



EASTERN KENTUCKY UNIVERSITY

Serving Kentuckians Since 1906

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July 28, 2017

Mr. Eric Eisiminger, Regional Office Supervisor
KY Division for Air Quality
Frankfort Regional Office
300 Sower Blvd. 1st Floor
Frankfort, KY 40601

U.S. EPA Region 4
Air Enforcement Branch
Atlanta Federal Center
61 Forsyth St. SW
Atlanta, GA 30303-8960

RE: Semi-Annual Monitoring Compliance Certification
January thru June, 2017
Eastern Kentucky University, Source ID No. 21-151-00007
Permit No. V-14-004

Dear Mr. Eisiminger,

As required by this facility's current air permit, we are submitting a semi-annual monitoring report certified by a responsible official. Attached please find supporting documentation to satisfy all reporting requirements of our Title V permit. My signature on this letter is my certification as warden of this facility.

We have indicated on the Semi-Annual Summary Report the data that has been maintained to meet permit requirements and have also provided much of it in the form of additional summary sheet attachments. The actual daily log sheets are archived in both hardcopy at our heat plant and as softcopy on a shared drive maintained by ECU Information Technology and can be made available upon request.

Please contact myself or Bill Rhodes, the Assistant Director of Environmental Compliance and Energy Management, if you have any questions.

Sincerely,

A handwritten signature in blue ink that reads "Paul Gannoe".

Paul Gannoe
Associate Vice President, ECU Facilities Services & Capital Planning

cc: Bill Rhodes
bill.rhodes@eku.edu

Assistant Director of Environmental Compliance & Energy Management
859 622-4104



Enclosures: Semi-Annual Summary Report for 2017; Jan-Jun
Heat Plant Steam Output 2017 Calendar Year
Monthly Output charts by days and weeks for Jan - Apr, 2017
Baghouse Differential Pressure 3 Hour Rolling Average for Jan - Feb, 2017
Moore Ventures letter 13 April 2017
Moore Ventures letter 28 July 2017
Fuel Usage with HCl and HAP's calculations for 2017 (including 12 month rolling HCl tonnage)
Coal Deliveries and Analyses for 1st and 2nd Quarter 2017 with SO₂ and Particulate calculations
Paint Shop Spray Booth Log for 2017; Jan-Jun



EKU COMPLIANCE SEMI-ANNUAL SUMMARY REPORT

January through June 2017



TITLE V AIR PERMIT No. V-03-025 Revision 1 (Source ID No. 21-151-00007)

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DAILY LOG										
1/1/17	NA	X	NA	X	NA	X	X	3.12	NA	N
1/2/17	NA	X	NA	X	NA	NA	X	3.12	NA	N
1/3/17	NA	X	NA	X	NA	NA	X	3.20	NA	N
1/4/17	NA	X	NA	X	NA	X	9	2.82	NA	N
1/5/17	NA	X	NA	X	NA	X	X	3.02	NA	N
1/6/17	NA	X	NA	X	NA	X	X	2.67	NA	N
1/7/17	NA	X	NA	X	NA	X	X	2.99	NA	N
1/8/17	NA	X	NA	X	NA	X	X	2.85	NA	N
1/9/17	NA	X	NA	X	NA	X	X	2.81	NA	N
1/10/17	NA	X	NA	X	NA	X	X	3.03	NA	N
1/11/17	NA	X	NA	X	NA	X	9	2.94	NA	N
1/12/17	NA	NA	NA	X	NA	X	X	2.98	NA	N
1/13/17	NA	NA	NA	X	NA	X	X	2.83	NA	N
1/14/17	NA	X	NA	X	NA	X	X	2.93	NA	N
1/15/17	NA	X	NA	X	NA	X	X	3.01	NA	N
1/16/17	NA	X	NA	X	NA	NA	X	3.07	NA	N
1/17/17	NA	X	NA	X	NA	NA	X	3.26	NA	N
1/18/17	NA	X	NA	X	NA	NA	9	2.97	NA	N
1/19/17	NA	X	NA	X	NA	X	X	2.79	NA	N
1/20/17	NA	X	NA	X	NA	X	X	3.09	NA	N
1/21/17	NA	X	NA	X	NA	X	X	3.26	NA	N
1/22/17	NA	X	NA	X	NA	X	X	3.38	NA	N
1/23/17	NA	X	NA	X	NA	X	X	3.07	NA	N
1/24/17	NA	X	NA	X	NA	X	X	2.73	NA	N
1/25/17	NA	X	NA	X	NA	X	9	3.04	NA	N
1/26/17	NA	X	NA	X	NA	X	X	3.26	NA	N
1/27/17	NA	X	NA	X	NA	X	X	3.01	NA	N
1/28/17	NA	X	NA	X	NA	X	X	3.16	NA	N
1/29/17	NA	X	NA	X	NA	X	X	3.24	NA	N
1/30/17	NA	X	NA	X	NA	X	X	3.29	NA	N
1/31/17	NA	X	NA	X	NA	X	X	3.16	NA	N
2/1/17	NA	X	NA	X	NA	X	9	2.82	NA	N
2/2/17	NA	X	NA	X	NA	NA	X	3.14	NA	N
2/3/17	NA	X	NA	X	NA	X	X	3.41	NA	N
2/4/17	NA	X	NA	X	NA	X	X	3.10	NA	N
2/5/17	NA	X	NA	X	NA	NA	X	2.97	NA	N
2/6/17	NA	X	NA	X	NA	NA	X	3.28	NA	N
2/7/17	NA	X	NA	X	NA	NA	X	4.63	NA	N
2/8/17	NA	X	NA	X	NA	NA	9	5.00	NA	N
2/9/17	NA	X	NA	X	NA	X	X	4.42	NA	N
2/10/17	NA	X	NA	X	NA	X	X	4.17	NA	N
2/11/17	NA	X	NA	X	NA	X	X	5.10	NA	N
2/12/17	NA	X	NA	X	NA	NA	X	5.32	NA	N
2/13/17	NA	X	NA	X	NA	NA	X	4.71	NA	N
2/14/17	NA	X	NA	X	NA	NA	X	4.60	NA	N
2/15/17	NA	X	NA	X	NA	NA	9	5.08	NA	N
2/16/17	NA	X	NA	NA	NA	NA	X	4.85	NA	N
2/17/17	NA	X	NA	NA	NA	NA	X	5.31	NA	N
2/18/17	NA	X	NA	NA	NA	NA	X	5.11	NA	N

