Grace Consulting, Inc.
Emissions Testing Services

RELATIVE ACCURACY TEST REPORT

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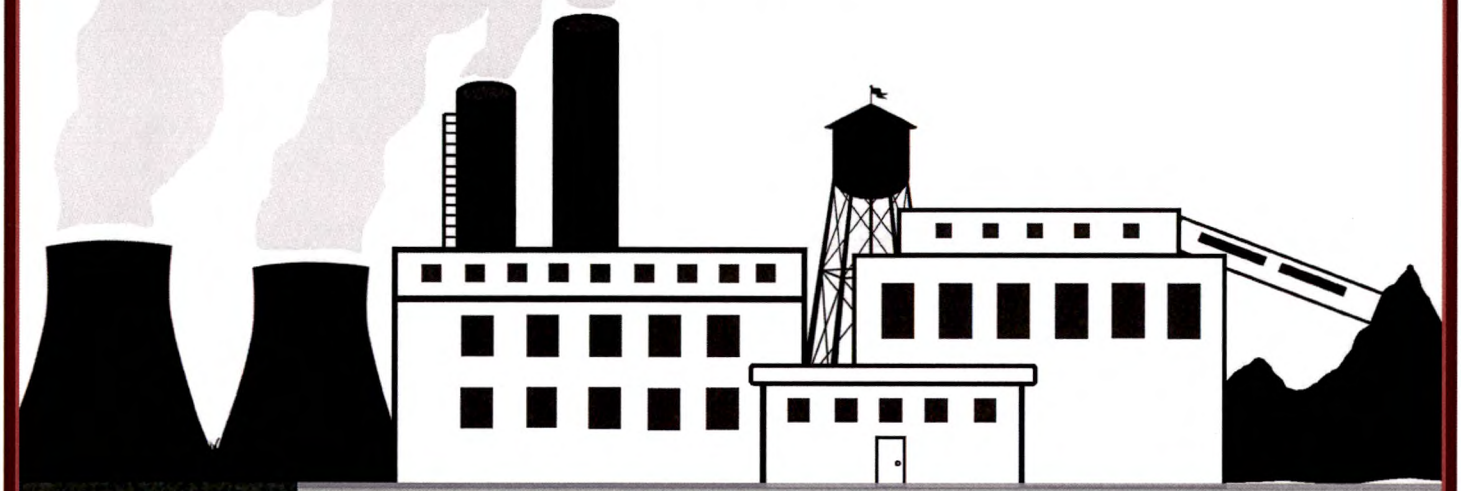

TES FILER CITY GENERATING STATION

STACK TESTING ACCREDITATION COUNCIL

ACCREDITED
TO ASTM D7036 ONLY
CERT #4675.01

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ACCREDITATION BODY

TES Filer City Generating Station
700 Mee Street
Filer City, MI 49634

EUBoiler01: Unit 1 Outlet and Inlet

Job # 24-106

Test Date: 08-20-24 & 08-21-24
Report Date: 09-30-24

Grace Consulting, Inc.
Emissions Testing Services

September 30, 2024

I, Tim Moody, hereby certify that the data obtained at the TES Filer City Generating Station on Unit 1 Outlet and Inlet is in accordance with procedures set forth by the USEPA. This report accurately represents the data obtained from the testing procedures and analysis of this data.

Timothy C. Moody

Tim Moody, QSTI
Crew Chief
timmoody@gcitest.com

I, Stacy Sword, hereby certify that the report was prepared under my direction in conformance with the requirements of ASTM D7036. To the best of my knowledge the data and results are complete and accurate.

Stacy Sword

Stacy Sword, QSTI
Office Manager
stacysword@gcitest.com

I, Carl Vineyard, hereby certify that I have reviewed this report and to the best of my knowledge, the data presented herein is complete and accurate. GCI operated in conformance with the requirements of the ASTM D7036 during the test project.

Carl Vineyard, P.E., QSTI
Test Engineer
carlvineyard@gcitest.com

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INTRODUCTION

This report presents the results of the Relative Accuracy test performed at the TES Filer City Generating Station on Unit 1 Outlet and Inlet.

The purpose of the tests was to determine the Relative Accuracy of the plant CEMS of the unit. The results can be found in the Summary of Test Results section of this report.

The testing was performed by Grace Consulting, Inc., located at 510 Dickson Street, Wellington, OH 44090. Present during the testing from Grace Consulting, Inc. were Tim Moody, Caleb Moody, and Aamir Mani. Also present during the testing were Thomas Schmelter with Consumers Energy's Regulatory Compliance Testing Section (RCTS). Austin Swiatlowski, and Chris Bosma with TES Filer City Generating Station were present for the testing, as well as Jim Fanning of Mechanical Systems, Inc. Caryn Owens with Michigan Department of Environment, Great Lakes and Energy (EGLE) observed the testing too.

The tests were performed on August 20 & 21, 2024. The testing was completed in accordance with USEPA test methods as published in the Federal Register.

The sampling and analytical procedures can be found in the Methods and Discussion section of this report. The raw field data and the equations used to determine the final results are presented in the Appendix section.

SUMMARY OF TEST RESULTS

SUMMARY OF TEST RESULTS

The following presents the results of the Relative Accuracy tests performed at the TES Filer City Station on Unit 1 Outlet and Inlet.

RELATIVE ACCURACY
Outlet

Date	Monitor	Units	Difference	RA	Allowable	Results
8/21/2024	NO_x	lb/mmBtu		9.16%	20%	PASS
8/21/2024	NO_x	ppm		6.83%	10%	PASS
8/21/2024	SO_2	lb/mmBtu		1.79%*	10%	PASS
8/21/2024	SO_2	ppm	2.389		±15 ppm	PASS
8/21/2024	CO	lb/mmBtu		0.92%*	5%	PASS
8/21/2024	CO	ppm		4.11%	10%	PASS
8/21/2024	CO_2	Percent		4.97%	10%	PASS
8/21/2024	Flow (M/N)	SCFH		3.38%	10%	PASS
8/21/2024	Flow (H/2nd N)	SCFH		1.62%	10%	PASS

*Average RM SO2 lb/mmBtu emissions were less than 50% of the facility emissions limit of 0.5 lb/mmBtu and RM CO lb/mmBtu emissions were less than 50% of the facility emissions limit of 0.3 lb/mmBtu; the emissions limit was used in the denominator of the RA calculation in lieu of the average RM value per §13.2 of 40 CFR Part 60, Appendix B, Performance Specifications 2 and 4/4A.

