1.0 EXECUTIVE SUMMARY

Mostardi Platt conducted a Maximum Achievable Control Technology (MACT) emissions test program on the No. 9 Boiler (EU9B03) North and South Stacks at the Escanaba Mill of Billerud Escanaba LLC in Escanaba, Michigan on August 18 and 19, 2022. This report summarizes the results of the test program and test methods used.

Test location, test dates, and test parameters are summarized below.

TEST INFORMATION		
Test Location	**Test Dates**	**Test Parameters**
No. 9 Boiler North and South Stacks	August 18, 2022	Carbon Monoxide (CO)
	August 19, 2022	Filterable Particulate Matter (FPM)

The purpose of the test program is to demonstrate that No. 9 Boiler is compliant with the Filterable Particulate Matter (FPM) and Carbon Monoxide (CO) applicable emission limits under *National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters* promulgated at 40 CFR Part 63, Subpart DDDDD Table 2 subcategory 13 for hybrid suspension grate units designed to burn biomass/bio-based solids. A complete summary of the emission test results follows the narrative portion of this report.

TEST RESULTS				
Test Location	**Test Dates**	**Test Parameters**	**Emission Limit, lb/mmBtu**	**Emission Rate***
No. 9 Boiler North Stack and South Stack Combined	8/18/2022 and 8/19/2022	FPM	0.44 lb/MMBtu (Heat Input)	0.1834 lb/MMBtu (Heat Input)
			0.5 lb/1000 lb stack gas	0.146 lb/1000 lb stack gas
		CO	3,500 ppmvd @ 3% O_2	1728 ppmvd @ 3% O2

*Combined stack (North and South) emission rate concentrations are weight average based on volumetric flow rates.

The identifications of individuals associated with the test program are summarized below.

TEST PERSONNEL INFORMATION		
Location	**Address**	**Contact**
Test Facility	Billerud Escanaba LLC 7100 County Road 426 M.5 Rd Escanaba, Michigan 49829	Adam Becker Environmental Engineer (906) 233-2929 (phone) Adam.Becker@versoco.com
Testing Company Representative	Mostardi Platt 888 Industrial Drive Elmhurst, Illinois 60126	Daniel Kossack Project Manager (630) 993-2100 (phone) ssands@mp-mail.com

The test crew consisted of J. Jimenez, N. Colangelo, W. Drake, W. Rogman, and D. Kossack of Mostardi Platt.

2.0 TEST METHODOLOGY

Emissions testing were conducted following the methods specified in 40 CFR, Part 60, Appendix A. Schematics of the test section diagram and sampling trains used are found in Appendix B and C, respectively. Calculation nomenclature and sample calculations are found in Appendix D. Sample analysis data are found in Appendix E. Copies of reference method data and field data sheets for each test run are included in Appendix F and G, respectively.

The following methodologies were used during the test program:

Method 1 Traverse Point Determination

Test measurement points were selected in accordance with Method 1. The characteristics of the measurement location are summarized below.

TEST POINT INFORMATION						
Location	Stack Diameter (Feet)	Stack Area (Square Feet)	Upstream Diameters	Downstream Diameters	Test Parameters	Number of Sampling Points
No. 9 Boiler	7.0	38.485	>0.5	>2.0	FPM	24
					CO	12 (stratification)

Method 2 Volumetric Flowrate Determination

Gas velocity was measured following Method 2, for purposes of calculating stack gas volumetric flow rate. An S-type pitot tube, differential pressure gauge, thermocouple and temperature readout were used to determine gas velocity at each sample point. All of the equipment used was calibrated in accordance with the specifications of the Method. Calibration data are presented in Appendix H.

Method 3A Oxygen (O_2)/Carbon Dioxide (CO_2) Determination

Stack gas molecular weight was determined in accordance with Method 3A, 40 CFR, Part 60, Appendix A. A Servomex analyzer was used to determine stack gas oxygen and carbon dioxide content and, by difference, nitrogen content. All of the equipment used was calibrated in accordance with the specifications of the Method. Calibration data are presented in Appendix H and gas cylinder certifications are presented in Appendix I.

Method 5 Filterable Particulate Matter (FPM) Determination

Stack gas FPM concentrations and emission rates were determined in accordance with USEPA Method 5, 40CFR60, Appendix A with filter and probe temperatures controlled at 248 degrees Fahrenheit +/- 25 degrees Fahrenheit. An Environmental Supply Company, Inc. sampling train was used to sample stack gas at an isokinetic rate, as specified in the Method utilizing Pallflex TX40HI45 filters. Particulate matter in the sample probe was recovered using an acetone rinse. The probe wash and filter catch were analyzed by Mostardi Platt in accordance with the Method in the Elmhurst, Illinois laboratory. Sample analysis data are found in Appendix E. All of the equipment used was calibrated in accordance with the specifications of the Method. Calibration data are presented in Appendix H.

Method 10 Carbon Monoxide (CO) Determination

Stack gas CO concentrations and emission rates were determined in accordance with Method 10. A Thermo Fischer Scientific 48 Series Gas Filter Correlation Carbon Monoxide Analyzer was used to determine carbon monoxide concentrations, in the manner specified in the Method. The instrument operates in a range of 0 ppm to the high-level span calibration gas to be determined on site.

A list of calibration gases used and the results of all calibration and other required quality assurance checks are provided in Appendix H. Copies of calibration gas certifications are provided in Appendix I. This testing met the performance specifications as outlined in the Method.

3.0 TEST RESULTS SUMMARIES

Client: Billerud Escanaba LLC
Facility: Escanaba Mill
Test Location: No. 9 Boiler (EU9B03) North
Test Method: 5

Source Condition	Normal	Normal	Normal		
Date	8/19/22	8/19/22	8/19/22		
Start Time	9:05	12:45	14:30		Weighted
End Time	10:10	13:50	15:35		Average
	Run 1	Run 3	Run 4	Average	(55%)
Stack Conditions					
Average Gas Temperature, °F	144.9	144.9	141.1	143.6	
Flue Gas Moisture, percent by volume	23.0%	23.0%	20.9%	22.3%	
Average Flue Pressure, in. Hg	29.00	29.00	29.00	29.00	
Gas Sample Volume, dscf	47.484	46.634	46.271	46.796	
Average Gas Velocity, ft/sec	26.722	26.267	25.830	26.273	
Gas Volumetric Flow Rate, acfm	61,704	60,652	59,642	60,666	
Gas Volumetric Flow Rate, dscfm	40,200	39,517	40,168	39,962	
Gas Volumetric Flow Rate, scfm	52,208	51,321	50,782	51,437	
Average $\%CO_2$ by volume, dry basis	12.7	12.0	9.9	11.5	
Average $\%O_2$ by volume, dry basis	7.5	8.7	10.4	8.9	
Isokinetic Variance	102.6	102.5	100.1	101.7	
Standard Fuel Factor Fd, dscf/mmBtu	9,240.0	9,240.0	9,240.0	9,240.0	
Yearly Operating Hours	8760.0	8760.0	8760.0	8,760.0	
Filterable Particulate Matter (Method 5)					
grams collected	0.24848	0.23142	0.20260	0.22750	
mg/dscm	184.800	175.249	154.628	171.5591	
mg/wscm	142.296	134.942	122.311	133.1829	
mg/acm at stack conditions	120.387	114.165	104.133	112.8950	
grains/acf	0.0526	0.0499	0.0455	0.0493	
grains/dscf	0.0807	0.0766	0.0676	0.0750	
grains/dscf @ 10% O2	0.0656	0.0684	0.0702	0.0681	
lb/hr	27.822	25.936	23.261	25.673	
lb/1000 lb of stack gas	0.147	0.137	0.124	0.136	0.075
ton/yr	121.860	113.600	101.883	112.448	
lb/mmBtu (Standard Fd Factor)	0.1662	0.1732	0.1775	0.1723	0.0948

Client:	**Billerud Escanaba LLC**
Facility:	**Escanaba Mill**
Test Location:	**No. 9 Boiler (EU9B03) South**
Test Method:	**5**

Source Condition	Normal	Normal	Normal		
Date	8/19/22	8/19/22	8/19/22		
Start Time	9:05	12:45	14:30		Weighted
End Time	10:10	13:50	15:35		Average
	Run 1	Run 3	Run 4	Average	(45%)
Stack Conditions					
Average Gas Temperature, °F	137.3	137.0	136.5	136.9	
Flue Gas Moisture, percent by volume	18.9%	18.8%	18.5%	18.7%	
Average Flue Pressure, in. Hg	29.00	29.00	29.00	29.00	
Gas Sample Volume, dscf	43.506	43.547	44.379	43.811	
Average Gas Velocity, ft/sec	20.022	19.903	20.336	20.087	
Gas Volumetric Flow Rate, acfm	46,233	45,957	46,958	46,383	
Gas Volumetric Flow Rate, dscfm	32,131	31,992	32,835	32,319	
Gas Volumetric Flow Rate, scfm	39,620	39,399	40,289	39,769	
Average $\%CO_2$ by volume, dry basis	12.6	11.4	9.5	11.2	
Average $\%O_2$ by volume, dry basis	7.4	8.4	10.4	8.7	
Isokinetic Variance	98.6	99.1	98.4	98.7	
Standard Fuel Factor Fd, dscf/mmBtu	9,240.0	9,240.0	9,240.0	9,240.0	
Yearly Operating Hours	8760.0	8760.0	8760.0	8,760.0	
Filterable Particulate Matter (Method 5)					
grams collected	0.24871	0.25264	0.23277	0.24471	
mg/dscm	201.885	204.880	185.228	197.3310	
mg/wscm	163.728	166.362	150.961	160.3507	
mg/acm at stack conditions	140.282	142.610	129.517	137.4697	
grains/acf	0.0613	0.0623	0.0566	0.0601	
grains/dscf	0.0882	0.0895	0.0809	0.0862	
grains/dscf @ 10% O2	0.0712	0.0780	0.0840	0.0777	
lb/hr	24.294	24.548	22.778	23.873	
lb/1000 lb of stack gas	0.161	0.164	0.149	0.158	0.071
ton/yr	106.408	107.520	99.768	104.565	
lb/mmBtu (Standard Fd Factor)	0.1803	0.1976	0.2126	0.1968	0.0886

Billerud Escanaba LLC Escanaba Mill No. 9 Boiler north (EU9BO3) Gaseous Summary							
Test No.	Date	Start Time	End Time	CO ppmvd	O_2 % (dry)	CO PPM at 3% O2	Weighted Average (55%)
1	08/18/22	09:30	10:39	1532.5	5.5	1781.3	
2	08/18/22	11:05	12:24	1027.4	5.8	1217.9	
3	08/18/22	12:45	13:54	1834.8	5.7	2160.7	
Average				1,464.9	5.7	1,720.0	946.0

Billerud Escanaba LLC Escanaba Mill No. 9 Boiler South (EU9BO3) Gaseous Summary							
Test No.	Date	Start Time	End Time	CO ppmvd	O_2 % (dry)	CO PPM at 3% O2	Weighted Average (45%)
1	08/18/22	09:30	10:39	1554.8	5.5	1807.2	
2	08/18/22	11:05	12:24	1043.0	5.8	1236.4	
3	08/18/22	12:45	13:54	1832.3	5.8	2172.1	
Average				1,476.7	5.7	1,738.6	782.4

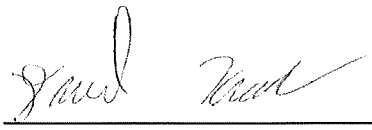
4.0 CERTIFICATION

Mostardi Platt is pleased to have been of service to Billerud Escanaba LLC. If you have any questions regarding this test report, please do not hesitate to contact us at 630-993-2100.

CERTIFICATION

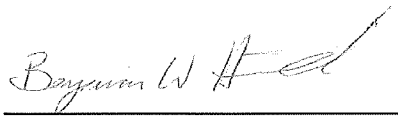
As project manager, I hereby certify that this test report represents a true and accurate summary of emissions test results and the methodologies employed to obtain those results, and the test program was performed in accordance with the methods specified in this test report.