EKU COMPLIANCE SEMI-ANNUAL SUMMARY REPORT

January through June 2017



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DAILY LOG										
2/19/17	NA	X	NA	NA	NA	NA	X	5.26	NA	N
2/20/17	NA	X	NA	NA	NA	NA	X	4.93	NA	N
2/21/17	NA	X	NA	NA	NA	NA	X	5.35	NA	N
2/22/17	NA	X	NA	NA	NA	NA	9	5.25	NA	N
2/23/17	NA	X	NA	NA	NA	NA	X	5.27	NA	N
2/24/17	NA	X	NA	NA	NA	NA	X	5.27	NA	N
2/25/17	NA	X	NA	NA	NA	NA	X	4.66	NA	N
2/26/17	NA	X	NA	NA	NA	X	X	4.67	NA	N
2/27/17	NA	X	NA	NA	NA	NA	X	4.90	NA	N
2/28/17	NA	X	NA	NA	NA	NA	X	4.93	NA	N
3/1/17	NA	X	NA	NA	NA	NA	9	5.39	NA	N
3/2/17	NA	X	NA	NA	NA	NA	X	5.04	NA	N
3/3/17	NA	X	NA	NA	NA	NA	X	4.68	NA	N
3/4/17	NA	X	NA	NA	NA	NA	X	4.31	NA	N
3/5/17	NA	X	NA	NA	NA	NA	X	4.97	NA	N
3/6/17	NA	X	NA	NA	NA	NA	X	5.26	NA	N
3/7/17	NA	X	NA	NA	NA	NA	X	5.09	NA	N
3/8/17	NA	X	NA	NA	NA	NA	9	5.12	NA	N
3/9/17	NA	X	NA	NA	NA	NA	X	5.31	NA	N
3/10/17	NA	X	NA	NA	NA	NA	X	5.18	NA	N
3/11/17	NA	X	NA	NA	NA	NA	X	4.52	NA	N
3/12/17	NA	X	NA	NA	NA	NA	X	4.54	NA	N
3/13/17	NA	X	NA	NA	NA	NA	X	4.41	NA	N
3/14/17	NA	X	NA	NA	NA	NA	X	5.12	NA	N
3/15/17	NA	X	NA	NA	NA	NA	9	4.61	NA	N
3/16/17	NA	X	NA	NA	NA	NA	X	4.47	NA	N
3/17/17	NA	X	NA	NA	NA	NA	X	4.94	NA	N
3/18/17	NA	X	NA	NA	NA	NA	X	4.84	NA	N
3/19/17	NA	X	NA	NA	NA	NA	X	4.87	NA	N
3/20/17	NA	X	NA	NA	NA	NA	X	4.59	NA	N
3/21/17	NA	X	NA	NA	NA	NA	X	5.18	NA	N
3/22/17	NA	X	NA	NA	NA	NA	9	4.95	NA	N
3/23/17	NA	X	NA	NA	NA	NA	X	4.48	NA	N
3/24/17	NA	X	NA	NA	NA	NA	X	5.02	NA	N
3/25/17	NA	X	NA	NA	NA	NA	X	5.13	NA	N
3/26/17	NA	X	NA	NA	NA	NA	X	4.99	NA	N
3/27/17	NA	X	NA	NA	NA	NA	X	5.26	NA	N
3/28/17	NA	X	NA	NA	NA	NA	X	5.22	NA	N
3/29/17	NA	X	NA	NA	NA	NA	9	5.55	NA	N
3/30/17	NA	X	NA	NA	NA	NA	X	5.45	NA	N
3/31/17	NA	X	NA	NA	NA	NA	X	5.15	NA	N
4/1/17	NA	X	NA	NA	NA	NA	X	4.90	NA	N
4/2/17	NA	X	NA	NA	NA	NA	X	5.11	NA	N
4/3/17	NA	X	NA	NA	NA	NA	X	4.93	NA	N
4/4/17	NA	X	NA	NA	NA	NA	9	4.56	NA	N
4/5/17	NA	X	NA	NA	NA	NA	9	5.09	NA	N
4/6/17	NA	X	NA	NA	NA	NA	X	4.56	NA	N
4/7/17	NA	X	NA	NA	NA	NA	X	4.64	NA	N
4/8/17	NA	X	NA	NA	NA	NA	X	4.46	NA	N

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January through June 2017



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DAILY LOG											
4/9/17	NA	X	NA	NA	NA	NA	X	5.08	NA	N	
4/10/17	NA	X	NA	NA	NA	NA	X	4.92	NA	N	
4/11/17	NA	X	NA	NA	NA	NA	X	5.20	NA	N	
4/12/17	NA	X	NA	X	NA	NA	9	5.30	NA	N	
4/13/17	NA	X	NA	X	NA	NA	X	5.47	NA	N	
4/14/17	NA	X	NA	X	NA	NA	X	5.28	NA	N	
4/15/17	NA	X	NA	X	NA	NA	X	5.21	NA	N	
4/16/17	NA	X	NA	X	NA	NA	X	5.13	NA	N	
4/17/17	NA	X	NA	X	NA	NA	X	5.44	NA	N	
4/18/17	NA	X	NA	X	NA	NA	X	5.22	NA	N	
4/19/17	NA	X	NA	X	NA	NA	9	5.24	NA	N	
4/20/17	NA	X	NA	X	NA	NA	X	5.14	NA	N	
4/21/17	NA	X	NA	X	NA	NA	X	4.56	NA	N	
4/22/17	NA	shut Down	NA	NA	NA	X	NA	NA	NA	N	
4/23/17	NA	NA	NA	NA	NA	X	NA	NA	NA	N	
4/24/17	NA	NA	NA	NA	NA	X	NA	NA	NA	N	
4/25/17	NA	NA	NA	NA	NA	X	NA	NA	NA	N	
4/26/17	NA	NA	NA	NA	NA	X	NA	NA	NA	N	
4/27/17	NA	NA	NA	NA	NA	X	NA	NA	NA	N	
4/28/17	NA	NA	NA	NA	NA	X	NA	NA	NA	N	
4/29/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
4/30/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/1/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/2/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/3/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/4/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/5/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/6/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/7/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/8/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/9/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/10/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/11/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/12/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/13/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/14/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/15/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/16/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/17/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/18/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/19/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/20/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/21/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/22/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/23/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/24/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/25/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/26/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	
5/27/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N	

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DAILY LOG										
5/28/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
5/29/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
5/30/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
5/31/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/1/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/2/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/3/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/4/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/5/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/6/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/7/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/8/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/9/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/10/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/11/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/12/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/13/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/14/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/15/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/16/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/17/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/18/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/19/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/20/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/21/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/22/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/23/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/24/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/25/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/26/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/27/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/28/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/29/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
6/30/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	N

Heat Plant Steam Output



Jan - Jun 2017

Monthly Totals, with Fuel & Water Usages

Month	Gas (Mcf)	Coal (Tons)	Ash (Tons)	Make-Up H ₂ O (Kgal)	Condensate Return (Cgal)	Percent Condensate Return	Boiler #1 Output (KLbs)	Boiler #2 Output (KLbs)	Boiler #3 Output (KLbs)	Boiler #4 Output (KLbs)	Total Steam (KLbs)	Steam Per Day (KLbs)	Steam Per Hour (KLbs)
January	2,711	944	0	1,204	1,092	8.3%	0	9,485	3,517	0	13,002	419	17
February	341	918	0	971	1,237	11.3%	0	5,817	901	3,996	10,714	383	16
March	0	907	29	1,064	1,244	10.5%	0	0	0	11,403	11,403	356	15
April	934	427	15	660	427	6.1%	0	5,000	1,406	378	6,784	226	9
May	0	0	0	0	0	--	0	0	0	0	0	0	0
June	0	0	0	0	0	--	0	0	0	0	0	0	0
2009 Totals	3,986	3,197	44	3,899	4,001	9.3%	0	20,302	5,824	15,777	41,903		
Percent Ash:		1.4%	Load Share		0.0%	48.4%	13.9%	37.7%	100%				

Jan - Jun Coal per truck load, Lbs: 10,550

Prorated Coal Usage

Month	% of Coal-Fired Steam		Boiler #2 Tons Burned	Boiler #4 Tons Burned	Total Tons Burned
	Boiler #2	Boiler #4			
Jan	100.0%	0.0%	944.2	0.0	944
Feb	59.3%	40.7%	544.1	373.8	918
Mar	0.0%	100.0%	0.0	907.3	907
Apr	93.0%	7.0%	397.2	30.0	427
May	--	--	--	--	--
Jun	--	--	--	--	--
Total	59.0%	41.0%	1,886	1,311	3,197

Weekly Steam Output with Fuel & Water Usage January 2017

First Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons						
1-Jan		306	114		6.0	31.7	0.0	0.0	99	41,547	310,772	38,039	1,898	4.8%
2-Jan		279	158		5.0	26.4	0.0	0.0	78	41,392	309,612	40,591	1,875	4.4%
3-Jan		150	0		4.0	21.1	0.0	0.0	0	32,253	241,252	29,697	1,502	4.8%
4-Jan		221	18		5.0	26.4	0.0	0.0	0	24,026	179,714	22,608	762	3.3%
5-Jan		379	5		7.0	36.9	2.0	0.0	107	38,586	288,623	35,270	1,125	3.1%
6-Jan		286	192		7.0	36.9	2.0	0.0	189	44,440	332,411	43,319	3,042	6.6%
7-Jan		352	237		6.0	31.7	2.0	0.0	231	55,578	415,723	52,506	5,524	9.5%
Weekly Totals	0	1973	724	0	40.0	211.0	6.0	0.0	704	277,822	2,078,109	262,030	15,728	5.7%
Steam Output					Daily Averages									
Week Total: 2,697 KLbs					Coal: 30.1 Tons					Make-up Water: 37432.9 Kgal				
Daily Avg: 385 KLbs					Ash: 0.0 Tons					Condensate Return: 2,247 Cgal				
Hourly Avg: 16.05 KLbs					Gas: 100.6 Mcf					City Water: 296,872.7 Kgal				

