APPENDIX A
DETAILED TEST DATA AND TEST RESULTS

TABLE A-1
SUMMARY OF MERCURY SPECIATION TEST DATA AND TEST RESULTS
UNIT 6-INLET

TEST DATA:				
Test run number	1	2	3	
Location		Unit 6 Inlet		
Test date	7/14/99	7/15/99	7/15/99	
Test time period	1415-1640	0825-1050	1250-1510	
PROCESS DATA:				
Unit Load, MW	74	75	75	
Coal feed rate, lb/hr. (1)	63700	64200	64000	
Coal Btu content, Btu/lb. (as received)	12038	12132	12121	
Heat Input, 10^6 Btu/hr (F-Factor)	761.3	818.0	749.1	
SAMPLING DATA:				
Sampling duration, min.	120.0	120.0	120.0	
Nozzle diameter, in.	0.253	0.267	0.267	
Cross sectional nozzle area, sq.ft.	0.000349	0.000389	0.000389	
Barometric pressure, in. Hg	29.47	29.50	29.56	
Avg. orifice press. diff., in H_2O	1.02	1.17	1.21	
Avg. dry gas meter temp., deg F	112.5	109.0	116.5	
Avg. abs. dry gas meter temp., deg. R	573	569	577	
Total liquid collected by train, ml	149.9	151.2	156.8	
Std. vol. of H_2O vapor coll., cu.ft.	7.1	7.1	7.4	
Dry gas meter calibration factor	1.0090	1.0090	1.0090	
Sample vol. at meter cond., dcf	68.275	71.469	74.243	
Sample vol. at std. cond., dscf (2)	62.713	66.142	67.957	
Percent of isokinetic sampling	103.9	100.6	101.5	
Sample vol. at std. cond., dscm (2)	1.776	1.873	1.924	
GAS STREAM COMPOSITION DATA:				
CO_2, % by volume, dry basis	13.7	13.8	13.4	
O_2, % by volume, dry basis	4.9	4.9	5.2	
N_2, % by volume, dry basis	81.4	81.3	81.4	
Molecular wt. of dry gas, lb/lb mole	30.39	30.40	30.35	
H_20 vapor in gas stream, prop. by vol.	0.101	0.097	0.098	
Mole fraction of dry gas	0.899	0.903	0.902	
Molecular wt. of wet gas, lb/lb mole	29.14	29.20	29.14	
GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA:				
Static pressure, in. H_2O	-8.50	-8.00	-8.00	
Absolute pressure, in. Hg	28.85	28.91	28.97	
Avg. temperature, deg. F	309	307	308	
Avg. absolute temperature, deg.R	769	767	768	
Pitot tube coefficient	0.84	0.84	0.84	
Total number of traverse points	12	12	12	
Avg. gas stream velocity, ft./sec.	40.4	39.1	39.8	
Stack/duct cross sectional area, sq.ft.	151.960	151.960	151.960	AVERAGE
Avg. gas stream volumetric flow, wacf/min.(as measured)	368086	356867	363219	362724
Avg. gas stream volumetric flow, dscf/min.(as measured)(2)	218890	214153	218163	217068
Avg. gas stream outlet volumetric flow, dscf/min. (adjusted)(2) (3)	163300	173606	166999	167968
MERCURY LABORATORY REPORT DATA:				
Particulate bound, ug	4.3410	4.9830	5.0130	
Oxidized, ug	1.0000	1.2100	1.0350	
Elemental, ug	0.2700	0.4150	0.2950	
Total catch, ug	5.6110	6.6080	6.3430	
PARTICULATE BOUND MERCURY EMISSIONS:				
Conc., ug/m^3	2.44	2.66	2.61	2.57
Conc., ug/Nm^3 (4)	2.62	2.85	2.79	2.76
Emission rate, lbs/10^{12} Btu. (5)	1.96	2.11	2.18	2.08
Emission rate, lbs/hr. (5)	1.50E-03	1.73E-03	1.63E-03	1.62E-03
OXIDIZED MERCURY EMISSIONS:				
Conc., ug/m^3	0.56	0.65	0.54	0.58
Conc., ug/Nm^3 (4)	0.60	0.69	0.58	0.62
Emission rate, lbs/10^{12} Btu. (5)	0.45	0.51	0.45	0.47
Emission rate, lbs/hr. (5)	3.44E-04	4.20E-04	3.36E-04	3.67E-04
ELEMENTAL MERCURY EMISSIONS:				
Conc., ug/m^3	0.15	0.22	0.15	0.18
Conc., ug/Nm^3 (4)	0.16	0.24	0.16	0.19
Emission rate, lbs/10^{12} Btu. (5)	0.12	0.18	0.13	0.14
Emission rate, lbs/hr. (5)	9.30E-05	1.44E-04	9.59E-05	1.11E-04
TOTAL MERCURY EMISSIONS:				
Conc., ug/m^3	3.16	3.53	3.30	3.33
Conc., ug/Nm^3 (4)	3.39	3.79	3.54	3.57
Emission rate, lbs/10^{12} Btu. (5)	2.54	2.80	2.75	2.70
Emission rate, lbs/hr. (5)	1.93E-03	2.29E-03	2.06E-03	2.10E-03

(1) Based on plant gravimetric feeder readings.
(2) Standard conditions = 68 deg. F. (20 deg. C.) and 29.92 inches Hg (760mm Hg).
(3) Measured volumetric flow from the corresponding test run on the Unit 6 outlet corrected for O_2 measured at the inlet location.
(4) Nm3 = Normal cubic meter (32 deg. F. (0 deg. C.) and 29.92 inches Hg (760mm Hg)).
(5) Emission rates are based on the adjusted volumetric flow.

TABLE A-2
SUMMARY OF MERCURY SPECIATION TEST DATA AND TEST RESULTS
UNIT 6-OUTLET

TEST DATA:					
Test run number	1	2		3	
Location		Unit 6 Outlet			
Test date	7/14/99	7/15/99		7/15/99	
Test time period	1415-1641	0825-1055		1250-1512	
PROCESS DATA:					
Unit Load, MW	74	75		75	
Coal feed rate, lb/hr (1)	63700	64200		64000	
Coal Btu content, Btu/lb. (as received)	12038	12132		12121	
Heat Input, 10^6 Btu/hr (F-Factor)	761.3	818.0		749.1	
SAMPLING DATA:					
Sampling duration, min.	120.0	120.0		120.0	
Nozzle diameter, in.	0.199	0.210		0.210	
Cross sectional nozzle area, sq.ft.	0.000216	0.000241		0.000241	
Barometric pressure, in. Hg	29.47	29.50		29.56	
Avg. orifice press. diff., in H_2O	1.37	1.83		1.66	
Avg. dry gas meter temp., deg F	90.3	97.0		89.1	
Avg. abs. dry gas meter temp., deg. R	550	557		549	
Total liquid collected by train, ml	161.4	182.9		174.5	
Std. vol. of H_2O vapor coll., cu.ft.	7.6	8.6		8.2	
Dry gas meter calibration factor	1.0098	1.0098		1.0098	
Sample vol. at meter cond., dcf	75.662	86.342		81.939	
Sample vol. at std. cond., dscf (2)	72.428	81.834		78.898	
Percent of isokinetic sampling	100.7	98.1		99.5	
Sample vol. at std. cond., dscm (2)	2.051	2.317		2.234	
GAS STREAM COMPOSITION DATA:					
CO_2, % by volume, dry basis	12.6	12.9		12.8	
O_2, % by volume, dry basis	6.1	5.8		5.9	
N_2, % by volume, dry basis	81.3	81.3		81.3	
Molecular wt. of dry gas, lb/lb mole	30.26	30.30		30.28	
H_20 vapor in gas stream, prop. by vol.	0.095	0.095		0.094	
Mole fraction of dry gas	0.905	0.905		0.906	
Molecular wt. of wet gas, lb/lb mole	29.10	29.13		29.13	
GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA:					
Static pressure, in. H_2O	-1.90	-1.90		-1.90	
Absolute pressure, in. Hg	29.33	29.36		29.42	
Avg. temperature, deg. F	305	304		306	
Avg. absolute temperature, deg.R	765	764		766	
Pitot tube coefficient	0.84	0.84		0.84	
Total number of traverse points	12	12		12	
Avg. gas stream velocity, ft./sec.	75.6	78.6		74.6	AVERAGE
Stack/duct cross sectional area, sq.ft.	63.617	63.617		63.617	
Avg. gas stream volumetric flow, wacf/min.	288413	299873		284780	291022
Avg. gas stream volumetric flow, dscf/min (2)	176540	183953		174792	178428
MERCURY LABORATORY REPORT DATA:					
Particulate bound, ug	0.1000	0.0510	<	0.0100	
Oxidized, ug	1.4300	1.9750		1.3800	
Elemental, ug	1.1800	1.8150		1.5300	
Total catch, ug	2.7100	3.8410		2.9100	
PARTICULATE BOUND MERCURY EMISSIONS:					
Conc., ug/m^3	0.049	0.022	<	0.004	0.035
Conc., ug/Nm^3 (3)	0.052	0.024	<	0.005	0.038
Emission rate, lbs/10^{12} Btu.	0.042	0.019	<	0.004	0.030
Emission rate, lbs/hr	3.22E-05	1.52E-05	<	2.93E-06	2.37E-05
OXIDIZED MERCURY EMISSIONS:					
Conc., ug/m^3	0.70	0.85		0.62	0.72
Conc., ug/Nm^3 (3)	0.75	0.91		0.66	0.78
Emission rate, lbs/10^{12} Btu.	0.61	0.72		0.54	0.62
Emission rate, lbs/hr	4.61E-04	5.87E-04		4.04E-04	4.84E-04
ELEMENTAL MERCURY EMISSIONS:					
Conc., ug/m^3	0.58	0.78		0.68	0.68
Conc., ug/Nm^3 (3)	0.62	0.84		0.73	0.73
Emission rate, lbs/10^{12} Btu.	0.50	0.66		0.60	0.59
Emission rate, lbs/hr	3.80E-04	5.40E-04		4.48E-04	4.56E-04
TOTAL MERCURY EMISSIONS: (4)					
Conc., ug/m^3	1.32	1.66		1.30	1.43
Conc., ug/Nm^3 (3)	1.42	1.78		1.40	1.53
Emission rate, lbs/10^{12} Btu.	1.15	1.40		1.14	1.23
Emission rate, lbs/hr	8.74E-04	1.14E-03		8.53E-04	9.56E-04
TOTAL MERCURY REMOVAL EFFICIENCY:	54.73%	50.13%		58.60%	54.49%

(1) Based on plant gravimetric feeder readings.
(2) Standard conditions = 68 deg. F. (20 deg. C.) and 29.92 inches Hg (760mm Hg).
(3) Nm3 = Normal cubic meter (32 deg. F. (0 deg. C.) and 29.92 inches Hg (760mm Hg)).
(4) Non-detects not included in Total mercury catch value or in average emission rate.

TABLE A-3
SUMMARY OF MERCURY SPECIATION TEST DATA AND TEST RESULTS
Unit 1-4 Outlet

TEST DATA:								
Test run number		1		2		3		
Location				Units 1-4 Outlet				
Test date		7/16/99		7/16/99		7/16/99		
Test time period		0820-1037		1115-1338		1410-1641		
PROCESS DATA:								
Unit Load, MW		124		127		138		
Coal feed rate, lb/hr (1)		110000		111000		117000		
Coal Btu content, Btu/lb.(as received)		12180		12180		12180		
Heat Input, 10^6 Btu/hr (F-Factor)		1784		1638		1755		
SAMPLING DATA:								
Sampling duration, min.		120.0		120.0		120.0		
Nozzle diameter, in.		0.150		0.152		0.150		
Cross sectional nozzle area, sq.ft.		0.000123		0.000126		0.000123		
Barometric pressure, in. Hg		29.50		29.50		29.50		
Avg. orifice press. diff., in H_2O		1.13		0.94		0.98		
Avg. dry gas meter temp., deg F		96.6		98.7		99.8		
Avg. abs. dry gas meter temp., deg. R		557		559		560		
Total liquid collected by train, ml		138.9		106.1		125.7		
Std. vol. of H_2O vapor coll., cu.ft.		6.5		5.0		5.9		
Dry gas meter calibration factor		1.0000		1.0000		1.0000		
Sample vol. at meter cond., dcf		68.759		54.982		60.161		
Sample vol. at std. cond., dscf (2)		68.759		54.982		60.161		
Percent of isokinetic sampling		109.6		90.4		96.8		
Sample vol. at std. cond., dscm (2)		1.947		1.557		1.704		
GAS STREAM COMPOSITION DATA:								
CO_2, % by volume, dry basis		13.4		13.0		13.3		
O_2, % by volume, dry basis		6.2		6.6		6.3		
N_2, % by volume, dry basis		80.4		80.4		80.4		
Molecular wt. of dry gas, lb/lb mole		30.39		30.34		30.38		
H_20 vapor in gas stream, prop. by vol.		0.087		0.083		0.090		
Mole fraction of dry gas		0.913		0.917		0.910		
Molecular wt. of wet gas, lb/lb mole		29.32		29.32		29.27		
GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA:								
Static pressure, in. H_2O		-2.00		-2.00		-2.04		
Absolute pressure, in. Hg		29.35		29.35		29.35		
Avg. temperature, deg. F		285		299		310		
Avg. absolute temperature, deg.R		745		759		770		
Pitot tube coefficient		0.84		0.84		0.84		
Total number of traverse points		12		12		12		
Avg. gas stream velocity, ft./sec.		111.9		107.1		114.9		AVERAGE
Stack/duct cross sectional area, sq.ft.		97.930		97.930		97.930		
Avg. gas stream volumetric flow, wacf/min.		657762		629574		675345		654227
Avg. gas stream volumetric flow, dscf/min (2)		417226		393930		413261		408139
MERCURY LABORATORY REPORT DATA:								
Particulate bound, ug	<	0.0080	<	0.0080	<	0.0080		
Oxidized, ug		0.4850		0.2600		0.3250		
Elemental, ug		0.0850		0.1550		0.0200		
Total mercury catch, ug		0.5700		0.4150		0.3450		
PARTICULATE BOUND MERCURY EMISSIONS:								
Conc., ug/m^3	<	0.004	<	0.005	<	0.005	<	0.005
Conc., ug/Nm^3 (3)	<	0.004	<	0.006	<	0.005	<	0.005
Emission rate, lbs/10^{12} Btu.	<	3.60E-03	<	4.63E-03	<	4.14E-03	<	4.12E-03
Emission rate, lbs/hr	<	6.42E-06	<	7.58E-06	<	7.27E-06	<	7.09E-06
OXIDIZED MERCURY EMISSIONS:								
Conc., ug/m^3		0.25		0.17		0.19		0.20
Conc., ug/Nm^3 (3)		0.27		0.18		0.20		0.22
Emission rate, lbs/10^{12} Btu.		0.22		0.15		0.17		0.18
Emission rate, lbs/hr		3.89E-04		2.46E-04		2.95E-04		3.10E-04
ELEMENTAL MERCURY EMISSIONS:								
Conc., ug/m^3		0.04		0.10		0.01		0.05
Conc., ug/Nm^3 (3)		0.05		0.11		0.01		0.06
Emission rate, lbs/10^{12} Btu.		0.04		0.09		0.01		0.05
Emission rate, lbs/hr		6.82E-05		1.47E-04		1.82E-05		7.78E-05
TOTAL MERCURY EMISSIONS: (4)								
Conc., ug/m^3		0.29		0.27		0.20		0.25
Conc., ug/Nm^3 (3)		0.31		0.29		0.22		0.27
Emission rate, lbs/10^{12} Btu.		0.26		0.24		0.18		2.25E-01
Emission rate, lbs/hr		4.58E-04		3.93E-04		3.13E-04		3.88E-04

(1) Based on plant gravimetric feeder readings.
(2) Standard conditions = 68 deg. F. (20 deg. C.) and 29.92 inches Hg (760mm Hg).
(3) Nm3 = Normal cubic meter (32 deg. F. (0 deg. C.) and 29.92 inches Hg (760mm Hg)).
(4) Non-detects not included in the total mercury catch value or in the average emission rates.

Table A-4
Presque Isle Hg Balance Data - July 1999
Unit No. 6 Hg Material Balance Data

	Test #1	Test #2	Test #3	Avgerage
Plant Load, MWe	73.9	73.4	73.2	73.5
COAL DATA				
% Carbon	72.90	72.84	74.46	73.40
% Ash	10.28	10.05	9.99	10.11
Btu	12694	12784	12772	12750
ppm Hg	0.039	0.039	0.039	0.039
F-Factor	9853	9749	10048	9883
Stack DSCFM	176540	183953	174792	178428
Stack DSCMM	4996	5206	4947	5050
Outlet % O_2	6.1	5.8	5.9	5.9
EA Free, DSCFM	125014	132904	125449	127789
Heat Input, MM Btu/hr	761.3	818.0	749.1	776.1
Coal Firing Rate, lb/h(1)	59971	63983	58652	60868
Inlet % O_2	4.9	4.9	5.2	5.0
Inlet DSCFM	163300	173606	166999	167968
Inlet DSCMM	4621	4913	4726	4753
ESP Ash Loading, lb/h	6219	7010	6018	6416
% Carbon in Ash	16.49	17.65	17.86	17.33
% Ash in Ash	82.30	81.30	80.89	81.50
ppm Hg in Ash	0.116	0.133	0.136	0.128
lb/h Carbon	1026	1237	1075	1113
lb/h Ash	5118	5699	4868	5228
Total Coal Fired, lb/h(2)	61378	65681	60095	62385
Total Coal Fired, lb/h(3)	63700	64200	64000	63967
% Diff in Coal Feed Rate	-4%	2%	-6%	-3%
Total Heat Input, MM Btu/h	779	840	768	795
Unit Heat Rate, Btu/kwh	10543	11440	10485	10823
Carbon Utilization	97.71	97.41	97.60	98
Maximum Ash Production, lb/h	6310	6601	6003	6305
% Ash in ESP Hoppers	81%	86%	81%	83%
Hg Input, ug/min	18093	19361	17715	18389
Max Hg in Inlet Gas, ug/m^3	3.91	3.94	3.75	3.87
Hg in ESP Ash, ug/min	5453	7047	6186	6229
% of Total Hg in Coal	30.1%	36.4%	34.9%	33.8%
Total Hg at Inlet, ug/m^3	3.16	3.53	3.30	3.33
Inlet Hg, ug/min	14604	17343	15596	15848
% Hg Balance at Inlet	**80.7%**	**89.6%**	**88.0%**	**86.1%**
Gas Phase Hg at Stack, ug/m^3	1.32	1.66	1.30	1.43
Stack Hg, ug/min	6595	8642	6431	7222
Hg in Ash and Stack Gas, ug/min	12047	15689	12617	13451
% of Total Hg Input in Coal	**66.6%**	**81.0%**	**71.2%**	**72.9%**

1 - Coal firing rate from stack gas flow rate
2 - Coal firing rate from stack gas flow rate and carbon in fly ash
3 - Coal firing rate from plant totalizers

Table A-5
Presque Isle Hg Balance Data - July 1999
Units 1-4 Hg Material Balance Data

	Test 1	Test 2	Test 3	Average
Stack Gas Flow, dscfm	417226	393930	413261	408139
Stack Gas Flow, dscmm	11807	11148	11695	11550
%O2 in Flue Gas	6.2	6.6	6.3	6.4
Coal Btu/lb	12874	12874	12874	12874
Coal F-Factor	9870	9870	9870	9870
Heat Input, MM Btu/h	1784	1638	1755	1726
Coal Firing Rate, lb/h (1)	138568	127271	136317	134052
Estimated Plant Load, MWe	162	149	160	157
Inlet % O2	4.5	4.5	4.5	4.5
Estimated Inlet dscfm	373977	343488	367903	361789
Estimated Inlet dscmm	10584	9721	10412	10239
Coal Hg Conc., ppm	0.02	0.02	0.02	0.02
Coal Ash Conc., %	9.79	9.79	9.79	9.79
ESP Hg Conc., ppm	0.131	0.145	0.129	0.14
ESP Ash Conc., %	69.42%	74.40%	71.63%	71.8%
ESP Ash Ratio	80.0%	80.0%	80.0%	80.0%
Hg Input, ug/min	20947	19239	20607	20264
Baghouse Max Hg in Inlet Gas, ug	1.98	1.98	1.98	1.98
Total Ash Rate, lb/h	13566	12460	13345	13124
Ash Into Baghouse, lb/h	10853	9968	10676	10499
Baghouse Dust Loading, lb/h	15633	13398	14905	14645
gr/dscf	4.88	4.55	4.73	4.72
Hg in Baghouse Ash, ug/min	15479	14683	14533	14898
% of Total Hg	73.9%	76.3%	70.5%	73.6%
Est. Gas Phase Hg at Inlet, ug/m3	0.52	0.47	0.58	0.52
Meas. Gas Phase Hg at Stack, ug	0.29	0.27	0.20	0.25
Hg in Stack Flue Gas, ug/min	3424	3010	2339	2924
% of Total Hg	16.3%	15.6%	11.4%	14.4%
Total Hg in Output Streams, ug/mi	18903	17693	16872	17823
% of Total Hg	90.2%	92.0%	81.9%	88.0%

(1) Coal firing rate from stack gas flow rate.

APPENDIX B
PROCESS OPERATIONS, FACILITY CEMS AND ESP DATA

UNIT 6 PROCESS OPERATIONS DATA

PRESQUE ISLE POWER PLANT LOAD TEST DATA (Units 1-9)

UNIT NO.: Six TIME: 1400 - 1500 DATE: 7-14-99

1. Gross Generation - MWH 75.336
2. Station Service - MWH 6.000
3. Net Generation - MWH 69.336
4. Control Valve Position % 88%
5. Main Steam Flow Lbs./Hr. 448000
6. F.W. Flow Lbs./Hr. 469000
7. F.W. Press. Psig 1530
8. Chart Throttle Press. Psig
9. Test Gauge Throttle Press. Psig
10. First Stage Press. Psig 980
11. Cold Reheat Press. Psig 345
12. Hot Reheat Press. Psig 329
13. F.W. (Loading/Temp.) 45% 397
14. Main Steam Temp. °F 990
15. Cold Reheat Temp. °F 642
16. Hot Reheat Temp. °F 970
17. Superheat Spray Flow 0
18. Reheat Spray Flow 0
19. Air Flow 520000
20. Excess Oxygen % 3.2%
21. Inlet Air Temp. °F 130
22. Gas Outlet Temp. °F 280
23. Opacity % 15.1%
24. I.D. Fan (Loading/Amps) 64% 156
25. F.D. Fan (Loading/rpm/Amps) 62% 85
26. Air Heater Press. (H20)

	IN	OUT	P
AIR	6.2	2.0	4.2
GAS	-2.5	-7.4	4.9

27. Burner Tilt Position/RH P
28. Condensate Pump Amps A B
29. Boiler Feed Pump Amps A B C
30. Coal Feeder Loading A B C D
31. Pulverizer Amps A B C D
32. Mill Outage Temp. A B C D
33. Coal Scale Readings:

	Beginning	Ending	Total
a	367627	367792	165
b	564242	564400	158
c	207131	207290	159
d	837732	837890	158

34. Coal Total Lbs. Hr. 64,000
35. Lbs. Coal/Net KWH .923
36. Lbs. Steam/Net KWH 6.461
38. Barometric Press. In.Hg
39. Vacuum In.Hg
40. Back Press. In.Hg
41. Circ. Water Pump Amps A B N or W S or E
42. Circ. Water Inlet Temp.°F
43. Circ. Water Outlet Temp °F
44. Circ. Water Inlet Press. Psig
45. Circ. Water Outlet Press. Psig
46. Condensate Make-up
47. Condensate Draw-off
48. Hot Well Temp. °F
49. Turbine Exhaust Temp. °F
50. 1st Pt.Htr.Ext.Press. Psig
51. 1st Pt.Htr.Ext.Temp. °F
52. 1st Pt.Htr.F.W.Out Temp °F
53. 2nd Pt.Htr.Ext.Press. Psig
54. 2nd Pt.Htr.Ext. Temp. °F
55. 2nd Pt.Htr.F.W.Out Temp. °F
56. 3rd Pt.Htr.Ext. Press. Psig
57. 3rd Pt.Htr.Ext. Temp. °F
58. 3rd Pt.Htr.F.W.Out Temp. °F
59. 4th Pt.Htr.Ext.Press. Psig
60. 4th Pt.Htr.Ext. Temp. °F
61. 4th Pt.Htr.F.W.Out Temp. °F
62. 5th Pt.Htr.Ext. Press.In.Hg
63. 5th Pt.Htr.Ext. Temp. °F
64. 5th Pt.Htr.F.W.In Temp., °F
65. 5th Pt.Htr.F.W.Out Temp. °F
66. 1st Pt.F.W.Out Temp.Minus(-) 5th Pt.F.W. In Temp. °F =
67. 1st Pt. Drain Temp. °F
68. 2nd Pt. Drain Temp. °F
69. 3rd Pt. Drain Temp. °F
70. 4th Pt. Drain Temp. °F
71. 5th Pt. Drain Temp. °F
72. Vars - Mvar
73. Generator Voltage - K volts
74. Auxiliary Steam Uses:
75. Remarks:

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PRESQUE ISLE POWER PLANT LOAD TEST DATA (Units 1-9)

UNIT NO.: SIX TIME: 1500-1600 DATE: 7-14-99

1. Gross Generation - MWH 73,264
2. Station Service - MWH 4,000
3. Net Generation - MWH 69,264
4. Control Valve Position % 88%
5. Main Steam Flow Lbs./Hr. 445000
6. F.W. Flow Lbs./Hr. 469000
7. F.W. Press. Psig 1530
8. Chart Throttle Press. Psig
9. Test Gauge Throttle Press. Psig
10. First Stage Press. Psig 980
11. Cold Reheat Press. Psig 346
12. Hot Reheat Press. Psig 329
13. F.W. (Loading/Temp.) 47% 397
14. Main Steam Temp. °F 990
15. Cold Reheat Temp. °F 644
16. Hot Reheat Temp. °F 960
17. Superheat Spray Flow 0
18. Reheat Spray Flow 0
19. Air Flow 515000
20. Excess Oxygen % 3.1%
21. Inlet Air Temp. °F 132
22. Gas Outlet Temp. °F 282
23. Opacity % 12.5%
24. I.D. Fan (Loading/Amps) 63% 157
25. F.D. Fan (Loading/rpm/Amps) 63% 85
26. Air Heater Press. (H20)

	IN	OUT	P
AIR	5.75	1.75	4.0
GAS	2.8	-7.4	2.6

27. Burner Tilt Position/RH P
28. Condensate Pump Amps A B
29. Boiler Feed Pump Amps A B C
30. Coal Feeder Loading A B C D
31. Pulverizer Amps A B C D
32. Mill Outage Temp. A B C D
33. Coal Scale Readings:

	Beginning	Ending	Total
a	367792	367957	165
b	564400	564558	158
c	207290	207448	158
d	837890	838049	159

34. Coal Total Lbs. Hr. 64,000
35. Lbs. Coal/Net KWH 924
36. Lbs. Steam/Net KWH 6.425
38. Barometric Press. In.Hg
39. Vacuum In.Hg
40. Back Press. In.Hg
41. Circ. Water Pump Amps A B
N or W S or E
42. Circ. Water Inlet Temp.°F
43. Circ. Water Outlet Temp °F
44. Circ. Water Inlet Press. Psig
45. Circ. Water Outlet Press. Psig
46. Condensate Make-up
47. Condensate Draw-off
48. Hot Well Temp. °F
49. Turbine Exhaust Temp. °F
50. 1st Pt.Htr.Ext.Press. Psig
51. 1st Pt.Htr.Ext.Temp. °F
52. 1st Pt.Htr.F.W.Out Temp °F
53. 2nd Pt.Htr.Ext.Press. Psig
54. 2nd Pt.Htr.Ext. Temp. °F
55. 2nd Pt.Htr.F.W.Out Temp. °F
56. 3rd Pt.Htr.Ext. Press. Psig
57. 3rd Pt.Htr.Ext. Temp. °F
58. 3rd Pt.Htr.F.W.Out Temp. °F
59. 4th Pt.Htr.Ext.Press. Psig
60. 4th Pt.Htr.Ext. Temp. °F
61. 4th Pt.Htr.F.W.Out Temp. °F
62. 5th Pt.Htr.Ext. Press.In.Hg
63. 5th Pt.Htr.Ext. Temp. °F
64. 5th Pt.Htr.F.W.In Temp. °F
65. 5th Pt.Htr.F.W.Out Temp. °F
66. 1st Pt.F.W.Out Temp.Minus(-) 5th Pt.F.W. In Temp. °F =
67. 1st Pt. Drain Temp. °F
68. 2nd Pt. Drain Temp. °F
69. 3rd Pt. Drain Temp. °F
70. 4th Pt. Drain Temp. °F
71. 5th Pt. Drain Temp. °F
72. Vars - Mvar
73. Generator Voltage - K volts
74. Auxiliary Steam Uses:
75. Remarks:

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PRESQUE ISLE POWER PLANT LOAD TEST DATA (Units 1-9)

UNIT NO.: SIX TIME: 1600-1700 DATE: 7-14-99

1. Gross Generation - MWH 73,264
2. Station Service - MWH 4,000
3. Net Generation - MWH 69,264
4. Control Valve Position % 88%
5. Main Steam Flow Lbs./Hr. 447,000
6. F.W. Flow Lbs./Hr. 471,000
7. F.W. Press. Psig 1535
8. Chart Throttle Press. Psig
9. Test Gauge Throttle Press. Psig
10. First Stage Press. Psig 990
11. Cold Reheat Press. Psig 346
12. Hot Reheat Press. Psig 320
13. F.W. (Loading/Temp.) 46%
14. Main Steam Temp. °F 990
15. Cold Reheat Temp. °F 639
16. Hot Reheat Temp. °F 960
17. Superheat Spray Flow 0
18. Reheat Spray Flow 0
19. Air Flow 510,000
20. Excess Oxygen % 3.1%
21. Inlet Air Temp. °F 131
22. Gas Outlet Temp. °F 281
23. Opacity % 10.0%
24. I.D. Fan (Loading/Amps) 62% 156
25. F.D. Fan (Loading/rpm/Amps) 62% 85
26. Air Heater Press. (H20)

	IN	OUT	P
AIR	5.75	1.8	3.95
GAS	-2.8	-7.4	4.6

27. Burner Tilt Position/RH P
28. Condensate Pump Amps A B
29. Boiler Feed Pump Amps A B C
30. Coal Feeder Loading A B C D
31. Pulverizer Amps A B C D
32. Mill Outage Temp. A B C D
33. Coal Scale Readings:

	Beginning	Ending	Total
a	367957	368121	164
b	564558	564715	157
c	207448	207606	158
d	838049	838200	151

34. Coal Total Lbs. Hr. 63,000
35. Lbs. Coal/Net KWH .910
36. Lbs. Steam/Net KWH 6,454
38. Barometric Press. In.Hg
39. Vacuum In.Hg
40. Back Press. In.Hg
41. Circ. Water Pump Amps A B N or W S or E
42. Circ. Water Inlet Temp. °F
43. Circ. Water Outlet Temp °F
44. Circ. Water Inlet Press. Psig
45. Circ. Water Outlet Press. Psig
46. Condensate Make-up
47. Condensate Draw-off
48. Hot Well Temp. °F
49. Turbine Exhaust Temp. °F
50. 1st Pt.Htr.Ext.Press. Psig
51. 1st Pt.Htr.Ext.Temp. °F
52. 1st Pt.Htr.F.W.Out Temp °F
53. 2nd Pt.Htr.Ext.Press. Psig
54. 2nd Pt.Htr.Ext. Temp. °F
55. 2nd Pt.Htr.F.W.Out Temp. °F
56. 3rd Pt.Htr.Ext. Press. Psig
57. 3rd Pt.Htr.Ext. Temp. °F
58. 3rd Pt.Htr.F.W.Out Temp. °F
59. 4th Pt.Htr.Ext.Press. Psig
60. 4th Pt.Htr.Ext. Temp. °F
61. 4th Pt.Htr.F.W.Out Temp. °F
62. 5th Pt.Htr.Ext. Press.In.Hg
63. 5th Pt.Htr.Ext. Temp. °F
64. 5th Pt.Htr.F.W.In Temp. °F
65. 5th Pt.Htr.F.W.Out Temp. °F
66. 1st Pt.F.W.Out Temp.Minus(-) 5th Pt.F.W. In Temp. °F =
67. 1st Pt. Drain Temp. °F
68. 2nd Pt. Drain Temp. °F
69. 3rd Pt. Drain Temp. °F
70. 4th Pt. Drain Temp. °F
71. 5th Pt. Drain Temp. °F
72. Vars - Mvar
73. Generator Voltage - K volts
74. Auxiliary Steam Uses:
75. Remarks:

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PRESQUE ISLE POWER PLANT LOAD TEST DATA (Units 1-9)

UNIT NO.: 6 TIME: 9:00-10:00 DATE: 7-15-99

1. Gross Generation - MWH DEFECTED
2. Station Service - MWH
3. Net Generation - MWH 69.432
4. Control Valve Position % 88%
5. Main Steam Flow Lbs./Hr. 465 000
6. F.W. Flow Lbs./Hr. 490,000
7. F.W. Press. Psig 1620
8. Chart Throttle Press. Psig 1451
9. Test Gauge Throttle Press. Psig 1450
10. First Stage Press. Psig 970
11. Cold Reheat Press. Psig 350
12. Hot Reheat Press. Psig 330
13. F.W. (Loading/Temp.) 45 398
14. Main Steam Temp. °F 1000°
15. Cold Reheat Temp. °F 650
16. Hot Reheat Temp. °F 980°
17. Superheat Spray Flow 0
18. Reheat Spray Flow 0
19. Air Flow 520,000
20. Excess Oxygen % 3.2%
21. Inlet Air Temp. °F 130°
22. Gas Outlet Temp. °F 280°
23. Opacity % 11.8
24. I.D. Fan (Loading/Amps) 64 160
25. F.D. Fan (Loading/rpm/Amps) 63 87
26. Air Heater Press. (H2O)

	IN	OUT	P
AIR	6.0	2.0	4.0
GAS	3	7.5	4.5

27. Burner Tilt Position/RH P N/A
28. Condensate Pump Amps A 107 B 111
29. Boiler Feed Pump Amps A 190 B 202
C
30. Coal Feeder Loading A 65 B 65
C 65 D 65
31. Pulverizer Amps A 51 B 50
C 50 D 42
32. Mill Outage Temp. A 170 B 180
C 178 D 180
33. Coal Scale Readings:

	Beginning	Ending	Total
a	370551	370716	165
b	567042	567199	157
c	209943	210102	159
d	840535	840693	158

34. Coal Total Lbs. Hr. 63,900

35. Lbs. Coal/Net KWH 920.32
36. Lbs. Steam/Net KWH .6697
38. Barometric Press. In.Hg
39. Vacuum In.Hg
40. Back Press. In.Hg
41. Circ. Water Pump Amps A B
N or W S or E
42. Circ. Water Inlet Temp. °F
43. Circ. Water Outlet Temp °F
44. Circ. Water Inlet Press. Psig
45. Circ. Water Outlet Press. Psig
46. Condensate Make-up
47. Condensate Draw-off
48. Hot Well Temp. °F
49. Turbine Exhaust Temp. °F
50. 1st Pt.Htr.Ext.Press. Psig
51. 1st Pt.Htr.Ext.Temp. °F
52. 1st Pt.Htr.F.W.Out Temp °F
53. 2nd Pt.Htr.Ext.Press. Psig
54. 2nd Pt.Htr.Ext. Temp. °F
55. 2nd Pt.Htr.F.W.Out Temp. °F
56. 3rd Pt.Htr.Ext. Press. Psig
57. 3rd Pt.Htr.Ext. Temp. °F
58. 3rd Pt.Htr.F.W.Out Temp. °F
59. 4th Pt.Htr.Ext.Press. Psig
60. 4th Pt.Htr.Ext. Temp. °F
61. 4th Pt.Htr.F.W.Out Temp. °F
62. 5th Pt.Htr.Ext. Press.In.Hg
63. 5th Pt.Htr.Ext. Temp. °F
64. 5th Pt.Htr.F.W.In Temp. °F
65. 5th Pt.Htr.F.W.Out Temp. °F
66. 1st Pt.F.W.Out Temp.Minus(-) 5th Pt.F.W. In Temp. °F =
67. 1st Pt. Drain Temp. °F
68. 2nd Pt. Drain Temp. °F
69. 3rd Pt. Drain Temp. °F
70. 4th Pt. Drain Temp. °F
71. 5th Pt. Drain Temp. °F
72. Vars - Mvar
73. Generator Voltage - K volts
74. Auxiliary Steam Uses:

75. Remarks: Unit #6 Gross Generation watt hour meter reading high (defected)

Jim Davey
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Todd Rapavi
Engineer

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PRESQUE ISLE POWER PLANT LOAD TEST DATA (Units 1-9)

UNIT NO.: 6 TIME: 1000-1100 DATE: 7-15-99

1. Gross Generation - MWH Defected
2. Station Service - MWH
3. Net Generation - MWH 69.264
4. Control Valve Position % 87%
5. Main Steam Flow Lbs./Hr. 470,000
6. F.W. Flow Lbs./Hr. 480,000
7. F.W. Press. Psig 1600
8. Chart Throttle Press. Psig 1450
9. Test Gauge Throttle Press. Psig 1450
10. First Stage Press. Psig 980
11. Cold Reheat Press. Psig 349
12. Hot Reheat Press. Psig 330
13. F.W. (Loading/Temp.) 46 398
14. Main Steam Temp. °F 1000
15. Cold Reheat Temp. °F 647
16. Hot Reheat Temp. °F 980
17. Superheat Spray Flow 0
18. Reheat Spray Flow 0
19. Air Flow 520,000
20. Excess Oxygen % 3.2%
21. Inlet Air Temp. °F 130
22. Gas Outlet Temp. °F 280
23. Opacity % 13%
24. I.D. Fan (Loading/Amps) 64 160
25. F.D. Fan (Loading/rpm/Amps) 87 92
26. Air Heater Press. (H20)

	IN	OUT	P
AIR	6.0	2.0	4.0
GAS	-3.0	-7.5	4.5

27. Burner Tilt Position/RH P N/A
28. Condensate Pump Amps A 106 B 112
29. Boiler Feed Pump Amps A 190 B 203
C
30. Coal Feeder Loading A 66 B 66
C 65 D 65
31. Pulverizer Amps A 52 B 50
C 50 D 42
32. Mill Outage Temp. A 170 B 180
C 176 D 181
33. Coal Scale Readings:

	Beginning	Ending	Total
a	370716	370882	166
b	567199	567358	159
c	210102	210261	159
d	840693	840853	160

34. Coal Total Lbs. Hr. 64,400
35. Lbs. Coal/Net KWH 929.77
36. Lbs. Steam/Net KWH .6785
38. Barometric Press. In.Hg
39. Vacuum In.Hg
40. Back Press. In.Hg
41. Circ. Water Pump Amps A B
N or W S or E
42. Circ. Water Inlet Temp. °F
43. Circ. Water Outlet Temp °F
44. Circ. Water Inlet Press. Psig
45. Circ. Water Outlet Press. Psig
46. Condensate Make-up
47. Condensate Draw-off
48. Hot Well Temp. °F
49. Turbine Exhaust Temp. °F
50. 1st Pt.Htr.Ext.Press. Psig
51. 1st Pt.Htr.Ext.Temp. °F
52. 1st Pt.Htr.F.W.Out Temp °F
53. 2nd Pt.Htr.Ext.Press. Psig
54. 2nd Pt.Htr.Ext. Temp. °F
55. 2nd Pt.Htr.F.W.Out Temp. °F
56. 3rd Pt.Htr.Ext. Press. Psig
57. 3rd Pt.Htr.Ext. Temp. °F
58. 3rd Pt.Htr.F.W.Out Temp. °F
59. 4th Pt.Htr.Ext.Press. Psig
60. 4th Pt.Htr.Ext. Temp. °F
61. 4th Pt.Htr.F.W.Out Temp. °F
62. 5th Pt.Htr.Ext. Press.In.Hg
63. 5th Pt.Htr.Ext. Temp. °F
64. 5th Pt.Htr.F.W.In Temp. °F
65. 5th Pt.Htr.F.W.Out Temp. °F
66. 1st Pt.F.W.Out Temp.Minus(-) 5th Pt.F.W. In Temp. °F =
67. 1st Pt. Drain Temp. °F
68. 2nd Pt. Drain Temp. °F
69. 3rd Pt. Drain Temp. °F
70. 4th Pt. Drain Temp. °F
71. 5th Pt. Drain Temp. °F
72. Vars - Mvar
73. Generator Voltage - K volts
74. Auxiliary Steam Uses:
75. Remarks: Unit #6 Gross Generation until hour meter reading high (defected).

Jim Davey
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Engineer

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PRESQUE ISLE POWER PLANT LOAD TEST DATA (Units 1-9)

UNIT NO.: 6 TIME: 11:00 - 1200 DATE: 7-15-99

1. Gross Generation - MWH: Defected
2. Station Service - MWH:
3. Net Generation - MWH: 69.000
4. Control Valve Position %: 88%
5. Main Steam Flow Lbs./Hr.: 475,000
6. F.W. Flow Lbs./Hr.: 483,000
7. F.W. Press. Psig: 1590
8. Chart Throttle Press. Psig: 1457
9. Test Gauge Throttle Press. Psig: 1450
10. First Stage Press. Psig: 980
11. Cold Reheat Press. Psig: 349
12. Hot Reheat Press. Psig: 330
13. F.W. (Loading/Temp.): 46 399
14. Main Steam Temp. °F: 1000
15. Cold Reheat Temp. °F: 648
16. Hot Reheat Temp. °F: 985
17. Superheat Spray Flow: 0
18. Reheat Spray Flow: 0
19. Air Flow: 520,000
20. Excess Oxygen %: 3.2%
21. Inlet Air Temp. °F: 130
22. Gas Outlet Temp. °F: 280
23. Opacity %: 11%
24. I.D. Fan (Loading/Amps): 64 160
25. F.D. Fan (Loading/rpm/Amps): 87 92
26. Air Heater Press. (H2O)

	IN	OUT	P
AIR	6.0	2.0	4.0
GAS	(-)13.0	(-)7.5	4.5

27. Burner Tilt Position/RH P: N/A
28. Condensate Pump Amps: A 106 B 111
29. Boiler Feed Pump Amps: A 190 B 203 C
30. Coal Feeder Loading: A 66 B 66 C 65 D 65
31. Pulverizer Amps: A 52 B 50 C 50 D 42
32. Mill Outage Temp.: A 170 B 180 C 176 D 181
33. Coal Scale Readings:

	Beginning	Ending	Total
a	370882	371048	166
b	567358	567518	160
c	210261	210422	161
d	840853	841013	160

34. Coal Total Lbs. Hr.: 64,700
35. Lbs. Coal/Net KWH: 934.43
36. Lbs. Steam/Net KWH: 6.860
38. Barometric Press. In.Hg
39. Vacuum In.Hg
40. Back Press. In.Hg
41. Circ. Water Pump Amps: A B
N or W S or E
42. Circ. Water Inlet Temp. °F
43. Circ. Water Outlet Temp °F
44. Circ. Water Inlet Press. Psig
45. Circ. Water Outlet Press. Psig
46. Condensate Make-up
47. Condensate Draw-off
48. Hot Well Temp. °F
49. Turbine Exhaust Temp. °F
50. 1st Pt.Htr.Ext.Press. Psig
51. 1st Pt.Htr.Ext.Temp. °F
52. 1st Pt.Htr.F.W.Out Temp °F
53. 2nd Pt.Htr.Ext.Press. Psig
54. 2nd Pt.Htr.Ext. Temp. °F
55. 2nd Pt.Htr.F.W.Out Temp. °F
56. 3rd Pt.Htr.Ext. Press. Psig
57. 3rd Pt.Htr.Ext. Temp. °F
58. 3rd Pt.Htr.F.W.Out Temp. °F
59. 4th Pt.Htr.Ext.Press. Psig
60. 4th Pt.Htr.Ext. Temp. °F
61. 4th Pt.Htr.F.W.Out Temp. °F
62. 5th Pt.Htr.Ext. Press.In.Hg
63. 5th Pt.Htr.Ext. Temp. °F
64. 5th Pt.Htr.F.W.In Temp. °F
65. 5th Pt.Htr.F.W.Out Temp. °F
66. 1st Pt.F.W.Out Temp.Minus(-) 5th Pt.F.W. In Temp. °F =
67. 1st Pt. Drain Temp. °F
68. 2nd Pt. Drain Temp. °F
69. 3rd Pt. Drain Temp. °F
70. 4th Pt. Drain Temp. °F
71. 5th Pt. Drain Temp. °F
72. Vars - Mvar
73. Generator Voltage - K volts
74. Auxiliary Steam Uses:
75. Remarks: Unit #6 Gross Generation watt hour meter reading high (defected)

Jim Davey
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Todd Rapavi
Engineer

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PRESQUE ISLE POWER PLANT LOAD TEST DATA (Units 1-9)

UNIT NO.: 6 TIME: 12:00-1300 DATE: 7-15-99

1. Gross Generation - MWH Defected
2. Station Service - MWH
3. Net Generation - MWH 69,264
4. Control Valve Position % 88%
5. Main Steam Flow Lbs./Hr. 470,000
6. F.W. Flow Lbs./Hr. 480,000
7. F.W. Press. Psig 1590
8. Chart Throttle Press. Psig 1445
9. Test Gauge Throttle Press. Psig 1452
10. First Stage Press. Psig 980
11. Cold Reheat Press. Psig 349
12. Hot Reheat Press. Psig 330
13. F.W. (Loading/Temp.) 47 399
14. Main Steam Temp. °F 1000°
15. Cold Reheat Temp. °F 637
16. Hot Reheat Temp. °F 990°
17. Superheat Spray Flow 0
18. Reheat Spray Flow 0
19. Air Flow 518000
20. Excess Oxygen % 3.1%
21. Inlet Air Temp. °F 130
22. Gas Outlet Temp. °F 280
23. Opacity % 12%
24. I.D. Fan (Loading/Amps) 64 160
25. F.D. Fan (Loading/rpm/Amps) 87 90
26. Air Heater Press. (H2O)

	IN	OUT	P
AIR	6.0	2.0	4.0
GAS	(-) 13.0	(-) 7.5	4.5

27. Burner Tilt Position/RH P N/A
28. Condensate Pump Amps A 106 B 112
29. Boiler Feed Pump Amps A 192 B 202
C ____
30. Coal Feeder Loading A 66 B 66
C 65 D 65
31. Pulverizer Amps A 52 B 50
C 50 D 42
32. Mill Outage Temp. A 170 B 180
C 176 D 181
33. Coal Scale Readings:

	Beginning	Ending	Total
a	371048	371214	166
b	567518	567676	158
c	210422	210580	158
d	841013	841171	158

34. Coal Total Lbs. Hr. 64,000

35. Lbs. Coal/Net KWH 924.00
36. Lbs. Steam/Net KWH .6785
38. Barometric Press. In.Hg
39. Vacuum In.Hg
40. Back Press. In.Hg
41. Circ. Water Pump Amps A ____ B ____
N or W S or E
42. Circ. Water Inlet Temp.°F
43. Circ. Water Outlet Temp °F
44. Circ. Water Inlet Press. Psig
45. Circ. Water Outlet Press. Psig
46. Condensate Make-up
47. Condensate Draw-off
48. Hot Well Temp. °F
49. Turbine Exhaust Temp. °F
50. 1st Pt.Htr.Ext.Press. Psig
51. 1st Pt.Htr.Ext.Temp. °F
52. 1st Pt.Htr.F.W.Out Temp °F
53. 2nd Pt.Htr.Ext.Press. Psig
54. 2nd Pt.Htr.Ext. Temp. °F
55. 2nd Pt.Htr.F.W.Out Temp. °F
56. 3rd Pt.Htr.Ext. Press. Psig
57. 3rd Pt.Htr.Ext. Temp. °F
58. 3rd Pt.Htr.F.W.Out Temp. °F
59. 4th Pt.Htr.Ext.Press. Psig
60. 4th Pt.Htr.Ext. Temp. °F
61. 4th Pt.Htr.F.W.Out Temp. °F
62. 5th Pt.Htr.Ext. Press.In.Hg
63. 5th Pt.Htr.Ext. Temp. °F
64. 5th Pt.Htr.F.W.In Temp. °F
65. 5th Pt.Htr.F.W.Out Temp. °F
66. 1st Pt.F.W.Out Temp.Minus(-)
5th Pt.F.W. In Temp. °F =
67. 1st Pt. Drain Temp. °F
68. 2nd Pt. Drain Temp. °F
69. 3rd Pt. Drain Temp. °F
70. 4th Pt. Drain Temp. °F
71. 5th Pt. Drain Temp. °F
72. Vars - Mvar
73. Generator Voltage - K volts
74. Auxiliary Steam Uses:

