Healthy People. Healthy Communities

July 12, 2017

Ms. Lizzette Danner
Johnson Controls Battery Group, Inc.
1800 Paper Mill Road
Florence, SC 29501

RE: **Furnaces 1-3, Refining Process, Refining Combustion, Refining Ventilation, and Slag Warehouse Emissions Testing – Conducted January 10-19, 2017 - Redacted Summary**

Dear Ms. Danner:

The Department has reviewed the referenced tests and the results are summarized below:

Furnace No. 1 (ID 07) Average Emissions			
Pollutant	**Emission Concentration**	**Emission Rate**	**Emission Limit**
Particulate Matter	1.16E-03 gr/dscf	0.38 lb/hr	0.022 gr/dscf 11.8[1] lb/hr
Lead	8.72E-07 gr/dscf 1.99E-03 mg/dscm	2.89E-04 lb/hr	8.70E-05 gr/dscf 0.2 mg/dscm
Mercury	2.61E-03 mg/dscm	3.77E-04 lb/hr	<12 tpy[2]
Sulfur Dioxide	<38.7 ppm	<15.0 lb/hr	<100 tpy[2]

[1]Based on SC Regulation 61-62.5, Standard No. 4.
[2]Facility-wide emission limit.

Furnace No. 1 Baghouse Operating Parameters					
Compartment		**5**	**6**	**7**	**8**
Module Differential Pressure (in. H_2O)	Range	3.2 – 4.7	2.3 – 4.2	3.3 – 5.7	5.5 – 8.0
	Average	4.0	3.2	4.2	6.8
HEPA Differential Pressure (in. H_2O)	Range	0.7 – 1.1	0.9 – 1.1	0.6 – 1.0	0.2 – 0.4
	Average	0.87	0.9	0.7	0.3

Furnace No. 2 (ID 08) Average Emissions			
Pollutant	**Emission Concentration**	**Emission Rate (lb/hr)**	**Emission Limit**
Particulate Matter	2.12E-03 gr/dscf	0.815	0.022 gr/dscf 8.17[1] lb/hr
Lead	4.21E-07 gr/dscf 9.64E-04 mg/dscm	1.62E-04	8.70E-05 gr/dscf 0.2 mg/dscm
Mercury	2.29E-03 mg/dscm	3.82E-04	<12 tpy[2]
Sulfur Dioxide	45.3 ppm	20.3	<100 tpy[2]
Acetaldehyde	<1.06 ppm	<0.325	----
Vinyl Chloride	<0.315 ppm	<0.137	----
Acrolein	<0.384 ppm	<0.150	----
1,3-Butadiene	<7.88E-02 ppm	<2.97E-02	----
Chloroform	<6.12E-03ppm	<5.08E-03	----
Benzene	<5.16E-02 ppm	<2.81E-02	----
Toluene	<1.22E-02 ppm	<7.79E-03	----
Ethylbenzene	<1.14E-02 ppm	<8.41E-03	----
p-Xylene	<1.15E-02 ppm	<8.50E-03	----
m-Xylene	1.12E-02 ppm	<8.30E-03	----
o-Xylene	<1.13E-02 ppm	<8.37E-03	----
Styrene	1.15E-02 ppm	<8.30E-03	----
Formaldehyde	0.456 ppm	9.47E-02	----
Propionaldehyde	1.43E-02 ppm	5.79E-03	----

[1]Based on SC Regulation 61-62.5, Standard No. 4.
[2]Facility-wide emission limit.

Furnace No. 2 Baghouse Operating Parameters					
Compartment		9	10	11	12
Module Differential Pressure (in. H_2O)	Range	4.2 – 7.0	2.2 – 5.3	4.3 – 6.9	4.7 – 7.4
	Average	5.8	3.9	5.8	6.4
HEPA Differential Pressure (in. H_2O)	Range	0.7 – 1.0	0.5 – 0.8	0.6 – 0.8	0.3 – 0.8
	Average	0.9	0.7	0.7	0.5

Furnace No. 3 (ID 09) Average Emissions			
Pollutant	Emission Concentration	Emission Rate	Emission Limit
Particulate Matter	4.76E-04 gr/dscf	0.167 lb/hr	0.022 gr/dscf 13.0[1] lb/hr
Lead	5.71E-07 gr/dscf 1.31E-03 mg/dscm	2.02E-04 lb/hr	8.70E-05 gr/dscf 0.2 mg/dscm
Mercury	2.28E-03 mg/dscm	3.51E-04 lb/hr	<12 tpy[2]
Sulfur Dioxide	<2.41 ppm	<0.980 lb/hr	<100 tpy[2]

[1]Based on SC Regulation 61-62.5, Standard No. 4.
[2]Facility-wide emission limit.