Second Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons						
8-Jan		278	312		6.0	31.7	0.0	0.0	279	57,151	427,489	53,382	7,215	11.9%
9-Jan		361	355		6.0	31.7	0.0	0.0	262	70,630	528,312	67,556	7,384	9.9%
10-Jan		284	310		6.0	31.7	0.0	0.0	208	54,702	409,171	53,672	6,221	10.4%
11-Jan		295	222		6.0	31.7	0.0	0.0	100	52,532	392,939	48,579	4,494	8.5%
12-Jan		311	140		6.0	31.7	0.0	0.0	38	44,995	336,563	44,122	3,289	6.9%
13-Jan		195	36		0.0	0.0	4.0	0.0	4	23,249	173,903	17,952	150	0.8%
14-Jan		372	82		0.0	0.0	4.0	0.0	79	42,801	320,151	41,132	4,476	9.8%
Weekly Totals	0	2096	1457	0	30.0	158.3	8.0	0.0	970	346,060	2,588,529	326,395	33,229	9.2%
Steam Output					Daily Averages									
Week Total: 3,553 KLbs					Coal: 22.6 Tons					Make-up Water: 46627.9 Kgal				
Daily Avg: 508 KLbs					Ash: 0.0 Tons					Condensate Return: 4,747 Cgal				
Hourly Avg: 21.15 KLbs					Gas: 138.6 Mcf					City Water: 49,437 Kgal				

Third Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons						
15-Jan		331	110		10.0	52.8	2.0	0.0	84	43,763	327,347	41,181	3,903	8.7%
16-Jan		332	110		10.0	52.8	0.0	0.0	106	42,244	315,985	39,773	4,147	9.4%
17-Jan		214	203		8.0	42.2	0.0	0.0	51	40,333	301,691	39,631	4,811	10.8%
18-Jan		218	0		6.0	31.7	0.0	0.0	0	29,386	219,807	26,161	729	2.7%
19-Jan		341	0		6.0	31.7	0.0	0.0	2	35,024	261,980	33,256	1,926	5.5%
20-Jan		451	5		6.0	31.7	0.0	0.0	2	44,999	336,593	41,448	5,056	10.9%
21-Jan		310	0		6.0	31.7	4.0	0.0	0	36,122	270,193	32,272	1,211	3.6%
Weekly Totals	0	2197	428	0	52.0	274.3	6.0	0.0	245	271,871	2,033,595	253,722	21,783	7.9%
Steam Output					Daily Averages									
Week Total: 2,625 KLbs					Coal: 39.2 Tons					Make-up Water: 36246.0 Kgal				
Daily Avg: 375 KLbs					Ash: 0.0 Tons					Condensate Return: 3,112 Cgal				
Hourly Avg: 15.63 KLbs					Gas: 35.0 Mcf					City Water: 38,839 Kgal				

Fourth Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons						
22-Jan		277	0		6.0	31.7	0.0	0.0	0	28,361	212,140	26,815	2,013	7.0%
23-Jan		293	0		6.0	31.7	0.0	0.0	0	28,900	216,172	28,081	2,212	7.3%
24-Jan		314	95		6.0	31.7	0.0	0.0	14	26,331	196,956	24,087	146	0.6%
25-Jan		329	25		6.0	31.7	0.0	0.0	45	34,226	256,010	32,853	3,112	8.7%
26-Jan		373	24		4.0	21.1	3.0	0.0	40	40,059	299,641	35,730	3,906	9.9%
27-Jan		336	28		5.0	26.4	0.0	0.0	63	36,345	271,861	35,533	2,618	6.9%
28-Jan		421	10		8.0	42.2	0.0	0.0	138	37,907	283,544	36,259	4,495	11.0%
Weekly Totals	0	2343	182	0	41.0	216.3	3.0	0.0	300	232,129	1,736,325	219,358	18,502	7.8%
Steam Output					Daily Averages									
Week Total: 2,525 KLbs					Coal: 30.9 Tons					Make-up Water: 31336.9 Kgal				
Daily Avg: 361 KLbs					Ash: 0.0 Tons					Condensate Return: 2,643 Cgal				
Hourly Avg: 15.03 KLbs					Gas: 42.9 Mcf					City Water: 33,161 Kgal				

Fifth Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons						
29-Jan		224	311		8.0	42.2	0.0	0.0	165	48,378	361,867	46,214	6,685	12.6%
30-Jan		317	157		4.0	21.1	0.0	0.0	154	47,844	357,873	45,656	6,126	11.8%
31-Jan		335	258		4.0	21.1	0.0	0.0	173	52,256	390,875	50,164	7,174	12.5%
														#DIV/0!
														#DIV/0!
														#DIV/0!
														#DIV/0!
Weekly Totals	0	876	726	0	16.0	84.4	0.0	0.0	492	148,478	1,110,615	142,034	19,985	12.3%
Steam Output					Daily Averages									
Week Total: 1,602 KLbs					Coal: 28.1 Tons					Make-up Water: 47344.7 Kgal				
Daily Avg: 534 KLbs					Ash: 0.0 Tons					Condensate Return: 6,662 Cgal				
Hourly Avg: 22.25 KLbs					Gas: 164.0 Mcf					City Water: 49,493 Kgal				

Sixth Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons						
														#DIV/0!
														#DIV/0!
														#DIV/0!
														#DIV/0!
														#DIV/0!
														#DIV/0!
														#DIV/0!
Weekly Totals	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	#DIV/0!
Steam Output					Daily Averages									
Week Total: 0 KLbs					Coal: #DIV/0! Tons					Make-up Water: #DIV/0! Kgal				
Daily Avg: #DIV/0! KLbs					Ash: #DIV/0! Tons					Condensate Return: #DIV/0! Cgal				
Hourly Avg: #DIV/0! KLbs					Gas: #DIV/0! Mcf					City Water: #DIV/0! Kgal				

Weekly Steam Output with Fuel & Water Usage February 2017

First Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons						
						0.0								#DIV/0!
						0.0								#DIV/0!
						0.0								#DIV/0!
1-Feb		255	164		7.0	36.9	4.0	0.0	83	42,847	320,496	39,240	4,778	10.9%
2-Feb		258	121		6.0	31.7	0.0	0.0	32	38,696	289,446	35,814	2,883	7.5%
3-Feb		444	0		7.0	36.9	4.0	0.0	0	44,924	336,032	41,188	3,872	8.6%
4-Feb		559	95		9.0	47.5	0.0	0.0	14	44,257	331,042	43,373	5,175	10.7%
Weekly Totals	0	1516	380	0	29.0	153.0	8.0	0.0	129	170,724	1,277,016	159,615	16,708	9.5%
Steam Output				Daily Averages										
Week Total: 1,896 KLbs				Coal: 38.2 Tons				Make-up Water: 39903.8 Kgal						
Daily Avg: 474 KLbs				Ash: 0.0 Tons				Condensate Return: 4,177 Cgal						
Hourly Avg: 19.75 KLbs				Gas: 32.3 Mcf				City Water: 319,253.9 Kgal						

Second Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons						
5-Feb		500	114		7.0	36.9	0.0	0.0	36	52,482	392,565	50,370	12,571	20.0%
6-Feb		394	0		5.0	26.4	0.0	0.0	0	39,249	293,583	36,732	4,065	10.0%
7-Feb		435	0		9.0	47.5	4.0	0.0	0	42,836	320,413	39,905	4,943	11.0%
8-Feb		257	0		9.0	47.5	4.0	0.0	0	27,183	203,329	24,177	1,356	5.3%
9-Feb		256	39		9.0	47.5	5.0	0.0	0	30,225	226,083	29,525	640	2.1%
10-Feb		415	48		6.0	31.7	0.0	0.0	65	44,433	332,359	42,102	5,140	10.9%
11-Feb		560	112		7.0	36.9	4.0	0.0	72	62,855	470,155	58,989	11,312	16.1%
Weekly Totals	0	2817	313	0	52.0	274.3	17.0	0.0	173	299,263	2,238,487	281,800	40,027	12.4%
Steam Output				Daily Averages										
Week Total: 3,130 KLbs				Coal: 39.2 Tons				Make-up Water: 40257.1 Kgal						
Daily Avg: 447 KLbs				Ash: 0.0 Tons				Condensate Return: 5,718 Cgal						
Hourly Avg: 18.63 KLbs				Gas: 24.7 Mcf				City Water: 42,752 Kgal						

