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Appendix A.7

Relative Accuracy Calculations/Results

RELATIVE ACCURACY TEST AUDIT DETERMINATION
EPA CFR 40, PARTS 60 & 75
SV POWER
TURBINE #1

O₂, % volume dry

<u>Run #</u>	<u>Date</u>	<u>Time</u>	<u>RM</u>	<u>CEMS</u>	<u>Difference</u>	<u>n</u>	<u>t_{0.975}</u>						
Run 1	7/16/24	0829-0910	13.1	13.0	0.1	1	100.00						
Run 2	7/16/24	0938-1008	13.1	13.0	0.1	2	12.706						
Run 3	7/16/24	1027-1057	13.1	13.0	0.1	3	4.303						
Run 4	7/16/24	1123-1153	13.1	13.0	0.1	4	3.182						
Run 5	7/16/24	1203-1224	13.1	13.0	0.1	5	2.776						
Run 6	7/16/24	1240-1301	13.0	13.0	0.0	6	2.571						
Run 7	7/16/24	1307-1328	13.1	13.0	0.1	7	2.447						
Run 8	7/16/24	1338-1359	13.1	13.0	0.1	8	2.365						
Run 9	7/16/24	1406-1427	13.1	13.0	0.1	9	2.306						
Run 10	7/16/24	1439-1500	13.1	13.0	0.1	10	2.262						
AVERAGES:			13.1	13.0	0.1	<i><u>choose only one of the two available criteria</u></i>							
STANDARD DEVIATION:					0.012	<table><tr><th><u>Criteria</u></th><th><u>Result</u></th></tr><tr><td>≤10</td><td>0.5</td></tr><tr><td>≤1</td><td>0.1</td></tr></table>		<u>Criteria</u>	<u>Result</u>	≤10	0.5	≤1	0.1
<u>Criteria</u>	<u>Result</u>												
≤10	0.5												
≤1	0.1												
CONFIDENCE COEFFICIENT:					0.009								
RELATIVE ACCURACY (BASED ON REFERENCE METHOD), %:													
RELATIVE ACCURACY (BASED ON DIFFERENCE), %:													

Note: The relative accuracy (RA) of the CEMS shall not exceed 10.0 percent. The relative accuracy test results are also acceptable if the difference between the mean value of the CEMS O₂ monitor measurements and the corresponding reference method (RM) measurement mean value does not exceed 1.0 percent O₂.

RELATIVE ACCURACY TEST AUDIT DETERMINATION
EPA CFR 40, PART 60, APPENDIX B, PS 4/4A
SV POWER
TURBINE #1

CO, ppm volume dry

<u>Run #</u>	<u>Date</u>	<u>Time</u>	<u>RM</u>	<u>CEMS</u>	<u>Difference</u>	<u>n</u>	<u>t_{0.975}</u>						
Run 1	7/16/24	0829-0910	1.1	1.1	0.0	1	100.00						
Run 2	7/16/24	0938-1008	1.2	1.0	0.2	2	12.706						
Run 3	7/16/24	1027-1057	1.2	1.1	0.1	3	4.303						
Run 4	7/16/24	1123-1153	1.2	1.1	0.1	4	3.182						
Run 5	7/16/24	1203-1224	1.2	1.1	0.1	5	2.776						
Run 6	7/16/24	1240-1301	1.2	1.1	0.1	6	2.571						
Run 7	7/16/24	1307-1328	1.2	1.1	0.1	7	2.447						
Run 8	7/16/24	1338-1359	1.2	1.1	0.1	8	2.365						
Run 9	7/16/24	1406-1427	1.2	1.1	0.1	9	2.306						
Run 10	7/16/24	1439-1500	1.2	1.1	0.1	10	2.262						
AVERAGES:			1.2	1.1	0.1	<i><u>choose only one of the</u></i>							
EMISSION LIMIT:					#N/A	<i><u>three available criteria</u></i>							
STANDARD DEVIATION:					0.024	<table><tr><th><u>Criteria</u></th><th><u>Result</u></th></tr><tr><td>≤10</td><td>9.3</td></tr><tr><td>≤5</td><td>0.1</td></tr></table>		<u>Criteria</u>	<u>Result</u>	≤10	9.3	≤5	0.1
<u>Criteria</u>	<u>Result</u>												
≤10	9.3												
≤5	0.1												
CONFIDENCE COEFFICIENT:					0.018								
RELATIVE ACCURACY (BASED ON REFERENCE METHOD), %:													
RELATIVE ACCURACY (BASED ON DIFFERENCE), PPM: <u>- 4A only -</u>													

Note: Performance Specification (PS) 4 is to be used on sources operating above 200 ppm analyzer span and PS 4A on sources operating below 200 ppm analyzer span. The relative accuracy (RA) of the CEMS must be no greater than 10 percent when the average reference method (RM) value is used to calculate RA, 5 percent when the applicable standard (AS) is used to calculate RA, or within 5 ppm (to be used with PS 4A only) when the RA is calculated as the absolute average difference between the RM and CEMS plus the 2.5 percent confidence coefficient.

RELATIVE ACCURACY TEST AUDIT DETERMINATION
EPA CFR 40, PART 60, APPENDIX B, PS 4/4A
SV POWER
TURBINE #1

CO, ppm @ 15% O₂

<u>Run #</u>	<u>Date</u>	<u>Time</u>	<u>RM</u>	<u>CEMS</u>	<u>Difference</u>	<u>n</u>	<u>t_{0.975}</u>						
Run 1	7/16/24	0829-0910	0.87	0.81	0.06	1	100.00						
Run 2	7/16/24	0938-1008	0.89	0.77	0.12	2	12.706						
Run 3	7/16/24	1027-1057	0.88	0.79	0.09	3	4.303						
Run 4	7/16/24	1123-1153	0.89	0.82	0.07	4	3.182						
Run 5	7/16/24	1203-1224	0.90	0.82	0.08	5	2.776						
Run 6	7/16/24	1240-1301	0.91	0.82	0.09	6	2.571						
Run 7	7/16/24	1307-1328	0.90	0.82	0.08	7	2.447						
Run 8	7/16/24	1338-1359	0.91	0.82	0.09	8	2.365						
Run 9	7/16/24	1406-1427	0.91	0.82	0.09	9	2.306						
Run 10	7/16/24	1439-1500	0.92	0.82	0.10	10	2.262						
AVERAGES:			0.90	0.82	0.08	<i><u>choose only one of the</u></i>							
EMISSION LIMIT:					4.0	<i><u>three available criteria</u></i>							
STANDARD DEVIATION:					0.014	<table><tr><th><u>Criteria</u></th><th><u>Result</u></th></tr><tr><td>≤5</td><td>2.3</td></tr><tr><td>≤5</td><td>0.1</td></tr></table>		<u>Criteria</u>	<u>Result</u>	≤5	2.3	≤5	0.1
<u>Criteria</u>	<u>Result</u>												
≤5	2.3												
≤5	0.1												
CONFIDENCE COEFFICIENT:					0.011								
RELATIVE ACCURACY (BASED ON APPLICABLE STANDARD), %:													
RELATIVE ACCURACY (BASED ON DIFFERENCE), PPM: <u>- 4A only -</u>													

Note: Performance Specification (PS) 4 is to be used on sources operating above 200 ppm analyzer span and PS 4A on sources operating below 200 ppm analyzer span. The relative accuracy (RA) of the CEMS must be no greater than 10 percent when the average reference method (RM) value is used to calculate RA, 5 percent when the applicable standard (AS) is used to calculate RA, or within 5 ppm (to be used with PS 4A only) when the RA is calculated as the absolute average difference between the RM and CEMS plus the 2.5 percent confidence coefficient.

RELATIVE ACCURACY TEST AUDIT DETERMINATION
EPA CFR 40, PART 60, APPENDIX B, PS 4(A)
SV POWER
TURBINE #1

CO, lb/hr

<u>Run #</u>	<u>Date</u>	<u>Time</u>	<u>RM</u>	<u>CEMS</u>	<u>Difference</u>	<u>n</u>	<u>t_{0.975}</u>								
Run 1	7/16/24	0829-0910	1.06	1.00	0.06	1	100.00								
Run 2	7/16/24	0938-1008	1.09	0.99	0.10	2	12.706								
Run 3	7/16/24	1027-1057	1.08	0.99	0.09	3	4.303								
Run 4	7/16/24	1123-1153	1.09	1.01	0.08	4	3.182								
Run 5	7/16/24	1203-1224	1.10	1.01	0.09	5	2.776								
Run 6	7/16/24	1240-1301	1.12	1.03	0.09	6	2.571								
Run 7	7/16/24	1307-1328	1.11	1.03	0.08	7	2.447								
Run 8	7/16/24	1338-1359	1.12	1.02	0.10	8	2.365								
Run 9	7/16/24	1406-1427	1.12	1.03	0.09	9	2.306								
Run 10	7/16/24	1439-1500	1.14	1.04	0.10	10	2.262								
AVERAGES:			1.10	1.01	0.09	<i><u>choose only one of the three available criteria</u></i>									
EMISSION LIMIT:					5.47										
STANDARD DEVIATION:					0.013	<table><tr><th><u>Criteria</u></th><th><u>Result</u></th></tr><tr><td>≤10</td><td>8.6</td></tr><tr><td>≤5</td><td>1.7</td></tr><tr><td>≤4.62</td><td>0.1</td></tr></table>		<u>Criteria</u>	<u>Result</u>	≤10	8.6	≤5	1.7	≤4.62	0.1
<u>Criteria</u>	<u>Result</u>														
≤10	8.6														
≤5	1.7														
≤4.62	0.1														
CONFIDENCE COEFFICIENT:					0.010										
RELATIVE ACCURACY (BASED ON REFERENCE METHOD), %:															
RELATIVE ACCURACY (BASED ON APPLICABLE STANDARD), %:															
RELATIVE ACCURACY (BASED ON DIFFERENCE), LB/HR:															

Note: Since this unit incorporates the total equipment required for the determining and recording the pollutant mass emission rate (in terms of mass per unit of time), the unit is technically defined as a continuous emissions rate monitoring system (CERMS) and is subject to Performance Specification (PS) 6. The relative accuracy (RA) of the CERMS shall be no greater than 20 percent of the mean value of the reference method (RM) test data in terms of the units of the emission standard, or 10 percent of the applicable standard (AS), whichever is greater.

RELATIVE ACCURACY TEST AUDIT DETERMINATION
EPA CFR 40, PART 60, APPENDIX B, PS 2
SV POWER
TURBINE #1

NO_x, ppm volume dry

Run #	Date	Time	RM	CEMS	Difference	n	t _{0.975}						
Run 1	7/16/24	0829-0910	2.6	2.4	0.2	1	100.00						
Run 2	7/16/24	0938-1008	2.5	2.4	0.1	2	12.706						
Run 3	7/16/24	1027-1057	2.7	2.4	0.3	3	4.303						
Run 4	7/16/24	1123-1153	2.5	2.4	0.1	4	3.182						
Run 5	7/16/24	1203-1224	2.4	2.4	0.0	5	2.776						
Run 6	7/16/24	1240-1301	2.5	2.4	0.1	6	2.571						
Run 7	7/16/24	1307-1328	2.4	2.4	0.0	7	2.447						
Run 8	7/16/24	1338-1359	2.5	2.4	0.1	8	2.365						
Run 9	7/16/24	1406-1427	2.4	2.4	0.0	9	2.306						
Run 10	7/16/24	1439-1500	2.5	2.4	0.1	10	2.262						
AVERAGES:			2.5	2.4	0.1	#N/A							
EMISSION LIMIT:					#N/A	#N/A							
STANDARD DEVIATION:					0.052	<table><tr><th>Criteria</th><th>Result</th></tr><tr><td>≤20</td><td>3.9</td></tr><tr><td>≤10</td><td>N/A</td></tr></table>		Criteria	Result	≤20	3.9	≤10	N/A
Criteria	Result												
≤20	3.9												
≤10	N/A												
CONFIDENCE COEFFICIENT:					0.040								
RELATIVE ACCURACY (BASED ON REFERENCE METHOD), %:													
RELATIVE ACCURACY (BASED ON APPLICABLE STANDARD), %:													

Note: The relative accuracy (RA) of the CEMS must be no greater than 20 percent when the reference method (RM) is used in the denominator of Equation 2-6 (the average emissions during the test are greater than 50 percent of the emission standard) or 10 percent when the applicable standard (AS) is used in the denominator of Equation 2-6 (the average emissions during the test are less than 50 percent of the emission standard).

$$RA = \frac{[|\bar{d}| + |CC|]}{RM} \times 100 \quad Eq. 2-6$$

RELATIVE ACCURACY TEST AUDIT DETERMINATION
EPA CFR 40, PART 60, APPENDIX B, PS 2
SV POWER
TURBINE #1

NO_x, ppm @ 15% O₂

<u>Run #</u>	<u>Date</u>	<u>Time</u>	<u>RM</u>	<u>CEMS</u>	<u>Difference</u>	<u>n</u>	<u>t</u> _{0.975}						
Run 1	7/16/24	0829-0910	1.93	1.80	0.13	1	100.00						
Run 2	7/16/24	0938-1008	1.86	1.80	0.06	2	12.706						
Run 3	7/16/24	1027-1057	2.01	1.80	0.21	3	4.303						
Run 4	7/16/24	1123-1153	1.87	1.80	0.07	4	3.182						
Run 5	7/16/24	1203-1224	1.77	1.80	-0.03	5	2.776						
Run 6	7/16/24	1240-1301	1.84	1.80	0.04	6	2.571						
Run 7	7/16/24	1307-1328	1.84	1.80	0.04	7	2.447						
Run 8	7/16/24	1338-1359	1.84	1.80	0.04	8	2.365						
Run 9	7/16/24	1406-1427	1.83	1.80	0.03	9	2.306						
Run 10	7/16/24	1439-1500	1.84	1.80	0.04	10	2.262						
AVERAGES:			1.85	1.80	0.05	> 50% of limit,							
EMISSION LIMIT:					2.0	<u>must use RM criteria</u>							
STANDARD DEVIATION:					0.041	<table><tr><th><u>Criteria</u></th><th><u>Result</u></th></tr><tr><td>≤20</td><td>4.3</td></tr><tr><td>≤10</td><td>4.0</td></tr></table>		<u>Criteria</u>	<u>Result</u>	≤20	4.3	≤10	4.0
<u>Criteria</u>	<u>Result</u>												
≤20	4.3												
≤10	4.0												
CONFIDENCE COEFFICIENT:					0.032								
RELATIVE ACCURACY (BASED ON REFERENCE METHOD), %:													
RELATIVE ACCURACY (BASED ON APPLICABLE STANDARD), %:													

Note: The relative accuracy (RA) of the CEMS must be no greater than 20 percent when the reference method (RM) is used in the denominator of Equation 2-6 (the average emissions during the test are greater than 50 percent of the emission standard) or 10 percent when the applicable standard (AS) is used in the denominator of Equation 2-6 (the average emissions during the test are less than 50 percent of the emission standard).

$$RA = \frac{[|\bar{d}| + |CC|]}{\overline{RM}} \times 100 \quad Eq. 2-6$$

RELATIVE ACCURACY TEST AUDIT DETERMINATION
EPA CFR 40, PART 60, APPENDIX B, PS 2
SV POWER
TURBINE #1

NO_x, lb/hr

<u>Run #</u>	<u>Date</u>	<u>Time</u>	<u>RM</u>	<u>CEMS</u>	<u>Difference</u>	<u>n</u>	<u>t_{0.975}</u>						
Run 1	7/16/24	0829-0910	3.86	3.94	-0.08	1	100.00						
Run 2	7/16/24	0938-1008	3.75	3.95	-0.20	2	12.706						
Run 3	7/16/24	1027-1057	4.04	3.95	0.09	3	4.303						
Run 4	7/16/24	1123-1153	3.76	3.96	-0.20	4	3.182						
Run 5	7/16/24	1203-1224	3.57	3.96	-0.39	5	2.776						
Run 6	7/16/24	1240-1301	3.73	3.98	-0.25	6	2.571						
Run 7	7/16/24	1307-1328	3.72	3.98	-0.26	7	2.447						
Run 8	7/16/24	1338-1359	3.73	3.98	-0.25	8	2.365						
Run 9	7/16/24	1406-1427	3.71	3.98	-0.27	9	2.306						
Run 10	7/16/24	1439-1500	3.73	3.98	-0.25	10	2.262						
AVERAGES:			3.78	3.97	-0.19	> 50% of limit,							
EMISSION LIMIT:					4.49	<u>must use RM criteria</u>							
STANDARD DEVIATION:					0.120	<table><tr><th><u>Criteria</u></th><th><u>Result</u></th></tr><tr><td>≤20</td><td>7.4</td></tr><tr><td>≤10</td><td>6.2</td></tr></table>		<u>Criteria</u>	<u>Result</u>	≤20	7.4	≤10	6.2
<u>Criteria</u>	<u>Result</u>												
≤20	7.4												
≤10	6.2												
CONFIDENCE COEFFICIENT:					0.092								
RELATIVE ACCURACY (BASED ON REFERENCE METHOD), %:													
RELATIVE ACCURACY (BASED ON APPLICABLE STANDARD), %:													

Note: Since this unit incorporates the total equipment required for the determining and recording the pollutant mass emission rate (in terms of mass per unit of time), the unit is technically defined as a continuous emissions rate monitoring system (CERMS) and is subject to Performance Specification (PS) 6. The relative accuracy (RA) of the CERMS shall be no greater than 20 percent of the mean value of the reference method (RM) test data in terms of the units of the emission standard, or 10 percent of the applicable standard (AS), whichever is greater.

RELATIVE ACCURACY TEST AUDIT DETERMINATION
EPA CFR 40, PART 60, APPENDIX B, PS 2
SV POWER
TURBINE #1

NO_x, lb/MMBtu

<u>Run #</u>	<u>Date</u>	<u>Time</u>	<u>RM</u>	<u>CEMS</u>	<u>Difference</u>	<u>n</u>	<u>t_{0.975}</u>				
Run 1	7/16/24	0829-0910	0.007	0.007	0.000	1	100.00				
Run 2	7/16/24	0938-1008	0.007	0.007	0.000	2	12.706				
Run 3	7/16/24	1027-1057	0.007	0.007	0.000	3	4.303				
Run 4	7/16/24	1123-1153	0.007	0.007	0.000	4	3.182				
Run 5	7/16/24	1203-1224	0.006	0.007	-0.001	5	2.776				
Run 6	7/16/24	1240-1301	0.007	0.007	0.000	6	2.571				
Run 7	7/16/24	1307-1328	0.007	0.007	0.000	7	2.447				
Run 8	7/16/24	1338-1359	0.007	0.007	0.000	8	2.365				
Run 9	7/16/24	1406-1427	0.007	0.007	0.000	9	2.306				
Run 10	7/16/24	1439-1500	0.007	0.007	0.000	10	2.262				
AVERAGES:			0.00683	0.00700	-0.00017	#N/A					
EMISSION LIMIT:					#N/A	#N/A					
STANDARD DEVIATION:					0.00021	<table><tr><th><u>Criteria</u></th><th><u>Result</u></th></tr><tr><td>≤20</td><td>4.9</td></tr></table>		<u>Criteria</u>	<u>Result</u>	≤20	4.9
<u>Criteria</u>	<u>Result</u>										
≤20	4.9										
CONFIDENCE COEFFICIENT:					0.00017						
RELATIVE ACCURACY (BASED ON REFERENCE METHOD), %:											

Note: The relative accuracy (RA) of the CEMS must be no greater than 20 percent when the reference method (RM) is used in the denominator of Equation 2-6 (the average emissions during the test are greater than 50 percent of the emission standard) or 10 percent when the applicable standard (AS) is used in the denominator of Equation 2-6 (the average emissions during the test are less than 50 percent of the emission standard).

$$RA = \frac{[|\bar{d}| + |CC|]}{RM} \times 100 \quad Eq. 2-6$$

RELATIVE ACCURACY TEST AUDIT DETERMINATION
EPA CFR 40, PART 75, APPENDIX A
EDR TABLE
SV POWER
TURBINE #1

NO_x, lb/MMBtu

<u>Run #</u>	<u>Date</u>	<u>Time</u>	<u>RM</u>	<u>CEMS</u>	<u>Difference</u>	<u>n</u>	<u>t_{0.975}</u>
Run 1	7/16/24	0829-0910	0.007	0.007	0.000	1	100.00
Run 2	7/16/24	0938-1008	0.007	0.007	0.000	2	12.706
Run 3	7/16/24	1027-1057	0.007	0.007	0.000	3	4.303
Run 4	7/16/24	1123-1153	0.007	0.007	0.000	4	3.182
Run 5	7/16/24	1203-1224	0.006	0.007	-0.001	5	2.776
Run 6	7/16/24	1240-1301	0.007	0.007	0.000	6	2.571
Run 7	7/16/24	1307-1328	0.007	0.007	0.000	7	2.447
Run 8	7/16/24	1338-1359	0.007	0.007	0.000	8	2.365
Run 9	7/16/24	1406-1427	0.007	0.007	0.000	9	2.306
Run 10	7/16/24	1439-1500	0.007	0.007	0.000	10	2.262
AVERAGES:			0.007000	0.007000	0.000000	#N/A	
EMISSION LIMIT:					#N/A	#N/A	
BIAS ADJUSTMENT FACTOR:					1.000		
STANDARD DEVIATION:					0.000000		
CONFIDENCE COEFFICIENT:					0.000000		
RELATIVE ACCURACY (BASED ON REFERENCE METHOD), %:							
RELATIVE ACCURACY (BASED ON lb/MMBtu DIFFERENCE), %:							
UNIT LOAD, MW:							

<u>Criteria</u>	<u>Result</u>
≤10	0.0
0.020	0.000
N/A	72.6

Note: The relative accuracy (RA) of the CEMS must be no greater than 20 percent when the reference method (RM) is used in the denominator of Equation 2–6 (the average emissions during the test are greater than 50 percent of the emission standard) or 10 percent when the applicable standard (AS) is used in the denominator of Equation 2–6 (the average emissions during the test are less than 50 percent of the emission standard).

RELATIVE ACCURACY TEST AUDIT DETERMINATION
EPA CFR 40, PARTS 60 & 75
SV POWER
UNIT #2

O₂, % volume dry

<u>Run #</u>	<u>Date</u>	<u>Time</u>	<u>RM</u>	<u>CEMS</u>	<u>Difference</u>	<u>n</u>	<u>t_{0.975}</u>					
Run 1	7/18/24	0825-0906	12.8	13.0	-0.2	1	100.00					
Run 2	7/18/24	0939-1009	12.8	13.0	-0.2	2	12.706					
Run 3	7/18/24	1035-1105	12.9	13.0	-0.1	3	4.303					
Run 4	7/18/24	1114-1144	12.9	13.0	-0.1	4	3.182					
Run 5	7/18/24	1153-1214	12.9	13.0	-0.1	5	2.776					
Run 6	7/18/24	1221-1242	12.9	13.0	-0.1	6	2.571					
Run 7	7/18/24	1253-1314	12.9	12.9	0.0	7	2.447					
Run 8	7/18/24	1321-1342	12.8	12.9	-0.1	8	2.365					
Run 9	7/18/24	1350-1411	12.8	12.9	-0.1	9	2.306					
Run 10	7/18/24	1419-1440	12.8	12.9	-0.1	10	2.262					
AVERAGES:			12.9	13.0	-0.1	<i><u>choose only one of the two available criteria</u></i>						
STANDARD DEVIATION:					0.037	<table><tr><th><u>Criteria</u></th><th><u>Result</u></th></tr><tr><td>≤10</td><td>0.9</td></tr><tr><td>≤1</td><td>0.1</td></tr></table>	<u>Criteria</u>	<u>Result</u>	≤10	0.9	≤1	0.1
<u>Criteria</u>	<u>Result</u>											
≤10	0.9											
≤1	0.1											
CONFIDENCE COEFFICIENT:					0.029							
RELATIVE ACCURACY (BASED ON REFERENCE METHOD), %:												
RELATIVE ACCURACY (BASED ON DIFFERENCE), %:												

Note: The relative accuracy (RA) of the CEMS shall not exceed 10.0 percent. The relative accuracy test results are also acceptable if the difference between the mean value of the CEMS O₂ monitor measurements and the corresponding reference method (RM) measurement mean value does not exceed 1.0 percent O₂.

RELATIVE ACCURACY TEST AUDIT DETERMINATION
EPA CFR 40, PART 60, APPENDIX B, PS 4/4A
SV POWER
UNIT #2

CO, ppm volume dry

<u>Run #</u>	<u>Date</u>	<u>Time</u>	<u>RM</u>	<u>CEMS</u>	<u>Difference</u>	<u>n</u>	<u>t</u> _{0.975}						
Run 1	7/18/24	0825-0906	1.4	1.1	0.3	1	100.00						
Run 2	7/18/24	0939-1009	1.2	1.1	0.1	2	12.706						
Run 3	7/18/24	1035-1105	1.2	1.1	0.1	3	4.303						
Run 4	7/18/24	1114-1144	1.2	1.1	0.1	4	3.182						
Run 5	7/18/24	1153-1214	1.2	1.1	0.1	5	2.776						
Run 6	7/18/24	1221-1242	1.2	1.1	0.1	6	2.571						
Run 7	7/18/24	1253-1314	1.2	1.1	0.1	7	2.447						
Run 8	7/18/24	1321-1342	1.2	1.1	0.1	8	2.365						
Run 9	7/18/24	1350-1411	1.2	1.1	0.1	9	2.306						
Run 10	7/18/24	1419-1440	1.2	1.2	0.0	10	2.262						
AVERAGES:			1.2	1.1	0.1	<u>choose only one of the</u>							
EMISSION LIMIT:					#N/A	<u>three available criteria</u>							
STANDARD DEVIATION:					0.034	<table><tr><th><u>Criteria</u></th><th><u>Result</u></th></tr><tr><td>≤10</td><td>9.6</td></tr><tr><td>≤5</td><td>0.1</td></tr></table>		<u>Criteria</u>	<u>Result</u>	≤10	9.6	≤5	0.1
<u>Criteria</u>	<u>Result</u>												
≤10	9.6												
≤5	0.1												
CONFIDENCE COEFFICIENT:					0.026								
RELATIVE ACCURACY (BASED ON REFERENCE METHOD), %:													
RELATIVE ACCURACY (BASED ON DIFFERENCE), PPM: <u>- 4A only -</u>													

Note: Performance Specification (PS) 4 is to be used on sources operating above 200 ppm analyzer span and PS 4A on sources operating below 200 ppm analyzer span. The relative accuracy (RA) of the CEMS must be no greater than 10 percent when the average reference method (RM) value is used to calculate RA, 5 percent when the applicable standard (AS) is used to calculate RA, or within 5 ppm (to be used with PS 4A only) when the RA is calculated as the absolute average difference between the RM and CEMS plus the 2.5 percent confidence coefficient.

RELATIVE ACCURACY TEST AUDIT DETERMINATION
EPA CFR 40, PART 60, APPENDIX B, PS 4/4A
SV POWER
UNIT #2

CO, ppm @ 15% O₂

<u>Run #</u>	<u>Date</u>	<u>Time</u>	<u>RM</u>	<u>CEMS</u>	<u>Difference</u>	<u>n</u>	<u>t_{0.975}</u>								
Run 1	7/18/24	0825-0906	1.06	0.82	0.24	1	100.00								
Run 2	7/18/24	0939-1009	0.89	0.82	0.07	2	12.706								
Run 3	7/18/24	1035-1105	0.87	0.81	0.06	3	4.303								
Run 4	7/18/24	1114-1144	0.87	0.81	0.06	4	3.182								
Run 5	7/18/24	1153-1214	0.86	0.81	0.05	5	2.776								
Run 6	7/18/24	1221-1242	0.86	0.82	0.04	6	2.571								
Run 7	7/18/24	1253-1314	0.90	0.83	0.07	7	2.447								
Run 8	7/18/24	1321-1342	0.90	0.83	0.07	8	2.365								
Run 9	7/18/24	1350-1411	0.88	0.82	0.06	9	2.306								
Run 10	7/18/24	1419-1440	0.90	0.84	0.06	10	2.262								
AVERAGES:			0.88	0.82	0.06	<i><u>choose only one of the three available criteria</u></i>									
EMISSION LIMIT:					4.0										
STANDARD DEVIATION:					0.011	<table><tr><th><u>Criteria</u></th><th><u>Result</u></th></tr><tr><td>≤10</td><td>7.7</td></tr><tr><td>≤5</td><td>1.7</td></tr><tr><td>≤5</td><td>0.1</td></tr></table>		<u>Criteria</u>	<u>Result</u>	≤10	7.7	≤5	1.7	≤5	0.1
<u>Criteria</u>	<u>Result</u>														
≤10	7.7														
≤5	1.7														
≤5	0.1														
CONFIDENCE COEFFICIENT:					0.009										
RELATIVE ACCURACY (BASED ON REFERENCE METHOD), %:															
RELATIVE ACCURACY (BASED ON APPLICABLE STANDARD), %:															
RELATIVE ACCURACY (BASED ON DIFFERENCE), PPM: <u>- 4A only -</u>															

Note: Performance Specification (PS) 4 is to be used on sources operating above 200 ppm analyzer span and PS 4A on sources operating below 200 ppm analyzer span. The relative accuracy (RA) of the CEMS must be no greater than 10 percent when the average reference method (RM) value is used to calculate RA, 5 percent when the applicable standard (AS) is used to calculate RA, or within 5 ppm (to be used with PS 4A only) when the RA is calculated as the absolute average difference between the RM and CEMS plus the 2.5 percent confidence coefficient.

RELATIVE ACCURACY TEST AUDIT DETERMINATION
EPA CFR 40, PART 60, APPENDIX B, PS 4(A)

SV POWER

UNIT #2

CO, lb/hr

<u>Run #</u>	<u>Date</u>	<u>Time</u>	<u>RM</u>	<u>CEMS</u>	<u>Difference</u>	<u>n</u>	<u>t_{0.975}</u>								
Run 1	7/18/24	0825-0906	1.29	1.02	0.27	1	100.00								
Run 2	7/18/24	0939-1009	1.09	1.04	0.05	2	12.706								
Run 3	7/18/24	1035-1105	1.06	1.01	0.05	3	4.303								
Run 4	7/18/24	1114-1144	1.06	1.01	0.05	4	3.182								
Run 5	7/18/24	1153-1214	1.05	1.02	0.03	5	2.776								
Run 6	7/18/24	1221-1242	1.05	1.02	0.03	6	2.571								
Run 7	7/18/24	1253-1314	1.10	1.06	0.04	7	2.447								
Run 8	7/18/24	1321-1342	1.10	1.05	0.05	8	2.365								
Run 9	7/18/24	1350-1411	1.08	1.05	0.03	9	2.306								
Run 10	7/18/24	1419-1440	1.10	1.07	0.03	10	2.262								
AVERAGES:			1.08	1.04	0.04	<i><u>choose only one of the three available criteria</u></i>									
EMISSION LIMIT:					5.47										
STANDARD DEVIATION:					0.010	<table><tr><th><u>Criteria</u></th><th><u>Result</u></th></tr><tr><td>≤20</td><td>4.5</td></tr><tr><td>≤10</td><td>0.9</td></tr><tr><td>≤4.49</td><td>0.0</td></tr></table>		<u>Criteria</u>	<u>Result</u>	≤20	4.5	≤10	0.9	≤4.49	0.0
<u>Criteria</u>	<u>Result</u>														
≤20	4.5														
≤10	0.9														
≤4.49	0.0														
CONFIDENCE COEFFICIENT:					0.008										
RELATIVE ACCURACY (BASED ON REFERENCE METHOD), %:															
RELATIVE ACCURACY (BASED ON APPLICABLE STANDARD), %:															
RELATIVE ACCURACY (BASED ON DIFFERENCE), LB/HR:															

Note: Since this unit incorporates the total equipment required for the determining and recording the pollutant mass emission rate (in terms of mass per unit of time), the unit is technically defined as a continuous emissions rate monitoring system (CERMS) and is subject to Performance Specification (PS) 6. The relative accuracy (RA) of the CERMS shall be no greater than 20 percent of the mean value of the reference method (RM) test data in terms of the units of the emission standard, or 10 percent of the applicable standard (AS), whichever is greater.

RELATIVE ACCURACY TEST AUDIT DETERMINATION
EPA CFR 40, PART 60, APPENDIX B, PS 2
SV POWER
UNIT #2

NO_x, ppm volume dry

<u>Run #</u>	<u>Date</u>	<u>Time</u>	<u>RM</u>	<u>CEMS</u>	<u>Difference</u>	<u>n</u>	<u>t_{0.975}</u>				
Run 1	7/18/24	0825-0906	2.3	2.4	-0.1	1	100.00				
Run 2	7/18/24	0939-1009	2.4	2.4	0.0	2	12.706				
Run 3	7/18/24	1035-1105	2.5	2.4	0.1	3	4.303				
Run 4	7/18/24	1114-1144	2.5	2.4	0.1	4	3.182				
Run 5	7/18/24	1153-1214	2.5	2.4	0.1	5	2.776				
Run 6	7/18/24	1221-1242	2.5	2.4	0.1	6	2.571				
Run 7	7/18/24	1253-1314	2.5	2.4	0.1	7	2.447				
Run 8	7/18/24	1321-1342	2.5	2.4	0.1	8	2.365				
Run 9	7/18/24	1350-1411	2.5	2.4	0.1	9	2.306				
Run 10	7/18/24	1419-1440	2.5	2.4	0.1	10	2.262				
AVERAGES:			2.5	2.4	0.1	#N/A					
EMISSION LIMIT:					#N/A	#N/A					
STANDARD DEVIATION:					0.085	<table><tr><th><u>Criteria</u></th><th><u>Result</u></th></tr><tr><td>≤20</td><td>5.4</td></tr></table>		<u>Criteria</u>	<u>Result</u>	≤20	5.4
<u>Criteria</u>	<u>Result</u>										
≤20	5.4										
CONFIDENCE COEFFICIENT:					0.065						
RELATIVE ACCURACY (BASED ON REFERENCE METHOD), %:											

Note: The relative accuracy (RA) of the CEMS must be no greater than 20 percent when the reference method (RM) is used in the denominator of Equation 2-6 (the average emissions during the test are greater than 50 percent of the emission standard) or 10 percent when the applicable standard (AS) is used in the denominator of Equation 2-6 (the average emissions during the test are less than 50 percent of the emission standard).

$$RA = \frac{[|\bar{d}| + |CC|]}{RM} \times 100 \quad Eq. 2-6$$

RELATIVE ACCURACY TEST AUDIT DETERMINATION
EPA CFR 40, PART 60, APPENDIX B, PS 2
SV POWER
UNIT #2

NO_x, ppm @ 15% O₂

<u>Run #</u>	<u>Date</u>	<u>Time</u>	<u>RM</u>	<u>CEMS</u>	<u>Difference</u>	<u>n</u>	<u>t</u> _{0.975}						
Run 1	7/18/24	0825-0906	1.66	1.80	-0.14	1	100.00						
Run 2	7/18/24	0939-1009	1.75	1.80	-0.05	2	12.706						
Run 3	7/18/24	1035-1105	1.85	1.80	0.05	3	4.303						
Run 4	7/18/24	1114-1144	1.84	1.80	0.04	4	3.182						
Run 5	7/18/24	1153-1214	1.85	1.80	0.05	5	2.776						
Run 6	7/18/24	1221-1242	1.87	1.80	0.07	6	2.571						
Run 7	7/18/24	1253-1314	1.86	1.81	0.05	7	2.447						
Run 8	7/18/24	1321-1342	1.83	1.81	0.02	8	2.365						
Run 9	7/18/24	1350-1411	1.82	1.80	0.02	9	2.306						
Run 10	7/18/24	1419-1440	1.84	1.80	0.04	10	2.262						
AVERAGES:			1.81	1.80	0.01	> 50% of limit,							
EMISSION LIMIT:					2.0	<u>must use RM criteria</u>							
STANDARD DEVIATION:					0.065	<table><tr><th><u>Criteria</u></th><th><u>Result</u></th></tr><tr><td>≤20</td><td>3.2</td></tr><tr><td>≤10</td><td>2.9</td></tr></table>		<u>Criteria</u>	<u>Result</u>	≤20	3.2	≤10	2.9
<u>Criteria</u>	<u>Result</u>												
≤20	3.2												
≤10	2.9												
CONFIDENCE COEFFICIENT:					0.050								
RELATIVE ACCURACY (BASED ON REFERENCE METHOD), %:													
RELATIVE ACCURACY (BASED ON APPLICABLE STANDARD), %:													

Note: The relative accuracy (RA) of the CEMS must be no greater than 20 percent when the reference method (RM) is used in the denominator of Equation 2-6 (the average emissions during the test are greater than 50 percent of the emission standard) or 10 percent when the applicable standard (AS) is used in the denominator of Equation 2-6 (the average emissions during the test are less than 50 percent of the emission standard).

$$RA = \frac{[|\bar{d}| + |CC|]}{\overline{RM}} \times 100 \quad Eq. 2-6$$

RELATIVE ACCURACY TEST AUDIT DETERMINATION
EPA CFR 40, PART 60, APPENDIX B, PS 2
SV POWER
UNIT #2

NO_x, lb/hr

<u>Run #</u>	<u>Date</u>	<u>Time</u>	<u>RM</u>	<u>CEMS</u>	<u>Difference</u>	<u>n</u>	<u>t_{0.975}</u>						
Run 1	7/18/24	0825-0906	3.32	3.92	-0.60	1	100.00						
Run 2	7/18/24	0939-1009	3.50	3.92	-0.42	2	12.706						
Run 3	7/18/24	1035-1105	3.72	3.93	-0.21	3	4.303						
Run 4	7/18/24	1114-1144	3.69	3.93	-0.24	4	3.182						
Run 5	7/18/24	1153-1214	3.72	3.93	-0.21	5	2.776						
Run 6	7/18/24	1221-1242	3.74	3.93	-0.19	6	2.571						
Run 7	7/18/24	1253-1314	3.74	3.94	-0.20	7	2.447						
Run 8	7/18/24	1321-1342	3.69	3.95	-0.26	8	2.365						
Run 9	7/18/24	1350-1411	3.67	3.95	-0.28	9	2.306						
Run 10	7/18/24	1419-1440	3.71	3.95	-0.24	10	2.262						
AVERAGES:			3.69	3.94	-0.25	> 50% of limit,							
EMISSION LIMIT:					4.49	<u>must use RM criteria</u>							
STANDARD DEVIATION:					0.069	<table><tr><th><u>Criteria</u></th><th><u>Result</u></th></tr><tr><td>≤20</td><td>8.3</td></tr><tr><td>≤10</td><td>6.8</td></tr></table>		<u>Criteria</u>	<u>Result</u>	≤20	8.3	≤10	6.8
<u>Criteria</u>	<u>Result</u>												
≤20	8.3												
≤10	6.8												
CONFIDENCE COEFFICIENT:					0.053								
RELATIVE ACCURACY (BASED ON REFERENCE METHOD), %:													
RELATIVE ACCURACY (BASED ON APPLICABLE STANDARD), %:													

Note: Since this unit incorporates the total equipment required for the determining and recording the pollutant mass emission rate (in terms of mass per unit of time), the unit is technically defined as a continuous emissions rate monitoring system (CERMS) and is subject to Performance Specification (PS) 6. The relative accuracy (RA) of the CERMS shall be no greater than 20 percent of the mean value of the reference method (RM) test data in terms of the units of the emission standard, or 10 percent of the applicable standard (AS), whichever is greater.

RELATIVE ACCURACY TEST AUDIT DETERMINATION
EPA CFR 40, PART 60, APPENDIX B, PS 2
SV POWER
UNIT #2

NO_x, lb/MMBtu

<u>Run #</u>	<u>Date</u>	<u>Time</u>	<u>RM</u>	<u>CEMS</u>	<u>Difference</u>	<u>n</u>	<u>t_{0.975}</u>				
Run 1	7/18/24	0825-0906	0.006	0.007	-0.001	1	100.00				
Run 2	7/18/24	0939-1009	0.006	0.007	-0.001	2	12.706				
Run 3	7/18/24	1035-1105	0.007	0.007	0.000	3	4.303				
Run 4	7/18/24	1114-1144	0.007	0.007	0.000	4	3.182				
Run 5	7/18/24	1153-1214	0.007	0.007	0.000	5	2.776				
Run 6	7/18/24	1221-1242	0.007	0.007	0.000	6	2.571				
Run 7	7/18/24	1253-1314	0.007	0.007	0.000	7	2.447				
Run 8	7/18/24	1321-1342	0.007	0.007	0.000	8	2.365				
Run 9	7/18/24	1350-1411	0.007	0.007	0.000	9	2.306				
Run 10	7/18/24	1419-1440	0.007	0.007	0.000	10	2.262				
AVERAGES:			0.00700	0.00700	-0.00011	#N/A					
EMISSION LIMIT:					#N/A	#N/A					
STANDARD DEVIATION:					0.00033						
CONFIDENCE COEFFICIENT:					0.00026						
RELATIVE ACCURACY (BASED ON REFERENCE METHOD), %:						<table><tr><td><u>Criteria</u></td><td><u>Result</u></td></tr><tr><td>≤20</td><td>5.2</td></tr></table>		<u>Criteria</u>	<u>Result</u>	≤20	5.2
<u>Criteria</u>	<u>Result</u>										
≤20	5.2										

Note: The relative accuracy (RA) of the CEMS must be no greater than 20 percent when the reference method (RM) is used in the denominator of Equation 2-6 (the average emissions during the test are greater than 50 percent of the emission standard) or 10 percent when the applicable standard (AS) is used in the denominator of Equation 2-6 (the average emissions during the test are less than 50 percent of the emission standard).

$$RA = \frac{[|\bar{d}| + |CC|]}{RM} \times 100 \quad Eq. 2-6$$

RELATIVE ACCURACY TEST AUDIT DETERMINATION
EPA CFR 40, PART 75, APPENDIX A
EDR TABLE
SV POWER
UNIT #2

NO_x, lb/MMBtu

<u>Run #</u>	<u>Date</u>	<u>Time</u>	<u>RM</u>	<u>CEMS</u>	<u>Difference</u>	<u>n</u>	<u>t_{0.975}</u>
Run 1	7/18/24	0825-0906	0.006	0.007	-0.001	1	100.00
Run 2	7/18/24	0939-1009	0.006	0.007	-0.001	2	12.706
Run 3	7/18/24	1035-1105	0.007	0.007	0.000	3	4.303
Run 4	7/18/24	1114-1144	0.007	0.007	0.000	4	3.182
Run 5	7/18/24	1153-1214	0.007	0.007	0.000	5	2.776
Run 6	7/18/24	1221-1242	0.007	0.007	0.000	6	2.571
Run 7	7/18/24	1253-1314	0.007	0.007	0.000	7	2.447
Run 8	7/18/24	1321-1342	0.007	0.007	0.000	8	2.365
Run 9	7/18/24	1350-1411	0.007	0.007	0.000	9	2.306
Run 10	7/18/24	1419-1440	0.007	0.007	0.000	10	2.262
AVERAGES:			0.006889	0.007000	-0.000111	#N/A	
EMISSION LIMIT:					#N/A	#N/A	
BIAS ADJUSTMENT FACTOR:					1.000		
STANDARD DEVIATION:					0.000333		
CONFIDENCE COEFFICIENT:					0.000256		
RELATIVE ACCURACY (BASED ON REFERENCE METHOD), %:						<u>Criteria</u>	<u>Result</u>
						≤10	5.3
RELATIVE ACCURACY (BASED ON lb/MMBtu DIFFERENCE), %:						0.020	0.000
UNIT LOAD, MW:						N/A	71.0

Note: The relative accuracy (RA) of the CEMS must be no greater than 20 percent when the reference method (RM) is used in the denominator of Equation 2–6 (the average emissions during the test are greater than 50 percent of the emission standard) or 10 percent when the applicable standard (AS) is used in the denominator of Equation 2–6 (the average emissions during the test are less than 50 percent of the emission standard).

Appendix A.8

Example Calculations

EXAMPLE CALCULATIONS STACK GAS VOLUMETRIC FLOW RATE

Project name: SV Power, DVR
Computed by: D. Duncan
Run number: 2-PM-2

Project number: 005AS-042969
Calculation date: 2024-07-22

SAMPLE TRAIN DATA

Meter calibration factor, Y_d	<u>0.99</u>	Y
Stack area, square feet	<u>78.540</u>	A_s
Pitot Coefficient	<u>0.84</u>	C_p
Barometric pressure, in. Hg	<u>29.99</u>	P_{bar}
Meter box volume, acf	<u>72.475</u>	V_m
Impinger liquid volume, g	<u>213.2</u>	V_{lc}
Meter temperature, °R	<u>544.8</u>	$T_m = (°F \text{ plus } 460)$
Meter pressure, (delta H) iwg	<u>1.261</u>	ΔH
Velocity head, (delta P) iwg	<u>1.4589</u>	ΔP
Static pressure, iwg	<u>0.20</u>	P_{sg}
Stack temperature, °R	<u>700.7</u>	$T_s = (°F \text{ plus } 460)$
Stack O ₂ , % volume dry	<u>12.9</u>	O_2
Stack CO ₂ , % volume dry	<u>4.6</u>	CO_2
Stack N ₂ , % volume dry	<u>82.5</u>	$N_2 = (100 - \%O_2 - \%CO_2)$
Nozzle area, square feet	<u>0.000185</u>	$A_n = \pi (D_n / 2)^2 (1 \text{ ft} / 12 \text{ in})^2$
PM sampling time, minutes	<u>120</u>	Θ
Reference temperature, °R	<u>530</u>	$T_{std} = (°F \text{ plus } 460)$

Note: The results calculated in the pages that follow may differ slightly from the results presented in the final report. This difference can be attributed to "significant digit round-off errors" common when comparing computer spreadsheets results with those derived from using a calculator.

1 VOLUMETRIC FLOW RATE
a. Standard sample gas volume, dscf

$$V_{mstd} = (V_m)(Y) \frac{(T_{std}) \left[P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right]}{(T_m) (P_{std})}$$

$$V_{mstd} = \frac{(72.475)(0.99)(530)[29.99 + (1.261)/(13.6)]}{(544.8)(29.92)}$$

$$V_{mstd} = \underline{70.181} \text{ dscf}$$

b. Water vapor volume, scf

$$V_{wstd} = (0.04716)(V_{lc}) \left(\frac{T_{std}}{528} \right)$$

$$V_{wstd} = \frac{(0.04716)(213.2)(530)}{(528)}$$

$$V_{wstd} = \underline{10.093} \text{ scf}$$

c. Moisture content, non-dimensional

$$B_{ws} = \left(\frac{V_{wstd}}{V_{mstd} + V_{wstd}} \right)$$

$$B_{ws} = \frac{(10.0925972727273)}{(70.181 + 10.0925972727273)}$$

$$B_{ws} = \underline{0.1257} \text{ moisture content (multiply by 100 for \% by volume)}$$

d. Stack gas molecular weight, lb/lb mole (dry)

$$MW_{dry} = [0.44(\%CO_2)] + [0.32(\%O_2)] + [0.28(\%N_2)]$$

$$MW_{dry} = [0.44(4.6)] + [0.32(12.9)] + [0.28(82.5)]$$

$$MW_{dry} = \underline{29.252} \text{ lb/lb mole}$$

e. Stack gas molecular weight, lb/lb mole (wet)

$$MW_{wet} = [MW_{dry}(1-B_{ws})] + [18(B_{ws})]$$

$$MW_{wet} = [29.252(1-0.1257)] + [18(0.1257)]$$

$$MW_{wet} = \underline{27.838} \text{ lb/lb mole}$$

f. Absolute stack pressure, in Hg

$$P_s = P_{bar} + \left(\frac{P_{sg}}{13.6} \right)$$

$$P_s = 29.99 + (0.2/13.6)$$

$$P_s = \underline{30.005} \text{ in. Hg}$$

g. Stack velocity, ft/sec

$$v_s = (85.49)(C_p)(\sqrt{\Delta P}) \sqrt{\frac{T_s}{(P_s)(MW_{wet})}}$$

$$v_s = (85.49)(0.84) \sqrt{\frac{(1.4589)(700.7)}{(30.005)(27.838)}}$$

$$v_s = \underline{79.443} \text{ ft/sec}$$

h. Actual stack flow rate, acfm

$$Q = (v_s)(A_s)(60 \text{ min/hr})$$

$$Q = (79.443)(78.54)(60)$$

$$Q = \underline{374,367} \text{ acfm}$$

i. Standard stack gas flow rate, wscfm

$$Q_{ws} = (v_s)(A_s)(60 \text{ min/hr}) \left(\frac{T_{std}}{T_s} \right) \left(\frac{P_s}{P_{std}} \right)$$

$$Q_{ws} = (79.443)(78.54)(60)(530/700.7)(30.005/29.92)$$

$$Q_{ws} = \underline{283,971} \text{ wscfm}$$

j. Standard stack gas flow rate, dscfm

$$Q_{ds} = (v_s)(A_s)(60 \text{ min/hr})(1 - B_{ws}) \left(\frac{T_{std}}{T_s} \right) \left(\frac{P_s}{P_{std}} \right)$$

$$Q_{ds} = (79.443)(78.54)(60)(1 - 0.1257)(530/700.7)(30.005/29.92)$$

$$Q_{ds} = \underline{248,276} \text{ dscfm}$$

k. Percent Isokinetic, %

$$I = \frac{(T_s)(V_{m \text{ std}})(P_{std})(100)}{(T_{std})(v_s)(\theta)(A_n)(P_s)(60)(1 - B_{ws})}$$

$$I = \frac{(700.7)(70.181)(29.92)(100)}{(530)(79.443)(120)(0.000185)(30.005)(60)(1 - 0.1257)}$$

$$I = \underline{100.0} \%$$

EXAMPLE CALCULATIONS PARTICULATE MATTER EMISSIONS

Project name: SV Power, DVR
 Computed by: D. Duncan
 Run number: 2-PM-2

Project number: 005AS-042969
 Calculation date: 2024-08-09

EMISSIONS DATA

Mass of collected particulate matter, mg	<u>1.63</u>	G_m
Dry stack gas flow rate at standard conditions, dscfm	<u>248,283</u>	Q_{ds}
Dry meter volume at standard conditions, dscf	<u>70.187</u>	$V_{m\ std}$

1 PARTICULATE MATTER EMISSIONS

a. Grain loading, gr/dscf

$$G = (0.0154) \left(\frac{G_m}{V_{m\ std}} \right)$$

$$G = (0.0154) \frac{(1.63)}{(70.187)}$$

$$G = \underline{0.0004} \text{ gr/dscf}$$

Note: The results calculated in the pages that follow may differ slightly from the results presented in the final report. This difference can be attributed to "significant digit round-off errors" common when comparing computer spreadsheets results with those derived from using a calculator.

b. Mass emission rate, lb/hr

$$M = (G)(Q_{ds}) \frac{(60 \text{ min/hr})}{(7,000 \text{ gr/lb})}$$

$$M = \frac{(0.0004)(248,283)(60)}{(7,000)}$$

$$M = \underline{0.76} \text{ lb/hr}$$

c. Mass emission rate, lb/day

$$M' \frac{\text{lb}}{\text{day}} = M \frac{\text{lb}}{\text{hr}} \times \frac{24 \text{ hr}}{\text{day}}$$

$$M' = 0.76 \times 24$$

$$M' = 18.2 \frac{\text{lb}}{\text{day}}$$

EXAMPLE CALCULATIONS
STACK GAS VOLUMETRIC FLOW RATE

Project name: Silicon Valley Power, DVR
Computed by: D. Duncan
Run number: RATA Run 3

Project number: 005AS-042969
Calculation date: 2024-08-09
Unit ID: Turbine 1

FUEL AND OXYGEN DATA

Fuel flow, scf/h	<u>537,570</u>	Q_f
Fuel factor, dscf/MMBtu	<u>8,648</u>	F_d
Heating value, btu/scf	<u>1,026</u>	HHV
Stack O ₂ , % volume dry	<u>13.09</u>	O_2

1 VOLUMETRIC FLOW RATE

a. Standard stack gas flow rate, dscfm

$$Q_{ds} = (Q_f)(HHV) \left(\frac{1 \text{ MMBtu}}{10^6 \text{ Btu}} \right) (F_d) \frac{(20.9)}{(20.9 - O_2)} \left(\frac{1 \text{ hr}}{60 \text{ min}} \right)$$

$$Q_{ds} = \frac{(537,570)(1026)(8,648)(20.9)}{(1,000,000)(20.9 - 13.09)(60)}$$

$$Q_{ds} = \underline{212,737} \text{ dscf}$$

Note: The results calculated on this page may differ slightly from the results presented in the final report. This difference can be attributed to "significant digit round-off errors" common when comparing computer spreadsheets results with those derived from using a calculator.

**EXAMPLE CALCULATIONS
GASEOUS EMISSIONS**

Project name: Silicon Valley Power
 Computed by: D. Duncan
 Run number: 8-NH3-1-Min

Project number: 005AS-042969
 Calculation date: 2024-08-09
 Gaseous Species: NH₃

EMISSIONS DATA

Reference temperature, °R	<u>530</u>	$T_{ref} = (°F \text{ plus } 460)$
Meter box volume, acf	<u>23.475</u>	V_m
Meter calibration	<u>0.992</u>	Y_d
Barometric pressure, in Hg	<u>30.06</u>	P_{bar}
Meter pressure, iwg	<u>1.80</u>	ΔH
Meter temperature, °R	<u>526.0</u>	$T_m = (°F \text{ plus } 460)$
Sample concentration, fraction 1 (measured), ppm	<u>8.53</u>	C_{m1}
Sample volume, fraction 1 (total), ml	<u>164.1</u>	SV_1
Stack O ₂ , % volume dry	<u>15.78</u>	O_2

Note: The results calculated on these pages may differ slightly from the results presented in the final report. This difference can be attributed to "significant digit round-off errors" common when comparing computer spreadsheets results with those derived from using a calculator.

