

Table 1. Emission Summary
Unit 1 Combustion Turbine - Gas Fired
Lake Cogeneration, Ltd.
Umatilla, Florida
December 9 - 10, 2008

Run Number	Time	Oxygen %	NOx Emissions				CO Emissions			CT		DB		CT + DB	DB	DB	
			ppm	ppm 15% O2	lbs/hr	lbs/MMBTU	ppm	lbs/hr	lbs/MMBTU	Gas Flow scfm	CT Heat Input MMBTUH HHV	CT Heat Input MMBTUH LHV	Gas Flow scfm	Heat Input MMBTUH HHV	Heat Input MMBTUH HHV	NOx Contr. lbs/MMBTU	CO Contr. lbs/MMBTU
Full Load CT only (12/9/08)																	
1	1256-1425	14.20	26.80	23.60	41.44	0.0869	27.03	25.45	0.0534	7627	476.8	431.5	NA	NA	NA	NA	NA
2	1442-1616	14.23	26.78	23.70	41.55	0.0872	26.70	25.23	0.0529	7622	476.5	431.2	NA	NA	NA	NA	NA
3	1630-1757	14.22	26.96	23.80	41.77	0.0876	26.10	24.64	0.0517	7626	476.8	431.5	NA	NA	NA	NA	NA
Average	—	14.22	26.85	23.70	41.59	0.0872	26.61	25.11	0.0527	7625	473.1	431.4	NA	NA	NA	NA	NA
Full Load CT with Duct Burner (12/10/08)																	
1	1208-1308	13.67	28.10	22.90	43.26	0.0845	33.20	31.06	0.0607	7569	473.2	428.2	619.0	38.7	511.9	0.047	0.145
2	1326-1426	13.64	28.37	23.10	43.50	0.0850	32.40	30.26	0.0591	7564	472.9	427.9	621.5	38.9	511.8	0.050	0.129
3	1443-1543	13.64	28.41	23.10	43.58	0.0851	32.40	30.24	0.0591	7567	473.1	428.1	623.5	39.0	512.1	0.046	0.144
Average	—	13.65	28.29	23.03	43.44	0.0849	32.67	30.52	0.0596	7567	473.1	428.1	621.3	38.8	511.9	0.048	0.139

Natural Gas Fd-Factor = 8710 MMBTU/dscf MW NOx = 46 lbs/lb-mole MW CO = 28 lbs/lb-mole
Heat Input HHV = (gas flow)(1042 dry Btu/cf)(60 min/hr)/10E6
lbs/hr = ppm(2.595 x 10⁻⁹)MW (20.9/20.9-%O2)(Fd)(Heat Input HHV)

Allowable Emissions

NOx = 25 ppmvd @ 15%O2
CO = 28 ppmvd
DB NOx = 0.1 lbs/MMBTU
DB CO = 0.2 lbs/MMBTU

SO2 Emissions (Subpart GG NSPS) = 6.06E-03 lbs/hr CT

Duct Burner Contribution = (lbs/hr CT = lbs/hr CT+DB) / DB Heat Input (HHV)

**Table 2. NOx Emission Summary at Different Load Levels
 Unit 1 Combustion Turbine - Gas Fired
 Lake Cogeneration, Ltd.
 Umatilla, Florida
 December 9, 2008**

Run Number	Time	Oxygen %	NOx Emissions			Gas Flow scfm	Heat Input MMBTUH HHV	
			ppm	ppm 15% O2	lbs/hr			
<u>28.9 MW</u>								
1	0636-0652	15.50	21.87	23.90	27.53	0.0879	5010	313.2
2	0700-0716	15.44	22.20	23.99	27.38	0.0883	4960	310.1
3	0724-0740	15.48	22.07	24.02	27.33	0.0885	4939	308.8
Average	---	15.47	22.05	23.97	27.41	0.0882	4970	310.7
<u>20 MW</u>								
4	0814-0830	15.99	18.77	22.55	20.15	0.0832	3875	242.2
5	0839-0855	15.96	19.17	22.90	20.53	0.0844	3890	243.2
6	0906-0922	15.97	19.23	23.01	20.45	0.0848	3857	241.1
Average	---	15.97	19.06	22.82	20.38	0.0841	3874	242.2
<u>39 MW</u>								
7	1019-1035	14.89	24.32	23.87	33.98	0.0879	6244	386.6
8	1044-1100	14.90	24.03	23.63	33.73	0.0870	6261	387.7
9	1109-1125	14.90	24.08	23.68	34.04	0.0872	6304	390.3
Average	---	14.90	24.14	23.73	33.92	0.0874	6270	388.2

Natural Gas Fd-Factor = 8710 MMBTU/dscf

Heat Input HHV = (gas flow)(1042 dry Btu/cf)(60 min/hr)/10E6

lbs/hr = ppm(2.595 x 10^{E-9})MW (20.9/20.9-%O2)(Fd)(Heat Input HHV)

MW NOx = 46