



Marathon Petroleum Company LP
1300 South Fort Street
Detroit, MI 48217

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REPORT ON RATA & COMPLIANCE TESTING

Performed for:
**MARATHON PETROLEUM COMPANY LP
DETROIT REFINERY**

COKER HEATER STACK (SV70-H1)


Client Reference No: 4100665755
CleanAir Project No: 13082-1
Revision 0: November 7, 2016

To the best of our knowledge, the data presented in this report are accurate, complete, error free, legible and representative of the actual emissions during the test program. Clean Air Engineering operates in conformance with the requirements of ASTM D7036-04 Standard Practice for Competence of Air Emission Testing Bodies.

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RENEWABLE OPERATING PERMIT
REPORT CERTIFICATION

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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 Permit (ROP) 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 specified in Rule 213(3)(b)(ii), and be made available to the Department of Environmental Quality, Air Quality Division upon request.

Source Name Marathon Petroleum Company LP County Wayne

Source Address 1300 South Fort Street City Detroit

AQD Source ID (SRN) A9831 ROP No. MI-ROP-A9831-2012c ROP Section No. _____

Please check the appropriate box(es):

Annual Compliance Certification (Pursuant to Rule 213(4)(c))

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 ROP, 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 ROP.

2. During the entire reporting period this source was in compliance with all terms and conditions contained in the ROP, 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 ROP, unless otherwise indicated and described on the enclosed deviation report(s).

Semi-Annual (or More Frequent) Report Certification (Pursuant to Rule 213(3)(c))

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

1. During the entire reporting period, ALL monitoring and associated recordkeeping requirements in the ROP 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 ROP 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 08/30/2016 To 09/14/2016

Additional monitoring reports or other applicable documents required by the ROP are attached as described:
submittal of Stack Testing and RATA results.

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 **MPC Investment LLC,**

its General Partner
Deputy Assistant Secretary

David T. Roland
Name of Responsible Official (print or type)

Title

313-843-9100
Phone Number

Signature of Responsible Official

11/11/2016
Date

PROJECT OVERVIEW

1-1

INTRODUCTION

Marathon Petroleum Company LP (MPC) contracted Clean Air Engineering (CleanAir) to perform emission measurements at the Detroit Refinery for relative accuracy test audit (RATA) and compliance purposes.

All testing was conducted in accordance with the regulations set-forth by the United States Environmental Protection Agency (USEPA) and the Michigan Department of Environmental Quality (DEQ). The permit limits are referenced in Michigan Department of Environmental Quality, Air Quality Division Permit to Install No. 63-08D, issued May 12, 2014.

Key Project Participants

Individuals responsible for coordinating and conducting the test program were:

Crystal Davis – MPC
Joe Reidy – MPC
Thomas Gasloli – DEQ
Chad Eilering – CleanAir

Test Program Parameters

The testing was performed at the Coker Heater Stack (Emission Unit ID No. EU70-COKERHTR-S1; Stack ID No. SV70-H1) on September 16, 2016, and included the following emissions measurements:

- particulate matter (PM), assumed equivalent to filterable particulate matter (FPM) only
- total particulate matter less than 10 microns (μm) in diameter (Total PM_{10}), assumed equivalent to the sum of the following constituents:
 - filterable particulate matter (FPM)
 - condensable particulate matter (CPM)
- volatile organic compounds (VOCs), assumed equivalent to total hydrocarbons (THC) minus the following constituents:
 - methane (CH_4)
 - ethane (C_2H_6)
- nitrogen oxides (NO_x)
- flue gas composition (e.g., O_2 , CO_2 , H_2O)
- flue gas flow rate

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PROJECT OVERVIEW**TEST PROGRAM SYNOPSIS****Test Schedule**

The on-site schedule followed during the test program is outlined in Table 1-1.