1 GASEOUS EMISSIONS
a. Standard sample volume, dscf @ 70 F

$$V_{m\ std,70} = (V_m)(Y)(17.71) \frac{[P_{bar} + (\frac{\Delta H}{13.6})]}{(T_m + 460)}$$

$$V_{m\ std, 70} = \frac{(23.475)(0.992)(17.71)(30.06 + (1.8/13.6))}{526.0}$$

$$V_{m\ std, 70} = \underline{23.673} \text{ dscf @ 70 F}$$

b. Ammonia concentration, ppm

*note: if c_{m2} is <0.5, treat as 0

$$C = \frac{(C_{m1} * sv_1) + (C_{m2} * sv_2)(50.2)}{(1000)(v_{m\ std,70})}$$

$$C = \frac{(8.53 * 164.1 + 0 * 0)(50.2)}{(1000)(23.673)}$$

$$C = \underline{3.0} \text{ ppm}$$

c. Concentration, ppm @ 15% O₂

$$C_{15} = C \frac{(20.9 - 15)}{(20.9 - \%O_2)}$$

$$C_{15} = \frac{2.97 \times (20.9 - 15)}{(20.9 - 15.78)}$$

$$C_{15} = \underline{3.4} \text{ ppm @ 15\% O}_2$$

EXAMPLE CALCULATIONS GASEOUS EMISSIONS

Project name: SVP DVR
 Computed by: D Duncan
 Run number: Unit 1, RATA Run 3

Project number: 005AS-042969
 Calculation date: 2024-08-09
 Gaseous Species: NO_x

EMISSIONS DATA

Reference temperature, °R	<u>530</u>	$T_{ref} = (°F \text{ plus } 460)$
Concentration of gaseous species, ppmvd	<u>2.662</u>	C
Dry stack gas flow rate at standard conditions, dscfm	<u>212,727</u>	Q_{ds}
Stack O ₂ , % volume dry	<u>13.09</u>	O_2
"F" factor of fuel based on O ₂ , dscf/MMBtu @ 0% O ₂	<u>8,648</u>	F_d
Molecular weight of gaseous species, lb/lb-mol	<u>46.01</u>	MW_s , where
$MW_s =$ <u>28.01</u> for CO <u>46.01</u> for NO _x as NO ₂	<u>64.06</u>	for SO _x as SO ₂
Conversion factor from ppm to lb/scf for Tref	<u>1.19E-07</u>	CF where
<u>1.189E-07</u> [(lb/scf) / ppm] for NO _x		
<u>1.189E-07</u> x MW _x /MW _{NO_x} [(lb/scf) / ppm] for other compounds (x)		

1 GASEOUS EMISSIONS

a. Concentration, ppm @ 15% O₂

$$C_{15} = C \frac{(20.9 - 15)}{(20.9 - \%O_2)}$$

$$C_{15} = 2.66 \times \frac{(20.9 - 15)}{(20.9 - 13.09)}$$

$$C_{15} = \underline{2.01} \text{ ppm @ 15\% O}_2$$

Note: The results calculated on these pages may differ slightly from the results presented in the final report. This difference can be attributed to "significant digit round-off errors" common when comparing computer spreadsheets results with those derived from using a calculator.

b. Mass emission rate, lb/hr

$$M = (C)(CF)(Q_{ds})(60 \text{ min/hr})$$

$$M = (2.662)(1.19E-07)(212,727)(60)$$

$$M = \underline{4.04} \text{ lb/hr}$$

c. Mass emission rate, lb/day

$$M' = (M)(24 \text{ hr/day})$$

$$M' = (4.04) \times 24$$

$$M' = \underline{97} \text{ lb/day}$$

d. Emission rate, lb/MMBtu

$$E = (C)(CF)(F_d) \left(\frac{20.9}{20.9 - \%O_2} \right)$$

$$E = \frac{(2.662)(1.19E-07)(8,648)(20.9)}{(20.9 - 13.09)}$$

$$E = \underline{0.0073} \text{ lb/MMBtu}$$

EXAMPLE CALCULATIONS RELATIVE ACCURACY CALCULATIONS

Project name: SVP, DVR
 Computed by: D. Duncan
 Analyzer, Units: NO_x @ 15% O₂

Project number: 005AS-042969
 Calculation date: 2024-07-23
 Equipment Unit: Turbine 1

EMISSIONS DATA

RATA Results

Run #	RM	CEMS	Diff., d
Run 1	1.93	1.80	0.13
Run 2	1.86	1.80	0.06
Run 3	2.01	1.80	0.21
Run 4	1.87	1.80	0.07
Run 5	1.77	1.80	-0.03
Run 6	1.84	1.80	0.04
Run 7	1.84	1.80	0.04
Run 8	1.84	1.80	0.04
Run 9	1.83	1.80	0.03
Run 10	1.84	1.80	0.04

Number of runs, n 9 n
 t-value associated with n, t_{0.975} 2.306 t_{0.975}

Adapted from Figure 2-1 of 40 CFR 60 Appendix B, Performance Specification 2:

2	3	4	5	6	7	8	9	10	11	12
12.706	4.303	3.182	2.776	2.571	2.447	2.365	2.306	2.262	2.228	2.201

Note: The results calculated on these pages may differ slightly from the results presented in the final report. This difference can be attributed to "significant digit round-off errors" common when comparing computer spreadsheets results with those derived from using a calculator.

1. RELATIVE ACCURACY TEST AUDIT CALCULATIONS
a. Arithmetic Mean of Differences, $\bar{d}$

$$\bar{d} = \frac{1}{n} \sum_{i=1}^n d_i$$

$$\bar{d} = \frac{1}{9} (0.43)$$

$$\bar{d} = \underline{0.048}$$

b. Standard Deviation, S_d

$$S_d = \left[\frac{\sum_{i=1}^n d_i^2 - \left(\frac{(\sum_{i=1}^n d_i)^2}{n} \right)}{n - 1} \right]^{1/2}$$

$$S_d = \left[\frac{0.034 - \frac{1}{9} \times (0.428)^2}{9 - 1} \right]^{1/2}$$

$$S_d = \underline{0.041}$$

c. 2.5% Error Confidence Coefficient (one-tailed), CC

$$CC = t_{0.975} \left(\frac{S_d}{\sqrt{n}} \right)$$

$$CC = (2.306) \frac{(0.041)}{\sqrt{9}}$$

$$CC = \underline{0.032}$$

d. Relative Accuracy (based on applicable standard), RA

$$RA = \frac{(|\bar{d}| + |CC|)}{AS} \times 100$$

$$RA = \frac{(0.048 + 0.032)}{2.0} \times 100$$

$$RA = \underline{4.0} \%$$

e. Relative Accuracy (based on reference method data), RA

$$RA = \frac{(|\bar{d}| + |CC|)}{RM} \times 100$$

$$RA = \frac{(0.048 + 0.032)}{1.848} \times 100$$

$$RA = \underline{4.3} \%$$

Appendix A.9

General Equations

EMISSION CALCULATIONS

1. Volumetric Flow and Isokinetics

- a. Standard sample gas volume, dscf

$$V_{mstd} = (V_m)(Y) \frac{(T_{std} + 460) \left(P_{bar} + \frac{\Delta H}{13.6} \right)}{(T_m + 460)(P_{std})}$$

- b. Water vapor volume, scf

$$V_{wstd} = (0.04716)(V_{lc}) \left(\frac{T_{std} + 460}{528} \right)$$

- c. Moisture content, non-dimensional

$$B_{ws} = \frac{V_{wstd}}{(V_{mstd} + V_{wstd})}$$

- d. Stack gas molecular weight, lb/lb mole (dry)

$$MW_{dry} = [0.44(\%CO_2)] + [0.32(\%O_2)] + [0.28(\%N_2)]$$

- e. Stack gas molecular weight, lb/lb mole (wet)

$$MW_{wet} = [MW_{dry}(1 - B_{ws})] + [18(B_{ws})]$$

- f. Absolute stack pressure, in Hg

$$P_s = P_{bar} + \left(\frac{P_{sg}}{13.6} \right)$$

- g. Stack velocity, ft/sec

$$v_s = (85.49)(C_p)(\sqrt{\Delta P}) \sqrt{\frac{T_s}{(P_s)(MW_{wet})}}$$

- h. Actual stack flow rate, acfm

$$Q = (v_s)(A_s)(60 \text{ min/hr})$$

- i. Standard stack gas flow rate, wscfm

$$Q_{ws} = (v_s)(A_s)(60 \text{ min/hr}) \left(\frac{T_{std} + 460}{T_s + 460} \right) \left(\frac{P_s}{P_{std}} \right)$$

- j. Standard stack gas flow rate, dscfm

$$Q_{ds} = (v_s)(A_s)(60 \text{ min/hr})(1 - B_{ws}) \left(\frac{T_{std} + 460}{T_s + 460} \right) \left(\frac{P_s}{P_{std}} \right)$$

- k. Percent isokinetic

$$I = \frac{(T_s)(V_{mstd})(P_{std})(100)}{(T_{std} + 460)(v_s)(\theta)(A_n)(P_s)(60)(1 - B_{ws})}$$

2. Gaseous Emissions

- a. Concentration, ppm volume wet (i.e. to calculate wet ppm from dry ppm)

$$C_w = (C)(1 - B_{ws})$$

- b. Concentration, ppm @ 3% O
- ₂
- dry

$$C_3 = (C) \left[\frac{(20.9 - 3.0)}{(20.9 - \% O_2)} \right]$$

- c. Concentration, ppm @ 12% CO
- ₂
- dry

$$C_{12} = (C) \left(\frac{12.0}{\% CO_2} \right)$$

- d. Concentration, ppm volume dry (i.e. to calculate dry ppm from wet ppm)

$$C = \left[\frac{C_w}{(1 - B_{ws})} \right]$$

- e. Mass emission rate, lb/hr

$$M = (C)(CF)(Q_{ds})(60 \text{ min/hr})$$

where,

CF = conversion factor from ppm to lb/scf:

$$CF_{NOx} = 1.194 \times 10^{-7} \left(\frac{\text{lb/scf}}{\text{ppm}} \right)$$

$$CF_{SO} = 1.660 \times 10^{-7} \left(\frac{\text{lb/scf}}{\text{ppm}} \right)$$

$$CF_X = CF_{NOx} \left(\frac{MW_X}{MW_{NOx}} \right) \text{ for other compounds (x)}$$

- f. Emission rate, lb/MMBtu

$$E = (C)(CF)(F_d) \left(\frac{20.9}{20.9 - \% O_2} \right)$$

- g. Mass emission rate, grams/bhp-hr

$$M_j = (M) \left(\frac{453.59 \text{ g/lb}}{J} \right)$$

3. Particulate Emissions

- a. Grain loading, gr/dscf

$$G = (0.0154) \left(\frac{G_m}{V_{m\ std}} \right)$$

- b. Grain loading corrected to 12% CO
- ₂
- , gr/dscf @ 12% CO
- ₂

$$G_{12} = (G) \left(\frac{12.0}{\% CO_2} \right)$$

- c. Mass emission rate, lb/hr

$$M = (G)(Q_{ds}) \left(\frac{60\ min/hr}{7,000\ gr/lb} \right)$$

- d. Emission rate, lb/MMBtu

$$E = (G) \left(\frac{1\ lb}{7,000\ gr} \right) (F_d) \left(\frac{20.9}{20.9 - \% O_2} \right)$$

4. Fuel Factor "F"

- a. Choice #1 – use the values for F_d provided in Method 19, Table 19-1
 Choice #2 – if you have fuel ultimate and proximate analysis, calculate F_d
 (need fuel weight %CHONS, HHV)

Stoichiometric fuel factor at 68 °F, dscf/MMBtu at 0% O₂:

$$F_d = \frac{(10^6)[3.64(\% H) + 1.53(\% C) + 0.14(\% N) + 0.57(\% S) - 0.46(\% O)]}{HHV, Btu/lb}$$

- b. Fuel factor at 60 °F (use if all your volumes and flows are at 60 °F)

$$F_{d\ 60} = F_d \left(\frac{520^\circ R}{528^\circ R} \right)$$

5. Miscellaneous Equations

- a. Standard stack gas flow rate, calculated from fuel flow and F factor, dscfm

Note: Q_f and HHV need to be in units of either lb/hr and Btu/lb, or scf/hr and Btu/scf.
Do not mix units!

(calculation based on stack %O₂)

$$Q_{ds} = (Q_f)(HHV)(10^{-6})(F_d) \left(\frac{20.9}{20.9 - \% O_2} \right) / (60 \text{ min/hr})$$

or (calculation based on stack %CO₂ – see EPA Method 19 for values of F_c)

$$Q_{ds} = (Q_f)(HHV)(10^{-6})(F_c) \left(\frac{100}{\% CO_2} \right) / (60 \text{ min/hr})$$

- b. Destruction efficiency of emission control device, %

$$EFF = \left(\frac{C_{in} - C_{out}}{C_{in}} \right) (100\%) \quad \text{based on concentrations}$$

or

$$EFF = \left(\frac{M_{in} - M_{out}}{M_{in}} \right) (100\%) \quad \text{based on mass emission rates}$$

- c. Cylinder gas audit, % accuracy

$$A_c = \left(\frac{C_m - C_a}{C_a} \right) (100\%)$$

Nomenclature:

A_c	=	accuracy of CEMS during cylinder gas audit (CGA), % difference
A_n	=	nozzle area, in ² (πr^2), where $\pi = 3.1416$ and r = radius ($\frac{1}{2}$ diameter) in inches
A_s	=	stack area, ft ² (πr^2), where $\pi = 3.1416$ and r = radius ($\frac{1}{2}$ diameter) in feet
B_{ws}	=	flue gas moisture content (multiply by 100 for % by volume)
C	=	concentration of gaseous species, ppm volume dry
C_a	=	concentration of audit gas, ppm (for CGA, equation 5c)
C_m	=	concentration measured by CEMS, ppm (for CGA, equation 5c)
C_p	=	calibration factor for pitot tube, dimensionless
C_w	=	concentration of gaseous species, ppm volume wet
C_3	=	corrected concentration of gaseous species, ppm @ 3% O ₂ dry
C_{12}	=	corrected concentration of gaseous species, ppm @ 12% CO ₂ dry
E	=	mass emission rate, lb/MMBtu
EFF	=	destruction or removal efficiency of emission control device, % efficiency
F_c	=	stoichiometric "F" factor of fuel based on CO ₂ , dscf/MMBtu @ 100% CO ₂
F_d	=	stoichiometric "F" factor of fuel based on O ₂ , dscf/MMBtu @ 0% O ₂
G	=	particulate matter grain loading, grains/dscf
G_{12}	=	corrected particulate matter grain loading, grains/dscf @ 12% CO ₂
G_m	=	mass of collected particulate matter, mg
HHV	=	higher heating value, Btu/cubic foot
I	=	% isokinetic sampling rate, %
J	=	brake horsepower, bhp
M_j	=	mass emission rate of measured species (s), g/hp-hr
M	=	mass emission rate, lb/hr
MW_{dry}	=	molecular weight of stack gas, dry basis
MW_{wet}	=	molecular weight of stack gas, wet basis
MW_s	=	molecular weight of gaseous species (s), lb/lb mole:
		CO: 28.01 (can use 28) NO _x as NO ₂ : 46.01 (can use 46)
		SO _x as SO ₂ : 64.06 (can use 64) Hydrocarbons as C: 12.01 (can use 12)
		Hydrocarbons as CH ₄ : 16.04 (can use 16) Hydrocarbons as C ₃ H ₈ : 44.10 (can use 44)
		NH ₃ : 17.03 (can use 17)
N_2	=	nitrogen content of stack gas, % volume dry
P_{bar}	=	barometric pressure, in. Hg
P_s	=	stack absolute pressure, in. Hg
P_{sg}	=	stack static pressure, inches of water, gauge (iwg)
Q	=	wet stack gas flow rate at actual conditions, acfm
Q_f	=	fuel flow rate, scfh or lb/hr (be careful of units)
Q_{ds}	=	dry stack gas flow rate at standard conditions, dscfm
Q_{ws}	=	wet stack gas flow rate at standard conditions, wscfm
SV	=	specific molar volume of an ideal gas at standard conditions, ft ³ /lb mole
T_m	=	meter temperature, °R
T_{std}	=	reference temperature, °R
T_s	=	stack gas temperature, °R
v_s	=	stack gas velocity, ft/sec
V_{lc}	=	volume of liquid collected in impingers, ml
V_m	=	dry meter volume uncorrected, acf
$V_{m std}$	=	dry meter volume corrected to standard conditions, dscf
$V_{w std}$	=	volume of water vapor at standard conditions, scf
Y	=	meter calibration coefficient, dimensionless
ΔH	=	average pressure differential across meter, inches water
ΔP	=	average velocity head of stack gas, inches water
Θ	=	sampling time, minutes

APPENDIX B

FACILITY CEMS AND PROCESS DATA

Appendix B.1

CEMS and Process Data

Average Data

Plant: DONALD VON RAESFELD

Type: Roll

Report Period: 07/15/2024 12:25 Through 07/15/2024 12:55

Interval: 1 Minute

Time Online Criteria: 1 minute(s)

Source

PCT1														
CO #/HR (LB/HR)	CTLOAD (MM)	GASEFLOW (LBS/SCFH)	NARFLOW (LBS/HR)	NARSUP (PPHM)	NOXHHR (LB/HR)	NOXAN60 (LB/MMBTU)	STKCO (PPM)	STKCO_C (PPM)	STKNOX (PPM)	STKNOX_C (PPM)	STKNOX_60 (PERCENT)	STLOAD (MM)	UNIT-HEAT (MMBTU/HR)	UNITLOAD (MM)
07/15/24 12:25	124	49	4,513.2	114.7	3.9	3.32	1.3	1.16	2.0	1.77	14.3	28	474.9	63
07/15/24 12:26	124	49	4,514.0	113.8	3.8	3.32	1.3	1.16	2.0	1.77	14.3	28	474.0	63
07/15/24 12:27	125	49	4,515.7	113.8	3.8	3.32	1.3	1.16	2.0	1.77	14.3	28	474.1	63
07/15/24 12:28	124	49	4,517.7	114.6	3.8	3.32	1.3	1.16	2.0	1.80	14.3	28	474.4	63
07/15/24 12:29	126	49	4,514.6	114.0	3.8	3.32	1.3	1.16	2.0	1.80	14.3	28	474.0	63
07/15/24 12:30	125	49	4,514.6	114.1	3.8	3.32	1.3	1.16	2.0	1.79	14.3	28	474.0	63
07/15/24 12:31	126	49	4,514.5	113.9	3.8	3.32	1.3	1.16	2.0	1.80	14.3	28	474.0	63
07/15/24 12:32	127	49	4,512.1	114.2	3.8	3.32	1.3	1.16	2.0	1.79	14.3	28	473.8	63
07/15/24 12:33	126	49	4,509.4	113.4	3.8	3.31	1.3	1.16	2.0	1.79	14.3	28	473.5	63
07/15/24 12:34	126	49	4,510.7	113.7	3.8	3.32	1.3	1.16	2.0	1.79	14.3	27	473.6	63
07/15/24 12:35	125	49	4,513.0	114.0	3.8	3.32	1.3	1.16	2.0	1.80	14.3	27	473.9	63
07/15/24 12:36	125	49	4,516.8	113.7	3.7	3.32	1.3	1.16	2.0	1.79	14.3	28	474.3	63
07/15/24 12:37	124	49	4,515.0	113.9	3.8	3.32	1.3	1.16	2.0	1.81	14.3	28	474.1	63
07/15/24 12:38	125	49	4,517.4	114.2	3.8	3.32	1.3	1.16	2.0	1.80	14.3	28	474.3	63
07/15/24 12:39	125	49	4,516.9	113.9	3.7	3.32	1.3	1.16	2.0	1.80	14.3	28	474.3	63
07/15/24 12:40	125	49	4,518.7	114.4	3.8	3.32	1.3	1.16	2.0	1.81	14.3	28	474.5	63
07/15/24 12:41	125	49	4,515.2	114.0	3.8	3.32	1.3	1.16	2.0	1.79	14.3	28	474.1	63
07/15/24 12:42	125	49	4,517.7	113.4	3.7	3.32	1.3	1.16	2.0	1.79	14.3	27	474.4	63
07/15/24 12:43	125	49	4,517.9	114.3	3.8	3.32	1.3	1.16	2.0	1.80	14.3	27	474.4	63
07/15/24 12:44	125	49	4,516.1	113.8	3.7	3.32	1.3	1.16	2.0	1.81	14.3	27	474.2	63
07/15/24 12:45	124	49	4,513.7	114.3	3.8	3.32	1.3	1.16	2.0	1.81	14.3	27	473.9	63
07/15/24 12:46	125	49	4,513.2	114.1	3.8	3.32	1.3	1.16	2.0	1.80	14.3	27	473.9	63
07/15/24 12:47	126	49	4,513.2	113.6	3.7	3.32	1.3	1.16	2.0	1.78	14.3	27	473.9	63
07/15/24 12:48	126	49	4,513.7	114.1	3.8	3.32	1.3	1.16	2.0	1.79	14.3	27	473.9	63
07/15/24 12:49	125	49	4,511.1	113.7	3.8	3.32	1.3	1.16	2.0	1.82	14.3	27	473.7	63
07/15/24 12:50	125	49	4,513.4	114.2	3.8	3.32	1.3	1.16	2.0	1.83	14.3	27	473.9	63
07/15/24 12:51	126	49	4,511.5	115.0	3.9	3.32	1.3	1.16	2.0	1.83	14.3	27	473.7	63
07/15/24 12:52	125	49	4,511.9	114.3	3.8	3.32	1.3	1.16	2.0	1.80	14.3	27	473.7	63
07/15/24 12:53	125	49	4,514.2	114.0	3.8	3.32	1.3	1.16	2.0	1.80	14.3	27	474.0	63
07/15/24 12:54	126	49	4,513.7	115.1	3.9	3.32	1.3	1.16	2.0	1.81	14.3	27	473.9	63
07/15/24 12:55	123	49	4,512.1	114.5	3.8	3.32	1.3	1.16	2.0	1.81	14.3	27	473.8	63

Average	125	49	4,514.3	114.1	3.8	3.32	1.3	1.16	2.0	1.80	14.3	27	474.0	63
Minimum	123	49	4,509.4	113.4	3.7	3.31	1.3	1.16	2.0	1.77	14.3	27	473.5	63
Maximum	127	49	4,518.7	115.1	3.9	3.32	1.3	1.16	2.0	1.83	14.3	28	474.5	63
Summation	3878	1,519	139,942.9	3,536.6	117.6	102.91	40.3	35.96	62.0	55.75	443.3	852	14,694.1	1,953

Geometric Mean

Included Data Points	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Total number of Data Points	31	31	31	31	31	31	31	31	31	31	31	31	31	31

F = Unit Offline
E = Exceedance
C = Calibration
S = Substituted
I = Invalid
M = Maintenance
T = Out Of Control
* = Suspect
U = Startup
D = Shutdown

Average Data
Plant: DONALD VON RAESFELD
Interval: 1 Minute
Type: Roll
Report Period: 07/15/2024 13:05 Through 07/15/2024 13:35
Time Online Criteria: 1 minute(s)

Source															PCT1														
CO #/HR (LB/HR)	CTLOAD (MMV)	GASEFLOW (LBS/SCFH)	NARFLOW (LB/HR)	NARSUP (PPMV)	NOXHHR (LB/HR)	NOXAN60 (LB/MMBTU)	STKCO (PPM)	STKCO_C (PPM)	STKNOX (PPM)	STKNOX_C (PPM)	STKNO2_60 (PERCENT)	STLOAD (MMV)	UNIT-HEAT (MMBTU/HR)	UNITLOAD (MMV)															
07/15/24 13:05	126	49	4,510.1	114.2	3.8	3.31	1.3	1.16	2.0	1.78	14.3	28	473.6	63															
07/15/24 13:06	126	49	4,506.0	113.7	3.8	3.31	1.3	1.16	2.0	1.78	14.3	27	473.3	63															
07/15/24 13:07	125	49	4,508.5	114.3	3.9	4,508.5	1.3	1.16	2.0	1.80	14.3	28	473.4	63															
07/15/24 13:08	126	49	4,508.1	114.2	3.8	3.31	1.3	1.16	2.0	1.79	14.3	28	473.4	63															
07/15/24 13:09	126	49	4,509.7	113.5	3.7	3.31	1.3	1.16	2.0	1.79	14.3	28	473.5	63															
07/15/24 13:10	125	49	4,509.0	114.2	3.8	3.31	1.3	1.16	2.0	1.81	14.3	28	473.4	63															
07/15/24 13:11	125	49	4,506.7	114.4	3.9	3.31	1.3	1.16	2.0	1.80	14.3	27	473.2	63															
07/15/24 13:12	126	49	4,511.0	113.5	3.7	3.32	1.3	1.16	2.0	1.80	14.3	27	473.7	63															
07/15/24 13:13	126	49	4,512.8	114.3	3.8	3.32	1.3	1.16	2.0	1.81	14.3	27	473.8	63															
07/15/24 13:14	125	49	4,512.2	114.8	3.9	3.32	1.3	1.16	2.0	1.82	14.3	27	473.8	63															
07/15/24 13:15	125	49	4,509.7	113.9	3.8	3.31	1.3	1.16	2.0	1.81	14.3	27	473.5	63															
07/15/24 13:16	126	49	4,512.2	114.7	3.9	3.32	1.3	1.16	2.0	1.81	14.3	27	473.8	63															
07/15/24 13:17	126	49	4,510.9	114.8	3.9	3.32	1.3	1.16	2.0	1.80	14.3	27	473.6	63															
07/15/24 13:18	126	49	4,511.9	113.6	3.7	3.32	1.3	1.16	2.0	1.79	14.3	27	473.7	63															
07/15/24 13:19	126	49	4,512.0	114.6	3.8	3.32	1.3	1.16	2.0	1.81	14.3	27	473.8	63															
07/15/24 13:20	126	49	4,510.2	114.7	3.9	3.32	1.3	1.16	2.0	1.80	14.3	27	473.6	63															
07/15/24 13:21	126	49	4,509.5	113.9	3.8	3.31	1.3	1.16	2.0	1.80	14.3	27	473.5	63															
07/15/24 13:22	126	49	4,509.8	114.3	3.8	3.31	1.3	1.16	2.0	1.81	14.3	27	473.5	63															
07/15/24 13:23	127	49	4,510.8	115.0	3.9	3.32	1.3	1.16	2.0	1.80	14.3	27	473.6	63															
07/15/24 13:24	126	49	4,509.1	114.0	3.8	3.31	1.3	1.16	2.0	1.80	14.3	27	473.5	63															
07/15/24 13:25	126	49	4,508.8	114.2	3.8	3.31	1.3	1.16	2.0	1.82	14.3	27	473.4	63															
07/15/24 13:26	127	49	4,511.3	115.3	3.9	3.32	1.3	1.16	2.0	1.82	14.3	27	473.7	63															
07/15/24 13:27	125	49	4,508.3	114.6	3.8	3.31	1.3	1.16	2.0	1.81	14.3	27	473.4	63															
07/15/24 13:28	125	49	4,509.0	114.3	3.8	3.31	1.3	1.16	2.0	1.80	14.3	27	473.4	63															
07/15/24 13:29	125	49	4,508.5	115.2	3.8	3.31	1.3	1.16	2.0	1.81	14.3	27	473.4	63															
07/15/24 13:30	126	49	4,509.0	114.6	3.9	3.31	1.3	1.16	2.0	1.80	14.3	27	473.4	63															
07/15/24 13:31	127	49	4,511.5	114.4	3.8	3.32	1.3	1.16	2.0	1.80	14.3	27	473.7	63															
07/15/24 13:32	125	49	4,510.6	115.2	3.9	3.32	1.3	1.16	2.0	1.81	14.3	27	473.6	63															
07/15/24 13:33	126	49	4,508.9	114.7	3.8	3.31	1.3	1.16	2.0	1.80	14.3	27	473.4	63															
07/15/24 13:34	125	49	4,510.7	114.8	3.9	3.32	1.3	1.16	2.0	1.81	14.3	27	473.6	63															
07/15/24 13:35	125	49	4,509.0	115.0	3.9	3.31	1.3	1.16	2.0	1.82	14.3	27	473.4	63															

Average	126	49	4,509.9	114.4	3.8	3.31	1.3	1.16	2.0	1.80	14.3	27	473.5	63
Minimum	125	49	4,506.7	113.5	3.7	3.31	1.3	1.16	2.0	1.78	14.3	27	473.2	63
Maximum	127	49	4,512.8	115.3	3.9	3.32	1.3	1.16	2.0	1.82	14.3	28	473.8	63
Summation	38.97	1,519	139,807.8	3,546.9	118.8	102.74	40.3	35.96	62.0	55.91	443.3	842	14,679.6	1,953
Geometric Mean														
Included Data Points	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Total number of Data Points	31	31	31	31	31	31	31	31	31	31	31	31	31	31

F = Unit Offline
E = Exceedance
C = Calibration
S = Substituted
I = Invalid
M = Maintenance
T = Out Of Control
* = Suspect
U = Startup
D = Shutdown

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Type: Roll
Report Period: 07/16/2024 08:29 Through 07/16/2024 09:10
Time Online Criteria: 1 minute(s)

[illegible]

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Average Data
Plant: DONALD VON RAESFELD
Interval: 1 Minute
Type: Roll
Report Period: 07/16/2024 09:38 Through 07/16/2024 10:08
Time Online Criteria: 1 minute(s)

Source															PCT1														
CO #/HR (LB/HR)	CTLOAD (MMV)	GASEFLOW (L/OSCH)	NARFLOW (LB/HR)	NARSUP (PPMV)	NOXHHR (LB/HR)	NOXAN60 (LB/MMTU)	STKCO (PPM)	STKCO_C (PPM)	STKNOX (PPM)	STKNOX_C (PPM)	STKNO2_80 (PERCENT)	STLOAD (MMV)	UNIT-HEAT (MMBTU/HR)	UNITLOAD (MMV)															
07/16/24 09:38	099	49	5,388.9	125.3	1.8	3,95	1.0	3,95	0.07	0.77	13.0	46	563.7	72															
07/16/24 09:39	099	49	5,370.0	125.6	1.8	3,95	1.1	3,95	0.07	0.78	13.0	46	563.9	72															
07/16/24 09:40	100	49	5,370.6	127.0	1.8	3,95	1.1	3,95	0.07	0.80	13.0	46	563.9	72															
07/16/24 09:41	098	49	5,371.3	125.7	1.8	3,95	1.0	3,95	0.07	0.75	13.0	46	564.0	72															
07/16/24 09:42	099	49	5,367.6	125.8	1.8	3,95	1.0	3,95	0.07	0.78	13.0	46	563.6	72															
07/16/24 09:43	099	49	5,370.3	126.1	1.8	3,95	1.0	3,95	0.07	0.75	13.0	46	563.9	72															
07/16/24 09:44	099	49	5,369.3	125.4	1.8	3,95	1.0	3,95	0.07	0.75	13.0	46	563.8	72															
07/16/24 09:45	099	49	5,369.7	125.6	1.8	3,95	1.0	3,95	0.07	0.76	13.0	46	563.8	72															
07/16/24 09:46	099	49	5,368.4	125.5	1.8	3,95	1.1	3,95	0.07	0.81	13.0	46	563.7	72															
07/16/24 09:47	099	49	5,367.8	125.9	1.8	3,95	1.0	3,95	0.07	0.76	13.0	46	563.6	72															
07/16/24 09:48	099	49	5,369.1	126.0	1.8	3,95	1.0	3,95	0.07	0.75	13.0	46	563.8	72															
07/16/24 09:49	098	49	5,371.0	126.7	1.8	3,95	1.0	3,95	0.07	0.75	13.0	46	564.0	72															
07/16/24 09:50	098	49	5,372.6	125.2	1.7	3,95	1.0	3,95	0.07	0.77	13.0	46	564.1	72															
07/16/24 09:51	099	49	5,370.3	126.1	1.8	3,95	1.0	3,95	0.07	0.76	13.0	46	563.9	72															
07/16/24 09:52	098	49	5,370.1	125.4	1.8	3,95	1.0	3,95	0.07	0.76	13.0	46	563.9	72															
07/16/24 09:53	099	49	5,372.4	125.4	1.8	3,95	1.1	3,95	0.07	0.80	13.0	46	564.1	72															
07/16/24 09:54	099	49	5,374.9	126.0	1.8	3,95	1.0	3,95	0.07	0.80	13.0	46	564.4	72															
07/16/24 09:55	099	49	5,373.7	125.4	1.8	3,95	1.0	3,95	0.07	0.76	13.0	46	564.2	72															
07/16/24 09:56	099	49	5,373.1	126.0	1.8	3,95	1.0	3,95	0.07	0.78	13.0	46	564.2	72															
07/16/24 09:57	097	49	5,376.2	126.5	1.8	3,95	1.0	3,95	0.07	0.75	13.0	46	564.5	72															
07/16/24 09:58	098	49	5,378.5	125.6	1.8	3,95	1.0	3,95	0.07	0.75	13.0	46	564.7	72															
07/16/24 09:59	100	49	5,377.4	125.9	1.8	3,95	1.1	3,95	0.07	0.80	13.0	46	564.6	72															
07/16/24 10:00	099	49	5,377.1	126.0	1.8	3,95	1.1	3,95	0.07	0.80	13.0	46	564.6	72															
07/16/24 10:01	099	49	5,376.4	125.8	1.8	3,95	1.0	3,95	0.07	0.78	13.0	46	564.5	72															
07/16/24 10:02	099	49	5,378.2	126.0	1.8	3,95	1.0	3,95	0.07	0.78	13.0	46	564.7	72															
07/16/24 10:03	099	49	5,377.0	125.5	1.8	3,95	1.0	3,95	0.07	0.77	13.0	46	564.6	72															
07/16/24 10:04	097	49	5,378.5	126.3	1.8	3,95	1.0	3,95	0.07	0.75	13.0	46	564.7	72															
07/16/24 10:05	098	49	5,376.4	126.5	1.8	3,95	1.0	3,95	0.07	0.75	13.0	46	564.5	72															
07/16/24 10:06	099	49	5,376.4	125.2	1.7	3,95	1.0	3,95	0.07	0.75	13.0	46	564.5	72															
07/16/24 10:07	099	49	5,370.1	126.3	1.8	3,95	1.1	3,95	0.07	0.80	13.0	46	564.8	72															
07/16/24 10:08	099	49	5,373.0	125.8	1.8	3,95	1.0	3,95	0.07	0.76	13.0	46	564.3	72															

Average	099	49	5,373.1	125.9	1.8	3,95	1.0	3,95	0.07	0.77	13.0	46	564.2	72															
Minimum	097	49	5,367.6	125.2	1.7	3,95	1.0	3,95	0.07	0.75	13.0	46	563.6	72															
Maximum	100	49	5,379.1	127.0	1.8	3,95	1.1	3,95	0.07	0.81	13.0	46	564.8	72															
Summation	30.61	1,519	168,566.2	3,902.7	55.6	122.45	31.7	23.88	74.4	55.78	403.0	1,426	17,489.5	2,232															
Geometric Mean																													
Included Data Points	31	31	31	31	31	31	31	31	31	31	31	31	31	31															
Total number of Data Points	31	31	31	31	31	31	31	31	31	31	31	31	31	31															

F = Unit Offline
E = Exceedance
C = Calibration
S = Substituted
I = Invalid
M = Maintenance
T = Out Of Control
* = Suspect
U = Startup
D = Shutdown

Average Data
Plant: DONALD VON RAESFELD
Interval: 1 Minute
Type: Roll
Report Period: 07/16/2024 10:27 Through 07/16/2024 10:57
Time Online Criteria: 1 minute(s)

Source															PCT1														
CO #/HR (LB/HR)	CTLOAD (MMV)	GASEFLOW (L/OSCHP)	NARFLOW (LB/HR)	NARSUP (PPMV)	NOX4HR (LB/HR)	NOXAN60 (LB/METU)	STKCO (PPM)	STKCO_C (PPM)	STKNOX (PPM)	STKNOX_C (PPM)	STKNO2_80 (PERCENT)	STLOAD (MMV)	UNIT-HEAT (MMBTU/HR)	UNITLOAD (MMV)															
07/16/24 10:27	100	49	5,379.3	126.6	1.8	3,95	0.007	1.1	0.80	0.007	2.4	1.80	13.0	46	564.7	72													
07/16/24 10:28	0.99	49	5,377.5	125.4	1.8	3,95	0.007	1.0	0.76	0.007	2.4	1.79	13.0	46	564.6	72													
07/16/24 10:29	0.99	49	5,377.7	125.6	1.8	3,95	0.007	1.0	0.76	0.007	2.4	1.80	13.0	46	564.7	72													
07/16/24 10:30	0.99	49	5,379.3	126.4	1.8	3,95	0.007	1.0	0.76	0.007	2.4	1.82	13.0	46	564.7	72													
07/16/24 10:31	0.99	49	5,376.1	126.2	1.8	3,95	0.007	1.1	0.80	0.007	2.4	1.81	13.0	46	564.5	72													
07/16/24 10:32	1.00	49	5,377.6	125.4	1.7	3,95	0.007	1.1	0.79	0.007	2.4	1.78	13.0	46	564.6	72													
07/16/24 10:33	0.98	49	5,378.1	126.8	1.8	3,95	0.007	1.0	0.76	0.007	2.4	1.82	13.0	46	564.7	72													
07/16/24 10:34	0.99	49	5,377.6	125.7	1.8	3,95	0.007	1.0	0.76	0.007	2.4	1.80	13.0	46	564.6	72													
07/16/24 10:35	0.99	49	5,379.1	126.8	1.8	3,95	0.007	1.0	0.76	0.007	2.4	1.80	13.0	46	564.8	72													
07/16/24 10:36	0.99	49	5,378.1	126.5	1.8	3,95	0.007	1.0	0.78	0.007	2.4	1.81	13.0	46	564.7	72													
07/16/24 10:37	0.99	49	5,378.2	126.0	1.8	3,95	0.007	1.0	0.76	0.007	2.4	1.79	13.0	46	564.7	72													
07/16/24 10:38	1.00	49	5,380.7	125.9	1.8	3,95	0.007	1.1	0.82	0.007	2.4	1.80	13.0	46	565.0	72													
07/16/24 10:39	0.99	49	5,378.9	126.5	1.8	3,95	0.007	1.0	0.80	0.007	2.4	1.81	13.0	46	564.8	72													
07/16/24 10:40	0.99	49	5,377.1	125.9	1.8	3,95	0.007	1.0	0.77	0.007	2.4	1.80	13.0	46	564.6	72													
07/16/24 10:41	0.99	49	5,379.3	126.4	1.8	3,95	0.007	1.0	0.77	0.007	2.4	1.81	13.0	46	564.8	72													
07/16/24 10:42	0.99	49	5,377.2	126.6	1.8	3,95	0.007	1.1	0.78	0.007	2.4	1.82	13.0	46	564.6	72													
07/16/24 10:43	0.99	49	5,374.2	125.7	1.8	3,95	0.007	1.0	0.76	0.007	2.4	1.79	13.0	46	564.3	72													
07/16/24 10:44	1.00	49	5,374.8	126.9	1.8	3,95	0.007	1.1	0.80	0.007	2.4	1.80	13.0	46	564.4	72													
07/16/24 10:45	0.99	49	5,375.6	126.0	1.8	3,95	0.007	1.1	0.80	0.007	2.4	1.79	13.0	46	564.4	72													
07/16/24 10:46	1.00	49	5,374.2	125.4	1.7	3,95	0.007	1.1	0.81	0.007	2.4	1.78	13.0	46	564.3	72													
07/16/24 10:47	1.00	49	5,374.4	126.4	1.8	3,95	0.007	1.1	0.82	0.007	2.4	1.80	13.0	46	564.3	72													
07/16/24 10:48	1.00	49	5,374.7	126.1	1.8	3,95	0.007	1.1	0.82	0.007	2.4	1.81	13.0	46	564.3	72													
07/16/24 10:49	0.99	49	5,375.7	125.6	1.8	3,95	0.007	1.1	0.79	0.007	2.4	1.79	13.0	46	564.1	72													
07/16/24 10:50	0.99	49	5,372.7	126.5	1.8	3,95	0.007	1.0	0.77	0.007	2.4	1.79	13.0	46	564.1	72													
07/16/24 10:51	0.99	49	5,371.6	126.0	1.8	3,95	0.007	1.0	0.79	0.007	2.4	1.80	13.0	46	564.0	72													
07/16/24 10:52	1.00	49	5,372.3	125.3	1.8	3,95	0.007	1.1	0.81	0.007	2.4	1.78	13.0	46	564.1	72													
07/16/24 10:53	1.00	49	5,370.8	126.0	1.8	3,95	0.007	1.1	0.82	0.007	2.4	1.80	13.0	46	563.9	72													
07/16/24 10:54	1.00	49	5,370.6	125.7	1.8	3,95	0.007	1.1	0.82	0.007	2.4	1.79	13.0	46	563.9	72													
07/16/24 10:55	1.00	49	5,370.5	125.5	1.8	3,95	0.007	1.1	0.81	0.007	2.4	1.78	13.0	46	563.9	72													
07/16/24 10:56	1.01	49	5,372.7	126.1	1.8	3,95	0.007	1.1	0.82	0.007	2.4	1.80	13.0	46	564.1	72													
07/16/24 10:57	1.00	49	5,371.3	125.0	1.7	3,95	0.007	1.1	0.81	0.007	2.4	1.79	13.0	46	564.0	72													

Average	0.99	49	5,375.7	126.0	1.8	3.95	0.007	1.1	0.79	2.4	1.80	13.0	46	564.4	72
Minimum	0.98	49	5,370.5	125.0	1.7	3.95	0.007	1.0	0.76	2.4	1.78	13.0	46	563.9	72
Maximum	1.01	49	5,380.7	126.9	1.8	3.95	0.007	1.1	0.82	2.4	1.82	13.0	46	565.0	72
Summation	30.82	1,519	166,645.9	3,905.9	55.5	122.45	0.217	32.7	24.47	74.4	55.75	403.0	1,426	17,497.5	2,232
Geometric Mean															

Geometric Mean

Included Data Points	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31													
Total number of Data Points	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31													

F = Unit Offline
E = Exceedance
C = Calibration
S = Substituted
I = Invalid
M = Maintenance
T = Out Of Control
* = Suspect
U = Startup
D = Shutdown

Average Data
Plant: DONALD VON RAESFELD
Interval: 1 Minute
Type: Roll
Report Period: 07/16/2024 11:23 Through 07/16/2024 11:53
Time Online Criteria: 1 minute(s)

Source															PCT1														
CO #/HR (LB/HR)	CTLOAD (MMV)	GASEFLOW (L/OSCH)	NARFLOW (LB/HR)	NARSUP (PPMV)	NOXHHR (LB/HR)	NOXAN60 (LB/METU)	STKCO (PPM)	STKCO_C (PPM)	STKNOX (PPM)	STKNOX_C (PPM)	STKCO_80 (PERCENT)	STLOAD (MMV)	UNIT-HEAT (MMBTU/HR)	UNITLOAD (MMV)															
07/16/24 11:23	1.01	49	5,379.3	126.1	1.8	3,95	0.007	1.1	3,95	0.82	13.0	46	564.7	72															
07/16/24 11:24	1.01	49	5,377.9	126.7	1.8	3,95	0.007	1.1	3,95	0.82	13.0	46	564.7	72															
07/16/24 11:25	1.00	49	5,377.9	126.6	1.8	3,95	0.007	1.1	3,95	0.81	13.0	46	564.7	72															
07/16/24 11:26	1.00	49	5,376.6	126.0	1.8	3,95	0.007	1.1	3,95	0.82	13.0	46	564.4	72															
07/16/24 11:27	1.01	49	5,379.5	126.4	1.8	3,95	0.007	1.1	3,95	0.82	13.0	46	564.8	72															
07/16/24 11:28	1.00	49	5,382.5	126.6	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.2	72															
07/16/24 11:29	1.01	49	5,380.0	126.1	1.8	3,95	0.007	1.1	3,95	0.82	13.0	46	564.9	72															
07/16/24 11:30	1.01	49	5,381.5	126.4	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.1	72															
07/16/24 11:31	1.01	49	5,381.9	126.4	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.1	72															
07/16/24 11:32	1.00	49	5,380.5	126.0	1.8	3,95	0.007	1.1	3,95	0.82	13.0	46	565.0	72															
07/16/24 11:33	1.01	49	5,381.7	126.5	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.1	72															
07/16/24 11:34	1.01	49	5,380.8	126.5	1.8	3,95	0.007	1.1	3,95	0.82	13.0	46	565.0	72															
07/16/24 11:35	1.01	49	5,381.3	126.1	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.0	72															
07/16/24 11:36	1.01	49	5,380.8	126.0	1.8	3,95	0.007	1.1	3,95	0.82	13.0	46	565.0	72															
07/16/24 11:37	1.00	49	5,384.3	126.0	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.4	72															
07/16/24 11:38	1.00	49	5,383.4	126.9	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.3	72															
07/16/24 11:39	1.00	49	5,381.8	126.1	1.8	3,96	0.007	1.1	3,96	0.80	13.0	46	565.1	72															
07/16/24 11:40	1.00	49	5,383.7	126.5	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.3	72															
07/16/24 11:41	1.00	49	5,383.5	126.7	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.3	72															
07/16/24 11:42	1.01	49	5,385.2	126.2	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.4	72															
07/16/24 11:43	1.00	49	5,384.4	126.3	1.8	3,96	0.007	1.1	3,96	0.80	13.0	46	565.4	72															
07/16/24 11:44	1.01	49	5,387.7	126.8	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.7	72															
07/16/24 11:45	1.01	49	5,385.6	126.4	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.5	72															
07/16/24 11:46	1.01	49	5,385.0	125.9	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.4	72															
07/16/24 11:47	1.02	49	5,383.9	126.3	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.3	72															
07/16/24 11:48	1.00	49	5,384.6	126.8	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.4	72															
07/16/24 11:49	1.00	49	5,386.0	126.8	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.5	72															
07/16/24 11:50	1.00	49	5,385.1	126.6	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.4	72															
07/16/24 11:51	1.01	49	5,384.5	125.7	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.4	72															
07/16/24 11:52	1.01	49	5,386.5	126.5	1.8	3,96	0.007	1.1	3,96	0.81	13.0	46	565.6	72															
07/16/24 11:53	1.00	49	5,385.3	126.7	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.5	72															

Average	1.01	49	5,382.6	126.1	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.2	72
Minimum	1.00	49	5,375.6	125.3	1.8	3,95	0.007	1.1	3,95	0.80	13.0	46	564.4	72
Maximum	1.02	49	5,387.7	126.9	1.8	3,96	0.007	1.1	3,96	0.82	13.0	46	565.7	72
Summation	31.18	1,519	168,860.9	3,910.2	55.8	122.67	0.217	34.1	25.36	74.4	403.0	1,426	17,520.6	2,232
Geometric Mean														
Included Data Points	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Total number of Data Points	31	31	31	31	31	31	31	31	31	31	31	31	31	31

F = Unit Offline
E = Exceedance
C = Calibration
S = Substituted
I = Invalid
M = Maintenance
T = Out Of Control
* = Suspect
U = Startup
D = Shutdown

Average Data

Plant: DONALD VON RAESFELD

Interval: 1 Minute

Type: Roll

Report Period: 07/16/2024 12:03 Through 07/16/2024 12:24

Time Online Criteria: 1 minute(s)

Source	PCT1														
	CO #/HR (LB/HR)	CTLOAD (MW)	GASFLOW (100SCFH)	NBSFLOW (LB/HR)	NHSUP (PPMV)	NOX4HR (LB/HR)	NOX#60 (LB/MMBTU)	STKCO (PPM)	STKCO_C (PPM)	STNOX (PPM)	STNOX_C (PPM)	STKCO2_60 (PERCENT)	STLOAD (MW)	UNIT/HEAT (MMBTU/HR)	UNIT/LOAD (MW)
07/16/24 12:03	1.01	49	5,387.6	126.1	1.8	396	0.007	1.1	0.82	2.4	1.81	13.0	46	565.7	72
07/16/24 12:04	1.01	49	5,389.2	126.6	1.8	396	0.007	1.1	0.82	2.4	1.80	13.0	46	565.9	72
07/16/24 12:05	1.01	49	5,387.3	125.4	1.8	396	0.007	1.1	0.81	2.4	1.78	13.0	46	565.7	72
07/16/24 12:06	1.01	49	5,388.5	126.2	1.8	396	0.007	1.1	0.82	2.4	1.80	13.0	46	565.8	72
07/16/24 12:07	1.02	49	5,386.7	125.6	1.8	396	0.007	1.1	0.82	2.4	1.79	13.0	46	565.6	72
07/16/24 12:08	1.00	49	5,388.8	126.0	1.8	396	0.007	1.1	0.80	2.4	1.80	13.0	46	565.8	72
07/16/24 12:09	1.00	49	5,386.7	126.6	1.8	396	0.007	1.1	0.82	2.4	1.81	13.0	46	565.8	72
07/16/24 12:10	1.01	49	5,386.5	125.4	1.8	396	0.007	1.1	0.82	2.4	1.79	13.0	46	565.6	72
07/16/24 12:11	1.01	49	5,387.3	126.1	1.8	396	0.007	1.1	0.82	2.4	1.81	13.0	46	565.7	72
07/16/24 12:12	1.00	49	5,390.4	126.4	1.8	396	0.007	1.1	0.80	2.4	1.80	13.0	46	566.0	72
07/16/24 12:13	1.00	49	5,389.6	125.3	1.7	396	0.007	1.1	0.82	2.4	1.78	13.0	46	565.9	72
07/16/24 12:14	1.00	49	5,392.2	125.6	1.8	396	0.007	1.1	0.82	2.4	1.80	13.0	46	566.2	72
07/16/24 12:15	0.99	49	5,391.9	126.3	1.8	396	0.007	1.1	0.82	2.4	1.81	13.0	46	566.1	72
07/16/24 12:16	1.00	49	5,390.5	126.2	1.8	396	0.007	1.1	0.80	2.4	1.79	13.0	46	566.0	72
07/16/24 12:17	1.01	49	5,391.9	125.4	1.7	396	0.007	1.1	0.82	2.4	1.77	13.0	46	566.1	72
07/16/24 12:18	1.00	49	5,391.4	125.7	1.8	396	0.007	1.1	0.82	2.4	1.79	13.0	46	566.1	72
07/16/24 12:19	1.01	49	5,390.5	125.1	1.8	396	0.007	1.1	0.82	2.4	1.81	13.0	46	566.0	72
07/16/24 12:20	1.01	49	5,393.4	126.0	1.8	396	0.007	1.1	0.82	2.4	1.82	13.0	46	566.3	72
07/16/24 12:21	1.00	49	5,394.7	126.5	1.8	397	0.007	1.1	0.82	2.4	1.80	13.0	47	566.4	73
07/16/24 12:22	1.01	49	5,394.9	125.3	1.8	397	0.007	1.1	0.82	2.4	1.79	13.0	47	566.5	73
07/16/24 12:23	1.01	49	5,392.6	125.4	1.8	396	0.007	1.1	0.82	2.4	1.79	13.0	47	566.2	73
07/16/24 12:24	1.00	49	5,394.4	126.0	1.8	396	0.007	1.1	0.82	2.4	1.80	13.0	47	566.4	73

F = Unit Offline
E = Exceedance
C = Calibration
S = Substituted
I = Invalid
M = Maintenance
T = Out Of Control
* = Suspect
U = Startup
D = Shutdown

Average Data

Plant: DONALD VON RAESFELD

Interval: 1 Minute

Type: Roll

Report Period: 07/16/2024 12:40 Through 07/16/2024 13:01

Time Online Criteria: 1 minute(s)

