1 Inlet

Plant: Mecklenburg Job#: 8493 Method: Ontario-Hydro

SampleBox #: 68ICL4 Date: 10/12/99

Run# 1	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1	100ml 1N KCl	601.1	547.4	53.7	
Impinger 2	100ml 1N KCl	570.6	542.4	28.2	
Impinger 3	100ml 1N KCl	544.8	542.0	2.8	
Impinger 4	100ml 5% HNO_3 10% H_2O_2	537.9	533.5	4.4	
Impinger 5	100ml 4% $KMnO_4$ 10% H_2SO_4	556.4	556.4	0.0	89.6 (12)
Impinger 6	100ml 4% $KMnO_4$ 10% H_2SO_4	541.8	512.6	29.2	~~90.1~~
Impinger 7	100ml 4% $KMnO_4$ 10% H_2SO_4	506.[illegible]	534.7	-28.7	~~100.8~~ (12)
Imp 8	silica gel	666.2	655.5	10.7	100.3

SampleBox #: 68-X1 Date: 10/13/99

Run# ~~2~~ (1) Field blank	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1	KCl		558.5	NA	
Impinger 2	KCl		656.8		
Impinger 3	KCl		552.0		
Impinger 4	HNO_3/H_2O_2		532.5		
Impinger 5	$KMnO_4/H_2SO_4$		524.3		
Impinger 6	$KMnO_4/H_2SO_4$		539.4		
Impinger 7	$KMnO_4/H_2SO_4$		~~647.7~~ 540.3		
Imp 8	silica gel		700.7		

SampleBox #: 68ICL4 Date: 10/13/99

Run# 2	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1	KCl	613.0	549.8	63.2	
Impinger 2	KCl	574.3	545.3	29.0	
Impinger 3	KCl	550.4	545.5	4.9	
Impinger 4	HNO_3/H_2O_2	543.4	539.8	3.6	
Impinger 5	$KMnO_4/H_2SO_4$	560.0	557.9	2.1	
Impinger 6	$KMnO_4/H_2SO_4$	517.7	516.3	1.4	105.5
Impinger 7	$KMnO_4/H_2SO_4$	537.6	536.3	1.3	115.4
Imp 8	silica gel	675.5	665.6	9.9	

(QC)

Impinger Weight Sheet

Client: Mecklenburg Cogen

Unit Name: 1 Inlet

Plant: Mecklenburg VA

Job#: 8493

Method: Ontario Hydro

SampleBox #: 68 X1

Date: 10/13/99

Run# 3	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1	KCl	628.2	549.8	78.4	
Impinger 2	KCl	673.0	655.7	17.3	
Impinger 3	KCl	560.1	555.8	4.3	
Impinger 4	HNO_3/H_2O_2	539.1	534.0	5.1	
Impinger 5	$KMnO_4/H_2SO_4$	530.4	529.2	1.2	
Impinger 6	$KMnO_4/H_2SO_4$	542.3	541.9	0.4	106.7
Impinger 7	$KMnO_4/H_2SO_4$	542.3	542.3	0	116.4
Imp 8	silicagel	701.8	692.1	9.7	

SampleBox #: _____ Date: _____

Run#	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1					
Impinger 2					
Impinger 3					
Impinger 4					
Impinger 5					
Impinger 6					
Impinger 7					

SampleBox #: _____ Date: _____

Run#	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1					
Impinger 2					
Impinger 3					
Impinger 4					
Impinger 5					
Impinger 6					
Impinger 7					

Test Location: INLET

Hg Testing
Field Data Sheet

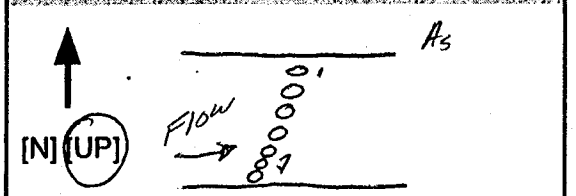
METHOD: Ontario Hydro 5 Page 1 of 3

UNIT: 1 RUN: 1

Client	mecklenburg	Project No.	8493
Plant	CLARKSVILLE	Date	10/12/99
Meter Operator	D. DRESKA		
Probe Operator	J. STROUD		

Meter Box No.	68-C	Sample Box No.	TCL4
Meter Yd	0.9980	Meter ΔH@	1.909
K Factor	.85	Pitot Cp	0.84
Leak Rate Before	.01 [cfm] [Lpm] @	16 (in Hg)	
Leak Rate After	.004 [cfm] [Lpm] @	15 (in Hg)	
Pitot Leak Check Before ☐	After Good ☑	Bad ☐	

Cross-Section of Test Location



Duct Dimensions (in)	70"		
Static Press. (in H2O)	Port Len (in)	Gas Flow: [In] [Out] of page	First point all the way [In] [Out]
-6.6	18		

Amb. Temp. (°F)	75	Bar. Press.	29.90 [in. Hg] [mbar]
Probe I.D. No.	56-120-2		
Liner Material	GLASS		

Filter No.	NA		
Thimble No.	NA		
Nozzle Diameter	.190	Nozzle I.D.	190-1

H2O	89.6 [ml] [gm]	Silica Gel (gm)	10.7
Total Vlc	100.3		

Start Time:	1455	Stop Time:	1740

Traverse Point Number	Min/pt 5.0 / Elapsed Time	Velocity Head ΔPs (in H2O)	Orifice Setting ΔH (in H2O)	Gas Sample Volume Vm (ft³)	Stack Temp Ts (°F)	Probe Tp (°F) Set Point 300	Filter Tf (°F) Set Point 300	Cond Temp Tc (°F)	DGM Inlet Tmi (°F)	DGM Outlet Tmo (°F)	Pump Vacuum (in Hg)	XAD Trap Temp Tt (°F)	Notes
				723.21									
1-1	5	.52	.44	725.03	316	300	299	64	90	87	4	C	
1	10	.50	.43	726.83	316	300	299	64	91	87	4	NA	
2	15	.60	.51	728.75	319	300	301	63	93	88	5		
2	20	.60	.51	730.70	319	305	304	61	95	89	5		
2-1	25	.47	.40	732.47	312	306	305	61	95	90	5		730.74 (-.04)
1	30	.47	.40	734.21	314	305	304	61	96	91	5		
2	35	.62	.53	736.21	311	305	305	60	97	91	6		
2	40	.62	.53	738.21	311	305	306	60	99	92	6		
3-1	45	.42	.34	739.90	308	305	304	59	97	93	5		738.25 (-.04)
1	50	.42	.36	741.60	308	305	305	58	98	93	5		
2	55	.61	.52	743.54	311	305	305	54	98	93	7		
2	60	.60	.51	745.50	311	305	306	53	99	93	8		
	Total	*8.775	5.5		3756				1148	1087			
	Average												

DS 001 General
CNVS/TRG.R3-4/6/94

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering

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Test Location: INLET

Hg Testing Field Data Sheet

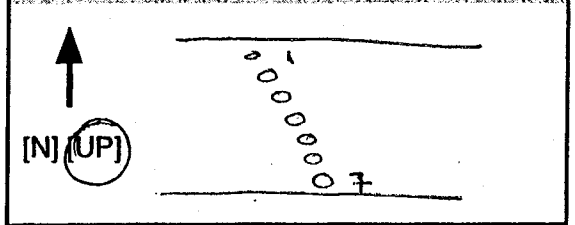
METHOD: OH-Hg **Page** 2 **of** 3

UNIT: 1 **RUN:** 1

Client	MECKLENBURG	Project No.	8493
Plant	CARKSVILLE	Date	10/12/99
Meter Operator	D. DRESKA		
Probe Operator	J. STROUD		

Meter Box No.	68-C	Sample Box No.	TC14
Meter Yd	0.9990	Meter ΔH@	1.908
K Factor	.85	Pitot Cp	.84
Leak Rate Before	.01 (cfm) [Lpm] @	16	(in Hg)
Leak Rate After	.004 (cfm) [Lpm] @	15	(in Hg)
Pitot Leak Check Before ☐	After: Good ☐	Bad ☐	

Cross-Section of Test Location



Duct Dimensions (in.)	70"		
Static Press. (in. H2O)	Port Len. (in.)	Gas Flow [In] [Out]	First point all the way [In] [Out]
-6.6	18	of page	

Amb. Temp. (°F)	70	Bar. Press.	29.90 (in. Hg) [mbar]
Probe I.D. No.	56-120-2		
Liner Material	GLASS		

Filter No.	NA		
Thimble No.	NA		
Nozzle Diameter	.190	Nozzle I.D.	190-1

H2O	89.6 [ml] [gm]	Silica Gel (gm)	10.7
Total Vlc	100.3		

Start Time:	1455	Stop Time:	1740

Traverse Point Number	Min/pt 5.0 / Elapsed Time	Velocity Head ΔPs (in. H2O)	Orifice Setting ΔH (in. H2O)	Gas Sample Volume Vm Init. Vol. (ft3) (L) 745.38	Stack Temp Ts (°F)	Probe Tp (°F) Set Points 305	Filter Tf (°F) Set Points 305	Cond Temp Tc (°F)	DGM Inlet Tmin (°F)	DGM Outlet Tmout (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp Tt (°F)	Notes (-.08)
4-1	65	.40	.34	747.12	302	304	304	60	98	94	5	↑	
1	70	.40	.34	748.72	301	304	305	53	98	94	7	NA	
2	75	.50	.43	750.49	305	305	305	52	99	94	7		
2	80	.51	.43	752.25	307	305	305	52	99	95	8		
5-1	85	.37	.31	753.87	287	303	304	53	98	95	7		752.36 (-.11)
1	90	.37	.31	755.37	286	305	305	54	98	95	7		
2	95	.60	.51	757.30	294	305	305	54	98	95	10		
2	100	.60	.51	759.24	294	305	305	54	98	95	10		
6-1	105	.47	.40	761.02	282	304	303	55	97	94	8		759.32 (-.08)
1	110	.47	.40	762.73	282	306	305	56	97	94	8		
2	115	.60	.51	764.64	293	305	306	56	98	94	10		
2	120	.63	.54	766.63	293	305	306	55	98	94	11	↓	
	Total	*8.391	5.03		3526				1176	1133			
	Average												

DS 001 General
CNVS/TRG.R3-4/6/94

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering

Test Location: INLET

Hg Testing
Field Data Sheet

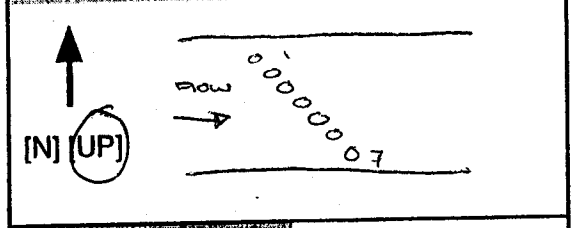
METHOD: OH-Hg Page 3 of 3

UNIT: 1 RUN: 1

Client	MECKLENBURG	Project No.	8493
Plant	CLARKSVILLE	Date	10/12/99
Meter Operator	D. DRESKA		
Probe Operator	J. STROUD		

Meter Box No.	68-C	Sample Box No.	ICL4
Meter Yd	0.980	Meter ΔH@	1.908
K Factor	.85	Pitot Cp	.84
Leak Rate Before	.01 (cfm) [Lpm] @	16	(in Hg)
Leak Rate After	.004 (cfm) [Lpm] @	15	(in Hg)
Pitot Leak Check Before: ☐	After: Good ☐	Bad ☐	

Cross Section of Test Location



Duct Dimensions (in.)	70"		
Static Press. (in. H2O)	Port Len (in.)	Gas Flow [In] [Out] of page	First point all the way (In) [Out]
-6.6	18		

Amb. Temp. (°F)	70	Bar. Press.	29.90 (in. Hg) [mbar]
Probe I.D. No.	56-120-2		
Liner Material	GLASS		

Filter No.	NA		
Thimble No.	NA		
Nozzle Diameter	.190	Nozzle I.D.	190-1

H2O	89.6 [ml] (gm)	Silica Gel (gm)	10.7
Total Vlc	100.3		

Start Time:	1455	Stop Time:	1740

Traverse Point Number	Min/pt. 5.0 / Elapsed Time	Velocity Head ΔP (in. H2O)	Orifice Set (in. H2O) ΔH (in. H2O)	Gas Sample Volume Vm (ft³) (L) 766.77	Stack Temp. Ts (°F)	Probe Tp (°F) Set Points 305	Filter Tf (°F) Set Points 305	Cond Temp. Tcd (°F)	DGM Inlet Tmin (°F)	DGM Outlet Tmout (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp. Tt (°F)	Notes (C-4)
7-1	125	.40	.34	768.34	282	305	304	57	97	94	8	NA	
1	130	.35	.30	769.85	282	305	304	58	96	94	8		
2	135	.52	.44	771.64	294	304	303	59	96	94	11		
2	140	.50	.43	773.46	296	303	303	60	96	94			
	Total	*2.652	1.51	49.79	1154				385	376			
	Average	.708	.43		301.3				94.7				

DS 001 General
CNVS/TRG.R3-4/6/94

* Sum of square roots.

(-HG)

Circle correct bracketed units on data sheet.

Clean Air Engineering

Test Location: INLET

Hg Testing Field Data Sheet

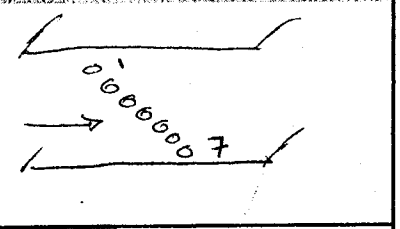
METHOD: ONT. HYDRO **Page** 1 **of** 3

UNIT: 1 **RUN:** 2

Client	Mecklenburg	Project No.	8493
Plant	Charlesville	Date	10/8/99
Meter Operator	D. Dreska		
Probe Operator	J. Stroud		

Meter Box No.	68-C	Sample Box No.	~~68 X~~ ICL4
Meter Yd	.9980	Meter ΔH@	1.9080
K Factor	.85	Pitot Cp	.84
Leak Rate Before	.006	(cfm) [Lpm] @	16 (in Hg)
Leak Rate After	.004	(cfm) [Lpm] @	10 (in Hg)
Pitot Leak Check Before ☐	After: Good ☒	Bad ☐	

Cross-Section of Test Location



Duct Dimensions (in.)	70"		
Static Press. (in. H2O)	Port Len (in.)	Gas Flow [In] [Out]	First point all the way [In] [Out]
-6.2	18"	of page	

Amb. Temp. (°F)	70	Bar. Press.	29.85 (in. Hg) [mbar]
Probe I.D. No.	56-120-2		
Liner Material	GLASS		

Filter No.	NA		
Thimble No.	NA		
Nozzle Diameter	.190	Nozzle I.D.	190-1

H2O	106.5 [ml] [gm]	Silica Gel (gm)	9.9
Total Vlc	115.4		

Start Time:	9:45	Stop Time:	1225

Traverse Point Number	Min/pt 5 Elapsed Time	Velocity Head ΔP (in. H2O)	Orifice Setting ΔH (in. H2O)	Gas Sample Volume Vm Int. Vol. (ft3) (L) 775.85	Stack Temp. Ts (°F)	Probe Tp (°F) Set Points 305	Filter Tf (°F) 305	Cond Temp. Tc (°F)	DGM Inlet Tm in (°F)	DGM Outlet Tm out (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp. Tt (°F)	Notes
1-1	5.0	.54	.46	777.75	313	303	301	64	76	75	4	5	
2	10	.54	.46	779.61	313	304	302	62	77	75	4	NA	
3	15	.65	.55	781.62	315	304	304	59	78	75	5		
2	20	.65	.55	783.65	317	304	304	57	80	75	5		
2-1	25	.55	.47	785.56	309	305	305	56	80	76	5		783.70 (±.05)
1	30	.55	.47	787.47	312	306	305	58	82	77	5		
2	35	.66	.56	789.51	311	305	305	58	83	77	5		
2	40	.70	.60	791.61	310	305	306	58	85	78	5		
3-1	45	.50	.43	793.43	302	306	305	60	84	79	5		791.66 (±.05)
1	50	.50	.43	795.24	306	305	305	59	85	79	5		
2	55	.64	.54	797.25	303	305	305	53	85	80	5		
2	60	.69	.59	799.35	303	305	305	54	86	80	5		
	Total	*9.259	6.11		3714				981	926			
	Average												

DS 001 General
CNVS/TRG.R3-4/6/94

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering

Test Location: INLET

Hg Testing Field Data Sheet

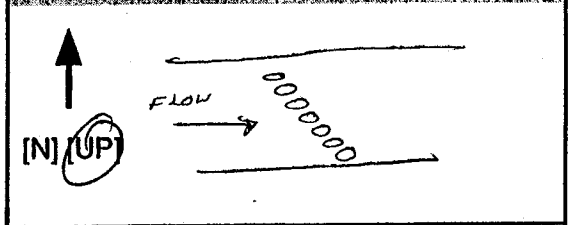
METHOD: ont. Hydro. **Page** 2 **of** 3

UNIT: 1 **RUN:** 2

Client	mecklenburg	Project No.	8493
Plant	CLARKSVILLE	Date	10/13/99
Meter Operator	D. DRESKA		
Probe Operator	J. STROUD		

Meter Box No.	68-C	Sample Box No.	~~68-XT~~ FCL4
Meter Y	.9980	Meter ΔH@	1.9080
K Factor	.85	Pitot Cp	.84
Leak Rate Before	.006	[cfm] [Lpm] @	16 (in Hg)
Leak Rate After	.004	[cfm] [Lpm] @	10 (in Hg)
Pitot Leak Check Before ☐	After: Good ☑	Bad ☐	

Cross Section of Test Location



Duct Dimensions (in)	70"		
Static Press. (in H2O)	Port Len (in)	Gas Flow [In] [Out]	First point all the way [In] [Out]
-6.2	18"	of page	

Amb. Temp. (°F)	70	Bar. Press.	29.85 [in. Hg] [mbar]
Probe I.D. No.	SG-120-2		
Liner Material	GLASS		

Filter No.	N/A		
Thimble No.	N/A		
Nozzle Diameter	.190	Nozzle I.D.	190-1

H2O	105.5 [ml] [gm]	Silica Gel (gm)	9.9
Total Vlc	115.4		

Start Time:	9:45	Stop Time:	1225

Traverse Point Number	Min/pt. 5.0 Elapsed Time	Velocity Head ΔPa (in H2O)	Orifice Setting ΔH (in H2O)	Gas Sample Volume Vm (ft³) Initial Vol. 799.38	Stack Temp Ts (°F)	Probe Tp (°F) Set Point 305	Filter Tf (°F) Set Point 305	Cond. Temp Tcs (°F)	DGM Inlet Tmin (°F)	DGM Outlet Tmout (°F)	Pump Vacuum (in Hg)	XAD Trap Temp Tf (°F)	Notes (-.05)
4-1	65	.44	.37	800.99	298	306	305	54	84	80	4		
1	70	.44	.37	802.59	298	305	304	52	85	81	5		
2	75	.67	~~.48~~ .57	804.66	306	304	305	52	86	81	6		
2	80	.69	.59	806.75	306	305	305	52	87	82	6	NA	
5-1	85	.40	.34	808.44	279	305	305	54	86	82	5		808.50 (-.06)
1	90	.40	.34	809.99	285	305	305	55	86	82	5		
2	95	.64	.54	811.95	288	305	305	55	86	82	7		
2	100	.66	.56	814.03	288	305	305	52	87	82	7		
6-1	105	.50	.43	815.96	277	306	302	57	85	83	6		814.14 (-.11)
1	110	.50	.43	817.80	279	306	305	54	86	83	6		
2	115	.64	.54	819.78	282	305	305	54	86	83	7		
2	120	.64	.54	821.81	283	304	305	55	87	83	7		
	Total	*8.86	5.62		3469				1031	984			
	Average												

DS 001 General
CNVS/TRG.R3-4/6/94

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering

Test Location: INLET

Hg Testing Field Data Sheet

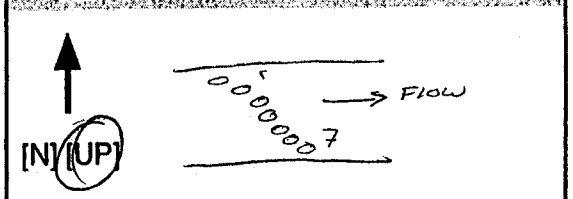
METHOD: UNT. Hydro. **Page** 3 **of** 3

UNIT: 1 **RUN:** 3

Client	mecklenburg	Project No.	8493
Plant	CLARKSBURG	Date	10/13/99
Meter Operator	D. DRESKA		
Probe Operator	J. STROUD		

Meter Box No.	68-C	Sample Box No.	~~68-XT~~ ICU4
Meter Yd	.9980	Meter ΔH@	1.9080
K Factor	.85	Pitot Cp	.84
Leak Rate Before	.006 [cfm] [Lpm] @	15	(In Hg)
Leak Rate After	.004 [cfm] [Lpm] @	10	(In Hg)
Pitot Leak Check Before: ☑	After: Good ☑	Bad ☐	

Cross-Section of Test Location



Duct Dimensions (In.)		70"	
Static Press. (In. H20)	Port Leni (In.)	Gas Flow: [In] [Out] of page	First point all the way (In) [Out]
-6.2	18		

Amb. Temp. (°F)	70	Bar. Press.	29.85 [In. Hg] [mbar]
Probe I.D. No.	SG-120-2		
Liner Material	GLASS		

Filter No.	NA		
Thimble No.	NA		
Nozzle Diameter	.190	Nozzle I.D.	190-1

H20	105.5 [ml] [gm]	Silica Gel (gm)	9.9
Total Vlc	115.4		

Start Time:	9:45	Stop Time:	12:25

Traverse Point Number	Min/pt 5.0 Elapsed Time	Velocity Head ΔPs (In. H2O)	Orifice Setting ΔH (In. H2O)	Gas Sample Volume Vm Init. Vol. (ft3) [L] 821.90	Stack Temp Ts (°F)	Probe Tp (°F) Set Points 305	Filter Tf (°F) Set Points 305	Cond Temp Tc (°F)	DGM Inlet Tmin (°F)	DGM Outlet Tmout (°F)	Pump Vacuum (In. Hg)	XAD Trap Temp Tt (°F)	Notes (-DG)
7-1	125	.47	.40	823.51	280	305	305	57	87	83	6		
1	130	.47	.40	825.24	280	305	305	57	87	83	6		
2	135	.65	.55	827.26	284	304	305	57	88	84	8		
2	140	.65	.55	829.30	283	304	304	56	88	84	8	NA	
	Total	*2.984	1.9	53.060	1127				350	334			
	Average	.754	.487		296.7				82.3				

DS 001 General
CNVS/TRG.R3-4/6/94

* Sum of square roots.

(-.9)

Circle correct bracketed units on data sheet.

Clean Air Engineering

Test Location: INLET

Hg Testing Field Data Sheet

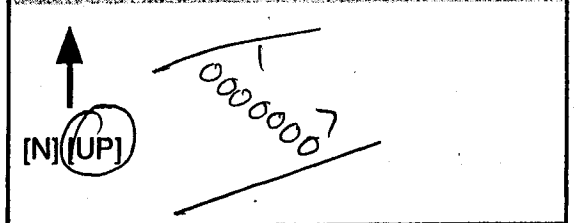
METHOD: ont. Hydro **Page** 1 **of** 3

UNIT: 1 **RUN:** 3

Client	mecklenburg	Project No.	8493
Plant	CLARKSVILLE	Date	10/13/99
Meter Operator	D. DRESKA		
Probe Operator	J. STROUD		

Meter Box No.	68-C	Sample Box No.	68-XI
Meter Yd	.9980	Meter ΔH@	1.9080
K Factor	.85	Pitot Cp	.84
Leak Rate Before	.004 (cfm) [Lpm] @	15	(in Hg)
Leak Rate After	.004 (cfm) [Lpm] @	10	(in Hg)
Pitot Leak Check Before ☐	After: Good ☒	Bad ☐	

Cross-Section of Test Location



Duct Dimensions (in.)	70"		
Static Press. (in. H20)	Port Len (in.)	Gas Flow [In] [Out]	First point all the way (In) [Out]
-6.4	18	of page	

Amb. Temp. (°F)	70	Bar. Press.	29.85 (in. Hg) [mbar]
Probe I.D. No.	56-120-2		
Liner Material	GLASS		

Filter No.	-		
Thimble No.	-		
Nozzle Diameter	.190	Nozzle I.D.	190-1

H20	106.7 [ml] (gm)	Silica Gel (gm)	9.7
Total Vlc	116.4		

Start Time:	1320	Stop Time:	1554

Traverse Point Number	Min/pt 5.0 Elapsed Time	Velocity Head ΔP (in. H2O)	Orifice Setting ΔH (in. H2O)	Gas Sample Volume Vm Init. Vol. (ft³) (L) 829.90	Stack Temp Ts (°F)	Probe Tp (°F) Set Points 305	Filter Tf (°F) 305	Cond. Temp. Tc (°F)	DGM Inlet Tmin (°F)	DGM Outlet Tmout (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp. Tt (°F)	Notes
1-1	5.0	.55	.47	831.84	313	305	304	64	83	82	4		
1	10	.55	.47	833.74	313	305	304	61	84	82	4	NA	
2	15	.70	.60	835.88	320	304	305	60	84	82	4		
2	20	.74	.63	838.13	320	305	305	58	85	82	5		
2-1	25	.52	.44	840.06	~~315~~ 305	305	305	58	86	82	4		838.23 (-.10)
1	30	.52	.44	841.88	312	305	305	57	87	83	4		
2	35	.61	.52	843.92	310	305	305	56	87	83	5		
2	40	.63	.54	846.98	308	303	304	55	89	83	5		
3-1	45	.49	.42	847.86	302	305	305	55	88	83	5		846.04 (-.06)
1	50	.49	.42	849.65	307	305	305	54	89	84	5		
2	55	.65	.55	851.63	306	305	305	55	89	84	5		
2	60	.60	.51	853.65	306	304	305	55	90	84			
	Total	*9.1779	6.01		3732				1041	994			
	Average												

DS 001 General
CNVS/TRG.R3-4/6/94

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering

Test Location: INLET

Hg Testing
Field Data Sheet

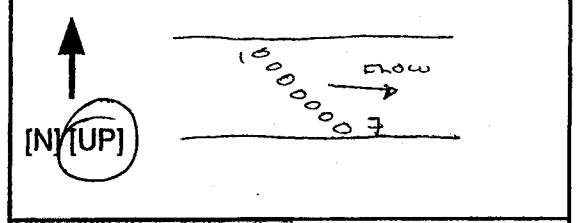
METHOD: ont. Hydro. **Page** 2 **of** 3

UNIT: 1 **RUN:** 3

Client	mecklenburg	Project No.	8493
Plant	CLARKSVILLE	Date	10/13/99
Meter Operator	D. DRESKA		
Probe Operator	J. STROUD		

Meter Box No.	68-C	Sample Box No.	68-X1
Meter Yd	0.9990	Meter ΔH@	1.9090
K Factor	.85	Pitot Cp	.84
Leak Rate Before	0.004 [cfm] [Lpm] @	15	(In.Hg)
Leak Rate After	0.004 [cfm] [Lpm] @	10	(In.Hg)
Pitot Leak Check Before: ☑	After: Good ☑	Bad ☐	

Cross-Section of Test Location



Duct Dimensions (In.)	70"		
Static Press. (In. H20)	Port Len. (In.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]
-6.4	18		

Amb. Temp. (°F)	70	Bar. Press.	29.85 [In. Hg] [mbar]
Probe I.D. No.	56-72-2		
Liner Material	GLASS		

Filter No.	–		
Thimble No.	–		
Nozzle Diameter	.190	Nozzle I.D.	1901

H20	106.7 [ml] [gm]	Silica Gel (gm)	9.7
Total Vlc	116.4		

Start Time:	1320	Stop Time:	1554

Traverse Point Number	Min/pt 5.0 Elapsed Time	Velocity Head (ΔP) (In. H2O)	Orifice Setting (ΔH) (In. H2O)	Gas Sample Volume Vm Init. Vol. (ft3) (L) 853.75	Stack Temp. Ts (°F)	Probe Tp (°F) Set Points 305	Filter Tf (°F) Set Points 305	Cond. Temp. Tc (°F)	DGM Inlet Tmin (°F)	DGM Outlet Tmout (°F)	Pump Vacuum (In. Hg)	XAD Trap Temp. Tt (°F)	Notes (-7.08)
4-1	65	.35	.30	855.26	296	305	306	860	88	84	4	(	
1	70	.35	.30	856.75	296	306	305	59	89	85	4	NA	
2	75	.45	.38	858.49	300	306	305	58	89	85	4		
2	80	.47	.40	860.25	303	305	306	57	89	85	4		860.36
5-1	85	.40	.34	861.98	285	305	306	57	89	85	4		(-.11)
1	90	.40	.34	863.65	286	305	305	56	89	85	4		
2	95	.61	.52	865.64	290	305	305	55	90	86	6		
2	100	.61	.52	867.63	291	305	305	55	90	86	6		
6-1	105	.50	.43	869.46	274	303	301	56	89	86	5		869.53 (-.07)
1	110	.50	.43	871.24	280	305	305	57	89	86	5		
2	115	.65	.55	873.26	281	304	306	57	90	86	6		
2	120	.65	.55	875.34	285	305	305	58	91	87	6		
	Total	*8.393	5.06		3467				1072	1026			
	Average												

DS 001 General
CNVS/TRG.R3-4/6/94

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering

Test Location: INLET

Hg Testing
Field Data Sheet

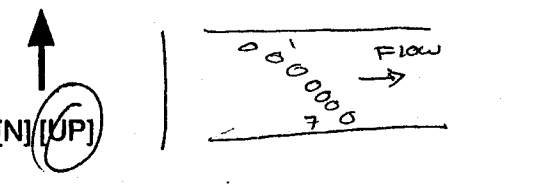
METHOD: ONT. Hydro **Page** 3 **of** 3

UNIT: 1 **RUN:** 3

Client	Mecklenburg	Project No.	8493
Plant	CLARKSVILLE	Date	10/13/99
Meter Operator	D. DRESKA		
Probe Operator	J. STROUD		

Meter Box No.	68-C	Sample Box No.	68-XI
Meter Y	0.9980	Meter ΔH@	1.908
K Factor	0.85	Pitot Cp	0.84
Leak Rate Before	0.004 [cfm] [Lpm] @	15	(in Hg)
Leak Rate After	0.004 [cfm] [Lpm] @	10	(in Hg)
Pitot Leak Check Before: ☐	After: Good ☐	Bad ☐	

Cross-Section of Test Location



Duct Dimensions (in.)	70"		
Static Press (in. H2O)	Port Len (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]
-6.4	18		

Amb. Temp. (°F)	70	Bar. Press.	29.85 [in. Hg] [mbar]
Probe I.D. No.	56-120-2		
Liner Material	GLASS		

Filter No.	–		
Thimble No.	–		
Nozzle Diameter	.190	Nozzle I.D.	190-1

H2O	106.7 [ml] [gm]	Silica Gel (gm)	9.7
Total V/c	116.4		

Start Time:	1320	Stop Time:	1554

Traverse Point Number	Minute / Elapsed Time	Velocity Head ΔPs (in. H2O)	Orifice Setting ΔH (in. H2O)	Gas Sample Volume Vm (cf) (L)	Stack Temp Ts (°F)	Probe Tp (°F) Set Points	Filter Tf (°F) Set Points	Cond Temp Tc (°F)	DGM Inlet Tmin (°F)	DGM Outlet Tmout (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp Tt (°F)	Notes
	5.0			875.44		305	305						
7-1	125	.49	.42	877.13	280	305	305	57	90	87	6		
1	130	.49	.42	879.96	281	305	305	56	90	87	6	NA	
2	135	.55	.47	880.87	281	305	305	57	91	87	6		
2	140	.55	.47	882.77	284	305	304	58	91	88	6		
	Total	*2.883	1.78	52.33	1126				362	349			
	Average	.731	.459		297.3				86.5				

(-.54)

DS 001 General
CNVS/TRG.R3-4/6/94

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering

Orsat Readings

Client Mecklenburg Cogen	Project Number 8493
Plant Mecklenburg VA	Unit 1
Date 10/12-13/99	Fuel Type coal
Orsat ID #4	Leak Check? ✓

$$F_o = \frac{20.9 - \%O_2}{\%CO_2}$$

F_o = 1.083 to 1.230 (for bituminous coal)

Run Number	Location	Bag ID	Trial	Percent CO_2	Percent $CO_2 + O_2$	Percent O_2	F_o	Sample Time	Analysis Time	Analyst
1	Outlet	O-R1	1	14.4	19.2	4.8		1455-1739	1845	RTD
			2	14.4	19.2	4.8				
			3	14.4	19.2	4.8				
			Avg.	14.4		4.8	1.12			
2	outlet	O-R2	1	14.8	19.2	4.4		945-1225	1327	RTD
			2	14.8	19.2	4.4				
			3	14.8	19.2	4.4				
			Avg.	14.8		4.4	1.11			
3	OUTLET	O-R3	1	14.2	19.0	4.8		1320-1554	1700	TDR
			2	14.2	19.0	4.8				
			3	14.2	19.0	4.8				
			Avg.	14.2		4.8	1.13			
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							

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(QC)

Impinger Weight Sheet

Client: Mecklenburg Cogen Facility Unit Name: 1 outlet

Plant: Mecklenburg Job#: 8493 Method: Ontario-Hydro

SampleBox #: 4685 Date: 10/12/99

Run# 1

	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1	100ml 1N KCl	720.7	550.2	170.5	
Impinger 2	100ml 1N KCl	564.2	543.6	20.6	
Impinger 3	100ml 1N KCl	562.0	560.5	1.5	
Impinger 4	100ml 5% HNO_3 10% H_2O_2	650.5	649.8	.7	
Impinger 5	100ml 4% $KMnO_4$ 10% H_2SO_4	643.0	643.0	0	
Impinger 6	100ml 4% $KMnO_4$ 10% H_2SO_4	532.7	532.6	.1	193.7
Impinger 7	100ml 4% $KMnO_4$ 10% H_2SO_4	644.2	643.9	.3	206.3
Imp 8	silicagel	730.3	717.7	12.6	

SampleBox #: 67-37 Date: 10/13/99

Run# 2

	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1	KCl	699.4	539.2	~~159.8~~ 160.2 (TR)	
Impinger 2	KCl	586.1	548.6	37.5	
Impinger 3	KCl	547.6	542.2	5.4	
Impinger 4	HNO_3/H_2O_2	553.6	552.0	1.6	
Impinger 5	$KMnO_4/H_2SO_4$	648.8	648.2	0.6	206.2
Impinger 6	$KMnO_4/H_2SO_4$	644.5	643.6	0.9	~~205.8~~ (TR)
Impinger 7	$KMnO_4/H_2SO_4$	527.3	527.3	0	~~219.0~~ (TR)
Imp 8	gel	707.6	694.4	13.2	219.4

SampleBox #: 4685 Date: 10/13/99

Run# 3

	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1	KCl	732.4	553.0	179.4	
Impinger 2	KCl	674.6	649.2	25.4	
Impinger 3	KCl	562.6	559.7	2.9	
Impinger 4	HNO_3/H_2O_2	657.2	655.4	1.8	
Impinger 5	$KMnO_4/H_2SO_4$	644.7	644.0	0.7	
Impinger 6	$KMnO_4/H_2SO_4$	535.0	534.7	0.3	210.9
Impinger 7	$KMnO_4/H_2SO_4$	645.2	644.8	0.4	221.9
Imp 8	gel	729.8	718.8	11	

QC

Impinger Weight Sheet

Client: Mecklenburg Cogen Unit Name: 1 Outlet

Plant: Mecklenburg VA Job#: 8493 Method: Ontario Hydro

SampleBox #: _____ Date: 10/13/99

Run# Fieldblank

	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1	KCl		540.9	NA	
Impinger 2	KCl		550.8		
Impinger 3	KCl		543.3		
Impinger 4	HNO_3 H_2O_2		548.3		
Impinger 5	$KMnO_4$ H_2SO_4		650.6		
Impinger 6	$KMnO_4$ H_2SO_4		644.8		
Impinger 7	$KMnO_4$ H_2SO_4		530.1		
Imp 8	Silicagel		707.5		

SampleBox #: _____ Date: _____

Run# _____

	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1					
Impinger 2					
Impinger 3					
Impinger 4					
Impinger 5					
Impinger 6					
Impinger 7					

SampleBox #: _____ Date: _____

Run# _____

	Contents	Gross Weight	Tare Weight	Net Weight Gain	Total Weight
Impinger 1					
Impinger 2					
Impinger 3					
Impinger 4					
Impinger 5					
Impinger 6					
Impinger 7					

Test Location: BAGHOUSE OUTLET

MERCURY **Testing**
Field Data Sheet

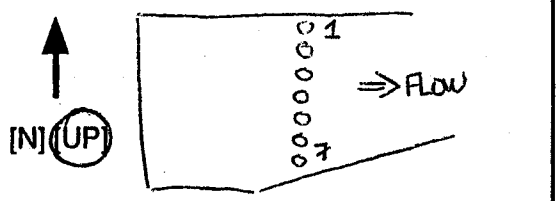
METHOD: OUT. HYD **Page** 1 **of** 3

UNIT: 1 **RUN:** 1

Client	MECKLENBERG COGEN	Project No.	8493
Plant	MECKLENBERG, VA	Date	10/12/99
Meter Operator	BOB PRZEKSTA		
Probe Operator	BILL DIMITROFF		

Meter Box No.	68E	Sample Box No.	~~R10~~ 4685 (M)
Meter Yd	1.0028	Meter ΔH@	1.8585
K Factor	1.00	Pitot Cp	0.84
Leak Rate Before	0.008 (cfm) [Lpm] @	15	(in Hg)
Leak Rate After	0.006 (cfm) [Lpm] @	10	(in Hg)
Pitot Leak Check Before: ■	After: Good ■	Bad □	

Cross-Section of Test Location



Duct Dimensions (in.)	124" ⊗ 84"		
Static Press. (in. H2O)	Port Len (in.)	Gas Flow ~~[In] [Out]~~	First point all the way ~~[In]~~ [Out]
-18.2	16"	of page	

Amb. Temp. (°F)	70	Bar. Press.	29.90 [in. Hg] [mbar]
Probe I.D. No.	56170-7		
Liner Material	GLASS		

Filter No.	NA		
Thimble No.	NA		
Nozzle Diameter	.199	Nozzle I.D.	G-199-1

H2O	193.7 [ml] (gm)	Silica Gel (gm)	12.6
Total Vlc	206.3		

Start Time:	1455	Stop Time:	1739

Traverse Point Number	Min/pt. 5 Elapsed Time	Velocity Head ΔP (in H2O)	Orifice Setting ΔH (in H2O)	Gas Sample Volume Vm Init Vol (ft³) 400.00	Stack Temp. Ts (°F)	Probe Tp (°F) Set Points 250	Filter Tf (°F) 250	Cond Temp. Tc (°F)	DGM Inlet Tmin (°F)	DGM Outlet Tmout (°F)	Pump Vacuum (in Hg)	XAD Trap Temp. Tt (°F)	Notes
1-1	5	.46	0.46	401.93	169	249	248	65	93	93	4	NA	
2	10	0.40	0.40	403.74	169	249	245	59	93	93	3	–	* FLOW BOUNCING
3	15	0.45	0.45	405.67	168	249	245	57	94	92	3	–	
4	20	0.23	0.23	406.98	167	249	243	56	95	92	2	–	
2-1	5	0.67	0.67	409.33	168	249	246	66	97	93	4	–	
2	10	0.55	0.55	411.43	169	249	246	63	98	93	4	–	
3	15	0.46	0.46	413.37	169	248	246	64	100	94	3	–	
4	20	0.50	0.50	415.40	168	248	246	64	101	94	4	–	
3-1	5	0.81	0.81	417.90	168	248	246	66	102	95	5	–	
2	10	0.62	0.62	420.26	168	249	246	62	104	96	4	–	
3	15	0.50	0.50	422.99	169	249	245	52	105	97	4	–	
4	20	0.43	0.43	424.14	168	249	245	50	106	97	3	–	
	Total	*8.456	6.08	67.97	2020				101.75				
	Average	0.843	0.735		168					2317			

DS 001 General
CNVS/TRG.R3-4/6/94

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering

Test Location: BAGHOUSE OUTLET

MERCURY **Testing**
Field Data Sheet

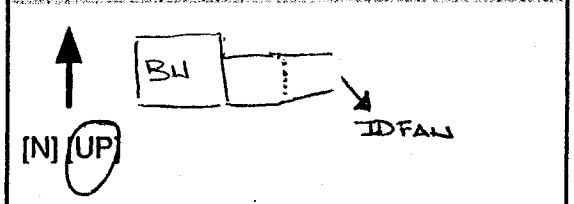
METHOD: CNT. HYDRO **Page** 2 **of** 3

UNIT: 1 **RUN:** 1

Client	MECKLENBERG	Project No.	8493
Plant	MECKLENBERG, VA	Date	10/12/99
Meter Operator	BOB PROKSTA		
Probe Operator	BILL DIMITROFF		

