APPENDIX

Appendix A: Process Operating Data
Appendix B: Calculations
Appendix C: Raw Field Data and Calibration Data Sheets
Appendix D: Reduced Field Data Sheets
Appendix E: Sampling Log and Chain of Custody Records
Appendix F: Analytical Data Sheets
Appendix G: List of Participants

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Run #1

Table 6
MERCURY SPECIATION TEST FUEL FLOW READINGS

Date: 8/24/99 Test Hours: 10:00 to ~~12:00~~ 12:30 Operator P. Schulz

Unit: Unit 101 Load (MW): 282 GMW

Rawhide Energy (½ hr Ending ~~Hour~~ Readings)

Data Point	Read From	Start				End	
~~Feeder A (Total Pounds)~~	~~Coal Feeder Counter~~ Time	10:00	10:30	11:00	11:30	12:00	12:30
Feeder 101 (Total Pounds)	Coal Feeder Counter X100	22216549	22216960	22217368	22217775	22218187	22218598
Feeder 102 (Total Pounds)	Coal Feeder Counter X100	21749340	21749753	21750160	21750566	21750977	21751387
Feeder 103 (Total Pounds)	Coal Feeder Counter X100	22047068	22047435	22047798	22048161	22048527	22048893
Feeder 104 (Total Pounds)	Coal Feeder Counter X100	12694546	12694897	12695244	12695589	12695939	12696288
~~Feeder F (Total Pounds)~~	~~Coal Feeder Counter~~						

Fuel Samples Taken ☒ Yes ☐ No

Fly Ash Samples Taken ☒ Yes ☐ No

PRPA-Rawhide TESTING DATA

Generation (gross MW)	280.83
Auxiliary Use (MW)	21.83
Generation (net MW)	258.88
STEAM CONDITIONS	
Throttle Stm Temp (F)	1010.2
Throttle Stm Press (psig)	1868.8
First Stage Press (psig)	1319.5
Cold RH Temp (F)	669.50
Cold RH Press (psig)	468.82
Main Stm Flow (KPPH)	1840.6
FEEDWATER CONDITIONS	
Feedwater Temp (F)	406.20
ΔMS Attemp Flow (KPPH)	45.99
ΔRH Attemp Flow (KPPH)	13.00
CONDENSER CONDITIONS	
Circ Water In (F)	77.36
Circ Water Out (F)	89.81
Condenser Press ("Hg)	5.54
Barometric Press ("Hg)	24.55
BOILER CONDITIONS	
AH Gas IN Temp (F)	826.28
AH Gas Out Temp (F)	335.12
AH Air IN Temp (F)	82.05
AH Air Out Temp (F)	768.97
FD Fan Suction Temp (F)	82.33
Ambient Temp (F)	82.33
Coal Flow (KPPH)	308.00
FLUE GAS CONDITIONS	
Stack Flow (KCFM)	763.03
Stack Gas Temp (F)	220.35
Opacity (%)	0.77
Stack Gas CO2 (%)	12.35

11:00 8-24-99

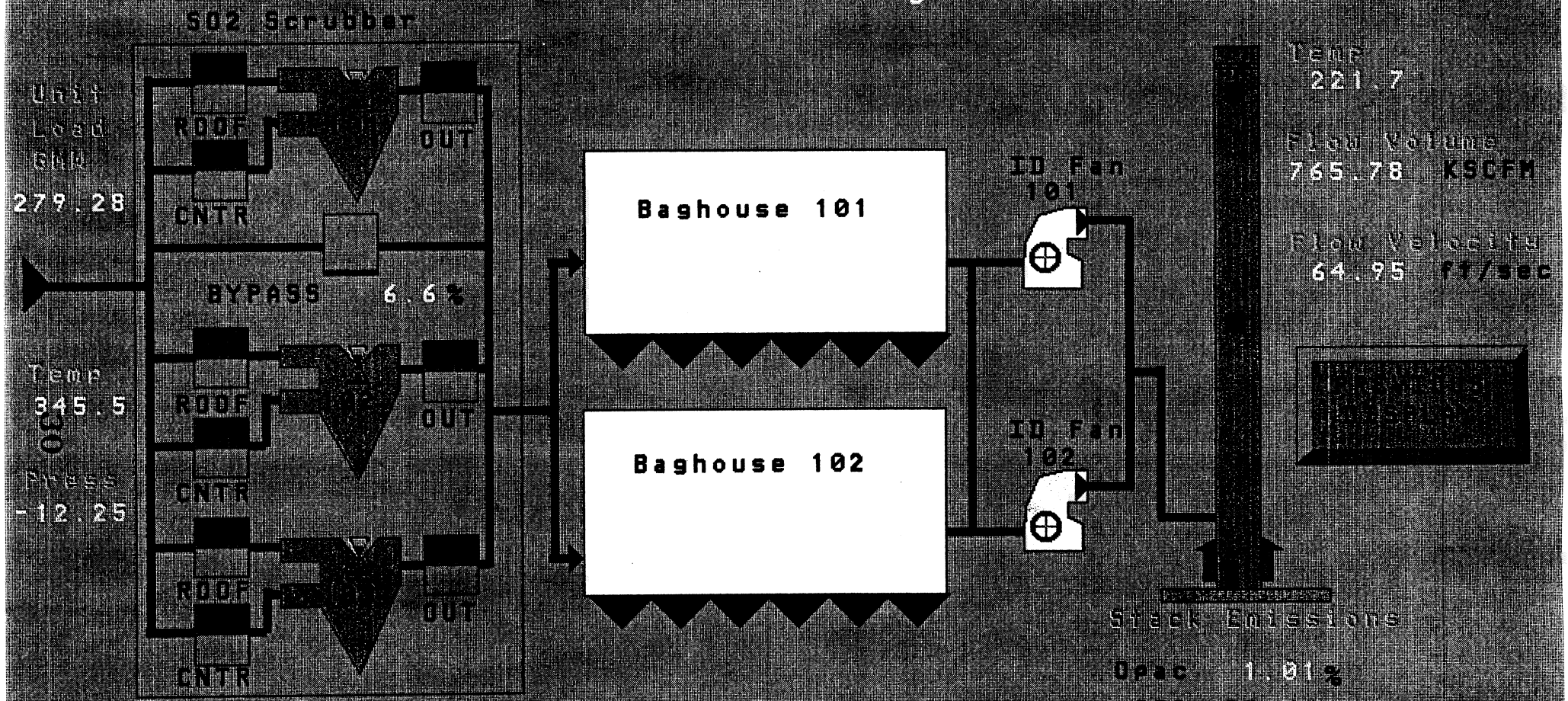
Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

PRPA-Rawhide TESTING DATA

Generation (gross MW)	280.05
Auxiliary Use (MW)	22.33
Generation (net MW)	257.55
STEAM CONDITIONS	
Throttle Stm Temp (F)	1009.4
Throttle Stm Press (psig)	1860.0
First Stage Press (psig)	1310.2
Cold RH Temp (F)	668.61
Cold RH Press (psig)	466.91
Main Stm Flow (KPPH)	1800.6
FEEDWATER CONDITIONS	
Feedwater Temp (F)	106.00
MS Attemp Flow (KPPH)	81.07
RH Attemp Flow (KPPH)	6.92
CONDENSER CONDITIONS	
Circ Water In (F)	77.57
Circ Water Out (F)	90.23
Condenser Press ("Hg)	5.64
Barometric Press ("Hg)	24.54
BOILER CONDITIONS	
AH Gas IN Temp (F)	829.54
AH Gas Out Temp (F)	341.07
AH Air IN Temp (F)	84.95
AH Air Out Temp (F)	773.13
FD Fan Suction Temp (F)	84.80
Ambient Temp (F)	84.80
Coal Flow (KPPH)	309.07
FLUE GAS CONDITIONS	
Stack Flow (KCFM)	769.22
Stack Gas Temp (F)	222.10
Opacity (%)	0.96
Stack Gas CO_2 (%)	12.39

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

Rawhide Emissions Control System



Inlet Emissions

SO2	232.68 ppm
SO2	0.507 #/Mbtu
CO2	13.70 %
CO	0.00 ppm
O2	3.43 %

SDA Outlet Temps

101 Temp	207.5
102 Temp	208.4
103 Temp	209.8

SDA Outlet Press

-14.24

Baghouse Temps

Inlet	
101	212.64
102	211.89
Outlet	
101	207.54
102	207.93

Stack Emissions

Opac	1.01 %
SO2	33.00 ppm
SO2	0.079 #/MBtu
SO2	254.42 lbs/hr
NOx	215.40 ppm
NOx	0.370 #/MBtu
CO2	12.42 %
SO2 Removal	84.71 %

12:30 8-24-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

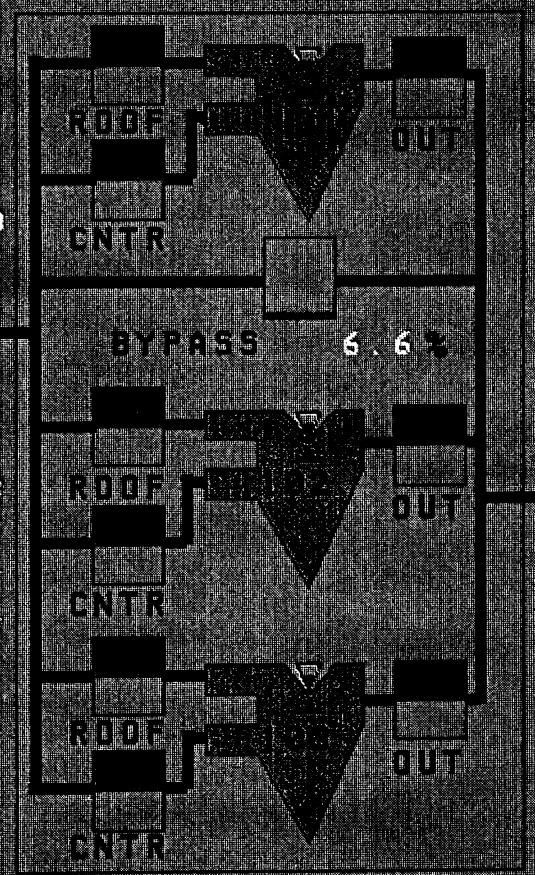
PRPA-Rawhide TESTING DATA

Generation (gross MW)	279.13
Auxiliary Use (MW)	22.92
Generation (net MW)	256.77
STEAM CONDITIONS	
Throttle Stm Temp (F)	1010.6
Throttle Stm Press (psig)	1863.8
First Stage Press (psig)	1323.4
Cold RH Temp (F)	667.42
Cold RH Press (psig)	467.30
Main Stm Flow (KPPH)	1865.6
FEEDWATER CONDITIONS	
Feedwater Temp (F)	106.00
MS Attemp Flow (KPPH)	41.34
RH Attemp Flow (KPPH)	1.82
CONDENSER CONDITIONS	
Circ Water In (F)	77.36
Circ Water Out (F)	90.23
Condenser Press ("Hg)	5.68
Barometric Press ("Hg)	24.51
BOILER CONDITIONS	
AH Gas IN Temp (F)	821.23
AH Gas Out Temp (F)	345.62
AH Air IN Temp (F)	91.65
AH Air Out Temp (F)	769.56
FD Fan Suction Temp (F)	91.20
Ambient Temp (F)	91.20
Coal Flow (KPPH)	308.95
FLUE GAS CONDITIONS	
Stack Flow (KCFM)	765.72
Stack Gas Temp (F)	221.75
Opacity (%)	1.76
Stack Gas CO2 (%)	12.42

12:02 8-24-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

Rawhide Emissions Control System



Unit Load Gmk
279.90

Temp
610.3
23

Press
-12.07

Baghouse 101

Baghouse 102

ID Fan 101

ID Fan 102

Temp
220.5

Flow Volume
760.27 KSCFM

Flow Velocity
64.41 ft/sec

Stack Emissions

Opac	1.07 %
SO2	36.11 ppm
SO2	0.087 #/MBtu
SO2	273.41 lbs/hr
NOx	216.67 ppm
NOx	0.379 #/MBtu
CO2	12.39 %
SO2 Removal	82.87 %

Inlet Emissions

SO2	231.00 ppm
SO2	0.505 #/Mbtu
CO2	13.65 %
CO	0.00 ppm
O2	3.40 %

SDA Outlet Temps

101 Temp	206.4
102 Temp	206.6
103 Temp	207.7

SDA Outlet Press
-14.07

Baghouse Temps

Inlet	
101	211.00
102	209.99
Outlet	
101	206.90
102	207.78

12:00 8-24-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

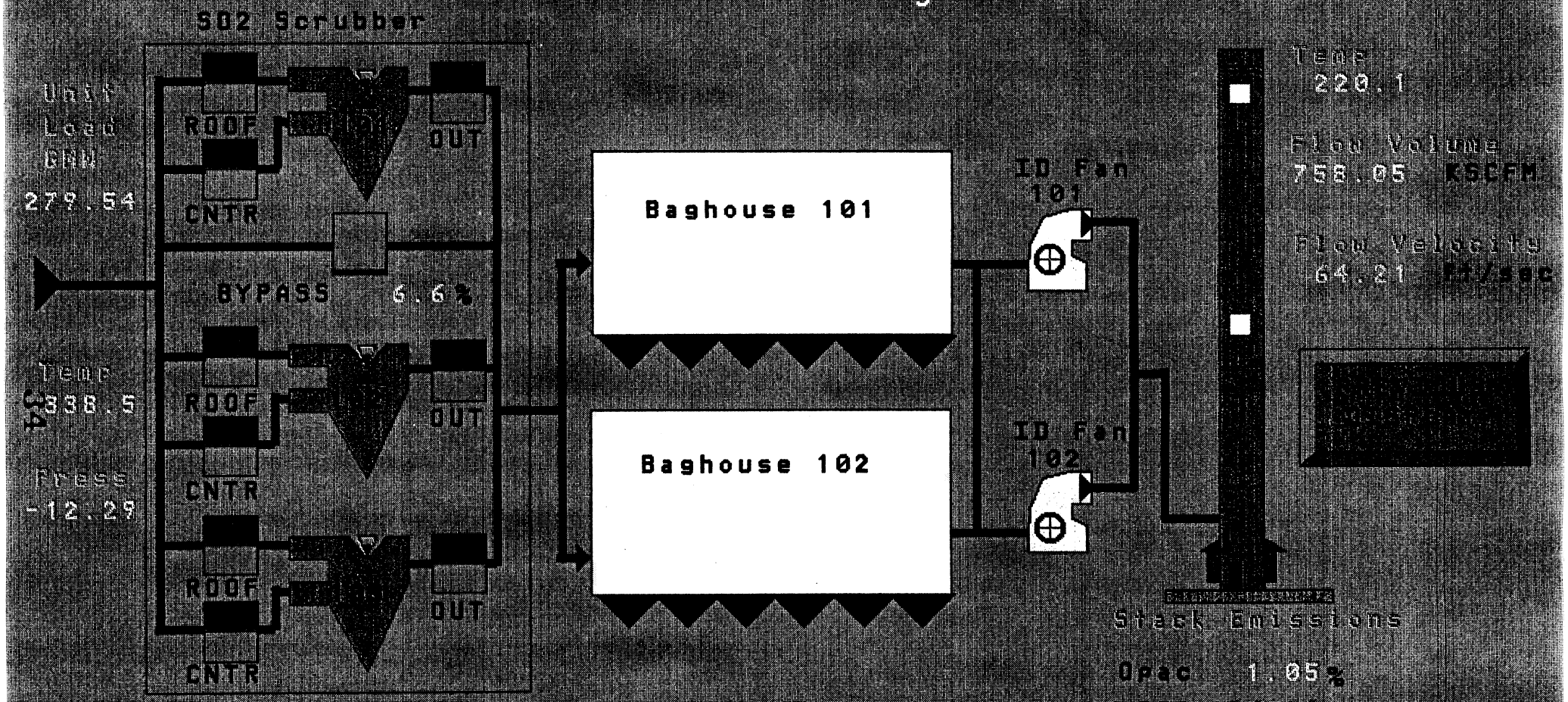
PRPA-Rawhide TESTING DATA

Generation (gross MW)	279.41
Auxiliary Use (MW)	22.23
Generation (net MW)	256.75
STEAM CONDITIONS	
Throttle Stm Temp (F)	1009.2
Throttle Stm Press (psig)	1863.1
First Stage Press (psig)	1319.6
Cold RH Temp (F)	667.42
Cold RH Press (psig)	466.50
Main Stm Flow (KPPH)	1857.5
FEEDWATER CONDITIONS	
Feedwater Temp (F)	106.20
MS Attemp Flow (KPPH)	34.02
RH Attemp Flow (KPPH)	0.0000
CONDENSER CONDITIONS	
Circ Water In (F)	77.36
Circ Water Out (F)	90.02
Condenser Press ("Hg)	5.57
Barometric Press ("Hg)	24.52
BOILER CONDITIONS	
AH Gas IN Temp (F)	830.43
AH Gas Out Temp (F)	340.29
AH Air IN Temp (F)	89.45
AH Air Out Temp (F)	770.16
FD Fan Suction Temp (F)	89.88
Ambient Temp (F)	89.88
Coal Flow (KPPH)	308.72
FLUE GAS CONDITIONS	
Stack Flow (KCFM)	759.38
Stack Gas Temp (F)	219.28
Opacity (%)	0.95
Stack Gas CO2 (%)	12.38

11:32 8-24-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

Rawhide Emissions Control System



Inlet Emissions	
SO2	234.03 ppm
SO2	0.513 #/MBtu
CO2	13.63 %
CO	0.00 ppm
O2	3.59 %

SDA Outlet Temps	
101 Temp	205.9
102 Temp	206.1
103 Temp	205.8

SDA Outlet Press	
	-14.28

Baghouse Temps	
Inlet	
101	210.84
102	208.49
Outlet	
101	206.88
102	207.47

Stack Emissions	
Opac	1.05 %
SO2	36.32 ppm
SO2	0.088 #/MBtu
SO2	274.25 lbs/hr
NOx	240.16 ppm
NOx	0.412 #/MBtu
CO2	12.38 %
SO2 Removal	82.80 %

11:30 8-24-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

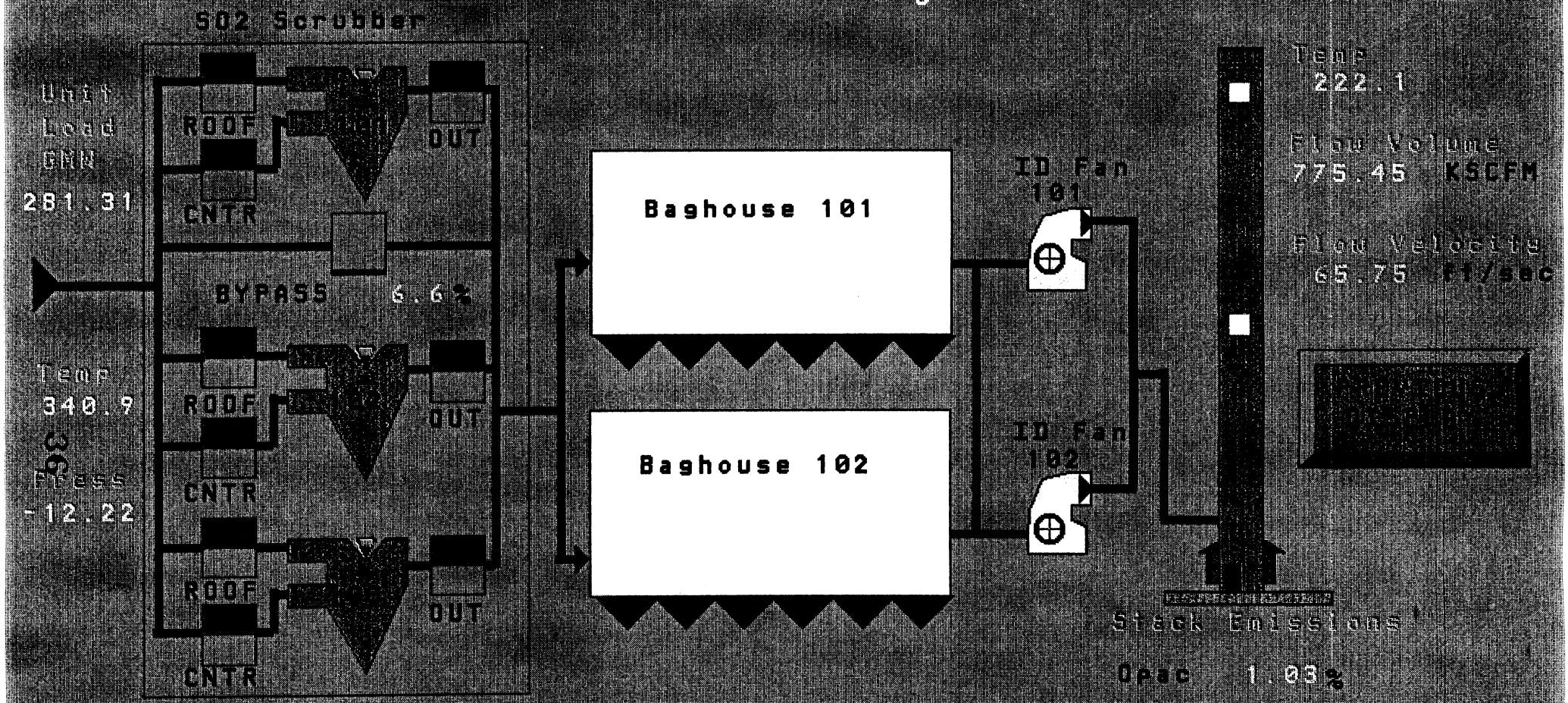
PRPA-Rawhide TESTING DATA

Generation (gross MW)	279.52
Auxiliary Use (MW)	21.97
Generation (net MW)	256.45
STEAM CONDITIONS	
Throttle Stm Temp (F)	1009.7
Throttle Stm Press (psig)	1863.1
First Stage Press (psig)	1315.3
Cold RH Temp (F)	667.42
Cold RH Press (psig)	465.39
Main Stm Flow (KPPH)	1875.6
FEEDWATER CONDITIONS	
Feedwater Temp (F)	106.00
MS Attemp Flow (KPPH)	46.50
RH Attemp Flow (KPPH)	1.53
CONDENSER CONDITIONS	
Circ Water In (F)	77.57
Circ Water Out (F)	89.81
Condenser Press ("Hg)	5.60
Barometric Press ("Hg)	24.53
BOILER CONDITIONS	
AH Gas IN Temp (F)	825.09
AH Gas Out Temp (F)	339.06
AH Air IN Temp (F)	86.90
AH Air Out Temp (F)	766.00
FD Fan Suction Temp (F)	88.01
Ambient Temp (F)	88.01
Coal Flow (KPPH)	306.23
FLUE GAS CONDITIONS	
Stack Flow (KCFM)	759.32
Stack Gas Temp (F)	220.38
Opacity (%)	0.81
Stack Gas CO2 (%)	12.37

11:02 8-24-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

Rawhide Emissions Control System



Inlet Emissions

SO2 230.12 ppm
SO2 0.504 #/Mbtu
CO2 13.64 %
CO 0.00 ppm
O2 8.52 %

SDA Outlet Temps

101 Temp 205.7
102 Temp 206.0
103 Temp 206.3

SDA Outlet Press

-14.49

Baghouse Temps

Inlet
101 210.63
102 209.20
Outlet
101 206.32
102 207.65

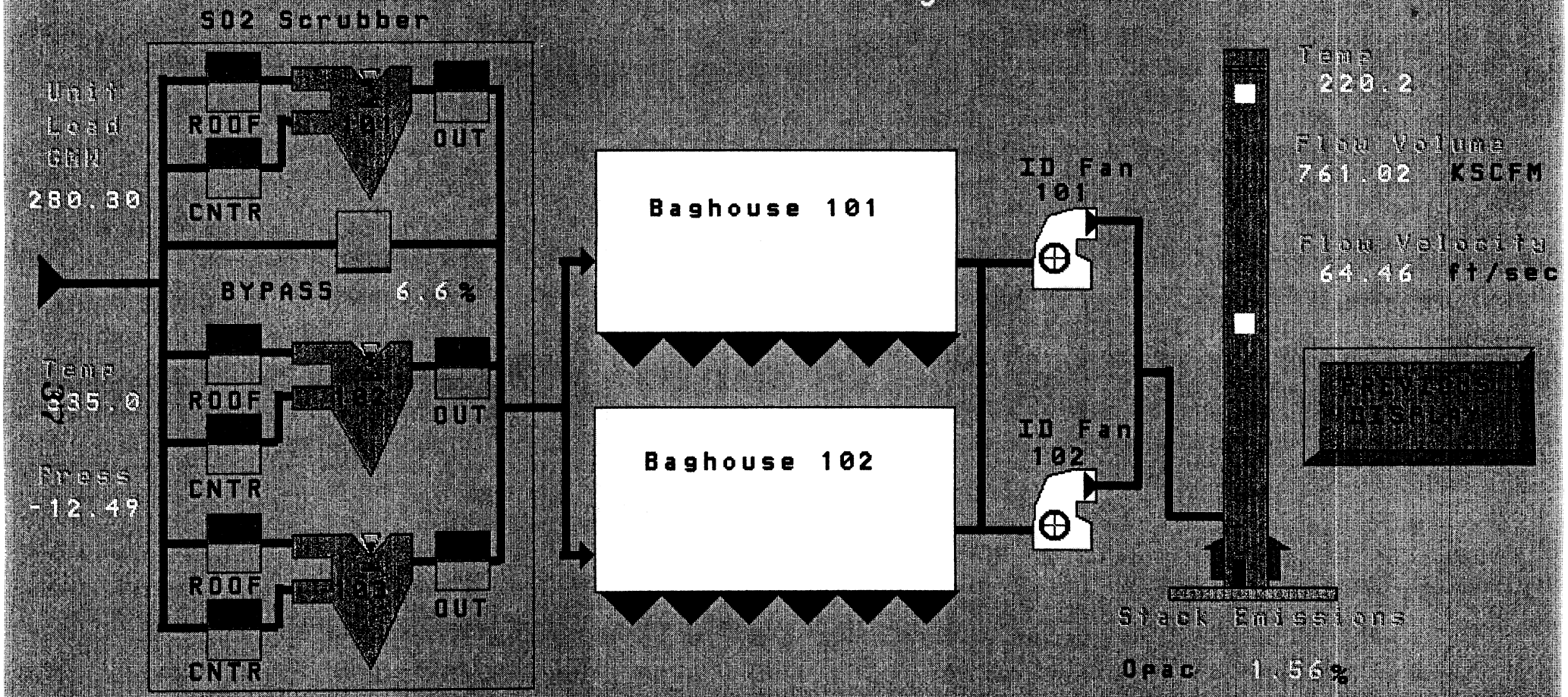
Stack Emissions

Opac 1.03 %
SO2 35.21 ppm
SO2 0.085 #/MBtu
SO2 271.50 lbs/hr
NOx 236.24 ppm
NOx 0.411 #/MBtu
CO2 12.38 %
SO2 Removal 82.96 %

10:32 8-24-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

Rawhide Emissions Control System



Inlet Emissions

SO2	232.07 PPM
SO2	0.509 #/Mbtu
CO2	13.60 %
CO	2.66 PPM
O2	3.59 %

SDA Outlet Temps

101 Temp	205.4
102 Temp	205.1
103 Temp	204.7

SDA Outlet Press
-14.79

Baghouse Temps

Inlet	
101	207.54
102	207.62
Outlet	
101	206.19
102	207.33

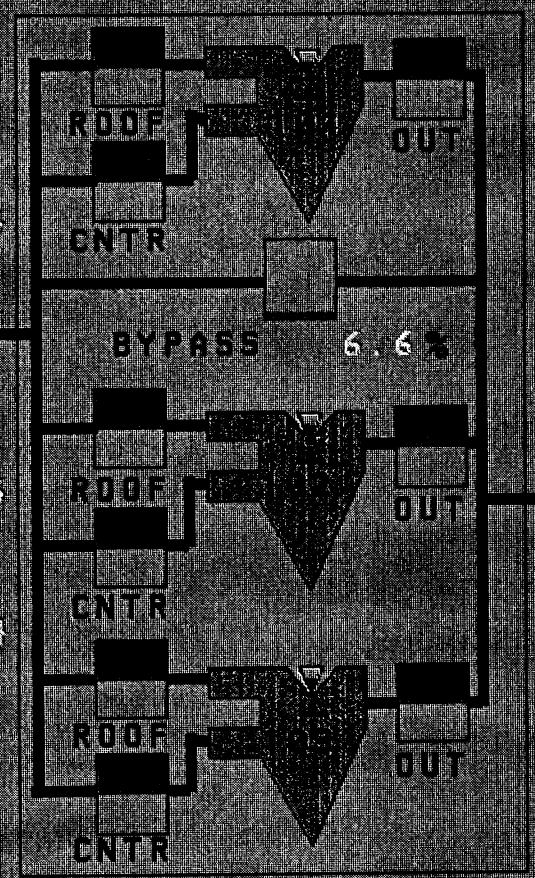
Stack Emissions

Opac	1.56 %
SO2	37.98 PPM
SO2	0.092 #/MBtu
SO2	287.54 lbs/hr
NOx	231.98 PPM
NOx	0.403 #/MBtu
CO2	12.85 %
SO2 Removal	81.97 %

10:16 8-24-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

Rawhide Emissions Control System



Unit Load GMW
281.44

Temp
334.6
°F

Press
-11.74

Baghouse 101

Baghouse 102

ID Fan 101

ID Fan 102

Temp
220.4

Flow Volume
766.35 KSCFM

Flow Velocity
64.94 ft/sec

Stack Emissions

Opac 0.78%
SO2 38.39 ppm
SO2 0.098 #/MBtu
SO2 293.18 lbs/hr
NOx 229.94 ppm
NOx 0.397 #/MBtu
CO2 12.34%
SO2 Removal 81.70%

Inlet Emissions
SO2 229.15 ppm
SO2 0.504 #/Mbtu
CO2 13.57%
CO 0.00 ppm
O2 3.48%

SDA Outlet Temps
101 Temp 206.1
102 Temp 205.0
103 Temp 205.6

SDA Outlet Press
-13.93

Baghouse Temps
Inlet
101 210.97
102 207.15
Outlet
101 206.66
102 207.58

10:13 8-24-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

PRPA-Rawhide TESTING DATA

Generation (gross MW)	280.57
Auxiliary Use (MW)	22.27
Generation (net MW)	259.62
STEAM CONDITIONS	
Throttle Stm Temp (F)	1010.1
Throttle Stm Press (psig)	1866.2
First Stage Press (psig)	1316.3
Cold RH Temp (F)	667.72
Cold RH Press (psig)	469.07
Main Stm Flow (KPPH)	1832.5
FEEDWATER CONDITIONS	
Feedwater Temp (F)	106.00
MS Attemp Flow (KPPH)	35.59
RH Attemp Flow (KPPH)	8.40
CONDENSER CONDITIONS	
Circ Water In (F)	77.36
Circ Water Out (F)	90.23
Condenser Press ("Hg)	5.62
Barometric Press ("Hg)	24.55
BOILER CONDITIONS	
AH Gas IN Temp (F)	822.42
AH Gas Out Temp (F)	334.69
AH Air IN Temp (F)	80.70
AH Air Out Temp (F)	767.78
FD Fan Suction Temp (F)	81.50
Ambient Temp (F)	81.50
Coal Flow (KPPH)	308.83
FLUE GAS CONDITIONS	
Stack Flow (KCFM)	769.41
Stack Gas Temp (F)	221.45
Opacity (%)	0.71
Stack Gas CO2 (%)	12.33

2/24/99 10:03

Sys CEM Config Inlet Stack CEMDAS SftMnt Se

Rawhide Emissions Control System

SO2 Scrubber

Unit Load GMW 281.20

ROOF OUT CNTR

BYPASS 6.6%

ROOF OUT CNTR

ROOF OUT CNTR

Baghouse 101

Baghouse 102

ID Fan 101

ID Fan 102

Te 2 Fl 77 Fl 6

Stack Emiss

Opac 0.79

SO2 35.94

SO2 0.087

SO2 276.72

Inlet Emissions

SO2 231.76 PPM

SO2 0.511 #/Mbtu

SDA Outlet Temps

101 Temp 206.1

102 Temp 205.4

Baghouse Temps

Inlet

101 210.73

BO Temp 333.9

Press -12.00

8/24/99 10:00

Sys CEM Config Inlet Stack CEMDAS SftMnt Se

PRPA-Rawhide TESTING DATA

Generation (gross MW)	281.59
Auxiliary Use (MW)	21.98
Generation (net MW)	259.38
STEAM CONDITIONS	
Throttle Stm Temp (F)	1011.5
Throttle Stm Press (psig)	1878.8
First Stage Press (psig)	1323.7
Cold RH Temp (F)	669.20
Cold RH Press (psig)	469.79
Main Stm Flow (KPPH)	1864.4
FEEDWATER CONDITIONS	
Feedwater Temp (F)	106.20
MS Attemp Flow (KPPH)	57.94
RH Attemp Flow (KPPH)	0.0000
CONDENSER CONDITIONS	
Circ Water In (F)	77.36
Circ Water Out (F)	89.81
Condenser Press ("Hg)	5.53
Barometric Press ("Hg)	24.55
BOILER CONDITIONS	
AH Gas IN Temp (F)	822.42
AH Gas Out Temp (F)	335.21
AH Air IN Temp (F)	79.85
AH Air Out Temp (F)	768.38
FD Fan Suction Temp (F)	80.35
Ambient Temp (F)	80.35

RATA Test Data - Stack Flow . CEM:STACK_MIN.R001
Platte River Power Authority
Rawhide Station
Unit 1

Report for 08/24/99 10:00:00 to 08/24/99 12:30:00
Report File: /opt/foxind/cem/rata/HgTest-1.txt
Report printed at Tue Aug 24 12:33:35 1999

Mercury Test Data
Test Run #1

Date & Time	Stack Flow (scfh)	Velocity	Gen MW
08/24/99 10:00:00	46495991	65.60	281.33
08/24/99 10:01:00	46440525	65.37	281.33
08/24/99 10:02:00	46331158	65.37	281.33
08/24/99 10:03:00	46305470	65.23	281.33
08/24/99 10:04:00	46258396	65.23	281.33
08/24/99 10:05:00	46258396	65.23	280.30
08/24/99 10:06:00	46189259	65.12	280.30
08/24/99 10:07:00	46166702	65.12	280.30
08/24/99 10:08:00	46160252	65.12	280.30
08/24/99 10:09:00	46148434	65.12	281.33
08/24/99 10:10:00	46148434	65.12	281.33
08/24/99 10:11:00	46148434	65.12	281.33
08/24/99 10:12:00	46148434	65.12	281.33
08/24/99 10:13:00	46148434	65.12	280.30
08/24/99 10:14:00	46148434	65.12	280.30
08/24/99 10:15:00	46038181	64.95	280.30
08/24/99 10:16:00	45982616	64.95	281.33
08/24/99 10:17:00	45928127	64.78	281.33
08/24/99 10:18:00	45817093	64.78	281.33
08/24/99 10:19:00	45750687	64.31	281.33
08/24/99 10:20:00	45616898	64.31	281.33
08/24/99 10:21:00	45616898	64.45	280.30
08/24/99 10:22:00	45707325	64.45	280.30
08/24/99 10:23:00	45707325	64.45	280.30
08/24/99 10:24:00	45740528	64.45	280.30
08/24/99 10:25:00	45763275	64.45	280.30
08/24/99 10:26:00	45774799	64.60	280.30
08/24/99 10:27:00	45798923	64.60	280.30
08/24/99 10:28:00	45798923	64.60	280.30
08/24/99 10:29:00	45780762	64.60	280.30
08/24/99 10:30:00	45780762	64.60	280.30
08/24/99 10:31:00	45733700	64.46	280.30
08/24/99 10:32:00	45669239	64.46	280.30
08/24/99 10:33:00	45675877	64.46	280.30
08/24/99 10:34:00	45760345	64.56	280.30
08/24/99 10:35:00	45760345	64.56	280.30
08/24/99 10:36:00	45731930	64.56	280.30
08/24/99 10:37:00	45687885	64.56	280.30
08/24/99 10:38:00	45700680	64.68	280.30
08/24/99 10:39:00	45837109	64.68	280.30
08/24/99 10:40:00	45837109	64.68	280.30
08/24/99 10:41:00	45852924	64.68	280.30
08/24/99 10:42:00	45890728	64.68	280.30
08/24/99 10:43:00	45906448	64.80	280.30