Source															
CO #/HR (LB/HR)	CTLOAD (MMV)	GASEFLOW (100SCFH)	NARFLOW (LB/HR)	NARSUP (PPMV)	NOXAHR (LB/HR)	NOXAHR60 (LB/MMBTU)	STKCO (PPM)	STKCO_C (PPM)	STKNOX (PPM)	STKNOX_C (PPM)	STKNO2_80 (PERCENT)	STLOAD (MMV)	UNIT-HEAT (MMBTU/HR)	UNITLOAD (MMV)	
07/16/24 12:40	103	49	5,414.3	125.4	1.7	398	0.007	1.1	0.82	2.4	1.81	47	565.5	73	
07/16/24 12:41	104	49	5,414.9	126.9	1.8	398	0.007	1.1	0.82	2.5	1.85	47	565.6	73	
07/16/24 12:42	104	49	5,416.0	125.6	1.7	398	0.007	1.1	0.82	2.4	1.81	47	565.7	73	
07/16/24 12:43	104	49	5,415.2	126.3	1.8	398	0.007	1.1	0.82	2.4	1.81	47	565.6	73	
07/16/24 12:44	104	49	5,413.9	126.9	1.8	398	0.007	1.1	0.82	2.4	1.82	47	565.5	73	
07/16/24 12:45	103	49	5,411.1	125.6	1.7	398	0.007	1.1	0.82	2.4	1.79	47	565.2	73	
07/16/24 12:46	103	49	5,411.2	126.3	1.8	398	0.007	1.1	0.82	2.4	1.80	47	565.2	73	
07/16/24 12:47	102	49	5,412.8	126.7	1.8	398	0.007	1.1	0.82	2.5	1.82	47	565.3	73	
07/16/24 12:48	102	49	5,411.4	125.9	1.8	398	0.007	1.1	0.82	2.4	1.80	47	565.2	73	
07/16/24 12:49	100	49	5,410.4	125.8	1.8	398	0.007	1.1	0.80	2.4	1.81	47	565.1	73	
07/16/24 12:50	102	49	5,410.1	126.7	1.8	398	0.007	1.1	0.82	2.4	1.80	47	565.1	73	
07/16/24 12:51	102	49	5,410.0	125.8	1.7	398	0.007	1.1	0.82	2.4	1.78	47	565.1	73	
07/16/24 12:52	102	49	5,409.2	126.9	1.8	398	0.007	1.1	0.82	2.4	1.81	47	565.0	73	
07/16/24 12:53	102	49	5,409.0	126.3	1.8	397	0.007	1.1	0.82	2.4	1.79	47	567.8	73	
07/16/24 12:54	102	49	5,409.8	125.8	1.7	398	0.007	1.1	0.82	2.4	1.79	47	565.0	73	
07/16/24 12:55	102	49	5,409.3	126.5	1.8	398	0.007	1.1	0.82	2.4	1.80	47	565.0	73	
07/16/24 12:56	102	49	5,409.3	126.5	1.8	398	0.007	1.1	0.82	2.4	1.81	47	565.0	73	
07/16/24 12:57	103	49	5,410.1	125.7	1.8	398	0.007	1.1	0.82	2.4	1.78	47	565.1	73	
07/16/24 12:58	103	49	5,411.2	126.7	1.8	398	0.007	1.1	0.82	2.4	1.81	47	565.2	73	
07/16/24 12:59	103	49	5,409.5	126.7	1.8	398	0.007	1.1	0.82	2.4	1.81	47	565.0	73	
07/16/24 13:00	102	49	5,409.7	125.8	1.7	398	0.007	1.1	0.82	2.4	1.77	47	565.0	73	
07/16/24 13:01	103	49	5,411.5	126.2	1.8	398	0.007	1.1	0.82	2.4	1.79	47	565.2	73	

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C = Calibration
S = Substituted
I = Invalid
M = Maintenance
T = Out Of Control
* = Suspect
U = Startup
D = Shutdown

Average Data
Plant: DONALD VON RAESFELD
Interval: 1 Minute
Type: Roll
Report Period: 07/16/2024 13:07 Through 07/16/2024 13:28
Time Online Criteria: 1 minute(s)

Source														
PCT1														
CO #/HR (LB/HR)	CTLOAD (MMV)	GASEFLOW (10SCFH)	NARFLOW (LB/HR)	NARSLIP (PPMV)	NOX4HR (LB/HR)	NOXAN60 (LB/MMBTU)	STKCO (PPM)	STKCO_C (PPM)	STKNOX (PPM)	STKNOX_C (PPM)	STKCO2_60 (PERCENT)	STLOAD (MMV)	UNIT-HEAT (MMBTU/HR)	UNITLOAD (MMV)
07/16/24 13:07	102	49	5,414.9	126.9	1.8	398	0.007	1.1	0.82	2.4	1.81	47	568.6	73
07/16/24 13:08	102	49	5,412.3	126.2	1.8	398	0.007	1.1	0.82	2.4	1.79	47	568.3	73
07/16/24 13:09	103	49	5,411.7	126.6	1.7	398	0.007	1.1	0.82	2.4	1.80	47	568.2	73
07/16/24 13:10	102	49	5,410.6	126.7	1.8	398	0.007	1.1	0.82	2.4	1.80	47	568.1	73
07/16/24 13:11	101	49	5,410.8	125.9	1.7	398	0.007	1.1	0.82	2.4	1.79	47	568.1	73
07/16/24 13:12	102	49	5,413.2	126.6	1.7	398	0.007	1.1	0.82	2.4	1.80	47	568.4	73
07/16/24 13:13	102	49	5,411.6	127.0	1.8	398	0.007	1.1	0.82	2.5	1.82	47	568.2	73
07/16/24 13:14	103	49	5,410.9	126.1	1.8	398	0.007	1.1	0.82	2.4	1.79	47	568.1	73
07/16/24 13:15	103	49	5,408.9	125.5	1.7	398	0.007	1.1	0.82	2.4	1.78	47	567.9	73
07/16/24 13:16	102	49	5,407.8	126.6	1.8	397	0.007	1.1	0.82	2.4	1.82	47	567.8	73
07/16/24 13:17	103	49	5,408.8	126.5	1.8	398	0.007	1.1	0.82	2.4	1.79	47	567.9	73
07/16/24 13:18	103	49	5,411.4	126.6	1.7	398	0.007	1.1	0.82	2.4	1.77	47	568.2	73
07/16/24 13:19	103	49	5,411.3	126.7	1.7	398	0.007	1.1	0.82	2.4	1.80	47	568.2	73
07/16/24 13:20	103	49	5,408.8	125.9	1.8	398	0.007	1.1	0.82	2.4	1.81	47	567.9	73
07/16/24 13:21	104	49	5,412.7	126.6	1.8	398	0.007	1.1	0.82	2.4	1.82	47	568.3	73
07/16/24 13:22	104	49	5,414.0	126.2	1.8	398	0.007	1.1	0.82	2.4	1.81	47	568.5	73
07/16/24 13:23	102	49	5,412.9	126.3	1.8	398	0.007	1.1	0.82	2.4	1.80	47	568.4	73
07/16/24 13:24	102	49	5,413.3	126.3	1.8	398	0.007	1.1	0.82	2.4	1.80	47	568.4	73
07/16/24 13:25	102	49	5,412.4	126.0	1.8	398	0.007	1.1	0.82	2.4	1.80	47	568.3	73
07/16/24 13:26	103	49	5,413.3	126.1	1.8	398	0.007	1.1	0.82	2.4	1.80	47	568.4	73
07/16/24 13:27	102	49	5,415.7	126.3	1.8	398	0.007	1.1	0.82	2.4	1.80	47	568.6	73
07/16/24 13:28	102	49	5,412.0	126.6	1.8	398	0.007	1.1	0.82	2.4	1.80	47	568.4	73

Average	103	49	5,411.8	126.2	1.8	398	0.007	1.1	0.82	2.4	1.80	13.0	47	568.2	73
Minimum	101	49	5,407.8	125.5	1.7	397	0.007	1.1	0.82	2.4	1.77	13.0	47	567.8	73
Maximum	104	49	5,415.7	127.0	1.8	398	0.007	1.1	0.82	2.5	1.82	13.0	47	568.6	73
Summation	2255	1,078	119,080.2	2,776.6	39.0	87.55	0.154	24.2	18.04	52.9	39.60	286.0	1,034	12,501.2	1,606

Geometric Mean

Included Data Points	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
Total number of Data Points	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22

F = Unit Offline
E = Exceedance
C = Calibration
S = Substituted
I = Invalid
M = Maintenance
T = Out Of Control
* = Suspect
U = Startup
D = Shutdown

Average Data

Plant: DONALD VON RAESFELD

Interval: 1 Minute

Type: Roll

Report Period: 07/16/2024 13:38 Through 07/16/2024 13:59

Time Online Criteria: 1 minute(s)

Source	PCT1														
	CO #/HR (LB/HR)	CTLOAD (MMV)	GASEFLOW (100SCFH)	NARFLOW (LB/HR)	NARSLIP (PPMV)	NOX4HR (LB/HR)	NOXAN60 (LB/MMBTU)	STKCO (PPM)	STKCO_C (PPM)	STKNOX (PPM)	STKNOX_C (PPM)	STKCO2_80 (PERCENT)	STLOAD (MMV)	UNIT-HEAT (MMBTU/HR)	UNITLOAD (MMV)
07/16/24 13:38	102	49	5.415.0	125.5	1.7	398	0.007	1.1	0.82	2.4	1.80	13.0	47	568.6	73
07/16/24 13:39	101	49	5.415.5	126.9	1.8	398	0.007	1.1	0.82	2.4	1.82	13.0	47	568.6	73
07/16/24 13:40	101	49	5.418.6	126.2	1.8	398	0.007	1.1	0.81	2.4	1.80	13.0	47	569.0	73
07/16/24 13:41	101	49	5.415.8	125.9	1.7	398	0.007	1.1	0.82	2.4	1.80	13.0	47	568.7	73
07/16/24 13:42	102	49	5.416.5	126.6	1.8	398	0.007	1.1	0.82	2.4	1.81	13.0	47	568.7	73
07/16/24 13:43	102	49	5.418.0	126.1	1.8	398	0.007	1.1	0.82	2.4	1.80	13.0	47	568.9	73
07/16/24 13:44	103	49	5.415.5	125.8	1.8	398	0.007	1.1	0.82	2.4	1.79	13.0	47	568.6	73
07/16/24 13:45	103	49	5.415.2	126.6	1.8	398	0.007	1.1	0.82	2.4	1.81	13.0	47	568.6	73
07/16/24 13:46	102	49	5.418.2	126.1	1.8	398	0.007	1.1	0.82	2.4	1.80	13.0	47	568.9	73
07/16/24 13:47	101	49	5.415.1	125.7	1.7	398	0.007	1.1	0.82	2.4	1.79	13.0	47	568.6	73
07/16/24 13:48	102	49	5.416.3	126.7	1.8	398	0.007	1.1	0.82	2.4	1.80	13.0	47	568.7	73
07/16/24 13:49	103	49	5.415.6	125.9	1.8	398	0.007	1.1	0.82	2.4	1.79	13.0	47	568.6	73
07/16/24 13:50	101	49	5.414.7	125.3	1.7	398	0.007	1.1	0.82	2.4	1.78	13.0	47	568.5	73
07/16/24 13:51	102	49	5.416.2	126.5	1.8	398	0.007	1.1	0.82	2.4	1.80	13.0	47	568.7	73
07/16/24 13:52	102	49	5.415.7	126.0	1.8	398	0.007	1.1	0.82	2.4	1.80	13.0	47	568.6	73
07/16/24 13:53	103	49	5.415.0	125.8	1.8	398	0.007	1.1	0.82	2.4	1.80	13.0	47	568.6	73
07/16/24 13:54	103	49	5.415.6	126.5	1.8	398	0.007	1.1	0.82	2.4	1.80	13.0	47	568.7	73
07/16/24 13:55	102	49	5.415.8	125.9	1.8	398	0.007	1.1	0.82	2.4	1.81	13.0	47	568.7	73
07/16/24 13:56	102	49	5.418.1	125.5	1.7	398	0.007	1.1	0.82	2.4	1.79	13.0	47	568.9	73
07/16/24 13:57	102	49	5.417.3	126.7	1.8	398	0.007	1.1	0.82	2.4	1.81	13.0	47	568.8	73
07/16/24 13:58	103	49	5.418.4	126.2	1.8	398	0.007	1.1	0.82	2.4	1.80	13.0	47	568.7	73
07/16/24 13:59	102	49	5.418.6	125.6	1.7	398	0.007	1.1	0.82	2.4	1.79	13.0	47	569.0	73

F = Unit Offline
E = Exceedance
C = Calibration
S = Substituted
I = Invalid
M = Maintenance
T = Out Of Control
* = Suspect
U = Startup
D = Shutdown

Average Data

Plant: DONALD VON RAESFELD

Interval: 1 Minute

Type: Roll

Report Period: 07/16/2024 14:06 Through 07/16/2024 14:27

Time Online Criteria: 1 minute(s)

Source	PCT1														
	CO #/HR (LB/HR)	CTLOAD (MMV)	GASFLOW (100SCFH)	NARFLOW (LB/HR)	NHRSUP (PPMV)	NOX4HR (LB/HR)	NOX#60 (LB/MMBTU)	STKCO (PPM)	STKCO_C (PPM)	STNOX (PPM)	STNOX_C (PPM)	STKCO2_60 (PERCENT)	STLOAD (MMV)	UNIT/HEAT (MMBTU/HR)	UNIT/LOAD (MMV)
07/16/24	14:06	103	49	5,414.6	127.2	1.8	398	0.007	1.1	0.82	2.4	1.82	47	568.6	73
	14:07	102	49	5,414.0	126.0	1.8	398	0.007	1.1	0.82	2.4	1.78	47	568.5	73
	14:08	102	49	5,413.8	125.9	1.8	398	0.007	1.1	0.82	2.4	1.79	47	568.4	73
	14:09	101	49	5,414.9	127.2	1.8	398	0.007	1.1	0.82	2.4	1.82	47	568.6	73
	14:10	103	49	5,415.3	126.0	1.8	398	0.007	1.1	0.82	2.4	1.80	47	568.6	73
	14:11	102	49	5,416.1	126.5	1.8	398	0.007	1.1	0.82	2.4	1.79	47	568.7	73
	14:12	103	49	5,414.9	126.8	1.8	398	0.007	1.1	0.82	2.4	1.80	47	568.6	73
	14:13	102	49	5,416.4	125.7	1.7	398	0.007	1.1	0.82	2.4	1.78	47	568.7	73
	14:14	102	49	5,416.4	126.8	1.8	398	0.007	1.1	0.82	2.4	1.82	47	568.7	73
	14:15	103	49	5,413.9	126.8	1.8	398	0.007	1.1	0.82	2.4	1.81	47	568.5	73
07/16/24	14:16	102	49	5,411.5	125.8	1.8	398	0.007	1.1	0.82	2.4	1.78	47	568.2	73
	14:17	101	49	5,415.7	126.3	1.8	398	0.007	1.1	0.82	2.4	1.80	47	568.6	73
	14:18	102	49	5,414.8	126.6	1.8	398	0.007	1.1	0.82	2.5	1.82	47	568.6	73
	14:19	101	49	5,413.8	126.6	1.8	398	0.007	1.1	0.82	2.4	1.79	47	568.4	73
	14:20	103	49	5,415.6	126.6	1.8	398	0.007	1.1	0.82	2.4	1.78	47	568.6	73
	14:21	102	49	5,416.9	125.8	1.7	398	0.007	1.1	0.82	2.4	1.78	47	568.8	73
	14:22	104	49	5,417.1	125.8	1.7	398	0.007	1.1	0.82	2.4	1.79	47	568.8	73
	14:23	104	49	5,419.2	126.8	1.8	398	0.007	1.1	0.82	2.4	1.81	47	569.0	73
	14:24	104	49	5,418.4	126.1	1.8	398	0.007	1.1	0.82	2.4	1.79	47	568.9	73
	14:25	104	49	5,416.2	125.6	1.7	398	0.007	1.1	0.82	2.4	1.80	47	568.7	73
07/16/24	14:26	104	49	5,413.3	126.9	1.8	398	0.007	1.1	0.82	2.4	1.82	47	568.4	73
	14:27	102	49	5,417.2	126.4	1.8	398	0.007	1.1	0.82	2.4	1.81	47	568.8	73

F = Unit Offline
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I = Invalid
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T = Out Of Control
* = Suspect
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D = Shutdown

Average Data
Plant: DONALD VON RAESFELD
Interval: 1 Minute
Type: Roll
Report Period: 07/16/2024 14:39 Through 07/16/2024 15:00
Time Online Criteria: 1 minute(s)

Source															PCT1														
CO #/HR (LB/HR)	CTLOAD (MMV)	GASEFLOW (LBS/CFH)	NAPFLOW (LB/HR)	NARSUP (PPMV)	NOX4HR (LB/HR)	NOXAN60 (LB/MMBTU)	STKCO (PPM)	STKCO_C (PPM)	STKNOX (PPM)	STKNOX_C (PPM)	STKCO2_60 (PERCENT)	STLOAD (MMV)	UNIT-HEAT (MMBTU/HR)	UNITLOAD (MMV)															
07/16/24 14:39	103	49	5,414.2	126.0	1.8	398	0.007	1.1	0.82	2.4	179	47	568.5	73															
07/16/24 14:40	104	49	5,412.1	125.4	1.7	398	0.007	1.1	0.82	2.4	180	47	568.3	73															
07/16/24 14:41	104	49	5,413.3	126.6	1.8	398	0.007	1.1	0.82	2.4	182	47	568.4	73															
07/16/24 14:42	104	49	5,414.4	126.0	1.8	398	0.007	1.1	0.82	2.4	180	47	568.5	73															
07/16/24 14:43	103	49	5,415.9	125.5	1.7	398	0.007	1.1	0.82	2.4	178	47	568.7	73															
07/16/24 14:44	103	49	5,413.5	126.3	1.8	398	0.007	1.1	0.82	2.4	180	47	568.4	73															
07/16/24 14:45	102	49	5,413.6	126.1	1.8	398	0.007	1.1	0.82	2.4	180	47	568.4	73															
07/16/24 14:46	103	49	5,415.3	125.3	1.7	398	0.007	1.1	0.82	2.4	179	47	568.6	73															
07/16/24 14:47	103	49	5,414.9	126.7	1.8	397	0.007	1.1	0.81	2.4	180	47	568.6	73															
07/16/24 14:48	101	49	5,413.2	126.4	1.8	398	0.007	1.1	0.81	2.5	180	47	568.4	73															
07/16/24 14:49	104	49	5,413.8	126.0	1.8	398	0.007	1.1	0.82	2.4	182	47	568.3	73															
07/16/24 14:50	104	49	5,412.4	126.9	1.8	398	0.007	1.1	0.82	2.4	181	47	568.3	73															
07/16/24 14:51	103	49	5,414.0	126.4	1.7	398	0.007	1.1	0.82	2.4	179	47	568.5	73															
07/16/24 14:52	104	49	5,412.8	125.7	1.8	398	0.007	1.1	0.82	2.4	181	47	568.2	73															
07/16/24 14:53	104	49	5,411.7	126.6	1.8	398	0.007	1.1	0.82	2.4	181	47	568.2	73															
07/16/24 14:54	105	49	5,413.1	125.7	1.8	398	0.007	1.1	0.82	2.4	178	47	568.4	73															
07/16/24 14:55	104	49	5,415.6	125.5	1.7	398	0.007	1.1	0.82	2.4	178	47	568.6	73															
07/16/24 14:56	103	49	5,413.0	125.5	1.8	398	0.007	1.1	0.82	2.4	180	47	568.4	73															
07/16/24 14:57	104	49	5,411.7	125.6	1.8	398	0.007	1.1	0.82	2.4	181	47	568.2	73															
07/16/24 14:58	104	49	5,412.0	126.3	1.8	398	0.007	1.1	0.82	2.4	180	47	568.3	73															
07/16/24 14:59	104	49	5,411.8	125.2	1.7	398	0.007	1.1	0.82	2.4	178	47	568.2	73															
07/16/24 15:00	105	49	5,414.4	125.4	1.7	398	0.007	1.1	0.82	2.4	179	47	568.5	73															

Average	104	49	5,413.5	125.9	1.8	398	0.007	1.1	0.82	2.4	180	47	568.4	73															
Minimum	101	49	5,411.7	125.2	1.7	389	0.007	1.1	0.81	2.4	178	47	568.2	73															
Maximum	105	49	5,415.9	126.9	1.8	398	0.007	1.1	0.82	2.5	182	47	568.7	73															
Summation	2278	1,078	119,098.7	2,769.3	38.9	87.46	0.154	24.2	18.02	52.9	39.53	1,034	12,505.1	1,606															
Geometric Mean																													

Included Data Points	22	22	22	22	22	22	22	22	22	22	22	22	22	22															
Total number of Data Points	22	22	22	22	22	22	22	22	22	22	22	22	22	22															

F = Unit Offline
E = Exceedance
C = Calibration
S = Substituted
I = Invalid
M = Maintenance
T = Out Of Control
* = Suspect
U = Startup
D = Shutdown

Average Data
Plant: DONALD VON RAESFELD
Interval: 1 Minute
Type: Roll
Report Period: 07/17/2024 07:27 Through 07/17/2024 07:57
Time Online Criteria: 1 minute(s)

Source															PCT1									
CO #/HR (LB/HR)	CTLOAD (MMV)	GASEFLOW (100SCFH)	NARFLOW (LB/HR)	NARSUP (PPMV)	NOX#/HR (LB/HR)	NOX#/60 (LB/METU)	STKCO (PPM)	STKCO_C (PPM)	STNOX (PPM)	STNOX_C (PPM)	STCO2_60 (PERCENT)	STLOAD (MMV)	UNIT-HEAT (MMBTU/HR)	UNITLOAD (MMV)										
07/17/24 07:27	0.86	25	2632.6	70.1	3.4	0.007	1.2	1.35	1.6	1.80	15.6	21	276.4	33										
07/17/24 07:28	0.86	25	2632.7	70.2	3.5	0.007	1.2	1.36	1.6	1.80	15.7	21	276.4	33										
07/17/24 07:29	0.87	25	2632.7	70.6	3.5	0.007	1.2	1.38	1.6	1.80	15.7	21	276.4	33										
07/17/24 07:30	0.87	25	2632.5	70.3	3.5	0.007	1.3	1.44	1.6	1.79	15.7	21	276.4	33										
07/17/24 07:31	0.88	25	2632.8	70.2	3.5	0.007	1.3	1.47	1.6	1.79	15.7	21	276.4	33										
07/17/24 07:32	0.87	25	2632.8	70.1	3.4	0.007	1.2	1.36	1.6	1.78	15.7	21	276.4	33										
07/17/24 07:33	0.87	25	2633.3	70.2	3.4	0.007	1.2	1.38	1.6	1.79	15.7	21	276.5	33										
07/17/24 07:34	0.87	25	2631.5	69.6	3.4	0.007	1.2	1.38	1.6	1.79	15.7	21	276.3	33										
07/17/24 07:35	0.88	25	2632.2	69.5	3.4	0.007	1.3	1.42	1.6	1.78	15.7	21	276.4	33										
07/17/24 07:36	0.87	25	2632.4	70.3	3.5	0.007	1.2	1.38	1.6	1.80	15.7	21	276.4	33										
07/17/24 07:37	0.87	25	2631.9	69.6	3.4	0.007	1.2	1.38	1.6	1.79	15.7	21	276.3	33										
07/17/24 07:38	0.88	25	2632.8	69.4	3.3	0.007	1.3	1.48	1.6	1.80	15.7	21	276.4	33										
07/17/24 07:39	0.88	25	2632.2	70.3	3.5	0.007	1.3	1.46	1.6	1.81	15.7	21	276.4	33										
07/17/24 07:40	0.87	25	2633.3	69.6	3.4	0.007	1.2	1.39	1.6	1.80	15.7	21	276.5	33										
07/17/24 07:41	0.87	25	2631.9	70.4	3.5	0.007	1.3	1.40	1.6	1.81	15.7	21	276.3	33										
07/17/24 07:42	0.86	25	2632.7	69.8	3.4	0.007	1.2	1.38	1.6	1.80	15.7	21	276.4	33										
07/17/24 07:43	0.87	25	2631.5	69.7	3.4	0.007	1.2	1.40	1.6	1.79	15.7	21	276.3	33										
07/17/24 07:44	0.87	25	2633.0	69.8	3.4	0.007	1.2	1.38	1.6	1.82	15.7	21	276.5	33										
07/17/24 07:45	0.86	25	2633.1	70.3	3.5	0.007	1.2	1.36	1.6	1.82	15.7	21	276.5	33										
07/17/24 07:46	0.86	25	2632.6	70.5	3.5	0.007	1.2	1.36	1.6	1.81	15.7	21	276.4	33										
07/17/24 07:47	0.86	25	2632.4	70.3	3.5	0.007	1.2	1.36	1.6	1.79	15.7	21	276.4	33										
07/17/24 07:48	0.87	25	2632.7	69.4	3.3	0.007	1.2	1.36	1.6	1.78	15.7	21	276.4	33										
07/17/24 07:49	0.87	25	2633.0	69.8	3.4	0.007	1.2	1.39	1.6	1.79	15.7	21	276.5	33										
07/17/24 07:50	0.86	25	2633.2	70.0	3.4	0.007	1.2	1.36	1.6	1.80	15.7	21	276.5	33										
07/17/24 07:51	0.87	25	2634.7	69.5	3.4	0.007	1.2	1.38	1.6	1.79	15.7	21	276.6	33										
07/17/24 07:52	0.87	25	2634.3	70.3	3.5	0.007	1.2	1.38	1.6	1.80	15.7	21	276.6	33										
07/17/24 07:53	0.87	25	2634.5	69.2	3.3	0.007	1.2	1.36	1.6	1.78	15.7	21	276.6	33										
07/17/24 07:54	0.88	25	2633.9	69.6	3.4	0.007	1.3	1.48	1.6	1.79	15.7	21	276.6	33										
07/17/24 07:55	0.88	25	2634.4	69.0	3.3	0.007	1.3	1.45	1.6	1.80	15.7	21	276.6	33										
07/17/24 07:56	0.87	25	2635.6	69.6	3.4	0.007	1.2	1.40	1.6	1.81	15.7	21	276.7	33										
07/17/24 07:57	0.87	25	2635.7	70.0	3.4	0.007	1.3	1.44	1.6	1.81	15.7	21	276.7	33										

Average	0.87	25	2,633.1	69.9	3.4	0.007	1.2	1.39	1.6	1.80	15.7	21	276.5	33
Minimum	0.86	25	2,631.5	69.0	3.3	0.007	1.2	1.35	1.6	1.76	15.6	21	276.3	33
Maximum	0.88	25	2,635.7	70.6	3.5	0.007	1.3	1.48	1.6	1.82	15.7	21	276.7	33
Summation	26.96	775	81,625.1	2,467.2	106.1	0.217	38.1	43.23	49.6	55.69	486.6	651	8,570.2	1,023

Geometric Mean

Included Data Points	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Total number of Data Points	31	31	31	31	31	31	31	31	31	31	31	31	31	31

F = Unit Offline
E = Exceedance
C = Calibration
S = Substituted
I = Invalid
M = Maintenance
T = Out Of Control
* = Suspect
U = Startup
D = Shutdown

Average Data
Plant: DONALD VON RAESFELD
Interval: 1 Minute
Type: Roll
Report Period: 07/17/2024 08:04 Through 07/17/2024 08:34
Time Online Criteria: 1 minute(s)

Source															PCT1									
CO #/HR (LB/HR)	CTLOAD (MMV)	GASEFLOW (100SCFH)	NAPFLOW (LB/HR)	NHRSUP (PPMV)	NOX#HR (LB/HR)	NOX#60 (LB/METU)	STKCO (PPM)	STKCO_C (PPM)	STNOX (PPM)	STNOX_C (PPM)	STO2_60 (PERCENT)	STLOAD (MMV)	UNITHEAT (MMBTU/HR)	UNITLOAD (MMV)										
07/17/24 08:04	0.86	25	2636.5	69.7	3.4	0.007	1.2	136	1.6	180	15.7	21	276.8	33										
07/17/24 08:05	0.85	25	2636.2	70.2	3.5	0.007	1.2	136	1.6	181	15.7	21	276.8	33										
07/17/24 08:06	0.85	25	2636.3	69.5	3.3	0.007	1.2	136	1.6	178	15.7	21	276.8	33										
07/17/24 08:07	0.85	25	2636.1	69.8	3.4	0.007	1.2	136	1.6	178	15.7	21	276.8	33										
07/17/24 08:08	0.85	25	2637.3	69.1	3.3	0.007	1.2	136	1.6	178	15.7	21	276.9	33										
07/17/24 08:09	0.85	25	2638.4	69.1	3.3	0.007	1.2	136	1.6	180	15.7	21	277.0	33										
07/17/24 08:10	0.84	25	2636.0	70.0	3.4	0.007	1.2	136	1.6	182	15.7	21	276.8	33										
07/17/24 08:11	0.84	25	2637.7	69.8	3.4	0.007	1.2	136	1.6	181	15.7	21	277.0	33										
07/17/24 08:12	0.84	25	2637.6	69.7	3.4	0.007	1.2	136	1.6	179	15.7	21	276.9	33										
07/17/24 08:13	0.83	25	2638.1	69.4	3.3	0.007	1.2	136	1.6	180	15.7	21	277.0	33										
07/17/24 08:14	0.84	25	2638.1	69.2	3.3	0.007	1.2	136	1.6	179	15.7	21	277.0	33										
07/17/24 08:15	0.83	25	2637.0	70.1	3.4	0.007	1.2	136	1.6	181	15.7	21	276.9	33										
07/17/24 08:16	0.84	25	2636.7	69.1	3.3	0.007	1.2	136	1.6	180	15.7	21	276.9	33										
07/17/24 08:17	0.83	25	2636.9	69.7	3.4	0.007	1.2	136	1.6	179	15.7	21	276.9	33										
07/17/24 08:18	0.83	25	2638.0	69.6	3.4	0.007	1.2	136	1.6	179	15.7	21	277.0	33										
07/17/24 08:19	0.83	25	2636.9	69.2	3.3	0.007	1.2	136	1.6	179	15.7	21	277.1	33										
07/17/24 08:20	0.84	25	2636.7	69.4	3.4	0.007	1.2	136	1.6	181	15.7	21	276.9	33										
07/17/24 08:21	0.84	25	2636.3	69.8	3.4	0.007	1.2	136	1.6	181	15.7	21	276.8	33										
07/17/24 08:22	0.83	25	2636.2	69.3	3.3	0.007	1.2	136	1.6	180	15.7	21	277.0	33										
07/17/24 08:23	0.84	25	2636.1	69.9	3.4	0.007	1.2	136	1.6	181	15.7	21	277.0	33										
07/17/24 08:24	0.84	25	2636.3	69.1	3.3	0.007	1.2	136	1.6	180	15.7	21	277.0	33										
07/17/24 08:25	0.84	25	2637.1	69.7	3.4	0.007	1.2	136	1.6	180	15.7	21	276.9	33										
07/17/24 08:26	0.85	25	2636.6	69.9	3.4	0.007	1.2	136	1.6	182	15.7	21	277.1	33										
07/17/24 08:27	0.84	25	2640.3	69.5	3.4	0.007	1.2	136	1.6	180	15.7	21	277.2	33										
07/17/24 08:28	0.85	25	2638.1	70.0	3.4	0.007	1.2	136	1.6	179	15.7	21	277.1	33										
07/17/24 08:29	0.81	25	2636.6	69.2	3.6	0.006	1.2	130	1.6	172	15.4	21	277.2	33										
07/17/24 08:30	0.85	25	2639.2	68.2	3.2	0.007	1.2	136	1.6	179	15.7	21	277.1	33										
07/17/24 08:31	0.84	25	2637.9	69.4	3.4	0.007	1.2	136	1.6	183	15.7	21	277.0	33										
07/17/24 08:32	0.84	25	2636.1	69.5	3.4	0.007	1.2	136	1.6	184	15.7	21	277.0	33										
07/17/24 08:33	0.84	25	2638.2	70.5	3.5	0.007	1.2	136	1.6	182	15.7	21	277.0	33										
07/17/24 08:34	0.85	25	2638.7	69.5	3.4	0.007	1.2	136	1.6	179	15.7	21	277.1	33										

Average	0.84	25	2,637.7	69.6	3.4	0.007	1.2	136	1.6	180	15.7	21	277.0	33																
Minimum	0.81	25	2,636.0	69.2	3.2	0.006	1.2	130	1.6	172	15.4	21	276.8	33																
Maximum	0.86	25	2,640.3	70.5	3.6	0.007	1.2	136	1.6	184	15.7	21	277.2	33																
Summation	26.06	775	81,770.2	2,158.1	104.7	0.216	37.2	4210	49.6	55.77	488.4	651	8,588.0	1,023																

Geometric Mean

Included Data Points	31	31	31	31	31	31	31	31	31	31	31	31	31	31																
Total number of Data Points	31	31	31	31	31	31	31	31	31	31	31	31	31	31																

F = Unit Offline
E = Exceedance
C = Calibration
S = Substituted
I = Invalid
M = Maintenance
T = Out Of Control
* = Suspect
U = Startup
D = Shutdown

Time Online Criteria: 1 minute(s)

Added Data Points

PCT2

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Time Online Criteria: 1 minute(s)

Added Data Points

Time Online Criteria: 1 minute(s)

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Average Data
Plant: DONALD VON RAESFELD
Type: Roll
Interval: 1 Minute
Report Period: 07/18/2024 08:25 Through 07/18/2024 09:06
Time Offset: 0.00s, 1 minute(s)

Source	PG12													
	CO #HR (LBS/HR)	CTLOAD (MM)	GASEFLOW (LBS/SEC)	NHPSFLOW (LBS/HR)	NHPSLIP (PSI)	NOX4HR (LBS/HR)	NOX4MBU (LBS/MBU)	STKOC (PSI)	STKNOX_C (PSI)	STKNOX (PSI)	STKOC_C (PSI)	STCOAD (MM)	UNTHREAT (LBS/HR)	UNTL0AD (MM)
07/18/24 08:25	1.01	48	5.332.2	116.9	1.5	3.92	0.007	1.1	0.81	2.4	1.81	46	599.9	71
07/18/24 08:26	1.05	48	5.330.0	116.9	1.5	3.92	0.007	1.1	0.82	2.4	1.81	46	599.7	71
07/18/24 08:27	1.04	48	5.331.2	116.4	1.5	3.92	0.007	1.1	0.81	2.4	1.79	46	599.8	71
07/18/24 08:28	1.02	48	5.330.6	117.1	1.5	3.92	0.007	1.1	0.81	2.4	1.81	46	599.7	71
07/18/24 08:29	0.99	48	5.330.5	116.5	1.5	3.92	0.007	1.1	0.79	2.4	1.81	46	599.7	71
07/18/24 08:30	1.00	48	5.329.6	116.8	1.5	3.92	0.007	1.1	0.81	2.4	1.80	46	599.6	71
07/18/24 08:31	1.02	48	5.331.7	117.0	1.5	3.92	0.007	1.1	0.81	2.4	1.81	46	599.8	71
07/18/24 08:32	1.00	48	5.332.7	116.5	1.5	3.92	0.007	1.1	0.79	2.4	1.79	46	599.9	71
07/18/24 08:33	1.02	48	5.332.7	116.8	1.5	3.92	0.007	1.1	0.82	2.4	1.81	46	599.9	71
07/18/24 08:34	1.01	48	5.330.7	117.3	1.5	3.92	0.007	1.1	0.82	2.4	1.82	46	599.7	71
07/18/24 08:35	1.02	48	5.333.0	116.6	1.5	3.92	0.007	1.1	0.82	2.4	1.78	46	599.8	71
07/18/24 08:36	1.02	48	5.331.3	116.7	1.5	3.92	0.007	1.1	0.82	2.4	1.79	46	599.8	71
07/18/24 08:37	1.01	48	5.331.9	116.7	1.5	3.92	0.007	1.1	0.82	2.4	1.80	46	599.8	71
07/18/24 08:38	1.01	48	5.331.9	116.4	1.5	3.92	0.007	1.1	0.82	2.4	1.79	46	599.8	71
07/18/24 08:39	1.02	48	5.334.5	117.1	1.5	3.92	0.007	1.1	0.82	2.4	1.81	46	599.1	71
07/18/24 08:40	1.02	48	5.333.0	116.7	1.5	3.92	0.007	1.1	0.82	2.4	1.81	46	599.0	71
07/18/24 08:41	1.05	48	5.333.0	116.9	1.5	3.92	0.007	1.1	0.82	2.4	1.80	46	599.0	71
07/18/24 08:42	1.02	48	5.333.6	117.2	1.5	3.92	0.007	1.1	0.82	2.4	1.81	46	599.0	71
07/18/24 08:43	1.03	48	5.333.1	116.7	1.5	3.92	0.007	1.1	0.82	2.4	1.79	46	599.0	71
07/18/24 08:44	1.00	48	5.330.5	116.9	1.5	3.92	0.007	1.1	0.82	2.4	1.80	46	599.0	71
07/18/24 08:45	0.97	48	5.334.2	116.9	1.5	3.92	0.007	1.1	0.76	2.4	1.81	46	599.1	71
07/18/24 08:46	1.01	48	5.333.7	116.8	1.5	3.92	0.007	1.1	0.82	2.4	1.81	46	599.0	71
07/18/24 08:47	1.03	48	5.331.9	117.1	1.5	3.92	0.007	1.1	0.82	2.4	1.81	46	599.8	71
07/18/24 08:48	1.01	48	5.333.3	117.3	1.5	3.92	0.007	1.1	0.82	2.4	1.80	46	599.0	71
07/18/24 08:49	1.01	48	5.331.5	116.7	1.5	3.92	0.007	1.1	0.82	2.4	1.79	46	599.8	71
07/18/24 08:50	1.00	48	5.332.1	117.1	1.5	3.92	0.007	1.1	0.82	2.4	1.79	46	599.9	71
07/18/24 08:51	0.99	48	5.330.5	116.9	1.5	3.92	0.007	1.1	0.81	2.4	1.81	46	599.7	71
07/18/24 08:52	1.00	48	5.332.4	116.7	1.5	3.92	0.007	1.1	0.81	2.4	1.78	46	599.9	71
07/18/24 08:53	1.04	48	5.332.0	117.1	1.5	3.92	0.007	1.1	0.82	2.4	1.79	46	599.9	71
07/18/24 08:54	1.02	48	5.330.6	116.4	1.5	3.92	0.007	1.1	0.82	2.4	1.79	46	599.7	71
07/18/24 08:55	1.02	48	5.331.4	116.4	1.5	3.92	0.007	1.1	0.82	2.4	1.78	46	599.8	71
07/18/24 08:56	1.05	48	5.330.3	116.9	1.5	3.92	0.007	1.1	0.83	2.4	1.80	46	599.7	71
07/18/24 08:57	1.02	48	5.333.4	116.3	1.5	3.92	0.007	1.1	0.81	2.4	1.80	46	599.0	71
07/18/24 08:58	1.00	48	5.332.2	116.3	1.5	3.92	0.007	1.1	0.81	2.4	1.80	46	599.9	71
07/18/24 08:59	0.99	48	5.331.2	117.1	1.5	3.92	0.007	1.1	0.81	2.4	1.81	46	599.8	71
07/18/24 09:00	1.01	48	5.332.2	116.3	1.5	3.92	0.007	1.1	0.82	2.4	1.80	46	599.9	71
07/18/24 09:01	1.00	48	5.333.7	116.6	1.5	3.92	0.007	1.1	0.82	2.4	1.80	46	599.0	71
07/18/24 09:02	1.02	48	5.333.0	117.0	1.5	3.92	0.007	1.1	0.82	2.4	1.81	46	599.0	71
07/18/24 09:03	1.03	48	5.334.7	116.5	1.5	3.92	0.007	1.1	0.82	2.4	1.80	46	599.1	71
07/18/24 09:04	1.05	48	5.334.9	116.5	1.5	3.92	0.007	1.1	0.82	2.4	1.80	46	599.2	71
07/18/24 09:05	1.04	48	5.334.1	117.2	1.5	3.92	0.007	1.1	0.82	2.4	1.81	46	599.1	71
07/18/24 09:06	1.02	48	5.334.2	116.5	1.5	3.92	0.007	1.1	0.82	2.4	1.80	46	599.1	71

Average	1.02	48	5.332.3	116.8	1.5	3.92	0.007	1.1	0.82	2.4	1.80	46	599.9	71
Minimum	0.97	48	5.329.6	116.3	1.5	3.92	0.007	1.0	0.76	2.4	1.78	46	599.6	71
Maximum	1.05	48	5.334.9	117.3	1.5	3.92	0.007	1.1	0.83	2.4	1.82	46	599.2	71
Summation	42.69	2,016	223,959.2	4,904.7	63.0	164.64	0.294	46.1	34.24	100.8	75.63	1,932	23,515.6	2,982

Geometric Mean

Included Data Points
Total number of Data Points

F = Unit Offline
E = Exceedance
C = Calibration
S = Substituted
I = Invalid
M = Maintenance
T = Out Of Control
* = Suspect
U = Startup
D = Shutdown

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Figure 1

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Time Online Criteria: 1 minute(s)

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Average Data
Plant: DONALD VON RAESFELD
Interval: 1 Minute
Type: Roll
Report Period: 07/18/2024 11:53 Through 07/18/2024 12:14
Time Online Criteria: 1 minute(s)

Source															PCT2														
CO #/HR (LB/HR)	CTLOAD (MMV)	GASEFLOW (LBS/CFH)	NARFLOW (LBS/HR)	NARSLIP (PPMV)	NOX4HR (LB/HR)	NOXAN60 (LBS/MMBTU)	STKCO (PPM)	STKCO_C (PPM)	STKNOX (PPM)	STKNOX_C (PPM)	STKNO2_80 (PERCENT)	STLOAD (MMV)	UNIT-HEAT (MMBTU/HR)	UNITLOAD (MMV)															
07/18/24 11:53	101	48	5,348.3	118.2	1.5	393	0.007	0.81	2.4	1.79	13.0	47	561.6	71															
07/18/24 11:54	102	48	5,347.0	118.4	1.5	393	0.007	0.81	2.4	1.81	13.0	47	561.4	71															
07/18/24 11:55	101	48	5,346.2	118.2	1.5	393	0.007	0.81	2.4	1.81	13.0	47	561.4	71															
07/18/24 11:56	100	48	5,346.4	118.3	1.5	393	0.007	0.81	2.4	1.80	13.0	47	561.3	71															
07/18/24 11:57	101	48	5,343.2	118.8	1.5	393	0.007	0.82	2.4	1.81	13.0	47	561.0	71															
07/18/24 11:58	101	48	5,344.2	118.1	1.5	393	0.007	0.82	2.4	1.79	13.0	47	561.1	71															
07/18/24 11:59	100	48	5,341.1	118.2	1.5	393	0.007	0.82	2.4	1.80	13.0	47	560.8	71															
07/18/24 12:00	103	48	5,340.0	118.8	1.5	392	0.007	0.82	2.4	1.80	13.0	47	560.7	71															
07/18/24 12:01	102	48	5,339.0	118.0	1.5	392	0.007	0.82	2.4	1.79	13.0	47	560.6	71															
07/18/24 12:02	102	48	5,341.4	118.0	1.5	393	0.007	0.81	2.4	1.79	13.0	47	560.8	71															
07/18/24 12:03	100	48	5,340.2	118.7	1.5	393	0.007	0.80	2.4	1.81	13.0	47	560.7	71															
07/18/24 12:04	102	48	5,343.5	118.3	1.5	393	0.007	0.82	2.4	1.80	13.0	47	561.1	71															
07/18/24 12:05	103	48	5,342.8	118.1	1.5	393	0.007	0.82	2.4	1.79	13.0	47	561.0	71															
07/18/24 12:06	102	48	5,345.2	118.4	1.5	393	0.007	0.82	2.4	1.81	13.0	47	561.2	71															
07/18/24 12:07	103	48	5,342.5	118.1	1.5	393	0.007	0.82	2.4	1.81	13.0	47	561.0	71															
07/18/24 12:08	097	48	5,344.4	118.6	1.5	393	0.007	0.77	2.4	1.81	13.0	46	561.2	71															
07/18/24 12:09	102	48	5,344.1	118.9	1.5	393	0.007	0.81	2.4	1.82	13.0	46	561.1	71															
07/18/24 12:10	098	48	5,345.8	118.3	1.5	393	0.007	0.78	2.4	1.80	13.0	46	561.3	71															
07/18/24 12:11	104	48	5,346.0	118.5	1.5	393	0.007	0.82	2.4	1.81	13.0	46	561.3	71															
07/18/24 12:12	105	48	5,342.4	119.0	1.5	393	0.007	0.82	2.4	1.82	13.0	46	561.0	71															
07/18/24 12:13	101	48	5,344.2	118.7	1.5	393	0.007	0.82	2.4	1.80	13.0	46	561.1	71															
07/18/24 12:14	103	48	5,343.1	118.5	1.5	393	0.007	0.82	2.4	1.80	13.0	47	561.0	71															

Average	102	48	5,343.6	118.4	1.5	393	0.007	0.81	2.4	1.80	13.0	47	561.1	71															
Minimum	097	48	5,339.0	118.0	1.5	392	0.007	0.77	2.4	1.79	13.0	46	560.6	71															
Maximum	105	48	5,348.3	119.0	1.5	393	0.007	0.82	2.4	1.82	13.0	47	561.6	71															
Summation	2233	1,056	117,580.0	2,605.1	33.0	8644	0.154	17.87	52.8	39.67	286.0	1,028	12,343.7	1,562															

Geometric Mean

Included Data Points	22	22	22	22	22	22	22	22	22	22	22	22	22	22															
Total number of Data Points	22	22	22	22	22	22	22	22	22	22	22	22	22	22															

F = Unit Offline
E = Exceedance
C = Calibration
S = Substituted
I = Invalid
M = Maintenance
T = Out Of Control
* = Suspect
U = Startup
D = Shutdown

Average Data
Plant: DONALD VON RAESFELD
Interval: 1 Minute
Type: Roll
Report Period: 07/18/2024 12:21 Through 07/18/2024 12:42
Time Online Criteria: 1 minute(s)

Source	PCT2														
	CO #/HR (LB/HR)	CTLOAD (MMV)	GASEFLOW (100SCFH)	NHSEFLOW (LB/HR)	NHSESLIP (PPMV)	NOX4HR (LB/HR)	NOXAN60 (LB/MMBTU)	STKCO (PPM)	STKCO_C (PPM)	STKNOX (PPM)	STKNOX_C (PPM)	STKCO2_80 (PERCENT)	STLOAD (MMV)	UNITHEAT (MMBTU/HR)	UNITLOAD (MMV)
07/18/24 12:21	100	48	5,347.1	119.3	1.6	393	0.007	1.1	0.79	2.4	1.82	13.0	46	561.4	71
07/18/24 12:22	101	48	5,348.3	118.7	1.5	393	0.007	1.1	0.81	2.4	1.79	13.0	47	561.6	71
07/18/24 12:23	106	48	5,340.7	118.4	1.5	393	0.007	1.1	0.86	2.4	1.79	13.0	47	561.7	71
07/18/24 12:24	100	48	5,346.8	119.1	1.5	393	0.007	1.1	0.80	2.4	1.82	13.0	47	561.3	71
07/18/24 12:25	101	48	5,347.8	118.8	1.5	393	0.007	1.1	0.79	2.4	1.81	13.0	47	561.5	71
07/18/24 12:26	101	48	5,347.1	119.0	1.6	393	0.007	1.1	0.82	2.4	1.80	13.0	47	561.4	71
07/18/24 12:27	099	48	5,344.5	119.0	1.6	393	0.007	1.1	0.80	2.4	1.80	13.0	47	561.2	71
07/18/24 12:28	102	48	5,345.4	118.4	1.5	393	0.007	1.1	0.82	2.4	1.78	13.0	47	561.3	71
07/18/24 12:29	102	48	5,346.1	118.9	1.5	393	0.007	1.1	0.82	2.4	1.80	13.0	47	561.3	71
07/18/24 12:30	100	48	5,346.5	118.9	1.5	393	0.007	1.1	0.80	2.4	1.81	13.0	47	561.4	71
07/18/24 12:31	102	48	5,347.5	118.3	1.5	393	0.007	1.1	0.82	2.4	1.79	13.0	47	561.5	71
07/18/24 12:32	106	48	5,347.0	118.8	1.5	393	0.007	1.1	0.83	2.4	1.80	13.0	47	561.4	71
07/18/24 12:33	103	48	5,346.1	118.9	1.5	393	0.007	1.1	0.82	2.4	1.81	13.0	47	561.3	71
07/18/24 12:34	103	48	5,348.2	118.6	1.5	393	0.007	1.1	0.82	2.4	1.81	13.0	47	561.6	71
07/18/24 12:35	102	48	5,346.1	118.9	1.5	393	0.007	1.1	0.82	2.4	1.80	13.0	47	561.3	71
07/18/24 12:36	102	48	5,350.1	119.2	1.6	393	0.007	1.1	0.82	2.4	1.80	12.9	47	561.8	71
07/18/24 12:37	102	48	5,349.8	118.4	1.5	393	0.007	1.1	0.82	2.4	1.79	13.0	47	561.7	71
07/18/24 12:38	101	48	5,351.9	119.1	1.6	393	0.007	1.1	0.82	2.4	1.81	13.0	47	561.9	71
07/18/24 12:39	103	48	5,351.7	119.0	1.5	393	0.007	1.1	0.82	2.4	1.81	13.0	47	561.9	71
07/18/24 12:40	105	48	5,355.2	118.9	1.5	394	0.007	1.1	0.82	2.4	1.81	12.9	47	562.3	71
07/18/24 12:41	104	48	5,355.5	119.4	1.6	394	0.007	1.1	0.81	2.4	1.80	12.9	47	562.3	71
07/18/24 12:42	104	48	5,355.7	118.9	1.5	394	0.007	1.1	0.81	2.4	1.80	12.9	47	562.3	71

Average	102	48	5,348.8	118.9	1.5	393	0.007	1.1	0.82	2.4	1.80	13.0	47	561.6	71
Minimum	099	48	5,344.5	118.3	1.5	393	0.007	1.1	0.79	2.4	1.78	12.9	46	561.2	71
Maximum	106	48	5,355.7	119.4	1.6	394	0.007	1.1	0.86	2.4	1.82	13.0	47	562.3	71
Summation	2249	1,056	117,873.1	2,614.9	33.6	8649	0.154	24.2	17.94	52.8	39.65	285.6	1,033	12,355.4	1,562

Geometric Mean

Included Data Points	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
Total number of Data Points	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22

F = Unit Offline
E = Exceedance
C = Calibration
S = Substituted
I = Invalid
M = Maintenance
T = Out Of Control
* = Suspect
U = Startup
D = Shutdown

Average Data
Plant: DONALD VON RAESFELD
Interval: 1 Minute
Type: Roll
Report Period: 07/18/2024 12:53 Through 07/18/2024 13:14
Time Online Criteria: 1 minute(s)

PCT2														
CO #/HR (LB/HR)	CTLOAD (MMV)	GASEFLOW (L/OSCFH)	NARFLOW (LB/HR)	NARSLIP (PPMV)	NOX4HR (LB/HR)	NOXAN60 (LB/MMBTU)	STKCO (PPM)	STKCO_C (PPM)	STKNOX (PPM)	STKNOX_C (PPM)	STKNO2_60 (PERCENT)	STLOAD (MMV)	UNIT-HEAT (MMBTU/HR)	UNITLOAD (MMV)
07/18/24 12:53	1.06	48	5,360.9	119.6	1.6	3.94	0.007	1.1	0.82	2.4	1.81	47	562.9	71
07/18/24 12:54	1.06	48	5,360.9	119.2	1.5	3.94	0.007	1.1	0.84	2.4	1.80	47	562.9	71
07/18/24 12:55	1.05	48	5,361.6	119.0	1.5	3.94	0.007	1.1	0.82	2.4	1.80	47	563.0	71
07/18/24 12:56	1.04	48	5,361.0	119.8	1.6	3.94	0.007	1.1	0.81	2.4	1.81	47	562.9	71
07/18/24 12:57	1.04	48	5,362.8	119.4	1.5	3.94	0.007	1.1	0.81	2.4	1.81	47	563.1	71
07/18/24 12:58	1.04	48	5,361.5	119.1	1.5	3.94	0.007	1.1	0.81	2.4	1.79	47	563.0	71
07/18/24 12:59	1.07	48	5,364.3	119.7	1.6	3.94	0.007	1.1	0.83	2.4	1.81	47	563.3	71
07/18/24 13:00	1.07	48	5,365.0	119.3	1.5	3.94	0.007	1.1	0.85	2.4	1.80	47	563.3	71
07/18/24 13:01	1.08	48	5,364.6	119.2	1.5	3.94	0.007	1.2	0.86	2.4	1.80	47	563.3	71
07/18/24 13:02	1.07	48	5,362.6	119.9	1.6	3.94	0.007	1.1	0.84	2.4	1.81	47	563.1	71
07/18/24 13:03	1.06	48	5,363.5	119.5	1.6	3.94	0.007	1.1	0.84	2.4	1.81	47	563.2	71
07/18/24 13:04	1.07	48	5,363.7	119.2	1.5	3.94	0.007	1.1	0.84	2.4	1.80	47	563.2	71
07/18/24 13:05	1.05	48	5,362.4	119.9	1.6	3.94	0.007	1.1	0.82	2.4	1.81	47	563.1	71
07/18/24 13:06	1.08	48	5,363.7	119.4	1.6	3.94	0.007	1.2	0.86	2.4	1.80	47	563.2	71
07/18/24 13:07	1.09	48	5,362.9	119.2	1.5	3.94	0.007	1.2	0.86	2.4	1.78	47	563.1	71
07/18/24 13:08	1.05	48	5,361.2	119.7	1.6	3.94	0.007	1.1	0.81	2.4	1.81	47	562.9	71
07/18/24 13:09	1.09	48	5,361.0	119.2	1.5	3.94	0.007	1.2	0.86	2.4	1.80	47	562.9	71
07/18/24 13:10	1.06	48	5,362.0	119.5	1.6	3.94	0.007	1.1	0.84	2.4	1.81	47	563.0	71
07/18/24 13:11	1.00	48	5,363.8	120.0	1.6	3.94	0.007	1.1	0.81	2.5	1.82	47	563.2	71
07/18/24 13:12	1.02	48	5,364.4	119.7	1.6	3.94	0.007	1.1	0.81	2.4	1.80	47	563.3	71
07/18/24 13:13	1.06	48	5,362.6	119.6	1.6	3.94	0.007	1.1	0.81	2.4	1.81	47	563.1	71
07/18/24 13:14	1.08	48	5,365.2	120.1	1.6	3.94	0.007	1.2	0.86	2.5	1.82	47	563.3	71