**Table 1-1:
Schedule of Activities**

Run Number	Location	Method	Analyte	Date	Start Time	End Time
1	Coker Heater Stack	USEPA Method 5/202	FPM/CPM	09/16/16	10:37	12:47
2	Coker Heater Stack	USEPA Method 5/202	FPM/CPM	09/16/16	14:14	16:24
3	Coker Heater Stack	USEPA Method 5/202	FPM/CPM	09/16/16	17:25	19:33
1	Coker Heater Stack	USEPA Method 3A/7E	O ₂ /CO ₂ /NO _x	09/16/16	10:03	10:24
2	Coker Heater Stack	USEPA Method 3A/7E	O ₂ /CO ₂ /NO _x	09/16/16	10:36	10:57
3	Coker Heater Stack	USEPA Method 3A/7E	O ₂ /CO ₂ /NO _x	09/16/16	11:09	11:30
4	Coker Heater Stack	USEPA Method 3A/7E	O ₂ /CO ₂ /NO _x	09/16/16	11:39	12:00
5	Coker Heater Stack	USEPA Method 3A/7E	O ₂ /CO ₂ /NO _x	09/16/16	12:10	12:31
6	Coker Heater Stack	USEPA Method 3A/7E	O ₂ /CO ₂ /NO _x	09/16/16	12:43	13:04
7	Coker Heater Stack	USEPA Method 3A/7E	O ₂ /CO ₂ /NO _x	09/16/16	14:17	14:38
8	Coker Heater Stack	USEPA Method 3A/7E	O ₂ /CO ₂ /NO _x	09/16/16	14:49	15:10
9	Coker Heater Stack	USEPA Method 3A/7E	O ₂ /CO ₂ /NO _x	09/16/16	15:21	15:42
10	Coker Heater Stack	USEPA Method 3A/7E	O ₂ /CO ₂ /NO _x	09/16/16	15:56	16:17
1	Coker Heater Stack	USEPA Method 3A/18/25A	O ₂ /CO ₂ /CH ₄ /C ₂ H ₆ /THC	09/16/16	10:03	11:30
2	Coker Heater Stack	USEPA Method 3A/18/25A	O ₂ /CO ₂ /CH ₄ /C ₂ H ₆ /THC	09/16/16	11:39	13:04
3	Coker Heater Stack	USEPA Method 3A/18/25A	O ₂ /CO ₂ /CH ₄ /C ₂ H ₆ /THC	09/16/16	14:17	15:42

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PROJECT OVERVIEW

Results Summary

Table 1-2 and Table 1-3 summarize the results of the test program. A more detailed presentation of the test conditions and results of analysis are shown on pages 2-1 through 2-7.

**Table 1-2:
Summary of Emission Compliance Test Results**

Source	Constituent (Units)	Sampling Method (USEPA)	Average Emission	Permit Limit ¹
<u>Coker Heater Stack</u>				
	PM (lb/MMBtu)	5	0.0014	0.0019
	PM ₁₀ (lb/MMBtu)	5 / 202	0.0041	0.0076
	VOC (lb/MMBtu)	25A / 18	<0.0006	0.0055

¹ Permit limits obtained from MDEQ Permit To Install No. 63-08D.

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**Table 1-3:
Summary of RATA Results**

Source	Constituent (Units)	Reference Method (USEPA)	Applicable Specification	Relative Accuracy (%)	Specification Limit ¹
<u>Coker Heater Stack</u>					
	O ₂ (% dv)	3A	PS3	0.14	±1.0% dv
	NO _x (ppmdv @ 0%O ₂)	7E	PS2	5.0	20% of RM
	NO _x (lb/MMBtu)	7E	PS2	1.8	20% of RM

¹ Specification limits obtained from 40 CFR 60, Appendix B, Performance Specifications.

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PROJECT OVERVIEW

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Discussion of Test Program***FPM and CPM Testing - USEPA Method 5/202***

For this test program, PM emission rate is assumed equivalent to FPM emission rate and PM₁₀ emission rate is assumed equivalent to the sum of FPM and CPM emission rates (units of lb/hr, Ton/yr, or lb/MMBtu for all constituents).

The analytical procedures in EPA Method 202 include an ammonium titration of the inorganic sample fractions with pH less than 7.0 to neutralize acids with hygroscopic properties such as H₂SO₄ that may be present in the sample. This step speeds up the sample desiccation process and allows the samples to come to a constant weight prior to weighing. The weight of ammonium added to the sample as a result of the titration is subtracted from the analytical result.

The laboratory performing the gravimetric analysis (Clean Air Analytical Services) has determined that only samples with an initial pH less than 4.5 require a significant amount of ammonium neutralization, resulting in a correction in excess of 0.5 mg. Based on this observation, the laboratory has altered their procedures to read that a sample must have a pH lower than 4.5 in order to be titrated.