14112 G.B.

	08/24/99 10:43:00	45906448	64.80	280.30
	08/24/99 10:44:00	45947460	64.80	280.30
	08/24/99 10:45:00	45947460	64.68	280.30
	08/24/99 10:46:00	45763866	64.56	280.30
	08/24/99 10:47:00	45763866	64.56	280.30
	08/24/99 10:48:00	45663570	64.22	280.30
	08/24/99 10:49:00	45525776	64.22	280.30
	08/24/99 10:50:00	45518555	64.10	280.30
1	08/24/99 10:51:00	45449997	64.10	280.30
2	08/24/99 10:52:00	45449997	64.10	280.30
3	08/24/99 10:53:00	45455856	64.10	280.30
4	08/24/99 10:54:00	45467579	64.26	280.30
5	08/24/99 10:55:00	45492477	64.26	280.30
6	08/24/99 10:56:00	45544041	64.58	280.30
7	08/24/99 10:57:00	45551270	64.58	280.30
8	08/24/99 10:58:00	45745022	64.58	280.30
9	08/24/99 10:59:00	45745022	65.12	280.30
10	08/24/99 11:00:00	46048733	65.12	280.30
11	08/24/99 11:01:00	46148136	65.75	280.30
12	08/24/99 11:02:00	46270992	65.75	281.31
13	08/24/99 11:03:00	46516018	65.97	281.31
14	08/24/99 11:04:00	46526470	65.97	281.31
15	08/24/99 11:05:00	46587498	65.97	280.30
16	08/24/99 11:06:00	46587498	65.97	280.30
17	08/24/99 11:07:00	46587498	65.97	280.30
18	08/24/99 11:08:00	46587498	65.48	281.33
19	08/24/99 11:09:00	46465137	65.48	281.33
20	08/24/99 11:10:00	46220016	65.48	281.33
21	08/24/99 11:11:00	46220016	65.48	280.30
22	08/24/99 11:12:00	46220016	65.48	280.30
23	08/24/99 11:13:00	46220016	64.73	280.30
24	08/24/99 11:14:00	46058498	64.73	281.33
25	08/24/99 11:15:00	45725971	63.95	281.33
26	08/24/99 11:16:00	45688572	63.95	281.33
27	08/24/99 11:17:00	45198826	63.95	281.33
28	08/24/99 11:18:00	45193451	63.80	281.33
29	08/24/99 11:19:00	45180561	63.80	281.33
30	08/24/99 11:20:00	45156345	64.12	281.33
31	08/24/99 11:21:00	45178814	64.12	280.30
32	08/24/99 11:22:00	45432522	64.12	280.30
33	08/24/99 11:23:00	45432522	64.50	280.30
34	08/24/99 11:24:00	45693455	64.50	280.30
35	08/24/99 11:25:00	45781841	64.50	280.30
36	08/24/99 11:26:00	45770020	64.50	280.30
37	08/24/99 11:27:00	45744434	64.50	280.30
38	08/24/99 11:28:00	45744434	64.26	280.30
39	08/24/99 11:29:00	45621780	64.26	279.28
40	08/24/99 11:30:00	45560741	64.26	279.28
41	08/24/99 11:31:00	45549900	64.26	279.28
42	08/24/99 11:32:00	45489452	64.73	279.28
43	08/24/99 11:33:00	45518749	64.73	280.30
44	08/24/99 11:34:00	45854588	64.73	280.3
45	08/24/99 11:35:00	45854588	64.51	280.3
46	08/24/99 11:36:00	45786526	64.51	280.30
47	08/24/99 11:37:00	45652054	64.38	280.30
48	08/24/99 11:38:00	45643261	64.38	280.3
49	08/24/99 11:39:00	45542480	63.84	280.30
50	08/24/99 11:40:00	45509079	63.84	280.30
51	08/24/99 11:41:00	45156544	63.84	280.3
52	08/24/99 11:42:00	45156544	63.97	280.3
53	08/24/99 11:43:00	45198441	63.97	280.30
54	08/24/99 11:44:00	45284088	63.97	280.3
55	08/24/99 11:45:00	45291504	63.97	280.3
56	08/24/99 11:46:00	45322464	63.97	280.30

14112 G.B.

08/24/99 11:33:00	[illegible]	[illegible]	[illegible]
08/24/99 11:34:00	45854588	64.73	280.30
08/24/99 11:35:00	45854588	64.73	280.30
08/24/99 11:36:00	45786526	64.51	280.30
08/24/99 11:37:00	45652054	64.51	280.30
08/24/99 11:38:00	45643261	64.38	280.30
08/24/99 11:39:00	45542480	64.38	280.30
08/24/99 11:40:00	45509079	63.84	280.30
08/24/99 11:41:00	45156544	63.84	280.30
08/24/99 11:42:00	45156544	63.84	280.30
08/24/99 11:43:00	45198441	63.97	280.30
08/24/99 11:44:00	45284088	63.97	280.30
08/24/99 11:45:00	45291504	63.97	280.30
08/24/99 11:46:00	45322464	63.97	280.30
08/24/99 11:47:00	45322464	63.97	280.30
08/24/99 11:48:00	45419338	64.13	280.30
08/24/99 11:49:00	45467579	64.13	279.16
08/24/99 11:50:00	45437115	64.13	279.16
08/24/99 11:51:00	45374802	64.13	279.16
08/24/99 11:52:00	45381149	64.24	280.17
08/24/99 11:53:00	45467091	64.24	280.17
08/24/99 11:54:00	45467091	64.24	280.17
08/24/99 11:55:00	45482128	64.24	281.18
08/24/99 11:56:00	45505856	64.24	281.18
08/24/99 11:57:00	45565823	64.55	281.18
08/24/99 11:58:00	45686909	64.55	281.18
08/24/99 11:59:00	45686909	64.55	280.17
08/24/99 12:00:00	45561817	64.34	280.17
08/24/99 12:01:00	45561817	64.34	279.16
08/24/99 12:02:00	45583889	64.34	279.16
08/24/99 12:03:00	45615234	64.34	280.17
08/24/99 12:04:00	45628605	64.58	280.17
08/24/99 12:05:00	45781055	64.58	280.17
08/24/99 12:06:00	45781055	64.58	280.17
08/24/99 12:07:00	45987988	64.98	280.17
08/24/99 12:08:00	46056744	64.98	280.17
08/24/99 12:09:00	46000488	64.76	280.17
08/24/99 12:10:00	45889648	64.76	280.17
08/24/99 12:11:00	45889648	64.76	280.17
08/24/99 12:12:00	45889648	64.76	280.17
08/24/99 12:13:00	45889648	64.76	280.17
08/24/99 12:14:00	45879593	64.65	280.17
08/24/99 12:15:00	45761913	64.65	280.17
08/24/99 12:16:00	45761913	64.65	280.17
08/24/99 12:17:00	45639160	64.33	277.87
08/24/99 12:18:00	45597363	64.33	277.87
08/24/99 12:19:00	45699322	64.84	279.90
08/24/99 12:20:00	45907227	64.84	280.93
08/24/99 12:21:00	45894238	64.60	280.93
08/24/99 12:22:00	45724804	64.60	280.93
08/24/99 12:23:00	45724804	64.60	279.79
08/24/99 12:24:00	45982422	65.09	278.76
08/24/99 12:25:00	46109665	65.09	278.76
08/24/99 12:26:00	46103710	65.09	280.80
08/24/99 12:27:00	46077438	65.09	280.80
08/24/99 12:28:00	46077438	65.09	280.80
08/24/99 12:29:00	46171680	65.31	280.80
08/24/99 12:30:00	46203907	65.31	280.80
Averages =	45795052	64.65	280.39

14112 G.B.

Run #2

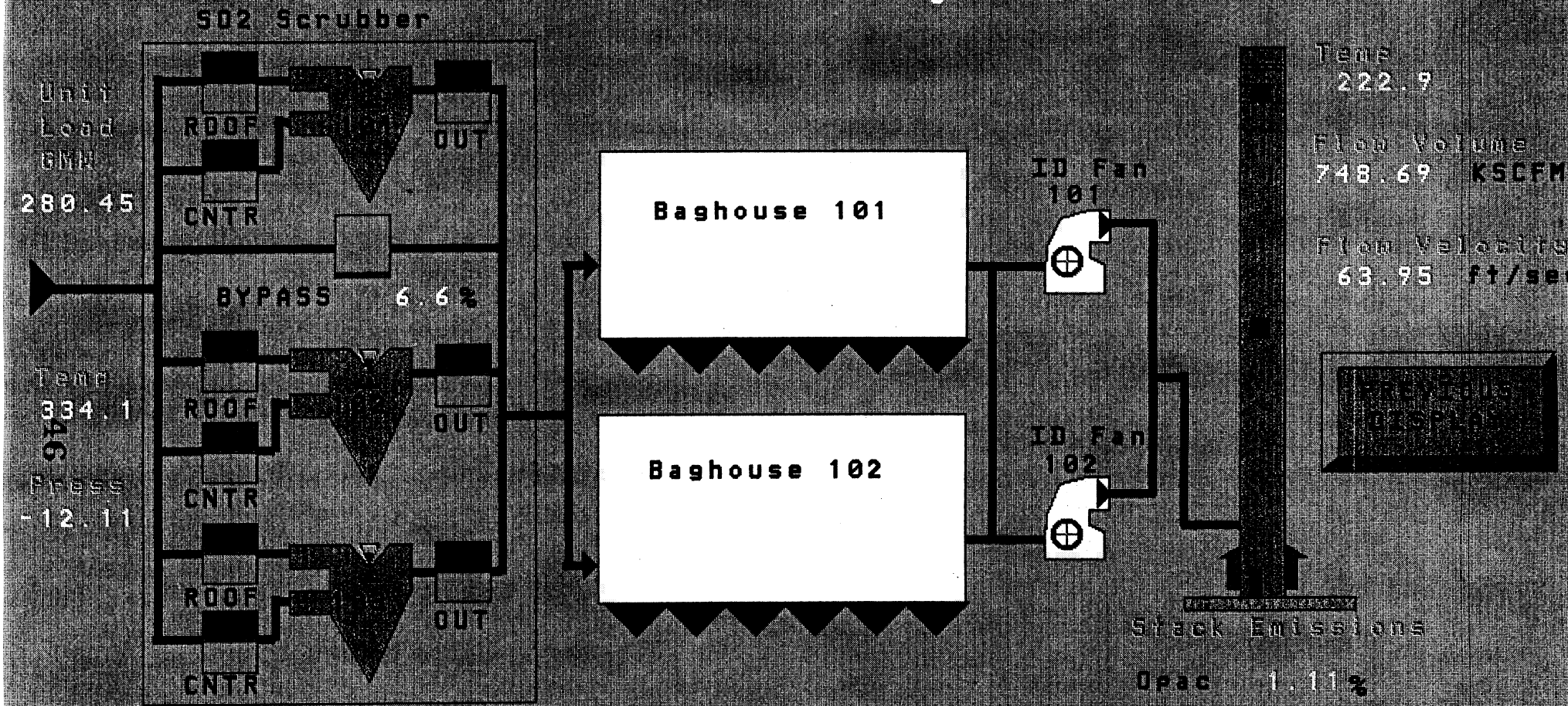
Table 6
MERCURY SPECIATION TEST FUEL FLOW READINGS

Date: 8/24/99	Test Hours: ____ to ____				Operator		
Unit: Unit 101					Load (MW): 280		
Rawhide Energy		(½ hr Ending ~~Hour~~ Readings)					
Data Point	**Read From**	Start		-	-	End	
~~Feeder A ~~ (~~Total Pounds~~)	~~Coal Feeder Counter~~ Time	14:10	14:40	15:10	15:40	16:10	16:40
Feeder 101 (Total Pounds)	Coal Feeder Counter X100	22219950	22220354	22220768	22221170	22221578	2222198
Feeder 102 (Total Pounds)	Coal Feeder Counter X100	21752741	21753145	21753559	21753961	21754369	2175477
Feeder 103 (Total Pounds)	Coal Feeder Counter X100	22050099	22050459	22050828	22051186	22051550	2205191
Feeder 104 (Total Pounds)	Coal Feeder Counter X100	12697441	12697785	12698139	12698480	12698828	1269917
~~Feeder F ~~ (~~Total Pounds~~)	~~Coal Feeder Counter~~						
Fuel Samples Taken	☒ Yes ☐ No						
Fly Ash Samples Taken	☒ Yes ☐ No						

16:42 8-24-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

Rawhide Emissions Control System



Stack Emissions

Opac	1.11 %
SO2	35.57 ppm
SO2	0.085 #/MBtu
SO2	265.72 lbs/hr
NOx	221.32 ppm
NOx	0.380 #/MBtu
CO2	12.48 %
SO2 Removal	82.55 %

Inlet Emissions

SO2	225.28 ppm
SO2	0.493 #/Mbtu
CO2	13.65 %
CO	0.16 ppm
O2	3.63 %

SDA Outlet Temps

101 Temp	213.8
102 Temp	209.8
103 Temp	211.1

SDA Outlet Press
-14.22

Baghouse Temps

Inlet	
101	215.45
102	212.84
Outlet	
101	211.75
102	211.43

16:40 8-24-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

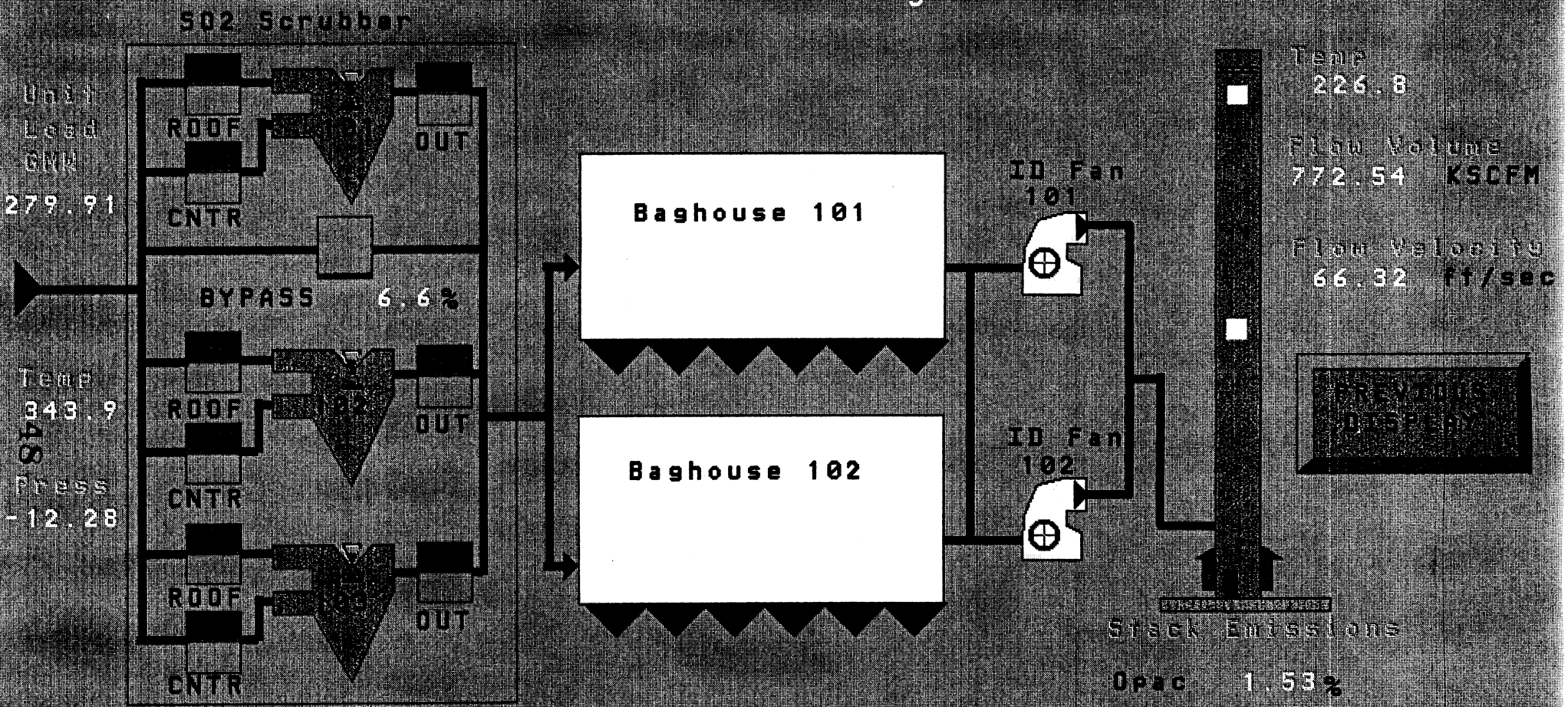
PRPA-Rawhide TESTING DATA

Generation (gross MW)	280.80
Auxiliary Use (MW)	22.55
Generation (net MW)	258.56
STEAM CONDITIONS	
Throttle Stm Temp (F)	1010.2
Throttle Stm Press (psig)	1868.8
First Stage Press (psig)	1326.6
Cold RH Temp (F)	668.31
Cold RH Press (psig)	470.36
Main Stm Flow (KPPH)	1840.6
FEEDWATER CONDITIONS	
Feedwater Temp (F)	106.00
MS Attemp Flow (KPPH)	32.30
RH Attemp Flow (KPPH)	1.65
CONDENSER CONDITIONS	
Circ Water In (F)	76.32
Circ Water Out (F)	90.23
Condenser Press ("Hg)	5.56
Barometric Press ("Hg)	24.45
BOILER CONDITIONS	
AH Gas IN Temp (F)	812.92
AH Gas Out Temp (F)	334.60
AH Air IN Temp (F)	90.95
AH Air Out Temp (F)	755.91
FD Fan Suction Temp (F)	91.02
Ambient Temp (F)	91.02
Coal Flow (KPPH)	305.28
FLUE GAS CONDITIONS	
Stack Flow (KCFM)	749.86
Stack Gas Temp (F)	222.71
Opacity (%)	1.24
Stack Gas CO2 (%)	12.47

16:12 8-24-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

Rawhide Emissions Control System



Inlet Emissions

SO2	225.24 ppm
SO2	0.490 #/Mbtu
CO2	13.72 %
CO	0.00 ppm
O2	3.55 %

SDA Outlet Temps

101 Temp	213.0
102 Temp	213.9
103 Temp	211.2

SDA Outlet Press

-14.33

Baghouse Temps

Inlet

101	217.76
102	213.93

Outlet

101	213.04
102	212.35

Stack Emissions

Opac	1.53 %
SO2	34.46 ppm
SO2	0.082 #/MBtu
SO2	264.78 lbs/hr
NOx	220.84 ppm
NOx	0.379 #/MBtu
CO2	12.51 %
SO2 Removal	82.93 %

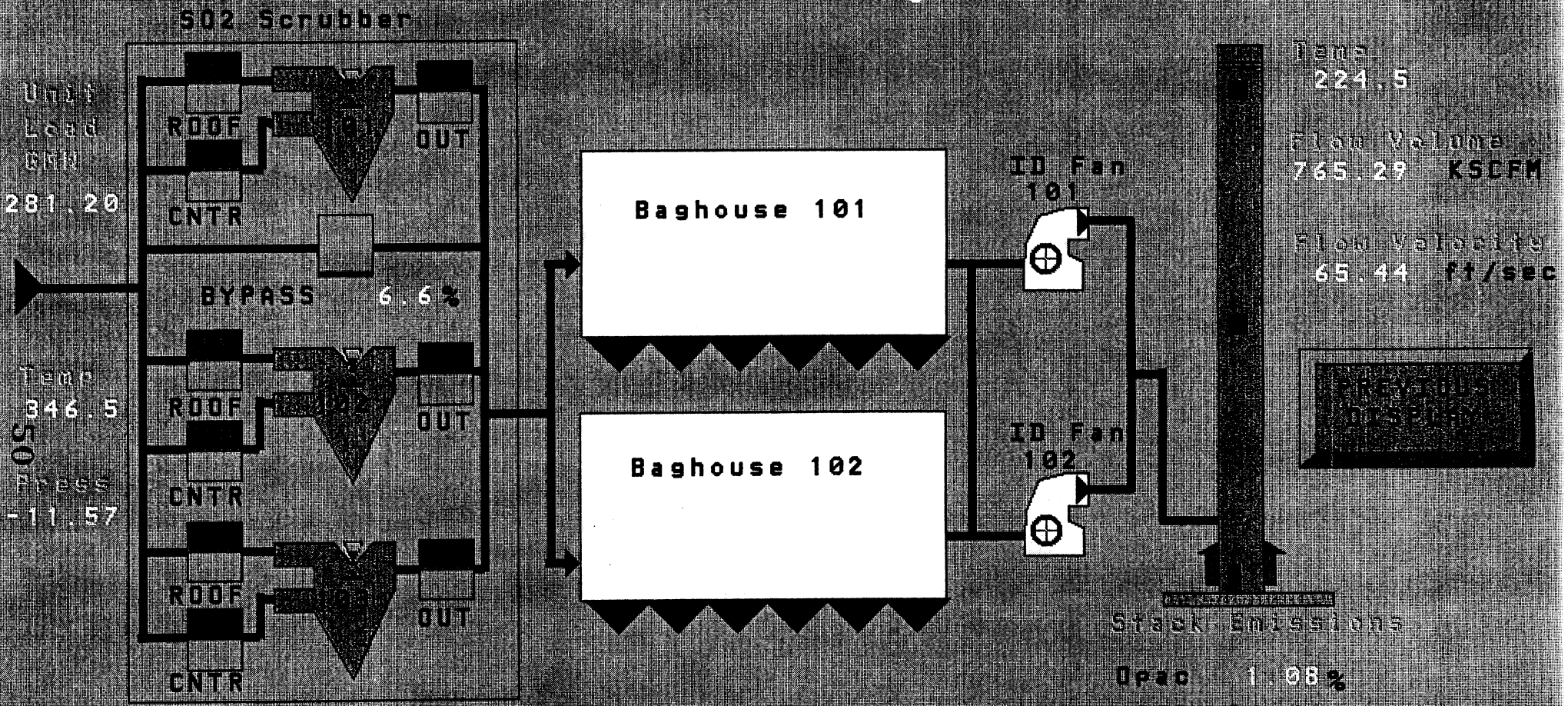
PRPA-Rawhide TESTING DATA

Generation (gross MW)	281.56
Auxiliary Use (MW)	22.28
Generation (net MW)	258.91
STEAM CONDITIONS	
Throttle Stm Temp (F)	1008.2
Throttle Stm Press (psig)	1879.4
First Stage Press (psig)	1329.9
Cold RH Temp (F)	667.42
Cold RH Press (psig)	471.41
Main Stm Flow (KPPH)	1865.6
FEEDWATER CONDITIONS	
Feedwater Temp (F)	106.00
MS Attemp Flow (KPPH)	23.63
RH Attemp Flow (KPPH)	1.98
CONDENSER CONDITIONS	
Circ Water In (F)	76.11
Circ Water Out (F)	90.23
Condenser Press ("Hg)	5.58
Barometric Press ("Hg)	24.46
BOILER CONDITIONS	
AH Gas IN Temp (F)	810.24
AH Gas Out Temp (F)	345.27
AH Air IN Temp (F)	92.80
AH Air Out Temp (F)	759.17
FD Fan Suction Temp (F)	90.87
Ambient Temp (F)	90.87
Coal Flow (KPPH)	303.85
FLUE GAS CONDITIONS	
Stack Flow (KCFM)	772.48
Stack Gas Temp (F)	226.84
Opacity (%)	1.43
Stack Gas CO2 (%)	12.51

15:42 8-24-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

Rawhide Emissions Control System



Inlet Emissions	
SO2	228.05 ppm
SO2	0.496 #/Mbtu
CO2	13.74 %
CO	0.00 ppm
O2	3.52 %

SDR Outlet Temps	
101 Temp	211.9
102 Temp	210.3
103 Temp	211.3

SDR Outlet Press	
	-13.70

Baghouse Temps	
Inlet	
101	216.87
102	214.20
Outlet	
101	211.50
102	212.07

Stack Emissions	
Opac	1.08 %
SO2	34.06 ppm
SO2	0.081 #/MBtu
SO2	259.30 lbs/hr
NOx	224.57 ppm
NOx	0.385 #/MBtu
CO2	12.49 %
SO2 Removal	83.54 %

15:40 8-24-99

Sys | Alarm | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

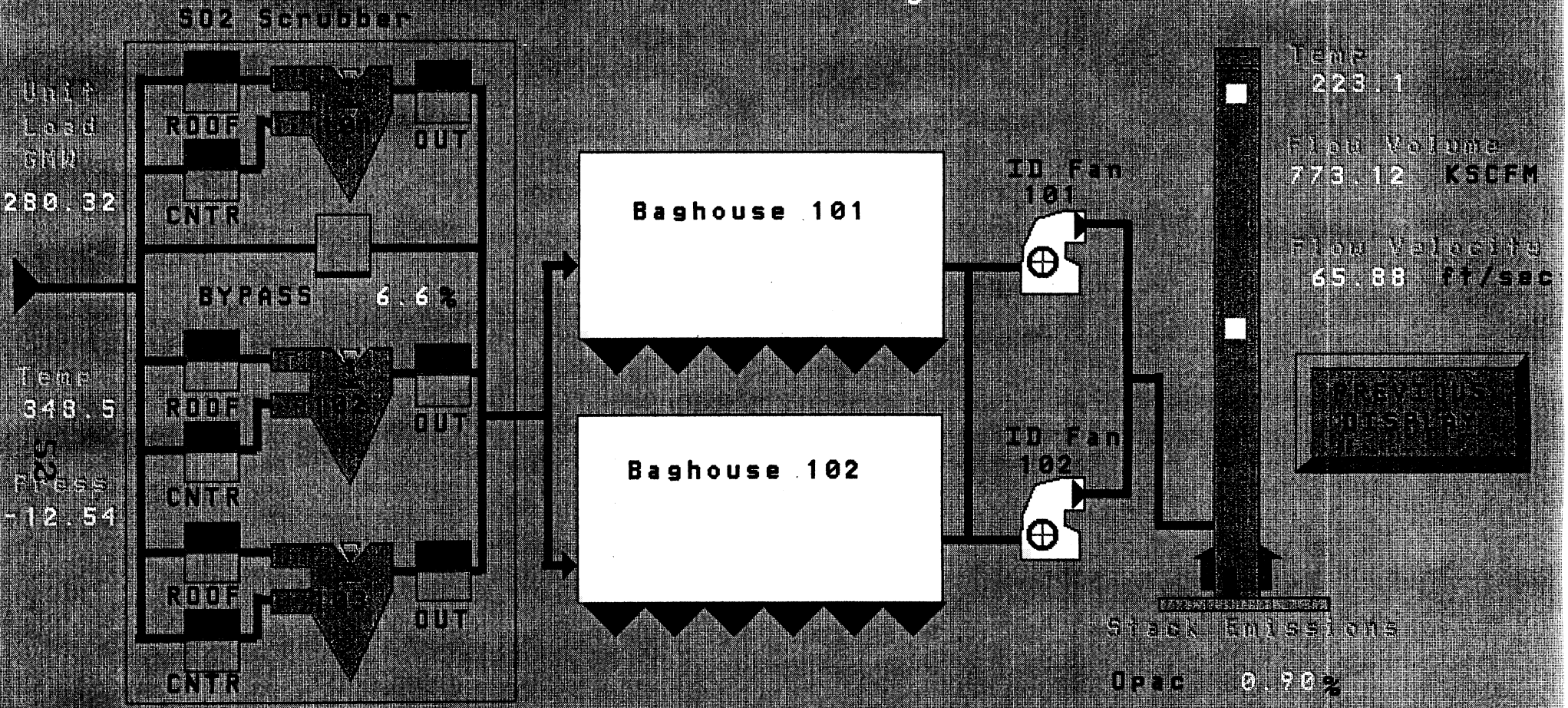
PRPA-Rawhide TESTING DATA

Generation (gross MW)	281.05
Auxiliary Use (MW)	22.38
Generation (net MW)	258.78
STEAM CONDITIONS	
Throttle Stm Temp (F)	1008.5
Throttle Stm Press (psig)	1867.5
First Stage Press (psig)	1326.8
Cold RH Temp (F)	666.23
Cold RH Press (psig)	471.28
Main Stm Flow (KPPH)	1905.6
FEEDWATER CONDITIONS	
Feedwater Temp (F)	105.79
MS Attemp Flow (KPPH)	26.30
RH Attemp Flow (KPPH)	6.27
CONDENSER CONDITIONS	
Circ Water In (F)	275.76 Bad Point
Circ Water Out (F)	90.02
Condenser Press ("Hg)	5.58
Barometric Press ("Hg)	24.46
BOILER CONDITIONS	
AH Gas IN Temp (F)	820.34
AH Gas Out Temp (F)	347.20
AH Air IN Temp (F)	92.80
AH Air Out Temp (F)	769.27
FD Fan Suction Temp (F)	93.22
Ambient Temp (F)	93.22
Coal Flow (KPPH)	306.34
FLUE GAS CONDITIONS	
Stack Flow (KCFM)	771.91
Stack Gas Temp (F)	225.49
Opacity (%)	1.26
Stack Gas CO2 (%)	12.50

15:12 8-24-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

Rawhide Emissions Control System



Inlet Emissions

SO2 230.98 ppm
SO2 0.500 #/Mbtu
CO2 13.79 %
CO 0.16 ppm
O2 3.56 %

SDA Outlet Temps

101 Temp 209.7
102 Temp 209.1
103 Temp 211.0

SDA Outlet Press

-14.82

Baghouse Temps

Inlet
101 214.41
102 213.26
Outlet
101 208.59
102 210.06

Stack Emissions

Opac 0.90 %
SO2 36.02 ppm
SO2 0.091 #/MBtu
SO2 291.33 lbs/hr
NOx 236.09 ppm
NOx 0.407 #/MBtu
CO2 12.47 %
SO2 Removal 82.08 %

15:10 8-24-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

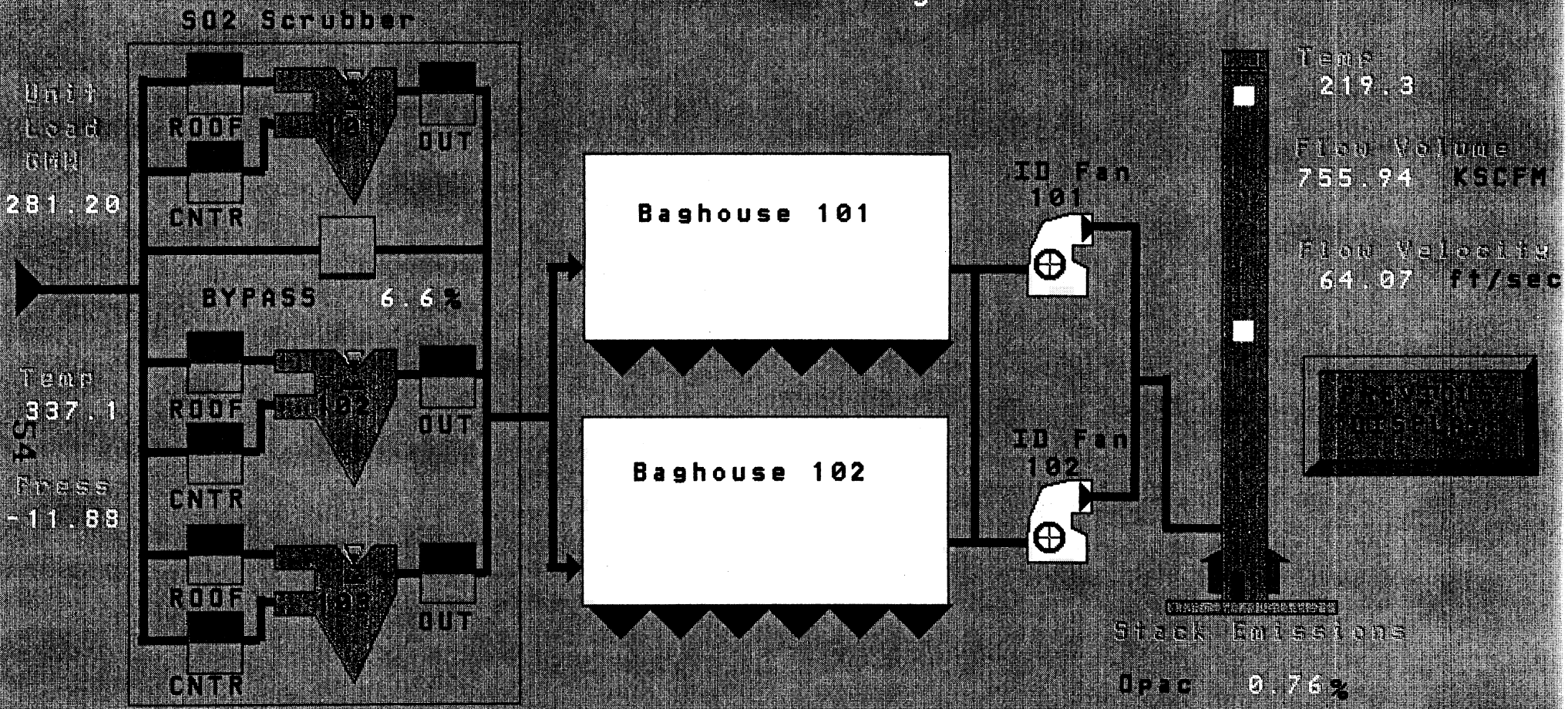
PRPA-Rawhide TESTING DATA

Generation (gross MW)	280.83
Auxiliary Use (MW)	22.39
Generation (net MW)	258.42
STEAM CONDITIONS	
Throttle Stm Temp (F)	1009.7
Throttle Stm Press (psig)	1866.9
First Stage Press (psig)	1315.8
Cold RH Temp (F)	669.80
Cold RH Press (psig)	471.60
Main Stm Flow (KPPH)	1846.2
FEEDWATER CONDITIONS	
Feedwater Temp (F)	107.04
MS Attemp Flow (KPPH)	29.01
RH Attemp Flow (KPPH)	18.54
CONDENSER CONDITIONS	
Circ Water In (F)	62.75 Bad Value
Circ Water Out (F)	90.23
Condenser Press ("Hg)	5.54
Barometric Press ("Hg)	24.47
BOILER CONDITIONS	
AH Gas IN Temp (F)	829.84
AH Gas Out Temp (F)	349.12
AH Air IN Temp (F)	91.60
AH Air Out Temp (F)	774.91
FD Fan Suction Temp (F)	91.91
Ambient Temp (F)	91.91
Coal Flow (KPPH)	306.46
FLUE GAS CONDITIONS	
Stack Flow (KCFM)	773.07
Stack Gas Temp (F)	223.09
Opacity (%)	1.16
Stack Gas CO2 (%)	12.47

14:41 8-24-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

Rawhide Emissions Control System



Stack Emissions

Opac	0.76 %
SO2	35.32 ppm
SO2	0.085 #/MBtu
SO2	266.00 lbs/hr
NOx	231.85 ppm
NOx	0.401 #/MBtu
CO2	12.44 %
SO2 Removal	82.96 %