Furnace No. 3 Baghouse Operating Parameters					
Compartment		1	2	3	4
Module Differential Pressure (in. H_2O)	Range	5.1 – 6.7	3.9 – 5.4	2.7 – 4.4	2.8 – 4.1
	Average	5.9	4.4	3.4	3.3
HEPA Differential Pressure (in. H_2O)	Range	0.7 – 1.0	0.2 – 1.0	0.7 - 1.0	0.5 - 0.7
	Average	0.8	0.8	0.9	0.6

Refining Kettles and Casting - Process Stack (ID 11) Average Emissions Summary			
Pollutant	**Emission Concentration**	**Emission Rate**	**Emission Limit**
Particulate Matter	2.88E-04 gr/dscf	0.659 lb/hr	21.5[1] lb/hr
Lead	5.76E-07 gr/dscf 1.32E-03 mg/dscm	4.24E-04 lb/hr	8.70E-05 gr/dscf 0.2 mg/dscm
Mercury	1.55E-04 mg/dscm	4.97E-05	<12 tpy[2]
Carbon Monoxide	4.92 ppm	1.84 lb/hr	----
Sulfur Dioxide	<6.78 ppm	<5.81 lb/hr	<100 tpy[2]

[1]Based on SC Regulation 61-62.5, Standard No. 4.
[2]Facility-wide emission limit.

Refining Kettles and Casting Baghouse Operating Parameters									
Compartment		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Module Differential Pressure (in. H_2O)	Range	2.7 – 3.1	2.3 - 3.2	2.1 - 3.3	3.4 - 3.6	3.8 – 4.1	3.6 – 3.9	3.5 – 3.7	3.5 – 3.7
	Average	2.9	3.0	2.3	3.5	4.0	3.7	3.7	3.7
HEPA Differential Pressure (in. H_2O)	Range	0.5 - 0.6	0.5 – 0.9	0.9 - 1.0	0.9 - 1.0	0.3 - 0.4	0.4 – 0.5	1.0 - 1.1	0.6 - 0.7
	Average	0.6	0.6	1.0	1.0	0.4	0.5	1.0	0.6

Refining Kettles and Casting - Combustion Stack (ID 11) Average Emissions Summary			
Pollutant	**Emission Concentration**	**Emission Rate**	**Emission Limit**
Carbon Monoxide	51.1 ppm	3.53 lb/hr	<100 tpy[1]
Sulfur Dioxide	<0.1 ppm	<1.61E-02 lb/hr	<100 tpy[1]

[1]Facility-wide emission limit.

Refining Ventilation (ID 12) Average Emissions Summary*			
Pollutant	**Emission Concentration**	**Emission Rate**	**Emission Limit**
Particulate Matter	8.37E-04 gr/dscf	7.53E-02 lb/hr	----
Lead	4.54E-05 gr/dscf 0.10 mg/dscm	4.25E-03 lb/hr	8.70E-05 gr/dscf 0.2 mg/dscm

*One vent was sampled. Results may be used for calculating emissions from all refining vents.

Refining Ventilation HEPA Filters Differential Pressure					
Refinery Vent		**FEU 1**	**FEU 2**	**FEU 3**	**FEU 4**
HEPA Differential Pressure (in. H_2O)	Range	2.3 - 2.6	2.1 - 2.2	2.7 - 2.9	1.8 - 3.6
	Average	2.4	2.2	2.8	3.4

Slag Warehouse (ID 14) Average Emissions			
Pollutant	**Emission Concentration**	**Emission Rate**	**Emission Limit**
Lead	6.72E-07 gr/dscf	2.20E-04 lb/hr	8.70E-05 gr/dscf

Compliance Status:
Furnaces 1, 2, and 3 (Unit ID 07, 08, 09), Refining Kettles and Casting (Unit ID 11), Refining Ventilation (Unit ID 12), & Slag Warehouse (Unit ID 14)
(Permit No. 1040-0129-CA).....**Compliance**
(40 CFR 63, Subpart X).....**Compliance**

The next source test for particulate matter for the Furnaces, Refining, and the Slag Warehouse shall be conducted no later than **January 31, 2019.** The next source test for sulfur dioxide for the Furnaces and Refining shall be conducted no later than **January 31, 2019.** The next source test for lead for the Furnaces, Refining Process, and the Slag Warehouse shall be conducted no later than **January 31, 2018.**

If I can be of further assistance, please do not hesitate to call me at (803) 898-0834 or e-mail me at williadt@dhec.sc.gov.

Sincerely,

Derek T. Williams
Environmental Health Manager
Source Evaluation Section
SC DHEC Bureau of Air Quality

Cc: Compliance file 1040-0129

Ec: Michael Shroup, BAQ
Breanna Lindler, BAQ
Nell Orscheln, BAQ
Brittany Staples, BAQ
Carol Miller, BAQ
Dawn Jordan, BAQ
Bryan Baxley, Pee Dee Region – Florence BEHS