75. Remarks: Gross Generation watt hour meter reading high (defected)

Jim Davey
CRO

Todd Rapovi
Engineer

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PRESQUE ISLE POWER PLANT LOAD TEST DATA (Units 1-9)

UNIT NO.: 6 TIME: 13:00 - 14:00 DATE: 7-15-99

1. Gross Generation - MWH: Defected
2. Station Service - MWH:
3. Net Generation - MWH: 69,120
4. Control Valve Position %: 88%
5. Main Steam Flow Lbs./Hr.: 475,000
6. F.W. Flow Lbs./Hr.: 480,000
7. F.W. Press. Psig: 1590
8. Chart Throttle Press. Psig: 1445
9. Test Gauge Throttle Press. Psig: 1450
10. First Stage Press. Psig: 980
11. Cold Reheat Press. Psig: 349
12. Hot Reheat Press. Psig: 330
13. F.W. (Loading/Temp.): 47 398
14. Main Steam Temp. °F: 1000°
15. Cold Reheat Temp. °F: 637
16. Hot Reheat Temp. °F: 985
17. Superheat Spray Flow: 0
18. Reheat Spray Flow: 0
19. Air Flow: 518,000
20. Excess Oxygen %: 3.1%
21. Inlet Air Temp. °F: 130
22. Gas Outlet Temp. °F: 280
23. Opacity %: 13%
24. I.D. Fan (Loading/Amps): 64 760
25. F.D. Fan (Loading/rpm/Amps): 87 90
26. Air Heater Press. (H20)

	IN	OUT	P
AIR	6.0	2.0	4.0
GAS	(-) 13.0	(-) 9.5	4.5

27. Burner Tilt Position/RH P: N/A
28. Condensate Pump Amps: A 106 B 112
29. Boiler Feed Pump Amps: A 192 B 202 C
30. Coal Feeder Loading: A 66 B 66 C 65 D 65
31. Pulverizer Amps: A 52 B 50 C 50 D 42
32. Mill Outage Temp.: A 170 B 180 C 176 D 181
33. Coal Scale Readings:

	Beginning	Ending	Total
a	371214	371378	164
b	567676	567834	158
c	210580	210739	159
d	841171	841329	158

34. Coal Total Lbs. Hr.: 63,900
35. Lbs. Coal/Net KWH: 924.47
36. Lbs. Steam/Net KWH: .6872
38. Barometric Press. In.Hg
39. Vacuum In.Hg
40. Back Press. In.Hg
41. Circ. Water Pump Amps: A ___ B ___
N or W S or E
42. Circ. Water Inlet Temp. °F
43. Circ. Water Outlet Temp °F
44. Circ. Water Inlet Press. Psig
45. Circ. Water Outlet Press. Psig
46. Condensate Make-up
47. Condensate Draw-off
48. Hot Well Temp. °F
49. Turbine Exhaust Temp. °F
50. 1st Pt.Htr.Ext.Press. Psig
51. 1st Pt.Htr.Ext.Temp. °F
52. 1st Pt.Htr.F.W.Out Temp °F
53. 2nd Pt.Htr.Ext.Press. Psig
54. 2nd Pt.Htr.Ext. Temp. °F
55. 2nd Pt.Htr.F.W.Out Temp. °F
56. 3rd Pt.Htr.Ext. Press. Psig
57. 3rd Pt.Htr.Ext. Temp. °F
58. 3rd Pt.Htr.F.W.Out Temp. °F
59. 4th Pt.Htr.Ext.Press. Psig
60. 4th Pt.Htr.Ext. Temp. °F
61. 4th Pt.Htr.F.W.Out Temp. °F
62. 5th Pt.Htr.Ext. Press.In.Hg
63. 5th Pt.Htr.Ext. Temp. °F
64. 5th Pt.Htr.F.W.In Temp. °F
65. 5th Pt.Htr.F.W.Out Temp. °F
66. 1st Pt.F.W.Out Temp.Minus(-) 5th Pt.F.W. In Temp. °F =
67. 1st Pt. Drain Temp. °F
68. 2nd Pt. Drain Temp. °F
69. 3rd Pt. Drain Temp. °F
70. 4th Pt. Drain Temp. °F
71. 5th Pt. Drain Temp. °F
72. Vars - Mvar
73. Generator Voltage - K volts
74. Auxiliary Steam Uses:
75. Remarks: Gross generation watt hour meter reading high (defected)

Jim Davey, CRO

Todd Bagavi, Engineer

2PE0691

PRESQUE ISLE POWER PLANT LOAD TEST DATA (Units 1-9)

UNIT NO.: 6 TIME: 14:00-1500 DATE: 7-15-99

1. Gross Generation - MWH Defected
2. Station Service - MWH
3. Net Generation - MWH 69,230
4. Control Valve Position % 88%
5. Main Steam Flow Lbs./Hr. 475,000
6. F.W. Flow Lbs./Hr. 480,000
7. F.W. Press. Psig 1590
8. Chart Throttle Press. Psig 1448
9. Test Gauge Throttle Press. Psig 1450
10. First Stage Press. Psig 980
11. Cold Reheat Press. Psig 349
12. Hot Reheat Press. Psig 330
13. F.W. (Loading/Temp.) 47 398
14. Main Steam Temp. °F 1000°
15. Cold Reheat Temp. °F 637
16. Hot Reheat Temp. °F 985
17. Superheat Spray Flow 0
18. Reheat Spray Flow 0
19. Air Flow 518,000
20. Excess Oxygen % 3.1%
21. Inlet Air Temp. °F 130
22. Gas Outlet Temp. °F 280
23. Opacity % 14%
24. I.D. Fan (Loading/Amps) 64 160
25. F.D. Fan (Loading/rpm/Amps) 87 90
26. Air Heater Press. (H2O)

	IN	OUT	P
AIR	6.0	2.0	4.0
GAS	(-) 13.0	(-) 7.5	4.5

27. Burner Tilt Position/RH P N/A
28. Condensate Pump Amps A 106 B 112
29. Boiler Feed Pump Amps A 192 B 202
C ____
30. Coal Feeder Loading A 66 B 66
C 65 D 65
31. Pulverizer Amps A 52 B 50
C 50 D 42
32. Mill Outage Temp. A 170 B 180
C 176 D 181
33. Coal Scale Readings:

	Beginning	Ending	Total
a	371378	371564	166
b	567834	568012	158
c	210739	210917	160
d	841329	841508	158

34. Coal Total Lbs. Hr. 64,200
35. Lbs. Coal/Net KWH 927.34
36. Lbs. Steam/Net KWH .6861
38. Barometric Press. In.Hg
39. Vacuum In.Hg
40. Back Press. In.Hg
41. Circ. Water Pump Amps A ____ B ____
N or W S or E
42. Circ. Water Inlet Temp.°F
43. Circ. Water Outlet Temp °F
44. Circ. Water Inlet Press. Psig
45. Circ. Water Outlet Press. Psig
46. Condensate Make-up
47. Condensate Draw-off
48. Hot Well Temp. °F
49. Turbine Exhaust Temp. °F
50. 1st Pt.Htr.Ext.Press. Psig
51. 1st Pt.Htr.Ext.Temp. °F
52. 1st Pt.Htr.F.W.Out Temp °F
53. 2nd Pt.Htr.Ext.Press. Psig
54. 2nd Pt.Htr.Ext. Temp. °F
55. 2nd Pt.Htr.F.W.Out Temp. °F
56. 3rd Pt.Htr.Ext. Press. Psig
57. 3rd Pt.Htr.Ext. Temp. °F
58. 3rd Pt.Htr.F.W.Out Temp. °F
59. 4th Pt.Htr.Ext.Press. Psig
60. 4th Pt.Htr.Ext. Temp. °F
61. 4th Pt.Htr.F.W.Out Temp. °F
62. 5th Pt.Htr.Ext. Press.In.Hg
63. 5th Pt.Htr.Ext. Temp. °F
64. 5th Pt.Htr.F.W.In Temp. °F
65. 5th Pt.Htr.F.W.Out Temp. °F
66. 1st Pt.F.W.Out Temp.Minus(-)
5th Pt.F.W. In Temp. °F =
67. 1st Pt. Drain Temp. °F
68. 2nd Pt. Drain Temp. °F
69. 3rd Pt. Drain Temp. °F
70. 4th Pt. Drain Temp. °F
71. 5th Pt. Drain Temp. °F
72. Vars - Mvar
73. Generator Voltage - K volts
74. Auxiliary Steam Uses:
75. Remarks: Unit #6 gross Generator watt hour meter reading high (defected)

Jim Davey
CRO

Todd Rapavi
Engineer

2PE0691

UNIT 6 CEMS DATA

Plant Name: PIPP

General Average Report

Reporting Period: 07/14/1999 to 07/14/1999

Site Name: PIPPF6P6

Time of Report: 07/19/99 07:43

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	F6CPCO2 (PERCENT)	F6CPNOX (PPM)	F6CPSO2 (PPM)	F6STEMP (DEGFAHRE)	F6CO (PPM)	F6OPC (PERCENT)	F6AFLOW (KACFM)	U6MEG (MEGAWATT)
07/14/99	13:15	11.6	445.4	521.7	315.7	3.3	18.	297.2	74.
	13:16	11.6	444.8	521.0	314.2	3.3	10.	298.3	74.
	13:17	11.6	447.5	522.2	314.3	2.7	12.	298.5	74.
	13:18	11.7	446.6	526.1	315.6	0.5	18.	299.6	74.
	13:19	11.7	444.1	525.8	315.6	1.7	12.	299.6	74.
	13:20	11.7	446.5	524.8	314.5	2.2	13.	300.0	74.
	13:21	11.7	444.7	524.2	313.8	0.0	16.	300.1	75.
	13:22	11.8	442.7	525.1	313.8	0.9	15.	301.6	74.
	13:23	11.6	446.7	519.9	313.8	2.6	11.	301.8	74.
	13:24	11.6	447.2	520.7	314.2	1.5	14.	300.8	74.
	13:25	11.6	446.5	524.9	314.5	1.0	16.	300.0	74.
	13:26	11.7	447.5	527.8	314.4	0.7	14.	298.3	74.
	13:27	11.7	444.0	530.1	314.4	1.0	13.	297.1	74.
	13:28	11.7	444.4	533.0	314.1	0.0	24.	296.2	74.
	13:29	11.7	446.6	530.5	313.6	1.2	24.	294.5	74.
	13:30	11.7	446.8	529.2	313.6	3.6	14.	294.7	74.
	13:31	11.7	447.2	531.6	313.6	1.5	22.	294.9	74.
	13:32	11.6	449.7	526.8	313.6	1.1	11.	294.9	74.
	13:33	11.6	447.3	526.9	313.9	0.0	13.	294.8	74.
	13:34	11.7	444.5	529.2	314.0	2.4	12.	294.2	74.
	13:35	11.7	444.4	529.9	314.4	2.1	19.	292.7	74.
	13:36	11.7	443.7	530.9	314.4	2.4	10.	292.7	74.
	13:37	11.6	446.9	530.6	313.1	1.2	13.	291.6	74.
	13:38	11.6	451.1	528.5	312.9	1.2	16.	291.3	74.
	13:39	11.7	446.7	531.9	314.0	2.9	12.	293.2	74.
	13:40	11.7	446.8	531.9	314.2	0.0	13.	293.5	74.
	13:41	11.7	444.2	532.8	314.0	0.7	19.	294.1	75.
	13:42	11.8	441.8	530.3	313.9	0.0	16.	294.4	74.
	13:43	11.7	444.3	526.7	313.7	1.4	12.	293.4	74.
	13:44	11.6	446.6	525.3	313.6	1.8	14.	293.1	74.
	13:45	11.7	445.5	527.1	313.5	1.8	17.	292.5	74.
	13:46	11.7	447.2	528.6	313.0	1.2	13.	291.3	74.
	13:47	11.7	445.9	527.8	313.2	1.1	10.	291.5	74.
	13:48	11.8	443.2	529.6	313.6	3.1	18.	291.7	74.
	13:49	11.7	443.2	529.2	313.5	0.6	14.	292.3	74.
	13:50	11.6	446.5	524.5	313.2	0.6	11.	295.0	74.
	13:51	11.6	446.4	523.9	313.3	2.3	18.	295.1	74.
	13:52	11.7	445.8	526.0	314.1	1.4	13.	295.2	74.
	13:53	11.7	445.5	527.9	314.1	0.0	14.	295.2	74.
	13:54	11.8	442.5	527.8	315.1	1.2	10.	296.2	74.
	13:55	11.7	443.6	526.1	315.3	3.8	17.	296.3	74.
	13:56	11.6	446.2	524.3	315.0	2.0	12.	296.0	74.
	13:57	11.7	444.7	525.0	315.0	1.3	11.	296.0	74.
	13:58	11.7	446.1	524.8	314.6	2.0	17.	296.4	74.
	13:59	11.7	447.3	524.5	314.4	1.7	11.	296.6	74.
	14:00	11.7	445.2	527.3	314.5	2.5	13.	296.0	74.
	14:01	11.8	443.4	530.2	314.7	1.1	15.	295.6	74.
	14:02	11.7	446.3	527.2	314.7	0.6	15.	295.8	74.
	14:03	11.6	445.4	525.5	314.8	1.7	11.	296.0	74.
	14:04	11.6	444.7	526.5	315.2	2.4	12.	295.9	74.

Plant Name: PIPP

General Average Report

Reporting Period: 07/14/1999 to 07/14/1999

Site Name: PIPPF6P6

Data Averaging Type: 1m

Time of Report: 07/19/99 07:43

Rolling Average Interval: 1

Date	Time	F6CPCO2 (PERCENT)	F6CPNOX (PPM)	F6CPSO2 (PPM)	F6STEMP (DEGFAHRE)	F6CO (PPM)	F6OPC (PERCENT)	F6AFLOW (KACFM)	U6MEG (MEGAWATT)
07/14/99	14:05	11.6	446.5	528.6	315.7	2.7	17.	295.7	74.
	14:06	11.7	444.3	529.4	315.6	4.7	12.	295.7	74.
	14:07	11.8	441.3	531.0	313.6	3.1	12.	295.6	74.
	14:08	11.7	445.8	529.8	313.7	1.8	13.	295.1	74.
	14:09	11.6	446.5	526.2	315.7	3.4	15.	293.9	74.
	14:10	11.7	445.8	527.5	315.7	1.7	11.	293.9	74.
	14:11	11.7	444.0	529.1	315.0	1.0	14.	295.4	74.
	14:12	11.7	445.2	531.6	314.6	0.5	18.	295.6	74.
	14:13	11.7	443.0	532.1	313.9	3.6	12.	296.0	74.
	14:14	11.8	445.2	534.1	313.9	2.5	10.	296.0	74.
	14:15	11.7	447.7	532.8	315.5	1.3	17.	294.3	74.
	14:16	11.8	443.9	532.3	316.5	2.2	11.	293.9	74.
	14:17	11.7	445.3	531.4	316.3	2.1	15.	292.7	74.
	14:18	11.7	449.5	530.3	316.2	1.3	14.	292.4	74.
	14:19	11.8	443.3	531.1	315.9	3.0	13.	292.4	74.
	14:20	11.8	442.7	532.1	315.7	3.1	11.	292.3	74.
	14:21	11.8	444.3	531.2	315.5	1.8	16.	293.5	74.
	14:22	11.8	443.2	532.8	315.3	3.1	17.	294.2	74.
	14:23	11.7	442.7	529.0	315.3	2.6	13.	294.4	74.
	14:24	11.7	444.8	526.0	315.7	2.3	11.	295.9	74.
	14:25	11.7	444.8	524.3	315.5	1.5	20.	296.0	74.
	14:26	11.7	445.1	524.7	315.0	1.4	11.	296.3	74.
	14:27	11.7	447.8	529.5	315.0	0.7	12.	296.1	74.
	14:28	11.7	447.4	527.4	314.9	0.0	14.	294.9	74.
	14:29	11.7	444.9	528.1	314.8	3.0	15.	294.8	74.
	14:30	11.7	446.1	526.9	314.3	2.9	13.	293.8	74.
	14:31	11.7	450.2	526.1	314.2	2.5	16.	293.8	74.
	14:32	11.8	448.5	530.4	314.3	1.5	18.	293.2	74.
	14:33	11.8	448.7	530.7	314.4	2.9	13.	293.0	74.
	14:34	11.7	449.3	528.0	315.4	3.7	11.	293.4	74.
	14:35	11.7	448.5	529.6	315.7	1.8	15.	293.5	74.
	14:36	11.7	449.1	525.6	315.2	1.5	12.	293.1	74.
	14:37	11.7	449.5	526.1	314.7	1.7	12.	292.7	74.
	14:38	11.7	448.5	528.9	314.8	2.3	15.	292.7	74.
	14:39	11.8	446.6	532.3	315.0	1.8	13.	292.7	74.
	14:40	11.8	447.0	531.5	315.0	2.6	12.	292.7	74.
	14:41	11.8	446.5	531.3	315.1	2.7	13.	292.7	75.
	14:42	11.8	445.8	534.6	315.4	1.9	23.	292.6	74.
	14:43	11.8	447.8	534.2	315.9	3.3	10.	292.4	74.
	14:44	11.7	451.0	530.0	315.9	4.7	14.	292.4	74.
	14:45	11.7	449.8	530.2	315.5	1.4	18.	292.4	74.
	14:46	11.7	449.8	530.8	315.5	3.4	13.	292.2	74.
	14:47	11.8	450.1	532.4	315.6	2.6	11.	290.8	74.
	14:48	11.8	450.4	534.9	315.6	0.7	17.	290.8	74.
	14:49	11.9	448.4	537.8	314.9	1.1	13.	290.4	75.
	14:50	11.9	444.0	538.6	314.7	3.1	13.	290.2	74.
	14:51	11.8	449.4	536.7	315.3	2.6	12.	290.2	74.
	14:52	11.7	451.5	531.0	315.4	0.0	18.	290.2	74.
	14:53	11.7	450.3	530.1	315.4	2.7	15.	292.2	74.
	14:54	11.7	450.5	530.1	315.3	1.7	10.	293.7	74.

Plant Name: PIPP

General Average Report

Reporting Period: 07/14/1999 to 07/14/1999

Site Name: PIPPF6P6

Time of Report: 07/19/99 07:43

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	F6CPCO2 (PERCENT)	F6CPNOX (PPM)	F6CPSO2 (PPM)	F6STEMP (DEGFAHRE)	F6CO (PPM)	F6OPC (PERCENT)	F6AFLOW (KACFM)	U6MEG (MEGAWATT)
07/14/99	14:55	11.7	450.7	531.1	315.3	1.7	17.	294.8	74.
	14:56	11.8	448.7	535.3	315.3	3.9	11.	295.5	74.
	14:57	11.8	449.1	535.9	315.5	2.6	12.	294.9	74.
	14:58	11.8	448.7	534.5	315.7	4.2	13.	294.1	74.
	14:59	11.7	450.7	531.0	315.7	3.1	14.	293.5	74.
	15:00	11.8	448.3	535.0	315.7	1.0	12.	292.4	74.
	15:01	11.8	450.3	535.3	315.7	2.1	13.	292.5	74.
	15:02	11.8	450.0	536.0	315.4	2.0	18.	293.0	74.
	15:03	11.8	450.1	535.0	315.0	3.4	11.	292.8	74.
	15:04	11.8	447.7	532.6	313.8	3.0	12.	292.3	74.
	15:05	11.8	451.1	529.1	313.8	4.3	18.	292.3	74.
	15:06	11.8	450.7	532.5	315.2	2.6	11.	292.6	74.
	15:07	11.8	448.6	530.6	315.4	1.7	13.	292.6	74.
	15:08	11.7	450.5	528.6	315.3	4.1	13.	289.3	74.
	15:09	11.7	453.2	527.6	315.3	2.4	16.	289.3	74.
	15:10	11.7	452.8	527.3	315.9	2.1	9.	289.2	74.
	15:11	11.7	452.5	529.5	316.2	2.8	12.	289.1	74.
	15:12	11.8	450.5	530.6	315.5	4.4	22.	289.4	74.
	15:13	11.8	453.9	532.6	315.3	1.7	12.	289.5	74.
	15:14	11.8	450.4	533.8	315.7	1.9	14.	290.5	74.
	15:15	11.9	450.3	534.0	316.5	3.3	18.	292.2	74.
	15:16	11.8	450.6	533.8	316.5	4.1	13.	292.3	74.
	15:17	11.8	449.3	531.0	316.5	2.9	11.	292.7	74.
	15:18	11.7	451.2	527.6	316.5	3.2	15.	292.7	74.
	15:19	11.7	452.8	529.3	316.0	3.0	14.	293.2	74.
	15:20	11.8	451.5	532.3	316.1	2.7	14.	293.0	74.
	15:21	11.8	448.8	533.3	316.5	3.7	12.	292.3	74.
	15:22	11.8	449.8	533.5	316.5	2.4	20.	292.3	74.
	15:23	11.8	451.2	531.0	315.7	3.6	10.	291.9	74.
	15:24	11.8	449.8	534.0	315.6	3.1	13.	291.7	74.
	15:25	11.8	446.8	534.8	314.5	3.1	21.	290.0	74.
	15:26	11.8	450.0	535.6	314.4	3.0	11.	290.0	74.
	15:27	11.7	449.7	531.8	315.1	4.8	13.	290.4	74.
	15:28	11.8	446.7	532.3	315.4	1.6	13.	290.7	74.
	15:29	11.8	447.5	532.3	314.9	4.2	15.	291.7	74.
	15:30	11.8	448.5	532.5	314.8	4.4	10.	291.9	74.
	15:31	11.9	446.5	537.3	315.3	4.4	13.	292.0	74.
	15:32	11.9	445.1	537.1	315.9	3.7	19.	292.0	74.
	15:33	11.8	448.3	532.0	316.3	4.7	13.	291.6	74.
	15:34	11.7	449.7	531.8	316.5	3.7	12.	291.3	74.
	15:35	11.8	447.9	532.1	316.1	3.8	16.	291.3	74.
	15:36	11.7	448.5	531.5	315.4	5.1	13.	291.3	74.
	15:37	11.7	450.6	531.1	316.3	4.4	10.	291.2	74.
	15:38	11.8	447.8	533.3	317.3	3.0	15.	291.1	74.
	15:39	11.8	441.9	535.1	317.3	3.4	17.	291.1	74.
	15:40	11.8	445.2	533.6	314.9	4.7	14.	289.1	74.
	15:41	11.7	448.9	530.1	314.9	2.8	11.	289.0	74.
Average =		11.7	447.3	530.0	315.0	2.3	14.	293.7	74.
Maximum =		11.9	453.9	538.6	317.3	5.1	24.	301.8	75.
Minimum =		11.6	441.3	519.9	312.9	0.0	9.	289.0	74.
Possible Values =		147	147	147	147	147	147	147	147
Included Values =		147	147	147	147	147	147	147	147
Total =		1724.2	65748.1	77903.6	46301.5	340.1	2061.	43168.4	10896.

* - excluded values (missing, OOC, invalid, suspect)

< - missing

T - out-of-control
I - invalid
S - suspect
V - invalid for state
H - exceedance
F - stack not operating
B - invalid (PADER)
U - missing data substituted
-999 - missing value
-888 - value could not be calculated

Plant Name: PIPP

General Average Report

Reporting Period: 07/15/1999 to 07/15/1999

Site Name: PIPPF6P6

Time of Report: 07/19/99 07:43

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	F6CPCO2 (PERCENT)	F6CPNOX (PPM)	F6CPSO2 (PPM)	F6STEMP (DEGFAHRE)	F6CO (PPM)	F6OPC (PERCENT)	F6AFLOW (KACFM)	U6MEG (MEGAWATT)
07/15/99	07:25	11.6	450.3	514.4	313.3	3.3	13.	293.2	74.
	07:26	11.7	449.4	516.8	313.4	2.9	9.	293.2	74.
	07:27	11.7	452.4	520.2	314.6	1.4	12.	293.0	74.
	07:28	11.7	453.9	522.1	314.7	3.0	10.	293.0	74.
	07:29	11.7	453.6	528.5	314.0	3.3	11.	292.8	74.
	07:30	11.8	450.8	531.1	313.4	2.3	26.	292.7	74.
	07:31	11.8	452.5	535.1	313.1	3.0	15.	291.1	74.
	07:32	11.8	452.1	532.9	313.1	1.5	11.	290.5	74.
	07:33	11.7	452.3	534.7	313.2	2.7	13.	289.7	74.
	07:34	11.8	451.7	540.4	313.5	3.0	11.	287.8	74.
	07:35	11.8	453.4	541.4	313.2	2.5	12.	287.9	75.
	07:36	11.9	450.3	543.0	312.6	0.7	10.	288.2	75.
	07:37	11.8	451.8	541.7	312.8	1.2	20.	288.2	74.
	07:38	11.7	453.3	537.3	314.4	2.0	11.	288.7	74.
	07:39	11.7	449.8	538.8	314.3	1.7	11.	288.6	74.
	07:40	11.8	448.3	541.0	313.1	1.9	11.	287.8	74.
	07:41	11.8	450.9	538.9	313.1	1.6	12.	287.8	74.
	07:42	11.8	450.9	543.3	314.1	2.4	11.	286.9	74.
	07:43	11.8	450.8	546.8	314.4	1.1	11.	286.8	74.
	07:44	11.8	452.6	545.0	313.6	1.9	16.	286.3	74.
	07:45	11.8	451.2	547.2	313.5	1.8	10.	286.2	75.
	07:46	11.9	449.9	548.5	313.5	0.8	11.	288.4	75.
	07:47	11.9	450.6	548.3	313.5	2.2	9.	290.1	75.
	07:48	11.8	450.5	547.0	313.9	0.7	13.	289.2	74.
	07:49	11.8	449.2	542.3	314.1	0.9	9.	288.7	74.
	07:50	11.8	451.1	540.1	313.7	0.0	18.	289.0	74.
	07:51	11.8	450.5	544.5	313.1	2.2	11.	289.5	74.
	07:52	11.9	451.5	550.6	313.2	1.7	13.	288.6	74.
	07:53	11.9	453.0	551.2	313.4	1.3	9.	287.9	74.
	07:54	11.8	452.3	546.8	313.4	1.4	12.	288.0	74.
	07:55	11.8	453.1	545.9	313.4	0.5	10.	289.0	74.
	07:56	11.8	451.9	546.9	313.5	2.7	12.	289.2	74.
	07:57	11.8	450.1	546.7	314.0	2.8	13.	289.5	74.
	07:58	11.9	447.6	551.1	314.0	1.6	12.	289.6	75.
	07:59	11.9	449.4	554.5	312.3	1.2	10.	289.8	75.
	08:00	11.8	452.3	551.4	312.3	1.5	11.	290.0	74.
	08:01	11.7	452.8	544.8	314.9	2.0	12.	290.9	74.
	08:02	11.7	453.9	543.5	314.9	0.0	13.	290.9	74.
	08:03	11.8	450.9	548.8	315.5	1.3	11.	291.5	74.
	08:04	11.8	450.3	549.0	315.8	3.1	16.	291.6	74.
	08:05	11.7	454.2	543.0	314.9	2.5	12.	291.1	74.
	08:06	11.8	451.7	546.1	314.7	3.2	13.	291.1	74.
	08:07	11.9	451.4	548.1	314.7	1.1	10.	291.7	74.
	08:08	11.9	452.4	549.5	314.7	3.7	16.	292.3	75.
	08:09	11.9	451.2	550.5	314.2	2.6	15.	292.7	75.
	08:10	11.8	452.6	546.6	313.7	2.0	11.	292.8	74.
	08:11	11.7	453.7	544.6	313.8	3.1	12.	292.8	75.
	08:12	11.8	450.3	547.1	314.1	2.0	10.	292.8	75.
	08:13	12.0	446.4	554.7	314.0	4.6	12.	293.3	75.
	08:14	11.9	450.9	550.7	314.0	3.6	11.	293.9	74.

Plant Name: PIPP

General Average Report

Reporting Period: 07/15/1999 to 07/15/1999

Site Name: PIPPF6P6

Data Averaging Type: 1m

Time of Report: 07/19/99 07:43

Rolling Average Interval: 1

Date	Time	F6CPCO2 (PERCENT)	F6CPNOX (PPM)	F6CPSO2 (PPM)	F6STEMP (DEGFAHRE)	F6CO (PPM)	F6OPC (PERCENT)	F6AFLOW (KACFM)	U6MEG (MEGAWATT)
07/15/99	08:15	11.6	457.3	536.2	314.0	2.9	10.	294.0	74.
	08:16	11.6	456.5	535.4	314.5	1.4	11.	294.5	74.
	08:17	11.7	453.9	539.7	314.5	0.0	11.	294.7	74.
	08:18	11.8	453.4	544.1	314.0	1.2	11.	295.7	75.
	08:19	11.9	452.2	547.1	314.0	2.8	11.	295.7	75.
	08:20	11.9	453.2	548.8	314.2	1.0	12.	296.2	75.
	08:21	11.9	450.8	552.4	314.3	2.6	11.	296.3	75.
	08:22	11.9	450.0	552.6	314.6	3.2	11.	296.6	74.
	08:23	11.6	457.2	542.9	314.7	3.1	12.	296.7	74.
	08:24	11.5	457.1	537.3	315.3	2.6	12.	296.9	74.
	08:25	11.8	452.8	546.9	316.1	2.1	10.	297.0	74.
	08:26	11.8	450.6	547.4	315.5	2.7	11.	295.4	74.
	08:27	11.8	454.6	549.5	315.2	2.0	11.	294.5	74.
	08:28	11.8	455.3	547.0	315.2	1.4	11.	293.8	74.
	08:29	11.8	456.0	548.8	314.9	2.8	11.	292.4	74.
	08:30	11.8	458.3	550.0	315.1	0.9	11.	292.4	75.
	08:31	11.9	457.7	550.3	315.5	1.3	11.	292.3	75.
	08:32	11.9	455.0	549.4	315.5	2.3	13.	292.3	75.
	08:33	11.9	457.5	551.1	315.0	2.4	12.	292.7	75.
	08:34	11.9	455.7	550.1	315.1	2.8	11.	292.9	75.
	08:35	11.8	458.9	549.8	315.3	3.2	10.	294.9	74.
	08:36	11.7	460.2	543.8	315.3	2.7	13.	294.9	74.
	08:37	11.7	458.7	546.9	314.4	5.1	10.	295.2	74.
	08:38	11.8	456.9	547.6	314.3	3.4	13.	295.3	74.
	08:39	11.8	459.0	545.2	315.2	3.8	11.	296.6	75.
	08:40	11.8	458.9	545.5	315.3	3.6	13.	296.6	75.
	08:41	11.8	455.2	546.5	315.2	3.8	11.	295.4	75.
	08:42	11.8	453.0	549.3	315.2	3.8	12.	294.8	75.
	08:43	11.7	457.3	546.6	316.3	4.4	11.	294.7	75.
	08:44	11.7	458.1	543.6	316.6	3.3	14.	294.6	74.
	08:45	11.7	457.1	542.3	315.6	3.4	11.	293.6	74.
	08:46	11.7	452.8	542.7	314.4	4.4	12.	292.4	74.
	08:47	11.8	453.9	548.3	314.9	2.7	11.	293.0	74.
	08:48	11.9	450.3	550.6	315.5	3.0	12.	293.8	75.
	08:49	11.9	450.9	550.0	315.6	4.7	23.	292.7	74.
	08:50	11.8	451.4	547.4	316.0	4.6	9.	291.1	74.
	08:51	11.8	448.6	549.1	315.6	3.0	18.	290.8	75.
	08:52	11.9	450.3	556.0	314.9	5.3	12.	290.4	75.
	08:53	11.9	450.5	556.2	314.9	3.1	12.	290.4	75.
	08:54	11.8	452.5	552.3	315.4	3.3	12.	289.5	75.
	08:55	11.8	452.8	551.7	315.5	4.0	11.	289.4	74.
	08:56	11.8	452.8	549.3	315.3	4.5	12.	289.4	74.
	08:57	11.8	454.2	550.1	315.3	4.3	12.	289.4	75.
	08:58	12.0	450.0	555.4	315.7	2.3	19.	291.5	75.
	08:59	11.9	450.8	552.4	315.8	2.3	13.	291.6	75.
	09:00	11.9	451.5	550.5	313.9	2.6	11.	291.8	75.
	09:01	11.8	454.8	546.3	313.7	4.2	10.	291.9	74.
	09:02	11.8	454.4	548.8	314.8	3.2	13.	292.7	75.
	09:03	11.8	456.9	546.3	315.8	3.3	11.	293.1	75.
	09:04	11.8	455.4	548.6	315.6	3.9	13.	292.1	74.

Plant Name: PIPP

General Average Report

Reporting Period: 07/15/1999 to 07/15/1999

Site Name: PIPPF6P6

Time of Report: 07/19/99 07:43

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	F6CPCO2 (PERCENT)	F6CPNOX (PPM)	F6CPSO2 (PPM)	F6STEMP (DEGFAHRE)	F6CO (PPM)	F6OPC (PERCENT)	F6AFLOW (KACFM)	U6MEG (MEGAWATT)
07/15/99	09:05	11.8	454.5	548.8	315.5	4.6	17.	291.9	75.
	09:06	11.8	455.5	546.2	315.5	3.5	14.	291.3	75.
	09:07	11.8	454.1	546.7	315.8	4.4	11.	290.4	75.
	09:08	11.8	457.0	547.7	315.4	5.4	14.	290.7	75.
	09:09	11.9	456.2	545.3	314.7	2.3	12.	291.1	75.
	09:10	11.8	456.7	546.5	314.7	2.8	14.	291.1	75.
	09:11	11.8	455.9	542.8	314.9	4.2	16.	290.2	74.
	09:12	11.8	455.0	543.1	314.9	3.1	22.	290.3	74.
	09:13	11.8	455.5	545.2	314.7	2.9	12.	290.9	74.
	09:14	11.7	458.4	541.9	314.7	3.0	13.	290.9	74.
	09:15	11.7	458.6	537.2	314.6	2.9	11.	289.4	74.
	09:16	11.9	456.3	546.5	314.6	2.8	13.	289.1	75.
	09:17	12.1	450.7	558.2	312.7	2.5	11.	290.3	75.
	09:18	12.0	450.4	553.4	312.3	3.6	19.	290.5	75.
	09:19	11.8	455.9	546.9	313.3	3.0	13.	290.3	74.
	09:20	11.7	456.0	541.7	314.0	2.1	13.	290.1	74.
	09:21	11.8	453.8	546.2	314.0	2.8	10.	291.0	74.
	09:22	11.9	452.9	548.0	314.0	3.1	8.	291.2	75.
	09:23	11.9	453.5	547.1	313.8	4.7	8.	291.1	74.
	09:24	11.9	452.6	541.4	313.7	3.8	15.	290.9	74.
	09:25	11.9	452.0	545.9	314.0	1.6	20.	290.5	74.
	09:26	11.8	453.8	546.0	314.4	3.4	11.	290.2	74.
	09:27	11.8	456.5	544.1	314.6	3.3	13.	290.3	75.
	09:28	12.0	448.5	553.3	316.1	0.0	12.	291.3	75.
	09:29	12.1	444.6	553.9	316.0	2.1	11.	291.9	75.
	09:30	11.8	452.0	547.0	315.0	1.5	13.	293.7	74.
	09:31	11.7	455.7	541.9	315.0	2.7	15.	293.7	74.
	09:32	11.8	453.0	542.4	315.1	1.4	12.	293.3	74.
	09:33	11.9	451.2	547.8	315.2	2.3	12.	293.2	75.
	09:34	11.9	450.7	552.5	315.7	3.5	12.	292.9	75.
	09:35	11.9	453.6	550.1	315.8	2.4	11.	292.8	75.
	09:36	11.9	454.3	551.3	315.2	4.4	12.	292.1	75.
	09:37	11.9	453.1	551.8	314.7	3.9	12.	291.5	75.
	09:38	12.0	450.1	552.4	315.2	2.8	20.	292.8	75.
	09:39	11.9	453.1	550.3	315.5	3.3	13.	293.7	74.
	09:40	11.6	457.2	541.4	315.6	3.5	13.	293.7	74.
	09:41	11.7	456.1	541.6	317.5	4.0	12.	294.8	75.
	09:42	11.9	453.3	547.0	316.8	5.1	12.	294.8	75.
	09:43	11.9	454.4	545.8	314.7	3.2	12.	294.8	75.
	09:44	11.8	455.3	545.5	314.7	4.5	12.	294.8	74.
	09:45	11.8	456.2	543.3	314.9	4.3	29.	292.5	74.
	09:46	11.8	457.7	545.5	314.9	4.4	13.	292.0	74.
	09:47	11.9	452.5	549.0	315.8	4.2	12.	290.6	74.
	09:48	11.8	456.1	548.6	316.0	3.8	13.	290.7	74.
	09:49	11.8	457.6	544.3	315.9	4.9	12.	289.4	74.
	09:50	11.8	454.2	545.6	315.8	4.3	12.	289.0	74.
	09:51	11.8	453.7	545.8	315.3	5.2	16.	290.9	75.
	09:52	11.9	455.0	549.0	315.0	2.6	15.	291.6	75.
	09:53	12.0	450.0	552.9	315.3	4.3	11.	292.1	75.
	09:54	11.9	453.7	548.8	315.8	6.9	14.	292.8	75.

Plant Name: PIPP

General Average Report

Reporting Period: 07/15/1999 to 07/15/1999

Site Name: PIPPF6P6

Data Averaging Type: 1m

Time of Report: 07/19/99 07:43

Rolling Average Interval: 1

Date	Time	F6CPCO2 (PERCENT)	F6CPNOX (PPM)	F6CPSO2 (PPM)	F6STEMP (DEGFAHRE)	F6CO (PPM)	F6OPC (PERCENT)	F6AFLOW (KACFM)	U6MEG (MEGAWATT)
07/15/99	09:55	11.8	457.3	543.8	316.4	4.7	11.	294.2	75.
Average =		11.8	453.3	545.7	314.6	2.8	12.	291.8	74.
Maximum =		12.1	460.2	558.2	317.5	6.9	29.	297.0	75.
Minimum =		11.5	444.6	514.4	312.3	0.0	8.	286.2	74.
Possible Values =		151	151	151	151	151	151	151	151
Included Values =		151	151	151	151	151	151	151	151
Total =		1784.5	68453.3	82399.2	47510.4	428.2	1887.	44057.8	11246.

* - excluded values (missing, OOC, invalid, suspect)
< - missing
T - out-of-control
I - invalid
S - suspect
V - invalid for state
H - exceedance
F - stack not operating
B - invalid (PADER)
U - missing data substituted
-999 - missing value
-888 - value could not be calculated

Plant Name: PIPP

General Average Report

Reporting Period: 07/15/1999 to 07/15/1999

Site Name: PIPPF6P6

Time of Report: 07/19/99 07:43

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	F6CPCO2 (PERCENT)	F6CPNOX (PPM)	F6CPSO2 (PPM)	F6STEMP (DEGFAHRE)	F6CO (PPM)	F6OPC (PERCENT)	F6AFLOW (KACFM)	U6MEG (MEGAWATT)
07/15/99	11:50	11.7	454.7	528.8	316.0	4.1	14.	294.8	74.
	11:51	11.6	448.8	525.0	315.8	4.5	12.	295.4	74.
	11:52	11.8	450.2	531.8	315.8	2.6	13.	295.1	74.
	11:53	11.8	449.6	534.6	315.8	3.6	20.	294.3	74.
	11:54	11.8	448.9	536.8	315.6	3.9	14.	293.6	74.
	11:55	11.8	446.8	537.3	315.2	3.2	14.	292.4	74.
	11:56	11.8	449.6	537.5	315.2	4.4	14.	292.4	74.
	11:57	11.8	448.9	540.5	315.0	2.6	13.	292.8	74.
	11:58	11.8	449.5	541.5	315.0	3.5	18.	292.7	74.
	11:59	11.9	446.3	544.6	314.1	1.9	15.	290.9	74.
	12:00	12.0	446.5	548.3	314.1	2.6	12.	290.9	74.
	12:01	11.9	449.4	543.6	314.3	4.7	13.	290.5	74.
	12:02	11.8	452.4	541.8	314.4	1.9	12.	290.4	74.
	12:03	11.8	449.2	541.1	315.1	3.6	26.	290.8	74.
	12:04	11.8	448.6	543.8	315.3	3.3	13.	290.8	74.
	12:05	11.8	448.9	545.5	315.1	3.3	15.	291.6	74.
	12:06	11.8	450.0	543.0	314.9	3.5	12.	292.2	74.
	12:07	11.9	447.6	546.0	314.6	4.1	14.	291.2	74.
	12:08	12.0	442.8	549.0	314.6	3.1	17.	290.9	74.
	12:09	11.8	449.7	542.6	314.7	2.2	13.	290.2	74.
	12:10	11.7	450.9	540.8	314.9	4.0	11.	289.7	74.
	12:11	11.8	449.3	539.1	314.9	3.1	13.	289.7	74.
	12:12	11.8	446.5	539.6	314.9	2.6	11.	289.7	74.
	12:13	11.8	447.3	535.5	315.1	2.6	17.	289.9	74.
	12:14	11.8	446.7	536.6	315.5	4.8	12.	290.2	74.
	12:15	11.9	444.3	543.1	315.1	3.7	13.	289.6	74.
	12:16	12.0	440.9	542.5	314.6	4.7	13.	288.9	74.
	12:17	12.0	441.5	539.1	314.4	4.1	13.	288.7	74.
	12:18	11.8	447.8	534.1	314.1	4.8	21.	288.3	74.
	12:19	11.7	448.0	530.6	314.3	3.9	12.	288.1	74.
	12:20	11.8	446.4	535.6	314.6	3.2	15.	287.8	74.
	12:21	11.9	446.7	541.6	314.6	3.4	11.	287.9	74.
	12:22	11.9	449.0	545.1	314.2	4.9	13.	289.4	74.
	12:23	11.9	449.7	548.3	314.2	2.6	18.	289.3	74.
	12:24	11.8	450.4	542.8	315.5	4.1	15.	289.1	74.
	12:25	11.8	450.3	543.5	315.5	4.5	12.	289.1	74.
	12:26	11.8	451.0	544.1	314.7	5.3	14.	289.5	74.
	12:27	11.8	450.5	543.8	314.4	5.1	12.	289.5	74.
	12:28	11.8	448.8	546.0	314.4	5.4	17.	290.0	74.
	12:29	11.8	449.5	545.5	314.4	5.5	13.	290.1	74.
	12:30	11.8	450.4	545.3	315.1	5.0	13.	290.4	74.
	12:31	11.9	450.4	546.1	315.8	5.4	11.	290.5	74.
	12:32	11.9	448.1	542.3	314.7	5.1	14.	292.8	74.
	12:33	11.9	445.7	535.5	314.3	5.1	21.	293.5	74.
	12:34	11.7	451.3	532.3	314.5	5.5	15.	293.2	74.
	12:35	11.7	451.9	533.3	315.2	3.4	10.	292.3	74.
	12:36	11.8	449.5	536.8	315.5	5.9	15.	292.7	74.
	12:37	11.8	449.1	539.0	315.8	4.3	11.	293.1	74.
	12:38	11.8	455.3	541.8	315.6	3.4	23.	293.0	74.
	12:39	11.9	452.0	544.0	313.4	3.6	12.	291.7	75.

Plant Name: PIPP

General Average Report

Reporting Period: 07/15/1999 to 07/15/1999

Site Name: PIPPF6P6

Data Averaging Type: 1m

Time of Report: 07/19/99 07:43

Rolling Average Interval: 1

Date	Time	F6CPCO2 (PERCENT)	F6CPNOX (PPM)	F6CPSO2 (PPM)	F6STEMP (DEGFAHRE)	F6CO (PPM)	F6OPC (PERCENT)	F6AFLOW (KACFM)	U6MEG (MEGAWATT)
07/15/99	12:40	11.9	449.4	543.1	313.9	4.0	14.	292.6	74.
	12:41	11.8	449.9	538.5	315.0	3.2	10.	293.8	74.
	12:42	11.6	453.3	532.1	315.0	3.9	14.	293.7	74.
	12:43	11.7	452.0	535.3	315.7	2.0	13.	293.0	74.
	12:44	11.8	448.8	540.5	315.9	5.0	15.	293.0	74.
	12:45	11.8	449.9	538.7	316.6	2.7	11.	293.4	74.
	12:46	11.8	445.8	544.1	316.6	5.0	15.	293.4	74.
	12:47	11.9	441.5	542.5	316.0	6.0	11.	293.8	74.
	12:48	11.7	449.5	538.2	315.8	3.4	25.	293.9	74.
	12:49	11.7	450.8	536.9	314.8	3.1	11.	293.8	74.
	12:50	11.9	447.0	543.1	314.7	4.0	16.	293.8	74.
	12:51	11.9	444.7	547.6	315.1	3.8	11.	293.3	74.
	12:52	11.8	450.4	544.4	315.5	4.3	12.	292.8	74.
	12:53	11.8	451.1	540.1	315.3	4.8	18.	291.0	74.
	12:54	11.8	451.0	540.3	315.2	5.0	13.	290.2	74.
	12:55	11.8	449.7	541.0	315.4	3.0	11.	290.3	74.
	12:56	11.9	448.7	541.6	316.2	2.4	13.	290.4	74.
	12:57	11.8	451.9	540.9	316.4	4.7	11.	290.7	74.
	12:58	11.8	452.3	539.5	316.6	2.7	16.	291.3	74.
	12:59	11.8	451.0	542.5	316.5	5.0	12.	291.2	74.
	13:00	11.8	447.7	538.6	316.4	4.7	13.	290.2	74.
	13:01	11.7	451.0	541.7	316.3	3.3	11.	290.3	74.
	13:02	11.8	448.3	550.3	315.5	2.4	13.	290.5	75.
	13:03	12.1	438.8	552.6	315.5	1.4	22.	290.5	74.
	13:04	11.8	446.4	542.9	315.6	3.9	15.	288.5	74.
	13:05	11.6	451.5	532.1	315.6	5.4	13.	288.3	73.
	13:06	11.6	450.0	536.9	315.8	3.7	12.	290.3	74.
	13:07	11.8	446.4	540.0	315.8	1.7	10.	290.4	74.
	13:08	11.9	443.0	539.8	315.5	4.1	20.	291.1	74.
	13:09	12.0	440.7	543.9	315.3	5.7	12.	291.6	74.
	13:10	11.8	445.9	539.7	316.0	3.1	13.	292.8	74.
	13:11	11.7	444.9	535.4	316.2	4.7	12.	293.4	74.
	13:12	11.7	447.6	530.0	315.3	2.2	13.	293.1	74.
	13:13	11.7	447.5	531.7	314.4	2.8	15.	292.8	74.
	13:14	11.8	445.7	534.2	314.2	2.8	14.	291.5	74.
	13:15	11.8	445.6	537.2	314.1	3.5	12.	290.9	74.
	13:16	11.9	447.3	537.5	314.0	3.9	13.	290.1	74.
	13:17	11.9	448.1	536.7	313.8	3.3	13.	288.6	74.
	13:18	11.8	450.4	536.1	314.8	3.1	22.	288.9	74.
	13:19	11.8	451.1	536.1	316.2	3.7	13.	289.1	74.
	13:20	11.8	451.8	533.6	316.0	3.6	14.	289.5	74.
	13:21	11.8	449.8	531.9	315.2	4.9	12.	290.2	74.
	13:22	11.8	450.3	528.5	315.2	1.9	12.	291.1	74.
	13:23	11.8	448.8	535.0	315.2	3.8	18.	292.4	74.
	13:24	11.8	448.0	534.8	315.2	3.4	13.	292.4	74.
	13:25	11.8	448.3	533.9	315.5	2.7	12.	292.0	74.
	13:26	11.8	448.3	534.5	316.0	2.2	13.	292.2	74.
	13:27	11.7	449.7	530.5	317.6	3.0	11.	292.7	74.
	13:28	11.7	450.7	531.1	317.6	4.0	17.	292.7	74.
	13:29	11.8	445.7	533.3	316.0	4.0	12.	292.0	74.