MOSTARDI PLATT



Program Manager

Daniel J. Kossack



Quality Assurance

Benjamin W. Hendricks

APPENDICES

Appendix A - Plant Operating Data

No. 9 Boiler Operating Parameters

Test 1 - CO Compliance, Max Steam Flow, and O2 Trim Setpoint											
Run No.	Date & Time	Fuels	Heat Input (mmbtu/hr)	Percent Heat Input	Total Heat Input (mmbtu/hour)	Steam Flow (KPPH)	North Scrubber Flow (gpm)	South Scrubber Flow (gpm)	North Scrubber dP (In H2O)	South Scrubber dP (In H2O)	Excess Oxygen (O2 trim control)
[illegible] TSM	Start 8/18/2022 9:30	Wood	281	71%	398	251	1110	1094	7	5	2
	Stop 8/18/2022 10:39	Gas	102	29%							
Run 2	Start 8/18/2022 11:05	Wood	273	69%	394	247	1109	1090	7	5	3
	Stop 8/18/2022 12:24	Gas	106	31%							
Run 3	Start 8/18/2022 12:45	Wood	270	69%	393	248	1110	1089	7	5	2
	Stop 8/18/2022 13:54	Gas	108	31%							

Test 2 - PM Compliance, Minimum Scrubber Flow, and dP											
Run No.	Date & Time	Fuels	Heat Input (mmbtu/hr)		Total Heat Input (mmbtu/hour)	Steam Flow (KPPH)	North Scrubber Flow (gpm)	South Scrubber Flow (gpm)	North Scrubber dP (In H2O)	South Scrubber dP (In H2O)	Excess Oxygen (O2 trim control)
Run 4	Start 8/19/2022 9:05	Wood	286	100%	286	180	1112	1090	6	4	5
	Stop 8/19/2022 10:10	Gas	0	0%							
Run 5	Start 8/19/2022 12:45	Wood	270	100%	270	171	1115	1091	6	4	6
	Stop 8/19/2022 13:50	Gas	0	0%							
Run 6	Start 8/19/2022 14:30	Wood	224	100%	224	145	1113	1092	6	4	6
	Stop 8/19/2022 15:35	Gas	0	0%							

Test 1	Minimum 1-hour dP Average		Minimum 1-hour Scrubber Flow Average		Minimum O2	110% Maximum Steam Flow
	North	South	North	South		
	7.12	4.72	1108.82	1088.66	2	277

Test 2	Minimum 1-hour dP Average		Minimum 1-hour Scrubber Flow Average		Minimum O2	110% Maximum Steam Flow
	North	South	North	South		
	6	4	1112	1090	5	198

Test 1 Run 1

Start	8/18/22 9:30												
Finish	8/18/22 10:39												
Interval	1m												
	Enthalpy Factor	1,110.2											
Run Averages =	251	278,534,026	102.8298634	102,295,225	397,905,752	280,996,924	70.6%	2	7	5	125	1,110	1,094

Date & Time	No. 9 Steam Load KPPH 03-F0115.4	Estimated Total Heat Output btus/hr	Gas Flow KSCFH 03-F0108.4	Gas btu's btus/hr	Estimated Total Heat Input btus/hr	Bark Heat Input btus/hr	% load from bark %	Excess Oxygen (O2 trim control) % 03-A0111.4	dP North in. H2O 33-P0800B.4	dP South in. H2O 33-P0800C.4	Scrubber Supply Pressure psig 03-P0601.4	North Scrubber Flow GPM 03-F0602.4	South Scrubber Flow GPM 03-F0603.4
8/18/22 9:30	248	275,163,446	88.8051899	88,805,190	393,090,637	291,598,991	74.2%	2	7	4	125.2	1110.1	1088.7
8/18/22 9:31	241	267,748,120	89.18608017	89,186,080	382,497,315	280,570,366	73.4%	2	7	5	125.2	1104.3	1094.3
8/18/22 9:32	238	264,361,076	86.32947083	86,329,471	377,658,680	278,996,428	73.9%	2	7	5	125.2	1108.0	1089.8
8/18/22 9:33	241	267,736,105	88.12826996	88,128,270	382,480,150	281,762,127	73.7%	2	7	4	125.3	1101.9	1092.1
8/18/22 9:34	246	273,311,656	88.9436573	88,943,657	390,445,223	288,795,329	74.0%	2	7	5	125.3	1105.8	1101.7
8/18/22 9:35	247	274,078,798	86.97173195	86,971,732	391,541,139	292,144,874	74.6%	3	7	4	125.2	1112.2	1088.3
8/18/22 9:36	243	270,093,338	87.30646286	87,306,463	385,847,626	286,068,812	74.1%	3	7	4	125.2	1107.0	1086.3
8/18/22 9:37	239	265,844,254	89.07722397	89,077,224	379,777,505	277,974,964	73.2%	3	7	5	125.3	1107.9	1092.4
8/18/22 9:38	241	267,802,582	87.01057549	87,010,575	382,575,117	283,134,460	74.0%	3	7	4	125.3	1109.4	1095.6
8/18/22 9:39	237	262,802,365	86.52890015	86,528,900	375,431,950	276,541,779	73.7%	3	7	4	125.3	1109.5	1093.9
8/18/22 9:40	229	254,357,217	89.18421402	89,184,214	363,367,452	261,442,636	71.9%	3	7	4	125.3	1118.0	1095.4
8/18/22 9:41	231	256,716,687	98.68008652	98,680,087	366,738,124	253,960,883	69.2%	3	7	5	125.3	1115.0	1088.1
8/18/22 9:42	246	272,847,699	105.8327122	105,832,712	389,782,427	268,830,756	69.0%	2	7	5	125.3	1109.4	1091.0
8/18/22 9:43	254	282,021,916	104.0825024	104,082,502	402,888,452	283,937,020	70.5%	2	7	5	125.3	1108.0	1093.5
8/18/22 9:44	258	286,800,448	106.6980003	106,698,000	409,714,926	287,774,354	70.2%	2	7	5	125.2	1110.7	1094.4
8/18/22 9:45	256	284,167,501	105.32995	105,329,950	405,953,572	285,576,487	70.3%	3	7	5	125.3	1107.1	1090.7
8/18/22 9:46	251	278,401,699	104.8403332	104,840,333	397,716,713	277,899,190	69.9%	3	7	5	125.3	1114.5	1090.7
8/18/22 9:47	240	266,620,033	106.7196243	106,719,624	380,885,762	258,920,477	68.0%	3	7	5	125.3	1116.4	1090.4
8/18/22 9:48	232	257,412,569	104.9658653	104,965,865	367,732,242	247,771,253	67.4%	3	7	5	125.3	1108.9	1089.6
8/18/22 9:49	235	260,404,127	105.2899834	105,289,983	372,005,896	251,674,487	67.7%	3	7	5	125.3	1107.7	1089.5
8/18/22 9:50	237	262,707,215	106.8334785	106,833,479	375,296,021	253,200,617	67.5%	3	7	5	125.3	1100.2	1096.9
8/18/22 9:51	242	268,661,562	104.66763	104,667,630	383,802,231	264,182,083	68.8%	3	7	5	125.2	1107.7	1093.8
8/18/22 9:52	245	271,662,426	105.7013256	105,701,326	388,089,180	267,287,665	68.9%	3	7	5	125.3	1109.4	1097.0
8/18/22 9:53	241	267,096,538	106.5661716	106,566,172	381,566,483	259,776,573	68.1%	3	7	5	125.3	1107.4	1095.7
8/18/22 9:54	246	273,631,121	103.9435234	103,943,523	390,901,601	272,109,003	69.6%	3	7	5	125.3	1112.7	1097.7
8/18/22 9:55	251	278,120,574	106.2853897	106,285,390	397,315,106	275,846,089	69.4%	3	7	5	125.2	1114.2	1098.0
8/18/22 9:56	252	279,532,206	106.7374168	106,737,417	399,331,723	277,346,104	69.5%	3	7	5	125.2	1110.6	1096.1
8/18/22 9:57	257	285,069,776	104.2724045	104,272,404	407,242,537	288,074,075	70.7%	2	7	5	125.2	1114.8	1091.8
8/18/22 9:58	251	278,834,254	104.5249584	104,524,958	398,334,648	278,877,553	70.0%	3	7	5	125.2	1112.7	1089.0
8/18/22 9:59	247	274,414,192	106.9237591	106,923,759	392,020,274	269,821,693	68.8%	2	7	5	125.2	1110.6	1091.4
8/18/22 10:00	249	276,638,128	106.8291328	106,829,133	395,197,326	273,106,889	69.1%	2	7	5	125.2	1106.7	1089.4
8/18/22 10:01	250	277,532,862	103.7331417	103,733,142	396,475,517	277,923,355	70.1%	2	7	5	125.3	1110.7	1089.7
8/18/22 10:02	246	273,663,459	107.072155	107,072,155	390,947,799	268,579,622	68.7%	2	7	5	125.3	1112.3	1088.1
8/18/22 10:03	255	283,543,758	105.8316395	105,831,639	405,062,512	284,112,067	70.1%	2	7	5	125.4	1104.7	1087.2
8/18/22 10:04	263	292,044,823	104.570977	104,570,977	417,206,890	297,697,202	71.4%	2	7	5	125.3	1113.3	1092.3
8/18/22 10:05	264	293,523,928	107.1382248	107,138,225	419,319,898	296,876,212	70.8%	2	7	5	125.2	1113.3	1095.1
8/18/22 10:06	263	292,259,634	104.7542389	104,754,239	417,513,763	297,794,633	71.3%	2	7	5	125.2	1115.0	1106.2
8/18/22 10:07	257	285,737,814	105.6569149	105,656,915	408,196,878	287,446,118	70.4%	2	7	5	125.1	1102.6	1102.7
8/18/22 10:08	258	286,356,925	106.7867813	106,786,781	409,081,322	287,039,286	70.2%	2	7	5	125.3	1104.8	1099.0
8/18/22 10:09	258	285,971,243	104.2986061	104,298,606	408,530,347	289,331,940	70.8%	2	7	5	125.3	1109.3	1093.7
8/18/22 10:10	254	282,086,993	103.8349724	103,834,972	402,981,419	284,312,879	70.6%	2	7	5	125.3	1112.3	1091.2
8/18/22 10:11	256	283,775,359	105.7308533	105,730,853	405,393,370	284,558,109	70.2%	2	7	5	125.3	1108.5	1095.7
8/18/22 10:12	253	281,382,031	107.1287823	107,128,782	401,974,330	279,541,436	69.5%	2	7	5	125.2	1113.7	1100.4
8/18/22 10:13	252	279,944,735	103.8262737	103,826,274	399,921,051	281,262,452	70.3%	2	7	5	125.3	1104.8	1095.0
8/18/22 10:14	258	286,950,903	106.6015236	106,601,524	409,929,861	288,099,549	70.3%	2	7	5	125.3	1107.1	1094.1
8/18/22 10:15	262	291,332,798	106.9714367	106,971,437	416,189,711	293,936,641	70.6%	2	7	5	125.3	1105.9	1094.2
8/18/22 10:16	266	295,347,134	104.5285347	104,528,535	421,924,477	302,463,294	71.7%	2	7	5	125.2	1102.4	1094.0
8/18/22 10:17	264	292,824,177	106.0316204	106,031,620	418,320,253	297,141,258	71.0%	2	7	5	125.3	1106.1	1092.6
8/18/22 10:18	256	284,248,616	107.0911903	107,091,190	406,069,452	283,679,520	69.9%	2	7	5	125.2	1118.0	1089.0
8/18/22 10:19	257	285,570,350	105.1999104	105,199,910	407,957,642	287,729,173	70.5%	2	7	5	125.2	1117.4	1092.8
8/18/22 10:20	259	288,096,248	105.4059406	105,405,941	411,566,069	291,102,137	70.7%	2	7	5	125.3	1116.4	1094.7
8/18/22 10:21	263	291,724,654	107.0942913	107,094,291	416,749,506	294,356,031	70.6%	2	7	5	125.3	1110.6	1097.2
8/18/22 10:22	265	294,135,338	106.8007813	106,800,781	420,193,340	298,135,304	71.0%	2	7	5	125.3	1108.8	1095.8
8/18/22 10:23	262	290,620,718	104.0401001	104,040,100	415,172,454	296,269,482	71.4%	2	7	5	125.3	1107.1	1091.2
8/18/22 10:24	262	290,580,082	107.4251072	107,425,107	415,114,402	292,342,851	70.4%	2	7	5	125.3	1107.1	1093.1
8/18/22 10:25	260	288,412,651	106.4381344	106,438,134	412,018,073	290,374,490	70.5%	2	7	5	125.3	1114.0	1095.7
8/18/22 10:26	256	284,636,662	104.9243279	104,924,328	406,623,803	286,710,286	70.5%	2	7	5	125.3	1103.3	1097.7
8/18/22 10:27	257	284,776,905	107.0912125	107,091,212	406,824,150	284,434,193	69.9%	2	7	5	125.3	1111.6	1092.6
8/18/22 10:28	253	281,367,120	106.2145603	106,214,560	401,953,029	280,564,960	69.8%	2	7	5	125.3	1111.0	1096.9
8/18/22 10:29	253	280,763,234	104.8657291	104,865,729	401,090,335	281,243,787	70.1%	2	7	5	125.4	1108.1	1095.1
8/18/22 10:30	256	284,172,829	107.1505558	107,150,556	405,961,184	283,503,406	69.8%	2	7	5	125.3	1108.2	1096.7
8/18/22 10:31	256	284,142,514	105.7226124	105,722,612	405,917,877	285,092,034	70.2%	2	7	5	125.2	1117.8	1093.4

Test 1 Run 1

Start	8/18/22 9:30												
Finish	8/18/22 10:39												
Interval	1m												
	Enthalpy Factor	1,110.2											
Run Averages =	251	278,534,026	102.8298634	102,295,225	397,905,752	280,996,924	70.6%	2	7	5	125	1,110	1,094