While all of the inorganic sample fractions from Runs 1-3 had a pH less than 4.5 and were titrated, the field train reagent blank had a pH of about 6.8 and was not titrated, per Clean Air Analytical Services' modified procedure. The sample fraction was observed to come to a constant weight without having to titrate the sample.

Three (3) 120-minute Method 5/202 test runs were performed on September 16, 2016. The final result for PM & PM₁₀ was expressed as the average of three (3) valid runs.

O₂ and NO_x RATA Testing - USEPA Methods 3A & 7E; Performance Specifications 2 & 3

Minute-average data points for O₂ and NO_x (dry basis) were collected over a period of 21 minutes for each RATA Reference Method (RM) run. The average result for each RM run was calculated and compared to the average result from the facility's CEMS over an identical time interval in order to calculate relative accuracy (RA).

PROJECT OVERVIEW

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VOC Testing - USEPA Method 25A and Method 18

VOC testing was performed concurrently with the RATA testing. Nine (9) 21-minute Method 25 test runs for THC were performed concurrently with three (3) Method 18 bag collections for CH₄ and C₂H₆, with each M-18 sample collected over a period of about 63 minutes. The M-18 samples were collected as follows:

- Method 18 Run 1: Collected during Method 25A Runs 1, 2 and 3
- Method 18 Run 2: Collected during Method 25A Runs 4, 5 and 6
- Method 18 Run 3: Collected during Method 25A Runs 7, 8 and 9

The VOC emission rate is normally equivalent to THC emission rate, minus CH₄ and C₂H₆ emission rate. The calculated emission rate of CH₄ detected through analysis of each Method 18 sample bag exceeded the amount of THC measured by the on-line THC analyzer.

This is likely due to variations in the calibration standards, measurement and analytical technique. Therefore, VOC emissions are reported as a value “less than” 1% of the calibration span of THC instrument. The final results were calculated using the average of three valid test runs, all using a concentration of 1% of the instrument span and reported as “less than” the amount.

Calculation of Final Results

Emission results in units of dry volume-based concentration (lb/dscf, ppm_{dv}) were converted to units of pounds per million Btu (lb/MMBtu) by calculating an oxygen-based fuel factor (F_d) for refinery gas per USEPA Method 19 specifications. The heat content and F_d factor were calculated from percent volume composition analytical data provided by MPC and tabulated heating values for each of the measured constituents.

Fuel analysis for September 16, 2016, was not available. Instead an average F_d was calculated from the fuel analyses of September 15, 2016, and September 17, 2016.

End of Section 1 – Project Overview

RESULTS**Table 2-1:
Coker Heater Stack – FPM, CPM and Total PM₁₀ Emissions (Method 5 / 202)**