Inlet Emissions

SO2	227.84 ppm
SO2	0.498 #/Mbtu
CO2	13.67 %
CO	0.00 ppm
O2	3.50 %

SDA Outlet Temps

101 Temp	205.4
102 Temp	205.8
103 Temp	205.3

SDA Outlet Press
-13.83

Baghouse Temps

Inlet	
101	210.62
102	208.36
Outlet	
101	207.09
102	208.34

14:40 8-24-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

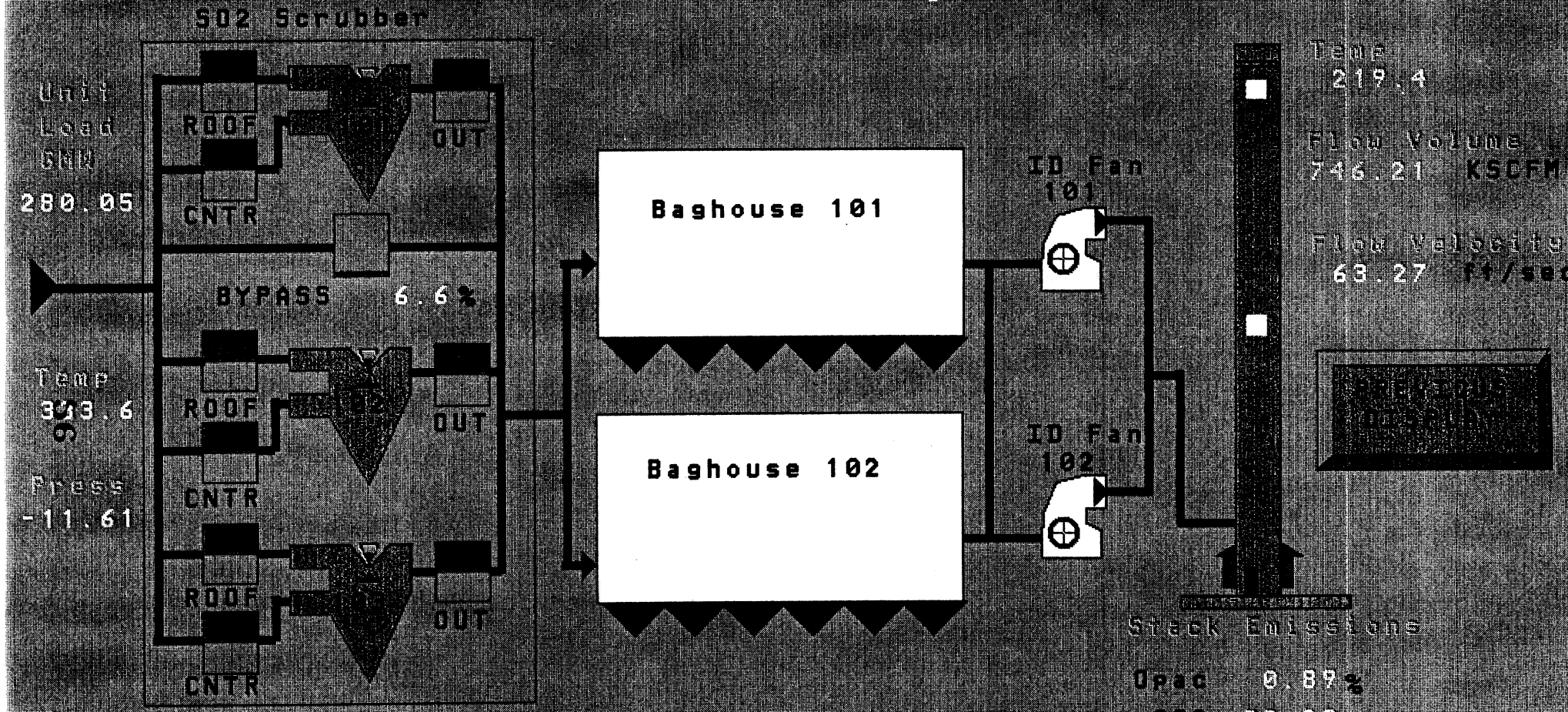
PRPA-Rawhide TESTING DATA

Generation (gross MW)	280.80
Auxiliary Use (MW)	22.61
Generation (net MW)	258.47
STEAM CONDITIONS	
Throttle Stm Temp (F)	1010.2
Throttle Stm Press (psig)	1868.1
First Stage Press (psig)	1323.3
Cold RH Temp (F)	668.61
Cold RH Press (psig)	469.85
Main Stm Flow (KPPH)	1846.9
FEEDWATER CONDITIONS	
Feedwater Temp (F)	106.20
MS Attemp Flow (KPPH)	43.72
RH Attemp Flow (KPPH)	2.54
CONDENSER CONDITIONS	
Circ Water In (F)	77.57
Circ Water Out (F)	90.02
Condenser Press ("Hg)	5.57
Barometric Press ("Hg)	24.48
BOILER CONDITIONS	
AH Gas IN Temp (F)	824.50
AH Gas Out Temp (F)	337.05
AH Air IN Temp (F)	91.20
AH Air Out Temp (F)	767.19
FD Fan Suction Temp (F)	91.03
Ambient Temp (F)	91.03
Coal Flow (KPPH)	303.73
FLUE GAS CONDITIONS	
Stack Flow (KCFM)	756.00
Stack Gas Temp (F)	219.30
Opacity (%)	1.07
Stack Gas CO2 (%)	12.43

14:12 8-24-97

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

Rawhide Emissions Control System



Inlet Emissions

SO2	229.36 ppm
SO2	0.503 #/Mbtu
CO2	13.62 %
CO	0.00 ppm
O2	3.51 %

SDA Outlet Temps

101 Temp	205.5
102 Temp	204.2
103 Temp	203.9

SDA Outlet Press

-13.66

Baghouse Temps

Inlet	
101	210.31
102	207.29
Outlet	
101	207.17
102	208.55

Stack Emissions

Opac	0.89 %
SO2	39.29 ppm
SO2	0.095 #/MBtu
SO2	291.23 lbs/hr
NOx	216.75 ppm
NOx	0.376 #/MBtu
CO2	12.42 %
SO2 Removal	81.08 %

14:10 8-24-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

PRPA-Rawhide TESTING DATA

Generation (gross MW)	279.81
Auxiliary Use (MW)	22.39
Generation (net MW)	257.59
STEAM CONDITIONS	
Throttle Stm Temp (F)	1007.6
Throttle Stm Press (psig)	1865.0
First Stage Press (psig)	1324.0
Cold RH Temp (F)	662.37
Cold RH Press (psig)	469.14
Main Stm Flow (KPPH)	1844.4
FEEDWATER CONDITIONS	
Feedwater Temp (F)	107.24
MS Attemp Flow (KPPH)	25.63
RH Attemp Flow (KPPH)	0.0000
CONDENSER CONDITIONS	
Circ Water In (F)	77.98
Circ Water Out (F)	90.23
Condenser Press ("Hg)	5.62
Barometric Press ("Hg)	24.49
BOILER CONDITIONS	
AH Gas IN Temp (F)	808.46
AH Gas Out Temp (F)	335.04
AH Air IN Temp (F)	91.60
AH Air Out Temp (F)	755.02
FD Fan Suction Temp (F)	91.19
Ambient Temp (F)	91.19
Coal Flow (KPPH)	306.23
FLUE GAS CONDITIONS	
Stack Flow (KCFM)	746.15
Stack Gas Temp (F)	219.43
Opacity (%)	0.89
Stack Gas CO2 (%)	12.42

RATA Test Data - Stack Flow CEM:STACK_MIN.R001
Platte River Power Authority
Rawhide Station
Unit 1

Report for 08/24/99 14:10:00 to 08/24/99 16:40:00
Report File: /opt/foxind/cem/rata/HgTest-2.txt
Report printed at Tue Aug 24 16:43:11 1999

Mercury Test Data
Test Run #2

Date & Time	Stack Flow (scfh)	Velocity	Gen MW
08/24/99 14:10:00	44773533	63.27	280.45
08/24/99 14:11:00	44773533	63.27	280.45
08/24/99 14:12:00	44773533	63.27	280.45
08/24/99 14:13:00	44773533	63.27	280.45
08/24/99 14:14:00	44773533	63.27	280.45
08/24/99 14:15:00	44856934	63.51	280.45
08/24/99 14:16:00	44975494	63.51	280.45
08/24/99 14:17:00	44975494	63.51	280.45
08/24/99 14:18:00	44939648	63.51	280.45
08/24/99 14:19:00	44939648	63.51	280.45
08/24/99 14:20:00	44964947	63.51	280.45
08/24/99 14:21:00	44972076	63.51	280.45
08/24/99 14:22:00	44956741	63.51	280.45
08/24/99 14:23:00	44920506	63.75	280.45
08/24/99 14:24:00	44938080	63.75	280.45
08/24/99 14:25:00	45139648	63.75	280.45
08/24/99 14:26:00	45139648	63.75	280.45
08/24/99 14:27:00	45195705	63.75	280.45
08/24/99 14:28:00	45214939	63.75	280.45
08/24/99 14:29:00	45182129	63.75	280.45
08/24/99 14:30:00	45120998	63.75	280.45
08/24/99 14:31:00	45120998	63.53	281.59
08/24/99 14:32:00	45044727	63.53	281.59
08/24/99 14:33:00	45009964	63.42	280.55
08/24/99 14:34:00	44937408	63.42	280.55
08/24/99 14:35:00	44901661	63.75	280.55
08/24/99 14:36:00	44924023	63.75	280.55
08/24/99 14:37:00	45157520	63.90	280.55
08/24/99 14:38:00	45166309	63.90	280.55
08/24/99 14:39:00	45268845	63.90	280.55
08/24/99 14:40:00	45268845	64.07	280.55
08/24/99 14:41:00	45329487	64.07	280.55
08/24/99 14:42:00	45359180	64.07	280.55
08/24/99 14:43:00	45347168	64.07	280.55
08/24/99 14:44:00	45324219	64.58	280.55
08/24/99 14:45:00	45324219	64.58	280.55
08/24/99 14:46:00	45708401	64.58	280.55
08/24/99 14:47:00	45708401	64.80	280.55
08/24/99 14:48:00	45819920	64.80	280.55
08/24/99 14:49:00	45857227	64.49	280.55
08/24/99 14:50:00	45785508	64.49	280.55
08/24/99 14:51:00	45653416	63.83	280.55
08/24/99 14:52:00	45482616	63.83	280.55

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08/24/99	14:46:00	45708401	64.58	280.55
08/24/99	14:47:00	45708401	64.58	280.55
08/24/99	14:48:00	45819920	64.80	280.55
08/24/99	14:49:00	45857227	64.80	280.55
08/24/99	14:50:00	45785938	64.49	280.55
08/24/99	14:51:00	45653416	64.49	280.55
08/24/99	14:52:00	45482616	63.83	280.55
08/24/99	14:53:00	45140625	63.83	280.55
08/24/99	14:54:00	45140625	63.68	281.60
08/24/99	14:55:00	45102829	63.68	281.60
08/24/99	14:56:00	45102829	63.68	281.60
08/24/99	14:57:00	45200001	63.90	280.57
08/24/99	14:58:00	45248245	63.90	280.57
08/24/99	14:59:00	45279591	64.04	279.54
08/24/99	15:00:00	45341599	64.04	278.52
08/24/99	15:01:00	45341599	64.04	277.49
08/24/99	15:02:00	45623043	64.61	278.50
08/24/99	15:03:00	45764450	64.61	278.50
08/24/99	15:04:00	45837597	65.07	279.54
08/24/99	15:05:00	45982128	65.07	279.54
08/24/99	15:06:00	46013577	65.76	279.54
08/24/99	15:07:00	46351955	65.76	279.54
08/24/99	15:08:00	46351955	65.76	279.54
08/24/99	15:09:00	46375977	65.87	279.54
08/24/99	15:10:00	46389069	65.87	280.55
08/24/99	15:11:00	46389069	65.87	280.55
08/24/99	15:12:00	46389069	65.87	280.55
08/24/99	15:13:00	46381840	65.87	280.55
08/24/99	15:14:00	46354588	65.87	280.55
08/24/99	15:15:00	46354588	65.87	280.55
08/24/99	15:16:00	46203518	65.58	279.54
08/24/99	15:17:00	46130474	65.58	279.54
08/24/99	15:18:00	46130474	65.58	279.54
08/24/99	15:19:00	46130474	65.58	279.54
08/24/99	15:20:00	46130474	65.58	279.54
08/24/99	15:21:00	46096783	65.58	280.55
08/24/99	15:22:00	46077545	65.58	281.56
08/24/99	15:23:00	46046585	65.58	281.56
08/24/99	15:24:00	45983204	65.58	280.45
08/24/99	15:25:00	45983204	65.34	279.43
08/24/99	15:26:00	45893360	65.34	279.43
08/24/99	15:27:00	45893360	65.34	279.43
08/24/99	15:28:00	45916119	65.48	279.43
08/24/99	15:29:00	45964355	65.48	279.43
08/24/99	15:30:00	46044922	65.80	280.55
08/24/99	15:31:00	46204006	65.80	280.55
08/24/99	15:32:00	46204006	65.80	280.55
08/24/99	15:33:00	46143749	65.80	280.55
08/24/99	15:34:00	46112988	65.80	280.55
08/24/99	15:35:00	46179688	66.02	280.55
08/24/99	15:36:00	46315235	66.02	280.55
08/24/99	15:37:00	46315235	66.02	280.55
08/24/99	15:38:00	46155079	65.75	279.43
08/24/99	15:39:00	46075489	65.75	279.43
08/24/99	15:40:00	46176468	66.04	280.68
08/24/99	15:41:00	46315235	66.04	280.68
08/24/99	15:42:00	46281448	65.44	280.68
08/24/99	15:43:00	45911911	65.44	280.68
08/24/99	15:44:00	45911911	65.44	280.68
08/24/99	15:45:00	45984955	65.60	280.68
08/24/99	15:46:00	46021679	65.60	280.68
08/24/99	15:47:00	45936718	65.32	279.66
08/24/99	15:48:00	45764156	65.32	279.66
08/24/99	15:49:00	45764156	65.78	279.66

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08/24/99 15:42:00	[illegible]	[illegible]	[illegible]
08/24/99 15:43:00	45911911	65.44	280.68
08/24/99 15:44:00	45911911	65.44	280.68
08/24/99 15:45:00	45984955	65.60	280.68
08/24/99 15:46:00	46021679	65.60	280.68
08/24/99 15:47:00	45936718	65.32	279.66
08/24/99 15:48:00	45764156	65.32	279.66
08/24/99 15:49:00	45764156	65.78	279.66
08/24/99 15:50:00	46077053	65.78	280.80
08/24/99 15:51:00	46077053	65.78	280.80
08/24/99 15:52:00	46149704	65.92	280.80
08/24/99 15:53:00	46185444	65.92	279.69
08/24/99 15:54:00	46117477	65.71	279.69
08/24/99 15:55:00	45982227	65.71	280.70
08/24/99 15:56:00	45976467	65.46	280.70
08/24/99 15:57:00	45859768	65.46	280.70
08/24/99 15:58:00	45859768	65.46	280.70
08/24/99 15:59:00	45916214	65.73	280.70
08/24/99 16:00:00	46001659	65.73	280.70
08/24/99 16:01:00	46001659	65.90	280.70
08/24/99 16:02:00	46149319	65.90	280.70
08/24/99 16:03:00	46149319	65.90	280.70
08/24/99 16:04:00	46320312	66.29	280.70
08/24/99 16:05:00	46405960	66.29	280.70
08/24/99 16:06:00	46351467	66.13	280.70
08/24/99 16:07:00	46240238	66.13	280.70
08/24/99 16:08:00	46250103	66.31	280.70
08/24/99 16:09:00	46350098	66.31	280.70
08/24/99 16:10:00	46350098	66.31	281.71
08/24/99 16:11:00	46350098	66.31	280.68
08/24/99 16:12:00	46350098	66.31	280.68
08/24/99 16:13:00	46350098	66.31	280.68
08/24/99 16:14:00	46350098	66.31	280.68
08/24/99 16:15:00	46198048	65.53	280.68
08/24/99 16:16:00	45893459	65.53	280.68
08/24/99 16:17:00	45848343	64.92	280.68
08/24/99 16:18:00	45360744	64.92	280.68
08/24/99 16:19:00	45339844	64.48	280.68
08/24/99 16:20:00	45121777	64.48	280.68
08/24/99 16:21:00	45121777	64.48	280.68
08/24/99 16:22:00	45131939	64.48	280.68
08/24/99 16:23:00	45138184	64.48	280.68
08/24/99 16:24:00	45128811	64.24	280.68
08/24/99 16:25:00	45067673	64.24	280.68
08/24/99 16:26:00	45067673	64.24	280.68
08/24/99 16:27:00	45080078	64.24	280.68
08/24/99 16:28:00	45086136	64.24	280.68
08/24/99 16:29:00	45074024	64.14	280.68
08/24/99 16:30:00	45068256	64.14	280.68
08/24/99 16:31:00	45048534	64.14	280.68
08/24/99 16:32:00	45012600	64.14	280.68
08/24/99 16:33:00	45005474	64.14	279.43
08/24/99 16:34:00	44978912	64.14	279.41
08/24/99 16:35:00	44978912	64.14	279.41
08/24/99 16:36:00	45057423	64.14	279.41
08/24/99 16:37:00	45085648	64.14	280.42
08/24/99 16:38:00	45127441	64.37	280.42
08/24/99 16:39:00	45215626	64.37	280.42
08/24/99 16:40:00	45140625	64.00	280.42
Averages =	45637127	64.85	280.38

1-112 G.B.

Run #3

Table 6
MERCURY SPECIATION TEST FUEL FLOW READINGS

Date: 8/25/99 Test Hours: 8:45 to 10:45 Operator P. Schuler

Unit: Unit 101 Load (MW): 267 - 280

Rawhide Energy (½ hr Ending ~~Hour~~ Readings)

Data Point	Read From	Start				End
~~Feeder A (Total Pounds)~~	~~Coal Feeder Counter~~ Time	08:45	09:15	09:45	10:15	10:45
Feeder 101 (Total Pounds)	Coal Feeder Counter X100	22234038	22234441	22234807	22235206	22235605
Feeder 102 (Total Pounds)	Coal Feeder Counter X100	21766841	21767213	21767610	21768010	21768409
Feeder 103 (Total Pounds)	Coal Feeder Counter X100	22063135	22063499	22063888	22064279	22064668
Feeder 104 (Total Pounds)	Coal Feeder Counter X100	12709903	12710215	12710549	12710886	12711221
~~Feeder F (Total Pounds)~~	~~Coal Feeder Counter~~					

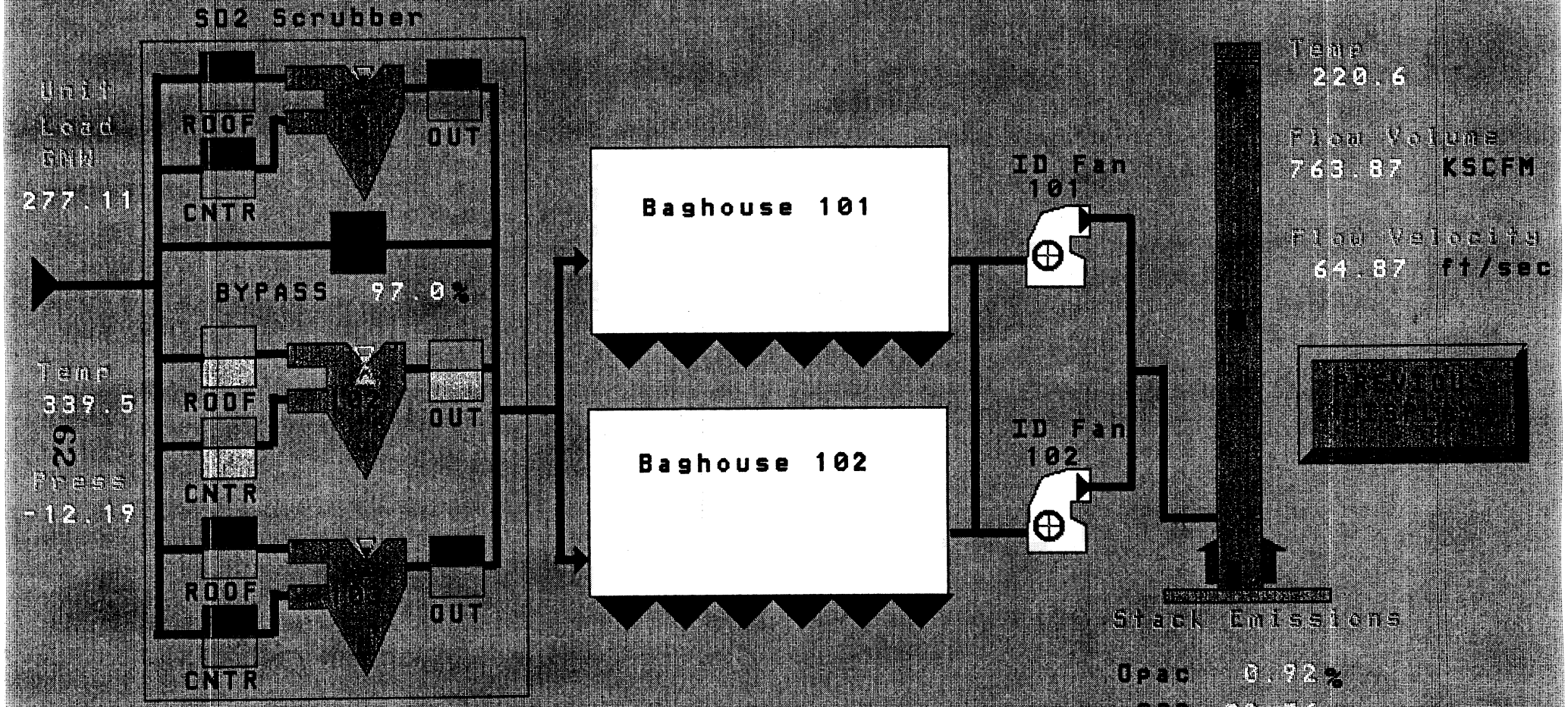
Fuel Samples Taken: ☒ Yes ☐ No

Fly Ash Samples Taken: ☒ Yes ☐ No

10-17 0-25 17

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

Rawhide Emissions Control System



Inlet Emissions

SO2	225.44 ppm
SO2	0.494 #/Mbtu
CO2	13.64 %
CO	0.00 ppm
O2	3.68 %

SDA Outlet Temps

101 Temp	195.7
102 Temp	181.6
103 Temp	196.0

SDA Outlet Press

-17.36

Baghouse Temps

Inlet

101	210.07
102	212.30

Outlet

101	204.39
102	205.88

Stack Emissions

Opac	0.92 %
SO2	32.76 ppm
SO2	0.080 #/MBtu
SO2	248.22 lbs/hr
NOx	231.13 ppm
NOx	0.404 #/MBtu
CO2	12.29 %
SO2 Removal	83.79 %

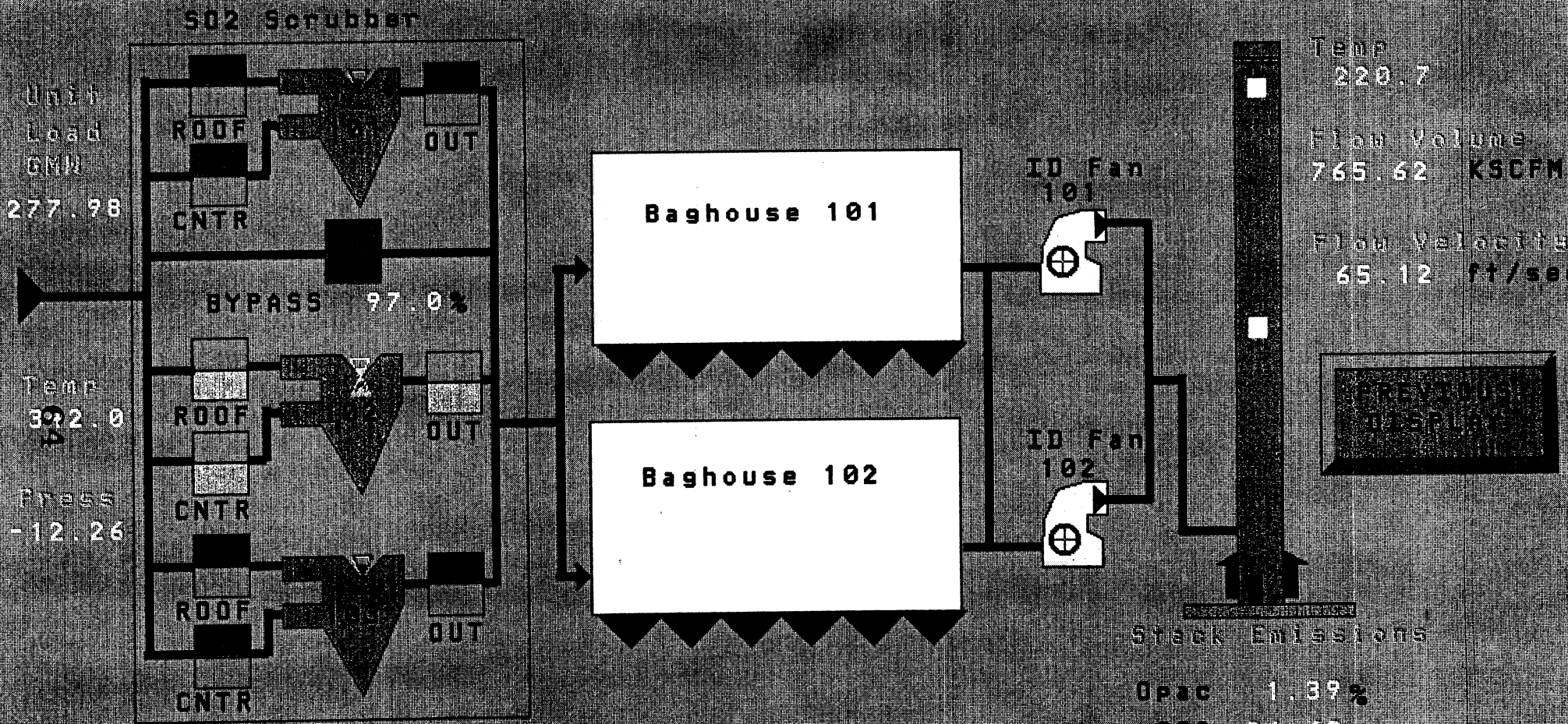
PRPA-Rawhide TESTING DATA

Generation (gross MW)	277.98
Auxiliary Use (MW)	22.25
Generation (net MW)	255.41
STEAM CONDITIONS	
Throttle Stm Temp (F)	1009.4
Throttle Stm Press (psig)	1858.8
First Stage Press (psig)	1293.7
Cold RH Temp (F)	669.50
Cold RH Press (psig)	464.82
Main Stm Flow (KPPH)	1772.5
FEEDWATER CONDITIONS	
Feedwater Temp (F)	105.79
MS Attemp Flow (KPPH)	59.74
RH Attemp Flow (KPPH)	20.59
CONDENSER CONDITIONS	
Circ Water In (F)	76.11
Circ Water Out (F)	89.81
Condenser Press ("Hg)	5.54
Barometric Press ("Hg)	24.49
BOILER CONDITIONS	
AH Gas IN Temp (F)	817.96
AH Gas Out Temp (F)	340.46
AH Air IN Temp (F)	87.95
AH Air Out Temp (F)	767.78
FD Fan Suction Temp (F)	85.90
Ambient Temp (F)	85.90
Coal Flow (KPPH)	308.83
FLUE GAS CONDITIONS	
Stack Flow (KCFM)	764.18
Stack Gas Temp (F)	220.63
Opacity (%)	1.01
Stack Gas CO2 (%)	12.30

10:17 8-25-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

Rawhide Emissions Control System



Inlet Emissions

SO2 227.46 ppm
SO2 0.496 #/Mbtu
CO2 13.69 %
CO 0.00 ppm
O2 3.55 %

SDA Outlet Temps

101 Temp 196.1
102 Temp 134.1
103 Temp 195.7

SDA Outlet Press

-17.54

Baghouse Temps

Inlet
101 211.12
102 212.14
Outlet
101 205.40
102 206.91

Stack Emissions

Opac 1.39 %
SO2 34.69 ppm
SO2 0.084 #/MBtu
SO2 264.23 lbs/hr
NOx 221.84 ppm
NOx 0.388 #/MBtu
CO2 12.29 %
SO2 Removal 82.88 %

Local Application Startup 10:15 8-25-99

Sys CEM Config Inlet Stack CEMDAS SftMnt Select

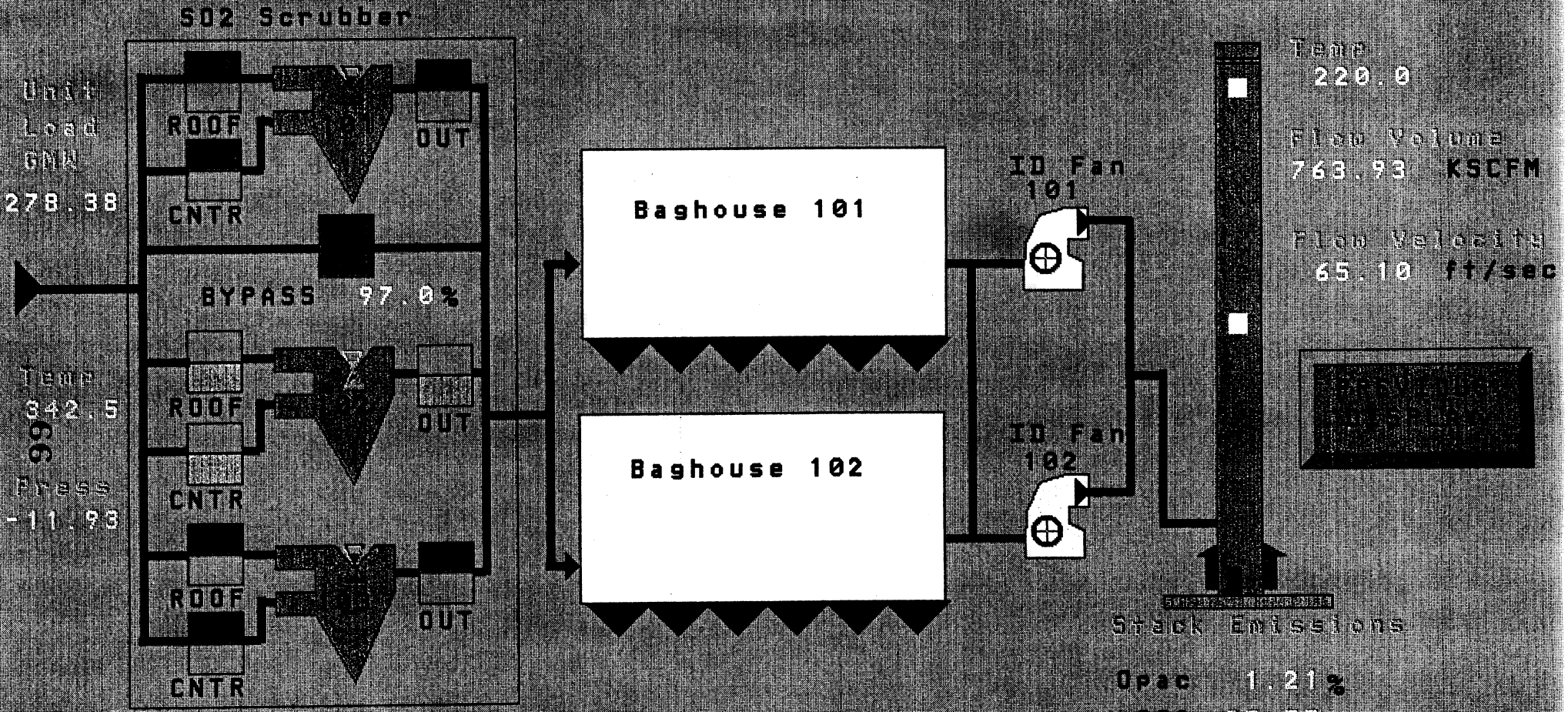
PRPA-Rawhide TESTING DATA

Generation (gross MW)	278.25
Auxiliary Use (MW)	22.05
Generation (net MW)	255.94
STEAM CONDITIONS	
Throttle Stm Temp (F)	1007.5
Throttle Stm Press (psig)	1852.5
First Stage Press (psig)	1304.5
Cold RH Temp (F)	667.72
Cold RH Press (psig)	464.54
Main Stm Flow (KPPH)	1791.2
FEEDWATER CONDITIONS	
Feedwater Temp (F)	106.00
MS Attemp Flow (KPPH)	74.46
RH Attemp Flow (KPPH)	2.46
CONDENSER CONDITIONS	
Circ Water In (F)	76.32
Circ Water Out (F)	89.81
Condenser Press ("Hg)	5.48
Barometric Press ("Hg)	24.50
BOILER CONDITIONS	
AH Gas IN Temp (F)	818.26
AH Gas Out Temp (F)	342.82
AH Air IN Temp (F)	87.90
AH Air Out Temp (F)	771.35
FD Fan Suction Temp (F)	86.19
Amblent Temp (F)	86.19
Coal Flow (KPPH)	308.95
FLUE GAS CONDITIONS	
Stack Flow (KCFM)	767.36
Stack Gas Temp (F)	221.62
Opacity (%)	1.14
Stack Gas CO2 (%)	12.30

9:46 8-25-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

Rawhide Emissions Control System



Inlet Emissions

SO2 227.83 ppm
SO2 0.497 #/Mbtu
CO2 13.70 %
CO 0.00 ppm
O2 3.58 %

SDA Outlet Temps

101 Temp 197.8
102 Temp 135.4
103 Temp 197.4

SDA Outlet Press

-16.98

Baghouse Temps

Inlet
101 212.58
102 213.49

Outlet
101 206.22
102 206.23

Stack Emissions

Opac 1.21 %
SO2 35.77 ppm
SO2 0.087 #/MBtu
SO2 276.53 lbs/hr
NOx 212.65 ppm
NOx 0.372 #/MBtu
CO2 12.29 %
SO2 Removal 82.47 %

9:45 8-25-99

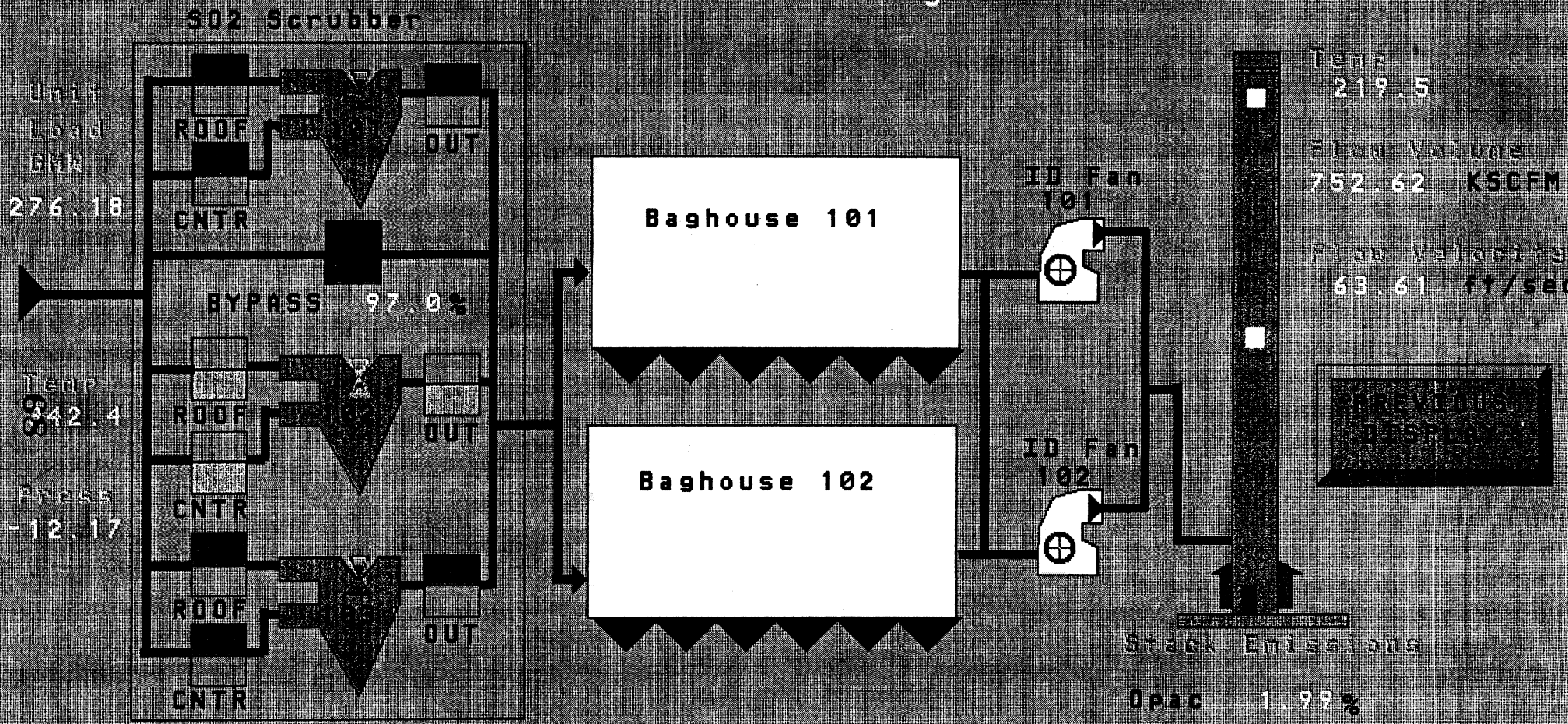
Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

PRPA-Rawhide TESTING DATA

Generation (gross MW)	278.91
Auxiliary Use (MW)	22.30
Generation (net MW)	256.14
STEAM CONDITIONS	
Throttle Stm Temp (F)	1009.5
Throttle Stm Press (psig)	1860.6
First Stage Press (psig)	1318.0
Cold RH Temp (F)	668.31
Cold RH Press (psig)	465.83
Main Stm Flow (KPPH)	1850.0
FEEDWATER CONDITIONS	
Feedwater Temp (F)	105.79
MS Attemp Flow (KPPH)	74.28
RH Attemp Flow (KPPH)	1.98
CONDENSER CONDITIONS	
Circ Water In (F)	76.32
Circ Water Out (F)	89.81
Condenser Press ("Hg)	5.49
Barometric Press ("Hg)	24.50
BOILER CONDITIONS	
AH Gas IN Temp (F)	824.79
AH Gas Out Temp (F)	343.35
AH Air IN Temp (F)	86.85
AH Air Out Temp (F)	776.10
FD Fan Suction Temp (F)	85.59
Ambient Temp (F)	85.59
Coal Flow (KPPH)	305.16
FLUE GAS CONDITIONS	
Stack Flow (KCFM)	767.58
Stack Gas Temp (F)	220.00
Opacity (%)	1.22
Stack Gas CO2 (%)	12.29

Sys CEM Config Inlet Stack CEMDAS SftMnt Select

Rawhide Emissions Control System



Inlet Emissions

SO2	231.89 ppm
SO2	0.506 #/Mbtu
CO2	13.72 %
CO	0.00 ppm
O2	3.42 %

SDA Outlet Temps

101 Temp	199.8
102 Temp	136.2
103 Temp	196.8

SDA Outlet Press

-17.29

Baghouse Temps

Inlet	
101	213.73
102	212.10
Outlet	
101	205.72
102	204.56

Stack Emissions

Opac	1.99 %
SO2	40.07 ppm
SO2	0.098 #/MBtu
SO2	299.38 lbs/hr
NOx	207.66 ppm
NOx	0.362 #/MBtu
CO2	12.30 %
SO2 Removal	80.64 %