Date & Time	No. 9 Steam Load KPPH 03-F0115.4	Estimated Total Heat Output btus/hr	Gas Flow KSCFH 03-F0108.4	Gas btu's btus/hr	Estimated Total Heat Input btus/hr	Bark Heat Input btus/hr	% load from bark %	Excess Oxygen (O2 trim control) % 03-A0111.4	dP North in. H2O 33-P0800B.4	dP South in. H2O 33-P0800C.4	Scrubber Supply Pressure psig 03-P0601.4	North Scrubber Flow GPM 03-F0602.4	South Scrubber Flow GPM 03-F0603.4
8/18/22 10:32	255	282,973,755	105.3025883	105,302,588	404,248,222	283,902,406	70.2%	2	7	5	125.2	1113.4	1091.7
8/18/22 10:33	250	278,029,987	107.0993904	107,099,390	397,185,695	274,786,392	69.2%	2	7	5	125.2	1113.2	1095.6
8/18/22 10:34	250	277,663,910	104.181002	104,181,002	396,662,728	277,598,726	70.0%	2	7	5	125.2	1104.3	1109.4
8/18/22 10:35	256	283,768,684	107.2387871	107,238,787	405,383,834	282,825,220	69.8%	2	7	5	125.4	1106.7	1100.6
8/18/22 10:36	256	284,459,047	106.2191475	106,219,147	406,370,068	284,976,756	70.1%	2	7	5	125.2	1112.8	1099.1
8/18/22 10:37	252	280,278,545	104.9620476	104,962,048	400,397,922	280,441,296	70.0%	2	7	5	125.3	1113.0	1095.5
8/18/22 10:38	258	286,551,750	107.1004585	107,100,459	409,359,642	286,959,118	70.1%	2	7	5	125.4	1122.6	1091.9

Test 1 Run 2

	0.04												
Start	8/18/22 11:05												
Finish	8/18/22 12:24												
Interval	1m												
	Enthalpy Factor	1,112.2											
Run Averages =	247	275,870,813	106.315644	106,135,537	394,101,161	272,803,405	69.2%	3	7	5	126	1,109	1,090

Date & Time	No. 9 Steam Load KPPH 03-F0115.4	Estimated Total Heat Output btus/hr	Gas Flow KSCFH 03-F0108.4	Gas btu's btus/hr	Estimated Total Heat Input btus/hr	Bark Heat Input btus/hr	% load from bark %	Excess Oxygen (O2 trim control) % 03-A0111.4	dP North in. H2O 33-P0800B.4	dP South in. H2O 33-P0800C.4	Scrubber Supply Pressure psig 03-P0601.4	North Scrubber Flow GPM 03-F0602.4	South Scrubber Flow GPM 03-F0603.4
8/18/22 11:05	247	274,646,890	105.8711086	105,871,109	392,352,700	271,357,147	69.2%	3	7	5	125.3	1108.3	1088.3
8/18/22 11:06	241	268,064,006	107.5573757	107,557,376	382,948,581	260,025,866	67.9%	3	7	5	125.2	1109.0	1093.0
8/18/22 11:07	244	271,418,409	104.8768147	104,876,815	387,740,584	267,881,367	69.1%	3	7	5	125.4	1115.4	1090.8
8/18/22 11:08	247	275,096,461	105.0979126	105,097,913	392,994,945	272,883,044	69.4%	3	7	5	125.4	1113.5	1087.6
8/18/22 11:09	251	279,618,060	107.5451553	107,545,155	399,454,371	276,545,622	69.2%	2	7	5	125.3	1114.9	1083.5
8/18/22 11:10	255	283,920,424	105.7074944	105,707,494	405,600,606	284,792,041	70.2%	2	7	5	125.3	1103.8	1089.0
8/18/22 11:11	249	277,033,866	105.5458771	105,545,877	395,762,665	275,138,806	69.5%	3	7	5	125.3	1112.2	1089.2
8/18/22 11:12	243	270,111,783	107.5161247	107,516,125	385,873,976	262,998,405	68.2%	2	7	5	125.3	1110.1	1091.2
8/18/22 11:13	240	267,373,598	104.8565712	104,856,571	381,962,283	262,126,202	68.6%	3	7	5	125.3	1110.3	1093.1
8/18/22 11:14	243	270,690,314	106.6111057	106,611,106	386,700,448	264,859,184	68.5%	3	7	5	125.3	1110.3	1093.1
8/18/22 11:15	255	283,356,381	106.6281403	106,628,140	404,794,831	282,934,099	69.9%	2	7	5	125.3	1110.4	1088.8
8/18/22 11:16	254	282,704,653	104.9572712	104,957,271	403,863,790	283,912,623	70.3%	2	7	5	125.3	1108.8	1090.1
8/18/22 11:17	253	281,449,066	107.5970901	107,597,090	402,070,095	279,101,992	69.4%	2	7	5	125.3	1105.8	1090.2
8/18/22 11:18	253	280,936,744	105.162114	105,162,114	401,338,206	281,152,933	70.1%	2	7	5	125.2	1105.7	1086.9
8/18/22 11:19	251	279,467,959	105.5056084	105,505,608	399,239,941	278,662,103	69.8%	3	7	5	125.3	1109.4	1086.3
8/18/22 11:20	252	280,523,852	107.0593815	107,059,381	400,748,361	278,394,782	69.5%	2	7	5	125.3	1107.4	1083.9
8/18/22 11:21	252	280,740,817	104.456147	104,456,147	401,058,310	281,679,856	70.2%	2	7	5	125.3	1109.1	1087.9
8/18/22 11:22	254	282,413,533	107.154528	107,154,528	403,447,905	280,985,587	69.6%	2	7	5	125.3	1110.2	1093.6
8/18/22 11:23	257	285,434,137	105.7511524	105,751,152	407,763,053	286,904,593	70.4%	2	7	5	125.3	1105.9	1095.2
8/18/22 11:24	260	288,670,623	104.7877735	104,787,774	412,386,604	292,629,148	71.0%	2	7	5	125.3	1103.3	1092.0
8/18/22 11:25	259	287,947,733	107.227243	107,227,243	411,353,904	288,808,483	70.2%	2	7	5	125.3	1116.3	1088.6
8/18/22 11:26	256	284,943,735	104.9648365	104,964,837	407,062,479	287,102,666	70.5%	2	7	5	125.4	1103.1	1088.7
8/18/22 11:27	254	282,486,941	105.7152897	105,715,290	403,552,772	282,735,298	70.1%	2	7	5	125.3	1113.8	1088.0
8/18/22 11:28	256	284,833,698	107.1147694	107,114,769	406,905,283	284,488,404	69.9%	2	7	5	125.4	1114.5	1087.3
8/18/22 11:29	260	289,478,041	104.3958996	104,395,900	413,540,059	294,230,459	71.1%	2	7	5	125.3	1102.9	1087.2
8/18/22 11:30	263	292,251,636	105.8305614	105,830,561	417,502,338	296,553,125	71.0%	2	7	5	125.4	1105.7	1090.8
8/18/22 11:31	255	283,703,412	107.0682026	107,068,203	405,290,589	282,926,929	69.8%	2	7	5	125.3	1112.0	1092.4
8/18/22 11:32	250	277,583,559	104.3071033	104,307,103	396,547,942	277,339,824	69.9%	2	7	5	125.3	1102.9	1091.4
8/18/22 11:33	249	276,446,880	105.9899406	105,989,941	394,924,114	273,792,753	69.3%	2	7	5	125.3	1114.3	1095.4
8/18/22 11:34	255	283,193,738	106.7220921	106,722,092	404,562,483	282,594,378	69.9%	2	8	5	125.3	1112.6	1092.5
8/18/22 11:35	257	285,435,492	104.8530052	104,853,005	407,764,989	287,932,983	70.6%	3	8	5	125.3	1112.5	1091.2
8/18/22 11:36	256	284,296,633	107.4997986	107,499,799	406,138,048	283,281,135	69.7%	2	7	5	125.3	1111.2	1090.3
8/18/22 11:37	257	285,287,183	104.4735497	104,473,550	407,553,119	288,154,777	70.7%	2	7	5	125.3	1112.1	1083.9
8/18/22 11:38	253	281,037,903	106.3964512	106,396,451	401,482,719	279,886,775	69.7%	2	7	5	125.3	1110.6	1087.7
8/18/22 11:39	248	275,787,890	106.2006104	106,200,610	393,982,700	272,610,574	69.2%	3	7	5	125.2	1101.7	1094.4
8/18/22 11:40	242	268,858,917	105.7341133	105,734,113	384,084,168	263,245,181	68.5%	3	7	5	125.3	1102.7	1089.3
8/18/22 11:41	249	277,066,732	107.3749054	107,374,905	395,809,616	273,095,439	69.0%	2	7	5	125.3	1109.1	1087.4
8/18/22 11:42	249	276,842,718	104.1348381	104,134,838	395,489,596	276,478,353	69.9%	2	7	5	125.3	1107.6	1092.8
8/18/22 11:43	249	276,444,976	107.226556	107,226,556	394,921,394	272,376,758	69.0%	2	7	5	125.3	1110.7	1090.3
8/18/22 11:44	246	273,690,719	106.2330925	106,233,092	390,986,742	269,577,493	68.9%	2	7	5	125.4	1104.5	1093.7
8/18/22 11:45	243	270,141,458	105.496957	105,496,957	385,916,369	265,348,418	68.8%	3	7	5	125.3	1109.5	1090.8
8/18/22 11:46	241	268,572,525	107.6108482	107,610,848	383,675,036	260,691,209	67.9%	3	7	5	125.3	1107.2	1084.1
8/18/22 11:47	245	272,322,628	105.3921955	105,392,196	389,032,326	268,584,103	69.0%	3	7	5	125.4	1113.5	1093.7
8/18/22 11:48	244	271,712,610	106.2698265	106,269,827	388,160,871	266,709,641	68.7%	3	7	5	125.4	1108.8	1094.9
8/18/22 11:49	245	272,803,475	107.4227596	107,422,760	389,719,249	266,950,381	68.5%	3	7	5	125.4	1112.7	1097.8
8/18/22 11:50	243	270,238,950	104.6547306	104,654,731	386,055,643	266,450,237	69.0%	3	7	5	125.3	1115.3	1095.4
8/18/22 11:51	241	267,529,838	107.131982	107,131,982	382,185,483	259,748,932	68.0%	3	7	5	125.3	1117.0	1086.3
8/18/22 11:52	242	269,155,662	106.8183479	106,818,348	384,508,088	262,429,976	68.3%	3	7	5	125.3	1107.2	1090.4
8/18/22 11:53	241	267,847,233	105.4684624	105,468,462	382,638,905	262,103,519	68.5%	3	7	5	125.4	1111.8	1091.8
8/18/22 11:54	240	266,669,488	107.5772701	107,577,270	380,956,411	258,010,960	67.7%	3	7	5	125.3	1105.5	1092.4
8/18/22 11:55	239	265,683,461	105.6194408	105,619,441	379,547,802	258,839,869	68.2%	3	7	5	125.2	1107.0	1091.2
8/18/22 11:56	243	270,726,256	106.2020115	106,202,011	386,751,794	265,378,067	68.6%	3	7	5	125.3	1105.2	1091.0

Test 1 Run 2

	0.04	
Start	8/18/22 11:05	
Finish	8/18/22 12:24	
Interval	1m	
	Enthalpy Factor	1,112.2

Run Averages =	247	275,870,813	106.315644	106,135,537	394,101,161	272,803,405	69.2%	3	7	5	126	1,109	1,090