Meter Box No.	6BE	Sample Box No.	~~810~~ 4685
Meter Yd	1.0028	Meter ΔH@	1.8585
K Factor	1.0	Pitot Cp	0.84
Leak Rate Before	0.09 [cfm] [Lpm] @	15	(in Hg)
Leak Rate After	0.06 [cfm] [Lpm] @	10	(in Hg)
Pitot Leak Check Before ■	After: Good ■	Bad ☐	

Cross-Section of Test Location



Duct Dimensions (in.)	124x84		
Static Press. (in. H2O)	Port Len. (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]
-18.2	16"		

Amb. Temp. (°F)	70	Bar. Press.	29.90 [in. Hg] [mbar]
Probe I.D. No.	56-120-7		
Liner Material	GLASS		

Filter No.	NA		
Thimble No.	NA		
Nozzle Diameter	.199	Nozzle I.D.	6-199-1

H2O	193.7 [ml] [gm]	Silica Gel (gm)	12.6
Total Vlc	206.3		

Start Time:	1455	Stop Time:	1739

Traverse Point Number	Min/pt 5 / Elapsed Time	Velocity Head ΔP (in. H2O)	Orifice Setting ΔH (in. H2O)	Gas Sample Volume Vm Init. Vol. (ft³) (L)	Stack Temp Ts (°F)	Probe Tp (°F) Set Points 250	Filter Tf (°F) Set Points 250	Cond. Temp. Tc (°F)	DGM Inlet Tmin (°F)	DGM Outlet Tmout (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp. Tt (°F)	Notes
4-1	5	0.95	0.95	426.94	168	249	246	53	106	98	7	—	
2	10	0.80	0.80	429.53	168	248	246	48	107	98	6	—	
3	15	0.68	0.68	431.95	169	249	246	49	109	100	5	—	
4	20	0.87	0.87	434.64	171	249	245	52	111	101	6	—	* FLOW BOUNCE
5-1	5	1.00	1.00	437.52	167	249	245	60	108	101	7	—	
2	10	1.00	1.00	440.43*	168	249	246	56	110	101	7	—	440.43 VOL.
3	15	0.60	0.60	442.77	167	249	245	56	110	102	5	—	* FLOWS BOUNCE
4	20	0.66	0.66	445.12	167	248	245	58	110	102	5	—	
6-1	5	0.98	0.98	447.98	168	249	245	65	109	102	7	—	
2	10	1.2	1.2	451.04	168	249	245	54	111	103	8	—	
3	15	1.3	1.3	454.25	167	249	245	53	111	103	8	—	
4	20	1.1	1.1	457.29	167	248	245	55	111	107	7	—	
	Total	*11.488	11.14		2015				2531				
	Average												

DS 001 General
CNVS/TRG.R3-4/6/94

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering

Test Location: BAGHOUSE OUTLET

Field Data Sheet

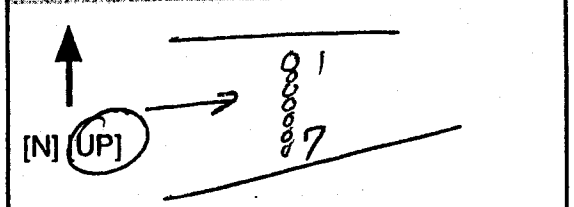
METHOD: CDT, ASME

UNIT: _____ RUN: 1

Client	MECKLENBERG	Project No.	8493
Plant		Date	10/12/99
Meter Operator	BOB PRZYSTA		
Probe Operator	BILL DIMITROFF		

Meter Box No.	L8E	Sample Box No.	~~R10~~ 4085
Meter Yd	1.0028	Meter ΔH@	1.8585
K Factor	1.0	Pitot Cp	0.84
Leak Rate Before	0.08 [cfm] [Lpm] @	15	(in Hg)
Leak Rate After	0.06 [cfm] [Lpm] @	10	(in Hg)
Pitot Leak Check Before ☑	After Good ☑	Bad ☐	

Cross Section of Test Location



Duct Dimensions (in.)	124x84		
Static Press (in. H2O)	Port Len (in.)	Gas Flow [In] [Out] of page	First point all the way (In) [Out]
-18.2	16"		

Amb. Temp. (°F)	70	Bar. Press.	29.90 (in. Hg) [mbar]
Probe I.D. No.	56-120-7		
Liner Material	glass		

Filter No.	NA		
Thimble No.	NA		
Nozzle Diameter	.199	Nozzle I.D.	G199-1

H2O	193.7 [ml] (gm)	Silica Gel (gm)	12.6
Total Vlc	206.3		

Start Time:		Stop Time:	17:39

Traverse Point Number	Min/pt 5 / Elapsed Time	Velocity Head ΔP (in. H2O)	Orifice Setting ΔH (in. H2O)	Gas Sample Volume Vm (ft³) Init Vol (ft³)	Stack Temp Ts (°F)	Probe Tp (°F) Set Points ~~249~~ 250	Filter Tf (°F) ~~246~~ 250	Cond Temp Tc (°F)	DGM Inlet Tmin (°F)	DGM Outlet Tmout (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp Tt (°F)	Notes
1-1	5	0.80	0.80	459.92	168	249	246	60	109	103	6	NA	
2	10	0.71	0.71	462.37	167	248	244	57	109	103	5	NA	
3	15	0.84	0.84	465.05	167	248	245	57	110	103	6	—	
4	20	1.0	1.0	467.97	167	248	245	57	110	103	6	—	
	Total	*			669								
	Average												

DS 001 General
CNVS/TRG.R3-4/6/94

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering

Test Location: BAGHOUSE OUTLET

MERCURY **Testing**
Field Data Sheet

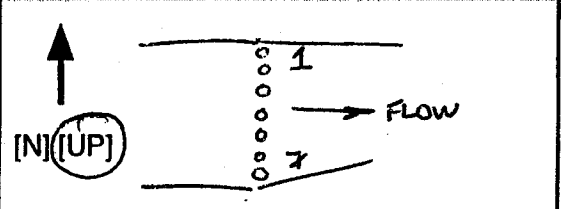
METHOD: ONT. HYDRO **Page** 1 **of** 3

UNIT: 1 **RUN:** 2

Client	MECKLENBERG COGEN	Project No.	8493
Plant	MECKLENBERG, VA	Date	6/13/97
Meter Operator	BOB PRZEKSTA		
Probe Operator	BILL DIMITROFF		

Meter Box No.	68E	Sample Box No.	67-37
Meter Yd	1.0028	Meter ΔH@	1.8585
K Factor	1.00	Pitot Cp	0.84
Leak Rate Before	~~0.005~~ 0.006	cfm [Lpm] @ ~~12~~ 15	(in Hg)
Leak Rate After	0.004	cfm [Lpm] @ 12	(in Hg)
Pitot Leak Check Before: ■	After: Good ■	Bad □	

Cross-Section of Test Location



Duct Dimensions (in)	124 x 84		
Static Press. (in. H20)	Port Len (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]
-18.5	16"		

Amb. Temp. (°F)	56	Bar. Press.	29.85 [in Hg] [mbar]
Probe I.D. No.	5G-120-4		
Liner Material	GLASS		

Filter No.	NA		
Thimble No.	NA		
Nozzle Diameter	0.200	Nozzle I.D.	0.200

H20	206.2 [ml] [gm]	Silica Gel (gm)	13.2
Total Vlc	219.4		

Start Time:	945	Stop Time:	1225

Traverse Point Number	Min/pt. 5 / Elapsed Time	Velocity Head ΔP's (in. H20)	Orifice Setting ΔH (in. H20)	Gas Sample Volume Vm (ft³) Init. Vol. ~~468.30~~	Stack Temp Ts (°F)	Probe Tp (°F) Set Points 250	Filter Tf (°F) Set Points 250	Cond. Temp Tc (°F)	DGM Inlet Tmin (°F)	DGM Outlet Tmout (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp Tt (°F)	Notes
1-1	5	0.50	0.50	470.43	167	255	244	65	76	73	3	NA	DELAY - 3D TRAV 468.500
2	10	0.56	0.54	472.48	166	254	244	61	77	73	4	—	LK CHECK 0.006@15
3	15	0.40	0.38	474.19	166	255	246	59	80	73	4	—	
4	20	0.27	0.25	475.54	167	256	244	59	81	74	3	—	
2-1	5	0.50	0.48	477.48	166	254	244	62	82	75	5	—	
2	10	0.72	0.70	479.82	166	255	247	60	85	76	8	—	
3	15	0.51	0.49	481.84	166	256	257	60	86	77	4	—	
4	20	0.25	0.25	483.26	168	257	252	61	86	78	2	—	
3-1	5	0.90	0.88	485.91	166	258	253	64	88	79	7	—	
2	10	0.82	0.82	488.51	167	258	253	64	90	80	7	—	
3	15	0.66	0.66	490.86	165	257	255	64	92	81	6	—	
4	20	0.24	0.24	492.26	167	258	254	64	92	82	3	—	
	Total	*8.533	6.19		1997				1936				
	Average	0.860	0.765						86				

DS 001 General
CNVS/TRG.R3-4/6/94

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering

Test Location: BAGHOUSE OUTLET

MERCURY **Testing**
Field Data Sheet

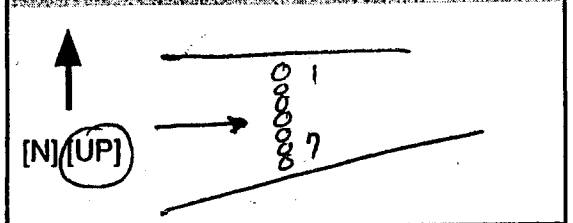
METHOD: OHT. HYDRO **Page** 2 **of** 3

UNIT: 1 **RUN:** 2

Client	MECKLENBERG	Project No.	8493
Plant		Date	10/13/89
Meter Operator	BOB PREKSTA		
Probe Operator	BILL DIMITROFF		

Meter Box No.	68E	Sample Box No.	67-37
Meter Yd.	1.0028	Meter ΔH@	1.8585
K Factor	1.0	Pitot Cp	0.84
Leak Rate Before	0.002 (cfm) [Lpm] @	15	(in Hg)
Leak Rate After	0.004 (cfm) [Lpm] @	12	(in Hg)
Pitot Leak Check Before ☒	After: Good ☒	Bad ☐	

Cross-Section of Test Location



Duct Dimensions (in.)	124 x 84		
Static Press. (in. H2O)	Port Len. (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]
-18.5	16		

Amb. Temp. (°F)	56	Bar. Press.	29.85 (in. Hg) [mbar]
Probe I.D. No.	56-120-4		
Liner Material	glass		

Filter No.	NA		
Thimble No.	NA		
Nozzle Diameter	0.201	Nozzle I.D.	G200-1

H2O	206.2 [ml] (gm)	Silica Gel (gm)	13.2
Total Vlc	219.4		

Start Time:	945	Stop Time:	1225

Traverse Point Number	Min/pt 5 / Elapsed time	Velocity Head (in. H2O)	Orifice Setting (in. H2O)	Gas Sample Volume Vm (ft³)	Stack Temp Ts (°F)	Probe Tp (°F) Set Point ~~258~~	Filter Tf (°F) Set Point ~~253~~	Cond. Temp. Tcx (°F)	DGM Inlet Tmin (°F)	DGM Outlet Tmout (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp. Tt (°F)	Notes
4-1	5	0.92	0.90	494.97	165	258	253	58	91	83	7	—	
2	10	0.82	0.80	497.55	165	258	253	55	93	83	6	—	
3	15	0.74	0.72	500.01	166	258	254	53	94	84	6	—	
4	20	0.59	0.57	502.17	166	258	254	53	94	84	5	—	*
5-1	5	1.10	1.10	505.10	165	258	251	54	93	85	8	—	
2	10	1.10	1.10	508.02	165	257	252	53	95	85	7	—	
3	15	1.00	1.00	510.87	166	257	254	53	96	85	7	—	
4	20	1.10	1.10	513.80	166	258	254	54	96	86	7	—	*
6-1	5	1.10	1.10	516.77	165	258	254	61	91	86	7	—	
2	10	1.20	1.20	519.80	165	257	254	56	94	86	8	—	
3	15	1.30	1.30	522.98	165	258	255	55	96	87	8	—	
4	20	1.0	1.0	525.90	165	257	254	55	97	87			
	Total	11.923	11.89		~~1819~~				2151				
	Average				1984 (166)								

DS 001 General
CNVS/TRG.R3-4/6/94

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering

Test Location: BAGHOUSE OUTLET

HERCURY Testing Field Data Sheet

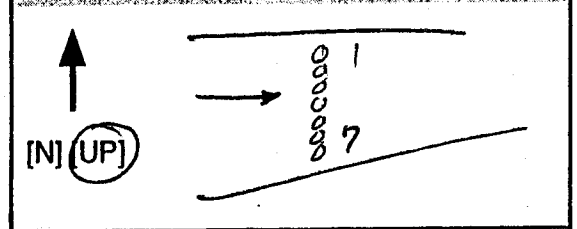
METHOD: OH Hg **Page** 3 **of** 3

UNIT: 1 **RUN:** 2

Client	MECKLENBERG	Project No.	8493
Plant		Date	10/13/99
Meter Operator	BOB PRZEKSTA		
Probe Operator	BILL DIMITROFF		

Meter Box No.	68E	Sample Box No.	67-37
Meter Yd	1.0028	Meter ΔH@	1.8585
K Factor	1.0	Pitot Cp	0.84
Leak Rate Before	0.0024 [cfm] [Lpm] @	15	(in.Hg)
Leak Rate After	0.004 [cfm] [Lpm] @	12	(in.Hg)
Pitot Leak Check Before: ☒	After: Good ☒	Bad ☐	

Cross-Section of Test Location



Duct Dimensions (in.)	124 x 84		
Static Press. (in. H20)	Port Len (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]
-19.5	16		

Amb. Temp. (°F)	56	Bar. Press.	29.85 [in. Hg] [mbar]
Probe I.D. No.	5G-120-4		
Liner Material	glass		

Filter No.	NA		
Thimble No.	NA		
Nozzle Diameter	0.200	Nozzle I.D.	G200-1

H20	206.2 [ml] [gm]	Silica Gel (gm)	13.2
Total Vlc	219.4		

Start Time:	945	Stop Time:	1225

Traverse Point Number	Min/pt / Elapsed Time	Velocity Head ΔPs (in. H20)	Orifice Setting ΔH (in. H20)	Gas Sample Volume Vm Init Vol. [13] [14]	Stack Temp Ts (°F)	Probe Tp (°F) Set Points 250	Filter Tf (°F) Set Points 250	Cond Temp Tc (°F)	DGM Inlet Tmin (°F)	DGM Outlet Tmout (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp Tt (°F)	Notes
1-1	5	0.71	0.71	528.38	165	258	253	60	95	87	5	–	
2	10	0.69	0.69	530.77	165	258	254	59	96	87	5	–	
3	15	1.2	1.2	533.85	165	257	254	58	98	88	8	–	
4	20	0.73	0.73	536.29	165	257	254	58	99	88	6	–	
	Total	*3.623	3.33						738				
	Average												

DS 001 General
CNVS/TRG.R3-4/6/94

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering

Test Location: BAGHOUSE OUTLET

MERCURY **Testing**
Field Data Sheet

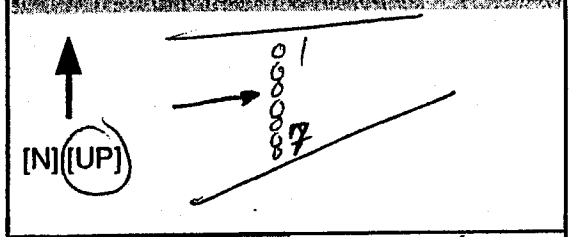
METHOD: OST. HYDRO **Page** 1 **of** 3

UNIT: 1 **RUN:** 3

Client	MECKLENBURG	Project No.	8493
Plant	CLARKSVILLE	Date	10/13/99
Meter Operator	BOB PREKSTA		
Probe Operator	BILL DIMITROFF		

Meter Box No.	68E	Sample Box No.	4685
Meter Yd	1.0028	Meter ΔH@	1.8585
K Factor	0.95	Pitot Cp	0.84
Leak Rate Before	0.000 (cfm) [Lpm] @	15	(in Hg)
Leak Rate After	0.002 (cfm) [Lpm] @	8	(in Hg)
Pitot Leak Check Before: ■	After: Good ■	Bad ☐	

Cross Section of Test Location



Duct Dimensions (in.)	124 X 84		
Static Press. (in. H2O)	Port Leni (in.)	Gas Flow [In] [Out] of page	First point all the way (In) [Out]
-18.6	16		

Amb. Temp. (°F)	65	Bar. Press.	29.88 (in. Hg) [mbar]
Probe I.D. No.	5G-170-4		
Liner Material	GLASS		

Filter No.	NA		
Thimble No.	NA		
Nozzle Diameter	200	Nozzle I.D.	6200-1

H2O	210.9 [ml] (gm)	Silica Gel (gm)	11
Total Vlc	221.9		

Start Time:	1320	Stop Time:	1555

Traverse Point Number	Min/pt 5 / Elapsed Time	Velocity Head ΔP's (in. H2O)	Orifice Setting ΔH (in. H2O)	Gas Sample Volume Vm Init. Vol. (ft3) (L) 537.40	Stack Temp. Ts (°F)	Probe Tp (°F) Set Points 250	Filter Tf (°F) Set Points 250	Cond. Temp. Tc (°F)	DGM Inlet Tm in (°F)	DGM Outlet Tm out (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp. Tt (°F)	Notes
1-1	5	0.48	0.46	539.42	165	258	254	64	89	86	3	—	
2	10	0.40	0.38	541.17	166	258	253	55	90	87	3	—	
3	15	0.43	0.40	543.00	167	258	255	54	92	87	3	—	
4	20	0.30	0.28	544.51	165	258	254	54	93	88	2	—	
2-1	5	0.62	0.59	547.23	164	254	252	56	94	88	3	—	545.01 (0.5)
2	10	0.55	0.52	549.30	166	250	252	57	96	89	3	—	
3	15	0.40	0.38	551.06	166	249	252	58	96	89	3	—	
4	20	0.68	0.65	553.38	165	249	252	59	97	89	3	—	553.82 (0.44)
3-1	5	0.77	0.73	556.28	165	249	250	60	98	90	4	—	
2	10	0.68	0.65	558.64	164	249	253	59	99	90	4	—	
3	15	0.86	0.82	561.27	166	250	253	63	100	91	4	—	
4	20	0.30	0.28	562.75	166	249	252	59	99	91	2	—	
	Total	*8.692	6.14	106.75	1985				2208				
	Average	0.851	0.713		165				195				

DS 001 General
CNVS/TRG.R3-4/6/94

* Sum of square roots. (-2.04)

Circle correct bracketed units on data sheet.

Clean Air Engineering

Test Location: BAGHOUSE OUTLET

MERCURY **Testing**

Field Data Sheet

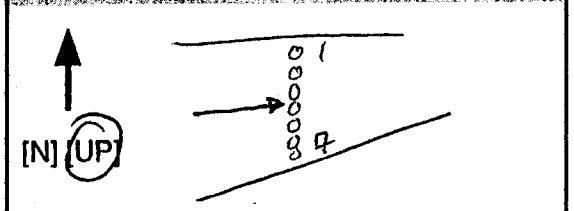
METHOD: ONT HYDRO **Page** 2 **of** 3

UNIT: 1 **RUN:** 3

Client	MECKLENBERG COGEN	Project No.	8493
Plant		Date	10/13/99
Meter Operator	BOB PEEKSTA		
Probe Operator	BILL DIMITRUFF		

Meter Box No.	L8E	Sample Box No.	4685
Meter Yd	1.0028	Meter ΔH@	1.9585
K Factor	0.95	Pitot Cp	0.84
Leak Rate Before	0.000	(cfm) [Lpm] @ 15	(in Hg)
Leak Rate After	0.002	(cfm) [Lpm] @ 8	(in Hg)
Pitot Leak Check Before: ☑	After: Good ☑	Bad ☐	

Cross-Section of Test Location



Duct Dimensions (in.)	124x84		
Static Press. (in. H2O)	Port Len. (in.)	Gas Flow [In] [Out] of page	First point all the way [In] [Out]
-8.6	16"		

Amb. Temp. (°F)	65	Bar. Press.	29.85 (in. Hg) [mbar]
Probe I.D. No.	5G-120-4		
Liner Material	glass		

Filter No.	NA		
Thimble No.	NA		
Nozzle Diameter	200	Nozzle I.D.	G200-1

H2O	210.9 [ml] (gm)	Silica Gel (gm)	11
Total Vlc	221.9		

Start Time:	1320	Stop Time:	1555

Traverse Point Number	Min/pt 5 / Elapsed Time	Velocity Head ΔPs (in. H2O)	Orifice Setting ΔH (in. H2O)	Gas Sample Volume - Vm Init. Vol. (ft³) (L)	Stack Temp. Ts (°F)	Probe Tp (°F) Set Points 250	Filter Tf (°F) Set Points 250	Cond. Temp. Tc (°F)	DGM Inlet Tm in (°F)	DGM Outlet Tm out (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp. Tt (°F)	Notes
4-1	5	0.82	0.78	565.59	165	249	252	54	98	91	4	—	563.02 (0.27)
2	10	0.91	0.87	568.28	164	250	253	52	99	91	4	—	
3	15	0.64	0.61	570.55	165	250	253	51	100	91	3	—	
4	20	0.42	0.40	572.36	166	250	252	52	100	92	3	—	572.68 (0.32)
5-1	5	1.10	1.05	575.65	165	249	251	54	99	92	3	—	← 575.65
2	10	1.10	1.05	578.57	165	250	251	52	101	92	3	—	
3	15	1.10	1.05	581.52	165	250	253	52	102	92	5	—	
4	20	~~1.2~~ 0.96	0.57	583.68	165	250	251	54	101	93	3	—	* 583.91 (.23)
6-1	5	1.3	1.2	587.02	165	249	250	56	100	93	6	—	
2	10	1.3	1.2	590.14	165	249	250	53	102	93	6	—	
3	15	0.75	0.71	592.61	165	249	252	53	102	93	4	—	
4	20	0.92	0.87	595.31	165	250	252	55	102	93	5	—	595.59 (.28)
	Total	*11.334	10.36		1980				2312				
	Average												

DS 001 General
CNVS/TRG.R3-4/6/94

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering

Test Location: BAGHOUSE OUTLET

Hg Testing
Field Data Sheet

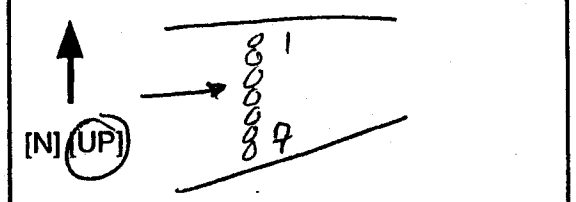
METHOD: 0H-Hg Page 3 of 3

UNIT: 1 RUN: 3

Client	MECKLENBURG	Project No.	8493
Plant	CLARKSVILLE	Date	10/13/99
Meter Operator	BOB PRESTA		
Probe Operator	BILL DIMITROFF		

Meter Box No.	6916	Sample Box No.	4685
Meter Y(d)	1.0028	Meter ΔH@	1.8585
K Factor	0.95	Pitot Cp	0.84
Leak Rate Before	0.000 (cfm) [Lpm] @	15	(in Hg)
Leak Rate After	0.002 (cfm) [Lpm] @	8	(in Hg)
Pitot Leak Check Before: ☑	After: Good ☑ Bad ☐		

Cross-Section of Test Location



Duct Dimensions (in)		124x84	
Static Press. (in. H20)	Port Len (in.)	Gas Flow [In] [Out]	First point all the way
-18.6	16	of page	(In) [Out]

Amb. Temp (°F)	65	Bar. Press.	29.95 (in. Hg) [mbar]
Probe I.D. No.	SG-120-4		
Liner Material	GLASS		

Filter No.	NA		
Thimble No.	NA		
Nozzle Diameter	200	Nozzle I.D.	G200-1

H20	210.9 [ml] (gm)	Silica Gel (gm)	11
Total VIC	221.9		

Start Time:	1320	Stop Time:	1555

Traverse Point Number	Min/pt (Elapsed time)	Velocity Head (Δp) (in. H2O)	Orifice Setting (ΔH) (in. H2O)	Gas Sample Volume Vm (Initial Vol. (Ta) (L)	Stack Temp Ts (°F)	Probe Tp (°F) Set Point 250	Filter Tf (°F) Set Point 250	Cond. Temp Tcs (°F)	DGM Inlet Tm in (°F)	DGM Outlet Tm out (°F)	Pump Vacuum (in. Hg)	XAD Trap Temp Tt (°F)	Notes
1-1	5	0.66	0.63	597.98	165	249	251	58	100	93	3	–	
2	10	0.64	0.62	600.17	165	250	252	56	101	93	3	–	
3	15	1.20	1.10	603.16	164	249	252	56	101	93	5	–	
4	20	1.20	1.10	606.19	164	249	252	56	101	93	5	–	
	Total	*											
	Average												

DS 001 General
CNVS/TRG.R3-4/6/94

* Sum of square roots.

Circle correct bracketed units on data sheet.

Clean Air Engineering

FIELD DATA PRINTOUTS

E

Field Data Printout

Location: SDA Inlet
Test Run: 1A High Load
Client: Mecklenburg Cogeneration Facility
Project No: 8493
Test Date: 10/12/99
Meter ΔH@: 1.9080
Meter Y_d: 0.9980
Pitot C_p: 0.84
Static P: -6.7
Leak Rate Before: 0.010 cfm @ 16"Hg
Leak Rate After: 0.004 cfm @ 15"Hg

Method: 2
Testing Type: Velocity
Area (ft²): 74.26

Bar. Press. (in. Hg): 29.90
Actual Moisture (%): 9.1
O_2 (dry volume %): 4.4
CO_2 (dry volume %): 14.8
Start Time (approx.): 12:44
Stop Time (approx.): 13:02
H_2O (condensate, ml): 89.6
H_2O (silica, g): 10.7

Traverse Point	Pitot ΔP_s (in. H_2O)	Stack T_s (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{in.\ H_2O}$)	Run Time	Sample ΔH (in. H_2O)	Metered (ft³)	Dry Gas Meter $T_{m\ in}$ (°F)	Dry Gas Meter $T_{m\ out}$ (°F)	Volume (calculated) (ft³)
				0.0		723.21			
1-01	0.65	312	0.81	5.0	0.44	725.03	90	87	1.82
1-02	0.46	318	0.68	10.0	0.43	726.83	91	87	1.80
1-03	0.48	325	0.69	15.0	0.51	728.75	93	88	1.92
1-04	0.58	318	0.76	20.0	0.51	730.70	95	89	1.95
2-01	0.84	315	0.92	20.0		730.74			
2-02	0.51	322	0.71	25.0	0.40	732.47	95	90	1.73
2-03	0.46	316	0.68	30.0	0.40	734.21	96	91	1.74
2-04	0.63	312	0.79	35.0	0.53	736.21	97	91	2.00
3-01	0.69	310	0.83	40.0	0.53	738.21	99	92	2.00
3-02	0.73	315	0.85	40.0		738.25			
3-03	0.44	309	0.66	45.0	0.36	739.90	97	93	1.65
3-04	0.67	308	0.82	50.0	0.36	741.60	98	93	1.70
4-01	0.54	304	0.73	55.0	0.52	743.54	98	93	1.94
4-02	0.51	312	0.71	60.0	0.51	745.50	99	93	1.96
4-03	0.48	308	0.69	60.0		745.58			
4-04	0.52	305	0.72	65.0	0.34	747.12	98	94	1.54
5-01	0.72	306	0.85	70.0	0.34	748.72	98	94	1.60
5-02	0.32	303	0.57	75.0	0.43	750.49	99	94	1.77
5-03	0.38	292	0.62	80.0	0.43	752.25	99	95	1.76
5-04	0.55	291	0.74	80.0		752.36			
6-01	0.92	308	0.96	85.0	0.31	753.87	98	95	1.51
6-02	0.37	301	0.61	90.0	0.32	755.37	98	95	1.50
6-03	0.44	288	0.66	95.0	0.51	757.30	98	95	1.93
6-04	0.68	289	0.82	100.0	0.51	759.24	98	95	1.94
7-01	0.41	289	0.64	100.0		759.32			
7-02	0.28	293	0.53	105.0	0.40	761.02	97	94	1.70
7-03	0.38	285	0.62	110.0	0.40	762.73	97	94	1.71
7-04	0.51	288	0.71	115.0	0.51	764.64	98	94	1.91
				120.0	0.54	766.63	98	94	1.99
				120.0		766.77			
				125.0	0.34	768.34	97	94	1.57
				130.0	0.30	769.85	96	94	1.51
				135.0	0.44	771.64	96	94	1.79
				140.0	0.43	773.46	96	94	1.82
Final	0.73	305		140.0	0.43	49.76	95		

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Field Data Printout

Location: Scrubber Inlet
Test Run: 1
Client: Mecklenburg Cogeneration Facility
Project No: 8493
Test Date: 10/12/99
Meter ΔH@: 1.9080
Meter Y_d: 0.9980
Pitot C_p: 0.84
Static P: -6.6
Leak Rate Before: 0.010 cfm @ 16 "Hg
Leak Rate After: 0.004 cfm @ 15 "Hg

Method: Ontario Hydro
Testing Type: Mercury
Area (ft²): 74.26

Bar. Press. (in. Hg): 29.90
Actual Moisture (%): 9.1
Nozzle Diameter (D_n): 0.190
O_2 (dry volume %): 4.4
CO_2 (dry volume %): 14.8
Start Time (approx.): 14:55
Stop Time (approx.): 17:40
H_2O (condensate, ml): 89.6
H_2O (silica, g): 10.7

Traverse Point	Run Time	Pitot ΔP_s	Sample ΔH	Metered	Stack T_s	Dry Gas Meter $T_{m\,in}$	Dry Gas Meter $T_{m\,out}$	$\sqrt{\Delta P_s}$ (calculated)	Volume (calculated)	Isokinetics (calculated)
	0.0	(in. H_2O)	(in. H_2O)	(ft³) 723.21	(°F)	(°F)	(°F)	(√in. H_2O)	(ft³)	(%)
1-01	5.0	0.52	0.44	725.03	316	90	87	0.72	1.82	99.3
1-01	10.0	0.50	0.43	726.83	316	91	87	0.71	1.80	100.0
1-02	15.0	0.60	0.51	728.75	319	93	88	0.77	1.92	97.4
1-02	20.0	0.60	0.51	730.70	319	95	89	0.77	1.95	98.6
Leak Check	20.0			730.74						
2-01	25.0	0.47	0.40	732.47	312	95	90	0.69	1.73	98.3
2-01	30.0	0.47	0.40	734.21	314	96	91	0.69	1.74	98.8
2-02	35.0	0.62	0.53	736.21	311	97	91	0.79	2.00	98.6
2-02	40.0	0.62	0.53	738.21	311	99	92	0.79	2.00	98.4
Leak Check	40.0			738.25						
3-01	45.0	0.42	0.36	739.90	308	97	93	0.65	1.65	98.5
3-01	50.0	0.42	0.36	741.60	308	98	93	0.65	1.70	101.3
3-02	55.0	0.61	0.52	743.54	311	98	93	0.78	1.94	96.2
3-02	60.0	0.60	0.51	745.50	311	99	93	0.77	1.96	97.9
Leak Check	60.0			745.58						
4-01	65.0	0.40	0.34	747.12	302	98	94	0.63	1.54	93.6
4-01	70.0	0.40	0.34	748.72	301	98	94	0.63	1.60	97.2
4-02	75.0	0.50	0.43	750.49	305	99	94	0.71	1.77	96.4
4-02	80.0	0.51	0.43	752.25	307	99	95	0.71	1.76	94.9
Leak Check	80.0			752.36						
5-01	85.0	0.37	0.31	753.87	287	98	95	0.61	1.51	94.4
5-01	90.0	0.37	0.32	755.37	286	98	95	0.61	1.50	93.7
5-02	95.0	0.60	0.51	757.30	294	98	95	0.77	1.93	95.2
5-02	100.0	0.60	0.51	759.24	294	98	95	0.77	1.94	95.7
Leak Check	100.0			759.32						
6-01	105.0	0.47	0.40	761.02	282	97	94	0.69	1.70	94.2
6-01	110.0	0.47	0.40	762.73	282	97	94	0.69	1.71	94.7
6-02	115.0	0.60	0.51	764.64	293	98	94	0.77	1.91	94.3
6-02	120.0	0.63	0.54	766.63	293	98	94	0.79	1.99	95.9
Leak Check	120.0			766.77						
7-01	125.0	0.40	0.34	768.34	282	97	94	0.63	1.57	94.3
7-01	130.0	0.35	0.30	769.85	282	96	94	0.59	1.51	97.0
7-02	135.0	0.52	0.44	771.64	294	96	94	0.72	1.79	95.1
7-02	140.0	0.50	0.43	773.46	296	96	94	0.71	1.82	98.8
Final	140.0	0.71	0.43	49.76	301	95				

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Field Data Printout

Location: SDA Inlet
Test Run: 1B High Load
Client: Mecklenburg Cogeneration Facilty
Project No: 8493
Test Date: 10/12/99
Meter ΔH@: 1.9080
Meter Y_d: 0.9980
Pitot C_p: 0.84
Static P: -6.2
Leak Rate Before: 0.010 cfm @ 16"Hg
Leak Rate After: 0.004 cfm @ 15"Hg

Method: 2
Testing Type: Velocity
Area (ft²): 74.26

Bar. Press. (in. Hg): 29.90
Actual Moisture (%): 9.1
O_2 (dry volume %): 4.4
CO_2 (dry volume %): 14.8
Start Time (approx.): 18:00
Stop Time (approx.): 18:15
H_2O (condensate, ml): 89.6
H_2O (silica, g): 10.7

Traverse Point	Pitot ΔP_s (in. H_2O)	Stack T_s (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{in.\ H_2O}$)	Run Time	Sample ΔH (in. H_2O)	Metered (ft³)	Dry Gas Meter $T_{m\,in}$ (°F)	Dry Gas Meter $T_{m\,out}$ (°F)	Volume (calculated) (ft³)
				0.0		723.21			
1-01	0.20	320	0.45	5.0	0.44	725.03	90	87	1.82
1-02	0.47	326	0.69	10.0	0.43	726.83	91	87	1.80
1-03	0.52	323	0.72	15.0	0.51	728.75	93	88	1.92
1-04	0.55	321	0.74	20.0	0.51	730.70	95	89	1.95
2-01	0.70	314	0.84	20.0		730.74			
2-02	0.49	319	0.70	25.0	0.40	732.47	95	90	1.73
2-03	0.57	316	0.75	30.0	0.40	734.21	96	91	1.74
2-04	0.47	314	0.69	35.0	0.53	736.21	97	91	2.00
3-01	0.70	318	0.84	40.0	0.53	738.21	99	92	2.00
3-02	0.85	322	0.92	40.0		738.25			
3-03	0.52	315	0.72	45.0	0.36	739.90	97	93	1.65
3-04	0.40	294	0.63	50.0	0.36	741.60	98	93	1.70
4-01	0.46	313	0.68	55.0	0.52	743.54	98	93	1.94
4-02	0.76	315	0.87	60.0	0.51	745.50	99	93	1.96
4-03	0.45	309	0.67	60.0		745.58			
4-04	0.38	297	0.62	65.0	0.34	747.12	98	94	1.54
5-01	0.63	299	0.79	70.0	0.34	748.72	98	94	1.60
5-02	0.50	302	0.71	75.0	0.43	750.49	99	94	1.77
5-03	0.34	294	0.58	80.0	0.43	752.25	99	95	1.76
5-04	0.39	290	0.62	80.0		752.36			
6-01	0.75	294	0.87	85.0	0.31	753.87	98	95	1.51
6-02	0.29	297	0.54	90.0	0.32	755.37	98	95	1.50
6-03	0.42	292	0.65	95.0	0.51	757.30	98	95	1.93
6-04	0.49	289	0.70	100.0	0.51	759.24	98	95	1.94
7-01	0.45	289	0.67	100.0		759.32			
7-02	0.32	289	0.57	105.0	0.40	761.02	97	94	1.70
7-03	0.42	288	0.65	110.0	0.40	762.73	97	94	1.71
7-04	0.50	286	0.71	115.0	0.51	764.64	98	94	1.91
				120.0	0.54	766.63	98	94	1.99
				120.0		766.77			
				125.0	0.34	768.34	97	94	1.57
				130.0	0.30	769.85	96	94	1.51
				135.0	0.44	771.64	96	94	1.79
				140.0	0.43	773.46	96	94	1.82
Final	0.70	305		140.0	0.43	49.76	95		

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Field Data Printout

Location: SDA Inlet
Test Run: 2A High Load
Client: Mecklenburg Cogeneration Facilty
Project No: 8493
Method: 2
Test Date: 10/13/99
Testing Type: Velocity
Meter ΔH@: 1.9080
Meter Y_d: 0.9980
Area (ft²): 74.26
Pitot C_p: 0.84
Static P: -6.4
Leak Rate Before: 0.006 cfm @ 16 "Hg
Leak Rate After: 0.004 cfm @ 10 "Hg

Bar. Press. (in. Hg): 29.85
Actual Moisture (%): 9.5
O_2 (dry volume %): 4.0
CO_2 (dry volume %): 15.0
Start Time (approx.): 08:25
Stop Time (approx.): 08:41
H_2O (condensate, ml): 105.5
H_2O (silica, g): 9.9

Traverse Point	Pitot ΔP_s (in. H_2O)	Stack T_s (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{in.}$ H_2O)	Run Time	Sample ΔH (in. H_2O)	Metered (ft³)	Dry Gas Meter $T_{m\,in}$ (°F)	Dry Gas Meter $T_{m\,out}$ (°F)	Volume (calculated) (ft³)
				0.0		775.85			
1-01	0.80	316	0.89	5.0	0.46	777.75	76	75	1.90
1-02	0.54	321	0.73	10.0	0.46	779.61	77	75	1.86
1-03	0.54	318	0.73	15.0	0.55	781.62	78	75	2.01
1-04	0.52	314	0.72	20.0	0.55	783.65	80	75	2.03
2-01	0.88	315	0.94	20.0		783.70			
2-02	0.52	321	0.72	25.0	0.47	785.56	80	76	1.86
2-03	0.64	318	0.80	30.0	0.47	787.47	82	77	1.91
2-04	0.69	307	0.83	35.0	0.56	789.51	83	77	2.04
3-01	0.74	313	0.86	40.0	0.60	791.61	85	78	2.10
3-02	0.95	311	0.97	40.0		791.66			
3-03	0.62	305	0.79	45.0	0.43	793.43	84	79	1.77
3-04	0.80	304	0.89	50.0	0.43	795.24	85	79	1.81
4-01	0.50	308	0.71	55.0	0.54	797.25	85	80	2.01
4-02	0.78	308	0.88	60.0	0.59	799.35	86	80	2.10
4-03	0.53	300	0.73	60.0		799.38			
4-04	0.54	299	0.73	65.0	0.37	800.99	84	80	1.61
5-01	0.62	299	0.79	70.0	0.37	802.59	85	81	1.60
5-02	0.43	300	0.66	75.0	0.57	804.66	86	81	2.07
5-03	0.40	297	0.63	80.0	0.59	806.75	87	82	2.09
5-04	0.50	294	0.71	85.0	0.34	808.44	86	82	1.69
6-01	0.37	293	0.61	85.0		808.50			
6-02	0.46	288	0.68	90.0	0.34	809.99	86	82	1.49
6-03	0.60	288	0.77	95.0	0.54	811.95	86	82	1.96
6-04	0.58	287	0.76	100.0	0.56	814.03	87	82	2.08
7-01	0.42	295	0.65	100.0		814.14			
7-02	0.34	295	0.58	105.0	0.43	815.96	85	83	1.82
7-03	0.46	291	0.68	110.0	0.43	817.80	86	83	1.84
7-04	0.48	285	0.69	115.0	0.54	819.78	86	83	1.98
				120.0	0.54	821.81	87	83	2.03
				120.0		821.90			
				125.0	0.40	823.51	87	83	1.61
				130.0	0.40	825.24	87	83	1.73
				135.0	0.55	827.26	88	84	2.02
				140.0	0.55	829.30	88	84	2.04
Final	0.76	303		140.0	0.49	53.06	82		

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Field Data Printout

Location: Scrubber Inlet
Test Run: 2
Client: Mecklenburg Cogeneration Facility
Project No: 8493
Test Date: 10/13/99
Meter ΔH@: 1.9080
Meter Y_d: 0.9980
Pitot C_p: 0.84
Static P: -6.2
Leak Rate Before: 0.006 cfm @ 16 "Hg
Leak Rate After: 0.004 cfm @ 10 "Hg

Method: Ontario Hydro
Testing Type: Mercury
Area (ft²): 74.26

Bar. Press. (in. Hg): 29.85
Assumed Moisture (%): 9.5
Nozzle Diameter (D_n): 0.190
O_2 (dry volume %): 4.0
CO_2 (dry volume %): 15.0
Start Time (approx.): 09:45
Stop Time (approx.): 12:25
H_2O (condensate, ml): 105.5
H_2O (silica, g): 9.9