Third Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons						
12-Feb		220	102		5.0	26.4	1.0	0.0	24	32,380	242,202	31,043	2,535	7.5%
13-Feb		31	36		5.0	26.4	0.0	0.0	0	20,350	152,218	9,699	3,618	27.2%
14-Feb		410	0		5.0	26.4	0.0	0.0	0	43,883	328,245	40,594	4,832	10.6%
15-Feb		459	0	75	5.0	26.4	0.0	0.0	0	39,243	293,538	37,097	4,621	11.1%
16-Feb		364	0	19	5.0	26.4	0.0	0.0	0	40,832	305,423	38,154	2,465	6.1%
17-Feb		0	0	489	12.0	63.3	0.0	0.0	0	44,624	333,788	42,461	6,953	14.1%
18-Feb		0	0	389	7.0	36.9	4.0	0.0	0	39,304	293,994	35,880	5,666	13.6%
Weekly Totals	0	1484	138	972	44.0	232.1	5.0	0.0	24	260,616	1,949,408	234,928	30,690	11.6%
Steam Output				Daily Averages										
Week Total: 2,594 KLbs				Coal: 33.2 Tons				Make-up Water: 33561.1 Kgal						
Daily Avg: 371 KLbs				Ash: 0.0 Tons				Condensate Return: 4,384 Cgal						
Hourly Avg: 15.44 KLbs				Gas: 3.4 Mcf				City Water: 37,231 Kgal						

Fourth Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons						
19-Feb		0	0	317	7.0	36.9	2.0	0.0	0	36,394	272,227	34,179	2,774	7.5%
20-Feb		0	0	309	6.0	31.7	0.0	0.0	0	38,310	286,559	35,865	2,359	6.2%
21-Feb		0	0	339	5.0	26.4	0.0	0.0	0	31,444	235,201	31,300	4,400	12.3%
22-Feb		0	0	244	5.0	26.4	0.0	0.0	0	28,120	210,338	25,679	2,128	7.7%
23-Feb		0	0	268	4.0	21.1	4.0	0.0	0	30,181	225,754	27,718	2,505	8.3%
24-Feb		0	0	254	4.0	21.1	0.0	0.0	0	26,155	195,639	26,076	1,825	6.5%
25-Feb		0	0	231	4.0	21.1	0.0	0.0	0	25,232	188,735	22,542	2,173	8.8%
Weekly Totals	0	0	0	1962	35.0	184.6	6.0	0.0	0	215,836	1,614,453	203,359	18,164	8.2%
Steam Output				Daily Averages										
Week Total: 1,962 KLbs				Coal: 26.4 Tons				Make-up Water: 29051.3 Kgal						
Daily Avg: 280 KLbs				Ash: 0.0 Tons				Condensate Return: 2,595 Cgal						
Hourly Avg: 11.68 KLbs				Gas: 0.0 Mcf				City Water: 30,834 Kgal						

Fifth Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons						
26-Feb		0	34	246	4.0	21.1	0.0	0.0	0	16,250	121,550	15,968	1,851	10.4%
27-Feb		0	36	437	4.0	21.1	0.0	0.0	15	39,983	299,073	38,537	10,378	21.2%
28-Feb		0	0	379	6.0	31.7	0.0	0.0	0	38,569	288,496	37,062	5,916	13.8%
						0.0								#DIV/0!
						0.0								#DIV/0!
						0.0								#DIV/0!
						0.0								#DIV/0!
Weekly Totals	0	0	70	1062	14.0	73.9	0.0	0.0	15	94,802	709,119	91,567	18,145	16.5%
Steam Output				Daily Averages										
Week Total: 1,132 KLbs				Coal: 24.6 Tons				Make-up Water: 30522.3 Kgal						
Daily Avg: 377 KLbs				Ash: 0.0 Tons				Condensate Return: 6,048 Cgal						
Hourly Avg: 15.72 KLbs				Gas: 5.0 Mcf				City Water: 31,601 Kgal						

Sixth Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons						
						0.0								#DIV/0!
						0.0								#DIV/0!
						0.0								#DIV/0!
						0.0								#DIV/0!
						0.0								#DIV/0!
						0.0								#DIV/0!
						0.0								#DIV/0!
Weekly Totals	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	#DIV/0!
Steam Output				Daily Averages										
Week Total: 0 KLbs				Coal: #DIV/0! Tons				Make-up Water: #DIV/0! Kgal						
Daily Avg: #DIV/0! KLbs				Ash: #DIV/0! Tons				Condensate Return: #DIV/0! Cgal						
Hourly Avg: #DIV/0! KLbs				Gas: #DIV/0! Mcf				City Water: #DIV/0! Kgal						

Weekly Steam Output with Fuel & Water Usage March 2017

First Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return	
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons							
						0.0								#DIV/0!	
						0.0								#DIV/0!	
						0.0								#DIV/0!	
1-Mar	0	0	0	392	8.0	42.2	1.0	0.0	0	40,356	301,863	38,080	3,990	9.5%	
2-Mar	0	0	0	218	6.0	31.7	1.0	0.0	0	29,797	222,882	28,194	586	2.0%	
3-Mar	0	0	0	356	5.0	26.4	4.0	0.0	0	31,963	239,083	29,794	5,683	16.0%	
4-Mar	0	0	0	523	6.0	31.7	0.0	0.0	0	46,409	347,139	44,623	5,966	11.8%	
Weekly Totals	0	0	0	1489	25.0	131.9	6.0	0.0	0	148,525	1,110,967	140,691	16,225	10.3%	
Steam Output				Daily Averages											
Week Total: 1,489 KLbs				Coal: 33.0 Tons				Make-up Water: 35172.8 Kgal							
Daily Avg: 372 KLbs				Ash: 0.0 Tons				Condensate Return: 4,056 Cgal							
Hourly Avg: 15.51 KLbs				Gas: 0.0 Mcf				City Water: 277,741.8 Kgal							

Second Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return	
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons							
5-Mar	0	0	0	403	6.0	31.7	0.0	0.0	0	37,022	276,925	35,984	5,909	14.1%	
6-Mar	0	0	0	415	5.0	26.4	0.0	0.0	0	36,877	275,840	35,391	8,779	19.9%	
7-Mar	0	0	0	322	6.0	31.7	0.0	0.0	0	32,848	245,703	32,778	3,063	8.5%	
8-Mar	0	0	0	123	6.0	31.7	0.0	0.0	0	21,311	159,406	20,098	1,922	8.7%	
9-Mar	0	0	0	350	6.0	31.7	0.0	0.0	0	34,881	260,910	32,565	4,221	11.5%	
10-Mar	0	0	0	307	5.0	26.4	5.0	0.0	0	33,518	250,715	30,730	3,407	10.0%	
11-Mar	0	0	0	318	5.0	26.4	0.0	0.0	0	33,830	253,048	31,163	1,544	4.7%	
Weekly Totals	0	0	0	2238	39.0	205.7	5.0	0.0	0	230,287	1,722,547	218,709	28,845	11.7%	
Steam Output				Daily Averages											
Week Total: 2,238 KLbs				Coal: 29.4 Tons				Make-up Water: 31244.1 Kgal							
Daily Avg: 320 KLbs				Ash: 0.0 Tons				Condensate Return: 4,121 Cgal							
Hourly Avg: 13.32 KLbs				Gas: 0.0 Mcf				City Water: 32,898 Kgal							