Date & Time	No. 9 Steam Load KPPH 03-F0115.4	Estimated Total Heat Output btus/hr	Gas Flow KSCFH 03-F0108.4	Gas btu's btus/hr	Estimated Total Heat Input btus/hr	Bark Heat Input btus/hr	% load from bark %	Excess Oxygen (O2 trim control) % 03-A0111.4	dP North in. H2O 33-P0800B.4	dP South in. H2O 33-P0800C.4	Scrubber Supply Pressure psig 03-P0601.4	North Scrubber Flow GPM 03-F0602.4	South Scrubber Flow GPM 03-F0603.4
8/18/22 11:57	240	267,464,417	107.6795025	107,679,502	382,092,024	259,029,735	67.8%	3	7	5	125.3	1104.9	1093.4
8/18/22 11:58	236	261,958,578	104.8176132	104,817,613	374,226,540	254,434,982	68.0%	3	7	5	125.4	1110.0	1093.9
8/18/22 11:59	237	263,954,021	107.3214699	107,321,470	377,077,172	254,424,064	67.5%	3	7	5	125.4	1109.2	1092.8
8/18/22 12:00	239	265,477,269	107.674337	107,674,337	379,253,241	256,196,856	67.6%	3	7	5	125.5	1108.4	1084.4
8/18/22 12:01	239	265,701,526	104.7297054	104,729,705	379,573,609	259,882,517	68.5%	3	7	5	126.0	1100.9	1087.7
8/18/22 12:02	239	266,265,638	107.5931931	107,593,193	380,379,483	257,415,833	67.7%	3	7	5	126.0	1095.8	1091.4
8/18/22 12:03	241	267,740,420	107.7207584	107,720,758	382,486,314	259,376,876	67.8%	3	7	5	126.1	1107.7	1093.4
8/18/22 12:04	242	268,993,192	105.2231907	105,223,191	384,275,988	264,020,913	68.7%	3	7	5	126.1	1112.3	1090.3
8/18/22 12:05	237	263,155,420	106.547076	106,547,076	375,936,315	254,168,228	67.6%	3	7	5	126.1	1102.0	1087.4
8/18/22 12:06	235	261,272,775	107.8331348	107,833,135	373,246,822	250,008,954	67.0%	3	7	5	126.2	1107.8	1081.8
8/18/22 12:07	238	265,252,620	105.127	105,127,000	378,932,314	258,787,171	68.3%	3	7	5	126.1	1114.7	1082.3
8/18/22 12:08	245	272,706,101	107.6991676	107,699,168	389,580,144	266,495,381	68.4%	3	7	5	126.2	1110.9	1087.4
8/18/22 12:09	248	275,990,193	107.5599373	107,559,937	394,271,704	271,346,061	68.8%	2	7	5	126.2	1108.1	1090.4
8/18/22 12:10	245	272,757,480	105.1178295	105,117,830	389,653,543	269,518,881	69.2%	3	7	5	126.2	1104.8	1096.5
8/18/22 12:11	235	260,856,291	108.1016304	108,101,630	372,651,844	249,107,124	66.8%	3	7	5	126.2	1103.7	1092.5
8/18/22 12:12	241	267,602,808	107.7473083	107,747,308	382,289,726	259,149,945	67.8%	3	7	5	126.1	1111.7	1092.9
8/18/22 12:13	246	273,597,924	105.4080505	105,408,051	390,854,178	270,387,834	69.2%	3	7	5	126.1	1118.2	1091.8
8/18/22 12:14	245	272,313,642	108.1467251	108,146,725	389,019,488	265,423,231	68.2%	2	7	5	126.1	1106.1	1097.2
8/18/22 12:15	246	273,297,898	106.8220135	106,822,013	390,425,569	268,343,268	68.7%	2	7	5	126.1	1111.5	1097.7
8/18/22 12:16	248	275,834,843	106.2128883	106,212,888	394,049,775	272,663,617	69.2%	2	7	5	126.2	1113.1	1094.1
8/18/22 12:17	244	271,192,312	108.2231819	108,223,182	387,417,588	263,733,952	68.1%	3	7	5	126.1	1112.1	1090.6
8/18/22 12:18	248	275,732,062	105.874511	105,874,511	393,902,946	272,903,505	69.3%	2	7	5	126.1	1108.6	1094.4
8/18/22 12:19	251	279,623,077	106.9858444	106,985,844	399,461,538	277,192,001	69.4%	2	7	5	126.1	1102.0	1091.1
8/18/22 12:20	255	283,331,978	107.9204128	107,920,413	404,759,968	281,422,354	69.5%	2	7	5	126.0	1109.8	1085.3
8/18/22 12:21	252	280,309,122	105.0201614	105,020,161	400,441,602	280,418,561	70.0%	2	7	5	126.1	1107.6	1087.1
8/18/22 12:22	251	279,592,962	107.8927853	107,892,785	399,418,517	276,112,477	69.1%	2	7	5	126.1	1097.6	1088.3
8/18/22 12:23	254	282,540,989	106.5640114	106,564,011	403,629,984	281,842,543	69.8%	2	7	5	126.0	1112.3	1089.2

Test 1 Run 3

Start	8/18/22 12:45	
Finish	8/18/22 13:54	
Interval	1m	
	Enthalpy Factor	1,108.3

Run Averages =	248	275,224,335	107.7743713	107,825,662	393,177,621	269,948,293	68.6%	2	7	5	126	1,110	1,089

Date & Time	No. 9 Steam Load KPPH 03-F0115.4	Estimated Total Heat Output btus/hr	Gas Flow KSCFH 03-F0108.4	Gas btu's btus/hr	Estimated Total Heat Input btus/hr	Bark Heat Input btus/hr	% load from bark %	Excess Oxygen (O2 trim control) % 03-A0111.4	dP North in. H2O 33-P0800B.4	dP South in. H2O 33-P0800C.4	Scrubber Supply Pressure psig 03-P0601.4	North Scrubber Flow GPM 03-F0602.4	South Scrubber Flow GPM 03-F0603.4
8/18/22 12:45	258	285,734,088	108.1	108,117,961	408,191,554	284,628,170	69.7%	2	7	5	126.1	1106.8	1089.0
8/18/22 12:46	258	285,538,780	108.9	108,902,666	407,912,543	283,452,353	69.5%	2	7	5	126.1	1110.5	1091.3
8/18/22 12:47	257	284,999,809	106.8	106,840,767	407,142,584	285,038,850	70.0%	2	7	5	126.1	1107.5	1092.1
8/18/22 12:48	254	281,013,909	108.0	107,995,877	401,448,442	278,024,582	69.3%	2	7	5	126.2	1114.2	1089.9
8/18/22 12:49	249	276,318,160	108.9	108,928,759	394,740,228	270,250,218	68.5%	2	7	5	126.2	1110.6	1089.0
8/18/22 12:50	248	274,884,166	106.9	106,850,763	392,691,666	270,576,508	68.9%	2	7	5	126.1	1105.9	1090.0
8/18/22 12:51	249	276,262,785	108.1	108,054,897	394,661,121	271,169,810	68.7%	2	7	5	126.2	1104.7	1091.3
8/18/22 12:52	246	272,334,201	109.0	109,021,740	389,048,858	264,452,584	68.0%	2	7	5	126.2	1108.1	1093.9
8/18/22 12:53	244	270,849,852	106.5	106,502,487	386,928,360	265,211,232	68.5%	2	7	5	126.3	1110.5	1092.9
8/18/22 12:54	245	271,091,182	108.8	108,770,042	387,273,117	262,964,498	67.9%	3	7	5	126.2	1116.0	1092.6
8/18/22 12:55	240	266,083,453	108.6	108,647,727	380,119,218	255,950,387	67.3%	2	7	4	126.2	1109.8	1093.5
8/18/22 12:56	239	265,215,472	106.7	106,705,712	378,879,246	256,929,861	67.8%	2	7	4	126.2	1104.7	1086.4
8/18/22 12:57	247	273,551,342	109.2	109,212,640	390,787,631	265,973,186	68.1%	2	7	5	126.1	1115.0	1084.6
8/18/22 12:58	249	276,306,464	107.5	107,467,717	394,723,520	271,903,272	68.9%	2	7	5	126.2	1111.2	1086.2
8/18/22 12:59	248	275,365,245	107.3	107,298,124	393,378,921	270,752,494	68.8%	2	7	5	126.1	1114.2	1083.7
8/18/22 13:00	255	282,738,976	109.1	109,071,576	403,912,822	279,259,592	69.1%	2	7	5	126.1	1114.6	1082.5
8/18/22 13:01	258	285,862,775	108.0	108,030,354	408,375,393	284,912,132	69.8%	2	7	5	126.1	1110.9	1088.2
8/18/22 13:02	261	289,687,126	106.9	106,879,103	413,838,751	291,691,204	70.5%	2	7	5	126.1	1111.4	1089.0
8/18/22 13:03	257	284,518,761	109.4	109,409,657	406,455,373	281,415,765	69.2%	2	7	5	126.0	1101.3	1088.4
8/18/22 13:04	252	279,534,871	108.0	108,049,302	399,335,529	275,850,613	69.1%	3	7	5	126.0	1112.8	1090.7
8/18/22 13:05	245	271,300,488	107.2	107,214,790	387,572,125	265,040,936	68.4%	3	7	5	126.1	1108.6	1085.9
8/18/22 13:06	244	269,871,973	109.2	109,221,193	385,531,389	260,707,169	67.6%	2	7	5	126.1	1108.7	1082.8
8/18/22 13:07	243	269,204,692	106.9	106,873,595	384,578,131	262,436,880	68.2%	2	7	5	126.1	1107.2	1086.1
8/18/22 13:08	247	274,031,738	109.2	109,241,252	391,473,912	266,626,767	68.1%	2	7	5	126.2	1110.6	1087.6
8/18/22 13:09	251	277,882,868	107.5	107,452,630	396,975,526	274,172,520	69.1%	2	7	5	126.1	1111.9	1088.3
8/18/22 13:10	252	278,954,463	108.0	107,986,352	398,506,375	275,093,402	69.0%	2	7	5	126.0	1114.8	1096.2
8/18/22 13:11	253	280,351,522	108.8	108,770,999	400,502,174	276,192,461	69.0%	2	7	5	126.2	1108.6	1092.5
8/18/22 13:12	252	279,703,068	106.4	106,422,276	399,575,811	277,950,353	69.6%	2	7	5	126.2	1109.6	1088.1
8/18/22 13:13	253	280,772,732	109.2	109,201,083	401,103,903	276,302,665	68.9%	2	7	5	126.1	1113.4	1089.3
8/18/22 13:14	248	274,365,365	107.5	107,485,329	391,950,522	269,110,146	68.7%	2	7	5	126.1	1104.5	1089.0
8/18/22 13:15	242	267,972,227	107.6	107,606,891	382,817,467	259,838,163	67.9%	3	7	5	126.1	1108.3	1092.7
8/18/22 13:16	250	277,395,189	109.1	109,147,321	396,278,842	271,539,047	68.5%	3	7	5	126.1	1107.9	1092.9
8/18/22 13:17	247	273,255,155	106.3	106,325,648	390,364,507	268,849,481	68.9%	2	7	5	126.1	1111.8	1092.4
8/18/22 13:18	246	273,172,396	108.6	108,620,444	390,246,279	266,108,629	68.2%	2	7	5	126.2	1110.6	1092.2
8/18/22 13:19	246	272,138,839	107.9	107,919,059	388,769,770	265,433,703	68.3%	2	7	5	126.1	1107.0	1090.6
8/18/22 13:20	245	272,033,123	107.0	107,037,814	388,618,748	266,289,817	68.5%	2	7	5	126.1	1108.4	1093.4
8/18/22 13:21	248	274,632,424	109.2	109,187,518	392,332,035	267,546,300	68.2%	2	7	5	126.1	1110.1	1098.1
8/18/22 13:22	249	275,827,222	106.3	106,297,112	394,038,888	272,556,474	69.2%	2	7	5	126.2	1113.9	1095.0
8/18/22 13:23	246	272,932,632	108.4	108,415,333	389,903,760	266,000,522	68.2%	2	7	5	126.2	1114.6	1077.8
8/18/22 13:24	248	274,317,979	108.4	108,363,660	391,882,827	268,038,644	68.4%	2	7	5	126.2	1117.8	1068.4
8/18/22 13:25	246	272,123,080	106.4	106,358,545	388,747,257	267,194,635	68.7%	2	7	5	126.2	1118.8	1072.5
8/18/22 13:26	247	273,200,085	109.1	109,099,209	390,285,836	265,601,026	68.1%	2	7	5	126.2	1112.0	1077.6
8/18/22 13:27	249	276,267,759	107.4	107,358,698	394,668,228	271,972,573	68.9%	2	7	5	126.0	1108.7	1082.7
8/18/22 13:28	251	278,618,152	107.0	107,009,705	398,025,931	275,729,126	69.3%	2	7	5	126.1	1102.3	1084.4
8/18/22 13:29	253	280,658,247	108.9	108,852,288	400,940,352	276,537,737	69.0%	2	7	5	126.1	1101.9	1083.7
8/18/22 13:30	257	285,065,099	107.0	106,993,302	407,235,855	284,957,796	70.0%	2	7	5	126.2	1113.2	1083.1
8/18/22 13:31	252	279,128,102	106.7	106,733,691	398,754,432	276,773,071	69.4%	3	7	5	126.1	1106.0	1085.2
8/18/22 13:32	246	272,104,700	108.8	108,848,284	388,721,000	264,322,961	68.0%	3	7	5	126.1	1111.0	1083.9
8/18/22 13:33	238	263,327,755	106.5	106,513,687	376,182,506	254,452,578	67.6%	3	7	4	126.2	1104.1	1088.1
8/18/22 13:34	231	256,417,440	107.2	107,180,988	366,310,629	243,818,071	66.6%	3	7	4	126.2	1102.0	1093.5
8/18/22 13:35	234	259,575,345	108.8	108,774,257	370,821,921	246,508,484	66.5%	2	7	4	126.1	1102.0	1086.5
8/18/22 13:36	239	264,335,319	106.3	106,259,397	377,621,885	256,182,574	67.8%	2	7	5	126.1	1112.1	1088.7
8/18/22 13:37	241	267,565,833	107.7	107,738,044	382,236,905	259,107,712	67.8%	2	7	5	126.2	1112.3	1089.2

Test 1 Run 3

Start	8/18/22 12:45	
Finish	8/18/22 13:54	
Interval	1m	
	Enthalpy Factor	1,108.3

Run Averages =	248	275,224,335	107.7743713	107,825,662	393,177,621	269,948,293	68.6%	2	7	5	126	1,110	1,089