Plant Name: PIPP

General Average Report

Reporting Period: 07/15/1999 to 07/15/1999

Site Name: PIPPF6P6

Data Averaging Type: 1m

Time of Report: 07/19/99 07:43

Rolling Average Interval: 1

Date	Time	F6CPCO2 (PERCENT)	F6CPNOX (PPM)	F6CPSO2 (PPM)	F6STEMP (DEGFAHRE)	F6CO (PPM)	F6OPC (PERCENT)	F6AFLOW (KACFM)	U6MEG (MEGAWATT)
07/15/99	13:30	11.8	447.6	533.3	315.8	3.6	13.	291.8	74.
	13:31	11.8	447.7	533.7	315.9	3.2	11.	291.0	74.
	13:32	11.9	443.2	538.7	315.9	4.8	13.	291.0	74.
	13:33	11.7	445.4	533.2	316.0	2.6	22.	291.0	74.
	13:34	11.6	450.5	526.8	316.1	3.6	12.	290.9	74.
	13:35	11.8	449.8	529.8	316.1	4.2	14.	292.5	74.
	13:36	11.9	445.0	540.5	316.1	4.5	11.	293.1	74.
	13:37	11.8	447.7	540.0	315.9	4.3	13.	293.5	74.
	13:38	11.8	449.5	538.8	315.5	4.2	18.	293.8	74.
	13:39	11.8	449.5	533.1	315.2	4.4	14.	293.4	74.
	13:40	11.8	450.3	534.3	314.9	5.2	11.	292.8	74.
	13:41	11.8	452.5	536.9	315.1	5.0	15.	292.7	74.
	13:42	11.8	450.2	537.9	316.6	7.1	11.	292.2	74.
	13:43	11.8	451.3	539.9	316.5	4.7	19.	292.3	74.
	13:44	11.8	452.1	536.6	316.2	4.8	11.	292.6	74.
	13:45	11.8	451.4	537.5	316.3	6.2	14.	292.6	74.
	13:46	11.8	451.7	541.5	315.3	5.2	12.	291.5	74.
	13:47	11.9	452.3	542.1	315.2	5.4	14.	291.2	75.
	13:48	11.9	451.6	542.9	315.9	5.3	26.	290.5	75.
	13:49	11.9	450.9	545.6	316.0	5.9	15.	290.5	75.
	13:50	11.8	450.6	543.1	315.6	6.1	12.	289.4	75.
	13:51	11.8	451.6	542.5	315.5	5.5	14.	289.0	74.
	13:52	11.7	451.2	536.7	314.6	5.7	12.	288.6	74.
	13:53	11.7	452.1	534.7	314.3	4.1	21.	288.6	74.
	13:54	11.7	450.1	534.1	315.5	6.0	11.	289.0	74.
	13:55	11.7	450.4	534.0	316.6	3.9	14.	289.4	74.
	13:56	11.8	448.1	537.4	315.5	5.5	11.	291.9	74.
	13:57	11.8	448.4	537.8	314.9	5.0	14.	293.2	74.
	13:58	11.8	449.8	535.8	314.8	4.7	14.	293.8	74.
	13:59	11.7	450.8	536.0	314.0	4.7	16.	294.9	74.
	14:00	11.7	452.5	536.5	314.6	5.5	12.	294.4	74.
	14:01	11.7	448.6	537.1	315.8	5.5	14.	293.5	74.
	14:02	11.7	448.7	536.2	315.8	4.0	11.	293.5	74.
	14:03	11.7	448.3	536.2	314.2	4.4	23.	290.1	74.
	14:04	11.7	446.8	536.6	314.2	3.6	13.	289.8	74.
	14:05	11.6	448.0	532.5	314.6	4.2	14.	288.7	74.
	14:06	11.7	449.8	535.1	314.6	5.5	11.	288.7	74.
	14:07	11.8	446.4	541.1	314.8	5.2	14.	290.8	74.
	14:08	11.9	445.1	544.3	314.9	3.4	17.	292.0	74.
	14:09	11.9	442.4	540.9	314.8	5.3	15.	292.8	74.
	14:10	11.8	442.9	538.9	314.7	3.7	11.	293.0	74.
	14:11	11.7	444.9	536.0	314.8	5.3	12.	293.6	74.
	14:12	11.7	446.8	534.8	314.9	2.6	12.	294.4	74.
Average =		11.8	448.7	538.7	315.3	4.1	14.	291.4	74.
Maximum =		12.1	455.3	552.6	317.6	7.1	26.	295.4	75.
Minimum =		11.6	438.8	525.0	313.4	1.4	10.	287.8	73.
Possible Values =		143	143	143	143	143	143	143	143
Included Values =		143	143	143	143	143	143	143	143
Total =		1686.8	64159.7	77029.4	45083.3	579.6	2014.	41675.5	10585.

* - excluded values (missing, OOC, invalid, suspect)

< - missing

T - out-of-control

I - invalid

S - suspect

V - invalid for state

H - exceedance
F - stack not operating
B - invalid (PADER)
U - missing data substituted
-999 - missing value
-888 - value could not be calculated

UNIT 6 ESP DATA

Wepco Presque Isle
Unit 6 Precipitator

Console	Primary VAC	Primary IAC	Secondary Kv	Secondary mA
T/R 6A	298	46	35	233
T/R 6B	155	42	19	0
T/R 6C	308	18	39	58
T/R 6D	280	41	33	227

OPACITY 13.80%
Boiler Load 75 Mw
Excess Air 2.74%

DATE: 07/14/1999 TIME: 14:12

Wepco Presque Isle
Unit 6 Precipitator

Console	Primary VAC	Primary IAC	Secondary Kv	Secondary mA
T/R 6A	301	49	35	248
T/R 6B	158	42	19	0
T/R 6C	308	18	39	59
T/R 6D	283	43	34	238

OPACITY 12.33%
Boiler Load 75 Mw
Excess Air 2.70%

DATE: 07/14/1999 TIME: 15:00

Wepco Presque Isle
Unit 6 Precipitator

Console	Primary VAC	Primary IAC	Secondary Kv	Secondary mA
T/R 6A	301	48	35	246
T/R 6B	154	42	18	0
T/R 6C	311	19	40	63
T/R 6D	281	42	34	235

OPACITY 11.79%
Boiler Load 75 Mw
Excess Air 2.64%

DATE: 07/14/1999 TIME: 16:00

Wepco Presque Isle
Unit 6 Precipitator

	Primary		Secondary	
Console	VAC	IAC	Kv	mA
T/R 6A	299	49	35	250
T/R 6B	150	42	18	0
T/R 6C	310	18	39	62
T/R 6D	280	42	34	233

OPACITY	14.63%
Boiler Load	75 Mw
Excess Air	2.60%

DATE: 07/14/1999 TIME: 16:48

Wepco Presque Isle
Unit 6 Precipitator

Console	Primary VAC	Primary IAC	Secondary Kv	Secondary mA
T/R 6A	303	46	36	235
T/R 6B	169	42	22	0
T/R 6C	325	21	41	72
T/R 6D	294	47	35	269

OPACITY 10.16%
Boiler Load 75 Mw
Excess Air 2.73%

DATE: 07/15/1999 TIME: 8:00

Wepco Presque Isle
Unit 6 Precipitator

Console	Primary VAC	Primary IAC	Secondary Kv	Secondary mA
T/R 6A	304	47	36	234
T/R 6B	164	42	21	0
T/R 6C	311	18	40	58
T/R 6D	285	42	34	237

OPACITY 14.65%
Boiler Load 75 Mw
Excess Air 2.74%

DATE: 07/15/1999 TIME: 8:24

Wepco Presque Isle
Unit 6 Precipitator

Console	Primary VAC	Primary IAC	Secondary Kv	Secondary mA
T/R 6A	306	50	36	259
T/R 6B	162	42	20	0
T/R 6C	320	19	41	64
T/R 6D	292	44	35	257

OPACITY 12.01%
Boiler Load 75 Mw
Excess Air 2.73%

DATE: 07/15/1999 TIME: 9:00

Wepco Presque Isle
Unit 6 Precipitator

Console	Primary VAC	Primary IAC	Secondary Kv	Secondary mA
T/R 6A	300	49	35	251
T/R 6B	162	42	20	0
T/R 6C	316	19	40	63
T/R 6D	285	42	34	239

OPACITY 11.97%
Boiler Load 75 Mw
Excess Air 2.78%

DATE: 07/15/1999 TIME: 10:00

Wepco Presque Isle
Unit 6 Precipitator

Console	Primary VAC	Primary IAC	Secondary Kv	Secondary mA
T/R 6A	318	57	37	306
T/R 6B	160	42	20	0
T/R 6C	329	22	40	80
T/R 6D	299	49	35	288

OPACITY 10.74%
Boiler Load 75 Mw
Excess Air 2.70%

DATE: 07/15/1999 TIME: 10:54

Wepco Presque Isle
Unit 6 Precipitator

Console	Primary VAC	Primary IAC	Secondary Kv	Secondary mA
T/R 6A	304	50	36	255
T/R 6B	143	42	18	0
T/R 6C	312	18	40	59
T/R 6D	287	42	34	235

OPACITY 14.33%
Boiler Load 75 Mw
Excess Air 2.69%

DATE: 07/15/1999 TIME: 12:48

Wepco Presque Isle
Unit 6 Precipitator

Console	Primary VAC	Primary IAC	Secondary Kv	Secondary mA
T/R 6A	305	51	36	264
T/R 6B	143	42	19	0
T/R 6C	316	19	40	61
T/R 6D	286	42	34	236

OPACITY 13.28%
Boiler Load 75 Mw
Excess Air 2.74%

DATE: 07/15/1999 TIME: 13:00

Wepco Presque Isle
Unit 6 Precipitator

Console	Primary VAC	Primary IAC	Secondary Kv	Secondary mA
T/R 6A	308	51	36	262
T/R 6B	150	42	19	0
T/R 6C	317	19	40	66
T/R 6D	287	43	34	242

OPACITY 12.89%
Boiler Load 75 Mw
Excess Air 2.70%

DATE: 07/15/1999 TIME: 14:00

Wepco Presque Isle
Unit 6 Precipitator

Console	Primary VAC	Primary IAC	Secondary Kv	Secondary mA
T/R 6A	308	51	36	269
T/R 6B	136	42	19	0
T/R 6C	319	19	41	66
T/R 6D	288	42	34	239

OPACITY 13.48%
Boiler Load 75 Mw
Excess Air 2.67%

DATE: 07/15/1999 TIME: 15:00

Wepco Presque Isle
Unit 6 Precipitator

	Primary		Secondary	
Console	VAC	IAC	Kv	mA
T/R 6A	304	50	36	255
T/R 6B	138	42	19	0
T/R 6C	316	19	40	65
T/R 6D	281	41	34	229

OPACITY	16.02%
Boiler Load	76 Mw
Excess Air	2.58%

DATE: 07/15/1999 TIME: 15:12

UNITS 1-4 PROCESS OPERATION DATA

K1

PRESQUE ISLE POWER PLANT LOAD TEST DATA (Units 1-9)

UNIT NO.: "A" Bag House 1-3 K3 TIME: 0900-1000 DATE: 7-16-99

1.	Gross Generation - MWH	48.624
2.	Station Service - MWH	3.264
3.	Net Generation - MWH	45.360
4.	Control Valve Position %	0.0.5
5.	Main Steam Flow Lbs./Hr.	297,000
6.	F.W. Flow Lbs./Hr.	387,600
7.	F.W. Press. Psig	1810
8.	Chart Throttle Press. Psig	
9.	Test Gauge Throttle Press. Psig	
10.	First Stage Press. Psig	825
11.	Cold Reheat Press. Psig	349
12.	Hot Reheat Press. Psig	315
13.	F.W. (Loading/Temp.)	14LBS/438
14.	Main Steam Temp. °F	955
15.	Cold Reheat Temp. °F	675
16.	Hot Reheat Temp. °F	1010
17.	Superheat Spray Flow	0
18.	Reheat Spray Flow	0
19.	Air Flow	360,000
20.	Excess Oxygen %	3.3
21.	Inlet Air Temp. °F	NOTE
22.	Gas Outlet Temp. °F	NOTE
23.	Opacity %	—
24.	I.D. Fan (Loading/Amps)	234
25.	F.D. Fan (Loading/rpm/Amps)	17LBS/64
26.	Air Heater Press. (H20)	

NOTE VERIF

	IN	OUT	P
AIR	7.0	3.5	3.5
GAS	-3.2	-7.9	-4.7

27. Burner Tilt Position/RH P
28. Condensate Pump Amps A B
29. Boiler Feed Pump Amps A B C
30. Coal Feeder Loading A B C D
31. Pulverizer Amps A B C D
32. Mill Outage Temp. A B C D
33. Coal Scale Readings:

	Beginning	Ending	Total
a	80755	81095	
b	80815	81143	
c	60	48	108
d		X400	43200

34. Coal Total Lbs. Hr. 43200

35.	Lbs. Coal/Net KWH	.952
36.	Lbs. Steam/Net KWH	6.547
38.	Barometric Press. In.Hg	
39.	Vacuum In.Hg	
40.	Back Press. In.Hg	
41.	Circ. Water Pump Amps	A B / N or W S or E
42.	Circ. Water Inlet Temp. °F	
43.	Circ. Water Outlet Temp °F	
44.	Circ. Water Inlet Press. Psig	
45.	Circ. Water Outlet Press. Psig	
46.	Condensate Make-up	
47.	Condensate Draw-off	
48.	Hot Well Temp. °F	
49.	Turbine Exhaust Temp. °F	
50.	1st Pt.Htr.Ext.Press. Psig	
51.	1st Pt.Htr.Ext.Temp. °F	
52.	1st Pt.Htr.F.W.Out Temp °F	
53.	2nd Pt.Htr.Ext.Press. Psig	
54.	2nd Pt.Htr.Ext. Temp. °F	
55.	2nd Pt.Htr.F.W.Out Temp. °F	
56.	3rd Pt.Htr.Ext. Press. Psig	
57.	3rd Pt.Htr.Ext. Temp. °F	
58.	3rd Pt.Htr.F.W.Out Temp. °F	
59.	4th Pt.Htr.Ext.Press. Psig	
60.	4th Pt.Htr.Ext. Temp. °F	
61.	4th Pt.Htr.F.W.Out Temp. °F	
62.	5th Pt.Htr.Ext. Press.In.Hg	
63.	5th Pt.Htr.Ext. Temp. °F	
64.	5th Pt.Htr.F.W.In Temp. °F	
65.	5th Pt.Htr.F.W.Out Temp. °F	
66.	1st Pt.F.W.Out Temp.Minus(-) 5th Pt.F.W. In Temp. °F =	
67.	1st Pt. Drain Temp. °F	
68.	2nd Pt. Drain Temp. °F	
69.	3rd Pt. Drain Temp. °F	
70.	4th Pt. Drain Temp. °F	
71.	5th Pt. Drain Temp. °F	
72.	Vars - Mvar	
73.	Generator Voltage - K volts	
74.	Auxiliary Steam Uses:	

NOTE

75. Remarks: A Bag house
INLET TEMP 248 OUTLET TEMP 263
PRESS -12 OUTLET PRESS -17

John Brunn
CRO

Engineer

2PE0691

PRESQUE ISLE POWER PLANT LOAD TEST DATA (Units 1-9)

R1

UNIT NO.: "B" BAG HSE 2+4 TIME: 1000-1100 DATE: 7-16-95

1.	Gross Generation - MWH	49.000
2.	Station Service - MWH	3.00
3.	Net Generation - MWH	46.000
4.	Control Valve Position %	0.0.3
5.	Main Steam Flow Lbs./Hr.	378.000
6.	F.W. Flow Lbs./Hr.	423.000
7.	F.W. Press. Psig	1850
8.	Chart Throttle Press. Psig	
9.	Test Gauge Throttle Press. Psig	
10.	First Stage Press. Psig	900
11.	Cold Reheat Press. Psig	339
12.	Hot Reheat Press. Psig	305
L 13.	F.W. (Loading/Temp.)	51% / 442
14.	Main Steam Temp. °F	974
15.	Cold Reheat Temp. °F	685
16.	Hot Reheat Temp. °F	1009
17.	Superheat Spray Flow	0
18.	Reheat Spray Flow	0
19.	Air Flow	390,000
20.	Excess Oxygen %	3.5
NOTE 21.	Inlet Air Temp. °F	NOTE
NOTE 22.	Gas Outlet Temp. °F	NOTE
23.	Opacity %	
24.	I.D. Fan (Loading/Amps)	270 AMPS
25.	F.D. Fan (Loading/rpm/Amps)	84% / 67 / AMPS
26.	Air Heater Press. (H20)	

	IN	OUT	P
AIR	5.0	3.5	1.5
GAS	-3.2	-4.0	-.8

27.	Burner Tilt Position/RH P	
28.	Condensate Pump Amps	A____ B____
29.	Boiler Feed Pump Amps	A____ B____ C____
30.	Coal Feeder Loading	A____ B____ C____ D____
31.	Pulverizer Amps	A____ B____ C____ D____
32.	Mill Outage Temp.	A____ B____ C____ D____
33.	Coal Scale Readings:	

	Beginning	Ending	Total
a	27914	73061	
b	27980	73133	
c	66	61	
d		X400	50400

34.	Coal Total Lbs. Hr.	
35.	Lbs. Coal/Net KWH	1.104
36.	Lbs. Steam/Net KWH	8.217
38.	Barometric Press. In.Hg	
39.	Vacuum In.Hg	
40.	Back Press. In.Hg	
41.	Circ. Water Pump Amps	A____ B____ (N or W S or E)
42.	Circ. Water Inlet Temp. °F	
43.	Circ. Water Outlet Temp °F	
44.	Circ. Water Inlet Press. Psig	
45.	Circ. Water Outlet Press. Psig	
46.	Condensate Make-up	
47.	Condensate Draw-off	
48.	Hot Well Temp. °F	
49.	Turbine Exhaust Temp. °F	
50.	1st Pt.Htr.Ext.Press. Psig	
51.	1st Pt.Htr.Ext.Temp. °F	
52.	1st Pt.Htr.F.W.Out Temp °F	
53.	2nd Pt.Htr.Ext.Press. Psig	
54.	2nd Pt.Htr.Ext. Temp. °F	
55.	2nd Pt.Htr.F.W.Out Temp. °F	
56.	3rd Pt.Htr.Ext. Press. Psig	
57.	3rd Pt.Htr.Ext. Temp. °F	
58.	3rd Pt.Htr.F.W.Out Temp. °F	
59.	4th Pt.Htr.Ext.Press. Psig	
60.	4th Pt.Htr.Ext. Temp. °F	
61.	4th Pt.Htr.F.W.Out Temp. °F	
62.	5th Pt.Htr.Ext. Press.In.Hg	
63.	5th Pt.Htr.Ext. Temp. °F	
64.	5th Pt.Htr.F.W.In Temp. °F	
65.	5th Pt.Htr.F.W.Out Temp. °F	
66.	1st Pt.F.W.Out Temp.Minus(-) 5th Pt.F.W. In Temp. °F =	
67.	1st Pt. Drain Temp. °F	
68.	2nd Pt. Drain Temp. °F	
69.	3rd Pt. Drain Temp. °F	
70.	4th Pt. Drain Temp. °F	
71.	5th Pt. Drain Temp. °F	
72.	Vars - Mvar	
73.	Generator Voltage - K volts	
74.	~~Auxiliary~~ Steam Uses: NOTE	

75. Remarks: B. BAGHOUSE
INLET TEMP 311 OUTLET TEMP 302
INLET PRESS -13 OUTLET PRESS -17

J. Brenner
CRO

Engineer

2PE0691

PRESQUE ISLE POWER PLANT LOAD TEST DATA (Units 1-9)

N2

UNIT NO.: A-Baghouse 3 TIME: 1100-1200 DATE: 07-16-85

1.	Gross Generation - MWH	49.140
2.	Station Service - MWH	3.00
3.	Net Generation - MWH	46.000
4.	Control Valve Position %	0.05
5.	Main Steam Flow Lbs./Hr.	301,500
6.	F.W. Flow Lbs./Hr.	396.000
7.	F.W. Press. Psig	1800
8.	Chart Throttle Press. Psig	
9.	Test Gauge Throttle Press. Psig	
10.	First Stage Press. Psig	825
11.	Cold Reheat Press. Psig	349
12.	Hot Reheat Press. Psig	315
13.	F.W. (Loading/Temp.)	14LBS/ 435
14.	Main Steam Temp. °F	957
15.	Cold Reheat Temp. °F	675
16.	Hot Reheat Temp. °F	1009
17.	Superheat Spray Flow	0
18.	Reheat Spray Flow	0
19.	Air Flow	360,000
20.	Excess Oxygen %	3.4
21.	Inlet Air Temp. °F	NOTE
22.	Gas Outlet Temp. °F	NOTE
23.	Opacity %	
24.	I.D. Fan (Loading/Amps)	237 AMPS
25.	F.D. Fan (Loading/rpm/Amps)	17LBS/64
26.	Air Heater Press. (H2O)	

	IN	OUT	P
AIR	7.0	3.5	3.5
GAS	-3.2	-7.7	-4.7

27.	Burner Tilt Position/RH P	
28.	Condensate Pump Amps	A____ B____
29.	Boiler Feed Pump Amps	A____ B____ C____
30.	Coal Feeder Loading	A____ B____ C____ D____
31.	Pulverizer Amps	A____ B____ C____ D____
32.	Mill Outage Temp.	A____ B____ C____ D____
33.	Coal Scale Readings:	

	Beginning	Ending	Total
a	80785	81194	
b	80949	81249	111
c	64	47	
d		X 400	

10 B

34.	Coal Total Lbs. Hr.	44400
35.	Lbs. Coal/Net KWH	.965
36.	Lbs. Steam/Net KWH	6.554
38.	Barometric Press. In.Hg	
39.	Vacuum In.Hg	
40.	Back Press. In.Hg	
41.	Circ. Water Pump Amps	A____ B____ N or W S or E
42.	Circ. Water Inlet Temp. °F	
43.	Circ. Water Outlet Temp °F	
44.	Circ. Water Inlet Press. Psig	
45.	Circ. Water Outlet Press. Psig	
46.	Condensate Make-up	
47.	Condensate Draw-off	
48.	Hot Well Temp. °F	
49.	Turbine Exhaust Temp. °F	
50.	1st Pt.Htr.Ext.Press. Psig	
51.	1st Pt.Htr.Ext.Temp. °F	
52.	1st Pt.Htr.F.W.Out Temp °F	
53.	2nd Pt.Htr.Ext.Press. Psig	
54.	2nd Pt.Htr.Ext. Temp. °F	
55.	2nd Pt.Htr.F.W.Out Temp. °F	
56.	3rd Pt.Htr.Ext. Press. Psig	
57.	3rd Pt.Htr.Ext. Temp. °F	
58.	3rd Pt.Htr.F.W.Out Temp. °F	
59.	4th Pt.Htr.Ext.Press. Psig	
60.	4th Pt.Htr.Ext. Temp. °F	
61.	4th Pt.Htr.F.W.Out Temp. °F	
62.	5th Pt.Htr.Ext. Press.In.Hg	
63.	5th Pt.Htr.Ext. Temp. °F	
64.	5th Pt.Htr.F.W.In Temp. °F	
65.	5th Pt.Htr.F.W.Out Temp. °F	
66.	1st Pt.F.W.Out Temp.Minus(-) 5th Pt.F.W. In Temp. °F =	
67.	1st Pt. Drain Temp. °F	
68.	2nd Pt. Drain Temp. °F	
69.	3rd Pt. Drain Temp. °F	
70.	4th Pt. Drain Temp. °F	
71.	5th Pt. Drain Temp. °F	
72.	Vars - Mvar	
73.	Generator Voltage - K volts	
74.	~~Auxiliary~~ Steam Uses:	

NOTE: A-Baghouse

75. Remarks:

INLET TEMP 272 OUTLET TEMP 277

INLET PRESS -12 OUTLET PRESS -16

John Burn
CRO

Engineer

2PE0691

R2

PRESQUE ISLE POWER PLANT LOAD TEST DATA (Units 1-9)

UNIT NO.: B. Baghouse 2+4 TIME: 1200 - 1300 DATE: 7-16-99

1. Gross Generation - MWH 48.864
2. Station Service - MWH 3.00
3. Net Generation - MWH 45.864
4. Control Valve Position %
5. Main Steam Flow Lbs./Hr. 319.500
6. F.W. Flow Lbs./Hr. 360.000
7. F.W. Press. Psig 1850
8. Chart Throttle Press. Psig
9. Test Gauge Throttle Press. Psig
10. First Stage Press. Psig 900
11. Cold Reheat Press. Psig 335
12. Hot Reheat Press. Psig 305
13. F.W. (Loading/Temp.) 51%/442
14. Main Steam Temp. °F 975
15. Cold Reheat Temp. °F 685
16. Hot Reheat Temp. °F 1000
17. Superheat Spray Flow 0
18. Reheat Spray Flow 0
19. Air Flow 390,000
20. Excess Oxygen % 3.5
21. Inlet Air Temp. °F NOTE
22. Gas Outlet Temp. °F NOTE
23. Opacity %
24. I.D. Fan (Loading/Amps) 271 AMP
25. F.D. Fan (Loading/rpm/Amps) 54%/67
26. Air Heater Press. (H2O)

	IN	OUT	P
AIR	5.0	3.5	1.5
GAS	3.2	-4.0	-.8

27. Burner Tilt Position/RH P
28. Condensate Pump Amps A B
29. Boiler Feed Pump Amps A B C
30. Coal Feeder Loading A B C D
31. Pulverizer Amps A B C D
32. Mill Outage Temp. A B C D
33. Coal Scale Readings:

	Beginning	Ending	Total
a	28 037	28090	53
b	73190	73247	57
c			110
d		X 400	

10 PP

34. Coal Total Lbs. Hr. 44000
35. Lbs. Coal/Net KWH .9593
36. Lbs. Steam/Net KWH 6.966
38. Barometric Press. In.Hg
39. Vacuum In.Hg
40. Back Press. In.Hg
41. Circ. Water Pump Amps A B N or W S or E
42. Circ. Water Inlet Temp. °F
43. Circ. Water Outlet Temp °F
44. Circ. Water Inlet Press. Psig
45. Circ. Water Outlet Press. Psig
46. Condensate Make-up
47. Condensate Draw-off
48. Hot Well Temp. °F
49. Turbine Exhaust Temp. °F
50. 1st Pt.Htr.Ext.Press. Psig
51. 1st Pt.Htr.Ext.Temp. °F
52. 1st Pt.Htr.F.W.Out Temp °F
53. 2nd Pt.Htr.Ext.Press. Psig
54. 2nd Pt.Htr.Ext. Temp. °F
55. 2nd Pt.Htr.F.W.Out Temp. °F
56. 3rd Pt.Htr.Ext. Press. Psig
57. 3rd Pt.Htr.Ext. Temp. °F
58. 3rd Pt.Htr.F.W.Out Temp. °F
59. 4th Pt.Htr.Ext.Press. Psig
60. 4th Pt.Htr.Ext. Temp. °F
61. 4th Pt.Htr.F.W.Out Temp. °F
62. 5th Pt.Htr.Ext. Press.In.Hg
63. 5th Pt.Htr.Ext. Temp. °F
64. 5th Pt.Htr.F.W.In Temp. °F
65. 5th Pt.Htr.F.W.Out Temp. °F
66. 1st Pt.F.W.Out Temp.Minus(-) 5th Pt.F.W. In Temp. °F =
67. 1st Pt. Drain Temp. °F
68. 2nd Pt. Drain Temp. °F
69. 3rd Pt. Drain Temp. °F
70. 4th Pt. Drain Temp. °F
71. 5th Pt. Drain Temp. °F
72. Vars - Mvar
73. Generator Voltage - K volts
74. Auxiliary Steam Uses: NOTE
75. Remarks: B- Baghouse
INLET TEMP 313 OUTLET TEMP 304
INLET PRESS OUTLET PRESS -17 -13

CRO Engineer

2PE0691

R2

PRESQUE ISLE POWER PLANT LOAD TEST DATA (Units 1-9)

UNIT NO.: A-Baghouse #1 #3 TIME: 1300-1400 DATE: 07-16-91

1.	Gross Generation - MWH	51.480
2.	Station Service - MWH	3.00
3.	Net Generation - MWH	48.480
4.	Control Valve Position %	0.05
5.	Main Steam Flow Lbs./Hr.	319.500
6.	F.W. Flow Lbs./Hr.	414.000
7.	F.W. Press. Psig	1800
8.	Chart Throttle Press. Psig	
9.	Test Gauge Throttle Press. Psig	
10.	First Stage Press. Psig	825
11.	Cold Reheat Press. Psig	348
12.	Hot Reheat Press. Psig	315
13.	F.W. (Loading/Temp.)	14 ~~689~~ 439
14.	Main Steam Temp. °F	957
15.	Cold Reheat Temp. °F	675
16.	Hot Reheat Temp. °F	1009
17.	Superheat Spray Flow	0
18.	Reheat Spray Flow	0
19.	Air Flow	360,000
20.	Excess Oxygen %	3.4
21.	Inlet Air Temp. °F	NOTR
22.	Gas Outlet Temp. °F	NOTR
23.	Opacity %	
24.	I.D. Fan (Loading/Amps)	235 AMPS
25.	F.D. Fan (Loading/rpm/Amps)	64 AMPS
26.	Air Heater Press. (H20)	

	IN	OUT	P
AIR	7.9	6.0	1.9
GAS	-3.4	-8.0	-4.6

27.	Burner Tilt Position/RH P	
28.	Condensate Pump Amps	A____ B____
29.	Boiler Feed Pump Amps	A____ B____ C____
30.	Coal Feeder Loading	A____ B____ C____ D____
31.	Pulverizer Amps	A____ B____ C____ D____
32.	Mill Outage Temp.	A____ B____ C____ D____

33. Coal Scale Readings:

	Beginning	Ending	Total
a	81012	81079	66
b	81288	81339	51
c			117
d			8400

34. Coal Total Lbs. Hr. 41800

35.	Lbs. Coal/Net KWH	.9653
36.	Lbs. Steam/Net KWH	6.590
38.	Barometric Press. In.Hg	
39.	Vacuum In.Hg	
40.	Back Press. In.Hg	
41.	Circ. Water Pump Amps	A____ B____ (N or W S or E)
42.	Circ. Water Inlet Temp. °F	
43.	Circ. Water Outlet Temp °F	
44.	Circ. Water Inlet Press. Psig	
45.	Circ. Water Outlet Press. Psig	
46.	Condensate Make-up	
47.	Condensate Draw-off	
48.	Hot Well Temp. °F	
49.	Turbine Exhaust Temp. °F	
50.	1st Pt.Htr.Ext.Press. Psig	
51.	1st Pt.Htr.Ext.Temp. °F	
52.	1st Pt.Htr.F.W.Out Temp °F	
53.	2nd Pt.Htr.Ext.Press. Psig	
54.	2nd Pt.Htr.Ext. Temp. °F	
55.	2nd Pt.Htr.F.W.Out Temp. °F	
56.	3rd Pt.Htr.Ext. Press. Psig	
57.	3rd Pt.Htr.Ext. Temp. °F	
58.	3rd Pt.Htr.F.W.Out Temp. °F	
59.	4th Pt.Htr.Ext.Press. Psig	
60.	4th Pt.Htr.Ext. Temp. °F	
61.	4th Pt.Htr.F.W.Out Temp. °F	
62.	5th Pt.Htr.Ext. Press.In.Hg	
63.	5th Pt.Htr.Ext. Temp. °F	
64.	5th Pt.Htr.F.W.In Temp. °F	
65.	5th Pt.Htr.F.W.Out Temp. °F	
66.	1st Pt.F.W.Out Temp.Minus(-) 5th Pt.F.W. In Temp. °F =	
67.	1st Pt. Drain Temp. °F	
68.	2nd Pt. Drain Temp. °F	
69.	3rd Pt. Drain Temp. °F	
70.	4th Pt. Drain Temp. °F	
71.	5th Pt. Drain Temp. °F	
72.	Vars - Mvar	
73.	Generator Voltage - K volts	
74.	Auxiliary Steam Uses:	

NOTR

75. Remarks: A-Baghouse
INLET TEMP 285 OUTLET TEMP 284
INLET PRESS -12 OUTLET PRESS -14

1236 # 1 on the line

CRO Engineer

2PE0691

R3

PRESQUE ISLE POWER PLANT LOAD TEST DATA (Units 1-9)

UNIT NO.: B-Baghouse 2 of 4 units TIME: 1400-1500 DATE: 7-16-95

1.	Gross Generation - MWH	47.748
2.	Station Service - MWH	3.00
3.	Net Generation - MWH	44.748
4.	Control Valve Position %	
5.	Main Steam Flow Lbs./Hr.	337.500
6.	F.W. Flow Lbs./Hr.	373500
7.	F.W. Press. Psig	1850
8.	Chart Throttle Press. Psig	
9.	Test Gauge Throttle Press. Psig	
10.	First Stage Press. Psig	900
11.	Cold Reheat Press. Psig	335
12.	Hot Reheat Press. Psig	305
13.	F.W. (Loading/Temp.)	51% / 442
14.	Main Steam Temp. °F	975
15.	Cold Reheat Temp. °F	685
16.	Hot Reheat Temp. °F	1009
17.	Superheat Spray Flow	0
18.	Reheat Spray Flow	0
19.	Air Flow	390000
20.	Excess Oxygen %	3.5
21.	Inlet Air Temp. °F	NOTE
22.	Gas Outlet Temp. °F	NOTE
23.	Opacity %	
24.	I.D. Fan (Loading/Amps)	271
25.	F.D. Fan (Loading/rpm/Amps)	84% / 167
26.	Air Heater Press. (H2O)	

	IN	OUT	P
AIR	5.0	3.5	7.5
GAS	-3.2	-4.0	-.8

27.	Burner Tilt Position/RH P	
28.	Condensate Pump Amps	A____ B____
29.	Boiler Feed Pump Amps	A____ B____ C____
30.	Coal Feeder Loading	A____ B____ C____ D____
31.	Pulverizer Amps	A____ B____ C____ D____
32.	Mill Outage Temp.	A____ B____ C____ D____

33. Coal Scale Readings:

	Beginning	Ending	Total
a	28148	28203	55
b	73311	73369	58
c			113
d			x 400

34. Coal Total Lbs. Hr. 45200

35.	Lbs. Coal/Net KWH	1.010
36.	Lbs. Steam/Net KWH	7.542.24
38.	Barometric Press. In.Hg	
39.	Vacuum In.Hg	
40.	Back Press. In.Hg	
41.	Circ. Water Pump Amps	A____ B____ N or W S or E
42.	Circ. Water Inlet Temp. °F	
43.	Circ. Water Outlet Temp °F	
44.	Circ. Water Inlet Press. Psig	
45.	Circ. Water Outlet Press. Psig	
46.	Condensate Make-up	
47.	Condensate Draw-off	
48.	Hot Well Temp. °F	
49.	Turbine Exhaust Temp. °F	
50.	1st Pt.Htr.Ext.Press. Psig	
51.	1st Pt.Htr.Ext.Temp. °F	
52.	1st Pt.Htr.F.W.Out Temp °F	
53.	2nd Pt.Htr.Ext.Press. Psig	
54.	2nd Pt.Htr.Ext. Temp. °F	
55.	2nd Pt.Htr.F.W.Out Temp. °F	
56.	3rd Pt.Htr.Ext. Press. Psig	
57.	3rd Pt.Htr.Ext. Temp. °F	
58.	3rd Pt.Htr.F.W.Out Temp. °F	
59.	4th Pt.Htr.Ext.Press. Psig	
60.	4th Pt.Htr.Ext. Temp. °F	
61.	4th Pt.Htr.F.W.Out Temp. °F	
62.	5th Pt.Htr.Ext. Press.In.Hg	
63.	5th Pt.Htr.Ext. Temp. °F	
64.	5th Pt.Htr.F.W.In Temp. °F	
65.	5th Pt.Htr.F.W.Out Temp. °F	
66.	1st Pt.F.W.Out Temp.Minus(-) 5th Pt.F.W. In Temp. °F =	
67.	1st Pt. Drain Temp. °F	
68.	2nd Pt. Drain Temp. °F	
69.	3rd Pt. Drain Temp. °F	
70.	4th Pt. Drain Temp. °F	
71.	5th Pt. Drain Temp. °F	
72.	Vars - Mvar	
73.	Generator Voltage - K volts	
74.	Auxiliary Steam Uses:	

75. Remarks: NOTE B-Baghouse
INLET TEMP 311 OUTLET TEMP 301
INLET PRESS -13 OUTLET PRESS -16

J. Burns
CRO

Engineer

2PE0691

PRESQUE ISLE POWER PLANT LOAD TEST DATA (Units 1-9)

K3

UNIT NO.: A-Baghouse (1+3) TIME: 1500-1600 DATE: 07-16-95

1.	Gross Generation - MWH	48.420
2.	Station Service - MWH	3.00
3.	Net Generation - MWH	45.420
4.	Control Valve Position %	—
5.	Main Steam Flow Lbs./Hr.	256.500
6.	F.W. Flow Lbs./Hr.	337.500
7.	F.W. Press. Psig	1800
8.	Chart Throttle Press. Psig	
9.	Test Gauge Throttle Press. Psig	
10.	First Stage Press. Psig	825
11.	Cold Reheat Press. Psig	349
12.	Hot Reheat Press. Psig	315
13.	F.W. (Loading/Temp.)	1441/439
14.	Main Steam Temp. °F	951
15.	Cold Reheat Temp. °F	625
16.	Hot Reheat Temp. °F	1009
17.	Superheat Spray Flow	0
18.	Reheat Spray Flow	0
19.	Air Flow	360,000
20.	Excess Oxygen %	3.9
21.	Inlet Air Temp. °F	NOTE
22.	Gas Outlet Temp. °F	NOTE
23.	Opacity %	—
24.	I.D. Fan (Loading/Amps)	299
25.	F.D. Fan (Loading/rpm/Amps)	17 LBS/64
26.	Air Heater Press. (H20)	

	IN	OUT	P
AIR	7.0	3.5	3.5
GAS	-3.2	-7.7	-4.7

27.	Burner Tilt Position/RH P	
28.	Condensate Pump Amps	A____ B____
29.	Boiler Feed Pump Amps	A____ B____ C____
30.	Coal Feeder Loading	A____ B____ C____ D____
31.	Pulverizer Amps	A____ B____ C____ D____
32.	Mill Outage Temp.	A____ B____ C____ D____
33.	Coal Scale Readings:	

	Beginning	Ending	Total
a	81141	81197	56
b	81387	81430	43
c			99
d			X400

34. Coal Total Lbs. Hr. 39600

35.	Lbs. Coal/Net KWH	.8718
36.	Lbs. Steam/Net KWH	5.647
38.	Barometric Press. In.Hg	
39.	Vacuum In.Hg	
40.	Back Press. In.Hg	
41.	Circ. Water Pump Amps	A____ B____ (N or W S or E)
42.	Circ. Water Inlet Temp. °F	
43.	Circ. Water Outlet Temp °F	
44.	Circ. Water Inlet Press. Psig	
45.	Circ. Water Outlet Press. Psig	
46.	Condensate Make-up	
47.	Condensate Draw-off	
48.	Hot Well Temp. °F	
49.	Turbine Exhaust Temp. °F	
50.	1st Pt.Htr.Ext.Press. Psig	
51.	1st Pt.Htr.Ext.Temp. °F	
52.	1st Pt.Htr.F.W.Out Temp °F	
53.	2nd Pt.Htr.Ext.Press. Psig	
54.	2nd Pt.Htr.Ext. Temp. °F	
55.	2nd Pt.Htr.F.W.Out Temp. °F	
56.	3rd Pt.Htr.Ext. Press. Psig	
57.	3rd Pt.Htr.Ext. Temp. °F	
58.	3rd Pt.Htr.F.W.Out Temp. °F	
59.	4th Pt.Htr.Ext.Press. Psig	
60.	4th Pt.Htr.Ext. Temp. °F	
61.	4th Pt.Htr.F.W.Out Temp. °F	
62.	5th Pt.Htr.Ext. Press.In.Hg	
63.	5th Pt.Htr.Ext. Temp. °F	
64.	5th Pt.Htr.F.W.In Temp. °F	
65.	5th Pt.Htr.F.W.Out Temp. °F	
66.	1st Pt.F.W.Out Temp.Minus(-) 5th Pt.F.W. In Temp. °F =	
67.	1st Pt. Drain Temp. °F	
68.	2nd Pt. Drain Temp. °F	
69.	3rd Pt. Drain Temp. °F	
70.	4th Pt. Drain Temp. °F	
71.	5th Pt. Drain Temp. °F	
72.	Vars - Mvar	
73.	Generator Voltage - K volts	
74.	Auxiliary Steam Uses:	

75. Remarks: NOTE A-Baghouse
INLET TEMP 314 OUTLET TEMP 301
INLET PRESS -12 OUTLET PRESS -

CRO Engineer

2PE0691

PRESQUE ISLE POWER PLANT
DAILY OPERATING REPORT
DAY/DATE: FRI., JULY 16, 1999
******* FUEL USED *******

****** COAL *******

1A	39.70	2A	142.05	3A	280.20	4A	253.80	5A	217.45	6A	183.55
1B	40.10	2B	138.45	3B	220.60	4B	267.40	5B	213.60	6B	193.85
OUT	20.00	OUT	0.00	OUT	0.00	OUT	0.00	5C	206.25	6C	189.50
TOT	99.80	TOT	280.50	TOT	500.80	TOT	521.20	5D	194.05	6D	176.90
								OUT	0.00	OUT	0.00
								TOT	831.35	TOT	743.80

7A1	248.45	8A1	286.45	9A1	269.00
7A2	243.35	8A2	292.10	9A2	274.75
7B1	273.45	8B1	286.55	9B1	301.00
7B2	264.80	8B2	280.30	9B2	301.60
OUT	0.00	OUT	0.00	OUT	0.00
TOT	1030.05	TOT	1145.40	TOT	1146.35

	UNITS 1-6 EASTERN	UNITS 7-9 WESTERN
COAL ON HAND	297,504.55	482,112.00
COAL RECEIVED	0.00	0.00
COAL USED	2,977.45	3,321.80
TOTAL COAL ON HAND	294,527.10 TONS	478,790.20 TONS

COAL USED YEAR-TO-DATE

UNIT NO 1	5,920.60	
UNIT NO 2	12,199.00	
UNIT NO 3	60,456.40	
UNIT NO 4	57,727.20	
UNIT NO 5	141,731.40	
UNIT NO 6	122,780.95	
UNIT NO 7		191,939.95
UNIT NO 8		162,522.35
UNIT NO 9		202,653.35
TOTAL YEAR-TO-DATE	400,815.55 TONS	557,115.65 TONS

******* FUEL OIL *******

UNIT No 1	0 Gals.	UNIT No 2	0 Gals.	UNIT No 3	0 Gals.
UNIT No 4	49 Gals.	UNIT No 5	0 Gals.	UNIT No 6	37 Gals.
UNIT No 7	0 Gals.	UNIT No 8	0 Gals.	UNIT No 9	0 Gals.

FUEL OIL USED YEAR-TO-DATE

UNIT No. 1	20,065	UNIT No. 6	28,527
UNIT No. 2	42,129	UNIT No. 7	28,824
UNIT No. 3	45,393	UNIT No. 8	27,590
UNIT No. 4	31,714	UNIT No. 9	32,251
UNIT No. 5	58,801		

TOTAL YEAR-TO-DATE 315,294 GALLONS

Plant Name: PIPP

General Average Report

Reporting Period: 07/15/1999 to 07/16/1999

Site Name: PIPPF4P4

Data Averaging Type: 1h

Time of Report: 01/11/00 14:07

Rolling Average Interval: 1

Date	Time	U1MEG (MEGAWATT)	U2MEG (MEGAWATT)	U3MEG (MEGAWATT)	U4MEG (MEGAWATT)
07/15/99	22:00	0.	1.	46.	48.
	23:00	0.	1.	46.	48.
07/16/99	00:00	0.	1.	46.	48.
	01:00	0.	1.	43.	47.
	02:00	0.	11.	35.	39.
	03:00	1.	26.	35.	38.
	04:00	1.	26.	35.	38.
	05:00	1.	26.	45.	45.
	06:00	1.	26.	49.	49.
	07:00	1.	26.	49.	49.
	08:00	1.	26.	49.	49.
	09:00	1.	26.	49.	49.
	10:00	1.	26.	49.	49.
	11:00	2.	26.	49.	49.
	12:00	10.	26.	48.	49.
	13:00	15.	26.	48.	50.
	14:00	16.	26.	48.	49.
	15:00	16.	26.	48.	49.
	16:00	16.	26.	48.	49.
	17:00	16.	26.	48.	49.
	18:00	16.	26.	48.	49.
	19:00	16.	26.	47.	49.
	20:00	16.	26.	47.	49.
	21:00	16.	26.	47.	49.
	22:00	15.	26.	47.	49.
Average =		7.	21.	46.	47.
Maximum =		16.	26.	49.	50.
Minimum =		0.	1.	35.	38.
Possible Values =		25	25	25	25
Included Values =		25	25	25	25
Total =		178.	529.	1149.	1187.

* - excluded values (missing, OOC, invalid, suspect)
< - missing
T - out-of-control
I - invalid
S - suspect
V - invalid for state
H - exceedance
F - stack not operating
B - invalid (PADER)
U - missing data substituted
-999 - missing value
-888 - value could not be calculated

Plant Name: PIPP

General Average Report

Reporting Period: 07/16/1999 to 07/16/1999

Site Name: PIPPF4P4

Data Averaging Type: 1m

Time of Report: 11/01/99 11:54

Rolling Average Interval: 1

Date	Time	F4MEG (MEGAWATT)	U1MEG (MEGAWATT)	U2MEG (MEGAWATT)	U3MEG (MEGAWATT)	U4MEG (MEGAWATT)
07/16/99	07:20	125.	0.	26.	49.	50.
	07:21	125.	0.	26.	49.	50.
	07:22	125.	0.	26.	49.	50.
	07:23	124.	0.	26.	49.	49.
	07:24	124.	0.	26.	49.	49.
	07:25	124.	0.	26.	49.	49.
	07:26	124.	0.	26.	49.	49.
	07:27	124.	0.	26.	49.	49.
	07:28	125.	0.	26.	49.	49.
	07:29	125.	0.	26.	49.	50.
	07:30	125.	0.	26.	49.	50.
	07:31	125.	0.	26.	49.	49.
	07:32	125.	0.	26.	49.	49.
	07:33	125.	0.	26.	49.	49.
	07:34	125.	0.	26.	49.	49.
	07:35	125.	0.	26.	49.	49.
	07:36	125.	0.	26.	49.	49.
	07:37	124.	0.	26.	49.	49.
	07:38	124.	0.	26.	49.	49.
	07:39	124.	0.	26.	49.	49.
	07:40	124.	0.	26.	49.	49.
	07:41	124.	0.	26.	49.	50.
	07:42	124.	0.	26.	49.	49.
	07:43	125.	0.	26.	49.	49.
	07:44	125.	0.	26.	49.	49.
	07:45	125.	0.	26.	49.	49.
	07:46	125.	0.	26.	50.	49.
	07:47	124.	0.	26.	49.	49.
	07:48	124.	0.	26.	49.	49.
	07:49	124.	0.	26.	49.	49.
	07:50	124.	0.	26.	49.	49.
	07:51	124.	0.	26.	49.	49.
	07:52	125.	0.	26.	50.	49.
	07:53	124.	0.	26.	50.	49.
	07:54	124.	0.	26.	49.	49.
	07:55	124.	0.	26.	49.	49.
	07:56	124.	0.	26.	49.	49.
	07:57	124.	0.	26.	49.	49.
	07:58	123.	0.	26.	49.	49.
	07:59	123.	0.	26.	49.	49.
	08:00	124.	0.	26.	49.	49.
	08:01	124.	0.	26.	49.	49.
	08:02	125.	0.	26.	50.	49.
	08:03	125.	0.	26.	50.	49.
	08:04	125.	0.	26.	50.	49.
	08:05	125.	0.	26.	50.	49.
	08:06	125.	0.	26.	49.	50.
	08:07	125.	0.	26.	49.	50.
	08:08	125.	0.	26.	49.	50.
	08:09	125.	0.	26.	49.	50.