Run No.		1	2	3	Average
Date (2016)		Sep 16	Sep 16	Sep 16	
Start Time (approx.)		10:37	14:14	17:25	
Stop Time (approx.)		12:47	16:24	19:33	
Process Conditions					
P ₁	Fuel gas flow rate (Mscf/day)	4,543	4,565	4,564	4,557
P ₂	Charge rate (bpd)	40,100	40,100	40,100	40,100
F _d	Oxygen-based F-factor (dscf/MMBtu)	8,339	8,339	8,339	8,339
Cap	Capacity factor (hours/year)	8,760	8,760	8,760	8,760
Gas Conditions					
O ₂	Oxygen (dry volume %)	5.3	5.1	5.1	5.2
CO ₂	Carbon dioxide (dry volume %)	8.8	9.1	9.1	9.0
T _s	Sample temperature (°F)	400	402	402	401
B _w	Actual water vapor in gas (% by volume)	13.7	16.7	14.7	15.0
Gas Flow Rate					
Q _a	Volumetric flow rate, actual (acfm)	88,400	88,400	87,500	88,100
Q _s	Volumetric flow rate, standard (scfm)	53,300	53,100	52,600	53,000
Q _{std}	Volumetric flow rate, dry standard (dscfm)	46,000	44,300	44,900	45,100
Sampling Data					
V _{mstd}	Volume metered, standard (dscf)	68.63	67.51	68.40	68.18
%I	Isokinetic sampling (%)	102.2	104.5	104.4	103.7
Laboratory Data					
m _n	Total FPM (g)	0.00534	0.00381	0.00267	
m _{CPM}	Total CPM (g)	0.00504	0.00949	0.00792	
m _{Part}	Total particulate (expressed as PM-10) (g)	0.01038	0.01330	0.01059	
n _{MDL}	Number of non-detectable fractions	N/A	N/A	N/A	
DLC	Detection level classification	ADL	ADL	ADL	
FPM Results					
C _{sd}	Particulate Concentration (lb/dscf)	1.7E-07	1.2E-07	8.6E-08	1.3E-07
E _{lb/hr}	Particulate Rate (lb/hr)	0.47	0.33	0.23	0.35
E _{T/yr}	Particulate Rate (Ton/yr)	2.1	1.4	1.0	1.5
E _{Fd}	Particulate Rate - F _d -based (lb/MMBtu)	0.0019	0.0014	0.00095	0.0014
CPM Results					
C _{sd}	Particulate Concentration (lb/dscf)	1.6E-07	3.1E-07	2.6E-07	2.4E-07
E _{lb/hr}	Particulate Rate (lb/hr)	0.45	0.82	0.69	0.65
E _{T/yr}	Particulate Rate (Ton/yr)	2.0	3.6	3.0	2.9
E _{Fd}	Particulate Rate - F _d -based (lb/MMBtu)	0.0018	0.0034	0.0028	0.0027
Total Particulate (as PM10) Results					
C _{sd}	Particulate Concentration (lb/dscf)	3.3E-07	4.3E-07	3.4E-07	3.7E-07
E _{lb/hr}	Particulate Rate (lb/hr)	0.92	1.2	0.92	1.00
E _{T/yr}	Particulate Rate (Ton/yr)	4.0	5.1	4.0	4.4
E _{Fd}	Particulate Rate - F _d -based (lb/MMBtu)	0.0037	0.0048	0.0038	0.0041

Average includes 3 runs.

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Detection level classifications are defined as follows:

ADL = Above Detection Level - all fractions are above detection limit

RESULTS

2-2

**Table 2-2:
Uncertainty Analysis – FPM, CPM and Total PM₁₀ (Method 5 / 202)**

	FPM Results (lb/MMBtu)		CPM Results (lb/MMBtu)		Total PM (as PM ₁₀) Results (lb/MMBtu)	
Method	5		202		5/202	
Run No.	1	0.0019	1	0.0018	1	0.0037
	2	0.0014	2	0.0034	2	0.0048
	3	0.00095	3	0.0028	3	0.0038
SD	4.85E-04		8.14E-04		6.04E-04	
AVG	0.00141		0.00268		0.00409	
RSD	34.3%		30.3%		14.7%	
N	3		3		3	
SE	2.80E-04		4.70E-04		3.49E-04	
RSE	19.8%		17.5%		8.5%	
P	95.0%		95.0%		95.0%	
TINV	4.30		4.30		4.30	
CI +	0.00262		0.00470		0.00559	
AVG	0.00141		0.00268		0.00409	
CI -	0.00021		0.00066		0.00259	
TB +	0.00513		0.00891		0.00872	

AVG (average) is the mean value of the runs; N is the number of individual runs.

SD (standard deviation) and RSD (relative standard deviation) are measures of the variability of individual runs.

SE (standard error) and RSE (relative standard error) are measures of the variability of the average of the runs.

P (probability) is the confidence level associated with the two-tailed Student's t-distribution.

TINV (t-value) is the value of the Student's t-distribution as a function of P (probability) and N-1 (degrees of freedom).

CI (confidence interval) indicates that if the test is conducted again under the same conditions, the average would be expected to fall within the interval (CI- to CI+) about 95% of the time.

TB+ (upper tolerance bound) is the value below which 95% of future runs are expected to fall (assuming testing at the same conditions).