Average	1.06	48	5,362.8	119.5	1.6	3.94	0.007	1.1	0.83	2.4	1.81	47	563.1	71
Minimum	1.00	48	5,360.9	119.0	1.5	3.94	0.007	1.1	0.81	2.4	1.78	47	562.9	71
Maximum	1.09	48	5,365.2	120.1	1.6	3.94	0.007	1.2	0.86	2.5	1.82	47	563.3	71
Summation	23.29	1,056	117,981.6	2,620.2	34.3	86.68	0.154	24.7	18.32	53.0	39.71	1,034	12,368.3	1,562
Geometric Mean														
Included Data Points	22	22	22	22	22	22	22	22	22	22	22	22	22	22
Total number of Data Points	22	22	22	22	22	22	22	22	22	22	22	22	22	22

F = Unit Offline
E = Exceedance
C = Calibration
S = Substituted
I = Invalid
M = Maintenance
T = Out Of Control
* = Suspect
U = Startup
D = Shutdown

Average Data
Plant: DONALD VON RAESFELD
Interval: 1 Minute
Type: Roll
Report Period: 07/18/2024 13:21 Through 07/18/2024 13:42
Time Online Criteria: 1 minute(s)

Source															
PCT2															
CO #/HR (LB/HR)	CTLOAD (MM)	GASEFLOW (100SCFH)	NARFLOW (LB/HR)	NARSLIP (PPMV)	NOX4HR (LB/HR)	NOXAN60 (LB/MMBTU)	STKCO (PPM)	STKCO_C (PPM)	STKNOX (PPM)	STKNOX_C (PPM)	STKCO2_60 (PERCENT)	STLOAD (MM)	UNIT-HEAT (MMBTU/HR)	UNITLOAD (MM)	
07/18/24 13:21	105	48	5,367.4	119.6	1.5	395	0.007	1.1	0.84	2.4	1.80	12.9	47	563.6	71
07/18/24 13:22	106	48	5,366.9	120.5	1.6	394	0.007	1.1	0.85	2.5	1.82	12.9	47	563.5	71
07/18/24 13:23	105	48	5,366.9	120.4	1.6	394	0.007	1.1	0.82	2.4	1.81	12.9	47	563.5	71
07/18/24 13:24	104	48	5,369.8	119.8	1.5	395	0.007	1.1	0.82	2.4	1.79	12.9	47	563.8	71
07/18/24 13:25	107	48	5,374.5	120.5	1.6	395	0.007	1.1	0.85	2.5	1.82	12.9	47	564.3	71
07/18/24 13:26	108	48	5,373.4	120.5	1.6	395	0.007	1.2	0.89	2.5	1.82	12.9	47	564.2	71
07/18/24 13:27	106	48	5,371.8	120.4	1.6	395	0.007	1.1	0.84	2.4	1.80	12.9	47	564.0	71
07/18/24 13:28	108	48	5,366.9	120.9	1.6	394	0.007	1.2	0.86	2.4	1.80	12.9	47	563.5	71
07/18/24 13:29	109	48	5,366.5	120.2	1.6	394	0.007	1.2	0.86	2.4	1.79	12.9	47	563.5	71
07/18/24 13:30	104	48	5,368.0	120.3	1.6	395	0.007	1.1	0.83	2.4	1.80	12.9	47	563.6	71
07/18/24 13:31	104	48	5,368.5	120.8	1.6	395	0.007	1.1	0.81	2.4	1.80	12.9	47	563.7	71
07/18/24 13:32	105	48	5,367.7	120.2	1.6	395	0.007	1.1	0.81	2.4	1.80	12.9	47	563.6	71
07/18/24 13:33	104	48	5,368.7	120.3	1.6	395	0.007	1.1	0.81	2.4	1.80	12.9	47	563.7	71
07/18/24 13:34	104	48	5,368.8	121.0	1.6	395	0.007	1.1	0.81	2.5	1.82	12.9	47	563.7	71
07/18/24 13:35	102	48	5,368.3	120.7	1.6	395	0.007	1.1	0.81	2.5	1.82	12.9	47	563.7	71
07/18/24 13:36	102	48	5,370.4	120.5	1.6	395	0.007	1.1	0.81	2.5	1.81	12.9	47	563.9	71
07/18/24 13:37	102	48	5,367.5	121.3	1.6	395	0.007	1.1	0.81	2.4	1.81	12.9	47	563.6	71
07/18/24 13:38	105	48	5,368.2	120.6	1.6	395	0.007	1.1	0.81	2.4	1.81	12.9	47	563.7	71
07/18/24 13:39	102	48	5,367.3	120.7	1.6	394	0.007	1.1	0.81	2.4	1.80	12.9	47	563.6	71
07/18/24 13:40	102	48	5,369.0	121.3	1.6	395	0.007	1.1	0.81	2.4	1.80	12.9	47	563.7	71
07/18/24 13:41	105	48	5,369.4	120.5	1.6	395	0.007	1.1	0.81	2.4	1.80	12.9	47	563.8	71
07/18/24 13:42	108	48	5,368.4	120.7	1.6	395	0.007	1.2	0.86	2.4	1.80	12.9	47	563.7	71

F = Unit Offline
E = Exceedance
C = Calibration
S = Substituted
I = Invalid
M = Maintenance
T = Out Of Control
* = Suspect
U = Startup
D = Shutdown

Average Data
Plant: DONALD VON RAESFELD
Interval: 1 Minute
Type: Roll
Report Period: 07/18/2024 13:50 Through 07/18/2024 14:11
Time Online Criteria: 1 minute(s)

Source															PCT2														
CO #/HR (LB/HR)	CTLOAD (MM)	GASELOW (USGCFH)	NARLOW (LB/HR)	NARSLP (PPMV)	NOX4HR (LB/HR)	NOXAN60 (LBMMBTU)	STKCO (PPM)	STKCO_C (PPM)	STKNOX (PPM)	STKNOX_C (PPM)	STKCO2_60 (PERCENT)	STLOAD (MM)	UNIT-HEAT (MMBTU/HR)	UNITLOAD (MM)															
07/18/24 13:50	103	48	5,371.0	120.9	1.6	3,95	0.007	0.81	2.4	1.81	12.9	47	564.0	71															
07/18/24 13:51	105	48	5,370.4	120.7	1.6	3,95	0.007	0.81	2.4	1.79	12.9	47	563.9	71															
07/18/24 13:52	105	48	5,369.9	121.1	1.6	3,95	0.007	0.82	2.5	1.81	12.9	47	563.8	71															
07/18/24 13:53	107	48	5,372.7	120.8	1.6	3,95	0.007	0.84	2.4	1.81	12.9	47	564.1	71															
07/18/24 13:54	107	48	5,372.7	121.0	1.6	3,95	0.007	0.82	2.4	1.80	12.9	47	564.1	71															
07/18/24 13:55	105	48	5,374.0	121.4	1.6	3,95	0.007	0.81	2.5	1.81	12.9	47	564.3	71															
07/18/24 13:56	104	48	5,374.5	120.7	1.6	3,95	0.007	0.81	2.4	1.79	12.9	47	564.3	71															
07/18/24 13:57	109	48	5,373.7	121.0	1.6	3,95	0.007	0.86	2.4	1.80	12.9	47	564.2	71															
07/18/24 13:58	104	48	5,375.6	121.3	1.6	3,95	0.007	0.81	2.5	1.81	12.9	47	564.4	71															
07/18/24 13:59	105	48	5,372.6	120.8	1.6	3,95	0.007	0.82	2.4	1.79	12.9	47	564.1	71															
07/18/24 14:00	105	48	5,373.6	121.1	1.6	3,95	0.007	0.81	2.4	1.80	12.9	47	564.3	71															
07/18/24 14:01	105	48	5,374.4	121.2	1.6	3,95	0.007	0.81	2.4	1.81	12.9	47	564.3	71															
07/18/24 14:02	104	48	5,376.0	120.8	1.6	3,95	0.007	0.81	2.4	1.79	12.9	47	564.5	71															
07/18/24 14:03	104	48	5,375.1	121.1	1.6	3,95	0.007	0.86	2.4	1.80	12.9	47	564.3	71															
07/18/24 14:04	108	48	5,374.2	120.6	1.6	3,95	0.007	0.82	2.4	1.80	12.9	47	564.3	71															
07/18/24 14:05	106	48	5,374.1	120.9	1.6	3,95	0.007	0.83	2.5	1.81	12.9	47	564.3	71															
07/18/24 14:06	106	48	5,373.5	121.6	1.6	3,95	0.007	0.82	2.4	1.80	12.9	47	564.2	71															
07/18/24 14:07	105	48	5,374.7	120.6	1.6	3,95	0.007	0.81	2.4	1.79	12.9	47	564.3	71															
07/18/24 14:08	106	48	5,375.3	120.7	1.6	3,95	0.007	0.81	2.4	1.80	12.9	47	564.4	71															
07/18/24 14:09	108	48	5,374.0	121.4	1.6	3,95	0.007	0.86	2.4	1.80	12.9	47	564.3	71															
07/18/24 14:10	104	48	5,375.5	120.5	1.6	3,95	0.007	0.81	2.4	1.79	12.9	47	564.4	71															
07/18/24 14:11	101	48	5,375.3	120.7	1.6	3,95	0.007	0.81	2.4	1.79	12.9	47	564.4	71															
Average	105	48	5,373.8	120.9	1.6	3,95	0.007	0.82	2.4	1.80	12.9	47	564.2	71															
Minimum	101	48	5,369.9	120.5	1.6	3,95	0.007	0.81	2.4	1.79	12.9	47	563.8	71															
Maximum	109	48	5,376.0	121.6	1.6	3,95	0.007	0.86	2.5	1.81	12.9	47	564.5	71															
Summation	2316	1,056	118,222.8	2,660.9	35.2	86.90	0.154	18.07	53.2	39.60	283.8	1,034	12,413.2	1,562															
Geometric Mean																													
Included Data Points	22	22	22	22	22	22	22	22	22	22	22	22	22	22															
Total number of Data Points	22	22	22	22	22	22	22	22	22	22	22	22	22	22															

F = Unit Offline
E = Exceedance
C = Calibration
S = Substituted
I = Invalid
M = Maintenance
T = Out Of Control
* = Suspect
U = Startup
D = Shutdown

Average Data
Plant: DONALD VON RAESFELD
Interval: 1 Minute
Type: Roll
Report Period: 07/18/2024 14:19 Through 07/18/2024 14:40
Time Online Criteria: 1 minute(s)

Source															PCT2														
CO #/HR (LB/HR)	CTLOAD (MMV)	GASELOW (LBS/CFH)	NARLOW (LB/HR)	NARSLP (PPMV)	NOX4HR (LB/HR)	NOXAN60 (LB/MMBTU)	STKCO (PPM)	STKCO_C (PPM)	STKNOX (PPM)	STKNOX_C (PPM)	STKCO2_60 (PERCENT)	STLOAD (MMV)	UNIT-HEAT (MMBTU/HR)	UNITLOAD (MMV)															
07/18/24 14:19	103	48	5,376.0	120.7	1.6	3,95	0.007	0.81	2.4	1.80	12.9	47	564.5	71															
07/18/24 14:20	107	48	5,376.6	120.3	1.6	3,95	0.007	0.81	2.4	1.79	12.9	47	564.4	71															
07/18/24 14:21	107	48	5,376.5	121.2	1.6	3,95	0.007	0.85	2.5	1.81	12.9	47	564.8	71															
07/18/24 14:22	102	48	5,380.1	120.5	1.6	3,95	0.007	0.81	2.4	1.81	12.9	47	564.9	71															
07/18/24 14:23	108	48	5,376.5	120.8	1.6	3,95	0.007	0.85	2.4	1.80	12.9	47	564.7	71															
07/18/24 14:24	111	48	5,380.3	121.3	1.6	3,95	0.007	0.85	2.5	1.81	12.9	47	564.9	71															
07/18/24 14:25	110	48	5,380.2	120.6	1.6	3,95	0.007	0.89	2.4	1.79	12.9	47	564.9	71															
07/18/24 14:26	109	48	5,379.5	120.5	1.6	3,95	0.007	0.81	2.4	1.80	12.9	47	564.8	71															
07/18/24 14:27	105	48	5,377.1	121.4	1.6	3,95	0.007	0.81	2.5	1.82	12.9	47	564.6	71															
07/18/24 14:28	107	48	5,377.7	120.8	1.6	3,95	0.007	0.85	2.4	1.80	12.9	47	564.7	71															
07/18/24 14:29	105	48	5,376.6	120.6	1.6	3,95	0.007	0.81	2.4	1.79	12.9	47	564.8	71															
07/18/24 14:30	109	48	5,377.6	121.4	1.6	3,95	0.007	0.86	2.5	1.82	12.9	47	564.7	71															
07/18/24 14:31	108	48	5,376.9	120.8	1.6	3,95	0.007	0.85	2.4	1.81	12.9	47	564.5	71															
07/18/24 14:32	108	48	5,379.0	120.9	1.6	3,95	0.007	0.87	2.4	1.79	12.9	47	564.8	71															
07/18/24 14:33	108	48	5,378.2	121.4	1.6	3,95	0.007	0.86	2.5	1.81	12.9	47	564.7	71															
07/18/24 14:34	103	48	5,379.2	120.7	1.6	3,95	0.007	0.81	2.4	1.80	12.9	47	564.8	71															
07/18/24 14:35	107	48	5,377.3	121.0	1.6	3,95	0.007	0.86	2.4	1.81	12.9	47	564.6	71															
07/18/24 14:36	106	48	5,378.1	121.4	1.6	3,95	0.007	0.82	2.5	1.81	12.9	47	564.7	71															
07/18/24 14:37	108	48	5,376.9	120.9	1.6	3,95	0.007	0.86	2.4	1.80	12.9	47	564.6	71															
07/18/24 14:38	107	48	5,376.1	121.1	1.6	3,95	0.007	0.82	2.5	1.81	12.9	47	564.7	71															
07/18/24 14:39	109	48	5,376.7	121.7	1.6	3,95	0.007	0.87	2.4	1.81	12.9	47	564.8	71															
07/18/24 14:40	108	48	5,376.4	120.9	1.6	3,95	0.007	0.85	2.4	1.79	12.9	47	564.7	71															

Average	107	48	5,378.2	121.0	1.6	3,95	0.007	0.84	2.4	1.80	12.9	47	564.7	71															
Minimum	102	48	5,376.6	120.3	1.6	3,95	0.007	0.81	2.4	1.79	12.9	47	564.4	71															
Maximum	111	48	5,380.3	121.7	1.6	3,95	0.007	0.89	2.5	1.82	12.9	47	564.9	71															
Summation	2355	1,056	118,320.7	2,660.9	35.2	86.90	0.154	18.58	53.5	39.68	283.8	1,034	12,423.6	1,562															
Geometric Mean																													
Included Data Points	22	22	22	22	22	22	22	22	22	22	22	22	22	22															
Total number of Data Points	22	22	22	22	22	22	22	22	22	22	22	22	22	22															

F = Unit Offline
E = Exceedance
C = Calibration
S = Substituted
I = Invalid
M = Maintenance
T = Out Of Control
* = Suspect
U = Startup
D = Shutdown

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F = Unit Offline
E = Exceedance
C = Calibration
S = Substituted
I = Invalid
M = Maintenance
T = Out Of Control
*** = Suspect**
U = Startup
D = Shutdown

Average Data

Plant: DONALD VON RAESFELD

Interval: 1 Minute

Type: Roll

Report Period: 07/19/2024 08:46 Through 07/19/2024 09:16

Time Online Criteria: 1 minute(s)

Source															PCT2														
CO_#HR (LB/HR)	CTLOAD (MW)	GASFLOW (100SCFH)	NBSFLOW (LB/HR)	NHSUP (PPMV)	NOXHHR (LB/HR)	NOXH60 (LB/MMBTU)	STKCO (PPM)	STKCO_C (PPM)	STNOX (PPM)	STNOX_C (PPM)	STK02_60 (PERCENT)	STLOAD (MW)	UNITHEAT (MMBTU/HR)	UNITLOAD (MW)															
07/19/24 08:46	25	2,686.0	63.8	2.9 IC	1.96 IC	0.007 IC	0.4 IC	0.46 IC	1.8 IC	1.92 IC	15.4 IC	21	280.1	33															
07/19/24 08:47	0.31	2,686.0	64.1	2.9	1.96	0.007	0.5	0.54	1.8	1.91	15.4	21	280.1	33															
07/19/24 08:48	25	2,687.7	63.8	2.9	1.96	0.007	0.5	0.52	1.8	1.91	15.4	21	280.1	33															
07/19/24 08:49	0.33	2,688.4	64.0	2.9	1.96	0.007	0.5	0.54	1.8	1.90	15.4	21	280.2	33															
07/19/24 08:50	0.32	2,670.5	64.4	3.0	1.96	0.007	0.5	0.54	1.8	1.90	15.4	21	280.4	33															
07/19/24 08:51	0.34	2,671.3	65.0	3.1	1.96	0.007	0.5	0.54	1.8	1.89	15.4	21	280.5	33															
07/19/24 08:52	0.35	2,670.3	66.2	3.3	1.96	0.007	0.5	0.54	1.7	1.86	15.4	21	280.4	33															
07/19/24 08:53	0.35	2,685.8	66.2	3.3	1.96	0.007	0.5	0.55	1.7	1.83	15.4	21	279.9	33															
07/19/24 08:54	0.33	2,686.5	66.1	3.3	1.96	0.007	0.5	0.53	1.7	1.78	15.4	21	280.0	33															
07/19/24 08:55	0.32	2,686.8	66.2	3.3	1.72	0.006	0.5	0.52	1.6	1.76	15.4	21	280.0	33															
07/19/24 08:56	0.34	2,686.6	65.0	3.0	1.68	0.006	0.5	0.54	1.6	1.75	15.4	21	280.0	33															
07/19/24 08:57	0.35	2,686.7	64.1	2.9	1.68	0.006	0.5	0.54	1.6	1.75	15.4	21	280.0	33															
07/19/24 08:58	0.35	2,685.7	64.1	2.9	1.96	0.007	0.5	0.55	1.7	1.79	15.4	21	279.9	33															
07/19/24 08:59	0.35	2,684.3	63.9	2.9	1.96	0.007	0.5	0.54	1.7	1.82	15.4	21	279.8	33															
07/19/24 09:00	0.33	2,685.2	64.3	2.9	1.96	0.007	0.5	0.54	1.7	1.83	15.4	21	279.8	33															
07/19/24 09:01	0.33	2,686.0	64.6	3.0	1.96	0.007	0.5	0.54	1.7	1.84	15.4	21	279.9	33															
07/19/24 09:02	0.32	2,686.0	65.0	3.1	1.96	0.007	0.5	0.54	1.7	1.83	15.4	21	279.9	33															
07/19/24 09:03	0.35	2,685.9	65.7	3.2	1.96	0.007	0.5	0.54	1.7	1.81	15.4	21	279.9	33															
07/19/24 09:04	0.33	2,686.6	65.7	3.1	1.96	0.007	0.5	0.54	1.7	1.80	15.4	21	280.0	33															
07/19/24 09:05	0.33	2,686.6	65.6	3.0	1.72	0.006	0.5	0.54	1.6	1.77	15.5	21	280.0	33															
07/19/24 09:06	0.31	2,686.2	65.5	2.9	1.68	0.006	0.4	0.49	1.6	1.76	15.5	21	280.0	33															
07/19/24 09:07	0.33	2,686.0	63.1	2.5	1.68	0.006	0.5	0.55	1.6	1.75	15.5	21	279.8	33															
07/19/24 09:08	0.31	2,685.4	63.3	2.5	1.68	0.006	0.5	0.51	1.6	1.77	15.5	21	279.9	33															
07/19/24 09:09	0.31	2,685.4	64.2	2.7	1.96	0.007	0.5	0.49	1.7	1.84	15.5	21	279.9	33															
07/19/24 09:10	0.31	2,684.4	64.8	2.8	1.96	0.007	0.4	0.51	1.7	1.84	15.5	21	279.8	33															
07/19/24 09:11	0.30	2,685.4	65.2	2.9	1.95	0.007	0.4	0.47	1.7	1.82	15.5	21	279.9	33															
07/19/24 09:12	0.31	2,684.3	65.2	2.9	1.68	0.006	0.5	0.47	1.6	1.80	15.5	21	279.8	33															
07/19/24 09:13	0.30	2,685.0	65.0	2.8	1.68	0.006	0.4	0.46	1.6	1.78	15.5	21	279.8	33															
07/19/24 09:14	0.31	2,685.5	65.1	2.8	1.68	0.006	0.4	0.47	1.6	1.78	15.5	21	279.9	33															
07/19/24 09:15	0.31	2,685.2	64.1	2.6	1.68	0.006	0.4	0.49	1.6	1.77	15.5	21	279.8	33															
07/19/24 09:16	0.30	2,684.8	64.1	2.6	1.68	0.006	0.4	0.44	1.6	1.78	15.5	21	279.8	33															

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Appendix B.2

Fuel Meter Calibration Data

March 6, 2024

CALIBRATION DATA SHEET

Consistent with ISO 10474 2.1 or EN 10204 2.1

Contact Information

Purchase Order: 0	Service Request: 240223-002972
Customer Name: Silicon Valley Power	Quote#: 0
Location/Project: Santa Clara	Sales Representative: 0
Address 1: 850 Duane Ave	Phone: 0
Address 2: Santa Clara CA 95054	Email: 0
Customer Contact: Chet Manchester	Service Representative: Kevin Cabello
Phone: 408-615-6560	Phone: 661-564-4653
Email: pmanchester@svpower.com	Email: kevin.cabello@emerson.com

Device Information

Device Type: Multivariable
Device Tag: 1FGA-FT-308
Model: 3051SMV3M13G3R2D21A1C41C2Q4E5M5
Serial #: 60551

Calibration Range Data

Static Pressure Range:	-2.696	To	225	PSI
Differential Pressure Range:	0	To	320	InH2O
Temperature Range:	40	To	150	F
Analog Output Range:	4	To	20	mA

Test Equipment Used

Asset #	Description	Calibration Due
ES-01412	FLUKE 754	18-May-24
PS-01544	FLUKE 750PD5	17-May-24
PS-01361	FLUKE 700P27	18-May-24
PS-01546	FLUKE 700R08	26-May-24

As Found Calibration Data

Target % Of Span	Static Pressure				Differential Pressure			
	Specified Range in PSI	Applied PSI	Indicated Static Pressure in PSI	Pass Fail +/- 0.056924 PSI	Specified Range InH2O	Applied InH2O	Indicated Differential Pressure InH2O	Pass Fail +/- 0.040 % Reading
0.00	-2.70	-2.696	-2.700	Pass	0.00	0.000	0.000	Pass
25.00	54.23	54.228	54.240	Pass	80.00	80.000	80.003	Pass
50.00	111.15	111.152	111.170	Pass	160.00	160.000	160.009	Pass
75.00	168.08	168.076	168.078	Pass	240.00	240.000	240.004	Pass
100.00	225.00	225.000	225.002	Pass	320.00	320.000	320.001	Pass
Target % Of Span	Temperature				Analog Out			
	Specified Range Deg F	Applied Deg F	Indicated Digital Temp Deg F	Pass Fail +/- 0.67 Deg F	Specified Range mA	Simulated mA	Indicated Output mA	Pass Fail +/- 0.0064 mA
0.00	40.00	40.00	40.010	Pass	4.0000	4.0000	4.0000	Pass
25.00	67.50	67.50	67.520	Pass	8.0000	8.0000	8.0000	Pass
50.00	95.00	95.00	95.020	Pass	12.0000	12.0000	12.0010	Pass
75.00	122.50	122.50	122.510	Pass	16.0000	16.0000	16.0010	Pass
100.00	150.00	150.00	150.010	Pass	20.0000	20.0000	20.0020	Pass

As Left Calibration Data

Target % Of Span	Static Pressure				Differential Pressure			
	Specified Range in PSI	Applied PSI	Indicated Static Pressure in PSI	Pass Fail +/- 0.056924 PSI	Specified Range InH2O	Applied InH2O	Indicated Differential Pressure InH2O	Pass Fail +/- 0.040 % Reading
0.00	-2.70	-2.696	-2.700	Pass	0.00	0.000	0.000	Pass
25.00	54.23	54.228	54.240	Pass	80.00	80.000	80.003	Pass
50.00	111.15	111.152	111.170	Pass	160.00	160.000	160.009	Pass
75.00	168.08	168.076	168.078	Pass	240.00	240.000	240.004	Pass
100.00	225.00	225.000	225.002	Pass	320.00	320.000	320.001	Pass
Target % Of Span	Temperature				Analog Out			
	Specified Range Deg F	Applied Deg F	Indicated Digital Temp Deg F	Pass Fail +/- 0.67 Deg F	Specified Range mA	Simulated mA	Indicated Output mA	Pass Fail +/- 0.0064 mA
0.00	40.00	40.00	40.010	Pass	4.0000	4.0000	4.0000	Pass
25.00	67.50	67.50	67.520	Pass	8.0000	8.0000	8.0000	Pass
50.00	95.00	95.00	95.020	Pass	12.0000	12.0000	12.0010	Pass
75.00	122.50	122.50	122.510	Pass	16.0000	16.0000	16.0010	Pass
100.00	150.00	150.00	150.010	Pass	20.0000	20.0000	20.0020	Pass

Certification

This is to validate that the listed product performs within the acceptable performance variation of the test equipment. Measuring and test equipment used in the inspection and validation of the listed product are traceable to the National Institute of Standards and Technology.

Kevin Cabello

Kevin Cabello
Rosemount Service Representative
PH: 661-564-4653

March 6, 2024

Date

March 12, 2024

CALIBRATION DATA SHEET

Consistent with ISO 10474 2.1 or EN 10204 2.1

Contact Information

Purchase Order: 0	Service Request: 240223-002972
Customer Name: Silicon Valley Power	Quote#: 0
Location/Project: Santa Clara	Sales Representative: 0
Address 1: 850 Duane Ave	Phone: 0
Address 2: Santa Clara CA 95054	Email: 0
Customer Contact: Chet Manchester	Service Representative: Kevin Cabello
Phone: 408-615-6560	Phone: 661-564-4653
Email: pmanchester@svpower.com	Email: kevin.cabello@emerson.com

Device Information

Device Type: Multivariable
Device Tag: 2FGA-FT-308
Model: 3051SMV3M13G3R2D21A1C41C2Q4E5M5
Serial #: 60550

Calibration Range Data

Static Pressure Range: -2.696 To 225 PSI
Differential Pressure Range: 0 To 320 InH2O
Temperature Range: 40 To 150 F
Analog Output Range: 4 To 20 mA

Test Equipment Used

Asset #	Description	Calibration Due
ES-01412	FLUKE 754	18-May-24
PS-01544	FLUKE 750PD5	17-May-24
PS-01361	FLUKE 700P27	18-May-24
PS-01546	FLUKE 700R08	26-May-24

As Found Calibration Data

Target % Of Span	Static Pressure				Differential Pressure			
	Specified Range in PSI	Applied PSI	Indicated Static Pressure in PSI	Pass Fail +/- 0.056924 PSI	Specified Range InH2O	Applied InH2O	Indicated Differential Pressure InH2O	Pass Fail +/- 0.040 % Reading
0.00	-2.70	-2.696	-2.692	Pass	0.00	0.000	0.000	Pass
25.00	54.23	54.228	54.229	Pass	80.00	80.000	79.999	Pass
50.00	111.15	111.152	111.148	Pass	160.00	160.000	160.020	Pass
75.00	168.08	168.076	168.047	Pass	240.00	240.000	239.999	Pass
100.00	225.00	225.000	224.998	Pass	320.00	320.000	320.010	Pass
Target % Of Span	Temperature				Analog Out			
	Specified Range Deg F	Applied Deg F	Indicated Digital Temp Deg F	Pass Fail +/- 0.67 Deg F	Specified Range mA	Simulated mA	Indicated Output mA	Pass Fail +/- 0.0064 mA
0.00	40.00	40.00	39.999	Pass	4.0000	4.0000	3.9990	Pass
25.00	67.50	67.50	67.499	Pass	8.0000	8.0000	7.9990	Pass
50.00	95.00	95.00	94.999	Pass	12.0000	12.0000	12.0000	Pass
75.00	122.50	122.50	122.500	Pass	16.0000	16.0000	16.0000	Pass
100.00	150.00	150.00	149.999	Pass	20.0000	20.0000	20.0000	Pass

As Left Calibration Data

Target % Of Span	Static Pressure				Differential Pressure			
	Specified Range in PSI	Applied PSI	Indicated Static Pressure in PSI	Pass Fail +/- 0.056924 PSI	Specified Range InH2O	Applied InH2O	Indicated Differential Pressure InH2O	Pass Fail +/- 0.040 % Reading
0.00	-2.70	-2.696	-2.692	Pass	0.00	0.000	0.000	Pass
25.00	54.23	54.228	54.229	Pass	80.00	80.000	79.999	Pass
50.00	111.15	111.152	111.148	Pass	160.00	160.000	160.020	Pass
75.00	168.08	168.076	168.047	Pass	240.00	240.000	239.999	Pass
100.00	225.00	225.000	224.998	Pass	320.00	320.000	320.010	Pass
Target % Of Span	Temperature				Analog Out			
	Specified Range Deg F	Applied Deg F	Indicated Digital Temp Deg F	Pass Fail +/- 0.67 Deg F	Specified Range mA	Simulated mA	Indicated Output mA	Pass Fail +/- 0.0064 mA
0.00	40.00	40.00	39.999	Pass	4.0000	4.0000	3.9990	Pass
25.00	67.50	67.50	67.499	Pass	8.0000	8.0000	7.9990	Pass
50.00	95.00	95.00	94.999	Pass	12.0000	12.0000	12.0000	Pass
75.00	122.50	122.50	122.500	Pass	16.0000	16.0000	16.0000	Pass
100.00	150.00	150.00	149.999	Pass	20.0000	20.0000	20.0000	Pass

Certification

This is to validate that the listed product performs within the acceptable performance variation of the test equipment. Measuring and test equipment used in the inspection and validation of the listed product are traceable to the National Institute of Standards and Technology.

Kevin Cabello

Kevin Cabello
Rosemount Service Representative
PH: 661-564-4653

March 12, 2024

Date

APPENDIX C

LABORATORY ANALYSIS DATA

Appendix C.1

Particulate Matter Analyses



PARTICULATE MATTER RESULTS - EPA 5/202

Client: Silicon Valley Power DVR

Project: PROJ - 042969

Test No.:	1-PM-1	2-PM-1	3-PM-1
Front-Half Particulate Catch			
m_f Filter catch, net mg	< 0.28	< 0.28	< 0.28
m_a Probe / nozzle rinse (acetone), net mg	< 0.11	< 0.11	< 0.11
Total filterable particulate matter catch, net mg	0.39	0.39	0.39
Back-Half Particulate Catch			
m_i Aqueous rinse (ASTM Type II water), net mg	1.20	1.34	0.95
m_o Organic rinse (hexane and acetone), net mg	1.32	1.36	1.55
Uncorrected condensible particulate matter catch, net mg	2.52	2.70	2.50
Back-Half Blank Catch			
m_{ib} Field blank aqueous rinse (ASTM Type II water), net mg	0.40	0.40	0.40
m_{ob} Field blank organic rinse (hexane and acetone), net mg	0.96	0.96	0.96
m_{fb} Total condensible particulate matter blank catch, net mg	1.36	1.36	1.36
m_{cpm} Corrected condensible particulate matter catch, net mg	< 1.24	1.34	< 1.24
Total Particulate Matter Catch, net mg	1.63	1.73	1.63

Notes: The front-half acetone fractions were blank-corrected according to EPA Methods 5 / 17.

The back-half fractions were blank corrected according to EPA Method 202

The back-half fractions blank correction values is ($m_{ib} + m_{ob}$) or 2.0mg, whichever is lesser, according to EPA Method 202

Prepared by: 

Esha Chetty
Laboratory Manager

Date: 08 / 02 / 2024

Reviewed by: 

Katie Resch
QC/Reporting Specialist

Date: 08 / 02 / 2024



PARTICULATE MATTER RESULTS - EPA 5/202

Client: Silicon Valley Power DVR

Project: PROJ - 042969

Test No.:	1-PM-2	2-PM-2	3-PM-2
Front-Half Particulate Catch			
m_f Filter catch, net mg	0.33	< 0.28	0.30
m_a Probe / nozzle rinse (acetone), net mg	< 0.11	< 0.11	< 0.11
Total filterable particulate matter catch, net mg	0.44	0.39	0.41
Back-Half Particulate Catch			
m_i Aqueous rinse (ASTM Type II water), net mg	1.23	1.02	1.46
m_o Organic rinse (hexane and acetone), net mg	1.56	1.27	1.38
Uncorrected condensible particulate matter catch, net mg	2.79	2.29	2.84
Back-Half Blank Catch			
m_{ib} Field blank aqueous rinse (ASTM Type II water), net mg	0.67	0.67	0.67
m_{ob} Field blank organic rinse (hexane and acetone), net mg	1.11	1.11	1.11
m_{fb} Total condensible particulate matter blank catch, net mg	1.78	1.78	1.78
m_{cpm} Corrected condensible particulate matter catch, net mg	< 1.24	< 1.24	< 1.24
Total Particulate Matter Catch, net mg	1.68	1.63	1.65

Notes: The front-half acetone fractions were blank-corrected according to EPA Methods 5 / 17.

The back-half fractions were blank corrected according to EPA Method 202

The back-half fractions blank correction values is ($m_{ib} + m_{ob}$) or 2.0mg, whichever is lesser, according to EPA Method 202

Prepared by: Esha Chetty

Esha Chetty
Laboratory Manager

Date: 08 / 02 / 2024

Reviewed by: Katie Resch

Katie Resch
QC/Reporting Specialist

Date: 08 / 02 / 2024

PARTICULATE MATTER RESULTS - EPA 5/202
Client: Silicon Valley Power DVR
Project: PROJ - 042969

Test Number	Sample Fraction	Sample Amount (g)	Lab Number (ID)	Tare Sequence (#)	Tare Weight (g)	Final Weight (g)	Raw Gain Weight (mg)	Blank Residue (%)	Blank Correction (mg)	Maximum Correction (mg)	Final Results (mg)
FB-PM-1	Filter (F¹/₂)	N/A	4799	Tare 1	0.3003	0.3005	--	--	--	--	--
				Tare 2	0.3002	0.3006	--	--	--	--	--
				Tare 3	0.3001	0.3006	--	--	--	--	--
				Average	0.3002	0.3006	0.37	N/A	N/A	N/A	N/A
1-PM-1	Filter (F¹/₂)	N/A	3820	Tare 1	0.3160	0.3151	--	--	--	--	--
				Tare 2	0.3157	0.3152	--	--	--	--	--
				Tare 3	0.3157	0.3151	--	--	--	--	--
				Average	0.3158	0.3151	-0.67	N/A	N/A	N/A	0.00
2-PM-1	Filter (F¹/₂)	N/A	4409	Tare 1	0.3219	0.3222	--	--	--	--	--
				Tare 2	0.3220	0.3222	--	--	--	--	--
				Tare 3	0.3219	0.3222	--	--	--	--	--
				Average	0.3219	0.3222	0.27	N/A	N/A	N/A	0.27
3-PM-1	Filter (F¹/₂)	N/A	4984	Tare 1	0.3029	0.3030	--	--	--	--	--
				Tare 2	0.3028	0.3030	--	--	--	--	--
				Tare 3	0.3028	0.3030	--	--	--	--	--
				Average	0.3028	0.3030	0.17	N/A	N/A	N/A	0.17

Note: The filters were not blank-corrected according to EPA Methods 5 / 17.

Reagent Blank	Acetone	35.9	AG492	Tare 1	2.20593	2.20624	--	--	--	--	--
				Tare 2	2.20587	2.20623	--	--	--	--	--
				Tare 3	2.20593	2.20619	--	--	--	--	--
				Average	2.20591	2.20622	0.31	0.0009%	N/A	N/A	N/A
1-PM-1	Probe/Nozzle Acetone (F¹/₂)	70.8	AG485	Tare 1	2.16674	2.16730	--	--	--	--	--
				Tare 2	2.16678	2.16729	--	--	--	--	--
				Tare 3	2.16674	2.16726	--	--	--	--	--
				Average	2.16675	2.16728	0.53	0.0009%	0.61	0.71	0.00
2-PM-1	Probe/Nozzle Acetone (F¹/₂)	65.5	AG486	Tare 1	2.17988	2.18025	--	--	--	--	--
				Tare 2	2.17979	2.18028	--	--	--	--	--
				Tare 3	2.17983	2.18024	--	--	--	--	--
				Average	2.17983	2.18026	0.42	0.0009%	0.57	0.66	0.00
3-PM-1	Probe/Nozzle Acetone (F¹/₂)	101.3	AG487	Tare 1	2.17573	2.17605	--	--	--	--	--
				Tare 2	2.17555	2.17609	--	--	--	--	--
				Tare 3	2.17573	2.17604	--	--	--	--	--
				Average	2.17567	2.17606	0.39	0.0009%	0.87	1.01	0.00

Note: The acetone fractions were blank-corrected according to EPA Methods 5 / 17. Blank values of greater than 0.001 percent of the weight of acetone used cannot be subtracted from the sample weight.

PARTICULATE MATTER RESULTS - EPA 5/202
Client: Silicon Valley Power DVR
Project: PROJ - 042969

Test Number	Sample Fraction	Sample Amount (g)	Lab Number (ID)	Tare Sequence (#)	Tare Weight (g)	Final Weight (g)	Raw Gain Weight (mg)	Blank Residue (%)	Blank Correction (mg)	Maximum Correction (mg)	Final Results (mg)
FB-PM-2	Filter (F^{1/2})	N/A	4262	Tare 1	0.2863	0.2867	--	--	--	--	--
				Tare 2	0.2863	0.2867	--	--	--	--	--
				Tare 3	0.2862	0.2867	--	--	--	--	--
				Average	0.2863	0.2867	0.43	N/A	N/A	N/A	N/A
1-PM-2	Filter (F^{1/2})	N/A	4966	Tare 1	0.3048	0.3051	--	--	--	--	--
				Tare 2	0.3048	0.3051	--	--	--	--	--
				Tare 3	0.3047	0.3051	--	--	--	--	--
				Average	0.3048	0.3051	0.33	N/A	N/A	N/A	0.33
2-PM-2	Filter (F^{1/2})	N/A	4252	Tare 1	0.2960	0.2960	--	--	--	--	--
				Tare 2	0.2956	0.2960	--	--	--	--	--
				Tare 3	0.2957	0.2961	--	--	--	--	--
				Average	0.2958	0.2960	0.27	N/A	N/A	N/A	0.27
3-PM-2	Filter (F^{1/2})	N/A	4999	Tare 1	0.3043	0.3046	--	--	--	--	--
				Tare 2	0.3044	0.3046	--	--	--	--	--
				Tare 3	0.3043	0.3047	--	--	--	--	--
				Average	0.3043	0.3046	0.30	N/A	N/A	N/A	0.30

Note: The filters were not blank-corrected according to EPA Methods 5 / 17.

Reagent Blank	Acetone	35.9	AG492	Tare 1	2.20593	2.20624	--	--	--	--	--
				Tare 2	2.20587	2.20623	--	--	--	--	--
				Tare 3	2.20593	2.20619	--	--	--	--	--
				Average	2.20591	2.20622	0.31	0.0009%	N/A	N/A	N/A
1-PM-2	Probe/Nozzle Acetone (F^{1/2})	93.8	AG498	Tare 1	2.20134	2.20200	--	--	--	--	--
				Tare 2	2.20150	2.20197	--	--	--	--	--
				Tare 3	2.20139	2.20194	--	--	--	--	--
				Average	2.20141	2.20197	0.56	0.0009%	0.81	0.94	0.00
2-PM-2	Probe/Nozzle Acetone (F^{1/2})	72.3	AG499	Tare 1	2.17610	2.17630	--	--	--	--	--
				Tare 2	2.17600	2.17637	--	--	--	--	--
				Tare 3	2.17606	2.17629	--	--	--	--	--
				Average	2.17605	2.17632	0.27	0.0009%	0.62	0.72	0.00
3-PM-2	Probe/Nozzle Acetone (F^{1/2})	63.3	AG500	Tare 1	2.18481	2.18538	--	--	--	--	--
				Tare 2	2.18484	2.18536	--	--	--	--	--
				Tare 3	2.18485	2.18535	--	--	--	--	--
				Average	2.18483	2.18536	0.53	0.0009%	0.55	0.63	0.00

Note: The acetone fractions were blank-corrected according to EPA Methods 5 / 17. Blank values of greater than 0.001 percent of the weight of acetone used cannot be subtracted from the sample weight.

PARTICULATE MATTER RESULTS - EPA 5/202
Client: Silicon Valley Power DVR
Project: PROJ - 042969

Test Number	Sample Fraction	Sample Amount (g)	Lab Number (ID)	Tare Sequence (#)	Tare Weight (g)	Final Weight (g)	Raw Gain Weight (mg)	Blank Residue (%)	Final Results (mg)
FB-PM-1	Organic Rinse (B½)	134.7	AG488	Tare 1	2.18526	2.18613	--	--	--
				Tare 2	2.18518	2.18625	--	--	--
				Tare 3	2.18529	2.18624	--	--	--
				Average	2.18524	2.18621	0.96	0.0007%	0.96
1-PM-1	Organic Rinse (B½)	201.9	AG489	Tare 1	2.15717	2.15848	--	--	--
				Tare 2	2.15709	2.15844	--	--	--
				Tare 3	2.15714	2.15843	--	--	--
				Average	2.15713	2.15845	1.32	0.0007%	1.32
2-PM-1	Organic Rinse (B½)	195.2	AG490	Tare 1	2.19727	2.19859	--	--	--
				Tare 2	2.19724	2.19865	--	--	--
				Tare 3	2.19727	2.19863	--	--	--
				Average	2.19726	2.19862	1.36	0.0007%	1.36
3-PM-1	Organic Rinse (B½)	240.5	AG491	Tare 1	2.18796	2.18959	--	--	--
				Tare 2	2.18797	2.18942	--	--	--
				Tare 3	2.18798	2.18956	--	--	--
				Average	2.18797	2.18952	1.55	0.0007%	1.55
FB-PM-1	Aqueous Water (B½)	134.9	AG516	Tare 1	2.22786	2.22829	--	--	--
				Tare 2	2.22781	2.22812	--	--	--
				Tare 3	2.22779	2.22825	--	--	--
				Average	2.22782	2.22822	0.40	0.0003%	0.40
1-PM-1	Aqueous Water (B½)	318.4	AG537	Tare 1	2.16633	2.16748	--	--	--
				Tare 2	2.16644	2.16765	--	--	--
				Tare 3	2.16634	2.16758	--	--	--
				Average	2.16637	2.16757	1.20	0.0003%	1.20
2-PM-1	Aqueous Water (B½)	298.4	AG532	Tare 1	2.19252	2.19370	--	--	--
				Tare 2	2.19249	2.19387	--	--	--
				Tare 3	2.19242	2.19388	--	--	--
				Average	2.19248	2.19382	1.34	0.0003%	1.34
3-PM-1	Aqueous Water (B½)	286.5	AG536	Tare 1	2.16752	2.16842	--	--	--
				Tare 2	2.16757	2.16857	--	--	--
				Tare 3	2.16752	2.16848	--	--	--
				Average	2.16754	2.16849	0.95	0.0003%	0.95

PARTICULATE MATTER RESULTS - EPA 5/202
Client: Silicon Valley Power DVR
Project: PROJ - 042969

Test Number	Sample Fraction	Sample Amount (g)	Lab Number (ID)	Tare Sequence (#)	Tare Weight (g)	Final Weight (g)	Raw Gain Weight (mg)	Blank Residue (%)	Final Results (mg)
FB-PM-2	Organic Rinse (B½)	141.6	AG501	Tare 1	2.17652	2.17768	--	--	--
				Tare 2	2.17650	2.17759	--	--	--
				Tare 3	2.17650	2.17758	--	--	--
				Average	2.17651	2.17762	1.11	0.0008%	1.11
1-PM-2	Organic Rinse (B½)	183.5	AG502	Tare 1	2.17912	2.18073	--	--	--
				Tare 2	2.17911	2.18056	--	--	--
				Tare 3	2.17911	2.18073	--	--	--
				Average	2.17911	2.18067	1.56	0.0008%	1.56
2-PM-2	Organic Rinse (B½)	205.1	AG503	Tare 1	2.17562	2.17683	--	--	--
				Tare 2	2.17556	2.17680	--	--	--
				Tare 3	2.17555	2.17692	--	--	--
				Average	2.17558	2.17685	1.27	0.0008%	1.27
3-PM-2	Organic Rinse (B½)	228.5	AG504	Tare 1	2.18030	2.18168	--	--	--
				Tare 2	2.18033	2.18169	--	--	--
				Tare 3	2.18031	2.18171	--	--	--
				Average	2.18031	2.18169	1.38	0.0008%	1.38
FB-PM-2	Aqueous Water (B½)	112.6	AG512	Tare 1	2.19819	2.19889	--	--	--
				Tare 2	2.19818	2.19878	--	--	--
				Tare 3	2.19809	2.19881	--	--	--
				Average	2.19815	2.19883	0.67	0.0006%	0.67
1-PM-2	Aqueous Water (B½)	275.0	AG514	Tare 1	2.16905	2.17028	--	--	--
				Tare 2	2.16900	2.17014	--	--	--
				Tare 3	2.16900	2.17031	--	--	--
				Average	2.16902	2.17024	1.23	0.0006%	1.23
2-PM-2	Aqueous Water (B½)	282.6	AG533	Tare 1	2.19641	2.19732	--	--	--
				Tare 2	2.19647	2.19750	--	--	--
				Tare 3	2.19636	2.19749	--	--	--
				Average	2.19641	2.19744	1.02	0.0006%	1.02
3-PM-2	Aqueous Water (B½)	312.4	AG515	Tare 1	2.19408	2.19549	--	--	--
				Tare 2	2.19404	2.19542	--	--	--
				Tare 3	2.19402	2.19561	--	--	--
				Average	2.19405	2.19551	1.46	0.0006%	1.46

PARTICULATE MATTER RESULTS - EPA 5/202

Client: Silicon Valley Power DVR

Project: PROJ - 042969

Test Number	Sample Fraction	Sample Amount (g)	Lab Number (ID)	Tare Sequence (#)	Tare Weight (g)	Final Weight (g)	Raw Gain Weight (mg)	Blank Residue (%)
Reagent Blank	Hexane	23.7	AG493	Tare 1	2.17874	2.17873	--	--
				Tare 2	2.17861	2.17854	--	--
				Tare 3	2.17866	2.17871	--	--
				Average	2.17867	2.17866	-0.01	0.0000%
Reagent Blank	Water	96.9	AG510	Tare 1	2.16229	2.16279	--	--
				Tare 2	2.16230	2.16281	--	--
				Tare 3	2.16236	2.16284	--	--
				Average	2.16232	2.16281	0.50	0.0005%

PARTICULATE MATTER RESULTS - EPA 5/202
Client: Silicon Valley Power DVR
Project: PROJ - 042969

Test Number	Sample Fraction	Sample Amount (g)	Lab Number (ID)	Tare Sequence (#)	Tare Weight (g)	Final Weight (g)	Raw Gain Weight (mg)	Blank Residue (%)
1-TPB-1	Hexane Acetone	63.2	AG494	Tare 1	2.20234	2.20276	--	--
				Tare 2	2.20236	2.20277	--	--
				Tare 3	2.20239	2.20277	--	--
				Average	2.20236	2.20277	0.40	0.0006%
2-TPB-1	Hexane Acetone	91.5	AG495	Tare 1	2.15681	2.15729	--	--
				Tare 2	2.15672	2.15734	--	--
				Tare 3	2.15678	2.15735	--	--
				Average	2.15677	2.15733	0.56	0.0006%
3-TPB-1	Hexane Acetone	64.9	AG496	Tare 1	2.20174	2.20214	--	--
				Tare 2	2.20171	2.20217	--	--
				Tare 3	2.20160	2.20218	--	--
				Average	2.20168	2.20216	0.48	0.0007%
1-TPB-1	Water	93.6	AG509	Tare 1	2.18840	2.18892	--	--
				Tare 2	2.18835	2.18896	--	--
				Tare 3	2.18837	2.18902	--	--
				Average	2.18837	2.18897	0.59	0.0006%
2-TPB-1	Water	102.2	AG508	Tare 1	2.16968	2.17043	--	--
				Tare 2	2.16975	2.17045	--	--
				Tare 3	2.16967	2.17042	--	--
				Average	2.16970	2.17043	0.73	0.0007%
3-TPB-1	Water	86.5	AG507	Tare 1	2.19901	2.19967	--	--
				Tare 2	2.19902	2.19956	--	--
				Tare 3	2.19902	2.19968	--	--
				Average	2.19902	2.19964	0.62	0.0007%



MONTROSE

AIR QUALITY SERVICES

LABORATORY NARRATIVE

EPA METHOD 5/202

Client: Silicon Valley Power DVR

Project: PROJ - 042969

Custody

Six sets of samples for two units were received on July 22nd, 2024. Each set consisted of a filter, probe/nozzle rinse, condensable particulate matter filter, impinger water and organic rinse. A set of field blanks, two sets of proof blanks, and a set of reagent blanks were also received. According to the chain-of-custody, these samples collected from July 16th, 2024 to July 18th, 2024. Sample bottles were marked with no evident sample loss.

Analysis

Samples were analyzed for particulate matter using the analytical procedures in EPA Methods 5 (Determination of Particulate Matter Emissions from Stationary Sources) and 202 (Determination of Condensable Particulate Matter Emissions from Stationary Sources). Samples were analyzed from July 29th, 2024 to July 31st, 2024 after desiccating for at least 24 hours. The results were blank corrected according to the test methods.

Front-Half Analysis

The filters were white in color. Any results less than zero, in the detailed laboratory report, may be attributed to the mass collected during sampling being less than the normal mass is due to the loss of filter material during sampling, recovery, or sample handling. The probe/nozzle rinses appeared as white residues.

Back-Half Analysis

The organic fractions appeared as white residues. The aqueous fractions appeared as white residues upon evaporation.

QC Notes

Prior to analysis, the accuracy of the balance was checked using 500 mg, 2 g, and 100 g ASTM E617-97 Class 1 Stainless Steel weights. Results below detection limits are reported as the detection limit.



MONTROSE

AIR QUALITY SERVICES

SAMPLE ACCEPTANCE CHECKLIST

Section 1

Client: Silicon Valley Power DNR
Date Received: 7/22/24

Project: PHJ-142969 Test Method: EPA 5/202
Sampler's Name Present: ☒ Yes ☐ No

Section 2

Sample Temperature (°C): Ambient
Testing: ☐ Compliance ☐ RATA ☐ Engineering ☐ NA

Section 3

	Yes	No	NA
Was a COC included with the samples?	✓		
Are sample IDs present on the COC?	✓		
Are sampling dates present on the COC?	✓		
Is a relinquished signature present?	✓		
Are the test methods required clearly indicated on the COC?	✓		
Were the samples kept cold during transport?		✓	
Were the samples placed under refrigeration for storage?		✓	
Are the level of liquid marked on the sample bottle?	✓		
If the sample bottles are marked, was there in visible loss of sample?		✓	
Are the caps/seals intact?	✓		
Did all the bottle labels agree with the COC? (Sample IDs, content)	✓		
Did the samples labels include the project number?	✓		
Did the samples labels include the collection date?	✓		
Were the samples collected in the correct containers for the required tests.	✓		
Are the containers label with the correct preservatives?	✓		
Was a sufficient amount of sample submitted for the requested tests?	✓		

Section 4 Explanations/Comments

Units 1 and 2.

