AQ/Fac/Case/25-000-00029 Dem

pennsylvania Erie Coke
DEPARTMENT OF ENVIRONMENTAL PROTECTION

MAY 16 2016

MEMO

TO Daniel D. Brophy DB
Air Quality Specialist
Northwest Regional Office

Compliant

FROM Rick Szekeres, M.S. RPS
Environmental Group Manager
Source Testing Section

THROUGH Charles J. Zadakis, P.E. CJZ
Environmental Program Manager
Division of Source Testing and Monitoring

DATE May 11, 2016

RE Source Test Review
Erie Coke Corp.
Boiler 1 (ID 031)
Boiler 2 (ID 032)
Combustion Battery (ID 805)
Erie, Erie County
TVOP 25-00029
eFACTS: 2446643 PFID: 50751
eFACTS Inspection Result: NOVIO

MESSAGE:
Erie Coke operates Boilers 1 and 2 (IDs: 031 and 032) at their coke plant. The rated heat inputs for Boilers 1 and 2 are 60.0 and 77.2 MMBtu/hour, respectively. The emissions from each boiler are discharged to the atmosphere via separate stacks with inner diameters of 64". Erie Coke Corporation also operates two coke oven batteries (ID: 805) – Battery A (Ovens 1-23) and Battery B (Ovens 24-58), for the production of foundry coke. The coke, formed by the batch heating of pulverized bituminous coal to ~2000°F for 14-36 hours in a reducing atmosphere, is used to melt iron that is to be processed into iron castings. Emissions from the batteries are controlled by a hydrogen sulfide (H_2S) adsorber (ID: C805A), prior to being discharged to the atmosphere via the combustion stack (ID: S805A) with an inner diameter of 142".

On November 24-25, 2015, Air/Compliance Consultants, Inc. (ACCI) conducted testing to determine the emissions of nitrogen oxides (NO_x) and carbon monoxide (CO) from Boiler 1 and Boiler 2 while firing a combination of coke oven gas (COG) and natural gas (NG). Testing was also conducted to determine the emissions of filterable particulate matter (FPM) and nitrogen oxides (NO_x) from the battery combustion stack, where testing on December 11, 2014 indicated that the NO_x emissions were higher than the limit. Several issues pertaining to the 2015 testing were discussed with the testing contractor,

ACCI, and were adequately addressed on May 3, 2016; a supplemental letter was received via email. The test runs were conducted in accordance with the test protocol, approved on November 19, 2015, and EPA Methods 1-5, 7E, 10, and 19. The test results are acceptable to the Department as a credible representation of the actual emissions under the operating conditions during testing and may be used for compliance determinations. There are still serious questions remaining about the actual rated capacities of the boilers and the reason for the huge discrepancies in the boilers' heat inputs.

The following is a summary of data, presented in the test report.

Emissions Summary (Boiler 1 firing COG/NG)

Run No.	1	2	3	Average	Standard
Test Date	11/25/2015	11/25/2015	11/25/2015		
Flow Rate [dscfm]	21,000	22,400	22,600	22,000	
NO_x as NO_2					
[ppmvd]	110	106	110	109	
[lbs./hour]	16.5	17.1	17.8	17.1	≤22.8
[lbs./MMBtu]	0.21	0.21	0.22	0.21	≤0.39
CO					
[ppmvd]	233	256	183	224	
[lbs./hour]	21.3	25.0	18.0	21.4	
[lbs./MMBtu]	0.27	0.30	0.22	0.26	
Heat Input [MMBtu/hour]					
Based on fuel flows	90.7	86.6	83.6	87.0	
Based on stack flows	79.5	82.9	82.4	81.6	
Rated Capacity	60.0	60.0	60.0	60.0	
Steam Load [lbs./hour]	50,600	49,500	48,400	49,500	

Emissions Summary (Boiler 2 firing COG/NG)

Run No.	1	2	3	Average	Standard
Test Date	11/24/2015	11/24/2015	11/24/2015		
Flow Rate [dscfm]	23,600	22,700	23,000	23,100	
Nitrogen Oxides					
[ppmvd as NO_2]	112	116	111	113	
[lbs./hour as NO_2]	18.9	18.8	18.3	18.7	≤22.8
[lbs./MMBtu as NO_2]	0.21	0.22	0.21	0.21	≤0.39
Carbon Monoxide					
[ppmvd]	149	37	213	133	
[lbs./hour]	15.3	3.62	21.4	13.4	
[lbs./MMBtu]	0.17	0.042	0.24	0.15	
Heat Input [MMBtu/hour]					
Based on fuel flows	100	101	99.5	100	
Based on stack flows	89.5	85.6	89.2	88.1	
Rated Capacity	77.2	77.2	77.2	77.2	
Steam Load [lbs./hour]	53,200	52,400	55,000	53,500	

Emissions Summary (Battery Combustion Stack)

Run No.	1	2	3	Average	Standard
Test Date	11/24/2015	11/24/2015	11/24/2015		
Flow Rate [dscfm]	33,400	33,700	32,600	33,200	
FPM (M5)					
[gr./dscf]	0.013	0.019	0.019	0.017	≤0.040
[lbs./hour]	3.85	5.61	5.28	4.91	
NO_x (M7E)					
[ppmvd as NO_2]	80	72	80	77	
[lbs./hour as NO_2]	19.0	17.4	18.7	18.4	≤19.9

cc: EPA/AKB
AIMS/AKB
Reading File, Source Testing Section