Anlayzer Information

Stack			*Inlet*		
NO_x	Thermo Model 42i	S/N 0623017966	SO_2	Thermo Model 43i	S/N 0622717879
SO_2	Thermo Model 43i	S/N 0622717877			
CO	Thermo Model 48i	S/N 0622717887			
CO_2	Thermo 410i	S/N 0622717869			
Flow	Air Monitor/MasstronII/CEM	S/N 59413A			

BIAS TEST RESULTS

Date	Monitor	Monitor Designation	Mean of Difference	Confidence Coefficient	Bias Results Factor Required	Bias Adj. Factor
8/21/2024	NO_x	ppm	-6.522	5.824	No	N/A
8/21/2024	SO_2	ppm	2.389	1.977	Yes	1.062
8/21/2024	Flow (M/N)	SCFH	-130111.111	69165.527	No	N/A
8/21/2024	Flow (H/2nd N)	SCFH	-3111.111	102956.469	No	N/A

RELATIVE ACCURACY
Inlet

Date	Monitor	Units	RA	Allowable	Results
8/20/2024	SO_2	lb/mmBtu	4.62%	20%	PASS

NO_x CONVERTER EFFICIENCY

Date	NO_2 Gas Value	Recorded Value	Converter Efficiency %
8/21/2024	45.68	44.94	98.38%

PROTOCOL GAS
Outlet

Gas Type	Low (zero)	Mid	PGVP#	Exp. Date	High	PGVP#	Exp. Date
NO_x	EB0164439	CC445042	B62023	4/25/2031	CC42271	B62024	1/12/2032
SO_2	EB0164439	CC316996	B62019	10/28/2027	EB0004700	B62024	7/8/2032
CO	EB0164439	CC137840	B62022	4/8/2030	XC033862B	B62021	8/14/2029
CO_2	CC445042	EB0164439	B62024	7/15/2032	CC26670	B62021	6/29/2029
O_2	CC445042	EB0164439	B62024	7/15/2032	CC26670	B62021	6/29/2029

PROTOCOL GAS
Inlet

Gas Type	Low (zero)	Mid	PGVP#	Exp. Date	High	PGVP#	Exp. Date
SO_2	EB0164439	EB0013061	B62019	11/4/2027	CC312633	B62016	12/27/2024
CO_2	EB0013061	EB0164439	B62024	7/15/2032	CC26670	B62021	6/29/2029

The complete results can be found on the computer printouts in the following sections.

INTERMEDIATE CALCULATIONS

Grace Consulting, Inc.

TES Filer City Station Unit 1 Outlet
Relative Accuracy Test Audit
Relative Accuracy Calculations and Results
NOx lb/mmBtu
8/21/2024

Use	Run	Start Time	Stop Time	Steam Flow	NOx lb/mmBtu RM	CEMS	Difference
Y	1	6:43	7:03	208	0.389	0.417	-0.028
Y	2	7:20	7:40	208	0.395	0.427	-0.032
Y	3	7:57	8:17	208	0.399	0.423	-0.024
Y	4	8:33	8:53	208	0.406	0.428	-0.022
Y	5	9:10	9:30	208	0.400	0.431	-0.031
Y	6	10:00	10:20	209	0.390	0.425	-0.035
N	7	10:37	10:57	209	0.389	0.434	-0.045
Y	8	11:11	11:31	208	0.407	0.451	-0.044
Y	9	12:52	13:12	208	0.424	0.435	-0.011
Y	10	13:26	13:46	208	0.398	0.435	-0.037
Averages				208	0.401	0.430	-0.029

Standard Deviation	0.010
Confidence Coefficient	0.007
Relative Accuracy	9.16

Grace Consulting, Inc.

TES Filer City Station Unit 1 Outlet
Relative Accuracy Test Audit
Relative Accuracy Calculations and Results
NOx PPM
8/21/2024

Use	Run	Start Time	Stop Time	Steam Flow	NOx PPM RM	NOx PPM CEMS	Difference
Y	1	6:43	7:03	208	174.000	183.000	-9.000
Y	2	7:20	7:40	208	176.700	187.400	-10.700
Y	3	7:57	8:17	208	180.800	185.900	-5.100
Y	4	8:33	8:53	208	185.700	188.700	-3.000
Y	5	9:10	9:30	208	176.800	191.200	-14.400
Y	6	10:00	10:20	209	170.400	187.600	-17.200
N	7	10:37	10:57	209	174.000	192.600	-18.600
Y	8	11:11	11:31	208	186.200	193.100	-6.900
Y	9	12:52	13:12	208	191.800	184.000	7.800
Y	10	13:26	13:46	208	184.000	184.200	-0.200
Averages				208	180.711	187.233	-6.522

Standard Deviation	7.577
Confidence Coefficient	5.824
Relative Accuracy	6.83
Bias Test Pass/Fail	PASS
Bias Adjustment Factor	1.000

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TES Filer City Station Unit 1 Outlet
Relative Accuracy Test Audit
Relative Accuracy Calculations and Results
SO2 lb/mmBtu
8/21/2024

Use	Run	Start Time	Stop Time	Steam Flow	SO2 lb/mmBtu RM	CEMS	Difference
Y	1	6:43	7:03	208	0.164	0.150	0.014
N	2	7:20	7:40	208	0.162	0.146	0.016
Y	3	7:57	8:17	208	0.124	0.117	0.007
Y	4	8:33	8:53	208	0.149	0.146	0.003
Y	5	9:10	9:30	208	0.123	0.117	0.006
Y	6	10:00	10:20	209	0.036	0.040	-0.004
Y	7	10:37	10:57	209	0.083	0.086	-0.003
Y	8	11:11	11:31	208	0.175	0.188	-0.013
Y	9	12:52	13:12	208	0.121	0.117	0.004
Y	10	13:26	13:46	208	0.148	0.138	0.010
Averages				208	0.125	0.122	0.003

Standard Deviation	0.008
Confidence Coefficient	0.006
Relative Accuracy	1.79

$$RA = \frac{|\text{Diff}| + CC}{\text{Std}} \times 100$$

Std = 0.5 lb/mmBtu

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TES Filer City Station Unit 1 Outlet
Relative Accuracy Test Audit
Relative Accuracy Calculations and Results
SO2 PPM
8/21/2024

Use	Run	Start Time	Stop Time	Steam Flow	SO2 PPM RM	SO2 PPM CEMS	SO2 PPM Difference
Y	1	6:43	7:03	208	52.700	47.400	5.300
Y	2	7:20	7:40	208	52.300	46.300	6.000
Y	3	7:57	8:17	208	40.500	36.900	3.600
Y	4	8:33	8:53	208	49.100	46.300	2.800
Y	5	9:10	9:30	208	39.100	37.300	1.800
Y	6	10:00	10:20	209	11.400	12.600	-1.200
Y	7	10:37	10:57	209	26.800	27.300	-0.500
Y	8	11:11	11:31	208	57.600	57.700	-0.100
Y	9	12:52	13:12	208	39.300	35.500	3.800
N	10	13:26	13:46	208	49.300	42.100	7.200
Averages				208	40.978	38.589	2.389

Standard Deviation	2.572
Confidence Coefficient	1.977
Relative Accuracy	10.65
Bias Test Pass/Fail	FAIL
Bias Adjustment Factor	1.062

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TES Filer City Station Unit 1 Outlet
Relative Accuracy Test Audit
Relative Accuracy Calculations and Results
CO lb/mmBtu
8/21/2024

Use	Run	Start Time	Stop Time	Steam Flow	CO lb/mmBtu RM	CEMS	Difference
Y	1	6:43	7:03	208	0.045	0.045	0.000
Y	2	7:20	7:40	208	0.045	0.046	-0.001
Y	3	7:57	8:17	208	0.043	0.043	0.000
Y	4	8:33	8:53	208	0.041	0.039	0.002
Y	5	9:10	9:30	208	0.043	0.045	-0.002
Y	6	10:00	10:20	209	0.042	0.041	0.001
Y	7	10:37	10:57	209	0.043	0.046	-0.003
Y	8	11:11	11:31	208	0.052	0.049	0.003
N	9	12:52	13:12	208	0.052	0.059	-0.007
Y	10	13:26	13:46	208	0.047	0.053	-0.006
Averages				208	0.045	0.045	-0.001