RESULTS**Table 2-3:
Coker Heater Stack – THC, CH₄, C₂H₆, and VOC Emissions (Method 25A / 18)**

Run No.		1	2	3	Average
Date (2016)		Sep 16	Sep 16	Sep 16	
Start Time (approx.)		10:03	11:39	14:17	
Stop Time (approx.)		11:30	13:04	15:42	
Process Conditions					
P ₁	Fuel gas flow rate (Mscf/day)	4,541	4,546	4,561	4,549
P ₂	FCC charge rate (bpd)	40,100	40,100	40,100	40,100
F _d	Oxygen-based F-factor (dscf/MMBtu)	8,339	8,339	8,339	8,339
Gas Conditions					
O ₂	Oxygen (dry volume %)	5.2	5.3	5.2	5.2
CO ₂	Carbon dioxide (dry volume %)	9.3	9.3	9.3	9.3
B _w	Actual water vapor in gas (% by volume) ¹	13.7	13.7	16.7	14.7
THC Results²					
C _{sd}	Concentration (ppmdv as C ₃ H ₈)	<0.52	<0.52	<0.45	<0.50
C _{sd}	Concentration (lb/dscf)	<6.0E-08	<6.0E-08	<5.1E-08	<5.7E-08
E _{Fd}	Emission Rate - F _d -based (lb/MMBtu)	< 0.00066	< 0.00066	< 0.00057	< 0.00063
Methane Results					
C _{sd}	Concentration (ppmdv)	2.1	2.2	2.0	2.1
C _{sd}	Concentration (lb/dscf)	8.8E-08	9.2E-08	8.5E-08	8.8E-08
E _{Fd}	Emission Rate - F _d -based (lb/MMBtu)	0.0010	0.0010	0.0009	0.0010
Ethane Results³					
C _{sd}	Concentration (ppmdv)	<0.22	<0.22	<0.22	<0.22
C _{sd}	Concentration (lb/dscf)	<1.7E-08	<1.7E-08	<1.7E-08	<1.7E-08
E _{Fd}	Emission Rate - F _d -based (lb/MMBtu)	< 0.00019	< 0.00019	< 0.00019	< 0.00019
VOC Results⁴					
E _{Fd}	Emission Rate - F _d -based (lb/MMBtu)	<0.00066	<0.00066	<0.00057	< 0.00063

Average includes 3 runs.

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¹ Moisture data used for ppmv to ppmdv correction obtained from nearly-concurrent M-5/202 runs.² For THC, '<' indicates a measured response below the detection limit (assumed to be 1% of the instrument calibration span).³ For ethane, '<' indicates a measured response below the analytical detection limit determined by the laboratory.⁴ For VOCs, '<' indicates at least one non-detectable fraction was used in the calculations.

For all calculated averages, "<" values are treated as the entire value of the detection limit.

RESULTS**Table 2-4:
Coker Heater Stack – NO_x Emissions (Method 7E)**

Run No.		1	2	3	4	5	6
Date (2016)		Sep 16	Sep 16	Sep 16	Sep 16	Sep 16	Sep 16
Start Time (approx.)		10:03	10:36	11:09	11:39	12:10	12:43
Stop Time (approx.)		10:24	10:57	11:30	12:00	12:31	13:04
Process Conditions							
P ₁	Fuel gas flow rate (Mscf/day)	4,533	4,560	4,531	4,536	4,550	4,558
P ₂	Charge rate (bpd)	40,100	40,100	40,100	40,100	40,100	40,100
F _d	Oxygen-based F-factor (dscf/MMBtu)	8,339	8,339	8,339	8,339	8,339	8,339
Gas Conditions							
O ₂	Oxygen (dry volume %)	5.2	5.2	5.3	5.3	5.2	5.3
CO ₂	Carbon dioxide (dry volume %)	9.4	9.4	9.3	9.3	9.3	9.3
Nitrogen Oxides Results							
C _{sd}	Concentration (ppmdv)	23.5	23.4	23.6	23.5	23.4	23.6
C _{sd-x}	Concentration @ 0% O ₂ (ppmdv)	31.3	31.1	31.6	31.4	31.3	31.6
C _{sd}	Concentration (lb/dscf)	2.81E-06	2.80E-06	2.81E-06	2.80E-06	2.80E-06	2.82E-06
E _{Fd}	Emission Rate - F _d -based (lb/MMBtu)	0.0312	0.0309	0.0315	0.0313	0.0311	0.0314