Traverse Point	Run Time	Pitot ΔP_s (in. H_2O)	Sample ΔH (in. H_2O)	Metered (ft³)	Stack T_s (°F)	Dry Gas Meter $T_{m\,in}$ (°F)	Dry Gas Meter $T_{m\,out}$ (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{\text{in. } H_2O}$)	Volume (calculated) (ft³)	Isokinetics (calculated) (%)
	0.0			775.85						
1-01	5.0	0.54	0.46	777.75	313	76	75	0.73	1.90	104.3
1-01	10.0	0.54	0.46	779.61	313	77	75	0.73	1.86	102.0
1-02	15.0	0.65	0.55	781.62	315	78	75	0.81	2.01	100.5
1-02	20.0	0.65	0.55	783.65	317	80	75	0.81	2.03	101.5
Leak Check	20.0			783.70						
2-01	25.0	0.55	0.47	785.56	309	80	76	0.74	1.86	100.4
2-01	30.0	0.55	0.47	787.47	312	82	77	0.74	1.91	103.1
2-02	35.0	0.66	0.56	789.51	311	83	77	0.81	2.04	100.3
2-02	40.0	0.70	0.60	791.61	310	85	78	0.84	2.10	100.0
Leak Check	40.0			791.66						
3-01	45.0	0.50	0.43	793.43	302	84	79	0.71	1.77	99.1
3-01	50.0	0.50	0.43	795.24	306	85	79	0.71	1.81	101.6
3-02	55.0	0.64	0.54	797.25	303	85	80	0.80	2.01	99.4
3-02	60.0	0.69	0.59	799.35	303	86	80	0.83	2.10	100.0
Leak Check	60.0			799.38						
4-01	65.0	0.44	0.37	800.99	298	84	80	0.66	1.61	95.8
4-01	70.0	0.44	0.37	802.59	298	85	81	0.66	1.60	95.0
4-02	75.0	0.67	0.57	804.66	306	86	81	0.82	2.07	100.1
4-02	80.0	0.69	0.59	806.75	306	87	82	0.83	2.09	99.4
5-01	85.0	0.40	0.34	808.44	279	86	82	0.63	1.69	103.7
Leak Check	85.0			808.50						
5-02	90.0	0.40	0.34	809.99	285	86	82	0.63	1.49	91.8
5-03	95.0	0.64	0.54	811.95	288	86	82	0.80	1.96	95.7
5-04	100.0	0.66	0.56	814.03	288	87	82	0.81	2.08	99.9
Leak Check	100.0			814.14						
6-01	105.0	0.50	0.43	815.96	277	85	83	0.71	1.82	99.8
6-02	110.0	0.50	0.43	817.80	279	86	83	0.71	1.84	100.9
6-03	115.0	0.64	0.54	819.78	282	86	83	0.80	1.98	96.2
6-04	120.0	0.64	0.54	821.81	283	87	83	0.80	2.03	98.6
Leak Check	120.0			821.90						
7-01	125.0	0.47	0.40	823.51	280	87	83	0.69	1.61	91.1
7-02	130.0	0.47	0.40	825.24	280	87	83	0.69	1.73	97.9
7-03	135.0	0.65	0.55	827.26	284	88	84	0.81	2.02	97.3
7-04	140.0	0.65	0.55	829.30	283	88	84	0.81	2.04	98.2
Final	140.0	0.75	0.49	53.06	297	82				

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Field Data Printout

Location: SDA Inlet
Test Run: 2B/3A High Load (using Run 2 Mercury data)
Client: Mecklenburg Cogeneration Facility
Project No: 8493 Method: 2
Test Date: 10/13/99 Testing Type: Velocity
Meter ΔH@: 1.9080
Meter Y_d: 0.9980 Area (ft²): 74.26
Pitot C_p: 0.84
Static P: -6.2
Leak Rate Before: 0.006 cfm @ 16 "Hg
Leak Rate After: 0.004 cfm @ 10 "Hg

Bar. Press. (in. Hg): 29.85
Actual Moisture (%): 9.5
O_2 (dry volume %): 4.0
CO_2 (dry volume %): 15.0
Start Time (approx.): 12:55
Stop Time (approx.): 13:13
H_2O (condensate, ml): 105.5
H_2O (silica, g): 9.9

Traverse Point	Pitot ΔP_s (in. H_2O)	Stack T_s (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{\text{in. } H_2O}$)	Run Time	Sample ΔH (in. H_2O)	Metered (ft³)	Dry Gas Meter $T_{m\,in}$ (°F)	Dry Gas Meter $T_{m\,out}$ (°F)	Volume (calculated) (ft³)
				0.0		775.85			
1-01	1.00	315	1.00	5.0	0.46	777.75	76	75	1.90
1-02	0.74	323	0.86	10.0	0.46	779.61	77	75	1.86
1-03	0.77	321	0.88	15.0	0.55	781.62	78	75	2.01
1-04	0.79	318	0.89	20.0	0.55	783.65	80	75	2.03
2-01	0.91	316	0.95	20.0		783.70			
2-02	0.74	318	0.86	25.0	0.47	785.56	80	76	1.86
2-03	0.75	317	0.87	30.0	0.47	787.47	82	77	1.91
2-04	0.69	312	0.83	35.0	0.56	789.51	83	77	2.04
3-01	0.74	309	0.86	40.0	0.60	791.61	85	78	2.10
3-02	0.90	313	0.95	40.0		791.66			
3-03	0.59	312	0.77	45.0	0.43	793.43	84	79	1.77
3-04	0.74	301	0.86	50.0	0.43	795.24	85	79	1.81
4-01	0.64	305	0.80	55.0	0.54	797.25	85	80	2.01
4-02	0.76	307	0.87	60.0	0.59	799.35	86	80	2.10
4-03	0.53	308	0.73	60.0		799.38			
4-04	0.42	302	0.65	65.0	0.37	800.99	84	80	1.61
5-01	0.76	310	0.87	70.0	0.37	802.59	85	81	1.60
5-02	0.34	308	0.58	75.0	0.57	804.66	86	81	2.07
5-03	0.44	302	0.66	80.0	0.59	806.75	87	82	2.09
5-04	0.60	297	0.77	85.0	0.34	808.44	86	82	1.69
6-01	0.62	298	0.79	85.0		808.50			
6-02	0.50	300	0.71	90.0	0.34	809.99	86	82	1.49
6-03	0.50	296	0.71	95.0	0.54	811.95	86	82	1.96
6-04	0.66	292	0.81	100.0	0.56	814.03	87	82	2.08
7-01	0.60	290	0.77	100.0		814.14			
7-02	0.37	289	0.61	105.0	0.43	815.96	85	83	1.82
7-03	0.40	286	0.63	110.0	0.43	817.80	86	83	1.84
7-04	0.44	284	0.66	115.0	0.54	819.78	86	83	1.98
				120.0	0.54	821.81	87	83	2.03
				120.0		821.90			
				125.0	0.40	823.51	87	83	1.61
				130.0	0.40	825.24	87	83	1.73
				135.0	0.55	827.26	88	84	2.02
				140.0	0.55	829.30	88	84	2.04
Final	0.79	305		140.0	0.49	53.06	82		

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Field Data Printout

Location: Scrubber Inlet
Test Run: 3
Client: Mecklenburg Cogeneration Facility
Project No: 8493
Test Date: 10/13/99
Meter ΔH@: 1.9080
Meter Y_d: 0.9980
Pitot C_p: 0.84
Static P: -6.4
Leak Rate Before: 0.004 cfm @ 15 "Hg
Leak Rate After: 0.004 cfm @ 10 "Hg

Method: Ontario Hydro
Testing Type: Mercury
Area (ft^2): 74.26

Bar. Press. (in. Hg): 29.85
Assumed Moisture (%): 9.8
Nozzle Diameter (D_n): 0.190
O_2 (dry volume %): 4.0
CO_2 (dry volume %): 15.0
Start Time (approx.): 13:20
Stop Time (approx.): 15:54
H_2O (condensate, ml): 106.7
H_2O (silica, g): 9.7

Traverse Point	Run Time	Pitot ΔP_s	Sample ΔH	Metered	Stack T_s	Dry Gas Meter $T_{m\,in}$	Dry Gas Meter $T_{m\,out}$	$\sqrt{\Delta P_s}$ (calculated)	Volume (calculated)	Isokinetics (calculated)
	0.0	(in. H_2O)	(in. H_2O)	(ft^3) 829.90	(°F)	(°F)	(°F)	($\sqrt{in.\ H_2O}$)	(ft^3)	(%)
1-01	5.0	0.55	0.47	831.84	313	83	82	0.74	1.94	104.4
1-01	10.0	0.55	0.47	833.74	313	84	82	0.74	1.90	102.2
1-02	15.0	0.70	0.60	835.88	320	84	82	0.84	2.14	102.5
1-02	20.0	0.74	0.63	838.13	320	85	82	0.86	2.25	104.7
Leak Check	20.0			838.23						
2-01	25.0	0.52	0.44	840.06	315	86	82	0.72	1.83	101.2
2-01	30.0	0.52	0.44	841.88	312	87	83	0.72	1.82	100.2
2-02	35.0	0.61	0.52	843.92	310	87	83	0.78	2.04	103.6
2-02	40.0	0.63	0.54	846.98	308	89	83	0.79	3.06	152.5*
Leak Check	40.0			847.04						
3-01	45.0	0.49	0.42	847.86	302	88	83	0.70	0.82	46.2*
3-01	50.0	0.49	0.42	849.65	307	89	84	0.70	1.79	100.9
3-02	55.0	0.65	0.55	851.63	306	89	84	0.81	1.98	96.9
3-02	60.0	0.60	0.51	853.65	306	90	84	0.77	2.02	102.8
Leak Check	60.0			853.75						
4-01	65.0	0.35	0.30	855.26	296	88	84	0.59	1.51	100.1
4-01	70.0	0.35	0.30	856.75	296	89	85	0.59	1.49	98.6
4-02	75.0	0.45	0.38	858.49	300	89	85	0.67	1.74	101.8
4-02	80.0	0.47	0.40	860.25	303	89	85	0.69	1.76	101.0
Leak Check	80.0			860.36						
5-01	85.0	0.40	0.34	861.98	285	89	85	0.63	1.62	99.5
5-01	90.0	0.40	0.34	863.65	286	89	85	0.63	1.67	102.7
5-02	95.0	0.61	0.52	865.64	290	90	86	0.78	1.99	99.2
5-02	100.0	0.61	0.52	867.63	291	90	86	0.78	1.99	99.3
6-01	105.0	0.50	0.43	869.46	274	89	86	0.71	1.83	99.8
Leak Check	105.0			869.53						
6-01	110.0	0.50	0.43	871.24	280	89	86	0.71	1.71	93.6
6-02	115.0	0.65	0.55	873.26	281	90	86	0.81	2.02	97.0
6-02	120.0	0.65	0.55	875.34	285	91	87	0.81	2.08	99.9
Leak Check	120.0			875.44						
7-01	125.0	0.49	0.42	877.13	280	90	87	0.70	1.69	93.3
7-01	130.0	0.49	0.42	879.96	281	90	87	0.70	2.83	156.3*
7-02	135.0	0.55	0.47	880.87	281	91	87	0.74	0.91	47.4*
7-02	140.0	0.55	0.47	882.77	284	91	88	0.74	1.90	99.1
Final	140.0	0.73	0.46	52.33	297	87				

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Field Data Printout

Location: SDA Inlet
Test Run: 3B High Load
Client: Mecklenburg Cogeneration Facility
Project No: 8493
Method: 2
Test Date: 10/13/99
Testing Type: Velocity
Meter ΔH@: 1.9080
Meter Y_d: 0.9980
Area (ft²): 74.26
Pitot C_p: 0.84
Static P: -6.4
Leak Rate Before: 0.004 cfm @ 15 "Hg
Leak Rate After: 0.004 cfm @ 10 "Hg

Bar. Press. (in. Hg): 29.85
Actual Moisture (%): 9.5
O_2 (dry volume %): 4.0
CO_2 (dry volume %): 15.0
Start Time (approx.): 16:10
Stop Time (approx.): 16:25
H_2O (condensate, ml): 106.7
H_2O (silica, g): 9.7

Traverse Point	Pitot ΔP_s (in. H_2O)	Stack T_s (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{in.}$ H_2O)	Run Time	Sample ΔH (in. H_2O)	Metered (ft³)	Dry Gas Meter $T_{m\,in}$ (°F)	Dry Gas Meter $T_{m\,out}$ (°F)	Volume (calculated) (ft³)
				0.0		829.90			
1-01	0.70	310	0.84	5.0	0.47	831.84	83	82	1.94
1-02	0.53	319	0.73	10.0	0.47	833.74	84	82	1.90
1-03	0.52	318	0.72	15.0	0.60	835.88	84	82	2.14
1-04	0.34	317	0.58	20.0	0.63	838.13	85	82	2.25
2-01	0.54	327	0.73	20.0		838.23			
2-02	0.43	324	0.66	25.0	0.44	840.06	86	82	1.83
2-03	0.54	319	0.73	30.0	0.44	841.88	87	83	1.82
2-04	0.56	311	0.75	35.0	0.52	843.92	87	83	2.04
3-01	0.60	294	0.77	40.0	0.54	846.98	89	83	3.06
3-02	0.72	301	0.85	40.0		847.04			
3-03	0.45	304	0.67	45.0	0.42	847.86	88	83	0.82
3-04	0.59	297	0.77	50.0	0.42	849.65	89	84	1.79
4-01	0.43	295	0.66	55.0	0.55	851.63	89	84	1.98
4-02	0.57	302	0.75	60.0	0.51	853.65	90	84	2.02
4-03	0.40	305	0.63	60.0		853.75			
4-04	0.40	296	0.63	65.0	0.30	855.26	88	84	1.51
5-01	0.56	294	0.75	70.0	0.30	856.75	89	85	1.49
5-02	0.44	296	0.66	75.0	0.38	858.49	89	85	1.74
5-03	0.32	292	0.57	80.0	0.40	860.25	89	85	1.76
5-04	0.44	290	0.66	80.0		860.36			
6-01	0.43	291	0.66	85.0	0.34	861.98	89	85	1.62
6-02	0.30	292	0.55	90.0	0.34	863.65	89	85	1.67
6-03	0.31	287	0.56	95.0	0.52	865.64	90	86	1.99
6-04	0.37	282	0.61	100.0	0.52	867.63	90	86	1.99
7-01	0.27	286	0.52	105.0	0.43	869.46	89	86	1.83
7-02	0.22	287	0.47	105.0		869.53			
7-03	0.21	281	0.46	110.0	0.43	871.24	89	86	1.71
7-04	0.24	280	0.49	115.0	0.55	873.26	90	86	2.02
				120.0	0.55	875.34	91	87	2.08
				120.0		875.44			
				125.0	0.42	877.13	90	87	1.69
				130.0	0.42	879.96	90	87	2.83
				135.0	0.47	880.87	91	87	0.91
				140.0	0.47	882.77	91	88	1.90
Final	0.66	300		140.0	0.46	52.33	87		

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Field Data Printout

Location: Baghouse Outlet
Test Run: 1
Client: Mecklenburg Cogeneration Facility
Project No: 8493
Test Date: 10/12/99
Meter ΔH@: 1.8585
Meter Y_d: 1.0028
Pitot C_p: 0.84
Static P: -18.2
Leak Rate Before: 0.008 cfm @ 15 "Hg
Leak Rate After: 0.006 cfm @ 10 "Hg

Method: Ontario Hydro
Testing Type: Mercury
Area (ft²): 72.33

Bar. Press. (in. Hg): 29.90
Actual Moisture (%): 13.2
Nozzle Diameter (D_n): 0.199
O_2 (dry volume %): 4.8
CO_2 (dry volume %): 14.4
Start Time (approx.): 14:55
Stop Time (approx.): 17:39
H_2O (condensate, ml): 193.7
H_2O (silica, g): 12.6

Traverse Point	Run Time	Pitot ΔP_s	Sample ΔH	Metered	Stack T_s	Dry Gas Meter $T_{m\,in}$	Dry Gas Meter $T_{m\,out}$	$\sqrt{\Delta P_s}$ (calculated)	Volume (calculated)	Isokinetics (calculated)
	0.0	(in. H_2O)	(in. H_2O)	400.00 (ft³)	(°F)	(°F)	(°F)	(√in. H_2O)	(ft³)	(%)
1-01	5.0	0.46	0.46	401.93	169	93	93	0.68	1.93	96.4
1-02	10.0	0.40	0.40	403.74	169	93	93	0.63	1.81	96.9
1-03	15.0	0.45	0.45	405.67	168	94	92	0.67	1.93	97.4
1-04	20.0	0.23	0.23	406.98	167	95	92	0.48	1.31	92.2
2-01	25.0	0.67	0.67	409.33	168	97	93	0.82	2.35	96.8
2-02	30.0	0.55	0.55	411.43	169	98	93	0.74	2.10	95.5
2-03	35.0	0.46	0.46	413.37	169	100	94	0.68	1.94	96.2
2-04	40.0	0.50	0.50	415.40	168	101	94	0.71	2.03	96.4
3-01	45.0	0.81	0.81	417.90	168	102	95	0.90	2.50	93.2
3-02	50.0	0.62	0.62	420.26	168	104	96	0.79	2.36	100.2
3-03	55.0	0.50	0.50	422.99	169	105	97	0.71	2.73	128.9*
3-04	60.0	0.43	0.43	424.14	168	106	97	0.66	1.15	58.4*
4-01	65.0	0.95	0.95	426.94	168	106	98	0.97	2.80	95.8
4-02	70.0	0.80	0.80	429.53	168	107	98	0.89	2.59	96.4
4-03	75.0	0.68	0.68	431.95	169	109	100	0.82	2.42	97.4
4-04	80.0	0.87	0.87	434.64	171	111	101	0.93	2.69	95.7
5-01	85.0	1.00	1.00	437.52	167	108	101	1.00	2.88	95.5
5-02	90.0	1.00	1.00	440.43	168	110	101	1.00	2.91	96.4
5-03	95.0	0.60	0.60	442.77	167	110	102	0.77	2.34	99.8
5-04	100.0	0.66	0.66	445.12	167	110	102	0.81	2.35	95.6
6-01	105.0	0.98	0.98	447.98	168	109	102	0.99	2.86	95.7
6-02	110.0	1.20	1.20	451.04	168	111	103	1.10	3.06	92.4
6-03	115.0	1.30	1.30	454.25	167	111	103	1.14	3.21	93.0
6-04	120.0	1.10	1.10	457.29	167	111	107	1.05	3.04	95.4
7-01	125.0	0.80	0.80	459.92	168	109	103	0.89	2.63	97.3
7-02	130.0	0.71	0.71	462.37	167	109	103	0.84	2.45	96.1
7-03	135.0	0.84	0.84	465.05	167	110	103	0.92	2.68	96.6
7-04	140.0	1.00	1.00	467.97	167	110	103	1.00	2.92	96.5
Final	140.0	0.84	0.73	67.97	168	102				

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Field Data Printout

Location: Baghouse Outlet
Test Run: 2
Client: Mecklenburg Cogeneration Facility
Project No: 8493
Test Date: 10/13/99
Meter ΔH@: 1.8585
Meter Y_d: 1.0028
Pitot C_p: 0.84
Static P: -18.5
Leak Rate Before: 0.002 cfm @ 15 "Hg
Leak Rate After: 0.004 cfm @ 12 "Hg

Method: Ontario Hydro
Testing Type: Mercury
Area (ft²): 72.33

Bar. Press. (in. Hg): 29.85
Actual Moisture (%): 13.6
Nozzle Diameter (D_n): 0.200
O_2 (dry volume %): 4.4
CO_2 (dry volume %): 14.8
Start Time (approx.): 09:45
Stop Time (approx.): 12:25
H_2O (condensate, ml): 206.2
H_2O (silica, g): 13.2

Traverse Point	Run Time	Pitot ΔP_s (in. H_2O)	Sample ΔH (in. H_2O)	Metered (ft³)	Stack T_s (°F)	Dry Gas Meter $T_{m\,in}$ (°F)	Dry Gas Meter $T_{m\,out}$ (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{\text{in. } H_2O}$)	Volume (calculated) (ft³)	Isokinetics (calculated) (%)
	0.0			468.50						
1-01	5.0	0.50	0.50	470.43	167	76	73	0.71	1.93	95.0
1-02	10.0	0.56	0.56	472.48	166	77	73	0.75	2.05	95.2
1-03	15.0	0.40	0.40	474.19	166	80	73	0.63	1.71	93.6
1-04	20.0	0.27	0.27	475.54	167	81	74	0.52	1.35	89.8*
2-01	25.0	0.50	0.50	477.48	166	82	75	0.71	1.94	94.7
2-02	30.0	0.72	0.72	479.82	166	85	76	0.85	2.34	94.8
2-03	35.0	0.51	0.51	481.84	166	86	77	0.71	2.02	97.1
2-04	40.0	0.25	0.25	483.26	168	86	78	0.50	1.42	97.5
3-01	45.0	0.90	0.90	485.91	166	88	79	0.95	2.65	95.6
3-02	50.0	0.82	0.82	488.51	167	90	80	0.91	2.60	98.0
3-03	55.0	0.66	0.66	490.86	165	92	81	0.81	2.35	98.3
3-04	60.0	0.24	0.24	492.26	167	92	82	0.49	1.40	97.1
4-01	65.0	0.92	0.92	494.97	165	91	83	0.96	2.71	96.0
4-02	70.0	0.82	0.82	497.55	165	93	83	0.91	2.58	96.6
4-03	75.0	0.74	0.74	500.01	166	94	84	0.86	2.46	96.8
4-04	80.0	0.59	0.59	502.17	166	94	84	0.77	2.16	95.2
5-01	85.0	1.10	1.10	505.10	165	93	85	1.05	2.93	94.6
5-02	90.0	1.10	1.10	508.02	165	95	85	1.05	2.92	94.1
5-03	95.0	1.00	1.00	510.87	166	96	85	1.00	2.85	96.3
5-04	100.0	1.10	1.10	513.80	166	96	86	1.05	2.93	94.3
6-01	105.0	1.10	1.10	516.77	165	91	86	1.05	2.97	96.0
6-02	110.0	1.20	1.20	519.80	165	94	86	1.10	3.03	93.5
6-03	115.0	1.30	1.30	522.98	165	96	87	1.14	3.18	94.1
6-04	120.0	1.00	1.00	525.90	165	97	87	1.00	2.92	98.3
7-01	125.0	0.71	0.71	528.38	165	95	87	0.84	2.48	99.2
7-02	130.0	0.69	0.69	530.77	165	96	87	0.83	2.39	96.9
7-03	135.0	1.20	1.20	533.85	165	98	88	1.10	3.08	94.6
7-04	140.0	0.73	0.73	536.29	165	99	88	0.85	2.44	95.8
Final	140.0	0.86	0.77	67.79	166	86				

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Field Data Printout

Location: Baghouse Outlet
Test Run: 3
Client: Mecklenburg Cogeneration Facility
Project No: 8493
Test Date: 10/13/99
Meter ΔH@: 1.8585
Meter Y_d: 1.0028
Pitot C_p: 0.84
Static P: -18.6
Leak Rate Before: 0.000 cfm @ 15 "Hg
Leak Rate After: 0.002 cfm @ 8 "Hg

Method: Ontario Hydro
Testing Type: Mercury
Area (ft²): 72.33

Bar. Press. (in. Hg): 29.85
Actual Moisture (%): 14.1
Nozzle Diameter (D_n): 0.200
O_2 (dry volume %): 4.8
CO_2 (dry volume %): 14.2
Start Time (approx.): 13:20
Stop Time (approx.): 15:55
H_2O (condensate, ml): 210.9
H_2O (silica, g): 11.0

Traverse Point	Run Time	Pitot ΔP_s	Sample ΔH	Metered	Stack T_s	Dry Gas Meter $T_{m\,in}$	Dry Gas Meter $T_{m\,out}$	$\sqrt{\Delta P_s}$ (calculated)	Volume (calculated)	Isokinetics (calculated)
	0.0	(in. H_2O)	(in. H_2O)	537.40	(°F)	(°F)	(°F)	($\sqrt{in.}$ H_2O)	(ft³)	(%)
1-01	5.0	0.48	0.46	539.42	165	89	86	0.69	2.02	99.2
1-02	10.0	0.40	0.38	541.17	166	90	87	0.63	1.75	94.0
1-03	15.0	0.43	0.40	543.00	167	92	87	0.66	1.83	94.8
1-04	20.0	0.30	0.28	544.51	165	93	88	0.55	1.51	93.3
Leak-check	20.0			545.01						
2-01	25.0	0.62	0.59	547.23	164	94	88	0.79	2.22	95.3
2-02	30.0	0.55	0.52	549.30	166	96	89	0.74	2.07	94.2
2-03	35.0	0.40	0.38	551.06	166	96	89	0.63	1.76	93.9
2-04	40.0	0.68	0.65	553.38	165	97	89	0.82	2.32	94.8
Leak-check	40.0			553.82						
3-01	45.0	0.77	0.73	556.28	165	98	90	0.88	2.46	94.3
3-02	50.0	0.68	0.65	558.64	164	99	90	0.82	2.36	96.1
3-03	55.0	0.86	0.82	561.27	166	100	91	0.93	2.63	95.3
3-04	60.0	0.30	0.28	562.75	166	99	91	0.55	1.48	90.7
Leak-check	60.0			563.02						
4-01	65.0	0.82	0.78	565.59	165	98	91	0.91	2.57	95.4
4-02	70.0	0.91	0.87	568.28	164	99	91	0.95	2.69	94.7
4-03	75.0	0.64	0.61	570.55	165	100	91	0.80	2.27	95.2
4-04	80.0	0.42	0.40	572.36	166	100	92	0.65	1.81	93.7
Leak-check	80.0			572.68						
5-01	85.0	1.10	1.05	575.65	165	99	92	1.05	2.97	95.1
5-02	90.0	1.10	1.05	578.57	165	101	92	1.05	2.92	93.3
5-03	95.0	1.10	1.05	581.52	165	102	92	1.05	2.95	94.2
5-04	100.0	0.60	0.57	583.68	165	101	93	0.77	2.16	93.3
Leak-check	100.0			583.91						
6-01	105.0	1.30	1.20	587.02	165	100	93	1.14	3.11	91.5
6-02	110.0	1.30	1.20	590.14	165	102	93	1.14	3.12	91.6
6-03	115.0	0.75	0.71	592.61	165	102	93	0.87	2.47	95.4
6-04	120.0	0.92	0.87	595.31	165	102	93	0.96	2.70	94.2
Leak-check	120.0			595.59						
7-01	125.0	0.66	0.63	597.98	165	100	93	0.81	2.39	98.5
7-02	130.0	0.64	0.62	600.17	165	101	93	0.80	2.19	91.6
7-03	135.0	1.20	1.10	603.16	164	101	93	1.10	2.99	91.4
7-04	140.0	1.20	1.10	606.19	164	101	93	1.10	3.03	92.6
Final	140.0	0.85	0.71	66.75	165	95				

Prepared by CAE Proprietary Software
SS EPA 29

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LABORATORY DATA

F

PHILIP SERVICES

DATA PACKAGE
FOR
CLEAN AIR ENGINEERING
Project # 8493

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

Submission #: 9J0745

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

1. CASE NARRATIVE

PROJECT NARRATIVE

PHILIP Analytical Services (Burlington ON)
Philip Project: AN991308
Philip Submission #:9J0745

Client: Clean Air Engineering
Client Project: 8493

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 (September1, 1999 Revision)- Front Half					
061631 99	Method Blank	99/10/13	99/10/20	99/12/02	99/12/02
061632 99	Reagent Blank	99/10/13	99/10/19	99/12/02	99/12/02
061633 99	Field Blank Inlet	99/10/13	99/10/19	99/12/02	99/12/02
061634 99	Unit 1 Inlet-R1	99/10/12	99/10/19	99/12/02	99/12/02
061635 99	Unit 1 Inlet-R2	99/10/13	99/10/19	99/12/02	99/12/02
061636 99	Unit 1 Inlet-R3	99/10/13	99/10/19	99/12/02	99/12/02
061637 99	Field Blank Outlet	99/10/13	99/10/19	99/12/02	99/12/02
061638 99	Unit 1 Outlet-R1	99/10/12	99/10/19	99/12/02	99/12/02
061639 99	Unit 1 Outlet-R2	99/10/12	99/10/19	99/12/02	99/12/02
061640 99	Unit 1 Outlet-R3	99/10/12	99/10/19	99/12/02	99/12/02
Draft ASTM Mercury Speciation Method (September1, 1999 Revision)- Hydroxylamine					
061631 99	Method Blank	99/10/13	99/10/20	99/10/27	99/10/27
061632 99	Reagent Blank	99/10/13	99/10/19	99/10/27	99/10/27
Draft ASTM Mercury Speciation Method (September1, 1999 Revision)- KCl Impingers/Rinses					
061631 99	Method Blank	99/10/13	99/10/20	99/11/01	99/11/01
061632 99	Reagent Blank	99/10/13	99/10/19	99/11/01	99/11/01
061633 99	Field Blank Inlet	99/10/13	99/10/19	99/11/01	99/11/01
061634 99	Unit 1 Inlet-R1	99/10/12	99/10/19	99/11/01	99/11/01
061635 99	Unit 1 Inlet-R2	99/10/13	99/10/19	99/11/01	99/11/01
061636 99	Unit 1 Inlet-R3	99/10/13	99/10/19	99/11/01	99/11/01
061637 99	Field Blank Outlet	99/10/13	99/10/19	99/11/01	99/11/01
061638 99	Unit 1 Outlet-R1	99/10/12	99/10/19	99/11/01	99/11/01
061639 99	Unit 1 Outlet-R2	99/10/12	99/10/19	99/11/01	99/11/01
061640 99	Unit 1 Outlet-R3	99/10/12	99/10/19	99/11/01	99/11/01
Draft ASTM Mercury Speciation Method (September1, 1999 Revision)- KMNO4 Impingers/Rinses					
061631 99	Method Blank	99/10/13	99/10/20	99/11/03	99/11/03
061632 99	Reagent Blank	99/10/13	99/10/19	99/11/03	99/11/03
061633 99	Field Blank Inlet	99/10/13	99/10/19	99/11/03	99/11/03

061634 99	Unit 1 Inlet-R1	99/10/12	99/10/19	99/11/03	99/11/03
061635 99	Unit 1 Inlet-R2	99/10/13	99/10/19	99/11/03	99/11/03
061636 99	Unit 1 Inlet-R3	99/10/13	99/10/19	99/11/03	99/11/03
061637 99	Field Blank Outlet	99/10/13	99/10/19	99/11/03	99/11/03
061638 99	Unit 1 Outlet-R1	99/10/12	99/10/19	99/11/03	99/11/03
061639 99	Unit 1 Outlet-R2	99/10/12	99/10/19	99/11/03	99/11/03
061640 99	Unit 1 Outlet-R3	99/10/12	99/10/19	99/11/03	99/11/03

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

061631 99	Method Blank	99/10/13	99/10/20	99/10/26	99/10/26
061632 99	Reagent Blank	99/10/13	99/10/19	99/10/26	99/10/26
061633 99	Field Blank Inlet	99/10/13	99/10/19	99/10/26	99/10/26
061634 99	Unit 1 Inlet-R1	99/10/12	99/10/19	99/10/26	99/10/26
061635 99	Unit 1 Inlet-R2	99/10/13	99/10/19	99/10/26	99/10/26
061636 99	Unit 1 Inlet-R3	99/10/13	99/10/19	99/10/26	99/10/26
061637 99	Field Blank Outlet	99/10/13	99/10/19	99/10/26	99/10/26
061638 99	Unit 1 Outlet-R1	99/10/12	99/10/19	99/10/26	99/10/26
061639 99	Unit 1 Outlet-R2	99/10/12	99/10/19	99/10/26	99/10/26
061640 99	Unit 1 Outlet-R3	99/10/12	99/10/19	99/10/26	99/10/26

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

b) Shipping Problems: none encountered

c) Documentation Problems: none encountered

II. SAMPLE PREP:

No problems encountered

III. SAMPLE ANALYSIS:

See also comments within the appropriate Certificate of Analysis.

a) Hold Times:
All impingers portions were analyzed within this recommended hold time of 45 days. The filter and rinses were analyzed 51-2 days following sampling while the ash portions were analyzed within the recommended hold times. Since the front half portions of the sample are within the 'heated zone' of the sampling train and since volatile mercury would have been stripped from this section, there should be no compromise to data quality for this exceedance. Note that it is concern for the 'volatile' Hg portions that the recommended hold time of 45 days was targeted. Fly ash is well known to provide Hg in a stable solid matrix. The solid NIST reference material 1633b is a fly ash and is recognized as stable to certified levels for periods of years.

b) Instrument Calibration: all within control limits

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

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

991209
Date

2. ANALYTICAL DATA REPORT

PHILIP SERVICES

Certificate of Analysis

CLIENT INFORMATION

Attention:	Tim Rodak
Client Name:	Clean Air Engineering
Project:	8493
Project Desc:	Mecklenburg, Cogen
Address:	Parkway West Industrial Park 1601 Parkway View Drive Pittsburg, PA 15205
Fax Number:	412-787-9138
Phone Number:	412-787-9130

LABORATORY INFORMATION

Contact:	Ron McLeod
Project:	AN991308
Date Received:	99/10/20
Date Reported:	99/12/03
Submission No.:	9J0745
Sample No.:	061631-061640

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

PHILIP SERVICES

Certificate of Analysis

CLIENT INFORMATION		LABORATORY INFORMATION	
Attention:	Tim Rodak	**Contact:**	Ron McLeod
Client Name:	Clean Air Engineering	**Project:**	AN991308
Project:	8493	**Date Received:**	99/10/20
Project Desc:	Mecklenburg, Cogen	**Date Reported:**	99/12/03
Address:	Parkway West Industrial Park 1601 Parkway View Drive Pittsburg, PA 15205	**Submission No.:**	9J0745
		Sample No.:	061631-061640
Fax Number:	412-787-9138		
Phone Number:	412-787-9130		

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: Revised Report: Jan 19th, 2000

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	Reagent Blank	Field Blank Inlet	Unit 1 Inlet-R1	Unit 1 Inlet-R1
	Client ID:		Method Blank	Blank Spike #1	Blank Spike #1	Blank Spike #2	Blank Spike #2	Reagent Blank	Field Blank Inlet	Unit 1 Inlet-R1	Unit 1 Inlet-R1
	Lab No.:		061631 99	061631 99	061631 99	061631 99	061631 99	061632 99	061633 99	061634 99	061634 99
	Date Sampled:		-	-	-	-	-	99/10/13	99/10/13	99/10/12	99/10/12
Component	**MDL**	**Units**			% Recoveries		% Recoveries				Duplicate
Mercury - filter	0.010	ug	<	0.10	100	0.10	100	<0.050	<0.050	14	-
Mercury - hydroxylamine	0.010	"	<	0.10	100	0.10	100	<	-	-	-
Mercury - KCl	0.030	"	<	0.31	100	0.32	110	<0.10	<0.10	4.2	4.1
Mercury - KMnO4	0.030	"	<	0.30	99	0.30	100	0.35	1.1	8.7	8.8
Mercury - H202	0.010	"	<	0.10	100	0.10	100	<0.25	<0.25	<0.25	<0.25

Client:Clean Air Engineering Project:8493

JAN 19 2000 14:23 FR PHILIP ANALYTICAL 905 332 9169 TO 14127879138 P.02/06

PASC - Certificate of Analysis

	Client ID:		Unit 1 Inlet-R1	Unit 1 Inlet-R1	Unit 1 Inlet-R1	Unit 1 Inlet-R1	Unit 1 Inlet-R2	Unit 1 Inlet-R3	Field Blank Outlet	Unit 1 Outlet-R1	Unit 1 Outlet-R1
	Lab No.:		061634 99	061634 99	061634 99	061634 99	061635 99	061636 99	061637 99	061638 99	061638 99
	Date Sampled:		99/10/12	99/10/12	99/10/12	99/10/12	99/10/13	99/10/13	99/10/13	99/10/12	99/10/12
Component	**MDL**	**Units**	M. Spike	MS % Rec.	MS Dup	MSD % Rec.					Duplicate
Mercury - filter	0.010	ug	-	-	-	-	7.8	9.3	<0.050	<0.050	<0.050
Mercury - hydroxylamine	0.010	"	-	-	-	-	-	-	-	-	-
Mercury - KCl	0.030	"	7.5	100	7.5	100	5.8	4.1	<0.10	0.12	-
Mercury - KMnO4	0.030	"	15	98	15	99	0.32	0.60	<0.10	0.14	-
Mercury - H202	0.010	"	2.6	110	2.6	100	<0.25	<0.25	<0.25	<0.25	-

JAN 19 2000 14:23 FR PHILIP ANALYTICAL 905 332 9169 TO 14127879138 P.03/06

PASC - Certificate of Analysis

Client ID:			Unit 1 Outlet-R1	Unit 1 Outlet-R1	Unit 1 Outlet-R1	Unit 1 Outlet-R1	Unit 1 Outlet-R2	Unit 1 Outlet-R3
Lab No.:			061638 99	061638 99	061638 99	061638 99	061639 99	061640 99
Date Sampled:			99/10/12	99/10/12	99/10/12	99/10/12	99/10/12	99/10/12
Component	**MDL**	**Units**	M. Spike	MS % Rec.	MS Dup	MSD % Rec.		
Mercury - filter	0.010	ug	0.56	110	0.56	110	<0.050	<0.050
Mercury - hydroxylamine	0.010	"	-	-	-	-	-	-
Mercury - KCl	0.030	"	-	-	-	-	0.12	<0.10
Mercury - KMnO4	0.030	"	-	-	-	-	0.40	0.37
Mercury - H202	0.010	"	-	-	-	-	<0.25	<0.25

JAN 19 2000 14:23 FR PHILIP ANALYTICAL 905 332 9169 TO 14127879138 P.04/06

PASC - Summary of Analysis Pre. Dates

Batch Code:	**1202MSA2**
Mercury - filter	061631 99
	061632 99
	061633 99
	061634 99
	061635 99
	061636 99
	061637 99
	061638 99
	061639 99
	061640 99
Run Date:	99/12/02
Date of Sample Prep:	99/12/02
Batch Code:	**10271GHY**
Mercury - hydroxylamine	061631 99
	061632 99
Run Date:	99/10/27
Date of Sample Prep:	99/10/27
Batch Code:	**11012NKC**
Mercury - KCl	061631 99
	061632 99
	061633 99
	061634 99
	061635 99
	061636 99
	061637 99
	061638 99
	061639 99
	061640 99
Run Date:	99/11/01
Date of Sample Prep:	99/11/01
Batch Code:	**11032NM4**
Mercury - KMnO4	061631 99
	061632 99
	061633 99
	061634 99
	061635 99
	061636 99
	061637 99
	061638 99
	061639 99
	061640 99
Run Date:	99/11/03
Date of Sample Prep:	99/11/03
Batch Code:	**1026ABP2**

PASC - Summary of Analysis Pre. Dates

Mercury - H202	061631 99
	061632 99
	061633 99
	061634 99
	061635 99
	061636 99
	061637 99
	061638 99
	061639 99
	061640 99
Run Date:	99/10/26
Date of Sample Prep:	99/10/26

Client:Clean Air Engineering Project:8493

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
061631	CAE-PITT	MB R456	Mercury -	PV	-0.010	-99999.0	0.101	101.	0.100	100.	99/12/02	MSA2	99/12/02	MG03	50.	43.	*BLKIMP*
061632	CAE-PITT	Reagent Blank	Mercury -	PV	-0.050						99/12/02	MSA2	99/12/02	MG03	50.	44.	
061633	CAE-PITT	Field Blank Inlet	Mercury -	PV	-0.050						99/12/02	MSA2	99/12/02	MG03	50.	44.	
061634	CAE-PITT	Unit 1 Inlet-R1	Mercury -	PV	-0.050						99/12/02	MSA2	99/12/02	MG03	51.	44.	
061635	CAE-PITT	Unit 1 Inlet-R2	Mercury -	PV	14.351						99/12/02	MSA2	99/12/02	MG03	50.	44.	
061636	CAE-PITT	Unit 1 Inlet-R3	Mercury -	PV	7.842						99/12/02	MSA2	99/12/02	MG03	50.	44.	
061637	CAE-PITT	Field Blank Outlet	Mercury -	PV	9.287						99/12/02	MSA2	99/12/02	MG03	50.	44.	
061638	CAE-PITT	Unit 1 Outlet-R1	Mercury -	PV	-0.050	-0.050	0.556	105.	0.563	105.	99/12/02	MSA2	99/12/02	MG03	51.	44.	
061639	CAE-PITT	Unit 1 Outlet-R2	Mercury -	PV	-0.050						99/12/02	MSA2	99/12/02	MG03	51.	44.	
061640	CAE-PITT	Unit 1 Outlet-R3	Mercury -	PV	-0.050						99/12/02	MSA2	99/12/02	MG03	51.	44.	
BL1202	INTERNAL		Mercury -	PV	-0.010	-99999.0	0.101	101.	0.100	100.	99/12/02	MSA2	99/12/02	MG03	$$$	$$$	*BLKIMP*