Date & Time	No. 9 Steam Load KPPH 03-F0115.4	Estimated Total Heat Output btus/hr	Gas Flow KSCFH 03-F0108.4	Gas btu's btus/hr	Estimated Total Heat Input btus/hr	Bark Heat Input btus/hr	% load from bark %	Excess Oxygen (O2 trim control) % 03-A0111.4	dP North in. H2O 33-P0800B.4	dP South in. H2O 33-P0800C.4	Scrubber Supply Pressure psig 03-P0601.4	North Scrubber Flow GPM 03-F0602.4	South Scrubber Flow GPM 03-F0603.4
8/18/22 13:38	250	276,895,942	108.4	108,394,479	395,565,631	271,686,227	68.7%	2	7	5	126.2	1112.0	1094.3
8/18/22 13:39	249	275,685,943	105.6	105,620,724	393,837,061	273,127,662	69.4%	2	7	5	126.2	1113.2	1092.0
8/18/22 13:40	252	279,150,378	108.3	108,321,268	398,786,254	274,990,519	69.0%	2	7	5	126.2	1112.2	1093.6
8/18/22 13:41	254	281,143,142	108.1	108,062,980	401,633,060	278,132,512	69.3%	2	7	5	126.1	1107.4	1101.3
8/18/22 13:42	253	280,433,353	106.1	106,133,506	400,619,075	279,323,639	69.7%	3	7	5	126.2	1116.1	1088.7
8/18/22 13:43	251	278,223,021	108.8	108,823,632	397,461,458	273,091,593	68.7%	2	7	5	126.1	1118.9	1090.5
8/18/22 13:44	246	273,136,718	106.8	106,795,433	390,195,312	268,143,389	68.7%	2	7	5	126.1	1106.7	1096.1
8/18/22 13:45	245	272,014,151	107.0	107,041,339	388,591,644	266,258,686	68.5%	3	7	5	126.1	1106.3	1092.6
8/18/22 13:46	244	270,831,667	108.7	108,729,400	386,902,381	262,640,210	67.9%	3	7	5	126.2	1103.6	1091.6
8/18/22 13:47	242	268,042,052	106.6	106,594,327	382,917,217	261,095,130	68.2%	2	7	5	126.2	1111.6	1088.2
8/18/22 13:48	246	272,118,392	107.7	107,729,948	388,740,561	265,620,620	68.3%	2	7	5	126.2	1111.1	1089.1
8/18/22 13:49	244	270,199,928	108.7	108,650,682	385,999,897	261,827,690	67.8%	2	7	5	126.2	1110.7	1085.9
8/18/22 13:50	245	271,123,931	105.8	105,780,212	387,319,902	266,428,231	68.8%	2	7	5	126.2	1120.2	1087.3
8/18/22 13:51	243	269,771,559	108.5	108,479,028	385,387,941	261,411,908	67.8%	2	7	5	126.2	1109.3	1086.4
8/18/22 13:52	247	273,630,764	107.8	107,845,773	390,901,091	267,648,779	68.5%	2	7	5	126.3	1108.1	1090.9
8/18/22 13:53	250	277,077,714	106.2	106,160,628	395,825,306	274,498,874	69.3%	3	7	5	126.3	1113.5	1085.6

Test 2 Run 1

Start	8/19/22 9:05	
Finish	8/19/22 10:10	
Interval	1m	
	Enthalpy Factor	1,110.0

Run Averages =	180.2690108	200,098,602	0	0	285,855,146	285,855,146	1	5	6	4	124	1,112	1,090

Date & Time	No. 9 Steam Load KPPH 03-F0115.4	Estimated Total Heat Output btus/hr	Gas Flow KSCFH 03-F0108.4	Gas btu's btus/hr	Estimated Total Heat Input btus/hr	Bark Heat Input btus/hr	% load from bark %	Excess Oxygen (O2 trim control) % 03-A0111.4	dP North in. H2O 33-P0800B.4	dP South in. H2O 33-P0800C.4	Scrubber Supply Pressure psig 03-P0601.4	North Scrubber Flow GPM 03-F0602.4	South Scrubber Flow GPM 03-F0603.4
8/19/22 9:05	174	192,755,944	0.0	0	275,365,634	275,365,634	100.0%	5	6	4	123.7	1108.3	1092.8
8/19/22 9:06	179	198,200,609	0.0	0	283,143,728	283,143,728	100.0%	6	6	4	123.9	1116.3	1091.1
8/19/22 9:07	173	192,473,083	0.0	0	274,961,547	274,961,547	100.0%	6	6	4	123.8	1107.6	1092.2
8/19/22 9:08	164	182,400,681	0.0	0	260,572,402	260,572,402	100.0%	6	6	4	123.8	1113.9	1089.1
8/19/22 9:09	167	184,911,002	0.0	0	264,158,575	264,158,575	100.0%	6	6	4	123.7	1121.7	1095.5
8/19/22 9:10	164	182,147,098	0.0	0	260,210,140	260,210,140	100.0%	6	6	4	123.7	1114.5	1093.1
8/19/22 9:11	162	179,611,980	0.0	0	256,588,543	256,588,543	100.0%	6	6	4	123.8	1115.1	1092.0
8/19/22 9:12	165	182,824,636	0.0	0	261,178,052	261,178,052	100.0%	6	6	4	123.8	1109.0	1088.7
8/19/22 9:13	163	180,766,109	0.0	0	258,237,299	258,237,299	100.0%	6	6	4	123.8	1119.2	1090.3
8/19/22 9:14	161	179,005,030	0.0	0	255,721,472	255,721,472	100.0%	7	6	4	123.8	1111.8	1091.3
8/19/22 9:15	159	177,017,492	0.0	0	252,882,132	252,882,132	100.0%	6	6	4	123.8	1115.3	1092.5
8/19/22 9:16	153	170,042,733	0.0	0	242,918,190	242,918,190	100.0%	6	6	4	123.8	1113.9	1094.1
8/19/22 9:17	157	174,720,140	0.0	0	249,600,200	249,600,200	100.0%	6	6	4	123.8	1115.9	1092.5
8/19/22 9:18	164	181,647,371	0.0	0	259,496,244	259,496,244	100.0%	6	6	4	123.7	1117.0	1089.8
8/19/22 9:19	167	184,897,106	0.0	0	264,138,723	264,138,723	100.0%	6	6	4	123.7	1113.5	1087.8
8/19/22 9:20	165	183,275,912	0.0	0	261,822,731	261,822,731	100.0%	7	6	4	123.8	1112.0	1088.6
8/19/22 9:21	168	185,926,907	0.0	0	265,609,867	265,609,867	100.0%	6	6	4	123.7	1120.3	1090.3
8/19/22 9:22	165	183,264,593	0.0	0	261,806,561	261,806,561	100.0%	6	6	4	123.7	1112.2	1090.0
8/19/22 9:23	163	180,853,283	0.0	0	258,361,833	258,361,833	100.0%	6	6	4	123.7	1105.0	1091.4
8/19/22 9:24	166	184,690,441	0.0	0	263,843,487	263,843,487	100.0%	5	6	4	123.8	1110.0	1093.0
8/19/22 9:25	175	194,360,332	0.0	0	277,657,618	277,657,618	100.0%	5	6	4	123.8	1112.9	1091.2
8/19/22 9:26	179	198,670,188	0.0	0	283,814,554	283,814,554	100.0%	6	6	4	123.8	1114.3	1091.8
8/19/22 9:27	173	191,969,210	0.0	0	274,241,729	274,241,729	100.0%	6	6	4	123.8	1111.2	1092.3
8/19/22 9:28	173	191,740,660	0.0	0	273,915,228	273,915,228	100.0%	5	6	4	123.9	1117.4	1091.3
8/19/22 9:29	169	188,133,906	0.0	0	268,762,723	268,762,723	100.0%	5	6	4	123.8	1127.0	1089.5
8/19/22 9:30	162	179,424,106	0.0	0	256,320,151	256,320,151	100.0%	5	6	4	123.8	1110.0	1081.2
8/19/22 9:31	163	180,842,340	0.0	0	258,346,200	258,346,200	100.0%	5	6	4	123.9	1103.6	1081.3
8/19/22 9:32	171	189,384,115	0.0	0	270,548,736	270,548,736	100.0%	5	6	4	123.9	1111.2	1088.4
8/19/22 9:33	173	192,305,726	0.0	0	274,722,465	274,722,465	100.0%	5	6	4	123.8	1114.7	1090.5
8/19/22 9:34	180	200,252,287	0.0	0	286,074,696	286,074,696	100.0%	4	6	4	123.9	1107.3	1093.4
8/19/22 9:35	175	194,561,608	0.0	0	277,945,155	277,945,155	100.0%	4	6	4	123.8	1109.4	1095.2
8/19/22 9:36	175	194,635,063	0.0	0	278,050,091	278,050,091	100.0%	4	6	4	123.8	1104.3	1090.8
8/19/22 9:37	184	204,360,206	0.0	0	291,943,151	291,943,151	100.0%	4	6	4	123.9	1108.2	1090.5
8/19/22 9:38	184	204,414,852	0.0	0	292,021,217	292,021,217	100.0%	5	6	4	123.9	1120.2	1090.6
8/19/22 9:39	186	206,220,622	0.0	0	294,600,888	294,600,888	100.0%	5	6	4	123.8	1108.6	1092.2
8/19/22 9:40	180	199,986,074	0.0	0	285,694,392	285,694,392	100.0%	4	6	4	123.9	1108.9	1091.0
8/19/22 9:41	179	198,585,543	0.0	0	283,693,633	283,693,633	100.0%	4	6	4	123.9	1112.0	1090.4
8/19/22 9:42	188	208,335,543	0.0	0	297,622,204	297,622,204	100.0%	4	6	4	123.9	1118.1	1085.9
8/19/22 9:43	188	208,278,858	0.0	0	297,541,226	297,541,226	100.0%	4	6	4	123.9	1109.9	1089.1
8/19/22 9:44	192	212,707,646	0.0	0	303,868,066	303,868,066	100.0%	4	6	4	123.9	1101.6	1092.4
8/19/22 9:45	190	210,849,543	0.0	0	301,213,633	301,213,633	100.0%	5	6	4	123.9	1111.6	1089.4
8/19/22 9:46	186	205,953,466	0.0	0	294,219,236	294,219,236	100.0%	5	6	4	123.9	1118.9	1087.5
8/19/22 9:47	182	202,083,580	0.0	0	288,690,829	288,690,829	100.0%	5	6	4	123.8	1112.5	1090.2
8/19/22 9:48	173	192,041,738	0.0	0	274,345,340	274,345,340	100.0%	6	6	4	123.8	1116.6	1091.1
8/19/22 9:49	179	198,164,134	0.0	0	283,091,620	283,091,620	100.0%	5	6	4	123.8	1110.9	1088.8
8/19/22 9:50	179	198,315,972	0.0	0	283,308,532	283,308,532	100.0%	5	6	4	123.8	1110.8	1088.2
8/19/22 9:51	175	194,234,990	0.0	0	277,478,557	277,478,557	100.0%	5	6	4	123.8	1113.0	1091.5
8/19/22 9:52	184	203,873,035	0.0	0	291,247,193	291,247,193	100.0%	5	6	4	123.9	1107.0	1098.4
8/19/22 9:53	193	214,534,043	0.0	0	306,477,204	306,477,204	100.0%	5	6	4	123.8	1111.8	1092.6
8/19/22 9:54	202	224,719,818	0.0	0	321,028,311	321,028,311	100.0%	4	6	4	123.9	1116.7	1089.4
8/19/22 9:55	200	221,891,257	0.0	0	316,987,510	316,987,510	100.0%	4	6	4	123.9	1107.9	1085.1
8/19/22 9:56	197	218,948,239	0.0	0	312,783,199	312,783,199	100.0%	4	6	4	123.8	1113.6	1085.1

Test 2 Run 1

Start	8/19/22 9:05												
Finish	8/19/22 10:10												
Interval	1m												
	Enthalpy Factor	1,110.0											
Run Averages =	180.2690108	200,098,602	0	0	285,855,146	285,855,146	1	5	6	4	124	1,112	1,090