Section 5

For discrepancies, how was the Project Manager notified? ☐ Verbal PM Initials: _____ Date: _____
☐ Email (email sent to/on): _____ / _____
Project Manager's response:

Completed By: Karanveer Singh

Date: 7/22/24



Antioch Lab

Client / Project:			Project / Sample Location:			Test / Analytical Method:		
SILICON VALLEY POWER DVR			UNIT 1 & 2			5/202		
Project No.: PROJ-042969			Purchase Order No:			Special Analysis / Reporting Instructions:		
Send Analytical Report To: Antioch QA/QC: AntiochQA-QC@montrose-env.com npatel@montrose-env.com			Sampler or PM Signature:					
Run / Sample No.	Date	Time	Containers	Sample Fraction	Reagent	Lab / Sample ID No.		
1-PM-1	7/16/24		1	F 1/2 PROBE NOZZLE	ACETONE			
1-PM-1	7/16/24		1	FILTER	FILTER			
1-PM-1	7/16/24		1	B 1/2 H2O	H2O			
1-PM-1	7/16/24		1	B 1/2 SOLVENTS	ACETONE/HEXANE			
1-PM-1	7/16/24		1	202 FILTER	202 FILTER			
2-3-PM-1	7/16/24		10	SAME AS 1-PM-1	SAME AS 1-PM-1			
1-3-PM-2	7/18/24		15	SAME AS 1-PM-1	SAME AS 1-PM-1			



CHAIN OF CUSTODY

Antioch Location

2825 Verne Roberts Circle

Antioch, CA 94509

Phone (925) 680-4300 | Fax (925) 680-4416

Lab info:

Antioch Lab

Client / Project: SILICON VALLEY POWER DVR		Project / Sample Location: UNIT 1 & 2		Test / Analytical Method: 5/202		
Project No.: PROJ-042969		Purchase Order No.:		Special Analysis / Reporting Instructions:		
Send Analytical Report To: Antioch QA/QC: AntiochQA-QC@montrose-env.com npatel@montrose-env.com		Sampler or PM Signature:				
Run / Sample No.	Date	Time	Containers	Sample Fraction	Reagent	Lab / Sample ID No.
FB-PM-1	7/16/24		1	FILTER	FILTER	
FB-PM-1	7/16/24		1	F1/2 PROBE NOZZLE	ACETONE	
FB-PM-2	7/18/24		2	SAME AS FB-PM-1	SAME AS FB-PM-1	
RB-ACETONE	7/18/24		1	ACETONE	ACETONE	
RB-HEXANE	7/18/24		1	HEXANE	HEXANE	
RB-H2O	7/18/24		1	H2O	H2O	
FRB-PM-1	7/16/24		1	IMPINGER RINSE H2O	H2O	
FRB-PM-1	7/16/24		1	IMPINGER RINSE SOLVENTS	ACETONE / HEXANE	
FRB-PM-1	7/16/24		1	202 FILTER	202 FILTER	
FRB-PM-2	7/18/24		3	SAME AS FRB-PM-1	SAME AS FRB-PM-1	
1-TPB-PM	7/16/24		1	IMPINGER RINSE H2O	H2O	HOLD
1-TPB-PM	7/16/24		1	IMPINGER RINSE SOLVENTS	ACETONE / HEXANE	HOLD
2-TPB-PM	7/16/24		1	IMPINGER RINSE H2O	H2O	HOLD
2-TPB-PM	7/16/24		1	IMPINGER RINSE SOLVENTS	ACETONE / HEXANE	HOLD
3-TPB-PM	7/16/24		1	IMPINGER RINSE H2O	H2O	HOLD
3-TPB-PM	7/16/24		1	IMPINGER RINSE SOLVENTS	ACETONE / HEXANE	HOLD
Total Containers			19			
Relinquished by Gabriella Gomez		Date 7/19/24	Time 1351	Received by Karamer Singh	Date 7/22/24	Time 1130
Relinquished by		Date	Time	Received by	Date	Time
Relinquished by		Date	Time	Received by	Date	Time

Appendix C.2

Ammonia Analyses

AMMONIA RESULTS

Client: Silicon Valley Power DVR
Project: PROJ - 042969

NH₃ Calibration:

 Standards: 1.216 ppm, 12.16 ppm, 121.6 ppm NH₃

Slope: -57.5

pH Calibration Check (pH = 5.00): 5.01

NH₃ Audit (Ricca Chemical):

Lot No. 2311E52

Recovery: 97%

Test Number	Reagent	Sample Volume (mL)	pH	Dilution Factor	Meter Reading (ppm NH ₃)	Blank Corrected (ppm NH ₃)	Average
Lab Blank (0.1 N HCl)		--	--	1	0.07 0.06	-- --	0.07
NH₃ Audit (10.00 ppm)		--	--	1	9.92 9.66	9.85 9.59	9.72
FB-NH₃-A	0.1 N HCl	122.9	1.20	1	0.06 0.04	-- --	< 0.5
1-NH₃-1-BASE-A	0.1 N HCl	208.8	1.45	1	9.53 9.26	9.48 9.21	9.34
2-NH₃-1-BASE-A	0.1 N HCl	165.2	1.35	1	14.3 14.4	14.2 14.3	14.3
3-NH₃-1-BASE-A	0.1 N HCl	176.8	1.39	1	12.2 12.2	12.1 12.1	12.1
FB-NH₃-B	0.1 N HCl	117.6	1.20	1	0.04 0.04	-- --	< 0.5
1-NH₃-1-BASE-B	0.1 N HCl	125.3	1.23	1	0.04 0.05	0.00 0.01	< 0.5
2-NH₃-1-BASE-B	0.1 N HCl	126.9	1.22	1	0.06 0.06	0.02 0.02	< 0.5
3-NH₃-1-BASE-B	0.1 N HCl	132.4	1.25	1	0.07 0.07	0.03 0.03	< 0.5

 NOTES: Reporting Limits: 0.5 ppm (mg/L) ammonia
 Units: ppm = mg/L

 Meter: Orion 4-Star, S/N G12980
 Ammonia Probe: Orion Z01-16012
 pH meter: Orion 4-Star, S/N K18319
 pH probe: Orion ARI-16705

Prepared by:



 Esha Chetty
 Laboratory Manager

Date: 07 / 25 / 2024

AMMONIA RESULTS

Client: Silicon Valley Power DVR
Project: PROJ - 042969

NH₃ Calibration:

 Standards: 1.216 ppm, 12.16 ppm, 121.6 ppm NH₃

Slope: -57.5

pH Calibration Check (pH = 5.00): 5.01

NH₃ Audit (Ricca Chemical):

Lot No. 2311E52

Recovery: 97%

Test Number	Reagent	Sample Volume (mL)	pH	Dilution Factor	Meter Reading (ppm NH ₃)	Blank Corrected (ppm NH ₃)	Average
Lab Blank (0.1 N HCl)		--	--	1	0.07 0.06	-- --	0.07
NH ₃ Audit (10.00 ppm)		--	--	1	9.92 9.66	9.85 9.59	9.72
4-NH ₃ -1-MAX-A	0.1 N HCl	184.8	1.41	1	7.19 7.38	7.14 7.33	7.23
5-NH ₃ -1-MAX-A	0.1 N HCl	203.8	1.45	1	7.91 8.10	7.86 8.05	7.95
6-NH ₃ -1-MAX-A	0.1 N HCl	194.4	1.41	1	8.15 8.10	8.10 8.05	8.07
4-NH ₃ -1-MAX-B	0.1 N HCl	141.4	1.28	1	0.04 0.04	0.01 0.00	< 0.5
5-NH ₃ -1-MAX-B	0.1 N HCl	139.6	1.27	1	0.04 0.04	0.00 0.00	< 0.5
6-NH ₃ -1-MAX-B	0.1 N HCl	136.9	1.26	1	0.04 0.03	0.00 -0.01	< 0.5

 NOTES: Reporting Limits: 0.5 ppm (mg/L) ammonia
 Units: ppm = mg/L

 Meter: Orion 4-Star, S/N G12980
 Ammonia Probe: Orion Z01-16012
 pH meter: Orion 4-Star, S/N K18319
 pH probe: Orion ARI-16705

 Prepared by: 
 Esha Chetty
 Laboratory Manager

Date: 07 / 25 / 2024

AMMONIA RESULTS

Client: Silicon Valley Power DVR
Project: PROJ - 042969

NH₃ Calibration:

 Standards: 1.216 ppm, 12.16 ppm, 121.6 ppm NH₃

Slope: -57.5

pH Calibration Check (pH = 5.00): 5.01

NH₃ Audit (Ricca Chemical):

Lot No. 2311E52

Recovery: 97%

Test Number	Reagent	Sample Volume (mL)	pH	Dilution Factor	Meter Reading (ppm NH ₃)	Blank Corrected (ppm NH ₃)	Average
Lab Blank (0.1 N HCl)		--	--	1	0.07 0.06	-- --	0.07
NH ₃ Audit (10.00 ppm)		--	--	1	9.92 9.66	9.85 9.59	9.72
7-NH ₃ -1-MIN-A	0.1 N HCl	166.3	1.35	1	7.91 7.89	7.86 7.84	7.85
8-NH ₃ -1-MIN-A	0.1 N HCl	164.1	1.35	1	8.63 8.53	8.58 8.48	8.53
9-NH ₃ -1-MIN-A	0.1 N HCl	177.8	1.38	1	7.33 7.19	7.28 7.14	7.21
7-NH ₃ -1-MIN-B	0.1 N HCl	137.5	1.27	1	0.06 0.06	0.03 0.02	< 0.5
8-NH ₃ -1-MIN-B	0.1 N HCl	141.0	1.28	1	0.06 0.07	0.03 0.03	< 0.5
9-NH ₃ -1-MIN-B	0.1 N HCl	164.1	1.34	1	0.06 0.05	0.02 0.01	< 0.5

 NOTES: Reporting Limits: 0.5 ppm (mg/L) ammonia
 Units: ppm = mg/L

 Meter: Orion 4-Star, S/N G12980
 Ammonia Probe: Orion Z01-16012
 pH meter: Orion 4-Star, S/N K18319
 pH probe: Orion ARI-16705

 Prepared by: 
 Esha Chetty
 Laboratory Manager

Date: 07 / 25 / 2024

AMMONIA RESULTS

Client: Silicon Valley Power DVR
Project: PROJ - 042969

NH₃ Calibration:

 Standards: 1.216 ppm, 12.16 ppm, 121.6 ppm NH₃

Slope: -57.5

pH Calibration Check (pH = 5.00): 5.01

NH₃ Audit (Ricca Chemical):

Lot No. 2311E52

Recovery: 97%

Test Number	Reagent	Sample Volume (mL)	pH	Dilution Factor	Meter Reading (ppm NH ₃)	Blank Corrected (ppm NH ₃)	Average
Lab Blank (0.1 N HCl)		--	--	1	0.07 0.06	-- --	0.07
NH₃ Audit (10.00 ppm)		--	--	1	9.92 9.66	9.85 9.59	9.72
1-NH₃-2-BASE-A	0.1 N HCl	198.5	1.44	1	8.65 8.38	8.60 8.33	8.46
2-NH₃-2-BASE-A	0.1 N HCl	191.6	1.42	1	8.84 9.07	8.79 9.02	8.9
3-NH₃-2-BASE-A	0.1 N HCl	196.8	1.42	1	9.14 9.45	9.09 9.40	9.2
1-NH₃-2-BASE-B	0.1 N HCl	142.0	1.30	1	0.05 0.05	0.01 0.01	< 0.5
2-NH₃-2-BASE-B	0.1 N HCl	137.5	1.28	1	0.06 0.06	0.03 0.02	< 0.5
3-NH₃-2-BASE-B	0.1 N HCl	138.7	1.28	1	0.07 0.07	0.03 0.03	< 0.5

 NOTES: Reporting Limits: 0.5 ppm (mg/L) ammonia
 Units: ppm = mg/L

 Meter: Orion 4-Star, S/N G12980
 Ammonia Probe: Orion Z01-16012
 pH meter: Orion 4-Star, S/N K18319
 pH probe: Orion ARI-16705

 Prepared by: 
 Esha Chetty
 Laboratory Manager

Date: 07 / 25 / 2024

AMMONIA RESULTS

Client: Silicon Valley Power DVR
Project: PROJ - 042969

NH₃ Calibration:

 Standards: 1.216 ppm, 12.16 ppm, 121.6 ppm NH₃
 Slope: -57.5

pH Calibration Check (pH = 5.00): 5.01

NH₃ Audit (Ricca Chemical):

 Lot No. 2311E52
 Recovery: 97%

Test Number	Reagent	Sample Volume (mL)	pH	Dilution Factor	Meter Reading (ppm NH ₃)	Blank Corrected (ppm NH ₃)	Average
Lab Blank (0.1 N HCl)		--	--	1	0.07 0.06	-- --	0.07
NH ₃ Audit (10.00 ppm)		--	--	1	9.92 9.66	9.85 9.59	9.72
4-NH ₃ -2-MAX-A	0.1 N HCl	204.3	1.45	1	7.58 7.82	7.53 7.77	7.65
5-NH ₃ -2-MAX-A	0.1 N HCl	184.1	1.41	1	8.06 7.81	8.01 7.76	7.88
6-NH ₃ -2-MAX-A	0.1 N HCl	172.7	1.38	1	9.68 9.72	9.63 9.67	9.65
4-NH ₃ -2-MAX-B	0.1 N HCl	145.9	1.31	1	0.04 0.03	0.00 -0.01	< 0.5
5-NH ₃ -2-MAX-B	0.1 N HCl	129.5	1.26	1	0.03 0.03	-0.01 -0.01	< 0.5
6-NH ₃ -2-MAX-B	0.1 N HCl	128.3	1.25	1	0.03 0.03	-0.01 -0.01	< 0.5

 NOTES: Reporting Limits: 0.5 ppm (mg/L) ammonia
 Units: ppm = mg/L

 Meter: Orion 4-Star, S/N G12980
 Ammonia Probe: Orion Z01-16012
 pH meter: Orion 4-Star, S/N K18319
 pH probe: Orion ARI-16705

 Prepared by: 
 Esha Chetty
 Laboratory Manager

Date: 07 / 25 / 2024

AMMONIA RESULTS

Client: Silicon Valley Power DVR
Project: PROJ - 042969

NH₃ Calibration:

 Standards: 1.216 ppm, 12.16 ppm, 121.6 ppm NH₃

Slope: -57.5

pH Calibration Check (pH = 5.00): 5.01

NH₃ Audit (Ricca Chemical):

Lot No. 2311E52

Recovery: 97%

Test Number	Reagent	Sample Volume (mL)	pH	Dilution Factor	Meter Reading (ppm NH ₃)	Blank Corrected (ppm NH ₃)	Average
Lab Blank (0.1 N HCl)		--	--	1	0.07 0.06	-- --	0.07
NH₃ Audit (10.00 ppm)		--	--	1	9.92 9.66	9.85 9.59	9.72
7-NH₃-2-MIN-A	0.1 N HCl	176.3	1.39	1	7.37 7.46	7.32 7.41	7.36
8-NH₃-2-MIN-A	0.1 N HCl	154.7	1.34	1	8.33 8.15	8.28 8.10	8.19
9-NH₃-2-MIN-A	0.1 N HCl	132.3	1.35	1	8.88 8.82	8.83 8.77	8.80
7-NH₃-2-MIN-B	0.1 N HCl	130.3	1.26	1	0.06 0.05	0.02 0.01	< 0.5
8-NH₃-2-MIN-B	0.1 N HCl	127.7	1.25	1	0.12 0.12	0.08 0.08	< 0.5
9-NH₃-2-MIN-B	0.1 N HCl	158.5	1.26	1	0.07 0.07	0.03 0.03	< 0.5

 NOTES: Reporting Limits: 0.5 ppm (mg/L) ammonia
 Units: ppm = mg/L

 Meter: Orion 4-Star, S/N G12980
 Ammonia Probe: Orion Z01-16012
 pH meter: Orion 4-Star, S/N K18319
 pH probe: Orion ARI-16705

 Prepared by: 
 Esha Chetty
 Laboratory Manager

Date: 07 / 25 / 2024



MONTROSE

AIR QUALITY SERVICES

LABORATORY NARRATIVE

BAAQMD METHOD ST-1B

Client: Silicon Valley Power DVR

Project: PROJ - 042969

Custody

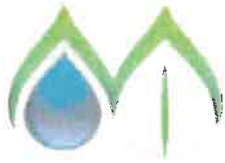
Eighteen sets of samples for two units were collected in 0.1 N HCl were received on July 22nd, 2024. A set of field blank was also received. According to the Chain of Custody, these samples were collected from July 15th, 2024 to July 17th, 2024. All other samples were received in good condition with no signs of loss.

Sample Analysis Notes

Samples were analyzed for ammonia based on the analytical procedures in BAAQMD ST-1A (Determination of Ammonia Effluents Collected in Acid Media using the Specific Ion Electrode). These samples were analyzed on July 22nd, 2024 (within 5 days of sample receipt). All samples had a pH measurement below 1.50. Immediately before ammonia analysis, the pH of each sample was raised above 11 using a pH/ionic strength adjusting solution.

Calibration Notes

Prior to analysis, the calibration was checked with a 10.00 ppm audit sample. The measured value was within 5% of the certified concentration.



MONTROSE

AIR QUALITY SERVICES

SAMPLE ACCEPTANCE CHECKLIST

Section 1

Client: Silicon Valley Power DVR
Date Received: 7/22/24

Project: PR205-042969 Test Method: BAAQMD ST-1B
Sampler's Name Present: ☒ Yes ☐ No

Section 2

Sample Temperature (°C): Ambient
Testing: ☐ Compliance ☐ RATA ☐ Engineering ☐ NA

Section 3

	Yes	No	NA
Was a COC included with the samples?	/		
Are sample IDs present on the COC?	/		
Are sampling dates present on the COC?	/		
Is a relinquished signature present?	/		
Are the test methods required clearly indicated on the COC?	/		
Were the samples kept cold during transport?		/	
Were the samples placed under refrigeration for storage?			/
Are the level of liquid marked on the sample bottle?	/		
If the sample bottles are marked, was there in visible loss of sample?		/	
Are the caps/seals intact?	/		
Did all the bottle labels agree with the COC? (Sample IDs, content)	/		
Did the samples labels include the project number?	/		
Did the samples labels include the collection date?	/		
Were the samples collected in the correct containers for the required tests.	/		
Are the containers label with the correct preservatives?	/		
Was a sufficient amount of sample submitted for the requested tests?	/		

Section 4 Explanations/Comments

Section 5

For discrepancies, how was the Project Manager notified?

☐ Verbal PM Initials: _____ Date: _____

☐ Email (email sent to/on): _____ / _____

Project Manager's response:

Completed By: Gabriele Gomer

Date: 7/22/24

Montrose Air Quality Services
2825 Verne Roberts Circle, Antioch, CA 94509
T: (925) 680-4300 F: (925) 680-4416

Sample Acceptance Checklist - Version 0, 6/21



Lab info:

Antioch Lab

2825 Verne Roberts Circle

Antioch, CA 94509

Phone (925) 680-4300 | Fax (925) 680-4416

Client / Project:

SILICON VALLEY POWER DVR

UNIT 1 (MIN, BASE & MAX LOAD)

Test / Analytical Method:

BAAQMD ST-1B

Project No.:

PROJ-042969

Send Analytical Report To:

Antioch QA/QC: AntiochQA-QC@montrose-env.com

npatel@montrose-env.com

Run / Sample No.	Date	Time	Containers	Sample Fraction	Reagent	Lab / Sample ID No.
1-NH3-1-BASE-A	7/15/24		1	1ST IMPINGER CONTENTS	0.1NHCL	
1-NH3-1-BASE-B	7/15/24		1	2ND IMPINGER CONTENTS	0.1NHCL	
2-NH3-1-BASE	7/15/24		2	SAME AS 1-NH3-1	0.1NHCL	
3-NH3-1-BASE	7/15/24		2	SAME AS 1-NH3-1	0.1NHCL	
4-NH3-1-MAX	7/16/24		2	SAME AS 1-NH3-1	0.1NHCL	
5-NH3-1-MAX	7/16/24		2	SAME AS 1-NH3-1	0.1NHCL	
6-NH3-1-MAX	7/16/24		2	SAME AS 1-NH3-1	0.1NHCL	
7-NH3-1-MIN	7/17/24		2	SAME AS 1-NH3-1	0.1NHCL	
8-NH3-1-MIN	7/17/24		2	SAME AS 1-NH3-1	0.1NHCL	
9-NH3-1-MIN	7/17/24		2	SAME AS 1-NH3-1	0.1NHCL	
FB-NH3-A	7/15/24		1	1ST IMPINGER CONTENTS	0.1NHCL	
FB-NH3-B	7/15/24		1	2ND IMPINGER CONTENTS	0.1NHCL	
Total Containers			20			
Relinquished by <i>Carmelita Gomez</i>	Date 7/19/24	Time 1351	Received by <i>Carmelita Gomez</i>	Date 7/22/24	Time 0831	Temp.
Relinquished by	Date	Time	Received by	Date	Time	Temp.
Relinquished by	Date	Time	Received by	Date	Time	Temp.

W005AS-042969-LR-869



Antioch Lab

W005AS-042969-LR-869

Appendix C.3

POC Analyses



Enthalpy Analytical
931 West Barkley Ave
Orange, CA 92868
(714) 771-6900

enthalpy.com

Lab Job Number : 512288
Report Level : II
Report Date : 07/31/2024

Analytical Report *prepared for:*

Nishad Patel
MAQS ANTIOCH, CA
2825 Verne Roberts Circle
Antioch, CA 94509

Location: Silicon Valley Power DVR , PROJ-042969

Authorized for release by:

Richard Villafania, Project Manager
richard.villafania@enthalpy.com

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the above signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

CA ELAP# 1338, NELAP# 4038, SCAQMD LAP# 18LA0518, LACSD ID# 10105



Sample Summary

Nishad Patel	Lab Job #:	512288
MAQS ANTIOCH, CA	Location:	Silicon Valley Power DVR , PROJ-042969
2825 Verne Roberts Circle	Date Received:	07/17/24
Antioch, CA 94509		

Sample ID	Lab ID	Collected	Matrix
1-POC-1	512288-001	07/16/24 10:08	Air
2-POC-1	512288-002	07/16/24 10:57	Air
3-POC-1	512288-003	07/16/24 11:53	Air

Case Narrative

MAQS ANTIOCH, CA
2825 Verne Roberts Circle
Antioch, CA 94509
Nishad Patel

Lab Job 512288
Number:
Location: Silicon Valley Power DVR , PROJ-
042969

Date Received: 07/17/24

This data package contains sample and QC results for three air samples, requested for the above referenced project on 07/17/24. The samples were received intact.

EPA 18 and EPA 18M (EPA 18M):

No analytical problems were encountered.



Lab info:

Enthalpy Lab

Phone (925) 680-4300 | Fax (925) 680-4416

[illegible]

SVPOWER COC UNIT 1- POC BAGS 2024



ENTHALPY ANALYTICAL

SAMPLE ACCEPTANCE CHECKLIST

Section 1

Client: MAQS AntiochProject: Silicon Valley Power DVR , PROJ-042969Date Received: 7/17/24Sampler's Name Present: ☐ Yes ☒ No

Section 2

Sample(s) received in a cooler? ☐ Yes, How many? ☒ No (skip section 2)Sample Temp (°C) : Amb.
(No Cooler)Sample Temp (°C), One from each cooler: #1: #2: #3: #4:

(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)

Shipping Information:

Section 3

Was the cooler packed with: ☐ Ice ☒ Ice Packs ☒ Bubble Wrap ☐ Styrofoam
☐ Paper ☐ None ☐ Other Cooler Temp (°C): #1: #2: #3: #4:

Section 4

	YES	NO	N/A
Was a COC received?	✓		
Are sample IDs present?	✓		
Are sampling dates & times present?	✓		
Is a relinquished signature present?	✓		
Are the tests required clearly indicated on the COC?	✓		
Are custody seals present?		✓	
If custody seals are present, were they intact?			✓
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)			✓
Did all samples arrive intact? If no, indicate in Section 4 below.	✓		
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were the samples collected in the correct containers for the required tests?	✓		
Are the containers labeled with the correct preservatives?			✓
Is there headspace in the VOA vials greater than 5-6 mm in diameter?			✓
Was a sufficient amount of sample submitted for the requested tests?	✓		

Section 5 Explanations/Comments

Tedlars ambient.

Section 6

For discrepancies, how was the Project Manager notified? ☐ Verbal PM Initials: Date/Time
☐ Email (email sent to/on): / Project Manager's response: Completed By: *Devin Spheth* Date: JUL 17 2024

Enthalpy Analytical, a subsidiary of Montrose Environmental Group, Inc.
931 W. Barkley Ave, Orange, CA 92868 • T: (714) 771-6900 • F: (714) 538-1209
www.enthalpy.com/socal
Sample Acceptance Checklist – Rev 4, 8/8/2017

ORIGIN ID: CCRA (925) 680-4300
MAQS
MONTROSE AIR QUALITY SERVICES
2825 VERNE ROBERTS CIRCLE

ANTIOCH, CA 94509
UNITED STATES US

TO ATTN: RICHARD VILLAFANIA
ENTHALPY LAB
931 W. BARKLEY AVE

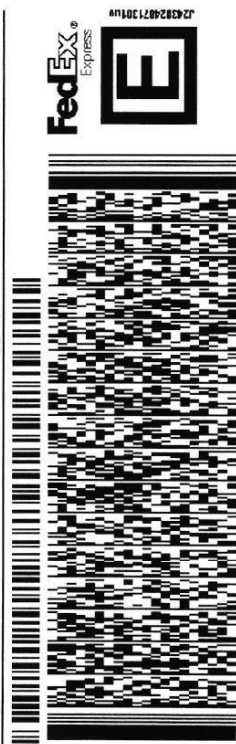
BILL SENDER

SHIP DATE: 16 JUL 24
ACTWGT: 5.00 LB
CAD: 4803247/NET4730

ORANGE CA 92868

(714) 771-9917
REF: PROJ042969
INV
PO: DEPT:

583J9/E0E4/9AE3

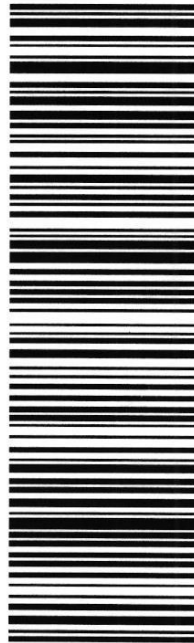


WED - 17 JUL 10:30A
PRIORITY OVERNIGHT

TRK# 7774 1938 1354
0201

92868
CA-US SNA

92 APVA



After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.
Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

Analysis Results for 512288

Nishad Patel
MAQS ANTIOCH, CA
2825 Verne Roberts Circle
Antioch, CA 94509

Lab Job #: 512288
Location: Silicon Valley Power DVR , PROJ-042969
Date Received: 07/17/24

Sample ID: 1-POC-1	Lab ID: 512288-001	Collected: 07/16/24 10:08
	Matrix: Air	

512288-001 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 18M									
Methane	3.5		ppmv	0.50	1	345320	07/17/24	07/17/24	MPD
Ethane	ND		ppmv	0.50	1	345320	07/17/24	07/17/24	MPD
TNMNEOC/C3+ as Methane	ND		ppmv	0.50	1	345320	07/17/24	07/17/24	MPD

Sample ID: 2-POC-1	Lab ID: 512288-002	Collected: 07/16/24 10:57
	Matrix: Air	

512288-002 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 18M									
Methane	3.0		ppmv	0.50	1	345320	07/17/24	07/17/24	MPD
Ethane	ND		ppmv	0.50	1	345320	07/17/24	07/17/24	MPD
TNMNEOC/C3+ as Methane	ND		ppmv	0.50	1	345320	07/17/24	07/17/24	MPD

Sample ID: 3-POC-1	Lab ID: 512288-003	Collected: 07/16/24 11:53
	Matrix: Air	

512288-003 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 18M									
Methane	2.8		ppmv	0.50	1	345320	07/17/24	07/17/24	MPD
Ethane	ND		ppmv	0.50	1	345320	07/17/24	07/17/24	MPD
TNMNEOC/C3+ as Methane	ND		ppmv	0.50	1	345320	07/17/24	07/17/24	MPD

ND Not Detected

Batch QC

Type: Lab Control Sample	Lab ID: QC1170143	Batch: 345320
Matrix: Air	Method: EPA 18M	

QC1170143 Analyte	Result	Spiked	Units	Recovery	Qual	Limits
Methane	99.88	100.0	ppmv	100%		85-115
Ethane	100.9	100.0	ppmv	101%		85-115

Type: Blank	Lab ID: QC1170144	Batch: 345320
Matrix: Air	Method: EPA 18M	

QC1170144 Analyte	Result	Qual	Units	RL	Prepared	Analyzed
Methane	ND		ppmv	0.50	07/17/24	07/17/24
Ethane	ND		ppmv	0.50	07/17/24	07/17/24
TNMNEOC/C3+ as Methane	ND		ppmv	0.50	07/17/24	07/17/24

Type: Sample Duplicate	Lab ID: QC1170145	Batch: 345320
Matrix (Source ID): Air (512288-001)	Method: EPA 18M	

QC1170145 Analyte	Result	Source Sample Result	Units	Qual	RPD	RPD Lim	DF
Methane	3.230	3.480	ppmv		7	25	1
Ethane	ND	ND	ppmv			25	1
TNMNEOC/C3+ as Methane	ND	ND	ppmv			25	1

Type: Matrix Spike	Lab ID: QC1170146	Batch: 345320
Matrix (Source ID): Air (512288-002)	Method: EPA 18M	

QC1170146 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	DF
Methane	197.1	2.960	200.0	ppmv	97%		75-125	2
Ethane	196.8	ND	200.0	ppmv	98%		75-125	2

Type: Matrix Spike Duplicate	Lab ID: QC1170147	Batch: 345320
Matrix (Source ID): Air (512288-002)	Method: EPA 18M	

QC1170147 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	RPD	RPD Lim	DF
Methane	197.1	2.960	200.0	ppmv	97%		75-125	0	25	2
Ethane	196.9	ND	200.0	ppmv	98%		75-125	0	25	2

ND Not Detected



Enthalpy Analytical
931 West Barkley Ave
Orange, CA 92868
(714) 771-6900

enthalpy.com

Lab Job Number : 512462
Report Level : II
Report Date : 08/02/2024

Analytical Report *prepared for:*

Nishad Patel
MAQS ANTIOCH, CA
2825 Verne Roberts Circle
Antioch, CA 94509

Location: SILICON VALLEY POWER DVR PROJ-027347

Authorized for release by:

Richard Villafania, Project Manager
richard.villafania@enthalpy.com

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the above signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

CA ELAP# 1338, NELAP# 4038, SCAQMD LAP# 18LA0518, LACSD ID# 10105



Sample Summary

Nishad Patel	Lab Job #:	512462
MAQS ANTIOCH, CA	Location:	SILICON VALLEY POWER DVR PROJ-027347
2825 Verne Roberts Circle Antioch, CA 94509	Date Received:	07/19/24

Sample ID	Lab ID	Collected	Matrix
1-POC-2	512462-001	07/18/24 10:09	Air
2-POC-2	512462-002	07/18/24 11:05	Air
3-POC-2	512462-003	07/18/24 11:44	Air

Case Narrative

MAQS ANTIOCH, CA
2825 Verne Roberts Circle
Antioch, CA 94509
Nishad Patel

Lab Job 512462

Number:

Location: SILICON VALLEY POWER DVR PROJ-
027347

Date Received: 07/19/24

This data package contains sample and QC results for three air samples, requested for the above referenced project on 07/19/24. The samples were received intact.

EPA 18 and EPA 18M (EPA 18M):

No analytical problems were encountered.



Login 512462
Login 512462

Lab info:

Enthalpy Lab

Phone (925) 680-4300 | Fax (925) 680-4416

[illegible]

SVPOWER COC UNIT 2- POC BAGS 2024



ENTHALPY ANALYTICAL

SAMPLE ACCEPTANCE CHECKLIST

Section 1

Client: MAQS ANTIOCH, CA 512462

Project: PROJ-027347 SILICON VALLEY POWER DVR UNIT 2 MAX LOAD

Date Received: 7/19/24

Sampler's Name Present: ☒ Yes ☐ No

Section 2

Sample(s) received in a cooler? ☐ Yes, How many? _____ ☒ No (skip section 2) Sample Temp (°C) (No Cooler): ambient

Sample Temp (°C), One from each cooler: #1: _____ #2: _____ #3: _____ #4: _____

(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)

Shipping Information: _____

Section 3

Was the cooler packed with: ☐ Ice ☐ Ice Packs ☐ Bubble Wrap ☐ Styrofoam
☐ Paper ☐ None ☐ Other _____

Cooler Temp (°C): #1: _____ #2: _____ #3: _____ #4: _____

Section 4

	YES	NO	N/A
Was a COC received?	✓		
Are sample IDs present?	✓		
Are sampling dates & times present?	✓		
Is a relinquished signature present?	✓		
Are the tests required clearly indicated on the COC?	✓		
Are custody seals present?		✓	
If custody seals are present, were they intact?			✓
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)			✓
Did all samples arrive intact? If no, indicate in Section 4 below.	✓		
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were the samples collected in the correct containers for the required tests?	✓		
Are the containers labeled with the correct preservatives?			✓
Is there headspace in the VOA vials greater than 5-6 mm in diameter?			✓
Was a sufficient amount of sample submitted for the requested tests?	✓		

Section 5 Explanations/Comments

Section 6

For discrepancies, how was the Project Manager notified? ☐ Verbal PM Initials: _____ Date/Time: _____
☐ Email (email sent to/on): _____ / _____

Project Manager's response: _____

Completed By: 6/2 Date: 7/19/24

Enthalpy Analytical, a subsidiary of Montrose Environmental Group, Inc.
931 W. Barkley Ave, Orange, CA 92868 • T: (714) 771-6900 • F: (714) 538-1209
www.enthalpy.com/socal
Sample Acceptance Checklist - Rev 4, 8/8/2017

Analysis Results for 512462

Nishad Patel
MAQS ANTIOCH, CA
2825 Verne Roberts Circle
Antioch, CA 94509

Lab Job #: 512462
Location: SILICON VALLEY POWER DVR PROJ-027347
Date Received: 07/19/24

Sample ID: 1-POC-2	Lab ID: 512462-001	Collected: 07/18/24 10:09
	Matrix: Air	

512462-001 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 18M									
Methane	12		ppmv	0.50	1	345518	07/19/24	07/19/24	MPD
Ethane	ND		ppmv	0.50	1	345518	07/19/24	07/19/24	MPD
TNMNEOC/C3+ as Methane	ND		ppmv	0.50	1	345518	07/19/24	07/19/24	MPD

Sample ID: 2-POC-2	Lab ID: 512462-002	Collected: 07/18/24 11:05
	Matrix: Air	

512462-002 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 18M									
Methane	12		ppmv	0.50	1	345518	07/19/24	07/19/24	MPD
Ethane	ND		ppmv	0.50	1	345518	07/19/24	07/19/24	MPD
TNMNEOC/C3+ as Methane	ND		ppmv	0.50	1	345518	07/19/24	07/19/24	MPD

Sample ID: 3-POC-2	Lab ID: 512462-003	Collected: 07/18/24 11:44
	Matrix: Air	

512462-003 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 18M									
Methane	13		ppmv	0.50	1	345518	07/19/24	07/19/24	MPD
Ethane	ND		ppmv	0.50	1	345518	07/19/24	07/19/24	MPD
TNMNEOC/C3+ as Methane	ND		ppmv	0.50	1	345518	07/19/24	07/19/24	MPD

ND Not Detected

Batch QC

Type: Lab Control Sample	Lab ID: QC1170826	Batch: 345518
Matrix: Air	Method: EPA 18M	

QC1170826 Analyte	Result	Spiked	Units	Recovery	Qual	Limits
Methane	100.3	100.0	ppmv	100%		85-115
Ethane	101.1	100.0	ppmv	101%		85-115

Type: Blank	Lab ID: QC1170827	Batch: 345518
Matrix: Air	Method: EPA 18M	

QC1170827 Analyte	Result	Qual	Units	RL	Prepared	Analyzed
Methane	ND		ppmv	0.50	07/19/24	07/19/24
Ethane	ND		ppmv	0.50	07/19/24	07/19/24
TNMNEOC/C3+ as Methane	ND		ppmv	0.50	07/19/24	07/19/24

Type: Sample Duplicate	Lab ID: QC1170828	Batch: 345518
Matrix (Source ID): Air (512462-001)	Method: EPA 18M	

QC1170828 Analyte	Result	Source Sample Result	Units	Qual	RPD	RPD Lim	DF
Methane	12.16	12.40	ppmv		2	25	1
Ethane	ND	ND	ppmv		16	25	1
TNMNEOC/C3+ as Methane	ND	ND	ppmv			25	1

Type: Matrix Spike	Lab ID: QC1170829	Batch: 345518
Matrix (Source ID): Air (512462-003)	Method: EPA 18M	

QC1170829 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	DF
Methane	180.3	12.66	200.0	ppmv	84%		75-125	2
Ethane	172.4	ND	200.0	ppmv	86%		75-125	2

Type: Matrix Spike Duplicate	Lab ID: QC1170830	Batch: 345518
Matrix (Source ID): Air (512462-003)	Method: EPA 18M	

QC1170830 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	RPD	RPD Lim	DF
Methane	180.9	12.66	200.0	ppmv	84%		75-125	0	25	2
Ethane	172.8	ND	200.0	ppmv	86%		75-125	0	25	2

ND Not Detected

Appendix C.4 Fuel Analyses

Silicon Valley Power
Corrections for dilution by ambient air

1-Fuel:

	As reported	Subtract	Adjusted	Normalized
	mole %	Stoichiometric quantities of air	mole %	Adjusted mole %
H2	0	0	0	0
O2	0.18	-0.18	0	0
N2	0.97	-0.7	0.2932	0.295
CO	0	0	0	0.000
CO2	0.96	0	0.96	0.967
C1	93.9	0	93.9	94.540
C2	3.49	0	3.4925	3.516
C3	0.5345	0	0.5345	0.538
C4	0.1102	0	0.1102	0.1110
C5	0.0209	0	0.0209	0.02104
C6 and greater	0.01141	0	0.01141	0.01149
total	100.2	-0.9	99.3	100.0

2-Fuel:

	As reported	Subtract	Adjusted	Normalized
	mole %	Stoichiometric quantities of air	mole %	Adjusted mole %
H2	0	0	0	0
O2	0.33	-0.33	0	0
N2	1.66	-1.2	0.4192	0.424
CO	0	0	0	0.000
CO2	0.96	0	0.96	0.972
C1	93.1	0	93.1	94.241
C2	3.77	0	3.7686	3.815
C3	0.4011	0	0.4011	0.406
C4	0.109	0	0.109	0.110
C5	0.0203	0	0.0203	0.021
C6 and greater	0.01078	0	0.01078	0.011
total	100.4	-1.6	98.8	100.0

3-Fuel:

	As reported	Subtract		Normalized
	mole %	Stoichiometric quantities	Adjusted	Adjusted
		of air	mole %	mole %
H2	0	0	0	0
O2	0.00	0.00	0	0
N2	1.09	0.0	1.09	1.087
CO	0	0	0	0.000
CO2	0.95	0	0.95	0.947
C1	94.1	0	94.1	93.840
C2	3.64	0	3.6369	3.627
C3	0.3819	0	0.3819	0.381
C4	0.0931	0	0.0931	0.093
C5	0.0172	0	0.0172	0.017
C6 and greater	0.00827	0	0.00827	0.008
total	100.3	0.0	100.3	100.0

4-Fuel:

	As reported	Subtract		Normalized
	mole %	Stoichiometric quantities	Adjusted	Adjusted
		of air	mole %	mole %
H2	0	0	0	0
O2	1.05	-1.05	0	0
N2	0	0.0	0	0.000
CO	0	0	0	0.000
CO2	0.87	0	0.87	0.876
C1	94.6	0	94.6	95.283
C2	3.35	0	3.3521	3.376
C3	0.4054	0	0.4054	0.408
C4	0.0438	0	0.0438	0.044
C5	0.00814	0	0.00814	0.008
C6 and greater	0.00411	0	0.00411	0.004
total	100.3	-1.1	99.3	100.0

5-Fuel:

	As reported	Subtract		Normalized
	mole %	Stoichiometric quantities	Adjusted	Adjusted
		of air	mole %	mole %
H2	0	0	0	0
O2	0.00	0.00	0	0
N2	1.14	0.0	1.14	1.136
CO	0	0	0	0.000
CO2	0.91	0	0.91	0.907
C1	94.4	0	94.4	94.060
C2	3.38	0	3.3808	3.369
C3	0.4174	0	0.4174	0.416
C4	0.0873	0	0.0873	0.087
C5	0.0158	0	0.0158	0.016
C6 and greater	0.01025	0	0.01025	0.010
total	100.4	0.0	100.4	100.0

6-Fuel:

	As reported	Subtract		Normalized
	mole %	Stoichiometric quantities	Adjusted	Adjusted
		of air	mole %	mole %
H2	0	0	0	0
O2	0.00	0.00	0	0
N2	1.21	0.0	1.21	1.206
CO	0	0	0	0.000
CO2	0.89	0	0.89	0.887
C1	94.4	0	94.4	94.082
C2	3.28	0	3.2832	3.272
C3	0.4498	0	0.4498	0.448
C4	0.0817	0	0.0817	0.081
C5	0.0149	0	0.0149	0.015
C6 and greater	0.00887	0	0.00887	0.009
total	100.3	0.0	100.3	100.0

7-Fuel:

	As reported	Subtract		Normalized
	mole %	Stoichiometric quantities	Adjusted	Adjusted
		of air	mole %	mole %
H2	0	0	0	0
O2	0.17	-0.17	0	0
N2	1.08	-0.6	0.4408	0.444
CO	0	0	0	0.000
CO2	0.91	0	0.91	0.917
C1	94.2	0	94.2	94.889
C2	3.19	0	3.1869	3.210
C3	0.4356	0	0.4356	0.439
C4	0.0779	0	0.0779	0.078
C5	0.0145	0	0.0145	0.015
C6 and greater	0.00857	0	0.00857	0.009
total	100.1	-0.8	99.3	100.0

8-Fuel:

	As reported	Subtract		Normalized
	mole %	Stoichiometric quantities	Adjusted	Adjusted
		of air	mole %	mole %
H2	0	0	0	0
O2	0.00	0.00	0	0
N2	1.03	0.0	1.03	1.030
CO	0	0	0	0.000
CO2	0.93	0	0.93	0.930
C1	94.4	0	94.4	94.368
C2	3.18	0	3.1776	3.177
C3	0.3933	0	0.3933	0.393
C4	0.0795	0	0.0795	0.079
C5	0.0146	0	0.0146	0.015
C6 and greater	0.00881	0	0.00881	0.009
total	100.0	0.0	100.0	100.0

9-Fuel:

	As reported	Subtract	Adjusted	Normalized
	mole %	Stoichiometric quantities	mole %	Adjusted
		of air		mole %
H2	0	0	0	0
O2	0.17	-0.17	0	0
N2	1.19	-0.6	0.5508	0.554
CO	0	0	0	0.000
CO2	0.92	0	0.92	0.925
C1	94.1	0	94.1	94.600
C2	3.40	0	3.4	3.418
C3	0.3936	0	0.3936	0.396
C4	0.0822	0	0.0822	0.083
C5	0.0155	0	0.0155	0.016
C6 and greater	0.00954	0	0.00954	0.010
total	100.3	-0.8	99.5	100.0

10-Fuel:

	As reported	Subtract	Adjusted	Normalized
	mole %	Stoichiometric quantities	mole %	Adjusted
		of air		mole %
H2	0	0	0	0
O2	0.24	-0.24	0	0
N2	1.33	-0.9	0.4276	0.432
CO	0	0	0	0.000
CO2	0.97	0	0.97	0.980
C1	93.5	0	93.5	94.416
C2	3.56	0	3.5621	3.597
C3	0.4673	0	0.4673	0.472
C4	0.0805	0	0.0805	0.081
C5	0.0141	0	0.0141	0.014
C6 and greater	0.00829	0	0.00829	0.008
total	100.2	-1.1	99.0	100.0

11-Fuel:

	As reported	Subtract		Normalized
	mole %	Stoichiometric quantities	Adjusted	Adjusted
		of air	mole %	mole %
H2	0	0	0	0
O2	0.62	-0.62	0	0
N2	2.57	-2.3	0.2388	0.246
CO	0	0	0	0.000
CO2	0.93	0	0.93	0.958
C1	92.2	0	92.2	95.008
C2	3.19	0	3.191	3.288
C3	0.3976	0	0.3976	0.410
C4	0.0679	0	0.0679	0.070
C5	0.0121	0	0.0121	0.012
C6 and greater	0.00734	0	0.00734	0.008
total	100.0	-3.0	97.0	100.0

12-Fuel:

	As reported	Subtract		Normalized
	mole %	Stoichiometric quantities	Adjusted	Adjusted
		of air	mole %	mole %
H2	0	0	0	0
O2	0.00	0.00	0	0
N2	0.85	0.0	0.85	0.849
CO	0	0	0	0.000
CO2	0.95	0	0.95	0.949
C1	94.5	0	94.5	94.433
C2	3.28	0	3.2766	3.274
C3	0.3944	0	0.3944	0.394
C4	0.0781	0	0.0781	0.078
C5	0.0136	0	0.0136	0.014
C6 and greater	0.00831	0	0.00831	0.008
total	100.1	0.0	100.1	100.0

13-Fuel:

	As reported	Subtract		Normalized
	mole %	Stoichiometric quantities	Adjusted	Adjusted
		of air	mole %	mole %
H2	0	0	0	0
O2	0.17	-0.17	0	0
N2	1.12	-0.6	0.4808	0.483
CO	0	0	0	0.000
CO2	0.94	0	0.94	0.945
C1	94.1	0	94.1	94.584
C2	3.44	0	3.4444	3.462
C3	0.4155	0	0.4155	0.418
C4	0.0828	0	0.0828	0.083
C5	0.0151	0	0.0151	0.015
C6 and greater	0.00935	0	0.00935	0.009
total	100.3	-0.8	99.5	100.0

14-Fuel:

	As reported	Subtract		Normalized
	mole %	Stoichiometric quantities	Adjusted	Adjusted
		of air	mole %	mole %
H2	0	0	0	0
O2	0.00	0.00	0	0
N2	1.05	0.0	1.05	1.049
CO	0	0	0	0.000
CO2	0.93	0	0.93	0.929
C1	94.3	0	94.3	94.191
C2	3.34	0	3.3358	3.332
C3	0.3989	0	0.3989	0.398
C4	0.078	0	0.078	0.078
C5	0.0144	0	0.0144	0.014
C6 and greater	0.00845	0	0.00845	0.008
total	100.1	0.0	100.1	100.0

15-Fuel:

	As reported	Subtract		Normalized
	mole %	Stoichiometric quantities	Adjusted	Adjusted
		of air	mole %	mole %
H2	0	0	0	0
O2	0.18	-0.18	0	0
N2	1.09	-0.7	0.4132	0.416
CO	0	0	0	0.000
CO2	0.93	0	0.93	0.936
C1	94.1	0	94.1	94.700
C2	3.42	0	3.4173	3.439
C3	0.4049	0	0.4049	0.407
C4	0.0783	0	0.0783	0.079
C5	0.0143	0	0.0143	0.014
C6 and greater	0.00804	0	0.00804	0.008
total	100.2	-0.9	99.4	100.0

FUEL F-FACTOR CALCULATIONS
Silicon Valley Power, DVR
7/15/24, 1-Fuel

SPECIES	MW	MOLE %	MOLE % (normalized)	MW**%	HHV	BTU/SCF	LHV	BTU/SCF	C	H	O	N
O ₂ (Oxygen)	32.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N ₂ (Nitrogen)	28.01	0.295	0.295	8.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
CO (Carbon Monoxide)	28.01	0.000	0.000	0.00	320.50	0.00	320.50	0.00	0.00	0.00	0.00	0.00
C ₁ (Methane)	16.04	94.54	94.540	1516.7	1010.00	954.86	909.40	859.75	11.34	3.78	0.00	0.00
CO ₂ (Carbon Dioxide)	44.01	0.967	0.967	42.56	0.00	0.00	0.00	0.00	0.12	0.00	0.31	0.00
C ₂ (Ethane)	30.07	3.516	3.516	105.73	1769.70	62.22	1618.70	56.91	0.84	0.21	0.00	0.00
C ₂ (Ethene / Ethylene)	28.05	0.000	0.000	0.00	1600.00	0.00	1499.00	0.00	0.00	0.00	0.00	0.00
C ₂ (Acetylene)	26.04	0.000	0.000	0.00	1476.00	0.00	1424.00	0.00	0.00	0.00	0.00	0.00
C ₃ (Propane)	44.10	0.538	0.538	23.72	2516.10	13.54	2314.90	12.45	0.19	0.04	0.00	0.00
ISO C ₄ (Isobutane / Methylpropane)	58.12	0.000	0.000	0.00	3251.90	0.00	3000.40	0.00	0.00	0.00	0.00	0.00
C ₄ / N-C ₄ (Butane / n-Butane)	58.12	0.111	0.111	6.45	3262.30	3.62	3010.80	3.34	0.05	0.01	0.00	0.00
Neo-C ₅ (Neopentane / dimethylpropane)	72.15	0.000	0.000	0.00	3985.00	0.00	3683.00	0.00	0.00	0.00	0.00	0.00
ISO C ₅ (Isopentane)	72.15	0.000	0.000	0.00	4000.90	0.00	3699.00	0.00	0.00	0.00	0.00	0.00
C ₅ / N-C ₅ (Pentane / n-Pentane)	72.15	0.021	0.021	1.52	4008.90	0.84	3703.90	0.78	0.01	0.00	0.00	0.00
C ₆₊ (Hexane+)	86.00	0.011	0.011	0.99	4755.90	0.55	4403.90	0.51	0.01	0.00	0.00	0.00
H ₂ O (Water)	18.02	0.000	0.000	0.00	50.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H ₂ (Hydrogen)	2.02	0.000	0.000	0.00	324.20	0.00	273.93	0.00	0.00	0.00	0.00	0.00
Ave. / Total	100.00	100.00	100.00	1705.92	1035.63	933.75	12.57	4.05	0.31	0.08		
Weight, %		99.74		=			73.70	23.75	1.81	0.48		
Gas MW		17.06										
HHV Btu/scf=		1036		@ 60 F								
LHV Btu/scf=		934		@ 60 F								
Btu/lb.=		23,039										
lb./scf=		0.0450										
Fd''(60)=		8,482		(O ₂ Based)								
Fd''(68)=		8,613										
Fc''(60)=		1,011		(CO ₂ Based)								
Fc''(68)=		1,027										

Calculations:

$$Fd''(68) = 10^{-6} * [3.64 * (H\%) + 1.53 * (C\%) + 0.14 * (N\%) - 0.46 * (O\%)] / HHV, Btu/lb$$

$$Fd''(60) = Fd''(68) * 520 R / 528 R$$

$$Fc''(68) = 10^{-6} * [0.321 * (C\%)] / HHV, Btu/lb$$

$$Fc''(60) = Fc''(68) * 520 R / 528 R$$

FUEL F-FACTOR CALCULATIONS
Silicon Valley Power, DVR
7/15/24, 2-Fuel

SPECIES	MW	MOLE %	MOLE % (normalized)	MW**%	HHV	BTU/SCF	LHV	BTU/SCF	C	H	O	N
O ₂ (Oxygen)	32.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N ₂ (Nitrogen)	28.01	0.424	0.424	11.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
CO (Carbon Monoxide)	28.01	0.000	0.000	0.00	320.50	0.00	320.50	0.00	0.00	0.00	0.00	0.00
C ₁ (Methane)	16.04	94.24	94.241	1511.9	1010.00	951.83	909.40	857.03	11.31	3.77	0.00	0.00
CO ₂ (Carbon Dioxide)	44.01	0.972	0.972	42.78	0.00	0.00	0.00	0.00	0.12	0.00	0.31	0.00
C ₂ (Ethane)	30.07	3.815	3.815	114.72	1769.70	67.51	1618.70	61.75	0.92	0.23	0.00	0.00
C ₂ (Ethene / Ethylene)	28.05	0.000	0.000	0.00	1600.00	0.00	1499.00	0.00	0.00	0.00	0.00	0.00
C ₂ (Acetylene)	26.04	0.000	0.000	0.00	1476.00	0.00	1424.00	0.00	0.00	0.00	0.00	0.00
C ₃ (Propane)	44.10	0.406	0.406	17.90	2516.10	10.22	2314.90	9.40	0.15	0.03	0.00	0.00
ISO C ₄ (Isobutane / Methylpropane)	58.12	0.000	0.000	0.00	3251.90	0.00	3000.40	0.00	0.00	0.00	0.00	0.00
C ₄ / N-C ₄ (Butane / n-Butane)	58.12	0.110	0.110	6.39	3262.30	3.59	3010.80	3.31	0.05	0.01	0.00	0.00
Neo-C ₅ (Neopentane / dimethylpropane)	72.15	0.000	0.000	0.00	3985.00	0.00	3683.00	0.00	0.00	0.00	0.00	0.00
ISO C ₅ (Isopentane)	72.15	0.000	0.000	0.00	4000.90	0.00	3699.00	0.00	0.00	0.00	0.00	0.00
C ₅ / N-C ₅ (Pentane / n-Pentane)	72.15	0.021	0.021	1.52	4008.90	0.84	3703.90	0.78	0.01	0.00	0.00	0.00
C ₆₊ (Hexane+)	86.00	0.011	0.011	0.95	4755.90	0.52	4403.90	0.48	0.01	0.00	0.00	0.00
H ₂ O (Water)	18.02	0.000	0.000	0.00	50.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H ₂ (Hydrogen)	2.02	0.000	0.000	0.00	324.20	0.00	273.93	0.00	0.00	0.00	0.00	0.00
Ave. / Total	100.00	100.00	100.00	1708.02		1034.52		932.75	12.56	4.05	0.31	0.12
Weight, %		99.74		=					73.54	23.69	1.82	0.70
Gas MW		17.08										
HHV Btu/scf=		1035		@ 60 F								
LHV Btu/scf=		933		@ 60 F								
Btu/lb.=		22,986										
lb./scf=		0.0450										
Fd''(60)=		8,484		(O ₂ Based)								
Fd''(68)=		8,614										
Fc''(60)=		1,011		(CO ₂ Based)								
Fc''(68)=		1,027										