Run No.		7	8	9	10	Average
Date (2016)		Sep 16	Sep 16	Sep 16	Sep 16	
Start Time (approx.)		14:17	14:49	15:21	15:56	
Stop Time (approx.)		14:38	15:10	15:42	16:17	
Process Conditions						
P ₁	Fuel gas flow rate (Mscf/day)	4,558	4,569	4,559	4,570	4,552
P ₂	Charge rate (bpd)	40,100	40,100	40,100	40,100	40,100
F _d	Oxygen-based F-factor (dscf/MMBtu)	8,339	8,339	8,339	8,339	8,339
Gas Conditions						
O ₂	Oxygen (dry volume %)	5.2	5.2	5.3	5.1	5.2
CO ₂	Carbon dioxide (dry volume %)	9.3	9.4	9.3	9.4	9.3
Nitrogen Oxides Results						
C _{sd}	Concentration (ppmdv)	23.5	23.2	23.2	23.1	23.4
C _{sd-x}	Concentration @ 0% O ₂ (ppmdv)	31.3	30.9	31.1	30.6	31.2
C _{sd}	Concentration (lb/dscf)	2.81E-06	2.78E-06	2.78E-06	2.76E-06	2.80E-06
E _{Fd}	Emission Rate - F _d -based (lb/MMBtu)	0.0312	0.0307	0.0309	0.0304	0.0311

Average includes 10 runs.

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RESULTS

**Table 2-5:
Coker Heater Stack – O₂ (%dv) RATA (Method 3A / PS3)**

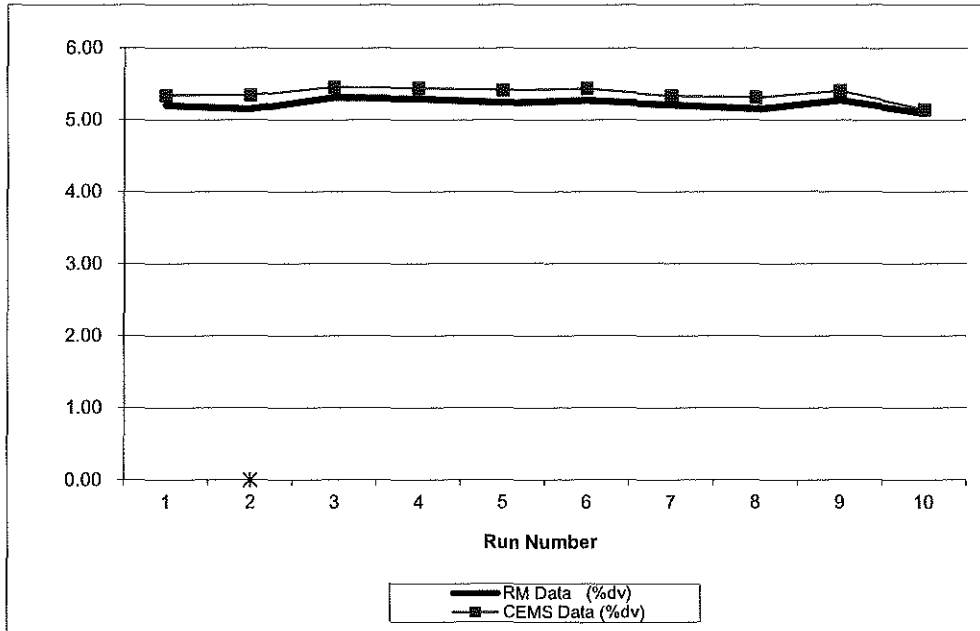
Run No.	Start Time	Date (2016)	RM Data (%dv)	CEMS Data (%dv)	Difference (%dv)	Difference Percent
1	10:03	Sep 16	5.20	5.34	-0.14	-2.7%
2 *	10:36	Sep 16	5.15	5.34	-0.19	-3.7%
3	11:09	Sep 16	5.31	5.45	-0.14	-2.6%
4	11:39	Sep 16	5.29	5.44	-0.15	-2.8%
5	12:10	Sep 16	5.24	5.41	-0.17	-3.2%
6	12:43	Sep 16	5.27	5.43	-0.16	-3.0%
7	14:17	Sep 16	5.21	5.33	-0.12	-2.3%
8	14:49	Sep 16	5.15	5.31	-0.16	-3.1%
9	15:21	Sep 16	5.27	5.40	-0.13	-2.5%
10	15:56	Sep 16	5.09	5.14	-0.05	-1.0%
Average			5.23	5.36	-0.14	-2.6%

