

Swanson Group Mfg., LLC - Roseburg
2010 Emission Compliance Tests

July 20, 2010

TABLE 1-1
SUMMARY OF AVERAGE EMISSIONS
PARTICULATE MATTER
KIPPER BOILER
SWANSON GROUP MFG., LLC
ROSEBURG, OREGON
JUNE 9, 2010

Parameter	Average	Permit Limit
Plant Operating Data:		
Firing Rate, Mlb/hr-steam	30,317	31,800
Flue Gas:		
O ₂ , % volume dry	10.21	--
CO ₂ , % volume dry	9.95	--
Gas temperature, °F	369.9	--
Moisture content, %	15.3	--
Volumetric flow rate, dscfm	14,542	--
Particulate Matter:		
gr/dscf	0.3210	--
gr/dscf @ 12% CO ₂	0.3838	0.2
lb/hr	39.97	--
lb/Mlb-steam	1.315	--
Opacity:		
%	14.2	40



Swanson Group, LLC, Roseburg, Oregon
Kipper Hog Fuel Boiler, October 1, 2010

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3. SUMMARY OF RESULTS

3.1 Table of Results:

Table 1

Kipper Hog Fuel Boiler (EU KB) – Particulate Matter (PM) Test Results

Test Date: October 1, 2010	Units	Run 1	Run 2	Run 3	Average
Start Time		15:24	17:12	18:58	
End Time		16:29	18:34	20:07	
Sampling Time	minutes	60	65	62.5	62.5
Sampling Results					
PM Concentration	gr/dscf	0.17	0.14	0.13	0.15
Concentration @ 12% CO ₂		0.19	0.17	0.16	0.17
Permit Limit @ 12% CO ₂	gr/dscf				0.2
Mass Rate	lb/hr	17.0	14.7	12.3	14.7
Production-Based Rate	lb/Mlb-Steam	0.91	0.75	0.62	0.76
Sample Volume	dscf	36.0	33.4	34.2	34.5
Sample Weight	mg	390	309	294	331
Percent Isokinetic	%	103	104	102	103
Source Parameters					
O ₂	%	9.6	10.3	10.0	10.0
CO ₂	%	10.6	9.9	10.3	10.2
Flow Rate (Actual)	acf/min	21,000	22,100	19,500	20,900
Flow Rate (Standard)	dscf/min	11,800	12,000	10,900	11,600
Temperature	°F	325	334	333	330
Moisture	%	15.1	17.0	15.4	15.8
Production/Process Data					
Boiler Steam Production Rate	Mlb/hr	18.7	19.6	19.9	19.4
Boiler Excess Oxygen	%	6.8	6.8	6.6	6.7
Multiclone Pressure Drop	in. H ₂ O	2.4	2.4	2.2	2.3
Boiler Breech Temperature	°F	647	670	660	659
Fuel Sample Moisture	%	44.8	44.4	46.4	45.2
Fuel <1/8 inch	%	6.0	7.5	9.1	7.5

Swanson Group, LLC, Roseburg, Oregon
Kipper Hog Fuel Boiler, October 6, 2011

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3. SUMMARY OF RESULTS

3.1 Table of Results:

Table 1

Kipper Hog Fuel Boiler (EU KB) – Particulate Matter and Opacity Results

Test Date: October 6, 2011	Units	Run 2	Run 3	Run 4	Average
Start Time		11:45	13:37	15:28	
End Time		12:52	14:44	16:34	
Sampling Time	minutes	60	60	60	60
Sampling Results					
PM Concentration	gr/dscf	0.14	0.16	0.20	0.17
Concentration @ 12% CO ₂		0.14	0.16	0.21	0.17
Permit Limit @ 12% CO ₂	gr/dscf				0.2
Mass Rate	lb/hr	12.6	14.2	20.8	15.9
Production-Based Rate	lb/Mlb-Steam	0.46	0.54	0.78	0.59
Sample Volume	dscf	36.2	35.4	41.4	37.7
Sample Weight	mg	331	375	544	417
Percent Isokinetic	%	100	100	100	100
Opacity (6-minute average)	%	17	18	18	17
Permit Limit	%				40
Source Parameters					
O ₂	%	8.0	7.7	8.9	8.2
CO ₂	%	12.3	12.6	11.5	12.1
Flow Rate (Actual)	acf/min	19,300	19,100	22,900	20,400
Flow Rate (Standard)	dscf/min	10,400	10,200	12,000	10,900
Temperature	°F	356	359	383	366
Moisture	%	15.5	16.7	15.8	16.0
Production/Process Data					
Boiler Steam Production Rate	Mlb/hr	27.4	26.1	26.8	26.8
Boiler Excess Oxygen	%	5.6	5.2	6.3	5.7
Multiclone Pressure Drop	in. H ₂ O	2.0	2.5	2.5	2.3
Boiler Breech Temperature	°F	659	672	685	672
Fuel Sample Moisture	%	42.8	39.5	46.7	43.0
Fuel <1/8 inch	%	4.7	4.5	9.9	6.3