Third Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return	
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons							
12-Mar	0	0	0	372	6.0	31.7	0.0	0.0	0	30,747	229,988	30,818	6,318	17.0%	
13-Mar	0	0	0	474	6.0	31.7	0.0	0.0	0	40,642	304,002	39,476	7,212	15.4%	
14-Mar	0	0	0	335	7.0	36.9	0.0	0.0	0	29,924	223,832	28,691	4,858	14.5%	
15-Mar	0	0	0	434	6.0	31.7	0.0	0.0	0	42,981	321,498	41,118	6,999	14.5%	
16-Mar	0	0	0	601	6.0	31.7	0.0	0.0	0	53,707	401,728	51,213	7,589	12.9%	
17-Mar	0	0	0	569	9.0	47.5	6.0	0.0	0	50,739	379,528	47,803	8,725	15.4%	
18-Mar	0	0	0	545	7.0	36.9	0.0	0.0	0	47,298	353,789	45,792	6,974	13.2%	
Weekly Totals	0	0	0	3330	47.0	247.9	6.0	0.0	0	296,038	2,214,364	284,911	48,675	14.6%	
Steam Output				Daily Averages											
Week Total: 3,330 KLbs				Coal: 35.4 Tons				Make-up Water: 40701.6 Kgal							
Daily Avg: 476 KLbs				Ash: 0.0 Tons				Condensate Return: 6,954 Cgal							
Hourly Avg: 19.82 KLbs				Gas: 0.0 Mcf				City Water: 42,291 Kgal							

Fourth Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return	
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons							
19-Mar	0	0	0	314	6.0	31.7	0.0	0.0	0	35,729	267,253	33,215	2,054	5.8%	
20-Mar	0	0	0	381	5.0	26.4	0.0	0.0	0	33,446	250,176	33,542	4,155	11.0%	
21-Mar	0	0	0	505	5.0	26.4	0.0	0.0	0	46,618	348,703	43,958	4,832	9.9%	
22-Mar	0	0	0	374	6.0	31.7	6.0	0.0	0	39,010	291,795	36,430	1,137	3.0%	
23-Mar	0	0	0	357	5.0	26.4	0.0	0.0	0	35,343	264,366	33,156	2,563	7.2%	
24-Mar	0	0	0	531	5.0	26.4	0.0	0.0	0	46,602	348,583	47,916	6,171	11.4%	
25-Mar	0	0	0	313	5.0	26.4	0.0	0.0	0	33,897	253,550	33,897	1,280	3.6%	
Weekly Totals	0	0	0	2775	37.0	195.2	6.0	0.0	0	270,645	2,024,425	262,114	22,192	7.8%	
Steam Output				Daily Averages											
Week Total: 2,775 KLbs				Coal: 27.9 Tons				Make-up Water: 37444.9 Kgal							
Daily Avg: 396 KLbs				Ash: 0.0 Tons				Condensate Return: 3,170 Cgal							
Hourly Avg: 16.52 KLbs				Gas: 0.0 Mcf				City Water: 38,664 Kgal							

Fifth Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return	
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons							
26-Mar	0	0	0	284	4.0	21.1	1.0	0.0	0	31,226	233,570	28,437	1,277	4.3%	
27-Mar	0	0	0	256	4.0	21.1	1.0	0.0	0	28,010	209,515	26,854	1,367	4.8%	
28-Mar	0	0	0	239	4.0	21.1	0.0	0.0	0	23,717	177,403	22,273	879	3.8%	
29-Mar	0	0	0	248	4.0	21.1	4.0	0.0	0	27,757	207,622	24,498	1,448	5.6%	
30-Mar	0	0	0	289	4.0	21.1	0.0	0.0	0	31,277	233,952	30,930	1,883	5.7%	
31-Mar	0	0	0	255	4.0	21.1	0.0	0.0	0	24,442	182,826	24,671	1,633	6.2%	
0-Jan														#DIV/0!	
Weekly Totals	0	0	0	1571	24.0	126.6	6.0	0.0	0	166,429	1,244,889	157,663	8,487	5.1%	
Steam Output				Daily Averages											
Week Total: 1,571 KLbs				Coal: 21.1 Tons				Make-up Water: 22523.3 Kgal							
Daily Avg: 224 KLbs				Ash: 0.0 Tons				Condensate Return: 1,212 Cgal							
Hourly Avg: 9.35 KLbs				Gas: 0.0 Mcf				City Water: 23,776 Kgal							

Sixth Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return	
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons							
						0.0								#DIV/0!	
						0.0								#DIV/0!	
						0.0								#DIV/0!	
						0.0								#DIV/0!	
						0.0								#DIV/0!	
						0.0								#DIV/0!	
						0.0								#DIV/0!	
						0.0								#DIV/0!	
Weekly Totals	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	#DIV/0!	
Steam Output				Daily Averages											
Week Total: 0 KLbs				Coal: #DIV/0! Tons				Make-up Water: #DIV/0! Kgal							
Daily Avg: #DIV/0! KLbs				Ash: #DIV/0! Tons				Condensate Return: #DIV/0! Cgal							
Hourly Avg: #DIV/0! KLbs				Gas: #DIV/0! Mcf				City Water: #DIV/0! Kgal							

Weekly Steam Output with Fuel & Water Usage April 2017

First Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons						
						0.0								#DIV/0!
						0.0								#DIV/0!
						0.0								#DIV/0!
						0.0								#DIV/0!
						0.0								#DIV/0!
1-Apr	0	90	0	378	3.0	15.8	0.0	0.0	0	33,237	248,613	32,079	44	0.1%
Weekly Totals	0	90	0	378	3.0	15.8	0.0	0.0	0	33,237	248,613	32,079	44	0.1%
Steam Output					Daily Averages									
Week Total: 468 KLbs					Coal: 15.8 Tons				Make-up Water: 32079.0 Kgal					
Daily Avg: 468 KLbs					Ash: 0.0 Tons				Condensate Return: 44 Cgal					
Hourly Avg: 19.50 KLbs					Gas: 0.0 Mcf				City Water: 248,612.8 Kgal					

Second Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons						
2-Apr	0	334	0	0	4.0	21.1	0.0	0.0	0	35,292	263,984	34,173	2,903	7.8%
3-Apr	0	375	0	0	4.0	21.1	0.0	0.0	0	37,395	279,715	33,661	4,226	11.2%
4-Apr	0	206	0	0	4.0	21.1	3.0	0.0	0	25,177	188,324	21,389	771	3.5%
5-Apr	0	192	0	0	4.0	21.1	3.0	0.0	0	21,206	158,621	18,662	614	3.2%
6-Apr	0	227	0	0	4.0	21.1	0.0	0.0	0	26,156	195,647	23,874	1,084	4.3%
7-Apr	0	295	0	0	4.0	21.1	0.0	0.0	0	31,893	238,560	30,355	1,389	4.4%
8-Apr	0	355	0	0	5.0	26.4	2.0	0.0	0	33,350	249,458	29,285	3,520	10.7%
Weekly Totals	0	1984	0	0	29.0	153.0	8.0	0.0	0	210,469	1,574,308	191,399	14,507	7.0%
Steam Output					Daily Averages									
Week Total: 1,984 KLbs					Coal: 21.9 Tons				Make-up Water: 27342.7 Kgal					
Daily Avg: 283 KLbs					Ash: 0.0 Tons				Condensate Return: 2,072 Cgal					
Hourly Avg: 11.81 KLbs					Gas: 0.0 Mcf				City Water: 30,067 Kgal					

Third Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons						
9-Apr	0	329	0	0	5.0	26.4	4.0	0.0	0	36,754	274,920	30,085	4,486	13.0%
10-Apr	0	266	0	0	4.0	21.1	3.0	0.0	0	31,747	237,468	26,842	2,233	7.7%
11-Apr	0	195	0	0	5.0	26.4	0.0	0.0	0	22,408	167,612	20,198	267	1.3%
12-Apr	0	209	0	0	5.0	26.4	0.0	0.0	0	22,620	169,198	20,005	1,173	5.5%
13-Apr	0	247	0	0	5.0	26.4	0.0	0.0	0	24,836	185,773	23,527	1,527	6.1%
14-Apr	0	223	0	0	5.0	26.4	0.0	0.0	0	26,670	199,492	21,446	1,213	5.4%
15-Apr	0	218	0	0	5.0	26.4	0.0	0.0	0	24,576	183,828	22,100	851	3.7%
Weekly Totals	0	1687	0	0	34.0	179.4	7.0	0.0	0	189,611	1,418,290	164,203	11,750	6.7%
Steam Output					Daily Averages									
Week Total: 1,687 KLbs					Coal: 25.6 Tons				Make-up Water: 23457.6 Kgal					
Daily Avg: 241 KLbs					Ash: 0.0 Tons				Condensate Return: 1,679 Cgal					
Hourly Avg: 10.04 KLbs					Gas: 0.0 Mcf				City Water: 27,087 Kgal					