Plant Name: PIPP

General Average Report

Reporting Period: 07/16/1999 to 07/16/1999

Site Name: PIPPF4P4

Time of Report: 11/01/99 11:54

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	F4MEG (MEGAWATT)	U1MEG (MEGAWATT)	U2MEG (MEGAWATT)	U3MEG (MEGAWATT)	U4MEG (MEGAWATT)
07/16/99	08:10	124.	0.	26.	49.	50.
	08:11	124.	0.	26.	49.	50.
	08:12	124.	0.	26.	49.	50.
	08:13	125.	0.	26.	49.	50.
	08:14	125.	0.	26.	49.	50.
	08:15	125.	0.	26.	49.	50.
	08:16	125.	0.	26.	49.	50.
	08:17	125.	0.	26.	50.	50.
	08:18	125.	0.	26.	50.	49.
	08:19	125.	0.	26.	50.	49.
	08:20	125.	0.	26.	50.	49.
	08:21	125.	0.	26.	50.	49.
	08:22	124.	0.	26.	49.	49.
	08:23	124.	0.	26.	49.	49.
	08:24	124.	0.	26.	49.	49.
	08:25	124.	0.	26.	49.	49.
	08:26	124.	0.	26.	49.	49.
	08:27	124.	0.	26.	49.	49.
	08:28	124.	0.	26.	49.	49.
	08:29	124.	0.	26.	49.	49.
	08:30	124.	0.	26.	50.	49.
	08:31	125.	0.	26.	50.	49.
	08:32	125.	0.	26.	50.	49.
	08:33	125.	0.	26.	50.	49.
	08:34	125.	0.	26.	50.	50.
	08:35	125.	0.	26.	49.	50.
	08:36	125.	0.	26.	49.	50.
	08:37	125.	0.	26.	49.	50.
	08:38	125.	0.	26.	49.	50.
	08:39	125.	0.	26.	49.	50.
	08:40	124.	0.	26.	49.	50.
	08:41	125.	0.	26.	49.	50.
	08:42	125.	0.	26.	49.	50.
	08:43	125.	0.	26.	49.	50.
	08:44	125.	0.	26.	50.	50.
	08:45	125.	0.	26.	50.	50.
	08:46	126.	0.	26.	50.	50.
	08:47	126.	0.	26.	50.	49.
	08:48	125.	0.	26.	50.	49.
	08:49	125.	0.	26.	50.	49.
	08:50	124.	0.	26.	49.	49.
	08:51	123.	0.	26.	49.	49.
	08:52	123.	0.	26.	48.	49.
	08:53	122.	0.	26.	48.	48.
	08:54	122.	0.	26.	48.	48.
	08:55	122.	0.	26.	48.	48.
	08:56	122.	0.	26.	48.	48.
	08:57	123.	0.	26.	48.	48.
	08:58	122.	0.	26.	48.	48.
	08:59	122.	0.	26.	47.	48.

Plant Name: PIPP

General Average Report

Reporting Period: 07/16/1999 to 07/16/1999

Site Name: PIPPF4P4

Data Averaging Type: 1m

Time of Report: 11/01/99 11:54

Rolling Average Interval: 1

Date	Time	F4MEG (MEGAWATT)	U1MEG (MEGAWATT)	U2MEG (MEGAWATT)	U3MEG (MEGAWATT)	U4MEG (MEGAWATT)
07/16/99	09:00	122.	0.	26.	47.	48.
	09:01	121.	0.	26.	47.	49.
	09:02	121.	0.	26.	46.	49.
	09:03	121.	0.	26.	46.	49.
	09:04	122.	0.	26.	47.	49.
	09:05	122.	0.	26.	47.	49.
	09:06	123.	0.	26.	47.	49.
	09:07	123.	0.	26.	48.	50.
	09:08	124.	0.	26.	48.	50.
	09:09	125.	0.	26.	49.	50.
	09:10	125.	0.	26.	49.	50.
	09:11	125.	0.	26.	50.	50.
	09:12	125.	0.	26.	50.	50.
	09:13	125.	0.	26.	50.	49.
	09:14	125.	0.	26.	50.	49.
	09:15	124.	0.	26.	50.	49.
	09:16	124.	0.	26.	49.	49.
	09:17	124.	0.	26.	49.	49.
	09:18	124.	0.	26.	49.	49.
	09:19	124.	0.	26.	49.	49.
	09:20	124.	0.	26.	49.	49.
	09:21	124.	0.	26.	49.	49.
	09:22	124.	0.	26.	48.	49.
	09:23	124.	0.	26.	48.	50.
	09:24	124.	0.	26.	48.	50.
	09:25	124.	0.	26.	48.	50.
	09:26	124.	0.	26.	48.	50.
	09:27	124.	0.	26.	48.	49.
	09:28	124.	0.	26.	48.	49.
	09:29	124.	0.	26.	49.	49.
	09:30	124.	0.	26.	49.	49.
	09:31	124.	0.	26.	49.	49.
	09:32	125.	0.	26.	50.	49.
	09:33	-999F	-999F	-999F	-999F	-999F
	09:34	-999F	-999F	-999F	-999F	-999F
	09:35	-999F	-999F	-999F	-999F	-999F
	09:36	-999F	-999F	-999F	-999F	-999F
	09:37	-999F	-999F	-999F	-999F	-999F
Average =		124.	0.	26.	49.	49.
Maximum =		126.	0.	26.	50.	50.
Minimum =		121.	0.	26.	46.	48.
Possible Values =		138	138	138	138	138
Included Values =		133	133	133	133	133
Total =		16524.	0.	3456.	6515.	6552.

* - excluded values (missing, OOC, invalid, suspect)
< - missing
T - out-of-control
I - invalid
S - suspect
V - invalid for state
H - exceedance
F - stack not operating
B - invalid (PADER)
U - missing data substituted
-999 - missing value

Plant Name: PIPP

General Average Report

Reporting Period: 07/16/1999 to 07/16/1999

Site Name: PIPPF4P4

Data Averaging Type: 1m

Time of Report: 11/01/99 11:54

Rolling Average Interval: 1

Date	Time	F4MEG (MEGAWATT)	U1MEG (MEGAWATT)	U2MEG (MEGAWATT)	U3MEG (MEGAWATT)	U4MEG (MEGAWATT)
07/16/99	10:15	125.	0.	26.	49.	50.
	10:16	125.	0.	26.	49.	50.
	10:17	125.	0.	26.	49.	49.
	10:18	125.	0.	26.	49.	49.
	10:19	125.	0.	26.	49.	50.
	10:20	125.	0.	26.	49.	50.
	10:21	124.	0.	26.	49.	50.
	10:22	124.	0.	26.	49.	50.
	10:23	124.	0.	26.	49.	50.
	10:24	124.	0.	26.	49.	49.
	10:25	124.	0.	26.	49.	50.
	10:26	124.	0.	26.	49.	50.
	10:27	124.	0.	26.	49.	49.
	10:28	124.	0.	26.	49.	49.
	10:29	124.	0.	26.	49.	49.
	10:30	124.	0.	26.	49.	49.
	10:31	124.	0.	26.	49.	49.
	10:32	124.	0.	26.	49.	49.
	10:33	124.	0.	26.	49.	49.
	10:34	124.	0.	26.	49.	49.
	10:35	124.	0.	26.	49.	49.
	10:36	124.	0.	26.	49.	49.
	10:37	124.	0.	26.	49.	49.
	10:38	124.	0.	26.	49.	49.
	10:39	124.	0.	26.	49.	49.
	10:40	124.	0.	26.	49.	50.
	10:41	124.	0.	26.	49.	50.
	10:42	124.	0.	26.	49.	50.
	10:43	124.	0.	26.	49.	49.
	10:44	124.	0.	26.	49.	49.
	10:45	124.	0.	26.	49.	49.
	10:46	124.	0.	26.	49.	49.
	10:47	124.	0.	26.	49.	49.
	10:48	124.	0.	26.	49.	49.
	10:49	124.	0.	26.	49.	49.
	10:50	124.	0.	26.	49.	49.
	10:51	124.	0.	26.	49.	49.
	10:52	124.	0.	26.	49.	49.
	10:53	124.	0.	26.	49.	49.
	10:54	124.	0.	26.	49.	49.
	10:55	124.	0.	26.	49.	49.
	10:56	124.	0.	26.	49.	49.
	10:57	124.	0.	26.	49.	49.
	10:58	124.	0.	26.	49.	49.
	10:59	124.	0.	26.	49.	49.
	11:00	124.	0.	26.	49.	49.
	11:01	124.	0.	26.	49.	49.
	11:02	124.	0.	26.	49.	49.
	11:03	124.	0.	26.	49.	49.
	11:04	124.	0.	26.	49.	49.

Plant Name: PIPP

General Average Report

Reporting Period: 07/16/1999 to 07/16/1999

Site Name: PIPPF4P4

Data Averaging Type: 1m

Time of Report: 11/01/99 11:54

Rolling Average Interval: 1

Date	Time	F4MEG (MEGAWATT)	U1MEG (MEGAWATT)	U2MEG (MEGAWATT)	U3MEG (MEGAWATT)	U4MEG (MEGAWATT)
07/16/99	11:05	125.	0.	26.	49.	50.
	11:06	125.	0.	26.	49.	50.
	11:07	125.	0.	26.	49.	50.
	11:08	125.	0.	26.	49.	50.
	11:09	125.	0.	26.	49.	50.
	11:10	125.	0.	26.	49.	50.
	11:11	124.	0.	26.	49.	50.
	11:12	125.	0.	26.	49.	50.
	11:13	125.	0.	26.	49.	50.
	11:14	125.	0.	26.	49.	50.
	11:15	125.	0.	26.	49.	50.
	11:16	124.	0.	26.	49.	50.
	11:17	124.	0.	26.	49.	50.
	11:18	124.	0.	26.	49.	50.
	11:19	124.	0.	26.	49.	49.
	11:20	124.	0.	26.	49.	49.
	11:21	124.	0.	26.	49.	50.
	11:22	124.	0.	26.	49.	50.
	11:23	124.	0.	26.	49.	50.
	11:24	124.	0.	26.	49.	50.
	11:25	124.	0.	26.	49.	49.
	11:26	124.	0.	26.	49.	49.
	11:27	124.	0.	26.	49.	49.
	11:28	124.	0.	26.	49.	49.
	11:29	124.	0.	26.	49.	49.
	11:30	123.	0.	26.	49.	49.
	11:31	123.	0.	26.	49.	49.
	11:32	123.	0.	26.	49.	48.
	11:33	123.	0.	26.	49.	49.
	11:34	124.	0.	26.	49.	49.
	11:35	124.	0.	26.	49.	49.
	11:36	126.	1.	26.	49.	49.
	11:37	126.	2.	26.	49.	49.
	11:38	126.	2.	26.	49.	49.
	11:39	126.	2.	26.	49.	49.
	11:40	126.	2.	26.	49.	49.
	11:41	126.	2.	26.	49.	49.
	11:42	126.	2.	26.	49.	49.
	11:43	126.	2.	26.	49.	49.
	11:44	126.	2.	26.	49.	49.
	11:45	128.	4.	26.	49.	49.
	11:46	129.	5.	26.	49.	49.
	11:47	131.	6.	26.	50.	49.
	11:48	131.	6.	26.	50.	49.
	11:49	132.	7.	26.	50.	50.
	11:50	132.	7.	26.	49.	50.
	11:51	132.	7.	26.	49.	50.
	11:52	132.	7.	26.	49.	50.
	11:53	132.	7.	26.	49.	50.
	11:54	132.	7.	26.	49.	50.

Plant Name: PIPP

General Average Report

Reporting Period: 07/16/1999 to 07/16/1999

Site Name: PIPPF4P4

Data Averaging Type: 1m

Time of Report: 11/01/99 11:55

Rolling Average Interval: 1

Date	Time	F4MEG (MEGAWATT)	U1MEG (MEGAWATT)	U2MEG (MEGAWATT)	U3MEG (MEGAWATT)	U4MEG (MEGAWATT)
07/16/99	13:10	136.	13.	25.	48.	49.
	13:11	136.	14.	25.	48.	49.
	13:12	136.	14.	25.	48.	49.
	13:13	136.	14.	25.	48.	49.
	13:14	136.	14.	25.	48.	49.
	13:15	137.	14.	25.	48.	49.
	13:16	137.	15.	25.	48.	49.
	13:17	137.	15.	25.	48.	49.
	13:18	137.	15.	26.	48.	49.
	13:19	138.	15.	26.	48.	49.
	13:20	138.	15.	26.	48.	49.
	13:21	138.	15.	26.	48.	49.
	13:22	138.	15.	26.	48.	49.
	13:23	138.	15.	26.	48.	49.
	13:24	138.	15.	26.	48.	49.
	13:25	138.	15.	26.	48.	49.
	13:26	138.	15.	26.	48.	49.
	13:27	138.	15.	26.	48.	49.
	13:28	138.	15.	26.	48.	50.
	13:29	138.	15.	26.	48.	49.
	13:30	138.	15.	26.	48.	49.
	13:31	138.	15.	26.	48.	49.
	13:32	137.	15.	26.	48.	49.
	13:33	138.	15.	26.	48.	50.
	13:34	138.	15.	26.	48.	50.
	13:35	138.	15.	26.	48.	50.
	13:36	138.	15.	26.	48.	50.
	13:37	138.	15.	25.	48.	49.
	13:38	138.	15.	25.	48.	49.
	13:39	138.	15.	25.	48.	49.
	13:40	138.	15.	26.	48.	49.
	13:41	138.	16.	26.	48.	50.
	13:42	138.	16.	26.	48.	49.
	13:43	138.	16.	25.	48.	49.
	13:44	138.	16.	25.	48.	50.
	13:45	138.	16.	25.	48.	50.
	13:46	138.	16.	25.	48.	50.
	13:47	138.	16.	26.	48.	50.
	13:48	138.	15.	26.	48.	50.
	13:49	138.	16.	25.	48.	50.
	13:50	138.	15.	25.	48.	50.
	13:51	138.	15.	26.	48.	50.
	13:52	139.	15.	26.	48.	50.
	13:53	139.	15.	26.	48.	50.
	13:54	139.	15.	26.	48.	50.
	13:55	139.	15.	26.	48.	50.
	13:56	139.	16.	26.	48.	50.
	13:57	139.	15.	26.	48.	50.
	13:58	139.	15.	26.	48.	50.
	13:59	138.	15.	26.	48.	50.

Plant Name: PIPP

General Average Report

Reporting Period: 07/16/1999 to 07/16/1999

Site Name: PIPPF4P4

Data Averaging Type: 1m

Time of Report: 11/01/99 11:55

Rolling Average Interval: 1

Date	Time	F4MEG (MEGAWATT)	U1MEG (MEGAWATT)	U2MEG (MEGAWATT)	U3MEG (MEGAWATT)	U4MEG (MEGAWATT)
07/16/99	14:00	138.	15.	25.	48.	49.
	14:01	138.	15.	26.	48.	49.
	14:02	138.	15.	26.	48.	49.
	14:03	138.	15.	26.	48.	49.
	14:04	138.	15.	26.	48.	50.
	14:05	138.	15.	25.	48.	50.
	14:06	138.	15.	26.	48.	49.
	14:07	138.	15.	25.	48.	49.
	14:08	138.	15.	25.	48.	49.
	14:09	138.	15.	26.	48.	49.
	14:10	138.	15.	26.	48.	49.
	14:11	138.	15.	26.	48.	49.
	14:12	138.	15.	26.	48.	49.
	14:13	138.	15.	26.	48.	49.
	14:14	138.	15.	26.	48.	49.
	14:15	138.	15.	26.	48.	49.
	14:16	138.	15.	26.	48.	49.
	14:17	138.	15.	26.	48.	49.
	14:18	138.	15.	26.	48.	49.
	14:19	138.	15.	26.	48.	49.
	14:20	138.	15.	25.	48.	49.
	14:21	138.	15.	25.	48.	49.
	14:22	138.	15.	25.	48.	49.
	14:23	138.	15.	25.	48.	50.
	14:24	138.	15.	25.	48.	49.
	14:25	138.	16.	25.	48.	49.
	14:26	138.	16.	26.	48.	49.
	14:27	138.	16.	26.	48.	49.
	14:28	138.	16.	26.	48.	49.
	14:29	138.	16.	26.	48.	49.
	14:30	138.	16.	26.	48.	49.
	14:31	138.	16.	26.	48.	49.
	14:32	138.	16.	26.	48.	49.
	14:33	138.	16.	26.	48.	49.
	14:34	138.	16.	26.	48.	49.
	14:35	138.	16.	26.	48.	49.
	14:36	138.	16.	25.	48.	49.
	14:37	138.	16.	25.	48.	49.
	14:38	138.	16.	25.	48.	49.
	14:39	138.	16.	25.	48.	49.
	14:40	138.	16.	25.	48.	50.
	14:41	139.	16.	25.	48.	50.
	14:42	139.	16.	25.	48.	50.
	14:43	139.	16.	25.	48.	50.
	14:44	139.	16.	26.	48.	50.
	14:45	139.	16.	26.	48.	50.
	14:46	139.	16.	26.	48.	49.
	14:47	139.	16.	26.	48.	49.
	14:48	139.	16.	26.	48.	49.
	14:49	139.	16.	26.	48.	49.

Plant Name: PIPP

General Average Report

Reporting Period: 07/16/1999 to 07/16/1999

Site Name: PIPPF4P4

Time of Report: 11/01/99 11:55

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	F4MEG (MEGAWATT)	U1MEG (MEGAWATT)	U2MEG (MEGAWATT)	U3MEG (MEGAWATT)	U4MEG (MEGAWATT)
07/16/99	14:50	139.	16.	26.	48.	49.
	14:51	139.	16.	26.	48.	49.
	14:52	139.	16.	26.	48.	49.
	14:53	139.	16.	26.	48.	49.
	14:54	139.	16.	26.	48.	49.
	14:55	139.	16.	26.	48.	49.
	14:56	139.	16.	26.	48.	49.
	14:57	139.	16.	26.	48.	50.
	14:58	139.	16.	26.	48.	50.
	14:59	139.	16.	26.	48.	50.
	15:00	139.	16.	26.	48.	50.
	15:01	139.	16.	26.	48.	49.
	15:02	139.	16.	26.	48.	49.
	15:03	139.	16.	26.	48.	49.
	15:04	139.	16.	26.	48.	49.
	15:05	139.	16.	26.	48.	49.
	15:06	139.	16.	26.	48.	49.
	15:07	139.	16.	26.	48.	49.
	15:08	139.	16.	26.	48.	49.
	15:09	139.	16.	26.	48.	49.
	15:10	139.	16.	26.	48.	50.
	15:11	139.	16.	26.	48.	50.
	15:12	139.	16.	25.	48.	50.
	15:13	139.	16.	25.	48.	50.
	15:14	139.	16.	25.	48.	49.
	15:15	138.	16.	25.	48.	49.
	15:16	138.	16.	25.	48.	49.
	15:17	138.	16.	25.	48.	49.
	15:18	138.	16.	25.	48.	49.
	15:19	138.	16.	25.	48.	49.
	15:20	139.	16.	26.	48.	49.
	15:21	139.	16.	26.	48.	49.
	15:22	139.	16.	26.	48.	49.
	15:23	139.	16.	26.	48.	49.
	15:24	139.	16.	26.	48.	49.
	15:25	139.	16.	26.	48.	49.
	15:26	138.	16.	25.	48.	49.
	15:27	139.	16.	25.	48.	49.
	15:28	139.	16.	25.	48.	49.
	15:29	139.	16.	25.	48.	49.
	15:30	139.	16.	26.	48.	49.
	15:31	139.	16.	26.	48.	49.
	15:32	139.	16.	26.	48.	49.
	15:33	139.	16.	26.	48.	49.
	15:34	139.	16.	25.	48.	49.
	15:35	139.	16.	26.	48.	49.
	15:36	139.	16.	26.	48.	49.
	15:37	139.	16.	26.	48.	49.
	15:38	139.	16.	26.	48.	49.
	15:39	139.	16.	26.	48.	49.

Plant Name: PIPP

General Average Report

Reporting Period: 07/16/1999 to 07/16/1999

Site Name: PIPPF4P4

Time of Report: 11/01/99 11:55

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	F4MEG (MEGAWATT)	U1MEG (MEGAWATT)	U2MEG (MEGAWATT)	U3MEG (MEGAWATT)	U4MEG (MEGAWATT)
07/16/99	15:40	139.	16.	26.	48.	49.
	15:41	139.	16.	26.	48.	49.
Average =		138.	16.	26.	48.	49.
Maximum =		139.	16.	26.	48.	50.
Minimum =		136.	13.	25.	48.	49.
Possible Values =		152	152	152	152	152
Included Values =		152	152	152	152	152
Total =		21012.	2365.	3885.	7258.	7504.

* - excluded values (missing, OOC, invalid, suspect)
< - missing
T - out-of-control
I - invalid
S - suspect
V - invalid for state
H - exceedance
F - stack not operating
B - invalid (PADER)
U - missing data substituted
-999 - missing value
-888 - value could not be calculated

UNITS 1-4 CEMS DATA

Plant Name: PIPP

General Average Report

Reporting Period: 07/16/1999 to 07/16/1999

Site Name: PIPPF4P4

Time of Report: 10/18/99 09:22

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	F4CPCO2 (PERCENT)	F4CPNOX (PPM)	F4CPSO2 (PPM)	F4MEG (MEGAWATT)	F4STEMP (DEGFAHRE)	F4CO (PPM)	F4AFLOW (KACFM)	F4OPC (PERCENT)
07/16/99	07:20	11.4	297.4	504.2	125.	315.0	19.4	513.0	2.
	07:21	11.4	299.2	504.2	125.	315.6	18.8	513.0	2.
	07:22	11.3	302.0	502.2	125.	316.3	19.5	512.9	2.
	07:23	11.3	302.7	502.3	124.	316.4	21.9	511.9	2.
	07:24	11.3	302.9	504.5	124.	316.8	20.5	511.7	2.
	07:25	11.3	305.1	506.2	124.	316.8	19.9	511.8	1.
	07:26	11.3	304.0	506.9	124.	316.6	19.5	511.9	1.
	07:27	11.3	303.1	504.6	124.	316.6	20.3	511.9	1.
	07:28	11.3	302.7	505.8	125.	316.4	20.6	512.0	1.
	07:29	11.4	302.4	510.1	125.	316.3	19.3	512.1	1.
	07:30	11.4	299.5	508.9	125.	316.2	19.1	512.2	1.
	07:31	11.4	300.4	506.2	125.	316.2	17.6	512.2	1.
	07:32	11.3	302.4	505.7	125.	316.2	17.8	512.2	1.
	07:33	11.3	303.6	504.4	125.	316.3	17.4	512.3	1.
	07:34	11.3	303.3	504.6	125.	316.4	16.4	512.4	1.
	07:35	11.4	300.6	505.7	125.	316.6	16.5	512.4	1.
	07:36	11.4	300.6	505.4	125.	316.6	16.2	512.6	1.
	07:37	11.4	302.1	503.2	124.	316.3	15.5	512.7	1.
	07:38	11.3	302.7	502.7	124.	316.2	15.9	513.0	1.
	07:39	11.3	303.5	504.5	124.	317.5	16.6	513.3	1.
	07:40	11.3	303.6	505.2	124.	318.0	16.8	514.1	1.
	07:41	11.3	303.7	504.5	124.	318.0	16.8	515.6	1.
	07:42	11.4	301.6	503.1	124.	317.6	14.8	514.5	1.
	07:43	11.4	300.9	504.9	125.	317.6	14.8	514.4	1.
	07:44	11.4	301.1	507.2	125.	317.4	14.9	514.5	1.
	07:45	11.4	302.0	507.9	125.	317.2	15.3	514.7	1.
	07:46	11.4	302.4	507.7	125.	317.2	16.7	516.2	1.
	07:47	11.4	302.7	507.8	124.	317.2	14.3	515.3	1.
	07:48	11.4	301.9	507.8	124.	317.3	16.3	514.4	1.
	07:49	11.3	305.3	504.0	124.	317.7	15.9	514.1	1.
	07:50	11.3	305.7	507.0	124.	317.7	14.7	514.4	1.
	07:51	11.4	305.0	506.3	124.	318.2	16.1	514.4	1.
	07:52	11.4	303.4	505.7	125.	318.2	15.6	514.3	1.
	07:53	11.4	298.9	507.4	124.	318.3	17.5	514.1	1.
	07:54	11.4	301.2	507.4	124.	318.3	19.1	514.1	1.
	07:55	11.4	302.7	506.9	124.	317.9	19.2	513.8	1.
	07:56	11.3	304.9	505.7	124.	317.7	16.4	513.9	1.
	07:57	11.3	304.0	505.6	124.	317.7	15.9	514.1	1.
	07:58	11.3	304.2	508.6	123.	317.7	15.3	514.0	1.
	07:59	11.4	305.1	510.1	123.	317.7	16.4	513.6	1.
	08:00	11.3	305.1	508.7	124.	317.7	16.6	512.2	1.
	08:01	11.4	303.4	510.0	124.	317.7	15.7	512.1	1.
	08:02	11.4	301.3	509.3	125.	318.2	17.2	512.1	1.
	08:03	11.4	301.6	507.0	125.	318.9	16.3	512.0	1.
	08:04	11.4	303.8	508.2	125.	319.0	17.5	512.0	1.
	08:05	11.4	302.7	508.7	125.	319.4	15.8	511.9	1.
	08:06	11.4	302.1	509.2	125.	319.4	15.5	511.9	1.
	08:07	11.4	302.0	506.4	125.	318.8	16.0	511.8	1.
	08:08	11.3	302.9	506.6	125.	318.8	14.4	511.8	1.
	08:09	11.3	303.5	506.6	125.	318.8	15.3	511.9	1.

Plant Name: PIPP

General Average Report

Reporting Period: 07/16/1999 to 07/16/1999

Site Name: PIPPF4P4

Time of Report: 10/18/99 09:22

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	F4CPCO2 (PERCENT)	F4CPNOX (PPM)	F4CPSO2 (PPM)	F4MEG (MEGAWATT)	F4STEMP (DEGFAHRE)	F4CO (PPM)	F4AFLOW (KACFM)	F4OPC (PERCENT)
07/16/99	08:10	11.3	303.5	504.4	124.	319.1	13.3	512.0	1.
	08:11	11.3	302.6	503.2	124.	319.1	12.5	512.1	1.
	08:12	11.3	302.2	505.2	124.	319.8	13.9	512.2	1.
	08:13	11.3	302.7	504.3	125.	319.9	12.6	512.3	1.
	08:14	11.4	302.1	501.5	125.	319.4	13.6	512.3	1.
	08:15	11.4	299.2	502.4	125.	319.2	13.0	512.5	1.
	08:16	11.5	296.4	502.2	125.	319.3	13.4	512.6	1.
	08:17	11.5	296.2	503.8	125.	318.8	14.8	512.8	1.
	08:18	11.5	298.5	504.8	125.	318.8	17.7	513.3	1.
	08:19	11.5	298.7	506.4	125.	319.2	14.9	513.6	1.
	08:20	11.4	302.0	504.0	125.	319.4	15.0	513.5	1.
	08:21	11.4	302.5	501.6	125.	319.5	17.2	513.3	1.
	08:22	11.3	302.8	499.2	124.	319.6	14.8	513.7	1.
	08:23	11.4	301.2	497.4	124.	319.4	14.6	514.2	1.
	08:24	11.4	302.0	496.6	124.	318.8	14.0	514.7	1.
	08:25	11.4	304.2	498.3	124.	318.8	13.7	515.8	1.
	08:26	11.3	303.4	499.1	124.	319.4	12.9	516.5	1.
	08:27	11.3	304.6	498.4	124.	319.4	15.2	514.3	2.
	08:28	11.3	306.4	498.7	124.	319.1	15.3	513.7	2.
	08:29	11.3	307.6	500.2	124.	318.9	20.1	514.1	2.
	08:30	11.4	307.3	504.3	124.	320.2	25.4	514.9	2.
	08:31	11.5	305.2	505.0	125.	320.6	77.4	515.9	2.
	08:32	11.5	302.6	501.5	125.	319.9	77.8	521.0	2.
	08:33	11.5	302.1	500.5	125.	318.9	54.8	520.2	2.
	08:34	11.6	300.2	502.7	125.	319.2	45.6	522.1	2.
	08:35	11.5	302.6	500.4	125.	319.7	40.7	518.2	2.
	08:36	11.5	302.1	494.9	125.	319.7	37.8	517.7	2.
	08:37	11.5	300.2	495.4	125.	320.3	37.8	518.3	2.
	08:38	11.5	301.5	495.6	125.	320.6	37.1	518.6	2.
	08:39	11.5	303.8	493.5	125.	320.7	39.9	520.2	2.
	08:40	11.4	305.6	493.1	124.	320.9	39.6	523.5	2.
	08:41	11.5	305.1	492.3	125.	320.8	40.0	525.0	2.
	08:42	11.4	306.0	493.6	125.	319.9	40.3	517.8	2.
	08:43	11.5	304.4	494.6	125.	319.9	38.4	515.7	2.
	08:44	11.5	302.8	497.4	125.	320.3	36.2	515.8	1.
	08:45	11.6	302.3	496.8	125.	320.3	37.4	518.6	1.
	08:46	11.5	301.4	495.3	126.	320.4	37.1	517.7	1.
	08:47	11.6	301.9	493.6	126.	320.5	36.4	515.9	1.
	08:48	11.5	298.8	491.8	125.	320.7	38.4	518.6	1.
	08:49	11.5	301.8	493.1	125.	321.1	39.0	524.2	1.
	08:50	11.4	304.0	491.8	124.	320.9	38.1	520.8	1.
	08:51	11.4	306.0	491.6	123.	320.6	35.6	519.9	1.
	08:52	11.3	307.0	492.0	123.	320.8	36.9	519.1	1.
	08:53	11.3	309.6	493.5	122.	321.5	38.4	519.4	1.
	08:54	11.3	311.1	496.6	122.	321.5	38.8	518.3	1.
	08:55	11.3	311.2	497.1	122.	321.4	40.3	518.3	1.
	08:56	11.3	310.9	497.6	122.	321.4	40.5	518.4	1.
	08:57	11.4	309.2	499.6	123.	321.1	43.0	518.7	1.
	08:58	11.5	307.0	499.6	122.	320.6	43.9	518.3	1.
	08:59	11.5	309.8	499.1	122.	320.8	43.2	517.8	1.

Plant Name: PIPP

General Average Report

Reporting Period: 07/16/1999 to 07/16/1999

Site Name: PIPPF4P4 | Time of Report: 10/18/99 09:22

Data Averaging Type: 1m | Rolling Average Interval: 1

Date	Time	F4CPCO2 (PERCENT)	F4CPNOX (PPM)	F4CPSO2 (PPM)	F4MEG (MEGAWATT)	F4STEMP (DEGFAHRE)	F4CO (PPM)	F4AFLOW (KACFM)	F4OPC (PERCENT)
07/16/99	09:00	11.3	314.5	497.5	122.	322.0	42.6	517.2	1.
	09:01	11.3	316.1	497.7	121.	322.0	42.3	517.0	1.
	09:02	11.2	315.3	496.4	121.	322.0	39.0	516.5	1.
	09:03	11.2	314.3	496.2	121.	322.0	37.5	516.3	1.
	09:04	11.2	313.0	497.8	122.	322.3	38.4	515.1	1.
	09:05	11.3	309.1	501.0	122.	322.5	38.5	515.0	1.
	09:06	11.4	307.6	502.5	123.	322.2	36.6	515.0	1.
	09:07	11.4	306.8	500.1	123.	322.0	38.7	514.9	1.
	09:08	11.5	304.4	498.4	124.	322.1	36.5	514.4	1.
	09:09	11.5	305.2	497.4	125.	322.3	39.0	514.2	1.
	09:10	11.5	302.2	494.6	125.	322.4	37.4	514.2	1.
	09:11	11.5	302.3	497.0	125.	322.8	35.3	514.2	1.
	09:12	11.5	303.8	497.3	125.	322.8	37.2	514.2	1.
	09:13	11.4	306.0	495.4	125.	321.8	36.6	514.2	1.
	09:14	11.5	305.5	497.1	125.	321.5	35.7	514.2	1.
	09:15	11.4	306.6	496.9	124.	321.7	36.6	514.3	1.
	09:16	11.3	307.1	497.1	124.	321.7	35.8	514.2	1.
	09:17	11.4	305.1	496.3	124.	321.8	37.4	514.2	1.
	09:18	11.4	305.0	497.3	124.	321.9	38.0	514.3	1.
	09:19	11.4	306.5	496.9	124.	321.8	41.0	514.3	1.
	09:20	11.5	305.7	497.5	124.	321.5	42.6	514.4	1.
	09:21	11.5	302.2	498.4	124.	321.5	41.8	514.5	1.
	09:22	11.6	302.8	497.2	124.	320.8	43.5	514.6	1.
	09:23	11.5	302.7	494.2	124.	320.8	40.7	514.6	1.
	09:24	11.5	302.5	491.7	124.	321.7	37.6	514.7	1.
	09:25	11.5	302.8	493.2	124.	321.9	38.0	514.8	1.
	09:26	11.5	304.2	495.0	124.	322.3	36.3	514.9	1.
	09:27	11.4	305.1	496.0	124.	322.9	36.1	515.1	1.
	09:28	11.4	303.3	497.2	124.	322.7	36.1	515.3	1.
	09:29	11.5	304.0	498.5	124.	322.0	35.9	515.4	1.
	09:30	11.4	302.5	497.9	124.	322.0	37.3	515.4	1.
	09:31	11.5	304.5	497.9	124.	322.3	40.0	515.4	1.
	09:32	11.5	303.9	498.1	125.	322.3	40.8	515.4	1.
	09:33	-999F	-999F	-999F	-999F	-999F	-999F	-999F	-999F
	09:34	-999F	-999F	-999F	-999F	-999F	-999F	-999F	-999F
	09:35	-999F	-999F	-999F	-999F	-999F	-999F	-999F	-999F
	09:36	-999F	-999F	-999F	-999F	-999F	-999F	-999F	-999F
	09:37	-999F	-999F	-999F	-999F	-999F	-999F	-999F	-999F
Average =		11.4	303.9	501.1	124.	319.5	27.6	514.9	1.
Maximum =		11.6	316.1	510.1	126.	322.9	77.8	525.0	2.
Minimum =		11.2	296.2	491.6	121.	315.0	12.5	511.7	1.
Possible Values =		138	138	138	138	138	138	138	138
Included Values =		133	133	133	133	133	133	133	133
Total =		1516.1	40414.2	66643.7	16524.	42495.5	3666.8	68486.7	176.

* - excluded values (missing, OOC, invalid, suspect)
< - missing
T - out-of-control
I - invalid
S - suspect
V - invalid for state
H - exceedance
F - stack not operating
B - invalid (PADER)
U - missing data substituted
-999 - missing value

Plant Name: PIPP

General Average Report

Reporting Period: 07/16/1999 to 07/16/1999

Site Name: PIPPF4P4

Data Averaging Type: 1m

Time of Report: 10/18/99 09:28

Rolling Average Interval: 1

Date	Time	F4CPCO2 (PERCENT)	F4CPNOX (PPM)	F4CPSO2 (PPM)	F4MEG (MEGAWATT)	F4STEMP (DEGFAHRE)	F4CO (PPM)	F4AFLOW (KACFM)	F4OPC (PERCENT)
07/16/99	10:15	11.6	295.1	508.5	125.	324.5	17.4	515.5	1.
	10:16	11.6	297.0	506.1	125.	324.3	17.6	515.3	1.
	10:17	11.6	299.7	505.5	125.	325.6	17.5	515.2	1.
	10:18	11.6	297.0	506.7	125.	325.8	17.6	515.2	1.
	10:19	11.6	298.5	505.3	125.	325.8	16.6	515.3	1.
	10:20	11.5	298.6	505.8	125.	325.4	16.6	515.0	1.
	10:21	11.6	297.9	506.1	124.	325.4	16.7	514.8	1.
	10:22	11.6	295.9	504.6	124.	325.0	17.8	514.8	1.
	10:23	11.6	298.6	506.9	124.	324.9	16.4	514.8	1.
	10:24	11.6	299.4	507.6	124.	325.6	16.4	514.8	1.
	10:25	11.6	299.5	507.9	124.	326.0	17.4	514.8	1.
	10:26	11.5	300.3	508.2	124.	325.8	18.4	514.7	1.
	10:27	11.6	298.7	509.7	124.	325.5	16.7	514.7	1.
	10:28	11.6	302.1	512.8	124.	325.5	20.3	514.2	1.
	10:29	11.5	301.3	510.3	124.	325.7	18.2	514.1	1.
	10:30	11.6	301.1	510.6	124.	325.7	18.7	514.2	1.
	10:31	11.6	302.3	512.7	124.	326.3	18.5	514.5	1.
	10:32	11.6	301.7	511.6	124.	326.3	17.2	514.4	1.
	10:33	11.6	303.2	510.6	124.	326.1	18.7	514.4	1.
	10:34	11.5	303.5	512.1	124.	326.1	18.3	514.5	1.
	10:35	11.6	306.4	513.9	124.	326.6	18.2	514.5	1.
	10:36	11.5	306.1	512.4	124.	326.9	18.0	514.4	1.
	10:37	11.6	303.2	513.1	124.	326.4	16.7	514.5	1.
	10:38	11.6	302.1	513.4	124.	326.0	18.1	514.7	2.
	10:39	11.6	302.6	514.4	124.	326.0	18.3	515.0	1.
	10:40	11.6	303.2	514.1	124.	326.3	18.1	515.3	1.
	10:41	11.6	302.4	514.1	124.	326.3	20.2	515.8	1.
	10:42	11.6	301.7	514.2	124.	326.3	18.7	516.4	1.
	10:43	11.6	302.6	513.2	124.	326.3	19.5	519.9	1.
	10:44	11.6	303.8	512.1	124.	326.7	19.4	520.2	1.
	10:45	11.5	305.0	512.6	124.	327.0	19.1	516.9	1.
	10:46	11.5	303.5	514.7	124.	327.0	18.6	516.5	1.
	10:47	11.6	305.3	517.4	124.	326.7	19.1	516.3	1.
	10:48	11.6	304.8	516.2	124.	326.7	20.0	516.4	1.
	10:49	11.6	304.4	514.9	124.	326.9	19.6	516.4	1.
	10:50	11.6	303.1	514.2	124.	326.9	19.7	516.6	1.
	10:51	11.5	304.0	510.2	124.	326.5	18.3	521.5	1.
	10:52	11.6	301.8	513.2	124.	326.1	19.6	521.4	1.
	10:53	11.6	301.3	515.2	124.	326.1	17.7	528.1	1.
	10:54	11.6	302.2	513.9	124.	326.0	18.7	518.3	1.
	10:55	11.6	302.2	514.6	124.	326.0	19.2	518.8	1.
	10:56	11.6	302.5	511.4	124.	326.7	19.5	516.5	1.
	10:57	11.5	302.7	512.2	124.	326.7	22.7	522.4	1.
	10:58	11.6	304.1	515.1	124.	325.8	21.4	517.7	1.
	10:59	11.5	304.2	512.9	124.	325.8	20.6	514.8	1.
	11:00	11.5	305.9	512.7	124.	326.0	19.8	514.6	1.
	11:01	11.5	305.3	514.7	124.	326.4	20.4	514.5	1.
	11:02	11.6	304.8	514.7	124.	326.7	20.8	514.5	1.
	11:03	11.6	303.2	513.7	124.	327.0	20.7	514.6	1.
	11:04	11.5	303.8	511.7	124.	327.2	19.4	516.0	1.

Plant Name: PIPP

General Average Report

Reporting Period: 07/16/1999 to 07/16/1999

Site Name: PIPPF4P4

Time of Report: 10/18/99 09:28

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	F4CPCO2 (PERCENT)	F4CPNOX (PPM)	F4CPSO2 (PPM)	F4MEG (MEGAWATT)	F4STEMP (DEGFAHRE)	F4CO (PPM)	F4AFLOW (KACFM)	F4OPC (PERCENT)
07/16/99	11:05	11.6	301.5	513.1	125.	327.3	19.5	516.4	1.
	11:06	11.7	300.0	510.2	125.	326.9	19.1	515.7	1.
	11:07	11.6	300.6	504.9	125.	325.9	18.0	514.1	1.
	11:08	11.7	300.2	504.2	125.	325.9	18.6	513.7	1.
	11:09	11.7	299.3	506.2	125.	325.6	19.4	513.6	1.
	11:10	11.6	301.6	507.2	125.	325.6	17.4	513.6	1.
	11:11	11.6	303.4	508.9	124.	326.1	17.2	513.6	1.
	11:12	11.6	304.0	509.6	125.	326.1	17.5	513.5	1.
	11:13	11.6	302.1	506.7	125.	327.3	16.5	513.5	1.
	11:14	11.7	299.8	506.7	125.	327.5	17.3	513.6	1.
	11:15	11.7	301.9	502.7	125.	326.6	17.1	513.7	1.
	11:16	11.6	301.8	501.7	124.	326.6	16.7	514.2	1.
	11:17	11.7	303.4	503.2	124.	326.9	17.7	521.7	1.
	11:18	11.7	305.3	504.6	124.	327.0	16.6	517.8	1.
	11:19	11.7	304.4	502.9	124.	326.9	18.0	514.9	1.
	11:20	11.7	304.4	498.9	124.	326.9	17.3	514.3	1.
	11:21	11.6	303.2	496.2	124.	326.9	16.2	514.1	1.
	11:22	11.6	303.6	497.1	124.	327.9	16.7	514.0	1.
	11:23	11.7	301.5	495.1	124.	327.9	18.6	514.0	1.
	11:24	11.6	304.7	493.9	124.	327.9	19.5	514.1	1.
	11:25	11.6	304.3	496.6	124.	327.9	19.6	514.2	1.
	11:26	11.6	307.1	498.7	124.	328.5	20.3	514.4	1.
	11:27	11.6	307.1	499.7	124.	328.7	18.2	515.1	1.
	11:28	11.5	306.9	498.7	124.	328.7	16.4	520.6	1.
	11:29	11.6	304.5	498.2	124.	328.6	17.9	515.5	1.
	11:30	11.6	306.5	501.1	123.	328.6	18.2	512.7	1.
	11:31	11.6	308.4	501.7	123.	328.6	17.8	512.5	2.
	11:32	11.5	308.8	503.4	123.	328.6	17.5	512.3	2.
	11:33	11.5	308.8	504.2	123.	328.3	18.6	512.2	2.
	11:34	11.6	307.7	507.1	124.	328.0	20.3	512.2	2.
	11:35	11.6	306.4	505.4	124.	328.0	21.1	512.1	2.
	11:36	11.6	306.1	503.4	126.	328.4	21.7	512.1	2.
	11:37	11.6	303.5	503.7	126.	328.7	20.6	512.1	2.
	11:38	11.7	304.1	504.9	126.	329.1	23.4	512.1	2.
	11:39	11.6	306.1	505.3	126.	329.8	23.4	512.0	2.
	11:40	11.6	307.2	505.7	126.	329.4	24.2	512.0	2.
	11:41	11.6	312.6	506.9	126.	328.9	24.9	512.0	2.
	11:42	11.7	316.5	512.2	126.	328.9	23.1	512.0	2.
	11:43	11.8	319.3	514.9	126.	328.8	21.6	512.0	2.
	11:44	11.8	320.2	514.7	126.	328.8	22.5	512.0	2.
	11:45	11.8	320.6	515.4	128.	328.5	23.5	512.0	2.
	11:46	11.8	322.3	516.6	129.	327.9	22.6	512.0	2.
	11:47	11.8	321.3	518.2	131.	327.9	24.6	512.0	2.
	11:48	11.9	321.8	516.4	131.	327.8	23.3	512.0	1.
	11:49	12.0	316.9	517.1	132.	327.8	21.5	512.0	1.
	11:50	12.0	316.6	518.1	132.	327.9	20.9	512.0	2.
	11:51	11.9	317.6	517.2	132.	327.9	20.6	512.1	2.
	11:52	11.9	318.2	518.4	132.	328.4	18.3	512.1	1.
	11:53	12.0	318.6	521.4	132.	328.4	19.9	512.2	1.
	11:54	12.0	320.5	524.4	132.	328.1	20.6	512.3	1.

Plant Name: PIPP

General Average Report

Reporting Period: 07/16/1999 to 07/16/1999

Site Name: PIPPF4P4

Data Averaging Type: 1m

Time of Report: 10/18/99 09:28

Rolling Average Interval: 1

Date	Time	F4CPCO2 (PERCENT)	F4CPNOX (PPM)	F4CPSO2 (PPM)	F4MEG (MEGAWATT)	F4STEMP (DEGFAHRE)	F4CO (PPM)	F4AFLOW (KACFM)	F4OPC (PERCENT)
07/16/99	11:55	12.1	319.6	522.7	132.	327.9	19.5	512.3	2.
	11:56	11.9	323.6	521.4	131.	328.1	18.3	512.4	2.
	11:57	11.8	327.0	519.9	130.	328.2	19.7	512.5	1.
	11:58	11.8	329.3	516.9	130.	328.4	16.9	512.5	1.
	11:59	11.8	327.0	518.6	130.	329.3	17.4	512.6	1.
	12:00	11.8	327.4	519.9	129.	329.3	19.2	512.7	2.
	12:01	11.8	328.0	519.2	130.	328.5	15.5	512.9	1.
	12:02	11.9	326.8	521.1	130.	328.5	16.0	513.0	1.
	12:03	12.0	327.0	524.9	130.	328.5	16.7	512.9	1.
	12:04	12.0	327.3	525.7	130.	328.4	17.4	512.9	1.
	12:05	11.9	328.0	523.9	130.	328.5	17.5	512.9	1.
	12:06	11.9	327.0	523.2	130.	329.2	16.8	512.9	1.
	12:07	11.9	328.2	524.4	130.	329.1	16.4	512.9	2.
	12:08	11.9	328.1	525.7	130.	327.8	17.2	512.9	1.
	12:09	11.9	329.6	525.2	130.	327.8	18.3	512.9	1.
	12:10	11.9	330.1	523.6	130.	328.0	17.1	512.8	1.
	12:11	11.9	328.4	525.9	130.	328.1	17.6	512.9	1.
	12:12	11.9	329.3	521.6	130.	328.5	18.2	512.9	1.
	12:13	11.9	328.9	521.7	130.	328.7	18.4	512.9	1.
	12:14	11.9	328.0	520.1	130.	328.7	17.2	512.9	2.
	12:15	12.0	327.8	520.1	130.	328.6	18.5	513.0	2.
	12:16	12.0	329.2	518.4	130.	328.6	17.8	512.9	1.
	12:17	12.0	329.4	521.4	130.	328.9	19.0	513.0	1.
	12:18	12.0	330.0	520.4	130.	328.9	18.0	513.0	1.
	12:19	12.0	329.7	524.1	131.	328.2	18.0	513.1	1.
	12:20	12.0	330.1	526.6	131.	328.1	18.9	513.1	1.
	12:21	12.2	327.4	527.6	131.	327.9	18.5	513.2	2.
	12:22	12.1	323.2	522.7	131.	327.8	21.4	513.2	1.
	12:23	12.1	324.9	521.7	131.	327.9	20.5	513.2	1.
	12:24	11.9	327.0	518.9	131.	329.3	18.6	513.2	1.
	12:25	11.9	327.0	520.2	132.	329.3	20.7	513.1	2.
	12:26	11.9	328.0	522.1	132.	329.8	22.3	513.1	1.
	12:27	12.0	333.0	527.2	132.	330.1	21.5	513.1	1.
	12:28	12.0	335.0	529.1	132.	329.5	20.0	513.1	1.
	12:29	11.9	331.2	526.1	132.	329.3	20.9	513.1	1.
	12:30	11.8	330.1	524.1	132.	329.3	21.2	513.1	1.
	12:31	11.8	333.6	525.4	133.	329.5	19.9	513.1	2.
	12:32	11.9	339.5	528.2	133.	329.4	19.9	513.1	2.
	12:33	12.0	340.3	532.9	133.	329.2	20.1	513.1	2.
	12:34	11.9	341.1	535.4	133.	329.2	18.9	513.2	2.
	12:35	12.0	339.9	535.2	133.	329.5	16.7	513.2	2.
	12:36	12.0	340.3	537.6	133.	329.6	17.5	513.2	2.
	12:37	12.1	340.5	538.6	134.	329.5	17.4	513.2	2.
	12:38	12.1	334.8	542.1	135.	329.5	16.1	513.1	2.
Average =		11.7	312.7	514.0	127.	327.5	19.0	514.3	1.
Maximum =		12.2	341.1	542.1	135.	330.1	24.9	528.1	2.
Minimum =		11.5	295.1	493.9	123.	324.3	15.5	512.0	1.
Possible Values =		144	144	144	144	144	144	144	144
Included Values =		144	144	144	144	144	144	144	144
Total =		1689.3	45034.8	74016.8	18271.	47161.5	2729.6	74055.8	203.