Date & Time	No. 9 Steam Load KPPH 03-F0115.4	Estimated Total Heat Output btus/hr	Gas Flow KSCFH 03-F0108.4	Gas btu's btus/hr	Estimated Total Heat Input btus/hr	Bark Heat Input btus/hr	% load from bark %	Excess Oxygen (O2 trim control) % 03-A0111.4	dP North in. H2O 33-P0800B.4	dP South in. H2O 33-P0800C.4	Scrubber Supply Pressure psig 03-P0601.4	North Scrubber Flow GPM 03-F0602.4	South Scrubber Flow GPM 03-F0603.4
8/19/22 9:57	195	216,355,069	0.0	0	309,078,670	309,078,670	100.0%	4	6	4	123.8	1108.4	1088.3
8/19/22 9:58	192	212,933,601	0.0	0	304,190,858	304,190,858	100.0%	4	6	4	123.8	1108.6	1087.5
8/19/22 9:59	197	218,522,150	0.0	0	312,174,500	312,174,500	100.0%	4	6	4	123.9	1106.5	1086.0
8/19/22 10:00	201	223,457,472	0.0	0	319,224,960	319,224,960	100.0%	4	6	4	123.9	1111.8	1087.3
8/19/22 10:01	199	221,337,407	0.0	0	316,196,296	316,196,296	100.0%	4	6	4	123.9	1114.7	1089.1
8/19/22 10:02	197	219,169,828	0.0	0	313,099,755	313,099,755	100.0%	4	6	4	123.9	1109.8	1089.5
8/19/22 10:03	199	220,872,221	0.0	0	315,531,745	315,531,745	100.0%	3	6	4	123.9	1107.5	1090.2
8/19/22 10:04	201	222,890,554	0.0	0	318,415,077	318,415,077	100.0%	4	6	4	124.0	1114.5	1088.9
8/19/22 10:05	206	228,144,695	0.0	0	325,920,992	325,920,992	100.0%	3	6	4	123.9	1106.1	1090.3
8/19/22 10:06	208	231,272,251	0.0	0	330,388,931	330,388,931	100.0%	3	6	4	123.9	1111.3	1089.4
8/19/22 10:07	208	230,946,751	0.0	0	329,923,930	329,923,930	100.0%	3	6	4	123.9	1108.1	1087.1
8/19/22 10:08	215	238,301,248	0.0	0	340,430,355	340,430,355	100.0%	3	6	4	123.8	1111.2	1092.4
8/19/22 10:09	213	235,995,030	0.0	0	337,135,758	337,135,758	100.0%	3	6	4	123.8	1110.3	1095.3

Test 2 Run 2

Start	8/19/22 12:45	
Finish	8/19/22 13:50	
Interval	1m	
	Enthalpy Factor	1,107.9

Run Averages =	170.9	189325629.5	0.0	0.0	270465185.0	270465185.0	1.0	6	6	4	124.1	1114.7	1091.3

Date & Time	No. 9 Steam Load KPPH 03-F0115.4	Estimated Total Heat Output btus/hr	Gas Flow KSCFH 03-F0108.4	Gas btu's btus/hr	Estimated Total Heat Input btus/hr	Bark Heat Input btus/hr	% load from bark %	Excess Oxygen (O2 trim control) % 03-A0111.4	dP North in. H2O 33-P0800B.4	dP South in. H2O 33-P0800C.4	Scrubber Supply Pressure psig 03-P0601.4	North Scrubber Flow GPM 03-F0602.4	South Scrubber Flow GPM 03-F0603.4
8/19/22 12:45	181	200,653,177	0.0	0	286,647,396	286,647,396	100.0%	5	6	4	124.1	1116.6	1089.1
8/19/22 12:46	189	209,304,231	0.0	0	299,006,045	299,006,045	100.0%	5	6	4	124.1	1118.7	1088.9
8/19/22 12:47	188	207,916,482	0.0	0	297,023,545	297,023,545	100.0%	5	6	4	124.0	1116.5	1091.4
8/19/22 12:48	181	201,018,929	0.0	0	287,169,899	287,169,899	100.0%	6	6	4	124.1	1111.0	1089.7
8/19/22 12:49	176	195,174,393	0.0	0	278,820,562	278,820,562	100.0%	5	6	4	124.1	1117.7	1091.4
8/19/22 12:50	179	198,625,578	0.0	0	283,750,826	283,750,826	100.0%	5	6	4	124.0	1113.6	1089.7
8/19/22 12:51	185	204,692,124	0.0	0	292,417,320	292,417,320	100.0%	5	6	4	124.1	1108.9	1091.6
8/19/22 12:52	184	203,301,682	0.0	0	290,430,975	290,430,975	100.0%	5	6	4	124.1	1103.9	1089.5
8/19/22 12:53	179	198,368,778	0.0	0	283,383,968	283,383,968	100.0%	5	6	4	124.1	1113.5	1088.7
8/19/22 12:54	176	194,952,353	0.0	0	278,503,361	278,503,361	100.0%	6	6	4	124.1	1114.1	1088.2
8/19/22 12:55	177	195,873,319	0.0	0	279,819,028	279,819,028	100.0%	6	6	4	124.0	1118.6	1088.0
8/19/22 12:56	184	203,993,592	0.0	0	291,419,417	291,419,417	100.0%	5	6	4	124.1	1114.9	1090.1
8/19/22 12:57	187	207,624,900	0.0	0	296,607,000	296,607,000	100.0%	5	6	4	124.1	1110.0	1092.6
8/19/22 12:58	188	207,875,427	0.0	0	296,964,896	296,964,896	100.0%	5	6	4	124.1	1124.8	1094.6
8/19/22 12:59	184	203,799,573	0.0	0	291,142,248	291,142,248	100.0%	5	6	4	124.2	1117.2	1090.7
8/19/22 13:00	187	207,385,627	0.0	0	296,265,181	296,265,181	100.0%	5	6	4	124.1	1116.8	1087.9
8/19/22 13:01	184	203,818,044	0.0	0	291,168,635	291,168,635	100.0%	5	6	4	124.1	1115.7	1090.5
8/19/22 13:02	175	194,345,548	0.0	0	277,636,497	277,636,497	100.0%	5	6	4	124.1	1112.6	1090.7
8/19/22 13:03	173	191,928,540	0.0	0	274,183,628	274,183,628	100.0%	5	6	4	124.1	1113.0	1085.4
8/19/22 13:04	183	202,836,939	0.0	0	289,767,055	289,767,055	100.0%	5	6	4	124.1	1109.6	1091.4
8/19/22 13:05	189	209,398,366	0.0	0	299,140,523	299,140,523	100.0%	5	6	4	124.1	1110.9	1101.3
8/19/22 13:06	193	214,103,134	0.0	0	305,861,620	305,861,620	100.0%	5	6	4	124.1	1117.0	1090.6
8/19/22 13:07	193	213,752,035	0.0	0	305,360,050	305,360,050	100.0%	5	6	4	124.1	1117.4	1088.1
8/19/22 13:08	190	210,936,077	0.0	0	301,337,252	301,337,252	100.0%	5	6	4	124.1	1117.5	1093.0
8/19/22 13:09	185	204,582,730	0.0	0	292,261,043	292,261,043	100.0%	5	6	4	124.1	1114.7	1098.0
8/19/22 13:10	181	200,541,503	0.0	0	286,487,862	286,487,862	100.0%	5	6	4	124.0	1115.6	1094.5
8/19/22 13:11	184	203,476,717	0.0	0	290,681,024	290,681,024	100.0%	5	6	4	124.0	1113.9	1092.2
8/19/22 13:12	178	196,670,666	0.0	0	280,958,094	280,958,094	100.0%	5	6	4	124.1	1108.9	1091.9
8/19/22 13:13	178	197,190,966	0.0	0	281,701,380	281,701,380	100.0%	5	6	4	124.1	1114.4	1090.9
8/19/22 13:14	184	203,973,852	0.0	0	291,391,217	291,391,217	100.0%	5	6	4	124.1	1111.9	1093.1
8/19/22 13:15	182	201,774,397	0.0	0	288,249,139	288,249,139	100.0%	5	6	4	124.1	1114.5	1090.9
8/19/22 13:16	179	198,084,910	0.0	0	282,978,443	282,978,443	100.0%	6	6	4	124.1	1113.0	1093.4
8/19/22 13:17	172	190,790,216	0.0	0	272,557,451	272,557,451	100.0%	6	6	4	124.1	1114.4	1092.3
8/19/22 13:18	173	191,790,440	0.0	0	273,986,343	273,986,343	100.0%	6	6	4	124.1	1116.1	1093.5
8/19/22 13:19	168	186,360,432	0.0	0	266,229,189	266,229,189	100.0%	6	6	4	124.2	1115.5	1095.6
8/19/22 13:20	156	173,015,853	0.0	0	247,165,504	247,165,504	100.0%	6	6	4	124.1	1118.4	1090.1
8/19/22 13:21	158	175,205,565	0.0	0	250,293,664	250,293,664	100.0%	6	6	4	124.1	1113.1	1088.6
8/19/22 13:22	160	176,917,569	0.0	0	252,739,384	252,739,384	100.0%	6	6	4	124.0	1109.3	1089.0
8/19/22 13:23	161	178,165,972	0.0	0	254,522,817	254,522,817	100.0%	6	6	4	124.0	1114.6	1089.7
8/19/22 13:24	162	179,822,772	0.0	0	256,889,675	256,889,675	100.0%	6	6	4	124.1	1115.5	1091.4
8/19/22 13:25	161	178,604,471	0.0	0	255,149,245	255,149,245	100.0%	6	6	4	124.1	1117.2	1087.7
8/19/22 13:26	169	186,926,314	0.0	0	267,037,591	267,037,591	100.0%	6	6	4	124.1	1111.0	1089.7
8/19/22 13:27	168	186,269,438	0.0	0	266,099,197	266,099,197	100.0%	6	6	4	124.0	1111.1	1093.4
8/19/22 13:28	154	171,170,173	0.0	0	244,528,818	244,528,818	100.0%	6	6	4	124.1	1116.4	1094.2
8/19/22 13:29	144	159,915,053	0.0	0	228,450,075	228,450,075	100.0%	7	5	4	124.1	1118.0	1094.4
8/19/22 13:30	149	164,664,654	0.0	0	235,235,220	235,235,220	100.0%	8	6	4	124.1	1108.4	1091.4
8/19/22 13:31	162	179,393,646	0.0	0	256,276,637	256,276,637	100.0%	7	6	4	124.0	1114.9	1091.2
8/19/22 13:32	159	175,644,425	0.0	0	250,920,608	250,920,608	100.0%	7	6	4	124.1	1119.5	1091.4
8/19/22 13:33	163	180,412,949	0.0	0	257,732,785	257,732,785	100.0%	7	6	4	124.0	1114.9	1094.1
8/19/22 13:34	165	182,924,835	0.0	0	261,321,193	261,321,193	100.0%	6	6	4	124.2	1110.3	1095.5
8/19/22 13:35	163	180,896,005	0.0	0	258,422,864	258,422,864	100.0%	6	6	4	124.2	1107.6	1092.9
8/19/22 13:36	157	173,886,521	0.0	0	248,409,316	248,409,316	100.0%	7	6	4	124.2	1113.9	1091.8

Test 2 Run 2

Start	8/19/22 12:45	
Finish	8/19/22 13:50	
Interval	1m	
	Enthalpy Factor	1,107.9

Run Averages =	170.9	189325629.5	0.0	0.0	270465185.0	270465185.0	1.0	6	6	4	124.1	1114.7	1091.3

Date & Time	No. 9 Steam Load KPPH 03-F0115.4	Estimated Total Heat Output btus/hr	Gas Flow KSCFH 03-F0108.4	Gas btu's btus/hr	Estimated Total Heat Input btus/hr	Bark Heat Input btus/hr	% load from bark %	Excess Oxygen (O2 trim control) % 03-A0111.4	dP North in. H2O 33-P0800B.4	dP South in. H2O 33-P0800C.4	Scrubber Supply Pressure psig 03-P0601.4	North Scrubber Flow GPM 03-F0602.4	South Scrubber Flow GPM 03-F0603.4
8/19/22 13:37	152	167,849,719	0.0	0	239,785,314	239,785,314	100.0%	7	6	4	124.1	1113.9	1093.2
8/19/22 13:38	160	177,467,720	0.0	0	253,525,314	253,525,314	100.0%	6	6	4	124.2	1116.4	1087.9
8/19/22 13:39	164	182,100,907	0.0	0	260,144,153	260,144,153	100.0%	7	6	4	124.2	1114.8	1087.1
8/19/22 13:40	156	172,415,205	0.0	0	246,307,436	246,307,436	100.0%	7	6	4	124.2	1116.8	1089.4
8/19/22 13:41	156	172,350,729	0.0	0	246,215,327	246,215,327	100.0%	7	6	4	124.2	1119.6	1089.3
8/19/22 13:42	158	175,491,046	0.0	0	250,701,494	250,701,494	100.0%	6	6	4	124.2	1114.3	1089.9
8/19/22 13:43	156	172,447,418	0.0	0	246,353,454	246,353,454	100.0%	6	6	4	124.2	1123.8	1090.2
8/19/22 13:44	161	177,985,990	0.0	0	254,265,700	254,265,700	100.0%	6	6	4	124.2	1118.6	1091.3
8/19/22 13:45	157	173,639,304	0.0	0	248,056,149	248,056,149	100.0%	6	6	4	124.2	1117.8	1094.1
8/19/22 13:46	147	163,153,008	0.0	0	233,075,725	233,075,725	100.0%	7	6	4	124.1	1115.8	1090.8
8/19/22 13:47	150	165,791,217	0.0	0	236,844,595	236,844,595	100.0%	7	6	4	124.1	1115.5	1093.8
8/19/22 13:48	153	169,597,619	0.0	0	242,282,313	242,282,313	100.0%	7	6	4	124.0	1116.2	1093.1
8/19/22 13:49	158	175,124,142	0.0	0	250,177,345	250,177,345	100.0%	7	6	4	124.1	1116.6	1091.2