Fourth Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons						
16-Apr	0	213	0	0	5.0	26.4	0.0	0.0	0	24,348	182,123	21,823	928	4.1%
17-Apr	0	212	0	0	5.0	26.4	0.0	0.0	0	24,661	184,464	22,265	760	3.3%
18-Apr	0	228	0	0	5.0	26.4	0.0	0.0	0	26,898	201,197	24,235	1,310	5.1%
19-Apr	0	195	0	0	0.0	0.0	0.0	0.0	0	22,833	170,791	20,559	171	0.8%
20-Apr	0	218	0	0	0.0	0.0	0.0	0.0	0	23,403	175,054	20,877	1,152	5.2%
21-Apr	0	173	0	0	0.0	0.0	0.0	0.0	0	19,027	142,322	16,673	1,102	6.2%
22-Apr	0	0	129	0	0.0	0.0	0.0	0.0	51	29,099	217,661	25,718	1,270	4.7%
Weekly Totals	0	1239	129	0	15.0	79.1	0.0	0.0	51	170,269	1,273,612	152,150	6,693	4.2%
Steam Output					Daily Averages									
Week Total: 1,368 KLbs					Coal: 11.3 Tons				Make-up Water: 21735.7 Kgal					
Daily Avg: 195 KLbs					Ash: 0.0 Tons				Condensate Return: 956 Cgal					
Hourly Avg: 8.14 KLbs					Gas: 7.3 Mcf				City Water: 24,324 Kgal					

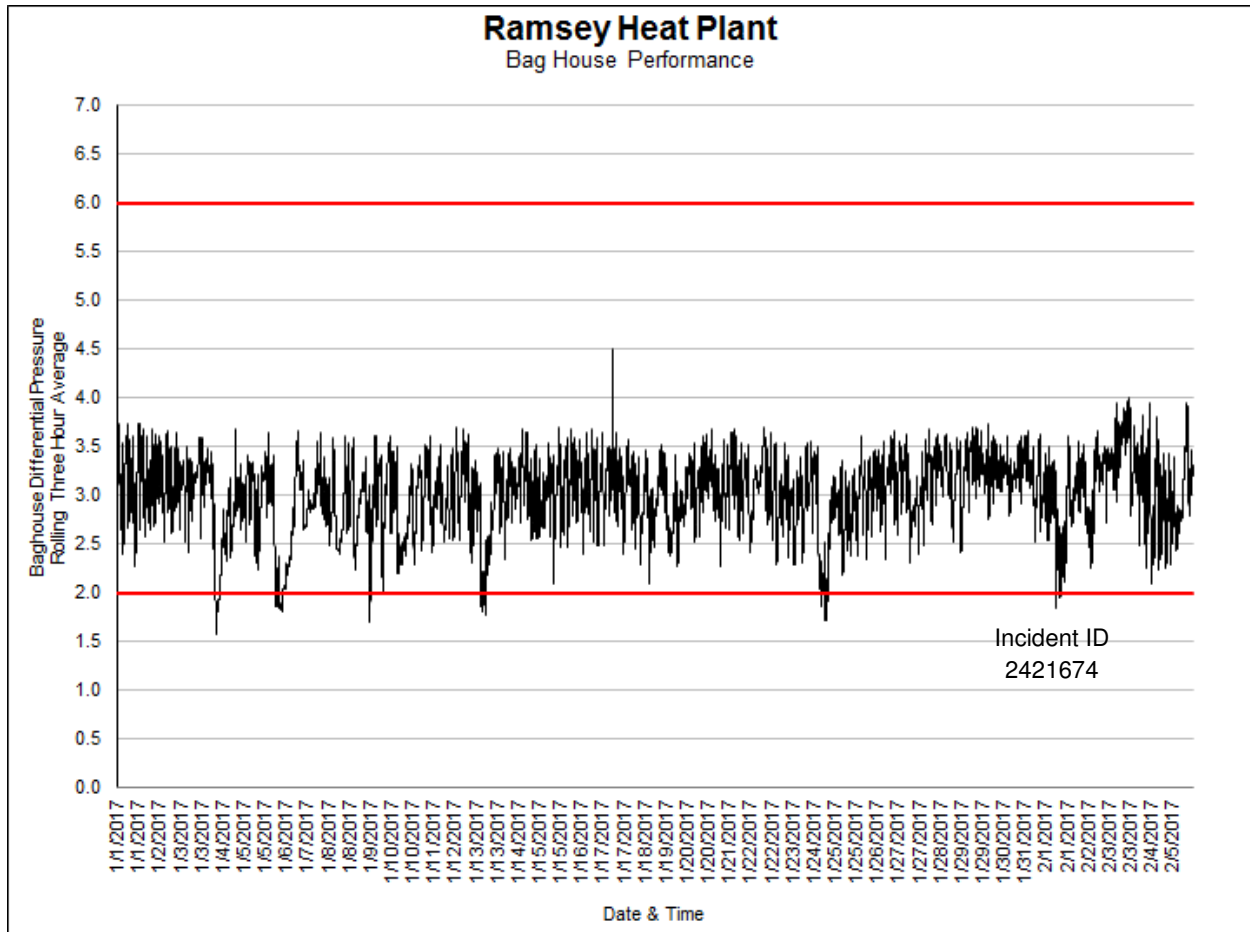
Fifth Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons						
23-Apr	0	0	168	0	0.0	0.0	0.0	0.0	162	17,086	127,803	15,733	575	3.5%
24-Apr	0	0	256	0	0.0	0.0	0.0	0.0	169	24,267	181,517	22,892	3,458	13.1%
25-Apr	0	0	221	0	0.0	0.0	0.0	0.0	151	20,043	149,922	18,810	2,443	11.5%
26-Apr	0	0	203	0	0.0	0.0	0.0	0.0	145	23,648	176,887	22,291	227	1.0%
27-Apr	0	0	228	0	0.0	0.0	0.0	0.0	138	18,222	136,301	19,341	2,768	12.5%
28-Apr	0	0	201	0	0.0	0.0	0.0	0.0	118	21,181	158,434	21,177	211	1.0%
29-Apr											0			#DIV/0!
Weekly Totals	0	0	1277	0	0.0	0.0	0.0	0.0	883	124,447	930,864	120,244	9,682	7.5%
Steam Output					Daily Averages									
Week Total: 1,277 KLbs					Coal: 0.0 Tons				Make-up Water: 17177.7 Kgal					
Daily Avg: 182 KLbs					Ash: 0.0 Tons				Condensate Return: 1,383 Cgal					
Hourly Avg: 7.60 KLbs					Gas: 147.2 Mcf				City Water: 17,778 Kgal					

Sixth Week:

Date	KLbs Steam Generated per Day				Boilers 1, 2 & 4 Coal		Boilers 1, 2 & 4 Fly Ash		Boiler 3 Gas Mcf	City Water Cu Ft	City Water Gal	Make-up Water Gal	Cndnsate Return Gal	Percent Return
	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Loads	Tons	Loads	Tons						
30-Apr						0.0								#DIV/0!
						0.0								#DIV/0!
						0.0								#DIV/0!
						0.0								#DIV/0!
						0.0								#DIV/0!
						0.0								#DIV/0!
						0.0								#DIV/0!
						0.0								#DIV/0!
Weekly Totals	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	#DIV/0!
Steam Output					Daily Averages									
Week Total: 0 KLbs					Coal: #DIV/0! Tons				Make-up Water: 0.0 Kgal					
Daily Avg: 0 KLbs					Ash: #DIV/0! Tons				Condensate Return: 0 Cgal					
Hourly Avg: 0.00 KLbs					Gas: #DIV/0! Mcf				City Water: 0 Kgal					

Bag House Differential Pressure 3 Hour Rolling Average



Unplanned Excess Emissions forms were not filled out during January because new foreman did not understand the requirement to provide a copy for electronic notification. Problem was caught when doing the last semi-annual report. All brief exceedances were due to “overcleaning,” or brief losses of load.