* - excluded values (missing, OOC, invalid, suspect)

< - missing

T - out-of-control

I - invalid

S - suspect

Plant Name: PIPP

General Average Report

Reporting Period: 07/16/1999 to 07/16/1999

Site Name: PIPPF4P4

Time of Report: 10/18/99 09:29

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	F4CPCO2 (PERCENT)	F4CPNOX (PPM)	F4CPSO2 (PPM)	F4MEG (MEGAWATT)	F4STEMP (DEGFAHRE)	F4CO (PPM)	F4AFLOW (KACFM)	F4OPC (PERCENT)
07/16/99	13:10	12.1	351.8	541.0	136.	331.5	20.5	514.2	2.
	13:11	12.1	347.8	542.2	136.	332.2	20.9	514.7	2.
	13:12	12.1	346.3	540.7	136.	332.1	19.9	514.9	2.
	13:13	12.1	349.0	542.5	136.	331.4	21.0	515.2	2.
	13:14	12.1	350.7	545.7	136.	331.4	19.6	515.4	1.
	13:15	12.2	351.5	544.6	137.	330.9	20.1	515.7	1.
	13:16	12.1	353.6	544.6	137.	330.8	18.7	517.7	1.
	13:17	12.1	352.9	546.2	137.	331.1	19.3	522.9	1.
	13:18	12.2	353.4	546.4	137.	331.1	17.9	520.4	1.
	13:19	12.2	354.9	545.8	138.	331.7	17.1	519.9	1.
	13:20	12.2	355.2	546.9	138.	332.5	16.0	519.5	1.
	13:21	12.2	358.1	548.1	138.	332.3	17.2	516.3	1.
	13:22	12.2	357.5	548.9	138.	331.6	18.1	515.8	1.
	13:23	12.2	359.4	546.9	138.	331.6	18.6	516.0	1.
	13:24	12.3	359.0	546.0	138.	331.5	16.4	515.5	1.
	13:25	12.2	358.4	543.2	138.	331.5	15.6	515.6	1.
	13:26	12.2	360.7	542.1	138.	331.7	16.1	515.9	1.
	13:27	12.2	361.4	545.7	138.	331.8	15.1	517.6	1.
	13:28	12.2	362.6	543.3	138.	331.1	16.1	508.7	1.
	13:29	12.1	361.8	544.7	138.	330.5	16.3	511.5	1.
	13:30	12.1	363.7	545.5	138.	330.9	15.4	512.3	1.
	13:31	12.1	364.5	546.7	138.	331.8	14.4	513.5	1.
	13:32	12.1	362.6	544.1	137.	331.8	16.0	517.9	1.
	13:33	12.2	363.6	546.6	138.	331.6	16.3	518.0	1.
	13:34	12.2	362.2	546.9	138.	331.6	14.2	519.5	1.
	13:35	12.2	361.2	546.7	138.	331.9	14.3	516.2	1.
	13:36	12.2	361.5	544.6	138.	331.9	14.2	514.7	1.
	13:37	12.2	362.1	544.2	138.	331.2	14.8	513.8	1.
	13:38	12.2	361.8	545.3	138.	331.0	15.5	513.6	1.
	13:39	12.1	364.4	547.4	138.	331.0	14.4	513.9	1.
	13:40	12.2	364.2	548.1	138.	331.0	13.6	514.1	1.
	13:41	12.1	364.8	546.7	138.	331.0	14.6	514.1	1.
	13:42	12.1	365.0	548.0	138.	331.0	13.4	514.5	1.
	13:43	12.2	366.3	547.7	138.	331.4	13.4	514.6	1.
	13:44	12.1	363.9	546.6	138.	332.1	14.2	514.6	1.
	13:45	12.1	366.4	547.4	138.	332.0	13.9	514.6	1.
	13:46	12.1	366.6	545.6	138.	330.9	15.2	514.6	1.
	13:47	12.1	364.8	546.6	138.	330.9	15.1	514.6	1.
	13:48	12.1	366.7	548.1	138.	331.7	13.9	514.7	1.
	13:49	12.1	365.6	549.2	138.	331.8	13.8	514.7	1.
	13:50	12.1	364.5	546.9	138.	331.1	17.0	514.6	1.
	13:51	12.1	367.2	548.4	138.	330.6	15.8	514.7	1.
	13:52	12.2	366.7	548.0	139.	330.5	14.0	514.8	1.
	13:53	12.1	366.0	546.1	139.	330.4	13.5	514.9	1.
	13:54	12.2	358.2	546.9	139.	330.4	14.9	515.0	1.
	13:55	12.2	357.7	544.7	139.	330.3	13.9	515.1	1.
	13:56	12.1	358.6	542.5	139.	330.4	13.6	515.2	1.
	13:57	12.1	361.5	541.7	139.	331.0	13.2	515.3	1.
	13:58	12.1	359.8	539.4	139.	331.0	13.6	515.4	1.
	13:59	12.0	362.3	538.9	138.	331.4	13.0	515.5	1.

Plant Name: PIPP

General Average Report

Reporting Period: 07/16/1999 to 07/16/1999

Site Name: PIPPF4P4

Data Averaging Type: 1m

Time of Report: 10/18/99 09:29

Rolling Average Interval: 1

Date	Time	F4CPCO2 (PERCENT)	F4CPNOX (PPM)	F4CPSO2 (PPM)	F4MEG (MEGAWATT)	F4STEMP (DEGFAHRE)	F4CO (PPM)	F4AFLOW (KACFM)	F4OPC (PERCENT)
07/16/99	14:00	12.0	362.7	540.6	138.	331.6	13.1	515.3	1.
	14:01	12.1	362.5	543.7	138.	330.2	14.1	515.4	1.
	14:02	12.0	362.4	543.0	138.	329.8	12.2	515.4	1.
	14:03	12.0	362.7	541.2	138.	330.8	14.2	515.6	1.
	14:04	12.0	362.1	541.7	138.	331.2	12.1	515.7	2.
	14:05	12.1	362.3	541.9	138.	331.3	14.7	515.7	2.
	14:06	12.1	361.8	542.4	138.	331.5	12.5	515.7	2.
	14:07	12.1	359.9	542.4	138.	331.1	11.8	515.7	2.
	14:08	12.1	363.4	542.7	138.	330.4	11.6	515.7	2.
	14:09	12.1	365.9	545.8	138.	330.4	12.9	515.8	2.
	14:10	12.1	364.9	545.7	138.	330.6	12.3	515.9	2.
	14:11	12.1	363.2	544.4	138.	330.6	10.9	515.9	2.
	14:12	12.1	362.6	545.5	138.	330.6	9.7	515.8	2.
	14:13	12.1	362.1	546.2	138.	330.6	11.1	516.0	2.
	14:14	12.1	358.9	545.7	138.	330.6	12.1	516.1	2.
	14:15	12.1	360.0	545.8	138.	330.6	10.4	516.2	2.
	14:16	12.1	360.7	548.2	138.	330.8	11.5	516.3	2.
	14:17	12.1	358.5	547.2	138.	331.0	10.1	516.3	2.
	14:18	12.1	356.7	546.3	138.	330.9	11.3	516.3	2.
	14:19	12.2	357.2	548.9	138.	330.9	9.2	516.2	2.
	14:20	12.2	355.8	548.6	138.	330.8	10.7	516.2	2.
	14:21	12.2	355.7	547.4	138.	330.7	10.1	516.2	2.
	14:22	12.1	357.7	546.1	138.	330.7	10.2	516.3	2.
	14:23	12.1	359.2	545.7	138.	331.3	11.5	516.3	2.
	14:24	12.1	360.3	545.7	138.	331.3	9.9	516.3	2.
	14:25	12.1	360.5	547.6	138.	331.2	9.6	516.5	2.
	14:26	12.2	359.3	549.2	138.	331.2	8.5	516.6	2.
	14:27	12.1	360.8	548.9	138.	330.3	11.0	516.6	1.
	14:28	12.1	362.9	549.3	138.	329.9	8.8	516.6	1.
	14:29	12.2	362.5	552.5	138.	330.3	10.2	516.6	1.
	14:30	12.1	360.0	548.9	138.	330.9	9.8	516.7	1.
	14:31	12.1	360.0	549.9	138.	330.5	8.9	516.8	1.
	14:32	12.2	360.2	551.6	138.	329.9	9.1	516.9	1.
	14:33	12.2	359.8	552.0	138.	330.0	9.5	517.1	1.
	14:34	12.2	361.3	554.3	138.	331.0	9.8	517.2	1.
	14:35	12.1	363.5	553.1	138.	331.2	9.1	516.9	1.
	14:36	12.1	362.9	552.9	138.	330.3	9.1	516.7	1.
	14:37	12.1	364.4	550.7	138.	330.3	7.6	516.8	1.
	14:38	12.1	364.7	551.1	138.	330.5	9.1	516.6	1.
	14:39	12.1	363.0	552.6	138.	330.7	7.4	517.5	1.
	14:40	12.1	362.3	551.0	138.	330.7	8.8	522.1	1.
	14:41	12.2	360.0	550.2	139.	330.7	9.4	520.6	1.
	14:42	12.2	356.9	552.3	139.	330.7	11.0	522.6	1.
	14:43	12.3	359.1	554.6	139.	330.7	9.3	514.2	1.
	14:44	12.3	361.8	554.9	139.	330.6	9.2	520.1	1.
	14:45	12.3	363.9	557.7	139.	329.6	8.7	522.2	1.
	14:46	12.3	364.4	558.4	139.	329.6	7.4	517.8	1.
	14:47	12.2	364.4	555.2	139.	328.9	9.8	517.4	1.
	14:48	12.2	365.7	551.7	139.	328.9	9.9	521.8	1.
	14:49	12.2	365.5	552.5	139.	330.2	8.9	522.0	1.

Plant Name: PIPP

General Average Report

Reporting Period: 07/16/1999 to 07/16/1999

Site Name: PIPPF4P4

Time of Report: 10/18/99 09:29

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	F4CPCO2 (PERCENT)	F4CPNOX (PPM)	F4CPSO2 (PPM)	F4MEG (MEGAWATT)	F4STEMP (DEGFAHRE)	F4CO (PPM)	F4AFLOW (KACFM)	F4OPC (PERCENT)
07/16/99	14:50	12.2	365.2	551.3	139.	330.6	8.8	516.9	1.
	14:51	12.2	362.9	553.0	139.	330.2	9.8	517.0	1.
	14:52	12.2	364.4	554.0	139.	329.6	9.6	517.4	1.
	14:53	12.2	362.9	555.0	139.	329.8	8.3	517.7	1.
	14:54	12.2	361.5	552.3	139.	330.4	7.8	517.9	1.
	14:55	12.2	360.8	553.2	139.	330.3	7.6	518.0	1.
	14:56	12.2	360.2	551.9	139.	330.1	6.9	518.2	1.
	14:57	12.2	359.9	550.6	139.	330.1	8.3	518.3	1.
	14:58	12.2	360.0	552.3	139.	328.7	9.0	518.6	1.
	14:59	12.3	359.7	553.4	139.	328.7	9.1	519.0	1.
	15:00	12.2	358.7	551.7	139.	329.0	7.4	519.1	1.
	15:01	12.3	360.1	552.4	139.	329.0	7.0	519.4	1.
	15:02	12.2	362.9	550.3	139.	329.5	7.7	520.2	1.
	15:03	12.2	362.7	550.8	139.	329.5	8.2	522.4	1.
	15:04	12.2	361.2	550.7	139.	328.9	5.2	527.5	1.
	15:05	12.2	360.9	551.4	139.	329.2	7.5	525.0	1.
	15:06	12.1	364.2	551.1	139.	330.7	8.1	518.3	1.
	15:07	12.2	362.2	552.9	139.	330.7	6.4	518.4	1.
	15:08	12.2	360.0	550.9	139.	329.9	5.3	522.1	1.
	15:09	12.2	361.2	550.6	139.	329.8	8.6	525.3	1.
	15:10	12.3	358.9	552.5	139.	329.0	6.8	528.6	1.
	15:11	12.3	358.7	551.3	139.	329.0	5.7	528.4	1.
	15:12	12.2	359.5	551.1	139.	328.9	4.9	528.3	1.
	15:13	12.2	361.4	551.1	139.	329.2	7.0	531.2	1.
	15:14	12.2	363.0	549.8	139.	330.4	9.1	527.6	1.
	15:15	12.2	363.4	550.6	138.	330.3	7.9	521.1	1.
	15:16	12.2	365.2	549.7	138.	329.6	5.6	520.3	1.
	15:17	12.1	364.7	551.9	138.	329.7	6.6	520.2	1.
	15:18	12.1	364.7	552.8	138.	329.8	8.1	520.0	1.
	15:19	12.2	362.3	555.6	138.	329.9	7.5	527.5	1.
	15:20	12.2	360.3	555.9	139.	330.3	6.6	525.9	1.
	15:21	12.2	359.7	556.5	139.	330.1	6.8	521.4	1.
	15:22	12.3	358.9	555.4	139.	329.3	10.5	525.4	1.
	15:23	12.2	359.2	555.5	139.	329.3	7.0	524.0	1.
	15:24	12.2	359.7	552.8	139.	329.3	8.1	524.4	1.
	15:25	12.2	361.8	552.6	139.	329.5	8.3	522.5	1.
	15:26	12.2	361.4	552.5	138.	330.1	5.4	517.4	1.
	15:27	12.2	361.7	551.6	139.	330.1	6.2	518.2	1.
	15:28	12.2	361.9	550.7	139.	329.8	7.5	517.3	1.
	15:29	12.2	362.4	552.4	139.	329.8	7.7	517.3	1.
	15:30	12.2	363.0	552.9	139.	330.0	9.2	518.2	1.
	15:31	12.2	363.7	552.1	139.	330.1	6.3	519.5	1.
	15:32	12.2	364.2	551.0	139.	330.8	7.2	520.3	1.
	15:33	12.2	363.5	551.8	139.	331.0	6.1	520.7	1.
	15:34	12.2	365.0	550.4	139.	331.0	6.1	521.6	1.
	15:35	12.2	364.2	549.3	139.	331.0	6.5	522.0	1.
	15:36	12.2	362.9	550.1	139.	331.0	6.3	522.1	1.
	15:37	12.2	361.2	548.3	139.	331.0	7.2	521.4	1.
	15:38	12.2	361.6	548.9	139.	331.0	7.3	520.6	1.
	15:39	12.2	361.9	550.3	139.	330.9	6.7	520.2	1.

Plant Name: PIPP

General Average Report

Reporting Period: 07/16/1999 to 07/16/1999

Site Name: PIPPF4P4

Time of Report: 10/18/99 09:29

Data Averaging Type: 1m

Rolling Average Interval: 1

Date	Time	F4CPCO2 (PERCENT)	F4CPNOX (PPM)	F4CPSO2 (PPM)	F4MEG (MEGAWATT)	F4STEMP (DEGFAHRE)	F4CO (PPM)	F4AFLOW (KACFM)	F4OPC (PERCENT)
07/16/99	15:40	12.2	361.9	548.0	139.	330.9	6.6	520.6	1.
	15:41	12.2	361.9	547.8	139.	331.2	7.7	520.9	1.
Average =		12.2	361.1	548.6	138.	330.6	11.2	518.0	1.
Maximum =		12.3	367.2	558.4	139.	332.5	21.0	531.2	2.
Minimum =		12.0	346.3	538.9	136.	328.7	4.9	508.7	1.
Possible Values =		152	152	152	152	152	152	152	152
Included Values =		152	152	152	152	152	152	152	152
Total =		1848.3	54894.1	83389.9	21012.	50252.4	1696.9	78735.6	164.

* - excluded values (missing, OOC, invalid, suspect)
< - missing
T - out-of-control
I - invalid
S - suspect
V - invalid for state
H - exceedance
F - stack not operating
B - invalid (PADER)
U - missing data substituted
-999 - missing value
-888 - value could not be calculated

APPENDIX C
RAW TEST DATA

TABLE A-1
ONTARIO HYDRO METHOD DATA INPUTS
Unit 6 Inlet

Test Data			
Run number	1	2	3
Location		Unit 6 Inlet	
Date	7/14/99	7/15/99	7/15/99
Time period	1415-1640	0825-1050	1250-1510
Operator	TB	TB	TB
Process Data			
Unit Load, MW	74	75	75
Coal feed rate, lb/hr.	63700	64200	64000
Coal Btu content, Btu/lb. (as received)	12038	12132	12121
Heat Input, 10^6 Btu/hr (F-Factor)	761.3	818.0	749.1
Inputs For Calcs.			
Sq. rt. delta P	0.587660	0.57170	0.58184
Delta H	1.01500	1.16667	1.20583
Stack temp. (deg.F)	309.10	307.30	307.50
Meter temp. (deg.F)	112.50	109.00	116.52
Sample volume (act.)	68.275	71.469	74.243
Barometric press. (in.Hg)	29.47	29.50	29.56
Volume H_2O imp. (ml)	136.6	137.8	142.5
Weight chnge sil. gel (g)	13.3	13.4	14.3
% CO_2	13.7	13.8	13.4
% O_2	4.9	4.9	5.2
% N	81.4	81.3	81.4
Area of stack (sq.ft.)	151.96	151.96	151.96
Sample time (min.)	120.00	120.00	120.00
Static pressure (in.H_2O)	-8.50	-8.00	-8.00
Nozzle dia. (in.)	0.253	0.267	0.267
Meter box cal.	1.0090	1.0090	1.0090
Cp of pitot tube	0.84	0.84	0.84
Traverse points	12	12	12
Mercury Laboratory Report Data			
Particulate bound, ug	4.3410	4.9830	5.0130
Oxidized, ug	1.0000	1.2100	1.0350
Elemental, ug	0.2700	0.4150	0.2950
Total mercury catch, ug	5.6110	6.6080	6.3430

TABLE A-2
ONTARIO HYDRO METHOD DATA INPUTS
Unit 6 Outlet

Test Data				
Run number	1	2		3
Location		Unit 6 Outlet		
Date	7/14/99	7/15/99		7/15/99
Time period	1415-1641	0825-1055		1250-1512
Operator	JP	JP		JP
Process Data				
Unit Load, MW	74	75		75
Coal feed rate, lb/hr.	63700	64200		64000
Coal Btu content, Btu/lb. (as received)	12038	12132		12121
Heat Input, 10^6 Btu/hr (F-Factor)	761.3	818.0		749.1
Inputs For Calcs.				
Sq. rt. delta P	1.111320	1.15748		1.09899
Delta H	1.36583	1.82583		1.66000
Stack temp. (deg.F)	305.00	303.91		305.80
Meter temp. (deg.F)	90.25	96.95		89.10
Sample volume (act.)	75.662	86.342		81.939
Barometric press. (in.Hg)	29.47	29.50		29.56
Volume H_2O imp. (ml)	146.7	165.9		156.0
Weight chnge sil. gel (g)	14.7	17.0		18.5
% CO_2	12.6	12.9		12.8
% O_2	6.1	5.8		5.9
% N	81.3	81.3		81.3
Area of stack (sq.ft.)	63.62	63.62		63.62
Sample time (min.)	120.00	120.00		120.00
Static pressure (in.H_2O)	-1.90	-1.90		-1.90
Nozzle dia. (in.)	0.199	0.210		0.210
Meter box cal.	1.0098	1.0098		1.0098
Cp of pitot tube	0.84	0.84		0.84
Traverse points	12	12		12
Mercury Laboratory Report Data				
Particulate bound, ug	0.1000	0.0510	<	0.0100
Oxidized, ug	1.4300	1.9750		1.3800
Elemental, ug	1.1800	1.8150		1.5300
Total mercury catch, ug	2.7100	3.8410		2.9100

Note: Non-detects not included in Total mercury catch value.

TABLE A-3
ONTARIO HYDRO METHOD DATA INPUTS
Unit 1-4 Outlet

Test Data			
Run number	1	2	3
Location		Units 1-4 Outlet	
Date	7/16/99	7/16/99	7/16/99
Time period	0820-1037	1115-1338	1410-1641
Operator			
Process Data			
Unit Load, MW	124.0	127.0	138.0
Coal feed rate, lb/hr.	110000	111000	117000
Coal Btu content, Btu/lb.(as received)	12180	12180	12180
Heat Input, 10^6 Btu/hr (F-Factor)	1784	1638	1755
Inputs For Calcs.			
Sq. rt. delta P	1.674900	1.58912	1.69028
Delta H	1.13000	0.94000	0.98000
Stack temp. (deg.F)	285.40	298.60	310.30
Meter temp. (deg.F)	96.60	98.70	99.80
Sample volume (std.)	68.759	54.982	60.161
Barometric press. (in.Hg)	29.50	29.50	29.50
Volume H_2O imp. (ml)	117.9	93.8	110.3
Weight chnge sil. gel (g)	21.0	12.3	15.4
% CO_2	13.4	13.0	13.3
% O_2	6.2	6.6	6.3
% N	80.4	80.4	80.4
Area of stack (sq.ft.)	97.93	97.93	97.93
Sample time (min.)	120.00	120.00	120.00
Static pressure (in.H_2O)	-2.00	-2.00	-2.04
Nozzle dia. (in.)	0.150	0.152	0.150
Meter box cal.	1.0000	1.0000	1.0000
Cp of pitot tube	0.84	0.84	0.84
Traverse points	12	12	12
Mercury Laboratory Report Data			
Particulate bound, ug	< 0.0080	< 0.0080	< 0.0080
Oxidized, ug	0.4850	0.2600	0.3250
Elemental, ug	0.0850	0.1550	0.0200
Total mercury catch, ug	0.5700	0.4150	0.3450

Sample and Velocity Traverse Point Data Sheet - Method 1

Client DOE
Loaction/Plant ~~UNIT~~ PRESQUE ISLE
Source UNIT 6 INLET

Operator TB-LF
Date 10-14-99
W.O. Number 20009-011-006-0500

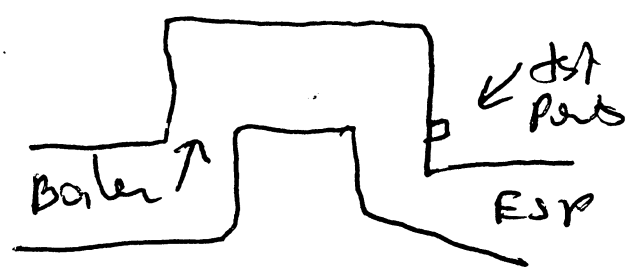
Duct Type	☐ Circular	☒ Rectangular Duct	Indicate appropriate type
Traverse Type	☒ Particulate Traverse	☐ Velocity Traverse	

Distance from far wall to outside of port (in.) = C	99"
Port Depth (in.) = D	17.5"
Depth of Duct, diameter (in.) = C-D	81.5"
Area of Duct (ft^2)	151.96 ~~127.8~~
Total Traverse Points	12
Total Traverse Points per Port	6

Rectangular Ducts Only	
Width of Duct, rectangular duct only (in.)	268.5"
Total Ports (rectangular duct only)	2 of 4

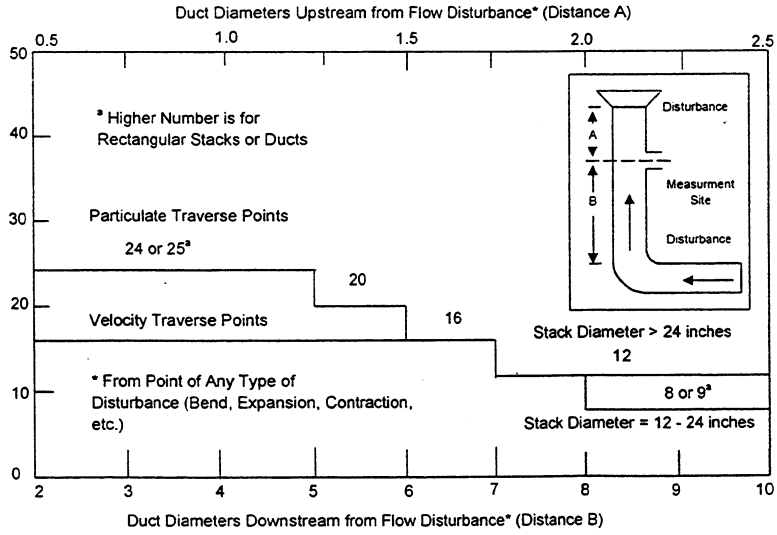
Flow Disturbances	
Upstream - A (ft)	
Downstream - B (ft)	
Upstream - A (duct diameters)	<0.5
Downstream - B (duct diameters)	<0.5

Diagram of Stack



Traverse Point Locations

Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	8.3	6 3/4	24 1/4
2	25	20 3/8	37 5/8
3	41.7	34	51 1/2
4	58.3	47 1/2	65
5	75	61 1/8	78 5/8
6	91.7	74 3/4	92 1/4
7			
8			
9			
10			
11			
12			



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

Traverse Point Location Percent of Stack -Circular

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

Traverse Point Location Percent of Stack -Rectangular

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

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

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Determination of Stack Gas Velocity - Method 2

Client: Doe
Location/Plant: Marquette, MI
Source: #6 Inlet
Operator: LDR
Date: 14 Jul 99
W.O. Number:
Pitot Coeff (Cp): 0.84
Stack Area, ft² (As): 127.8
Pitot Tube/Thermo ID: P142

Run Number	1		
Time	1307		
Barometric Press, in Hg (Pb)			
Static Press, in H_20 (Pstatic)	-0.85		
Source Moisture, % (BWS)			
O_2, %			
CO_2, %			

Cyclonic Flow Determination		Traverse Location		Leak Check good ? (Y) N		Leak Check good ? Y / N		Leak Check good ? Y / N	
Delta P at 0°	Angle yeilding zero Delta P	Port	Point	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)
0.04	10	1	1	0.36	307				
0.10	10		2	0.45	311				
0.05	10		3	0.50	305				
0.05	5		4	0.50	300				
0.01	2		5	0.46	294				
0	0		6	0.35	300				
		2	1	0.18	307				
			2	0.40	317				
			3	0.41	319				
			4	0.44	318				
			5	0.42	316				
			6	0.35	315				
Avg Angle	7.4		Avg Delta P & Temp	.402	310				
			avg √DeltaP	.62958					
Average gas stream velocity, ft/sec.									
Vol. flow rate @ actual conditions, wacf/min									
Vol. flow rate at standard conditions, dscf/min									

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

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

$$Tsa = Ts + 460$$

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

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

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

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

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

Comments

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ISOKINETIC FIELD DATA SHEET

Ontario Hydro Method - Mercury

Client	DOE
W.O.#	20009-011-006-0500
Project ID	DOE
Mode/Source ID	BO 6
Samp. Loc. ID	IN
Run No.ID	1
Test Method ID	OHM
Date ID	13JUL1999
Source/Location	Boiler 6 Inlet
Sample Date	7-14-99
Baro. Press (in Hg)	29.58 47
Operator	TB

Stack Conditions

	Assumed	Actual
% Moisture	10	
Impinger Vol (ml)		136.6
Silica gel (g)		13.3
CO2, % by Vol	15	13.7
O2, % by Vol	5	4.9
Temperature (°F)	300	
Meter Temp (°F)	115	
Static Press (in H_2O)	-8.5	-8.5
Ambient Temp (°F)	~100	

Meter Box ID	12
Meter Box Y	1.009
Meter Box Del H	1.9055
Probe ID / Length	P300 8'
Probe Material	Boro
Pitot / Thermocouple ID	
Pitot Coefficient	0.84
Nozzle ID	
Avg Nozzle Dia (in)	.253
Area of Stack (ft^2)	127.8
Sample Time	120
Total Traverse Pts	12

K Factor 2.93

Leak Checks	Initial	Mid-Point	Final
Sample Train (ft^3)	.010	.006	.008
Leak Check @ (in Hg)	15	8	10
Pitot good	yes / no	yes / no	yes / no
Orsat good	yes / no	yes / no	yes / no

Temp Check	Pre-Test Set	Post-Test Set
Meter Box Temp	102	103
Reference Temp	101	101
Pass/Fail (+/- 2°)	Pass / Fail	Pass / Fail
Temp Change Response	yes / no	yes / no

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft^3)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS
	0	1415			190.267									
1	5		0.30	0.88	193.2	301	110	108	256	255	66	2		
	10		0.28	0.82	195.8	307	110	107	249	257	63	2		
2	15		0.37	1.08	198.6	306	111	107	250	256	61	2.5		
	20		0.37	1.08	201.5	303	112	107	251	253	61	2.5		
3	25		0.33	0.97	204.3	298	114	108	251	256	60	2.5		
	30		0.33	0.97	207.1	299	114	109	256	251	60	3		
4	35		0.40	1.17	210.1	298	115	109	249	253	59	3		
	40		0.40	1.17	213.1	297	115	109	250	253	59	3		
5	45		0.36	1.05	216.0	297	116	110	248	250	58	3		
	50		0.36	1.05	218.8	295	116	110	249	251	59	3		
6	55		0.31	0.91	221.6	295	116	111	251	256	61	3		
	60	1515	0.31	0.91	224.467	293	116	111	250	258	61	3		34.140
													103.9	% I
													10.1	% m
													184100	SCFM
													Vm =	62.7
													m3	1.76
			Avg Sqrt Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm		Min/Max	Min/Max	Max Temp	Max Vac	Max Temp	

Avg Sqrt Del H

Comments:

Ontario Hydro Method

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MID ~~4057~~ 36 LEAK CK.
.008 @ 11"

ISOKINETIC FIELD DATA SHEET

Ontario Hydro Method - Mercury

Client: DOE
Source: Boiler 6
Sample Loc.: Inlet
Operator: TB
Run No.: 1
Date: 7-14-99
K Factor: 2.93

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPING EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS
	0	1540			224.772									
1	5		0.32	0.94	227.6	319	111	110	248	256	67	3		
	10		0.25	0.73	230.1	321	113	110	249	251	64	3		
2	15		0.32	0.94	232.8	324	114	110	250	251	62	3		
	20		0.32	0.94	235.6	325	116	111	254	253	62	3		
3	25		0.40	1.17	238.6	324	116	111	255	258	61	3.5		
	30		0.40	1.17	241.6	324	116	111	251	254	61	3.5		
4	35		0.40	1.17	244.5	321	117	111	251	253	61	4		
	40		0.40	1.17	247.6	321	118	112	250	254	60	4		
5	45		0.37	1.08	250.5	317	118	112	251	248	61	4.5		
	50		0.38	1.11	253.3	318	118	112	250	248	62	4.5		
6	55		0.32	0.94	256.2	310	118	113	255	248	63	5		
	60	1640	0.32	0.94	258.907	305	118	113	258	250	65	5		34.135

Avg Sqrt Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Max Temp	Max Vac	Max Temp
0.58766	1.015	68.275	309.1	112.5	248/258	248/258	67	5	

Avg Sqrt Del H: 1.00558

Comments:

WESTON MANAGERS DESIGNERS/CONSULTANTS

MID ~~4 HOST~~ 3E LEAK CK.
.008 @ 11"

ISOKINETIC FIELD DATA SHEET

Ontario Hydro Method - Mercury

Client: DOE
Source: Boiler 6
Sample Loc.: Inlet
Operator: TB
Run No.: 1
Date: 7-14-99
K Factor: 2.93

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPING EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS
	0	1540			224.772									
1	5		0.32	0.94	227.6	319	111	110	248	256	67	3		
	10		0.25	0.73	230.1	321	113	110	249	251	64	3		
2	15		0.32	0.94	232.8	324	114	110	250	251	62	3		
	20		0.32	0.94	235.6	325	116	111	254	253	62	3		
3	25		0.40	1.17	238.6	324	116	111	255	258	61	3.5		
	30		0.40	1.17	241.6	324	116	111	251	254	61	3.5		
4	35		0.40	1.17	244.5	321	117	111	251	253	61	4		
	40		0.40	1.17	247.6	321	118	112	250	254	60	4		
5	45		0.37	1.08	250.5	317	118	112	251	248	61	4.5		
	50		0.38	1.11	253.3	318	118	112	250	248	62	4.5		
6	55		0.32	0.94	256.2	310	118	113	255	248	63	5		
	60	1640	0.32	0.94	258.907	305	118	113	258	250	65	5		34.135

Avg Sqrt Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Max Temp	Max Vac	Max Temp
0.58766	1.015	68.275	309.1	112.5	248/258	248/258	67	5	

Avg Sqrt Del H: 1.00558

Comments:

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ISOKINETIC FIELD DATA SHEET

Ontario Hydro Method - Mercury

Client	DOE
W.O.#	20009-011-006-0500
Project ID	DOE
Mode/Source ID	BO 6
Samp. Loc. ID	IN
Run No.ID	2
Test Method ID	OHM
Date ID	13JUL1999
Source/Location	Boiler 6 Inlet
Sample Date	7-15-99
Baro. Press (in Hg)	29.50
Operator	TB

Stack Conditions

	Assumed	Actual
% Moisture	10	
Impinger Vol (ml)		137.8
Silica gel (g)		13.4
CO2, % by Vol	15	13.8
O2, % by Vol	5	4.9
Temperature (°F)	310	
Meter Temp (°F)	110	
Static Press (in H_2O)	-8.5	-8.0
Ambient Temp (°F)	100	

Meter Box ID	12
Meter Box Y	1.009
Meter Box Del H	1.9055
Probe ID / Length	P2000 8'
Probe Material	Boro
Pitot / Thermocouple ID	
Pitot Coefficient	0.84
Nozzle ID	
Avg Nozzle Dia (in)	.267
Area of Stack (ft^2)	127.8
Sample Time	120
Total Traverse Pts	12

K Factor 3.55

Leak Checks	Initial	Mid-Point	Final
Sample Train (ft^3)	0.010	0.011	0.011
Leak Check @ (in Hg)	10	8	10
Pitot good	yes / no	yes / no	yes / no
Orsat good	yes / no	yes / no	yes / no

Temp Check	Pre-Test Set	Post-Test Set
Meter Box Temp	100	102
Reference Temp	101	102
Pass/Fail (+/- 2°)	Pass / Fail	Pass / Fail
Temp Change Response	yes / no	yes / no

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft^3)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPING EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS
	0	0825			259.170									
1	5		0.23	0.82	261.8	316	102	101	247	244	67	2		
	10		0.23	0.82	264.4	319	104	102	247	243	64	2		
2	15		0.33	1.17	267.4	321	106	102	246	249	61	3		
	20		0.33	1.17	270.3	321	108	103	247	247	60	3		
3	25		0.38	1.35	273.5	322	109	103	252	250	60	3		
	30		0.38	1.35	276.7	320	111	104	252	247	60	3		
4	35		0.36	1.28	280.1	320	111	104	250	246	58	3		
	40		0.38	1.35	283.0	311	112	105	250	244	68	4		
5	45		0.36	1.28	286.1	306	112	106	245	246	60	4		
	50		0.35	1.24	289.2	315	113	106	250	248	60	4		
6	55		0.31	1.10	292.1	316	113	107	249	246	61	4		
	60	0925	0.29	1.03	294.883	310	113	107	249	246	62	4		
			Avg Sqrt Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm		Min/Max	Min/Max	Max Temp	Max Vac	Max Temp	

Avg Sqrt Del H

Comments:

Ontario Hydro Method

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ISOKINETIC FIELD DATA SHEET

Ontario Hydro Method - Mercury

MID LEAK CHECK
0.010 @ 10"

Client: DOE
Source: Boiler 6
Sample Loc.: Inlet
Operator: TB
Run No.: 2
Date: 7-15-99
K Factor: 3.55

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPING EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS
	0	0950			295.024									
1	5		0.24	0.85	297.8	305	109	106	250	244	66	3		
	10		0.24	0.85	300.6	307	110	107	248	246	64	3		
2	15		0.34	1.20	303.3	308	112	107	250	245	65	4		
	20		0.34	1.20	306.2	306	113	107	250	247	61	4		
3	25		0.38	1.35	309.4	303	114	108	248	246	61	4.5		
	30		0.38	1.35	312.6	298	114	108	248	246	59	4.5		
4	35		0.36	1.28	315.7	294	115	109	248	245	59	4.5		
	40		0.36	1.28	318.8	293	116	109	250	246	60	5		
5	45		0.34	1.20	321.8	297	116	110	248	246	60	5		
	50		0.34	1.20	324.9	292	116	110	246	245	61	5.5		
6	55		0.32	1.14	327.8	290	116	110	250	245	61	6		
	60	1050	0.32	1.14	330.780	290	116	110	245	246	62	6		
													Ts =	100.6
													%M	9.7
													SCFM	180100
														66.14 Vm
														1.85 m³
			Avg Sqrt Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm		Min/Max	Min/Max	Max Temp	Max Vac	Max Temp	
			0.57170	1.16667	71.469	307.3	~~108~~ 109.0		245/252	243/250	67	6		
				Avg Sqrt Del H	Comments:									
				1.07189										

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4/02

ISOKINETIC FIELD DATA SHEET

Ontario Hydro Method - Mercury

Client	DOE
W.O.#	20009-011-006-0500
Project ID	DOE
Mode/Source ID	BO 6
Samp. Loc. ID	IN
Run No.ID	3
Test Method ID	OHM
Date ID	13JUL1999
Source/Location	Boiler 6 Inlet
Sample Date	7-15-99
Baro. Press (in Hg)	29.50
Operator	TB

Stack Conditions

	Assumed	Actual
% Moisture	10	
Impinger Vol (ml)		142.5
Silica gel (g)		14.3
CO2, % by Vol	15	13.4
O2, % by Vol	5	5.2
Temperature (°F)	310	
Meter Temp (°F)	110	
Static Press (in H_2O)	-8	-8
Ambient Temp (°F)	~100	

Meter Box ID	10
Meter Box Y	1.009
Meter Box Del H	1.8055
Probe ID / Length	P300 / 8'
Probe Material	Boro
Pitot / Thermocouple ID	
Pitot Coefficient	0.84
Nozzle ID	
Avg Nozzle Dia (in)	.267
Area of Stack (ft^2)	127.8
Sample Time	120
Total Traverse Pts	12

K Factor 3.55

Leak Checks	Initial	Mid-Point	Final
Sample Train (ft^3)	.013	0.010	0.014
Leak Check @ (in Hg)	13	9	12
Pitot good	yes / no	yes / no	yes / no
Orsat good	yes / no	yes / no	yes / no

Temp Check	Pre-Test Set	Post-Test Set
Meter Box Temp	102	100
Reference Temp	100	99
Pass/Fail (+/- 2°)	Pass / Fail	Pass / Fail
Temp Change Response	yes / no	yes / no

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft^3)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS
	0	1250			331.175									
1	5		0.34	1.21	334.1	248	113	111	248	248	66	3		
	10		0.34	1.21	337.2	306	115	114	249	246	62	3		
2	15		0.33	1.17	340.2	305	117	112	250	246	61	3		
	20		0.32	1.14	343.1	304	117	112	250	246	61	3		
3	25		0.35	1.24	346.2	303	118	113	247	245	60	3		
	30		0.36	1.28	349.4	299	119	113	247	246	59	3.5		
4	35		0.36	1.28	352.5	298	120	114	249	246	59	3.5		
	40		0.32	1.31	355.7	297	121	114	246	247	60	3.5		
5	45		0.38	1.35	358.9	295	121	114	249	246	61	4		
	50		0.38	1.35	362.1	294	121	115	247	247	62	4		
6	55		0.34	1.21	365.2	291	121	115	248	250	61	4		
	60	1350	0.33	1.17	368.253	290	121	115	248	249	61	4		
													Iso=	101.4
													%M	9.8
													SCFM	183300
													Vm=	67.82
			Avg Sqrt Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm		Min/Max	Min/Max	Max Temp	Max Vac	Max Temp	

Avg Sqrt Del H

Comments:

Ontario Hydro Method

WESTON MANAGERS DESIGNERS/CONSULTANTS

ISOKINETIC FIELD DATA SHEET

Ontario Hydro Method - Mercury

MID LEAK CHECK: 0.008 @ 10"

Client: DOE
Source: Boiler 6
Sample Loc.: Inlet
Operator: TB
Run No.: 3
Date: 7-15-99
K Factor: 3.55

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPING EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS
	0	1410			368.937									
1	5		0.25	0.89	372.2	303	115	114	243	245	67	3		
	10		0.24	0.85	374.8	302	118	114	245	247	65	3		
2	15		0.34	1.21	377.9	302	118	114	246	246	63	4		
	20		0.33	1.17	380.7	303	119	114	247	247	61	4		
3	25	0.37	~~0.35~~	~~1.24~~ 1.31	383.4	303	120	114	248	246	61	4.5		
	30		0.37	1.31	387.1	302	120	114	248	246	61	5		
4	35		0.38	1.35	390.3	310	121	115	248	245	62	5		
	40		0.37	1.31	393.5	314	121	115	249	248	60	5		
5	45		0.35	1.24	396.6	312	121	115	250	245	63	5.5		
	50		0.35	1.24	399.7	313	121	115	249	245	63	5.5		
6	55		0.30	1.07	402.6	310	121	115	249	245	62	5.5		
	60	1510	0.30	1.07	405.562	311	121	115	250	247	65	6		
					37.078									
					37.165									
			Avg Sqrt Delta P: .581835	Avg Delta H: 1.20583	Total Volume: 74.243	Avg Ts: 307.5	Avg Tm: 116.52		Min/Max: 243/250	Min/Max: 245/250	Max Temp: 67	Max Vac: 6	Max Temp	
				Avg Sqrt Del H: 1.09642	Comments:									

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Source Gas Analysis Data Sheet - Method 3

Client: Dot / LP
Analyst: KK
Location/Plant: Marquette
Date: 7/14/99
Source: #6 inlet
Analytical Method (circle one): EPA 3 using 3A analyzers
W.O. Number: _____

Run Number: 1
* Cal ~~Leak~~ Check Good? (circle one) Yes No

Analysis Number	Analysis Time	Percent CO_2 (A)	Percent Total (B)	Percent O_2 (B - A)	Percent N_2 (100 - B)
1		13.7		4.9	
2		13.7		5.0	
3		13.7		4.9	
	Average	13.7		4.9	

Run Number: 2
Cal ~~Leak~~ Check Good? (circle one) Yes No

Analysis Number	Analysis Time	Percent CO_2 (A)	Percent Total (B)	Percent O_2 (B - A)	Percent N_2 (100 - B)
1		13.8		4.9	
2		13.8		4.9	
3		13.8		4.9	
	Average	13.8		4.9	

Run Number: 3
Cal ~~Leak~~ Check Good? (circle one) Yes No

Analysis Number	Analysis Time	Percent CO_2 (A)	Percent Total (B)	Percent O_2 (B - A)	Percent N_2 (100 - B)
1		13.4		5.2	
2		13.4		5.2	
3		13.5		5.1	
	Average	13.4		5.2	

Acceptable differences for repeat analysis:
- if CO_2 > 4% than +/- 0.3%
- if CO_2 < or = 4% than +/- 0.2%
- if O_2 > or = 15% than +/- 0.2%
- if O_2 < 15% than +/- 0.3%

Ambient Check
Oxygen: ✓ (20.9)
Carbon Dioxide: ✓ (0.6)

Report all values to the nearest 0.1 percent

Comments: * Cal w/ 0 N_2, 12.63% O_2, 9.91% CO_2

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Sample and Velocity Traverse Point Data Sheet - Method 1

Client: DOE / WP
Loaction/Plant: MARQUETTE
Source: #6 STACK

Operator: KK JP
Date: 7/14/99
W.O. Number:

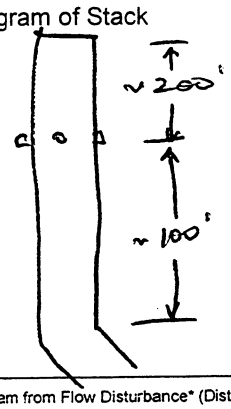
Duct Type	☒ Circular	☐ Rectangular Duct	Indicate appropriate type
Traverse Type	☐ Particulate Traverse	☐ Velocity Traverse	

Distance from far wall to outside of port (in.) = C	115"
Port Depth (in.) = D	7
Depth of Duct, diameter (in.) = C-D	108"
Area of Duct (ft^2)	63.617
Total Traverse Points	12
Total Traverse Points per Port	3

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

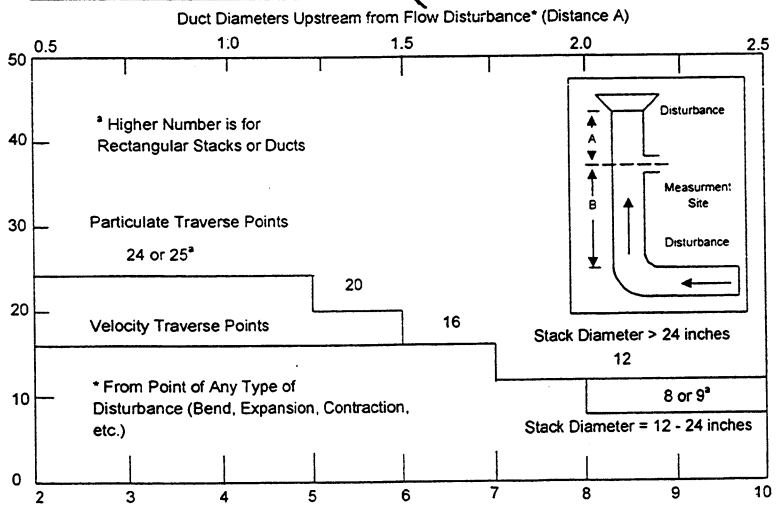
Flow Disturbances	
Upstream - A (ft)	~ 200'
Downstream - B (ft)	~ 100
Upstream - A (duct diameters)	22
Downstream - B (duct diameters)	11

Diagram of Stack



Traverse Point Locations

Traverse Point	% of Duct	Distance from Inside Duct Wall (in)	Distance from Outside of Port (in)
1	.044	4.752	11 3/4
2	.146	15.768	22 3/4
3	.296	31.968	39
4			
5			
6			
7			
8			
9			
10			
11			
12			



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

Traverse Point Location Percent of Stack -Circular

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

Traverse Point Location Percent of Stack -Rectangular

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

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

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Determination of Stack Gas Velocity - Method 2

Client	DOE / WP	Operator	KW Jr	Pitot Coeff (Cp)	.84
Location/Plant	MARQUETTE	Date	7/14/99	Stack Area, ft² (As)	63.617
Source	#6 STACK	W.O. Number		Pitot Tube/Thermo ID	P200

Run Number	PRE		
Time	1210		
Barometric Press, in Hg (Pb)	29.47		
Static Press, in H_20 (Pstatic)	-1.9		
Source Moisture, % (BWS)			
O_2, %			
CO_2, %			

Cyclonic Flow Determination		Traverse Location		Leak Check good ? Y N		Leak Check good ? Y / N		Leak Check good ? Y / N	
Delta P at O°	Angle yeilding zero Delta P	Port	Point	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)	Delta P	Source Temp, F° (Ts)
-.05	<5	A	1	1.5	290				
-.05	<5		2	1.5	290				
0	—		3	1.1	290				
0	—	B	1	1.5	291				
0	—		2	1.4	292				
-.05	5		3	1.2	291				
0	—	C	1	1.4	291				
-.05	5		2	1.4	291				
-.10	8		3	1.2	292				
-.05	<5	D	1	1.3	290				
-.10	10		2	1.4	290				
0	—		3	.96	290				
Avg Angle		Avg Delta P & Temp		1.3	~290				
		avg $\sqrt{DeltaP}$							
		Average gas stream velocity, ft/sec.							
		Vol. flow rate @ actual conditions, wacf/min							
		Vol. flow rate at standard conditions, dscf/min							

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

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

$$Tsa = Ts + 460$$

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

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

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

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

Comments _____

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

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ISOKINETIC FIELD DATA SHEET

Ontario Hydro Method - Mercury

Client	DOE
W.O.#	20009-011-006-0500
Project ID	DOE
Mode/Source ID	BO 6
Samp. Loc. ID	OUT
Run No.ID	1
Test Method ID	OHM
Date ID	13JUL1999
Source/Location	Boiler 6 Outlet
Sample Date	7/14/99
Baro. Press (in Hg)	29.47
Operator	JP ~~29~~ JP/KH/JC

Stack Conditions

	Assumed	Actual
% Moisture	10	
Impinger Vol (ml)		146.7
Silica gel (g)		14.7
CO2, % by Vol	15	12.6
O2, % by Vol	5	6.1
Temperature (°F)	290	
Meter Temp (°F)	90	
Static Press (in H_2O)	-1.9	-1.9
Ambient Temp (°F)	~75	

Meter Box ID	14
Meter Box Y	1.0098
Meter Box Del H	1.9408
Probe ID / Length	P301 3
Probe Material	Boro
Pitot / Thermocouple ID	P301
Pitot Coefficient	0.84
Nozzle ID	
Avg Nozzle Dia (in)	.199
Area of Stack (ft^2)	63.617
Sample Time	120
Total Traverse Pts	12

K Factor (LCK) ~~1.12~~ ~~1.13~~ 1.10

Leak Checks	Initial	Mid-Point	Final
Sample Train (ft^3)	15		.002
Leak Check @ (in Hg)	.008		10
Pitot good	yes / no	yes / no	yes / no
Orsat good	yes / no	yes / no	yes / no

Temp Check	Pre-Test Set	Post-Test Set
Meter Box Temp	82	86
Reference Temp	81.1	85.1
Pass/Fail (+/- 2°)	Pass / Fail	Pass / Fail
Temp Change Response	yes / no	yes / no

