BOILER PERFORMANCE SUMMARY

6/15/2007

Boiler Horsepower	1500
Steam Flow lb/hr	49,304
Steam Pres. psig	200
Steam Temp. F	388
Feedwater Temp. F	212
Feedwater Rate GPM	102.76
Steam Enth. btu/lb	1199.4
Feedwater Enth. btu/lb	181
Heat Absorb. by stm. btu/lb	1018.4
Ex. Air [include tramp air] %	45
Unburn Carbon Loss %	0.5
Air Temp. To Boiler F	225
Gas Temp.Leaving Boiler F	425
Excess Air %	45
Moist. In Air lb H2O/lb air	0.013
Radiation Loss %	0.5
Manufactures Margin %	0.5
Fuel BTU/LB	4,510
Water from Fuel lb/10 kbtu	1.73
Theoretical Air lb/10 kbtu	7.05
Fuel wt.- Ash wt. lb/10 kbtu	2.21
Actual Dry Air lb/10 kbtu	10.18
Wt. of FuelBurned Wet lb/10 kbtu	2.21
Moisture in Air lb/10 kbtu	0.13
Total Wet Gas lb/10 kbtu	12.52
Water in Wet Gas lb/10 kbtu	1.87
Dry Gas total lb/10 kbtu	10.66
% water by wt. in Gas %	14.90
Gas out F - Air in F	200

= 51,750 F&A 212

Operating

Dry & Saturated

w/ AH

Customer:

Location:

Zebley

Fuel: WOOD

Moisture : 50 %

Fuel Analysis % by Weight	
Ash	0.25
S	0
H2	3.15
C	25.9
N2	0.05
O2	20.65
H2O	50
Total 100	100

Heating Value: 4,510 Btu/lb

LOSSES	%
Dry Gas Loss %	5.11
H2O from Fuel Loss %	18.43
Moist . In Air Loss %	0.13
Unburn Comb. Loss %	0.50
Radation Loss %	0.50
Manufac.Unaccount.Margin %	0.50
Total Losses %	25.17
BOILER EFFICIENCY	74.83

Fuel Input mmBtu/hr	67.10
Wet Gas Weight M lb/hr x1000	84.02
Total Air to Burners M lb/hr x1000	69.42
Total Air Flow ACFM 70 F	15,447
Fuel Rate lb/hr	14,878.3
Fuel Rate Tons/yr	65,166.9

CONSTITUENTS OF FLUE GAS	WET BASIS		DRY BASIS	
	% BY WT.	% BY VOL.	% BY WT.	%BYVOL
CO2	16.67	10.45	19.56	13.53
SO2	0.00	0.00	0.00	0.00
H2O	14.81	22.71	0.00	0.00
N2	62.71	61.82	73.61	79.99
O2	5.81	5.01	6.82	6.49
Total	100.00	100.00	100.00	100.00

Flue Gas		F
Density Flue Gas #/cf	0.040	425
Flue Gas Flow ACFM	35,038	425
Flue Gas Flow SCFM	20,587	70
Gas Flow DSCFM	15,912	70
Corrected 8% O2 dscf	17,777	70

PROJECTED EMISSIONS	RATE (lb/mmBtu)	Source	lbs/hr	Tons/yr
PM -10 with Multicyclone	0.32	AP-42	21.47	94.05
PM-2.5 with Multicyclone	0.19	AP-42	12.75	55.84
Total PM with Multicyclone	0.30	Hurst	20.13	88.17
PM-10 with ESP	0.04	AP-42	2.68	11.76
PM-2.5 with ESP	0.035	AP-42	2.35	10.29
Total PM with ESP	0.054	AP-42	3.62	15.87
Nox	0.22	AP-42	14.76	64.66
CO	0.3	Hurst	20.13	88.17
SO2	0.025	AP-42	1.68	7.35
TOC	0.039	AP-42	2.62	11.46
VOC	0.013	AP-42	0.87	3.82

Hurst BOILER & WELDING COMPANY, INC.