9:15 8-25-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

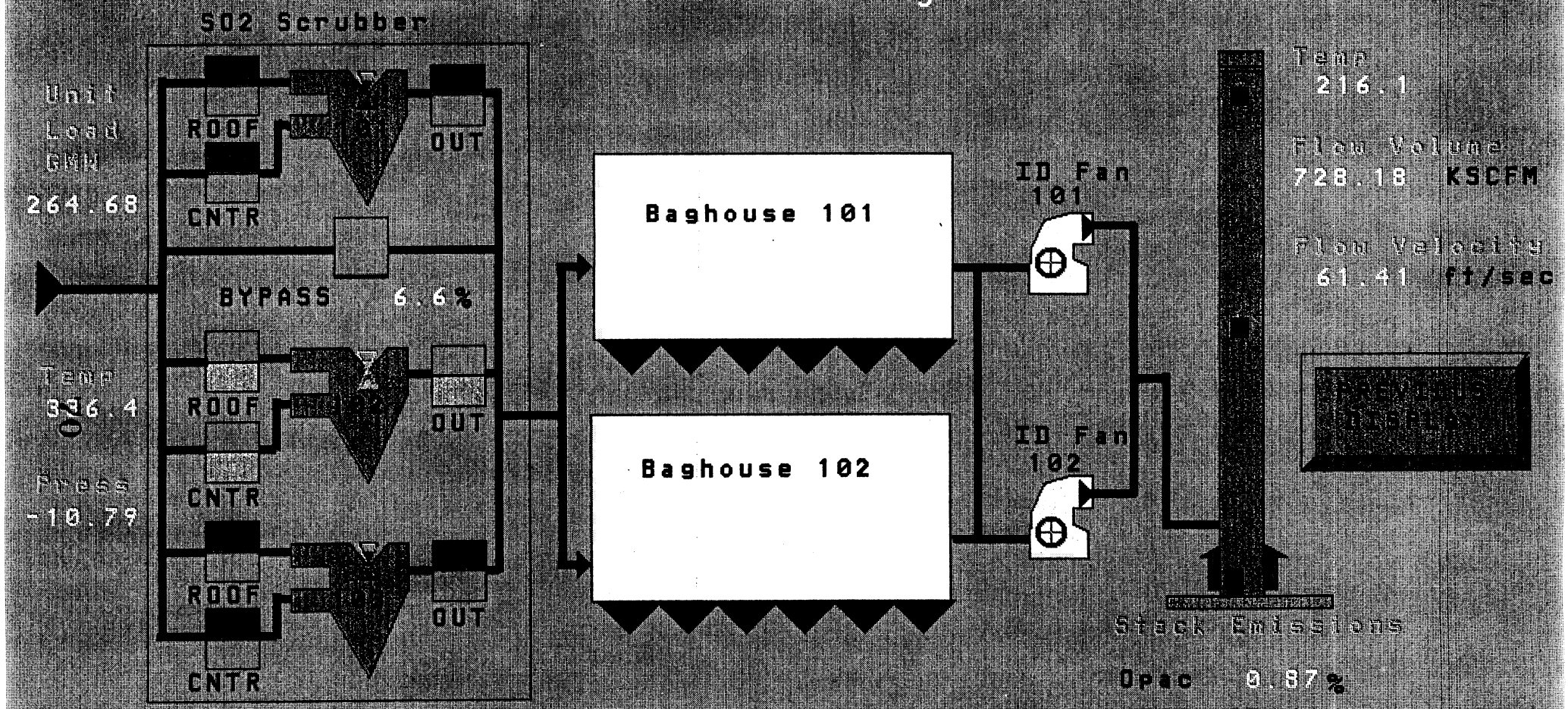
PRPA-Rawhide TESTING DATA

Generation (gross MW)	276.35
Auxiliary Use (MW)	22.23
Generation (net MW)	254.28
STEAM CONDITIONS	
Throttle Stm Temp (F)	1011.2
Throttle Stm Press (psig)	1848.1
First Stage Press (psig)	1302.3
Cold RH Temp (F)	669.50
Cold RH Press (psig)	461.37
Main Stm Flow (KPPH)	1804.4
FEEDWATER CONDITIONS	
Feedwater Temp (F)	105.37
MS Attemp Flow (KPPH)	61.79
RS Attemp Flow (KPPH)	0.4419
CONDENSER CONDITIONS	
Circ Water In (F)	76.11
Circ Water Out (F)	89.81
Condenser Press ("Hg)	5.64
Barometric Press ("Hg)	24.50
BOILER CONDITIONS	
AH Gas IN Temp (F)	831.03
AH Gas Out Temp (F)	342.39
AH Air IN Temp (F)	85.70
AH Air Out Temp (F)	779.36
FD Fan Suction Temp (F)	84.92
Ambient Temp (F)	84.92
Coal Flow (KPPH)	305.51
FLUE GAS CONDITIONS	
Stack Flow (KCFM)	753.71
Stack Gas Temp (F)	219.01
Opacity (%)	1.01
Stack Gas CO2 (%)	12.27

8:48 8-25-99

Sys | CEM | Config | Inlet | Stack | CEMDAS | SftMnt | Select

Rawhide Emissions Control System



Inlet Emissions

SO2	231.21 ppm
SO2	0.506 #/Mbtu
CO2	13.64 %
CO	0.00 ppm
O2	3.39 %

SDA Outlet Temps

101 Temp	201.4
102 Temp	139.3
103 Temp	200.5

SDA Outlet Press

-16.27

Baghouse Temps

Inlet	
101	206.54
102	204.20
Outlet	
101	201.57
102	201.47

Stack Emissions

Opac	0.87 %
SO2	33.42 ppm
SO2	0.082 #/MBtu
SO2	242.03 lbs/hr
NOx	194.34 ppm
NOx	0.345 #/MBtu
CO2	12.25 %
SO2 Removal	86.88 %

PRPA-Rawhide TESTING DATA

Generation (gross MW)	265.19
Auxiliary Use (MW)	21.98
Generation (net MW)	242.56
STEAM CONDITIONS	
Throttle Stm Temp (F)	1009.7
Throttle Stm Press (psig)	1832.5
First Stage Press (psig)	1243.7
Cold RH Temp (F)	664.75
Cold RH Press (psig)	440.59
Main Stm Flow (KPPH)	1761.2
FEEDWATER CONDITIONS	
Feedwater Temp (F)	104.54
MS Attemp Flow (KPPH)	35.50
RH Attemp Flow (KPPH)	2.93
CONDENSER CONDITIONS	
Circ Water In (F)	76.11
Circ Water Out (F)	89.19
Condenser Press ("Hg)	5.59
Barometric Press ("Hg)	24.51
BOILER CONDITIONS	
AH Gas IN Temp (F)	823.31
AH Gas Out Temp (F)	336.61
AH Air IN Temp (F)	81.25
AH Air Out Temp (F)	770.75
FD Fan Suction Temp (F)	83.04
Ambient Temp (F)	83.04
Coal Flow (KPPH)	290.81
FLUE GAS CONDITIONS	
Stack Flow (KCFM)	735.06
Stack Gas Temp (F)	217.05
Opacity (%)	0.71
Stack Gas CO2 (%)	12.27

RATA Test Data - Stack Flow CEM:STACK_MIN.R001
Platte River Power Authority
Rawhide Station
Unit 1

Report for 08/25/99 08:45:00 to 08/25/99 10:45:00
Report File: /opt/foxind/cem/rata/HgTest-3.txt
Report printed at Wed Aug 25 11:02:00 1999

Mercury Test Data
Test Run #3

Date & Time	Stack Flow (scfh)	Velocity	Gen MW
08/25/99 08:45:00	43871197	61.75	265.84
08/25/99 08:46:00	43969830	61.97	264.68
08/25/99 08:47:00	44110443	61.97	264.94
08/25/99 08:48:00	43970898	61.41	264.94
08/25/99 08:49:00	43690624	61.41	264.94
08/25/99 08:50:00	43690624	61.41	266.09
08/25/99 08:51:00	43722260	61.41	266.09
08/25/99 08:52:00	43722260	61.41	266.09
08/25/99 08:53:00	43520702	60.80	265.09
08/25/99 08:54:00	43231152	60.80	265.09
08/25/99 08:55:00	43266205	61.32	266.22
08/25/99 08:56:00	43633793	61.32	268.55
08/25/99 08:57:00	43633793	61.32	268.55
08/25/99 08:58:00	43713192	61.63	268.55
08/25/99 08:59:00	43871582	61.63	269.68
08/25/99 09:00:00	43973438	63.24	271.73
08/25/99 09:01:00	45065327	63.24	275.32
08/25/99 09:02:00	45065327	63.24	275.32
08/25/99 09:03:00	45125782	63.58	276.33
08/25/99 09:04:00	45247952	63.58	276.33
08/25/99 09:05:00	45298050	63.80	275.32
08/25/99 09:06:00	45394634	63.80	275.32
08/25/99 09:07:00	45394634	63.80	275.32
08/25/99 09:08:00	45089554	63.22	275.32
08/25/99 09:09:00	44936432	63.22	275.32
08/25/99 09:10:00	44936432	63.22	275.32
08/25/99 09:11:00	44936432	63.22	275.32
08/25/99 09:12:00	44936432	63.22	276.35
08/25/99 09:13:00	44936432	63.22	276.35
08/25/99 09:14:00	44958988	63.61	276.35
08/25/99 09:15:00	45230366	63.61	276.35
08/25/99 09:16:00	45230366	63.61	276.35
08/25/99 09:17:00	45181736	63.61	276.35
08/25/99 09:18:00	45157028	63.61	276.35
08/25/99 09:19:00	45278805	63.97	276.35
08/25/99 09:20:00	45399352	63.97	276.35
08/25/99 09:21:00	45346970	64.09	276.35
08/25/99 09:22:00	45413086	64.09	276.35
08/25/99 09:23:00	45413086	64.22	276.35
08/25/99 09:24:00	45505173	64.22	276.35
08/25/99 09:25:00	45505173	64.22	276.35
08/25/99 09:26:00	45443648	64.12	276.35
08/25/99 09:27:00	45412399	64.12	275.32
[illegible]	[illegible]	63.97	275.32

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08/25/99	09:26:00	[illegible]	[illegible]	[illegible]
08/25/99	09:27:00	45412399	64.12	275.32
08/25/99	09:28:00	45395508	63.87	275.32
08/25/99	09:29:00	45194626	63.87	275.32
08/25/99	09:30:00	45194626	63.87	275.32
08/25/99	09:31:00	45194626	63.87	275.32
08/25/99	09:32:00	45194626	63.87	275.32
08/25/99	09:33:00	45253902	64.11	275.32
08/25/99	09:34:00	45375488	64.11	276.33
08/25/99	09:35:00	45360546	63.90	276.33
08/25/99	09:36:00	45195408	63.90	276.33
08/25/99	09:37:00	45195408	63.90	276.33
08/25/99	09:38:00	45232327	64.05	276.33
08/25/99	09:39:00	45303219	64.05	277.51
08/25/99	09:40:00	45303219	64.05	277.51
08/25/99	09:41:00	45377048	64.05	277.51
08/25/99	09:42:00	45377048	64.05	278.63
08/25/99	09:43:00	45731445	64.94	278.63
08/25/99	09:44:00	45910446	64.94	278.63
08/25/99	09:45:00	45954590	65.09	278.63
08/25/99	09:46:00	46052734	65.09	278.63
08/25/99	09:47:00	46037014	64.82	278.63
08/25/99	09:48:00	45836811	64.82	278.63
08/25/99	09:49:00	45836811	64.82	277.62
08/25/99	09:50:00	45750488	64.56	277.62
08/25/99	09:51:00	45633011	64.56	277.62
08/25/99	09:52:00	45618748	64.56	277.62
08/25/99	09:53:00	45579098	64.56	277.62
08/25/99	09:54:00	45579098	64.56	277.62
08/25/99	09:55:00	45713867	64.79	277.62
08/25/99	09:56:00	45780178	64.79	277.62
08/25/99	09:57:00	45793751	64.79	278.65
08/25/99	09:58:00	45817486	64.79	278.65
08/25/99	09:59:00	45798828	64.79	277.62
08/25/99	10:00:00	45762592	64.79	277.62
08/25/99	10:01:00	45762592	64.79	277.62
08/25/99	10:02:00	45751266	64.79	277.62
08/25/99	10:03:00	45745708	64.79	277.62
08/25/99	10:04:00	45751266	64.79	277.62
08/25/99	10:05:00	45757519	64.79	277.62
08/25/99	10:06:00	45811615	65.00	277.62
08/25/99	10:07:00	45907715	65.00	277.62
08/25/99	10:08:00	45907715	65.26	277.62
08/25/99	10:09:00	46035446	65.26	277.62
08/25/99	10:10:00	46035446	65.26	277.62
08/25/99	10:11:00	46035446	65.26	277.62
08/25/99	10:12:00	46035446	65.26	278.65
08/25/99	10:13:00	46035446	65.26	278.65
08/25/99	10:14:00	46035446	65.26	277.62
08/25/99	10:15:00	46053806	65.26	277.62
08/25/99	10:16:00	46053806	65.26	277.62
08/25/99	10:17:00	45980175	65.11	277.62
08/25/99	10:18:00	45945408	65.11	277.62
08/25/99	10:19:00	45920506	64.97	278.76
08/25/99	10:20:00	45872753	64.97	278.76
08/25/99	10:21:00	45872753	64.97	278.76
08/25/99	10:22:00	45855667	64.97	278.76
08/25/99	10:23:00	45855667	64.97	277.73
08/25/99	10:24:00	45793354	64.80	277.73
08/25/99	10:25:00	45762299	64.80	278.76
08/25/99	10:26:00	45746288	64.51	278.76
08/25/99	10:27:00	45580151	64.51	278.76
08/25/99	10:28:00	45561619	64.26	278.76
08/25/99	10:29:00	45357914	64.26	278.76
08/25/99	10:30:00	45357914	64.26	278.76

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08/25/99 10:14:00	46035446	65.26	277.62
08/25/99 10:15:00	46053806	65.26	277.62
08/25/99 10:16:00	46053806	65.26	277.62
08/25/99 10:17:00	45980175	65.11	277.62
08/25/99 10:18:00	45945408	65.11	277.62
08/25/99 10:19:00	45920506	64.97	278.76
08/25/99 10:20:00	45872753	64.97	278.76
08/25/99 10:21:00	45872753	64.97	278.76
08/25/99 10:22:00	45855667	64.97	278.76
08/25/99 10:23:00	45855667	64.97	277.73
08/25/99 10:24:00	45793354	64.80	277.73
08/25/99 10:25:00	45762299	64.80	278.76
08/25/99 10:26:00	45746288	64.51	278.76
08/25/99 10:27:00	45580181	64.51	278.76
08/25/99 10:28:00	45561619	64.26	278.76
08/25/99 10:29:00	45357914	64.26	278.76
08/25/99 10:30:00	45357914	64.26	278.76
08/25/99 10:31:00	45234177	64.03	278.76
08/25/99 10:32:00	45193161	64.03	278.76
08/25/99 10:33:00	45253323	64.24	278.76
08/25/99 10:34:00	45375977	64.24	278.76
08/25/99 10:35:00	45400391	64.65	278.76
08/25/99 10:36:00	45651661	64.65	278.76
08/25/99 10:37:00	45651661	64.65	277.74
08/25/99 10:38:00	45748241	65.04	277.74
08/25/99 10:39:00	45963863	65.04	277.74
08/25/99 10:40:00	45963863	65.16	276.71
08/25/99 10:41:00	46000004	65.16	277.73
08/25/99 10:42:00	46000004	65.16	277.73
08/25/99 10:43:00	45952240	64.95	278.78
08/25/99 10:44:00	45854004	64.95	278.78
08/25/99 10:45:00	45854004	64.95	278.78
Averages =	45322159	64.04	275.91

14112 G.B.

SUMMARY OF RESULTS CALCULATIONS

$$Vm\ (std) = 17.647 \times Vm \times \left[\frac{P_{bar} + \frac{DH}{13.6}}{(460 + Tm)} \right] \times Y$$

$$Vw\ (std) = 0.0471 \times Vlc$$

Vlc = water + silica net

$$Bws = \left[\frac{Vw\ (std)}{Vw\ (std) + Vm\ (std)} \right]$$

$$Md = (0.44 \times \%CO_2) + (0.32 \times \%O_2) + [0.28 \times (100 - \%CO_2 - \%O_2)]$$

$$MS = Md \times (1 - Bws) + (18 \times Bws)$$

$$Vs = \sqrt{\frac{(Ts + 460)}{Ms \times Ps}} \times \sqrt{DP} \times Cp \times 85.49$$

Cp = pitot tube correction factor
Ps = absolute flue gas pressure
Ms = molecular weight of gas (lb/lb mole)
Md = dry molecular weight of gas (lb/lb mole)
Bws = water vapor in gas stream proportion by volume

$$Acfm = Vs \times Area\ (of\ stack\ or\ duct) \times 60$$

$$Dscfm = Acfm \times 17.647 \times \left[\frac{Ps}{(460 + Ts)} \right] \times (1 - Bws)$$

$$Scfm = Acfm \times 17.647 \times \left[\frac{Ps}{(460 + Ts)} \right]$$

$$Scfh = Scfm \times 60 \frac{min}{hr}$$

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CALCULATION FORMULAS

1. $V_{m(std)} = V_m Y \left(\frac{T_{std}}{T_m}\right)\left(\frac{P_{bar} + \frac{\Delta H}{13.6}}{P_{std}}\right) = K_1 V_m Y \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}$

2. $V_{w(std)} = V_{lc}\left(\frac{\rho_w}{M_w}\right)\left(\frac{RT_{std}}{P_{std}}\right) = K_2 V_{lc}$

3. $B_{ws} = \frac{V_{w(std)}}{V_{m(std)} + V_{w(std)}}$

4a. $C_a = \frac{m_a}{V_a \rho_a}$

4b. $W_a = C_a V_{aw} \rho_a$

5. $C_S = (15.43 \text{ grains/gram})\,(m_n / V_{m(std)})$

6. $C_{acf} = 15.43 K_i \left(\frac{m_n P_s}{V_{w(std)} + V_{m(std)}\ T_s}\right)$

7. $\%EA = \left(\frac{\%O_2 - (0.5\ \%CO}{0.264\ \%N_2 - (\%O_2 - 0.5\ \%CO)}\right) \times 100$

8. $M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO)$

9. $M_s = M_d(1 - B_{ws}) + 18.0 B_{ws}$

10. $v_s = K_p C_p \sqrt{\frac{\Delta P\ T_s}{P_s M_s}}$

11. $Q_{acfm} = v_s A(60_{sec/min})$

12. $Q_{sd} = (3600_{sec/hr})(1 - B_{ws})\ v_s \left(\frac{T_{std} P_s}{T_s P_{std}}\right) A$

13. E (emission rate, lbs/hr) $= Q_{std}(C_s / 7000 \text{ grains/lb})$

14. $IKV = \frac{T_s V_{m(std)} P_{std}}{T_{std} v_s \theta A_n P_s 60(1 - B_{ws})} = K_4 \frac{T_s V_{m(std)}}{P_s v_s A_n \theta (1 - B_{ws})}$

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NOMENCLATURE

A = Cross-sectional area of stack or duct, ft^2
A_n = Cross-sectional area of nozzle, ft^2
B_{ws} = Water vapor in gas stream, proportion by volume
C_a = Acetone blank residue concentration, g/g
C_{acf} = Concentration of particulate matter in gas stream at actual conditions, gr/acf
C_p = Pitot tube coefficient, dimensionless
C_s = Concentration of particulate matter in gas stream, dry basis, corrected to standard conditions, gr/dscf
IKV = Isokinetic sampling variance, must be $.90 \leq IKV \leq 1.10$
M_d = Dry molecular weight of gas, lb/lb-mole
m_n = Total amount of particulate matter collected, grams
M_s = Molecular weight of gas, wet basis, lb/lb-mole
M_w = Molecular weight of water, 18.0 lb/lb-mole
m_a = Mass of residue of acetone after evaporation, grams
P_{bar} = Barometric pressure at testing site, in. Hg
P_g = Static pressure of gas, in. Hg (in. H_2O/13.6)
P_s = Absolute pressure of gas, in. Hg = $P_{bar} + P_g$
P_{std} = Standard absolute pressure, 29.92 in. Hg
Q_{acfm} = Actual volumetric gas flow rate, acfm
Q_{sd} = Dry volumetric gas flow rate corrected to standard conditions, dscf/hr
R = Ideal gas constant, 21.85 in. Hg-ft^3/°R-lb-mole
T_m = Absolute dry gas meter temperature, °R
T_s = Absolute gas temperature, °R
T_{std} = Standard absolute temperature, 528°R
V_a = Volume of acetone blank, ml
V_{aw} = Volume of acetone used in wash, ml
V_{lc} = Total volume of liquid collected in impingers and silica gel, ml
V_m = Volume of gas sample as measured by dry gas meter, dcf
$V_{m(std)}$ = Volume of gas sample measured by dry gas meter, corrected to standard conditions, dscf
v_s = Gas velocity, ft/sec
$V_{w(std)}$ = Volume of water vapor in gas sample, corrected to standard conditions, scf
W_a = Weight of residue in acetone wash, grams
Y = Dry gas meter calibration factor
ΔH = Average pressure differential across the orifice meter, in. H_2O
Δp = Velocity head of gas, in. H_2O
ρ_a = Density of acetone, 0.7855 g/ml (average)
ρ_w = Density of water, 0.002201 lb/ml
θ = Total sampling time, minutes
K_1 = 17.64 °R/in. Hg
K_2 = 0.04707 ft^3/ml
K_4 = 0.09450/100 = 0.000945
K_p = Pitot tube constant, $85.49 \frac{ft}{sec}\left[\frac{(lb/lb-mole)(in.Hg)}{(°R)(in.H_2O)}\right]^{1/2}$
%EA = Percent excess air
$\%CO_2$ = Percent carbon dioxide by volume, dry basis
$\%O_2$ = Percent oxygen by volume, dry basis
%CO = Percent carbon monoxide by volume, dry basis
$\%N_2$ = Percent nitrogen by volume, dry basis
0.264 = Ratio of O_2 to N_2 in air, v/v
0.28 = Molecular weight of N_2 or CO, divided by 100
0.32 = Molecular weight of O_2 divided by 100
0.44 = Molecular weight of CO_2 divided by 100
13.6 = Specific gravity of mercury (Hg)

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MERCURY CALCULATIONS

Determination of Speciated Mercury

Concentration

$$\frac{\text{ug of Mercury detected} \times \frac{10^{-6}\,\text{g}}{\text{ug}}}{453.6\,\text{g/lb}} = \text{lbs Mercury/sample}$$

$$\frac{\text{lbs Mercury/sample}}{\text{Vm(std)}} = \text{lbs Mercury/dscf}$$

Emission Rates

$$\text{lbs Mercury/hr} = \text{lbs/dscf} \times \text{dscf/min} \times 60\,\text{min/hr}$$

$$\text{lbs Mercury}/10^{12}\,\text{Btu} = \text{lbs/dscf} \times F_d\,\text{Factor}\left(\text{dscf}/10^{6}\,\text{Btu}\right) \times \frac{20.9\%}{20.9\% - O_2\%} \times 10^{6}$$

Mercury Fractions

Elemental Mercury Catch – mercury collected in the acidified hydrogen peroxide (HNO_3-H_2O_2) and potassium permanganate (H_2SO_4-$KMnO_4$) impinger solutions.

Oxidized Mercury Catch – mercury collected in the aqueous potassium chloride (KCl) impinger solution.

Particle-bound Mercury Catch – mercury associated with the particulate matter collected in the front half of the sampling train.

Determination of Mercury Available from Coal

$$\text{lbs Mercury/hr} = \frac{\text{ug Mercury}}{\text{g Coal}}(\text{dry}) \times \frac{10^{-6}\,\text{g}}{\text{ug}} \times \frac{\text{lbs Coal (wet)}}{\text{hr}} \times (1 - B_{ws})\,\text{moisture corr.}$$

$$\text{lbs Mercury}/10^{12}\,\text{Btu} = \frac{\text{lbs Mercury}}{\text{hr}} \div \frac{10^{12}\,\text{Btu}}{\text{hr}}$$

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EMISSION RATE CALCULATIONS

A pollutant emission rate (E), expressed as pounds of pollutant per million Btu heat input from the fuel combusted can be calculated by several methods as follows:

1. $C = C_s/7000$ where, C = pollutant concentration, lb/dscf
   c_s = pollutant concentration, grains/dscf

2. If fuel flow is monitored and the fuel combusted during the test is sampled and analyzed for gross calorific value, then:

$$E = \frac{Q_{sd}C}{\text{fuel flow rate (lb / hr) GCV}} \times 10^6$$

where, E = lbs per million Btu
GCV = gross calorific value, Btu / lb
Q_{sd} = dry volumetric gas flow at standard conditions, dscf / hr

3. If an integrated gas sample is taken during the test and analyzed for $\%CO_2$ or $\%O_2$, dry basis by volume, with an Orsat gas analyzer, then

$$E = C\,F_c \frac{100}{(\%CO_2)} \text{ or, } E = C\,F \frac{20.9}{(20.9 - \%O_2)} \quad \text{where,}$$

$\%CO_2$ and $\%O_2$ are expressed as percent; and, for example, for subbituminous and bituminous coals:

F_c = a factor representing a ratio of the volume of carbon dioxide generated to the calorific value of the fuel combusted, 1800 scf CO_2/million Btu.

F = a factor representing a ratio of the volume of dry flue gases generated to the calorific value of the fuel combusted, 9780 dscf/million Btu.

4. If fuel sample increments are taken and composited during the test and an ultimate analysis is performed and the GCV is determined, then

$$F_c = \frac{321 \times 10^3 (\%C)}{GCV} \quad \text{where, } \%C = \text{carbon content by weight expressed as percent}$$

$$F = \frac{[3.64\,(\%H) + 1.53\,(\%C) + 0.57\,(\%S) + 0.14\,(\%N) - 0.46\,(\%O_2)]}{GVC} \times 10^6$$

where, H, C, S, N, and O are content by weight of hydrogen, carbon, sulfur, nitrogen, and oxygen (expressed as percent) respectively.

5. If fuels other than subbituminous and bituminous coals are fired, other F-factors than those above will apply; and, if combinations of different fuels are fired, the F-factors must be prorated according to the fraction of the total heat input derived from each type of fuel.

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MOSTARDI-PLATT ASSOCIATES, INC.
TEST SUPPORT DATA

TEST RUN NO. 1 OH-Hg

COMPANY: Platte River Power Authority
PLANT: Rawhide Energy Station
TEST LOCATION: SDA Inlet
CLIENT: Platte River Power Authority
OPERATOR: Jeff Daniels
DATE: 8-24-99
CONTROL BOX: E35 POT. NO.: E35
METER NO.: E35
METER CALIBRATION FACTOR: 1.001
PITOT ID NO.: 434 A
PITOT TUBE COEFFICIENT: .83
PORT LENGTH: 21 in.
PORT SIZE: 4.5 in.
PORT TYPE: Nipple with Plug Vertical

IMPINGER H_2O Gravimetric
FINAL: 4893.2 ml/gm
INITIAL: 4746.5 ml/gm
GAIN: 146.7 ml/gm
TOTAL H_2O COLLECTED: 158.6

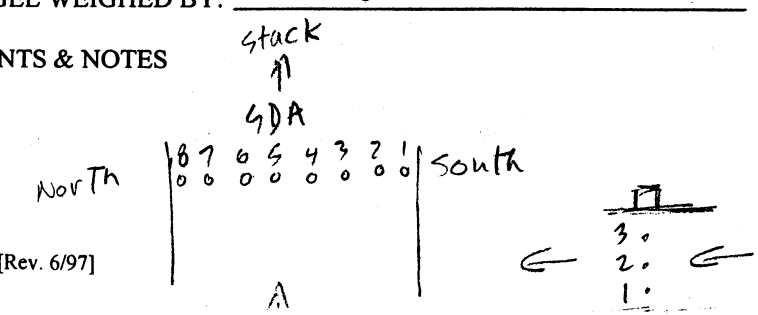
SILICA GEL:
FINAL WT: 771.9 gm
INITIAL WT: 760 gm
WT. GAIN: 11.9 gm

DESCRIPTION OF IMPINGER H_2O: See Lab Notes
SILICA GEL EXHAUSTED?: ↓
IMPINGERS RECOVERED BY: JW
SILICA GEL WEIGHED BY: JW

THIMBLE NO: 012 TARE WT:
FILTER NO: N/A TARE WT: N/A
BAROMETRIC PRESSURE in. Hg: 24.55
FLUE PRESSURE in. H_2O: -12.24
FLUE PRESSURE in. Hg ABS: 23.65
PROBE LENGTH: 12 ft.
PROBE LINER MATERIAL: Teflon
NOZZLE IDENTIFICATION NO: B8
CALIBRATED NOZZLE DIAMETER: .240
LEAK CHECK: PRE: 0.002 POST: 0.006 @ 12/10 in. Hg
DUCT SHAPE: Rectan Eq DIAMETER: (21.899)
DUCT AREA: 376.67 sq. ft. L 18' 10" W 20'
DISTURBANCE UPSTREAM: 6 DOWNSTREAM: 5
TEST LENGTH: 120 min
MINUTES PER POINT: 5
TOTAL NUMBER OF TRAVERSE POINTS: 24
GAS ANALYSIS (ORSAT/FYRITE):
CO_2: 13.8
O_2: 5.13

PITOT LEAK CHECK: PRE 4.2 " H_2O POST 4.0 " H_2O
ΔH@ 1.878
SAMPLES REMOVED FROM SITE BY: JRP/JW/JCD/PC

COMMENTS & NOTES



For computer data entry: Supervisor, please complete.
Do you want to enter a fuel analysis? Y ☐ N ☐
What value do you want to use? F = 9,780 F_c = 1,800 Other = _____
Circle to indicate "Yes" or add other value if not given.

m 1053 [Rev. 6/97]

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FIELD TEST DATA SHEET
FOR ISOKINETIC SAMPLING

MOSTARDI-PLATT ASSOCIATES, INC.

PROJECT Platte River Power Authority
TEST RUN NO. #1 – Rawhide Gen. Station (JCD)
TEST LOCATION Inlet

DATE 24 Aug 99 PAGE 1 OF 2

~~1.86~~ 1.945 ~~1.913~~ ~~0.835~~ 0.863 ~~0.838~~

Port-Point No.	Velocity Head (P) in. H_2O	$\sqrt{P}$	Clock Time 24 hr.	Meter Volume (Vm) ft³	Orifice (H) in. H_2O	Stack Temp (ts) °F	Meter Temp. (t_m) Inlet °F	Meter Temp. (t_m) Outlet °F	Meter Rate cfm	Pump Vacuum in. Hg	x5	Notes	Probe Temp. °F	Heated Line ~~Filter Holder~~ Temp. °F	Fully Iced Impinger Outlet Temp. °F
1-1	0.30	0.548	1040	582.48	0.57	352	79	82	0.459	4	2.295		245	225	66
-2	0.48	0.693	1045	584.65	0.92	353	82	83	0.581	5	2.903	584.775	266	228	66
-3	0.55	0.742	1050	587.40	1.05	352	82	84	0.621	5	3.107	587.68	264	225	63
		1.982	1055	590.46	2.54	1057	492					590.79			
				8.00											
2-1	0.48	0.693	1058	590.5	0.92	353	83	85	0.581	5	2.903		267	227	66
-2	0.53	0.728	1103	593.47	1.01	355	84	85	0.610	5	3.050	593.40	269	226	63
-3	0.20	0.447	1108	596.30	0.37	354	84	85	0.373	4	1.867	596.45	271	226	68
		1.868	1113	598.51	2.30	1062	506					598.32			
				8.01											
3-1	0.63	0.794	1115	598.54	1.17	346	84	86	0.663	6	3.314		268	228	67
-2	0.73	0.854	1120	601.28	1.36	350	86	87	0.713	6	3.567	601.85	256	226	66
-3	0.22	0.469	1125	604.60	0.41	350	87	85	0.392	5	1.958	605.42	271	225	67
		2.117	1130	606.98	2.94	1046	515					607.38			
				8.44											
4-1	0.72	0.849	1132	607.03	1.34	346	86	87	.709	6	3.543		267	228	63
-2	0.65	0.806	1137	610.25	1.21	348	87	89	0.673	7	3.366	610.57	269	226	66
-3	0.27	0.520	1142	613.48	0.50	350	87	88	0.434	5	2.169	613.94	271	227	68
		2.174	1147	616.14	3.05	1044	524					616.11			
				9.11											
5-1	0.33	0.574	1149	616.19	0.61	333	89	89	0.480	5	2.398		266	226	68
-2	0.52	0.721	1154	618.61	0.97	339	91	92	0.602	5	3.011	618.588	265	227	68
-3	0.12	0.346	1159	621.23	0.22	345	91	92	0.289	3	1.446	621.599	266	228	65
		1.642	1204	623.09	1.80	1017	544					623.045			
				6.90											
6-1	0.67	0.819	1206	623.15	1.25	329	94	93	0.683	6	3.417		262	227	66
-2	0.63	0.794	1211	626.68	1.23	331	96	95	0.685	7	3.425	626.57	262	224	66
-3	0.30	0.548	1216	630.20	0.58	339	96	95	0.473	5	2.363	629.995	268	227	67
		2.16	1221	632.32	3.06	999	569								
				7.17											

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FIELD TEST DATA SHEET
FOR ISOKINETIC SAMPLING

JCN

MOSTARDI-PLATT ASSOCIATES, INC.

PROJECT Platte River Power Authority
TEST RUN NO. #1 - Rawhide Gen. Station
TEST LOCATION Inlet

DATE 24 Aug 99 PAGE 2 OF 2

Port-Point No.	Velocity Head (P) in. H_2O	$\sqrt{P}$	Clock Time 24 hr.	Meter Volume (Vm) ft^3	1.945 Orifice (H) in. H_2O	Stack Temp (ts) °F	Meter Temp. (t_m) Inlet °F	Meter Temp. (t_m) Outlet °F	0.863 Meter Rate cfm	Pump Vacuum in. Hg	x 5 Notes		Probe Temp. °F	Filter Holder Temp. °F	Impinger Outlet Temp. °F
7-1	0.54	0.735	1223	632.41	1.05	325	98	93	0.634	6	3.171		266	225	67
-2	0.38	0.616	1228	635.27	0.74	328	96	93	0.532	6	2.660	635.58	268	227	65
-3	0.25	0.500	1233	638.20	0.49	333	97	93	0.432	5	2.158	638.24	267	229	66
		1.851	1238	640.50	2.28	986	570					640.398			
				8.09											
10 eth 8-1	0.72	0.849	1241	640.54	1.40	315	95	94	0.732	7	3.661		269	232	68
-2	0.53	0.728	1246	644.46	1.03	317	95	94	0.628	6	3.141	644.20	265	228	66
-3	0.23	0.480	1251	647.33	0.45	320	95	94	0.414	6	2.069	647.34	264	225	67
		2.056	1256	650.10	2.88	952	567					649.41			
				9.56											
∞		3.907	120 min	12.65	5.16	1938	1137								
		11.943		49.63	15.69	6225	3150								
		15.850			20.85	8163	4287								
		0.660		67.28	0.869	340.13	89.31								
						800.13	549.31								

Form 1026 [Rev. 5/27]

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MOSTARDI-PLATT ASSOCIATES, INC.
TEST SUPPORT DATA

TEST RUN NO. 2 OH - HG

COMPANY: Platte River Power Authority
PLANT: Rawhide Energy Station
TEST LOCATION: SDA Inlet
CLIENT: Platte River Power Authority
OPERATOR: Jeff Daniels
DATE: 8-24-99
CONTROL BOX: E35 POT. NO.: E35
METER NO.: e35
METER CALIBRATION FACTOR: 1.001
PITOT ID NO.: 434A
PITOT TUBE COEFFICIENT: .83
PORT LENGTH: 21 in.
PORT SIZE: 4.5 in.
PORT TYPE: Nipple w/Plug Vertical

IMPINGER H_2O
FINAL: 4834.2 ml/gm
INITIAL: 4693.8 ml/gm
GAIN: 140.4 ml/gm
TOTAL H_2O COLLECTED: 162.3
DESCRIPTION OF IMPINGER H_2O: See Lab Notes

SILICA GEL:
FINAL WT: 775.3 gm
INITIAL WT: 753.4 gm
WT. GAIN: 21.9 gm

SILICA GEL EXHAUSTED?: "
IMPINGERS RECOVERED BY: JW
SILICA GEL WEIGHED BY: JW

COMMENTS & NOTES

THIMBLE NO: 007 TARE WT:
FILTER NO: TARE WT:
BAROMETRIC PRESSURE in. Hg: 24.55
FLUE PRESSURE in. H_2O: -12.24
FLUE PRESSURE in. Hg ABS: 23.65
PROBE LENGTH: 12 ft.
PROBE LINER MATERIAL: Teflon
NOZZLE IDENTIFICATION NO: B-8
CALIBRATED NOZZLE DIAMETER: .24
LEAK CHECK: PRE: 0.002 POST: 0.006 @ 10/15 in. Hg
DUCT SHAPE: Rectangle Eq. DIAMETER: 21.895
DUCT AREA: 376.67 sq. ft. L 18' 10" W 20'
DISTURBANCE UPSTREAM: 6 DOWNSTREAM: 5
TEST LENGTH: 120 min
MINUTES PER POINT: 5
TOTAL NUMBER OF TRAVERSE POINTS: 24
GAS ANALYSIS (ORSAT/FYRITE):
CO_2: 14.8 / 14.8 / 14.6
O_2: 4.2 / 4.4 / 4.0

PITOT LEAK CHECK: PRE 4.4 POST 3.8
ΔH@ 1.878
SAMPLES REMOVED FROM SITE BY: JRP/JW/RC/JCD

For computer data entry: Supervisor, please complete.
Do you want to enter a fuel analysis? Y ☐ N ☐
What value do you want to use? F = 9,780 F_c = 1,800 Other = _____
Circle to indicate "Yes" or add other value if not given.