Report above run in February. Currently can only access archive data for the last 90 days; which does not go back to spring shutdown. Will provide complete plot through shutdown in this fall’s report. See attached consultant’s report.

Manually recorded instantaneous bag house DP exceeded limit only one other time after February 5th, and there were no 8 hour averages above limit after that date. Four instantaneous exceedances were reported during that period; Incident ID’s 2422485, 2422945, 2424041 and 2424308. All were due to insufficient loads or New Science Building boilers coming on line, both of which will be addressed this fall:

Baghouse Instantaneous Differential Pressures



Time												
DATE	12 am	3 am	6 am	3rd Avg	9 am	12 pm	3 pm	1st Avg	6 pm	9 pm	12 am	2nd Avg
1/1/17	3.54	2.96	3.02	3.17	2.73	3.41	2.53	2.89	3.74	2.70	3.47	3.30
1/2/17	3.47	2.96	3.31	3.25	3.10	3.11	3.13	3.11	2.75	2.63	3.65	3.01
1/3/17	3.65	2.89	3.35	3.30	2.54	2.81	3.20	2.85	3.52	3.60	3.20	3.44
1/4/17	3.20	3.15	2.92	3.09	1.81	2.47	2.57	2.28	3.06	2.75	3.46	3.09
1/5/17	3.46	2.87	3.11	3.15	3.39	3.28	2.30	2.99	2.27	3.31	3.16	2.91
1/6/17	3.16	3.04	3.27	3.16	2.48	1.87	2.08	2.14	2.25	2.50	3.34	2.70
2/19/17	5.27	5.57	5.16	5.33	5.55	5.87	5.05	5.49	6.07	4.64	4.19	4.97

13 April 2017

Ronnie Mink, Associate Director of Facility Services
EKU; The Gentry Building
521 Lancaster St.
Richmond, KY 40475

RE: FIELD REPORT OF ISSUES BAG FILTER DIFFERENTIAL PRESSURE, WINTER 2017

Dear Ronnie:

I have worked with your Heat Plant and Facilities Staff over several months this winter, and one of the issues we investigated and resolved was bag house differential pressure (DP) readings. This sensor reports values that are used to verify the bag filter is working properly to remove particulate. On February 1, we began by disconnecting the sensor and blowing down the sensing lines with compressed air to clean out any ash in the lines. We found the low tap (plant side) mostly plugged, but were able to clear the plug using compressed air. Next, we calibrated the sensor to a brand-new, factory calibrated Dwyer Series 475 Mark III Manometer, 0-10.00"WC Range. We found the existing bag house DP meter within 0.15"WC, and then slightly adjusted it to bring the reading in-line.

EKU has experienced repeated issues with the sensing lines plugging with ash over the last 5 years, and to address this (hopefully permanently), I removed pugs on the bottom of the sensing lines and had 3/32" holes drilled in the plugs to trickle-in sweeping air. I have verified that this does not change the measurement when both holes are simultaneously plugged. This is a common strategy for ash systems that operate under a vacuum.

Also, as part of the project work, I had our Siemens programmer bring-out the settings for baghouse cleaning onto the screen where the Operator can determine this set-point. I left the plant with this default to set to clean the bags at a DP of 4.5" WC, and it will pulse down only 1/2" WC. The Operator has the ability to set the cleaning parameter higher (all the way up to 7"), but it's a balance of keeping above the low DP required by the permit, and operating the filter so dirty that it may cause damage to the filters themselves. The operator now has control over the set points, and can set them as high (or low) as he chooses; but I generally expect this to be set around 4.5". This is incremental to the work we did 1.5 years ago to put an alarm / silence button also on the screen that will allow the operator to acknowledge the audible alarm in the control room and reset it for up to 30 minutes. All of this should help resolve the issues EKU has had with the keeping the DP measurement above its permit limits.

To summarize these issues and resolutions above in list form, they are:

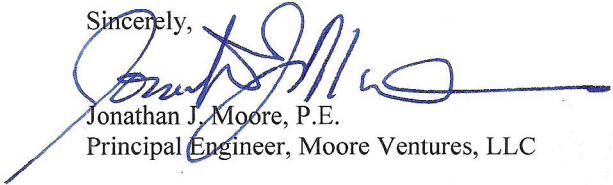
- We blew out the sensing lines and cleared a plug, then calibrated the DP meter on Feb. 1, 2017
- Modified the sensing line plugs to allow some air sweep to prevent plugging in the future.
- Placed the cleaning DP set-point on HMI screen and allow the Operator to select a higher SP.
- Placed the LO-DP alarm on screen with a silence/acknowledge button.

I note that EKU has identified that several incidents where the DP dropped below the permit requirement, and I believe those were due to the following, and were not real conditions:

1. During the week of 1/30, this was due to our calibration and sensing line work; not true readings.
2. Dec./Jan. deviations were likely due to load swings compounded by the plugged sensing lines.

Finally, while I do not possess a pair of "*Method-9 calibrated eyeballs*", I will also note that at no time in my support at EKU have I detected even the hint of ash emissions coming from the stack. In fact, I have been concerned that the boiler was not operating every time I have driven to the plant, so perfectly clear is the emissions from the chimney. All of this leads me to the conclusion that the bag house is performing its function properly. If you have any questions or concerns, please contact me at my office or on my mobile phone 859-576-0341.

Sincerely,


Jonathan J. Moore, P.E.
Principal Engineer, Moore Ventures, LLC

cc: Paul Gannoe, Bill Rhodes, Billy Powell, Kyle Willis, print copy for EKU Heat Plant File.

jm/JJM (EKU Baghouse Differential Pressure Issue; Winter 2017.doc)

28 July 2017

Bill Rhodes, Assistant Director of Facility Services; Energy & Environmental Services
EKU; The Gentry Building
521 Lancaster St.
Richmond, KY 40475

RE: BAG FILTER DIFFERENTIAL PRESSURE DATA REPORTING ISSUES, ARCHIVE OF FEB-APRIL 2017

Dear Bill:

Today I worked with you in an attempt to produce the data report from the Siemens PCS-7 system through XL reporter. We were ultimately unable to produce that report today, but did some troubleshooting, and verified that the data has been recorded, and is archived on the computers at the heat plant; in short, the data exists and is present, but we were unable to produce the report from the data without further troubleshooting.

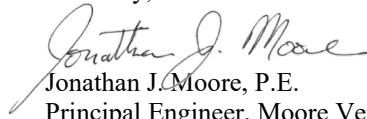
To summarize the technical issue, we were able to see 90-days' worth of live, minutely-recorded data in the both the main PSC-7 Win CC HMI application, and after some troubleshooting, we were able to create a report through XL Reporter, which is your normal application to report this data to DAQ. However, we were not able to pull data for the window of time that extended into your operating period from February through April 2017, because this data had been archived out of the main HMI application into an archive file. I was further able to access the archive files and verify that the program is correctly archiving data routinely, and we have archive files continuously from 2015. At this point, however, we are unable to access this archived data, as the main PCS-7 Win CC application is used to interpret the SQL databases of information, and for some reason the PCS-7 is not reading this data.

During the winter of 2017, I worked with Dave Andritz, a Siemens programmer, to verify the archiving function and to link that data folder to the application. It appears that somehow that link is no longer working, though it was verified the first week of February 2017, and I do not understand what has changed from that time. That being said, the data is being archived, and I am nearly certain it is present and can be pulled after some work in the control system. I have discussed this issue with both Dave Andritz and Hall Limmer of Preferred MFG, and have confirmed my suspicions about this archiving pathway issue which will be easily fixed.

I observed today that EKU is presently in the process of demolishing Boiler #4, moving a coal auger, and completing other work that will require engineering and programming modifications of their boiler house and control system, including the installation and interface to a new gas boiler. This work is incremental to the miscellaneous start-up support that I proposed previously to EKU to support Boiler #2 start-up and emissions testing over the fall of 2017. Should you wish Moore Ventures to support this work, I will be happy to produce a proposal and will also include time for re-mapping the archive files and updating XL Reporter to this work. At that time we perform that support, we'll also produce a report that includes the data for the early 2017 data that is missing from the present report semiannual report.