Relative Accuracy Test Audit Results

Standard Deviation of Differences 0.036
Confidence Coefficient (CC) 0.027
t-Value for 9 Data Sets 2.306

Avg. Abs. Diff. (%dv) **0.14** Limit **1.0**

RM = Reference Method (CleanAir Data) 101116 120406
CEMS = Continuous Emissions Monitoring System (Marathon Petroleum Company Data)
RATA calculations are based on 9 of 10 runs. * indicates the excluded run.



RESULTS

**Table 2-6:
Coker Heater Stack – NO_x (ppmdv @ 0% O₂) RATA (Method 7E / PS2)**

Run No.	Start Time	Date (2016)	RM Data (ppm@0%O2)	CEMS Data (ppm@0%O2)	Difference (ppm@0%O2)	Difference Percent
1	10:03	Sep 16	31.32	29.77	1.55	4.9%
2	10:36	Sep 16	31.08	29.58	1.50	4.8%
3	11:09	Sep 16	31.59	29.92	1.67	5.3%
4	11:39	Sep 16	31.41	29.99	1.42	4.5%
5	12:10	Sep 16	31.26	29.98	1.28	4.1%
6	12:43	Sep 16	31.57	30.02	1.55	4.9%
7	14:17	Sep 16	31.33	29.95	1.38	4.4%
8	14:49	Sep 16	30.85	29.38	1.47	4.8%
9	15:21	Sep 16	31.07	29.73	1.34	4.3%
10 *	15:56	Sep 16	30.56	28.75	1.81	5.9%
Average			31.28	29.81	1.46	4.7%

Relative Accuracy Test Audit Results

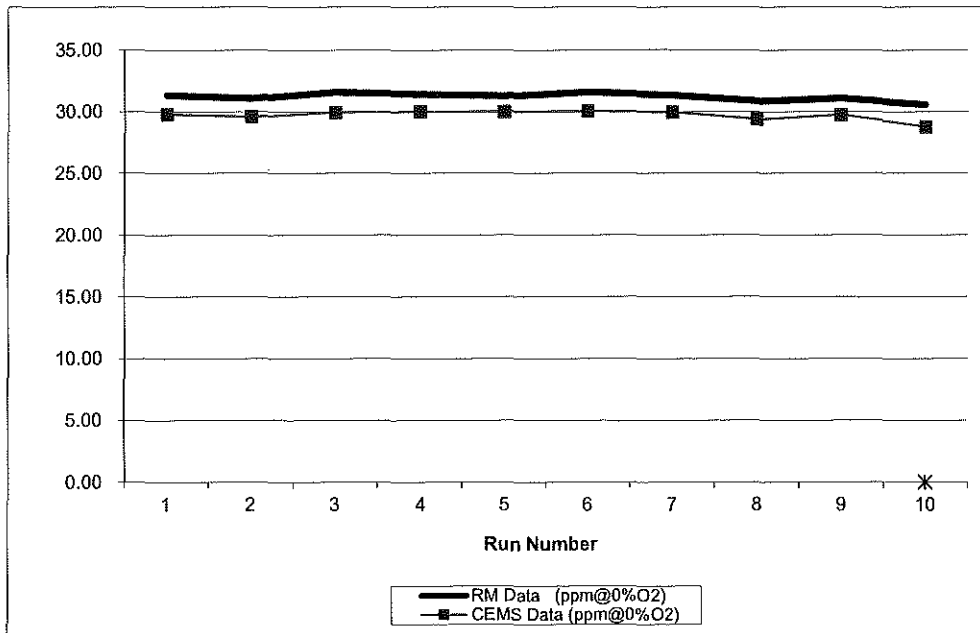
Standard Deviation of Differences	0.121	
Confidence Coefficient (CC)	0.093	
t-Value for 9 Data Sets	2.306	
		Limit
Relative Accuracy (as % of RM)	5.0%	20.0%
Relative Accuracy (as % of Appl. Std.)	2.6%	10.0%
Appl. Std. = 60 ppm@0%O2		

RM = Reference Method (CleanAir Data)

101116 120406

CEMS = Continuous Emissions Monitoring System (Marathon Petroleum Company Data)

RATA calculations are based on 9 of 10 runs. * indicates the excluded run.