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

111

00013

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.12.02(WP) Run Code: MG03 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)	0.6		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.6		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.6		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12			BL1202	MSA2		
13			"			
14			BL1202 S			
15			"			
16			BL1202 DS			
17			"			
18			61638			
19			"			
20			61638 D			
21			"			
22			61638 S			
23			"			
24			61638 DS			
25			"			
26			BLANK			
27			"			
28			61632			
29			"			
30			61633			
31			"			
32			CCV			
33			B			
34			D4			
35		1/10	61634			
36		1/10	"			
37		1/5	61635			
38		↓	"			
39			61636			
40		↓	"			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41			61637			
42			"			
43			61639			
44			"			
45			61640			
46			"			
47		1/2	1633 b			
48		↓	"			
49			CCV			
50			B			
51			D4			
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
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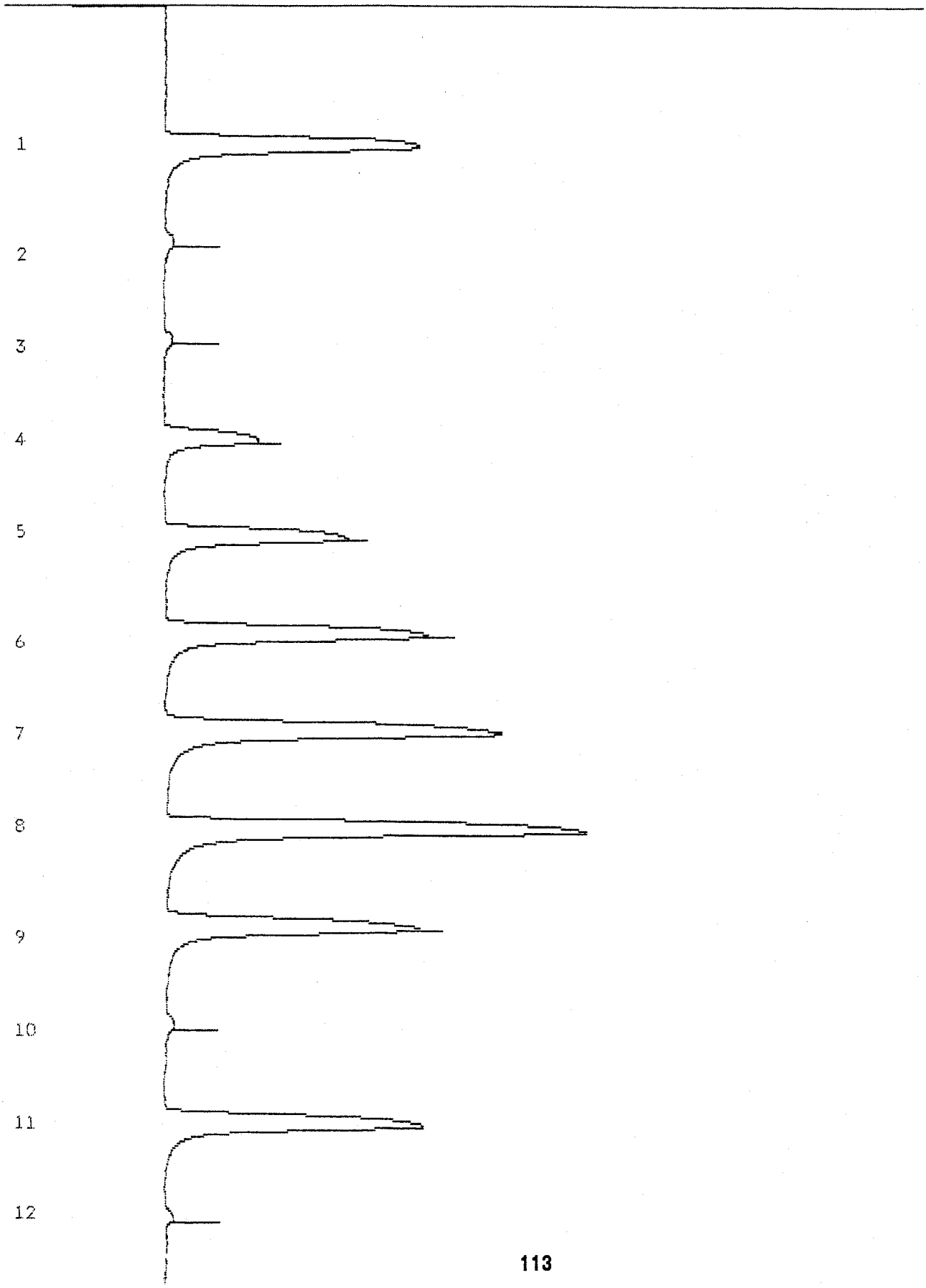
80						

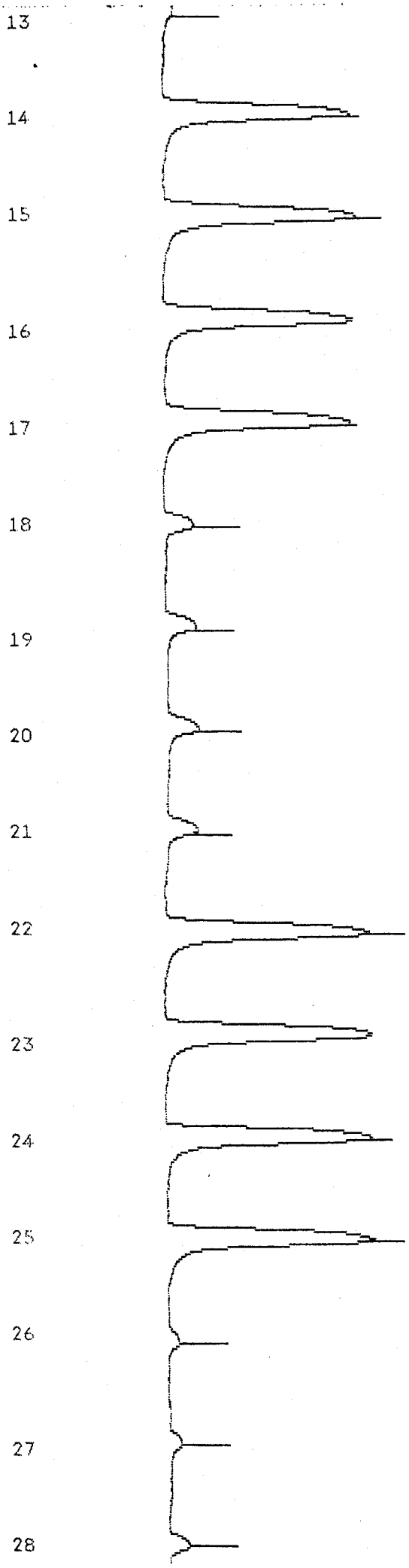
Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

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

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

RUN DATE: 12-02-1999 CHART DATE: 12-03-1999
CHART SPEED: 30
DATA FILE NAME: C:\DP4\DATA\991202WF.DAT

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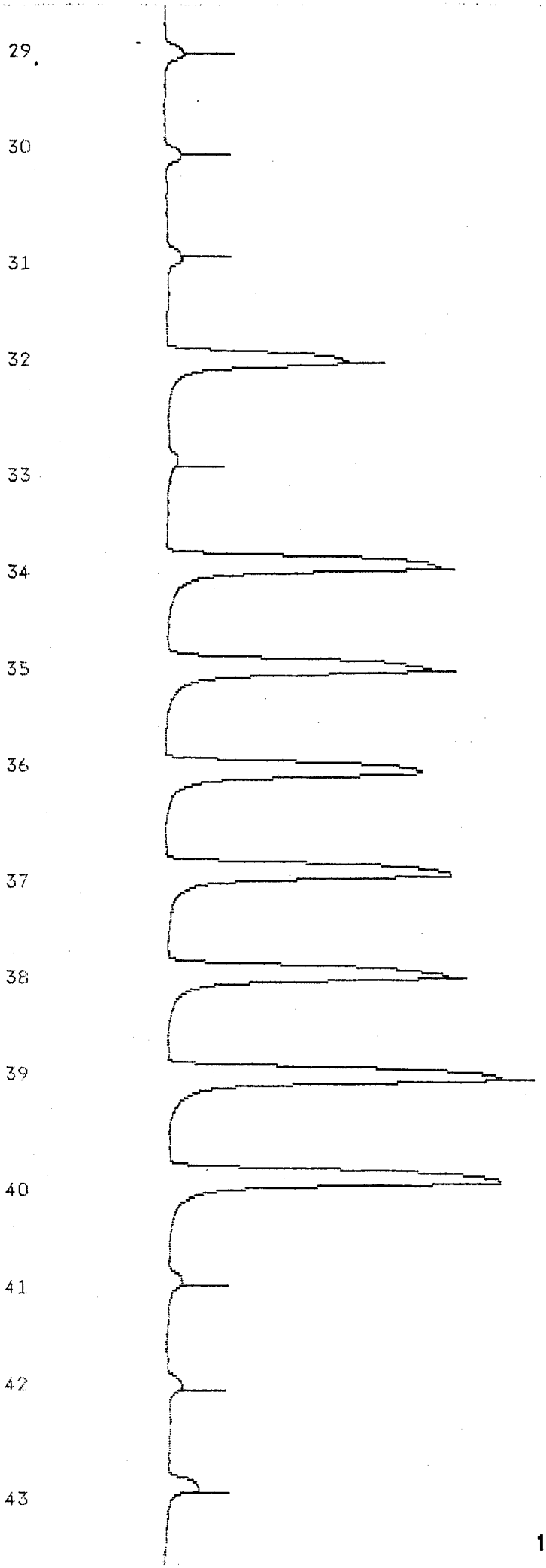
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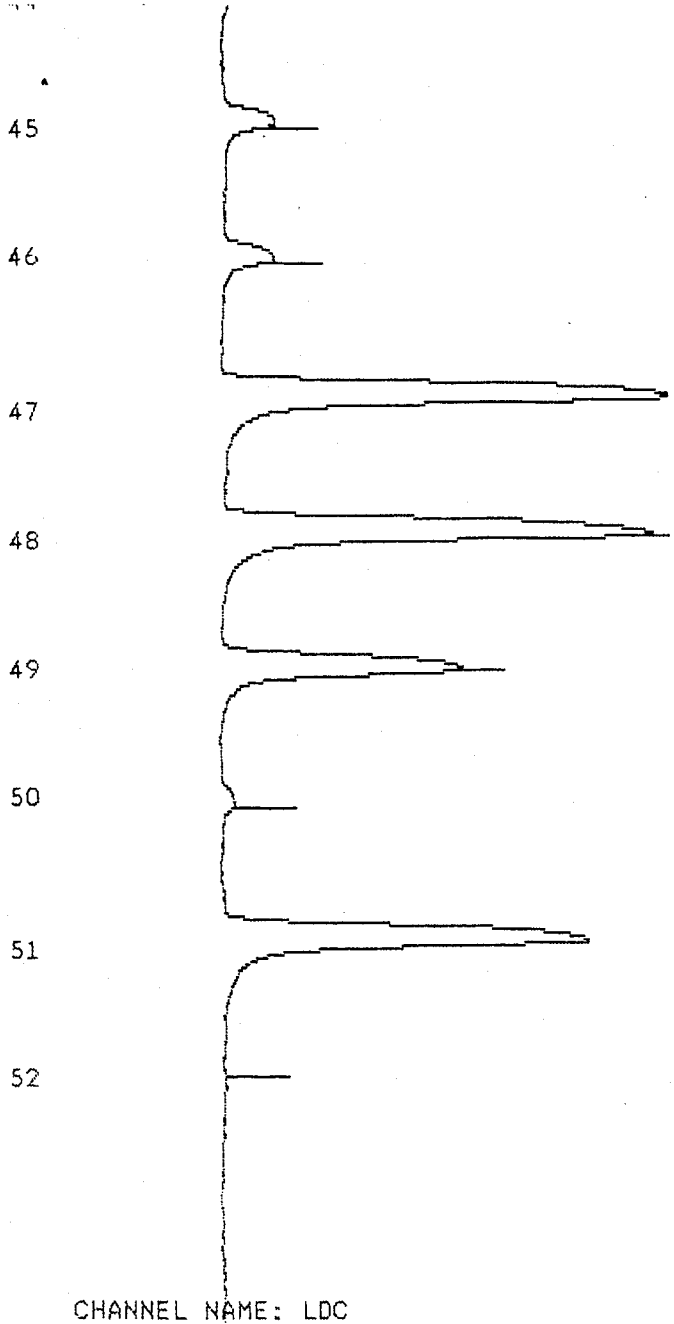
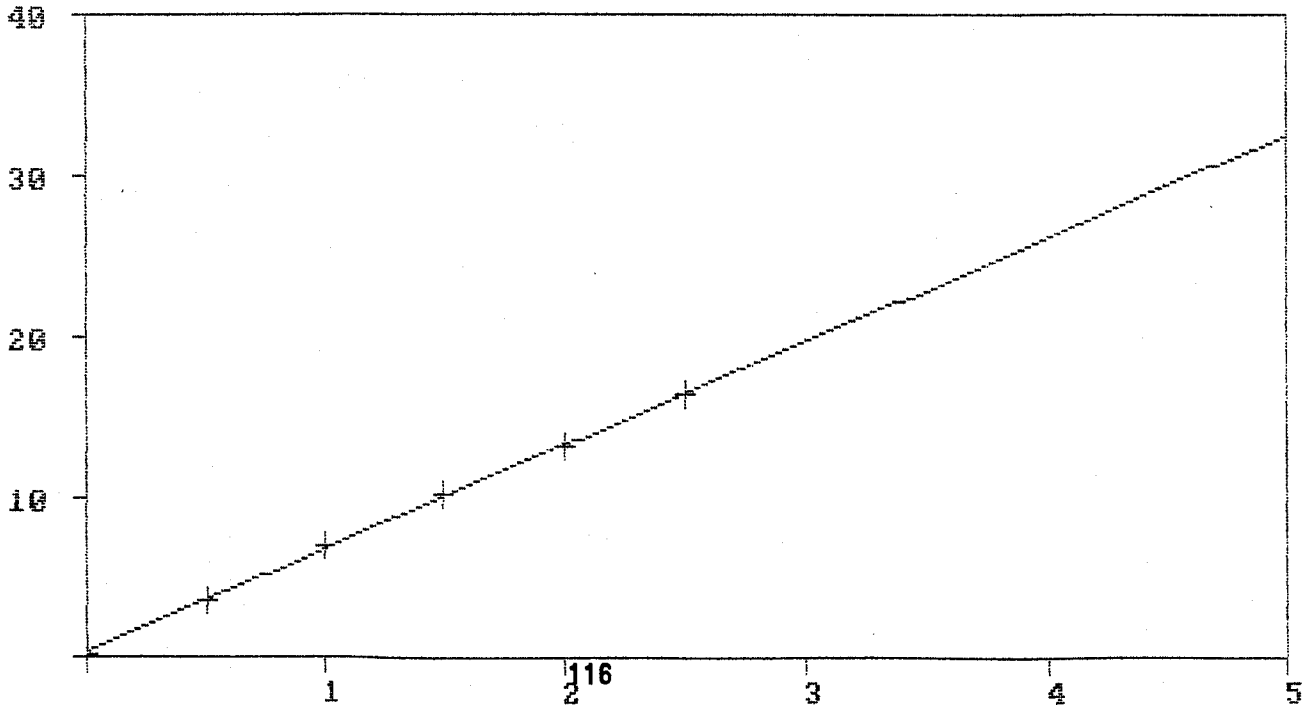


CHANNEL NAME: LDC
RUN NAME: 991202WF



DATA TYPE: FIA
INTERCEPT = 0.37

CALIBRATION ORDER: 1 00019
SLOPE = 6.420373

CORRELATION: .9997824

CHANNEL NAME: LDC
RUN DATE: 12-02-1999
SAMPLE TABLE NAME: 991202WF
METHOD NAME: HGWATER

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA		CONCENTRATION µg/L	EF
1	PRIMER	1	1	10.0		1.498	s
2	DUMMY	1	1	0.3		-0.012	I
3	S1: 0	1	1	0.2		-0.020	I
4	S2: .5	1	1	3.6		0.498	
5	S3: 1	1	1	7.0		1.030	
6	S4: 1.5	1	1	10.1		1.517	
7	S5: 2	1	1	13.1		1.985	
8	S6: 2.5	1	1	16.4		2.491	
9	ICV	1	1	9.7		1.460	97%
10	B	1	1	0.0		-0.058	b
11	D4	1	1	10.1		1.517	d
12	BL1202-MSA2 61631	1	1	0.0	<0.01	-0.058	I
13	BL1202-MSA2	1	1	0.0		-0.054	I
14	BL1202S	1	1	6.8	0.101	0.996	101%
15	BL1202S	1	1	6.9		1.015	
16	BL1202DS	1	1	6.8	0.100	1.007	100%
17	BL1202DS	1	1	6.7		0.988	
18	61638	1	1	0.7	<0.05	0.056	
19	61638	1	1	0.8		0.064	
20	61638D	1	1	0.8	<0.05	0.072	
21	61638D	1	1	0.8		0.072	
22	61638S	1	1	7.4	0.556	1.102	105%
23	61638S	1	1	7.6		1.121	
24	61638DS	1	1	7.5	0.563	1.118	105%
25	61638DS	1	1	7.6		1.133	
26	61631	1	1	0.0	<0.01	-0.050	I
27	61631	1	1	0.1		-0.043	I
28	61632	1	1	0.4	<0.05	-0.001	I
29	61632	1	1	0.4		-0.001	I
30	61633	1	1	0.2	<0.05	-0.020	I
31	61633	1	1	0.2		-0.020	s
32	CCV	1	1	6.5		0.954	95%
33	B	1	1	0.0		-0.058	b
34	D4	1	1	10.1		1.517	d
35	61634	10	1	9.7	14.351	14.522	
36	61634	10	1	9.5		14.180	
37	61635	5	1	10.6	7.842	7.946	
38	61635	5	1	10.3		7.737	
39	61636	5	1	12.3	9.287	9.258	
40	61636	5	1	12.3		9.315	
41	61637	1	1	0.1	<0.05	-0.035	I
42	61637	1	1	0.1		-0.039	I
43	61639	1	1	0.8	<0.05	0.060	
44	61639	1	1	0.8		0.068	
45	61640	1	1	1.0	<0.05	0.094	
46	61640	1	1	1.0		0.091	s
47	1633b	2	1	12.1		3.650	
48	1633b	2	1	11.7		3.536	
49	CCV	1	1	6.3		0.931	93%
50	B	1	1	0.0		-0.058	b
51	D4	1	1	10.1		1.517	d

CORRELATION COEF: .9997824

00020

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
061631	CAE-PITT	MB R456	Mercury -	PV	-0.010	-99999.0	0.102	102.	0.103	103.	99/10/27	1GHY	99/10/27	MG01	14.	7.	*BLKIMP*
061632	CAE-PITT	Reagent Blank	Mercury -	PV	-0.010						99/10/27	1GHY	99/10/27	MG01	14.	8.	
BL1027	INTERNAL		Mercury -	PV	-0.010	-99999.0	0.102	102.	0.103	103.	99/10/27	1GHY	99/10/27	MG01	$$$	$$$	*BLKIMP*

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

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.10.27 Run Code: MG01 Matrix: IMP.

Analyst: MG Units: µg (see comments) MDL: 0.05/0.01

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			BL1026			
15			"			
16			BL1026 S			
17			"			
18			BL1026 DS			
19			"			
20			60669			
21			"			
22			60669 D			
23			"			
24			60669 S			
25			"			
26			60669 DS			
27			"			
28			61632	HYX.		
29			"			
30			CCV			
31			B			
32			D4			
33						
34						
35						
36						
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Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41						
42						
43						
44						
45						
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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.

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

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG
DGHGLEACH, DG29HG***

Calibration Solutions:

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

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

	#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
	9	ICV (Init. Calib. Verif.)	INA	20 ml	30 ml	1 X	1.5 ppb = 600 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	10	BL 1026	"	"	"	"	(Processed Blank)
	11	BL 1026 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	12	59395	"	"	"	"	470 mL
1	13	D	"	"	"	"	(Duplicate sample)
1	14	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	15	DS	"	"	"	"	(Duplicate Spiked sample)
2	16	59393	"	"	"	"	520 mL
3	17	94	"	"	"	"	400 mL
4	18	96	"	"	"	"	475 mL
5	19	99	"	"	"	"	475 mL
6	20	78	"	"	"	"	550 mL
7	21	79	"	"	"	"	525 mL
8	22	59400	"	"	"	"	540 mL
9	23		"	"	"	"	
10	24		"	"	"	"	
	25	CCV (Cont. Calib. Verif.)	2N33	20 ml	30 ml	1 X	1.0 ppb = 400 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	26	BL 1026	"	"	"	"	(Processed Blank)
	27	BL 1026 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	28	60669	"	"	"	"	FV38 1000 mL
1	29	D	"	"	"	"	(Duplicate sample)
1	30	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	31	DS	"	"	"	"	(Duplicate Spiked sample)
2	32	60667	"	"	"	"	
3	33	68	"	"	"	"	
4	34	70	"	"	"	"	
5	35	71	"	"	"	"	
6	36		"	"	"	"	
7	37		"	"	"	"	
8	38		"	"	"	"	
9	39		"	"	"	"	
10	40		"	"	"	"	

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

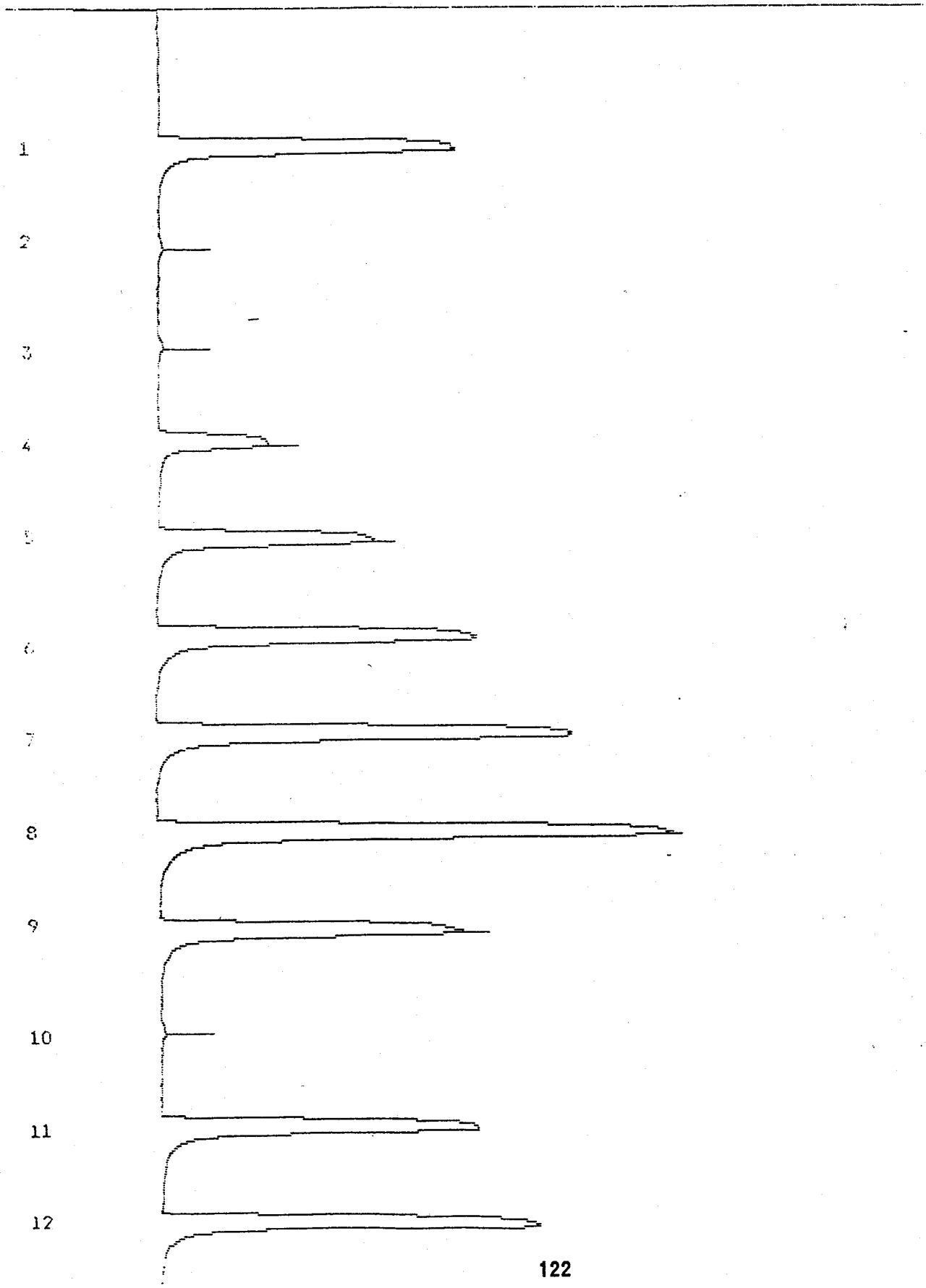
Include External Reference Material (EPA WS 378 or SPEX CertiPrep TM - WS) per run

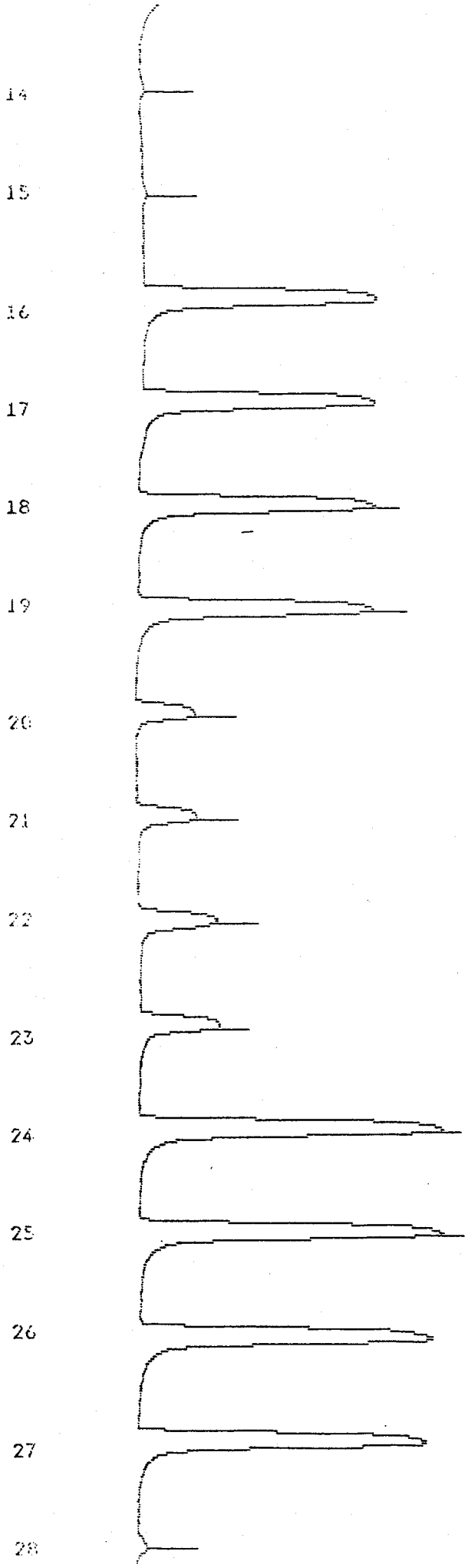
Prepare 0.05 ppm standards daily

HNO3 Lot No: 119060 | H2SO4 Lot No: 517120 | Bath Temps: 1 195 °C

Prepared By: [illegible] Date: 99/06/26 Checked by: [illegible]

RUN DATE: 10-27-1999 CHART DATE: 10-27-1999
CHART SPEED: 30
DATA FILE NAME: C:\DP4\DATA\991027W.DAT

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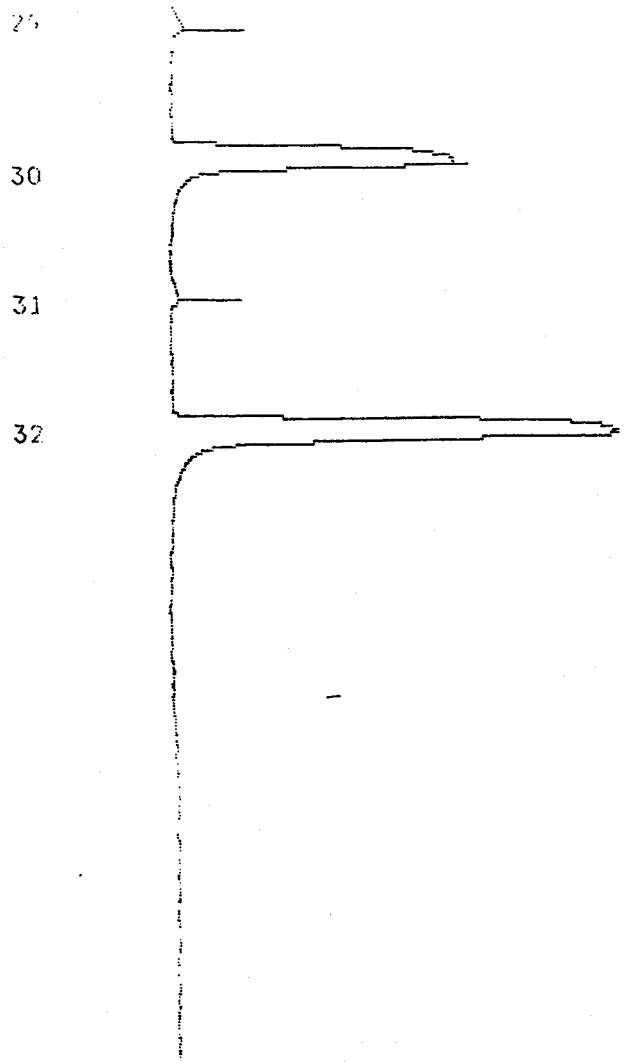
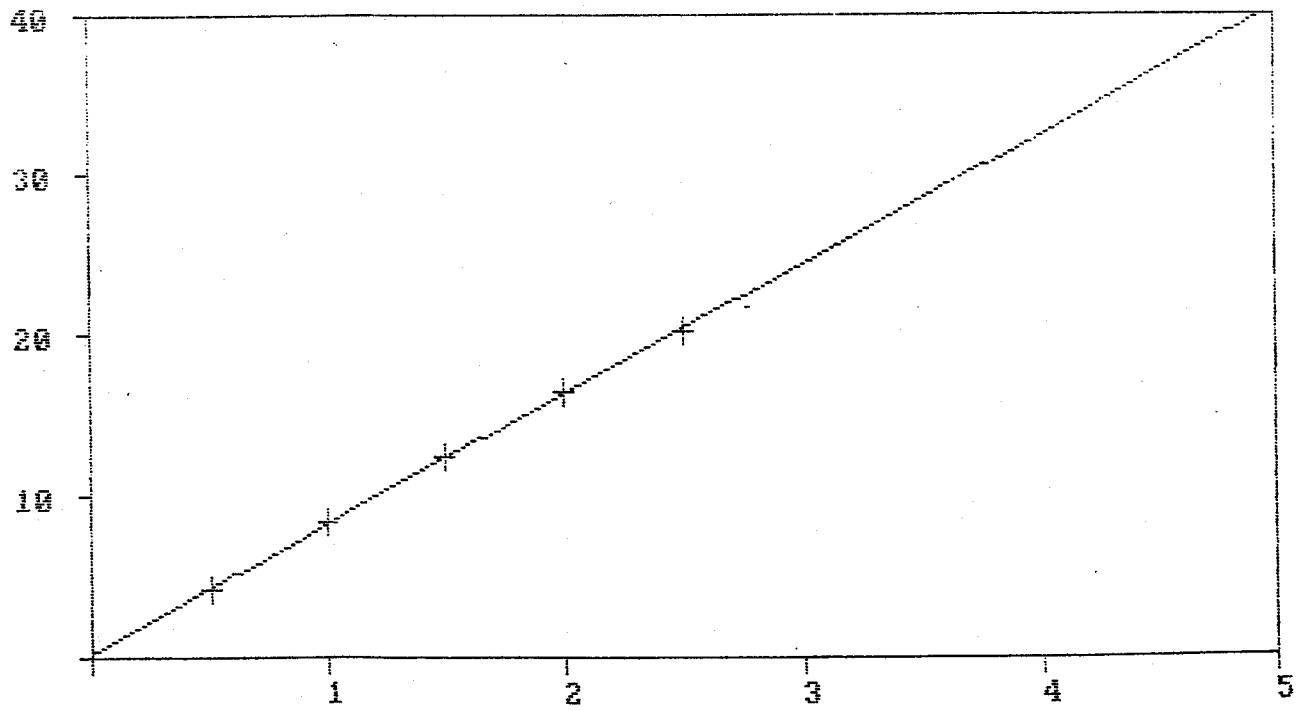


CHANNEL NAME: LDC
RUN NAME: 991027W



DATA TYPE: FIA
INTERCEPT = 0.20

CALIBRATION ORDER: 1
SLOPE = 8.048841

CORRELATION: .9998505

CHANNEL NAME: LOC
RUN DATE: 10-27-1999
SAMPLE TABLE NAME: 991027W
METHOD NAME: HGWATER

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA		CONCENTRATION (ppb)		EF
1	PRIMER	1	1	11.6		1.413		s
2	DUMMY	1	1	0.1		-0.016		I
3	S1: 0	1	1	0.1		-0.013		I
4	S2: .5	1	1	4.2		0.494		
5	S3: 1	1	1	8.4		1.015		
6	S4: 1.5	1	1	12.5		1.522		
7	S5: 2	1	1	16.3		2.001		
8	S6: 2.5	1	1	20.2		2.481		
9	ICV	1	1	11.8		1.446	96%	
10	B	1	1	0.0		-0.025		b
11	D4	1	1	12.5		1.522		d
12	WS 378	1	1	14.8	TUG	1.813	91%	
13	ORG REF	1	1	17.3		2.126	106%	
14	BL1026-2N3C 61631	1	1	0.0		-0.025		I
15	BL1026-2N3C	1	1	0.0		-0.025		I
16	BL1026S	1	1	8.4	0.511	1.021	0.102	- 102%
17	BL1026S	1	1	8.4		1.021		
18	BL1026DS	1	1	8.5	0.516	1.034	0.103	103%
19	BL1026DS	1	1	8.5		1.031		
20	60669	1	1	1.9	0.214	0.214		
21	60669	1	1	1.9		0.214		
22	60669D	1	1	2.5	0.298	0.290		
23	60669D	1	1	2.7		0.305		
24	60669S	1	1	11.0	1.343	1.340	109%	
25	60669S	1	1	11.0		1.346		
26	60669DS	1	1	10.5	1.275	1.285	101%	
27	60669DS	1	1	10.4		1.264		
28	61632-OHHYX	1	1	0.1	< 0.01	-0.007		I
29	61632-OHHYX	1	1	0.2		-0.001		I
30	CCV	1	1	7.7		0.927	93%	
31	B	1	1	0.0		-0.025		b
32	D4	1	1	12.5		1.522		d

INTERCEPT: 0.20 LINEAR COEF. 8.048841
CORRELATION COEF: .9998505

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
061631	CAE-PITT	MB R456	Mercury -	PV	-0.030	-99999.0	0.312	104.	0.316	105.	99/11/01	2NKC	99/11/01	MG01	19.	12.	
061632	CAE-PITT	Reagent Blank	Mercury -	PV	-0.100						99/11/01	2NKC	99/11/01	MG01	19.	13.	
061633	CAE-PITT	Field Blank Inlet	Mercury -	PV	-0.100						99/11/01	2NKC	99/11/01	MG01	19.	13.	
061634	CAE-PITT	Unit 1 Inlet-R1	Mercury -	PV	4.177	4.146	7.526	101.	7.536	101.	99/11/01	2NKC	99/11/01	MG01	20.	13.	*PDS*
061635	CAE-PITT	Unit 1 Inlet-R2	Mercury -	PV	5.776						99/11/01	2NKC	99/11/01	MG01	19.	13.	
061636	CAE-PITT	Unit 1 Inlet-R3	Mercury -	PV	4.089						99/11/01	2NKC	99/11/01	MG01	19.	13.	
061637	CAE-PITT	Field Blank Outlet	Mercury -	PV	-0.100						99/11/01	2NKC	99/11/01	MG01	19.	13.	
061638	CAE-PITT	Unit 1 Outlet-R1	Mercury -	PV	0.115						99/11/01	2NKC	99/11/01	MG01	20.	13.	
061639	CAE-PITT	Unit 1 Outlet-R2	Mercury -	PV	0.119						99/11/01	2NKC	99/11/01	MG01	20.	13.	
061640	CAE-PITT	Unit 1 Outlet-R3	Mercury -	PV	-0.100						99/11/01	2NKC	99/11/01	MG01	20.	13.	
BL1101	INTERNAL		Mercury -	PV	-0.030	-99999.0	0.312	104.	0.316	105.	99/11/01	2NKC	99/11/01	MG01	$$$	$$$	

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

126

00028

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.11.01 Run Code: MGO Matrix: IMP

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

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)	(S6)		
12			WS 378			
13			ORG. REF.			
14			BL1101	MNA!		
15			BL1101 S			
16			BL1101 DS			
17			59401			
18			01 D			
19			01 S			
20			01 DS			
21			59401	KMn24		
22			01 D			
23			01 S			
24			01 DS			
25			CCV			
26			B			
27			D4			
28			BL1101	1NBN		
29			"			
30			BL1101 S			
31			"			
32			BL1101 DS			
33			"			
34			60669			
35			"			
36			60669 D			
37			"			
38			60669 S			
39			"			
40			60669 DS			
41			60669 DS			
42			60668			
43			"			
44			60670			
45			"			
46			60671			
47			"			
48			CCV			
49			B			
50			D4			
51			BL1101	1NKC		
52			"			
53			BL1101 S			
54			"			
55			BL1101 DS			
56			"			
57	2/3	1/10	60117			
58			"			
59			60117 D			
60			"			
61			60117 S			
62			"			
63			60117 DS			
64			"			
65			60116			
66			"			
67		1/4	60118			
68			"			
69			60119			
70			"			
71			CCV			
72			B			
73			D4			
74			BL1101	2NKC		
75			"			
76			BL1101 S			
77			"			
78			BL1101 DS			
79			"			
80	2/3	1/5	61634			

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

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

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

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.11.01 Run Code: MG01 Matrix: IMP/WATER

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

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12						
13						
14						
15						
16						
17						
18						
19						
20						
21 (81)	2/3	1/5	61634			
22	8/3		61634 D			
23			"			
24			61634 S			
25			"			
26			61634 DS			
27			"			
28			61632			
29			"			
30			61633			
31			"			
32		1/4	61635			
33			"			
34			CCV			
35			B			
36			D4			
37	2/3	1/4	61636			
38			"			
39			61637			
40			"			
41	2/3		61638			
42			"			
43			61639			
44			"			
45			61640			
46			"			
47			CCV			
48			B			
49			D4			
50			BL1101	ABA1		
51			BL1101 S			
52			63871			
53			871 D			
54			871 S			
55			869			
56			869 S			
57			877			
58			79			
59			81			
60			83			
61			85			
62			87			
63			89			
64			64453			
65			CCV			
66			B			
67			D4			
68			BL1101	ABA2		
69			BL1101			
70			63827			
71			27 D			
72			27 S			
73			37			
74			41			
75			42			
76			43			
77			44			
78			45			
79	10		47			
80			63245			