Standard Deviation	0.003
Confidence Coefficient	0.002
Relative Accuracy	0.92

$$RA = \frac{|Diff| + CC}{Std} \times 100$$

Std = 0.3 lb/mmBtu

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TES Filer City Station Unit 1 Outlet
Relative Accuracy Test Audit
Relative Accuracy Calculations and Results
CO PPM
8/21/2024

Use	Run	Start Time	Stop Time	Steam Flow	CO PPM RM	CO PPM CEMS	Difference
Y	1	6:43	7:03	208	33.400	32.800	0.600
Y	2	7:20	7:40	208	33.300	33.500	-0.200
Y	3	7:57	8:17	208	32.100	30.700	1.400
Y	4	8:33	8:53	208	31.200	28.600	2.600
Y	5	9:10	9:30	208	31.600	32.700	-1.100
Y	6	10:00	10:20	209	30.400	29.900	0.500
Y	7	10:37	10:57	209	31.700	33.700	-2.000
N	8	11:11	11:31	208	39.100	34.700	4.400
Y	9	12:52	13:12	208	38.600	40.800	-2.200
Y	10	13:26	13:46	208	35.700	36.600	-0.900
Averages				208	33.111	33.256	-0.144

Standard Deviation	1.583
Confidence Coefficient	1.217
Relative Accuracy	4.11

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TES Filer City Station Unit 1 Outlet
Relative Accuracy Test Audit
Relative Accuracy Calculations and Results
CO2 Percent
8/21/2024

Use	Run	Start Time	Stop Time	Steam Flow	CO2 Percent RM	CEMS	Difference
Y	1	6:43	7:03	208	8.600	8.400	0.200
Y	2	7:20	7:40	208	8.600	8.400	0.200
Y	3	7:57	8:17	208	8.700	8.400	0.300
Y	4	8:33	8:53	208	8.800	8.500	0.300
Y	5	9:10	9:30	208	8.500	8.500	0.000
Y	6	10:00	10:20	209	8.400	8.500	-0.100
Y	7	10:37	10:57	209	8.600	8.500	0.100
Y	8	11:11	11:31	208	8.800	8.200	0.600
Y	9	12:52	13:12	208	8.700	8.100	0.600
N	10	13:26	13:46	208	8.900	8.200	0.700
Averages				208	8.633	8.389	0.244

Standard Deviation	0.240
Confidence Coefficient	0.185
Relative Accuracy	4.97

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TES Filer City Station Unit 1 Outlet
Relative Accuracy Test Audit
Relative Accuracy Calculations and Results
Mid Flow
8/21/2024

Use	Run	Start Time	Stop Time	Steam Flow	Mid Flow RM	Mid Flow CEMS	Mid Flow Difference
Y	1	6:43	7:03	208	5924000	6024000	-100000
Y	2	7:20	7:40	208	5771000	5980000	-209000
Y	3	7:57	8:17	208	5750000	5952000	-202000
Y	4	8:33	8:53	208	5794000	5922000	-128000
Y	5	9:10	9:30	208	5906000	5900000	6000
Y	6	10:00	10:20	209	5876000	5913000	-37000
Y	7	10:37	10:57	209	5919000	5992000	-73000
Y	8	11:11	11:31	208	6057000	6208000	-151000
Y	9	12:52	13:12	208	6000000	6277000	-277000
N	10	13:26	13:46	208	5924000	6271000	-347000
Averages				208	5888555.556	6018666.667	-130111.111

Standard Deviation	89981.171
Confidence Coefficient	69165.527
Relative Accuracy	3.38
Bias Test Pass/Fail	PASS
Bias Adjustment Factor	1.000

Grace Consulting, Inc.

TES Filer City Station Unit 1 Outlet
Relative Accuracy Test Audit
Relative Accuracy Calculations and Results
High Flow
8/21/2024

Use	Run	Start Time	Stop Time	Steam Flow	High Flow RM	High Flow CEMS	Difference
Y	1	14:55	15:04	291	6463000	6572000	-109000
Y	2	15:06	15:12	292	6665000	6551000	114000
Y	3	15:15	15:21	291	6464000	6572000	-108000
Y	4	15:23	15:29	291	6482000	6569000	-87000
N	5	15:34	15:42	291	6092000	6564000	-472000
Y	6	15:47	15:53	291	6324000	6558000	-234000
Y	7	15:56	16:02	291	6614000	6542000	72000
Y	8	16:06	16:14	291	6666000	6506000	160000
Y	9	16:15	16:22	290	6598000	6500000	98000
Y	10	16:31	16:37	291	6598000	6532000	66000
Averages				291	6541555.556	6544666.667	-3111.111

Standard Deviation	133941.633
Confidence Coefficient	102956.469
Relative Accuracy	1.62
Bias Test Pass/Fail	PASS
Bias Adjustment Factor	1.000

Grace Consulting, Inc.

TES Filer City Station Unit 1 Inlet
Relative Accuracy Test Audit
Relative Accuracy Calculations and Results
SO2 lb/mmBtu
8/20/2024

Use	Run	Start Time	Stop Time	Steam Flow	SO2 lb/mmBtu RM	CEMS	Difference
Y	1	6:10	6:30	210	1.457	1.387	0.070
Y	2	6:48	7:08	209	1.415	1.341	0.074
Y	3	7:26	7:46	208	1.442	1.460	-0.018
N	4	8:00	8:20	208	1.404	1.300	0.104
Y	5	8:33	8:53	209	1.415	1.371	0.044
Y	6	9:03	9:23	209	1.391	1.429	-0.038
Y	7	9:35	9:55	210	1.369	1.441	-0.072
Y	8	10:09	10:29	208	1.481	1.447	0.034
Y	9	10:40	11:00	209	1.493	1.483	0.010
Y	10	11:16	11:36	209	1.559	1.457	0.102
Averages				209	1.447	1.424	0.023

Standard Deviation	0.057
Confidence Coefficient	0.044
Relative Accuracy	4.62

Grace Consulting, Inc.
Moisture Calculations (Runs 1 - 6)

Site: TES Filer City Station
Date: 08/21/24
Unit Number: 1 Outlet
Load: Mid

Run:	1	2	3
Total Impinger Content:	62.40	62.40	56.40
Volume Metered:	21.536	21.536	21.810
Meter Temperature:	43.00	43.00	54.00
Delta H:	1.700	1.700	1.700
Barometric Pressure:	29.31	29.31	29.31
Meter Correction Factor:	0.980	0.980	0.980
Volume Measured (DSCF):	21.79	21.79	21.59
Water Volume (SCF):	2.94	2.94	2.66
% Moisture in Flue Gas:	11.9	11.9	11.0

Run:	4	5	6
Total Impinger Content:	56.40	72.40	76.50
Volume Metered:	21.810	21.953	21.974
Meter Temperature:	54.00	70.00	81.00
Delta H:	1.700	1.700	1.700
Barometric Pressure:	29.31	29.31	29.31
Meter Correction Factor:	0.980	0.980	0.980
Volume Measured (DSCF):	21.59	21.08	20.67
Water Volume (SCF):	2.66	3.41	3.61
% Moisture in Flue Gas:	11.0	13.9	14.9

Grace Consulting, Inc.
Moisture Calculations (Runs 7 - 10)

Site: TES Filer City Station
Date: 08/21/24
Unit Number: 1 Outlet
Load: Mid

Run:	7	8	9
Total Impinger Content:	76.50	54.10	40.60
Volume Metered:	21.974	21.895	21.554
Meter Temperature:	81.00	85.00	81.00
Delta H:	1.700	1.700	1.700
Barometric Pressure:	29.31	29.31	29.31
Meter Correction Factor:	0.980	0.980	0.980
Volume Measured (DSCF):	20.67	20.44	20.27
Water Volume (SCF):	3.61	2.55	1.91
% Moisture in Flue Gas:	14.9	11.1	8.6

Run:	10
Total Impinger Content:	40.60
Volume Metered:	21.554
Meter Temperature:	81.00
Delta H:	1.700
Barometric Pressure:	29.31
Meter Correction Factor:	0.980
Volume Measured (DSCF):	20.27
Water Volume (SCF):	1.91
% Moisture in Flue Gas:	8.6

Grace Consulting, Inc.