Finally, while I do not possess a pair of "*Method-9 calibrated eyeballs*", I will also note that at no time in my support at EKU have I detected even the hint of ash emissions coming from the stack. After our work in the spring, which is summarized in to you in a Moore Ventures letter dated 13 April 2017, the baghouse was operating and controlling differential better than at any time in my involvement with EKU. If you have any questions or concerns, please contact me at my office or on my mobile phone 859-576-0341.

Sincerely,



Jonathan J. Moore, P.E.
Principal Engineer, Moore Ventures, LLC

cc:

Fuel Usage and Area Source Emissions



Month	Coal Used EU 02 (Tons)	Coal Used EU 04 (Tons)	Coal 12 Month Rolling Total (Tons)	HCl EU 02 (Tons)	HCl EU 04 (Tons)	HCl (Tons)	HCl 12 Month Rolling Total (Tons)	Heat Plant Natural Gas (Mcf)	Other Nat Gas Used (Mcf)	Diesel Burned (1000 Gal)	Paint Sprayed (Gal)	HAPs _{1a} EU 02 Coal (Lbs)	HAPs _{1b} EU 04 Coal (Lbs)	HAPs ₂ Natural Gas (Lbs)	HAPs ₃ Diesel (Lbs)	HAPs ₄ Paint (Lbs)	HAPs ₅ Other (Lbs)	Total HAPs (Tons)	HAPs 12 Month Rolling Total (Tons)	
Title V Limits:							9.0													22.5
2016	January	276.0	1,192.0	5,138	0.21	0.20	0.42	1.88	2,437	6,812	1,260	0.00	472	2,836	17.5	0.67	0.00	500	1.91	8.69
	February	410.0	937.0	5,162	0.32	0.16	0.48	1.88	0	5,536	1,120	0.00	701	2,229	10.5	0.59	0.00	500	1.72	8.71
	March	303.0	678.0	5,245	0.23	0.12	0.35	1.68	967	4,608	0.950	0.00	518	1,613	10.5	0.50	0.00	500	1.32	8.92
	April	540.0	0.0	5,465	0.42	0.00	0.42	1.85	1,020	6,922	0.800	0.00	923	0	15.0	0.42	0.00	500	0.72	9.10
	May	0.0	0.0	5,465	0.00	0.00	0.00	1.85	4,247	9,501	0.818	0.00	0	0	26.0	0.43	0.00	500	0.26	9.11
	June	0.0	0.0	5,465	0.00	0.00	0.00	1.85	0	6,100	0.548	0.00	0	0	11.5	0.29	0.00	500	0.26	9.11
	July	0.0	0.0	5,465	0.00	0.00	0.00	1.85	0	6,421	0.929	0.00	0	0	12.1	0.49	0.00	500	0.26	9.11
	August	0.0	0.0	5,465	0.00	0.00	0.00	1.85	0	6,337	1.169	0.00	0	0	12.0	0.62	0.00	500	0.26	9.11
	September	0.0	0.0	5,465	0.00	0.00	0.00	1.85	0	8,657	0.945	0.00	0	0	16.4	0.50	0.00	500	0.26	9.10
	October	0.0	0.0	5,465	0.00	0.00	0.00	1.85	0	12,138	0.879	0.00	0	0	22.9	0.47	0.00	500	0.26	9.10
	November	0.0	0.0	5,465	0.00	0.00	0.00	1.85	2,958	3,142	1.157	0.00	0	0	11.5	0.61	0.00	500	0.26	9.09
	December	849.0	0.0	5,185	0.66	0.00	0.66	2.32	3,881	2,219	0.747	0.00	1,451	0	11.5	0.40	0.00	500	0.98	8.46
2017	January	944.2	0.0	4,661	0.73	0.00	0.73	2.64	2,711	12,721	0.742	0.00	1,614	0	29.2	0.39	0.00	500	1.07	7.62
	February	544.1	373.8	4,232	0.42	0.06	0.49	2.64	341	6,519	0.733	0.00	930	889	13.0	0.39	0.00	500	1.17	7.07
	March	0.0	907.3	4,158	0.00	0.15	0.15	2.45	0	5,458	1.207	0.00	0	2,158	10.3	0.64	0.00	500	1.33	7.08
	April	397.2	30.0	4,046	0.31	0.01	0.31	2.34	934	6,952	0.792	0.00	679	71	14.9	0.42	0.00	500	0.63	6.99
	May	0.0	0.0	4,046	0.00	0.00	0.00	2.34	0	8,385	1.205	0.00	0	0	15.8	0.64	0.00	500	0.26	6.99
	June	0.0	0.0	4,046	0.00	0.00	0.00	2.34	0	not rcv'd	1.224	0.00	0	0	0.0	0.65	0.00	500	0.25	6.98

An area source of air emissions is defined by EPA as any stationary source, or group of stationary sources, that annually emits, in aggregate, less than 10 tons of any single hazardous air pollutant (HAP) or less than 25 tons of multiple HAPs.

EASTERN KENTUCKY UNIVERSITY PO #

2017 - 1st Qtr

SHIP DATE	TICKET NO.	TRUCK NO.	WEIGHT		ANALYSIS (AS DELIVERED)							
			NET LBS	NET TONS	REPORT WEEK	MOISTURE < 4%	ASH (DRY) < 7.0 %	SULFUR < 0.8%	BTU/LB > 13,000	ANALYSIS SAMPLE ID #	DAYS 7 MAX	TONS (500 MAX)
				0.00							1	0
				0.00								

1st Quarter Weighted Averages:

#DIV/0! #DIV/0! #DIV/0! #DIV/0!

1st Quarter Total Tonnage: 0.00

EASTERN KENTUCKY UNIVERSITY PO #

2017 - 2nd Qtr

SHIP DATE	TICKET NO.	TRUCK NO.	WEIGHT		ANALYSIS (AS DELIVERED)							
			NET LBS	NET TONS	REPORT WEEK	MOISTURE < 4%	ASH (DRY) < 7.0 %	SULFUR < 0.8%	BTU/LB > 13,000	ANALYSIS SAMPLE ID #	DAYS 7 MAX	TONS (500 MAX)
3/7/17	31578	49	82,580	41.29	3/7 - 3/8	3.56	6.05	0.75	13,608	550-1775721-004	2	497
3/7/17	31579	20	81,680	40.84								
3/7/17	31580	65	83,320	41.66								
3/7/17	31581	96	82,040	41.02								
3/7/17	31582	99	82,820	41.41								
3/7/17	31583	86	83,920	41.96								
3/7/17	31584	67	83,580	41.79								
3/7/17	31585	91	84,740	42.37								
3/7/17	31586	98	83,440	41.72								
3/7/17	31588	87	82,700	41.35								
3/7/17	31589	79	82,060	41.03								
3/8/17	31590	76	80,620	40.31								
3/8/17	31591	67	83,500	41.75								
3/8/17	31592	84	84,640	42.32								
3/8/17	31593	99	82,940	41.47								
3/8/17	31594	94	80,920	40.46								
3/8/17	31595	91	82,340	41.17								
3/8/17	31596	96	81,460	40.73								
3/9/17	31597	91	80,600	40.30								
3/9/17	31598	65	81,480	40.74								
3/9/17	31599	96	81,520	40.76								
3/9/17	31600	82	81,100	40.55								
3/9/17	31601	67	80,840	40.42								
3/9/17	31602	76	81,540	40.77								
3/9/17	31670	49	80,240	40.12	3/9	2.53	6.10	0.76	13,883	550-1775840-004	1	40

2nd Quarter Weighted Averages:

3.65 6.07 0.76 13,672

2nd Quarter Total Tonnage: 1,028.31

Paint Shop Spray Booth Log



Date Assigned	Assigned by	Item	Date Painted	Start Time	End Time	Product	Qty (Qts or Gals)	Painted by
5-24	2017	Cabinets brush work	5-24	7:30	12:00	Wood Cabosides Poly	1/2 gal	Jasen Travis
Jan	2017	NOT IN	USE					
Feb	2017	NOT IN	USE					
MARCH	2017	NOT IN	USE					
April	2017	NOT IN	USE					
June	2017	NOT IN	USE					

Rodney Denton