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

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

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

RUN DATE: 11-01-1999 CHART DATE: 11-02-1999
CHART SPEED: 30
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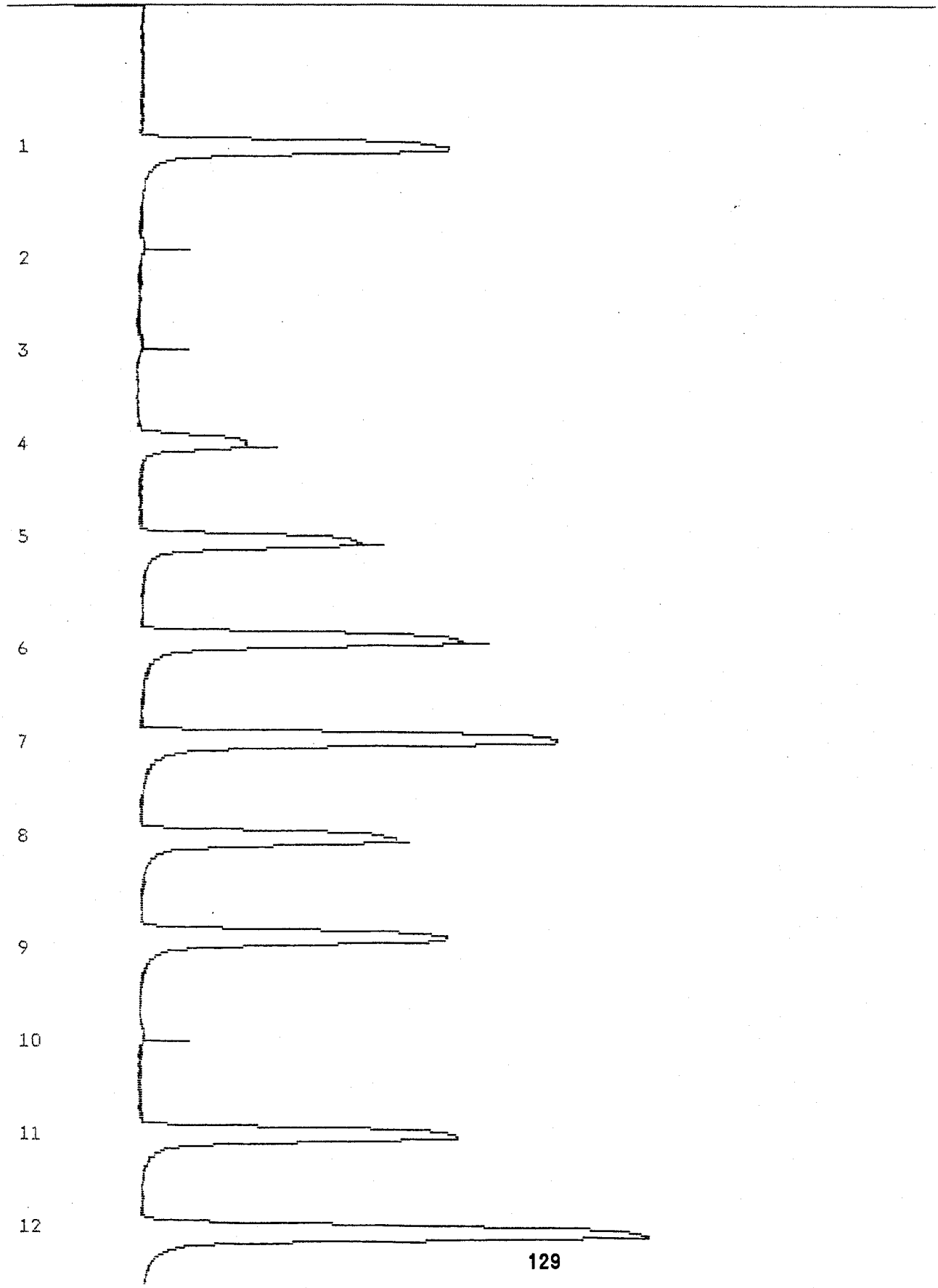

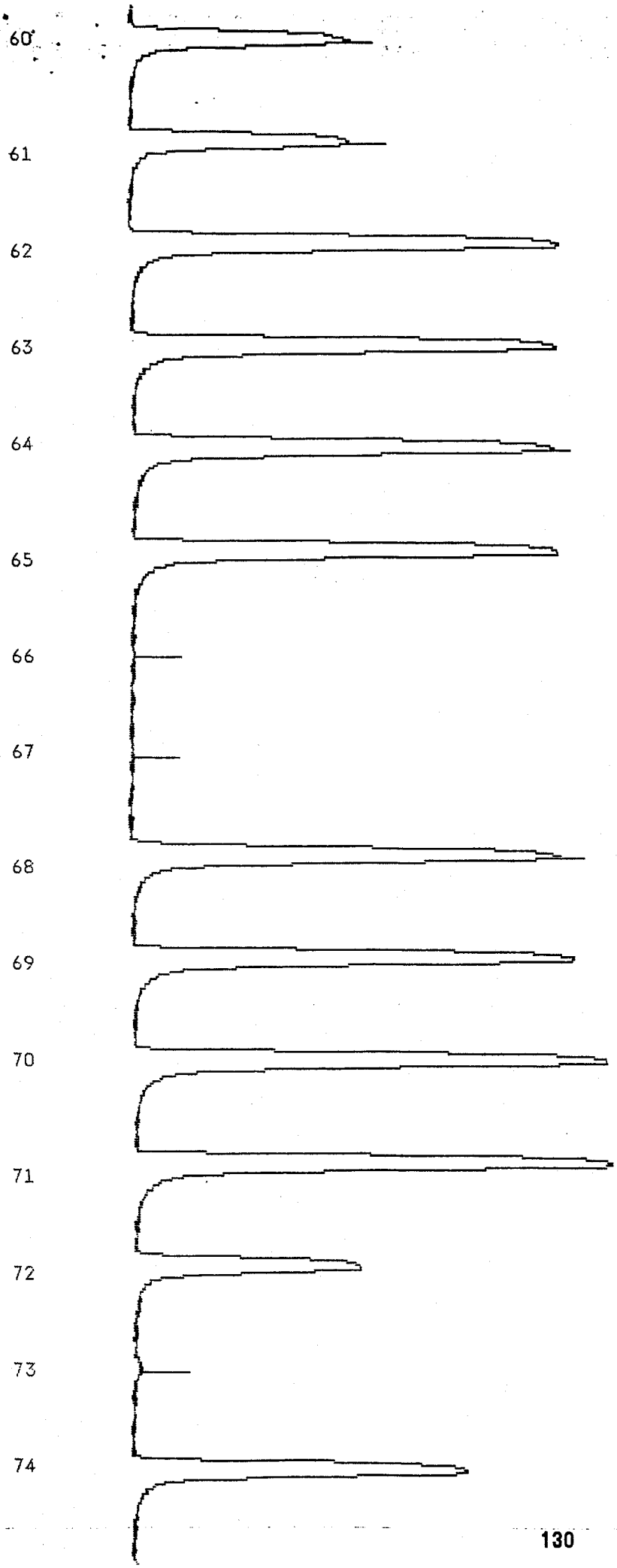
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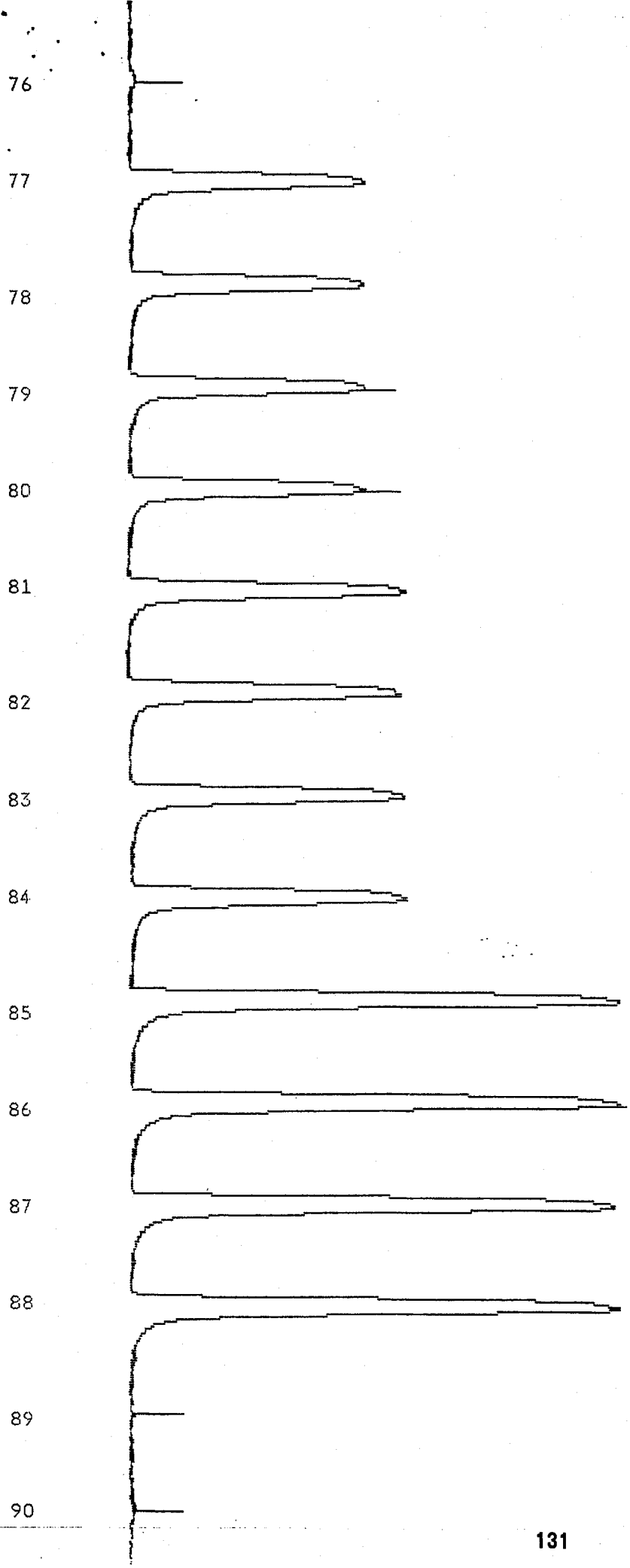
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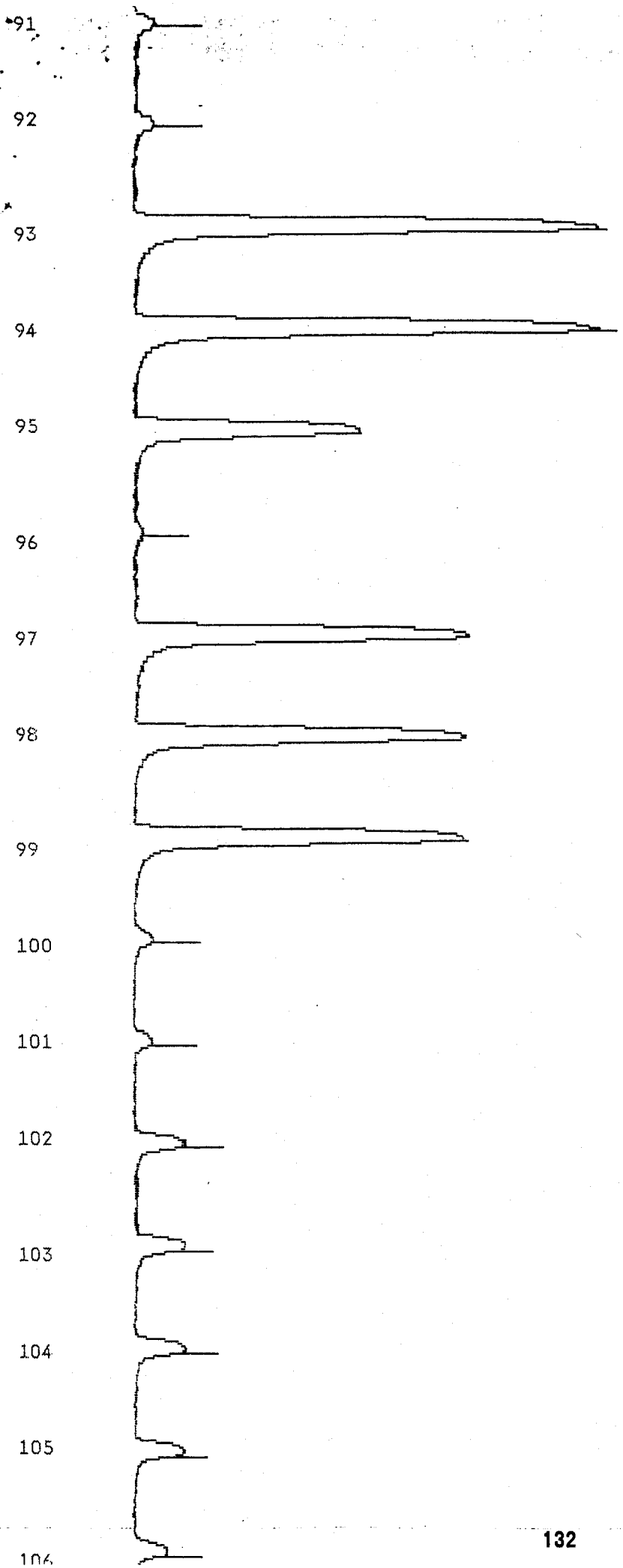
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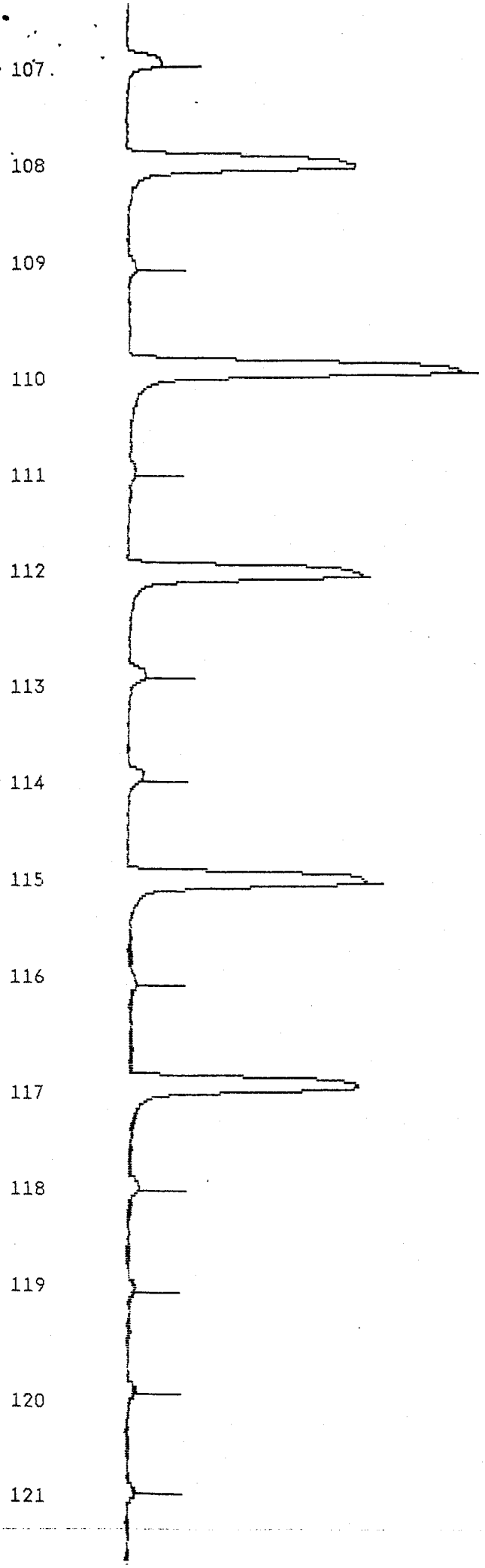
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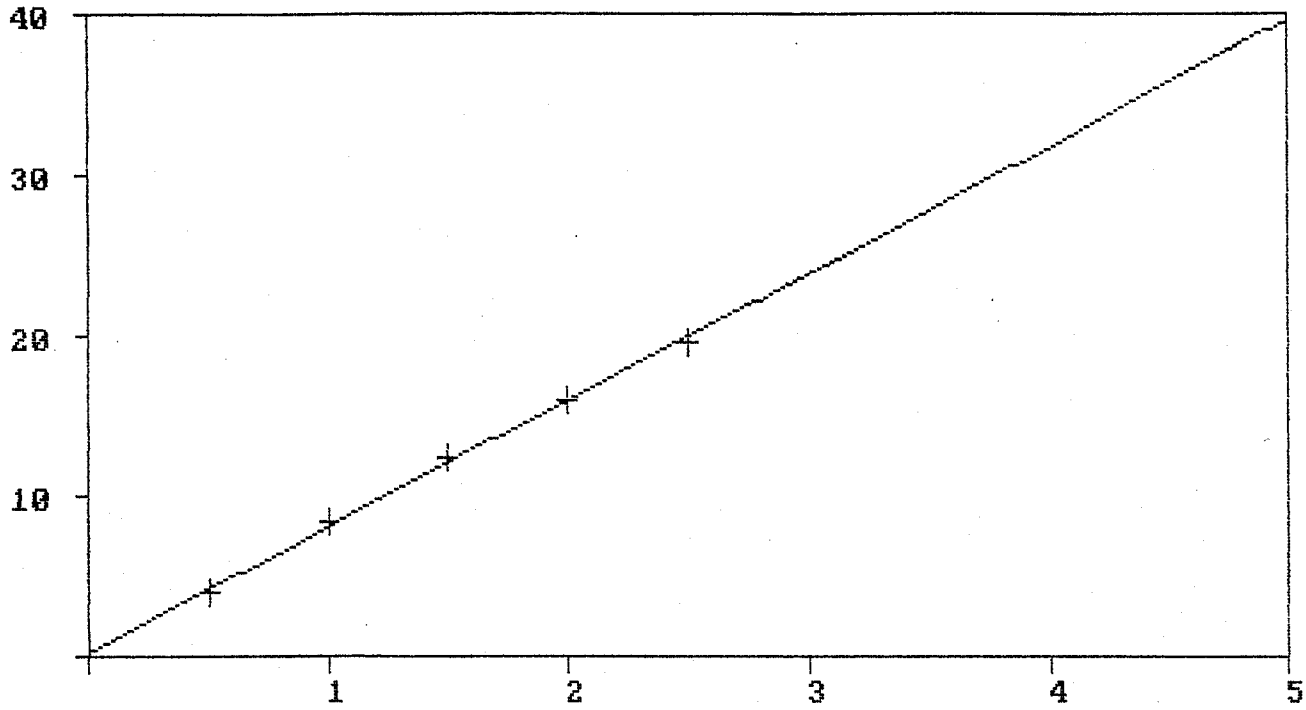
CHANNEL NAME: LDC
RUN NAME: 991101W



DATA TYPE: FIA
CALIBRATION ORDER: 1
INTERCEPT = 0.21
SLOPE = 7.874412

CORRELATION: .9994826

CHANNEL NAME: LDC
RUN DATE: 11-01-1999
SAMPLE TABLE NAME: 991101W
METHOD NAME: HGWATER

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA	CONCENTRATION	EF
1	PRIMER	1	1	11.9	1.484	s
2	DUMMY	1	1	0.1	-0.011	I
3	S1: 0	1	1	0.1	-0.017	I
4	S2: .5	1	1	4.0	0.476	
5	S3: 1	1	1	8.4	1.034	
6	S4: 1.5	1	1	12.3	1.540	
7	S5: 2	1	1	15.9	1.996	
8	STD6	1	1	9.7	1.208	
9	ICV	1	1	11.7	1.462	
10	B	1	1	0.0	-0.026	b
11	D4	1	1	12.3	1.540	d
12	S6: 2.5	1	1	19.7	2.470	
13	WS 378	1	1	14.4	1.807	
14	ORG REF	1	1	17.5	2.191	
15	BL1101-MNA1	1	1	0.0	-0.026	I
16	BL1101S	1	1	8.3	1.025	s
17	BL1101DS	1	1	8.5	1.053	
18	59401	1	1	0.6	0.045	
19	59401D	1	1	0.5	0.033	
20	59401S	1	1	9.1	1.128	
21	59401DS	1	1	9.0	1.112	

23	59401D		1	1	1.2		0.125	
24	59401S		1	1	9.3		1.159	M
25	59401DS		1	1	8.9		1.109	
26	CCV		1	1	8.1		1.003	
27	B		1	1	0.0		-0.026	b
28	D4		1	1	12.3		1.540	d
29	BL1101-1N8N		1	1	0.0		-0.026	I
30	BL1101-1N8N		1	1	0.0		-0.026	I
31	BL1101S		1	1	8.1		1.003	s
32	BL1101S		1	1	8.1		1.003	
33	BL1101DS		1	1	8.4		1.038	
34	BL1101DS		1	1	8.3		1.025	
35	60669		1	1	0.8		0.070	
36	60669		1	1	0.8		0.070	I
37	60669D		1	1	0.7		0.067	
38	60669D		1	1	0.8		0.070	
39	60669S		1	1	9.1		1.134	
40	60669S		1	1	9.3		1.155	
41	60669DS		1	1	9.3		1.159	
42	60669DS		1	1	9.3		1.149	
43	60668		1	1	0.2		-0.004	I
44	60668		1	1	0.2		-0.004	I
45	60670		1	1	1.7		0.188	
46	60670		1	1	1.7		0.185	s
47	60671		1	1	0.3		0.011	I
48	60671		1	1	0.3		0.011	I
49	CCV		1	1	8.2		1.016	
50	B		1	1	0.0		-0.026	b
51	D4		1	1	12.3		1.540	d
52	BL1101-1NKC		1	1	0.1		-0.008	I
53	BL1101-1NKC		1	1	0.1		-0.017	I
54	BL1101S		1	1	8.5		1.056	
55	BL1101S		1	1	8.4		1.041	
56	BL1101DS		1	1	8.7		1.084	
57	BL1101DS		1	1	8.6		1.072	
58	60117		6.666	1	8.0		6.586	
59	60117		6.666	1	8.0		6.586	
60	60117D		6.666	1	8.0		6.565	
61	60117D		6.666	1	7.8		6.462	s
62	60117S		6.666	1	15.8		13.222	
63	60117S		6.666	1	15.6		13.035	
64	60117DS		6.666	1	15.6		13.035	
65	60117DS		6.666	1	15.7		13.139	
66	60116		.6666	1	0.0		-0.017	I
67	60116		.6666	1	0.0		-0.017	I
68	60118		2.666	1	15.9		5.304	
69	60118		2.666	1	16.2		5.428	
70	60119		2.666	1	17.3		5.792	
71	60119		2.666	1	17.5		5.867	
72	CCV		1	1	8.3		1.025	
73	B		1	1	0.0		-0.026	b
74	D4		1	1	12.3		1.540	d
75	BL1101-2NKC		1	1	0.0		-0.026	I
76	BL1101-2NKC		1	1	0.0		-0.026	s
77	BL1101S		1	1	8.4		1.047	
78	BL1101S		1	1	8.4		1.034	
79	BL1101DS		1	1	8.5		1.053	
80	BL1101DS		1	1	8.5		1.056	
81	61634		3.333	1	10.1		4.192	
82	61634		3.333	1	10.0		4.161	
83	61634D		3.333	1	9.9		4.120	
84	61634D		3.333	1	10.1		4.171	
85	61634S		3.333	1	18.0		7.531	
86	61634S		3.333	1	18.0		7.520	
87	61634DS		3.333	1	17.9		7.469	

00037

TUG

60115

20.03

0.315 105 %

0.323 107 %

6.586

6.514

13.130 99 %

13.088 98 %

20.100

5.368

5.831

103 %

61631

20.03

0.312 104 %

0.316 105 %

4.177

4.146

7.526 101 %

7.521 101 %

89	61632	.6666	1	0.0	<0.100	-0.017	I
90	61632	.6666	1	0.0		-0.017	I
91	61633	.6666	1	0.4	<0.100	0.018	s
92	61633	.6666	1	0.4		0.018	I
93	61635	2.666	1	17.2	5.776	5.759	
94	61635	2.666	1	17.3		5.792	
95	CCV	1	1	8.2		1.019	101%
96	B	1	1	0.0		-0.026	b
97	D4	1	1	12.3		1.540	d
98	61636	2.666	1	12.4	4.089	4.114	
99	61636	2.666	1	12.2		4.064	
100	61637	.6666	1	0.4	<0.100	0.016	I
101	61637	.6666	1	0.4		0.016	I
102	61638	.6666	1	1.6	0.115	0.115	
103	61638	.6666	1	1.6		0.115	
104	61639	.6666	1	1.6	0.119	0.119	
105	61639	.6666	1	1.6		0.119	
106	61640	.6666	1	1.0	<0.100	0.063	s
107	61640	.6666	1	1.1		0.071	
108	CCV	1	1	8.4		1.041	104%
109	B	1	1	0.0		-0.026	b
110	D4	1	1	12.3		1.540	d
111	BL1101-ABA1	1	1	0.0		-0.026	I
112	BL1101S	1	1	8.6		1.065	
113	63871	1	1	0.3		0.011	I
114	63871D	1	1	0.3		0.011	I
115	63871S	1	1	8.7		1.084	
116	63769	1	1	0.0		-0.026	I
117	63869S	1	1	8.4		1.044	
118	63877	1	1	0.1		-0.014	I
119	63879	1	1	0.0		-0.026	I
120	63881	1	1	0.0		-0.026	I
121	63883	1	1	0.0		-0.023	s
122	63885	1	1	0.1		-0.011	I
123	63887	1	1	0.0		-0.026	I
124	63889	1	1	0.1		-0.011	I
125	64453	1	1	0.0		-0.023	I
126	CCV	1	1	8.4		1.034	
127	B	1	1	0.0		-0.026	b
128	D4	1	1	12.3		1.540	d
129	BL1101-ABA2	1	1	0.0		-0.026	I
130	BL1101S	1	1	8.5		1.050	
131	63827	1	1	0.0		-0.026	I
132	63827D	1	1	0.0		-0.026	I
133	63827S	1	1	8.5		1.050	
134	63837	1	1	0.0		-0.026	I
135	63841	1	1	0.0		-0.026	I
136	63842	1	1	0.0		-0.026	s
137	63843	1	1	0.0		-0.023	I
138	63844	1	1	0.0		-0.026	I
139	63845	1	1	0.0		-0.020	I
140	63847	10	1	17.4		21.881	
141	63245	1	1	0.0		-0.023	I
142	63246	1	1	0.1		-0.008	I
143	CCV	1	1	8.4		1.041	
144	B	1	1	0.0		-0.026	b
145	CUP MISSED	1	1	0.0		-0.026	I
146	BL1101-ABA3	1	1	0.1		-0.017	I
147	BL1101S	1	1	8.8		1.087	
148	63248	1	1	0.1		-0.014	I
149	63248D	1	1	0.1		-0.017	I
150	63248S	1	1	8.7		1.075	
151	63247	1	1	0.2		-0.004	s
152	63249	1	1	0.0		-0.026	I
153	63250	1	1	0.0		-0.026	I

00038

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
061631	CAE-PITT	MB R456	Mercury -	PV	-0.030	-99999.0	0.298	99.	0.302	101.	99/11/03	2NM4	99/11/03	MG01	21.	14.	
061632	CAE-PITT	Reagent Blank	Mercury -	PV	0.352						99/11/03	2NM4	99/11/03	MG01	21.	15.	
061633	CAE-PITT	Field Blank Inlet	Mercury -	PV	1.125						99/11/03	2NM4	99/11/03	MG01	21.	15.	
061634	CAE-PITT	Unit 1 Inlet-R1	Mercury -	PV	8.731	8.787	15.292	98.	15.347	99.	99/11/03	2NM4	99/11/03	MG01	22.	15.	*POST SPIKE*
061635	CAE-PITT	Unit 1 Inlet-R2	Mercury -	PV	0.324						99/11/03	2NM4	99/11/03	MG01	21.	15.	
061636	CAE-PITT	Unit 1 Inlet-R3	Mercury -	PV	0.597						99/11/03	2NM4	99/11/03	MG01	21.	15.	
061637	CAE-PITT	Field Blank Outlet	Mercury -	PV	-0.100						99/11/03	2NM4	99/11/03	MG01	21.	15.	
061638	CAE-PITT	Unit 1 Outlet-R1	Mercury -	PV	0.135						99/11/03	2NM4	99/11/03	MG01	22.	15.	
061639	CAE-PITT	Unit 1 Outlet-R2	Mercury -	PV	0.398						99/11/03	2NM4	99/11/03	MG01	22.	15.	
061640	CAE-PITT	Unit 1 Outlet-R3	Mercury -	PV	0.373						99/11/03	2NM4	99/11/03	MG01	22.	15.	
BL1103	INTERNAL		Mercury -	PV	-0.030	-99999.0	0.298	99.	0.302	101.	99/11/03	2NM4	99/11/03	MG01	$$$	$$$	

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

137

000039

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG
DGHGLEACH, DG29HG***

Calibration Solutions:

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

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

	#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
	9	ICV (Init. Calib. Verif.)	ZNM4	20 ml	30 ml	1 X	1.5 ppb = 600 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	10	BL 1103	"	"	"	"	(Processed Blank) 61631 MB
	11	BL 1103 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	12	61632	"	"	"	"	FV0HMN4 1000ml
1	13	D	"	"	"	"	(Duplicate sample)
1	14	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	15	DS	"	"	"	"	(Duplicate Spiked sample)
2	16	61633	"	"	"	"	
3	17	34	"	"	"	"	
4	18	35	"	"	"	"	
5	19	36	"	"	"	"	
6	20	37	"	"	"	"	
7	21	38	"	"	"	"	
8	22	39	"	"	"	"	
9	23	40	"	"	"	"	
10	24		"	"	"	"	
	25	CCV (Cont. Calib. Verif.)		20 ml	30 ml	1 X	1.0 ppb = 400 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	26	BL	"	"	"	"	(Processed Blank)
	27	BL S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	28		"	"	"	"	
1	29	D	"	"	"	"	(Duplicate sample)
1	30	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	31	DS	"	"	"	"	(Duplicate Spiked sample)
2	32		"	"	"	"	
3	33		"	"	"	"	
4	34		"	"	"	"	
5	35		"	"	"	"	
6	36		"	"	"	"	
7	37		"	"	"	"	
8	38		"	"	"	"	
9	39		"	"	"	"	
10	40		"	"	"	"	

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

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

Prepare 0.05 ppm standards daily

HNO3 Lot. No. 119060 | H2SO4 Lot. No. 319060 | Bath Temp. 95°C

Prepared By: M Alvarado Date: 99 11 03 Checked by: M Alvarado

0039 A

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.11.03 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			WS 378			
13			ORG REF			
14			BL1103	2NM4		
15			"			
16			BL1103 S			
17			"			
18			BL1103 DS			
19			"			
20	2/3	1/10	61634			
21			"			
22			61634 D			
23			"			
24			61634 S			
25			"			
26			61634 DS			
27			"			
28			61632			
29			"			
30		1/2	61633			
31			"			
32			61635			
33			"			
34			CCV			
35			B			
36			D4			
37	2/3		61636			
38			"			
39			61637			
40			"			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41	2/3		61638			
42			"			
43			61639			
44			"			
45		1/4	61640			
46			"			
47		1/4	60118			
48			"			
49			60119			
50			"			
51			CCV			
52			B			
53			D4			
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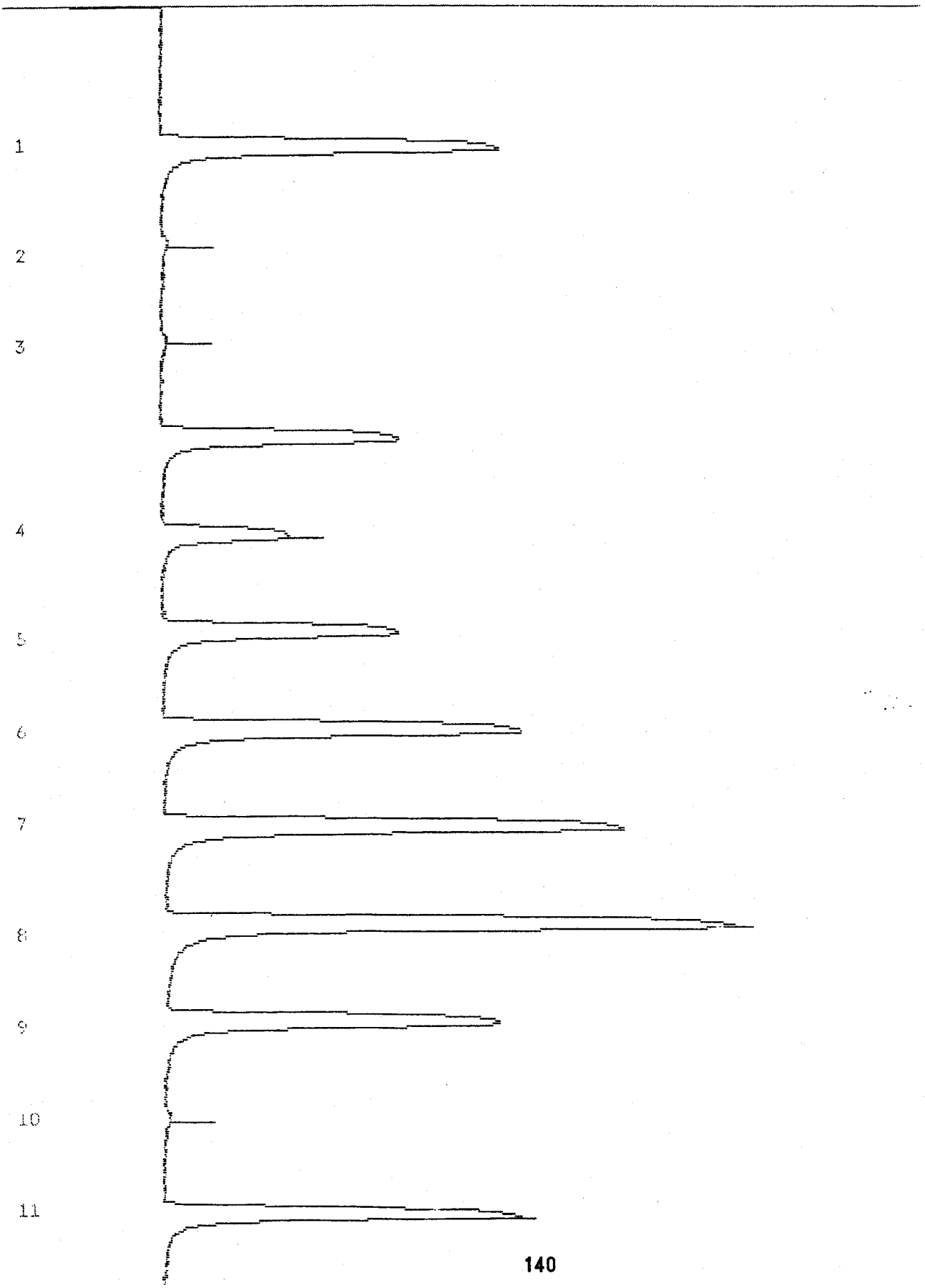
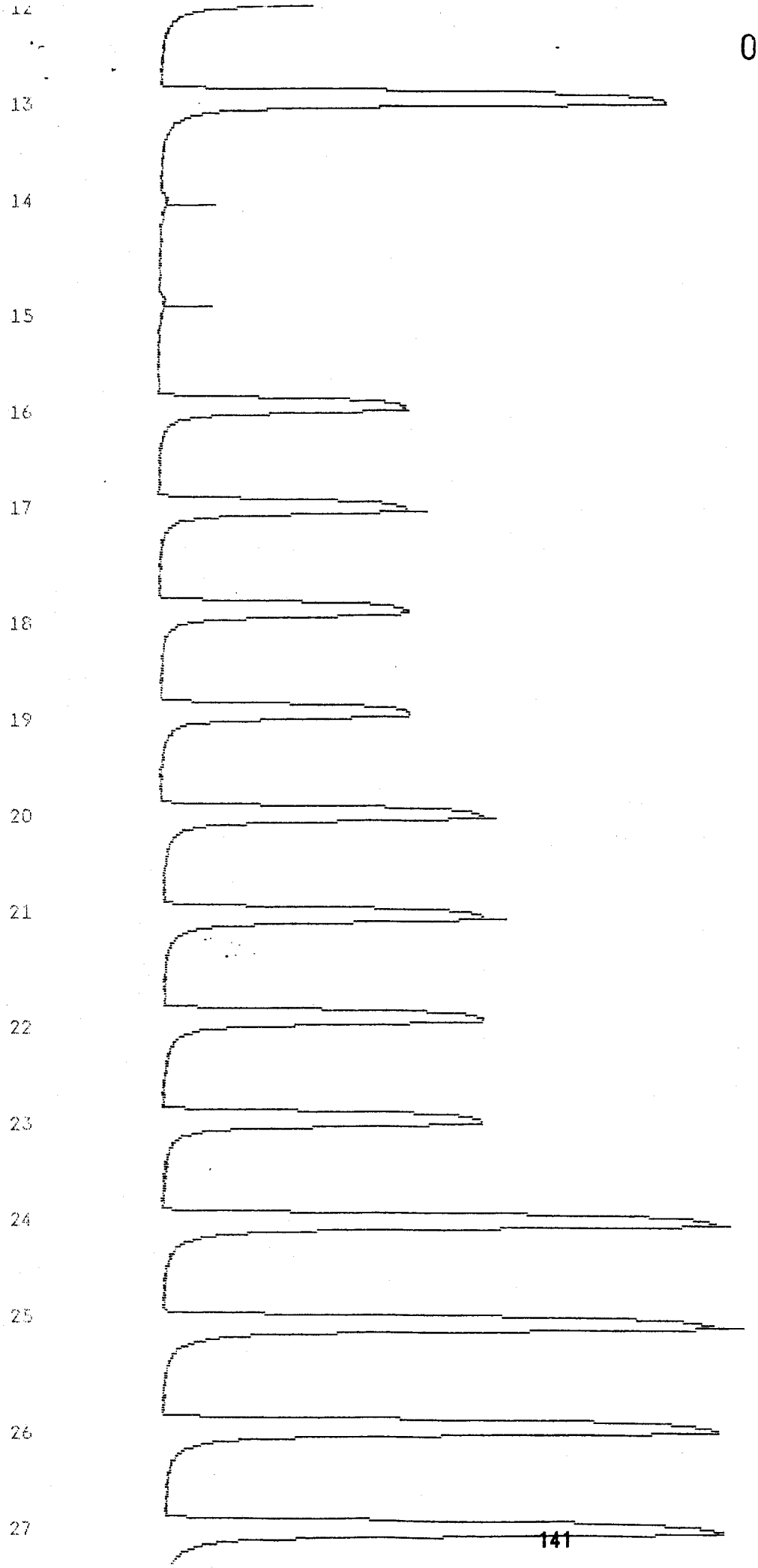
Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

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

Blank Spike = 1.0 mg/kg for solid samples.