Velocity Traverse Calculations and Results

Site: TES Filer City Station
Date: 08/21/24
Unit Number: 1 Outlet
Load: Mid

Run:		1	2	3
Start Time:		06:43	07:20	07:57
End Time:		07:03	07:40	08:17
Pitot Coefficient:		0.815	0.815	0.815
Barometric Pressure:	In. Hg.	29.31	29.31	29.31
Static Pressure:	In. H20	-0.67	-0.62	-0.75
Square Root of Delta-P:		1.050	1.020	1.020
Flue Temperature:	Deg. F.	166.1	162.6	164.7
Percent CO2:	%	9.80	9.80	9.80
Percent O2:	%	9.40	9.40	9.40
Percent Moisture:	%	11.9	11.9	11.0
Area of Flue:	Sq. Ft.	31.5	31.5	31.5
Absolute Flue Pressure:	In. Hg.	29.26	29.26	29.25
Molecular Weight:	Lb/Lb Mole	28.52	28.52	28.63
Velocity of Flue Gas:	FPS	63.36	61.38	61.38
Volume of Flue Gas:	ACFM	119759	116005	116001
Volume of Flue Gas:	DSCFM	86981	84738	85285
Volume of Flue Gas:	KSCFM	98.73	96.18	95.83
Volume of Flue Gas:	KSCFH	5923.78	5771.05	5749.57
Volume of Flue Gas:	SCFH	5924000	5771000	5750000

Grace Consulting, Inc.

Velocity Traverse Calculations and Results

Site: TES Filer City Station
Date: 08/21/24
Unit Number: 1 Outlet
Load: Mid

Run:		4	5	6
Start Time:		08:33	09:10	10:00
End Time:		08:53	09:30	10:20
Pitot Coefficient:		0.815	0.815	0.815
Barometric Pressure:	In. Hg.	29.31	29.31	29.31
Static Pressure:	In. H20	-0.70	-0.54	-0.51
Square Root of Delta-P:		1.028	1.041	1.033
Flue Temperature:	Deg. F.	164.6	164.3	163.8
Percent CO2:	%	9.90	9.90	9.90
Percent O2:	%	9.30	9.30	9.30
Percent Moisture:	%	11.0	13.9	14.9
Area of Flue:	Sq. Ft.	31.5	31.5	31.5
Absolute Flue Pressure:	In. Hg.	29.26	29.27	29.27
Molecular Weight:	Lb/Lb Mole	28.64	28.29	28.17
Velocity of Flue Gas:	FPS	61.84	62.97	62.59
Volume of Flue Gas:	ACFM	116872	119020	118304
Volume of Flue Gas:	DSCFM	85951	84753	83338
Volume of Flue Gas:	KSCFM	96.57	98.44	97.93
Volume of Flue Gas:	KSCFH	5794.42	5906.14	5875.75
Volume of Flue Gas:	SCFH	5794000	5906000	5876000

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Velocity Traverse Calculations and Results

Site: TES Filer City Station
Date: 08/21/24
Unit Number: 1 Outlet
Load: Mid

Run:		7	8	9
Start Time:		10:37	11:11	12:52
End Time:		10:57	11:31	13:12
Pitot Coefficient:		0.815	0.815	0.815
Barometric Pressure:	In. Hg.	29.31	29.31	29.31
Static Pressure:	In. H20	-0.50	-0.92	-0.50
Square Root of Delta-P:		1.045	1.082	1.077
Flue Temperature:	Deg. F.	168.4	172.9	174.2
Percent CO2:	%	10.10	9.90	9.50
Percent O2:	%	9.30	9.70	9.80
Percent Moisture:	%	14.9	11.1	8.6
Area of Flue:	Sq. Ft.	31.5	31.5	31.5
Absolute Flue Pressure:	In. Hg.	29.27	29.24	29.27
Molecular Weight:	Lb/Lb Mole	28.20	28.64	28.89
Velocity of Flue Gas:	FPS	63.52	65.53	64.98
Volume of Flue Gas:	ACFM	120059	123855	122821
Volume of Flue Gas:	DSCFM	83957	89741	91403
Volume of Flue Gas:	KSCFM	98.66	100.95	100.00
Volume of Flue Gas:	KSCFH	5919.43	6056.75	6000.21
Volume of Flue Gas:	SCFH	5919000	6057000	6000000

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Velocity Traverse Calculations and Results

Site:	TES Filer City Station
Date:	08/21/24
Unit Number:	1 Outlet
Load:	Mid

Run:		10
Start Time:		13:26
End Time:		13:46
Pitot Coefficient:		0.815
Barometric Pressure:	In. Hg.	29.31
Static Pressure:	In. H20	-0.55
Square Root of Delta-P:		1.064
Flue Temperature:	Deg. F.	174.3
Percent CO2:	%	9.70
Percent O2:	%	9.90
Percent Moisture:	%	8.6
Area of Flue:	Sq. Ft.	31.5
Absolute Flue Pressure:	In. Hg.	29.27
Molecular Weight:	Lb/Lb Mole	28.92
Velocity of Flue Gas:	FPS	64.17
Volume of Flue Gas:	ACFM	121287
Volume of Flue Gas:	DSCFM	90236
Volume of Flue Gas:	KSCFM	98.73
Volume of Flue Gas:	KSCFH	5923.58
Volume of Flue Gas:	SCFH	5924000

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Sampling System Bias Check and Measured Value Correction

TES Filer City Station - Unit 1 Outlet Gas RATA

Date: 8/21/2024
Pollutant: NOx
Monitor Span: 504.20

Run Number	Average Measured Value	Initial Zero Gas Bias	Final Zero Gas Bias	Zero Gas Drift	Initial Upscale Gas Bias	Final Upscale Gas Bias	Upscale Gas Drift	Calibration Gas	Percent Moisture	Corrected Value, Dry Basis	Corrected Value, Wet Basis
1	194.5	0.23	2.22	0.39	228.95	227.54	-0.28	232.00	11.9	197.5	174.0
2	197.1	2.22	2.21	0.00	227.54	227.63	0.02	232.00	11.9	200.6	176.7
3	200.0	2.21	2.24	0.01	227.63	228.43	0.16	232.00	11.0	203.2	180.8
4	206.6	2.24	2.66	0.08	228.43	230.61	0.43	232.00	11.0	208.6	185.7
5	204.3	2.66	3.12	0.09	230.61	230.32	-0.06	232.00	13.9	205.3	176.8
6	197.8	3.12	2.65	-0.09	230.32	227.24	-0.61	232.00	14.9	200.2	170.4
7	200.8	2.65	2.76	0.02	227.24	227.63	0.08	232.00	14.9	204.5	174.0
8	205.7	2.76	2.55	-0.04	227.63	227.65	0.00	232.00	11.1	209.4	186.2
9	205.7	2.55	3.12	0.11	227.65	226.78	-0.17	232.00	8.6	209.8	191.8
10	197.6	3.12	3.05	-0.01	226.78	227.65	0.17	232.00	8.6	201.3	184.0

$$C_{gas} = (C_{avg} - C_o) * C_{ma} / (C_m - C_o) \qquad \text{Eq. 6C-1}$$

where:

Cgas = Effluent gas concentration, dry basis, ppm
Cavg = Average gas concentration indicated by gas analyzer, dry basis, ppm
Co = Average of initial and final system calibration bias check responses for the zero gas, ppm
Cm = Average of initial and final system calibration bias check responses for the upscale calibration gas, ppm
Cma = Actual concentration of the upscale calibration gas, ppm

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Sampling System Bias Check and Measured Value Correction

TES Filer City Station - Unit 1 Outlet Gas RATA

Date: 8/21/2024
Pollutant: SO2
Monitor Span: 228.10

Run Number	Average Measured Value	Initial Zero Gas Bias	Final Zero Gas Bias	Zero Gas Drift	Initial Upscale Gas Bias	Final Upscale Gas Bias	Upscale Gas Drift	Calibration Gas	Percent Moisture	Corrected Value, Dry Basis	Corrected Value, Wet Basis
1	59.9	1.25	2.16	0.40	99.84	98.31	-0.67	100.00	11.9	59.8	52.7
2	59.4	2.16	2.24	0.04	98.31	98.62	0.14	100.00	11.9	59.4	52.3
3	46.5	2.24	3.33	0.48	98.62	99.24	0.27	100.00	11.0	45.5	40.5
4	56.0	3.33	3.32	0.00	99.24	98.43	-0.36	100.00	11.0	55.2	49.1
5	46.5	3.32	3.22	-0.04	98.43	98.36	-0.03	100.00	13.9	45.4	39.1
6	15.7	3.22	2.65	-0.25	98.36	97.34	-0.45	100.00	14.9	13.4	11.4
7	32.6	2.65	3.21	0.25	97.34	96.72	-0.27	100.00	14.9	31.5	26.8
8	64.0	3.21	3.21	0.00	96.72	97.43	0.31	100.00	11.1	64.8	57.6
9	44.0	3.21	4.09	0.39	97.43	97.49	0.03	100.00	8.6	43.0	39.3
10	54.7	4.09	3.87	-0.10	97.49	98.76	0.56	100.00	8.6	53.9	49.3

$$C_{gas} = (C_{avg} - C_o) * C_{ma} / (C_m - C_o) \qquad \text{Eq. 6C-1}$$

where:

Cgas = Effluent gas concentration, dry basis, ppm
Cavg = Average gas concentration indicated by gas analyzer, dry basis, ppm
Co = Average of initial and final system calibration bias check responses for the zero gas, ppm
Cm = Average of initial and final system calibration bias check responses for the upscale calibration gas, ppm
Cma = Actual concentration of the upscale calibration gas, ppm

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Sampling System Bias Check and Measured Value Correction

TES Filer City Station - Unit 1 Outlet Gas RATA

Date: 8/21/2024
Pollutant: CO
Monitor Span: 229.00

Run Number	Average Measured Value	Initial Zero Gas Bias	Final Zero Gas Bias	Zero Gas Drift	Initial Upscale Gas Bias	Final Upscale Gas Bias	Upscale Gas Drift	Calibration Gas	Percent Moisture	Corrected Value, Dry Basis	Corrected Value, Wet Basis
1	38.4	0.20	1.09	0.39	99.85	99.43	-0.18	99.32	11.9	37.9	33.4
2	38.4	1.09	0.84	-0.11	99.43	99.44	0.00	99.32	11.9	37.8	33.3
3	36.4	0.84	0.38	-0.20	99.44	98.76	-0.30	99.32	11.0	36.1	32.1
4	35.1	0.38	1.14	0.33	98.76	97.54	-0.53	99.32	11.0	35.0	31.2
5	36.6	1.14	0.72	-0.18	97.54	97.23	-0.14	99.32	13.9	36.7	31.6
6	35.7	0.72	0.57	-0.07	97.23	99.38	0.94	99.32	14.9	35.7	30.4
7	37.3	0.57	0.52	-0.02	99.38	97.69	-0.74	99.32	14.9	37.3	31.7
8	44.0	0.52	0.55	0.01	97.69	99.62	0.84	99.32	11.1	44.0	39.1
9	42.2	0.55	0.42	-0.06	99.62	97.49	-0.93	99.32	8.6	42.2	38.6
10	38.7	0.42	0.26	-0.07	97.49	97.94	0.20	99.32	8.6	39.1	35.7

Cgas = (Cavg - Co) * Cma / (Cm - Co) Eq. 6C-1

where:
Cgas = Effluent gas concentration, dry basis, ppm
Cavg = Average gas concentration indicated by gas analyzer, dry basis, ppm
Co = Average of initial and final system calibration bias check responses for the zero gas, ppm
Cm = Average of initial and final system calibration bias check responses for the upscale calibration gas, ppm
Cma = Actual concentration of the upscale calibration gas, ppm

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Sampling System Bias Check and Measured Value Correction

TES Filer City Station - Unit 1 Outlet Gas RATA and Mid Load Flow RATA Diluent

Date: 8/21/2024
Pollutant: CO2
Monitor Span: 20.02

Run Number	Average Measured Value	Initial Zero Gas Bias	Final Zero Gas Bias	Zero Gas Drift	Initial Upscale Gas Bias	Final Upscale Gas Bias	Upscale Gas Drift	Calibration Gas	Percent Moisture	Corrected Value, Dry Basis	Corrected Value, Wet Basis
1	9.9	0.41	0.40	-0.05	11.15	11.10	-0.25	11.03	11.9	9.8	8.6
2	9.9	0.40	0.41	0.05	11.10	11.13	0.15	11.03	11.9	9.8	8.6
3	9.9	0.41	0.42	0.05	11.13	11.04	-0.45	11.03	11.0	9.8	8.7
4	10.0	0.42	0.44	0.10	11.04	11.09	0.25	11.03	11.0	9.9	8.8
5	10.0	0.44	0.42	-0.10	11.09	11.13	0.20	11.03	13.9	9.9	8.5
6	10.0	0.42	0.37	-0.25	11.13	11.14	0.05	11.03	14.9	9.9	8.4
7	10.2	0.37	0.41	0.20	11.14	11.08	-0.30	11.03	14.9	10.1	8.6
8	10.0	0.41	0.46	0.25	11.08	11.09	0.05	11.03	11.1	9.9	8.8
9	9.5	0.13	0.39	1.30	10.78	11.09	1.55	11.03	8.6	9.5	8.7
10	9.7	0.39	0.39	0.00	11.09	10.82	-1.35	11.03	8.6	9.7	8.9

$$Cgas = (Cavg - Co) * Cma / (Cm - Co) \qquad \text{Eq. 6C-1}$$

where:

Cgas = Effluent gas concentration, dry basis, percent
Cavg = Average gas concentration indicated by gas analyzer, dry basis, percent
Co = Average of initial and final system calibration bias check responses for the zero gas, percent
Cm = Average of initial and final system calibration bias check responses for the upscale calibration gas, percent
Cma = Actual concentration of the upscale calibration gas, percent

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Sampling System Bias Check and Measured Value Correction

TES Filer City Station - Unit 1 Outlet Mid Load Flow RATA Diluent

Date: 8/21/2024
Pollutant: O2
Monitor Span: 22.12

Run Number	Average Measured Value	Initial Zero Gas Bias	Final Zero Gas Bias	Zero Gas Drift	Initial Upscale Gas Bias	Final Upscale Gas Bias	Upscale Gas Drift	Calibration Gas	Percent Moisture	Corrected Value, Dry Basis	Corrected Percent, Wet Basis
1	9.4	0.04	0.00	-0.18	11.09	10.93	-0.72	11.01	11.9	9.4	8.3
2	9.3	0.00	0.24	1.08	10.93	10.90	-0.14	11.01	11.9	9.4	8.3
3	9.3	0.24	0.05	-0.86	10.90	10.93	0.14	11.01	11.0	9.4	8.4
4	9.3	0.05	0.06	0.05	10.93	10.99	0.27	11.01	11.0	9.3	8.3
5	9.3	0.06	0.07	0.05	10.99	10.94	-0.23	11.01	13.9	9.3	8.0
6	9.2	0.07	0.06	-0.05	10.94	10.90	-0.18	11.01	14.9	9.3	7.9
7	9.2	0.06	0.29	1.04	10.90	10.87	-0.14	11.01	14.9	9.3	7.9
8	9.6	0.29	0.02	-1.22	10.87	10.86	-0.05	11.01	11.1	9.7	8.6
9	9.7	0.02	0.04	0.09	10.86	10.82	-0.18	11.01	8.6	9.8	9.0
10	9.7	0.04	0.03	-0.05	10.82	10.81	-0.05	11.01	8.6	9.9	9.0

Cgas = (Cavg - Co) * Cma / (Cm - Co) Eq. 6C-1

where:
Cgas = Effluent gas concentration, dry basis, percent
Cavg = Average gas concentration indicated by gas analyzer, dry basis, percent
Co = Average of initial and final system calibration bias check responses for the zero gas, percent
Cm = Average of initial and final system calibration bias check responses for the upscale calibration gas, percent
Cma = Actual concentration of the upscale calibration gas, percent

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Moisture Calculations (Runs 1 - 10)

Site:	TES Filer City Station
Date:	08/21/24
Unit Number:	1 Outlet
Load:	High

Run:	1-6	7-10
Total Impinger Content:	44.00	69.40
Volume Metered:	21.929	21.837
Meter Temperature:	75.00	75.00
Delta H:	1.700	1.700
Barometric Pressure:	29.31	29.31
Meter Correction Factor:	0.980	0.980
Volume Measured (DSCF):	20.86	20.77
Water Volume (SCF):	2.07	3.27
% Moisture in Flue Gas:	9.0	13.6

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Velocity Traverse Calculations and Results

Site: TES Filer City Station
Date: 08/21/24
Unit Number: 1 Outlet
Load: High

Run:		1	2	3
Start Time:		14:55	15:06	15:15
End Time:		15:04	15:12	15:21
Pitot Coefficient:		0.815	0.815	0.815
Barometric Pressure:	In. Hg.	29.31	29.31	29.31
Static Pressure:	In. H20	-0.51	-0.57	-0.56
Square Root of Delta-P:		1.164	1.200	1.164
Flue Temperature:	Deg. F.	173.5	173.2	173.3
Percent CO2:	%	12.20	12.20	12.20
Percent O2:	%	6.50	6.40	6.50
Percent Moisture:	%	9.0	9.0	9.0
Area of Flue:	Sq. Ft.	31.5	31.5	31.5
Absolute Flue Pressure:	In. Hg.	29.27	29.27	29.27
Molecular Weight:	Lb/Lb Mole	29.11	29.11	29.11
Velocity of Flue Gas:	FPS	69.92	72.08	69.92
Volume of Flue Gas:	ACFM	132156	136230	132144
Volume of Flue Gas:	DSCFM	98026	101080	98035
Volume of Flue Gas:	KSCFM	107.72	111.08	107.73
Volume of Flue Gas:	KSCFH	6463.25	6664.64	6463.86
Volume of Flue Gas:	SCFH	6463000	6665000	6464000

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Velocity Traverse Calculations and Results

Site: TES Filer City Station
Date: 08/21/24
Unit Number: 1 Outlet
Load: High

Run:		4	5	6
Start Time:		15:23	15:34	15:47
End Time:		15:29	15:42	15:53
Pitot Coefficient:		0.815	0.815	0.815
Barometric Pressure:	In. Hg.	29.31	29.31	29.31
Static Pressure:	In. H20	-0.64	-0.55	-0.52
Square Root of Delta-P:		1.168	1.098	1.138
Flue Temperature:	Deg. F.	173.9	174.8	172.8
Percent CO2:	%	12.20	12.10	12.10
Percent O2:	%	6.50	6.50	6.50
Percent Moisture:	%	9.0	9.0	9.0
Area of Flue:	Sq. Ft.	31.5	31.5	31.5
Absolute Flue Pressure:	In. Hg.	29.26	29.27	29.27
Molecular Weight:	Lb/Lb Mole	29.11	29.10	29.10
Velocity of Flue Gas:	FPS	70.20	66.05	68.34
Volume of Flue Gas:	ACFM	132674	124828	129167
Volume of Flue Gas:	DSCFM	98316	92392	95912
Volume of Flue Gas:	KSCFM	108.04	101.53	105.40
Volume of Flue Gas:	KSCFH	6482.35	6091.75	6323.88
Volume of Flue Gas:	SCFH	6482000	6092000	6324000

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Velocity Traverse Calculations and Results

Site: TES Filer City Station
Date: 08/21/24
Unit Number: 1 Outlet
Load: High

Run:		7	8	9
Start Time:		15:56	16:06	16:15
End Time:		16:02	16:14	16:22
Pitot Coefficient:		0.815	0.815	0.815
Barometric Pressure:	In. Hg.	29.31	29.31	29.31
Static Pressure:	In. H20	-0.50	-0.52	-0.87
Square Root of Delta-P:		1.179	1.186	1.175
Flue Temperature:	Deg. F.	173.2	170.4	171.1
Percent CO2:	%	12.10	12.20	12.20
Percent O2:	%	6.50	6.50	6.40
Percent Moisture:	%	13.6	13.6	13.6
Area of Flue:	Sq. Ft.	31.5	31.5	31.5
Absolute Flue Pressure:	In. Hg.	29.27	29.27	29.25
Molecular Weight:	Lb/Lb Mole	28.54	28.55	28.55
Velocity of Flue Gas:	FPS	71.52	71.77	71.18
Volume of Flue Gas:	ACFM	135169	135641	134525
Volume of Flue Gas:	DSCFM	95240	95992	95013
Volume of Flue Gas:	KSCFM	110.23	111.10	109.97
Volume of Flue Gas:	KSCFH	6613.88	6666.12	6598.13
Volume of Flue Gas:	SCFH	6614000	6666000	6598000