FIELD TEST DATA SHEET
FOR ISOKINETIC SAMPLING

MOSTARDI-PLATT ASSOCIATES, INC.

PROJECT Platte River Power Authority - Rawhide Energy Station
TEST RUN NO. 2 O.H. Hg
TEST LOCATION SDA INLET (JCD) DATE 8-24-99 PAGE 2 OF 2

Port-Point No.	Velocity Head (P) in. H_2O	$\sqrt{P}$	Clock Time 24 hr.	Meter Volume (Vm) ft³	1.711 Orifice (H) in. H_2O	Stack Temp (Ts) °F	Meter Temp. (t_m) Inlet °F	Meter Temp. (t_m) Outlet °F	0.849 Meter Rate cfm	Pump Vacuum in. Hg	x5 Notes		Probe Temp. °F	Filter Holder Temp. °F	Impinger Outlet Temp. °F
2-1	0.42	0.648	1610	701.33	0.80	355	91	90	0.550	6	2.751		263	226	64
2	0.45	0.671	1615	704.19	0.86	353	90	88	0.570	6	2.848	704.081	270	227	67
3	0.20	0.447	1620	707.05	0.38	340	90	88	0.380		1.898	706.929	274	225	65
		1.766	1625	708.75	2.04	1048	537					708.827			
				7.42											
1-1	0.50	0.707	1627	708.80	0.96	349	89	88	0.600	7	3.002		265	228	66
2	0.52	0.72	1632	711.71	0.99	350	89	88	0.612	8	3.061	711.80	265	227	67
3	0.31	0.557	1637	714.75	0.59	349	89	87	0.473	6	2.364	714.86	265	225	68
		1.985	1642	717.14	2.54	1048	530					717.22			
				8.34											
		3.751		15.76	4.58	2096	1067								
		11.491		49.68	14.71	6038	3209								
		15.242			19.29	8134	4276								
		0.635	120 min	65.44	0.804	338.92	89.08								
						798.92	549.08								

Form 1026 [Rev. 5/27]

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FIELD TEST DATA SHEET FOR ISOKINETIC SAMPLING

(SCD)

MOSTARDI-PLATT ASSOCIATES, INC.

PROJECT Platte River Power Authority - Rawhide Energy Station
TEST RUN NO. 2 Off. Hg
TEST LOCATION SDA Inlet

DATE 8-24-99 PAGE 1 OF 2

Port-Point No.	Velocity Head (P) in. H2O	√P	Clock Time 24 hr.	Meter Volume (Vm) ft³	Orifice (H) in. H2O	Stack Temp (ts) °F	Meter Temp. (tm) Inlet °F	Meter Temp. (tm) Outlet °F	0.849 Meter Rate cfm	Pump Vacuum in. Hg	×5 Notes		Probe Temp. °F	Filter Holder Temp. °F	Impinger Outlet Temp. °F
orth 1-1	0.67	0.819	1417	650.55	1.28	310	89	87	0.695	7	3.475		253	232	63
2	0.48	0.693	1422	653.88	0.92	312	89	86	0.693	7	3.465	654.02	257	230	61
3	0.20	0.447	1427	657.35	0.38	313	89	86	0.380	5	1.898	657.48	259	231	65
		1.959	1432	659.57	2.58	935	526					659.38			
				9.04											
2-1	0.58	0.762	1435	659.63	1.108	318	89	88	0.647	7	3.233		263	228	67
2	0.32	0.566	1440	663.08	0.612	323	90	87	0.480	6	2.401	662.86	268	230	66
3	0.23	0.480	1445	665.47	0.440	329	90	88	0.407	6	2.036	665.26	260	227	68
		1.807	1450	667.63	2.16	970	532					667.30			
				8.00											
1-1	0.45	0.671	1452	667.68	0.86	321	90	87	0.570	6	2.848		267	227	66
2	0.73	0.854	1459	669.90	1.40	333	89	89	0.725	9	3.627	670.528	267	227	68
3	0.25	0.50	1502	674.18	0.48	344	89	89	0.425	12	2.123	674.155	265	225	67
		2.025	1507	676.33	2.74	998	533					676.278			
*	LEAK CHECK		*	8.65											
5-1	0.45	0.671	1517	677.21	0.86	342	89	88	0.570	6	2.848		268	224	65
2	0.37	0.608	1522	680.19	0.71	345	90	89	0.516	7	2.582	680.06	270	227	67
3	0.19	0.436	1527	682.51	0.36	349	91	90	0.370	5	1.850	682.64	260	228	63
		1.715	1532	684.66	1.53	1036	537					684.49			
				7.45											
4-1	0.38	0.616	1534	684.71	0.73	342	91	91	0.523	6	2.616		263	225	65
2	0.47	0.686	1539	687.17	0.90	341	90	90	0.582	6	2.910	687.327	265	226	63
3	0.25	0.50	1544	690.15	0.48	350	90	90	0.425	5	2.123	690.237	263	228	66
		1.802	1549	692.02	2.1	1033	542					692.360			
				7.31											
3-1	0.63	0.79	1552	692.06	1.20	353	91	91	0.674	7	3.369		267	225	63
2	0.79	0.889	1557	695.56	1.51	355	90	88	0.755	8	3.773	695.43	274	233	67
3	0.25	0.50	1602	699.46	0.48	358	91	88	0.425	5	2.123	699.203	270		
		2.183	1607	701.29	3.19	1066	539								
				9.22											

Cleaned screen at dry gas meter inlet 701.326

* Leak check post

Form 1026 [Rev. 5/27]

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MOSTARDI-PLATT ASSOCIATES, INC.
TEST SUPPORT DATA

TEST RUN NO. 3 O.H. Hg

COMPANY: Platte River Power Authority
PLANT: Rawhide Energy Station
TEST LOCATION: SDA Inlet
CLIENT: Platte River Power Authority
OPERATOR: Jeff Daniels
DATE: 8-24-99
CONTROL BOX: E35 POT. NO.: E35
METER NO.: E35
METER CALIBRATION FACTOR: 1.001
PITOT ID NO.: 434 A
PITOT TUBE COEFFICIENT: .83
PORT LENGTH: 21 in.
PORT SIZE: 4.5 in.
PORT TYPE: Nipple w/plug - Vertical

IMPINGER H_2O
FINAL: 4702.9 ml/gm
INITIAL: 4574.3 ml/gm
GAIN: 128.6 ml/gm

SILICA GEL:
FINAL WT: 811.3 gm
INITIAL WT: 794.6 gm
WT. GAIN: 16.7 gm

TOTAL H_2O COLLECTED: 145.3
DESCRIPTION OF IMPINGER H_2O: See Lab Notes
SILICA GEL EXHAUSTED?: "
IMPINGERS RECOVERED BY: JW
SILICA GEL WEIGHED BY: JW

COMMENTS & NOTES

THIMBLE NO: 011 TARE WT:
FILTER NO: None TARE WT: None
BAROMETRIC PRESSURE in. Hg: 24.80
FLUE PRESSURE in. H_2O: -12.24
FLUE PRESSURE in. Hg ABS: 23.90
PROBE LENGTH: 12 ft.
PROBE LINER MATERIAL: Teflon
NOZZLE IDENTIFICATION NO: B-8
CALIBRATED NOZZLE DIAMETER: 0.24
LEAK CHECK: PRE: 0.004 POST: 0.006 @ 12/14 in. Hg ON ALL 3
DUCT SHAPE: Rectangle EQ DIAMETER: 21.8994 ← DO NOT ENTER
DUCT AREA: 376.6667 sq. ft. L 18'10" (18.8333) W 20' ← ENTER
DISTURBANCE UPSTREAM: DOWNSTREAM:
TEST LENGTH: 120 min
MINUTES PER POINT: 5
TOTAL NUMBER OF TRAVERSE POINTS: 24
GAS ANALYSIS (ORSAT/FYRITE):
CO_2: 13.6
O_2: 5.6

PITOT LEAK CHECK: PRE 4.4 POST 3.6
ΔH@ 1.878
SAMPLES REMOVED FROM SITE BY: JRP/JW/PC/JCD

For computer data entry: Supervisor, please complete.
Do you want to enter a fuel analysis? Y ☐ N ☐
What value do you want to use? F = 9,780 F_c = 1,800 Other = _____
Circle to indicate "Yes" or add other value if not given.

Form 1053 [Rev. 6/97]

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FIELD TEST DATA SHEET
FOR ISOKINETIC SAMPLING (JCD) MOSTARDI-PLATT ASSOCIATES, INC.

PROJECT Platte River Power Authority
TEST RUN NO. #3
TEST LOCATION INLET - Rawhide Gen. Station DATE 25 Aug 99 PAGE 1 OF 2

Port-Point No.	Velocity Head (P) in. H_2O	$\sqrt{P}$	Clock Time 24 hr.	Meter Volume (Vm) ft^3	~~1.84~~ 1.87 Orifice (H) in. H_2O	Stack Temp (t_s) °F	Meter Temp. (t_m) Inlet °F	Meter Temp. (t_m) Outlet °F	~~0.817~~ 0.83 Meter Rate cfm	Pump Vacuum in. Hg	x 5 Notes		Probe Temp. °F	Filter Holder Temp. °F	Impinger Outlet Temp. °F
1-1	0.46	0.678	845	717.80	0.85	350	78	80	0.554	4	2.771		251	228	63
-2	0.43	0.656	850	720.45	0.79	350	79	80	0.536	4	2.679	720.57	269	234	64
-3	0.35	0.592	855	723.30	0.64	349	80	81	0.483	3	2.417	723.25	258	234	65
		1.9256	900	725.69	2.28	1049	478					725.67			
				7.89											
2-1	0.43	0.656	902	725.75	0.79	348	81	81	0.536	4	2.679		259	230	64
-2	0.40	0.632	907	728.52	0.74	353	81	81	0.517	4	2.584	728.43	259	229	65
-3	0.18	0.424	912	731.22	0.33	350	82	81	0.347	3	1.733	731.01	258	229	66
		1.712	917	732.82	1.86	1051	487					732.74			
				7.07											
3-1	0.62	0.787	919	733.00	1.14	350	84	84	0.643	5	3.217		250	225	68
-2	0.63	0.794	924	736.40	1.18	354	84	84	0.659	5	3.294	736.217	250	225	66
-3	0.22	0.469	929	739.47	0.41	354	84	84	0.389	4	1.947	739.51	255	226	67
		2.050	934	741.45	2.73	1058	504					741.46			
				8.45											
4-1	0.63	0.794	936	741.49	1.18	352	85	84	0.659	6	3.294		250	230	67
-2	0.67	0.819	941	744.83	1.25	354	84	84	0.679	7	3.397	744.78	251	227	64
3	0.18	0.424	946	747.95	0.34	354	84	83	0.352	5	1.761	748.177	251	228	66
		2.0365	951	749.81	2.77	1060	504					749.94			
				8.32											
5-1	0.28	0.529	954	749.87	0.52	340	85	84	0.439	4	2.196		251	228	65
2	0.42	0.648	959	752.15	0.79	342	85	84	0.538	5	2.690	752.07	252	227	66
3	0.10	0.316	1004	754.81	0.19	348	84	83	0.262	3	1.312	754.76	253	227	68
		1.493	1009	756.25	1.50	1030	505					756.07			
				6.38											
		9.2171		38.11	11.14	5248	2478								

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FIELD TEST DATA SHEET
FOR ISOKINETIC SAMPLING (JCD) MOSTARDI-PLATT ASSOCIATES, INC.

PROJECT Platte River Power Authority
TEST RUN NO. #3 - Rawhide Gen. Station
TEST LOCATION Inlet DATE 25 Aug 99 PAGE 2 OF 2

Port-Point No.	Velocity Head (P) in. H_2O	$\sqrt{P}$	Clock Time 24 hr.	Meter Volume (Vm) ft^3	1.87 Orifice (H) in. H_2O	Stack Temp (ts) °F	Meter Temp. (t_m) Inlet °F	Meter Temp. (t_m) Outlet °F	0.83 Meter Rate cfm	Pump Vacuum in. Hg	x 5 Notes		Probe Temp. °F	Filter Holder Temp. °F	Impinger Outlet Temp. °F
6-1	0.60	0.775	1011	756.30	1.12	325	85	85	0.643	6	3.215		257	226	64
-2	0.60	0.775	1016	759.68	1.12	330	85	85	0.643	6	3.215	759.51	255	227	66
-3	0.18	0.424	1021	762.62	0.34	336	85	85	0.352	4	1.761	762.725	256	228	67
		(1.973)	1026	764.53	(2.58)	(991)	(510)					764.486			
				(8.23)											
7-1	0.48	0.693	1028	764.58	0.90	321	85	85	0.575	6	2.875		257	230	65
-2	0.30	0.548	1033	767.61	0.56	322	87	85	0.455	6	2.273	767.46	258	226	66
-3	0.20	0.447	1038	769.85	0.37	327	86	85	0.371	5	1.856	769.73	256	227	68
		(1.688)	1043	771.42	(1.83)	(972)	(513)					771.586			
8				(6.84)											
8-1	0.50	0.707	1045	771.52	0.94	314	88	85	0.587	5	2.934		258	228	66
2	0.45	0.671	1050	774.51	0.84	317	87	84	0.557	5	2.784	774.45	256	229	67
3	0.15	0.387	1055	777.30	0.28	317	86	85	0.321	3	1.607	777.23	256	230	68
		(1.765)	1100	778.94	(2.06)	(948)	(515)					778.84			
				(9.42)											
		5.426		22.49	6.47	2911	1538								
		9.2171		38.11	11.14	5248	24.78								
		(14.643)			17.61	8159	4016								
		0.610		60.60	0.734	339.96	83.67								
						799.96	543.67								

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METHOD 3 - FIELD DATA SHEET
INTEGRATED SAMPLES - GAS ANALYSIS

Project: PLATTE RIVER POWER AUTHORITY Date: 24 Aug 99
Sampling Location: INLET RAWHIDE GEN. STATION
Source Condition: NORMAL LOAD Monitor Model No:
Fuel Type: COAL Serial No: E-35
Module No: PUMP #1 Rate Meter Units: LPM Orsat No. 3008-008 Bag Type: TEDLAR

Test (Run) No. #1

SAMPLING

Port-Point No.	Clock Time 24hr	Flow Rate
1-1	1040	0.5
2	1050	0.5
2-1	1058	0.5
2	1108	0.5
3-1	1115	0.5
2	1125	0.5
4-1	1132	0.5
2	1142	0.5
5-1	1149	0.5
2	1159	0.5
6-1	1206	0.5
2	1216	0.5
7-1	1223	0.5
2	1233	0.5
8-1	1241	0.5
2	1251	0.5

ANALYSIS

% By Volume (dry basis)

Total	CO_2	O_2	CO
19.2	13.8	5.4	
18.8	13.8	5.0	
18.8	13.8	5.0	
Avg.	13.8	5.13	

Pre-Run Leak Check:
Train: OK @ 12" MERC.
Bag: OK @ 12" MERC
Pipettes: OK at 4 min.
Burette: OK at 4 min.

Post-Run Leak Check:
Train: okay @ 10" Hg
Bag: —
Pipettes: ✓ @ 4 min
Burette: ✓ @ 4 min

VALIDATION

Fuel Factor (F_o)		Percent Difference
Orsat	Fuel	

Test (Run) No. #2

SAMPLING

Port-Point No.	Clock Time 24hr	Flow Rate
8-1	1417	
2	1427	
7-1	1435	
2	1445	
6-1	1452	
2	1502	
5-1	1517	
2	1527	
4-1	1534	
2	1544	
3-1	1552	
2	1602	
2-1	1610	
2	1620	
1-1	1627	
2	1637	

ANALYSIS

% By Volume (dry basis)

Total	CO_2	O_2	CO
19.0	14.8	4.2	
19.2	14.8	4.4	
18.6	14.6	4.0	
Avg.	14.73	4.2	

Pre-Run Leak Check:
Train: ok @ 12" Hg
Bag: ok @ 10" Hg
Pipettes: ✓ @ 4 min
Burette: ✓ @ 4 min

Post-Run Leak Check:
Train: okay @ 10" Hg
Bag: —
Pipettes: ✓ @ 4 min
Burette: ✓ @ 4 min

VALIDATION

Fuel Factor (F_o)		Percent Difference
Orsat	Fuel	

Comments: Operator: J.C.D.

$$F12_o(\text{Orsat}) = \frac{20.9 - (\%O_2 - 0.5\ \%CO)}{\%CO_2 + \%CO}$$

$$F_o(\text{Fuel}) = \frac{0.209 F_d}{F_c} = \frac{0.651\,(1.53\ \%C + 3.64\ \%H + 0.57\ \%S + 0.14\ \%S + 0.14\ \%N - 0.46\ \%O)}{\%C}$$

$$\%\ \text{Difference} = \frac{F_o\ (\text{Orsat}) - F_o\ (\text{Fuel})}{F_o\ (\text{Fuel})} \times 100$$

Form 1022 [Rev. 5/97]

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METHOD 3 - FIELD DATA SHEET
INTEGRATED SAMPLES - GAS ANALYSIS

Project: PLATTE RIVER POWER AUTHORITY Date: 25 Aug 99
Sampling Location: INLET - RAWHIDE GEN. STATION
Source Condition: NORMAL Monitor Model No: E-35
Fuel Type: COAL Serial No:
Module No: #1 Pump Rate Meter Units: LPM Orsat No. 3008-008 Bag Type: TEDLAR

Test (Run) No. #3

SAMPLING

Port-Point No.	Clock Time 24hr	Flow Rate
1-1	845	0.5
2	855	0.5
2-1	902	0.5
2	912	0.5
3-1	919	0.5
2	929	0.5
4-1	936	0.5
2	946	0.5
5-1	954	
2	1004	
6-1	1011	
2	1021	
7-1	1028	
2	1038	
8-1	1045	
2	1055	

ANALYSIS

% By Volume (dry basis)

Total	CO_2	O_2	CO
19.0	13.6	5.4	
19.0	13.4	5.6	
19.0	13.8	5.2	
Avg.	13.6	5.6	

Pre-Run Leak Check:
Train: ✓ @ 10" Hg
Bag: ✓ @ 8" Hg
Pipettes: ✓ @ 4 min
Burette: ✓ @ 4 min

Post-Run Leak Check:
Train: ✓ @ 11" Hg
Bag: —
Pipettes: ✓ @ 4 min
Burette: ✓ @ 4 min

VALIDATION

Fuel Factor (F_o)		Percent Difference
Orsat	Fuel	

Test (Run) No. _____

SAMPLING

Port-Point No.	Clock Time 24hr	Flow Rate

ANALYSIS

% By Volume (dry basis)

Total	CO_2	O_2	CO
Avg.			

Pre-Run Leak Check:
Train:
Bag:
Pipettes:
Burette:

Post-Run Leak Check:
Train:
Bag:
Pipettes:
Burette:

VALIDATION

Fuel Factor (F_o)		Percent Difference
Orsat	Fuel	

Comments:

Operator: JCD

$$F12_o(\text{Orsat}) = \frac{20.9 - (\%O_2 - 0.5\ \%CO)}{\%CO_2 + \%CO}$$

$$F_o(\text{Fuel}) = \frac{0.209 F_d}{F_c} = \frac{0.651\,(1.53\ \%C + 3.64\ \%H + 0.57\ \%S + 0.14\ \%S + 0.14\ \%N - 0.46\ \%O)}{\%C}$$

$$\%\ \text{Difference} = \frac{F_o\ (\text{Orsat}) - F_o\ (\text{Fuel})}{F_o\ (\text{Fuel})} \times 100$$

Form 1022 [Rev. 5/97]

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PITOT TRAVERSE DATA

2.76' From Ø Average

Max 15° from

Project: Platte River Power Authority - Rawhide Station

Location: Inlet

Date: 8-23-99 Test No: Preliminary cyclonic flow check Time: 1740-

Point No.	ΔP	√ΔP	t_s	α from Ø	Point No.	ΔP	√ΔP	t_s	α
A 8-1	0.35		316	+10	3-1	0.78		345	0
2	0.37		312	+10	2	0.56		330	+4
3	0.10		285	+15	3	0.13		290	0
		1.5161	913				1.9455		
7-1	0.36		316	0	2-1	0.44		342	0
2	0.28		296	0	2	0.30		325	0
3	0.25		288	+12	3	0.13		300	-2
		1.100		900			1.5716		
6-1	0.68		320	+6	1-1	0.48		349	-5
2	0.53		294	0	2	0.40		332	-4
3	0.15		286	+4	3	0.15		302	0
		1.940					1.7126		
5-1	0.53		328	-5	2.76		11.4218	6573	
2	0.35		325	0			0.5439	313	773
3	0.10		292	+5					
		1.636			Vks =	74.598			
					Tm	75°F	535°R		
4 -									
					1.878	= H			
					1.001	= Y			
					DN =	0.252	=	60 ft³	

P_{bar} 24.50 "Hg Static -12.74 "H_2O P_g -0.9 "Hg P_s 23.60 "Hg Pitot ID ____ C_p .83 Temp. ID E35

0.44 × 15 %CO_2 = 6.6 √ΔP 0.5439 t_s 313 °F T 773 °R Flue Area 376.67 ft²

0.32 × 3 %O_2 = + 0.96 Duct Dimensions ____

0.28 × 82 %N_2 = + 22.96 B_{ws} .12 1 - B_{ws} .88 Disturbance: Upstream ____

(30.52 Md × .88 1-B_{ws}) + (18 × .12 B_{ws}) = 29.02 (Ms) Downstream ____

$$v_s = 85.49 \times ___ Cp \times \sqrt{\frac{(___)Ts\,°R}{Ms \times Ps}} \times ___ \sqrt{\Delta P} = ___ \text{ ft/sec (Vs)}$$

Q_{acfm} = 40.575 Vs × ____ Flue Area × 60 = 917012 acfm Port Length 21 Inches

$$Q_{dscfm} = 17.647 \times ACFM \times \frac{Ps}{Ts\,°R} = 504526 \text{ SCFM}$$

$$Q_{dscfm} = 17.647 \times ACFM \times \frac{Ps}{Ts\,°R} \times (1\text{-}Bws) = 448019 \text{ DSCFM}$$

Pre-test leak check 3 "H_2O

Post-test leak check 3.2 "H_2O

Data Taken By: JCD, NS

Field Engineer / Test Technician

120 × .5439 × K = 60

K = .919

24.1

Form 1012 [Rev. 5/97]

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MOSTARDI-PLATT ASSOCIATES, INC.
TEST SUPPORT DATA

93405

TEST RUN NO. 1

COMPANY: Platte River Power Authority
PLANT: Rawhide Station
TEST LOCATION: Stack
CLIENT: EPRI
OPERATOR: PC
DATE: 8/24/99
CONTROL BOX: E-21 POT. NO.: E-21
METER NO.: E-21
METER CALIBRATION FACTOR: 1.008
PITOT ID NO.: 437A
PITOT TUBE COEFFICIENT: 0.829
PORT LENGTH: 17 in.
PORT SIZE: 6 in.
PORT TYPE: Flange

IMPINGER ~~H_2O~~ SILICA GEL:
FINAL: 4697.6 ml/gm FINAL WT: 706.6 gm
INITIAL: 4573.3 ml/gm INITIAL WT: 695.6 gm
GAIN: 124.3 ml/gm WT. GAIN: 11.0 gm
TOTAL H_2O COLLECTED: 135.3
DESCRIPTION OF IMPINGER H_2O:
SILICA GEL EXHAUSTED?:
IMPINGERS RECOVERED BY:
SILICA GEL WEIGHED BY:

COMMENTS & NOTES

6.379

Bws ~ 12.8%

THIMBLE NO: — TARE WT: —
FILTER NO: 786 TARE WT: 0.6496
BAROMETRIC PRESSURE in. Hg: 24.295
FLUE PRESSURE in. H_2O: -0.50
FLUE PRESSURE in. Hg ABS: 24.258
PROBE LENGTH: 9 ft.
PROBE LINER MATERIAL: Glass
NOZZLE IDENTIFICATION NO: Set A #6
CALIBRATED NOZZLE DIAMETER: 0.180
LEAK CHECK: PRE: 0.015 POST: 0.015 @ 10/10 in. Hg
DUCT SHAPE: Circular DIAMETER: 20'
DUCT AREA: 314.16 sq. ft. L — W —
DISTURBANCE UPSTREAM: 12.5d DOWNSTREAM: 9.7d
TEST LENGTH: 120 min
MINUTES PER POINT: 10
TOTAL NUMBER OF TRAVERSE POINTS: 12
GAS ANALYSIS (ORSAT/FYRITE):
CO_2: 13.0 / 13.0 / 13.0 13.0
O_2: 6.0 / 6.0 / 6.1 6.0

PITOT LEAK CHECK: PRE 0/3" POST 0/3"
ΔH@
SAMPLES REMOVED FROM SITE BY:

For computer data entry: Supervisor, please complete.
Do you want to enter a fuel analysis? Y ☐ N ☐
What value do you want to use? F = 9,780 F_c = 1,800 Other = _____
Circle to indicate "Yes" or add other value if not given.

Form 1053 [Rev. 6/97]

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MOSTARDI-PLATT ASSOCIATES, INC.
TEST SUPPORT DATA

TEST RUN NO. 2

COMPANY: PLATT RIVER POWER AUTH.
PLANT: Rawhide Station
TEST LOCATION: STACK
CLIENT:
OPERATOR: PC
DATE: 8/24/99
CONTROL BOX: E-21 POT. NO.: E-21
METER NO.: E-21
METER CALIBRATION FACTOR: 1.008
PITOT ID NO.: 437A
PITOT TUBE COEFFICIENT: 0.829
PORT LENGTH: 17 in.
PORT SIZE: 6 in.
PORT TYPE: Flange

IMPINGER H_2O:
FINAL: 5073.6 ml/gm
INITIAL: 4906 ml/gm
GAIN: 167.6 ml/gm

SILICA GEL:
FINAL WT: 732.0 gm
INITIAL WT: 718.5 gm
WT. GAIN: 13.5 gm

TOTAL H_2O COLLECTED: 181.1
DESCRIPTION OF IMPINGER H_2O:
SILICA GEL EXHAUSTED?:
IMPINGERS RECOVERED BY:
SILICA GEL WEIGHED BY:

COMMENTS & NOTES

Vmstd = 43.962
Pbar = 24.3

THIMBLE NO: — TARE WT: —
FILTER NO: 776 TARE WT: 0.6408
BAROMETRIC PRESSURE in. Hg: 24.295
FLUE PRESSURE in. H_2O: -0.50
FLUE PRESSURE in. Hg ABS: 24.258
PROBE LENGTH: 9 ft.
PROBE LINER MATERIAL: GLASS
NOZZLE IDENTIFICATION NO: SET A #6
CALIBRATED NOZZLE DIAMETER: 0.180
LEAK CHECK: PRE: 0.014 POST: 0.014 @ 10/10 in. Hg
DUCT SHAPE: Circ. DIAMETER: 20'
DUCT AREA: 314.16 sq. ft. L — W —
DISTURBANCE UPSTREAM: 12.5d DOWNSTREAM: 9.7d
TEST LENGTH: 120 min
MINUTES PER POINT: 10
TOTAL NUMBER OF TRAVERSE POINTS: 12
GAS ANALYSIS (ORSAT/FYRITE):
CO_2: 13.4 / 13.5 / 13.5 (13.5)
O_2: 5.6 / 5.5 / 5.5 (5.5)

PITOT LEAK CHECK: PRE 0/3" POST 0/3
ΔH@
SAMPLES REMOVED FROM SITE BY:

For computer data entry: Supervisor, please complete.
Do you want to enter a fuel analysis? Y ☐ N ☐
What value do you want to use? F = 9,780 F_c = 1,800 Other = _____
Circle to indicate "Yes" or add other value if not given.

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FIELD TEST DATA SHEET
FOR ISOKINETIC SAMPLING

MOSTARDI-PLATT ASSOCIATES, INC.

PROJECT PRPA

TEST RUN NO. 2

TEST LOCATION STACK

DATE 8/24/99 PAGE 1 OF 1

.748 ΔP .530 ΔH

	Port-Point No.	Velocity Head (P) in. H_2O	$\sqrt{P}$	Clock Time 24 hr.	Meter Volume (Vm) ft^3	Orifice (H) in. H_2O	Stack Temp (t) °F	Meter Temp. (t_m) Inlet °F	Meter Temp. (t_m) Outlet °F	Meter Rate cfm	Pump Vacuum in. Hg	Notes	Probe Temp. °F	Filter Holder Temp. °F	Impinger Outlet Temp. °F
S	1-1	0.82	.906	1410	19.258	0.61	220	100	100	.480	6		255	255	65
	-1	0.82	.906	1415	21.7	0.61	220	100	100	—	6	21.66	255	252	65
	-2	0.81	.900	1420	24.0	0.60	220	99	99	.477	6	24.06	257	254	65
	-2	0.81	.900	1425	26.3	0.60	220	100	99	—	6	26.44	257	254	65
	-3	0.70	.837	1430	28.7	0.52	219	100	99	.443	5	28.83	257	254	65
	-3	0.70	.837	1435	31.0	0.52	219	100	99	—	5	31.0	256	255	65
			0.881	1440	33.303	0.58	219.7		99.6			33.26			
E	2-1	0.82	.906	1447	33.303	0.61	220	100	99	.480	6		257	254	65
	-1	0.82	.906	1452	35.6	0.61	220	100	99	—	6	35.66	257	254	66
	-2	0.81	.900	1457	38.1	0.60	220	100	99	.477	6	38.06	256	256	66
	-2	0.81	.900	1502	40.4	0.60	220	100	99	—	6	40.44	256	256	66
	-3	0.71	.843	1507	42.9	0.53	220	100	99	.452	5	42.83	256	256	66
	-3	0.71	.843	1512	45.1	0.53	220	100	99	—	5	45.09	256	256	66
			.883	1517	47.359	0.58	220		99.5			47.35			
N	3-1	0.84	.917	1527	47.359	0.63	222	100	99	.491	6		257	256	66
	-1	0.84	.917	1532	49.8	0.63	222	100	99	—	6	49.81	256	256	66
	-2	0.83	.911	1537	52.3	0.62	222	100	99	.488	6	52.26	256	256	66
	-2	0.83	.911	1542	54.7	0.62	222	101	100	—	6	54.7	257	255	67
	-3	0.73	.854	1547	57.1	0.55	221	103	102	.458	5	57.14	256	255	67
	-3	0.73	.854	1552	59.4	0.55	221	103	102	—	5	59.43	256	255	67
			.894	1557	61.735	0.60	221.7		100.7			61.72			
	4-1	0.85	.922	1604	61.735	0.64	223	101	100	.494	6		256	255	67
	-1	0.85	.922	1609	64.2	0.64	223	101	100	—	6	64.19	257	255	67
	-2	0.83	.911	1614	66.7	0.62	222	101	100	.488	6	66.66	256	255	67
	-2	0.83	.911	1619	69.2	0.62	222	101	100	—	6	69.10	256	255	67
	-3	0.72	.849	1624	71.5	0.54	222	101	100	.455	5	71.54	256	255	67
	-3	0.72	.849	1629	73.8	0.54	222	101	100	—	5	73.82	256	255	67
			.894	1634	76.045	0.60	222.3		100.5			76.08			
			0.888		56.887	0.59	220.9		100.0						

Form 1026 [Rev. 5/27]

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MOSTARDI-PLATT ASSOCIATES, INC.
TEST SUPPORT DATA

TEST RUN NO. 3

COMPANY: PLATT RIVER POWER AUTHORITY
PLANT: RAWHIDE STATION
TEST LOCATION: STACK
CLIENT:
OPERATOR: PC
DATE: 8/25/99
CONTROL BOX: E-21 POT. NO.: E-21
METER NO.: E-21
METER CALIBRATION FACTOR: 1.008
PITOT ID NO.: 437A
PITOT TUBE COEFFICIENT: 0.829
PORT LENGTH: 17 in.
PORT SIZE: 6 in.
PORT TYPE: Flge

IMPINGER H_2O / SILICA GEL:
FINAL: 4900.5 ml/gm FINAL WT: 798.8 gm
INITIAL: 4733.3 ml/gm INITIAL WT: 787 gm
GAIN: 167.2 ml/gm WT. GAIN: 11.8 gm
TOTAL H_2O COLLECTED: 179.0
DESCRIPTION OF IMPINGER H_2O:
SILICA GEL EXHAUSTED?:
IMPINGERS RECOVERED BY:
SILICA GEL WEIGHED BY:

THIMBLE NO: — TARE WT: —
FILTER NO: TARE WT:
BAROMETRIC PRESSURE in. Hg: 24.595
FLUE PRESSURE in. H_2O: −0.50
FLUE PRESSURE in. Hg ABS: 24.56
PROBE LENGTH: 9 ft.
PROBE LINER MATERIAL: GLASS
NOZZLE IDENTIFICATION NO: SET A #6
CALIBRATED NOZZLE DIAMETER: 0.180
LEAK CHECK: PRE: 0.015 POST: 0.014 @ 10/10 in. Hg
DUCT SHAPE: Circ. DIAMETER: 20'
DUCT AREA: 314.16 sq. ft. L — W —
DISTURBANCE UPSTREAM: 12.5d DOWNSTREAM: 9.7d
TEST LENGTH: 120 min
MINUTES PER POINT: 10
TOTAL NUMBER OF TRAVERSE POINTS: 12
GAS ANALYSIS (ORSAT/FYRITE):
CO_2: 13
O_2: 6

PITOT LEAK CHECK: PRE 0/3" POST 0/3"
ΔH@
SAMPLES REMOVED FROM SITE BY:

COMMENTS & NOTES

V_{mstd} ~ 43,630

For computer data entry: Supervisor, please complete.
Do you want to enter a fuel analysis? Y ☐ N ☐
What value do you want to use? F = 9,780 F_c = 1,800 Other = _____
Circle to indicate "Yes" or add other value if not given.

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143
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FIELD TEST DATA SHEET FOR ISOKINETIC SAMPLING

MOSTARDI-PLATT ASSOCIATES, INC.

