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MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

RENEWABLE OPERATING PERMIT REPORT CERTIFICATION

Authorized by 1994 P.A. 451, as amended. Failure to provide this information may result in civil and/or criminal penalties.

Reports submitted pursuant to R 336.1213 (Rule 213), subrules (3)(c) and/or (4)(c), of Michigan's Renewable Operating (RO) Permit program must be certified by a responsible official. Additional information regarding the reports and documentation listed below must be kept on file for at least 5 years, as described in General Condition No. 22 in the RO Permit and be made available to the Department of Environmental Quality, Air Quality Division upon request.

Source Name: Graphic Packaging International, LLC — County: Kalamazoo

Source Address: 1500 North Pitcher Street — City: Kalamazoo

AQD Source ID (SRN): B1678 — RO Permit No.: MI-ROP-B1678-2015 — RO Permit Section No.: 1

Please check the appropriate box(es):

☐ **Annual Compliance Certification (General Condition No. 28 and No. 29 of the RO Permit)**

Reporting period (provide inclusive dates): From _____ To _____

☐ 1. During the entire reporting period, this source was in compliance with **ALL** terms and conditions contained in the RO Permit, each term and condition of which is identified and included by this reference. The method(s) used to determine compliance is/are the method(s) specified in the RO Permit.

☐ 2. During the entire reporting period this source was in compliance with all terms and conditions contained in the RO Permit, each term and condition of which is identified and included by this reference, **EXCEPT** for the deviations identified on the enclosed deviation report(s). The method used to determine compliance for each term and condition is the method specified in the RO Permit, unless otherwise indicated and described on the enclosed deviation report(s).

☐ **Semi-Annual (or More Frequent) Report Certification (General Condition No. 23 of the RO Permit)**

Reporting period (provide inclusive dates): From _____ To _____

☐ 1. During the entire reporting period, **ALL** monitoring and associated recordkeeping requirements in the RO Permit were met and no deviations from these requirements or any other terms or conditions occurred.

☐ 2. During the entire reporting period, all monitoring and associated recordkeeping requirements in the RO Permit were met and no deviations from these requirements or any other terms or conditions occurred, **EXCEPT** for the deviations identified on the enclosed deviation report(s).

☒ **Other Report Certification**

Reporting period (provide inclusive dates): From 4/01/19 To 6/30/19

Additional monitoring reports or other applicable documents required by the RO Permit are attached as described:

2019 Relative Accuracy Test Audit Report for Boiler 9 NOx CEMS

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in this report and the supporting enclosures are true, accurate and complete.

Richard W. Townley	Mill Manager	(269) 383-5015
Name of Responsible Official (print or type)	Title	Phone Number
Richard W Townley		7/27/2019
Signature of Responsible Official		Date

* Photocopy this form as needed.

EQP 5736 (Rev 9/01)

DATA ACCURACY ASSESSMENT REPORT

BOILER NO. 9

Annual Quality Assurance
Relative Accuracy Test Audit (RATA)

Performance Specification 2 and 3
Utilizing EPA Reference Methods 3A, 7E, and 19

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Test Date(s): April 17, 2019
Facility ID: MIB1678
Source Location: Kalamazoo, Michigan
Permit: EGLE Permit No. MI-ROP-B1678-2015

Prepared For:

Graphic Packaging International, LLC
1500 North Pitcher Street • Kalamazoo, MI 49007

Prepared By:

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Document Number: M011AS-554631-RT-3R0
Document Date: May 13, 2019
Scope ID / Project: 11658 / 190401

STAC STACK TESTING ACCREDITATION COUNCIL

A2LA ACCREDITED TO ASTM D7036 ONLY CERT #3925.01

MONTROSE AIR QUALITY SERVICES

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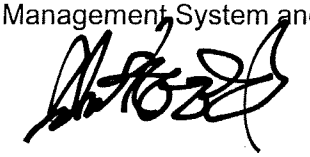
REVIEW AND CERTIFICATION

The results of the Data Accuracy Assessment for Continuous Emission Monitoring Systems (CEMS) conducted on April 17, 2019 are a product of the application of the United States Environmental Protection Agency (US EPA) Stationary Source Sampling Methods listed in 40 CFR Part 60, Appendix A, that were in effect at the time of this test in accordance with 40 CFR Part 60, Appendices B and F.