Test 2 Run 3

Start	8/19/22 14:30	
Finish	8/19/22 15:35	
Interval	1m	
	Enthalpy Factor	1,082.8

Run Averages =	145	156,989,863	0	0	224,271,232	224,271,232	1	8	6	4	124	1,113	1,092

Date & Time	No. 9 Steam Load KPPH 03-F0115.4	Estimated Total Heat Output btus/hr	Gas Flow KSCFH 03-F0108.4	Gas btu's btus/hr	Estimated Total Heat Input btus/hr	Bark Heat Input btus/hr	% load from bark %	Excess Oxygen (O2 trim control) % 03-A0111.4	dP North in. H2O 33-P0800B.4	dP South in. H2O 33-P0800C.4	Scrubber Supply Pressure psig 03-P0601.4	North Scrubber Flow GPM 03-F0602.4	South Scrubber Flow GPM 03-F0603.4
8/19/22 14:30	147	159,599,958	0.0	0	227,999,940	227,999,940	100.0%	7	6	4	124.2	1114.3	1094.3
8/19/22 14:31	141	153,118,055	0.0	0	218,740,078	218,740,078	100.0%	8	5	4	124.2	1108.5	1092.8
8/19/22 14:32	142	153,710,978	0.0	0	219,587,111	219,587,111	100.0%	8	5	4	124.2	1117.9	1092.7
8/19/22 14:33	140	151,676,388	0.0	0	216,680,555	216,680,555	100.0%	8	5	4	124.2	1111.8	1092.4
8/19/22 14:34	139	150,861,650	0.0	0	215,516,643	215,516,643	100.0%	8	5	4	124.2	1113.4	1090.8
8/19/22 14:35	139	150,628,429	0.0	0	215,183,470	215,183,470	100.0%	9	5	4	124.1	1119.3	1090.9
8/19/22 14:36	143	155,302,168	0.0	0	221,860,240	221,860,240	100.0%	9	5	4	124.1	1118.3	1086.4
8/19/22 14:37	141	152,322,694	0.0	0	217,603,848	217,603,848	100.0%	8	5	4	124.2	1113.9	1087.5
8/19/22 14:38	138	149,660,641	0.0	0	213,800,916	213,800,916	100.0%	9	5	4	124.1	1109.8	1089.8
8/19/22 14:39	134	144,576,668	0.0	0	206,538,097	206,538,097	100.0%	9	5	4	124.2	1103.4	1091.8
8/19/22 14:40	131	141,634,155	0.0	0	202,334,507	202,334,507	100.0%	9	5	4	124.2	1110.1	1093.2
8/19/22 14:41	131	142,136,919	0.0	0	203,052,741	203,052,741	100.0%	9	5	4	124.1	1107.9	1093.5
8/19/22 14:42	136	147,319,541	0.0	0	210,456,487	210,456,487	100.0%	8	6	4	124.2	1109.5	1090.7
8/19/22 14:43	153	165,898,604	0.0	0	236,998,006	236,998,006	100.0%	8	6	4	124.2	1109.5	1092.2
8/19/22 14:44	163	176,285,939	0.0	0	251,837,055	251,837,055	100.0%	7	6	4	124.2	1117.5	1094.9
8/19/22 14:45	150	161,994,449	0.0	0	231,420,642	231,420,642	100.0%	8	6	4	124.2	1115.1	1093.0
8/19/22 14:46	142	153,746,753	0.0	0	219,638,219	219,638,219	100.0%	8	6	4	124.3	1117.6	1090.6
8/19/22 14:47	135	146,522,170	0.0	0	209,317,386	209,317,386	100.0%	8	5	4	124.2	1115.1	1088.8
8/19/22 14:48	141	152,698,404	0.0	0	218,140,576	218,140,576	100.0%	9	5	4	124.1	1110.5	1088.3
8/19/22 14:49	143	154,797,452	0.0	0	221,139,217	221,139,217	100.0%	9	6	4	124.2	1112.9	1089.2
8/19/22 14:50	147	159,316,791	0.0	0	227,595,416	227,595,416	100.0%	8	6	4	124.2	1113.5	1090.5
8/19/22 14:51	149	161,653,504	0.0	0	230,933,578	230,933,578	100.0%	8	6	4	124.2	1108.6	1089.0
8/19/22 14:52	155	168,190,874	0.0	0	240,272,677	240,272,677	100.0%	7	6	4	124.3	1110.6	1090.5
8/19/22 14:53	165	178,717,732	0.0	0	255,311,046	255,311,046	100.0%	6	6	4	124.3	1113.0	1090.9
8/19/22 14:54	163	176,108,534	0.0	0	251,583,620	251,583,620	100.0%	7	6	4	124.3	1114.8	1089.1
8/19/22 14:55	148	159,807,818	0.0	0	228,296,883	228,296,883	100.0%	8	6	4	124.1	1118.7	1088.7
8/19/22 14:56	143	155,358,994	0.0	0	221,941,420	221,941,420	100.0%	8	6	4	124.2	1110.6	1090.5
8/19/22 14:57	146	158,443,384	0.0	0	226,347,692	226,347,692	100.0%	8	6	4	124.2	1110.0	1090.4
8/19/22 14:58	148	160,057,768	0.0	0	228,653,954	228,653,954	100.0%	8	6	4	124.3	1117.9	1089.4
8/19/22 14:59	147	158,816,607	0.0	0	226,880,866	226,880,866	100.0%	8	6	4	124.2	1115.4	1088.8
8/19/22 15:00	141	153,095,936	0.0	0	218,708,479	218,708,479	100.0%	8	6	4	124.3	1109.3	1096.4
8/19/22 15:01	144	156,220,005	0.0	0	223,171,436	223,171,436	100.0%	8	6	4	124.2	1112.4	1103.4
8/19/22 15:02	145	157,143,890	0.0	0	224,491,271	224,491,271	100.0%	8	5	4	124.2	1115.9	1097.4
8/19/22 15:03	136	147,118,012	0.0	0	210,168,588	210,168,588	100.0%	9	5	4	124.2	1114.9	1093.9
8/19/22 15:04	132	142,872,443	0.0	0	204,103,491	204,103,491	100.0%	8	6	4	124.2	1110.0	1092.5
8/19/22 15:05	143	155,065,178	0.0	0	221,521,682	221,521,682	100.0%	8	5	4	124.2	1111.6	1094.5
8/19/22 15:06	142	153,625,758	0.0	0	219,465,369	219,465,369	100.0%	8	5	4	124.2	1109.5	1094.0
8/19/22 15:07	133	144,474,768	0.0	0	206,392,525	206,392,525	100.0%	9	5	4	124.3	1114.1	1092.3
8/19/22 15:08	138	149,705,293	0.0	0	213,864,705	213,864,705	100.0%	9	6	4	124.2	1110.0	1091.9
8/19/22 15:09	137	148,659,828	0.0	0	212,371,182	212,371,182	100.0%	8	5	4	124.2	1112.6	1091.9
8/19/22 15:10	136	147,083,305	0.0	0	210,119,007	210,119,007	100.0%	9	5	4	124.2	1118.1	1093.3
8/19/22 15:11	137	147,958,156	0.0	0	211,368,794	211,368,794	100.0%	9	5	4	124.2	1109.8	1091.4
8/19/22 15:12	136	146,972,120	0.0	0	209,960,171	209,960,171	100.0%	9	5	4	124.2	1113.5	1092.3
8/19/22 15:13	147	159,474,899	0.0	0	227,821,285	227,821,285	100.0%	8	6	4	124.2	1113.6	1092.6
8/19/22 15:14	155	167,456,902	0.0	0	239,224,146	239,224,146	100.0%	8	6	4	124.2	1114.4	1093.8
8/19/22 15:15	160	172,834,075	0.0	0	246,905,822	246,905,822	100.0%	7	6	4	124.2	1121.8	1095.0
8/19/22 15:16	156	169,354,412	0.0	0	241,934,874	241,934,874	100.0%	7	6	4	124.1	1118.7	1094.6
8/19/22 15:17	150	162,957,976	0.0	0	232,797,108	232,797,108	100.0%	7	6	4	124.1	1113.9	1092.0
8/19/22 15:18	145	157,188,320	0.0	0	224,554,742	224,554,742	100.0%	8	5	4	124.2	1112.7	1091.9
8/19/22 15:19	142	153,849,655	0.0	0	219,785,222	219,785,222	100.0%	8	5	4	124.1	1110.5	1092.6
8/19/22 15:20	138	149,922,598	0.0	0	214,175,140	214,175,140	100.0%	8	5	4	124.1	1116.8	1094.3
8/19/22 15:21	134	144,790,222	0.0	0	206,843,174	206,843,174	100.0%	9	5	4	124.2	1116.6	1093.8

Test 2 Run 3

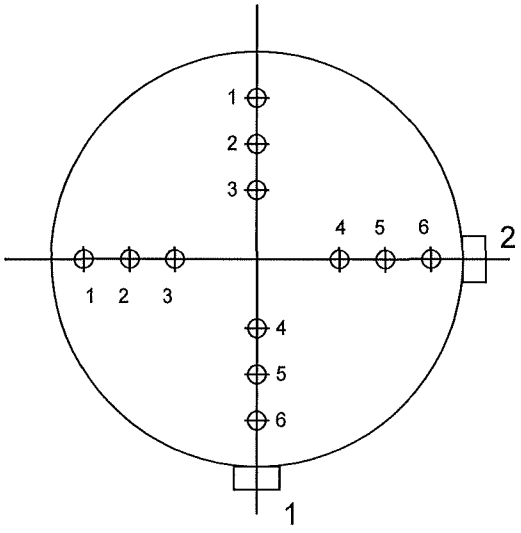
Start	8/19/22 14:30	
Finish	8/19/22 15:35	
Interval	1m	
	Enthalpy Factor	1,082.8

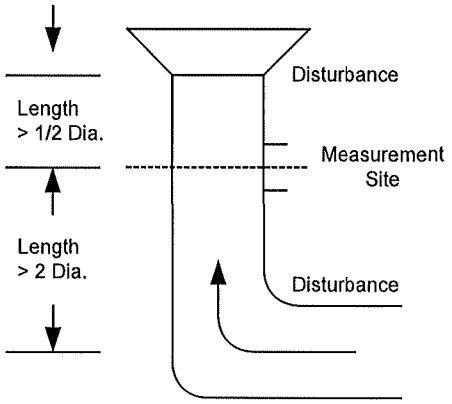
Run Averages =	145	156,989,863	0	0	224,271,232	224,271,232	1	8	6	4	124	1,113	1,092

Date & Time	No. 9 Steam Load KPPH 03-F0115.4	Estimated Total Heat Output btus/hr	Gas Flow KSCFH 03-F0108.4	Gas btu's btus/hr	Estimated Total Heat Input btus/hr	Bark Heat Input btus/hr	% load from bark %	Excess Oxygen (O2 trim control) % 03-A0111.4	dP North in. H2O 33-P0800B.4	dP South in. H2O 33-P0800C.4	Scrubber Supply Pressure psig 03-P0601.4	North Scrubber Flow GPM 03-F0602.4	South Scrubber Flow GPM 03-F0603.4
8/19/22 15:22	136	147,180,211	0.0	0	210,257,445	210,257,445	100.0%	9	5	4	124.2	1111.1	1094.4
8/19/22 15:23	139	151,007,256	0.0	0	215,724,651	215,724,651	100.0%	8	6	4	124.2	1113.1	1092.4
8/19/22 15:24	146	157,914,148	0.0	0	225,591,640	225,591,640	100.0%	7	6	4	124.2	1106.2	1094.7
8/19/22 15:25	154	166,842,022	0.0	0	238,345,746	238,345,746	100.0%	7	6	4	124.2	1114.3	1094.6
8/19/22 15:26	162	175,594,964	0.0	0	250,849,949	250,849,949	100.0%	6	6	4	124.2	1110.6	1092.2
8/19/22 15:27	166	180,217,216	0.0	0	257,453,165	257,453,165	100.0%	6	6	4	124.2	1109.7	1091.9
8/19/22 15:28	158	170,880,865	0.0	0	244,115,522	244,115,522	100.0%	7	5	4	124.3	1109.4	1095.6
8/19/22 15:29	151	163,023,898	0.0	0	232,891,282	232,891,282	100.0%	8	6	4	124.2	1113.9	1095.0
8/19/22 15:30	155	167,499,923	0.0	0	239,285,605	239,285,605	100.0%	7	6	4	124.2	1111.5	1093.4
8/19/22 15:31	152	165,013,276	0.0	0	235,733,251	235,733,251	100.0%	7	5	4	124.1	1118.3	1092.6
8/19/22 15:32	145	156,517,332	0.0	0	223,596,189	223,596,189	100.0%	8	5	4	124.3	1115.0	1095.6
8/19/22 15:33	144	156,295,056	0.0	0	223,278,652	223,278,652	100.0%	8	5	4	124.3	1112.8	1093.9
8/19/22 15:34	146	157,567,141	0.0	0	225,095,915	225,095,915	100.0%	8	5	4	124.2	1116.7	1092.8