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Velocity Traverse Calculations and Results

Site:	TES Filer City Station
Date:	08/21/24
Unit Number:	1 Outlet
Load:	High

Run:		10
Start Time:		16:31
End Time:		16:37
Pitot Coefficient:		0.815
Barometric Pressure:	In. Hg.	29.31
Static Pressure:	In. H20	-0.87
Square Root of Delta-P:		1.175
Flue Temperature:	Deg. F.	171.3
Percent CO2:	%	12.10
Percent O2:	%	6.50
Percent Moisture:	%	13.6
Area of Flue:	Sq. Ft.	31.5
Absolute Flue Pressure:	In. Hg.	29.25
Molecular Weight:	Lb/Lb Mole	28.54
Velocity of Flue Gas:	FPS	71.20
Volume of Flue Gas:	ACFM	134571
Volume of Flue Gas:	DSCFM	95015
Volume of Flue Gas:	KSCFM	109.97
Volume of Flue Gas:	KSCFH	6598.28
Volume of Flue Gas:	SCFH	6598000

Grace Consulting, Inc.

Sampling System Bias Check and Measured Value Correction

TES Filer City Station - Unit 1 Outlet High Load Flow RATA Diluent

Date: 8/21/2024
Pollutant: CO2
Monitor Span: 20.02

Run Number	Average Measured Value	Initial Zero Gas Bias	Final Zero Gas Bias	Zero Gas Drift	Initial Upscale Gas Bias	Final Upscale Gas Bias	Upscale Gas Drift	Calibration Gas	Corrected Value, Dry Basis
1	12.0	0.16	0.11	-0.25	10.88	10.83	-0.25	11.03	12.2
2	12.0	0.16	0.11	-0.25	10.88	10.83	-0.25	11.03	12.2
3	12.0	0.16	0.11	-0.25	10.88	10.83	-0.25	11.03	12.2
4	12.0	0.16	0.11	-0.25	10.88	10.83	-0.25	11.03	12.2
5	11.9	0.16	0.11	-0.25	10.88	10.83	-0.25	11.03	12.1
6	11.9	0.16	0.11	-0.25	10.88	10.83	-0.25	11.03	12.1
7	11.9	0.16	0.11	-0.25	10.88	10.83	-0.25	11.03	12.1
8	12.0	0.16	0.11	-0.25	10.88	10.83	-0.25	11.03	12.2
9	12.0	0.16	0.11	-0.25	10.88	10.83	-0.25	11.03	12.2
10	11.9	0.16	0.11	-0.25	10.88	10.83	-0.25	11.03	12.1

$$C_{gas} = (C_{avg} - C_o) * C_{ma} / (C_m - C_o) \qquad \text{Eq. 6C-1}$$

where:

Cgas = Effluent gas concentration, dry basis, percent
Cavg = Average gas concentration indicated by gas analyzer, dry basis, percent
Co = Average of initial and final system calibration bias check responses for the zero gas, percent
Cm = Average of initial and final system calibration bias check responses for the upscale calibration gas, percent
Cma = Actual concentration of the upscale calibration gas, percent

Grace Consulting, Inc.

Sampling System Bias Check and Measured Value Correction

TES Filer City Station - Unit 1 Outlet High Load Flow RATA Diluent

Date: 8/21/2024
Pollutant: O2
Monitor Span: 22.12

Run Number	Average Measured Value	Initial Zero Gas Bias	Final Zero Gas Bias	Zero Gas Drift	Initial Upscale Gas Bias	Final Upscale Gas Bias	Upscale Gas Drift	Calibration Gas	Corrected Value, Dry Basis
1	6.6	0.17	0.19	0.09	11.13	11.04	-0.41	11.01	6.5
2	6.5	0.17	0.19	0.09	11.13	11.04	-0.41	11.01	6.4
3	6.6	0.17	0.19	0.09	11.13	11.04	-0.41	11.01	6.5
4	6.6	0.17	0.19	0.09	11.13	11.04	-0.41	11.01	6.5
5	6.6	0.17	0.19	0.09	11.13	11.04	-0.41	11.01	6.5
6	6.6	0.17	0.19	0.09	11.13	11.04	-0.41	11.01	6.5
7	6.6	0.17	0.19	0.09	11.13	11.04	-0.41	11.01	6.5
8	6.6	0.17	0.19	0.09	11.13	11.04	-0.41	11.01	6.5
9	6.5	0.17	0.19	0.09	11.13	11.04	-0.41	11.01	6.4
10	6.6	0.17	0.19	0.09	11.13	11.04	-0.41	11.01	6.5

$$C_{gas} = (C_{avg} - C_o) * C_{ma} / (C_m - C_o) \qquad \text{Eq. 6C-1}$$

where:

Cgas = Effluent gas concentration, dry basis, percent
Cavg = Average gas concentration indicated by gas analyzer, dry basis, percent
Co = Average of initial and final system calibration bias check responses for the zero gas, percent
Cm = Average of initial and final system calibration bias check responses for the upscale calibration gas, percent
Cma = Actual concentration of the upscale calibration gas, percent

Grace Consulting, Inc.

Sampling System Bias Check and Measured Value Correction

TES Filer City Station - Unit 1 Inlet Gas RATA

Date: 8/20/2024
Pollutant: SO2
Monitor Span: 890.90

Run Number	Average Measured Value	Initial Zero Gas Bias	Final Zero Gas Bias	Zero Gas Drift	Initial Upscale Gas Bias	Final Upscale Gas Bias	Upscale Gas Drift	Calibration Gas	Corrected Value, Dry Basis
1	565.9	2.17	3.12	0.11	497.54	492.43	-0.57	500.80	572.9
2	569.1	3.12	2.85	-0.03	492.43	494.65	0.25	500.80	577.9
3	559.5	2.85	3.13	0.03	494.65	497.54	0.32	500.80	565.2
4	552.7	3.13	3.44	0.03	497.54	495.43	-0.24	500.80	557.9
5	552.8	3.44	4.21	0.09	495.43	499.84	0.50	500.80	556.7
6	559.5	4.21	4.47	0.03	499.84	496.78	-0.34	500.80	562.8
7	553.0	4.47	3.37	-0.12	496.78	495.15	-0.18	500.80	558.8
8	600.2	3.37	4.05	0.08	495.15	500.12	0.56	500.80	604.8
9	600.6	4.05	3.17	-0.10	500.12	488.32	-1.32	500.80	609.4
10	614.4	3.17	5.69	0.28	488.32	489.64	0.15	500.80	630.4

$$C_{gas} = (C_{avg} - C_o) * C_{ma} / (C_m - C_o) \qquad \text{Eq. 6C-1}$$

where:

Cgas = Effluent gas concentration, dry basis, ppm
Cavg = Average gas concentration indicated by gas analyzer, dry basis, ppm
Co = Average of initial and final system calibration bias check responses for the zero gas, ppm
Cm = Average of initial and final system calibration bias check responses for the upscale calibration gas, ppm
Cma = Actual concentration of the upscale calibration gas, ppm

Grace Consulting, Inc.