RUN DATE: 11-03-1999 CHART DATE: 11-03-1999
CHART SPEED: 30
DATA FILE NAME: C:\DP4\DATA\991103W.DAT

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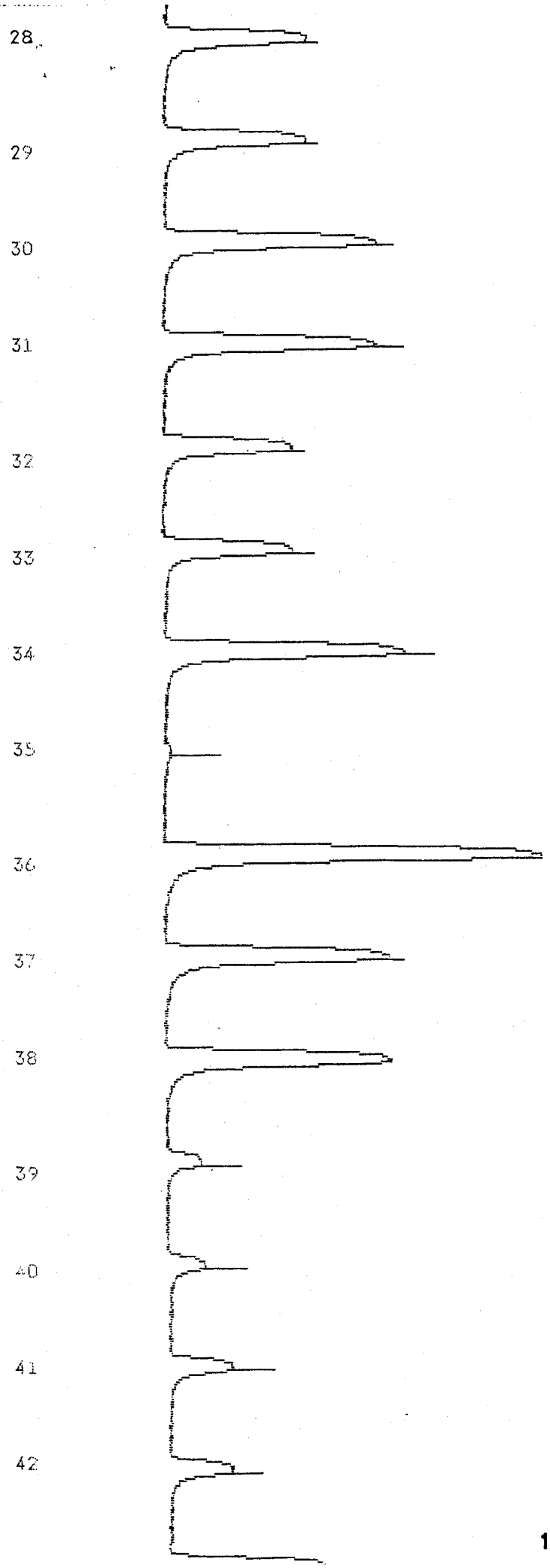
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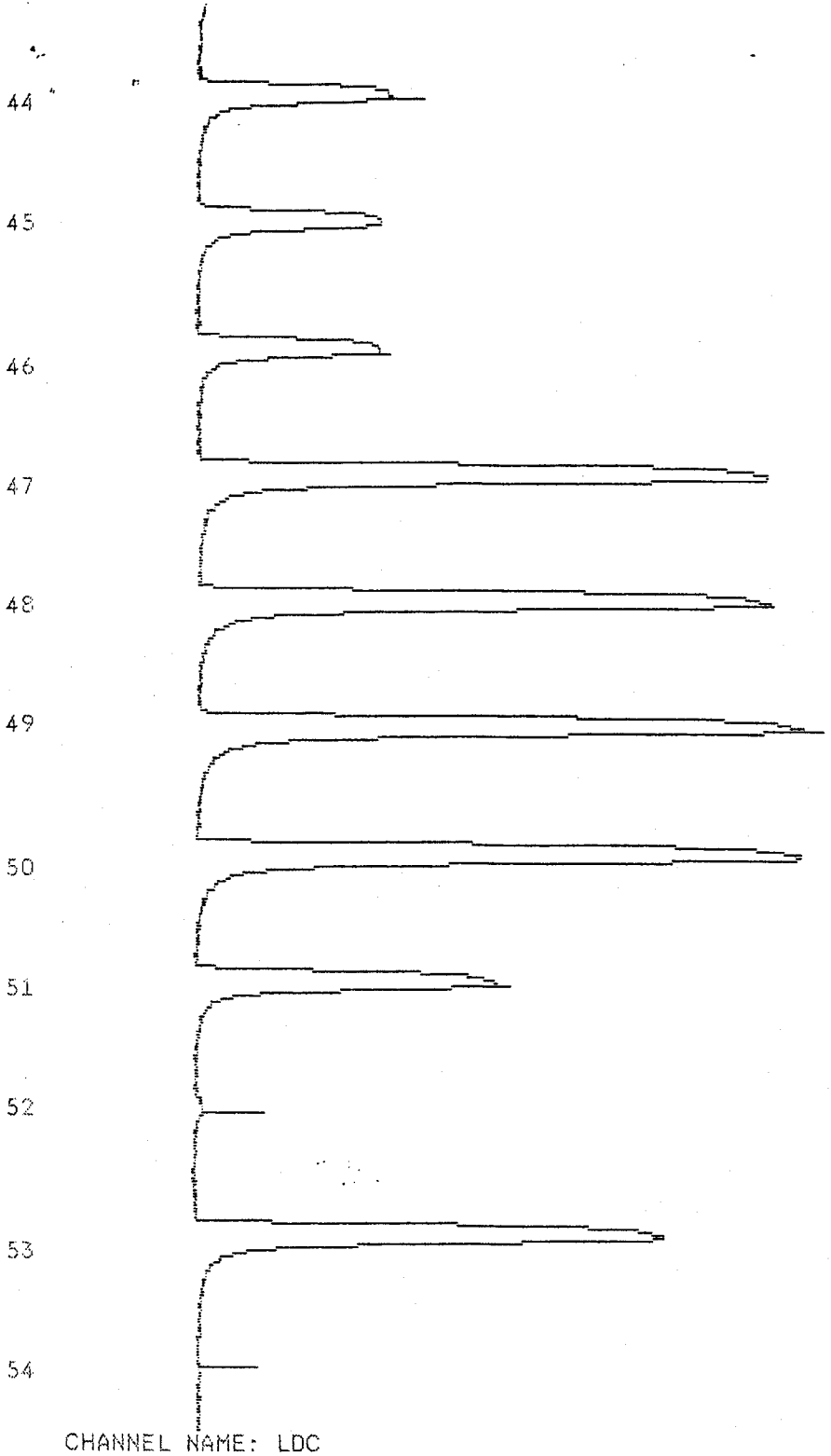
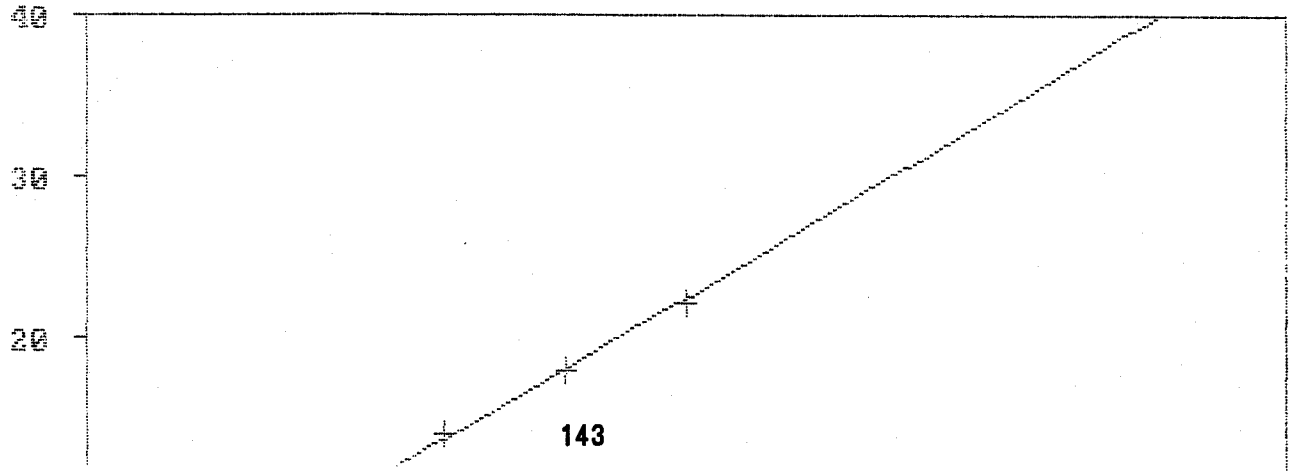
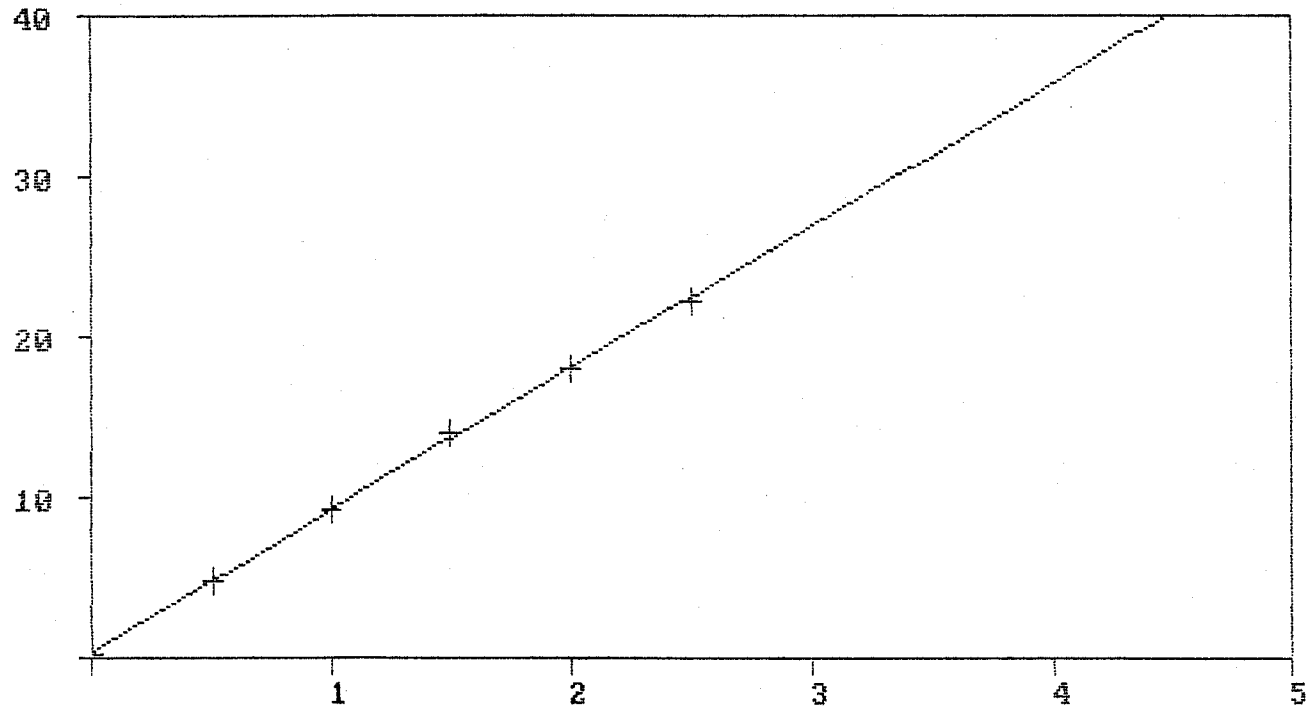


CHANNEL NAME: LDC
RUN NAME: 991103W



CHANNEL NAME: LDC
RUN NAME: 991103W



DATA TYPE: FIA CALIBRATION ORDER: 1
INTERCEPT = 0.34 SLOPE = 8.845631

CORRELATION: .9995673

CHANNEL NAME: LDC
RUN DATE: 11-03-1999
SAMPLE TABLE NAME: 991103W
METHOD NAME: HGWATER

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA		CONCENTRATION µg/L	EF
1	PRIMER	1	1	13.3		1.469	s
2	DUMMY	1	1	0.2		-0.014	I
3	S1: 0	1	1	0.1		-0.025	I
4	S2: .5	1	1	4.8		0.505	
5	S3: 1	1	1	9.2		1.005	
6	S4: 1.5	1	1	14.0		1.549	
7	S5: 2	1	1	18.0		1.993	
8	S6: 2.5	1	1	22.2		2.473	
9	ICV	1	1	13.1		1.444	96%
10	B	1	1	0.0	TuG	-0.039	b
11	D4	1	1	14.0		1.549	d
12	WS 378	1	1	15.3		1.687	
13	ORG REF	1	1	18.9		2.104	
14	BL1103-1NM4	1	1	0.1	20.03	-0.030	I
15	BL1103-1NM4	1	1	0.1		-0.030	s
16	BL1103S	1	1	9.1	0.298	0.988	99%
17	BL1103S	1	1	9.2		0.996	
18	BL1103DS	1	1	9.2	0.302	0.999	101%
19	BL1103DS	1	1	9.3		1.013	
20	61634	6.666	1	144 11.9	8.731	8.740	

22	[illegible]	[illegible]	[illegible]	[illegible]	8.787	[illegible]	
23	61634D	6.666	1	12.0		8.759	
24	61634S	6.666	1	20.6	15.292	15.292	98%
25	61634S	6.666	1	20.6		15.292	
26	61634DS	6.666	1	20.7	15.347	15.310	99%
27	61634DS	6.666	1	20.8		15.384	
28	61632	.6666	1	5.0	0.352	0.351	
29	61632	.6666	1	5.0		0.353	
30	61633	1.333	1	7.8	1.125	1.119	s
31	61633	1.333	1	7.8		1.130	
32	61635	.6666	1	4.6	0.324	0.322	
33	61635	.6666	1	4.7		0.326	
34	CCV	1	1	8.9		0.963	96%
35	B	1	1	0.0		-0.039	b
36	D4	1	1	14.0		1.549	d
37	61636	.6666	1	8.2	0.597	0.592	
38	61636	.6666	1	8.3		0.602	
39	61637	.6666	1	1.1	<0.100	0.057	
40	61637	.6666	1	1.1		0.061	
41	61638	.6666	1	2.1	0.135	0.134	
42	61638	.6666	1	2.1		0.136	
43	61639	.6666	1	5.6	0.398	0.396	
44	61639	.6666	1	5.6		0.399	
45	61640	.6666	1	5.3	0.373	0.370	s
46	61640	.6666	1	5.3		0.375	
47	60118	2.666	1	17.1	5.056	5.056	
48	60118	2.666	1	17.1		5.056	
49	60119	2.666	1	18.1	5.370	5.365	
50	60119	2.666	1	18.2		5.372	
51	CCV	1	1	9.0		0.974	97%
52	B	1	1	0.0		-0.039	b
53	D4	1	1	14.0		1.549	d

INTERCEPT: 0.34 LINEAR COEF: 8.845631
CORRELATION COEF: .9995673

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
061631	CAE-PITT	MB R456	Mercury -	PV	-0.0100	-99999.0	0.1010	101.	0.1010	101.	99/10/26	ABP2	99/10/26	MG02	13.	6.	*BLKIMP*
061632	CAE-PITT	Reagent Blank	Mercury -	PV	-0.2500						99/10/26	ABP2	99/10/26	MG02	13.	7.	
061633	CAE-PITT	Field Blank Inlet	Mercury -	PV	-0.2500						99/10/26	ABP2	99/10/26	MG02	13.	7.	
061634	CAE-PITT	Unit 1 Inlet-R1	Mercury -	PV	-0.2500	-0.2500	2.6380	105.	2.5970	103.	99/10/26	ABP2	99/10/26	MG02	14.	7.	
061635	CAE-PITT	Unit 1 Inlet-R2	Mercury -	PV	-0.2500						99/10/26	ABP2	99/10/26	MG02	13.	7.	
061636	CAE-PITT	Unit 1 Inlet-R3	Mercury -	PV	-0.2500						99/10/26	ABP2	99/10/26	MG02	13.	7.	
061637	CAE-PITT	Field Blank Outlet	Mercury -	PV	-0.2500						99/10/26	ABP2	99/10/26	MG02	13.	7.	
061638	CAE-PITT	Unit 1 Outlet-R1	Mercury -	PV	-0.2500						99/10/26	ABP2	99/10/26	MG02	14.	7.	
061639	CAE-PITT	Unit 1 Outlet-R2	Mercury -	PV	-0.2500						99/10/26	ABP2	99/10/26	MG02	14.	7.	
061640	CAE-PITT	Unit 1 Outlet-R3	Mercury -	PV	-0.2500						99/10/26	ABP2	99/10/26	MG02	14.	7.	
BL1026	INTERNAL		Mercury -	PV	-0.2500	-99999.0	0.1010	101.	0.1010	101.	99/10/26	ABP2	99/10/26	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

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00047

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.10.26 (W) Run Code: MG02 Matrix: IMP.

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

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12			WS 378			
13			ORG. REF.			
14			BL1026	INAI.		
15			"			
16			BL1026 S			
17			"			
18			BL1026 DS			
19			"			
20			53751			
21			"			
22			53751 D			
23			"			
24			53751 S			
25			"			
26			53751 DS			
27			"			
28	5		51090			
29	↓		"			
30			51090D			
31			"			
32		1/80	59395			
33		↓	"			
34			CCV			
35			B			
36			D4			
37		1/80	59395 D			
38		↓	"			
39			59395 S			
40		↓	"			
41		1/80	59395 DS			
42		↓	"			
43		1/400	59395 DS			
44			"			
45			59393			
46			"			
47			59394			
48			"			
49			59396			
50			"			
51		1/2	59397			
52		↓	"			
53		1/20	59398			
54		↓	"			
55			59399			
56			"			
57			CCV			
58			B			
59			D4			
60		1/4	59400			
61		↓	"			
62			BL1026	ZNSB		
63			"			
64			BL1026 S			
65			"			
66			BL1026 DS			
67			"			
68			60669			
69			"			
70			60669 D			
71			"			
72			60669 S			
73			"			
74			60669 DS			
75			"			
76			60667			
77			"			
78			60668			
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.

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

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.10.26 Run Code: MG02 Matrix: IMP

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

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12						
13						
14						
15						
16						
17						
18						
19						
20						
81 ~~21~~			B			
22			D4			
23			60670			
24			"			
25			60671			
26			"			
27			BL1026	ABP1		
28			"			
29			BL1026 S			
30			"			
31			BL1026 DS			
32			"			
33	10		60117			
34	↓		"			
35			60117 D			
36			"			
37			60117 S			
38			"			
39			60117 DS			
40	↓		"			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41	10		60116			
42	↓		"			
43			CCV			
44			B			
45			D4			
46	10		60118			
47	↓		"			
48			60119			
49	↓		"			
50			BL1026	ABP2		
51			BL1026 B			
52			BL1026 S			
53			"			
54			BL1026 DS			
55			"			
56	10		61634			
57	↓		"			
58			61634 D			
59			"			
60			61634 S			
61			"			
62			61634 DS			
63			"			
64			61632			
65	↓		"			
66			CCV			
67			B			
68			D4			
69	10		61633			
70	↓		"			
71			61635			
72			"			
73			61636			
74			"			
75			61637			
76			"			
77			61638			
78			"			
79			61639			
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.

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

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.10.26 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)			
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20						
41 ~~21~~	10		61640			
22	↓		"			
23			CCV			
24			B			
25			D4			
26			BL1026	ABA1		
27			BL1026 S			
28			63026			
29			026 D			
30			026 S			
31			022			
32			022 S			
33			62668			
34	10		62596			
35	↓		598			
36			62901			
37			63687			
38			WS 378			
39			ORG. REF.			
40			CCV			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41			B			
42			D4			
43						
44						
45						
46						
47						
48						
49						
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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.

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

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG
DGHGLEACH, DG29HG***

Calibration Solutions:

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

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

	#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
	9	ICV (Init. Calib. Verif.)	ABP1	20 ml	30 ml	1 X	1.5 ppb = 600 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	10	BL 1026	"	"	"	"	(Processed Blank) 60115
	11	BL 1026 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	12	60117	"	"	"	10X	FV=250ml
1	13	D	"	"	"	"	(Duplicate sample)
1	14	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	15	DS	"	"	"	"	(Duplicate Spiked sample)
2	16	60116	"	"	"	"	
3	17	118	"	"	"	"	
4	18	119	"	"	"	"	
5	19		"	"	"	"	
6	20		"	"	"	"	
7	21		"	"	"	"	
8	22		"	"	"	"	
9	23		"	"	"	"	
10	24		"	"	"	"	
	25	CCV (Cont. Calib. Verif.)	ABP2	20 ml	30 ml	1 X	1.0 ppb = 400 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	26	BL 1026	"	"	"	"	(Processed Blank) 61631
	27	BL 1026 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	28	61634	"	"	"	10X	FVPOX = 250ml
1	29	D	"	"	"	"	(Duplicate sample)
1	30	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	31	DS	"	"	"	"	(Duplicate Spiked sample)
2	32	61632	"	"	"	"	
3	33	633	"	"	"	"	
4	34	635	"	"	"	"	
5	35	636	"	"	"	"	
6	36	637	"	"	"	"	
7	37	638	"	"	"	"	
8	38	639	"	"	"	"	
9	39	640	"	"	"	"	
10	40		"	"	"	"	

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

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

Prepare 0.05 ppm standards daily

HNO3 Lot. No. 119060 | H2SO4 Lot. No. 317120 | Bath Temps. 195 °C

Prepared By: AL Date: 99.10.26 Checked by: AL

RUN DATE: 10-26-1999 CHART DATE: 10-27-1999
CHART SPEED: 30
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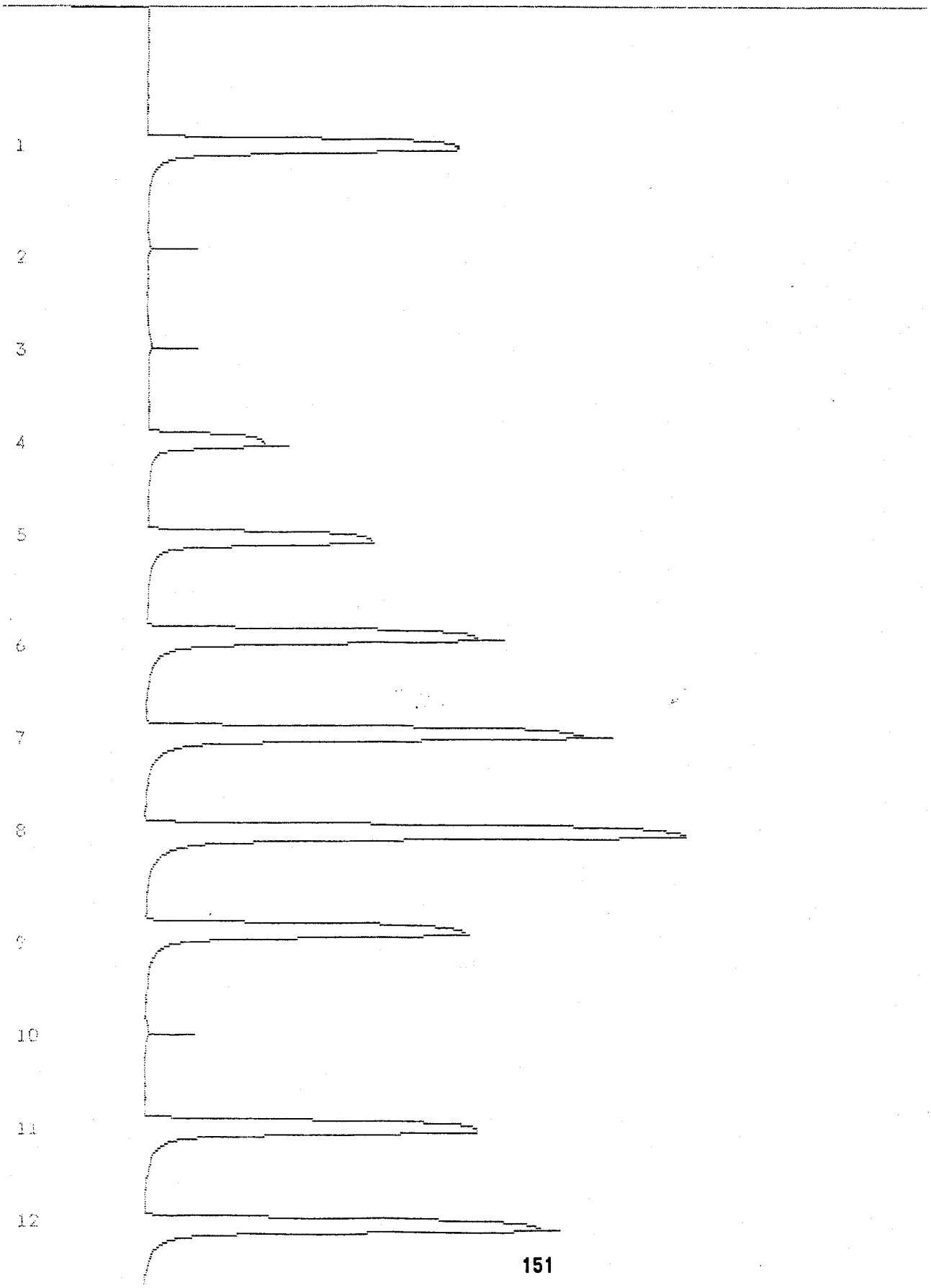

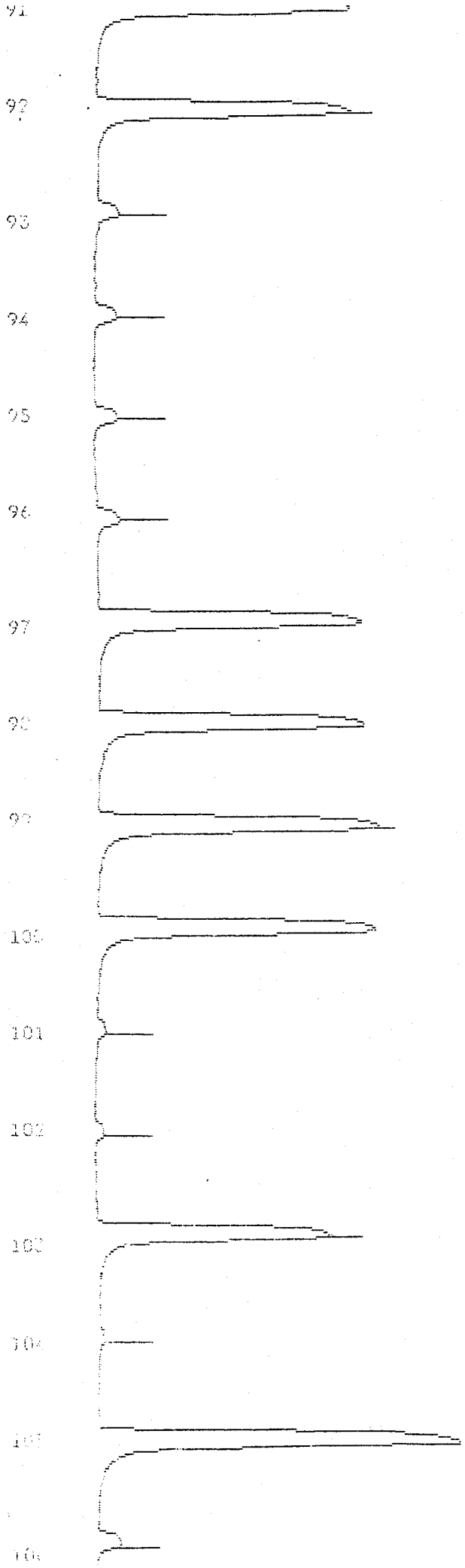
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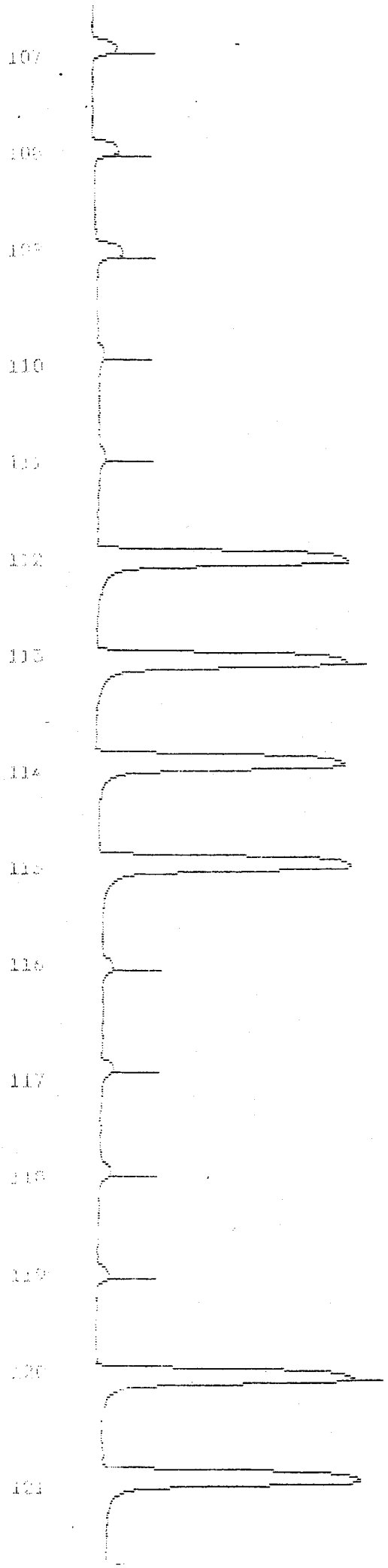
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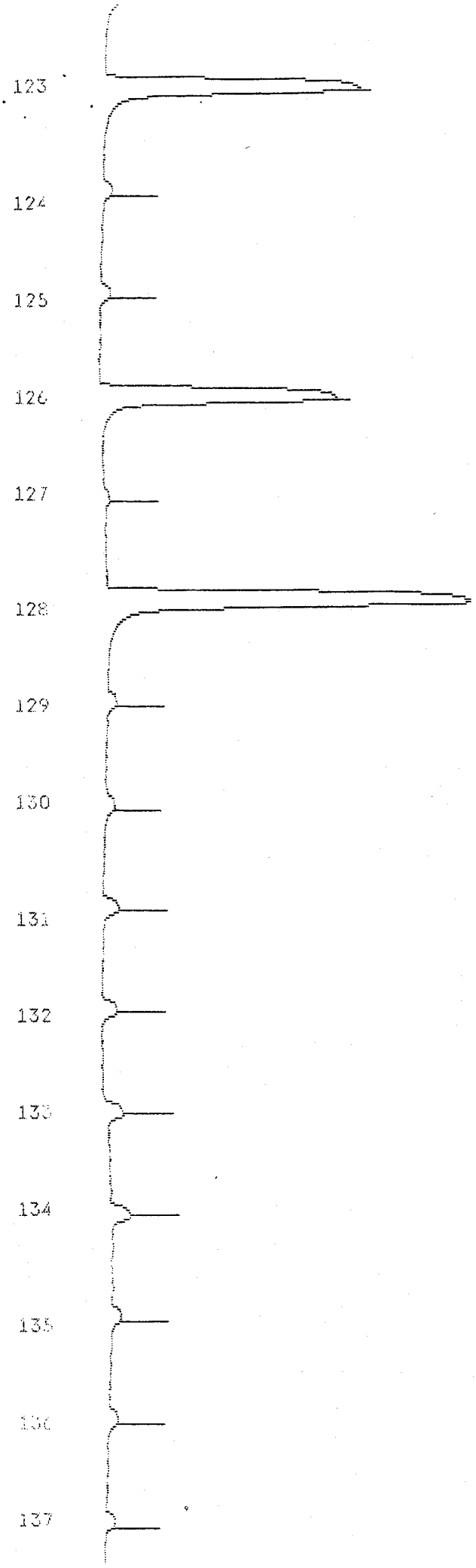
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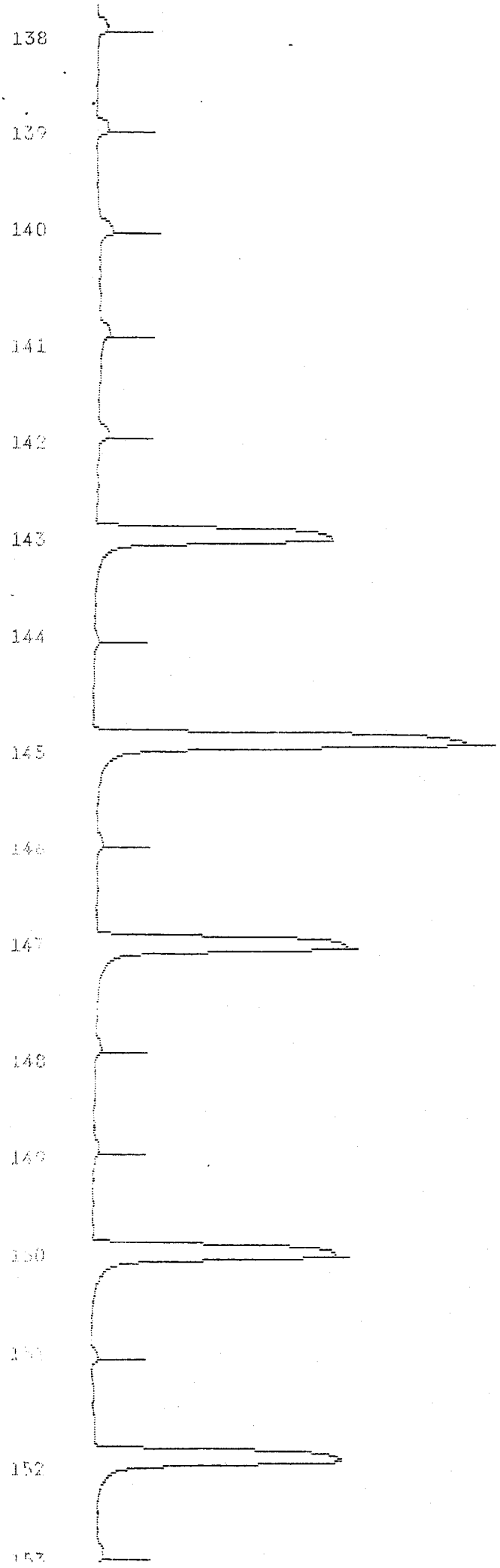
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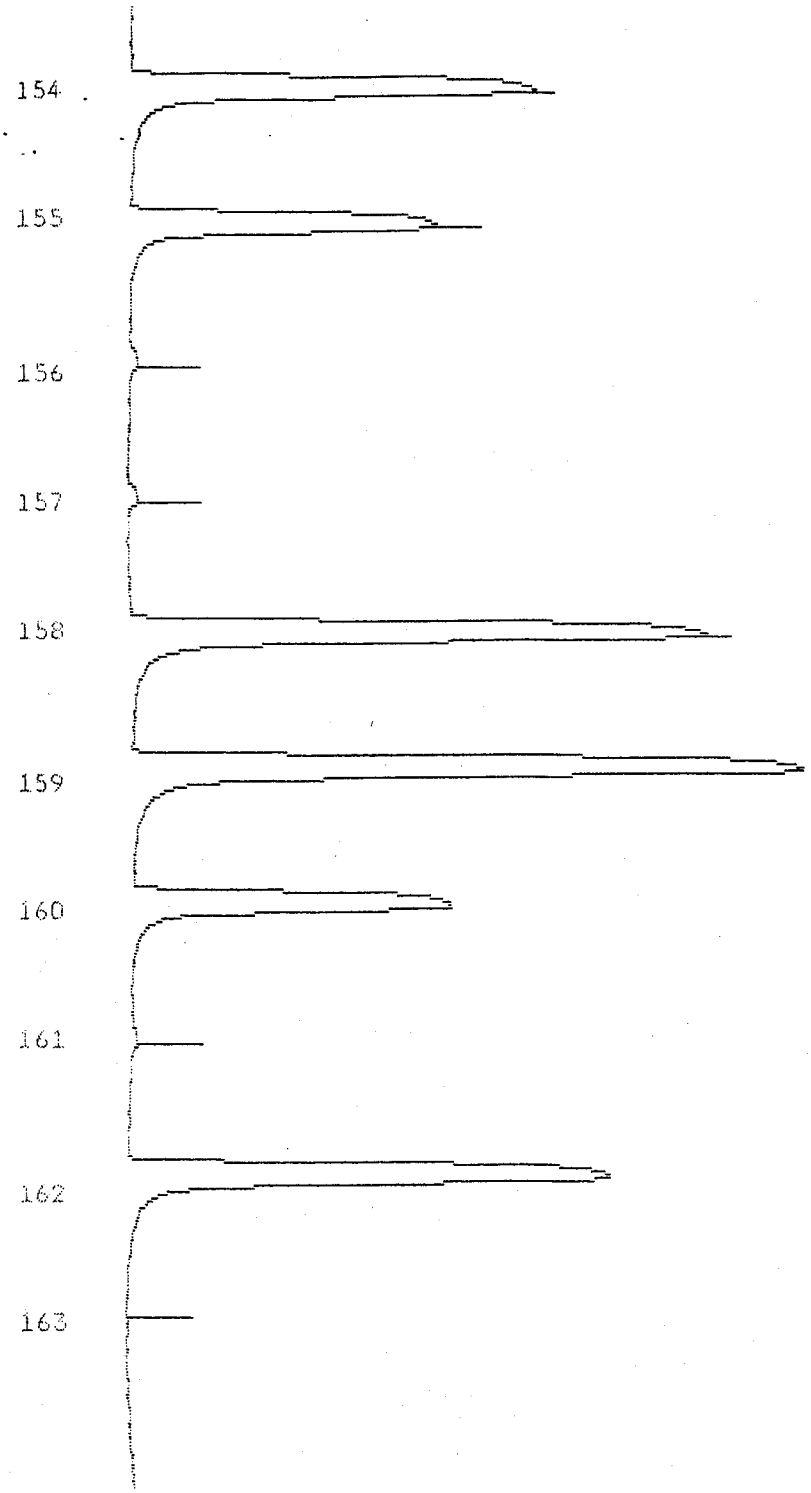
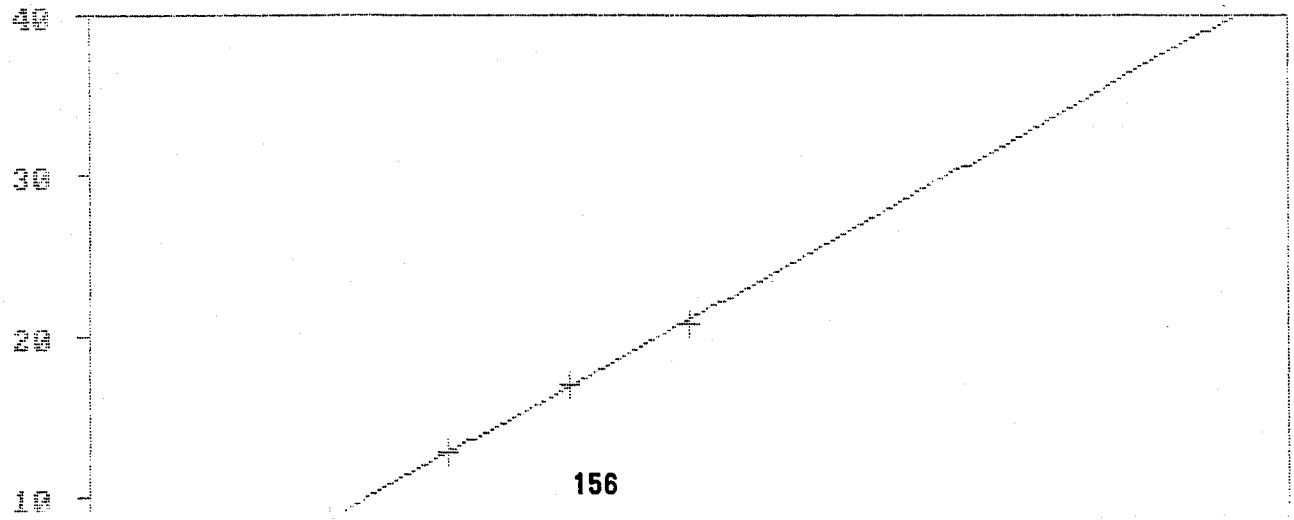


CHANNEL NAME: LDC
RUN NAME: 991026W



DATA TYPE: FIA
INTERCEPT = 0.23

CALIBRATION ORDER: 1
SLOPE = 8.30839

CORRELATION: .9998331

CHANNEL NAME: LDC
RUN DATE: 10-26-1999
SAMPLE TABLE NAME: 991026W
METHOD NAME: HGWATER

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA		CONCENTRATION (PPb)	EF
1	PRIMER	1	1	12.1		1.431	s
2	DUMMY	1	1	0.0		-0.027	I
3	S1: 0	1	1	0.1		-0.021	I
4	S2: .5	1	1	4.4		0.505	
5	S3: 1	1	1	8.7		1.017	
6	S4: 1.5	1	1	12.8		1.511	
7	S5: 2	1	1	16.9		2.010	
8	S6: 2.5	1	1	20.8		2.478	
9	ICV	1	1	12.3		1.446 96%	
10	B	1	1	0.0		-0.030	b
11	D4	1	1	12.8	TLIG	1.511	d
12	WS 378	1	1	15.0		1.781 89%	
13	ORG REF	1	1	17.5		2.081 104%	
14	BL1026-1NA1 59393	1	1	0.0	<0.05	-0.027	I
15	BL1026-1NA1	1	1	0.0		-0.030	I
16	BL1026S	1	1	8.7	0.508	1.014	101%
17	BL1026S	1	1	8.6		1.005	
18	BL1026DS	1	1	8.9	0.520	1.037	104%
19	BL1026DS	1	1	8.9		1.043	
20	53751	1	1	4.2		0.479	
21	53751	1	1	4.1		0.467	
22	53751D	1	1	4.2		0.473	
23	53751D	1	1	4.1		0.458	
24	53751S	1	1	13.0		1.537	
25	53751S	1	1	12.9		1.525	
26	53751DS	1	1	13.0		1.531	
27	53751DS	1	1	12.8		1.514	
28	51090	5	1	7.0		4.085	
29	51090	5	1	7.0		4.055	
30	51090D	5	1	8.4		4.922	
31	51090D	5	1	6.9		4.026	s
32	59395	80	1	7.5	33.994	70.059	
33	59395	80	1	7.6		70.765	
34	CCV	1	1	8.2		0.961 96%	
35	B	1	1	0.0		-0.030	b
36	D4	1	1	12.8		1.511	d
37	59395D	80	1	7.5	32.928	70.059	
38	59395D	80	1	7.5		70.059	
39	59395S	80	1	16.0	71.276	151.416	101%
40	59395S	80	1	16.0		151.887	
41	59395DS	80	1	16.0	71.276	151.652	101%
42	59395DS	80	1	16.0		151.652	
43	59395DS Dil. check	400	1	3.3		146.904	3% RPD
44	59395DS	400	1	3.3		148.080	
45	59393	1	1	0.0	<0.05	-0.030	I