Calculations:

$$Fd''(68) = 10^{-6} * [3.64 * (H\%) + 1.53 * (C\%) + 0.14 * (N\%) - 0.46 * (O\%)] / HHV, Btu/lb$$

$$Fd''(60) = Fd''(68) * 520 R / 528 R$$

$$Fc''(68) = 10^{-6} * [0.321 * (C\%)] / HHV, Btu/lb$$

$$Fc''(60) = Fc''(68) * 520 R / 528 R$$

FUEL F-FACTOR CALCULATIONS
Silicon Valley Power, DVR
7/15/24, 3-Fuel

SPECIES	MW	MOLE %	MOLE % (normalized)	MW**%	HHV	BTU/SCF	LHV	BTU/SCF	C	H	O	N
O ₂ (Oxygen)	32.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N ₂ (Nitrogen)	28.01	1.087	1.087	30.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30
CO (Carbon Monoxide)	28.01	0.000	0.000	0.00	320.50	0.00	320.50	0.00	0.00	0.00	0.00	0.00
C ₁ (Methane)	16.04	93.84	93.840	1505.5	1010.00	947.78	909.40	853.38	11.26	3.75	0.00	0.00
CO ₂ (Carbon Dioxide)	44.01	0.947	0.947	41.68	0.00	0.00	0.00	0.00	0.11	0.00	0.30	0.00
C ₂ (Ethane)	30.07	3.627	3.627	109.06	1769.70	64.19	1618.70	58.71	0.87	0.22	0.00	0.00
C ₂ (Ethene / Ethylene)	28.05	0.000	0.000	0.00	1600.00	0.00	1499.00	0.00	0.00	0.00	0.00	0.00
C ₂ (Acetylene)	26.04	0.000	0.000	0.00	1476.00	0.00	1424.00	0.00	0.00	0.00	0.00	0.00
C ₃ (Propane)	44.10	0.381	0.381	16.80	2516.10	9.59	2314.90	8.82	0.14	0.03	0.00	0.00
ISO C ₄ (Isobutane / Methylpropane)	58.12	0.000	0.000	0.00	3251.90	0.00	3000.40	0.00	0.00	0.00	0.00	0.00
C ₄ / N-C ₄ (Butane / n-Butane)	58.12	0.093	0.093	5.41	3262.30	3.03	3010.80	2.80	0.04	0.01	0.00	0.00
Neo-C ₅ (Neopentane / dimethylpropane)	72.15	0.000	0.000	0.00	3985.00	0.00	3683.00	0.00	0.00	0.00	0.00	0.00
ISO C ₅ (Isopentane)	72.15	0.000	0.000	0.00	4000.90	0.00	3699.00	0.00	0.00	0.00	0.00	0.00
C ₅ / N-C ₅ (Pentane / n-Pentane)	72.15	0.017	0.017	1.23	4008.90	0.68	3703.90	0.63	0.01	0.00	0.00	0.00
C ₆₊ (Hexane+)	86.00	0.008	0.008	0.69	4755.90	0.38	4403.90	0.35	0.01	0.00	0.00	0.00
H ₂ O (Water)	18.02	0.000	0.000	0.00	50.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H ₂ (Hydrogen)	2.02	0.000	0.000	0.00	324.20	0.00	273.93	0.00	0.00	0.00	0.00	0.00
Ave. / Total	100.00	100.00	100.00	1710.77	1025.65	924.69	12.44	4.01	0.30	0.30	1.77	1.78
Weight, %			99.75	=								
Gas MW		17.11										
HHV Btu/scf=		1026		@ 60 F								
LHV Btu/scf=		925		@ 60 F								
Btu/lb.=		22,752										
lb./scf=		0.0451										
Fd''(60)=		8,489		(O ₂ Based)								
Fd''(68)=		8,620										
Fc''(60)=		1,011		(CO ₂ Based)								
Fc''(68)=		1,026										

Calculations:

$$Fd''(68) = 10^{-6} * [3.64 * (H\%) + 1.53 * (C\%) + 0.14 * (N\%) - 0.46 * (O\%)] / HHV, Btu/lb$$

$$Fd''(60) = Fd''(68) * 520 R / 528 R$$

$$Fc''(68) = 10^{-6} * [0.321 * (C\%)] / HHV, Btu/lb$$

$$Fc''(60) = Fc''(68) * 520 R / 528 R$$

FUEL F-FACTOR CALCULATIONS
Silicon Valley Power, DVR
7/16/24, 4-Fuel

SPECIES	MW	MOLE %	MOLE % (normalized)	MW*%	HHV	BTU/SCF	LHV	BTU/SCF	C	H	O	N
O ₂ (Oxygen)	32.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N ₂ (Nitrogen)	28.01	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO (Carbon Monoxide)	28.01	0.000	0.000	0.00	320.50	0.00	320.50	0.00	0.00	0.00	0.00	0.00
C ₁ (Methane)	16.04	95.28	95.284	1528.6	1010.00	962.37	909.40	866.51	11.43	3.81	0.00	0.00
CO ₂ (Carbon Dioxide)	44.01	0.876	0.876	38.55	0.00	0.00	0.00	0.00	0.11	0.00	0.28	0.00
C ₂ (Ethane)	30.07	3.376	3.376	101.52	1769.70	59.75	1618.70	54.65	0.81	0.20	0.00	0.00
C ₂ (Ethene / Ethylene)	28.05	0.000	0.000	0.00	1600.00	0.00	1499.00	0.00	0.00	0.00	0.00	0.00
C ₂ (Acetylene)	26.04	0.000	0.000	0.00	1476.00	0.00	1424.00	0.00	0.00	0.00	0.00	0.00
C ₃ (Propane)	44.10	0.408	0.408	17.99	2516.10	10.27	2314.90	9.44	0.15	0.03	0.00	0.00
ISO C ₄ (Isobutane / Methylpropane)	58.12	0.000	0.000	0.00	3251.90	0.00	3000.40	0.00	0.00	0.00	0.00	0.00
C ₄ / N-C ₄ (Butane / n-Butane)	58.12	0.044	0.044	2.56	3262.30	1.44	3010.80	1.32	0.02	0.00	0.00	0.00
Neo-C ₅ (Neopentane / dimethylpropane)	72.15	0.000	0.000	0.00	3985.00	0.00	3683.00	0.00	0.00	0.00	0.00	0.00
ISO C ₅ (Isopentane)	72.15	0.000	0.000	0.00	4000.90	0.00	3699.00	0.00	0.00	0.00	0.00	0.00
C ₅ / N-C ₅ (Pentane / n-Pentane)	72.15	0.008	0.008	0.58	4008.90	0.32	3703.90	0.30	0.00	0.00	0.00	0.00
C ₆₊ (Hexane+)	86.00	0.004	0.004	0.34	4755.90	0.19	4403.90	0.18	0.00	0.00	0.00	0.00
H ₂ O (Water)	18.02	0.000	0.000	0.00	50.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H ₂ (Hydrogen)	2.02	0.000	0.000	0.00	324.20	0.00	273.93	0.00	0.00	0.00	0.00	0.00
Ave. / Total	100.00	100.00	100.00	1690.16	1034.33	932.40	12.53	4.05	0.28	0.00	0.00	0.00
Weight, %		99.74		=		74.11	23.98	1.66	0.00	0.00	0.00	0.00
Gas MW		16.90										
HHV Btu/scf=		1034		@ 60 F								
LHV Btu/scf=		932		@ 60 F								
Btu/lb.=		23,224										
lb./scf=		0.0445										
Fd"(60)=		8,477		(O ₂ Based)								
Fd"(68)=		8,607										
Fc"(60)=		1,009		(CO ₂ Based)								
Fc"(68)=		1,024										

Calculations:

$$Fd''(68) = 10^{-6} * [3.64 * (H\%) + 1.53 * (C\%) + 0.14 * (N\%) - 0.46 * (O\%)] / HHV, Btu/lb$$

$$Fd''(60) = Fd''(68) * 520 R / 528 R$$

$$Fc''(68) = 10^{-6} * [0.321 * (C\%)] / HHV, Btu/lb$$

$$Fc''(60) = Fc''(68) * 520 R / 528 R$$

FUEL F-FACTOR CALCULATIONS
Silicon Valley Power, DVR
7/16/24, 5-Fuel

SPECIES	MW	MOLE %	MOLE % (normalized)	MW*%	HHV	BTU/SCF	LHV	BTU/SCF	HHV	BTU/SCF	LHV	BTU/SCF	C	H	O	N
O ₂ (Oxygen)	32.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N ₂ (Nitrogen)	28.01	1.136	1.136	31.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32
CO (Carbon Monoxide)	28.01	0.000	0.000	0.00	320.50	0.00	320.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C ₁ (Methane)	16.04	94.06	94.059	1509.0	1010.00	950.00	909.40	855.37	11.29	3.76	0.00	0.00	0.00	0.00	0.00	0.00
CO ₂ (Carbon Dioxide)	44.01	0.907	0.907	39.92	0.00	0.00	0.00	0.00	0.11	0.00	0.29	0.00	0.00	0.00	0.00	0.00
C ₂ (Ethane)	30.07	3.369	3.369	101.30	1769.70	59.62	1618.70	54.53	0.81	0.20	0.00	0.00	0.00	0.00	0.00	0.00
C ₂ (Ethene / Ethylene)	28.05	0.000	0.000	0.00	1600.00	0.00	1499.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C ₂ (Acetylene)	26.04	0.000	0.000	0.00	1476.00	0.00	1424.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C ₃ (Propane)	44.10	0.416	0.416	18.34	2516.10	10.47	2314.90	9.63	0.15	0.03	0.00	0.00	0.00	0.00	0.00	0.00
ISO C ₄ (Isobutane / Methylpropane)	58.12	0.000	0.000	0.00	3251.90	0.00	3000.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C ₄ / N-C ₄ (Butane / n-Butane)	58.12	0.000	0.000	0.00	3262.30	0.00	3010.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neo-C ₅ (Neopentane / dimethylpropane)	72.15	0.000	0.000	0.00	3985.00	0.00	3683.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ISO C ₅ (Isopentane)	72.15	0.000	0.000	0.00	4000.90	0.00	3699.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C ₅ / N-C ₅ (Pentane / n-Pentane)	72.15	0.016	0.016	1.15	4008.90	0.64	3703.90	0.59	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C ₆₊ (Hexane+)	86.00	0.010	0.010	0.86	4755.90	0.48	4403.90	0.44	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H ₂ O (Water)	18.02	0.000	0.000	0.00	50.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H ₂ (Hydrogen)	2.02	0.000	0.000	0.00	324.20	0.00	273.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ave. / Total	100.00	100.00	100.00	1702.37	1021.20	920.57	12.37	4.00	0.29	0.32	1.87					
Weight, %			99.75	=												
Gas MW			17.02													
HHV Btu/scf=			1021	@ 60 F												
LHV Btu/scf=			921	@ 60 F												
Btu/lb.=			22,765													
lb./scf=			0.0449													
Fd"(60)=			8,488	(O ₂ Based)												
Fd"(68)=			8,619													
Fc"(60)=			1,009	(CO ₂ Based)												
Fc"(68)=			1,025													

Calculations:

$$Fd''(68) = 10^{-6} * [3.64 * (H\%) + 1.53 * (C\%) + 0.14 * (N\%) - 0.46 * (O\%)] / HHV, Btu/lb$$

$$Fd''(60) = Fd''(68) * 520 R / 528 R$$

$$Fc''(68) = 10^{-6} * [0.321 * (C\%)] / HHV, Btu/lb$$

$$Fc''(60) = Fc''(68) * 520 R / 528 R$$

FUEL F-FACTOR CALCULATIONS
Silicon Valley Power, DVR
7/16/24, 6-Fuel

SPECIES	MW	MOLE %	MOLE % (normalized)	MW**%	HHV	BTU/SCF	LHV	BTU/SCF	C	H	O	N
O ₂ (Oxygen)	32.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N ₂ (Nitrogen)	28.01	1.206	1.206	33.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34
CO (Carbon Monoxide)	28.01	0.000	0.000	0.00	320.50	0.00	320.50	0.00	0.00	0.00	0.00	0.00
C ₁ (Methane)	16.04	94.08	94.082	1509.3	1010.00	950.23	909.40	855.58	11.29	3.76	0.00	0.00
CO ₂ (Carbon Dioxide)	44.01	0.887	0.887	39.04	0.00	0.00	0.00	0.00	0.11	0.00	0.28	0.00
C ₂ (Ethane)	30.07	3.272	3.272	98.39	1769.70	57.90	1618.70	52.96	0.79	0.20	0.00	0.00
C ₂ (Ethene / Ethylene)	28.05	0.000	0.000	0.00	1600.00	0.00	1499.00	0.00	0.00	0.00	0.00	0.00
C ₂ (Acetylene)	26.04	0.000	0.000	0.00	1476.00	0.00	1424.00	0.00	0.00	0.00	0.00	0.00
C ₃ (Propane)	44.10	0.448	0.448	19.76	2516.10	11.27	2314.90	10.37	0.16	0.04	0.00	0.00
ISO C ₄ (Isobutane / Methylpropane)	58.12	0.000	0.000	0.00	3251.90	0.00	3000.40	0.00	0.00	0.00	0.00	0.00
C ₄ / N-C ₄ (Butane / n-Butane)	58.12	0.081	0.081	4.71	3262.30	2.64	3010.80	2.44	0.04	0.01	0.00	0.00
Neo-C ₅ (Neopentane / dimethylpropane)	72.15	0.000	0.000	0.00	3985.00	0.00	3683.00	0.00	0.00	0.00	0.00	0.00
ISO C ₅ (Isopentane)	72.15	0.000	0.000	0.00	4000.90	0.00	3699.00	0.00	0.00	0.00	0.00	0.00
C ₅ / N-C ₅ (Pentane / n-Pentane)	72.15	0.015	0.015	1.08	4008.90	0.60	3703.90	0.56	0.01	0.00	0.00	0.00
C ₆₊ (Hexane+)	86.00	0.009	0.009	0.77	4755.90	0.43	4403.90	0.40	0.01	0.00	0.00	0.00
H ₂ O (Water)	18.02	0.000	0.000	0.00	50.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H ₂ (Hydrogen)	2.02	0.000	0.000	0.00	324.20	0.00	273.93	0.00	0.00	0.00	0.00	0.00
Ave. / Total	100.00	100.00	100.00	1706.87	1023.08	922.31	12.40	4.01	0.28	0.34		
Weight, %			99.75	=			72.63	23.47	1.66	1.98		
Gas MW			17.07									
HHV Btu/scf=			1023	@ 60 F								
LHV Btu/scf=			922	@ 60 F								
Btu/lb.=			22,747									
lb./scf=			0.0450									
Fd''(60)=			8,490	(O ₂ Based)								
Fd''(68)=			8,620									
Fc''(60)=			1,009	(CO ₂ Based)								
Fc''(68)=			1,025									

Calculations:

$$Fd''(68) = 10^{-6} * [3.64 * (H\%) + 1.53 * (C\%) + 0.14 * (N\%) - 0.46 * (O\%)] / HHV, Btu/lb$$

$$Fd''(60) = Fd''(68) * 520 R / 528 R$$

$$Fc''(68) = 10^{-6} * [0.321 * (C\%)] / HHV, Btu/lb$$

$$Fc''(60) = Fc''(68) * 520 R / 528 R$$

FUEL F-FACTOR CALCULATIONS
Silicon Valley Power, DVR
7/17/24, 7-Fuel

SPECIES	MW	MOLE %	MOLE % (normalized)	MW*%	HHV	BTU/SCF	LHV	BTU/SCF	C	H	O	N
O ₂ (Oxygen)	32.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N ₂ (Nitrogen)	28.01	0.444	0.444	12.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
CO (Carbon Monoxide)	28.01	0.000	0.000	0.00	320.50	0.00	320.50	0.00	0.00	0.00	0.00	0.00
C ₁ (Methane)	16.04	94.89	94.888	1522.3	1010.00	958.37	909.40	862.91	11.39	3.80	0.00	0.00
CO ₂ (Carbon Dioxide)	44.01	0.917	0.917	40.36	0.00	0.00	0.00	0.00	0.11	0.00	0.29	0.00
C ₂ (Ethane)	30.07	3.210	3.210	96.52	1769.70	56.81	1618.70	51.96	0.77	0.19	0.00	0.00
C ₂ (Ethene / Ethylene)	28.05	0.000	0.000	0.00	1600.00	0.00	1499.00	0.00	0.00	0.00	0.00	0.00
C ₂ (Acetylene)	26.04	0.000	0.000	0.00	1476.00	0.00	1424.00	0.00	0.00	0.00	0.00	0.00
C ₃ (Propane)	44.10	0.439	0.439	19.36	2516.10	11.05	2314.90	10.16	0.16	0.04	0.00	0.00
ISO C ₄ (Isobutane / Methylpropane)	58.12	0.000	0.000	0.00	3251.90	0.00	3000.40	0.00	0.00	0.00	0.00	0.00
C ₄ / N-C ₄ (Butane / n-Butane)	58.12	0.078	0.078	4.53	3262.30	2.54	3010.80	2.35	0.04	0.01	0.00	0.00
Neo-C ₅ (Neopentane / dimethylpropane)	72.15	0.000	0.000	0.00	3985.00	0.00	3683.00	0.00	0.00	0.00	0.00	0.00
ISO C ₅ (Isopentane)	72.15	0.000	0.000	0.00	4000.90	0.00	3699.00	0.00	0.00	0.00	0.00	0.00
C ₅ / N-C ₅ (Pentane / n-Pentane)	72.15	0.015	0.015	1.08	4008.90	0.60	3703.90	0.56	0.01	0.00	0.00	0.00
C ₆₊ (Hexane+)	86.00	0.009	0.009	0.77	4755.90	0.43	4403.90	0.40	0.01	0.00	0.00	0.00
H ₂ O (Water)	18.02	0.000	0.000	0.00	50.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H ₂ (Hydrogen)	2.02	0.000	0.000	0.00	324.20	0.00	273.93	0.00	0.00	0.00	0.00	0.00
Ave. / Total	100.00	100.00	100.00	1697.33	1029.80	928.33	12.48	4.03	0.29	0.12	0.73	
Weight, %		99.74		=			73.51	23.77	1.73			
Gas MW		16.97										
HHV Btu/scf=		1030		@ 60 F								
LHV Btu/scf=		928		@ 60 F								
Btu/lb.=		23,025										
lb./scf=		0.0447										
Fd"(60)=		8,482		(O ₂ Based)								
Fd"(68)=		8,612										
Fc"(60)=		1,009		(CO ₂ Based)								
Fc"(68)=		1,025										

Calculations:

$$Fd''(68) = 10^{-6} * [3.64 * (H\%) + 1.53 * (C\%) + 0.14 * (N\%) - 0.46 * (O\%)] / HHV, Btu/lb$$

$$Fd''(60) = Fd''(68) * 520 R / 528 R$$

$$Fc''(68) = 10^{-6} * [0.321 * (C\%)] / HHV, Btu/lb$$

$$Fc''(60) = Fc''(68) * 520 R / 528 R$$

FUEL F-FACTOR CALCULATIONS
Silicon Valley Power, DVR
7/17/24, 8-Fuel

SPECIES	MW	MOLE %	MOLE % (normalized)	MW**%	HHV	BTU/SCF	LHV	BTU/SCF	C	H	O	N
O ₂ (Oxygen)	32.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N ₂ (Nitrogen)	28.01	1.030	1.030	28.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29
CO (Carbon Monoxide)	28.01	0.000	0.000	0.00	320.50	0.00	320.50	0.00	0.00	0.00	0.00	0.00
C ₁ (Methane)	16.04	94.37	94.365	1513.9	1010.00	953.09	909.40	858.16	11.32	3.77	0.00	0.00
CO ₂ (Carbon Dioxide)	44.01	0.930	0.930	40.93	0.00	0.00	0.00	0.00	0.11	0.00	0.30	0.00
C ₂ (Ethane)	30.07	3.177	3.177	95.53	1769.70	56.22	1618.70	51.42	0.76	0.19	0.00	0.00
C ₂ (Ethene / Ethylene)	28.05	0.000	0.000	0.00	1600.00	0.00	1499.00	0.00	0.00	0.00	0.00	0.00
C ₂ (Acetylene)	26.04	0.000	0.000	0.00	1476.00	0.00	1424.00	0.00	0.00	0.00	0.00	0.00
C ₃ (Propane)	44.10	0.393	0.393	17.33	2516.10	9.89	2314.90	9.10	0.14	0.03	0.00	0.00
ISO C ₄ (Isobutane / Methylpropane)	58.12	0.000	0.000	0.00	3251.90	0.00	3000.40	0.00	0.00	0.00	0.00	0.00
C ₄ / N-C ₄ (Butane / n-Butane)	58.12	0.079	0.079	4.59	3262.30	2.58	3010.80	2.38	0.04	0.01	0.00	0.00
Neo-C ₅ (Neopentane / dimethylpropane)	72.15	0.000	0.000	0.00	3985.00	0.00	3683.00	0.00	0.00	0.00	0.00	0.00
ISO C ₅ (Isopentane)	72.15	0.000	0.000	0.00	4000.90	0.00	3699.00	0.00	0.00	0.00	0.00	0.00
C ₅ / N-C ₅ (Pentane / n-Pentane)	72.15	0.017	0.017	1.23	4008.90	0.68	3703.90	0.63	0.01	0.00	0.00	0.00
C ₆₊ (Hexane+)	86.00	0.009	0.009	0.77	4755.90	0.43	4403.90	0.40	0.01	0.00	0.00	0.00
H ₂ O (Water)	18.02	0.000	0.000	0.00	50.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H ₂ (Hydrogen)	2.02	0.000	0.000	0.00	324.20	0.00	273.93	0.00	0.00	0.00	0.00	0.00
Ave. / Total	100.00	100.00	100.00	1703.11	1022.88	922.08	12.39	4.01	0.30	0.29		
Weight, %		99.75		=			72.77	23.53	1.75	1.69		
Gas MW		17.03										
HHV Btu/scf=		1023		@ 60 F								
LHV Btu/scf=		922		@ 60 F								
Btu/lb.=		22,793										
lb./scf=		0.0449										
Fd''(60)=		8,488		(O ₂ Based)								
Fd''(68)=		8,618										
Fc''(60)=		1,009		(CO ₂ Based)								
Fc''(68)=		1,025										

Calculations:

$$Fd''(68) = 10^{-6} * [3.64 * (H\%) + 1.53 * (C\%) + 0.14 * (N\%) - 0.46 * (O\%)] / HHV, Btu/lb$$

$$Fd''(60) = Fd''(68) * 520 R / 528 R$$

$$Fc''(68) = 10^{-6} * [0.321 * (C\%)] / HHV, Btu/lb$$

$$Fc''(60) = Fc''(68) * 520 R / 528 R$$

FUEL F-FACTOR CALCULATIONS
Silicon Valley Power, DVR
7/17/24, 9-Fuel

SPECIES	MW	MOLE %	MOLE % (normalized)	MW**%	HHV	BTU/SCF	LHV	BTU/SCF	C	H	O	N
O ₂ (Oxygen)	32.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N ₂ (Nitrogen)	28.01	0.554	0.554	15.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
CO (Carbon Monoxide)	28.01	0.000	0.000	0.00	320.50	0.00	320.50	0.00	0.00	0.00	0.00	0.00
C ₁ (Methane)	16.04	94.60	94.598	1517.6	1010.00	955.44	909.40	860.28	11.35	3.78	0.00	0.00
CO ₂ (Carbon Dioxide)	44.01	0.925	0.925	40.71	0.00	0.00	0.00	0.00	0.11	0.00	0.30	0.00
C ₂ (Ethane)	30.07	3.418	3.418	102.78	1769.70	60.49	1618.70	55.33	0.82	0.21	0.00	0.00
C ₂ (Ethene / Ethylene)	28.05	0.000	0.000	0.00	1600.00	0.00	1499.00	0.00	0.00	0.00	0.00	0.00
C ₂ (Acetylene)	26.04	0.000	0.000	0.00	1476.00	0.00	1424.00	0.00	0.00	0.00	0.00	0.00
C ₃ (Propane)	44.10	0.396	0.396	17.46	2516.10	9.96	2314.90	9.17	0.14	0.03	0.00	0.00
ISO C ₄ (Isobutane / Methylpropane)	58.12	0.000	0.000	0.00	3251.90	0.00	3000.40	0.00	0.00	0.00	0.00	0.00
C ₄ / N-C ₄ (Butane / n-Butane)	58.12	0.083	0.083	4.82	3262.30	2.71	3010.80	2.50	0.04	0.01	0.00	0.00
Neo-C ₅ (Neopentane / dimethylpropane)	72.15	0.000	0.000	0.00	3985.00	0.00	3683.00	0.00	0.00	0.00	0.00	0.00
ISO C ₅ (Isopentane)	72.15	0.000	0.000	0.00	4000.90	0.00	3699.00	0.00	0.00	0.00	0.00	0.00
C ₅ / N-C ₅ (Pentane / n-Pentane)	72.15	0.016	0.016	1.15	4008.90	0.64	3703.90	0.59	0.01	0.00	0.00	0.00
C ₆₊ (Hexane+)	86.00	0.010	0.010	0.86	4755.90	0.48	4403.90	0.44	0.01	0.00	0.00	0.00
H ₂ O (Water)	18.02	0.000	0.000	0.00	50.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H ₂ (Hydrogen)	2.02	0.000	0.000	0.00	324.20	0.00	273.93	0.00	0.00	0.00	0.00	0.00
Ave. / Total	100.00	100.00	100.00	1700.92		1029.72		928.30	12.48	4.03	0.30	0.16
Weight, %		99.74		=					73.39	23.71	1.74	0.91
Gas MW		17.01										
HHV Btu/scf=		1030		@ 60 F								
LHV Btu/scf=		928		@ 60 F								
Btu/lb.=		22,974										
lb./scf=		0.0448										
Fd''(60)=		8,483		(O ₂ Based)								
Fd''(68)=		8,614										
Fc''(60)=		1,010		(CO ₂ Based)								
Fc''(68)=		1,025										

Calculations:

$$Fd''(68) = 10^{-6} * [3.64 * (H\%) + 1.53 * (C\%) + 0.14 * (N\%) - 0.46 * (O\%)] / HHV, Btu/lb$$

$$Fd''(60) = Fd''(68) * 520 R / 528 R$$

$$Fc''(68) = 10^{-6} * [0.321 * (C\%)] / HHV, Btu/lb$$

$$Fc''(60) = Fc''(68) * 520 R / 528 R$$

FUEL F-FACTOR CALCULATIONS
Silicon Valley Power, DVR
7/18/24, 10-Fuel

SPECIES	MW	MOLE %	MOLE % (normalized)	MW*%	HHV	BTU/SCF	LHV	BTU/SCF	C	H	O	N
O ₂ (Oxygen)	32.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N ₂ (Nitrogen)	28.01	0.432	0.432	12.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
CO (Carbon Monoxide)	28.01	0.000	0.000	0.00	320.50	0.00	320.50	0.00	0.00	0.00	0.00	0.00
C ₁ (Methane)	16.04	94.42	94.416	1514.7	1010.00	953.60	909.40	858.62	11.33	3.78	0.00	0.00
CO ₂ (Carbon Dioxide)	44.01	0.980	0.980	43.13	0.00	0.00	0.00	0.00	0.12	0.00	0.31	0.00
C ₂ (Ethane)	30.07	3.597	3.597	108.16	1769.70	63.66	1618.70	58.22	0.86	0.22	0.00	0.00
C ₂ (Ethene / Ethylene)	28.05	0.000	0.000	0.00	1600.00	0.00	1499.00	0.00	0.00	0.00	0.00	0.00
C ₂ (Acetylene)	26.04	0.000	0.000	0.00	1476.00	0.00	1424.00	0.00	0.00	0.00	0.00	0.00
C ₃ (Propane)	44.10	0.472	0.472	20.81	2516.10	11.88	2314.90	10.93	0.17	0.04	0.00	0.00
ISO C ₄ (Isobutane / Methylpropane)	58.12	0.000	0.000	0.00	3251.90	0.00	3000.40	0.00	0.00	0.00	0.00	0.00
C ₄ / N-C ₄ (Butane / n-Butane)	58.12	0.081	0.081	4.71	3262.30	2.64	3010.80	2.44	0.04	0.01	0.00	0.00
Neo-C ₅ (Neopentane / dimethylpropane)	72.15	0.000	0.000	0.00	3985.00	0.00	3683.00	0.00	0.00	0.00	0.00	0.00
ISO C ₅ (Isopentane)	72.15	0.000	0.000	0.00	4000.90	0.00	3699.00	0.00	0.00	0.00	0.00	0.00
C ₅ / N-C ₅ (Pentane / n-Pentane)	72.15	0.014	0.014	1.01	4008.90	0.56	3703.90	0.52	0.01	0.00	0.00	0.00
C ₆₊ (Hexane+)	86.00	0.008	0.008	0.69	4755.90	0.38	4403.90	0.35	0.01	0.00	0.00	0.00
H ₂ O (Water)	18.02	0.000	0.000	0.00	50.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H ₂ (Hydrogen)	2.02	0.000	0.000	0.00	324.20	0.00	273.93	0.00	0.00	0.00	0.00	0.00
Ave. / Total	100.00	100.00	100.00	1705.31	1032.72	931.08	12.53	4.04	0.31	0.12		
Weight, %		99.74		=		73.50	23.70	1.84	0.71			
Gas MW		17.05										
HHV Btu/scf=		1033		@ 60 F								
LHV Btu/scf=		931		@ 60 F								
Btu/lb.=		22,982										
lb./scf=		0.0449										
Fd''(60)=		8,483		(O ₂ Based)								
Fd''(68)=		8,614										
Fc''(60)=		1,011		(CO ₂ Based)								
Fc''(68)=		1,027										

Calculations:

$$Fd''(68) = 10^{-6} * [3.64 * (H\%) + 1.53 * (C\%) + 0.14 * (N\%) - 0.46 * (O\%)] / HHV, Btu/lb$$

$$Fd''(60) = Fd''(68) * 520 R / 528 R$$

$$Fc''(68) = 10^{-6} * [0.321 * (C\%)] / HHV, Btu/lb$$

$$Fc''(60) = Fc''(68) * 520 R / 528 R$$

FUEL F-FACTOR CALCULATIONS
Silicon Valley Power, DVR
7/18/24, 11-Fuel

SPECIES	MW	MOLE %	MOLE % (normalized)	MW**%	HHV	BTU/SCF	LHV	BTU/SCF	C	H	O	N
O ₂ (Oxygen)	32.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N ₂ (Nitrogen)	28.01	0.246	0.246	6.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
CO (Carbon Monoxide)	28.01	0.000	0.000	0.00	320.50	0.00	320.50	0.00	0.00	0.00	0.00	0.00
C ₁ (Methane)	16.04	95.01	95.008	1524.2	1010.00	959.58	909.40	864.00	11.40	3.80	0.00	0.00
CO ₂ (Carbon Dioxide)	44.01	0.958	0.958	42.16	0.00	0.00	0.00	0.00	0.11	0.00	0.31	0.00
C ₂ (Ethane)	30.07	3.288	3.288	98.87	1769.70	58.19	1618.70	53.22	0.79	0.20	0.00	0.00
C ₂ (Ethene / Ethylene)	28.05	0.000	0.000	0.00	1600.00	0.00	1499.00	0.00	0.00	0.00	0.00	0.00
C ₂ (Acetylene)	26.04	0.000	0.000	0.00	1476.00	0.00	1424.00	0.00	0.00	0.00	0.00	0.00
C ₃ (Propane)	44.10	0.410	0.410	18.08	2516.10	10.32	2314.90	9.49	0.15	0.03	0.00	0.00
ISO C ₄ (Isobutane / Methylpropane)	58.12	0.000	0.000	0.00	3251.90	0.00	3000.40	0.00	0.00	0.00	0.00	0.00
C ₄ / N-C ₄ (Butane / n-Butane)	58.12	0.070	0.070	4.07	3262.30	2.28	3010.80	2.11	0.03	0.01	0.00	0.00
Neo-C ₅ (Neopentane / dimethylpropane)	72.15	0.000	0.000	0.00	3985.00	0.00	3683.00	0.00	0.00	0.00	0.00	0.00
ISO C ₅ (Isopentane)	72.15	0.000	0.000	0.00	4000.90	0.00	3699.00	0.00	0.00	0.00	0.00	0.00
C ₅ / N-C ₅ (Pentane / n-Pentane)	72.15	0.012	0.012	0.87	4008.90	0.48	3703.90	0.44	0.01	0.00	0.00	0.00
C ₆₊ (Hexane+)	86.00	0.008	0.008	0.69	4755.90	0.38	4403.90	0.35	0.01	0.00	0.00	0.00
H ₂ O (Water)	18.02	0.000	0.000	0.00	50.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H ₂ (Hydrogen)	2.02	0.000	0.000	0.00	324.20	0.00	273.93	0.00	0.00	0.00	0.00	0.00
Ave. / Total	100.00	100.00	100.00	1695.82	1031.23	929.62	12.50	4.04	0.31	0.07		
Weight, %		99.74		=			73.71	23.82	1.81	0.41		
Gas MW		16.96										
HHV Btu/scf=		1031		@ 60 F								
LHV Btu/scf=		930		@ 60 F								
Btu/lb.=		23,077										
lb./scf=		0.0447										
Fd''(60)=		8,480		(O ₂ Based)								
Fd''(68)=		8,611										
Fc''(60)=		1,010		(CO ₂ Based)								
Fc''(68)=		1,025										

Calculations:

$$Fd''(68) = 10^{-6} * [3.64 * (H\%) + 1.53 * (C\%) + 0.14 * (N\%) - 0.46 * (O\%)] / HHV, Btu/lb$$

$$Fd''(60) = Fd''(68) * 520 R / 528 R$$

$$Fc''(68) = 10^{-6} * [0.321 * (C\%)] / HHV, Btu/lb$$

$$Fc''(60) = Fc''(68) * 520 R / 528 R$$

FUEL F-FACTOR CALCULATIONS
Silicon Valley Power, DVR
7/18/24, 12-Fuel

SPECIES	MW	MOLE %	MOLE % (normalized)	MW**%	HHV	BTU/SCF	LHV	BTU/SCF	C	H	O	N
O ₂ (Oxygen)	32.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N ₂ (Nitrogen)	28.01	0.849	0.849	23.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
CO (Carbon Monoxide)	28.01	0.000	0.000	0.00	320.50	0.00	320.50	0.00	0.00	0.00	0.00	0.00
C ₁ (Methane)	16.04	94.43	94.434	1515.0	1010.00	953.78	909.40	858.78	11.33	3.78	0.00	0.00
CO ₂ (Carbon Dioxide)	44.01	0.949	0.949	41.77	0.00	0.00	0.00	0.00	0.11	0.00	0.30	0.00
C ₂ (Ethane)	30.07	3.274	3.274	98.45	1769.70	57.94	1618.70	53.00	0.79	0.20	0.00	0.00
C ₂ (Ethene / Ethylene)	28.05	0.000	0.000	0.00	1600.00	0.00	1499.00	0.00	0.00	0.00	0.00	0.00
C ₂ (Acetylene)	26.04	0.000	0.000	0.00	1476.00	0.00	1424.00	0.00	0.00	0.00	0.00	0.00
C ₃ (Propane)	44.10	0.394	0.394	17.37	2516.10	9.91	2314.90	9.12	0.14	0.03	0.00	0.00
ISO C ₄ (Isobutane / Methylpropane)	58.12	0.000	0.000	0.00	3251.90	0.00	3000.40	0.00	0.00	0.00	0.00	0.00
C ₄ / N-C ₄ (Butane / n-Butane)	58.12	0.078	0.078	4.53	3262.30	2.54	3010.80	2.35	0.04	0.01	0.00	0.00
Neo-C ₅ (Neopentane / dimethylpropane)	72.15	0.000	0.000	0.00	3985.00	0.00	3683.00	0.00	0.00	0.00	0.00	0.00
ISO C ₅ (Isopentane)	72.15	0.000	0.000	0.00	4000.90	0.00	3699.00	0.00	0.00	0.00	0.00	0.00
C ₅ / N-C ₅ (Pentane / n-Pentane)	72.15	0.014	0.014	1.01	4008.90	0.56	3703.90	0.52	0.01	0.00	0.00	0.00
C ₆₊ (Hexane+)	86.00	0.008	0.008	0.69	4755.90	0.38	4403.90	0.35	0.01	0.00	0.00	0.00
H ₂ O (Water)	18.02	0.000	0.000	0.00	50.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H ₂ (Hydrogen)	2.02	0.000	0.000	0.00	324.20	0.00	273.93	0.00	0.00	0.00	0.00	0.00
Ave. / Total	100.00	100.00	100.00	1702.59	1025.12	924.12	12.43	4.02	0.30	0.24		
Weight, %		99.75		=		72.98	23.59	1.78	1.40			
Gas MW		17.03										
HHV Btu/scf=		1025		@ 60 F								
LHV Btu/scf=		924		@ 60 F								
Btu/lb.=		22,850										
lb./scf=		0.0449										
Fd''(60)=		8,486		(O ₂ Based)								
Fd''(68)=		8,617										
Fc''(60)=		1,010		(CO ₂ Based)								
Fc''(68)=		1,025										

Calculations:

$$Fd''(68) = 10^{-6} * [3.64 * (H\%) + 1.53 * (C\%) + 0.14 * (N\%) - 0.46 * (O\%)] / HHV, Btu/lb$$

$$Fd''(60) = Fd''(68) * 520 R / 528 R$$

$$Fc''(68) = 10^{-6} * [0.321 * (C\%)] / HHV, Btu/lb$$

$$Fc''(60) = Fc''(68) * 520 R / 528 R$$

FUEL F-FACTOR CALCULATIONS
Silicon Valley Power, DVR
7/19/24, 13-Fuel

SPECIES	MW	MOLE %	MOLE % (normalized)	MW**%	HHV	BTU/SCF	LHV	BTU/SCF	C	H	O	N
O ₂ (Oxygen)	32.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N ₂ (Nitrogen)	28.01	0.483	0.483	13.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
CO (Carbon Monoxide)	28.01	0.000	0.000	0.00	320.50	0.00	320.50	0.00	0.00	0.00	0.00	0.00
C ₁ (Methane)	16.04	94.58	94.585	1517.4	1010.00	955.31	909.40	860.16	11.35	3.78	0.00	0.00
CO ₂ (Carbon Dioxide)	44.01	0.945	0.945	41.59	0.00	0.00	0.00	0.00	0.11	0.00	0.30	0.00
C ₂ (Ethane)	30.07	3.462	3.462	104.10	1769.70	61.27	1618.70	56.04	0.83	0.21	0.00	0.00
C ₂ (Ethene / Ethylene)	28.05	0.000	0.000	0.00	1600.00	0.00	1499.00	0.00	0.00	0.00	0.00	0.00
C ₂ (Acetylene)	26.04	0.000	0.000	0.00	1476.00	0.00	1424.00	0.00	0.00	0.00	0.00	0.00
C ₃ (Propane)	44.10	0.418	0.418	18.43	2516.10	10.52	2314.90	9.68	0.15	0.03	0.00	0.00
ISO C ₄ (Isobutane / Methylpropane)	58.12	0.000	0.000	0.00	3251.90	0.00	3000.40	0.00	0.00	0.00	0.00	0.00
C ₄ / N-C ₄ (Butane / n-Butane)	58.12	0.083	0.083	4.82	3262.30	2.71	3010.80	2.50	0.04	0.01	0.00	0.00
Neo-C ₅ (Neopentane / dimethylpropane)	72.15	0.000	0.000	0.00	3985.00	0.00	3683.00	0.00	0.00	0.00	0.00	0.00
ISO C ₅ (Isopentane)	72.15	0.000	0.000	0.00	4000.90	0.00	3699.00	0.00	0.00	0.00	0.00	0.00
C ₅ / N-C ₅ (Pentane / n-Pentane)	72.15	0.015	0.015	1.08	4008.90	0.60	3703.90	0.56	0.01	0.00	0.00	0.00
C ₆₊ (Hexane+)	86.00	0.009	0.009	0.77	4755.90	0.43	4403.90	0.40	0.01	0.00	0.00	0.00
H ₂ O (Water)	18.02	0.000	0.000	0.00	50.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H ₂ (Hydrogen)	2.02	0.000	0.000	0.00	324.20	0.00	273.93	0.00	0.00	0.00	0.00	0.00
Ave. / Total	100.00	100.00	100.00	1701.74	1030.83	929.32	12.50	4.04	0.30	1.78	0.79	0.14
Weight, %			99.74	=					73.46	23.72		
Gas MW			17.02									
HHV Btu/scf=			1031	@ 60 F								
LHV Btu/scf=			929	@ 60 F								
Btu/lb.=			22,988									
lb./scf=			0.0448									
Fd''(60)=			8,483	(O ₂ Based)								
Fd''(68)=			8,614									
Fc''(60)=			1,010	(CO ₂ Based)								
Fc''(68)=			1,026									

Calculations:

$$Fd''(68) = 10^{-6} * [3.64 * (H\%) + 1.53 * (C\%) + 0.14 * (N\%) - 0.46 * (O\%)] / HHV, Btu/lb$$

$$Fd''(60) = Fd''(68) * 520 R / 528 R$$

$$Fc''(68) = 10^{-6} * [0.321 * (C\%)] / HHV, Btu/lb$$

$$Fc''(60) = Fc''(68) * 520 R / 528 R$$

FUEL F-FACTOR CALCULATIONS
Silicon Valley Power, DVR
7/19/24, 14-Fuel

SPECIES	MW	MOLE %	MOLE % (normalized)	MW*%	HHV	BTU/SCF	LHV	BTU/SCF	C	H	O	N
O ₂ (Oxygen)	32.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N ₂ (Nitrogen)	28.01	1.049	1.049	29.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29
CO (Carbon Monoxide)	28.01	0.000	0.000	0.00	320.50	0.00	320.50	0.00	0.00	0.00	0.00	0.00
C ₁ (Methane)	16.04	94.19	94.192	1511.1	1010.00	951.34	909.40	856.58	11.30	3.77	0.00	0.00
CO ₂ (Carbon Dioxide)	44.01	0.929	0.929	40.89	0.00	0.00	0.00	0.00	0.11	0.00	0.30	0.00
C ₂ (Ethane)	30.07	3.332	3.332	100.19	1769.70	58.97	1618.70	53.94	0.80	0.20	0.00	0.00
C ₂ (Ethene / Ethylene)	28.05	0.000	0.000	0.00	1600.00	0.00	1499.00	0.00	0.00	0.00	0.00	0.00
C ₂ (Acetylene)	26.04	0.000	0.000	0.00	1476.00	0.00	1424.00	0.00	0.00	0.00	0.00	0.00
C ₃ (Propane)	44.10	0.398	0.398	17.55	2516.10	10.01	2314.90	9.21	0.14	0.03	0.00	0.00
ISO C ₄ (Isobutane / Methylpropane)	58.12	0.000	0.000	0.00	3251.90	0.00	3000.40	0.00	0.00	0.00	0.00	0.00
C ₄ / N-C ₄ (Butane / n-Butane)	58.12	0.078	0.078	4.53	3262.30	2.54	3010.80	2.35	0.04	0.01	0.00	0.00
Neo-C ₅ (Neopentane / dimethylpropane)	72.15	0.000	0.000	0.00	3985.00	0.00	3683.00	0.00	0.00	0.00	0.00	0.00
ISO C ₅ (Isopentane)	72.15	0.000	0.000	0.00	4000.90	0.00	3699.00	0.00	0.00	0.00	0.00	0.00
C ₅ / N-C ₅ (Pentane / n-Pentane)	72.15	0.014	0.014	1.01	4008.90	0.56	3703.90	0.52	0.01	0.00	0.00	0.00
C ₆₊ (Hexane+)	86.00	0.008	0.008	0.69	4755.90	0.38	4403.90	0.35	0.01	0.00	0.00	0.00
H ₂ O (Water)	18.02	0.000	0.000	0.00	50.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H ₂ (Hydrogen)	2.02	0.000	0.000	0.00	324.20	0.00	273.93	0.00	0.00	0.00	0.00	0.00
Ave. / Total	100.00	100.00	100.00	1705.35		1023.81		922.95	12.41	4.01	0.30	0.29
Weight, %		99.75		=					72.77	23.51	1.74	1.72
Gas MW		17.05										
HHV Btu/scf=		1024		@ 60 F								
LHV Btu/scf=		923		@ 60 F								
Btu/lb.=		22,783										
lb./scf=		0.0449										
Fd''(60)=		8,488		(O ₂ Based)								
Fd''(68)=		8,619										
Fc''(60)=		1,010		(CO ₂ Based)								
Fc''(68)=		1,025										

Calculations:

$$Fd''(68) = 10^{-6} * [3.64 * (H\%) + 1.53 * (C\%) + 0.14 * (N\%) - 0.46 * (O\%)] / HHV, Btu/lb$$

$$Fd''(60) = Fd''(68) * 520 R / 528 R$$

$$Fc''(68) = 10^{-6} * [0.321 * (C\%)] / HHV, Btu/lb$$

$$Fc''(60) = Fc''(68) * 520 R / 528 R$$

FUEL F-FACTOR CALCULATIONS
Silicon Valley Power, DVR
7/19/24, 15-Fuel

SPECIES	MW	MOLE %	MOLE % (normalized)	MW**%	HHV	BTU/SCF	LHV	BTU/SCF	C	H	O	N
O ₂ (Oxygen)	32.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N ₂ (Nitrogen)	28.01	0.416	0.416	11.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
CO (Carbon Monoxide)	28.01	0.000	0.000	0.00	320.50	0.00	320.50	0.00	0.00	0.00	0.00	0.00
C ₁ (Methane)	16.04	94.70	94.701	1519.3	1010.00	956.48	909.40	861.21	11.36	3.79	0.00	0.00
CO ₂ (Carbon Dioxide)	44.01	0.936	0.936	41.19	0.00	0.00	0.00	0.00	0.11	0.00	0.30	0.00
C ₂ (Ethane)	30.07	3.439	3.439	103.41	1769.70	60.86	1618.70	55.67	0.83	0.21	0.00	0.00
C ₂ (Ethene / Ethylene)	28.05	0.000	0.000	0.00	1600.00	0.00	1499.00	0.00	0.00	0.00	0.00	0.00
C ₂ (Acetylene)	26.04	0.000	0.000	0.00	1476.00	0.00	1424.00	0.00	0.00	0.00	0.00	0.00
C ₃ (Propane)	44.10	0.407	0.407	17.95	2516.10	10.24	2314.90	9.42	0.15	0.03	0.00	0.00
ISO C ₄ (Isobutane / Methylpropane)	58.12	0.000	0.000	0.00	3251.90	0.00	3000.40	0.00	0.00	0.00	0.00	0.00
C ₄ / N-C ₄ (Butane / n-Butane)	58.12	0.079	0.079	4.59	3262.30	2.58	3010.80	2.38	0.04	0.01	0.00	0.00
Neo-C ₅ (Neopentane / dimethylpropane)	72.15	0.000	0.000	0.00	3985.00	0.00	3683.00	0.00	0.00	0.00	0.00	0.00
ISO C ₅ (Isopentane)	72.15	0.000	0.000	0.00	4000.90	0.00	3699.00	0.00	0.00	0.00	0.00	0.00
C ₅ / N-C ₅ (Pentane / n-Pentane)	72.15	0.014	0.014	1.01	4008.90	0.56	3703.90	0.52	0.01	0.00	0.00	0.00
C ₆₊ (Hexane+)	86.00	0.008	0.008	0.69	4755.90	0.38	4403.90	0.35	0.01	0.00	0.00	0.00
H ₂ O (Water)	18.02	0.000	0.000	0.00	50.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H ₂ (Hydrogen)	2.02	0.000	0.000	0.00	324.20	0.00	273.93	0.00	0.00	0.00	0.00	0.00
Ave. / Total	100.00	100.00	100.00	1699.76	1031.10	929.55	12.50	4.04	0.30	0.12		
Weight, %		99.74		=			73.54	23.75	1.76	0.69		
Gas MW		17.00										
HHV Btu/scf=		1031		@ 60 F								
LHV Btu/scf=		930		@ 60 F								
Btu/lb.=		23,021										
lb./scf=		0.0448										
Fd''(60)=		8,482		(O ₂ Based)								
Fd''(68)=		8,613										
Fc''(60)=		1,010		(CO ₂ Based)								
Fc''(68)=		1,025										

Calculations:

$$Fd''(68) = 10^{-6} * [3.64 * (H\%) + 1.53 * (C\%) + 0.14 * (N\%) - 0.46 * (O\%)] / HHV, Btu/lb$$

$$Fd''(60) = Fd''(68) * 520 R / 528 R$$

$$Fc''(68) = 10^{-6} * [0.321 * (C\%)] / HHV, Btu/lb$$

$$Fc''(60) = Fc''(68) * 520 R / 528 R$$

Silicon Valley Power, DVR
Fuel sample result summary

Date	Fuel Sample ID	HHV Btu/dscf	Fd
7/15/2024	1-Fuel	1036	8613
7/15/2024	2-Fuel	1035	8614
7/15/2024	3-Fuel	1026	8620
	Avg:	1032	8616
7/16/2024	4-Fuel	1034	8607
7/16/2024	5-Fuel	1021	8619
7/16/2024	6-Fuel	1023	8620
	Avg:	1026	8615
7/17/2024	7-Fuel	1030	8612
7/17/2024	8-Fuel	1023	8618
7/17/2024	9-Fuel	1030	8614
	Avg:	1028	8615
7/18/2024	10-Fuel	1033	8614
7/18/2024	11-Fuel	1031	8611
7/18/2024	12-Fuel	1025	8617
	Avg:	1030	8614
7/19/2024	13-Fuel	1031	8614
7/19/2024	14-Fuel	1024	8619
7/19/2024	15-Fuel	1031	8613
	Avg:	1029	8615

Fuel Sulfur Content Calculations
Silicon Valley Power, DVR

Sample:	4-Fuel, 7/16/24			5-Fuel, 7/16/24			6-Fuel, 7/16/24		
	ppbv	#S atoms/mole	ppmv as S	ppbv	#S atoms/mole	ppmv as S	ppbv	#S atoms/mole	ppmv as S
Compound									
Hydrogen Sulfide	0	1	0	295	1	0.295	300	1	0.3
Carbonyl Sulfide	876	1	0.876	803	1	0.803	726	1	0.726
Methyl Mercaptan	0	1	0	118	1	0.118	126	1	0.126
Ethyl Mercaptan	0	1	0	0	1	0	0	1	0
Dimethyl Sulfide	0	1	0	0	1	0	0	1	0
Carbon Disulfide	0	2	0	0	2	0	0	2	0
Isopropyl Mercaptan	0	1	0	0	1	0	0	1	0
tert-Butyl Mercaptan	0	1	0	834	1	0.834	893	1	0.893
n-Propyl Mercaptan	0	1	0	0	1	0	0	1	0
Ethyl Methyl Sulfide	0	1	0	0	1	0	0	1	0
Thiophene	0	1	0	0	1	0	0	1	0
Isobutyl Mercaptan	0	1	0	0	1	0	0	1	0
Diethyl Sulfide	0	1	0	0	1	0	0	1	0
Butyl Mercaptan	0	1	0	0	1	0	0	1	0
Dimethyl Disulfide	0	2	0	0	2	0	0	2	0
3-Methylthiophene	0	1	0	0	1	0	0	1	0
Tetrahydrothiophene	462	1	0.462	855	1	0.855	823	1	0.823
2-Ethylthiophene	0	1	0	0	1	0	0	1	0
2,5-Dimethylthiophene	0	1	0	0	1	0	0	1	0
Diethyl Disulfide	0	2	0	0	2	0	0	2	0
Unidentified Sulfur	0	1	0	0	1	0	0	1	0
Total:			1.338			2.905			2.868

Average ppmv as Sulfur: 2.37
Sulfur, grains/100scf: 0.140

Fuel Sulfur Content Calculations
Silicon Valley Power, DVR

Sample:	10-Fuel, 7/18/24			11-Fuel, 7/18/24			12-Fuel, 7/18/24		
	ppbv	#S atoms/mole	ppmv as S	ppbv	#S atoms/mole	ppmv as S	ppbv	#S atoms/mole	ppmv as S
Compound									
Hydrogen Sulfide	246	1	0.246	199	1	0.199	205	1	0.205
Carbonyl Sulfide	905	1	0.905	851	1	0.851	633	1	0.633
Methyl Mercaptan	99	1	0.099	84	1	0.084	74	1	0.074
Ethyl Mercaptan	0	1	0	0	1	0	0	1	0
Dimethyl Sulfide	0	1	0	0	1	0	0	1	0
Carbon Disulfide	0	2	0	0	2	0	0	2	0
Isopropyl Mercaptan	0	1	0	0	1	0	0	1	0
tert-Butyl Mercaptan	1060	1	1.06	1020	1	1.02	811	1	0.811
n-Propyl Mercaptan	0	1	0	0	1	0	0	1	0
Ethyl Methyl Sulfide	0	1	0	0	1	0	0	1	0
Thiophene	0	1	0	0	1	0	0	1	0
Isobutyl Mercaptan	0	1	0	0	1	0	0	1	0
Diethyl Sulfide	0	1	0	0	1	0	0	1	0
Butyl Mercaptan	0	1	0	0	1	0	0	1	0
Dimethyl Disulfide	0	2	0	0	2	0	0	2	0
3-Methylthiophene	0	1	0	0	1	0	0	1	0
Tetrahydrothiophene	1240	1	1.24	1330	1	1.33	1030	1	1.03
2-Ethylthiophene	0	1	0	0	1	0	0	1	0
2,5-Dimethylthiophene	0	1	0	0	1	0	0	1	0
Diethyl Disulfide	0	2	0	0	2	0	0	2	0
Unidentified Sulfur	0	1	0	0	1	0	0	1	0
Total:			3.55			3.484			2.753

Average ppmv as Sulfur: 3.26
Sulfur, grains/100scf: 0.193



Atmospheric Analysis & Consulting, Inc.