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft^3)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS
1	0	1415			213.985									
A	5		1.4	1.58	217.4	305	86	84	226	242	67	4.0		
2	10		1.3	1.43	220.6	305	88	85	229	246	57	3.0		
	15		1.2	1.32	223.6	305	90	86	231	243	51	3.0		
3	20		1.2	1.32	226.7	305	92	86	238	242	48	3.0		
	25		1.1	1.21	229.6	304	91	86	243	242	48	3.0		
	30	1445	~~1.2~~ 1.1	1.21	232.735	304	92	86	238	243	48	3.0		18.75
						L.L good @ 5 in Hg								
B 1	0	1458			232.945									
	5		1.5	1.65	236.3	304	89	86	244	242	60	3.5		
2	10		1.5	1.65	239.8	305	90	87	238	240	54	3.5		
	15		1.5	1.65	243.2	305	92	86	240	243	54	3.5		
3	20		1.4	1.54	246.5	306	93	87	248	243	56	3.5		
	25		1.3	1.43	249.7	306	94	88	251	244	57	3.5		
	30	1528	1.3	1.43	253.002	304	93	87	247	239	57	3.5		20.057
							L.L good @ 5 in Hg							
			Avg Sqrt Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm		Min/Max	Min/Max	Max Temp	Max Vac	Max Temp	
				Avg Sqrt Del H	Comments:									

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Ontario Hydro Method

ISOKINETIC FIELD DATA SHEET

Ontario Hydro Method - Mercury

Client: DOE
Source: Boiler 6
Sample Loc.: 6
Operator: JP KW
Run No.: 1
Date: 7/14/99
K Factor: 1.10

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPING EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS
1	0	1533			253.161									
C	5		1.2	1.32	256.1	304	89	87	231	242	65	3.5		
2	10		1.1	1.21	259.1	305	91	87	246	236	62	3.5		
	15		1.4	1.54	262.4	306	92	88	242	244	59	3.5		
3	20		1.4	1.54	265.7	306	95	88	245	243	58	3.5		
	25		1.1	1.21	268.7	305	96	89	247	242	58	3.5		
	30		1.2	1.32	271.869	305	92	89	241	242	60	3.5		18.708
								LL	good @ 5" Hg					
D 1	0	1611			272.044									
	5		1.3	1.43	275.2	305	93	89	235	243	66	3.5		
2	10		1.2	1.32	278.4	306	95	90	237	243	65	3.5		
	15		1.1	1.21	281.6	305	96	90	235	243	64	3.5		
3	20		1.1	1.21	284.6	306	98	91	241	245	64	3.5		
	25		0.95	1.04	287.4	305	99	92	245	244	64	3.5		
	30	1641	0.92	1.01	290.191	304	97	91	245	242	64	3.5		18.147
													100.6	Iso
										ISO	100.72			
										M	9.49		9.5	% M
										SCFM	176539.58			
										SVOL	72.43		177000	SCFM
													72.4	Vm
													2.03	m³

Avg Sqrt Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm	Min/Max	Min/Max	Max Temp	Max Vac	Max Temp
1.11132	1.36583	~~75.658~~ JP	305.0 JP	~~305.0~~ JP	226/251	236/241	67	4.0	

Avg Sqrt Del H: 1.16609

Comments: 75.662

90.25

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63.61

ISOKINETIC FIELD DATA SHEET

Ontario Hydro Method - Mercury

Client	DOE
W.O.#	20009-011-006-0500
Project ID	DOE
Mode/Source ID	BO 6
Samp. Loc. ID	OUT
Run No.ID	2
Test Method ID	OHM
Date ID	13JUL1999
Source/Location	Boiler 6 Outlet
Sample Date	7/15/99
Baro. Press (in Hg)	29.50
Operator	SP KK

Stack Conditions

	Assumed	Actual
% Moisture	10	
Impinger Vol (ml)		165.4
Silica gel (g)		13
CO2, % by Vol	14	12.9
O2, % by Vol	6	5.8
Temperature (°F)	305	
Meter Temp (°F)	90	
Static Press (in H_2O)	-1.9	
Ambient Temp (°F)	~ 80	

Meter Box ID	14
Meter Box Y	1.0098
Meter Box Del H	1.9408
Probe ID / Length	P301 3'
Probe Material	Boro
Pitot / Thermocouple ID	P301
Pitot Coefficient	0.84
Nozzle ID	
Avg Nozzle Dia (in)	.210
Area of Stack (ft^2)	63.617
Sample Time	120
Total Traverse Pts	12

K Factor 1.36

Leak Checks	Initial	Mid-Point	Final
Sample Train (ft^3)	.010		.008
Leak Check @ (in Hg)	15		8
Pitot good	yes / no	yes / no	yes / no
Orsat good	yes / no	yes / no	yes / no

Temp Check	Pre-Test Set	Post-Test Set
Meter Box Temp	81	87
Reference Temp	79	86.7
Pass/Fail (+/- 2°)	Pass / Fail	Pass / Fail
Temp Change Response	yes / no	yes / no

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft^3)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPING EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS
	0	8:25			290.441									
D 1	5		1.3	1.76	294.1	302	90	89	245	244	66	3.5		
2	10		1.3	1.76	297.5	303	93	90	248	249	54	3.5		
	15		1.2	1.63	300.9	304	97	90	248	245	52	3.5		
3	20		1.1	1.49	304.1	303	98	91	250	244	51	3.5		
	25		1.1	1.49	307.3	303	99	91	248	244	53	3.5		
	30	8:55	1.1	1.49	310.589	303	99	92	245	244	53	3.5		20.148
							L.C good @ 5 in Hg							
C 1	0	9:05			310.746									
	5		1.6	2.17	314.6	303	95	92	245	243	65	3.5		
2	10		1.6	2.17	318.6	304	98	93	239	243	58	4.0		
	15		1.5	2.04	322.4	304	101	93	244	243	57	4.0		
3	20		1.5	2.04	326.2	305	103	94	250	243	58	4.0		
	25		1.3	1.76	329.8	304	103	95	248	241	60	4.0		
	30	9:35	1.3	1.76	333.280	304	103	95	247	241	62	4.0		22.534
						L.C good @ 5 in Hg								
			Avg Sqrt Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm		Min/Max	Min/Max	Max Temp	Max Vac	Max Temp	

Avg Sqrt Del H

Comments:

Ontario Hydro Method

WESTON MANAGERS DESIGNERS/CONSULTANTS

ISOKINETIC FIELD DATA SHEET — Ontario Hydro Method - Mercury

Client: DOE
Source: Boiler 6
Sample Loc.: outlet
Operator: JP KU
Run No.: 2
Date: 7/15/99
K Factor: 1.36

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPING EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS
1	0	945			333.458									
B	5		1.6	2.17	337.4	304	97	94	227	243	65	4.0		
2	10		1.6	2.17	341.2	305	100	101	240	251	64	4.5		
	15		1.5	2.04	345.1	305	103	95	245	248	64	4.5		
3	20		1.5	2.04	348.8	304	104	95	245	240	65	4.5		
	25		1.2	1.63	352.2	304	104	96	247	239	66	4.5		
	30	1015	1.2	1.63	355.718	304	104	95	240	238	67	~~5.0~~ 4.0		22.260
		10												
A 1	0	925			355.964									
	5		1.5	2.04	359.8	303	98	94	230	240	66	4.5		
2	10		1.5	2.04	363.6	304	101	95	228	240	62	4.5		
	15		1.3	1.76	367.2	304	103	95	230	242	58	4.5		
3	20		1.3	1.76	370.8	305	103	95	234	241	58	4.5		
	25		JP ~~1.0~~ 1.1	JP ~~1.36~~ 1.49	374.1	305	104	96	238	241	58	4.5		
	30	955	1.1	1.49	377.364	305	102	96	240	242	59	4.5		21.400
		10												
													%I=	98.1
													%M	9.5
													SCFM	184000
													Vm=	81.83
													m³	2.29
			Avg Sqrt Delta P: 1.15748	Avg Delta H: 1.82583	Total Volume: 86.342	Avg Ts: 303.91	Avg Tm: 96.95		Min/Max: 227/250	Min/Max: 238/251	Max Temp: 67	Max Vac: 4.5	Max Temp	
				Avg Sqrt Del H: 1.33733	Comments:									

WESTON MANAGERS DESIGNERS/CONSULTANTS

ISOKINETIC FIELD DATA SHEET

Ontario Hydro Method - Mercury

Client	DOE
W.O.#	20009-011-006-0500
Project ID	DOE
Mode/Source ID	BO 6
Samp. Loc. ID	OUT
Run No.ID	3
Test Method ID	OHM
Date ID	13JUL1999
Source/Location	Boiler 6 Outlet
Sample Date	7/15/99
Baro. Press (in Hg)	29.56
Operator	JP KA

Stack Conditions	Assumed	Actual
% Moisture	10	
Impinger Vol (ml)		15.6
Silica gel (g)		18.5
CO2, % by Vol	14	12.8
O2, % by Vol	6	5.9
Temperature (°F)	305	
Meter Temp (°F)	90	
Static Press (in H_2O)	-1.9	
Ambient Temp (°F)	~85	

Meter Box ID	14
Meter Box Y	1.0098
Meter Box Del H	1.9408
Probe ID / Length	7301 / 3'
Probe Material	Boro
Pitot / Thermocouple ID	P301
Pitot Coefficient	0.84
Nozzle ID	
Avg Nozzle Dia (in)	.210
Area of Stack (ft^2)	63.617
Sample Time	120
Total Traverse Pts	12

K Factor ~~1.36~~ JP 1.37

Leak Checks	Initial	Mid-Point	Final
Sample Train (ft^3)	.006		.004
Leak Check @ (in Hg)	15 ~~.006~~		12
Pitot good	yes / no	yes / no	yes / no
Orsat good	yes / no	yes / no	yes / no

Temp Check	Pre-Test Set	Post-Test Set
Meter Box Temp	80	86
Reference Temp	80.8	86.8
Pass/Fail (+/- 2°)	Pass / Fail	Pass / Fail
Temp Change Response	yes / no	yes / no

TRAVERSE POINT NO	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft^3)	STACK TEMP (°F)	BGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPINGER EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS
	0	1250			377.534									
A	5		1.3	1.78	381.2	305	83	83	227	245	66	4.0		
	10		1.3	1.78	384.7	306	88	85	234	248	66	4.0		
	15		1.1	1.50	388.0	304	88	84	237	248	61	4.0		
	20		1.2	1.64	391.2	305	87	84	244	246	59	4.0		
	25		1.0	1.37	394.5	305	88	84	241	246	58	4.0		
	30	1320	1.0	1.37	397.628	305	87	83	239	244	57	4.0		20.094
							L.C good @ 6 in Hg							
B	0	1327	1.		397.872									
	5		1.4	1.91	401.5	306	85	84	229	246	65	4.0		
	10		1.4	1.91	405.2	305	88	83	225	246	61	4.0		
	15		1.4	1.91	408.8	305	89	83	228	245	59	4.0		
	20		1.4	1.91	412.5	306	89	83	239	246	59	4.0		
	25		1.2	1.64	416.0	307	91	84	245	245	60	4.0		
	30	1337	1.2	1.64	419.293	308	94	86	239	244	62	4.0		21.421
							L.L good @ 8 in Hg							
			Avg Sqrt Delta P	Avg Delta H	Total Volume	Avg Ts	Avg Tm		Min/Max	Min/Max	Max Temp	Max Vac	Max Temp	
				Avg Sqrt Del H	Comments:									

WESTON MANAGERS DESIGNERS/CONSULTANTS

Ontario Hydro Method

ISOKINETIC FIELD DATA SHEET — Ontario Hydro Method - Mercury

Client: DOE | Operator: JP KM
Source: Boiler 6 | Run No.: 3
Sample Loc.: 6 | Date: 7/15/99 | K Factor: 1.37

TRAVERSE POINT NO.	SAMPLE TIME (min)	CLOCK TIME (plant time)	VELOCITY PRESSURE Delta P (in H2O)	ORIFICE PRESSURE Delta H (in H2O)	DRY GAS METER READING (ft³)	STACK TEMP (°F)	DGM INLET TEMP (°F)	DGM OUTLET TEMP (°F)	PROBE TEMP (°F)	FILTER BOX TEMP (F)	IMPING EXIT TEMP (°F)	SAMPLE TRAIN VAC (in Hg)		COMMENTS
	0	1405			419.461									
C	5		1.5	2.05	423.2	305	88	85	237	240	66	4.5		
	10		1.4	1.91	426.9	306	90	86	229	243	60	4.5		
	15		1.2	1.64	430.3	307	95	88	236	242	58	4.5		
	20		1.2	1.64	433.6	306	96	88	249	242	59	4.5		
	25		1.2	1.64	437.0	306	97	89	250	243	60	4.5		
	30	1435	1.2	1.64	440.408	306	98	90	246	243	59	4.5		20.947
		JP				L-C good @ 10in Hg								
D	0	1442			440.614									
	5		1.2	1.64	444.0	306	93	90	248	241	68	4.0		
	10		1.2	1.64	447.3	306	96	91	231	242	62	4.0		
	15		1.1	1.50	450.6	305	96	90	236	242	61	4.0		
	20		1.1	1.50	453.9	307	98	92	247	244	62	4.0		
	25		0.95	1.27	458.1	306	99	92	244	245	64	4.0		
	30	1512	0.95	1.29	460.091	305	98	92	240	244	66	4.0		19.477
					20.094									
					21.421						ISO	99.5		
					20.947						M	9.4		
					19.477						SCFM	174792	25	
											SVOL	78.89		
			Avg Sqrt Delta P	Avg Delta H	Total Volume	Avg Ts		Avg Tm	Min/Max	Min/Max	Max Temp	Max Vac	Max Temp	
			1.09997	1.66	81.939	305.8		89.1	225 / 250	241 / 246	68	4.5		
				Avg Sqrt Del H 1.28428	Comments:									

WESTON MANAGERS DESIGNERS/CONSULTANTS

JB

Source Gas Analysis Data Sheet - Method 3

Client DOE / WP

Analyst KK

Location/Plant Marquette

Date 7/14/99

Source #6 STACK

Analytical Method (circle one) EPA 3 using 3A analyzer

W.O. Number

Run Number 1

* Cal ~~Leak~~ Check Good? (circle one) Yes No

Analysis Number	Analysis Time	Percent CO_2 (A)	Percent Total (B)	Percent O_2 (B - A)	Percent N_2 (100 - B)
1	12.6	~~6.1~~ KK		6.1	
2		12.6		6.1	
3		12.6		6.1	
	Average	12.6		6.1	

Run Number 2

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

Analysis Number	Analysis Time	Percent CO_2 (A)	Percent Total (B)	Percent O_2 (B - A)	Percent N_2 (100 - B)
1		12.9		5.8	
2		12.9		5.8	
3		12.9		5.8	
	Average	12.9		5.8	

Run Number 3

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

Analysis Number	Analysis Time	Percent CO_2 (A)	Percent Total (B)	Percent O_2 (B - A)	Percent N_2 (100 - B)
1		12.8		5.9	
2		12.8		5.9	
3		12.8		5.9	
	Average	12.8		5.9	

Acceptable differences for repeat analysis:

if CO_2 > 4% than +/- 0.3%

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

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

if O_2 < 15% than +/- 0.3%

Ambient Check

Oxygen ✓ (20.9)

Carbon Dioxide ✓ (0.0)

Report all values to the nearest 0.1 percent

Comments * cal w/ Ø N_2, 12.63 % O_2, 9.91 % CO_2

WESTON MANAGERS DESIGNERS/CONSULTANTS

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Sample Pt. Unit 6 Inlet

Train Type : **ONTARIO-HYDRO METHOD**

Date 7/14/99
Run In-~~2~~ 1 Boiler 6
Fund #
Cost Center #

Stopper Type	Type Of Solution	Initial Wt. (g)	Final Wt. (g)	Net Wt. (g)
BUBBLER	KCl	728.0	837.3	109.3 ✓
BUBBLER	KCl	733.3	748.9	15.6 ✓
IMPINGER	KCl	720.7	727.8	7.1 ✓
BUBBLER	H_2O_2/HNO_3	759.7	763.7	4.0 ✓
BUBBLER	$KMnO_4/H_2SO_4$	736.0	736.0	0.0 ✓
BUBBLER	$KMnO_4/H_2SO_4$	~~743.2~~ 664.1	663.9	- 0.2 ✓
IMPINGER	$KMnO_4/H_2SO_4$	743.1	743.9	0.8 ✓
BUBBLER	SILICA GEL	956.6	969.9	13.3 ✓
			Total H_2O (g)	~~150.3~~
FILTER				149.9
			Si gel	13.3
			Total Dust (g)	

$V_w std = 0.0474 * (H_2O\ g)$ _____ SCF

$V_m Corrected = V_m * C_m$ _____ ACF

$V_m std = \frac{17.71\ V_m C\ (P_b + \Delta H/13.6)}{T_m}$ _____ SCF

$V_t std = V_w std + V_m std$ _____ SCF

$\%H_2O = (V_w std / V_t std) * 100$ _____ $\%H_2O$

$Q_n std = 17.71\ Q_n\ P_s / T_s$ _____ SCFM

% Isokinetic = $V_t std$ / ($Q_n std$ * Time) _____ %

DUST LOADING CALCULATIONS (Concentration Basis)

DCL = 15.432 (dust g) / $V_t std$ _____ grains/scf

% Efficiency = $\frac{(\text{Inlet DCL - Outlet DCL})}{\text{Inlet DCL}} * 100$ _____ %

ACFM = V_s * Pipe Area (ft^2) _____ ACFM

SCFM = ACFM * $P_s/29.92 * 530/T_s$ = ACFM * P_s/T_s * 17.71 _____ SCFM

lbs/hour = grains / scf * 0.000143 * SCFM * 60 _____ lbs/hour

Sample Pt. Unit 6 Outlet

Train Type : **ONTARIO-HYDRO METHOD**

Date 7/14/99
Run Outlet 1 Boiler 4
Fund #
Cost Center #

Stopper Type	Type Of Solution	Initial Wt. (g)	Final Wt. (g)	Net Wt. (g)
BUBBLER	KCl	696.1	810.4	114.3 ✓
BUBBLER	KCl	698.0	717.5	19.5 ✓
IMPINGER	KCl	745.6	751.9	6.3 ✓
BUBBLER	H_2O_2/HNO_3	609.2	613.7	4.5 ✓
BUBBLER	$KMnO_4/H_2SO_4$	744.9	746.2	1.3 ✓
BUBBLER	$KMnO_4/H_2SO_4$	739.0	739.3	0.3 ✓
IMPINGER	$KMnO_4/H_2SO_4$	730.2	730.7	0.5 ✓
BUBBLER	SILICA GEL	936.8	951.5	14.7 ✓
			Total H_2O (g)	~~146.1~~ 146.4 ✓
FILTER			Si gel	14.7
			Total Dust (g)	

$V_w std = 0.0474 * (H_2O\ g)$ _____ SCF

$V_m Corrected = V_m * C_m$ _____ ACF

$V_m std = \frac{17.71\ V_m C\ (P_b + \Delta H/13.6)}{T_m}$ _____ SCF

$V_t std = V_w std + V_m std$ _____ SCF

$\%H_2O = (V_w std / V_t std) * 100$ _____ $\%H_2O$

$Q_n std = 17.71\ Q_n\ P_s / T_s$ _____ SCFM

% Isokinetic = $V_t std / (Q_n std * Time)$ _____ %

DUST LOADING CALCULATIONS (Concentration Basis)

DCL = 15.432 (dust g) / $V_t std$ _____ grains/scf

% Efficiency = $\frac{(\text{Inlet DCL} - \text{Outlet DCL})}{\text{Inlet DCL}} * 100$ _____ %

ACFM = V_s * Pipe Area (ft^2) _____ ACFM

SCFM = ACFM * $P_s/29.92 * 530/T_s$ = ACFM * P_s/T_s * 17.71 _____ SCFM

lbs/hour = grains / scf * 0.000143 * SCFM * 60 _____ lbs/hour

Sample Pt. _____

Train Type : **ONTARIO-HYDRO METHOD**

Date 7/15/95
Run Inlet-2
Fund # _____
Cost Center # _____

Stopper Type	Type Of Solution	Initial Wt. (g)	Final Wt. (g)	Net Wt. (g)
BUBBLER	KCl	588.2	690.4	102.2
BUBBLER	KCl	747.9	773.3	25.4
IMPINGER	KCl	728.4	733.4	5.0
BUBBLER	H_2O_2/HNO_3	721.4	724.8	3.4
BUBBLER	$KMnO_4/H_2SO_4$ *	~~637.7~~ 725.7	726.8	1.1
BUBBLER	$KMnO_4/H_2SO_4$	655.9	656.3	0.4
IMPINGER	$KMnO_4/H_2SO_4$	741.8	742.1	0.3
BUBBLER	SILICA GEL	819.9	833.3	13.4
			Total H_2O (g)	~~151.2~~ 137.8
FILTER			Si gel	13.4
			Total Dust (g)	151.2

* broke during leak check

$V_w std = 0.0474 * (H_2O\ g)$ _____ SCF

$V_m Corrected = V_m * C_m$ _____ ACF

$V_m std = \frac{17.71\ V_m C\ (P_b + \Delta H/13.6)}{T_m}$ _____ SCF

$V_t std = V_w std + V_m std$ _____ SCF

$\%H_2O = (V_w std / V_t std) * 100$ _____ $\%H_2O$

$Q_n std = 17.71\ Q_n\ P_s / T_s$ _____ SCFM

% Isokinetic = $V_t std$ / ($Q_n std$ * Time) _____ %

DUST LOADING CALCULATIONS (Concentration Basis)

DCL = 15.432 (dust g) / $V_t std$ _____ grains/scf

$\% \text{ Efficiency} = \frac{(\text{Inlet DCL} - \text{Outlet DCL})}{\text{Inlet DCL}} * 100$ _____ %

ACFM = V_s * Pipe Area (ft^2) _____ ACFM

SCFM = ACFM * P_s/29.92 * 530/T_s = ACFM * P_s/T_s * 17.71 _____ SCFM

lbs/hour = grains / scf * 0.000143 * SCFM * 60 _____ lbs/hour

Sample Pt. _____

Train Type : **ONTARIO-HYDRO METHOD**

Date 7/15/99
Run Outlet-2
Fund # _____
Cost Center # _____

Stopper Type	Type Of Solution	Initial Wt. (g)	Final Wt. (g)	Net Wt. (g)
BUBBLER	KCl	699.9	813.4	113.5
BUBBLER	KCl	701.2	735.1	33.9
IMPINGER	KCl	724.8	734.9	10.1
BUBBLER	H_2O_2/HNO_3	710.8	715.2	4.4
BUBBLER	$KMnO_4/H_2SO_4$	634.7	636.6	1.9
BUBBLER	$KMnO_4/H_2SO_4$	648.4	649.1	0.7
IMPINGER	$KMnO_4/H_2SO_4$	749.0	750.4	1.4
BUBBLER	SILICA GEL	829.0	846.0	17
			Total H_2O (g)	165.9
FILTER			Sight	17
			Total Dust (g)	

$V_w std = 0.0474 * (H_2O\ g)$ _____ SCF

$V_m Corrected = V_m * C_m$ _____ ACF

$V_m std = \frac{17.71\ V_m C\ (P_b + \Delta H/13.6)}{T_m}$ _____ SCF

$V_t std = V_w std + V_m std$ _____ SCF

$\%H_2O = (V_w std / V_t std) * 100$ _____ $\%H_2O$

$Q_n std = 17.71\ Q_n\ P_s / T_s$ _____ SCFM

% Isokinetic = $V_t std$ / ($Q_n std$ * Time) _____ %

DUST LOADING CALCULATIONS (Concentration Basis)

DCL = 15.432 (dust g) / $V_t std$ _____ grains/scf

% Efficiency = $\frac{(\text{Inlet DCL - Outlet DCL})}{\text{Inlet DCL}} * 100$ _____ %

ACFM = V_s * Pipe Area (ft^2) _____ ACFM

SCFM = ACFM * $P_s/29.92$ * $530/T_s$ = ACFM * P_s/T_s * 17.71 _____ SCFM

lbs/hour = grains / scf * 0.000143 * SCFM * 60 _____ lbs/hour

Sample Pt. _____

Train Type : **ONTARIO-HYDRO METHOD**

Date 7/15/99
Run B06-IN-3 (pm inlet)
Fund # _____
Cost Center # _____

Stopper Type	Type Of Solution	Initial Wt. (g)	Final Wt. (g)	Net Wt. (g)
BUBBLER	KCl	695.4	809.3	113.9
BUBBLER	KCl	724.2	741.7	17.5
IMPINGER	KCl	621.8	627.4	5.6
BUBBLER	H_2O_2/HNO_3	758.1	762.4	4.3
BUBBLER	$KMnO_4/H_2SO_4$	730.2	730.9	0.7
BUBBLER	$KMnO_4/H_2SO_4$	718.9	718.7	-0.2
IMPINGER	$KMnO_4/H_2SO_4$	704.4	705.1	0.7
BUBBLER	SILICA GEL	935.7	950.0	14.3
			Total H_2O (g)	143.5
FILTER				157
			Total Dust (g)	~~157~~ SP

$V_w std = 0.0474 * (H_2O\ g)$ _____ SCF

$V_m Corrected = V_m * C_m$ _____ ACF

$V_m std = \frac{17.71\ V_m C\ (P_b + \Delta H/13.6)}{T_m}$ _____ SCF

$V_t std = V_w std + V_m std$ _____ SCF

$\%H_2O = (V_w std / V_t std) * 100$ _____ $\%H_2O$

$Q_n std = 17.71\ Q_n\ P_s / T_s$ _____ SCFM

% Isokinetic = $V_t std$ / ($Q_n std$ * Time) _____ %

DUST LOADING CALCULATIONS (Concentration Basis)

DCL = 15.432 (dust g) / $V_t std$ _____ grains/scf

% Efficiency = $\frac{(\text{Inlet DCL - Outlet DCL})}{\text{Inlet DCL}} * 100$ _____ %

ACFM = V_s * Pipe Area (ft^2) _____ ACFM

SCFM = ACFM * $P_s/29.92 * 530/T_s$ = ACFM * P_s/T_s * 17.71 _____ SCFM

lbs/hour = grains / scf * 0.000143 * SCFM * 60 _____ lbs/hour

Sample Pt. _____

Train Type : **ONTARIO-HYDRO METHOD**

Date 7/15/99
Run B06-Out3 (pm) outlet
Fund # _____
Cost Center # _____

Stopper Type	Type Of Solution	Initial Wt. (g)	Final Wt. (g)	Net Wt. (g)
BUBBLER	KCl	698.6	820.4	121.8
BUBBLER	KCl	619.9	643.2	23.3
IMPINGER	KCl	726.5	731.8	5.3
BUBBLER	H_2O_2/HNO_3	743.6	748.3	4.7
BUBBLER	$KMnO_4/H_2SO_4$	750.8	751.3	0.5
BUBBLER	$KMnO_4/H_2SO_4$	756.6	756.2	0.4
IMPINGER	$KMnO_4/H_2SO_4$	~~574.6~~ 754.6	755.4	0.8
BUBBLER	SILICA GEL	808.2	826.7	18.5
			Total H_2O (g)	156
FILTER			5 gal	18.5
			Total Dust (g)	

$V_w std = 0.0474 * (H_2O\ g)$ _____ SCF

$V_m Corrected = V_m * C_m$ _____ ACF

$V_m std = \frac{17.71\ V_m C\ (P_b + \Delta H/13.6)}{T_m}$ _____ SCF

$V_t std = V_w std + V_m std$ _____ SCF

$\%H_2O = (V_w std / V_t std) * 100$ _____ $\%H_2O$

$Q_n std = 17.71\ Q_n\ P_s / T_s$ _____ SCFM

% Isokinetic = $V_t std$ / ($Q_n std$ * Time) _____ %

DUST LOADING CALCULATIONS (Concentration Basis)

DCL = 15.432 (dust g) / $V_t std$ _____ grains/scf

% Efficiency = $\frac{(\text{Inlet DCL} - \text{Outlet DCL})}{\text{Inlet DCL}} * 100$ _____ %

ACFM = V_s * Pipe Area (ft^2) _____ ACFM

SCFM = ACFM * $P_s/29.92$ * $530/T_s$ = ACFM * P_s/T_s * 17.71 _____ SCFM

lbs/hour = grains / scf * 0.000143 * SCFM * 60 _____ lbs/hour

b. Select the "Input Data" option by moving the cursor over it and then pressing Enter. The following screens will appear:

Field Data Input Screen:

Input Field Data:

RUN NUMBER:
RUN TYPE (C,L,P,V):
DATE:
TIME:
UNITS (E or M):
PLANT NAME:
LOCATION:
STACK ID:
1ST OPERATOR:
2ND OPERATOR:
HOT BOX ID:
CONTROL UNIT SN:
PROCESSOR ID:
PROBE SN:
FILTER ID:
NOZZLE SN:
ORIFICE SN:

Input Field Data:

DELTA-AT:	inH2O
PITOT CP:	
AMBIENT TEMPERATURE:	degF
BAROMETRIC PRESSURE:	inHg
DGM MOISTURE CONTENT:	%
NOZZLE DIAMETER:	in
PROBE TEMPERATURE SETTING:	degF
PROBE LENGTH:	ft
HOTBOX TEMPERATURE SETTING:	degF
STACK GAS PRESSURE:	inH2O
STACK MOISTURE CONTENT:	%
DRY GAS MOLECULAR WEIGHT:	lb/M

Stack Geometry Data Input Screen:

Input Stack Geometry Data:

STACK GEOMETRY (C or R):	
STACK DIAMETER:	in
STACK WIDTH:	in
STACK LENGTH:	in
FRONT-WALL THICKNESS:	in
SIDE-WALL THICKNESS:	in
PORT LENGTH:	in
UPSTREAM DISTANCE:	ft
DOWNSTREAM DISTANCE:	ft

Traverse Points Input Screen:

Input Traverse Points Rectangular: (* If stack geometry is Rectangular)

TOTAL NUMBER OF POINTS:	
NO. X-DIRECTION POINTS:	
NO. Y-DIRECTION POINTS:	
FRONT-WALL DISTANCE:	in
X-DIRECTION INCREMENT:	in
SIDE-WALL DISTANCE:	in
Y-DIRECTION INCREMENT:	in

Input Traverse Points Circular: (* If stack geometry is Circular)

TOTAL NUMBER OF POINTS:	
P1 DISTANCE:	in
P2 DISTANCE:	in
P3 DISTANCE:	in
P4 DISTANCE:	in
P5 DISTANCE:	in
P6 DISTANCE:	in
P7 DISTANCE:	in
P8 DISTANCE:	in
P9 DISTANCE:	in
P10 DISTANCE:	in
P11 DISTANCE:	in
P12 DISTANCE:	in
P13 DISTANCE:	in
P14 DISTANCE:	in
P15 DISTANCE:	in
P16 DISTANCE:	in

Calibration Data Input Screen: (* If run type is Calibration)

Input Calibration Data:

PITOT OFFSET:	inH2O
PITOT SLOPE:	inH2O/V
PITOT ZERO VALUE:	inH2O
PITOT ZERO DATE:	
PITOT FULL SCALE VALUE:	inH2O
PITOT FULL SCALE DATE:	
ORIFICE OFFSET:	inH2O
ORIFICE SLOPE:	inH2O/V
ORIFICE ZERO VALUE:	inH2O
ORIFICE ZERO DATE:	
ORIFICE FULL SCALE VALUE:	inH2O
ORIFICE FULL SCALE DATE:	

End Of Run Data Input Screen: (* If run type is Particulate or Velocity Traverse)

Input End Of Run Data:

DELTA-P AVG.:	inH2O
STACK TEMPERATURE AVG.:	degF
DELTA-H AVG:	inH2O
DGM TEMPERATURE AVG.:	degF
STACK VELOCITY AVG.:	ft/s
STACK FLOWRATE AVG.:	cfm
RUN TIME:	sec
GAS VOLUME:	cf
ISOKINETIC VARIATION AVG.:	%

c. On the Control Unit go to the "1.6 Host Communication" menu and select the "3. Download Data" option.

When the "1.6.3. Download Data" menu appears, answer YES to the question "Do you really want to download data?". This causes the Control Unit to enter the host communication mode and be ready to "receive" the Run Data from the Host Computer.

d. On the Host Computer, select the "Send Data" option by moving the cursor over it and then pressing Enter. This will start the Data Sending process.

You can monitor the progress of the operation on the "Sending Data Screen". This screen will show a series of rapidly changing messages during the downloading process. When the operation is completed, the message "@END" will appear on the screen.

You can exit the NAPPLINK program by pressing Escape and then selecting the "Goodbye" option.

e. On the Control Unit, after the "Downlod Data" operation is completed, you can return to the "1.6 Host Communication" menu by pressing the 'A' key on the keypad. You can, then, optionally proceed to list the Data Bank contents to verify the presense of the Run Data downloaded from the Host Computer by selecting the "1. List Data Bank" option.

NAPP DATA DOWNLOAD

FIELD DATA

RUN_NUMBER:	1
RUN_TYPE:	PARTICULATE
DATE:	7-16-99
TIME:	08:20
UNITS:	ENGLISH
PLANT_NAME:	PRESQUE ISLE
LOCATION:	MARQUETTE
STACK_ID:	134
1ST_OPERAT RS	RS
2ND_OPERA GD	GD
HOT_BOX_ID:	
CONTROL_UNIT_ID:	
PROBE_ID:	
FILTER_ID:	
NOZZLE_ID:	
ORIFICE_ID:	
DELTA-AT:	1.70 ✓
PITOT_CP:	0.84
TEMP_AMB:	75
PRES_ATM:	29.26 ✓
B_WM:	0.005
NOZZLE_DIA .185 /	0.150
PROBE_TEMP_SET	300
PROBE_LENGTH:	12
HB_TEMP_SET:	250
LEAK_RATE:	0.014
PRESS_STAT:	29.11
B_WS:	0.083
M_DRY_GAS:	30.39

Need CO_2/O_2 and the stack Box cal.

STACK GEOMETRY DATA

STACK_GEOMETRY:	CIRCULAR
STACK_DIAMETER:	134 = 97.93
FRONT_WALL_THICK:	0.25
SIDE_WALL_THICK:	0.25
PORT_LENGTH:	7.00
UPSTREAM_DIST:	+22
DOWNSTREAM_DIST:	+89

TRAVERS POINT DATA (CIRC)

NUM_POINTS: 12

POINT_NO	DIST	
1	12.90	S
2	26.56	
3	46.66	
4	101.34	
5	121.44	
6	135.10	
7	12.90	E
8	26.56	
9	46.66	
10	101.34	
11	121.44	
12	135.10	

PARTICULATE TRAVERS DATA

P_#	S_TIME	DH_V	TS	DP_S	DH_M	V_G	TM_I	TM_O	T_HB	T_PR	T_CB
1	600.13	3.52	283.76	2.84	2.28	8.814	75.31	74.98	245.72	298.14	70.55
2	600.00	2.32	283.17	2.90	1.04	5.792	84.22	81.93	261.41	299.27	68.94
3	600.00	2.31	284.29	2.95	1.08	5.813	92.13	88.74	260.19	301.02	67.53
4	600.00	2.43	284.43	2.98	1.09	5.831	100.81	95.03	249.54	300.54	65.72
5	600.00	2.56	285.02	2.90	1.08	5.781	107.32	102.65	254.10	299.96	65.87
6	600.71	2.57	284.89	2.81	1.06	5.693	112.42	106.18	248.12	299.15	65.02
7	600.23	2.60	285.13	2.63	0.93	5.058	85.69	83.42	262.93	300.67	72.19
8	600.00	2.73	286.27	2.79	0.98	5.224	93.57	91.08	248.33	298.32	69.11
9	600.00	2.82	286.89	2.85	1.03	5.269	99.48	96.24	252.57	301.45	67.34
10	600.00	2.89	287.04	2.78	1.03	5.213	106.36	102.97	258.52	305.11	66.39
11	600.00	2.85	287.42	2.72	1.00	5.139	110.13	105.35	249.67	298.37	66.41
12	600.57	2.91	286.12	2.53	0.99	5.132	113.42	107.81	253.28	298.01	66.35

$\sqrt{\Delta P}$ 1.6749

END OF RUN DATA

DELTA-P_AVE:	2.81
STACK_TEMP_AVE:	285.37
STACK_VEL_AVE:	112.33
STACK_FLOW_AVE	2.50E+07
DELTA-H_AVE:	1.13
DGM_TEMP_AVE:	96.5517
RUN_TIME:	7201.64
GAS_VOLUME:	68.759
ISOKINETIC_VAR:	104.76

sec 120 min

TRAVERS POINT DATA (CIRC)

NUM_POINTS: 12

POINT_NO	DIST	
1	12.90	E
2	26.56	
3	46.66	
4	101.34	
5	121.44	
6	135.10	
7	12.90	S
8	26.56	
9	46.66	
10	101.34	
11	121.44	
12	135.10	

PARTICULATE TRAVERS DATA

P_#	S_TIME	DH_V	TS	DP_S	DH_M	V_G	TM_I	TM_O	T_HB	T_PR	T_CB
1	600.19	3.03	296.83	2.41	0.86	4.466	78.49	76.48	240.29	302.59	71.34
2	600.00	3.09	297.30	2.47	0.90	4.508	87.38	83.72	256.83	298.07	70.18
3	600.00	3.06	298.19	2.51	0.93	4.534	95.10	90.09	264.81	299.32	68.93
4	600.00	3.19	298.64	2.53	0.94	4.552	102.94	97.55	254.17	300.78	68.03
5	600.00	3.18	298.52	2.51	0.95	4.536	109.31	104.53	249.54	306.82	67.12
6	600.93	3.21	297.85	2.42	0.92	4.467	114.65	108.87	246.88	302.45	66.89
7	600.17	3.17	298.38	2.56	0.93	4.648	87.45	85.23	252.02	300.57	70.96
8	600.00	3.24	299.03	2.61	0.96	4.694	95.03	91.61	257.77	301.37	69.99
9	600.00	3.45	299.86	2.66	0.99	4.739	102.33	98.25	250.94	302.44	69.27
10	600.00	3.62	300.19	2.60	0.98	4.682	109.11	104.40	254.04	298.73	68.72
11	600.00	3.71	299.59	2.55	0.97	4.603	112.97	107.12	249.97	303.71	68.38
12	600.85	3.68	298.40	2.48	0.94	4.553	115.62	109.94	253.76	301.60	67.62

1.58912

END OF RUN DATA

DELTA-P_AVE:	2.53
STACK_TEMP_AVE:	298.57
STACK_VEL_AVE:	107.52
STACK_FLOW_AVE	2.35E+07
DELTA-H_AVE:	0.94
DGM_TEMP_AVE:	98.67
RUN_TIME:	7202.14
GAS_VOLUME:	54.982
ISOKINETIC_VAR:	90.98

NAPP DATA DOWNLOAD

FIELD DATA

RUN_NUMBER:	2
RUN_TYPE:	PARTICULATE
DATE:	7-16-99
TIME:	11:15
UNITS:	ENGLISH
PLANT_NAME:	PRESQUE ISLE
LOCATION:	MARQUETTE
STACK_ID:	134
1ST_OPERAT RS	RS
2ND_OPERA GD	GD
HOT_BOX_ID:	
CONTROL_UNIT_ID:	
PROBE_ID:	
FILTER_ID:	
NOZZLE_ID:	
ORIFICE_ID:	
DELTA-AT:	1.70
PITOT_CP:	0.84
TEMP_AMB:	78
PRES_ATM:	29.26
B_WM:	0.005
NOZZLE_DIAM:	0.152
PROBE_TEMP_SET	300
PROBE_LENGTH:	12
HB_TEMP_SET:	250
LEAK_RATE:	0.011
PRESS_STAT:	29.11
B_WS:	0.085
M_DRY_GAS:	30.22

STACK GEOMETRY DATA

STACK_GEOMETRY:	CIRCULAR
STACK_DIAMETER:	134
FRONT_WALL_THICK:	0.25
SIDE_WALL_THICK:	0.25
PORT_LENGTH:	7.00
UPSTREAM_DIST:	+22
DOWNSTREAM_DIST:	+89

TRAVERS POINT DATA (CIRC)

NUM_POINTS: 12

POINT_NO	DIST	
1	12.90	S
2	26.56	
3	46.66	
4	101.34	
5	121.44	
6	135.10	
7	12.90	E
8	26.56	
9	46.66	
10	101.34	
11	121.44	
12	135.10	

PARTICULATE TRAVERS DATA

P_#	S_TIME	DH_V	TS	DP_S	DH_M	V_G	TM_I	TM_O	T_HB	T_PR	T_CB
1	600.11	2.87	308.51	2.80	0.93	5.081	79.52	78.37	254.71	310.67	73.85
2	600.00	2.92	310.92	2.89	0.97	5.122	88.49	84.41	259.51	309.28	71.06
3	600.00	2.91	311.24	2.95	1.00	5.197	96.08	91.13	250.84	301.27	69.16
4	600.00	2.98	310.98	2.96	1.02	5.204	103.56	98.21	246.37	305.96	68.21
5	600.00	3.01	310.41	2.89	1.01	5.147	110.23	105.38	256.61	299.92	67.31
6	601.42	3.21	309.52	2.79	0.98	5.098	115.44	109.61	251.55	303.33	67.17
7	600.21	3.19	309.76	2.76	0.93	4.812	88.75	86.34	247.39	305.84	72.32
8	600.00	3.24	310.47	2.82	0.96	4.839	98.12	94.57	252.58	304.01	71.94
9	600.00	3.30	311.03	2.93	1.01	4.926	103.59	99.04	249.99	297.34	71.03
10	600.00	3.35	310.95	2.94	1.02	4.951	110.21	105.46	255.47	306.75	68.25
11	600.00	3.32	310.05	2.79	0.98	4.952	113.87	108.28	250.09	302.52	67.43
12	600.61	3.39	309.32	2.77	0.97	4.832	115.35	110.80	252.16	308.28	67.92

1.69028

END OF RUN DATA

DELTA-P_AVE:	2.86
STACK_TEMP_AVE:	310.26
STACK_VEL_AVE:	115.18
STACK_FLOW_AVE	2.46E+07
DELTA-H_AVE:	0.98
DGM_TEMP_AVE:	99.78
RUN_TIME:	7202.35
GAS_VOLUME:	60.161
ISOKINETIC_VAR:	97.43

NAPP DATA DOWNLOAD

FIELD DATA

RUN_NUMBER:	3
RUN_TYPE:	PARTICULATE
DATE:	7-16-99
TIME:	14:10
UNITS:	ENGLISH
PLANT_NAME:	PRESQUE ISLE
LOCATION:	MARQUETTE
STACK_ID:	134
1ST_OPERAT RS	RS
2ND_OPERA GD	GD
HOT_BOX_ID:	
CONTROL_UNIT_ID:	
PROBE_ID:	
FILTER_ID:	
NOZZLE_ID:	
ORIFICE_ID:	
DELTA-AT:	1.70
PITOT_CP:	0.84
TEMP_AMB:	81
PRES_ATM:	29.29
B_WM:	0.005
NOZZLE_DIAM:	0.150
PROBE_TEMP_SET	300
PROBE_LENGTH:	12
HB_TEMP_SET:	250
LEAK_RATE:	0.007
PRESS_STAT:	29.14
B_WS:	0.091
M_DRY_GAS:	30.38

STACK GEOMETRY DATA

STACK_GEOMETRY:	CIRCULAR
STACK_DIAMETER:	134
FRONT_WALL_THICK:	0.25
SIDE_WALL_THICK:	0.25
PORT_LENGTH:	7.00
UPSTREAM_DIST:	+22
DOWNSTREAM_DIST:	+89

DATE 7-16-99
RUN # Unit 1-4 Stack run 1
FUND # 5344
COST CENTER NUMBER _____

5 on computer

DUST LOADING DATA SHEET

Time at Start 8:20 Operators RS / GP

Sample Pt. _____ Traverse Pt. _____

P_B(Barometric Pressure)= 29.26 in. Hg

P_s(Stack Pressure)= P_B ±(_____ in H_2O/13.6) = [ ] in Hg

T_s(Stack Temp)= 283 °F+460= [ ] °R

~~5~~6

ΔP(Pitot)= _____ in H_2O _____ Type S Cp=.84 _____ Standard

D_n(Nozzle Diam)= .185 / .150 in Approx % H_2O= _____ changed at 1st port RS

ΔH@= _____ in H_2O Cm= _____

V_s(Stack Velocity) = $951.6\ Cp \sqrt{\frac{Ts\ \Delta P}{Ps}}$ = _____ ft/min

Q_n(Nozzle flow Rate)= $V_s \pi D_n^2/576$= _____ ACFM

Q_m(meter flow rate $\frac{Q_n T_m Qn}{CmT_s(p_B+\Delta H/13.6)}$ (1 - $\frac{\%H_2O}{100}$)= _____ ACFM

ΔH(orifice)= $\frac{Qm^2 \Delta H@(P_B+\Delta H/13.6)}{0.03175 T_m}$ = _____ in H_2O

Second/Rev= _____ $\%CO_2$ _____ $\%O_2$ _____

Note: Standard Temperature and Pressure are 70 °F and 29.92 in Hg

S/R	Trav # ~~Point~~	Time	Gas Meter	ΔP	ΔH	Pump Vac.	Stack Temp.	Probe Temp.	Meter In	Meter Out				
	1	8:20	881.342											
			923.030	End										
			Leak ✓ - OK											
	2		923.193											
			957.961	End										
			Leak ✓ - OK											

Filter .15085 change nozzle at the 1st locals ~~.20~~ to .185 & .150 to

Comments: 74 89 104

13 27 47 101 121 135

Sample Pt. _____

Train Type : **ONTARIO-HYDRO METHOD**

Date _____
Run Unit 1-4 Stack, sample #1
Fund # _____
Cost Center # _____

Stopper Type	Type Of Solution	Initial Wt. (g)	Final Wt. (g)	Net Wt. (g)
BUBBLER	KCl	698.2	774.6	76.4 ✓
BUBBLER	KCl	713.3	740.4	27.1 ✓
IMPINGER	KCl	596.4	605.1	8.7 ✓
BUBBLER	H_2O_2/HNO_3	728.6	732.4	3.8 ✓
BUBBLER	$KMnO_4/H_2SO_4$	701.4	700.9	-.5 ✓
BUBBLER	$KMnO_4/H_2SO_4$	708.9	709.3	.4 ✓
IMPINGER	$KMnO_4/H_2SO_4$	691.9	693.9	2.0 ✓
BUBBLER	SILICA GEL	931.1	952.1	21 ✓
			Total H_2O (g)	138.9
FILTER		.15085	.15359	.00274
		H_2O =	117.9 ✓	
		SG=	21	
			Total Dust (g)	

$V_w std = 0.0474 * (H_2O\ g)$ _____ SCF

$V_m Corrected = V_m * C_m$ _____ ACF

$V_m std = \frac{17.71\ V_m C\ (P_b + \Delta H/13.6)}{T_m}$ _____ SCF

$V_t std = V_w std + V_m std$ _____ SCF

$\%H_2O = (V_w std / V_t std) * 100$ _____ $\%H_2O$

$Q_n std = 17.71\ Q_n\ P_s / T_s$ _____ SCFM

% Isokinetic = $V_t std / (Q_n std * Time)$ _____ %

DUST LOADING CALCULATIONS (Concentration Basis)

DCL = 15.432 (dust g) / $V_t std$ _____ grains/scf

% Efficiency = $\frac{(\text{Inlet DCL - Outlet DCL})}{\text{Inlet DCL}} * 100$ _____ %

ACFM = V_s * Pipe Area (ft^2) _____ ACFM

SCFM = ACFM * $P_s/29.92 * 530/T_s$ = ACFM * P_s/T_s * 17.71 _____ SCFM

lbs/hour = grains / scf * 0.000143 * SCFM * 60 _____ lbs/hour

DATE 7-16-99
RUN # Unit 1-4 stack - run 2 (6 on computa
FUND # 5344
COST CENTER NUMBER _____

DUST LOADING DATA SHEET

Time at Start 11:15 Operators RS / GV

Sample Pt. 1-4 Stack Traverse Pt. E of S

P_B(Barometric Pressure)= 29.26 in. Hg

P_s(Stack Pressure)= P_B ±(_____ in H_2O/13.6) = [ ] in Hg

T_s(Stack Temp)= _____ °F+460= [ ] °R

ΔP(Pitot)= _____ in H_2O _____Type S Cp=.84 _____Standard

D_n(Nozzle Diam)= .152 in Approx % H_2O= 10

ΔH@= _____ in H_2O Cm= _____

V_s(Stack Velocity) = $951.6\ Cp \sqrt{\frac{Ts}{Ps}\Delta P}$ = _____ ft/min

Q_n(Nozzle flow Rate)= $V_s \pi D_n^2/576$= _____ACFM

Q_m(meter flow rate $\frac{Q_n T_m Q_n}{C_m T_s(p_B+\Delta H/13.6)}$ (1 - $\frac{\%H_2O}{100}$)= _____ACFM

ΔH(orifice)= $\frac{Q_m^2 \Delta H@(P_B+\Delta H/13.6)}{0.03175 T_m}$ = _____in H_2O

Second/Rev= _____ %CO_2_____ %O_2_____

Note: Standard Temperature and Pressure are 70 °F and 29.92 in Hg

S/R	Trav. Point	Time	Gas Meter	ΔP	ΔH	Pump Vac.	Stack Temp.	Probe Temp.	Meter In	Meter Out				
	1	11:15	958.073											
			988.186											
			Leak	✓										
	2	12:30	988.286											
			1019.686											

Comments: .15076 Pre Leak ✓ OK

Sample Pt. _____

Train Type : **ONTARIO-HYDRO METHOD**

Date 7/16/99
Run Unit 1-4 Stack - run 2
Fund # 5344
Cost Center # _____

Stopper Type	Type Of Solution	Initial Wt. (g)	Final Wt. (g) 830.2	Net Wt. (g)
BUBBLER	KCl	753.8	~~667.9~~	76.4
BUBBLER	KCl	723.4	735.8	12.4
IMPINGER	KCl	734.9	737.1	2.2
BUBBLER	H_2O_2/HNO_3	742.2	744.3	2.1
BUBBLER	$KMnO_4/H_2SO_4$	733.8	733.4	-.4
BUBBLER	$KMnO_4/H_2SO_4$	625.8	626.2	.4
IMPINGER	$KMnO_4/H_2SO_4$	706.8	707.5	.7
BUBBLER	SILICA GEL	968.0	980.3	12.3
			Total H_2O (g)	106.1
FILTER		.15046	.15126	.00080
		H_2O =	93.8	
		SG =	12.3	
			Total Dust (g)	

$V_w std = 0.0474 * (H_2O\ g)$ _____ SCF

$V_m Corrected = V_m * C_m$ _____ ACF

$V_m std = \frac{17.71\ V_m C\ (P_b + \Delta H/13.6)}{T_m}$ _____ SCF

$V_t std = V_w std + V_m std$ _____ SCF

$\%H_2O = (V_w std / V_t std) * 100$ _____ $\%H_2O$

$Q_n std = 17.71\ Q_n\ P_s / T_s$ _____ SCFM

% Isokinetic = $V_t std / (Q_n std * Time)$ _____ %

DUST LOADING CALCULATIONS (Concentration Basis)

DCL = 15.432 (dust g) / $V_t std$ _____ grains/scf

% Efficiency = $\frac{(\text{Inlet DCL} - \text{Outlet DCL})}{\text{Inlet DCL}} * 100$ _____ %

ACFM = V_s * Pipe Area (ft^2) _____ ACFM

SCFM = ACFM * $P_s/29.92$ * $530/T_s$ = ACFM * P_s/T_s * 17.71 _____ SCFM

lbs/hour = grains / scf * 0.000143 * SCFM * 60 _____ lbs/hour

DATE 7/16/99
RUN # Unit 1-4 Stack, Run #3
FUND #
COST CENTER NUMBER

DUST LOADING DATA SHEET

Time at Start 14:10 Operators RB / GO

Sample Pt. Stack Traverse Pt.