PROJECT PRPA

TEST RUN NO. 3

TEST LOCATION STACK

DATE 8/25/99 PAGE 1 OF 1

.720 ΔP .523 ΔP

Port-Point No.	Velocity Head (P) in. H_2O	$\sqrt{P}$	Clock Time 24 hr.	Meter Volume (Vm) ft^3	Orifice (H) in. H_2O	Stack Temp (t_s) °F	Meter Temp. (t_m) Inlet °F	Meter Temp. (t_m) Outlet °F	Meter Rate cfm	Pump Vacuum in. Hg	Notes	Probe Temp. °F	Filter Holder Temp. °F	Impinger Outlet Temp. °F
1-1	0.83	.911	0845	76.303	0.60	215	100	99	.476	4		256	255	65
-1	0.83	.911	850	78.7	0.60	215	102	99	—	4	78.68	257	256	65
-2	0.82	.906	855	81.1	0.59	215	103	100	.473	4	81.07	255	259	65
-2	0.82	.906	900	83.5	0.59	215	103	100	—	4	83.44	256	255	65
-3	0.72	.849	905	85.9	0.52	215	102	100	.444	3	85.81	256	254	65
-3	0.72	.849	910	88.1	0.52	215	102	100	—	3	88.03	255	253	66
		.887	915	90.255	0.57	215		100.7			90.25			
2-1	0.83	.911	920	90.255	0.60	218	102	100	.476	4		255	254	66
-1	0.83	.911	925	92.7	0.60	218	102	100	—	4	92.63	256	253	66
-2	0.81	.900	930	95.1	0.58	218	102	100	.471	4	95.01	257	254	66
-2	0.81	.900	935	97.4	0.58	219	102	100	—	4	97.37	256	254	66
-3	0.71	.843	940	99.8	0.51	219	102	100	.441	2	99.72	257	253	66
-3	0.71	.843	945	101.8	0.51	219	102	100	—	2	101.93	256	254	66
		.885	950	104.235	0.56	218.5		101			104.13			
3-1	0.85	.922	1000	104.235	0.61	219	102	100	.482	4		256	253	66
-1	0.85	.922	1005	106.5	0.61	219	102	100	—	4	106.54	257	252	66
-2	0.83	.911	1010	109.0	0.60	219	102	100	.476	4	108.95	256	253	66
-2	0.83	.911	1015	111.2	0.60	219	102	100	—	4	111.33	257	254	67
-3	0.72	.849	1020	113.6	0.52	219	102	100	.444	2	113.71	257	255	67
-3	0.72	.849	1025	116.0	0.52	219	102	100	—	2	115.93	256	256	67
		.894	1030	118.189	0.58	219		101			118.15			
4-1	0.84	.917	1035	118.189	0.60	219	102	100	.479	4		256	255	67
-1	0.84	.917	1040	120.5	0.60	219	102	100	—	4	120.55	256	255	67
-2	0.83	.911	1045	123.0	0.60	219	102	100	.476	4	122.94	257	256	67
-2	0.83	.911	1050	125.4	0.60	219	102	100	—	4	125.32	256	255	67
-3	0.72	.849	1055	127.7	0.52	219	102	100	.444	2	127.70	256	254	67
-3	0.72	.849	1100	130.0	0.52	219	102	100	—	2	129.92	256	254	67
		.892	1105	132.166	0.57	219		101			132.14			
		.890		55.863	0.57	217.9		100.9						

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Form 1026 [Rev. 5/27]

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METHOD 3 - FIELD DATA SHEET
INTEGRATED SAMPLES - GAS ANALYSIS

Project: PRPA
Date: 8/24/99
Sampling Location: Rawhide Station
Source Condition: Normal
Monitor Model No:
Fuel Type: COAL
Serial No:
Module No: Rate Meter Units: LPM Orsat No. 3008-008 Bag Type: TEDLAR

Test (Run) No. 1

SAMPLING

Port-Point No.	Clock Time 24hr	Flow Rate
1-1	1050	0.5
-1	1055	0.5
1-2	1100	0.5
-2	1105	0.5
-3	x	x
-3	x	x
2-1	1129	0.5
-1	1134	0.5
-2	1139	0.5
-2	1144	0.5
-3	x	x
-3	x	x
3-1	1208	0.5
-1	1213	0.5
-2	1218	0.5
-2	1223	0.5
-3	x	x
-3	x	x

ANALYSIS

% By Volume (dry basis)

Port Point # ~~Total~~	Time ~~CO_2~~	O_2	CO_2	Flow
4-1	1246	6.0	13.0	0.5
-1	1251	6.0	13.0	0.5
-2	1256	6.1	13.0	0.5
-2	1301			0.5
Avg.	x			x
-3	x			x

Pre-Run Leak Check:
Train: 0.00 @ 15" Hg
Bag: 0.0 @ 12" Hg
Pipettes: 0.0 @ 4 min
Burette: 0.0 @ 4 min

Post-Run Leak Check:
Train: 0.00 @ 15" Hg
Bag: 0.0 @ 12" Hg
Pipettes: 0.0 @ 4 min
Burette: 0.0 @ 4 min

VALIDATION

Fuel Factor (F_o)		Percent Difference
Orsat	Fuel	

Test (Run) No. 2

SAMPLING

Port-Point No.	Clock Time 24hr	Flow Rate	Flow
1-1	1415	0.5	0.5
-1	1420	0.5	0.5
-2	1425	0.5	0.5
-2	1430	0.5	0.5
-3	x	x	x
-3	x	x	x
2-1	1452	0.5	
-1	1457	0.5	
-2	1502	0.5	
-2	1507	0.5	
-3	x	x	
-3	x	x	
3-1	1532	0.5	
-1	1537	0.5	
-2	1542	0.5	
-2	1547	0.5	
-3	x	x	
-3	x	x	

ANALYSIS

% By Volume (dry basis)

Port Pt. ~~Total~~	Time ~~O_2~~	~~CO_2~~	
4-1	1609	5.6	13.4
-1	1614	5.5	13.5
-2	1619	5.5	13.5
-2	1624		
Avg.	x	5.5	13.5
-3	x		

Pre-Run Leak Check:
Train: 0.00 @ 15" Hg
Bag: 0.0 @ 12" Hg
Pipettes: 0.0 @ 4 min
Burette: 0.0 @ 4 min

Post-Run Leak Check:
Train: 0.00 @ 15" Hg
Bag: 0.0 @ 12" Hg
Pipettes: 0.0 @ 4 min
Burette: 0.0 @ 4 min

VALIDATION

Fuel Factor (F_o)		Percent Difference
Orsat	Fuel	

Comments:

Operator: PC

$$F12_o(\text{Orsat}) = \frac{20.9 - (\%O_2 - 0.5\ \%CO)}{\%CO_2 + \%CO}$$

$$F_o(\text{Fuel}) = \frac{0.209 F_d}{F_c} = \frac{0.651\,(1.53\ \%C + 3.64\ \%H + 0.57\ \%S + 0.14\ \%S + 0.14\ \%N - 0.46\ \%O)}{\%C}$$

$$\%\ \text{Difference} = \frac{F_o\,(\text{Orsat}) - F_o\,(\text{Fuel})}{F_o\,(\text{Fuel})} \times 100$$

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METHOD 3 - FIELD DATA SHEET
INTEGRATED SAMPLES - GAS ANALYSIS

Project: PRPA
Date: 8/24/99
Sampling Location: STACK
Source Condition: NORMAL
Monitor Model No:
Fuel Type: FUEL
Serial No:
Module No: P1 Rate Meter Units: LPM Orsat No. 3008-008 Bag Type: TEDLAR

Test (Run) No. 3

SAMPLING

Port-Point No.	Clock Time 24hr	Flow Rate
1-1	850	0.5
-1	855	0.5
-2	900	0.5
-2	905	0.5
-3	x	x
-3	x	x
2-1	925	0.5
-1	930	0.5
-2	935	0.5
-2	940	0.5
-3	x	x
-3	x	x
3-1	1005	0.5
-1	1010	0.5
-2	1015	0.5
-2	1020	0.5
-3	x	x
-3	x	x

ANALYSIS

% By Volume (dry basis)

Port Point ~~Total~~	Time ~~CO_2~~	O_2	CO_2	Flow
4-1	1040			0.5
-1	1045			0.5
-2	1050			0.5
-2	1055			0.5
Avg3	x			x
-3	x			x

Pre-Run Leak Check:
Train: 0.00 @ 15"Hg
Bag: 0.0 @ 15"Hg
Pipettes: ND @ 4 min
Burette: ND @ 4 min

Post-Run Leak Check:
Train: 0.00 @ 15"Hg
Bag: 0.0 @ 15"Hg
Pipettes: ND @ 4 min
Burette: ND @ 4 min

VALIDATION

Fuel Factor (F_o)		Percent Difference
Orsat	Fuel	

Test (Run) No.

SAMPLING

Port-Point No.	Clock Time 24hr	Flow Rate

ANALYSIS

% By Volume (dry basis)

Total	CO_2	O_2	CO
Avg.			

Pre-Run Leak Check:
Train:
Bag:
Pipettes:
Burette:

Post-Run Leak Check:
Train:
Bag:
Pipettes:
Burette:

VALIDATION

Fuel Factor (F_o)		Percent Difference
Orsat	Fuel	

Comments:

Operator: PC

$$F12_o(\text{Orsat}) = \frac{20.9 - (\%O_2 - 0.5\ \%CO)}{\%CO_2 + \%CO}$$

$$F_o(\text{Fuel}) = \frac{0.209\,F_d}{F_c} = \frac{0.651\,(1.53\ \%C - 3.64\ \%H + 0.57\ \%S + 0.14\ \%S + 0.14\ \%N - 0.46\ \%O)}{\%C}$$

$$\%\ \text{Difference} = \frac{F_o\ (\text{Orsat}) - F_o\ (\text{Fuel})}{F_o\ (\text{Fuel})} \times 100$$

Form 1022 [Rev. 5/97]

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PITOT TRAVERSE DATA

Project: RAW HIDE STATION

Location: STACK

Date: 8/23/99 Test No: NULL PT. Time: 1648

Point No.	ΔP	√ΔP	t_s	α	Point No.	ΔP	√ΔP	t_s	α
1/1	0.88		221	5					
2	0.87		222	9					
3	0.73		221	6					
2/1	0.86		221	9					
2	0.87		222	10					
3	0.77		222	9					
3/1	0.89		222	7					
2	0.84		221	9					
3	0.73		222	7					
4/1	0.83		222	7					
2	0.83		222	9					
3	0.70		222	9					
		.905	221.7						

P_{bar} 24.31 "Hg Static -0.50 H_2O P_g _____ "Hg P_s _____ "Hg Pitot ID 137A C_p 0.829 Temp. ID E-21

0.44 × 14.5 %CO_2 = _____ √ΔP _____ t_s _____ °F T _____ °R Flue Area 314.16 ft²

0.32 × 4.5 %O_2 = + _____ Duct Dimensions 20 × 20

0.28 × 80. %N_2 = + _____ B_{ws} .12 1 - B_{ws} .88 Disturbance: Upstream 12.8d

(_____ Md × _____ 1-B_{ws}) + (18 × _____ B_{ws}) = _____ (Ms) Downstream 9.7d

$$v_s = 85.49 \times .829\,Cp \times \sqrt{\frac{(681.7)\,Ts\,°R}{28.79\,Ms \times 24.27\,Ps}} \times .903\sqrt{\Delta P} = 63.997 \text{ ft/sec (Vs)}$$

Q_{acfm} = _____ Vs × _____ Flue Area × 60 = 1,206,312 acfm Port Length 17 Inches

$$Q_{dscfm} = 17.647 \times ACFM \times \frac{Ps}{Ts\,°R} = 757,842 \text{ SCFM}$$

$$Q_{dscfm} = 17.647 \times ACFM \times \frac{Ps}{Ts\,°R} \times (1\text{-}Bws) = 666,945 \text{ DSCFM}$$

Pre-test leak check 0/3 "H_2O

Post-test leak check 0/3 "H_2O

Data Taken By: PC, C

Field Engineer / Test Technician

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FIELD TEST DATA SHEET
FOR ISOKINETIC SAMPLING

MOSTARDI-PLATT ASSOCIATES, INC.

PROJECT Platte River Power Authority

TEST RUN NO. 1

TEST LOCATION stack

DATE 8/24/99 PAGE 1 OF 1

.7394D .530/10P

Port-Point No.	Velocity Head (P) in. H_2O	$\sqrt{P}$	Clock Time 24 hr.	Meter Volume (Vm) ft^3	Orifice (H) in. H_2O	Stack Temp (ts) °F	Meter Temp. (t_m) Inlet °F	Meter Temp. (t_m) Outlet °F	Meter Rate cfm	Pump Vacuum in. Hg	Notes	Probe Temp. °F	Filter Holder Temp. °F	Impinger Outlet Temp. °F
255 W 1-1	0.84	.917	1045	62.113	0.62	218	96	95	.486	4		250	250	60
1-	0.84	.917	1050	64.6	0.62	218	97	95	—	4	64.5	251	252	61
1-2	0.83	.911	1055	67.0	0.61	219	97	96	.483	4	66.97	252	255	62
-2	0.83	.911	1100	69.5	0.61	219	97	96	—	4	69.4	252	254	63
1-3	0.70	.837	1105	71.9	0.52	49	98	96	.443	2	71.80	254	257	64
-3	0.70	.837	1110	74.0	0.52	219	99	96	—	2	74.0	253	256	64
		0.888	1115	76.251	0.58	218.7		96.5			76.23			
N 2-1	0.83	.911	1124	76.251	0.61	219	99	96	.483	4		253	258	64
-1	0.83	.911	1129	78.8	0.61	219	101	98	—	4	78.645	253	256	64
100 -2	0.82	.906	1134	81.1	0.60	219	101	99	.480	4	81.06	253	256	64
-2	0.82	.906	1139	83.5	0.60	219	101	99	—	4	83.46	254	257	64
2-3	0.71	.843	1144	86.0	0.52	219	102	99	.447	2	85.86	253	258	65
-3	0.71	.843	1149	88.2	0.52	219	102	99	—	2	88.10	253	258	65
		0.887	1154	90.335	0.58	219		99.7			90.33			
E 3-1	0.84	.917	1203	90.335	0.62	219	103	100	.486	4		253	256	66
-1	0.84	.917	1208	92.7	0.62	219	103	100	—	4	92.76	253	256	66
-2	0.80	.894	1213	95.2	0.59	219	103	100	.474	4	95.19	253	257	66
-2	0.80	.894	1218	97.6	0.59	219	103	100	—	4	97.56	253	257	66
-3	0.70	.837	1223	99.9	0.52	219	103	100	.443	2	99.93	253	257	66
-3	0.70	.837	1228	102.2	0.52	219	103	100	—	2	102.1	252	256	66
		0.883	1233	104.375	0.58	219		101.5			104.36			
S 4-1	0.82	.906	1241	104.375	0.61	218	102	100	.480	4		253	256	66
1-1	0.82	.906	1246	106.8	0.61	219	103	100	—	4	106.76	253	256	66
-2	0.80	.894	1251	109.2	0.59	219	103	100	.474	4	109.16	253	256	66
-2	0.80	.894	1256	111.6	0.59	219	103	100	—	4	111.53	253	256	66
-3	0.70	.837	1301	114.0	0.52	219	103	100	.443	2	113.90	253	256	67
-3	0.70	.837	1306	116.2	0.52	219	103	100	—	2	116.12	253	256	67
		.879	1311	118.353	0.57	48.8		101.4			118.33			
		0.884		56.24	0.58	218.9		99.65			V_{mstd} = 43.488			

Form 1026 [Rev. 5/27]

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CALIBRATION PROCEDURES

PITOT TUBES

The pitot tubes used during this test program are fabricated according to the specification described and illustrated in the *Code of Federal Regulations*, Title 40, Part 60, Appendix A, Methods 1 through 5 as published in the *Federal Register*, Volume 42, No. 160; hereafter referred to by the appropriate method number. The pitot tubes comply with the alignment specifications in Method 2, Section 4; and the pitot tube assemblies are in compliance with specifications in the same section.

Pitot tube assemblies are calibrated in accordance with Method 2, Section 4, against a standard hemispherical pitot utilizing a wind tunnel meeting the specification in Method 2, Section 4.1.2.

NOZZLES

The nozzles are measured according to Method 5, Section 5.1.

TEMPERATURE SENSING DEVICES

The potentiometer and thermocouples are calibrated against a mercury thermometer in a calibration well. Alternatively, readings are checked utilizing a NBS traceable millivolt source.

DRY GAS METERS

The test meters are calibrated according to Method 5, Section 5.3 and "Procedures for Calibrating and Using Dry Gas Volume Meters as Calibration Standards" by P.R. Westlin and R.T. Shigehara, March 10, 1978.

ANALYTICAL BALANCE

The accuracy of the analytical balance is checked with Class S, Stainless Steel Type 303 weights manufactured by F. Hopken and Son, Jersey City, New Jersey.

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Pitot Tube Calibration Data

Calibration Pitot Tube: Type: HEMI STD Size (OD): 1/4" Pitot ID #: 16018

Type "S" Pitot Tube ID Number: 434 (1/4") Cp(std) = 0.99

Calibration Date: 12/4/1997 Performed By: M. McIntyre

P_{std}, (in.) H_2O		A-Side Calibration		
Set Value	Read Value	P_s, (in.) H_2O	$C_{p(S)}$ [a]	DEV. [b]
0.25	0.27	0.39	0.829	0.001
0.55	0.55	0.78	0.830	0.000
0.85	0.85	1.20	0.831	0.000
1.00	1.05	1.50	0.828	0.002
2.00	2.00	2.80	0.837	0.006
3.00	3.00	4.30	0.827	0.003
		Average	0.830	0.002

P_{std}, (in.) H_2O		B-Side Calibration		
Set Value	Read Value	P_s, (in.) H_2O	$C_{p(S)}$ [a]	DEV. [b]
0.25	0.26	0.37	0.830	0.001
0.55	0.55	0.78	0.830	0.001
0.85	0.85	1.20	0.831	0.001
1.00	1.05	1.50	0.828	0.003
2.00	2.00	2.80	0.837	0.005
3.00	3.00	4.25	0.832	0.000
		Average	0.831	0.002

$\overline{C_p}(A) - \overline{C_p}(B) =$ 0.001 ***(must be ≤ 0.01)***

[a] $C_{p(S)} = C_{p(std)}\sqrt{\frac{\Delta P_{std}}{\Delta P_s}}$

[b] $DEV = C_{p(S)} - \overline{C_p}$, (must be ≤ 0.01)

TYPE S PITOT TUBE INSPECTION DATA FORM

Pitot tube assembly level? __x__ yes _____ no

Pitot tube openings damaged? _____ yes (explain below) __x__ no

α_1 = 0.5 ° (<10°), α_2 = 1 ° (<10°) z = A sin γ = 0.027 (in.); (<0.125 in.)

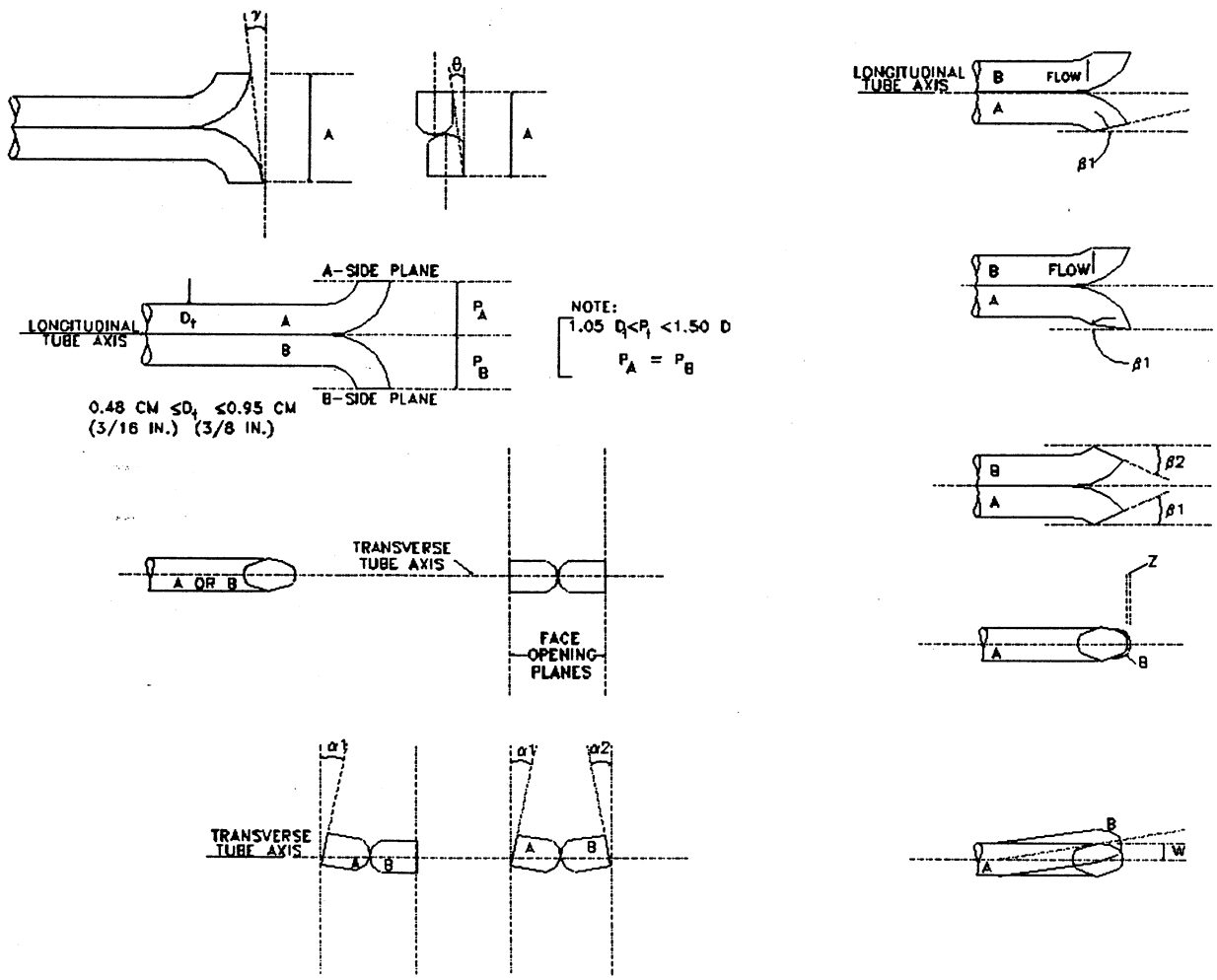
β_1 0 ° (<5°), β_2 = 4 ° (<5°) w = A sin θ = 0.007 (in.); (<0.03125 in.)

γ = 2 °, θ = 0.5 °, A = 0.768 (in.) P_A 0.38 (in.), P_B = 0.38 (in.), D_t = 0.213 (in.)

Comments: 11' 7" M5 probe

Calibration required? _____ yes __x__ no

Pitot Tube No.: 434 Date: 7/7/1999 Name: SCK



Pitot Tube Calibration Data

Calibration Pitot Tube: Type: HEMI STD Size (OD): 1/4" Pitot ID #: 16018

Type "S" Pitot Tube ID Number: 437 (1/4") Cp(std) = 0.99

Calibration Date: 12/4/1997 Performed By: M. McIntyre

P_{std}, (in.) H_2O		A-Side Calibration		
Set Value	Read Value	P_s, (in.) H_2O	$C_{p(S)}$ [a]	DEV. [b]
0.25	0.27	0.39	0.829	0.000
0.55	0.55	0.78	0.828	0.002
0.85	0.85	1.20	0.831	0.001
1.00	1.05	1.50	0.828	0.001
2.00	2.00	2.85	0.829	0.000
3.00	3.00	4.25	0.832	0.002
		Average	0.829	0.001

P_{std}, (in.) H_2O		B-Side Calibration		
Set Value	Read Value	P_s, (in.) H_2O	$C_{p(S)}$ [a]	DEV. [b]
0.25	0.26	0.37	0.830	0.001
0.55	0.55	0.78	0.830	0.001
0.85	0.85	1.20	0.831	0.002
1.00	1.05	1.50	0.828	0.001
2.00	2.00	2.85	0.829	0.000
3.00	3.00	4.30	0.827	0.002
		Average	0.829	0.001

$\overline{C_p}(A) - \overline{C_p}(B) =$ 0.000 ***(must be ≤ 0.01)***

[a] $C_{p(S)} = C_{p(std)}\sqrt{\frac{\Delta P_{std}}{\Delta P_s}}$

[b] $DEV = C_{p(S)} - \overline{C_p}$, (must be ≤ 0.01)

TYPE S PITOT TUBE INSPECTION DATA FORM

Pitot tube assembly level? x yes ____ no

Pitot tube openings damaged? ____ yes (explain below) x no

α_1 = 3 ° (<10°), α_2 = 0 ° (<10°) z = A sin γ = 0.045 (in.); (<0.125 in.)

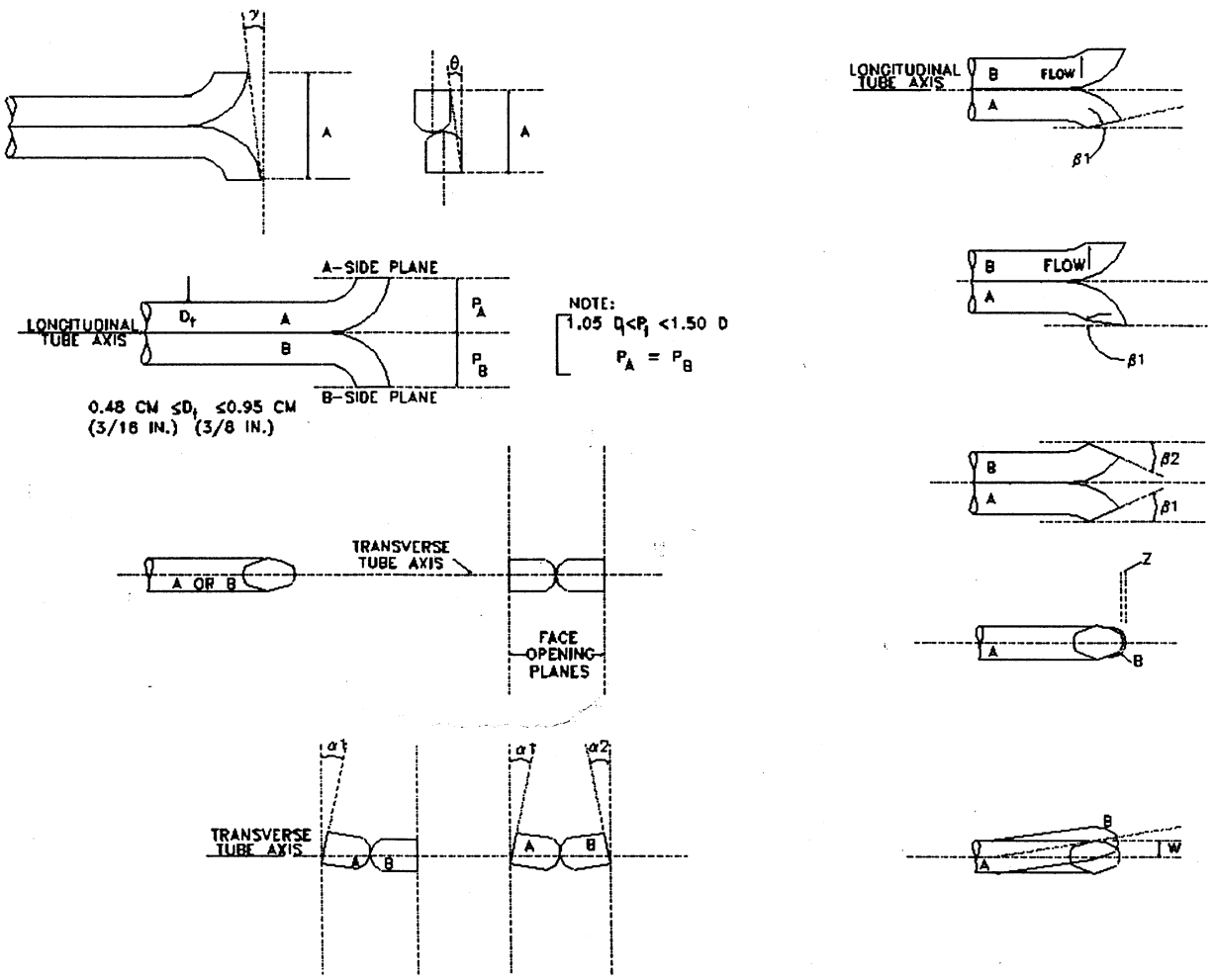
β_1 1.5 ° (<5°), β_2 = 2 ° (<5°) w = A sin θ = 0.006 (in.); (<0.03125 in.)

γ = 3.5 °, θ = 0.5 °, A = 0.736 (in.) P_A 0.37 (in.), P_B = 0.36 (in.), D_t = 0.157 (in.)

Comments: 6' 1" M5 probe

Calibration required? ____ yes x no

Pitot Tube No.: 437 Date: 07/27/1999 Name: SCK

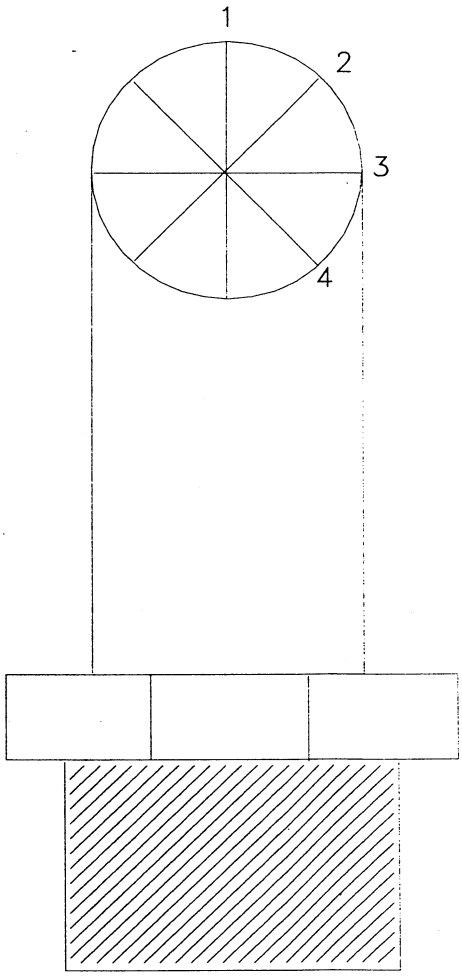


Nozzle Calibration

Date: 8/23/99

Nozzle ID No.: B8

Analyst: JCD



Pre Test		Post Test
0.239	1	√
0.240	2	√
0.240	3	√
0.240	4	√

Average
0.240

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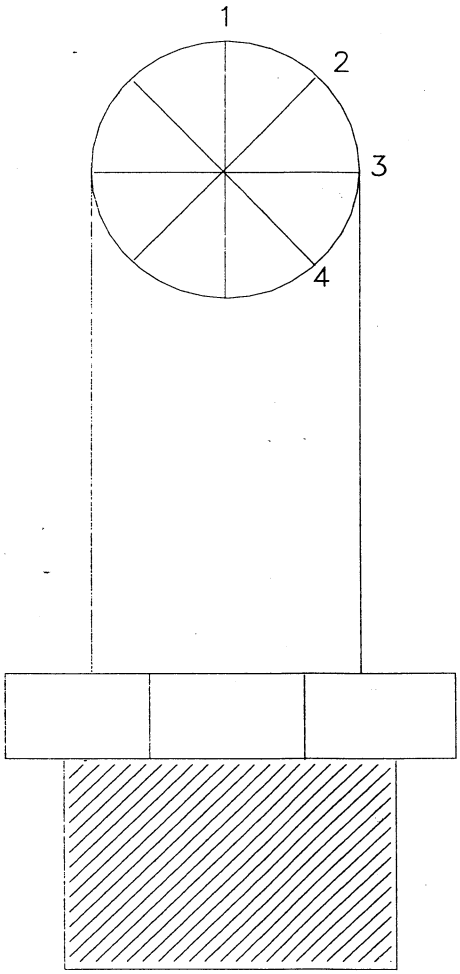
Nozzle Calibration

Date: 8/23/99

Nozzle ID No.: A6

Analyst: JCD



Pre Test		Post Test
0.180	1	√
0.181	2	√
0.180	3	√
0.179	4	√

Average
0.180

DWG-AN2 (indnozzl.xls)

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STACK TEMPERATURE SENSOR CALIBRATION DATA FORM
(FOR K-TYPE THERMOCOUPLES)

EPA Control Module Number: E35 Name: Sarah Kaufman

Ambient Temperature: 88 °F Date: 07-27-99

Model 1061; S/N: A20821 Reference Source (T/C Calibrator): Transmation, Inc.

Date of Calibration Verification: 10/18/94

Primary Standards Directly Traceable to
National Institute of Standards and Technology (NIST)

Reference[a] Source Temperature, (°F)	Test Thermometer Temperature, (°F)	Temperature Difference,[b] %
50	51	0.196
100	100	0.000
150	150	0.000
200	200	0.000
250	250	0.000
300	300	0.000
350	350	0.000
400	400	0.000
450	451	0.110
500	500	0.000
550	551	0.099
600	601	0.094
650	650	0.000
700	700	0.000
800	800	0.000
900	901	0.074
1000	1000	0.000
1100	1101	0.064
1200	1201	0.060

[a]Every (50°F) for each reference point.

$$\frac{(\text{Ref. Temp., °F} + 460) - (\text{Test Therm. Temp., °F} + 460)}{\text{Ref. Temp., °F} + 460} * 100 <= 1.5\ \%$$

STACK TEMPERATURE SENSOR CALIBRATION DATA FORM
(FOR K-TYPE THERMOCOUPLES)

EPA Control Module Number: E35 Name: Michael Sawyer

Ambient Temperatu 87 °F Date: 9/04/99

Model 1061; S/N: A20821 Reference Source (T/C Calibrator): Transmation, Inc.

Date of Calibration Verification: 10/18/94

Primary Standards Directly Traceable to
National Institute of Standards and Technology (NIST)

Reference[a] Source Temperature, (°F)	Test Thermometer Temperature, (°F)	Temperature Difference,[b] %
50	52	0.392
100	101	0.179
150	151	0.164
200	201	0.152
250	251	0.141
300	301	0.132
350	351	0.123
400	401	0.116
450	451	0.110
500	501	0.104
550	551	0.099
600	601	0.094
650	651	0.090
700	701	0.086
800	801	0.079
900	901	0.074
1000	1001	0.068
1100	1101	0.064
1200	1201	0.060

[a]Every (50°F) for each reference point.

$$\frac{(\text{Ref. Temp., °F} + 460) - (\text{Test Therm. Temp., °F} + 460)}{\text{Ref. Temp., °F} + 460} * 100 <= 1.5\ \%$$

STACK TEMPERATURE SENSOR CALIBRATION DATA FORM
(FOR K-TYPE THERMOCOUPLES)

EPA Control Module Number: 677191 Name: Sarah Kaufman

Ambient Temperature: 84 °F Date: 07-20-99

Model 1061; S/N: A20821 Reference Source (T/C Calibrator): Transmation, Inc.

Date of Calibration Verification: 10/18/94

Primary Standards Directly Traceable to
National Institute of Standards and Technology (NIST)

Reference[a] Source Temperature, (°F)	Test Thermometer Temperature, (°F)	Temperature Difference,[b] %
50	50	0.000
100	100	0.000
150	150	0.000
200	201	0.152
250	250	0.000
300	301	0.132
350	351	0.123
400	401	0.116
450	451	0.110
500	501	0.104
550	551	0.099
600	602	0.189
650	652	0.180
700	703	0.259
800	803	0.238
900	902	0.147
1000	1003	0.205
1100	1103	0.192
1200	1204	0.241

[a]Every (50°F) for each reference point.

$$\frac{(\text{Ref. Temp., °F} + 460) - (\text{Test Therm. Temp., °F} + 460)}{\text{Ref. Temp., °F} + 460} * 100 <= 1.5\ \%$$

STACK TEMPERATURE SENSOR CALIBRATION DATA FORM
(FOR K-TYPE THERMOCOUPLES)

EPA Control Module Number: E21 Name: Rich Russ

Ambient Temperatu 74 °F Date: 09-15-99

Model 1061; S/N: A20821 Reference Source (T/C Calibrator): Transmation, Inc.

