

Cleaver-Brooks Boiler Estimated Exhaust/Emission Performance Data

Customer: Jamaica Project
 Location: Jamaica
 Prepared By: Wildasin
 Elevation, feet: 100
 Date: 09/05/06

Boiler Summary Data

Boiler Model:	4WI 600-850 200#	Boiler Type:	Steam
Fuel:	No. 6 Oil	Steam Pressure, psig:	175
Input, Btu/hr:	34,699,695	LE Option, ppm:	None

	Firing Rate			
	25%	50%	75%	100%
Horsepower	213	425	638	850
Btu/hr	8,674,924	17,349,848	26,024,771	34,699,695

Emission Performance

		25%	50%	75%	100%
CO	ppm	95	95	95	95
	lb/MMBtu	0.075	0.075	0.075	0.075
	lb/hr	0.65	1.30	1.95	2.60
	tpy	2.85	5.70	8.55	11.40
NOx	ppm	320	320	320	320
	lb/MMBtu	0.426	0.426	0.426	0.426
	lb/hr	3.70	7.39	11.09	14.78
	tpy	16.2	32.4	48.6	64.8
SOx	ppm	1665	1665	1665	1665
	lb/MMBtu	3.09	3.09	3.09	3.09
	lb/hr	26.81	53.61	80.42	107.22
	tpy	117.4	234.8	352.2	469.6
HC/VOCs	ppm	70	70	70	70
	lb/MMBtu	0.035	0.035	0.035	0.035
	lb/hr	0.304	0.607	0.911	1.214
	tpy	1.33	2.66	3.99	5.32
PM	ppm	N/A	N/A	N/A	N/A
	lb/MMBtu	0.479	0.479	0.479	0.479
	lb/hr	4.16	8.31	12.47	16.63
	tpy	18.21	36.41	54.62	72.82

Exhaust Data

		25%	50%	75%	100%
Temperature, F		411	428	436	445
Flow	ACFM	3,437	6,168	9,335	12,572
	SCFM	2,085	3,670	5,505	7,340
	lb/hr	9,378	16,506	24,759	33,012
Velocity	ft/sec	18.24	32.72	49.52	66.70
	ft/min	1094.1	1963.3	2971.4	4001.7

- Notes:**
- 1.) All ppm levels are corrected to 3% oxygen
 - 2.) No. 6 Oil emission levels are based on the following fuel constituent levels:

Ash Content	0.05 %	by weight
Fuel-bound Nitrogen Content	0.28 %	by weight
Sulfur Content	3.00 %	by weight
Conradson Carbon Residue	12.0 %	by weight
 - 3.) If any of the actual fuel constituent levels are different than indicated above, the emission levels will change.
 - 4.) Fuel input is based on 80% boiler efficiency.