P_B(Barometric Pressure)= 29.29 in. Hg

P_s(Stack Pressure)= P_B ±(-2 in H_2O/13.6) = 29.14 in Hg

T_s(Stack Temp)= 310 °F+460= 770 °R

ΔP(Pitot)= 2.85 in H_2O Y Type S Cp=.84 Standard

D_n(Nozzle Diam)= .150 in Approx % H_2O= 10

STACK ID 134

ΔH@= 1.86 in H_2O Cm= .96

V_s(Stack Velocity) = $951.6\ Cp \sqrt{\frac{Ts}{Ps}\Delta P}$ = 6936 ft/min

Q_n(Nozzle flow Rate)= $V_s \pi D_n^2/576$= .8512 ACFM

Q_m(meter flow rate $\frac{Q_n T_m Q_n}{C_m T_s(p_B+\Delta H/13.6)}$ (1 - %H_2O)= .5613 ACFM

ΔH(orifice)= $\frac{Q_m^2 \Delta H@(P_B+\Delta H/13.6)}{0.03175 T_m}$ = .99 in H_2O

Second/Rev= 10.7 %CO_2 %O_2

Note: Standard Temperature and Pressure are 70 °F and 29.92 in Hg

85

S/R	Trav. Point	Time	Gas Meter	ΔP	ΔH	Pump Vac.	Stack Temp.	Probe Temp.	Meter In	Meter Out				
	1	14:10	20.177											
			Leak	Y	≈	1 cf								
	2	15:18	~			computer					restart			
				78.8137		DGM		Power Failure				(81.327 in		
			87.736	DGM			84.8667		computer					
			60.559											

Comments:

Sample Pt. _____

Train Type : **ONTARIO-HYDRO METHOD**

Date 7/16/99
Run Unit 1-4 Stack, Run 3
Fund # _____
Cost Center # _____

Stopper Type	Type Of Solution	Initial Wt. (g)	Final Wt. (g)	Net Wt. (g)
BUBBLER	KCl	713.9	796.1	82.2
BUBBLER	KCl	707.9	726.9	19.0
IMPINGER	KCl	712.3	716.5	4.2
BUBBLER	H_2O_2/HNO_3	615.9	620.1	4.2
BUBBLER	$KMnO_4/H_2SO_4$	700.5	700.4	-.1
BUBBLER	$KMnO_4/H_2SO_4$	743.0	743.9	.9
IMPINGER	$KMnO_4/H_2SO_4$	718.6	718.5	-.1
BUBBLER	SILICA GEL	930.6	946.0	15.4
			Total H_2O (g)	125.7
FILTER		.15549	.15619	.00070
		H_2O	110.3	
		DG=	15.4	
			Total Dust (g)	

$V_w std = 0.0474 * (H_2O\ g)$ — 5.927 SCF

$V_m Corrected = V_m * C_m$ — 63.897 ACF

$V_m std = \frac{17.71\ V_m C\ (P_b + \Delta H/13.6)}{T_m}$ — 61.000 SCF

$V_t std = V_w std + V_m std$ — 67.027 SCF

$\%H_2O = (V_w std / V_t std) * 100$ — 8.8 $\%H_2O$

$Q_n std = 17.71\ Q_n\ P_s / T_s$ — .570 SCFM

% Isokinetic = $V_t std / (Q_n std * Time)$ — 97.9 %

DUST LOADING CALCULATIONS (Concentration Basis)

DCL = 15.432 (dust g) / $V_t std$ — .0002 grains/scf

% Efficiency = $\frac{(\text{Inlet DCL} - \text{Outlet DCL})}{\text{Inlet DCL}} * 100$ — ~ %

ACFM = V_s * Pipe Area (ft^2) — ~ ACFM

SCFM = ACFM * $P_s/29.92 * 530/T_s$ = ACFM * P_s/T_s * 17.71 — _____ SCFM

lbs/hour = grains / scf * 0.000143 * SCFM * 60 — _____ lbs/hour

APPENDIX D
LABORATORY ANALYTICAL REPORTS

PROCESS SOLID SAMPLES ANALYTICAL REPORT

CONSOL INC.
RESEARCH & DEVELOPMENT
ANALYTICAL LABORATORY
4000 BROWNSVILLE ROAD, LIBRARY, PA 15129

DESCRIPTION *PRESQUE ISLE COAL SAMPLE*

SAMPLE NUMBER UNIT 1 - 4 COMPOSITE

DATE LOGGED *07/26/99*
DATE COMPLETED *08/26/99*
PROJECT NUMBER *1621-29 -7*
ANALYTICAL NUMBER **994581**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	9.79
Volatile Matter	35.95
Fixed Carbon	54.26
Sulfur, Total	0.98
BTU/lb	12872
MAF BTU/lb	14269

ULTIMATE	(Dry)%
Carbon	73.90
Hydrogen	4.76
Nitrogen	1.56
Chlorine	0.021
Sulfur, Total	0.98
Ash	9.79
Oxygen (DIFF)	8.99

MAJOR ASH ELEM	%
Ignited at 750 C	
SiO2	56.30
Al2O3	25.05
TiO2	0.81
Fe2O3	4.75
CaO	3.19
MgO	1.67
Na2O	2.19
K2O	0.95
P2O5	0.47
SO3	2.92
UND	1.70

MISC. (As Det.)

Hg 22 ppb

AS DETERMINED MOISTURE: 5.38 %

DISTRIBUTION:
M. DEVITO

Approved for transmittal

CONSOL INC.
RESEARCH & DEVELOPMENT
ANALYTICAL LABORATORY
4000 BROWNSVILLE ROAD, LIBRARY, PA 15129

DESCRIPTION *PRESQUE ISLE ASH SAMPLES*

SAMPLE NUMBER BAGHOUSE 1

DATE LOGGED *07/23/99*
DATE COMPLETED *08/25/99*
PROJECT NUMBER *1621-29 -7*
ANALYTICAL NUMBER **994540**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	69.66
Sulfur, Total	0.92

MISC. (As Det.)	
Hg	131 ppb

ULTIMATE	(Dry)%
Carbon	28.91
Hydrogen	0.03
Nitrogen	0.29
Sulfur, Total	0.92
Ash	69.66
Oxygen (DIFF)	0.15

MAJOR ASH ELEM	(Dry)%
SiO2	43.21
Al2O3	15.55
TiO2	0.44
Fe2O3	4.35
CaO	2.41
MgO	1.17
Na2O	1.38
K2O	0.74
P2O5	0.25
SO3	0.40
UND	30.10

AS DETERMINED MOISTURE: 0.35 %

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DESCRIPTION *PRESQUE ISLE ASH SAMPLES*

SAMPLE NUMBER BAGHOUSE 2

DATE LOGGED *07/23/99*
DATE COMPLETED *08/25/99*
PROJECT NUMBER *1621-29 -7*
ANALYTICAL NUMBER **994541**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	74.58
Sulfur, Total	0.92
MISC. (As Det.)	
Hg	145 ppb

ULTIMATE	(Dry)%
Carbon	24.19
Hydrogen	0.00
Nitrogen	0.22
Sulfur, Total	0.92
Ash	74.58
Oxygen (DIFF)	0.06

MAJOR ASH ELEM	(Dry)%
SiO2	46.85
Al2O3	16.64
TiO2	0.49
Fe2O3	5.15
CaO	2.56
MgO	1.33
Na2O	1.51
K2O	0.79
P2O5	0.28
SO3	0.42
UND	23.98

AS DETERMINED MOISTURE: 0.25 %

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DESCRIPTION *PRESQUE ISLE ASH SAMPLES*

SAMPLE NUMBER BAGHOUSE 3

DATE LOGGED *07/23/99*
DATE COMPLETED *08/25/99*
PROJECT NUMBER *1621-29 -7*
ANALYTICAL NUMBER **994542**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	71.88
Sulfur, Total	0.92

MISC. (As Det.)	
Hg	129 ppb

ULTIMATE	(Dry)%
Carbon	26.84
Hydrogen	-0.01
Nitrogen	0.28
Sulfur, Total	0.92
Ash	71.88
Oxygen (DIFF)	0.06

MAJOR ASH ELEM	(Dry)%
SiO2	46.07
Al2O3	15.25
TiO2	0.41
Fe2O3	5.15
CaO	2.44
MgO	1.25
Na2O	1.39
K2O	0.76
P2O5	0.24
SO3	0.34
UND	26.70

AS DETERMINED MOISTURE: 0.36 %

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DESCRIPTION *PRESQUE ISLE COAL SAMPLE*

SAMPLE NUMBER UNIT 6 - TEST 1

DATE LOGGED *07/26/99*
DATE COMPLETED *08/12/99*
PROJECT NUMBER *1621-29 -7*
ANALYTICAL NUMBER **994572**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	10.28
Volatile Matter	37.83
Fixed Carbon	51.89
Sulfur, Total	1.02
BTU/lb	12694
MAF BTU/lb	14148

ULTIMATE	(Dry)%
Carbon	72.90
Hydrogen	4.64
Nitrogen	1.57
Chlorine	0.020
Sulfur, Total	1.02
Ash	10.28
Oxygen (DIFF)	9.57

MAJOR ASH ELEM	%
Ignited at 750 C	
SiO2	55.57
Al2O3	24.78
TiO2	0.80
Fe2O3	5.42
CaO	3.51
MgO	1.78
Na2O	2.12
K2O	1.05
P2O5	0.46
SO3	3.69
UND	0.82

MISC. (As Det.)	
Hg	24.5 PPB

AS DETERMINED MOISTURE: 5.17 %

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DESCRIPTION *PRESQUE ISLE COAL SAMPLE*

SAMPLE NUMBER UNIT 6 - TEST 2

DATE LOGGED *07/26/99*
DATE COMPLETED *08/12/99*
PROJECT NUMBER *1621-29 -7*
ANALYTICAL NUMBER **994573**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	10.05
Volatile Matter	38.10
Fixed Carbon	51.85
Sulfur, Total	1.04
BTU/lb	12784
MAF BTU/lb	14212

ULTIMATE	(Dry)%
Carbon	72.84
Hydrogen	4.64
Nitrogen	1.61
Chlorine	0.021
Sulfur, Total	1.04
Ash	10.05
Oxygen (DIFF)	9.80

MAJOR ASH ELEM	%
Ignited at 750 C	
SiO2	55.59
Al2O3	25.29
TiO2	0.82
Fe2O3	5.10
CaO	3.27
MgO	1.69
Na2O	2.08
K2O	1.02
P2O5	0.46
SO3	3.20
UND	1.48

MISC. (As Det.)

Hg 46 PPB

AS DETERMINED MOISTURE: 5.10 %

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DESCRIPTION *PRESQUE ISLE COAL SAMPLE*

SAMPLE NUMBER UNIT 6 - TEST 3

DATE LOGGED *07/26/99*
DATE COMPLETED *08/13/99*
PROJECT NUMBER *1621-29 -7*
ANALYTICAL NUMBER **994574**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	9.99
Volatile Matter	38.04
Fixed Carbon	51.97
Sulfur, Total	1.04
BTU/lb	12772
MAF BTU/lb	14190

ULTIMATE	(Dry)%
Carbon	74.46
Hydrogen	4.76
Nitrogen	1.61
Chlorine	0.018
Sulfur, Total	1.04
Ash	9.99
Oxygen (DIFF)	8.12

MAJOR ASH ELEM	%
Ignited at 750 C	
SiO2	57.17
Al2O3	25.89
TiO2	0.83
Fe2O3	5.00
CaO	3.31
MgO	1.75
Na2O	2.15
K2O	1.05
P2O5	0.46
SO3	3.07
UND	-0.68

MISC. (As Det.)

Hg 41 PPB

AS DETERMINED MOISTURE: 5.10 %

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DESCRIPTION *PRESQUE ISLE ASH SAMPLES*

SAMPLE NUMBER UNIT 6 #1 - FRONT

DATE LOGGED *07/23/99*
DATE COMPLETED *08/25/99*
PROJECT NUMBER *1621-29 -7*
ANALYTICAL NUMBER **994547**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	83.41
Sulfur, Total	0.62
MISC. (As Det.)	
Hg	67 ppb

ULTIMATE	(Dry)%
Carbon	15.57
Hydrogen	-0.02
Nitrogen	0.18
Sulfur, Total	0.62
Ash	83.41
Oxygen (DIFF)	0.21

MAJOR ASH ELEM	(Dry)%
SiO2	49.67
Al2O3	21.12
TiO2	0.66
Fe2O3	4.09
CaO	2.56
MgO	1.37
Na2O	1.67
K2O	0.80
P2O5	0.35
SO3	0.38
UND	17.33

AS DETERMINED MOISTURE: 0.34 %

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DESCRIPTION *PRESQUE ISLE ASH SAMPLES*

SAMPLE NUMBER UNIT 6 #2 - FRONT

DATE LOGGED *07/23/99*
DATE COMPLETED *08/25/99*
PROJECT NUMBER *1621-29 -7*
ANALYTICAL NUMBER **994548**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	81.80
Sulfur, Total	0.65
MISC. (As Det.)	
Hg	69 ppb

ULTIMATE	(Dry)%
Carbon	17.39
Hydrogen	-0.01
Nitrogen	0.21
Sulfur, Total	0.65
Ash	81.80
Oxygen (DIFF)	-0.07

MAJOR ASH ELEM	(Dry)%
SiO2	50.01
Al2O3	20.67
TiO2	0.66
Fe2O3	4.13
CaO	2.75
MgO	1.38
Na2O	1.75
K2O	0.81
P2O5	0.35
SO3	0.37
UND	17.12

AS DETERMINED MOISTURE: 0.32 %

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DESCRIPTION *PRESQUE ISLE ASH SAMPLES*

SAMPLE NUMBER UNIT 6 #3 - FRONT

DATE LOGGED *07/23/99*
DATE COMPLETED *08/25/99*
PROJECT NUMBER *1621-29 -7*
ANALYTICAL NUMBER **994549**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	81.17
Sulfur, Total	0.66
MISC. (As Det.)	
Hg	80 ppb

ULTIMATE	(Dry)%
Carbon	17.65
Hydrogen	0.00
Nitrogen	0.21
Sulfur, Total	0.66
Ash	81.17
Oxygen (DIFF)	0.29

MAJOR ASH ELEM	(Dry)%
SiO2	48.72
Al2O3	20.38
TiO2	0.66
Fe2O3	4.09
CaO	2.78
MgO	1.37
Na2O	1.72
K2O	0.81
P2O5	0.36
SO3	0.37
UND	18.74

AS DETERMINED MOISTURE: 0.27 %

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DESCRIPTION *PRESQUE ISLE ASH SAMPLES*

SAMPLE NUMBER UNIT 6 #1 - BACK

DATE LOGGED *07/23/99*
DATE COMPLETED *08/10/99*
PROJECT NUMBER *1621-29 -7*
ANALYTICAL NUMBER **994550**

ANALYSIS REPORT

PROXIMATE	(Dry)%	ULTIMATE	(Dry)%
Ash	79.72	Carbon	18.64
Sulfur, Total	0.86	Hydrogen	-0.03
		Nitrogen	0.22
MISC. (As Det.)		Sulfur, Total	0.86
		Ash	79.72
Hg	228	Oxygen (DIFF)	0.55

AS DETERMINED MOISTURE: 0.41 %

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DESCRIPTION *PRESQUE ISLE ASH SAMPLES*

SAMPLE NUMBER UNIT 6 #2 - BACK

DATE LOGGED *07/23/99*
DATE COMPLETED *08/10/99*
PROJECT NUMBER *1621-29 -7*
ANALYTICAL NUMBER **994551**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	80.12
Sulfur, Total	0.82

MISC. (As Det.)	
Hg	280

ULTIMATE	(Dry)%
Carbon	18.27
Hydrogen	0.01
Nitrogen	0.20
Sulfur, Total	0.82
Ash	80.12
Oxygen (DIFF)	0.54

AS DETERMINED MOISTURE: 0.36 %

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DESCRIPTION *PRESQUE ISLE ASH SAMPLES*

SAMPLE NUMBER UNIT 6 #3 - BACK

DATE LOGGED *07/23/99*
DATE COMPLETED *08/10/99*
PROJECT NUMBER *1621-29 -7*
ANALYTICAL NUMBER **994552**

ANALYSIS REPORT

PROXIMATE	(Dry)%	ULTIMATE	(Dry)%
Ash	80.23	Carbon	18.36
Sulfur, Total	0.81	Hydrogen	0.00
		Nitrogen	0.20
MISC. (As Det.)		Sulfur, Total	0.81
		Ash	80.23
Hg	264	Oxygen (DIFF)	0.38

AS DETERMINED MOISTURE: 0.22 %

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Unit 6
Test 1
Coal

PROCESS STREAM SAMPLING SHEET

Sample Stream: Unit #6 Coal

Plant WEPCO Presque Isle

Date 7/14/99

Increment	1	2	3	4	5	6	7	8
Time	1415	1435	1455	1515	1535	1535	1615	1635
Weigth / Volume	500g							
Comp / Grab								
Process Status	75 mw	75	75	75	75	75	75	75
Sampler Condition	Clean							
Container Condition	Clean							
Container Label	Yes							
Sampler	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD
Sample Stored	Yes							
pH (if required)								
Temperature								
Preservative								
	A-1	A-2	B-1	B-2	C-1	C-2	D-1	D-2

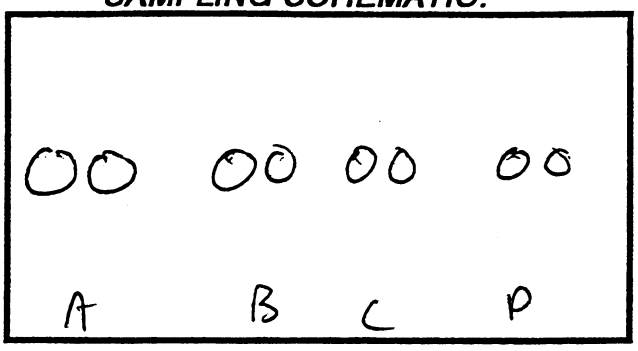
Test ID: Unit #6 - Test 1
Sample Stream: Unit #6 Coal
Sample ID: Unit 6 - Test 1 - Coal
Target Size: 3-5 Kg
Sample Device: mill Sampler
Analysis:
Preservative:
Container: Bag / Bag / Bucket
Frequency: 20 min
Safety Issues: Dust
Protective Gear: mask

Composite Logged? Yes
Sample Stored? Yes
Storage Method: Bag / Bag / Bucket
Checked By: MS DeVito
Shipped By: MSD
Received By: MSD 7-23-99

SAMPLING NOTES: 1415 to ~~1641~~ 1641

Mill Gas Temperatures
140°F to 160°F

SAMPLING SCHEMATIC:



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← Unit 5

→ Unit 7

Unit 6
Test 1
ESP Ash- Front

PROCESS STREAM SAMPLING SHEET

Sample Stream: Unit 6 ESP Ash Front

Plant WEPCO Presque Isle

Date 7/14/99

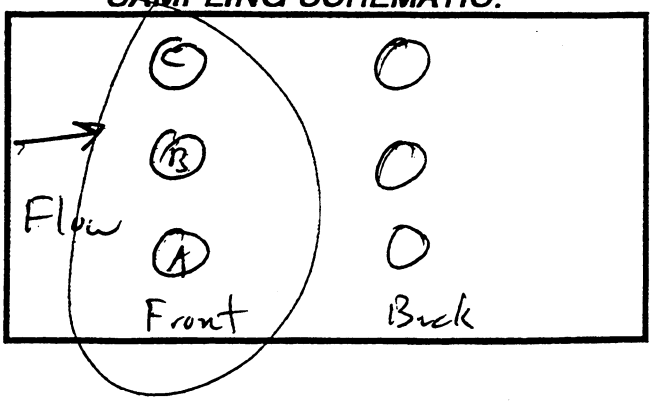
Increment	1	2	3	4	5	6	7	8
Time	1545							
Weigth / Volume								
Comp / Grab	3-hoppers							
Process Status								
Sampler Condition								
Container Condition								
Container Label								
Sampler								
Sample Stored								
pH (if required)								
Temperature								
Preservative								

Test ID: Unit 6 - Test 1
Sample Stream: Front Field ESP Ash
Sample ID:
Target Size:
Sample Device: Thief
Analysis:
Preservative:
Container: Glass Bottles
Frequency: Grab
Safety Issues: Dust
Protective Gear: mask

Composite Logged? Yes
Sample Stored? Yes
Storage Method: Glass Bottle
Checked By: MS Devito
Shipped By: MSD
Received By: MSD 7-23-99

SAMPLING NOTES: 1545 hrs

SAMPLING SCHEMATIC:



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Unit 6
Test 1
ESP Ash - Back

PROCESS STREAM SAMPLING SHEET

Plant Presque Isle

Sample Stream: Unit 6 ESP Ash Back

Date 7/14/99

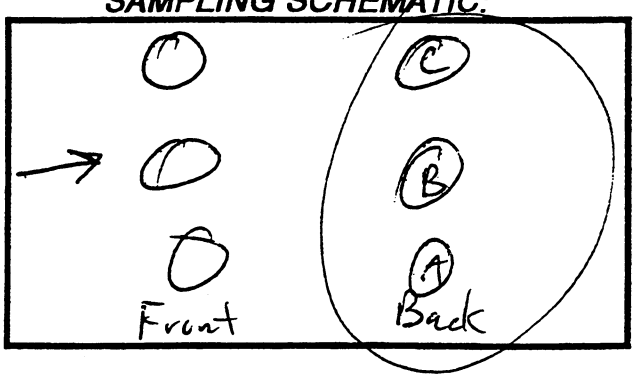
Increment	1	2	3	4	5	6	7	8
Time	1540							
Weigth / Volume								
Comp / Grab	3-hoppers							
Process Status								
Sampler Condition								
Container Condition								
Container Label								
Sampler								
Sample Stored								
pH (if required)								
Temperature								
Preservative								

Test ID: Unit 6 - Test 1
Sample Stream: Back Field ESP Ash
Sample ID:
Target Size:
Sample Device: Thief
Analysis:
Preservative:
Container: Glass Bottles
Frequency: Grab
Safety Issues: Dust
Protective Gear: mask

Composite Logged? Yes
Sample Stored? Yes
Storage Method: Glass Bottle
Checked By: M.S. DeVito
Shipped By: MSD
Received By: MSD 7-23-99

SAMPLING NOTES:

SAMPLING SCHEMATIC:



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Unit 6
Test 2
Coal

PROCESS STREAM SAMPLING SHEET

Sample Stream: Unit 6 Coal

Plant Presque Isle

Date 7-15-99

Increment	1	2	3	4	5	6	7	8
Time	0825	0845	0905	0925	0945	1005	1025	1045
Weigth / Volume	550g							
Comp / Grab								
Process Status	76	75	75	76	76	76	76	76
Sampler Condition	Clean							
Container Condition	Clean							
Container Label	Y							
Sampler	MSD							
Sample Stored	Y							
pH (if required)								
Temperature								
Preservative								
% O_2	3.2				3.1			
	D-2	D-1	C-2	C-1	B-1	B-1	A-2	A-1

Test ID: Unit 6 - Test 2 - Coal
Sample Stream: Unit #6 Coal
Sample ID: Unit 6 - Test 2 - Coal
Target Size: 3-5 KG
Sample Device: Mill Sampler
Analysis:
Preservative:
Container: Bag / Bucket
Frequency: 20 min
Safety Issues:
Protective Gear:

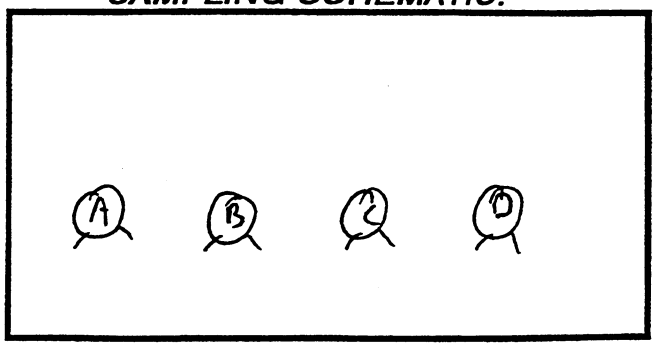
Composite Logged? Yes
Sample Stored? Yes
Storage Method: Bag / Bag / Bucket
Checked By: M. S. DeVito
Shipped By: MSD
Received By: MSD 7-23-99

SAMPLING NOTES: 0825 to

Mill Temp 145° to 160°

(Sandborn Creek Coal)

SAMPLING SCHEMATIC:



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← Unit 5

→ Unit 7

Unit 6
Test 2
ESP - Front

PROCESS STREAM SAMPLING SHEET

Sample Stream: Unit 6 - ESP Ash Front

Plant Presque Isle

Date 7-15-99

Increment	1	2	3	4	5	6	7	8
Time	1010							
Weigth / Volume	1 kg							
Comp / Grab								
Process Status	76 mw							
Sampler Condition	Clean							
Container Condition	Clean							
Container Label	Y							
Sampler	MSD							
Sample Stored	Y							
pH (if required)								
Temperature								
Preservative								
	3% O2							

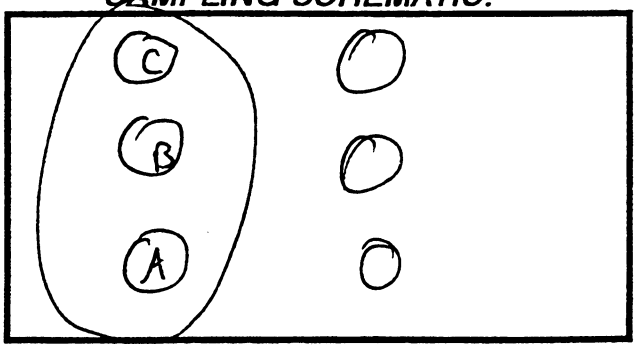
Test ID: Unit 6 - Test 2
Sample Stream: Unit 6
Sample ID: Unit 6 - Test 2 - ESP-Front
Target Size:
Sample Device: Thief
Analysis:
Preservative:
Container: Glass Bottle
Frequency:
Safety Issues:
Protective Gear:

Composite Logged? Yes
Sample Stored? Yes
Storage Method: Glass Bottle
Checked By: M.S. DeVito
Shipped By: MSD
Received By: MSD 7-23-99

SAMPLING NOTES: Ash P-11 complete @ 0930

Sampled @ 1010 hrs

SAMPLING SCHEMATIC:



Gas Flow

O:\appres\stack\process

Unit 6
Test 2
ESP - Back

PROCESS STREAM SAMPLING SHEET

Sample Stream: Unit 6 ESP Ash Back

Plant Presque Isle

Date 7-15-99

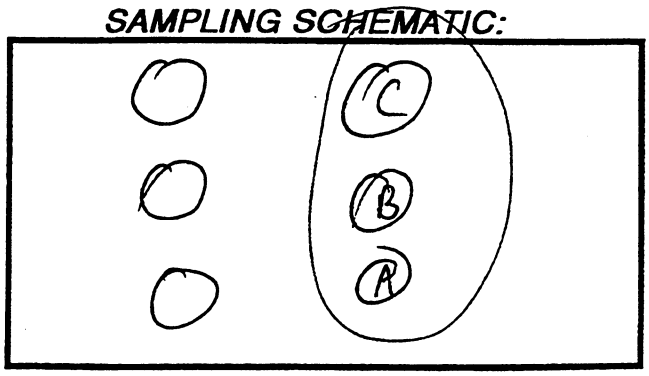
Increment	1	2	3	4	5	6	7	8
Time	1050							
Weigth / Volume	1 Kg							
Comp / Grab								
Process Status	76 mw							
Sampler Condition	Clean							
Container Condition	Clean							
Container Label	Y							
Sampler	MSD							
Sample Stored	Y							
pH (if required)								
Temperature								
Preservative								

Test ID: Unit 6 - Test 2
Sample Stream: Unit 6 - ESP Ash - Back
Sample ID: Unit 6 - Test 2 - ESP - Back
Target Size:
Sample Device: Thief
Analysis:
Preservative:
Container: Glass Bottle
Frequency:
Safety Issues:
Protective Gear:

Composite Logged? Yes
Sample Stored? Yes
Storage Method: Glass Bottle
Checked By: M. S. DiVito
Shipped By: MSD
Received By: MSD 7-23-99

SAMPLING NOTES: Ash Pull Completed @ 0930
Sampled @ 1050 hrs

SAMPLING SCHEMATIC:



Gas Flow

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Unit 6
Test 3
Coal

PROCESS STREAM SAMPLING SHEET

Plant Presque Isle **Sample Stream:** Unit 6 Coal Date 7/15/99

Increment	1	2	3	4	5	6	7	8
Time	1250	1310	1330	1350	1410	1430	1450	1510
Weigth / Volume	500 g							
Comp / Grab								
Process Status	75	75	75	75	75	75	76	76
Sampler Condition	Clean							
Container Condition	clean							
Container Label	Y							
Sampler	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD
Sample Stored	Y							
pH (if required)								
Temperature								
Preservative								
Burner & mill	A1	A2	B1	B2	C1	C2	D1	D2
% O2	3.1							

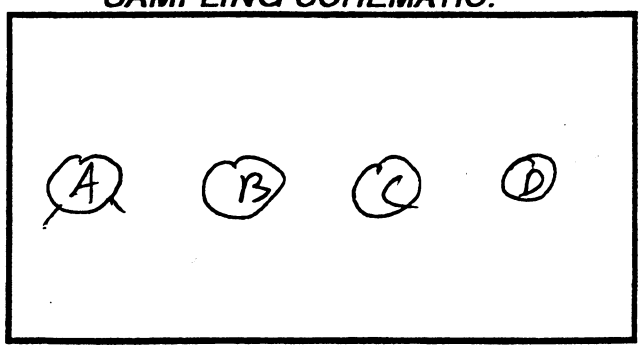
Test ID: Unit 6 - Test 3
Sample Stream: Unit 6 - Coal
Sample ID: Unit6-Test3-Coal
Target Size: 3-5 kg
Sample Device: Mill Sampler
Analysis:
Preservative:
Container: Bag / Bucket
Frequency: 20 min
Safety Issues:
Protective Gear:

Composite Logged? Yes
Sample Stored? Yes
Storage Method: Bag / Bag / Bucket
Checked By: MSD
Shipped By: MSD
Received By: MSD - 7/23/99

SAMPLING NOTES:

Mill Temps 145-165°F

SAMPLING SCHEMATIC:



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← Unit 5 → Unit 6

Unit 6
Test 3
ESP - Back

PROCESS STREAM SAMPLING SHEET

Plant Presque Isle **Sample Stream:** Unit 6 ESP Ash Back Date 7/15/99

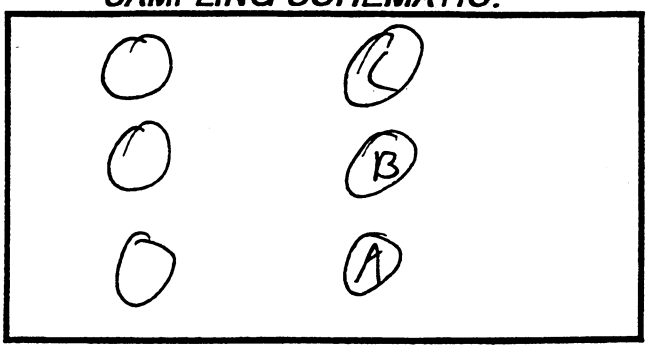
Increment	1	2	3	4	5	6	7	8
Time								
Weigth / Volume	1 Kg							
Comp / Grab								
Process Status	~~Clean~~							
Sampler Condition	Clean							
Container Condition	Clean							
Container Label	Y							
Sampler	MSD							
Sample Stored	Y							
pH (if required)								
Temperature								
Preservative								

Test ID: Unit 6 Test 3
Sample Stream: Unit 6 - ESP Ash - Front
Sample ID: Unit 6 - Test 3 - ESP - Back
Target Size:
Sample Device: Thief
Analysis:
Preservative:
Container: Glass Bottle
Frequency: Grab
Safety Issues:
Protective Gear:

Composite Logged? Yes
Sample Stored? Yes
Storage Method: Glass Bottle
Checked By: MSD
Shipped By: MSD
Received By: MSD 7-23-99

SAMPLING NOTES:

SAMPLING SCHEMATIC:



Gas Flow

O:\appres\stack\process

Unit 6
Test 3
ESP Front

PROCESS STREAM SAMPLING SHEET

Plant Presque Isle

Sample Stream: Unit 6 - ESP Ash Front

Date 7-15-99

Increment	1	2	3	4	5	6	7	8
Time	1400							
Weigth / Volume	1 Kg							
Comp / Grab								
Process Status	75 (mw)							
Sampler Condition	Clean							
Container Condition	Clean							
Container Label	Y							
Sampler	MSD							
Sample Stored	Y							
pH (if required)								
Temperature								
Preservative								

Test ID: Unit 6 Test3
Sample Stream: Unit 6 - ESP Ash - Front
Sample ID: Unit6 - Test3 - ESP - Front
Target Size:
Sample Device: Thief
Analysis:
Preservative:
Container: Glass Bottle
Frequency: Grab
Safety Issues:
Protective Gear:

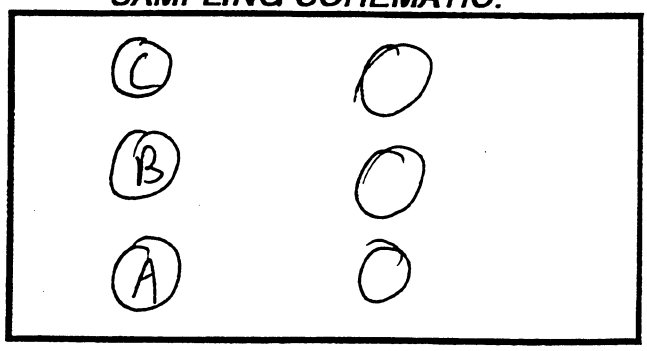
Composite Logged? Yes
Sample Stored? Yes
Storage Method: Glass Bottle
Checked By: MSD
Shipped By: MSD
Received By: MSD - 7/23/99

SAMPLING NOTES:

Ash Pulled @ 1230 hrs

Sample @ 1400 hrs

SAMPLING SCHEMATIC:



Gas Flow

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PROCESS STREAM SAMPLING SHEET

Plant Presque Isle

Sample Stream: Units 1, 2, 3, 4 Coal

Date 7/16/99

Increment	1	2	3	4	5	6	7	8
Time	0815	0840	0915	0950	1115	1200	1240	1300
Weigth / Volume	500g							
Comp / Grab								
Process Status	2-3-4 Fill 1 on oil							
Sampler Condition	OK							
Container Condition	OK							
Container Label	Y							
Sampler	MSD	MSD	MSD	MSD	MSD	MSD	MSD	MSD
Sample Stored	Y							
pH (if required)								
Temperature								
Preservative								
Unit / mill	4-B	4-B	4-B	4A	4A	4A		

Test ID: Units 1-4 Coal
Sample Stream: Units 1-4 Coal
Sample ID:
Target Size: ~~NA~~
Sample Device: mill Sampler
Analysis:
Preservative:
Container: Bag
Frequency:
Safety Issues:
Protective Gear:

Composite Logged? Yes
Sample Stored? Yes
Storage Method: Bag / Bags / Bucket
Checked By: MSD
Shipped By: MSD
Received By: MSD 7/23/99

SAMPLING NOTES:

Unit 1 on Oil
1st test started @ 0815 hrs
Second test started @ 1115 hrs
3rd (1s)
1410 to 1630 12 splits

SAMPLING SCHEMATIC:

O:\appres\stack\process

Coal
Cont

PROCESS STREAM SAMPLING SHEET

Plant Presque Isle

Sample Stream: Unit 1, 2, 3, 4
Coal Page 2

Date 7/16/99

Increment	1	2	3	4	5	6	7	8
Time	1410	1450	1530	1610				
Weigth / Volume								
Comp / Grab								
Process Status								
Sampler Condition								
Container Condition								
Container Label								
Sampler	msD	msD	msD	msD				
Sample Stored								
pH (if required)								
Temperature								
Preservative								

Test ID
Sample Stream
Sample ID
Target Size
Sample Device
Analysis
Preservative
Container
Frequency
Safety Issues
Protective Gear

Composite Logged?
Sample Stored?
Storage Method:
Checked By:
Shipped By:
Received By:

SAMPLING NOTES: 12 splits

SAMPLING SCHEMATIC:

O:\appres\stack\process

Unit 1-4
Test 1
Baghouse Ash

PROCESS STREAM SAMPLING SHEET

Sample Stream: Baghouse Ash

Plant Presque Isle

Date 7-16-99

Increment	1	2	3	4	5	6	7	8
Time	0925	0945						
Weigth / Volume	1 Kg							
Comp / Grab								
Process Status								
Sampler Condition	Clean							
Container Condition	OK							
Container Label	Y							
Sampler	MSD							
Sample Stored	Y							
pH (if required)								
Temperature								
Preservative								

Test ID: Units 1-4 - Test 1
Sample Stream: Baghouse Ash - Both Units
Sample ID:
Target Size:
Sample Device: Thief
Analysis:
Preservative:
Container: Glass bottle
Frequency: 1/Test
Safety Issues:
Protective Gear:

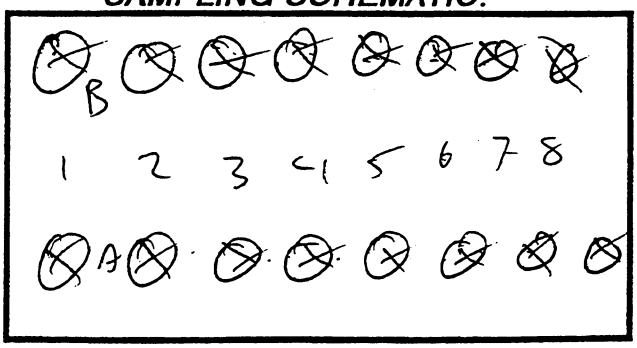
Composite Logged? Yes
Sample Stored? Yes
Storage Method: Bottle / Glass
Checked By: MSD [illegible]
Shipped By: MSD
Received By: MSD 7-23-99

SAMPLING NOTES: 0925-0945

Thief from all Hoppers!

hopper cleaned @ 0900

SAMPLING SCHEMATIC:



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Unit 1-4
Test 2
Baghouse Ash

PROCESS STREAM SAMPLING SHEET

Sample Stream: Baghouse Ash

Plant PRESQUE ISLE

Date 7-16-99

Increment	1	2	3	4	5	6	7	8
Time	1240	- 1300						
Weigth / Volume	1 Kg							
Comp / Grab								
Process Status								
Sampler Condition	Clean							
Container Condition	Clean							
Container Label	Y							
Sampler	MSP							
Sample Stored	Y							
pH (if required)								
Temperature								
Preservative								

Test ID: Units 1-4 Test 2
Sample Stream: Baghouse Ash- Both Units
Sample ID:
Target Size:
Sample Device: Thief
Analysis:
Preservative:
Container: Glass Bottle
Frequency: 1 per Test
Safety Issues:
Protective Gear:

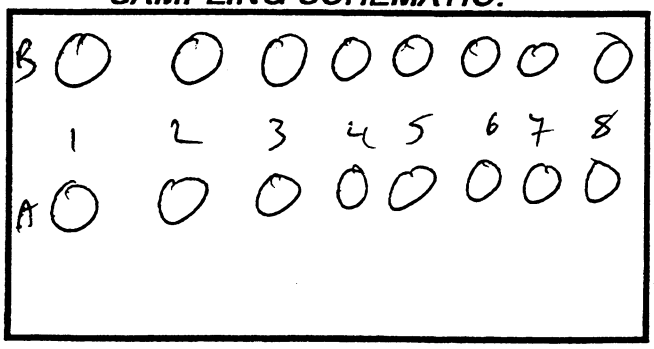
Composite Logged? Yes
Sample Stored? Yes
Storage Method: Yes Glass Bottle
Checked By: MSP
Shipped By: MSP
Received By: MSP 7-23-99

SAMPLING NOTES:

Sample from every hopper 1240- 1300

Hoppers Cleaned @ 1100

SAMPLING SCHEMATIC:



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Unit 1-4
Test 3
Baghouse

PROCESS STREAM SAMPLING SHEET

Plant Presque Isle Sample Stream: Baghouse Ash Date 7-16-99

Increment	1	2	3	4	5	6	7	8
Time	1500	1540						
Weigth / Volume								
Comp / Grab								
Process Status								
Sampler Condition								
Container Condition								
Container Label								
Sampler								
Sample Stored								
pH (if required)								
Temperature								
Preservative								

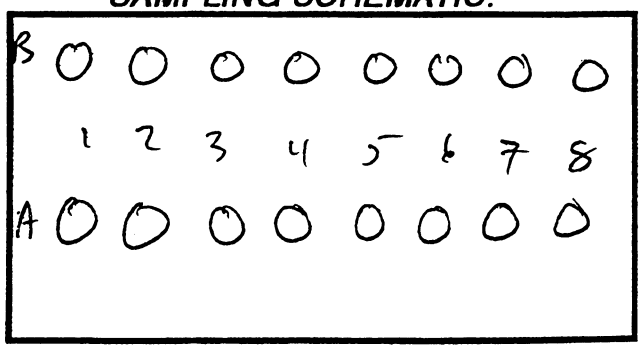
Test ID: Units 1-4 - Test 3
Sample Stream: Baghouse Ash - Both Units
Sample ID:
Target Size:
Sample Device: Thief
Analysis:
Preservative:
Container: Glass Bottle
Frequency: 1/Test
Safety Issues:
Protective Gear:

Composite Logged? Yes
Sample Stored? Yes
Storage Method: Glass Bottle
Checked By: M.S. DeVito
Shipped By: MSD
Received By: MSD 7-23-99

SAMPLING NOTES:

Sample from every hopper
1500 - 1540 hrs.

SAMPLING SCHEMATIC:



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PROCESS SOLID SAMPLES QA/QC SUMMARY

QA/QC Text for Coal and Ash Samples Analyzed by CONSOL Inc.

All process stream samples were analyzed by CONSOL following carefully written sampling and analytical procedures. These procedures are reviewed periodically to maintain consistency with industry standards and practices. Professional staff members take an active part in the development and testing of the ASTM methods used in this program. The individual determinations were completed by experiences staff personnel who were specifically trained in the individual analytical procedures. Analyst performance and data quality are monitored using quality control samples, certified standards, blind samples and duplicate samples. For this program, duplicate analysis was performed on every sample. The CONSOL R&D Laboratory participates in a variety of external auditing programs specific to coal analyses. Two of these programs specific to these samples are the EPRI-sponsored mercury-in-coal-analysis round robin study and the Standard Laboratories Inc., "Interlab" round robin program. A summary of the performance indicators used to access data quality for this program are discussed as follows.

Quality Control Check Samples

The CONSOL R&D lab utilized a number of quality control check samples (QCCS) for this program. Accuracy is determined from the percent difference in the measured value from the QCCS reference value. The specific samples and the results obtained from the analysis of these samples used to access the quality of the coal analysis are shown Table 1. Similar data for the ash samples are presented in Table 3.

Analytical Precision

All process stream samples were analyzed in duplicate. Analytical precision was determined by the percent difference in the duplicate sample analysis. The percent relative difference (PRD) obtained in for the sample analyses completed in this program are summarized in Table 2 (coal samples) and Table 4 (ash samples).

Summary of Analytical Performance

A summary of the QC checks and relative percent differences are as follows:

Parameter	Coal Samples		ESP Ash Samples	
	Accuracy	PRD	Accuracy	PRD
Ult./Prox.	98% - 102%	0% - 2%	—	—
Carbon	—	—	98% - 102%	1%
Ash	—	—	98% - 102%	<1%
Sulfur	98% -102%	2%	98% - 102%	2%
Btu	100%	0.1%	—	—
Ash Elements	94% - 107%	1% - 4%	96% - 105%	2% - 6%

Mercury	105% - 109%	10%	88% - 92%	6%
Chlorine	92% - 96%	6%	—	—

The analytical accuracy for both the coal and ash samples were 100 ± 10%. This is well within the data quality objectives. The relative percent differences, as an indication of analytical precision were ≤10%. Again, this is within the data quality objective. The coal mercury analysis showed the greatest PRD at 10%. This is a result of the extremely low mercury concentration in the coal samples which for this test ranged from 0.04 to 0.06 ppm. A precision of 10% is excellent for this low level.