CLIENT : Montrose Air Quality Services
PROJECT NAME : Silicon Valley Power DVR
PROJECT NO. : PROJ-42969
AAC PROJECT NO. : 241700
REPORT DATE : 08/06/2024

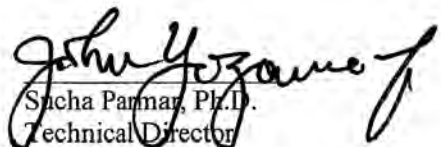
On July 23rd 2024, Atmospheric Analysis & Consulting, Inc. received fifteen (15) Six-Liter Silonite Canisters for ASTM D-1945 analysis and Total Reduced Sulfur analysis by ASTM D-5504. Upon receipt, the samples were assigned unique Laboratory ID numbers as follows:

Client ID	Lab No.	Return Pressure (mmHg)	Client ID	Lab No.	Return Pressure (mmHg)
1-FUEL	241700-61418	630.6	9-FUEL	241700-61426	515.3
2-FUEL	241700-61419	587.6	10-FUEL	241700-61427	597.6
3-FUEL	241700-61420	539.1	11-FUEL	241700-61428	1016.6
4-FUEL	241700-61421	499.1	12-FUEL	241700-61429	731.9
5-FUEL	241700-61422	483.0	13-FUEL	241700-61430	513.6
6-FUEL	241700-61423	540.3	14-FUEL	241700-61431	621.9
7-FUEL	241700-61424	642.8	15-FUEL	241700-61432	546.4
8-FUEL	241700-61425	728.2			

This analysis is performed in accordance with AAC's Quality Manual. Test results apply to the sample(s) as received. For detailed information pertaining to specific EPA, NCASI, ASTM and SCAQMD accreditations (Methods & Analytes), please visit our website at www.aacalab.com.

I certify that this data is technically accurate, complete, and in compliance with the terms and conditions of the contract. No problems were encountered during receiving, preparation, and/or analysis of these samples. The Technical Director or his/her designee, as verified by the following signature, has authorized release of the data.

If you have any questions or require further explanation of data results, please contact the undersigned.


Sucha Panmar, Ph.D.
Technical Director

This report consists of 17 pages.



Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

CLIENT : Montrose Air Quality Services
PROJECT NO. : 241700
MATRIX : Air

SAMPLING DATE : 07/15-16/2024
RECEIVING DATE : 07/23/2024
ANALYSIS DATE : 07/31-08/02/24
REPORT DATE : 08/06/2024

ASTM D-1945

Client ID	1-FUEL	2-FUEL	3-FUEL
AAC ID	241700-61418	241700-61419	241700-61420
Can Dilution Factor	1.44	1.59	1.77
Analyte	Result	Result	Result
H ₂	< 1.4 %	< 1.6 %	< 1.8 %
O ₂	0.18 %	0.33 %	< 0.2 %
N ₂	0.97 %	1.66 %	1.09 %
CO	< 0.1 %	< 0.2 %	< 0.2 %
CO ₂	0.96 %	0.96 %	0.95 %
CH ₄	93.9 %	93.1 %	94.1 %
C ₂ (as Ethane)	34,925 ppmV	37,686 ppmV	36,369 ppmV
C ₃ (as Propane)	5,345 ppmV	4,011 ppmV	3,819 ppmV
C ₄ (as Butane)	1,102 ppmV	1,090 ppmV	931 ppmV
C ₅ (as Pentane)	209 ppmV	203 ppmV	172 ppmV
C ₆ (as Hexane)	59.6 ppmV	56.4 ppmV	44.3 ppmV
C ₆ + (as Hexane)	54.5 ppmV	51.4 ppmV	38.4 ppmV

Client ID	4-FUEL	5-FUEL	6-FUEL
AAC ID	241700-61421	241700-61422	241700-61423
Can Dilution Factor	1.84	1.93	1.70
Analyte	Result	Result	Result
H ₂	< 1.8 %	< 1.9 %	< 1.7 %
O ₂	1.05 %	< 0.2 %	< 0.2 %
N ₂	< 0.2 %	1.14 %	1.21 %
CO	< 0.2 %	< 0.2 %	< 0.2 %
CO ₂	0.87 %	0.91 %	0.89 %
CH ₄	94.6 %	94.4 %	94.4 %
C ₂ (as Ethane)	33,521 ppmV	33,808 ppmV	32,832 ppmV
C ₃ (as Propane)	4,054 ppmV	4,174 ppmV	4,498 ppmV
C ₄ (as Butane)	438 ppmV	873 ppmV	817 ppmV
C ₅ (as Pentane)	81.4 ppmV	158 ppmV	149 ppmV
C ₆ (as Hexane)	20.2 ppmV	52.2 ppmV	44.2 ppmV
C ₆ + (as Hexane)	20.9 ppmV	50.3 ppmV	44.5 ppmV

All fixed gases have been normalized to 100% on a dry basis

Sample Reporting Limit (SRL) is equal to Reporting Limit x Analysis Dil. Fac x Canister Dil. Fac (if applicable)



Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

CLIENT : Montrose Air Quality Services
PROJECT NO. : 241700
MATRIX : Air

SAMPLING DATE : 07/17-18/2024
RECEIVING DATE : 07/23/2024
ANALYSIS DATE : 08/02-08/05/2
REPORT DATE : 08/06/2024

ASTM D-1945

Client ID	7-FUEL	8-FUEL	9-FUEL
AAC ID	241700-61424	241700-61425	241700-61426
Can Dilution Factor	1.46	1.25	1.76
Analyte	Result	Result	Result
H ₂	< 1.5 %	< 1.3 %	< 1.8 %
O ₂	0.17 %	< 0.1 %	0.17 %
N ₂	1.08 %	1.03 %	1.19 %
CO	< 0.1 %	< 0.1 %	< 0.2 %
CO ₂	0.91 %	0.93 %	0.92 %
CH ₄	94.2 %	94.4 %	94.1 %
C ₂ (as Ethane)	31,869 ppmV	31,776 ppmV	34,000 ppmV
C ₃ (as Propane)	4,356 ppmV	3,933 ppmV	3,936 ppmV
C ₄ (as Butane)	779 ppmV	795 ppmV	822 ppmV
C ₅ (as Pentane)	145 ppmV	146 ppmV	155 ppmV
C ₆ (as Hexane)	45.2 ppmV	45.7 ppmV	47.5 ppmV
C ₆ + (as Hexane)	40.5 ppmV	42.4 ppmV	47.9 ppmV

Client ID	10-FUEL	11-FUEL	12-FUEL
AAC ID	241700-61427	241700-61428	241700-61429
Can Dilution Factor	1.51	1.00	1.26
Analyte	Result	Result	Result
H ₂	< 1.5 %	< 1.0 %	< 1.3 %
O ₂	0.24 %	0.62 %	< 0.1 %
N ₂	1.33 %	2.57 %	0.85 %
CO	< 0.2 %	< 0.1 %	< 0.1 %
CO ₂	0.97 %	0.93 %	0.95 %
CH ₄	93.5 %	92.2 %	94.5 %
C ₂ (as Ethane)	35,621 ppmV	31,910 ppmV	32,766 ppmV
C ₃ (as Propane)	4,673 ppmV	3,976 ppmV	3,944 ppmV
C ₄ (as Butane)	805 ppmV	679 ppmV	781 ppmV
C ₅ (as Pentane)	141 ppmV	121 ppmV	136 ppmV
C ₆ (as Hexane)	42.8 ppmV	37.3 ppmV	42.8 ppmV
C ₆ + (as Hexane)	40.1 ppmV	36.1 ppmV	40.3 ppmV

All fixed gases have been normalized to 100% on a dry basis

Sample Reporting Limit (SRL) is equal to Reporting Limit x Analysis Dil. Fac x Canister Dil. Fac (if applicable)



Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

CLIENT : Montrose Air Quality Services
PROJECT NO. : 241700
MATRIX : Air

SAMPLING DATE : 07/19/2024
RECEIVING DATE : 07/23/2024
ANALYSIS DATE : 08/02-08/05/24
REPORT DATE : 08/06/2024

ASTM D-1945

Client ID	13-FUEL	14-FUEL	15-FUEL
AAC ID	241700-61430	241700-61431	241700-61432
Can Dilution Factor	1.78	1.47	1.66
Analyte	Result	Result	Result
H ₂	< 1.8 %	< 1.5 %	< 1.7 %
O ₂	0.17 %	< 0.1 %	0.18 %
N ₂	1.12 %	1.05 %	1.09 %
CO	< 0.2 %	< 0.1 %	< 0.2 %
CO ₂	0.94 %	0.93 %	0.93 %
CH ₄	94.1 %	94.3 %	94.1 %
C ₂ (as Ethane)	34,444 ppmV	33,358 ppmV	34,173 ppmV
C ₃ (as Propane)	4,155 ppmV	3,989 ppmV	4,049 ppmV
C ₄ (as Butane)	828 ppmV	780 ppmV	783 ppmV
C ₅ (as Pentane)	151 ppmV	144 ppmV	143 ppmV
C ₆ (as Hexane)	45.8 ppmV	39.9 ppmV	41.8 ppmV
C ₆ + (as Hexane)	47.7 ppmV	44.6 ppmV	38.6 ppmV

All fixed gases have been normalized to 100% on a dry basis

Sample Reporting Limit (SRL) is equal to Reporting Limit x Analysis Dil. Fac x Canister Dil. Fac (if applicable)



Atmospheric Analysis & Consulting, Inc.

LABORATORY ANALYSIS REPORT

CLIENT : Montrose Air Quality Services
PROJECT NO. : 241700
MATRIX : AIR
UNITS : ppmv

SAMPLING DATE : 07/15-16/2024
RECEIVING DATE : 07/23/2024
ANALYSIS DATE : 07/23-24/2024
REPORT DATE : 08/06/2024

Total Reduced Sulfur Compounds by ASTM D-5504

Client ID	1-FUEL	2-FUEL	3-FUEL	4-FUEL	5-FUEL	6-FUEL
AAC ID	241700-61418	241700-61419	241700-61420	241700-61421	241700-61422	241700-61423
Canister Dil. Fac.	1.4	1.6	1.8	1.8	1.9	1.7
Analyte	Result	Result	Result	Result	Result	Result
Hydrogen Sulfide	0.264	0.339	0.369	< 0.092	0.295	0.300
COS / SO ₂	1.40	1.37	1.27	0.876	0.803	0.726
Methyl Mercaptan	0.110	0.150	0.167	< 0.092	0.118	0.126
Ethyl Mercaptan	< 0.072	< 0.079	< 0.088	< 0.092	< 0.097	< 0.085
Dimethyl Sulfide	< 0.072	< 0.079	< 0.088	< 0.092	< 0.097	< 0.085
Carbon Disulfide	< 0.072	< 0.079	< 0.088	< 0.092	< 0.097	< 0.085
Isopropyl Mercaptan	< 0.072	< 0.079	< 0.088	< 0.092	< 0.097	< 0.085
tert-Butyl Mercaptan	1.17	0.944	1.33	< 0.092	0.834	0.893
n-Propyl Mercaptan	< 0.072	< 0.079	< 0.088	< 0.092	< 0.097	< 0.085
Methylethylsulfide	< 0.072	< 0.079	< 0.088	< 0.092	< 0.097	< 0.085
sec-Butyl Mercaptan / Thiophene	< 0.072	< 0.079	< 0.088	< 0.092	< 0.097	< 0.085
iso-Butyl Mercaptan	< 0.072	< 0.079	< 0.088	< 0.092	< 0.097	< 0.085
Diethyl Sulfide	< 0.072	< 0.079	< 0.088	< 0.092	< 0.097	< 0.085
n-Butyl Mercaptan	< 0.072	< 0.079	< 0.088	< 0.092	< 0.097	< 0.085
Dimethyl Disulfide	< 0.072	< 0.079	< 0.088	< 0.092	< 0.097	< 0.085
2-Methylthiophene	< 0.072	< 0.079	< 0.088	< 0.092	< 0.097	< 0.085
3-Methylthiophene	< 0.072	< 0.079	< 0.088	< 0.092	< 0.097	< 0.085
Tetrahydrothiophene	1.18	1.46	1.19	0.462	0.855	0.823
Bromothiophene	0.112	0.089	< 0.088	< 0.092	< 0.097	< 0.085
Thiophenol	< 0.072	< 0.079	< 0.088	< 0.092	< 0.097	< 0.085
Diethyl Disulfide	< 0.072	< 0.079	< 0.088	< 0.092	< 0.097	< 0.085
Total Unidentified Sulfur	< 0.072	< 0.079	< 0.088	< 0.092	< 0.097	< 0.085
Total Reduced Sulfurs	2.83	2.98	3.05	0.462	2.10	2.14

All unidentified compound's concentrations expressed in terms of H₂S
Sample Reporting Limit (SRL) is equal to Reporting Limit x Canister Dil. Fac. x Analysis Dil. Fac.



Atmospheric Analysis & Consulting, Inc.

LABORATORY ANALYSIS REPORT

CLIENT : Montrose Air Quality Services
PROJECT NO. : 241700
MATRIX : AIR
UNITS : ppmv

SAMPLING DATE : 07/17-18/2024
RECEIVING DATE : 07/23/2024
ANALYSIS DATE : 07/24-25/2024
REPORT DATE : 08/06/2024

Total Reduced Sulfur Compounds by ASTM D-5504

Client ID	7-FUEL	8-FUEL	9-FUEL	10-FUEL	11-FUEL	12-FUEL
AAC ID	241700-61424	241700-61425	241700-61426	241700-61427	241700-61428	241700-61429
Canister Dil. Fac.	1.5	1.3	1.8	1.5	1.0	1.3
Analyte	Result	Result	Result	Result	Result	Result
Hydrogen Sulfide	0.241	0.200	0.208	0.246	0.199	0.205
COS / SO ₂	0.876	0.934	1.01	0.905	0.851	0.633
Methyl Mercaptan	0.151	0.122	0.181	0.099	0.084	0.074
Ethyl Mercaptan	< 0.073	< 0.063	< 0.088	< 0.075	< 0.050	< 0.063
Dimethyl Sulfide	< 0.073	< 0.063	< 0.088	< 0.075	< 0.050	< 0.063
Carbon Disulfide	< 0.073	< 0.063	< 0.088	< 0.075	< 0.050	< 0.063
Isopropyl Mercaptan	< 0.073	< 0.063	< 0.088	< 0.075	< 0.050	< 0.063
tert-Butyl Mercaptan	1.00	1.00	0.908	1.06	1.02	0.811
n-Propyl Mercaptan	< 0.073	< 0.063	< 0.088	< 0.075	< 0.050	< 0.063
Methylethylsulfide	< 0.073	< 0.063	< 0.088	< 0.075	< 0.050	< 0.063
sec-Butyl Mercaptan / Thiophene	< 0.073	< 0.063	< 0.088	< 0.075	< 0.050	< 0.063
iso-Butyl Mercaptan	< 0.073	< 0.063	< 0.088	< 0.075	< 0.050	< 0.063
Diethyl Sulfide	< 0.073	< 0.063	< 0.088	< 0.075	< 0.050	< 0.063
n-Butyl Mercaptan	< 0.073	< 0.063	< 0.088	< 0.075	< 0.050	< 0.063
Dimethyl Disulfide	< 0.073	< 0.063	< 0.088	< 0.075	< 0.050	< 0.063
2-Methylthiophene	< 0.073	< 0.063	< 0.088	< 0.075	< 0.050	< 0.063
3-Methylthiophene	< 0.073	< 0.063	< 0.088	< 0.075	< 0.050	< 0.063
Tetrahydrothiophene	1.53	1.30	1.14	1.24	1.33	1.03
Bromothiophene	< 0.073	< 0.063	< 0.088	< 0.075	< 0.050	< 0.063
Thiophenol	< 0.073	< 0.063	< 0.088	< 0.075	< 0.050	< 0.063
Diethyl Disulfide	< 0.073	< 0.063	< 0.088	< 0.075	< 0.050	< 0.063
Total Unidentified Sulfur	< 0.073	< 0.063	< 0.088	< 0.075	< 0.050	< 0.063
Total Reduced Sulfurs	2.92	2.63	2.44	2.65	2.63	2.12

All unidentified compound's concentrations expressed in terms of H₂S
Sample Reporting Limit (SRL) is equal to Reporting Limit x Canister Dil. Fac. x Analysis Dil. Fac.



Atmospheric Analysis & Consulting, Inc.

LABORATORY ANALYSIS REPORT

CLIENT : Montrose Air Quality Services
PROJECT NO. : 241700
MATRIX : AIR
UNITS : ppmv

SAMPLING DATE : 07/19/2024
RECEIVING DATE : 07/23/2024
ANALYSIS DATE : 07/26/2024
REPORT DATE : 08/06/2024

Total Reduced Sulfur Compounds by ASTM D-5504

Client ID	13-FUEL	14-FUEL	15-FUEL
AAC ID	241700-61430	241700-61431	241700-61432
Canister Dil. Fac.	1.8	1.5	1.7
Analyte	Result	Result	Result
Hydrogen Sulfide	< 0.089	< 0.073	0.149
COS / SO ₂	0.747	0.833	0.968
Methyl Mercaptan	< 0.089	< 0.073	0.131
Ethyl Mercaptan	< 0.089	< 0.073	< 0.083
Dimethyl Sulfide	< 0.089	< 0.073	< 0.083
Carbon Disulfide	< 0.089	< 0.073	< 0.083
Isopropyl Mercaptan	< 0.089	< 0.073	< 0.083
tert-Butyl Mercaptan	0.302	0.287	0.988
n-Propyl Mercaptan	< 0.089	< 0.073	< 0.083
Methylethylsulfide	< 0.089	< 0.073	< 0.083
sec-Butyl Mercaptan / Thiophene	< 0.089	< 0.073	< 0.083
iso-Butyl Mercaptan	< 0.089	< 0.073	< 0.083
Diethyl Sulfide	< 0.089	< 0.073	< 0.083
n-Butyl Mercaptan	< 0.089	< 0.073	< 0.083
Dimethyl Disulfide	< 0.089	< 0.073	< 0.083
2-Methylthiophene	< 0.089	< 0.073	< 0.083
3-Methylthiophene	< 0.089	< 0.073	< 0.083
Tetrahydrothiophene	1.04	1.25	1.32
Bromothiophene	< 0.089	< 0.073	< 0.083
Thiophenol	< 0.089	< 0.073	< 0.083
Diethyl Disulfide	< 0.089	< 0.073	< 0.083
Total Unidentified Sulfur	< 0.089	0.174	0.469
Total Reduced Sulfurs	1.34	1.71	3.05

All unidentified compound's concentrations expressed in terms of H₂S
Sample Reporting Limit (SRL) is equal to Reporting Limit x Canister Dil. Fac. x Analysis Dil. Fac.



Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

Date Analyzed : 08/02/2024
Analyst : DM/RSF
Units : %

Instrument ID : GC-TCA #2
Calb Date : 01/24/2024
Reporting Limit : 0.1%

I - Opening Continuing Calibration Verification - BTU/ASTM D-1945

AAC ID	Analyte	H2	O2	N2	CH4	CO	CO2
CCV	Spike Conc	10.0	9.9	19.9	10.0	10.0	10.0
	Result	10.2	10.1	21.9	10.3	10.1	10.0
	% Rec *	101.7	101.9	110.0	103.8	100.8	100.5

II - Method Blank - BTU/ASTM D-1945

AAC ID	Analyte	H2	O2	N2	CH4	CO	CO2
MB	Concentration	ND	ND	ND	ND	ND	ND

III - Laboratory Control Spike & Duplicate - BTU/ASTM D-1945

AAC ID	Analyte	H2	O2	N2	CH4	CO	CO2
Lab-Control Standards	Sample Conc	0.0	0.0	0.0	0.0	0.0	0.0
	Spike Conc	10.0	9.9	19.9	10.0	10.0	10.0
	LCS Result	10.0	10.8	21.8	9.3	8.9	9.2
	LCSD Result	10.2	10.6	21.7	9.8	9.6	9.3
	LCS % Rec *	99.9	109.1	109.2	93.9	89.4	92.9
	LCSD % Rec *	102.0	107.1	108.8	98.6	95.6	93.9
	% RPD ***	2.1	1.8	0.4	4.9	6.7	1.1

IV - Sample & Sample Duplicate - BTU/ASTM D-1945

AAC ID	Analyte	H2	O2	N2	CH4	CO	CO2
241700-61418	Sample	0.0	0.1	0.7	69.3	0.0	0.7
	Sample Dup	0.0	0.1	0.7	68.7	0.0	0.7
	Mean	0.0	0.1	0.7	69.0	0.0	0.7
	% RPD ***	0.0	11.2	4.2	0.8	0.0	0.1

V - Matrix Spike & Duplicate - BTU/ASTM D-1945

AAC ID	Analyte	H2	N2	CH4	CO	CO2
241700-61418	Sample Conc	0.0	0.4	34.5	0.0	0.4
	Spike Conc	10.0	10.1	10.0	10.0	10.0
	MS Result	10.0	10.7	44.0	10.1	10.1
	MSD Result	10.2	10.4	43.9	9.9	10.0
	MS % Rec **	100.0	103.3	95.1	100.8	98.3
	MSD % Rec **	101.7	100.1	94.3	98.8	97.1
	% RPD ***	1.8	3.1	0.8	2.0	1.2

VI - Closing Continuing Calibration Verification - BTU/ASTM D-1945

AAC ID	Analyte	H2	O2	N2	CH4	CO	CO2
CCV	Spike Conc	10.0	9.9	19.9	10.0	10.0	10.0
	Result	10.8	10.2	21.4	10.2	9.8	9.6
	% Rec *	107.5	103.0	107.4	102.5	98.3	96.8

* Must be 85-115%

** Must be 75-125%

*** Must be < 25%

ND = Not Detected

<RL = less than Reporting Limit



Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

Date Analyzed : 08/05/2024
Analyst : DM/RSF
Units : %

Instrument ID : GC-TCA #2
Calb Date : 01/24/2024
Reporting Limit : 0.1%

I - Opening Continuing Calibration Verification - BTU/ASTM D-1945

AAC ID	Analyte	H2	O2	N2	CH4	CO	CO2
CCV	Spike Conc	10.0	9.9	19.9	10.0	10.0	10.0
	Result	10.3	10.6	21.4	9.3	9.1	9.0
	% Rec *	102.8	106.6	107.2	93.2	91.2	90.5

II - Method Blank - BTU/ASTM D-1945

AAC ID	Analyte	H2	O2	N2	CH4	CO	CO2
MB	Concentration	ND	ND	ND	ND	ND	ND

III - Laboratory Control Spike & Duplicate - BTU/ASTM D-1945

AAC ID	Analyte	H2	O2	N2	CH4	CO	CO2
Lab Control Standards	Sample Conc	0.0	0.0	0.0	0.0	0.0	0.0
	Spike Conc	10.0	9.9	19.9	10.0	10.0	10.0
	LCS Result	9.3	10.3	21.4	9.8	9.6	9.4
	LCSD Result	10.1	10.1	21.5	10.0	9.8	9.5
	LCS % Rec *	92.7	103.9	107.2	98.1	95.8	94.4
	LCSD % Rec *	101.1	102.1	107.9	100.6	98.3	95.8
	% RPD ***	8.7	1.7	0.6	2.6	2.5	1.4

IV - Sample & Sample Duplicate - BTU/ASTM D-1945

AAC ID	Analyte	H2	O2	N2	CH4	CO	CO2
241700-61424	Sample	0.0	0.1	0.8	67.0	0.0	0.6
	Sample Dup	0.0	0.1	0.8	67.1	0.0	0.7
	Mean	0.0	0.1	0.8	67.0	0.0	0.7
	% RPD ***	0.0	6.5	0.7	0.2	0.0	0.9

V - Matrix Spike & Duplicate- BTU/ASTM D-1945

AAC ID	Analyte	H2	N2	CH4	CO	CO2
241700-61424	Sample Conc	0.0	0.4	33.5	0.0	0.3
	Spike Conc	10.0	10.1	10.0	10.0	10.0
	MS Result	10.7	10.5	44.1	9.8	10.0
	MSD Result	10.5	10.6	43.3	9.9	10.0
	MS % Rec **	106.9	100.6	106.8	98.3	96.9
	MSD % Rec **	104.7	101.3	98.7	98.5	97.4
	% RPD ***	2.1	0.7	7.9	0.2	0.6

VI - Closing Continuing Calibration Verification - BTU/ASTM D-1945

AAC ID	Analyte	H2	O2	N2	CH4	CO	CO2
CCV	Spike Conc	10.0	9.9	19.9	10.0	10.0	10.0
	Result	10.4	9.9	20.3	10.5	10.2	10.1
	% Rec *	103.7	99.6	101.9	105.6	102.0	101.1

* Must be 85-115%

** Must be 75-125%

*** Must be < 25%

ND = Not Detected

<RL = less than Reporting Limit



Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

Date Analyzed : 07/31/2024
Analyst : NR
Units : ppmv

Instrument ID : FID#6
Calb Date : 10/17/2023
Reporting Limit : 0.5 ppmv

I - Opening Continuing Calibration Verification - BTU/ASTM D-1945

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
CCV	Spike Conc	99.7	98.2	100.0	99.8	99.9	100.1
	Result	91.4	89.9	89.5	88.8	89.3	85.8
	% Rec *	91.7	91.5	89.6	89.0	89.4	85.7

II - Method Blank - BTU/ASTM D-1945

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
MB	Concentration	ND	ND	ND	ND	ND	ND

III - Laboratory Control Spike & Duplicate - BTU/ASTM D-1945

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
Lab Control Standards	Sample Conc	0.0	0.0	0.0	0.0	0.0	0.0
	Spike Conc	99.7	98.2	100.0	99.8	99.9	100.1
	LCS Result	111.8	111.1	110.3	110.3	110.8	106.0
	LCSD Result	104.1	103.8	103.5	102.8	103.5	99.0
	LCS % Rec *	112.2	113.1	110.4	110.6	110.9	105.9
	LCSD % Rec *	104.5	105.7	103.6	103.0	103.6	98.9
	% RPD ***	7.1	6.8	6.3	7.1	6.9	6.8

IV - Sample & Sample Duplicate - BTU/ASTM D-1945

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
231830-48752	Sample	3.0	0.0	0.0	0.0	0.0	0.0
	Sample Dup	2.8	0.0	0.0	0.0	0.0	0.0
	Mean	2.9	0.0	0.0	0.0	0.0	0.0
	% RPD ***	5.1	0.0	0.0	0.0	0.0	0.0

V - Matrix Spike & Duplicate - BTU/ASTM D-1945

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
231830-48752	Sample Conc	1.5	0.0	0.0	0.0	0.0	0.0
	Spike Conc	49.8	49.1	50.0	49.9	49.9	50.0
	MS Result	50.6	48.7	48.1	48.1	48.1	46.4
	MSD Result	57.5	55.8	54.9	54.9	55.6	53.4
	MS % Rec **	98.6	99.1	96.3	96.4	96.3	92.8
	MSD % Rec **	112.4	113.7	109.9	110.0	111.4	106.7
	% RPD ***	13.1	13.7	13.2	13.2	14.5	14.0

VI - Closing Continuing Calibration Verification - BTU/ASTM D-1945

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
CCV	Spike Conc	99.7	98.2	100.0	99.8	99.9	100.1
	Result	109.8	109.7	109.1	109.0	109.9	105.3
	% Rec *	110.2	111.7	109.2	109.2	110.1	105.2

* Must be 85-115%

** Must be 75-125%

*** Must be < 25%

ND = Not Detected

<RL = less than Reporting Limit



Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

Date Analyzed : 08/02/2024
Analyst : NR
Units : ppmv

Instrument ID : FID#6
Calb Date : 10/17/2023
Reporting Limit : 0.5 ppmv

I - Opening Continuing Calibration Verification - BTU/ASTM D-1945

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
CCV	Spike Conc	99.7	98.2	100.0	99.8	99.9	100.1
	Result	94.0	93.6	92.5	93.4	96.6	97.5
	% Rec *	94.4	95.3	92.5	93.7	96.8	97.5

II - Method Blank - BTU/ASTM D-1945

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
MB	Concentration	ND	ND	ND	ND	ND	ND

III - Laboratory Control Spike & Duplicate - BTU/ASTM D-1945

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
Lab Control Standards	Sample Conc	0.0	0.0	0.0	0.0	0.0	0.0
	Spike Conc	99.7	98.2	100.0	99.8	99.9	100.1
	LCS Result	93.8	94.9	94.5	96.2	102.4	107.8
	LCSD Result	112.0	112.2	111.3	112.9	117.0	118.6
	LCS % Rec *	94.1	96.6	94.5	96.4	102.5	107.7
	LCSD % Rec *	112.4	114.3	111.4	113.1	117.2	118.5
	% RPD ***	17.7	16.8	16.4	15.9	13.4	9.5

IV - Sample & Sample Duplicate - BTU/ASTM D-1945

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
231830-48752	Sample	2.8	0.0	0.0	0.0	0.0	0.0
	Sample Dup	3.0	0.0	0.0	0.0	0.0	0.0
	Mean	2.9	0.0	0.0	0.0	0.0	0.0
	% RPD ***	4.9	0.0	0.0	0.0	0.0	0.0

V - Matrix Spike & Duplicate - BTU/ASTM D-1945

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
231830-48752	Sample Conc	1.5	0.0	0.0	0.0	0.0	0.0
	Spike Conc	49.8	49.1	50.0	49.9	49.9	50.0
	MS Result	52.8	50.1	50.0	49.8	50.5	49.6
	MSD Result	55.8	54.3	53.9	53.8	54.5	53.2
	MS % Rec **	103.1	102.0	100.1	99.9	101.1	99.1
	MSD % Rec **	109.0	110.6	107.8	107.9	109.0	106.3
	% RPD ***	5.6	8.0	7.4	7.7	7.5	7.0

VI - Closing Continuing Calibration Verification - BTU/ASTM D-1945

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
CCV	Spike Conc	99.7	98.2	100.0	99.8	99.9	100.1
	Result	110.9	109.7	109.1	108.7	110.2	106.3
	% Rec *	111.3	111.6	109.1	109.0	110.3	106.2

* Must be 85-115%

** Must be 75-125%

*** Must be < 25%

ND = Not Detected

<RL = less than Reporting Limit



Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

Date Analyzed : 08/05/2024
Analyst : NR
Units : ppmv

Instrument ID : FID#6
Calb Date : 10/17/2023
Reporting Limit : 0.5 ppmv

I - Opening Continuing Calibration Verification - BTU/ASTM D-1945

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
CCV	Spike Conc	99.7	98.2	100.0	99.8	99.9	100.1
	Result	93.0	92.0	91.0	90.7	91.0	90.2
	% Rec *	93.3	93.7	91.0	90.9	91.1	90.1

II - Method Blank - BTU/ASTM D-1945

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
MB	Concentration	ND	ND	ND	ND	ND	ND

III - Laboratory Control Spike & Duplicate - BTU/ASTM D-1945

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
Lab Control Standards	Sample Conc	0.0	0.0	0.0	0.0	0.0	0.0
	Spike Conc	99.7	98.2	100.0	99.8	99.9	100.1
	LCS Result	102.5	101.3	100.6	100.9	100.7	95.6
	LCSD Result	103.9	103.0	103.2	101.9	102.0	96.9
	LCS % Rec *	102.9	103.2	100.6	101.1	100.9	95.5
	LCSD % Rec *	104.2	104.8	103.2	102.2	102.2	96.8
	% RPD ***	1.3	1.6	2.5	1.0	1.3	1.3

IV - Sample & Sample Duplicate - BTU/ASTM D-1945

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
241830-48752	Sample	2.9	0.0	0.0	0.0	0.0	0.0
	Sample Dup	2.9	0.0	0.0	0.0	0.0	0.0
	Mean	2.9	0.0	0.0	0.0	0.0	0.0
	% RPD ***	1.7	0.0	0.0	0.0	0.0	0.0

V - Matrix Spike & Duplicate - BTU/ASTM D-1945

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
241830-48752	Sample Conc	1.5	0.0	0.0	0.0	0.0	0.0
	Spike Conc	49.8	49.1	50.0	49.9	49.9	50.0
	MS Result	56.5	53.8	53.8	53.2	53.5	51.0
	MSD Result	55.6	53.0	52.6	53.1	52.9	51.0
	MS % Rec **	110.4	109.6	107.6	106.7	107.1	101.9
	MSD % Rec **	108.6	108.0	105.3	106.5	105.9	101.9
	% RPD ***	1.6	1.5	2.2	0.2	1.1	0.0

VI - Closing Continuing Calibration Verification - BTU/ASTM D-1945

AAC ID	Analyte	Methane	Ethane	Propane	Butane	Pentane	Hexane
CCV	Spike Conc	99.7	98.2	100.0	99.8	99.9	100.1
	Result	104.3	102.8	102.5	101.2	102.1	97.6
	% Rec *	104.7	104.6	102.5	101.5	102.2	97.5

* Must be 85-115%

** Must be 75-125%

*** Must be < 25%

ND = Not Detected

<RL = less than Reporting Limit



Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report ASTM D-5504

Date Analyzed: 7/23/2024
Analyst: CM/KM
Units: ppmV

Instrument ID : SCD-BTU
Calb. Date: : 01/25/2024

Opening Calibration Verification Standard

0.511 ppbV H₂S (GC-110223-01)

H ₂ S	Resp. (area)	Result	% Rec *	% RPD ****
Initial	11082	0.514	100.6	0.5
Duplicate	11135	0.516	101.0	0.0
Triplicate	11193	0.519	101.6	0.5

0.502 ppbV MeSH (GC-110223-01)

MeSH	Resp. (area)	Result	% Rec *	% RPD ****
Initial	9313	0.502	100.1	1.9
Duplicate	9518	0.513	102.3	0.2
Triplicate	9652	0.521	103.7	1.7

0.497 ppbV DMS (GC-110223-01)

DMS	Resp. (area)	Result	% Rec *	% RPD ****
Initial	12491	0.518	104.3	0.2
Duplicate	12500	0.519	104.4	0.1
Triplicate	12561	0.521	104.9	0.4

Method Blank

Analyte	Result
H ₂ S	<PQL
MeSH	<PQL
DMS	<PQL

Duplicate Analysis

Sample ID 241694-61374

Analyte	Sample Result	Duplicate Result	Mean	% RPD ***
H ₂ S	<PQL	<PQL	0.000	0.0
MeSH	<PQL	<PQL	0.000	0.0
DMS	<PQL	<PQL	0.000	0.0

Matrix Spike & Duplicate

Sample ID x2

Analyte	Sample Conc.	Spike Added	MS Result	MSD Result	MS % Rec **	MSD % Rec **	% RPD ***
H ₂ S	<PQL	0.256	0.242	0.243	94.7	95.1	0.4
MeSH	<PQL	0.251	0.254	0.249	101.2	99.2	2.0
DMS	<PQL	0.249	0.269	0.270	108.2	108.7	0.4

Closing Calibration Verification Standard

Analyte	Std. Conc.	Result	% Rec **
H ₂ S	0.511	0.460	90.0
MeSH	0.502	0.457	91.0
DMS	0.497	0.472	95.0

* Must be 95-105%, ** Must be 90-110%, *** Must be < 10%, **** Must be < 5% RPD from Mean result.

PQL = 50.0 ppbV

MDL = 1.1 ppbV



Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report ASTM D-5504

Date Analyzed: 7/24/2024
Analyst: KM
Units: ppbV

Instrument ID : SCD#10
Calb. Date: : 07/09/24

Opening Calibration Verification Standard

510.5 ppbV H₂S (GC-110223-01)

H ₂ S	Resp. (area)	Result	% Rec *	% RPD ****
Initial	11758	516	101.0	1.8
Duplicate	11525	505	99.0	0.2
Triplicate	11374	499	97.7	1.5

501.8 ppbV H₂S (GC-110223-01)

MeSH	Resp. (area)	Result	% Rec *	% RPD ****
Initial	10267	506	100.9	0.3
Duplicate	10108	499	99.4	1.3
Triplicate	10337	510	101.6	1.0

497.0 ppbV H₂S (GC-110223-01)

DMS	Resp. (area)	Result	% Rec *	% RPD ****
Initial	15135	515	103.6	3.0
Duplicate	14568	496	99.7	0.9
Triplicate	14398	490	98.5	2.1

Method Blank

Analyte	Result
H ₂ S	<PQL
MeSH	<PQL
DMS	<PQL

Duplicate Analysis

Sample ID 231800-48643

Analyte	Sample Result	Duplicate Result	Mean	% RPD ***
H ₂ S	<PQL	<PQL	0.0	0.0
MeSH	<PQL	<PQL	0.0	0.0
DMS	<PQL	<PQL	0.0	0.0

Matrix Spike & Duplicate

Sample ID 231800-48643

Analyte	Sample Conc.	Spike Added	MS Result	MSD Result	MS % Rec **	MSD % Rec **	% RPD ***
H ₂ S	<PQL	255.3	255.5	250.7	100.1	98.2	1.9
MeSH	<PQL	250.9	257.5	247.3	102.6	98.6	4.0
DMS	<PQL	248.5	255.8	256.3	103.0	103.1	0.2

Closing Calibration Verification Standard

Analyte	Std. Conc.	Result	% Rec **
H ₂ S	510.5	487.5	95.5
MeSH	501.8	489.1	97.5
DMS	497.0	534.0	107.4

* Must be 95-105%, ** Must be 90-110%, *** Must be < 10%, **** Must be < 5% RPD from Mean result.

MeSH: PQL = 10.5 ppbV, MDL = 1.12 ppbV

DMS: PQL = 11.0 ppbV, MDL = 1.12 ppbV



Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report ASTM D-5504

Date Analyzed: 7/25/2024
Analyst: KM
Units: ppbV

Instrument ID : SCD#10
Calb. Date: : 07/09/24

Opening Calibration Verification Standard

510.5 ppbV H₂S (GC-110223-01)

H ₂ S	Resp. (area)	Result	% Rec *	% RPD ****
Initial	11580	508	99.5	0.5
Duplicate	11834	519	101.6	1.7
Triplicate	11502	504	98.8	1.2

501.8 ppbV H₂S (GC-110223-01)

MeSH	Resp. (area)	Result	% Rec *	% RPD ****
Initial	10284	507	101.1	0.4
Duplicate	10424	514	102.5	1.8
Triplicate	10020	494	98.5	2.2

497.0 ppbV H₂S (GC-110223-01)

DMS	Resp. (area)	Result	% Rec *	% RPD ****
Initial	14835	505	101.5	1.0
Duplicate	15190	517	104.0	1.3
Triplicate	14945	508	102.3	0.3

Method Blank

Analyte	Result
H ₂ S	<PQL
MeSH	<PQL
DMS	<PQL

Duplicate Analysis

Sample ID 231800-48643

Analyte	Sample Result	Duplicate Result	Mean	% RPD ***
H ₂ S	<PQL	<PQL	0.0	0.0
MeSH	<PQL	<PQL	0.0	0.0
DMS	<PQL	<PQL	0.0	0.0

Matrix Spike & Duplicate

Sample ID 231800-48643

Analyte	Sample Conc.	Spike Added	MS Result	MSD Result	MS % Rec **	MSD % Rec **	% RPD ***
H ₂ S	<PQL	255.3	255.7	256.3	100.2	100.4	0.2
MeSH	<PQL	250.9	244.8	246.5	97.6	98.2	0.7
DMS	<PQL	248.5	273.3	269.4	110.0	108.4	1.4

Closing Calibration Verification Standard

Analyte	Std. Conc.	Result	% Rec **
H ₂ S	510.5	499.2	97.8
MeSH	501.8	479.9	95.6
DMS	497.0	529.2	106.5

* Must be 95-105%, ** Must be 90-110%, *** Must be < 10%, **** Must be < 5% RPD from Mean result.

MeSH: PQL = 10.5 ppbV, MDL = 1.12 ppbV
DMS: PQL = 11.0 ppbV, MDL = 1.12 ppbV



Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report ASTM D-5504

Date Analyzed: 7/26/2024

Analyst: KM/CM

Units: ppbV

Instrument ID : SCD#10

Calb. Date: : 07/09/24

Opening Calibration Verification Standard

510.5 ppbV H₂S (GC-110223-01)

H ₂ S	Resp. (area)	Result	% Rec *	% RPD ****
Initial	11500	504	98.8	0.4
Duplicate	11387	499	97.8	0.6
Triplicate	11491	504	98.7	0.3

501.8 ppbV H₂S (GC-110223-01)

MeSH	Resp. (area)	Result	% Rec *	% RPD ****
Initial	9962	491	97.9	1.3
Duplicate	10229	505	100.6	1.4
Triplicate	10079	497	99.1	0.1

497.0 ppbV H₂S (GC-110223-01)

DMS	Resp. (area)	Result	% Rec *	% RPD ****
Initial	14432	491	98.8	1.5
Duplicate	14785	503	101.2	0.9
Triplicate	14758	502	101.0	0.7

Method Blank

Analyte	Result
H ₂ S	<PQL
MeSH	<PQL
DMS	<PQL

Duplicate Analysis

Sample ID 231800-48643

Analyte	Sample Result	Duplicate Result	Mean	% RPD ***
H ₂ S	<PQL	<PQL	0.0	0.0
MeSH	<PQL	<PQL	0.0	0.0
DMS	<PQL	<PQL	0.0	0.0

Matrix Spike & Duplicate

Sample ID 231800-48643

Analyte	Sample Conc.	Spike Added	MS Result	MSD Result	MS % Rec **	MSD % Rec **	% RPD ***
H ₂ S	<PQL	255.3	266.3	247.0	104.3	96.8	7.5
MeSH	<PQL	250.9	268.2	248.8	106.9	99.2	7.5
DMS	<PQL	248.5	267.4	256.1	107.6	103.1	4.3

Closing Calibration Verification Standard

Analyte	Std. Conc.	Result	% Rec **
H ₂ S	510.5	486.3	95.3
MeSH	501.8	512.2	102.1
DMS	497.0	516.7	104.0

* Must be 95-105%, ** Must be 90-110%, *** Must be < 10%, **** Must be < 5% RPD from Mean result.

MeSH: PQL = 10.5 ppbV, MDL = 1.12 ppbV

DMS: PQL = 11.0 ppbV, MDL = 1.12 ppbV



CHAIN OF CUSTODY

Antioch Location

2825 Verne Roberts Circle
Antioch, CA 94509
Phone (925) 680-4300 | Fax (925) 680-4416

Lab info:

AAC

291700

Client / Project: SILICON VALLEY POWER DVR				Project / Sample Location: UNIT 1 MAX LOAD & UNIT 2 MAX LOAD				Test / Analytical Method: ASTM D5504 / ASTM D1945				
Project No.: PROJ-042969				Purchase Order No.:				Special Analysis / Reporting Instructions: FUEL SULFUR				
Send Analytical Report To: Antioch QA/QC: AntiochQA-QC@montrose-env.com npatel@montrose-env.com				Sampler or PM Signature:								
Run / Sample No.	Date	Time	Containers	Sample Fraction	Reagent	Lab / Sample ID No.						
61418 1-FUEL	7/15/24	1230	1	SUMMA CANISTER	FUEL	828						
61419 2-FUEL	7/15/24	1320	1	SUMMA CANISTER	FUEL	1153						
61420 3-FUEL	7/15/24	1350	1	SUMMA CANISTER	FUEL	820						
61421 4-FUEL	7/16/24	1000	1	SUMMA CANISTER	FUEL	1562						
61422 5-FUEL	7/16/24	1205	1	SUMMA CANISTER	FUEL	822						
61423 6-FUEL	7/16/24	1400	1	SUMMA CANISTER	FUEL	716						
61424 7-FUEL	7/17/24	0900	1	SUMMA CANISTER	FUEL	1820						
61425 8-FUEL	7/17/24	1030	1	SUMMA CANISTER	FUEL	1108						
61426 9-FUEL	7/17/24	1140	1	SUMMA CANISTER	FUEL	944						
61427 10-FUEL	7/18/24	1100	1	SUMMA CANISTER	FUEL	889						
61428 11-FUEL	7/18/24	1230	1	SUMMA CANISTER	FUEL	1118						
61429 12-FUEL	7/18/24	1400	1	SUMMA CANISTER	FUEL	1833						
61430 13-FUEL	7/19/24	0725	1	SUMMA CANISTER	FUEL	787						
61431 14-FUEL	7/19/24	0850	1	SUMMA CANISTER	FUEL	705						
61432 15-FUEL	7/19/24	0935	1	SUMMA CANISTER	FUEL	833						
Total Containers			15									
Relinquished by Gabriella Gomez			Date	7/19/24	Time	1351	Received by Karanveer Singh		Date	7/22/24	Time	0900
Relinquished by Karanveer Singh to FedEx			Date	7/22/24	Time	1600	Received by		Date		Time	
Relinquished by			Date		Time		Received by		Date	7/23/24	Time	1040

Fed Ex 1600 hrs (to verify)

APPENDIX D

QUALITY ASSURANCE/QUALITY CONTROL

Appendix D.1

Units and Abbreviations

UNITS OF MEASUREMENT

@ X% O ₂	corrected to X% oxygen (corrected for dilution air)
CC	absolute value of the confidence coefficient
d	absolute value of the mean differences
°C	degrees Celsius
°F	degrees Fahrenheit
°R	degrees Rankine
" H ₂ O	inches of water column
13.6	specific gravity of mercury
ΔH	pressure drop across orifice meter, inches H ₂ O
ΔP	velocity head of stack gas, inches H ₂ O
θ	total sampling time, minutes
μg	microgram
ρ _a	density of acetone, mg/ml
ρ _w	density of water, 0.9982 g/ml or 0.002201 lb/ml
% vd	percent by volume, dry basis
% vw	percent by volume, wet basis
acfm	actual cubic feet of gas per minute at stack conditions
A _n	cross-sectional area of nozzle, ft ²
A _s	cross-sectional area of stack, square feet (ft ²)
Btu	British thermal unit
Btu/ft ³	British thermal units per cubic foot
Btu/gal	British thermal units per gallon
B _{ws}	proportion by volume of water vapor in gas stream
C _a	particulate matter concentration in stack gas, gr/acf
C _{Avg}	average unadjusted gas concentration, ppmv
C _{Dir}	measured concentration of calibration gas, ppmv
cf or ft ³	cubic feet
cfm	cubic feet per minute
C _{Gas}	average gas concentration adjusted for bias, ppmv
C _M	average of initial and final system bias check responses from upscale calibration gas, ppmv
cm or m ³	cubic meters
C _{MA}	actual concentration of the upscale calibration gas, ppmv
C _O	average of initial and final system bias check responses from low-level calibration gas, ppmv
C _p	pitot tube coefficient
C _s	particulate matter concentration in stack gas, gr/dscf
CS	calibration span, % or ppmv
C _S	measured concentration of calibration gas, ppmv
C _V	manufactured certified concentration of calibration gas, ppmv
D	drift assessment, % of span
dcf	dry cubic feet
dcm	dry cubic meters
D _n	diameter of nozzle, inches
D _s	diameter of stack, inches
dscf	dry standard cubic feet
dscf/MMBtu	dry standard cubic foot per million British thermal units
dscfm	dry standard cubic feet per minute
dscm	dry standard cubic meters
F _d	F-factor, dscf/MMBtu of heat input
fpm	feet per minute
fps	feet per second
ft	feet

UNITS OF MEASUREMENT

ft ²	square feet
g	gram
gal	gallons
gal/hr	gallons per hour
gr	grains (7000 grains per pound)
gr/dscf	grains per dry standard cubic feet
GW	gigawatt
GWh	gigawatt-hour
hr	hour
I	percent of isokinetic sampling
in	inch
k	kilo or thousand (metric units, multiply by 10 ³)
K	kelvin (temperature)
K ₃	conversion factor 0.0154 gr/mg
K ₄	conversion factor 0.002668 ((in. Hg)(ft ³))/((ml)(°R))
kg	kilogram
K _p	pitot tube constant (85.49 ft/sec)
kwsacf	thousand wet standard cubic feet per hour
l or L	liters
lb/hr	pounds per hour
lb/lb-mole	pounds per pound mole
lb/MMBtu	pounds per million Btu
lb/TBtu	pounds per trillion Btu
lpm	liters per minute
m	meter or milli
M	thousand (English units) or mega (million, metric units)
m ³	cubic meters
m _a	mass of residue of acetone after evaporation, mg
M _d	molecular weight of stack gas; dry basis, lb/lb-mole
meq	milliequivalent
mg	milligram
Mg	megagram (10 ⁶ grams)
min	minute
ml or mL	milliliter
mm	millimeter
MM	million (English units)
MMBtu	million British thermal units
MMBtu/hr	million Btu per hour
m _n	total amount of particulate matter collected, mg
mol	mole
mol. wt. or MW	molecular weight
M _s	molecular weight of stack gas; wet basis, lb/lb-mole
MW	molecular weight or megawatt
MWh	megawatt-hour
n	number of data points
ng	nanogram
nm	nanometer
Nm ³	normal cubic meter
P _{bar}	barometric pressure, inches Hg
pg	picogram
P _g	stack static pressure, inches H ₂ O
P _m	barometric pressure of dry gas meter, inches Hg
ppb	parts per billion
ppbv	parts per billion, by volume
ppbvd	parts per billion by volume, dry basis

UNITS OF MEASUREMENT

ppm	parts per million
ppmv	parts per million, by volume
ppmvd	parts per million by volume, dry basis
ppmvw	parts per million by volume, wet basis
P _s	absolute stack gas pressure, inches Hg
psi	pounds per square inch
psia	pounds per square inch absolute
psig	pounds per square inch gauge
P _{std}	standard absolute pressure, 29.92 inches Hg
Q _a	volumetric flow rate, actual conditions, acfm
Q _s	volumetric flow rate, standard conditions, scfm
Q _{std}	volumetric flow rate, dry standard conditions, dscfm
R	ideal gas constant 21.85 ((in. Hg) (ft ³))/((°R) (lbmole))
SB _{final}	post-run system bias check, % of span
SB _i	pre-run system bias check, % of span
scf	standard cubic feet
scf/MMBtu	standard cubic foot per million British thermal units
scfh	standard cubic feet per hour
scfm	standard cubic feet per minute
scm	standard cubic meters
scmh	standard cubic meters per hour
sec	second
sf, sq. ft., or ft ²	square feet
std	standard
t	metric ton (1000 kg)
T _{0.975}	t-value
T _a	absolute average ambient temperature, °R (+459.67 for English)
T _m	absolute average dry gas meter temperature, °R (+459.67 for English)
ton or t	ton = 2000 pounds
tph or tons/hr	tons per hour
tpy or tons/yr	tons per year
T _s	absolute average stack gas meter temperature, °R (+459.67 for English)
T _{std}	absolute temperature at standard conditions
V	volt
V _a	volume of acetone blank, ml
V _{aw}	volume of acetone used in wash, ml
V _{lc}	total volume H ₂ O collected in impingers and silica gel, grams
V _m	volume of gas sampled through dry gas meter, ft ³
V _{m(std)}	volume of gas measured by the dry gas meter, corrected to standard conditions, dscf
V _{ma}	stack gas volume sampled, acf
V _n	volume collected at stack conditions through nozzle, acf
V _s	average stack gas velocity, feet per second
V _{wc(std)}	volume of water vapor condensed, corrected to standard conditions, scf
V _{wi(std)}	volume of water vapor in gas sampled from impingers, scf
V _{wsg(std)}	volume of water vapor in gas sampled from silica gel, scf
W	watt
W _a	weight of residue in acetone wash, mg
W _{imp}	total weight of impingers, grams
W _{sg}	total weight of silica gel, grams
Y	dry gas meter calibration factor, dimensionless

ABBREVIATIONS

ACE	analyzer calibration error
AAS	atomic absorption spectroscopy
ACDP	air contaminant discharge permit
ACE	analyzer calibration error, percent of span
AD	absolute difference
ADL	above detection limit
AETB	Air Emissions Testing Body
APCD	air pollution control device
APCS	air pollution control system
AS	applicable standard (emission limit)
ASTM	American Society For Testing And Materials
BACT	best achievable control technology
BDL	below detection limit
BHP	brake horsepower
BIF	boiler and industrial furnace
BLS	black liquor solids
CARB	California Air Resources Board
CC	confidence coefficient
CD	calibration drift
CE	capture efficiency or collection efficiency
CEM	continuous emissions monitor
CEMS	continuous emissions monitoring system
CERMS	continuous emissions rate monitoring system
CET	calibration error test
CFB	circulating fluidized bed
CFR	Code of Federal Regulations
CGA	cylinder gas audit
CHNOS	elemental analysis for determination of C, H, N, O, and S content in fuels
CNCG	concentrated non-condensable gas
CO	catalytic oxidizer
COC	chain of custody
COMS	continuous opacity monitoring system
CPM	condensable particulate matter
CPMS	continuous parameter monitoring system
CT	combustion turbine
CTM	conditional test method
CTO	catalytic thermal oxidizer
CTS	calibration transfer standard
CVAAS	cold vapor atomic absorption spectroscopy
CVAFS	cold vapor atomic fluorescence spectrometry
D _e	equivalent diameter
DE	destruction efficiency
DGM	dry gas meter
Dioxins	polychlorinated dibenzo-p-dioxins (PCDDs)
DLL	detection level limited
DNCG	dilute non-condensable gas
EDF	electric arc furnace
ECD	electron capture detector
EGU	electric utility steam generating unit
EIT	Engineer In Training
ELCD	electrolytic conductivity detector (hall detector)
EMPC	estimated maximum possible concentration
EPA	US Environmental Protection Agency
EPRI	Electric Power Research Institute
ES	emission standard (applicable limit)
ESP	electrostatic precipitator
ERT	Electronic Reporting Tool
EU	emission unit

ABBREVIATIONS

FB	field blank
FCCU	fluid catalytic cracking unit
FGD	flue gas desulfurization
FI	flame ionization
FIA	flame ionization analyzer
FID	flame ionization detector
FPD	flame photometric detector
FPM	filterable particulate matter
FTIR	Fourier-transform infrared spectroscopy
FTPB	field train proof blank
FTRB	field train recovery blank
Furans	polychlorinated dibenzofurans (PCDFs)
GC	gas chromatography
GC/MS	gas chromatography/mass spectroscopy
GFAAS	graphite furnace atomic absorption spectroscopy
GFC	gas filter correlation
GHG	greenhouse gas
HAP	hazardous air pollutant
HC	hydrocarbons
HHV	higher heating value
HI	heat input
HPLC	high performance liquid chromatography
HRGC/HRMS	high-resolution gas chromatography/high-resolution mass spectroscopy
HRSG	heat recovery steam generator
IC	ion chromatography
ICAP	inductively-coupled argon plasma emission spectroscopy
ICPCR	ion chromatography with a post-column reactor
ICP-MS	inductively coupled plasma-mass spectroscopy
ICR	information collection request
IR	infrared radiation
ISE	ion-specific electrode
ISO	International Standards Organization
kW	kilowatts
LEE	low emitting EGU
LFG	landfill gas
LHV	lower heating value
LPG	liquified petroleum gas
LRGC/LRMS	low-resolution gas chromatography/low-resolution mass spectroscopy
MACT	maximum achievable control technology
MATS	Mercury and Air Toxics Standard
MDI	methylene diphenyl diisocyanate
MDL	method detection limit
MNOC	maximum normal operating conditions
MRL	method reporting limit
MS	mass spectrometry
MSW	municipal solid waste
MWC	municipal waste combustor
NA	not applicable or not available
NCASI	National Council For Air And Steam Improvement
NCG	non-condensable gases
ND	not detected
NDIR	non-dispersive infrared
NDO	natural draft opening
NESHAP	National Emissions Standards For Hazardous Air Pollutants
NG	natural gas
NIOSH	National Institute For Occupational Safety And Health
NIST	National Institute Of Standards And Technology
NMC	non-methane cutter
NMEOC	non-methane, non-ethane organic compounds

ABBREVIATIONS

NMOC	non-methane organic compounds
NMVOC	non-methane volatile organic compounds
NPD	nitrogen phosphorus detector
NSPS	New Source Performance Standards
OSHA	Occupational Safety And Health Administration
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyl compounds
PCWP	plywood and composite wood products
PE	Professional Engineer
PEMS	predictive emission monitoring system
PFAS	per- and polyfluoroalkyl substances (PFAS)
PI	photoionization
PID	photoionization detector
PM	particulate matter
PM ₁₀	particulate matter less than 10 microns in aerodynamic diameter
PM _{2.5}	particulate matter less than 2.5 microns in aerodynamic diameter
PMS	parametric monitoring system
PPE	personal protective equipment
POM	polycyclic organic matter
PS	performance specification
PSD	particle size distribution
PSEL	plant site emission limits
PST	performance specification test
PTE	permanent total enclosure
PTM	performance test method
QA/QC	quality assurance and quality control
QI	Qualified Individual
QSTI	Qualified Source Test Individual
QSTO	Qualified Source Test Observer
RA	relative accuracy
RAA	relative accuracy audit
RACT	reasonably available control technology
RATA	relative accuracy test audit
RCA	response correlation audit
RB	reagent blank
RCTO	rotary concentrator thermal oxidizer
RE	removal or reduction efficiency
RICE	stationary reciprocating internal combustion engine
RM	reference method
RRA	relative response audit
RTO	regenerative thermal oxidizer
SAM	sulfuric acid mist
SCD	sulfur chemiluminescent detector
SCR	selective catalytic reduction system
SD	standard deviation
Semi-VOST	semi-volatile organic compounds sample train
SI ICE	spark ignition internal combustion engine
SLU	scattered light units
SNCR	selective noncatalytic reduction
SRM	standard reference material
SSI	sewage sludge incineration
STMS	sorbent trap monitoring system
TAP	toxic air pollutant
TBD	to be determined
TCA	thermal conductivity analyzer
TCD	thermal conductivity detector
TEF	toxic equivalency factor
TEQ	toxic equivalency quotient

ABBREVIATIONS

TGNENMOC	total gaseous non-ethane non-methane organic compounds
TGNMOC	total gaseous non-methane organic compounds
TGOC	total gaseous organic compounds
THC	total hydrocarbons
TIC	tentatively identified compound
TO	thermal oxidizer
TO	toxic organic (as in EPA Method TO-15)
TPM	total particulate matter
TSP	total suspended particulate matter
TTE	temporary total enclosure
ULSD	ultra-low sulfur diesel
US EPA	United States Environmental Protection Agency
UV	ultraviolet radiation range
VE	visible emissions
VOC	volatile organic compounds
VOST	volatile organic sample train
WC	water column
WWTP	waste water treatment plant

CHEMICAL NOMENCLATURE

Ag	silver	Se	selenium
As	arsenic	SO ₂	sulfur dioxide
Ba	barium	SO ₃	sulfur trioxide
Be	beryllium	SO _x	sulfur oxides
Br ₂	bromine	TCDD	tetrachlorodibenzodioxin
C	carbon	TCDF	tetrachlorodibenzofuran
Cd	cadmium	TGOC	total gaseous organic concentration
CdS	cadmium sulfide	THC	total hydrocarbons
CH ₂ O	formaldehyde	TI	thallium
CH ₃ CHO	acetaldehyde	TRS	total reduced sulfur compounds
CH ₃ OH	methanol	Zn	zinc
CH ₄	methane		
C ₂ H ₄ O	ethylene oxide		
C ₂ H ₆	ethane		
C ₃ H ₄ O	acrolein		
C ₃ H ₆ O	propionaldehyde		
C ₃ H ₈	propane		
C ₆ H ₅ OH	phenol		
C ₆ H ₁₄	hexane		
Cl ₂	chlorine		
ClO ₂	chlorine dioxide		
CO	carbon monoxide		
Co	cobalt		
CO ₂	carbon dioxide		
Cr	chromium		
Cu	copper		
EtO	ethylene oxide		
EtOH	ethyl alcohol (ethanol)		
H ₂	hydrogen		
H ₂ O	water		
H ₂ O ₂	hydrogen peroxide		
H ₂ S	hydrogen sulfide		
H ₂ SO ₄	sulfuric acid		
HBr	hydrogen bromide		
HCl	hydrogen chloride		
HF	hydrogen fluoride		
Hg	mercury		
IPA	isopropyl alcohol		
MDI	methylene diphenyl diisocyanate		
MeCl ₂	methylene chloride		
MEK	methyl ethyl ketone		
MeOH	methanol		
Mn	manganese		
N ₂	nitrogen		
NH ₃	ammonia		
Ni	nickel		
NO	nitric oxide		
NO ₂	nitrogen dioxide		
NO _x	nitrogen oxides		
O ₂	oxygen		
P	phosphorus		
Pb	lead		
PCDD	polychlorinated dibenzo-p-dioxins		
PCDF	polychlorinated dibenzofurans		
Sb	antimony		

Appendix D.2

Manual Test Method QA/QC Data



EPA Method 5

Meter Box Calibration by Calibrated Critical Orifice, Leak Check, and Thermocouple Calibration Check

English Meter Box Units, English K' Factor

Meter box ID:	CB 18
Meter ID (if applicable):	CB 18
Office set ID:	Antioch
Calibrated by:	VC
Expires:	9/5/24

Date:	3/5/24
Location:	Antioch
No. of orifices used (min. 3)	5
Barometric pressure (in. Hg):	30.05 in. Hg
Theoretical critical vacuum	14.17 in. Hg

Yd:	0.990
ΔH@:	1.945

Meter Box Orifice Calibration

IMPORTANT For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above
IMPORTANT The Critical Orifice Coefficient, K', must be entered in English units, (ft³/3(deg R)(0.5/(in.Hg)^{1/2}(min)).