48	59394	1	1	4.4	0.201	0.502		
49	59396	1	1	14.7	0.828	1.743		
50	59396	1	1	14.7		1.743		
51	59397	2	1	11.9	1.325	2.798		
52	59397	2	1	11.8		2.780		
53	59398	20	1	12.6	16.439	29.742		
54	59398	20	1	12.7		30.036		
55	59399	20	1	18.8	23.422	44.614		
56	59399	20	1	18.8		44.614		
57	CCV	1	1	8.0		0.937	94%	
58	B	1	1	0.0		-0.030	b	
59	D4	1	1	12.8		1.511	d	
60	59400	4	1	17.5	4.479	8.311		
61	59400	4	1	17.4		8.276	s	
62	BL1026-2N3B 60667	1	1	0.0	<0.05	-0.030	I	
63	BL1026-2N3B	1	1	0.0		-0.030	I	
64	BL1026S	1	1	8.7	0.509	1.014	101%	
65	BL1026S	1	1	8.7		1.020		
66	BL1026DS	1	1	8.9	0.518	1.040	103%	
67	BL1026DS	1	1	8.8		1.032		
68	60669	1	1	2.0		0.214		
69	60669	1	1	2.0		0.214		
70	60669D	1	1	0.0		~~-0.030~~	VOID; CUP MISSED.	
71	60669D	1	1	2.8		0.308	RERUN ON Oct. 27, 1999 M	
72	60669S	1	1	11.4		1.337		
73	60669S	1	1	11.3		1.325		
74	60669DS	1	1	10.9		1.278		
75	60669DS	1	1	10.9		1.287		
76	60667	1	1	0.1	<0.100	-0.018	s	
77	60667	1	1	0.1		-0.018	I	
78	60668	1	1	0.5	<0.100	0.026	I	
79	60668	1	1	0.5		0.026	I	
80	CCV	1	1	8.3		0.964	96%	
81	B	1	1	0.0		-0.030	b	
82	D4	1	1	12.8		1.511	d	
83	60670	1	1	5.2	0.606	0.594		
84	60670	1	1	5.4		0.617		
85	60671	1	1	5.5	0.638	0.632		
86	60671	1	1	5.6		0.644		
87	BL1026-ABP1 60115	1	1	0.1	<0.01	-0.012	I	
88	BL1026-ABP1	1	1	0.1		-0.012	I	
89	BL1026S	1	1	8.8	0.103	1.029	103%	
90	BL1026S	1	1	8.7		1.023		
91	BL1026DS	1	1	9.0	0.105	1.052	105	
92	BL1026DS	1	1	8.9		1.043		
93	60117	10	1	0.6	<0.250	0.381		
94	60117	10	1	0.5		0.322		
95	60117D	10	1	0.5	<0.250	0.351		
96	60117D	10	1	0.6		0.410		
97	60117S	10	1	9.3	2.737	10.903	105%	
98	60117S	10	1	9.4		10.991		
99	60117DS	10	1	9.9	2.887	11.638	111%	
100	60117DS	10	1	9.8		11.461		
101	60116	10	1	0.2	<0.250	-0.090	I	
102	60116	10	1	0.1		-0.119	I	
103	CCV	1	1	8.2		0.955	95%	
104	B	1	1	0.0		-0.030	b	
105	D4	1	1	12.8		1.511	d	
106	60118	10	1	0.7	<0.250	0.528	s	
107	60118	10	1	0.7		0.528		
108	60119	10	1	0.7	<0.250	0.586		
109	60119	10	1	0.8		0.675		
110	BL1026-ABP2 61631	1	1	0.0	<0.01	-0.027	I	
111	BL1026-ABP2	1	1	0.1		-0.021	I	

00059

113	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	
114	BL1026DS	1	1	8.6	00060	1.008	101%
115	BL1026DS	1	1	8.8		1.026	
116	61634	10	1	0.2	<0.250	-0.001	I
117	61634	10	1	0.2		-0.001	I
118	61634D	10	1	0.2	<0.250	-0.031	I
119	61634D	10	1	0.2		-0.001	I
120	61634S	10	1	9.0	2.638	10.580	105%
121	61634S	10	1	9.0		10.521	s
122	61634DS	10	1	8.9	2.597	10.374	103%
123	61634DS	10	1	8.9		10.403	
124	61632	10	1	0.2	<0.250	-0.060	I
125	61632	10	1	0.2		-0.090	I
126	CCV	1	1	8.2		0.958	95%
127	B	1	1	0.0		-0.030	b
128	D4	1	1	12.8		1.511	d
129	61633	10	1	0.2	<0.250	-0.060	I
130	61633	10	1	0.2		-0.001	I
131	61635	10	1	0.3	<0.250	0.087	I
132	61635	10	1	0.2		0.001	I
133	61636	10	1	0.3	<0.250	0.116	
134	61636	10	1	0.5		0.263	I
135	61637	10	1	0.2	<0.250	-0.060	I
136	61637	10	1	0.2		-0.060	s
137	61638	10	1	0.2	<0.250	-0.060	I
138	61638	10	1	0.2		-0.060	I
139	61639	10	1	0.3	<0.250	0.057	I
140	61639	10	1	0.3		0.116	I
141	61640	10	1	0.2	<0.250	-0.060	I
142	61640	10	1	0.2		-0.060	I
143	CCV	1	1	8.1		0.946	95%
144	B	1	1	0.0		-0.030	b
145	D4	1	1	12.8		1.511	d
146	BL1026-A8A1	1	1	0.0		-0.027	I
147	BL1026S	1	1	8.6		1.005	101%
148	63026	1	1	0.1		-0.021	I
149	63026D	1	1	0.1		-0.021	I
150	63026S	1	1	8.4		0.979	98%
151	63022	1	1	0.1		-0.021	s
152	63022S	1	1	8.5		0.995	100%
153	62668	1	1	0.0		-0.030	I
154	62596	10	1	10.5		12.402	
155	62598	10	1	7.9		9.228	
156	62901	1	1	0.1		-0.021	I
157	62687	1	1	0.0		-0.024	I
158	WS 378	1	1	15.3		1.807	90%
159	ORG REF	1	1	17.8		2.107	105%
160	CCV	1	1	8.3		0.967	97%
161	B	1	1	0.0		-0.030	b
162	D4	1	1	12.8		1.511	d

INTERCEPT: 0.25 LINEAR COEF 8.30839
CORRELATION COEF: .9998331

MB-61631

CHAIN OF CUSTODY FORM

CLIENT: Mecklenburg Cogen
PLANT: Mecklenburg VA
PROJECT MANAGER: Tim Rodak
PROJECT NO.: 8493
DEPT.: 68

CAE LAB NO.	RUN NO.	TEST LOCATION	DATE	SAMPLE MATRIX	NO. OF CONTAINERS	ORIGINAL VOLUME	Ontario Hydro Method (Hg)				ADDITIONAL INFORMATION
61633		Field blank Inlet	10/13	Quartz filter	1		X				PPD.
61634	1	Unit 1 Inlet	10/12		1		X				
61635	2		10/13		1		X				
61636	3		10/13		1		X				
61638	1	Unit 1 Outlet	10/12		1		X				
39	2		10/13		1		X				
40	3		10/13		1		X				250CG×3, 1LCG×2
61632		Reagent blank	10/13	Quartz filter	1		X				PPD.
				0.1N HNO_3	1	200	X				250CG.
				1N KCl	1	300	X				1LCG.
				5% HNO_3 10% H_2O_2	1	100	X				250CG.
				H_2SO_4/ $KMnO_4$	1	300	X				1LCG.
				$(NH_2OH)_2 \cdot H_2SO_4$/NaCl	1	20	X				250CG.
				10% HNO_3	1	100	X				250CG.
		Reagent blank	10/13	5% $KMnO_4$	1	20	X				250CG.

Relinquished by:(Signature)	Date/Time	Received by:(Signature)	Date/Time	Relinquished by:(Signature)	Date/Time
[signature]	10/13/99 1830				
Courier:	**Date/Time**	**Relinquished by:(Signature)**	**Date/Time**	**Rec'd for Analysis by:**	**Date/Time**
				[signature] - PAL	991018 11:45

Special Handling Instructions

Forwarding Lab: Philip Analytical

PO Number:

This form was completed by: [signature] 10/13/99
Signature Date

Completed Shipment

Clean Air Engineering
1601 Parkway View Drive
Pittsburgh, PA 15205
(412) 787-9130 ph
(412) 787-9138 fax

DS COC Pittsburgh
EXCL R0-8/3/95

CHAIN OF CUSTODY FORM

CLIENT Mecklenburg Cogen
PLANT Mecklenburg VA
PROJECT MANAGER Tim Rodak

PROJECT NO. 8493
DEPT. 68

CAE LAB NO.	RUN NO.	TEST LOCATION	DATE	SAMPLE MATRIX	NO. OF CONTAINERS	ORIGINAL VOLUME	Ontario Hydro Method (Hg)				ADDITIONAL INFORMATION
611634	1	Unit 1 Inlet	10/12/99	1N KCl Imp 1,2,3	1		X				ILCG.
611635	2	↓	10/13	↓	1		X				↓
611636	3	↓	10/13	↓	1		X				↓
611638	1	Unit 1 Outlet	10/12	↓	1		X				↓
611639	2	↓	10/13	↓	1		X				↓
611640	3	↓	10/13	↓	1		X				↓
611633	Field blank	Field blank Inlet	10/13	↓	1		X				↓
611634	1	Unit 1 Inlet	10/12	$KMnO_4/H_2SO_4$ Imp 5,6,7	1		X				ILCG.
611635	2	↓	10/13	↓	1		X				↓
611636	3	↓	10/13	↓	1		X				↓
611638	1	Unit 1 Outlet	10/12	↓	1		X				↓
39	2	↓	10/13	↓	1		X				↓
40	3	↓	10/13	↓	1		X				↓
611633	Field blank	Field blank Inlet	10/13	↓	1		X				↓

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[signature]	10/13/99 1830				
Courier:	**Date/Time**	**Relinquished by:(Signature)**	**Date/Time**	**Rec'd for Analysis by:**	**Date/Time**
				[signature] PAS	991018 11:45 a.m. completed shipment

Special Handling Instructions

Forwarding Lab: Philip Analytical

PO Number:

This form was completed by: [signature] 10/13/99
Signature Date

CAE
Clean Air Engineering
1601 Parkway View Drive
Pittsburgh, PA 15205
(412) 787-9130 ph
(412) 787-9138 fax

DS COC Pittsburgh
EXCL.R0-8/3/95

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CHAIN OF CUSTODY FORM

CLIENT Mecklenburg Cogen
PLANT Mecklenburg VA
PROJECT MANAGER Tim Rodak

PROJECT NO. 8493
DEPT. 68

CAE LAB NO.	RUN NO.	TEST LOCATION	DATE	SAMPLE MATRIX	NO. OF CONTAINERS	ORIGINAL VOLUME	Ontario Hydro Method (Hg)				ADDITIONAL INFORMATION
611634	1	Unit 1 Inlet	10/12	Front half 0.1N HNO_3	1		X				250CC.
35	2	↓	10/13	↓	1		X				↓
36	3	↓	↓	↓	1		X				↓
611633		Field blank Inlet	↓	↓	1		X				↓
611638	1	Unit 1 Outlet	10/12	↓	1		X				↓
39	2	↓	10/13	↓	1		X				↓
40	3	↓	↓	↓	1		X				↓
611633		Field blank Inlet	↓	HNO_3/H_2O_2 Imp4	1		X				↓
34	1	Unit 1. Inlet	10/12	↓	1		X				250CC.
35	2	↓	10/13	↓	1		X				↓
36	3	↓	10/13	↓	1		X				↓
611638	1	Unit 1 Outlet	10/12	↓	1		X				↓
39	2	↓	10/13	↓	1		X				↓
40	3	↓	10/13	↓	1		X				↓

Relinquished by:(Signature)	Date/Time	Received by:(Signature)	Date/Time	Relinquished by:(Signature)	Date/Time
Rob Don	10/13/99 1830				
Courier:	**Date/Time**	**Relinquished by:(Signature)**	**Date/Time**	**Rec'd for Analysis by:**	**Date/Time.**
				PASL	991018 11:45a completed Shipped

Special Handling Instructions

Forwarding Lab: Philip Analytical

PO Number:

This form was completed by:

Rob Don 10/13/99

Signature Date

Clean Air Engineering
1601 Parkway View Drive
Pittsburgh, PA 15205
(412) 787-9130 ph
(412) 787-9138 fax

DS COC Pittsburgh
EXCL R0-8/3/95

00068

CHAIN OF CUSTODY FORM

CLIENT Mecklenburg Cogen
PLANT Mecklenburg VA
PROJECT MANAGER Tim Redak

PROJECT NO. 8493
DEPT. 68

CAE LAB NO.	RUN NO.	TEST LOCATION	DATE	SAMPLE MATRIX	NO. OF CONTAINERS	ORIGINAL VOLUME	ANALYSIS REQUESTED: Ontario Hydro Method				ADDITIONAL INFORMATION
6116~~57~~		Field blank Outlet	10/13	Fronthalf 0.1N HNO3	1		X				250CC
↓		↓	↓	Quartz filter	1		X				PPD.
				1N KCl Imp 1,2,3	1		X				1LCG.
				5% HNO3/10% H2O2 Imp 4	1		X			250CC	→ jar labelled as 1N KCl.
				KMnO4/H2SO4 Imp 5,6,7	1		X				1LCG.

Relinquished by:(Signature)	Date/Time	Received by:(Signature)	Date/Time	Relinquished by:(Signature)	Date/Time
[signature]	10/13/99 1830				
Courier:	**Date/Time**	**Relinquished by:(Signature)**	**Date/Time**	**Rec'd for Analysis by:**	**Date/Time**
				[signature] - PASL	991018 11:45

Completed shipment

Special Handling Instructions

Forwarding Lab: Philip Analytical

PO Number:

This form was completed by:

[signature] 10/13/99
Signature Date

Clean Air Engineering
1601 Parkway View Drive
Pittsburgh, PA 15205

(412) 787-9130 ph
(412) 787-9138 fax

DS COC Pittsburgh
EXCL R0-8/3/95

00069

GEOCHEMICAL TESTING
a division of Energy Center, Inc.

2005 N Center Ave
Somerset PA 15501

814/443-1671
814/445-6666
FAX: 814/445-6729

COAL ANALYSIS REPORT

Client: CLEAN AIR ENGINEERING-PA

Sampled by: Tim Rodak

NOV 22 RECD

Sampling Date: 10/12/1999

Analyzed on: 10/29/1999

Description: Mecklenburg Co Gen Coal Sample Run #1
PO #PA-1020-68570-8493

LAB NO. 99-021057

Air Dry Loss..... 4.36 %

Residual Moisture..... 1.12 %

	As Received	Dry	Dry Ash-Free
PROXIMATE ANALYSIS D3172			
Moisture.....	5.43		
Ash.....	6.59	6.97	
Volatile Matter.....	36.93	39.05	41.97
Fixed Carbon.....	51.05	53.98	58.03
	---	---	---
	100.00	100.00	100.00
ULTIMATE ANALYSIS			
Hydrogen.....D5373..	5.63	5.31	5.71
Carbon.....D5373..	73.56	77.78	83.61
Nitrogen.....D5373..	1.39	1.47	1.58
Sulfur.....D4239..	1.19	1.25	1.35
Oxygen.....D3176..	11.64	7.22	7.75
Ash.....D3174..	6.59	6.97	
	---	---	---
	100.00	100.00	100.00
Heating Value(BTU/Lb) D1989	13279	14042	15094

Free Swelling Index D720 4.5

Chlorine	1901	mg/kg, dry
Mercury.....ASTM D3684	0.09	mg/Kg, dry

Robert L. Stull
Director of Coal Services

MEMBER ACIL

GEOCHEMICAL TESTING
a division of Energy Center, Inc.

2005 N Center Ave
Somerset PA 15501

814/443-1671
814/445-6666
FAX: 814/445-6729

COAL ANALYSIS REPORT

Client: CLEAN AIR ENGINEERING-PA

Sampled by: Tim Rodak

Sampling Date: 10/13/1999

Analyzed on: 10/29/1999

Description: Mecklenburg Co Gen Coal Sample Run #2
PO #PA-1020-68570-8493

LAB NO. 99-021058

Air Dry Loss..... 4.48 %

Residual Moisture..... 1.21 %

	As Received	Dry	Dry Ash-Free
PROXIMATE ANALYSIS D3172			
Moisture.....	5.64		
Ash.....	7.30	7.73	
Volatile Matter.....	36.81	39.01	42.28
Fixed Carbon.....	50.25	53.26	57.72
	---	---	---
	100.00	100.00	100.00
ULTIMATE ANALYSIS			
Hydrogen.....D5373..	5.64	5.31	5.75
Carbon.....D5373..	72.75	77.10	83.57
Nitrogen.....D5373..	1.38	1.47	1.59
Sulfur.....D4239..	1.46	1.55	1.68
Oxygen.....D3176..	11.47	6.84	7.41
Ash.....D3174..	7.30	7.73	
	---	---	---
	100.00	100.00	100.00
Heating Value(BTU/Lb) D1989	13094	13877	15040

Free Swelling Index D720 4.5

Chlorine	1852	mg/kg, dry
Mercury.....ASTM D3684	0.11	mg/Kg, dry

Robert L. Stull
Director of Coal Services

MEMBER ACIL

GEOCHEMICAL TESTING
a division of Energy Center, Inc.

2005 N Center Ave
Somerset PA 15501

814/443-1671
814/445-6666
FAX: 814/445-6729

COAL ANALYSIS REPORT

Client: CLEAN AIR ENGINEERING-PA

Sampled by: Tim Rodak

Sampling Date: 10/13/1999

Analyzed on: 10/29/1999

Description: Mecklenburg Co Gen Coal Sample Run #3
PO #PA-1020-68570-8493

LAB NO. 99-021059

Air Dry Loss..... 5.91 %

Residual Moisture..... 1.29 %

	As Received	Dry	Dry Ash-Free
PROXIMATE ANALYSIS D3172			
Moisture.....	7.12		
Ash.....	7.15	7.70	
Volatile Matter.....	35.85	38.60	41.82
Fixed Carbon.....	49.88	53.70	58.18
	---	---	---
	100.00	100.00	100.00
ULTIMATE ANALYSIS			
Hydrogen.....D5373..	5.66	5.23	5.67
Carbon.....D5373..	71.28	76.74	83.14
Nitrogen.....D5373..	1.35	1.45	1.57
Sulfur.....D4239..	1.28	1.38	1.49
Oxygen.....D3176..	13.28	7.50	8.13
Ash.....D3174..	7.15	7.70	
	---	---	---
	100.00	100.00	100.00
Heating Value(BTU/Lb) D1989	12879	13867	15023

Free Swelling Index D720 5.0

Chlorine	1925	mg/kg, dry
Mercury.....ASTM D3684	0.09	mg/Kg, dry

Robert L. Stull
Director of Coal Services

MEMBER ACIL

GEOCHEMICAL TESTING
a division of Energy Center, Inc.

2005 N Center Ave
Somerset PA 15501

814/443-1671
814/445-6666
FAX: 814/445-6729

COAL ANALYSIS REPORT

Client: CLEAN AIR ENGINEERING-PA

Sampled by: Tim Rodak

Sampling Date: 10/12/1999

Analyzed on: 10/29/1999

Description: Mecklenburg Co Gen Coal Sample Run #1
PO #PA-1020-68570-8493

LAB NO. 99-021057

Mercury Accuracy
NIST 1630a

Known Value	0.104 mg/kg	(As Determined)
Measured Value	0.108 mg/kg	(As Determined)

REVISED REPORT 02/03/00 - NIST Standard Mercury value added to the report.

Robert L. Stull
Director of Coal Services

MEMBER ACIL

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Somerset PA 15501

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814/445-6666
FAX: 814/445-6729

COAL ANALYSIS REPORT

Client: CLEAN AIR ENGINEERING-PA

Sampled by: Tim Rodak

Sampling Date: 10/13/1999

Analyzed on: 10/29/1999

Description: Mecklenburg Co Gen Coal Sample Run #2
PO #PA-1020-68570-8493

LAB NO. 99-021058

Mercury Accuracy
NIST 1630a

Known Value	0.104 mg/kg	(As Determined)
Measured Value	0.108 mg/kg	(As Determined)

REVISED REPORT 02/03/00 - NIST Standard Mercury value added to the report.

Robert L. Stull
Director of Coal Services

MEMBER ACIL

GEOCHEMICAL TESTING
a division of Energy Center, Inc.

2005 N Center Ave
Somerset PA 15501

814/443-1671
814/445-6666
FAX: 814/445-6729

COAL ANALYSIS REPORT

Client: CLEAN AIR ENGINEERING-PA

Sampled by: Tim Rodak

Sampling Date: 10/13/1999

Analyzed on: 10/29/1999

Description: Mecklenburg Co Gen Coal Sample Run #3
PO #PA-1020-68570-8493

LAB NO. 99-021059

Mercury Accuracy
NIST 1630a

Known Value	0.104 mg/kg	(As Determined)
Measured Value	0.108 mg/kg	(As Determined)

REVISED REPORT 02/03/00 - NIST Standard Mercury value added to the report.

Robert L. Stull
Director of Coal Services

MEMBER ACIL

CHAIN OF CUSTODY FORM

CLIENT: Mecklenburg Cogen
PLANT: Mecklenburg
PROJECT MANAGER: Tim Rodak
PROJECT NO.: 8493
DEPT.: 68

CAE LAB NO.	RUN NO.	TEST LOCATION	DATE	SAMPLE MATRIX	NO. OF CONTAINERS	ORIGINAL VOLUME	ANALYSIS REQUESTED: Proximate	Ultimate	Mercury	Chloride			ADDITIONAL INFORMATION
	1	Run1	10/12/99	coal	1		X	X					21057
	2	Run2	10/13	coal	1		X	X					21058
	3	Run 3	10/13	coal	1		X	X					21059

Relinquished by:(Signature)	Date/Time	Received by:(Signature)	Date/Time	Relinquished by:(Signature)	Date/Time
Rob Doran	10/26/99 10:00	Jim Fox	10/27 10:00		
Courier:	**Date/Time**	**Relinquished by:(Signature)**	**Date/Time**	**Rec'd for Analysis by:**	**Date/Time**

Special Handling Instructions

Forwarding Lab: Geochemical
Bob Stull

PO Number: PA-1020-68570-8493

This form was completed by:

Rob Doran 10/26/99
Signature Date

Clean Air Engineering
1601 Parkway View Drive
Pittsburgh, PA 15205
(412) 787-9130 ph
(412) 787-9138 fax

DS COC Pittsburgh
EXCL.R0-8/3/95

OPERATING DATA

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Mercury Stack Test U1 Operating Data

Tag	U1CPFI430	U1CPFI130	U1CPFI230	U1CPFI330	U1BSFI140	U1EMWI003	U1PSFIC10	U1BGTI010	U1BGTI065	U1BGTI1201	U1LSFI1304	U1BGTI1218	U1BGPDI121
Date & Time	Total Coal Flow (KLbs./Hr)	A Feeder Coal Flow (KLbs./Hr)	B Feeder Coal Flow (KLbs./Hr)	C Feeder Coal Flow (KLbs./Hr)	Boiler Main Steam Flow (KLbs./Hr)	Generator Gross Output (MW)	Turbine Ext Stm Flow (KLbs./Hr)	FD Fan Air In Temp (F)	Air Heater Gas In Temp (F)	Scrubber Inlet Temp (F)	Scrubber Slurry Flow (GPM)	Scrubber Outlet Temp (F)	Baghouse Diff. Pressure (inWC)
10/12/99 14:55	58.24	17.95	19.37	20.77	612.74	71.50	36.01	110.01	594.36	311.17	54.11	160.37	7.87
10/12/99 15:00	58.20	17.96	19.14	20.48	613.25	71.53	34.41	110.06	594.30	311.21	53.43	160.33	7.75
10/12/99 15:05	58.17	18.23	19.27	20.56	613.76	71.56	32.80	110.11	594.23	311.25	55.00	160.29	7.87
10/12/99 15:10	58.05	17.99	19.30	20.95	614.27	71.59	33.58	110.16	594.17	311.29	55.35	160.26	7.71
10/12/99 15:15	57.88	18.58	19.37	20.82	614.79	71.61	35.81	110.21	594.11	311.33	55.95	160.22	7.60
10/12/99 15:20	57.70	18.34	19.45	20.80	615.30	71.63	38.04	110.27	594.04	311.37	54.86	160.18	7.52
10/12/99 15:25	57.61	18.06	19.22	20.72	615.81	71.65	39.37	110.32	593.98	311.41	56.77	160.15	7.48
10/12/99 15:30	57.53	18.56	19.86	20.85	616.32	71.67	40.15	110.37	593.91	311.45	53.38	160.11	7.57
10/12/99 15:35	57.45	18.24	19.33	20.62	616.83	71.69	40.92	110.42	593.85	311.49	55.36	160.07	7.63
10/12/99 15:40	57.77	18.85	19.55	20.76	617.34	71.71	41.70	110.47	593.79	311.54	55.88	160.04	8.82
10/12/99 15:45	58.38	17.88	19.49	20.98	617.86	71.73	43.02	110.52	593.72	311.58	54.16	160.00	8.59
10/12/99 15:50	58.24	18.38	19.31	20.87	618.06	71.75	46.80	110.57	593.66	311.62	53.09	159.96	8.66
10/12/99 15:55	58.10	18.29	19.23	20.46	618.05	71.77	44.79	110.62	593.59	311.66	55.34	159.93	8.50
10/12/99 16:00	58.07	18.07	19.19	20.45	618.04	71.79	41.13	110.68	593.53	311.70	56.04	159.89	8.50
10/12/99 16:05	58.16	18.02	19.20	20.95	618.03	71.81	40.81	110.73	593.47	311.74	57.41	159.85	8.05
10/12/99 16:10	58.23	17.98	19.30	20.68	618.03	71.83	43.12	110.78	593.40	311.78	54.04	159.82	7.60
10/12/99 16:15	58.22	18.63	19.27	20.90	618.02	71.85	45.42	110.83	593.34	311.82	53.51	159.78	8.51
10/12/99 16:20	58.23	18.34	19.28	20.99	617.99	71.87	47.73	110.88	593.27	311.86	54.71	159.74	8.59
10/12/99 16:25	58.38	18.30	19.83	20.90	617.90	71.89	40.48	110.93	593.71	311.90	54.92	159.71	8.57
10/12/99 16:30	58.54	18.03	19.82	20.93	617.81	71.91	38.04	110.98	594.48	311.94	55.56	159.67	8.66
10/12/99 16:35	58.69	18.47	19.39	21.21	617.72	71.93	44.87	111.03	595.24	311.98	56.34	159.63	8.58
10/12/99 16:40	58.85	18.49	19.82	21.63	617.63	71.95	49.84	111.08	596.01	312.02	55.19	159.60	8.85
10/12/99 16:45	59.01	18.01	19.29	21.02	618.12	71.97	50.91	111.12	596.78	312.06	53.97	159.56	8.39
10/12/99 16:50	59.25	18.63	19.36	21.16	618.66	71.99	51.97	111.17	597.54	312.10	54.06	159.52	8.75
10/12/99 16:55	59.54	18.56	19.09	21.05	619.20	72.01	53.03	111.22	598.31	312.14	53.29	159.49	7.94
10/12/99 17:00	59.14	18.76	20.25	21.77	619.74	72.03	50.98	111.27	599.08	312.18	54.55	159.45	8.88
10/12/99 17:05	58.52	18.51	19.38	21.11	620.28	72.04	48.94	111.32	599.84	312.22	56.25	159.41	8.97
10/12/99 17:10	58.87	19.08	20.01	21.37	620.83	72.05	49.30	111.37	600.61	312.26	54.47	159.38	9.09
10/12/99 17:15	59.22	18.92	19.88	21.30	621.37	72.06	51.13	111.42	601.38	312.30	54.71	159.34	9.22
10/12/99 17:20	60.28	19.50	20.71	21.72	621.76	72.07	52.97	111.47	602.14	312.34	57.79	159.30	10.10
10/12/99 17:25	60.31	18.67	20.00	21.06	621.41	72.08	54.80	111.52	602.26	312.38	55.59	159.27	8.72
10/12/99 17:30	59.79	19.01	19.67	21.17	621.06	72.09	56.64	111.57	601.46	312.42	56.20	159.23	8.60
10/12/99 17:35	60.05	18.88	19.91	21.20	620.70	72.10	56.97	111.62	600.67	312.47	54.66	159.19	8.44
10/12/99 17:40	59.67	19.10	19.80	21.74	620.35	72.11	57.29	111.67	599.88	312.51	54.87	159.15	8.32
Average	**58.60**	**18.45**	**19.54**	**21.00**	**617.91**	**71.85**	**45.11**	**110.85**	**596.12**	**311.84**	**55.02**	**159.76**	**8.38**

Mercury Stack Test U1 Operating Data

Tag	U1CPFI430	U1CPFI130	U1CPFI230	U1CPFI330	U1BSFI140	U1EMWI003	U1PSFIC10	U1BGTI010	U1BGTI065	U1BGTI1201	U1LSFI1304	U1BGTI1218	U1BGPDI121
Date & Time	Total Coal Flow (KLbs./Hr)	A Feeder Coal Flow (KLbs./Hr)	B Feeder Coal Flow (KLbs./Hr)	C Feeder Coal Flow (KLbs./Hr)	Boiler Main Steam Flow (KLbs./Hr)	Generator Gross Output (MW)	Turbine Ext Stm Flow (KLbs./Hr)	FD Fan Air In Temp (F)	Air Heater Gas In Temp (F)	Scrubber Inlet Temp (F)	Scrubber Slurry Flow (GPM)	Scrubber Outlet Temp (F)	Baghouse Diff. Pressure (inWC)
10/13/99 9:45	61.67	18.97	20.32	21.85	635.39	73.80	49.83	102.46	604.91	310.41	60.41	157.76	9.10
10/13/99 9:50	61.66	19.05	20.34	21.96	634.58	73.79	52.54	102.52	604.75	310.42	60.80	157.73	8.35
10/13/99 9:55	61.65	19.32	20.25	21.73	633.78	73.79	52.50	102.58	604.59	310.43	56.40	157.71	8.88
10/13/99 10:00	61.64	19.59	20.39	21.53	634.73	73.78	52.46	102.64	604.43	310.43	55.99	157.69	8.36
10/13/99 10:05	61.63	19.05	20.54	21.99	635.72	73.77	52.41	102.70	604.27	310.44	59.65	157.67	8.42
10/13/99 10:10	61.62	19.20	20.14	21.70	636.71	73.76	52.99	102.76	604.11	310.45	58.60	157.65	8.71
10/13/99 10:15	61.45	19.14	20.62	21.77	637.70	73.76	53.69	102.82	603.95	310.45	56.33	157.63	8.81
10/13/99 10:20	61.13	19.06	20.08	21.26	638.69	73.75	53.66	102.88	603.79	310.46	56.68	157.61	8.75
10/13/99 10:25	60.81	19.30	20.28	21.88	639.68	73.74	53.49	102.94	603.62	310.46	57.17	157.58	8.69
10/13/99 10:30	60.19	18.58	19.89	21.38	640.24	73.63	53.33	102.99	603.46	310.47	55.10	157.56	8.48
10/13/99 10:35	62.53	19.93	20.93	22.59	637.83	72.54	53.16	103.05	603.36	310.48	57.69	157.54	9.03
10/13/99 10:40	61.17	18.81	19.75	21.47	639.93	72.70	53.00	103.11	603.41	310.48	60.37	157.52	8.39
10/13/99 10:45	59.84	19.32	19.87	21.38	641.01	73.04	52.15	103.17	603.45	310.49	51.44	157.50	8.08
10/13/99 10:50	62.45	19.24	20.31	21.89	640.96	72.94	48.55	103.23	603.49	310.50	60.12	157.48	9.06
10/13/99 10:55	61.06	18.49	20.09	20.89	640.91	72.98	44.96	103.29	603.53	310.50	57.31	157.46	8.91
10/13/99 11:00	60.80	18.97	20.29	21.64	640.87	73.02	46.16	103.35	603.58	310.51	57.45	157.43	8.39
10/13/99 11:05	60.94	19.21	19.91	21.80	640.82	73.06	48.56	103.41	603.62	310.51	52.82	157.41	9.08
10/13/99 11:10	61.08	19.25	20.16	21.90	640.77	73.10	49.77	103.47	603.66	310.52	57.23	157.39	9.48
10/13/99 11:15	61.21	19.24	20.16	21.80	640.72	73.14	50.73	103.53	603.70	310.53	58.43	157.37	8.82
10/13/99 11:20	61.35	19.44	20.28	22.10	640.68	73.18	51.68	103.59	603.75	310.53	57.56	157.35	9.17
10/13/99 11:25	61.49	19.02	20.67	21.85	640.63	73.22	52.64	103.65	603.79	310.54	56.20	157.33	9.44
10/13/99 11:30	61.63	19.13	20.46	21.59	640.58	73.26	53.59	103.71	603.83	310.55	55.62	157.30	9.27
10/13/99 11:35	60.59	19.82	20.59	22.04	640.54	73.30	54.55	103.77	603.88	310.55	57.74	157.28	9.60
10/13/99 11:40	60.09	19.39	20.24	21.55	640.49	73.31	55.50	103.83	603.92	310.56	60.95	157.26	9.40
10/13/99 11:45	60.67	19.33	20.37	21.77	640.44	73.30	56.46	103.89	603.96	310.56	56.35	157.24	9.35
10/13/99 11:50	60.86	19.32	20.31	21.78	640.39	73.29	57.41	103.95	604.00	310.57	56.18	157.22	9.52
10/13/99 11:55	60.88	19.45	20.15	21.74	640.35	73.28	57.01	104.01	604.05	310.58	56.13	157.20	9.07
10/13/99 12:00	60.91	19.05	20.58	21.72	640.30	73.27	56.23	104.07	604.09	310.58	56.67	157.18	8.98
10/13/99 12:05	60.93	19.33	20.34	21.82	640.25	73.27	55.44	104.13	604.13	310.59	57.87	157.15	8.70
10/13/99 12:10	60.95	19.26	20.04	21.93	640.20	73.26	54.66	104.19	604.17	310.60	55.61	157.13	8.30
10/13/99 12:15	60.97	19.30	20.00	21.88	640.16	73.25	53.87	104.25	604.22	310.60	60.89	157.11	8.29
10/13/99 12:20	60.99	19.19	19.95	21.71	640.11	73.24	53.08	104.31	604.26	310.61	59.25	157.09	8.13
10/13/99 12:25	60.89	19.24	20.46	21.89	640.06	73.23	52.30	104.37	604.30	310.61	54.59	157.07	8.04
Average	**61.14**	**19.21**	**20.27**	**21.75**	**639.28**	**73.33**	**52.68**	**103.41**	**603.94**	**310.51**	**57.32**	**157.41**	**8.82**

Mercury Stack Test U1 Operating Data

Tag	U1CPFI430	U1CPFI130	U1CPFI230	U1CPFI330	U1BSFI140	U1EMWI003	U1PSFIC10	U1BGTI010	U1BGTI065	U1BGTI1201	U1LSFI1304	U1BGTI1218	U1BGPDI121
Date & Time	Total Coal Flow (KLbs./Hr)	A Feeder Coal Flow (KLbs./Hr)	B Feeder Coal Flow (KLbs./Hr)	C Feeder Coal Flow (KLbs./Hr)	Boiler Main Steam Flow (KLbs./Hr)	Generator Gross Output (MW)	Turbine Ext Stm Flow (KLbs./Hr)	FD Fan Air In Temp (F)	Air Heater Gas In Temp (F)	Scrubber Inlet Temp (F)	Scrubber Slurry Flow (GPM)	Scrubber Outlet Temp (F)	Baghouse Diff. Pressure (inWC)
10/13/99 13:20	61.08	19.01	20.24	21.67	639.54	73.14	51.76	105.02	604.77	310.68	60.85	156.83	9.56
10/13/99 13:25	61.07	19.29	20.21	21.82	639.49	73.13	52.61	105.08	604.81	310.69	59.45	156.81	9.10
10/13/99 13:30	61.07	19.27	20.44	21.81	639.45	73.12	52.99	105.14	604.86	310.70	57.75	156.79	9.22
10/13/99 13:35	61.00	19.43	20.41	21.83	639.40	73.12	53.37	105.20	604.90	310.70	59.70	156.77	9.48
10/13/99 13:40	60.91	19.24	20.27	21.84	639.35	73.11	53.76	105.26	604.94	310.71	59.55	156.75	9.20
10/13/99 13:45	60.81	18.68	20.13	21.77	639.30	73.10	53.26	105.32	604.98	310.71	57.43	156.73	9.31
10/13/99 13:50	60.70	19.18	20.28	21.44	639.26	73.09	44.84	105.38	605.03	310.72	55.74	156.70	8.98
10/13/99 13:55	60.47	19.34	20.55	21.69	639.21	73.08	44.80	105.44	605.07	310.73	57.90	156.68	9.33
10/13/99 14:00	60.25	19.59	20.16	21.68	639.16	73.08	48.70	105.50	605.11	310.73	60.89	156.66	8.66
10/13/99 14:05	60.02	19.47	20.24	21.61	639.12	73.07	52.60	105.56	605.16	310.74	58.00	156.64	8.81
10/13/99 14:10	59.80	18.87	20.27	21.83	639.07	73.06	53.10	105.62	605.20	310.75	56.99	156.62	9.10
10/13/99 14:15	59.74	19.08	20.18	21.71	639.02	73.05	49.61	105.68	605.24	310.75	54.12	156.60	8.59
10/13/99 14:20	60.43	19.15	20.27	21.72	638.97	73.04	46.18	105.74	605.28	310.76	57.66	156.58	8.53
10/13/99 14:25	60.66	19.11	20.22	21.13	638.93	73.03	44.87	105.80	605.33	310.76	57.70	156.55	7.94
10/13/99 14:30	60.57	19.39	20.40	21.81	638.88	73.02	49.48	105.86	605.37	310.77	53.86	156.53	8.24
10/13/99 14:35	60.53	19.09	20.23	21.50	638.83	73.01	48.97	105.92	605.41	310.78	56.06	156.51	7.79
10/13/99 14:40	60.55	18.96	20.46	21.58	638.78	73.00	47.83	105.98	605.45	310.78	56.87	156.49	8.08
10/13/99 14:45	60.56	19.29	20.15	21.59	638.72	72.99	53.74	106.03	605.50	310.79	56.94	156.47	8.06
10/13/99 14:50	60.58	19.33	20.75	21.85	638.43	72.98	59.65	106.09	605.35	310.80	60.58	156.45	8.31
10/13/99 14:55	60.60	19.21	20.44	21.60	638.14	72.97	59.31	106.15	605.02	310.80	57.12	156.42	8.12
10/13/99 15:00	60.61	19.16	20.70	21.67	637.85	72.96	55.12	106.22	604.69	310.81	58.17	156.40	8.06
10/13/99 15:05	60.63	19.36	20.38	21.73	637.56	72.94	52.40	106.38	604.36	310.81	56.47	156.38	7.95
10/13/99 15:10	60.64	19.51	20.52	21.74	637.27	72.93	55.52	106.55	604.03	310.82	56.48	156.36	8.24
10/13/99 15:15	60.66	19.31	20.27	21.68	636.98	72.92	58.63	106.71	603.70	310.83	59.07	156.34	9.02
10/13/99 15:20	60.67	19.22	20.39	21.63	636.69	72.91	57.22	106.87	603.37	310.83	53.76	156.32	9.35
10/13/99 15:25	60.69	19.28	20.36	21.82	636.41	72.90	54.53	107.03	603.04	310.84	60.23	156.30	9.49
10/13/99 15:30	60.61	19.32	20.28	21.89	636.12	72.89	51.99	107.19	602.71	310.85	58.27	156.27	9.44
10/13/99 15:35	60.45	19.24	20.19	21.73	635.83	72.88	49.68	107.35	602.38	310.85	58.13	156.25	9.34
10/13/99 15:40	60.28	19.39	20.11	21.76	635.54	72.87	49.18	107.51	602.05	310.86	60.29	156.23	8.84
10/13/99 15:45	60.11	19.47	20.39	22.09	635.25	72.86	50.10	107.68	601.72	310.86	61.05	156.21	9.50
10/13/99 15:50	59.97	19.07	19.96	21.46	634.96	72.84	51.03	107.84	601.39	310.87	60.90	156.19	9.87
10/13/99 15:55	60.05	18.94	20.22	21.57	634.67	72.83	49.94	108.00	601.06	310.88	59.16	156.17	8.88
Average	**60.52**	**Average**	**20.31**	**Average**	**638.01**	**Average**	**51.77**	**Average**	**604.29**	**Average**	**58.04**	**Average**	**8.82**