Date of Calibration Verification: 10/18/94

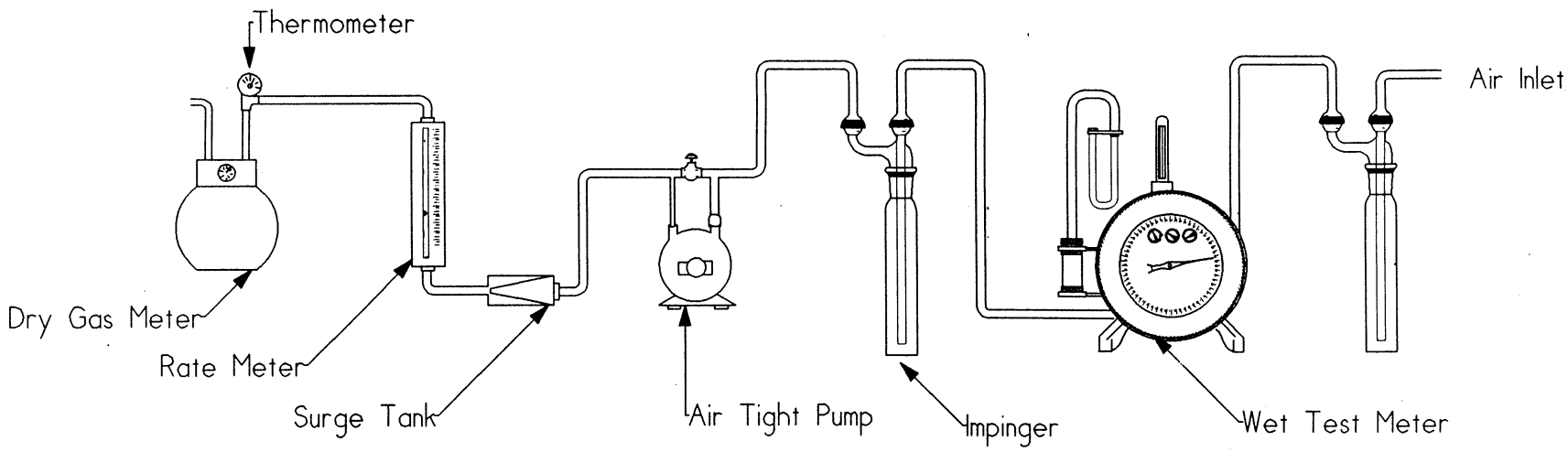
Primary Standards Directly Traceable to
National Institute of Standards and Technology (NIST)

Reference[a] Source Temperature, (°F)	Test Thermometer Temperature, (°F)	Temperature Difference,[b] %
50	50	0.000
100	100	0.000
150	150	0.000
200	200	0.000
250	250	0.000
300	300	0.000
350	350	0.000
400	400	0.000
450	450	0.000
500	500	0.000
550	550	0.000
600	600	0.000
650	650	0.000
700	700	0.000
800	800	0.000
900	900	0.000
1000	1000	0.000
1100	1100	0.000
1200	1200	0.000

[a]Every (50°F) for each reference point.

$$\frac{(\text{Ref. Temp., °F} + 460) - (\text{Test Therm. Temp., °F} + 460)}{\text{Ref. Temp., °F} + 460} * 100 <= 1.5\ \%$$

Gas Meter Calibration Train



Mostardi Platt

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DWG-AF

[Rev. 7/97]

METER BOX CALIBRATION

Dry Gas Meter No.	E35	Date:	07-27-99
Standard Meter No.	3623853	Calibrated By:	Sarah Kaufman
Standard Meter (Yr)	0.9943	Barometric Pressure :	29.29

Formula Protection Password: MPA

Run Number		Orifice Setting in H20 Chg (H)	Standard Meter Gas Volume Vr	Dry Meter Gas Volume Vd	Standard Meter Temp. F tr	Dry Gas Meter Inlet Temp. F tdi	Dry Gas Meter Outlet Temp. F tdo	Dry Gas Meter Avg. Temp. F td	Time Min.	Time Sec.	Y	Chg (H@)
Final			34.299	69.181	88	91	92					
Inital			28.936	63.809	88	91	90					
Difference	1	0.20	5.363	5.372	88	91	91	91	20	14	1.003	1.678
Final			39.699	74.629	89	92	92					
Inital			34.440	69.339	89	91	92					
Difference	2	0.50	5.259	5.290	89	91.5	92	91.75	13	1	0.998	1.810
Final			22.614	57.504	88	91	91					
Inital			16.544	51.396	88	90	89					
Difference	3	0.70	6.070	6.108	88	90.5	90	90.25	12	56	0.996	1.876
Final			45.019	79.949	89	93	92					
Inital			39.954	74.882	89	92	92					
Difference	4	0.90	5.065	5.067	89	92.5	92	92.25	9	34	1.003	1.895
Final			50.304	85.236	89	93	91					
Inital			45.206	80.155	89	92	92					
Difference	5	1.20	5.098	5.081	89	92.5	91.5	92	8	31	1.006	1.978
Final			28.595	63.471	88	92	91					
Inital			22.922	57.793	88	90	91					
Difference	6	2.00	5.673	5.678	88	91	91	91	7	27	1.000	2.033
									Average		1.001	1.878

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VOLUME METERING SYSTEM FIELD AUDIT

Date: 07-27-99 Name: Sarah Kaufman

EPA Control Module No.: E35 Ambient Temperature: 90 °F

Calibration (Y): 1.001 Barometric Pressure: 29.29 "Hg

Delta H: 1.878

#VALUE!

Run No.	Time (Minutes)	Gas Meter Reading/Gas Meter Temperature (Cubic Feet)	Inlet (°F)	Outlet (°F)	Yc (Calculated)
1	0	8.861	94	93	1.020
	10	16.474	95	92	
	Vm=	7.613	Avg.= 93.50	553.50	
2	0	16.474	94	92	1.018
	10	24.099	95	93	
	Vm=	7.625	Avg.= 93.50	553.50	
3	0	24.099	94	92	1.018
	10	31.724	95	92	
	Vm=	7.625	Avg.= 93.25	553.25	

$$Yc = \frac{10}{Vm}\sqrt{\frac{Pbar}{0.0319Tm}}$$

Limit: $0.97Y < Yc < 1.03Y$

Limit: $0.971 < Yc < 1.031$

$$\text{Calc. Delta H @} = \frac{0.0319\,(\text{Delta H})(Tm)(100)}{Pbar(Y^2)(Vm^2)}$$ (From Calibration Data) = 1.945

METER BOX CALIBRATION

Dry Gas Meter No.	E35	Date:	04-Sep-99
Standard Meter No.	3623851	Calibrated By:	Michael Sawyer
Standard Meter (Yr)	1.0063	Barometric Pressure :	29.34

POST TEST CALIBRATION

Run Number		Orifice Setting in H20 Chg (H)	Standard Meter Gas Volume Vr	Dry Meter Gas Volume Vd	Standard Meter Temp. F tr	Dry Gas Meter Inlet Temp. F tdi	Dry Gas Meter Outlet Temp. F tdo	Dry Gas Meter Avg. Temp. F td	Time Min.	Time Sec.	Y	Chg (H@)
Final			39.423	23.413	85	93	86					
Inital			31.715	15.626	85	93	86					
Difference	1	2.00	7.708	7.787	85	93	86	89.5	10	0	0.993	1.965
Final			47.126	31.192	85	94	86					
Inital			39.423	23.413	85	93	86					
Difference	2	2.00	7.703	7.779	85	93.5	86	89.75	10	0	0.994	1.966
Final			54.804	38.984	86	94	87					
Inital			47.126	31.192	85	94	86					
Difference	3	2.00	7.678	7.792	85.5	94	86.5	90.25	10	0	0.989	1.981
									Average		0.992	1.971

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METER BOX CALIBRATION

Dry Gas Meter No.	E21	Date:	07-20-99
Standard Meter No.	677191	Calibrated By:	Sarah Kaufman
Standard Meter (Yr)	0.9991	Barometric Pressure :	29.38

Formula Protection Password: MPA

Run Number		Orifice Setting in H20 Chg (H)	Standard Meter Gas Volume Vr	Dry Meter Gas Volume Vd	Standard Meter Temp. F tr	Dry Gas Meter Inlet Temp. F tdi	Dry Gas Meter Outlet Temp. F tdo	Dry Gas Meter Avg. Temp. F td	Time Min.	Time Sec.	Y	Chg (H@)
Final			81.527	22.968	82	84	83					
Inital			75.334	16.823	81	83	81					
Difference	1	0.20	6.193	6.145	81.5	83.5	82	82.75	24	13	1.010	1.782
Final			86.886	28.305	82	85	83					
Inital			81.832	23.285	82	84	82					
Difference	2	0.50	5.054	5.020	82	84.5	82.5	83.5	13	10	1.008	1.978
Final			55.938	97.659	85	89	87					
Inital			50.672	92.424	85	87	87					
Difference	3	0.70	5.266	5.235	85	88	87	87.5	10	55	1.009	1.760
Final			92.399	33.786	83	86	83					
Inital			87.181	28.591	82	85	83					
Difference	4	0.90	5.218	5.195	82.5	85.5	83	84.25	9	55	1.005	1.895
Final			97.811	39.189	83	86	84					
Inital			92.541	33.931	83	85	84					
Difference	5	1.20	5.270	5.258	83	85.5	84	84.75	8	45	1.002	1.931
Final			62.176	103.834	85	90	87					
Inital			56.069	97.796	85	88	86					
Difference	6	2.00	6.107	6.038	85	89	86.5	87.75	7	45	1.011	1.883
									Average		1.008	1.871

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VOLUME METERING SYSTEM FIELD AUDIT

Date: 07-20-99 Name: Sarah Kaufman

EPA Control Module No.: E21 Ambient Temperature: 82 °F

Calibration (Y): 1.008 Barometric Pressure: 29.33 "Hg

Delta H: 1.871

#VALUE!

Run No.	Time (Minutes)	Gas Meter Reading/Gas Meter Temperature (Cubic Feet)	Inlet (°F)	Outlet (°F)	Yc (Calculated)
1	0	39.424	85	84	1.038
	10	46.839	87	84	
	Vm=	7.415	Avg.= 85.00	545.00	
2	0	46.839	87	84	1.024
	10	54.362	88	85	
	Vm=	7.523	Avg.= 86.00	546.00	
3	0	54.362	87	84	1.018
	10	61.934	88	85	
	Vm=	7.572	Avg.= 86.00	546.00	

$$Yc = \frac{10}{Vm}\sqrt{\frac{Pbar}{0.0319Tm}}$$

Limit: 0.97Y <Yc< 1.03Y

Limit: 0.978 <Yc< 1.038

$$\text{Calc. Delta H @} = \frac{0.0319\,(\text{Delta H})(Tm)(100)}{Pbar(Y^2)(Vm^2)}$$ (From Calibration Data) = 1.941

METER BOX CALIBRATION

Dry Gas Meter No.	E21	Date:	09-15-99
Standard Meter No.	3623853	Calibrated By:	Rich Russ
Standard Meter (Yr)	0.9943	Barometric Pressure :	29.44

Formula Protection Password: MPA

Run Number		Orifice Setting in H20 Chg (H)	Standard Meter Gas Volume Vr	Dry Meter Gas Volume Vd	Standard Meter Temp. F tr	Dry Gas Meter Inlet Temp. F tdi	Dry Gas Meter Outlet Temp. F tdo	Dry Gas Meter Avg. Temp. F td	Time Min.	Time Sec.	Y	Chg (H@)
Final			56.307	51.550	73	78	77					
Inital			51.444	46.646	73	77	75					
Difference	1	0.20	4.863	4.904	73	77.5	76	76.75	18	33	0.998	1.657
Final			64.724	60.012	73	80	78					
Inital			58.933	54.191	73	79	77					
Difference	2	0.50	5.791	5.821	73	79.5	77.5	78.5	14	12	1.004	1.707
Final			50.465	45.669	73	77	75					
Inital			45.449	40.624	73	76	73					
Difference	3	0.70	5.016	5.045	73	76.5	74	75.25	10	34	0.997	1.774
Final			71.298	66.602	73	81	78					
Inital			65.781	61.076	73	80	78					
Difference	4	0.90	5.517	5.526	73	80.5	78	79.25	10	12	1.008	1.744
Final			77.948	73.302	73	81	79					
Inital			72.874	68.202	73	81	78					
Difference	5	1.20	5.074	5.100	73	81	78.5	79.75	8	7	1.004	1.739
Final			85.514	80.848	73	82	79					
Inital			78.658	73.985	73	81	79					
Difference	6	2.00	6.856	6.863	73	81.5	79	80.25	8	43	1.008	1.829
									Average		1.003	1.742

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ONTARIO HYDRO METHOD TEST SUPPORT DATA

PROJECT NO.:	93405	**TEST RUN NO.:**	1	**TEST DATE:**	8/24/99

CUSTOMER:	Platte River Power Authority	**BAROMETRIC PRESSURE (Pb)**	24.55 **in. Hg.**
PLANT:	Rawhide Station	**STATIC PRESSURE**	-12.24 **in. H2O**
TEST LOC.:	SDA Inlet	**FLUE PRESSURE (Ps)**	23.65 **in. Hg. abs.**
CLIENT:	Platte River Power Authority	**PROBE LENGTH:**	12 **ft.**
OPERATOR:	J. Daniels	**PROBE LINER MATERIAL:**	Teflon
CONTROL BOX:	E-35	**NOZZLE IDENTIFICATION NO.:**	Set B #8
METER NO.:	E-35	**CALIBRATED NOZZLE DIAMETER:**	0.240 **in.**
METER CALIBRATION FACTOR:	1.001	**LEAK CHECK PRE:**	0.002 **POST:** 0.006 @ 10 in. Hg.
PITOT ID NO.:	434A	**DUCT SHAPE:**	Circular DIA. Feet Rectangular 18.8333 Feet 20 Feet
PITOT TUBE COEFFICIENT:	0.830	**DUCT AREA:**	376.666 **sq. ft.**
PORT LENGTH:	21 in.	**TEST LENGTH:**	120 **min.**
PORT SIZE:	4.5 in.	**MINUTES PER POINT:**	5
PORT TYPE:	Nipple w/Plug	**TOTAL NUMBER OF TRAVERSE POINTS:**	24

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ONTARIO HYDRO METHOD TRAVERSE DATA

Company: Platte River Power Authority **Date:** 8/24/99 **Test Run.:** 1

Location: SDA Inlet

Point	Δp	Sq. Root Δp	Time	Volume cubic fe	ΔH	Stack Temp °F	Meter Inlet °F	Meter Outlet °F	Vacuum in. Hg	
1-1	0.30	0.548	10:40	582.48	0.57	352	79	82	4	2.170
1-2	0.48	0.693	10:45	584.65	0.92	353	82	83	5	2.750
1-3	0.55	0.742	10:50	587.40	1.05	352	82	84	5	3.080
			10:55	590.48						0.000
2-1	0.48	0.693	10:58	590.50	0.92	353	83	85	5	2.970
2-2	0.53	0.728	11:03	593.47	1.01	355	84	85	5	2.830
2-3	0.20	0.447	11:08	596.30	0.37	354	84	85	4	2.210
			11:13	598.51						0.000
3-1	0.63	0.794	11:15	598.54	1.17	346	84	86	6	2.740
3-2	0.73	0.854	11:20	601.28	1.36	350	86	87	6	3.320
3-3	0.22	0.469	11:25	604.60	0.41	350	87	85	5	2.380
			11:30	606.98						0.000
4-1	0.72	0.849	11:32	607.03	1.34	346	86	87	6	3.220
4-2	0.65	0.806	11:37	610.25	1.21	348	87	89	7	3.230
4-3	0.27	0.520	11:42	613.48	0.50	350	87	88	5	2.660
			11:47	616.14						0.000
5-1	0.33	0.574	11:49	616.19	0.61	333	89	89	5	2.420
5-2	0.52	0.721	11:54	618.61	0.97	339	91	92	5	2.620
5-3	0.12	0.346	11:59	621.23	0.22	345	91	92	3	1.860
			12:04	623.09						0.000
6-1	0.67	0.819	12:06	623.15	1.25	329	94	93	6	3.530
6-2	0.63	0.794	12:11	626.68	1.23	331	96	95	7	3.520
6-3	0.30	0.548	12:16	630.20	0.58	339	96	95	5	0.000
			12:21	630.20						0.000
7-1	0.54	0.735	12:23	632.41	1.05	325	98	93	6	2.860
7-2	0.38	0.616	12:28	635.27	0.74	328	96	93	6	2.930
7-3	0.25	0.500	12:33	638.20	0.49	333	97	93	5	2.300
			12:38	640.50						0.000
8-1	0.72	0.849	12:41	640.54	1.40	315	95	94	7	3.920
8-2	0.53	0.728	12:46	644.46	1.03	317	95	94	6	2.870
8-3	0.23	0.480	12:51	647.33	0.45	320	95	94	6	2.770
			12:56	650.10						0.000
										0.000
										0.000
										0.000
										0.000
										0.000
		0.660		65.160	0.87	340	89	89		#####
							89.31			

MOISTURE, DILUENT AND MERCURY DATA

Company Platte River Power Authority **Date:** 8/24/99 **Test Run:** 1

Location: SDA Inlet

SILICA GEL FINAL WT.:	771.90	**grams**
SILICA GEL INITIAL WT.:	760.00	**grams**
DIFFERENCE:	11.90	
FINAL IMPINGER WATER:	4893.20	**mls.**
INITIAL IMPINGER WATER:	4746.50	**mls.**
DIFFERENCE:	146.70	
TOTAL WATER GAIN:	158.60	

ITEM	MERCURY (UG)		= NET WT. (G)
FILTER: 4	0.316		0.000000316
PROBE WASH:	0.002		0.000000002
		Particle-bound Total:	0.000000318
KCl:	1.784		0.000001784
		Oxidized Total:	0.000001784
HNO_3/H_2O_2:	3.745		0.000003745
$KMNO_4$:	12.331		0.000012331
		Elemental Total:	0.000016076

Orsat Analysis	1	2	3	Average
Carbon Dioxide:	13.80			13.80
Oxygen:	5.13			5.13

ONTARIO HYDRO METHOD DATA ENTRY FORM

Field Data/Calculated Data

Company:	Platte River Power Authority
Date:	8/24/99
Test Run:	1
Stack or Duct No.:	SDA Inlet
Start Time:	10:40
Stop Time:	12:56

Pb:	24.55	Inches Hg
Static	-12.24	Inches H2O
Ps:	23.65	Inches Hg Abs.
Vlc:	159	ml + grams
Mn:	0.0000	gm
Test Time:	120	minutes
% O2:	5.13	%
% CO2:	13.80	%
% N2:	81.07	%
Delta H:	0.87	Inches H20
Cp:	0.830	Dimensionless - pitot
Tm:	89.31	°F
Sqrt P:	0.660	Inches H20
Ts:	340.13	°F
Vm:	65.160	Cubic Feet
Dn:	0.240	Inches - nozzle
As:	376.67	Sq. Feet
Yd:	1.001	Mcf
CF:	N/A	Process tons/hr
Heat Input:	N/A	MM BTU/hr
Fd:	N/A	dscf/10^6 Btu
Fc:	N/A	scf/10^6 Btu

Vmstd:	51.576	cubic feet (dry)
Vwstd:	7.470	cubic feet (wet)
Bwo:	0.127	
Md:	30.413	lb/lb-mole (dry)
Ms:	28.843	lb/lb-mole (wet)
Excess Air (%)	31.526	
Vs:	50.756	fps
ACFM:	1147082.	
DSCFM:	522631.	
WSCFM:	598327	
%I:	98.7	isokinetic variance
GR/ACF:	---	
GR/DSCF:	---	
lbs/hr	---	
lbs/ton prod.:	N/A	
lbs/MM BTU:	N/A	Heat Input
lbs/MM BTU:	N/A	O2 Basis
lbs/MM BTU:	N/A	CO2 Basis

ONTARIO HYDRO METHOD TEST SUPPORT DATA

PROJECT NO.:	93405	**TEST RUN NO.:**	2	**TEST DATE:**	8/24/99

CUSTOMER:	Platte River Power Authority	**BAROMETRIC PRESSURE (Pb)**	24.55 **in. Hg.**
PLANT:	Rawhide Station	**STATIC PRESSURE**	-12.24 **in. H2O**
TEST LOC.:	SDA Inlet	**FLUE PRESSURE (Ps)**	23.65 **in. Hg. abs.**
CLIENT:	Platte River Power Authority	**PROBE LENGTH:**	12 **ft.**
OPERATOR:	J. Daniels	**PROBE LINER MATERIAL:**	Teflon
CONTROL BOX:	E-35	**NOZZLE IDENTIFICATION NO.:**	Set B #8
METER NO.:	E-35	**CALIBRATED NOZZLE DIAMETER:**	0.240 **in.**
METER CALIBRATION FACTOR:	1.001	**LEAK CHECK** **PRE:**	0.002 **POST:** 0.006 @ 15 in. Hg.
PITOT ID NO.:	434A	**DUCT SHAPE:**	Circular DIA. Feet Rectangular 18.8333 Feet 20 Feet
PITOT TUBE COEFFICIENT:	0.830	**DUCT AREA:**	376.666 **sq. ft.**
PORT LENGTH:	21 in.	**TEST LENGTH:**	120 **min.**
PORT SIZE:	4.5 in.	**MINUTES PER POINT:**	5
PORT TYPE:	Nipple w/Plug	**TOTAL NUMBER OF TRAVERSE POINTS:**	24

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ONTARIO HYDRO METHOD TRAVERSE DATA

Company: Platte River Power Authority **Date:** 8/24/99 **Test Ru** 2

Location: SDA Inlet

Point	Δp	Sq. Root Δp	Time	Volume cubic fe	ΔH	Stack Temp °F	Meter Inlet °F	Meter Outlet °F	Vacuum in. Hg	
8-1	0.67	0.819	14:17	650.55	1.28	310	89	87	7	3.330
8-2	0.48	0.693	14:22	653.88	0.92	312	89	86	7	3.470
8-3	0.20	0.447	14:27	657.35	0.38	313	89	86	5	2.240
			14:32	659.59						0.000
7-1	0.58	0.762	14:35	659.63	1.11	318	89	88	7	3.450
7-2	0.32	0.566	14:40	663.08	0.61	323	90	87	6	2.390
7-3	0.23	0.480	14:45	665.47	0.44	329	90	88	6	2.160
			14:50	667.63						0.000
6-1	0.45	0.671	14:52	667.68	0.86	321	90	87	6	2.220
6-2	0.73	0.854	14:57	669.90	1.40	333	89	89	9	4.280
6-3	0.25	0.500	15:02	674.18	0.48	344	89	89	12	2.150
			15:07	676.33						0.000
5-1	0.45	0.671	15:17	677.21	0.86	342	89	88	6	2.980
5-2	0.37	0.608	15:22	680.19	0.71	345	90	89	7	2.320
5-3	0.19	0.436	15:27	682.51	0.36	349	91	90	5	2.150
			15:32	684.66						0.000
4-1	0.38	0.616	15:34	684.71	0.73	342	91	91	6	2.460
4-2	0.47	0.686	15:39	687.17	0.90	341	90	90	6	2.980
4-3	0.25	0.500	15:44	690.15	0.48	350	90	90	5	1.870
			15:49	692.02						0.000
3-1	0.63	0.794	15:52	692.06	1.20	353	91	91	7	3.500
3-2	0.79	0.889	15:57	695.56	1.51	355	90	88	8	3.920
3-3	0.25	0.500	16:02	699.48	0.48	358	91	88	5	1.810
			16:07	701.29						0.000
2-1	0.42	0.648	16:10	701.33	0.80	355	91	90	6	2.840
2-2	0.45	0.671	16:15	704.17	0.86	353	90	88	6	2.880
2-3	0.20	0.447	16:20	707.05	0.38	340	90	88	6	1.700
			16:25	708.75						0.000
1-1	0.50	0.707	16:27	708.80	0.96	349	89	88	7	2.910
1-2	0.52	0.721	16:32	711.71	0.99	350	89	88	8	3.040
1-3	0.31	0.557	16:37	714.75	0.59	349	89	87	6	2.390
			16:42	717.14						0.000
										0.000
										0.000
										0.000
										0.000
										0.000
										0.000
		0.635		65.440	0.80	339	90	88		#####
							89.08			

MOISTURE, DILUENT AND MERCURY DATA

Company Platte River Power Authority **Date:** 8/24/99 **Test Run:** 2

Location: SDA Inlet

SILICA GEL FINAL WT.:	775.30	**grams**
SILICA GEL INITIAL WT.:	753.40	**grams**
DIFFERENCE:	21.90	
FINAL IMPINGER WATER:	4834.20	**mls.**
INITIAL IMPINGER WATER:	4693.80	**mls.**
DIFFERENCE:	140.40	
TOTAL WATER GAIN:	162.30	

ITEM		MERCURY (UG)		= NET WT. (G)
FILTER:	5	2.622		0.000002622
PROBE WASH:		0.010		0.000000010
			Particle-bound Total:	0.000002632
KCl:		1.124		0.000001124
			Oxidized Total:	0.000001124
HNO_3/H_2O_2:		4.565		0.000004565
$KMNO_4$:		13.031		0.000013031
			Elemental Total:	0.000017596

Orsat Analysis	1	2	3	Average
Carbon Dioxide:	14.80	14.80	14.60	14.73
Oxygen:	4.20	4.40	4.00	4.20

ONTARIO HYDRO METHOD DATA ENTRY FORM

Field Data/Calculated Data

Company:	Platte River Power Authority
Date:	8/24/99
Test Run:	2
Stack or Duct No.:	SDA Inlet
Start Time:	14:17
Stop Time:	16:42

Pb:	24.55	Inches Hg
Static	-12.24	Inches H2O
Ps:	23.65	Inches Hg Abs.
Vlc:	162	ml + grams
Mn:	0.0000	gm
Test Time:	120	minutes
% O2:	4.20	%
% CO2:	14.73	%
% N2:	81.07	%
Delta H:	0.80	Inches H20
Cp:	0.830	Dimensionless - pitot
Tm:	89.08	°F
Sqrt P:	0.635	Inches H20
Ts:	338.92	°F
Vm:	65.440	Cubic Feet
Dn:	0.240	Inches - nozzle
As:	376.67	Sq. Feet
Yd:	1.001	Mcf
CF:	N/A	Process tons/hr
Heat Input:	N/A	MM BTU/hr
Fd:	N/A	dscf/10^6 Btu
Fc:	N/A	scf/10^6 Btu

Vmstd:	51.809	cubic feet (dry)
Vwstd:	7.644	cubic feet (wet)
Bwo:	0.129	
Md:	30.525	lb/lb-mole (dry)
Ms:	28.915	lb/lb-mole (wet)
Excess Air (%)	24.416	
Vs:	48.706	fps
ACFM:	1100743.	
DSCFM:	501090.	
WSCFM:	575024	
%I:	103.4	isokinetic variance
GR/ACF:	---	
GR/DSCF:	---	
lbs/hr	---	
lbs/ton prod.:	N/A	
lbs/MM BTU:	N/A	Heat Input
lbs/MM BTU:	N/A	O2 Basis
lbs/MM BTU:	N/A	CO2 Basis

ONTARIO HYDRO METHOD TEST SUPPORT DATA

PROJECT NO.:	93405	**TEST RUN NO.:**	3	**TEST DATE:**	8/25/99

CUSTOMER:	Platte River Power Authority	**BAROMETRIC PRESSURE (Pb)**	24.8 **in. Hg.**
PLANT:	Rawhide Station	**STATIC PRESSURE**	-12.24 **in. H2O**
TEST LOC.:	SDA Inlet	**FLUE PRESSURE (Ps)**	23.90 **in. Hg. abs.**
CLIENT:	Platte River Power Authority	**PROBE LENGTH:**	12 **ft.**
OPERATOR:	J. Daniels	**PROBE LINER MATERIAL:**	Teflon
CONTROL BOX:	E-35	**NOZZLE IDENTIFICATION NO.:**	Set B #8
METER NO.:	E-35	**CALIBRATED NOZZLE DIAMETER:**	0.240 **in.**
METER CALIBRATION FACTOR:	1.001	**LEAK CHECK** **PRE:**	0.004 **POST:** 0.006 @ 14 in. Hg.
PITOT ID NO.:	434A	**DUCT SHAPE:**	Circular DIA. Feet Rectangular 18.8333 Feet 20 Feet
PITOT TUBE COEFFICIENT:	0.830	**DUCT AREA:**	376.666 **sq. ft.**
PORT LENGTH:	21 in.	**TEST LENGTH:**	120 **min.**
PORT SIZE:	4.5 in.	**MINUTES PER POINT:**	5
PORT TYPE:	Nipple w/Plug	**TOTAL NUMBER OF TRAVERSE POINTS:**	24

ONTARIO HYDRO METHOD TRAVERSE DATA

Company: Platte River Power Authority **Date:** 8/25/99 **Test Ru** 3

Location: SDA Inlet

Point	Δp	Sq. Root Δp	Time	Volume cubic fe	ΔH	Stack Temp °F	Meter Inlet °F	Meter Outlet °F	Vacuum in. Hg	
1-1	0.46	0.678	8:45	717.80	0.85	350	78	80	4	2.650
1-2	0.43	0.656	8:50	720.45	0.79	350	79	80	4	2.850
1-3	0.35	0.592	8:55	723.30	0.64	349	80	81	3	2.390
			9:00	725.69						0.000
2-1	0.43	0.656	9:02	725.75	0.79	348	81	81	4	2.770
2-2	0.40	0.632	9:07	728.52	0.74	353	81	81	4	2.700
2-3	0.18	0.424	9:12	731.22	0.33	350	82	81	3	1.600
			9:17	732.82						0.000
3-1	0.62	0.787	9:19	733.00	1.14	350	84	84	5	3.400
3-2	0.63	0.794	9:24	736.40	1.18	354	84	84	5	3.070
3-3	0.22	0.469	9:29	739.47	0.41	354	84	84	4	1.980
			9:34	741.45						0.000
4-1	0.63	0.794	9:36	741.49	1.18	352	85	84	6	3.340
4-2	0.67	0.819	9:41	744.83	1.25	354	84	84	7	3.120
4-3	0.18	0.424	9:46	747.95	0.34	354	84	83	5	1.860
			9:51	749.81						0.000
5-1	0.28	0.529	9:54	749.87	0.52	340	85	84	4	2.280
5-2	0.42	0.648	9:59	752.15	0.79	342	85	84	5	2.660
5-3	0.10	0.316	10:04	754.81	0.19	348	84	83	3	1.440
			10:09	756.25						0.000
6-1	0.60	0.775	10:11	756.30	1.12	325	85	85	6	3.380
6-2	0.60	0.775	10:16	759.68	1.12	330	85	85	6	2.940
6-3	0.18	0.424	10:21	762.62	0.34	336	85	85	4	1.910
			10:26	764.53						0.000
7-1	0.48	0.693	10:28	764.58	0.90	321	85	85	6	3.030
7-2	0.30	0.548	10:33	767.61	0.56	322	87	85	6	2.240
7-3	0.20	0.447	10:38	769.85	0.37	329	86	85	5	1.570
			10:43	771.42						0.000
8-1	0.50	0.707	10:45	771.52	0.94	314	88	85	5	2.990
8-2	0.45	0.671	10:50	774.51	0.84	317	87	84	5	2.790
8-3	0.15	0.387	10:55	777.30	0.28	317	86	85	3	1.640
			11:00	778.94						0.000
										0.000
										0.000
										0.000
										0.000
										0.000
										0.000
		0.610		60.600	0.73	340	84	83		#####
							83.67			

MOISTURE, DILUENT AND MERCURY DATA

Company Platte River Power Authority **Date:** 8/25/99 **Test Run:** 3

Location: SDA Inlet

SILICA GEL FINAL WT.:	811.30	**grams**
SILICA GEL INITIAL WT.:	794.60	**grams**
DIFFERENCE:	16.70	
FINAL IMPINGER WATER:	4702.90	**mls.**
INITIAL IMPINGER WATER:	4574.30	**mls.**
DIFFERENCE:	128.60	
TOTAL WATER GAIN:	145.30	

ITEM		MERCURY (UG)		= NET WT. (G)
FILTER:	14	4.462		0.000004462
PROBE WASH:		0.004		0.000000004
			Particle-bound Total:	0.000004466
KCl:		0.536		0.000000536
			Oxidized Total:	0.000000536
HNO_3/H_2O_2:		3.305		0.000003305
$KMNO_4$:		14.231		0.000014231
			Elemental Total:	0.000017536

Orsat Analysis	1	2	3	Average
Carbon Dioxide:	13.60			13.60
Oxygen:	5.60			5.60

ONTARIO HYDRO METHOD DATA ENTRY FORM

Field Data/Calculated Data

Company:	Platte River Power Authority
Date:	8/25/99
Test Run:	3
Stack or Duct No.:	SDA Inlet
Start Time:	8:45
Stop Time:	11:00

Pb:	24.80	Inches Hg
Static	-12.24	Inches H2O
Ps:	23.90	Inches Hg Abs.
Vlc:	145	ml + grams
Mn:	0.0000	gm
Test Time:	120	minutes
% O2:	5.60	%
% CO2:	13.60	%
% N2:	80.80	%
Delta H:	0.73	Inches H20
Cp:	0.830	Dimensionless - pitot
Tm:	83.67	°F
Sqrt P:	0.610	Inches H20
Ts:	339.96	°F
Vm:	60.600	Cubic Feet
Dn:	0.240	Inches - nozzle
As:	376.67	Sq. Feet
Yd:	1.001	Mcf
CF:	N/A	Process tons/hr
Heat Input:	N/A	MM BTU/hr
Fd:	N/A	dscf/10^6 Btu
Fc:	N/A	scf/10^6 Btu

Vmstd:	48.937	cubic feet (dry)
Vwstd:	6.844	cubic feet (wet)
Bwo:	0.123	
Md:	30.400	lb/lb-mole (dry)
Ms:	28.879	lb/lb-mole (wet)
Excess Air (%)	35.598	
Vs:	46.613	fps
ACFM:	1053451.	
DSCFM:	487271.	
WSCFM:	555413	
%I:	100.4	isokinetic variance
GR/ACF:	---	
GR/DSCF:	---	
lbs/hr	---	
lbs/ton prod.:	N/A	
lbs/MM BTU:	N/A	Heat Input
lbs/MM BTU:	N/A	O2 Basis
lbs/MM BTU:	N/A	CO2 Basis

ONTARIO HYDRO METHOD TEST SUPPORT DATA

PROJECT NO.: 93405 **TEST RUN NO.:** 1 **TEST DATE:** 8/24/99

CUSTOMER:	Platte River Power Authority	**BAROMETRIC PRESSURE (Pb)**	24.295 **in. Hg.**
PLANT:	Rawhide Station	**STATIC PRESSURE**	-0.5 **in. H2O**
TEST LOC.:	Stack	**FLUE PRESSURE (Ps)**	24.26 **in. Hg. abs.**
CLIENT:	Platte River Power Authority	**PROBE LENGTH:**	9 **ft.**
OPERATOR:	P. Coleman	**PROBE LINER MATERIAL:**	Glass
CONTROL BOX:	E-21	**NOZZLE IDENTIFICATION NO.:**	Set A #6
METER NO.:	E-21	**CALIBRATED NOZZLE DIAMETER:**	0.180 **in.**
METER CALIBRATION FACTOR:	1.008	**LEAK CHECK PRE:**	0.015 **POST:** 0.015 @ 10 in. Hg.
PITOT ID NO.:	437A	**DUCT SHAPE:**	Circular DIA. 20 Feet Rectangular Feet Feet
PITOT TUBE COEFFICIENT:	0.829	**DUCT AREA:**	314.159 **sq. ft.**
PORT LENGTH:	17 in.	**TEST LENGTH:**	120 **min.**
PORT SIZE:	6 in.	**MINUTES PER POINT:**	10
PORT TYPE:	Flange	**TOTAL NUMBER OF TRAVERSE POINTS:**	12

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ONTARIO HYDRO METHOD TRAVERSE DATA

Company: Platte River Power Authority **Date:** 8/24/99 **Test Ru** 1

Location: Stack

Point	Δp	Sq. Root Δp	Time	Volume cubic fe	ΔH	Stack Temp °F	Meter Inlet °F	Meter Outlet °F	Vacuum in. Hg	
1-1	0.84	0.917	10:45	62.11	0.62	218	96	95	4	2.487
1-1	0.84	0.917	10:50	64.60	0.62	218	97	95	4	2.400
1-2	0.83	0.911	10:55	67.00	0.61	219	97	96	4	2.500
1-2	0.83	0.911	11:00	69.50	0.61	219	97	96	4	2.400
1-3	0.70	0.837	11:05	71.90	0.52	219	98	96	2	2.100
1-3	0.70	0.837	11:10	74.00	0.52	219	99	96	2	2.251
			11:15	76.25						0.000
2-1	0.83	0.911	11:24	76.25	0.61	219	99	96	4	2.549
2-1	0.83	0.911	11:29	78.80	0.61	219	101	98	4	2.300
2-2	0.82	0.906	11:34	81.10	0.60	219	101	99	4	2.400
2-2	0.82	0.906	11:39	83.50	0.60	219	101	99	4	2.500
2-3	0.71	0.843	11:44	86.00	0.52	219	102	99	2	2.200
2-3	0.71	0.843	11:49	88.20	0.52	219	102	99	2	2.135
			11:54	90.34						0.000
3-1	0.84	0.917	12:03	90.34	0.62	219	103	100	4	2.365
3-1	0.84	0.917	12:08	92.70	0.62	219	103	100	4	2.420
3-2	0.80	0.894	12:13	95.12	0.59	219	103	100	4	2.480
3-2	0.80	0.894	12:18	97.60	0.59	219	103	100	4	2.300
3-3	0.70	0.837	12:23	99.90	0.52	219	103	100	2	2.300
3-3	0.70	0.837	12:28	102.20	0.52	219	103	100	2	2.175
			12:33	104.38						0.000
4-1	0.82	0.906	12:41	104.38	0.61	218	102	100	4	2.425
4-1	0.82	0.906	12:46	106.80	0.61	219	103	100	4	2.400
4-2	0.80	0.894	12:51	109.20	0.59	219	103	100	4	2.400
4-2	0.80	0.894	12:56	111.60	0.59	219	103	100	4	2.400
4-3	0.70	0.837	13:01	114.00	0.52	219	103	100	2	2.200
4-3	0.70	0.837	13:06	116.20	0.52	219	103	100	2	2.153
			13:11	118.35						0.000
										0.000
										0.000
										0.000
										0.000
										0.000
										0.000
										0.000
										0.000
										0.000
										0.000
		0.884		56.240	0.58	219	101	99		#####
							99.77			

MOISTURE, DILUENT AND MERCURY DATA

Company Platte River Power Authority **Date:** 8/24/99 **Test Run:** 1

Location: Stack

SILICA GEL FINAL WT.:	706.60	**grams**
SILICA GEL INITIAL WT.:	695.60	**grams**
DIFFERENCE:	11.00	
FINAL IMPINGER WATER:	4697.60	**mls.**
INITIAL IMPINGER WATER:	4573.30	**mls.**
DIFFERENCE:	124.30	
TOTAL WATER GAIN:	135.30	

ITEM	MERCURY (UG)		= NET WT. (G)
FILTER:	0.246		0.000000246
PROBE WASH:	0.000		0.000000000
		Particle-bound Total:	0.000000246
KCl:	0.772		0.000000772
		Oxidized Total:	0.000000772
HNO_3/H_2O_2:	4.295		0.000004295
$KMNO_4$:	6.791		0.000006791
		Elemental Total:	0.000011086

