GSEE, Inc.

Environmental Services

ASCE OXYGEN TRANSFER DETERMINATION

PROJECT: Otterbine
DATE: 26-Apr-07
RUN: 2

599 Waldron Rd.
LaVergne, TN 37086
615/793-7547
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	Initial	Mid Point	Final
Barometric Pres. (PSIA)	14.209	14.187	14.168
(mm Hg)	734.80	733.70	732.70
Ambient Temperature (°F)	65.80	67.60	73.60
Relative Humidity (%)	64%	69%	59%
Line Pressure (PSIG)	14.205	14.205	14.205
(In. Hg)	28.92	28.92	28.92
Line Temperature (°F)	105.00	111.00	116.00
Rotometer (SCFH)	425.000	415.000	412.000
$C_{sm}T$ (Standard Methods, mg/l at 0 TDS)		9.713	β (C^*_{20TDS}/C^*_{20CW})
C^*_{20} (mg/L at 0 TDS)		11.901	**0.997**
Water Temp. (°C)	16.53	16.68	17.07
Orifice Diameter (in)		NA	
Number Of Aeration Devices		12	
Side Water Depth (ft)		30.00	(9.14 m)
Air Release Depth (ft)		29.50	(8.99 m)
Tank Length (ft)		0.00	(0.00 m)
Tank Width (ft)		0.00	(0.00 m)
Tank Diameter (ft)		21.00	(6.40 m)
Gear Reducer or Belt Efficiency		100.0%	
Motor Efficiency		85.0%	
Viscosity at 20° (μ - cp)		1.002	
Blower HP_{wire}		1.64	(1.22 kw)
Total HP_{wire} av.		1.64	(1.22 kw)
Actual Air Flow (ACFM)		6.96	

C' Air Flow Rotometer	2.71
Air Flow Device 2 (SCFM)	12.33
TDS Water Density @ 20°C (kg/m³)	998.62
Standard Density @ 20°C (kg/m³)	998.23
Temp. Correction Factor (τ)	1.07
Pressure Correction Factor (Ω)	0.97
Average Air Flow (SCFM)	12.33
Effective Depth Correction (f)	0.35
Headloss (In. H_2O)	39.21
C* (mg/l)	12.33
$C_{sm}T$ (Standard Methods, mg/l at test TDS))	9.68
C^*_{20} (mg/L at Test TDS)	11.86
Tank Volume (Ft³)	10,390.8
(Gallons)	77,728.7
(m³)	294.2
(Million Pounds)	0.648
#Na_2SO_3 @ 118% Stoichiometric	74.44
Cobalt Concen. (mg/l)	0.100
Grams Cobalt Chloride	121.3
Viscosity at Test Temperature & Pressure (μ - cp)	1.086
Effective Saturation Depth (d_e)	10.29
Blower HP_{motor}	1.39
Total HP_{motor} av.	1.39
TDS (mg/L)	504.00

NON-LINEAR REGRESSION RESULTS

Probe	K_La_T	K_La_{20}	SOTR	SOTR/Dev	SOTE	SAE_{wire}	C*	Std. Err.
1	0.40	0.44	3.34	0.28	26.13	2.04	12.26	0.0468
2	0.40	0.43	3.34	0.28	26.13	2.04	12.29	0.0222
3	0.40	0.43	3.34	0.28	26.14	2.04	12.39	0.0314
4	0.40	0.43	3.35	0.28	26.22	2.05	12.51	0.0269
5	0.42	0.45	3.45	0.29	27.02	2.11	12.19	0.2340
NA	NA	NA	NA	NA	NA	NA	NA	NA
avg.	0.40	0.44	3.36	0.28	26.33	2.06	12.33	0.0723
Avg	*0.40*	*0.43*	*3.34*	*0.28*	*26.13*	*2.04*	*12.31*	Exclude Max&Min
TDS	***0.42***	***0.46***	***3.53***	***0.29***	***27.62***	***2.16***	***12.33***	***0.94%***
	/hr	/hr	#O2/hr		%	#O2/hr-WHP		

OXYGEN TRANSFER

Total SCFM:	**12.3**	**19.820**	**:Nm³/Hr**	**5.818**	**L/s**	**#O2/Hr:**	**3.36**	**1.523**	**:KgO2/Hr**
SCFM/Diff.:	**1.03**	**1.652**	**:Nm³/hr/Diff**			**#O2/Hr/Diff.:**	**0.28**	**0.127**	**:KgO2/Hr/Diff.**
SCFM/KCF:	**1.2**	**0.067**	**:Nm³/hr/m³**			**#O2/Day:**	**80.6**	**36.6**	**:KgO2/Day**
Total ICFM:	**12.8**	**6.04**	**L/s**			**#O2/Day/1000 Ft³:**	**8**	**0.12**	**:KgO2/Day/m³**

LINEAR REGRESSION RESULTS

Probe	K_La_T	K_La_{20}	SOTR	SOTR/Dev	SOTE	SAE_{wire}	C*	Corr.Coeff.
1	0.40	0.44	3.34	0.28	26.17	2.04	12.22	0.9993
2	0.41	0.44	3.37	0.28	26.36	2.06	12.26	0.9999
3	0.40	0.44	3.37	0.28	26.40	2.06	12.36	0.9998
4	0.40	0.43	3.36	0.28	26.31	2.05	12.48	0.9998
5	0.41	0.44	3.33	0.28	26.06	2.04	12.09	0.9866
NA	NA	NA	NA	NA	NA	NA	NA	NA
avg.	0.40	0.44	3.35	0.28	26.26	2.05	12.28	0.9971
Avg	*0.41*	*0.44*	*3.39*	*0.28*	*26.55*	*2.07*	*12.28*	Exclude Max&Min
TDS	***0.42***	***0.46***	***3.55***	***0.30***	***27.77***	***2.17***	***12.28***	
	/hr	/hr	#O2/hr		%	#O2/hr-HPw		