All work, calculations, and other activities and tasks performed and presented in this document were carried out by me or under my direction and supervision. I hereby certify that, to the best of my knowledge, Montrose operated in conformance with the requirements of the Montrose Quality Management System and ASTM D7036-04 during this test project.

Signature:  Date: 5/13/2019

Name: Jack Hoard Title: Field Project Manager

I have reviewed, technically and editorially, details, calculations, results, conclusions, and other appropriate written materials contained herein. I hereby certify that, to the best of my knowledge, the presented material is authentic, accurate, and conforms to the requirements of the Montrose Quality Management System and ASTM D7036-04.

Signature: robert j lisy jr Date: 05/13/2019

Name: Robert J. Lisy, Jr. Title: District Manager

1.0 INTRODUCTION

1.1 SUMMARY OF TEST PROGRAM

Graphic Packaging International, LLC (Facility ID: MIB1678), located in Kalamazoo, Michigan, contracted Montrose Air Quality Services (Montrose) of Cleveland, Ohio, to conduct the Annual Quality Assurance (QA) Relative Accuracy Test Audit (RATA) for the Continuous Emission Monitoring Systems (CEMS) associated with their Boiler No. 9. Testing was performed on April 17, 2019, for the purpose of evaluating the quality of the emissions data produced by Graphic Packaging International, LLC's CEMS in accordance with 40 CFR Part 60, Appendices B and F, and Michigan Department of Environment, Great Lakes, and Energy (EGLE) Permit No. MI-ROP-B1678-2015.

Reference Method (RM) sampling for nitrogen oxides (NO_x) and oxygen (O_2) was performed at >50% load conditions in accordance with Performance Specification 2 (PS-2) and Performance Specification 3 (PS-3) to determine the Relative Accuracy (RA) of the CEMS associated with the Boiler No. 9 Exhaust Stack. RAs were determined for NO_x emissions (lb/MMBtu) (as NO_2), NO_x concentration (ppmvd), and O_2 concentration (%-dry).

For the RATA, ten (10) NO_x and O_2 runs were performed, and nine (9) were utilized in the RA calculations. Each concentration run was 21-minutes in duration.

The test methods that were conducted during this test were US EPA Reference Methods 3A, 7E, and 19 following the procedures contained within PS-2 and PS-3.

1.2 KEY PERSONNEL

The key personnel who coordinated this test program (and their phone numbers) were:

- Donald Krug, Environmental Engineer, Graphic Packaging International, LLC, 269-383-5000
- Loretta Lehrman, Air Toxics, US EPA - Region 5, 312-886-5482
- David Patterson, Environmental Quality Analyst, Michigan Department of Environment, Great Lakes and Energy (EGLE), 517-241-7469
- Karen Kajiya-Mills, Environmental Manager, Michigan Department of Environment, Great Lakes and Energy (EGLE), 517-256-0880
- Monica Brothers, Environmental Quality Analyst, Michigan Department of Environment, Great Lakes and Energy (EGLE), 269-567-3552
- Cody Yazzie, Environmental Engineer, Michigan Department of Environment, Great Lakes and Energy (EGLE), 269-567-3554
- John Hoard QI, Field Project Manager, Montrose, 800-372-2471

2.0 SUMMARY AND DISCUSSION OF TEST RESULTS

2.1 OBJECTIVES AND TEST MATRIX

The purpose of this test was to conduct the Annual QA RATA for the CEMS associated with Boiler No. 9. Ten (10) NO_x and O_2 RATA runs were performed at >50% load conditions in accordance with PS-2 and PS-3 to determine the RA between the CEMS and the applicable RMs. Testing was performed for the purpose of evaluating the quality of the emissions data produced by Graphic Packaging International's CEMS in accordance with 40 CFR Part 60, Appendices B and F, and EGLE Permit No. MI-ROP-B1678-2015.

The specific test objectives for this test were as follows:

- Measure the concentration of NO_x and O_2 at the Boiler No. 9 Exhaust Stack at >50% load conditions in accordance with PS-2, PS-3, and U.S. EPA Reference Methods 3A and 7E.
- Utilize the above variables, in conjunction with EPA Method 19, to calculate the corresponding RA of the CEMS for NO_x emissions (lb/MMBtu) (as NO_2), NOx concentration (ppmvd), and O_2 concentration (%-dry) and evaluate the RAs against 40 CFR Part 60 requirements.