Table 1. QCCS Summary for Coal Analysis
(units are % unless noted)

Parameter	QC Sample	QCCS Value	# of Checks	Avg Result	% Recovery
Moisture	Coal	1.08	1	1.06	98.0
Carbon	EDTA	41.10	4	40.81	99.3
Hydrogen	EDTA	5.52	4	5.54	100.3
Nitrogen	EDTA	9.59	4	9.78	102.0
Ash	Coal	6.01	1	5.92	98.5
Volatile Matter	Coal	38.05	1	37.82	99.4
Sulfur	NIST 2692A	1.16	2	1.16	100.0
Cl, ppm	NIST 1630a	1143	1	1078	94.3
Hg, ppm	BCR 181	0.138	2	0.148	107.2
Btu	Benzoic Acid	1136	1	11356	99.9
SiO_2	NIST 1633a	48.78	2	49.20	100.9
$Al2O_3$	NIST 1633a	27.02	2	26.70	98.8
TiO_2	NIST 1633a	1.33	2	1.33	100.0
Fe_2O_3	NIST 1633a	13.44	2	13.50	100.4
CaO	NIST 1633a	1.55	2	1.58	101.9
MgO	NIST 1633a	0.75	2	0.74	98.7

Na_2O	NIST 1633a	0.22	2	0.23	104.5
K_2O	NIST 1633a	2.26	2	2.25	99.6
P_2O_5	NIST 1633a	0.44	2	0.44	100.0
SO_3	NIST 1633a	0.37	2	0.31	83.8

Table 2. Precision Summary for Coal Analysis

Parameter	No. of Pairs	Average PRD
Moisture	4	1.2
Carbon	4	0.5
Hydrogen	4	0.5
Nitrogen	4	0.5
Ash	4	0.5
Volatile Matter	4	0.7
Sulfur	4	0.5
Cl, ppm	4	8.9
Hg, ppm	4	11.3
Btu	4	0.2
SiO_2	4	0.8
$Al2O_3$	4	1.0
TiO_2	4	2.5
Fe_2O_3	4	2.0
CaO	4	1.2
MgO	4	0.7
Na_2O	4	1.3
K_2O	4	0.8
P_2O_5	4	1.1
SO_3	4	0.7

Table 3. QCCS Summary for Ash Analysis
(units are % unless noted)

Parameter	QC Sample	QCCS Value	# of Checks	Avg Result	% Recovery
Moisture	Coal	1.08	2	1.04	96.3
Carbon	EDTA	41.10	2	41.13	100.1
Ash	Coal	6.01	2	6.12	102.0
Sulfur	Ash	1.96	4	1.94	99.0
Hg, ppm	BCR 181	0.138	1	0.124	89.9
SiO_2	NIST 1633a	48.78	2	49.40	101.3
$Al2O_3$	NIST 1633a	27.02	2	26.84	99.3
TiO_2	NIST 1633a	1.33	2	1.32	99.2
Fe_2O_3	NIST 1633a	13.44	2	13.41	99.8
CaO	NIST 1633a	1.55	2	1.55	100.0
MgO	NIST 1633a	0.75	2	0.75	100.0
Na_2O	NIST 1633a	0.22	2	0.23	104.5
K_2O	NIST 1633a	2.26	2	2.28	100.9
P_2O_5	NIST 1633a	0.44	2	0.42	95.5
SO_3	NIST 1633a	0.37	2	0.33	89.2

Table 4. Precision Summary for Ash Analysis

Parameter	No. of Pairs	Average PRD
Carbon	9	0.6
Ash	9	0.2
Sulfur	9	1.4
Hg, ppm	9	6.9
SiO_2	6	1.0
$Al2O_3$	6	1.1
TiO_2	6	2.3
Fe_2O_3	6	1.6
CaO	6	0.8
MgO	6	1.3
Na_2O	6	1.1
K_2O	6	1.9
P_2O_5	6	2.1
SO_3	6	3.5

ONTARIO HYDRO SAMPLES ANALYTICAL REPORT

Mercury in Ash Collecting in the Sampling Train Thimbles at Presque Isle

Sample Code Code	Sample ID ID	Measued Hg	Total Hg µg	Total Ash g
49863-07	DOE-BO6 IN-1	0.256	4.341	16.95539
49863-08	DOE-BO6 OUT-1 (total ug)	0.100	0.100	
49863-09	DOE-BO6 IN-2	0.258	4.983	19.31361
49863-10	DOE-BO6 OUT-2 (total ug)	0.051	0.051	
49863-11	DOE-BO6 IN-3	0.279	5.013	17.96909
49863-12	DOE-BO6 OUT-3 (total ug)	<0.002	< 0.002	

		MERCURY ANALYSIS					
DATE:	7/14/99						
LOCATION:	PRESQUE ISLE POWER PLANT						
LAB #	SAMPLE ID	SAMPLE TYPE		VOLUME, ml		CONCENTRATION, ug/L	
71399-22	10% HNO3 BLANK	10% HNO3		100			<0.03
71399-23	KCL BLANK	KCL		100			<0.03
71399-24	H2O2 BLANK	H2O2		100			<0.03
71399-25	KMNO4 BLANK	KMNO4		100			<0.03

		MERCURY ANALYSIS						
DATE:	7/15/99							
LOCATION:	PRESQUE ISLE POWER PLANT							
LAB #	SAMPLE ID	SAMPLE TYPE		VOLUME, ml		CONCENTRATION, ug/L		
71499-16	BO6-IN-1-FHHNO3	0.1 N HNO3		250			<0.03	
71499-17	BO6-IN-1-PFHNO3	0.1 N HNO3		250			<0.03	
71499-18	BO6-IN-1-BHKCL	KCL		500			2	
71499-19	BO6-IN-1-BHHNO3	H2O2		250			<0.03	
71499-20	BO6-IN-1-BHKMNO4	KMnO4		500			0.54	
71499-21	BO6-OUT-1-FHHNO3	0.1 N HNO3		250			<0.03	
71499-22	BO6-OUT-1-PFHNO3	0.1 N HNO3		200			<0.03	
71499-23	BO6-OUT-1-BHKCL	KCL		500			2.86	
71499-24	BO6-OUT-1-BHHNO3	H2O2		250			<0.03	
71499-25	BO6-OUT-1-BHKMNO4	KMnO4		500			2.36	
71499-26	BO6-FBSPK-KCL	KCL		500			2.24	
71499-27	B06-FBSPK-HNO3	H2O2		250			1.89	
71499-28	BO6-FBSPK-KMNO4	KMnO4		500			1.83	

		MERCURY ANALYSIS		
DATE:	7/16/99			
LOCATION:	PRESQUE ISLE POWER PLANT			
LAB #	SAMPLE ID	SAMPLE TYPE	VOLUME, ml	CONCENTRATION, ug/L
71599-1	BO6-IN-2-FHHNO3	0.1 N HNO3	250	<0.03
71599-2	BO6-IN-2-PFHNO3	0.1 N HNO3	250	<0.03
71599-3	BO6-IN-2-BHKCL	KCL	500	2.42
71599-4	BO6-IN-2-BHHNO3	H2O2	250	<0.03
71599-5	BO6-IN-2-BHKMNO4	KMnO4	500	0.83
71599-6	BO6-OUT-2-FHHNO3	0.1 N HNO3	250	<0.03
71599-7	BO6-OUT-2-PFHNO3	0.1 N HNO3	100	<0.03
71599-8	BO6-OUT-2-BHKCL	KCL	500	3.95
71599-9	BO6-OUT-2-BHHNO3	H2O2	250	<0.03
71599-10	BO6-OUT-2-BHKMNO4	KMnO4	500	3.63
71599-11	BO6-IN-BT-FHHNO3	0.1 N HNO3	100	<0.03
71599-12	BO6-IN-BT-PFHNO3	0.1 N HNO3	200	<0.03
71599-13	BO6-IN-BT-BHKCL	KCL	500	<0.03
71599-14	BO6-IN-BT-BHHNO3	H2O2	250	<0.03
71599-15	BO6-IN-BT-BHKMNO4	KMnO4	500	<0.03
71599-16	BO6-OUT-BT-FHHNO3	0.1 N HNO3	100	<0.03
71599-17	BO6-OUT-BT-PFHNO3	0.1 N HNO3	200	<0.03
71599-18	BO6-OUT-BT-BHKCL	KCL	500	<0.03
71599-19	BO6-OUT-BT-BHHNO3	H2O2	250	<0.03
71599-20	BO6-OUT-BT-BHKMNO4	KMnO4	500	<0.03
71599-21	BO6-IN-3-FHHNO3	0.1 N HNO3	250	<0.03
71599-22	BO6-IN-3-PFHNO3	0.1 N HNO3	200	<0.03
71599-23	BO6-IN-3-BHKCL	KCL	500	2.07
71599-24	BO6-IN-3-BHHNO3	H2O2	250	<0.03
71599-25	BO6-IN-3-BHKMNO4	KMnO4	500	0.59
71599-26	BO6-OUT-3-FHHNO3	0.1 N HNO3	250	<0.03
71599-27	BO6-OUT-3-PFHNO3	0.1 N HNO3	100	<0.03
71599-28	BO6-OUT-3-BHKCL	KCL	500	2.76
71599-29	BO6-OUT-3-BHHNO3	H2O2	250	<0.03
71599-30	BO6-OUT-3-BHKMNO4	KMnO4	500	3.06
71599-31	BO6-FBSPK-15JUL1999-KCL	KCL	500	2.21
71599-32	B06-FBSPK-15JUL1999-HNO3	H2O2	250	1.64
71599-33	BO6-FBSPK-15JUL1999-KMNO4	KMnO4	500	1.99

		MERCURY ANALYSIS						
DATE:	7/17/99							
LOCATION:	PRESQUE ISLE POWER PLANT							
	UNIT 1-4 STACK SAMPLES							
LAB #	SAMPLE ID	SAMPLE TYPE		VOLUME, ml		CONCENTRATION, ug/L		
71699-1	RUN #1	0.1 N HNO3		200			<0.03	
71699-2	RUN #1	0.1 N HNO3		200			<0.03	
71699-3	RUN #1	KCL		500			0.97	
71699-4	RUN #1	H2O2		250			<0.03	
71699-5	RUN #1	KMnO4		500			0.17	
71699-6	RUN #2	0.1 N HNO3		200			<0.03	
71699-7	RUN #2	0.1 N HNO3		200			<0.03	
71699-8	RUN #2	KCL		500			0.52	
71699-9	RUN #2	H2O2		250			<0.03	
71699-10	RUN #2	KMnO4		500			0.31	
71699-11	RUN #3	0.1 N HNO3		200			<0.03	
71699-12	RUN #3	0.1 N HNO3		200			<0.03	
71699-13	RUN #3	KCL		500			0.65	
71699-14	RUN #3	H2O2		250			<0.03	
71699-15	RUN #3	KMnO4		500			0.04	

ONTARIO HYDRO SAMPLES QA/QC SUMMARY

	LOCATION: PRESQUE ISLE POWER PLANT						
	UNIT 1-4 STACK SAMPLES TRIPLICATE ANALYSIS AND LAB SPIKE DATA						
TRIPLICATE ANALYSIS							
		TRIAL #					
SAMPLE ID	1	2	3	S.D.			
KCL	0.99	0.95	0.96	0.0208			
KMNO4	0.316	0.312	0.309	0.0035			
LAB SPIKE RESULTS			Calibration Standards:		0, 1, 5, 10, 20 ppb		R=0.9999
SAMPLE ID		SPIKE		SAMPLE	SPIKE		SPIKE
	AMOUNT (ppb)			READING(ug/L)	READING(ug/L)		RECOVERY%
KCL		5		0.97	5.92		**99.00**
KCL		10		0.97	11.18		**102.10**
KMNO4		5		0.31	5.06		**95.00**
KMNO4		10		0.31	10.09		**97.80**
FIELD BLANKS							
	SAMPLE		SAMPLE				
SAMPLE ID	VOLUME (ml)		READING(µg/L)				
10% HNO3	100		<0.03				
KCL	100		<0.03				
H2O2	100		<0.03				
KMNO4	100		<0.03				

	QC= 4.01 (4)		R=0.9998		QC=4.18(4)	

DATE:	7/15/99										
	Calibration Standards:			0, 1, 5, 10, 20 ppb		R=0.9999		QC=4.08(4)			
LAB #	SAMPLE ID	SAMPLE TYPE		SPIKE AMOUNT (ppb)	SAMPLE READING(ug/L)	SPIKE READING(ug/L)		SPIKE LOCATION		SPIKE RECOVERY%	
71499-26	BO6-FBSPK-KCL	KCl		2	0	2.24		**FIELD**		**112.00**	
71499-26	BO6-FBSPK-KCL	KCl		5	2.24	7.9		LAB		**113.20**	
71499-3	BO5-IN-3-BHKCL	KCl		5	1.57	7.08		LAB		**110.20**	
71499-3	BO5-IN-3-BHKCL	KCl		10	1.57	12.29		LAB		**107.20**	
71499-27	B06-FBSPK-HNO3	H2O2		2	0	1.89		**FIELD**		**94.50**	
71499-27	B06-FBSPK-HNO3	H2O2		5	1.89	7.34		LAB		**109.00**	
71499-27	B06-FBSPK-HNO3	H2O2		10	1.89	12.76		LAB		**108.70**	
DATE:	7/16/99										

	Calibration Standards:		0, 1, 5, 10, 20 ppb		R=0.9997		QC=4.09(4)		
		SAMPLE	SPIKE	SAMPLE	SPIKE		SPIKE		SPIKE
LAB #	SAMPLE ID	TYPE	AMOUNT (ppb)	READING(ug/L)	READING(ug/L)		LOCATION		RECOVERY%
71599-31	BO6-FBSPK-15JUL1999-KCL	KCl	2	0	2.21		**FIELD**		**110.60**
71599-31	BO6-FBSPK-15JUL1999-KCL	KCl	5	2.21	7.78		LAB		**111.48**
71599-31	BO6-FBSPK-15JUL1999-KCL	KCl	10	2.21	11.75		LAB		**95.36**
71599-8	BO6-OUT-2-BHKCL	KCl	5	2.42	7.92		LAB		**110.00**
71599-8	BO6-OUT-2-BHKCL	KCl	10	2.42	10.97		LAB		**85.50**
71599-32	B06-FBSPK-15JUL1999-HNO3	H2O2	2	0	1.64		**FIELD**		**82.00**
71599-32	B06-FBSPK-15JUL1999-HNO3	H2O2	5	1.64	6.53		LAB		**97.80**
71599-32	B06-FBSPK-15JUL1999-HNO3	H2O2	10	1.64	11.31		LAB		**96.70**
71599-9	BO6-OUT-2-BHHNO3	H2O2	5	0	4.55		LAB		**91.00**
71599-9	BO6-OUT-2-BHHNO3	H2O2	10	0	9.7		LAB		**97.00**
71599-33	BO6-FBSPK-15JUL1999-KMNO4	KMnO4	2	0	1.99		**FIELD**		**99.50**
71599-33	BO6-FBSPK-15JUL1999-KMNO4	KMnO4	5	1.99	7.32		LAB		**106.60**
71599-33	BO6-FBSPK-15JUL1999-KMNO4	KMnO4	10	1.99	12		LAB		**100.10**
71599-10	BO6-OUT-2-BHKMNO4	KMnO4	5	3.63	8.82		LAB		**103.80**
71599-10	BO6-OUT-2-BHKMNO4	KMnO4	10	3.63	13.6		LAB		**99.70**
DATE:	7/20/99								

APPENDIX E
SAMPLE CALCULATIONS

SAMPLE CALCULATIONS FOR FLOW, MOISTURE AND ISO

Client: DOE
Test Number: Run 1
Test Location: Unit 6 Inlet

Plant: Presque Isle
Test Date: 7/14/99
Test Period: 1415-1640

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

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

$$Vm(std) = \frac{17.64 \times 1.0090 \times 68.275 \times \left(29.47 + \frac{1.015}{13.6} \right)}{112.50 + 460} = 62.713$$

Where:

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

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

Vw(std) = (0.04707 x Vwc) + (0.04715 x Wwsg)

Vw(std) = (0.04707 x 136.6) + (0.04715 x 13.3) = 7.1

Where:

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

3. Moisture content

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

$$bws = \frac{7.057}{7.057 + 62.713} = 0.101$$

Where:

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

4. Mole fraction of dry gas.

Md = 1 - bws

Md = 1 - 0.101 = 0.899

Where:

Md = Mole fraction of dry gas, dimensionless.

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

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

MWd = (0.440 x 13.7) + (0.320 x 4.9) + (0.280 x (81.4 + 0.00))

= 30.39

Where:

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

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

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

MWs = (30.39 x 0.899) +(18 (1 - 0.899)) = 29.14

Where:

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

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

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

$$Vs = 85.49 \times 0.84 \times 0.587660 \times \left(\frac{769}{28.85 \times 29.14} \right)^{1/2} = 40.4$$

Where:

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

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

Qs(act) = 60 x Vs x As

Qs(act) = 60 x 40.37 x 151.96 = 368086

Where:

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

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

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

$$Qs(std) = 17.64 \times 0.899 \times \frac{28.85}{769} \times 368086$$

$$= 218890$$

Where:

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

Note: Volumetric flowrate from the unit 5 outlet (corrected to the Unit 5 inlet O_2 concentration) was used in the emission rate calculations. That value is 182,746 dscfm.

10. Isokinetic variation calculated from intermediate values, percent.

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

$$I = \frac{17.327 \times 769 \times 62.713}{40.37 \times 120 \times 28.85 \times 0.899 \times (0.253)^2} = 103.9$$

Where:

I = Percent of isokinetic sampling.

O = Total sampling time, minutes.

Dn = Diameter of nozzle, inches.

17.327 = Factor which includes standard temperature (528 deg R), standard pressure (29.92 in. Hg), the formula for calculating area of circle $D^{2/4}$, conversion of square feet to square inches (144), conversion of seconds to minutes (60), and conversion to percent (100), $\frac{(in.\ Hg)(in^2)(min)}{(deg\ R)(ft^2)(sec)}$

SAMPLE CALCULATIONS FOR MERCURY

Client: DOE
Test Number: Run 1
Test Location: Unit 6 Inlet

Plant: Presque Isle
Test Date: 7/14/99
Test Period: 1415-1640

1. Total Mercury concentration, lb/dscf.

$$C_1 = \frac{W \times 2.2046 \times 10E\text{-}9}{Vm_{(std)}}$$

$$C_1 = \frac{5.61 \times 2.2046 \times 10E\text{-}9}{62.713}$$

$$= 1.97E\text{-}10$$

Where:

W	=	Weight of Total Mercury collected in sample in ug.
C_1	=	Total Mercury concentration, lb/dscf.
2.2046×10^{-9}	=	Conversion factor from ug to pounds.

2. Total Mercury concentration, ug/dscm

$$C_2 = \frac{W}{Vm_{(std)} \times 0.02832}$$

$$C_2 = \frac{5.611}{62.713 \times 0.02832}$$

$$= 3.16$$

Where:

C_2	=	Total Mercury concentration, µg/dscm.
W	=	Total Mercury catch, µg.
0.02832	=	Conversion factor from cubic feet to cubic meters.

3. Total Mercury concentration, ug/Nm3

$$C_3 = \frac{W}{Vm_{(std)} \times 0.02832 \times (16.44/17.64)}$$

$$C_3 = \frac{5.611}{1.66}$$

$$C_3 = 3.39$$

Where:

C_3	=	Total Mercury concentration, ug/Nm^3
W	=	Total Mercury catch, µg.
0.02832	=	Conversion factor from cubic feet to cubic meters.
16.44/17.64	=	Ratio of conversion factors for standard temperature and pressure and normal temperature.

4. Total Mercury mass emission rate, lbs/hr.

MR1 = C_1 x Qs(std) x 60

MR1 = 1.97E-10 x 163300 x 60

MR1 = 1.93E-03

Where:

MR1	=	Total Mercury mass emission rate, lbs/hr.
60	=	Conversion factor from minutes to hours.

5. Total Mercury mass emission rate, lbs/10E+12 Btu.

MR2 = MR1/F-Factor x 10E+6

MR2 = 1.93E-03 / 761 x 10E+6

MR2 = 2.54

Where:

MR2	=	Total Mercury mass emission rate, lbs/10E+12 Btu.
Heat Input	=	761.3 x 10E+6 Btu/hr

APPENDIX F
EQUIPMENT CALIBRATION RECORDS

WESTON

LONG/PRE DRY GAS METER CALIBRATION DATA FORM

Calibrator P. Mack

Date 3/22/99 Meter Box Number 6 Plant

Barometric pressure, P_b = 29.33 in. Hg Dry Gas Meter Number 9429 Comments

Setting	Gas volume		Temperatures						
Orifice manometer	Wet test meter	Dry gas meter	Wet test meter	Dry gas meter					
(Δ H) in. H_2O	(V_w) ft^3	(V_d) ft^3	(t_w) °F	Inlet (td_i) °F	Outlet (td_o) °F	Avg (t_d) °F	Time (θ), min	Y_i	ΔH @$_i$ in. H_2O
0.5	5	684.986 679.850	64	74, 77	74.75	75	12.6	.9927	1.7615
1.0	5	690.127 684.986	64	78, 81	76, 77	78	9.1	.9961	1.8271
1.5	10	700.434 690.127	64	81, 88	77, 80	81.5	15.5	.9940	1.9750
2.0	10	710.441 700.434	64	83, 92	80, 83	86	13.5	.9915	1.9811
3.0	10	721.401 710.441	64	93, 97	83, 86	90	11.1	.9960	1.9944
							Avg	Y .9941	Δ H @ 1.9078

If there is only one thermometer on the dry gas meter, record the temperature under td_o.

(ΔH) in. H_2O	$\frac{\Delta H}{13.6}$	$Y_i = \frac{V_w P_b (t_d + 460)}{V_d \left(P_b + \frac{\Delta H}{13.6}\right)(t_w + 460)}$	$\Delta H@i = \frac{0.0317 \Delta H}{P_b (t_d + 460)} \left[\frac{(t_w + 460)\Theta}{V_w}\right]^2$
0.5	0.0368	$\frac{(5)(29.33)(75+460)}{(5.136)(29.33+.0368)(64+460)}$	$\frac{(.0317)(.5)}{(29.33)(75+460)}\left[\frac{(64+460)(12.6)}{5}\right]^2$
1.0	0.0735	$\frac{(5)(29.33)(78+460)}{(5.141)(29.33+.0735)(64+460)}$	$\frac{(.0317)(1.0)}{(29.33)(78+460)}\left[\frac{(64+460)(9.1)}{5}\right]^2$
1.5	0.110	$\frac{(10)(29.33)(\frac{81.5}{2}+460)}{(10.357)(29.33+.110)(64+460)}$	$\frac{(.0317)(1.5)}{(29.33)(81.5+460)}\left[\frac{(64+460)(15.5)}{10}\right]^2$
2.0	0.147	$\frac{(10)(29.33)(86+460)}{(10.457)(29.33+.147)(64+460)}$	$\frac{(.0317)(2.0)}{(29.33)(86+460)}\left[\frac{(64+460)(13.5)}{10}\right]^2$
3.0	0.221	$\frac{(10)(29.33)(90+460)}{(10.46)(29.33+.221)(64+460)}$	$\frac{(.0317)(3.0)}{(29.33)(90+460)}\left[\frac{(64+460)(11.1)}{10}\right]^2$

WESTON

STACK TEMPERATURE SENSOR CALIBRATION DATA FORM

DATE 3/04/99
AMBIENT TEMPERATURE [illegible]
CALIBRATION [illegible]

POTENTIOMETER NUMBER 2010 #6
BAROMETRIC PRESSURE 29.33
REFERENCE: THERMOCOUPLE SIMULATOR
(ACCURACY ± 1°F)

REFERENCE TEMPERATURE °C	°F	TEMPERATURE READING FROM THERMOCOUPLE CHANNEL INPUT NUMBER 1	2	3	4	5	AVERAGE TEMPERATURE READING ⊙	TEMPERATURE DIFFERENCE ⊙ (%)
0	32	32	32	32	32	32	32	0° - 0%
100	212	213	213	213	213	213	213	1° - .15%
500	932	933	933	933	933	933	933	1° - .107%
1000	1832	1831	1831	1831	1831	1831	1831	1° - .04

COMMENTS

⊙ AVERAGE TEMPERATURE READING = MEAN OF THE TEMPERATURE READINGS FOR THE THERMOCOUPLE CHANNELS

⊙ THE CHANNEL READINGS MUST AGREE WITHIN ± 5° F OR 3 °C

ACCEPTABLE TEMPERATURE DIFFERNCE ≤ 1.5 = $\left(\frac{(\text{REF TEMP}^{\circ}\text{F} + 460) - (\text{TEST TEMP}^{\circ}\text{F} + 460)}{(\text{REF TEMP}^{\circ}\text{F} + 460)}\right) \times 100$

WESTON

STACK TEMPERATURE SENSOR CALIBRATION DATA FORM

DATE 7/29/99
AMBIENT TEMPERATURE 73
CALIBRATION [illegible]

POTENTIOMETER NUMBER 2010 #6
BAROMETRIC PRESSURE 29.22
REFERENCE: THERMOCOUPLE SIMULATOR
(ACCURACY ± 1°F)

REFERENCE TEMPERATURE °C	°F	TEMPERATURE READING FROM THERMOCOUPLE CHANNEL INPUT NUMBER 1	2	3	4	5	AVERAGE TEMPERATURE READING ①	TEMPERATURE DIFFERENCE (%)
0	32	33	33	33	33	33	33	1° - .20%
100	212	214	214	214	214	214	214	2° - .30
500	932	933	933	933	933	933	933	1° - .07%
1000	1832	1830	1830	1830	1830	1830	1830	2° - .09%

COMMENTS

① AVERAGE TEMPERATURE READING = MEAN OF THE TEMPERATURE READINGS FOR THE THERMOCOUPLE CHANNELS

② THE CHANNEL READINGS MUST AGREE WITHIN ± 5° F OR 3 °C

ACCEPTABLE TEMPERATURE DIFFERNCE ≤ 1.5 = $\left(\frac{(\text{REF TEMP}^{\circ}\text{F} + 460) - (\text{TEST TEMP}^{\circ}\text{F} + 460)}{(\text{REF TEMP}^{\circ}\text{F} + 460)}\right) \times 100$

WESTON
MANAGERS DESIGNERS/CONSULTANTS

DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

CLIENT: DOE-Wisconsin Electric Co.

FACILITY: Marquette, MI.

DATE: 7/24/99

METER BOX #: 6

DRY GAS METER SERIAL #: 9429

CRITICAL ORIFICE SET SERIAL #: 13225

	INITIAL	FINAL	AVG (P_{bar})
BAROMETRIC PRESSURE (In Hg):	29.27	29.27	29.72

IF Y VARIATI

ORIFICE SHOULD

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (In Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH (In H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y
11	1	0.3237	24	630.898	635.253	4.355	72	73	74	71	71	72.25	10.00	0.62	4.2977	4.1722	0.9708
	2	0.3237	24	635.253	639.680	4.427	72	74	76	72	72	73.5	10.10	0.62	4.3585	4.2139	0.9668
	3	0.3237	24	639.680	644.078	4.398	72	77	78	73	74	75.5	10.10	0.62	4.3137	4.2139	0.9769
																AVG =	0.9715
24	1	0.6703	21	644.078	653.294	9.216	72	79	84	74	77	78.5	10.20	2.6	9.0330	8.8123	0.9756
	2	0.6703	21	653.294	662.359	9.065	72	84	88	77	79	82	10.00	2.6	8.8276	8.6395	0.9787
	3	0.6703	21	662.359	671.490	9.131	72	89	91	80	81	85.25	10.00	2.6	8.8388	8.6395	0.9774
																AVG =	0.9772
16	1	0.4501	22	671.490	677.706	6.216	72	87	89	82	83	85.25	10.00	1.2	5.9979	5.8013	0.9672
	2	0.4501	22	677.706	683.925	6.219	72	88	89	83	84	85.5	10.00	1.2	5.9980	5.8013	0.9672
	3	0.4501	22	683.925	690.155	6.230	72	89	89	84	85	86.75	10.00	1.2	5.9949	5.8013	0.9677
																AVG =	0.9674

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 0.9720

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at maximum attainable vacuum (open coarse valve, close fine valve), for period of 5 minutes minimum for large orifice up to 10 minutes for smallest orifice.
4) Record readings in outlined boxes, other columns are automatically calculated.

(1) $V_m\,(std) = K_1\, V_m \dfrac{P_{bar} + (\Delta H/13.6)}{T_m}$ = Net volume of gas sample passed through DGM, corrected to standard conditions

K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)

T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $V_{cr}\,(std) = K' \sqrt{\dfrac{P_{bar}\,\theta}{T_{amb}}}$ = Volume of gas sample passed through the critical orifice, corrected to standard conditions

T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)

K' = Average K' factor from Critical Orifice Calibration

WESTON

LONG/PRE DRY GAS METER CALIBRATION DATA FORM

Calibrator P. Mack

Date 2/25/99 Meter Box Number 12 Plant

Barometric pressure, P_b = 29.72 in. Hg Dry Gas Meter Number 6898070 Comments

Setting	Gas volume		Temperatures						
Orifice manometer	Wet test meter	Dry gas meter	Wet test meter	Dry gas meter					
(Δ H) in. H_2O	(V_w) ft^3	(V_d) ft^3	(t_w) °F	Inlet (td_i) °F	Outlet (td_o) °F	Avg (t_d) °F	Time (θ), min	Y_i	ΔH @$_i$ in. H_2O
0.5	5	728.659 723.650	66	69, 75	69, 72	71	12.6	1.006	1.7646
1.0	5	733.685 728.659	66	75, 77	72, 73	74	9.2	1.007	1.8710
1.5	10	743.761 733.685	66	79, 84	73, 76	78	15.4	1.011	1.9513
2.0	10	753.860 743.761	67	83, 86	76, 77	80.5	13.5	1.010	1.9977
3.0	10	763.977 753.860	67	87, 90	78, 79	83.5	10.9	1.012	1.9427
							Avg	Y 1.009	Δ H @ 1.9055

If there is only one thermometer on the dry gas meter, record the temperature under td_o.

(ΔH) in. H_2O	$\frac{\Delta H}{13.6}$	$Y_i = \frac{V_w P_b (t_d + 460)}{V_d \left(P_b + \frac{\Delta H}{13.6}\right)(t_w + 460)}$	$\Delta H@i = \frac{0.0317 \Delta H}{P_b (t_d + 460)} \left[\frac{(t_w + 460)\Theta}{V_w}\right]^2$
0.5	0.0368	$\frac{(5)(29.72)(71+460)}{(5.009)(29.72+.0368)(66+460)}$	$\frac{(.0317)(.5)}{(29.72)(71+460)}\left[\frac{(66+460)(12.6)}{5}\right]^2$
1.0	0.0735	$\frac{(5)(29.72)(74+460)}{(5.026)(29.72+.0735)(66+460)}$	$\frac{(.0317)(1.0)}{(29.72)(74+460)}\left[\frac{(66+460)(9.2)}{5}\right]^2$
1.5	0.110	$\frac{(10)(29.72)(78+460)}{(10.076)(29.72+.110)(66+460)}$	$\frac{(.0317)(1.5)}{(29.72)(78+460)}\left[\frac{(66+460)(15.4)}{10}\right]^2$
2.0	0.147	$\frac{(10)(29.72)(80.5+460)}{(10.099)(29.72+.147)(67+460)}$	$\frac{(.0317)(2.0)}{(29.72)(80.5+460)}\left[\frac{(67+460)(13.5)}{10}\right]^2$
3.0	0.221	$\frac{(10)(29.72)(83.5+460)}{[illegible]}$	$\frac{(.0317)(3.0)}{[illegible]}\left[(67+460)(10.9)\right]^2$

WESTON

STACK TEMPERATURE SENSOR CALIBRATION DATA FORM

DATE 23 FEB 99
AMBIENT TEMPERATURE [illegible] 72
CALIBRATION 6P

POTENTIOMETER NUMBER [illegible] 12
BAROMETRIC PRESSURE 29.94
REFERENCE: THERMOCOUPLE SIMULATOR (ACCURACY ± 1°F)

REFERENCE TEMPERATURE °C	°F	TEMPERATURE READING FROM THERMOCOUPLE CHANNEL INPUT NUMBER 1	2	3	4	5	AVERAGE TEMPERATURE READING ①	TEMPERATURE DIFFERENCE ② (%)
0	32	32	32	32	32	32	32	0°-0%
100	212	213	213	213	213	213	213	1°-.15%
500	932	933	933	933	933	933	933	1°-.07%
1000	1832	1830	1830	1831	1831	1832	1830.8	1.2°-.05%

COMMENTS

① AVERAGE TEMPERATURE READING = MEAN OF THE TEMPERATURE READINGS FOR THE THERMOCOUPLE CHANNELS

② THE CHANNEL READINGS MUST AGREE WITHIN ± 5°F OR 3°C

ACCEPTABLE TEMPERATURE DIFFERNCE ≤ 1.5 = $\left(\frac{(\text{REF TEMP}^\circ\text{F} + 460) - (\text{TEST TEMP}^\circ\text{F} + 460)}{(\text{REF TEMP}^\circ\text{F} + 460)}\right) \times 100$

WESTON®

MANAGERS DESIGNERS/CONSULTANTS

DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

CLIENT: DOE-Wisconsin Electric Ic.Co.

FACILITY: Marquette, MI.

DATE: 8/9/99

METER BOX #: 12

DRY GAS METER SERIAL #: 6898070

CRITICAL ORIFICE SET SERIAL #: 13225

BAROMETRIC PRESSURE (In Hg):	INITIAL	FINAL	AVG (P_{bar})
	29.25	29.25	29.25

IF Y VARIATI

ORIFICE SHOULD

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (In Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH (In H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y
11	1	0.3237	27	931.266	935.664	4.398	72	74	76	71	72	73.25	10.00	0.68	4.2642	4.1062	0.9630
	2	0.3237	27	935.664	940.061	4.397	72	80	80	73	72	76.25	10.00	0.68	4.2393	4.1062	0.9686
	3	0.3237	27	940.061	944.472	4.411	72	80	82	73	74	77.25	10.00	0.68	4.2449	4.1062	0.9673
																AVG =	0.9663
18	1	0.5114	22	944.472	951.362	6.890	72	77	81	74	74	76.5	10.00	1.6	6.6568	6.4872	0.9746
	2	0.5114	22	951.362	958.263	6.901	72	80	82	74	75	77.75	10.00	1.6	6.6520	6.4872	0.9762
	3	0.5114	22	958.263	965.162	6.899	72	84	85	77	77	80.75	10.00	1.6	6.6131	6.4872	0.9810
																AVG =	0.9769
24	1	0.6703	20	965.162	973.944	8.782	72	81	86	76	78	80	10.00	2.65	8.4520	8.5029	1.0060
	2	0.6703	20	973.944	982.994	9.050	72	80	86	76	78	80	10.00	2.65	8.7099	8.5029	0.9762
	3	0.6703	20	982.994	992.024	9.030	72	86	88	78	79	82.75	10.00	2.65	8.6466	8.5029	0.9834
																AVG =	0.9885

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 0.9772

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at maximum attainable vacuum (open coarse valve, close fine valve), for period of 5 minutes minimum for large orifice up to 10 minutes for smallest orifice
4) Record readings in outlined boxes, other columns are automatically calculated

(1) $V_m\,(std) = K_1\, V_m \dfrac{P_{bar} + (\Delta H/13.6)}{T_m}$ = Net volume of gas sample passed through DGM, corrected to standard conditions

K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)

T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $V_{cr}\,(std) = K' \sqrt{\dfrac{P_{bar}\,\theta}{T_{amb}}}$ = Volume of gas sample passed through the critical orifice, corrected to standard conditions

T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)

K' = Average K' factor from Critical Orifice Calibration

(3) $Y = \dfrac{V_{cr}\,(std)}{V_m\,(std)}$ = DGM calibration factor

Calibrator: P. Mack

WESTON

STACK TEMPERATURE SENSOR CALIBRATION DATA FORM

DATE 8/09/99
AMBIENT TEMPERATURE 72
CALIBRATION [illegible]

POTENTIOMETER NUMBER 2010 #12
BAROMETRIC PRESSURE 29.25
REFERENCE: THERMOCOUPLE SIMULATOR (ACCURACY ± 1°F)

REFERENCE TEMPERATURE °C	°F	TEMPERATURE READING FROM THERMOCOUPLE CHANNEL INPUT NUMBER 1	2	3	4	5	AVERAGE TEMPERATURE READING ①	TEMPERATURE DIFFERENCE ② (%)
0	32	31	31	31	31	31	31	1° - .20%
100	212	212	212	212	212	212	212	0° - 0%
500	932	932	932	932	932	932	932	0° - 0%
1000	1832	1828	1828	1828	1828	1828	1828	4° - .17%

COMMENTS

① AVERAGE TEMPERATURE READING = MEAN OF THE TEMPERATURE READINGS FOR THE THERMOCOUPLE CHANNELS

② THE CHANNEL READINGS MUST AGREE WITHIN ± 5°F OR 3°C

ACCEPTABLE TEMPERATURE DIFFERNCE ≤ 1.5 = $\left(\frac{(\text{REF TEMP}^{\circ}\text{F} + 460) - (\text{TEST TEMP}^{\circ}\text{F} + 460)}{(\text{REF TEMP}^{\circ}\text{F} + 460)}\right) \times 100$

WESTON

LONG/PRE DRY GAS METER CALIBRATION DATA FORM

Calibrator P. Mack

Date 3/30/99 Meter Box Number 14 Plant

Barometric pressure, P_b = 29.83 in. Hg Dry Gas Meter Number 6848169 Comments

Setting	Gas volume		Temperatures						
Orifice manometer	Wet test meter	Dry gas meter	Wet test meter	Dry gas meter					
(Δ H) in. H_2O	(V_w) ft^3	(V_d) ft^3	(t_w) °F	Inlet (td_i) °F	Outlet (td_o) °F	Avg (t_d) °F	Time (θ), min	Y_i	ΔH @$_i$ in. H_2O
0.5	5	938.464 933.449	69	77, 79	74, 75	76	13.0	1.0089	1.8753
1.0	5	943.481 938.464	69	80, 82	76, 76	78.5	9.2	1.0120	1.8697
1.5	10	953.563 943.481	69.5	82, 87	76, 78	81	15.7	1.0097	2.0362
2.0	10	963.645 953.563	69.5	85, 89	79, 80	83	13.4	1.0102	1.9705
3.0	10	973.790 963.645	69.5	85, 90	80, 81	84	10.9	1.0082	1.9521
							Avg	Y 1.0088	ΔH @ 1.9408

If there is only one thermometer on the dry gas meter, record the temperature under td_o.

(ΔH) In. H_2O	$\frac{\Delta H}{13.6}$	$Y_i = \frac{V_w P_b (t_d + 460)}{V_d \left(P_b + \frac{\Delta H}{13.6}\right)(t_w + 460)}$	$\Delta H@i = \frac{0.0317 \Delta H}{P_b (t_d + 460)} \left[\frac{(t_w + 460)\Theta}{V_w}\right]^2$
0.5	0.0368	$\frac{(5)(29.83)(76+460)}{(5.015)(29.83+.0368)(69+460)}$	$\frac{(.0317)(.5)}{(29.83)(76+460)}\left[\frac{(69+460)(13.0)}{5}\right]^2$
1.0	0.0735	$\frac{(5)(29.83)(78.5+460)}{(5.017)(29.83+.0735)(69+460)}$	$\frac{(.0317)(1.0)}{(29.83)(78.5+460)}\left[\frac{(69+460)(9.2)}{5}\right]^2$
1.5	0.110	$\frac{(10)(29.83)(81+460)}{(10.082)(29.83+.110)(69.5+460)}$	$\frac{(.0317)(1.5)}{(29.83)(81+460)}\left[\frac{(69.5+460)(15.7)}{10}\right]^2$
2.0	0.147	$\frac{(10)(29.83)(83+460)}{(10.102)(29.83+.147)(69.5+460)}$	$\frac{(.0317)(2.0)}{(29.83)(83+460)}\left[\frac{(69.5+460)(13.4)}{10}\right]^2$
3.0	0.221	$\frac{(10)(29.83)(84+460)}{(10.115)(29.83+.221)(19.5+460)}$	$\frac{(.0317)(3.0)}{(29.83)(84+460)}\left[\frac{(69.5+460)(10.9)}{\ldots}\right]^2$

WESTON

STACK TEMPERATURE SENSOR CALIBRATION DATA FORM

DATE 23 FEB 99
AMBIENT TEMPERATURE GP ~~62~~ 72
CALIBRATION GP

POTENTIOMETER NUMBER NUTECH #14
BAROMETRIC PRESSURE 29.94
REFERENCE: THERMOCOUPLE SIMULATOR (ACCURACY ± 1°F)

REFERENCE TEMPERATURE °C	°F	TEMPERATURE READING FROM THERMOCOUPLE CHANNEL INPUT NUMBER 1	2	3	4	5	AVERAGE TEMPERATURE READING ⊙	TEMPERATURE DIFFERENCE ⊙ (%)
0	32	34	34	34	34	34	34	2° - .41
100	212	214	214	214	214	214	214	2° - .30%
500	932	934	934	934	934	93~~3~~4 GP	934	2° - .14%
1000	1832	1831	1831	1831	1831	183~~3~~1 GP	1831	1° - .04%

COMMENTS

⊙ AVERAGE TEMPERATURE READING = MEAN OF THE TEMPERATURE READINGS FOR THE THERMOCOUPLE CHANNELS

⊙ THE CHANNEL READINGS MUST AGREE WITHIN ± 5°F OR 3°C

ACCEPTABLE TEMPERATURE DIFFERNCE ≤ 1.5 = $\left(\frac{(\text{REF TEMP}^\circ\text{F} + 460) - (\text{TEST TEMP}^\circ\text{F} + 460)}{(\text{REF TEMP}^\circ\text{F} + 460)}\right) \times 100$

WESTON®
MANAGERS DESIGNERS/CONSULTANTS

DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

CLIENT: DOE-Wisconsin Electric Co.

FACILITY: Marquette, MI.

DATE: 7/24/99

METER BOX #: 14

DRY GAS METER SERIAL #: 6848169

CRITICAL ORIFICE SET SERIAL #: 13223

BAROMETRIC PRESSURE (in Hg):	INITIAL	FINAL	AVG (P_{bar})
	29.27	29.27	29.27

IF Y VARIATI
ORIFICE SHOULD

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y
24	1	0.6703	19	159.210	167.871	8.661	72	83	84	82	82	82.75	10.00	2.6	8.2978	8.5067	1.0254
	2	0.6703	19	167.871	176.521	8.650	72	83	86	81	81	82.5	10.00	2.6	8.2911	8.5067	1.0262
	3	0.6703	19	176.521	185.174	8.653	72	84	86	81	82	83.25	10.00	2.6	8.2925	8.5067	1.0273
																AVG =	1.0263
16	1	0.4501	22	185.174	190.997	5.823	72	86	85	82	82	83.75	10.00	1.2	5.5491	5.7135	1.0296
	2	0.4501	22	190.997	196.813	5.816	72	85	86	82	82	83.5	10.00	1.2	5.5450	5.7135	1.0304
	3	0.4501	22	196.813	202.633	5.820	72	86	87	83	84	85	10.00	1.2	5.5335	5.7135	1.0325
																AVG =	1.0308
11	1	0.3237	24	202.633	206.799	4.166	72	86	86	84	84	85	10.00	0.56	3.9546	4.1090	1.0390
	2	0.3237	24	206.799	210.965	4.166	72	85	86	84	83	84.5	10.00	0.56	3.9532	4.1090	1.0391
	3	0.3237	24	210.965	215.125	4.160	72	86	87	84	85	85.5	10.00	0.56	3.9453	4.1090	1.0415
																AVG =	1.0396

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at maximum attainable vacuum (open coarse valve, close fine valve), for period of 5 minutes minimum for large orifice up to 10 minutes for smallest orifice.
4) Record readings in outlined boxes, other columns are automatically calculated.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 1.0322

(1) $V_m\,(std) = K_1\, V_m \dfrac{P_{bar} + (\Delta H/13.6)}{T_m}$ = Net volume of gas sample passed through DGM, corrected to standard conditions

K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)

T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $V_{cr}\,(std) = K' \sqrt{\dfrac{P_{bar}\,\theta}{T_{amb}}}$ = Volume of gas sample passed through the critical orifice, corrected to standard conditions

T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)

K' = Average K' factor from Critical Orifice Calibration

(3) $Y = \dfrac{V_{cr}\,(std)}{V_m\,(std)}$ = DGM calibration factor

Calibrator: P. Mack

WESTON

STACK TEMPERATURE SENSOR CALIBRATION DATA FORM

DATE 7/24/99
AMBIENT TEMPERATURE 72
CALIBRATION Okay

POTENTIOMETER NUMBER 2010 #14
BAROMETRIC PRESSURE 29.27
REFERENCE: THERMOCOUPLE SIMULATOR (ACCURACY ± 1°F)

REFERENCE TEMPERATURE °C	°F	TEMPERATURE READING FROM THERMOCOUPLE CHANNEL INPUT NUMBER 1	2	3	4	5	AVERAGE TEMPERATURE READING ①	TEMPERATURE DIFFERENCE ② (%)
0	32	33	33	33	33	33	33	1° - .29%
100	212	214	214	214	214	214	214	2° - .30%
500	932	934	934	934	934	934	934	2° - .14%
1000	1832	1831	1831	1831	1831	1831	1831	1° - .04%

COMMENTS

① AVERAGE TEMPERATURE READING = MEAN OF THE TEMPERATURE READINGS FOR THE THERMOCOUPLE CHANNELS

② THE CHANNEL READINGS MUST AGREE WITHIN ± 5°F OR 3°C

ACCEPTABLE TEMPERATURE DIFFERNCE ≤ 1.5 = $\left(\frac{(\text{REF TEMP}^{\circ}\text{F} + 460) - (\text{TEST TEMP}^{\circ}\text{F} + 460)}{(\text{REF TEMP}^{\circ}\text{F} + 460)}\right) \times 100$

WESTON

PITOT TUBE IDENTIFICATION NUMBER: P142

TYPE S PITOT TUBE INSPECTION DATA FORM

PITOT TUBE ASSEMBLY LEVEL? ✓ (YES) ____ (NO)

PITOT TUBE OPENINGS DAMAGED? ____ (YES-EXPLAIN BELOW) ✓ (NO)

α_1 = 0° (<10) α_2 = 0° (<10)

β_1 = 0° (<5) β_2 = 0° (<5)

γ = 1° θ = 0° A = .94 in.

z = A sin γ = .01 in.; (< 1/8 in.),

w = A sin θ = 0 in.; (< 1/32 in.),

P_a = .47 in. P_b = .47 in.

D_t = .38 in. $P_a = P_b$? ✓ (YES) ____ (NO)

COMMENTS ____

CALIBRATION REQUIRED? ____ (YES) ✓ (NO)

INSPECTOR Tom Bruce DATE 12-22-98

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PITOT TUBE IDENTIFICATION NUMBER: P200

TYPE S PITOT TUBE INSPECTION DATA FORM

PITOT TUBE ASSEMBLY LEVEL? ✓ (YES) ____ (NO)

PITOT TUBE OPENINGS DAMAGED? ____ (YES-EXPLAIN BELOW) ✓ (NO)

α_1 = 0 ° (<10) α_2 = 1 ° (<10)

β_1 = 1 ° (<5) β_2 = 0 ° (<5)

γ = 0 ° θ = 0 ° A = .002 in.

z = A sin γ = 0 in.; (<1/8 in.),

w = A sin θ = 0 in.; (<1/32 in.),

P_a = .31 in. P_b = .31 in.

D_t = .25 in. $P_a = P_b$? ✓ (YES) ____ (NO)

COMMENTS ____

CALIBRATION REQUIRED? ____ (YES) ✓ (NO)

INSPECTOR [illegible] DATE 4/14/99

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WESTON

PITOT TUBE IDENTIFICATION NUMBER: P-300

TYPE S PITOT TUBE INSPECTION DATA FORM

PITOT TUBE ASSEMBLY LEVEL? ✓ (YES) ____ (NO)

PITOT TUBE OPENINGS DAMAGED? ____ (YES-EXPLAIN BELOW) ✓ (NO)

α_1 = 3 ° (< 10) α_2 = 2 ° (< 10)

β_1 = 1 ° (< 5) β_2 = 1 ° (< 5)

γ = 0 ° θ = 0 A = .94 in.

z = A sin γ = 0 in.; (< 1/8 in.)

w = A sin θ = 0 in.; (< 1/32 in.)

P_a .47 in P_b = .47 in.

D_t = .58 in. $P_a = P_b$? ✓ (YES) ____ (NO)

COMMENTS 17 inch head

CALIBRATION REQUIRED? ____ (YES) ✓ (NO)

[illegible] [signature] DATE 2-10-99

WESTON

PITOT TUBE IDENTIFICATION NUMBER: P-301

TYPE S PITOT TUBE INSPECTION DATA FORM

PITOT TUBE ASSEMBLY LEVEL? ✓ (YES) ____ (NO)

PITOT TUBE OPENINGS DAMAGED? ____ (YES-EXPLAIN BELOW) ✓ (NO)

α_1 = 0° (<10) α_2 = 0° (<10)

β_1 = 0° (<5) β_2 = 0° (<5)

γ = 1° θ = 0° A = .93 in.

[illegible] = .01 in. (<1/8 in.)

w = A sinθ = 0 in.; (<1/32 in.),

P_1 = .465 in P_2 = .465 in.

P_3 = .38 in $P_a = P_b$? ✓ (YES) ____ (NO)

COMMENTS 17 inch head

CALIBRATION REQUIRED? ____ (YES) ✓ (NO)

[signature] DATE 2-10-99

WESTON

PITOT TUBE IDENTIFICATION NUMBER: 302

TYPE S PITOT TUBE INSPECTION DATA FORM

PITOT TUBE ASSEMBLY LEVEL? ✓ (YES) ____ (NO)

PITOT TUBE OPENINGS DAMAGED? ____ (YES-EXPLAIN BELOW) ✓ (NO)

α_1 = 0° (< 10) α_2 = 0° (< 10)

β_1 = 0° (< 5) β_2 = 0° (< 5)

γ = 1° θ = 0 A = .93 in.

α = .01 in. (< 1/8)

w = A sin θ = 0 in. (< 1/32 in.),

P_a = .465 in P_b = .465 in

P_c = .38 in $P_a = P_b$? ✓ (YES) ____ (NO)

COMMENTS 18 in head

CALIBRATION REQUIRED? ____ (YES) ✓ (NO)

[signature] DATE 2/10/99