Sampling System Bias Check and Measured Value Correction

TES Filer City Station - Unit 1 Inlet Gas RATA

Date: 8/20/2024
Pollutant: CO2
Monitor Span: 20.02

Run Number	Average Measured Value	Initial Zero Gas Bias	Final Zero Gas Bias	Zero Gas Drift	Initial Upscale Gas Bias	Final Upscale Gas Bias	Upscale Gas Drift	Calibration Gas	Corrected Value, Dry Basis
1	10.8	0.21	0.21	0.00	11.16	11.29	0.65	11.03	10.6
2	11.2	0.21	0.23	0.10	11.29	11.22	-0.35	11.03	11.0
3	10.7	0.23	0.22	-0.05	11.22	11.24	0.10	11.03	10.5
4	10.9	0.22	0.23	0.05	11.24	11.19	-0.25	11.03	10.7
5	10.7	0.23	0.22	-0.05	11.19	11.10	-0.45	11.03	10.6
6	11.0	0.22	0.21	-0.05	11.10	11.16	0.30	11.03	10.9
7	11.0	0.21	0.22	0.05	11.16	10.98	-0.90	11.03	11.0
8	11.0	0.22	0.23	0.05	10.98	11.05	0.35	11.03	11.0
9	11.1	0.23	0.19	-0.20	11.05	11.17	0.60	11.03	11.0
10	11.0	0.19	0.22	0.15	11.17	11.18	0.05	11.03	10.9

$$Cgas = (Cavg - Co) * Cma / (Cm - Co) \qquad \text{Eq. 6C-1}$$

where:

Cgas = Effluent gas concentration, dry basis, percent
Cavg = Average gas concentration indicated by gas analyzer, dry basis, percent
Co = Average of initial and final system calibration bias check responses for the zero gas, percent
Cm = Average of initial and final system calibration bias check responses for the upscale calibration gas, percent
Cma = Actual concentration of the upscale calibration gas, percent

METHODS AND DISCUSSION

Test Methods used at the TES Filer City Generating Station on Unit 1 Outlet and Inlet

Methods 2 and 4

GCI performed 10 Method 2 test runs on the Normal (Mid) and Off Load/2nd Normal (High) to determine the KSCFH of flue gas exiting the stack for a Relative Accuracy Test Audit of the in-stack flow monitor. A 12-point traverse was tested for each Method 2 test run.

One moisture test was performed for each hour of Method 2, 3A, 6C, 7E, and 10 testing on the Normal (Mid) and Off load (High). The Outlet Gas RATA and Mid Load Flow RATA were performed concurrently, with a single set of moisture values used for both RATAs. The diluent gas measurements collected during the Outlet Gas RATA were used to determine exhaust gas molecular weights during the Mid Load Flow RATA. Also, note that there are not separate CEMS average data reports for the Mid Load Flow RATA; the flow data is presented on the CEMS average data reports titled as "1-Minute Outlet Gas RATA Report" in the Plant Data section of the appendices.

Method 3A

CO_2 and O_2 concentrations were determined with 10 Method 3A test runs. GCI used a monitor range of 0-20.02% for CO_2 and a monitor range of 0-22.12% for O_2 on the Outlet and Inlet.

Method 6C

SO_2 emissions were determined with 10 Method 6C test runs on the Normal load. GCI used a monitor span of 228.1 ppm for SO_2 on the Outlet and 890.9 ppm for SO_2 on the Inlet.

Method 7E

NO_x emissions were determined with 10 Method 7E test runs on the Normal load. GCI used a monitor span of 504.2 ppm for NO_x.

Method 10

CO emissions were determined with 10 Method 10 test runs on the Normal load. GCI used a monitor span of 229.0 ppm for CO.

All gaseous sampling was performed at 16.7, 50.0 and 83.3 percent of the measurement line.

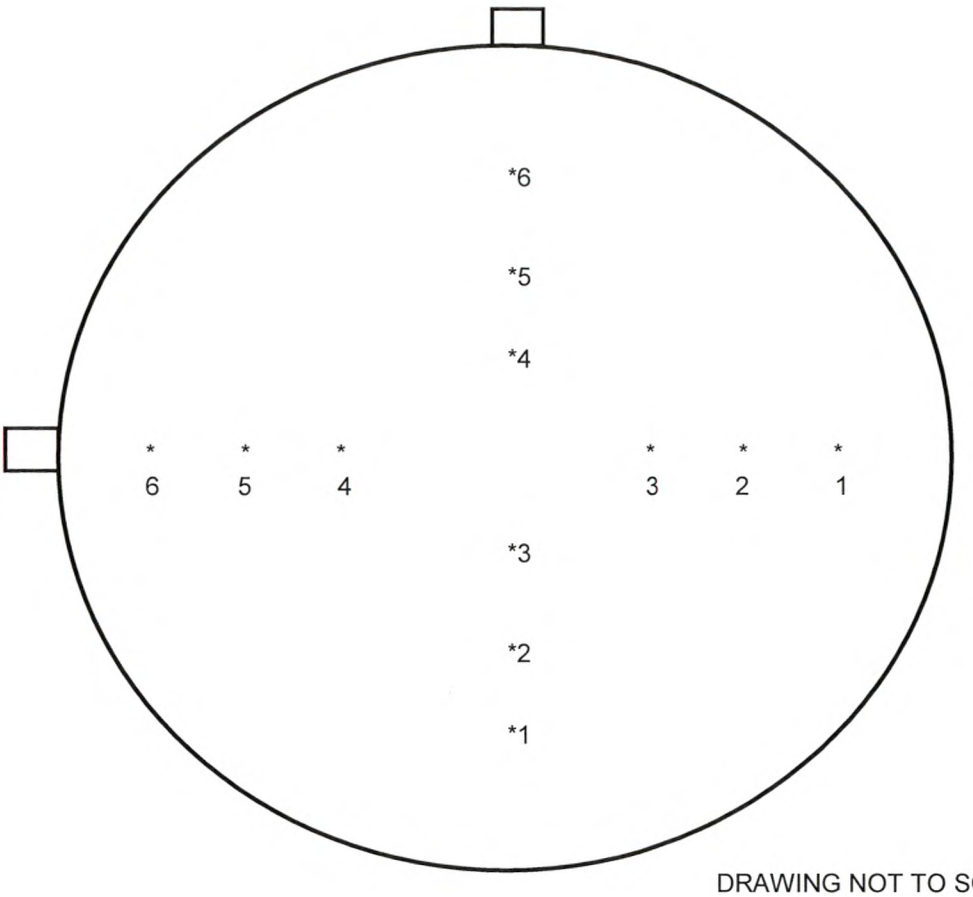
Method 19

Method 19, Equation 19-6 or 19-7, as applicable were used to calculate lb/mmBtu emission rates in conjunction with the pollutant and diluent measured concentrations and the run specific Fc factors as reflected in the "Plant Data" appended information.

Discussion

Environmental conditions did not adversely affect the test results.

Testing was completed by following GCI's Internal Site Specific Test Plan #24-106 with no deviations.



DRAWING NOT TO SCALE

POINTS	DISTANCE FROM INSIDE WALL
1)	72.652 "
2)	64.901 "
3)	53.501 "
4)	22.495 "
5)	11.095 "
6)	3.344 "

STACK AREA = 31.5 sq ft
STACK DIAMETER = 6.33 '

TES Filer City Station
Unit 1

Grace Consulting, Inc.
Emissions Testing Services