Table 2-1 presents the sampling matrix log for this test.

2.2 FIELD TEST CHANGES AND PROBLEMS

No field test changes or problems occurred during the performance of this test that would bias the accuracy of the results of this test.

2.3 PRESENTATION OF RESULTS

A single sampling train was utilized at >50% load conditions to determine the RA of the CEMS for NO_x emissions (lb/MMBtu) (as NO_2), NO_x concentration (ppmvd), and O_2 concentration (%-dry). This sampling train measured the stack gas concentrations of O_2 and NO_x.

Tables 2-2 to 2-4 display the results of this RATA.

Table 2-5 displays the specifications of the Boiler No. 8 CEMS and Reference Method analyzers utilized.

Table 2-6 displays the US EPA Protocol Gas Cylinders utilized to calibrate the Reference Method analyzers during this RATA.

Figure 2-1 schematically illustrates the concentration traverse point location utilized for this test.

2.4 RELATIVE ACCURACY CALCULATIONS

Confidence Coefficient =T-Value * Standard Deviation / Square Root of Number of Runs

0.00036 = 2.306 * 0.00046 / SQRT 9

RA = ((ABS (Mean Difference) + Confidence Coefficient) / Emission Standard) * 100

2.845 = ((ABS (-0.0014) + 0.00036) / 0.06) * 100

TABLE 2-1
>50% LOAD RATA - SAMPLING MATRIX OF TEST METHODS UTILIZED

Date	Run No.	Sampling Location	US EPA METHOD 3A (O_2) Sampling Time / Duration (min)		US EPA METHOD 7E (NO_x) Sampling Time / Duration (min)	
4/17/2019	1	Boiler No. 9 Exhaust Stack	7:04 - 7:25	/ 21	7:04 - 7:25	/ 21
4/17/2019	2	Boiler No. 9 Exhaust Stack	7:35 - 7:56	/ 21	7:35 - 7:56	/ 21
4/17/2019	3	Boiler No. 9 Exhaust Stack	8:07 - 8:28	/ 21	8:07 - 8:28	/ 21
4/17/2019	4	Boiler No. 9 Exhaust Stack	8:37 - 8:58	/ 21	8:37 - 8:58	/ 21
4/17/2019	5	Boiler No. 9 Exhaust Stack	9:07 - 9:28	/ 21	9:07 - 9:28	/ 21
4/17/2019	6	Boiler No. 9 Exhaust Stack	9:38 - 9:59	/ 21	9:38 - 9:59	/ 21
4/17/2019	7	Boiler No. 9 Exhaust Stack	10:10 - 10:31	/ 21	10:10 - 10:31	/ 21
4/17/2019	8	Boiler No. 9 Exhaust Stack	10:55 - 11:16	/ 21	10:55 - 11:16	/ 21
4/17/2019	9	Boiler No. 9 Exhaust Stack	11:27 - 11:48	/ 21	11:27 - 11:48	/ 21
4/17/2019	10	Boiler No. 9 Exhaust Stack	11:58 - 12:19	/ 21	11:58 - 12:19	/ 21

All times are Facility Time.

TABLE 2-2
PRIMARY CEMS - >50% LOAD - NO_x (lb/MMBtu) RELATIVE ACCURACY

CEMS: **Primary**
Load: **>50%**
RATA: **NOx**
RATA Units: **lb/MMBtu**
RA Criteria: **10%**
RATA Label: **>50%-NOx-lb/MMBtu**

Run Number	RM All lb/MMBtu	RM Used lb/MMBtu	CEMS All lb/MMBtu	CEMS Used lb/MMBtu	Difference All lb/MMBtu	Difference Used lb/MMBtu	klb/hr Steam Flow	Used as Valid Test Run (yes/no)
1	0.027	0.027	0.028	0.028	-0.001	-0.001	106	yes
2	0.027	0.027	0.028	0.028	-0.001	-0.001	106	yes
3	0.026	0.026	0.027	0.027	-0.001	-0.001	106	yes
4	0.026	0.026	0.028	0.028	-0.002	-0.002	107	yes
5	0.026	0.026	0.028	0.028	-0.002	-0.002	107	yes
6	0.026		0.028		-0.002			no
7	0.026	0.026	0.028	0.028	-0.002	-0.002	106	yes
8	0.027	0.027	0.028	0.028	-0.001	-0.001	107	yes
9	0.026	0.026	0.028	0.028	-0.002	-0.002	107	yes
10	0.026	0.026	0.028	0.028	-0.002	-0.002	107	yes
Average	**0.026**	**0.026**		**0.028**		**-0.0014**	**106**	