RESULTS

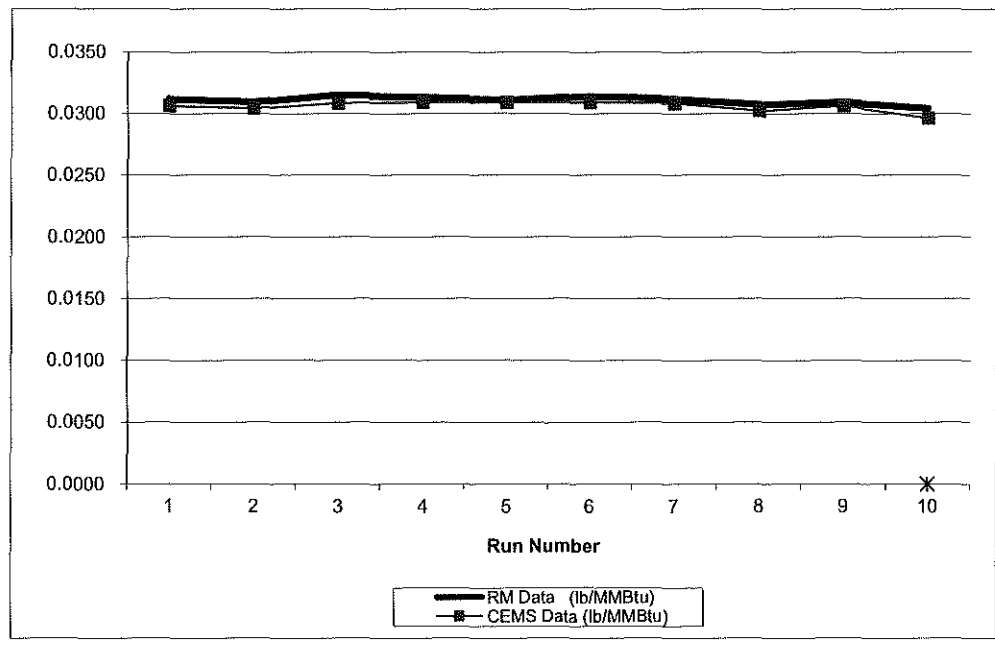
**Table 2-7:
Coker Heater Stack – NO_x (lb/MMBtu) RATA (USEPA 7E / PS2)**

Run No.	Start Time	Date (2016)	RM Data (lb/MMBtu)	CEMS Data (lb/MMBtu)	Difference (lb/MMBtu)	Difference Percent
1	10:03	Sep 16	0.0312	0.0306	0.0006	1.9%
2	10:36	Sep 16	0.0309	0.0304	0.0005	1.6%
3	11:09	Sep 16	0.0315	0.0308	0.0007	2.2%
4	11:39	Sep 16	0.0313	0.0309	0.0004	1.3%
5	12:10	Sep 16	0.0311	0.0309	0.0002	0.6%
6	12:43	Sep 16	0.0314	0.0309	0.0005	1.6%
7	14:17	Sep 16	0.0312	0.0308	0.0004	1.3%
8	14:49	Sep 16	0.0307	0.0302	0.0005	1.6%
9	15:21	Sep 16	0.0309	0.0306	0.0003	1.0%
10 *	15:56	Sep 16	0.0304	0.0296	0.0008	2.6%
Average			0.0311	0.0307	0.0005	1.5%

Relative Accuracy Test Audit Results

Standard Deviation of Differences	0.0002	
Confidence Coefficient (CC)	0.0001	
t-Value for 9 Data Sets	2.3060	
		Limit
Relative Accuracy (as % of RM)	1.8%	20.0%
Relative Accuracy (as % of Appl. Std.)	1.1%	10.0%
Appl. Std. = 0.05 lb/MMBtu		

RM = Reference Method (CleanAir Data) 101116 113851
 CEMS = Continuous Emissions Monitoring System (Marathon Petroleum Company Data)
 RATA calculations are based on 9 of 10 runs. * indicates the excluded run.



End of Section 2 – Results