Orsat Analysis	1	2	3	Average
Carbon Dioxide:	13.00	13.00	13.00	13.00
Oxygen:	6.00	6.00	6.10	6.03

ONTARIO HYDRO METHOD DATA ENTRY FORM

Field Data/Calculated Data

Company:	Platte River Power Authority
Date:	8/24/99
Test Run:	1
Stack or Duct No.:	Stack
Start Time:	10:45
Stop Time:	13:11

Pb:	24.30	Inches Hg
Static	-0.50	Inches H2O
Ps:	24.26	Inches Hg Abs.
Vlc:	135	ml + grams
Mn:	0.0000	gm
Test Time:	120	minutes
% O2:	6.03	%
% CO2:	13.00	%
% N2:	80.97	%
Delta H:	0.58	Inches H20
Cp:	0.829	Dimensionless - pitot
Tm:	99.77	°F
Sqrt P:	0.884	Inches H20
Ts:	218.88	°F
Vm:	56.240	Cubic Feet
Dn:	0.180	Inches - nozzle
As:	314.16	Sq. Feet
Yd:	1.008	Mcf
CF:	N/A	Process tons/hr
Heat Input:	N/A	MM BTU/hr
Fd:	N/A	dscf/10^6 Btu
Fc:	N/A	scf/10^6 Btu

Vmstd:	43.495	cubic feet (dry)
Vwstd:	6.373	cubic feet (wet)
Bwo:	0.128	
Md:	30.321	lb/lb-mole (dry)
Ms:	28.747	lb/lb-mole (wet)
Excess Air (%)	39.326	
Vs:	61.813	fps
ACFM:	1165142.	
DSCFM:	640826.	
WSCFM:	734715	
%I:	100.6	isokinetic variance
GR/ACF:	---	
GR/DSCF:	---	
lbs/hr	---	
lbs/ton prod.:	N/A	
lbs/MM BTU:	N/A	Heat Input
lbs/MM BTU:	N/A	O2 Basis
lbs/MM BTU:	N/A	CO2 Basis

ONTARIO HYDRO METHOD TEST SUPPORT DATA

PROJECT NO.: 93405 **TEST RUN NO.:** 2 **TEST DATE:** 8/24/99

CUSTOMER:	Platte River Power Authority	**BAROMETRIC PRESSURE (Pb)**	24.295 **in. Hg.**
PLANT:	Rawhide Station	**STATIC PRESSURE**	-0.5 **in. H2O**
TEST LOC.:	Stack	**FLUE PRESSURE (Ps)**	24.26 **in. Hg. abs.**
CLIENT:	Platte River Power Authority	**PROBE LENGTH:**	9 **ft.**
OPERATOR:	P. Coleman	**PROBE LINER MATERIAL:**	Glass
CONTROL BOX:	E-21	**NOZZLE IDENTIFICATION NO.:**	Set A #6
METER NO.:	E-21	**CALIBRATED NOZZLE DIAMETER:**	0.180 **in.**
METER CALIBRATION FACTOR:	1.008	**LEAK CHECK PRE:**	0.014 **POST:** 0.014 @ 10 in. Hg.
PITOT ID NO.:	437A	**DUCT SHAPE:**	Circular DIA. 20 Feet Rectangular Feet Feet
PITOT TUBE COEFFICIENT:	0.829	**DUCT AREA:**	314.159 **sq. ft.**
PORT LENGTH:	17 in.	**TEST LENGTH:**	120 **min.**
PORT SIZE:	6 in.	**MINUTES PER POINT:**	10
PORT TYPE:	Flange	**TOTAL NUMBER OF TRAVERSE POINTS:**	12

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ONTARIO HYDRO METHOD TRAVERSE DATA

Company: Platte River Power Authority **Date:** 8/24/99 **Test Ru** 2

Location: Stack

Point	Δp	Sq. Root Δp	Time	Volume cubic fe	ΔH	Stack Temp °F	Meter Inlet °F	Meter Outlet °F	Vacuum in. Hg	
1-1	0.82	0.906	14:10	19.26	0.61	220	100	100	6	2.442
1-1	0.82	0.906	14:15	21.70	0.61	220	100	100	6	2.300
1-2	0.81	0.900	14:20	24.00	0.60	220	99	99	6	2.300
1-2	0.81	0.900	14:25	26.30	0.60	220	100	99	6	2.400
1-3	0.70	0.837	14:30	28.70	0.52	219	100	99	5	2.300
1-3	0.70	0.837	14:35	31.00	0.52	219	100	99	5	2.303
			14:40	33.30						0.000
2-1	0.82	0.906	14:47	33.30	0.61	220	100	99	6	2.297
2-1	0.82	0.906	14:52	35.60	0.61	220	100	99	6	2.500
2-2	0.81	0.900	14:57	38.10	0.60	220	100	99	6	2.300
2-2	0.81	0.900	15:02	40.40	0.60	220	100	99	6	2.500
2-3	0.71	0.843	15:07	42.90	0.53	220	100	99	5	2.200
2-3	0.71	0.843	15:12	45.10	0.53	220	100	99	5	2.259
			15:17	47.36						0.000
3-1	0.84	0.917	15:27	47.36	0.63	222	100	99	6	2.441
3-1	0.84	0.917	15:32	49.80	0.63	222	100	99	6	2.500
3-2	0.83	0.911	15:37	52.30	0.62	222	100	99	6	2.400
3-2	0.83	0.911	15:42	54.70	0.62	222	101	100	6	2.400
3-3	0.73	0.854	15:47	57.10	0.55	221	103	102	5	2.300
3-3	0.73	0.854	15:52	59.40	0.55	221	103	102	5	2.335
			15:57	61.74						0.000
4-1	0.85	0.922	16:04	61.74	0.64	223	101	100	6	2.465
4-1	0.85	0.922	16:09	64.20	0.64	223	101	100	6	2.500
4-2	0.83	0.911	16:14	66.70	0.62	222	101	100	6	2.500
4-2	0.83	0.911	16:19	69.20	0.62	222	101	100	6	2.300
4-3	0.72	0.849	16:24	71.50	0.54	222	101	100	5	2.300
4-3	0.72	0.849	16:29	73.80	0.54	222	101	100	5	2.245
			16:34	76.05						0.000
										0.000
										0.000
										0.000
										0.000
										0.000
										0.000
										0.000
										0.000
										0.000
										0.000
		0.888		56.787	0.59	221	101	100		#####
							100.06			

MOISTURE, DILUENT AND MERCURY DATA

Company Platte River Power Authority **Date:** 8/24/99 **Test Run:** 2

Location: Stack

SILICA GEL FINAL WT.:	732.00	**grams**
SILICA GEL INITIAL WT.:	718.50	**grams**
DIFFERENCE:	13.50	
FINAL IMPINGER WATER:	5073.60	**mls.**
INITIAL IMPINGER WATER:	4906.00	**mls.**
DIFFERENCE:	167.60	
TOTAL WATER GAIN:	181.10	

ITEM	MERCURY (UG)		= NET WT. (G)
FILTER:	0.009		0.000000009
PROBE WASH:	0.000		0.000000000
		Particle-bound Total:	0.000000009
KCl:	0.733		0.000000733
		Oxidized Total:	0.000000733
HNO_3/H_2O_2:	2.265		0.000002265
$KMNO_4$:	8.341		0.000008341
		Elemental Total:	0.000010606

Orsat Analysis	1	2	3	Average
Carbon Dioxide:	13.40	13.50	13.50	13.47
Oxygen:	5.60	5.50	5.50	5.53

ONTARIO HYDRO METHOD DATA ENTRY FORM

Field Data/Calculated Data

Company:	Platte River Power Authority
Date:	8/24/99
Test Run:	2
Stack or Duct No.:	Stack
Start Time:	14:10
Stop Time:	16:34

Pb:	24.30	Inches Hg
Static	-0.50	Inches H2O
Ps:	24.26	Inches Hg Abs.
Vlc:	181	ml + grams
Mn:	0.0000	gm
Test Time:	120	minutes
% O2:	5.53	%
% CO2:	13.47	%
% N2:	81.00	%
Delta H:	0.59	Inches H20
Cp:	0.829	Dimensionless - pitot
Tm:	100.06	°F
Sqrt P:	0.888	Inches H20
Ts:	220.92	°F
Vm:	56.787	Cubic Feet
Dn:	0.180	Inches - nozzle
As:	314.16	Sq. Feet
Yd:	1.008	Mcf
CF:	N/A	Process tons/hr
Heat Input:	N/A	MM BTU/hr
Fd:	N/A	dscf/10^6 Btu
Fc:	N/A	scf/10^6 Btu

Vmstd:	43.897	cubic feet (dry)
Vwstd:	8.530	cubic feet (wet)
Bwo:	0.163	
Md:	30.376	lb/lb-mole (dry)
Ms:	28.362	lb/lb-mole (wet)
Excess Air (%)	34.909	
Vs:	62.595	fps
ACFM:	1179889.	
DSCFM:	621096.	
WSCFM:	741784	
%I:	104.8	isokinetic variance
GR/ACF:	---	
GR/DSCF:	---	
lbs/hr	---	
lbs/ton prod.:	N/A	
lbs/MM BTU:	N/A	Heat Input
lbs/MM BTU:	N/A	O2 Basis
lbs/MM BTU:	N/A	CO2 Basis

ONTARIO HYDRO METHOD TEST SUPPORT DATA

PROJECT NO.:	93405	**TEST RUN NO.:**	3	**TEST DATE:**	8/25/99

CUSTOMER:	Platte River Power Authority	**BAROMETRIC PRESSURE (Pb)**	24.595 **in. Hg.**
PLANT:	Rawhide Station	**STATIC PRESSURE**	-0.5 **in. H2O**
TEST LOC.:	Stack	**FLUE PRESSURE (Ps)**	24.56 **in. Hg. abs.**
CLIENT:	Platte River Power Authority	**PROBE LENGTH:**	9 **ft.**
OPERATOR:	P. Coleman	**PROBE LINER MATERIAL:**	Glass
CONTROL BOX:	E-21	**NOZZLE IDENTIFICATION NO.:**	Set A #6
METER NO.:	E-21	**CALIBRATED NOZZLE DIAMETER:**	0.180 **in.**
METER CALIBRATION FACTOR:	1.008	**LEAK CHECK**	**PRE:** 0.015 **POST:** 0.014 @ 10 in. Hg.
PITOT ID NO.:	437A	**DUCT SHAPE:**	Circular DIA. 20 Feet Rectangular Feet Feet
PITOT TUBE COEFFICIENT:	0.829	**DUCT AREA:**	314.159 **sq. ft.**
PORT LENGTH:	17 in.	**TEST LENGTH:**	120 **min.**
PORT SIZE:	6 in.	**MINUTES PER POINT:**	10
PORT TYPE:	Flange	**TOTAL NUMBER OF TRAVERSE POINTS:**	12

139

Mostardi Platt

ONTARIO HYDRO METHOD TRAVERSE DATA

Company: Platte River Power Authority **Date:** 8/25/99 **Test Ru** 3

Location: Stack

Point	Δp	Sq. Root Δp	Time	Volume cubic fe	ΔH	Stack Temp °F	Meter Inlet °F	Meter Outlet °F	Vacuum in. Hg	
1-1	0.83	0.911	8:45	76.30	0.60	215	100	99	4	2.397
1-1	0.83	0.911	8:50	78.70	0.60	215	100	99	4	2.400
1-2	0.82	0.906	8:55	81.10	0.59	215	103	100	4	2.400
1-2	0.82	0.906	9:00	83.50	0.59	215	103	100	4	2.400
1-3	0.72	0.849	9:05	85.90	0.52	215	102	100	3	2.200
1-3	0.72	0.849	9:10	88.10	0.52	215	102	100	3	2.155
			9:15	90.26						0.000
2-1	0.83	0.911	9:20	90.26	0.60	218	102	100	4	2.445
2-1	0.83	0.911	9:25	92.70	0.60	218	102	100	4	2.400
2-2	0.81	0.900	9:30	95.10	0.58	218	102	100	4	2.300
2-2	0.81	0.900	9:35	97.40	0.58	219	102	100	4	2.400
2-3	0.71	0.843	9:40	99.80	0.51	219	102	100	2	2.000
2-3	0.71	0.843	9:45	101.80	0.51	219	102	100	2	2.435
			9:50	104.24						0.000
3-1	0.85	0.922	10:00	104.24	0.61	219	102	100	4	2.265
3-1	0.85	0.922	10:05	106.50	0.61	219	102	100	4	2.500
3-2	0.83	0.911	10:10	109.00	0.60	219	102	100	4	2.200
3-2	0.83	0.911	10:15	111.20	0.60	219	102	100	4	2.400
3-3	0.72	0.849	10:20	113.60	0.52	219	102	100	2	2.400
3-3	0.72	0.849	10:25	116.00	0.52	219	102	100	2	2.189
			10:30	118.19						0.000
4-1	0.84	0.917	10:35	118.19	0.60	219	102	100	4	2.311
4-1	0.84	0.917	10:40	120.50	0.60	219	102	100	4	2.500
4-2	0.83	0.911	10:45	123.00	0.60	219	102	100	4	2.400
4-2	0.83	0.911	10:50	125.40	0.60	219	102	100	4	2.300
4-3	0.72	0.849	10:55	127.70	0.52	219	102	100	2	2.300
4-3	0.72	0.849	11:00	130.00	0.52	219	102	100	2	2.166
			11:05	132.17						0.000
										0.000
										0.000
										0.000
										0.000
										0.000
										0.000
										0.000
										0.000
										0.000
		0.890		55.863	0.57	218	102	100		#####
							100.92			

MOISTURE, DILUENT AND MERCURY DATA

Company Platte River Power Authority **Date:** 8/25/99 **Test Run:** 3

Location: Stack

SILICA GEL FINAL WT.:	798.80	**grams**
SILICA GEL INITIAL WT.:	787.00	**grams**
DIFFERENCE:	11.80	
FINAL IMPINGER WATER:	4900.50	**mls.**
INITIAL IMPINGER WATER:	4733.30	**mls.**
DIFFERENCE:	167.20	
TOTAL WATER GAIN:	179.00	

ITEM	MERCURY (UG)		= NET WT. (G)
FILTER:	0.066		0.000000066
PROBE WASH:	0.000		0.000000000
		Particle-bound Total:	0.000000066
KCl:	1.014		0.000001014
		Oxidized Total:	0.000001014
HNO_3/H_2O_2:	0.683		0.000000683
$KMNO_4$:	8.591		0.000008591
		Elemental Total:	0.000009274

Orsat Analysis	1	2	3	Average
Carbon Dioxide:	13.00			13.00
Oxygen:	6.00			6.00

ONTARIO HYDRO METHOD DATA ENTRY FORM

Field Data/Calculated Data

Company:	Platte River Power Authority
Date:	8/25/99
Test Run:	3
Stack or Duct No.:	Stack
Start Time:	8:45
Stop Time:	11:05

Pb:	24.60	Inches Hg
Static	-0.50	Inches H2O
Ps:	24.56	Inches Hg Abs.
Vlc:	179	ml + grams
Mn:	0.0000	gm
Test Time:	120	minutes
% O2:	6.00	%
% CO2:	13.00	%
% N2:	81.00	%
Delta H:	0.57	Inches H20
Cp:	0.829	Dimensionless - pitot
Tm:	100.92	°F
Sqrt P:	0.890	Inches H20
Ts:	217.88	°F
Vm:	55.863	Cubic Feet
Dn:	0.180	Inches - nozzle
As:	314.16	Sq. Feet
Yd:	1.008	Mcf
CF:	N/A	Process tons/hr
Heat Input:	N/A	MM BTU/hr
Fd:	N/A	dscf/10^6 Btu
Fc:	N/A	scf/10^6 Btu

Vmstd:	43.646	cubic feet (dry)
Vwstd:	8.431	cubic feet (wet)
Bwo:	0.162	
Md:	30.320	lb/lb-mole (dry)
Ms:	28.325	lb/lb-mole (wet)
Excess Air (%)	39.002	
Vs:	62.244	fps
ACFM:	1173278.	
DSCFM:	628664.	
WSCFM:	750101	
%I:	102.9	isokinetic variance
GR/ACF:	---	
GR/DSCF:	---	
lbs/hr	---	
lbs/ton prod.:	N/A	
lbs/MM BTU:	N/A	Heat Input
lbs/MM BTU:	N/A	O2 Basis
lbs/MM BTU:	N/A	CO2 Basis

Project Summary-Samples Received Report

Project	*Client*	*Unit*
93405	PLATTE RIVER POWER AUTHORITY	RAWHIDE ENERGY STAT.WELLINGTON

Project	*Sample*	*Sample Point*	*Date Received*	*Analyte Detail*
93405	001	INL HNO3 RNS T1	8/26/1999	Mercury
93405	002	INL HNO3 RNS T2	8/26/1999	Mercury
93405	003	INL HNO3 RNS T3	8/26/1999	Mercury
93405	004	INL KCL IMP T1	8/26/1999	Mercury
93405	005	INL KCL IMP T2	8/26/1999	Mercury
93405	006	INL KCL IMP T3	8/26/1999	Mercury
93405	007	IN HNO3/H202 T1	8/26/1999	Mercury
93405	008	IN HNO3/H202 T2	8/26/1999	Mercury
93405	009	IN HNO3/H202 T3	8/26/1999	Mercury
93405	010	INL KMNO4 IM T1	8/26/1999	Mercury
93405	011	INL KMNO4 IM T2	8/26/1999	Mercury
93405	012	INL KMNO4 IM T3	8/26/1999	Mercury
93405	013	OUT HNO3 RNS T1	8/26/1999	Mercury
93405	014	OUT HNO3 RNS T2	8/26/1999	Mercury
93405	015	OUT HNO3 RNS T3	8/26/1999	Mercury
93405	016	OUT KCL IMP T1	8/26/1999	Mercury
93405	017	OUT KCL IMP T2	8/26/1999	Mercury
93405	018	OUT KCL IMP T3	8/26/1999	Mercury
93405	019	OUT HNO3/H2O2-1	8/26/1999	Mercury
93405	020	OUT HNO3/H2O2-2	8/26/1999	Mercury
93405	021	OUT HNO3/H2O2-3	8/26/1999	Mercury
93405	022	OUT KMNO4 IM T1	8/26/1999	Mercury
93405	023	OUT KMNO4 IM T2	8/26/1999	Mercury
93405	024	OUT KMNO4 IM T3	8/26/1999	Mercury
93405	025	FLD BL INL KCL	8/26/1999	Mercury
93405	026	F/B INHNO3/H2O2	8/26/1999	Mercury

Project	Sample	Sample Point	Date Received	Analyte Detail
93405	027	FLD BL IN KMNO4	8/26/1999	Mercury
93405	028	FLD BL OUT KCL	8/26/1999	Mercury
93405	029	F/B HNO3/H2O2	8/26/1999	Mercury
93405	030	F/B OUTL KMNO4	8/26/1999	Mercury
93405	031	BLANK:QRTZ FLT	8/26/1999	Mercury
93405	032	BLANK:QRTZ FLT	8/26/1999	Mercury
93405	033	BLANK:QRTZ FLT	8/26/1999	Mercury
93405	034	BLANK:H/PUR FLT	8/26/1999	Mercury
93405	035	BLANK:H/PUR FLT	8/26/1999	Mercury
93405	036	BLANK:H/PUR FLT	8/26/1999	Mercury
93405	037	REAG BLNK HNO3	8/26/1999	Mercury
93405	038	REAG BLNK KCL	8/26/1999	Mercury
93405	039	R/BL HNO3/H2O2	8/26/1999	Mercury
93405	040	R/BL HYDROXYLAM	8/26/1999	Mercury
93405	041	REAG BL KMNO4	8/26/1999	Mercury
93405	042	REAG BL KMNO4	8/26/1999	Mercury
93405	043	COAL SAMPLE T1	8/26/1999	Chloride
93405	043	COAL SAMPLE T1	8/26/1999	Mercury
93405	043	COAL SAMPLE T1	8/26/1999	Ultimate/Proximate on Coal
93405	044	COAL SAMPLE T2	8/26/1999	Chloride
93405	044	COAL SAMPLE T2	8/26/1999	Mercury
93405	044	COAL SAMPLE T2	8/26/1999	Ultimate/Proximate on Coal
93405	045	COAL SAMPLE T3	8/26/1999	Chloride
93405	045	COAL SAMPLE T3	8/26/1999	Mercury
93405	045	COAL SAMPLE T3	8/26/1999	Ultimate/Proximate on Coal
93405	046	FLY ASH SMPL T1	8/26/1999	Hold
93405	047	FLY ASH SMPL T2	8/26/1999	Hold
93405	048	FLY ASH SMPL T3	8/26/1999	Hold

LABORATORY REPORT

TEI Analytical, Inc.
7177 N. Austin
Niles, IL 60714-4617
847-647-1345

PREPARED FOR:

Frank Jarke
Mostardi-Platt Associates, Inc.
945 Oaklawn Avenue
Elmhurst, IL 60126

Report #: 35704
Report Date: 1/27/00
Sample Received:
8/31/99 14:20

TEI	93405	Type	Total ug	mg/kg	Date	%RSD	Lin.Reg.	Blank	CPI	MS	MSD
35704	001	HNO3	0.002		1/3/00	4.25	0.99999	NA	98.6	93.8	88.6
35705	002	HNO3	0.01		1/3/00	3.23	0.99999	NA	98.6	93.8	88.6
35706	003	HNO3	0.004		1/3/00	2.49	0.99999	NA	98.6	93.8	88.6
35707	004	KCl	1.79		12/23/99	0.934	1.00000	0.219	96.8	101	103
35708	005	KCl	1.13		12/23/99	0.375	1.00000	0.219	96.8	101	103
35709	006	KCl	0.542		12/23/99	0.628	1.00000	0.219	96.8	101	103
35710	007	H2O2	3.76		1/6/00	0.531	0.99959	0.148	107	99.5	84.3
35711	008	H2O2	4.58		1/6/00	0.327	0.99959	0.148	107	99.5	84.3
35712	009	H2O2	3.32		1/6/00	0.079	0.99959	0.148	107	99.5	84.3
35713	010	KMnO4	12.9		12/13/99	0.605	1.00000	<0.03	93.5	118	110
35714	011	KMnO4	13.6		12/13/99	0.910	1.00000	<0.03	93.5	118	110
35715	012	KMnO4	14.8		12/13/99	0.253	1.00000	<0.03	93.5	118	110
35716	013	HNO3	<0.003		1/3/00	4.49	0.99999	NA	98.6	93.8	88.6
35717	014	HNO3	<0.003		1/4/00	3.73	1.00000	NA	97.0	128	127
35718	015	HNO3	<0.003		1/4/00	6.26	1.00000	NA	97.0	128	127
35719	016	KCl	0.778		12/23/99	0.250	1.00000	0.219	96.8	101	103
35720	017	KCl	0.739		12/23/99	0.575	1.00000	0.219	96.8	101	103
35721	018	KCl	1.02		12/23/99	0.555	1.00000	0.219	96.8	101	103
35722	019	H2O2	4.31		1/6/00	0.196	0.99959	0.148	107	99.5	84.3
35723	020	H2O2	2.28		1/6/00	0.231	0.99959	0.148	107	99.5	84.3
35724	021	H2O2	0.698		1/6/00	0.650	0.99959	0.148	107	99.5	84.3
35725	022	KMnO4	7.36		12/13/99	0.363	1.00000	<0.03	93.5	118	110

Gayle E. O'Neill, Ph.D.

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LABORATORY REPORT

TEI Analytical, Inc.
7177 N. Austin
Niles, IL 60714-4617
847-647-1345

PREPARED FOR:

Frank Jarke
Mostardi-Platt Associates, Inc.
945 Oaklawn Avenue
Elmhurst, IL 60126

Report #: 35704
Report Date: 1/27/00
Sample Received:
8/31/99 14:20

TEI	93405	Type	Total ug	mg/kg	Date	%RSD	Lin.Reg.	Blank	CPI	MS	MSD
35726	023	KMnO4	8.91		12/13/99	0.422	1.00000	<0.03	93.5	118	110
35727	024	KMnO4	9.16		12/13/99	0.326	1.00000	<0.03	93.5	118	110
35728	025	KCl	0.173		12/16/99	0.617	1.00000	<0.03	99.0	106	108
35729	026	H2O2	0.37		1/5/00	0.664	0.99998	0.105	98.0	99.6	101
35730	027	KMnO4									
35731	028	KCl	0.162		12/16/99	0.826	1.00000	<0.03	99.0	106	108
35732	029	H2O2	0.66		1/5/00	1.34	0.99998	0.105	98.0	99.6	101
35733	030	KMnO4									
35734	031	Filt		0.062	10/7/99	QNS	0.99884	0.129	97.0	86.3	86.2
35735	032	Filt									
35736	033	Filt		0.066	10/7/99	QNS	0.99884	0.129	97.0	86.3	86.2
35737	034	Filt		0.066	10/1/99	1.65	0.99925	0.129	107	91.0	89.0
35738	035	Filt		0.022	10/1/99	4.21	0.99925	0.129	107	91.0	89.0
35739	036	Filt		0.067	10/1/99	QNS	0.99925	0.129	107	91.0	89.0
35740	037	HNO3	<0.003		1/9/00	1.89	0.99998	NA	101	112	108
35741	038	KCl	0.006		1/4/00	20.8	1.00000	<0.03	97.5	117	117
35742	039	H2O2	0.015		1/5/00	3.00	0.99998	0.105	98.0	99.6	101
35743	040	NH2OH	<0.003		1/4/00	0.267	1.00000	NA	97.5	95	96
35744	041	KMnO4	1.05		12/12/99	0.128	0.99999	0.070	92.3	108	108
35745	042	KMnO4	0.088		12/12/99	3.32	0.99999	0.070	92.3	108	108
35704F	001	Filt		0.092	10/20/99	0.385	0.99837	0.129	107	105	105
35705F	002	Filt		0.793	10/20/99	0.224	0.99837	0.129	107	105	105
35706F	003	Filt		1.33	10/20/99	.0387	0.99837	0.129	107	105	105
35716F	013	Filt		0.352	10/20/99	.0184	0.99837	0.129	107	105	105
35717F	014	Filt		0.0124	10/20/99	0.369	0.99837	0.129	107	105	105
35718F	015	Filt		0.094	10/20/99	0.619	0.99837	0.129	107	105	105

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LABORATORY REPORT

TEI Analytical, Inc.
7177 N. Austin
Niles, IL 60714-4617
847-647-1345

PREPARED FOR:

Frank Jarke
Mostardi-Platt Associates, Inc.
945 Oaklawn Avenue
Elmhurst, IL 60126

Report #: 35704
Report Date: 1/27/00
Sample Received:
8/31/99 14:20

Mercury (Ontario Hydro Method)

The QAPP called for the analysis of all samples in duplicate with every tenth sample run in triplicate. To simplify the instrument setup, we chose to run all samples, blanks, standards, matrix spikes and matrix spike duplicates in triplicate. The reported %RSD is for the triplicate measurements.

All sample results are reported as total micrograms in the sample received by the laboratory, with the exception of the filter samples. The filter sample results are expressed as mg/kg.

The instrument was calibrated at least daily with a blank and four standards. The Lin.Reg. column in this report represents the linear regression coefficient obtained during the calibration.

The laboratory method blank is reported in ug/l in the Blank column of this report. For samples requiring only addition of Hydroxylamine Hydrochloride, NA is entered in this column. No laboratory method blanks were applicable for these samples.

The CPI column presents the % Recovery of an independent standard (obtained from CPI). The calibration curve was prepared in our laboratory from Mercuric Chloride in accordance with EPA Method 7470.

The MS and MSD columns present the % Recovery of the Matrix Spikes and Matrix Spike Duplicates.

Gayle E. O'Neill, Ph.D.

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LABORATORY REPORT

TEI Analytical, Inc.
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Niles, IL 60714-4617
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PREPARED FOR:

Frank Jarke
Mostardi-Platt Associates, Inc.
945 Oaklawn Avenue
Elmhurst, IL 60126

Report #: 35704
Report Date: 1/27/00
Sample Received:
8/31/99 14:20

In reviewing the initial data for these samples, inconsistently high results were obtained, particularly for the KCl solutions. After considerable investigation, it was determined that the disposable plastic tubes used for the sample digestion were the source of the contamination.

It was also determined that adjustments in the instrument parameters and calibration levels were required to reach the lower limits required for this program. Where possible, samples were reanalysed following these adjustments. However, some samples had insufficient quantity for reanalysis. This was particularly true in the case of the filters.

Gayle E. O'Neill, Ph.D.

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COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • TEL: 630-953-9300 FAX: 630-953-9306

SINCE 1908®

SGS Member of the SGS Group (Société Générale de Surveillance)

ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN RD.
SOUTH HOLLAND, IL 60473
TEL: (708) 331-2900
FAX: (708) 333-3060

September 20, 1999

MOSTARDI-PLATT ASSOCIATES, INC
945 Oaklawn Avenue
Elmhurst, IL 60126
Attn: Frank Jarke

Sample identification by
Mostardi-Platt Assoc., Inc.

Kind of sample reported to us: Coal

Sample taken at: ------

Sample taken by: Mostardi-Platt Assoc., Inc.

Date sampled: August 24, 1999

Date received: September 1, 1999

MPA Sample No: 93405-043

Test 1

P.O. No. 22151

Analysis Report No. 71-101452

PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	20.51	xxxxx
% Ash	5.77	7.26
% Volatile	34.35	43.21
% Fixed Carbon	39.37	49.53
	100.00	100.00
Btu/lb	9433	11867
% Sulfur	0.25	0.31
MAF Btu		12796

ULTIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	20.51	xxxxx
% Carbon	55.59	69.93
% Hydrogen	3.78	4.76
% Nitrogen	0.83	1.05
% Sulfur	0.25	0.31
% Ash	5.77	7.26
% Oxygen(diff)	13.27	16.69
	100.00	100.00
CHLORIDE ug/g	106	133

METHODS

Moisture: ASTM D 3302; Ash: ASTM D 3174; Volatile: ASTM D 3175; Fixed Carbon: Calculated Value; ASTM D 3172
Btu/lb: ASTM 3286; Sulfur: ASTM D 4239 (Method C); Carbon, Hydrogen & Nitrogen: ASTM D 5373; Chloride: ASTM D 4208

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Joseph B. Housel

South Holland Laboratory

MEMBER ACIL

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COMMERCIAL TESTING & ENGINEERING CO.
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16130 VAN DRUNEN RD.
SOUTH HOLLAND, IL 60473
TEL: (708) 331-2900
FAX: (708) 333-3060

September 20, 1999

MOSTARDI-PLATT ASSOCIATES, INC
945 Oaklawn Avenue
Elmhurst, IL 60126
Attn: Frank Jarke

Sample identification by
Mostardi-Platt Assoc., Inc.

Kind of sample reported to us: Coal

MPA Sample No: 93405-043

Sample taken at: ------

Sample taken by: Mostardi-Platt Assoc., Inc.

Date sampled: August 24, 1999

Date received: September 1, 1999

P.O. No. 22151

Analysis Report No. 71-101452

	Dry Basis, ug/g	MDL, ug/g
Mercury, Hg	0.07	0.01

	Expected	Observed
SARM 1157	0.05	0.05
NIST 1630A	0.11	0.11

MDL Denotes Method Detection Limit

METHOD
Mercury: ASTM D 3684

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Joseph B. Hausch

South Holland Laboratory

MEMBER ACIL

OVER 40 BRANCH LABORATORIES STRATEGICALLY LOCATED IN PRINCIPAL COAL MINING AREAS, TIDEWATER AND GREAT LAKES PORTS, AND RIVER LOADING FACILITIES
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16130 VAN DRUNEN RD.
SOUTH HOLLAND, IL 60473
TEL: (708) 331-2900
FAX: (708) 333-3060

September 20, 1999

MOSTARDI-PLATT ASSOCIATES, INC
945 Oaklawn Avenue
Elmhurst, IL 60126
Attn: Frank Jarke

Sample identification by
Mostardi-Platt Assoc., Inc.

Kind of sample reported to us Coal

Sample taken at ------

Sample taken by Mostardi-Platt Assoc., Inc.

Date sampled August 24, 1999

Date received September 1, 1999

MPA Sample No: 93405-044

Test 2

P.O. No. 22151

Analysis Report No. 71-101453

PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	25.55	xxxxx
% Ash	5.44	7.31
% Volatile	31.60	42.45
% Fixed Carbon	37.41	50.24
	100.00	100.00
Btu/lb	8936	12003
% Sulfur	0.22	0.30
MAF Btu		12950

ULTIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	25.55	xxxxx
% Carbon	52.35	70.32
% Hydrogen	3.64	4.89
% Nitrogen	0.77	1.04
% Sulfur	0.22	0.30
% Ash	5.44	7.31
% Oxygen(diff)	12.03	16.14
	100.00	100.00
CHLORIDE ug/g	88	118

METHODS

Moisture: ASTM D 3302; Ash: ASTM D 3174; Volatile: ASTM D 3175; Fixed Carbon: Calculated Value; ASTM D 3172
Btu/lb: ASTM 3286; Sulfur: ASTM D 4239 (Method C); Carbon, Hydrogen & Nitrogen: ASTM D 5373; Chloride: ASTM D 4208

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Joseph B. Fowler

South Holland Laboratory

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September 20, 1999

MOSTARDI-PLATT ASSOCIATES, INC
945 Oaklawn Avenue
Elmhurst, IL 60126
Attn: Frank Jarke

Sample identification by
Mostardi-Platt Assoc., Inc.

Kind of sample reported to us Coal

MPA Sample No: 93405-044

Sample taken at ------

Sample taken by Mostardi-Platt Assoc., Inc.

Date sampled August 24, 1999

Date received September 1, 1999

P.O. No. 22151

Analysis Report No. 71-101453

	Dry Basis, ug/g	MDL, ug/g
Mercury, Hg	0.07	0.01

	Expected	Observed
SARM 1157	0.05	0.05
NIST 1630A	0.11	0.11

MDL Denotes Method Detection Limit

METHOD
Mercury: ASTM D 3684

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Joseph B. Hauser

South Holland Laboratory

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September 20, 1999

MOSTARDI-PLATT ASSOCIATES, INC
945 Oaklawn Avenue
Elmhurst, IL 60126
Attn: Frank Jarke

Sample identification by
Mostardi-Platt Assoc., Inc.

Kind of sample reported to us: Coal

Sample taken at: ------

Sample taken by: Mostardi-Platt Assoc., Inc.

Date sampled: August 24, 1999

Date received: September 1, 1999

MPA Sample No: 93405-045

Test 3.

P.O. No. 22151

REVISED CHLORINE

Analysis Report No. 71-101454

PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	23.44	xxxxx
% Ash	5.73	7.48
% Volatile	32.91	42.98
% Fixed Carbon	37.92	49.54
	100.00	100.00
Btu/lb	9135	11932
% Sulfur	0.23	0.30
MAF Btu		12897

ULTIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	23.44	xxxxx
% Carbon	53.89	70.39
% Hydrogen	3.69	4.82
% Nitrogen	0.80	1.04
% Sulfur	0.23	0.30
% Ash	5.73	7.48
% Oxygen(diff)	12.22	15.97
	100.00	100.00
CHLORIDE ug/g	99	129

METHODS

Moisture: ASTM D 3302; Ash: ASTM D 3174; Volatile: ASTM D 3175; Fixed Carbon: Calculated Value; ASTM D 3172
Btu/lb: ASTM 3286; Sulfur: ASTM D 4239 (Method C); Carbon, Hydrogen & Nitrogen: ASTM D 5373; Chloride: ASTM D 4208

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Joseph B. Hoeser

South Holland Laboratory

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FAX: (708) 333-3060

September 20, 1999

MOSTARDI-PLATT ASSOCIATES, INC
945 Oaklawn Avenue
Elmhurst, IL 60126
Attn: Frank Jarke

Sample identification by
Mostardi-Platt Assoc., Inc.

Kind of sample reported to us Coal

MPA Sample No: 93405-045

Sample taken at ------

Sample taken by Mostardi-Platt Assoc., Inc.

Date sampled August 24, 1999

P.O. No. 22151

Date received September 1, 1999

Analysis Report No. 71-101454

	Dry Basis, ug/g	MDL, ug/g
Mercury, Hg	0.08	0.01

	Expected	Observed
SARM 1157	0.05	0.05
NIST 1630A	0.11	0.11

MDL Denotes Method Detection Limit

METHOD
Mercury: ASTM D 3684

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Joseph B. Housey

South Holland Laboratory

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LIST OF PARTICIPANTS

Name	Organization	Project Role
Paul Schulz	Platte Rive Power Authority	Plant Coordinator
James R. Platt	Mostardi Platt	Vice President
Paul F. Coleman	Mostardi Platt	Project Manager
Jeffery C. Daniels	Mostardi Platt	Project Supervisor
John Wendell	Mostardi Platt	Laboratory Chemist
Norm Smith	Mostardi Platt	Test Technician
Chris Mirecki	Mostardi Platt	Test Technician
Gayle O'Neill, Ph.D.	TEI Analytical, Inc.	Speciated Hg Sample Analysis
Joseph Houser	CTE	Coal Sample Analysis