Standard Deviation	0.00046	
T-Value	2.306	
Confidence Coefficient	0.00036	
Relative Accuracy (%)	**2.8450**	**(Based on an Applicable Emission Standard of 0.06 lb/MMBtu)**

TABLE 2-3
PRIMARY CEMS - >50% LOAD - NO_x (ppm) RELATIVE ACCURACY

CEMS: **Primary**
Load: **>50%**
RATA: **NOx**
RATA Units: **ppm**
RA Criteria: **20%**
RATA Label: **>50%-NOx-ppm**

Run Number	RM All ppm	RM Used ppm	CEMS All ppm	CEMS Used ppm	Difference All ppm	Difference Used ppm	Used as Valid Test Run (yes/no)
1	22.581	22.581	23.124	23.124	-0.543	-0.543	yes
2	22.581	22.581	23.095	23.095	-0.514	-0.514	yes
3	21.840	21.840	23.119	23.119	-1.279	-1.279	yes
4	21.869	21.869	23.090	23.090	-1.222	-1.222	yes
5	21.951	21.951	23.281	23.281	-1.330	-1.330	yes
6	21.787		23.352		-1.565		no
7	21.971	21.971	23.438	23.438	-1.467	-1.467	yes
8	21.909	21.909	23.390	23.390	-1.482	-1.482	yes
9	21.746	21.746	23.157	23.157	-1.411	-1.411	yes
10	21.649	21.649	23.129	23.129	-1.480	-1.480	yes
Average	**21.988**	**22.011**		**23.203**		**-1.192**	

Standard Deviation	0.38701	
T-Value	2.306	
Confidence Coefficient	0.29748	
Relative Accuracy (%)	**6.767**	**(Based on the Reference Method Mean)**

TABLE 2-4
PRIMARY CEMS - >50% LOAD - O_2 (%) RELATIVE ACCURACY

CEMS: **Primary**
Load: **>50%**
RATA: **O2**
RATA Units: **%**
RA Criteria: **1%**
RATA Label: **>50%-O2-%**

Run Number	RM All %	RM Used %	CEMS All %	CEMS Used %	Difference All %	Difference Used %	Used as Valid Test Run (yes/no)
1	2.670	2.670	2.681	2.681	-0.011	-0.011	yes
2	2.670	2.670	2.783	2.783	-0.113	-0.113	yes
3	2.663	2.663	2.657	2.657	0.006	0.006	yes
4	2.662	2.662	2.700	2.700	-0.038	-0.038	yes
5	2.671	2.671	2.681	2.681	-0.010	-0.010	yes
6	2.668	2.668	2.748	2.748	-0.079	-0.079	yes
7	2.664	2.664	2.681	2.681	-0.017	-0.017	yes
8	3.394		2.662		0.732		no
9	2.645	2.645	2.795	2.795	-0.151	-0.151	yes
10	2.646	2.646	2.724	2.724	-0.078	-0.078	yes
Average	**2.735**	**2.662**		**2.717**		**-0.054**	

Standard Deviation	0.05361	
T-Value	2.306	
Confidence Coefficient	0.04121	
Relative Accuracy (%)	**0.054**	**(Calculated as the Absolute Mean Difference)**

TABLE 2-5
ANALYZER SPECIFICATIONS

BOILER NO. 9 CEMS

Parameter	NO_x Analyzer	O_2 Analyzer
Analyzer Manufacturer	Horiba	Horiba
Analyzer Model Number	CMA-EC622	CMA-EC622
Analyzer Serial Number	42108510081	42108510081
System Type	Straight-Extractive	Straight-Extractive
Analyzer Span Value	100-ppm	25.00%

REFERENCE METHOD CEMS

Parameter	NO_x Analyzer	O_2 Analyzer
Analyzer Manufacturer	Thermo	Servomex
Analyzer Model Number	42C	1400
Analyzer Serial Number	42CHL-66127-351	01440D1/4049
Analyzer Type	Extractive	Extractive
Analyzer Technique	Chemiluminescent Reaction	Paramagnetic
Analyzer Span Value	112.3-PPM	22.93%