Mercury Stack Test U1 Operating Data

Tag	U1CPFI430	U1CPFI130	U1CPFI230	U1CPFI330	U1BSFI140	U1EMWI003	U1PSFIC10	U1BGTI010	U1BGTI065	U1BGTI1201	U1LSFI1304	U1BGTI1218	U1BGPDI121
Date & Time	Total Coal Flow (KLbs./Hr)	A Feeder Coal Flow (KLbs./Hr)	B Feeder Coal Flow (KLbs./Hr)	C Feeder Coal Flow (KLbs./Hr)	Boiler Main Steam Flow (KLbs./Hr)	Generator Gross Output (MW)	Turbine Ext Stm Flow (KLbs./Hr)	FD Fan Air In Temp (F)	Air Heater Gas In Temp (F)	Scrubber Inlet Temp (F)	Scrubber Slurry Flow (GPM)	Scrubber Outlet Temp (F)	Baghouse Diff. Pressure (inWC)
10/11/99 15:00	37.69	14.24	10.80	13.70	410.34	45.92	55.46	119.50	536.08	299.29	36.47	157.95	5.29
10/11/99 15:05	28.42	14.29	0.09	14.27	346.93	37.85	54.99	121.39	522.02	298.33	28.26	158.20	3.79
10/11/99 15:10	27.40	14.03	0.07	13.94	316.76	34.43	54.52	123.78	505.66	298.74	26.74	158.46	3.83
10/11/99 15:15	40.91	20.43	0.04	20.63	385.75	44.37	54.05	122.74	514.48	298.71	36.52	158.72	6.51
10/11/99 15:20	49.60	25.03	0.02	25.02	476.56	54.15	53.58	120.08	533.08	296.45	41.63	158.96	8.20
10/11/99 15:25	58.04	22.52	13.65	23.02	557.34	64.67	53.11	117.43	554.49	295.21	46.92	159.02	9.64
10/11/99 15:30	56.92	20.11	16.45	20.21	608.17	69.67	52.64	114.78	575.91	297.21	49.36	159.08	8.00
10/11/99 15:35	61.33	21.40	17.56	21.56	625.85	70.19	52.17	114.47	579.92	299.20	54.89	159.14	8.13
10/11/99 15:40	59.33	20.13	18.65	20.31	636.95	71.23	52.55	114.47	583.93	301.20	55.76	159.19	7.52
10/11/99 15:45	61.67	21.60	19.62	21.31	641.06	71.58	53.72	114.47	587.95	303.20	57.05	159.09	7.98
10/11/99 15:50	62.23	20.72	19.60	21.18	641.32	71.71	54.88	114.48	591.96	305.19	57.87	158.99	8.01
10/11/99 15:55	61.49	20.65	19.21	20.89	641.58	71.84	55.74	114.48	595.56	307.19	57.45	158.89	7.78
10/11/99 16:00	60.75	20.45	19.16	20.74	640.79	71.97	54.36	114.48	595.42	309.11	55.20	158.79	7.55
10/12/99 8:00	23.51	11.42	0.25	11.86	268.58	23.00	41.76	115.64	460.83	274.85	17.14	160.13	2.41
10/12/99 8:05	22.97	11.23	0.26	11.23	266.03	23.06	40.28	115.38	461.43	274.58	17.05	160.19	2.33
10/12/99 8:10	22.31	11.24	0.26	11.32	263.48	23.13	38.80	115.12	462.34	274.31	16.96	160.24	2.41
10/12/99 8:15	21.82	11.36	0.27	11.30	260.93	23.20	37.32	114.86	463.26	274.04	16.94	160.29	2.31
10/12/99 8:20	21.86	11.38	0.27	11.77	258.38	23.26	37.13	114.60	464.17	273.76	16.98	160.34	2.52
10/12/99 8:25	21.90	11.16	0.28	11.52	255.83	23.33	37.82	114.34	465.09	273.49	17.02	160.39	2.45
10/12/99 8:30	22.17	11.31	0.28	11.28	253.52	23.39	38.69	114.09	466.01	273.22	17.07	160.45	2.46
10/12/99 8:35	23.06	11.08	0.29	11.18	251.23	23.46	39.56	113.83	466.92	272.95	17.11	160.50	2.47
10/12/99 8:40	23.85	11.93	0.29	11.92	248.95	23.53	40.43	113.57	467.84	272.68	17.15	160.55	2.62
10/12/99 8:45	24.50	11.67	0.30	11.75	246.66	23.59	41.52	113.31	468.75	272.41	17.19	160.60	2.56
10/12/99 8:50	25.15	11.96	0.30	11.99	244.37	23.66	43.82	113.05	469.67	272.14	17.23	160.65	2.70
10/12/99 8:55	29.49	14.49	0.31	14.25	326.27	33.48	44.88	112.79	470.92	272.51	19.74	160.71	3.39
10/12/99 9:00	44.95	23.20	0.31	22.45	411.26	45.43	43.53	111.18	497.30	274.91	32.22	160.76	7.77
10/12/99 9:05	39.64	19.95	0.32	19.71	421.70	46.75	42.18	106.10	529.48	276.20	36.63	160.99	6.00
10/12/99 9:10	38.83	18.87	0.32	19.41	420.60	47.30	40.83	105.92	529.99	276.09	29.03	161.11	4.97
10/12/99 9:15	41.02	20.47	0.33	21.62	419.26	46.86	39.82	106.04	529.93	276.75	33.30	161.12	5.30
10/12/99 9:20	40.98	19.56	0.33	20.11	417.92	46.75	39.49	106.17	533.12	277.59	32.70	161.13	4.64
10/12/99 9:25	39.92	20.31	0.34	20.68	416.59	46.78	39.16	106.30	534.73	278.42	31.68	161.14	4.84
10/12/99 9:30	39.98	19.98	0.34	19.95	415.25	46.81	38.83	106.43	534.77	279.25	33.29	161.15	4.84
10/12/99 9:35	40.05	19.77	0.35	19.86	413.91	46.84	38.50	106.55	534.80	280.09	32.19	161.16	4.96
10/12/99 9:40	40.11	19.86	0.35	19.83	412.57	46.86	38.16	106.68	534.83	280.92	30.92	161.17	5.13
10/12/99 9:45	40.17	19.41	0.36	20.05	411.23	46.89	37.83	106.81	534.87	281.75	31.31	161.18	5.11
10/12/99 9:50	40.23	19.58	0.36	20.18	409.90	46.92	37.49	106.93	534.90	282.22	31.98	161.19	5.21
10/12/99 9:55	40.29	19.74	0.37	20.09	408.56	46.94	37.16	107.06	534.94	282.19	32.88	161.20	5.32
10/12/99 10:00	40.35	20.06	0.37	19.85	407.22	46.97	36.82	107.19	534.97	282.16	32.44	161.21	5.33
10/12/99 10:05	40.42	19.85	0.38	19.94	405.88	47.00	37.08	107.32	535.00	282.13	32.24	161.22	5.52
10/12/99 10:10	40.48	19.91	0.39	20.03	404.54	47.03	37.60	107.44	535.04	282.10	32.13	161.23	5.63
10/12/99 10:15	40.54	20.16	0.39	20.09	404.22	47.05	38.11	107.57	535.07	282.07	31.79	161.24	5.68
10/12/99 10:20	40.60	20.19	0.40	19.99	404.42	47.08	38.63	107.70	535.11	282.04	32.60	161.25	5.86
10/12/99 10:25	40.66	20.01	0.40	19.87	404.62	47.11	40.24	107.82	535.14	282.01	31.42	161.26	5.86
10/12/99 10:30	40.73	20.14	0.41	19.93	404.82	47.14	43.05	107.95	535.18	281.98	32.90	161.27	6.06
10/12/99 10:35	40.79	20.37	0.41	20.14	405.02	47.16	45.85	108.08	535.21	281.95	32.54	161.28	6.19
10/12/99 10:40	40.85	20.24	0.42	20.34	405.22	47.19	48.18	108.21	535.24	281.92	32.50	161.29	6.25

Mercury Stack Test U1 Operating Data

Tag	U1CPFI430	U1CPFI130	U1CPFI230	U1CPFI330	U1BSFI140	U1EMWI003	U1PSFIC10	U1BGTI010	U1BGTI065	U1BGTI1201	U1LSFI1304	U1BGTI1218	U1BGPDI121
Date & Time	Total Coal Flow (KLbs./Hr)	A Feeder Coal Flow (KLbs./Hr)	B Feeder Coal Flow (KLbs./Hr)	C Feeder Coal Flow (KLbs./Hr)	Boiler Main Steam Flow (KLbs./Hr)	Generator Gross Output (MW)	Turbine Ext Stm Flow (KLbs./Hr)	FD Fan Air In Temp (F)	Air Heater Gas In Temp (F)	Scrubber Inlet Temp (F)	Scrubber Slurry Flow (GPM)	Scrubber Outlet Temp (F)	Baghouse Diff. Pressure (inWC)
10/12/99 10:45	40.91	20.12	0.42	20.25	405.42	47.22	43.09	108.33	535.28	281.89	32.44	161.30	6.26
10/12/99 10:50	40.97	20.23	0.43	20.13	405.62	47.25	39.46	108.46	535.31	281.85	32.47	161.31	6.45
10/12/99 10:55	41.03	20.05	0.43	20.02	405.82	47.27	40.03	108.59	535.35	281.82	32.33	161.32	6.45
10/12/99 11:00	41.10	19.98	0.44	20.34	406.02	47.30	40.61	108.71	535.38	281.79	32.50	161.33	6.52
10/12/99 11:05	41.16	20.15	0.44	20.22	406.22	47.33	41.18	108.84	535.41	281.76	32.53	161.34	6.62
10/12/99 11:10	41.22	20.29	0.45	20.08	406.42	47.36	41.75	108.97	535.45	281.73	32.57	161.35	6.78
10/12/99 11:15	41.28	20.41	0.45	20.07	406.62	47.38	42.32	109.10	535.48	281.70	31.83	161.36	6.79
10/12/99 11:20	41.34	20.11	0.46	20.22	406.82	47.41	41.88	109.22	535.52	281.67	32.74	161.37	7.00
10/12/99 11:25	41.28	20.28	0.46	20.25	407.02	47.44	40.88	109.35	535.55	281.64	31.99	161.38	7.23
10/12/99 11:30	41.08	20.07	0.47	20.24	407.22	47.46	39.87	109.48	535.58	281.61	32.24	161.39	7.11
10/12/99 11:35	40.88	20.02	0.47	19.98	407.42	47.49	39.00	109.60	535.62	281.58	32.96	161.40	7.01
10/12/99 11:40	40.68	20.07	0.48	19.89	407.62	47.52	38.58	109.53	535.65	281.55	32.44	161.41	7.13
10/12/99 11:45	40.49	19.94	0.48	20.50	407.82	47.55	38.15	108.66	535.69	281.52	32.66	161.42	7.33
10/12/99 11:50	49.49	24.42	0.49	24.49	461.17	55.29	37.72	107.79	535.72	281.59	34.46	161.44	10.14
10/12/99 11:55	63.63	25.40	13.11	26.27	574.73	68.92	37.67	106.91	570.82	286.89	48.19	161.76	12.66
10/12/99 12:00	54.07	20.22	13.94	20.18	614.06	71.29	38.93	107.01	590.33	292.19	51.04	162.36	9.65
10/12/99 12:05	59.56	22.38	16.26	22.79	622.08	70.02	40.19	107.13	589.11	296.01	51.47	162.33	10.34
10/12/99 12:10	57.56	17.91	18.73	20.56	623.25	70.66	41.45	107.25	591.03	299.49	53.19	162.25	9.31
10/12/99 12:15	58.73	18.40	19.54	21.27	624.41	70.39	42.71	107.36	592.26	301.94	53.43	162.17	9.30
10/12/99 12:20	60.88	18.79	19.70	21.38	624.63	70.13	45.13	107.48	592.36	303.06	56.42	162.08	9.55
10/12/99 12:25	56.98	17.73	19.21	20.65	624.81	70.59	45.42	107.60	592.46	304.18	55.42	162.00	9.26
10/12/99 12:30	59.48	18.81	19.80	21.44	624.52	70.71	42.78	107.72	592.56	305.30	54.16	161.92	9.10
10/12/99 12:35	57.89	17.79	19.07	20.31	624.07	70.73	44.58	107.83	592.66	306.41	53.43	161.83	8.37
10/12/99 12:40	59.19	19.02	20.28	21.17	623.59	70.75	48.44	107.95	592.77	307.53	53.13	161.75	8.54
10/12/99 12:45	58.35	18.18	19.32	20.52	623.10	70.78	43.92	108.07	592.87	308.65	56.58	161.66	7.86
10/12/99 12:50	58.34	18.44	19.38	21.17	622.61	70.81	39.39	108.18	592.97	309.77	53.14	161.58	8.01
10/12/99 12:55	59.20	18.35	19.22	20.95	622.12	70.84	36.77	108.30	593.07	310.20	53.03	161.50	7.86
10/12/99 13:00	59.13	18.92	19.58	21.05	621.64	70.86	37.53	108.42	593.17	310.24	53.60	161.41	7.80
10/12/99 13:05	59.15	18.44	19.37	20.52	621.15	70.89	38.30	108.54	593.27	310.28	54.59	161.33	7.57
10/12/99 13:10	59.18	18.31	19.44	20.79	620.66	70.92	39.06	108.65	593.38	310.32	52.88	161.25	7.68
10/12/99 13:15	59.21	18.10	19.49	21.21	620.18	70.95	39.83	108.77	593.48	310.36	55.22	161.16	7.70
10/12/99 13:20	59.22	18.71	19.39	20.96	619.81	70.98	40.59	108.89	593.58	310.40	55.36	161.08	7.92
10/12/99 13:25	58.44	18.07	18.93	20.69	619.45	71.00	41.36	109.01	593.68	310.44	57.21	161.03	7.83
10/12/99 13:30	58.28	18.55	19.98	20.91	619.10	71.03	41.87	109.12	593.78	310.48	54.48	160.99	7.71
10/12/99 13:35	58.78	18.26	19.56	20.90	618.74	71.06	42.29	109.19	593.88	310.52	54.18	160.96	7.56
10/12/99 13:40	58.76	18.27	19.46	20.72	618.38	71.09	42.72	109.24	593.99	310.56	55.53	160.92	7.47
10/12/99 13:45	58.73	18.56	19.84	21.00	618.03	71.11	43.15	109.29	594.09	310.61	53.80	160.88	7.94
10/12/99 13:50	58.71	18.37	19.40	20.45	617.67	71.14	43.58	109.34	594.19	310.65	52.92	160.85	8.50
10/12/99 13:55	58.70	18.39	19.30	20.70	617.31	71.17	44.02	109.40	594.29	310.69	56.09	160.81	8.70
10/12/99 14:00	58.82	18.20	19.27	20.81	616.96	71.20	44.01	109.45	594.39	310.73	54.73	160.77	8.73
10/12/99 14:05	58.94	18.21	19.50	20.89	616.33	71.23	43.54	109.50	594.49	310.77	51.66	160.73	8.55
10/12/99 14:10	59.06	18.26	19.73	20.82	615.67	71.25	43.07	109.55	594.60	310.81	54.74	160.70	8.22
10/12/99 14:15	59.10	18.29	19.23	20.82	615.01	71.28	41.41	109.60	594.70	310.85	60.09	160.66	8.41
10/12/99 14:20	59.04	18.27	19.47	20.66	614.35	71.31	36.69	109.65	594.80	310.89	52.46	160.62	8.82
10/12/99 14:25	58.98	18.25	19.55	20.72	613.68	71.34	31.98	109.70	594.75	310.93	56.06	160.59	8.14
10/12/99 14:30	58.92	18.24	19.58	20.84	613.02	71.36	32.93	109.75	594.68	310.97	54.33	160.55	8.46
10/12/99 14:35	58.81	18.45	19.44	21.04	612.36	71.39	34.65	109.81	594.62	311.01	52.79	160.51	8.88

Mercury Stack Test U1 Operating Data

Tag	U1CPFI430	U1CPFI130	U1CPFI230	U1CPFI330	U1BSFI140	U1EMWI003	U1PSFIC10	U1BGTI010	U1BGTI065	U1BGTI1201	U1LSFI1304	U1BGTI1218	U1BGPDI121
Date & Time	Total Coal Flow (KLbs./Hr)	A Feeder Coal Flow (KLbs./Hr)	B Feeder Coal Flow (KLbs./Hr)	C Feeder Coal Flow (KLbs./Hr)	Boiler Main Steam Flow (KLbs./Hr)	Generator Gross Output (MW)	Turbine Ext Stm Flow (KLbs./Hr)	FD Fan Air In Temp (F)	Air Heater Gas In Temp (F)	Scrubber Inlet Temp (F)	Scrubber Slurry Flow (GPM)	Scrubber Outlet Temp (F)	Baghouse Diff. Pressure (inWC)
10/12/99 14:40	58.66	18.82	19.59	20.85	611.70	71.42	36.37	109.86	594.55	311.05	55.20	160.48	9.06
10/12/99 14:45	58.51	18.45	19.33	21.06	611.72	71.45	38.10	109.91	594.49	311.09	57.59	160.44	9.10
10/12/99 14:50	58.36	17.95	19.19	20.96	612.23	71.48	37.62	109.96	594.43	311.13	54.29	160.40	8.48
10/12/99 14:55	58.24	17.95	19.37	20.77	612.74	71.50	36.01	110.01	594.36	311.17	54.11	160.37	7.87
10/12/99 15:00	58.20	17.96	19.14	20.48	613.25	71.53	34.41	110.06	594.30	311.21	53.43	160.33	7.75
10/12/99 15:05	58.17	18.23	19.27	20.56	613.76	71.56	32.80	110.11	594.23	311.25	55.00	160.29	7.87
10/12/99 15:10	58.05	17.99	19.30	20.95	614.27	71.59	33.58	110.16	594.17	311.29	55.35	160.26	7.71
10/12/99 15:15	57.88	18.58	19.37	20.82	614.79	71.61	35.81	110.21	594.11	311.33	55.95	160.22	7.60
10/12/99 15:20	57.70	18.34	19.45	20.80	615.30	71.63	38.04	110.27	594.04	311.37	54.86	160.18	7.52
10/12/99 15:25	57.61	18.06	19.22	20.72	615.81	71.65	39.37	110.32	593.98	311.41	56.77	160.15	7.48
10/12/99 15:30	57.53	18.56	19.86	20.85	616.32	71.67	40.15	110.37	593.91	311.45	53.38	160.11	7.57
10/12/99 15:35	57.45	18.24	19.33	20.62	616.83	71.69	40.92	110.42	593.85	311.49	55.36	160.07	7.63
10/12/99 15:40	57.77	18.85	19.55	20.76	617.34	71.71	41.70	110.47	593.79	311.54	55.88	160.04	8.82
10/12/99 15:45	58.38	17.88	19.49	20.98	617.86	71.73	43.02	110.52	593.72	311.58	54.16	160.00	8.59
10/12/99 15:50	58.24	18.38	19.31	20.87	618.06	71.75	46.80	110.57	593.66	311.62	53.09	159.96	8.66
10/12/99 15:55	58.10	18.29	19.23	20.46	618.05	71.77	44.79	110.62	593.59	311.66	55.34	159.93	8.50
10/12/99 16:00	58.07	18.07	19.19	20.45	618.04	71.79	41.13	110.68	593.53	311.70	56.04	159.89	8.50
10/12/99 16:05	58.16	18.02	19.20	20.95	618.03	71.81	40.81	110.73	593.47	311.74	57.41	159.85	8.05
10/12/99 16:10	58.23	17.98	19.30	20.68	618.03	71.83	43.12	110.78	593.40	311.78	54.04	159.82	7.60
10/12/99 16:15	58.22	18.63	19.27	20.90	618.02	71.85	45.42	110.83	593.34	311.82	53.51	159.78	8.51
10/12/99 16:20	58.23	18.34	19.28	20.99	617.99	71.87	47.73	110.88	593.27	311.86	54.71	159.74	8.59
10/12/99 16:25	58.38	18.30	19.83	20.90	617.90	71.89	40.48	110.93	593.71	311.90	54.92	159.71	8.57
10/12/99 16:30	58.54	18.03	19.82	20.93	617.81	71.91	38.04	110.98	594.48	311.94	55.56	159.67	8.66
10/12/99 16:35	58.69	18.47	19.39	21.21	617.72	71.93	44.87	111.03	595.24	311.98	56.34	159.63	8.58
10/12/99 16:40	58.85	18.49	19.82	21.63	617.63	71.95	49.84	111.08	596.01	312.02	55.19	159.60	8.85
10/12/99 16:45	59.01	18.01	19.29	21.02	618.12	71.97	50.91	111.12	596.78	312.06	53.97	159.56	8.39
10/12/99 16:50	59.25	18.63	19.36	21.16	618.66	71.99	51.97	111.17	597.54	312.10	54.06	159.52	8.75
10/12/99 16:55	59.54	18.56	19.09	21.05	619.20	72.01	53.03	111.22	598.31	312.14	53.29	159.49	7.94
10/12/99 17:00	59.14	18.76	20.25	21.77	619.74	72.03	50.98	111.27	599.08	312.18	54.55	159.45	8.88
10/12/99 17:05	58.52	18.51	19.38	21.11	620.28	72.04	48.94	111.32	599.84	312.22	56.25	159.41	8.97
10/12/99 17:10	58.87	19.08	20.01	21.37	620.83	72.05	49.30	111.37	600.61	312.26	54.47	159.38	9.09
10/12/99 17:15	59.22	18.92	19.88	21.30	621.37	72.06	51.13	111.42	601.38	312.30	54.71	159.34	9.22
10/12/99 17:20	60.28	19.50	20.71	21.72	621.76	72.07	52.97	111.47	602.14	312.34	57.79	159.30	10.10
10/12/99 17:25	60.31	18.67	20.00	21.06	621.41	72.08	54.80	111.52	602.26	312.38	55.59	159.27	8.72
10/12/99 17:30	59.79	19.01	19.67	21.17	621.06	72.09	56.64	111.57	601.46	312.42	56.20	159.23	8.60
10/12/99 17:35	60.05	18.88	19.91	21.20	620.70	72.10	56.97	111.62	600.67	312.47	54.66	159.19	8.44
10/12/99 17:40	59.67	19.10	19.80	21.74	620.35	72.11	57.29	111.67	599.88	312.51	54.87	159.15	8.32
10/12/99 17:45	59.30	18.78	19.98	21.22	619.99	72.12	57.62	111.72	599.09	312.55	58.35	159.12	8.35
10/12/99 17:50	59.10	19.28	19.87	21.06	619.64	72.06	57.95	111.76	598.29	312.59	56.86	159.08	8.27
10/12/99 17:55	59.17	19.01	19.60	21.39	619.28	71.89	58.28	111.81	597.50	312.63	57.41	159.04	8.05
10/12/99 18:00	59.25	19.26	19.72	21.25	618.93	71.72	57.73	111.86	596.71	312.67	54.57	159.01	8.01
10/12/99 18:05	58.79	18.32	19.71	20.73	618.57	71.55	55.73	111.91	595.92	312.71	55.57	158.97	8.03
10/12/99 18:10	56.87	17.59	18.81	20.28	603.47	70.19	53.73	111.96	595.13	312.75	56.52	158.93	7.68
10/12/99 18:15	52.04	15.84	16.96	18.27	559.81	65.06	51.74	112.01	592.34	312.79	49.65	158.90	6.57
10/12/99 18:20	55.06	17.14	18.14	19.72	551.85	64.14	51.91	112.06	587.39	312.83	49.43	158.98	6.94
10/12/99 18:25	48.37	14.74	15.65	17.49	522.81	61.20	52.69	112.11	580.06	312.75	49.41	159.07	5.81
10/12/99 18:30	45.85	14.45	14.56	16.45	480.91	54.23	53.32	111.91	569.72	312.23	41.54	159.16	5.42

Mercury Stack Test U1 Operating Data

Tag	U1CPFI430	U1CPFI130	U1CPFI230	U1CPFI330	U1BSFI140	U1EMWI003	U1PSFIC10	U1BGTI010	U1BGTI065	U1BGTI1201	U1LSFI1304	U1BGTI1218	U1BGPDI121
Date & Time	Total Coal Flow (KLbs./Hr)	A Feeder Coal Flow (KLbs./Hr)	B Feeder Coal Flow (KLbs./Hr)	C Feeder Coal Flow (KLbs./Hr)	Boiler Main Steam Flow (KLbs./Hr)	Generator Gross Output (MW)	Turbine Ext Stm Flow (KLbs./Hr)	FD Fan Air In Temp (F)	Air Heater Gas In Temp (F)	Scrubber Inlet Temp (F)	Scrubber Slurry Flow (GPM)	Scrubber Outlet Temp (F)	Baghouse Diff. Pressure (inWC)
10/13/99 8:00	58.60	24.34	11.84	23.15	575.79	67.05	47.22	101.21	588.63	297.92	51.46	157.49	9.58
10/13/99 8:05	56.73	20.49	16.13	20.61	595.14	68.71	46.61	101.27	589.57	300.04	47.17	157.59	7.43
10/13/99 8:10	63.57	20.08	20.51	22.34	628.51	72.85	46.01	101.33	593.68	301.76	53.86	158.26	9.38
10/13/99 8:15	61.20	19.18	20.07	21.49	638.63	72.94	46.51	101.39	604.79	303.48	58.08	158.71	8.83
10/13/99 8:20	60.62	19.26	20.14	21.65	643.70	73.05	47.33	101.45	604.82	305.20	56.37	158.77	9.00
10/13/99 8:25	61.34	19.53	20.29	21.66	643.71	73.25	48.14	101.50	604.84	306.92	57.77	158.71	9.22
10/13/99 8:30	59.86	18.79	19.88	21.65	643.71	73.05	50.33	101.56	604.87	308.64	56.83	158.65	8.50
10/13/99 8:35	61.23	19.22	20.33	21.80	643.76	72.75	52.91	101.62	604.90	310.33	54.87	158.59	8.91
10/13/99 8:40	59.03	18.96	20.10	21.26	645.47	72.83	53.31	101.68	604.93	310.33	52.99	158.53	9.29
10/13/99 8:45	60.24	18.94	20.25	21.98	645.07	72.91	49.85	101.74	604.96	310.34	58.53	158.47	9.47
10/13/99 8:50	60.77	18.96	20.17	21.43	644.26	72.99	47.95	101.80	604.99	310.35	56.61	158.41	9.22
10/13/99 8:55	60.70	19.23	20.33	21.63	643.46	73.07	48.81	101.86	605.02	310.35	58.08	158.35	9.61
10/13/99 9:00	60.30	18.80	20.19	21.54	642.65	73.16	49.68	101.92	605.04	310.36	58.00	158.29	9.12
10/13/99 9:05	59.88	19.21	20.04	21.52	641.84	73.24	50.54	101.98	605.07	310.36	58.63	158.23	9.00
10/13/99 9:10	59.45	18.93	19.91	21.30	641.04	73.32	48.51	102.04	605.10	310.37	56.09	158.17	9.06
10/13/99 9:15	60.18	18.90	20.20	21.39	640.23	73.42	45.23	102.10	605.13	310.38	56.59	158.11	9.36
10/13/99 9:20	60.89	19.14	20.20	21.65	639.42	73.52	45.79	102.16	605.16	310.38	60.41	158.05	8.75
10/13/99 9:25	61.25	18.84	20.33	21.39	638.62	73.61	46.67	102.22	605.19	310.39	59.79	157.99	8.78
10/13/99 9:30	61.62	19.06	20.26	21.51	637.81	73.71	46.85	102.28	605.22	310.40	56.64	157.93	9.36
10/13/99 9:35	61.70	19.40	20.38	21.63	637.00	73.81	45.37	102.34	605.23	310.40	57.10	157.87	9.58
10/13/99 9:40	61.68	18.90	20.14	21.55	636.20	73.81	44.57	102.40	605.07	310.41	55.91	157.81	9.39
10/13/99 9:45	61.67	18.97	20.32	21.85	635.39	73.80	49.83	102.46	604.91	310.41	60.41	157.76	9.10
10/13/99 9:50	61.66	19.05	20.34	21.96	634.58	73.79	52.54	102.52	604.75	310.42	60.80	157.73	8.35
10/13/99 9:55	61.65	19.32	20.25	21.73	633.78	73.79	52.50	102.58	604.59	310.43	56.40	157.71	8.88
10/13/99 10:00	61.64	19.59	20.39	21.53	634.73	73.78	52.46	102.64	604.43	310.43	55.99	157.69	8.36
10/13/99 10:05	61.63	19.05	20.54	21.99	635.72	73.77	52.41	102.70	604.27	310.44	59.65	157.67	8.42
10/13/99 10:10	61.62	19.20	20.14	21.70	636.71	73.76	52.99	102.76	604.11	310.45	58.60	157.65	8.71
10/13/99 10:15	61.45	19.14	20.62	21.77	637.70	73.76	53.69	102.82	603.95	310.45	56.33	157.63	8.81
10/13/99 10:20	61.13	19.06	20.08	21.26	638.69	73.75	53.66	102.88	603.79	310.46	56.68	157.61	8.75
10/13/99 10:25	60.81	19.30	20.28	21.88	639.68	73.74	53.49	102.94	603.62	310.46	57.17	157.58	8.69
10/13/99 10:30	60.19	18.58	19.89	21.38	640.24	73.63	53.33	102.99	603.46	310.47	55.10	157.56	8.48
10/13/99 10:35	62.53	19.93	20.93	22.59	637.83	72.54	53.16	103.05	603.36	310.48	57.69	157.54	9.03
10/13/99 10:40	61.17	18.81	19.75	21.47	639.93	72.70	53.00	103.11	603.41	310.48	60.37	157.52	8.39
10/13/99 10:45	59.84	19.32	19.87	21.38	641.01	73.04	52.15	103.17	603.45	310.49	51.44	157.50	8.08
10/13/99 10:50	62.45	19.24	20.31	21.89	640.96	72.94	48.55	103.23	603.49	310.50	60.12	157.48	9.06
10/13/99 10:55	61.06	18.49	20.09	20.89	640.91	72.98	44.96	103.29	603.53	310.50	57.31	157.46	8.91
10/13/99 11:00	60.80	18.97	20.29	21.64	640.87	73.02	46.16	103.35	603.58	310.51	57.45	157.43	8.39
10/13/99 11:05	60.94	19.21	19.91	21.80	640.82	73.06	48.56	103.41	603.62	310.51	52.82	157.41	9.08
10/13/99 11:10	61.08	19.25	20.16	21.90	640.77	73.10	49.77	103.47	603.66	310.52	57.23	157.39	9.48
10/13/99 11:15	61.21	19.24	20.16	21.80	640.72	73.14	50.73	103.53	603.70	310.53	58.43	157.37	8.82
10/13/99 11:20	61.35	19.44	20.28	22.10	640.68	73.18	51.68	103.59	603.75	310.53	57.56	157.35	9.17
10/13/99 11:25	61.49	19.02	20.67	21.85	640.63	73.22	52.64	103.65	603.79	310.54	56.20	157.33	9.44
10/13/99 11:30	61.63	19.13	20.46	21.59	640.58	73.26	53.59	103.71	603.83	310.55	55.62	157.30	9.27
10/13/99 11:35	60.59	19.82	20.59	22.04	640.54	73.30	54.55	103.77	603.88	310.55	57.74	157.28	9.60
10/13/99 11:40	60.09	19.39	20.24	21.55	640.49	73.31	55.50	103.83	603.92	310.56	60.95	157.26	9.40

Mercury Stack Test U1 Operating Data

Tag	U1CPFI430	U1CPFI130	U1CPFI230	U1CPFI330	U1BSFI140	U1EMWI003	U1PSFIC10	U1BGTI010	U1BGTI065	U1BGTI1201	U1LSFI1304	U1BGTI1218	U1BGPDI121
Date & Time	Total Coal Flow (KLbs./Hr)	A Feeder Coal Flow (KLbs./Hr)	B Feeder Coal Flow (KLbs./Hr)	C Feeder Coal Flow (KLbs./Hr)	Boiler Main Steam Flow (KLbs./Hr)	Generator Gross Output (MW)	Turbine Ext Stm Flow (KLbs./Hr)	FD Fan Air In Temp (F)	Air Heater Gas In Temp (F)	Scrubber Inlet Temp (F)	Scrubber Slurry Flow (GPM)	Scrubber Outlet Temp (F)	Baghouse Diff. Pressure (inWC)
10/13/99 11:45	60.67	19.33	20.37	21.77	640.44	73.30	56.46	103.89	603.96	310.56	56.35	157.24	9.35
10/13/99 11:50	60.86	19.32	20.31	21.78	640.39	73.29	57.41	103.95	604.00	310.57	56.18	157.22	9.52
10/13/99 11:55	60.88	19.45	20.15	21.74	640.35	73.28	57.01	104.01	604.05	310.58	56.13	157.20	9.07
10/13/99 12:00	60.91	19.05	20.58	21.72	640.30	73.27	56.23	104.07	604.09	310.58	56.67	157.18	8.98
10/13/99 12:05	60.93	19.33	20.34	21.82	640.25	73.27	55.44	104.13	604.13	310.59	57.87	157.15	8.70
10/13/99 12:10	60.95	19.26	20.04	21.93	640.20	73.26	54.66	104.19	604.17	310.60	55.61	157.13	8.30
10/13/99 12:15	60.97	19.30	20.00	21.88	640.16	73.25	53.87	104.25	604.22	310.60	60.89	157.11	8.29
10/13/99 12:20	60.99	19.19	19.95	21.71	640.11	73.24	53.08	104.31	604.26	310.61	59.25	157.09	8.13
10/13/99 12:25	60.89	19.24	20.46	21.89	640.06	73.23	52.30	104.37	604.30	310.61	54.59	157.07	8.04
10/13/99 12:30	60.62	19.28	20.32	21.61	640.01	73.22	55.60	104.43	604.34	310.62	58.25	157.05	8.31
10/13/99 12:35	60.89	18.72	20.14	21.26	639.97	73.22	48.34	104.49	604.39	310.63	58.57	157.03	8.07
10/13/99 12:40	61.11	19.01	20.70	21.47	639.92	73.21	48.17	104.54	604.43	310.63	57.89	157.00	8.46
10/13/99 12:45	61.11	19.23	20.15	21.46	639.87	73.20	54.43	104.60	604.47	310.64	58.46	156.98	8.41
10/13/99 12:50	61.11	19.53	20.32	22.13	639.83	73.19	53.92	104.66	604.52	310.65	56.53	156.96	8.37
10/13/99 12:55	61.10	18.85	20.32	21.87	639.78	73.18	50.78	104.72	604.56	310.65	57.27	156.94	8.19
10/13/99 13:00	61.10	18.78	20.63	21.70	639.73	73.17	47.64	104.78	604.60	310.66	58.56	156.92	8.20
10/13/99 13:05	61.09	19.03	20.03	21.84	639.68	73.17	47.73	104.84	604.64	310.66	55.92	156.90	8.10
10/13/99 13:10	61.09	19.31	20.03	21.94	639.64	73.16	49.07	104.90	604.69	310.67	57.53	156.88	8.69
10/13/99 13:15	61.08	19.80	20.68	21.85	639.59	73.15	50.42	104.96	604.73	310.68	56.41	156.85	8.86
10/13/99 13:20	61.08	19.01	20.24	21.67	639.54	73.14	51.76	105.02	604.77	310.68	60.85	156.83	9.56
10/13/99 13:25	61.07	19.29	20.21	21.82	639.49	73.13	52.61	105.08	604.81	310.69	59.45	156.81	9.10
10/13/99 13:30	61.07	19.27	20.44	21.81	639.45	73.12	52.99	105.14	604.86	310.70	57.75	156.79	9.22
10/13/99 13:35	61.00	19.43	20.41	21.83	639.40	73.12	53.37	105.20	604.90	310.70	59.70	156.77	9.48
10/13/99 13:40	60.91	19.24	20.27	21.84	639.35	73.11	53.76	105.26	604.94	310.71	59.55	156.75	9.20
10/13/99 13:45	60.81	18.68	20.13	21.77	639.30	73.10	53.26	105.32	604.98	310.71	57.43	156.73	9.31
10/13/99 13:50	60.70	19.18	20.28	21.44	639.26	73.09	44.84	105.38	605.03	310.72	55.74	156.70	8.98
10/13/99 13:55	60.47	19.34	20.55	21.69	639.21	73.08	44.80	105.44	605.07	310.73	57.90	156.68	9.33
10/13/99 14:00	60.25	19.59	20.16	21.68	639.16	73.08	48.70	105.50	605.11	310.73	60.89	156.66	8.66
10/13/99 14:05	60.02	19.47	20.24	21.61	639.12	73.07	52.60	105.56	605.16	310.74	58.00	156.64	8.81
10/13/99 14:10	59.80	18.87	20.27	21.83	639.07	73.06	53.10	105.62	605.20	310.75	56.99	156.62	9.10
10/13/99 14:15	59.74	19.08	20.18	21.71	639.02	73.05	49.61	105.68	605.24	310.75	54.12	156.60	8.59
10/13/99 14:20	60.43	19.15	20.27	21.72	638.97	73.04	46.18	105.74	605.28	310.76	57.66	156.58	8.53
10/13/99 14:25	60.66	19.11	20.22	21.13	638.93	73.03	44.87	105.80	605.33	310.76	57.70	156.55	7.94
10/13/99 14:30	60.57	19.39	20.40	21.81	638.88	73.02	49.48	105.86	605.37	310.77	53.86	156.53	8.24
10/13/99 14:35	60.53	19.09	20.23	21.50	638.83	73.01	48.97	105.92	605.41	310.78	56.06	156.51	7.79
10/13/99 14:40	60.55	18.96	20.46	21.58	638.78	73.00	47.83	105.98	605.45	310.78	56.87	156.49	8.08
10/13/99 14:45	60.56	19.29	20.15	21.59	638.72	72.99	53.74	106.03	605.50	310.79	56.94	156.47	8.06
10/13/99 14:50	60.58	19.33	20.75	21.85	638.43	72.98	59.65	106.09	605.35	310.80	60.58	156.45	8.31
10/13/99 14:55	60.60	19.21	20.44	21.60	638.14	72.97	59.31	106.15	605.02	310.80	57.12	156.42	8.12
10/13/99 15:00	60.61	19.16	20.70	21.67	637.85	72.96	55.12	106.22	604.69	310.81	58.17	156.40	8.06
10/13/99 15:05	60.63	19.36	20.38	21.73	637.56	72.94	52.40	106.38	604.36	310.81	56.47	156.38	7.95
10/13/99 15:10	60.64	19.51	20.52	21.74	637.27	72.93	55.52	106.55	604.03	310.82	56.48	156.36	8.24
10/13/99 15:15	60.66	19.31	20.27	21.68	636.98	72.92	58.63	106.71	603.70	310.83	59.07	156.34	9.02
10/13/99 15:20	60.67	19.22	20.39	21.63	636.69	72.91	57.22	106.87	603.37	310.83	53.76	156.32	9.35
10/13/99 15:25	60.69	19.28	20.36	21.82	636.41	72.90	54.53	107.03	603.04	310.84	60.23	156.30	9.49
10/13/99 15:30	60.61	19.32	20.28	21.89	636.12	72.89	51.99	107.19	602.71	310.85	58.27	156.27	9.44
10/13/99 15:35	60.45	19.24	20.19	21.73	635.83	72.88	49.68	107.35	602.38	310.85	58.13	156.25	9.34

Mercury Stack Test U1 Operating Data

Tag	U1CPFI430	U1CPFI130	U1CPFI230	U1CPFI330	U1BSFI140	U1EMWI003	U1PSFIC10	U1BGTI010	U1BGTI065	U1BGTI1201	U1LSFI1304	U1BGTI1218	U1BGPDI121
Date & Time	Total Coal Flow (KLbs./Hr)	A Feeder Coal Flow (KLbs./Hr)	B Feeder Coal Flow (KLbs./Hr)	C Feeder Coal Flow (KLbs./Hr)	Boiler Main Steam Flow (KLbs./Hr)	Generator Gross Output (MW)	Turbine Ext Stm Flow (KLbs./Hr)	FD Fan Air In Temp (F)	Air Heater Gas In Temp (F)	Scrubber Inlet Temp (F)	Scrubber Slurry Flow (GPM)	Scrubber Outlet Temp (F)	Baghouse Diff. Pressure (inWC)
10/13/99 15:40	60.28	19.39	20.11	21.76	635.54	72.87	49.18	107.51	602.05	310.86	60.29	156.23	8.84
10/13/99 15:45	60.11	19.47	20.39	22.09	635.25	72.86	50.10	107.68	601.72	310.86	61.05	156.21	9.50
10/13/99 15:50	59.97	19.07	19.96	21.46	634.96	72.84	51.03	107.84	601.39	310.87	60.90	156.19	9.87
10/13/99 15:55	60.05	18.94	20.22	21.57	634.67	72.83	49.94	108.00	601.06	310.88	59.16	156.17	8.88
10/13/99 16:00	60.12	18.86	20.47	21.54	634.38	72.82	47.14	108.16	600.73	310.88	61.09	156.15	9.06
10/13/99 16:05	60.19	19.03	20.25	21.65	634.09	72.81	45.01	108.32	600.40	310.89	57.57	156.12	9.41
10/13/99 16:10	60.26	19.22	20.09	21.53	633.80	72.80	46.41	108.48	600.07	310.90	58.31	156.10	9.55
10/13/99 16:15	56.11	17.21	18.05	19.68	633.52	72.79	47.81	108.65	599.74	310.90	58.69	156.08	9.32
10/13/99 16:20	49.69	18.42	12.12	18.68	557.24	64.45	49.21	108.81	594.50	310.75	54.16	155.98	6.55
10/13/99 16:25	43.53	15.56	10.79	15.87	444.81	50.26	50.60	108.97	569.61	308.05	42.11	155.67	5.56
10/13/99 16:30	28.63	13.79	0.05	14.32	371.72	43.09	52.00	111.11	544.72	305.35	30.70	155.35	2.96
10/13/99 16:35	35.67	17.49	0.08	17.66	346.50	38.29	53.40	114.16	526.85	304.19	30.82	155.04	4.17
10/13/99 16:40	28.70	14.07	0.12	14.12	305.46	33.88	54.80	114.90	513.34	302.47	26.61	154.92	2.79
10/13/99 16:45	27.89	14.20	0.15	14.08	289.97	30.94	56.19	115.63	500.83	300.08	24.32	155.03	2.49
10/13/99 16:50	27.61	13.74	0.18	13.84	274.47	27.99	54.93	116.36	488.31	297.98	22.91	155.15	2.69
10/13/99 16:55	27.33	13.55	0.21	13.13	261.22	26.63	53.37	117.10	483.05	296.04	23.08	155.26	2.60
10/13/99 17:00	26.50	12.95	0.25	12.97	249.02	25.49	47.43	117.83	480.32	294.10	22.78	155.38	2.33