Appendix B - Test Section Diagram

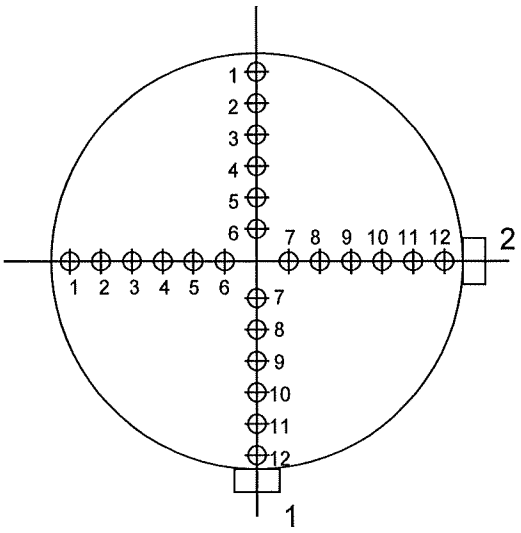
EQUAL AREA TRAVERSE FOR ROUND DUCTS
(Stratification test)

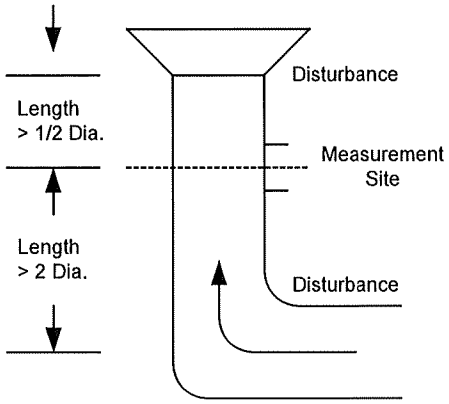




Job:	Billerud Escanaba LLC Escanaba, Michigan
Date:	August 19, 2022
Test Location:	No. 9 North Stack and South Stack
Duct Diameter:	7 Feet
Duct Area:	38.485 Square Feet
No. Points Across Diameter:	6
No. of Ports:	2
Port Length:	12 Inches

EQUAL AREA TRAVERSE FOR ROUND DUCTS
(FPM testing)

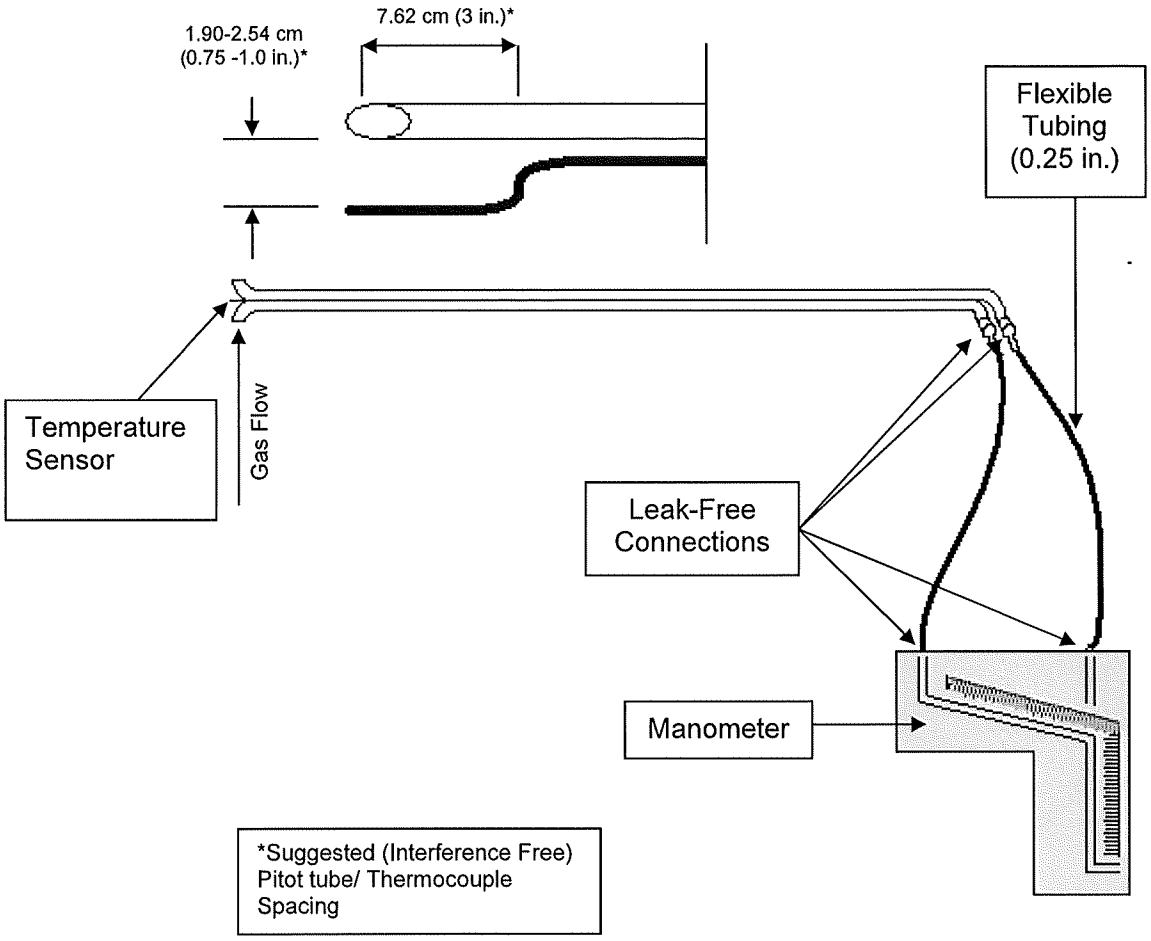




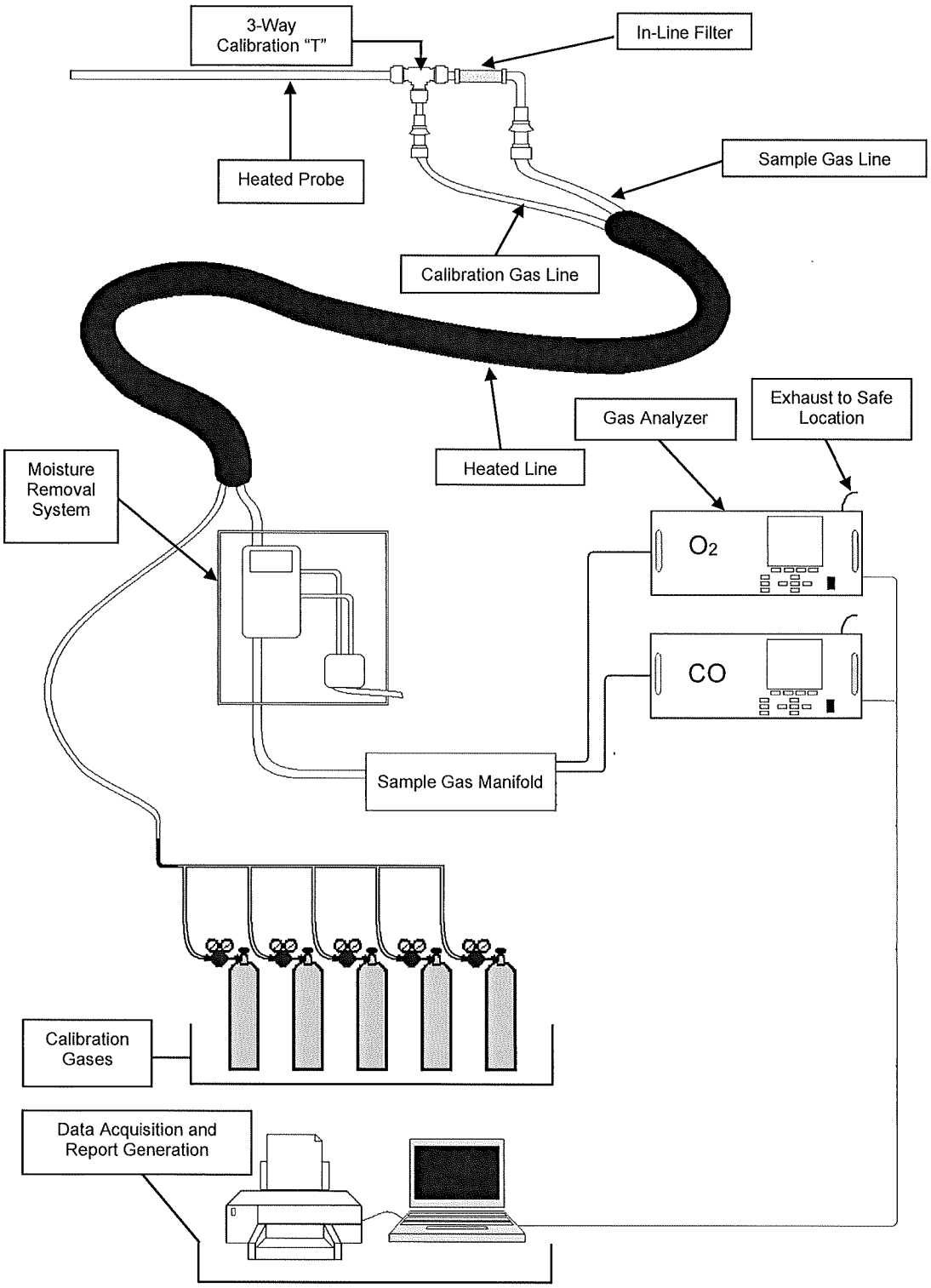
Job:	Billerud Escanaba LLC Escanaba, Michigan
Date:	August 19, 2022
Test Location:	No. 9 North Stack and South Stack
Duct Diameter:	7 Feet
Duct Area:	38.485 Square Feet
No. Points Across Diameter:	12
No. of Ports:	2
Port Length:	12 Inches

Appendix C -Sample Train Diagrams

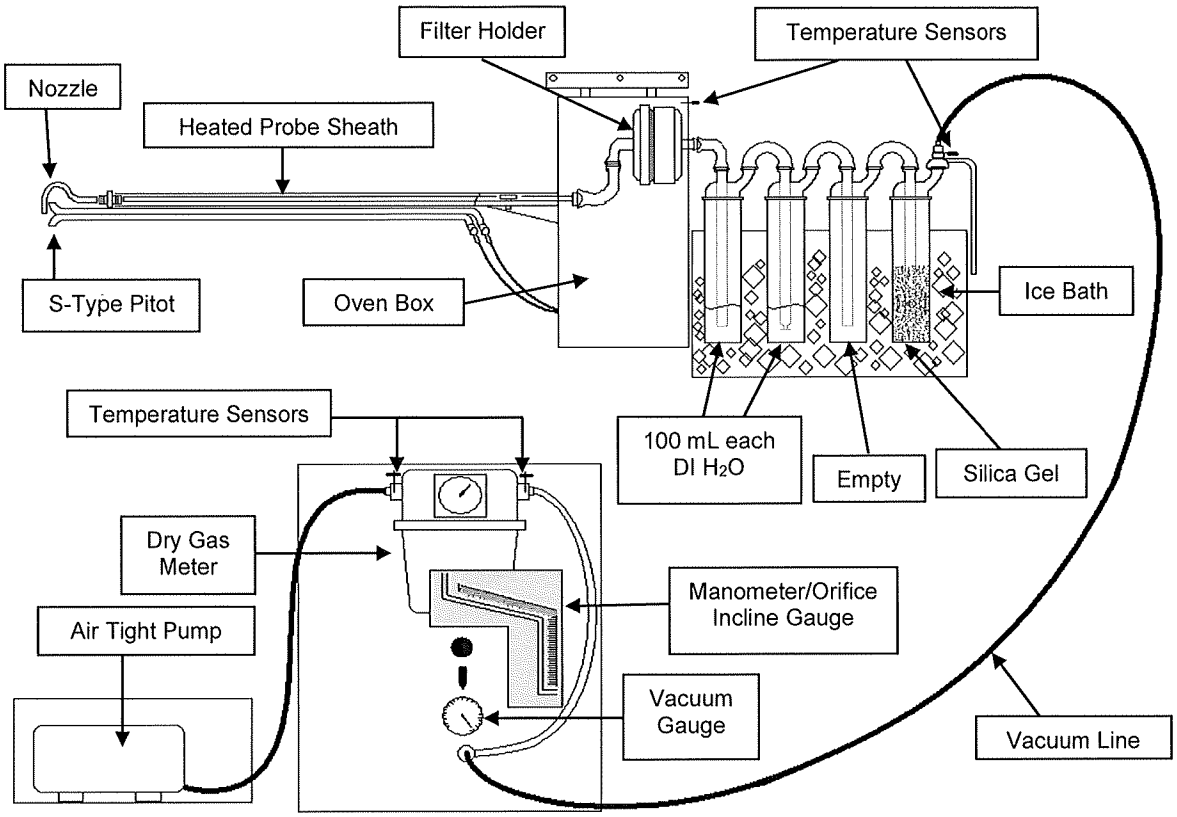
USEPA Method 2 – Type S Pitot Tube Manometer Assembly



USEPA Methods 3A and 10 Extractive Gaseous Sampling Diagram



USEPA Method 5- Particulate Matter Sample Train Diagram



Appendix D -Calculation Nomenclature and Formulas