ΔH (in. H ₂ O)	Time (min)	Volume		Initial Temp.		Final Temp.		Orifice Serial# (number)	K' Orifice Coefficient (see above)	Ambient Temperature --		
		Initial (cu ft)	Final (cu ft)	Inlet (deg F)	Outlet (deg F)	Inlet (deg F)	Outlet (deg F)			Vacuum (in. Hg)	Initial (deg F)	Average (deg F)
0.35	18.00	676.276	681.768	58.0	58.0	58.0	59.0	RG-40	0.2372	16.0	70.0	70.0
0.71	12.00	681.768	687.162	59.0	59.0	59.0	61.0	RG-48	0.3488	16.0	70.0	70.0
1.10	10.00	687.162	692.770	61.0	61.0	61.0	62.0	RG-55	0.4347	16.0	70.0	70.0
2.00	7.00	692.770	698.212	62.0	62.0	62.0	64.0	RG-63	0.5991	16.0	70.0	70.0
3.40	5.00	671.204	676.276	58.0	58.0	58.0	58.0	RG-73	0.7804	16.0	70.0	70.0

— SAMPLE RATE —

INDICATED VS. ACTUAL

ΔH (in. H ₂ O)	Sample Rate (scfm)
0.35	0.310
0.71	0.455
1.10	0.567
2.00	0.782
3.40	1.032

--- DRY GAS METER ---

VOLUME

CORRECTED

Vm(std) (cu ft)
5.619
5.508
5.716
5.543
5.233

--- ORIFICE ---

VOLUME

CORRECTED

Vcr(std) (cu ft)	Vcr (cu ft)
5.573	5.572
5.463	5.463
5.674	5.673
5.474	5.473
5.159	5.158

--- DRY GAS METER ---

VOLUME

CORRECTED

Value (number)	Variation (number)
0.9917	0.002
0.9919	0.002
0.9927	0.003
0.988	-0.002
0.986	-0.004

--- ORIFICE ---

CALIBRATION FACTOR

ΔH@

Value (in H ₂ O)	Variation (in H ₂ O)
2.100	0.156
1.965	0.020
1.954	0.009
1.865	-0.080
1.839	-0.105

QA Criteria:

Average Yd	0.9899
Average ΔH@	1.9448
Variation of Yd's	PASS
Variation of ΔH@	PASS
Vacuum Criteria	PASS

For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +/-0.02.

For Orifice Calibration Factor ΔH@, the orifice differential pressure in inches of H₂O that equates to 0.75 cfm of air at 68 F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +/-0.2.

Meter Box Pressure Leak Check

Test Pressure, (in. H ₂ O):	7	Should be 5-7 in. H ₂ O
Leak Rate, (in. H ₂ O/min):	0	Must be zero (manometer level stable for 1 minute)

Meter Box Vacuum Leak Check

Test Vacuum, (in. Hg):	25	Coarse adjust valve fully open, fine adjust fully closed, sample inlet plugged
Leak Rate, (cfm):	0	Must be zero (meter dial stable for 1 minute)

Meter Box Thermocouple Readout Calibration Check

Input Temperature	Allowable Temp. Dev.*	Low	High
30	7	23	37
70	8	62	78
120	9	111	129
250	11	239	261
350	12	338	362
500	14	486	514
700	17	683	717
900	20	880	920

* Reading values must be within 1.5% of reference thermometer values (based on absolute temperature scale) for calibration to be acceptable.

Stack	Probe	Filter	Exit	Aux.
27	27	28	27	27
67	67	67	67	67
117	118	117	117	117
249	249	249	249	249
349	349	349	349	349
701				
899				

Thermocouple simulator	
Make:	Omega
Model:	CL125
Serial Number:	16200736
Cal Date:	1/31/2024

Performed by:

Name: Vincent Cagala

Signature

Vincent Cagala

Date: 3/5/24

Approved by:

Name: RAUL MORENO

Signature

Raul Moreno

Date: 3/5/24



Alternative Method 5 Post-Test Calibration (ALT-009)

Meter box ID:	CB-18
Calibrated by:	Antioch
Date Calibrated:	7/19/23

Y _d :	0.990
ΔH@:	1.945

Parameter	Run 1	Run 2	Run 3	Average
Y _{qa} (dry gas meter calibration check value), dimensionless	0.9787	0.9502	0.9258	0.9516
Total run time, min	30.0	30.0	30.0	30.0
V _m (meter box volume), acf	22.355	23.280	23.880	23.172
T _m (absolute average dry gas meter temperature), °R	547.7	560.0	559.3	555.7
P _{bar} (barometric pressure), in. Hg	30.01	30.01	30.01	30.01
0.0318 = (29.92/(460+T _{ref}))*(0.75*0.75), in. Hg/°R * cfm ²	0.032	0.032	0.032	0.032
ΔH _{avg} (average orifice meter differential), in. H ₂ O	1.800	1.800	1.800	1.800
√ΔH _{avg} (average sq. rt. orifice meter differential), in. H ₂ O	1.342	1.342	1.342	1.342
ΔH@ (orifice meter calibration coefficient), in. H ₂ O	1.945	1.945	1.945	1.945
MW _{dry} (dry molecular weight of stack gas), lb/lb-mole	29.112	29.122	29.118	29.1
29 (dry molecular weight of air), lb/lb-mole	29.0	29.0	29.0	29.0
13.6 (specific gravity of mercury)	13.6	13.6	13.6	13.6

Note: If the average Y_{qa} does not meet the +5 percent criterion, recalibrate the meter over the full range of orifice settings, as detailed in Section 5.3.1 of Method 5. Then follow the procedure in Section 5.3.3 of Method 5.

QA Criteria:	
Y _d (meter calibration factor)	0.990
Y _{qa} (meter check value)	0.952
Difference, %	0.039
	PASS

Performed by: Name: Dan Duncan Signature: *Dan Duncan* Date: 07 / 23 / 2024

Approved by: Name: Patrick Switzer Signature: *PS* Date: 07 / 23 / 2024

Meter box Alternative Post-Test calibration form (ALT-009) R2



EPA Method 5

Meter Box Calibration by Calibrated Critical Orifice, Leak Check, and Thermocouple Calibration Check

English Meter Box Units, English K' Factor

Meter box ID:	CB 22
Meter ID (if applicable):	CB 22
Orifice set ID:	Antioch
Calibrated by:	EG
Expires:	9/12/24

Date:	3/12/24
Location:	Antioch
No. of orifices used (min. 3):	5
Barometric pressure (in. Hg):	30.13 in. Hg
Theoretical critical vacuum	14.21 in. Hg

Yd:	0.992
ΔH@:	1.834

Meter Box Orifice Calibration

IMPORTANT For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above

IMPORTANT The Critical Orifice Coefficient, K', must be entered in English units, (ft³·s^{1/2}/(in. Hg)^{1/2}(min)).

ΔH (in H ₂ O)	Time (min)	Volume		Initial Temps.		Final Temps.		Orifice Coefficient (see above)	Vacuum (in Hg)	- Ambient Temperature -		
		Initial (cu ft)	Final (cu ft)	Net (cu ft)	Inlet (deg F)	Outlet (deg F)	Orifice # (number)			Initial (deg F)	Final (deg F)	Average (deg F)
0.32	17.00	730.132	735.303	5.171	57.0	58.0	RG-40	0.2372	16.0	70.0	70.0	70.0
0.65	12.00	735.303	740.667	5.364	58.0	59.0	RG-48	0.3488	16.0	72.0	72.0	72.0
1.00	9.00	740.667	745.684	5.017	59.0	60.0	RG-55	0.4347	16.0	72.0	72.0	72.0
2.00	7.00	745.684	751.072	5.388	60.0	62.0	RG-63	0.5991	16.0	72.0	72.0	72.0
3.30	5.00	725.105	730.132	5.027	55.0	57.0	RG-73	0.7904	16.0	70.0	70.0	70.0

-- SAMPLE RATE --
INDICATED VS. ACTUAL

ΔH (in H ₂ O)	Sample Rate (scfm)
0.32	0.310
0.65	0.456
1.00	0.568
2.00	0.763
3.30	1.034

Vm(std) (cu ft)
5.315
5.507
5.145
5.523
5.220

Vc(std) (cu ft)	Vc (cu ft)
5.277	5.263
5.468	5.473
5.111	5.116
5.478	5.483
5.172	5.158

Value (number)	Variance (number)
0.9929	0.001
0.9928	0.000
0.9933	0.001
0.992	-0.001
0.991	-0.001

Value (in H ₂ O)	Variance (in H ₂ O)
1.819	0.085
1.806	-0.028
1.785	-0.049
1.875	0.040
1.787	-0.047

QA Criteria:

Average Yd	0.9924
Average ΔH@	1.8345
Variance of Yd's	PASS
Variance of ΔH@	PASS
Vacuum Criteria	PASS

For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is ± 0.02 .

For Orifice Calibration Factor ΔH@, the orifice differential pressure in inches of H₂O that equates to 0.75 cfm of air at 68 F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is ± 0.02 .

Meter Box Pressure Leak Check

Test Pressure, (in H ₂ O):	7	Should be 5-7 in. H ₂ O
Leak Rate, (in H ₂ O/min):	0	Must be zero (manometer level stable for 1 minute)

Meter Box Vacuum Leak Check

Test Vacuum, (in. Hg):	25	Coarse adjust valve fully open, fine adjust fully closed, sample inlet plugged
Leak Rate, (cfm):	0	Must be zero (meter dial stable for 1 minute)

Meter Box Thermocouple Readout Calibration Check

Input Temperature	Allowable Temp. Dev.*	Low	High
30	7	23	37
70	8	62	78
120	9	111	129
250	11	239	261
350	12	338	362
500	14	486	514
700	17	683	717
900	20	880	920

Stack	Probe	Filter	Exit	Aux.
28	28	28	28	27
67	67	67	67	67
120	120	120	120	120
251	252	252	252	252
350	350	350	350	350
499				
701				
897				

Thermocouple simulator	
Make:	Omega
Model:	CL125
Serial Number:	16200736
Cal Date:	1/31/2024

* Reading values must be within 1.5% of reference thermometer values (based on absolute temperature scale) for calibration to be acceptable.

Performed by:

Name:

Edgar Garcia

Signature

Edgar Garcia

Date:

3/12/24

Approved by:

Name:

RAUL MORENO

Signature

Raul Moreno

Date:

3/12/24



Alternative Method 5 Post-Test Calibration (ALT-009)

Meter box ID:	CB-22
Calibrated by:	Antioch
Date Calibrated:	7/18/24

Y _d :	0.992
ΔH@:	1.834

Parameter	Run 1	Run 2	Run 3	Average
Y _{qa} (dry gas meter calibration check value), dimensionless	0.9716	0.9386	1.0044	0.9715
Total run time, min	30.0	30.0	30.0	30.0
V _m (meter box volume), acf	22.860	23.670	22.175	22.902
T _m (absolute average dry gas meter temperature), °R	534.0	535.0	537.3	535.4
P _{bar} (barometric pressure), in. Hg	29.99	29.99	29.99	29.99
0.0318 = (29.92/(460+T _{ref}))*(0.75*0.75), in. Hg/°R * cfm ²	0.032	0.032	0.032	0.032
ΔH _{avg} (average orifice meter differential), in. H ₂ O	1.800	1.800	1.800	1.800
√ΔH _{avg} (average sq. rt. orifice meter differential), in. H ₂ O	1.342	1.342	1.342	1.342
ΔH@ (orifice meter calibration coefficient), in. H ₂ O	1.834	1.834	1.834	1.834
MW _{dry} (dry molecular weight of stack gas), lb/lb-mole	29.232	29.268	29.252	29.3
29 (dry molecular weight of air), lb/lb-mole	29.0	29.0	29.0	29.0
13.6 (specific gravity of mercury)	13.6	13.6	13.6	13.6

Note: If the average Y_{qa} does not meet the +5 percent criterion, recalibrate the meter over the full range of orifice settings, as detailed in Section 5.3.1 of Method 5. Then follow the procedure in Section 5.3.3 of Method 5.

QA Criteria:	
Y _d (meter calibration factor)	0.992
Y _{qa} (meter check value)	0.972
Difference, %	0.021
	PASS

Performed by: Name: Dan Duncan Signature: *Dan Duncan* Date: 07 / 23 / 2024

Approved by: Name: Patrick Switzer Signature: *Patrick Switzer* Date: 07 / 23 / 2024

Meter box Alternative Post-Test calibration form (ALT-009) R2



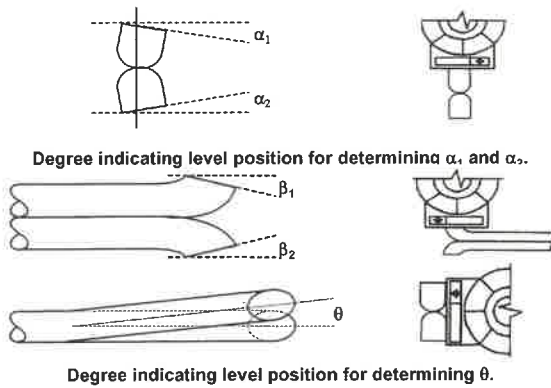
Pitot Tube Calibration Data Sheet

Calibration Date:	3/5/2024	Performed by:	VC	Expiration Date:	September 5, 2024
Calibrated Pitot Tube:	S-type	ID No.:	101	No obstructions:	YES
Probe Description:	NP	Probe/Pitot ID No:	101-NP-6	No damage:	YES
Thermocouple calibration performed?	Yes	Effective Length (ft):	6	Level and Perpendicular:	YES
Thermocouple passed calibration?	YES				

Protractor or Digital Angle Finder ID: 1-APR-OAK
Measuring Tape ID: 1-TM-OAK
Caliper ID: ANT-OAK-8

Calibration performed using the procedures of EPA Method 2, Section 10.1

Alignment and Tubing Dimensions

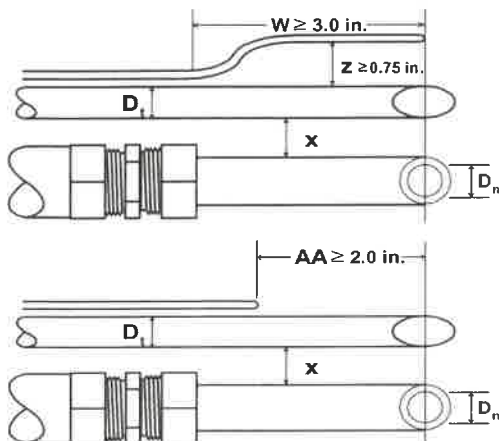


α_1 ($-10^\circ < \alpha_1 < +10^\circ$)	0
α_2 ($-10^\circ < \alpha_2 < +10^\circ$)	-1
β_1 ($-5^\circ < \beta_1 < +5^\circ$)	1
β_2 ($-5^\circ < \beta_2 < +5^\circ$)	1
γ	0
θ	1
A	0.9290
$z = A \tan \gamma$ (± 0.125)	0.0000
$w = A \tan \theta$ (± 0.03125)	0.0162
D_t ($0.1875 < D_t < 0.375$)	0.3730
P_A ($1.05D_t < P_A < 1.5D_t$)	0.4675
P_B ($1.05D_t < P_B < 1.5D_t$)	0.4395
$ P_A - P_B \leq 0.0625$	0.0280

Pass
Pass
Pass
Pass
Pass
Pass

Degree indicating level position for determining γ then calculating Z.

Assembly Inter-Component Spacing Requirements



W (≥ 3.0)	7.000
-or- AA (≥ 2.0)	
X	1.000
D_n	0.510
X / D_n (≥ 1.5)	1.961
Y (≥ 3.0)	3.500
$Z \geq 0.75$	1.261

Pass Offset TC only
Setback TC only
Pass
Pass
Pass Offset TC only

Performed By: Vincent Cabral
Approved By: RAUL M.

Signature: Vincent Cabral
Signature: RAUL M.

Date: 3/5/24
Date: 3/5/24



Calibration complies with ISO/IEC
17025, ANSI/NCSL Z540-1, and 9001

Cert. No.: 4371-14881592

Traceable® Certificate of Calibration for Lollipop Thermometer

Manufactured for and distributed by : Traceable® Products 12554 Galveston Rd B230, Webster, TX 77598

Instrument Identification:

Model: 4371,90205-05

S/N: 240162450

Manufacturer: Control Company

Standards/Equipment:

Description	Serial Number	Due Date	NIST Traceable Reference
Temperature Calibration Bath	93139		
Temperature Probe	128	03 Aug 2024	15-E5O3Q-40-1
Thermistor Module	A17118	08 Aug 2024	1000494698
Temperature Probe	3039	03 Aug 2024	15-E5O3Q-20-1
Temperature Calibration Bath	B3A444		

Certificate Information:

Technician: 420

Procedure: CAL-03

Cal Date: 23 Feb 2024

Cal Due Date: 23 Feb 2026

Test Conditions: 48.35%RH 23.73°C 1017mBar

Calibration Data: (New Instrument)

Unit(s)	Nominal	As Found	In Tol	Nominal	As Left	In Tol	Min	Max	±U	TUR
°C	N.A.	N.A.		0.00	0.1	Y	-1	1	0.058	>4:1
°C	N.A.	N.A.		100.00	100.1	Y	99	101	0.058	>4:1

This certificate indicates Traceability to standards provided by (NIST) National Institute of Standards and Technology and/or a National Standards Laboratory.

A Test Uncertainty Ratio of at least 4:1 is maintained unless otherwise stated and is calculated using the expanded measurement uncertainty. Uncertainty evaluation includes the instrument under test and is calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement": (GUM). The uncertainty represents an expanded uncertainty using a coverage factor k=2 to approximate a 95% confidence level. In tolerance conditions are based on test results falling within specified limits with no reduction by the uncertainty of the measurement. The results contained herein relate only to the item calibrated. This certificate shall not be reproduced except in full, without written approval of Control Company.

Nominal=Standard's Reading; As Left=Instrument's Reading; In Tol=In Tolerance; Min/Max=Acceptance Range; ±U=Expanded Measurement Uncertainty; TUR=Test Uncertainty Ratio; Accuracy=±(Max-Min)/2; Min=As Left Nominal(Rounded) - Tolerance; Max= As Left Nominal(Rounded) + Tolerance;

Nicol Rodriguez

Nicol Rodriguez, Quality Manager

Note :

Maintaining Accuracy:

In our opinion once calibrated your Lollipop Thermometer should maintain its accuracy. There is no exact way to determine how long calibration will be maintained. Lollipop Thermometer change little, if any at all, but can be affected by aging, temperature, shock, and contamination.

Recalibration:

For factory calibration and re-certification traceable to National Institute of Standards and Technology contact Control Company.

Issue Date : 23 Feb 2024

CONTROL COMPANY 12554 Galveston RD Suite B230 Webster TX USA 77598
Phone 281 482-1714 Fax 281 482-9448 sales@control3.com www.traceable.com

Control Company is an ISO/IEC 17025:2017 Calibration Laboratory Accredited by (A2LA) American Association for Laboratory Accreditation, Certificate No. 1750.01.
Control Company is ISO 9001:2015 Quality Certified by DNV GL, Certificate No. CERT-01805-2006-AQ-HOU-ANAB.
International Laboratory Accreditation Cooperation - Multilateral Recognition Arrangement (ILAC-MRA).

Appendix D.3

Instrumental Test Method QA/QC Data



MAQDAQ 1.0

Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 1 BASE
Run Length: 30	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 1	Points per port: 3	DAQ Device: DT9803(01)

Analyzer Configuration

Name:	O2 (OX-10)	CO2 (CD-10)						
Make/Model:								
25A or 7E:	7E	7E						
Voltage max:	10	10						
Voltage offset:	0	0						
Range:	10	10						
Upscale:								
Downscale:								

Cylinder Information

Zero Number:	XC014765B	XC014765B						
Zero Conc:	0	0						
Low Number:								
Low Conc:								
Mid Number:	CC 31354	CC 31354						
Mid Conc:	11.61	3.985						
High Number:	CC 323781	CC 323781						
High Conc:	21.12	8.376						
Bias Number:	CC 31354	CC 31354						
Bias Conc:	11.61	3.985						



MAQDAQ 1.0

Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 1 BASE
Run Length: 30	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 1	Points per port: 3	DAQ Device: DT9803(01)

Calibration

Name:	O2 (OX-10)	CO2 (CD-10)						
Make/Model:								
25A or 7E:	7E	7E						

Cylinder Concentrations

Zero:	0.000	0.000						
Low:								
Mid:	11.61	3.985						
High:	21.12	8.376						

Calibration Readings

Zero reading:	-0.014	-0.002						
Low reading:	0.000	0.000						
Mid reading:	11.55	3.980						
High reading:	21.07	8.375						

EPA Method 7E Error Calculations

Zero %Err:	<2.0	-0.066	-0.024					
Mid %Err:	<2.0	-0.284	-0.060					
High %Err:	<2.0	-0.237	-0.012					



MAQDAQ 1.0

Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 1 BASE
Run Length: 30	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 1	Points per port: 3	DAQ Device: DT9803(01)

Initial bias

Name:	O2 (OX-10)	CO2 (CD-10)						
Make/Model:								
25A or 7E:	7E	7E						

Cylinder Concentrations

Zero:	0.000	0.000						
Low:								
Mid:	11.61	3.985						
High:	21.12	8.376						

Calibration Readings

Zero reading:	-0.014	-0.002						
Low reading:	0.000	0.000						
Mid reading:	11.55	3.980						
High reading:	21.07	8.375						

EPA Method 7E Error Calculations

Zero %Err:	<2.0	-0.066	-0.024					
Mid %Err:	<2.0	-0.284	-0.060					
High %Err:	<2.0	-0.237	-0.012					

Initial Bias Data

Zero reading:	0.029	-0.007						
Span reading:	11.49	3.949						
Zero % bias:	<5.0	0.204	-0.060					
Span % bias:	<5.0	-0.284	-0.370					



MAQDAQ 1.0

Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 1 MAX
Run Length: 30	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 1	Points per port: 3	DAQ Device: DT9803(01)

Analyzer Configuration

Name:	O2 (OX-10)	CO2 (CD-10)	CO (CO21)	NOX (NO-2)				
Make/Model:								
25A or 7E:	7E	7E	7E	7E				
Voltage max:	10	10	10	10				
Voltage offset:	0	0	0	0				
Range:	25	10	6	6				
Upscale:								
Downscale:								

Cylinder Information

Zero Number:	XC014765B	XC014765B	XC014765B	XC014765B				
Zero Conc:	0	0	0	0				
Low Number:								
Low Conc:								
Mid Number:	CC 31354	CC 31354	CC754521	CC754521				
Mid Conc:	11.61	3.985	2.496	2.488				
High Number:	CC 323781	CC 323781	CC191010	CC191010				
High Conc:	21.12	8.376	5.059	5.074				
Bias Number:	CC 31354	CC 31354	CC754521	CC754521				
Bias Conc:	11.61	3.985	2.496	2.488				



MAQDAQ 1.0			
Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 1 MAX
Run Length: 30	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 1	Points per port: 3	DAQ Device: DT9803(01)

Calibration								
	Name:	O2 (OX-10)	CO2 (CD-10)	CO (CO21)	NOX (NO-2)			
	Make/Model:							
	25A or 7E:	7E	7E	7E	7E			

Cylinder Concentrations								
	Zero:	0.000	0.000	0.000	0.000			
	Low:							
	Mid:	11.61	3.985	2.496	2.488			
	High:	21.12	8.376	5.059	5.074			

Calibration Readings								
	Zero reading:	-0.020	-0.070	0.021	0.010			
	Low reading:	0.000	0.000	0.000	0.000			
	Mid reading:	11.53	3.954	2.589	2.545			
	High reading:	21.02	8.397	5.061	5.067			

EPA Method 7E Error Calculations								
Zero %Err:	<2.0	-0.095	-0.836	0.415	0.197			
Mid %Err:	<2.0	-0.379	-0.370	1.838	1.123			
High %Err:	<2.0	-0.473	0.251	0.040	-0.138			



MAQDAQ 1.0

Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 1 MAX
Run Length: 30	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 1	Points per port: 3	DAQ Device: DT9803(01)

Initial bias

Name:	O2 (OX-10)	CO2 (CD-10)	CO (CO21)	NOX (NO-2)				
Make/Model:								
25A or 7E:	7E	7E	7E	7E				

Cylinder Concentrations

Zero:	0.000	0.000	0.000	0.000				
Low:								
Mid:	11.61	3.985	2.496	2.488				
High:	21.12	8.376	5.059	5.074				

Calibration Readings

Zero reading:	-0.020	-0.070	0.021	0.010				
Low reading:	0.000	0.000	0.000	0.000				
Mid reading:	11.53	3.954	2.589	2.545				
High reading:	21.02	8.397	5.061	5.067				

EPA Method 7E Error Calculations

Zero %Err:	<2.0	-0.095	-0.836	0.415	0.197			
Mid %Err:	<2.0	-0.379	-0.370	1.838	1.123			
High %Err:	<2.0	-0.473	0.251	0.040	-0.138			

Initial Bias Data

Zero reading:	0.030	-0.046	0.050	0.002				
Span reading:	11.50	3.934	2.655	2.371				
Zero % bias:	<5.0	0.237	0.287	0.573	-0.158			
Span % bias:	<5.0	-0.142	-0.239	1.305	-3.429			



MAQDAQ 1.0

Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 1 MAX
Run Length: 30	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 1	Points per port: 3	DAQ Device: DT9803(01)

Analyzer Configuration

Name:	O2 (OX-10)	CO2 (CD-10)	CO (CO21)	NOX (NO-2)	THC (VO 20)	CH3 (VO14)		
Make/Model:								
25A or 7E:	7E	7E	7E	7E	25A	25A		
Voltage max:	10	10	10	10	10	10		
Voltage offset:	0	0	0	0	0	0		
Range:	25	10	6	6	10	10		
Upscale:								
Downscale:								

Cylinder Information

Zero Number:	XC014765B	XC014765B	XC014765B	XC014765B				
Zero Conc:	0	0	0	0	0	0		
Low Number:					CC505035	CC505035		
Low Conc:					2.978	2.978		
Mid Number:	CC 31354	CC 31354	CC754521	CC754521	ALM022488	ALM022488		
Mid Conc:	11.61	3.985	2.496	2.488	5.119	5.119		
High Number:	CC 323781	CC 323781	CC191010	CC191010	ALM015720	ALM015720		
High Conc:	21.12	8.376	5.059	5.074	8.535	8.535		
Bias Number:	CC 31354	CC 31354	CC754521	CC754521	ALM022488	ALM022488		
Bias Conc:	11.61	3.985	2.496	2.488	5.119	5.119		



MAQDAQ 1.0

Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 1 MAX
Run Length: 30	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 1	Points per port: 3	DAQ Device: DT9803(01)

Calibration

Name:	O2 (OX-10)	CO2 (CD-10)	CO (CO21)	NOX (NO-2)	THC (VO 20)	CH3 (VO14)		
Make/Model:								
25A or 7E:	7E	7E	7E	7E	25A	25A		

Cylinder Concentrations

Zero:	0.000	0.000	0.000	0.000	0.000	0.000		
Low:					2.978	2.978		
Mid:	11.61	3.985	2.496	2.488	5.119	5.119		
High:	21.12	8.376	5.059	5.074	8.535	8.535		

Calibration Readings

Zero reading:	-0.020	-0.070	0.021	0.010	0.001	-0.004		
Low reading:	0.000	0.000	0.000	0.000	2.966	2.958		
Mid reading:	11.53	3.954	2.589	2.545	5.067	5.091		
High reading:	21.02	8.397	5.061	5.067	8.503	8.484		

EPA Method 7E Error Calculations

Zero %Err:	<2.0	-0.095	-0.836	0.415	0.197	N/A	N/A		
Mid %Err:	<2.0	-0.379	-0.370	1.838	1.123	N/A	N/A		
High %Err:	<2.0	-0.473	0.251	0.040	-0.138	N/A	N/A		

EPA Method 25A Error Calculations

Zero Err:	N/A	N/A	N/A	N/A	N/A	0.001	-0.004		
Low Err:	5% of cyl	N/A	N/A	N/A	N/A	-0.012	-0.020		
Mid Err:	5% of cyl	N/A	N/A	N/A	N/A	-0.052	-0.028		
High Err:	N/A	N/A	N/A	N/A	N/A	-0.032	-0.051		



MAQDAQ 1.0

Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 1 MAX
Run Length: 30	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 1	Points per port: 3	DAQ Device: DT9803(01)

Initial bias

Name:	O2 (OX-10)	CO2 (CD-10)	CO (CO21)	NOX (NO-2)	THC (VO 20)	CH3 (VO14)		
Make/Model:								
25A or 7E:	7E	7E	7E	7E	25A	25A		

Cylinder Concentrations

Zero:	0.000	0.000	0.000	0.000	0.000	0.000		
Low:					2.978	2.978		
Mid:	11.61	3.985	2.496	2.488	5.119	5.119		
High:	21.12	8.376	5.059	5.074	8.535	8.535		

Calibration Readings

Zero reading:	-0.020	-0.070	0.021	0.010	0.001	-0.004		
Low reading:	0.000	0.000	0.000	0.000	2.966	2.958		
Mid reading:	11.53	3.954	2.589	2.545	5.067	5.091		
High reading:	21.02	8.397	5.061	5.067	8.503	8.484		

EPA Method 7E Error Calculations

Zero %Err:	<2.0	-0.095	-0.836	0.415	0.197	N/A	N/A		
Mid %Err:	<2.0	-0.379	-0.370	1.838	1.123	N/A	N/A		
High %Err:	<2.0	-0.473	0.251	0.040	-0.138	N/A	N/A		

EPA Method 25A Error Calculations

Zero %Err:	N/A	N/A	N/A	N/A	N/A	0.001	-0.004		
Low %Err:	5% of cyl	N/A	N/A	N/A	N/A	-0.012	-0.020		
Mid %Err:	5% of cyl	N/A	N/A	N/A	N/A	-0.052	-0.028		
High %Err:	N/A	N/A	N/A	N/A	N/A	-0.032	-0.051		

Initial Bias Data

	Zero reading:	0.030	-0.046	0.050	0.002	N/A	N/A		
	Span reading:	11.50	3.934	2.655	2.371	N/A	N/A		
Zero % bias:	<5.0	0.237	0.287	0.573	-0.158	N/A	N/A		
Span % bias:	<5.0	-0.142	-0.239	1.305	-3.429	N/A	N/A		



MAQDAQ 1.0			
Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 1 MAX
Run Length: 30	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 1	Points per port: 3	DAQ Device: DT9803(01)

NOx Converter Check		
Time	NOx reading, ppm	Efficiency, %
15:21:37	4.963	92.4%
15:21:38	4.963	92.4%
15:21:39	4.953	92.3%
15:21:40	4.953	92.3%
15:21:41	4.953	92.3%
15:21:42	4.953	92.3%
15:21:43	4.954	92.3%
15:21:44	4.953	92.3%
15:21:45	4.953	92.3%
15:21:46	4.953	92.3%
15:21:47	4.953	92.3%
15:21:48	4.953	92.3%
15:21:49	4.953	92.3%
15:21:50	4.953	92.3%
15:21:51	4.953	92.3%
15:21:52	4.953	92.3%
15:21:53	4.953	92.3%

Summary	
Analyzer:	NOX (NO-2)
NO2 Cylinder Concentration:	5.369
NO2 Cylinder Number:	CC501066
NOx Analyzer Reading:	4.953
Efficiency:	92.3%



MAQDAQ 1.0			
Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 1 MIN
Run Length: 30	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 1	Points per port: 3	DAQ Device: DT9803(01)

Analyzer Configuration							
Name:	O2 (OX-10)	CO2 (CD-10)	CO (CO21)				
Make/Model:							
25A or 7E:	7E	7E	7E				
Voltage max:	10	10	10				
Voltage offset:	0	0	0				
Range:	10	10	10				
Upscale:							
Downscale:							

Cylinder Information							
Zero Number:	XC014765B	XC014765B	XC014765B				
Zero Conc:	0	0	0				
Low Number:							
Low Conc:							
Mid Number:	CC 31354	CC 31354	CC754521				
Mid Conc:	11.61	3.985	2.496				
High Number:	CC 323781	CC 323781	CC191010				
High Conc:	21.12	8.376	5.059				
Bias Number:	CC 31354	CC 31354	CC754521				
Bias Conc:	11.61	3.985	2.496				



MAQDAQ 1.0

Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 1 MIN
Run Length: 30	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 1	Points per port: 3	DAQ Device: DT9803(01)

Calibration

Name:	O2 (OX-10)	CO2 (CD-10)	CO (CO21)					
Make/Model:								
25A or 7E:	7E	7E	7E					

Cylinder Concentrations

Zero:	0.000	0.000	0.000					
Low:								
Mid:	11.61	3.985	2.496					
High:	21.12	8.376	5.059					

Calibration Readings

Zero reading:	0.002	0.003	0.001					
Low reading:	0.000	0.000	0.000					
Mid reading:	11.52	3.980	2.583					
High reading:	21.05	8.383	5.073					

EPA Method 7E Error Calculations

Zero %Err:	<2.0	0.009	0.036	0.020				
Mid %Err:	<2.0	-0.426	-0.060	1.720				
High %Err:	<2.0	-0.331	0.084	0.277				



MAQDAQ 1.0

Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 1 MIN
Run Length: 30	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 1	Points per port: 3	DAQ Device: DT9803(01)

Initial bias

Name:	O2 (OX-10)	CO2 (CD-10)	CO (CO21)					
Make/Model:								
25A or 7E:	7E	7E	7E					

Cylinder Concentrations

Zero:	0.000	0.000	0.000					
Low:								
Mid:	11.61	3.985	2.496					
High:	21.12	8.376	5.059					

Calibration Readings

Zero reading:	0.002	0.003	0.001					
Low reading:	0.000	0.000	0.000					
Mid reading:	11.52	3.980	2.583					
High reading:	21.05	8.383	5.073					

EPA Method 7E Error Calculations

Zero %Err:	<2.0	0.009	0.036	0.020				
Mid %Err:	<2.0	-0.426	-0.060	1.720				
High %Err:	<2.0	-0.331	0.084	0.277				

Initial Bias Data

Zero reading:	0.054	0.017	0.080					
Span reading:	11.49	3.944	2.589					
Zero % bias:	<5.0	0.246	0.167	1.562				
Span % bias:	<5.0	-0.142	-0.430	0.119				



MAQDAQ 1.0			
Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 2 MAX
Run Length: 36	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 2	Points per port: 6	DAQ Device: DT9803(01)

Analyzer Configuration							
Name:	O2 (OX-10)	CO2 (CD-10)	CO (CO21)	NOX (NO-2)			
Make/Model:							
25A or 7E:	7E	7E	7E	7E			
Voltage max:	10	10	10	10			
Voltage offset:	0	0	0	0			
Range:	25	10	6	6			
Upscale:							
Downscale:							

Cylinder Information							
Zero Number:	XC014765B	XC014765B	XC014765B	XC014765B			
Zero Conc:	0	0	0	0			
Low Number:							
Low Conc:							
Mid Number:	CC 31354	CC 31354	CC754521	CC754521			
Mid Conc:	11.61	3.985	2.496	2.488			
High Number:	CC 323781	CC 323781	CC191010	CC191010			
High Conc:	21.12	8.376	5.059	5.074			
Bias Number:	CC 31354	CC 31354	CC754521	CC754521			
Bias Conc:	11.61	3.985	2.496	2.488			



MAQDAQ 1.0			
Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 2 MAX
Run Length: 36	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 2	Points per port: 6	DAQ Device: DT9803(01)

Calibration								
	Name:	O2 (OX-10)	CO2 (CD-10)	CO (CO21)	NOX (NO-2)			
	Make/Model:							
	25A or 7E:	7E	7E	7E	7E			

Cylinder Concentrations								
	Zero:	0.000	0.000	0.000	0.000			
	Low:							
	Mid:	11.61	3.985	2.496	2.488			
	High:	21.12	8.376	5.059	5.074			

Calibration Readings								
	Zero reading:	0.022	-0.001	-0.010	0.010			
	Low reading:	0.000	0.000	0.000	0.000			
	Mid reading:	11.57	3.978	2.589	2.557			
	High reading:	21.03	8.378	5.043	5.073			

EPA Method 7E Error Calculations								
Zero %Err:	<2.0	0.104	-0.012	-0.198	0.197			
Mid %Err:	<2.0	-0.189	-0.084	1.838	1.360			
High %Err:	<2.0	-0.426	0.024	-0.316	-0.020			



MAQDAQ 1.0

Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 2 MAX
Run Length: 36	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 2	Points per port: 6	DAQ Device: DT9803(01)

Initial bias

Name:	O2 (OX-10)	CO2 (CD-10)	CO (CO21)	NOX (NO-2)				
Make/Model:								
25A or 7E:	7E	7E	7E	7E				

Cylinder Concentrations

Zero:	0.000	0.000	0.000	0.000				
Low:								
Mid:	11.61	3.985	2.496	2.488				
High:	21.12	8.376	5.059	5.074				

Calibration Readings

Zero reading:	0.022	-0.001	-0.010	0.010				
Low reading:	0.000	0.000	0.000	0.000				
Mid reading:	11.57	3.978	2.589	2.557				
High reading:	21.03	8.378	5.043	5.073				

EPA Method 7E Error Calculations

Zero %Err:	<2.0	0.104	-0.012	-0.198	0.197			
Mid %Err:	<2.0	-0.189	-0.084	1.838	1.360			
High %Err:	<2.0	-0.426	0.024	-0.316	-0.020			

Initial Bias Data

Zero reading:	0.024	0.001	0.110	0.002				
Span reading:	11.50	3.947	2.636	2.396				
Zero % bias:	<5.0	0.009	0.024	2.372	-0.158			
Span % bias:	<5.0	-0.331	-0.370	0.929	-3.173			



MAQDAQ 1.0

Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 2 MAX
Run Length: 30	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 1	Points per port: 6	DAQ Device: DT9803(01)

Analyzer Configuration

Name:	O2 (OX-10)	CO2 (CD-10)	CO (CO21)	NOX (NO-2)	THC (VO 20)	CH3 (VO14)		
Make/Model:								
25A or 7E:	7E	7E	7E	7E	25A	25A		
Voltage max:	10	10	10	10	10	10		
Voltage offset:	0	0	0	0	0	0		
Range:	25	10	6	6	100	100		
Upscale:								
Downscale:								

Cylinder Information

Zero Number:	XC014765B	XC014765B	XC014765B	XC014765B				
Zero Conc:	0	0	0	0	0	0		
Low Number:					ALM033726	ALM033726		
Low Conc:					29.85	29.85		
Mid Number:	CC 31354	CC 31354	CC754521	CC754521	CC710101	CC710101		
Mid Conc:	11.61	3.985	2.496	2.488	49.56	49.56		
High Number:	CC 323781	CC 323781	CC191010	CC191010	CC741764	CC741764		
High Conc:	21.12	8.376	5.059	5.074	85.01	85.01		
Bias Number:	CC 31354	CC 31354	CC754521	CC754521	CC710101	CC710101		
Bias Conc:	11.61	3.985	2.496	2.488	49.56	49.56		



MAQDAQ 1.0

Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 2 MAX
Run Length: 30	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 1	Points per port: 6	DAQ Device: DT9803(01)

Calibration

Name:	O2 (OX-10)	CO2 (CD-10)	CO (CO21)	NOX (NO-2)	THC (VO 20)	CH3 (VO14)		
Make/Model:								
25A or 7E:	7E	7E	7E	7E	25A	25A		

Cylinder Concentrations

Zero:	0.000	0.000	0.000	0.000	0.000	0.000		
Low:					29.85	29.85		
Mid:	11.61	3.985	2.496	2.488	49.56	49.56		
High:	21.12	8.376	5.059	5.074	85.01	85.01		

Calibration Readings

Zero reading:	0.022	-0.001	-0.010	0.010	0.287	0.104		
Low reading:	0.000	0.000	0.000	0.000	30.11	29.84		
Mid reading:	11.57	3.978	2.589	2.557	50.81	50.00		
High reading:	21.03	8.378	5.043	5.073	85.11	85.24		

EPA Method 7E Error Calculations

Zero %Err:	<2.0	0.104	-0.012	-0.198	0.197	N/A	N/A		
Mid %Err:	<2.0	-0.189	-0.084	1.838	1.360	N/A	N/A		
High %Err:	<2.0	-0.426	0.024	-0.316	-0.020	N/A	N/A		

EPA Method 25A Error Calculations

Zero Err:	N/A	N/A	N/A	N/A	N/A	0.287	0.104		
Low Err:	5% of cyl	N/A	N/A	N/A	N/A	0.260	-0.010		
Mid Err:	5% of cyl	N/A	N/A	N/A	N/A	1.250	0.440		
High Err:	N/A	N/A	N/A	N/A	N/A	0.100	0.230		



MAQDAQ 1.0

Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 2 MAX
Run Length: 30	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 1	Points per port: 6	DAQ Device: DT9803(01)

Initial bias

Name:	O2 (OX-10)	CO2 (CD-10)	CO (CO21)	NOX (NO-2)	THC (VO 20)	CH3 (VO14)		
Make/Model:								
25A or 7E:	7E	7E	7E	7E	25A	25A		

Cylinder Concentrations

Zero:	0.000	0.000	0.000	0.000	0.000	0.000		
Low:					29.85	29.85		
Mid:	11.61	3.985	2.496	2.488	49.56	49.56		
High:	21.12	8.376	5.059	5.074	85.01	85.01		

Calibration Readings

Zero reading:	0.022	-0.001	-0.010	0.010	0.287	0.104		
Low reading:	0.000	0.000	0.000	0.000	30.11	29.84		
Mid reading:	11.57	3.978	2.589	2.557	50.81	50.00		
High reading:	21.03	8.378	5.043	5.073	85.11	85.24		

EPA Method 7E Error Calculations

Zero %Err:	<2.0	0.104	-0.012	-0.198	0.197	N/A	N/A		
Mid %Err:	<2.0	-0.189	-0.084	1.838	1.360	N/A	N/A		
High %Err:	<2.0	-0.426	0.024	-0.316	-0.020	N/A	N/A		

EPA Method 25A Error Calculations

Zero %Err:	N/A	N/A	N/A	N/A	N/A	0.287	0.104		
Low %Err:	5% of cyl	N/A	N/A	N/A	N/A	0.260	-0.010		
Mid %Err:	5% of cyl	N/A	N/A	N/A	N/A	1.250	0.440		
High %Err:	N/A	N/A	N/A	N/A	N/A	0.100	0.230		

Initial Bias Data

	Zero reading:	0.024	0.001	0.110	0.002	N/A	N/A		
	Span reading:	11.50	3.947	2.636	2.396	N/A	N/A		
Zero % bias:	<5.0	0.009	0.024	2.372	-0.158	N/A	N/A		
Span % bias:	<5.0	-0.331	-0.370	0.929	-3.173	N/A	N/A		



MAQDAQ 1.0			
Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 2 MAX
Run Length: 21	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 1	Points per port: 3	DAQ Device: DT9803(01)

NOx Converter Check		
Time	NOx reading, ppm	Efficiency, %
14:50:16	4.953	92.3%
14:50:17	4.955	92.3%
14:50:18	4.954	92.3%
14:50:19	4.953	92.3%
14:50:20	4.953	92.3%
14:50:21	4.953	92.3%
14:50:22	4.954	92.3%
14:50:23	4.954	92.3%
14:50:24	4.954	92.3%
14:50:25	4.954	92.3%
14:50:26	4.954	92.3%
14:50:27	4.953	92.3%
14:50:28	4.953	92.3%
14:50:29	4.954	92.3%
14:50:30	4.954	92.3%
14:50:31	4.953	92.3%

Summary	
Analyzer:	NOX (NO-2)
NO2 Cylinder Concentration:	5.369
NO2 Cylinder Number:	CC501066
NOx Analyzer Reading:	4.953
Efficiency:	92.3%



MAQDAQ 1.0

Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 2 MIN
Run Length: 30	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 1	Points per port: 3	DAQ Device: DT9803(01)

Analyzer Configuration

Name:	O2 (OX-10)	CO2 (CD-10)	CO (CO21)					
Make/Model:								
25A or 7E:	7E	7E	7E					
Voltage max:	10	10	10					
Voltage offset:	0	0	0					
Range:	10	10	10					
Upscale:								
Downscale:								

Cylinder Information

Zero Number:	XC014765B	XC014765B	XC014765B					
Zero Conc:	0	0	0					
Low Number:								
Low Conc:								
Mid Number:	CC 31354	CC 31354	CC754521					
Mid Conc:	11.61	3.985	2.496					
High Number:	CC 323781	CC 323781	CC191010					
High Conc:	21.12	8.376	5.059					
Bias Number:	CC 31354	CC 31354	CC754521					
Bias Conc:	11.61	3.985	2.496					



MAQDAQ 1.0

Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 2 MIN
Run Length: 30	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 1	Points per port: 3	DAQ Device: DT9803(01)

Calibration

Name:	O2 (OX-10)	CO2 (CD-10)	CO (CO21)					
Make/Model:								
25A or 7E:	7E	7E	7E					

Cylinder Concentrations

Zero:	0.000	0.000	0.000					
Low:								
Mid:	11.61	3.985	2.496					
High:	21.12	8.376	5.059					

Calibration Readings

Zero reading:	0.042	-0.005	-0.046					
Low reading:	0.000	0.000	0.000					
Mid reading:	11.53	3.966	2.552					
High reading:	21.10	8.351	5.031					

EPA Method 7E Error Calculations

Zero %Err:	<2.0	0.199	-0.060	-0.909				
Mid %Err:	<2.0	-0.379	-0.227	1.107				
High %Err:	<2.0	-0.095	-0.298	-0.553				



MAQDAQ 1.0

Project Name: SVP DVR	Project Number: PROJ-042969	CEMS Operator: N.PATEL	Unit/Condition: UNIT 2 MIN
Run Length: 30	Record Interval: 6	Average Interval: 60	Triplicate Sampling: False
Traverse: True	Ports: 1	Points per port: 3	DAQ Device: DT9803(01)

Initial bias

Name:	O2 (OX-10)	CO2 (CD-10)	CO (CO21)					
Make/Model:								
25A or 7E:	7E	7E	7E					

Cylinder Concentrations

Zero:	0.000	0.000	0.000					
Low:								
Mid:	11.61	3.985	2.496					
High:	21.12	8.376	5.059					

Calibration Readings

Zero reading:	0.042	-0.005	-0.046					
Low reading:	0.000	0.000	0.000					
Mid reading:	11.53	3.966	2.552					
High reading:	21.10	8.351	5.031					

EPA Method 7E Error Calculations

Zero %Err:	<2.0	0.199	-0.060	-0.909				
Mid %Err:	<2.0	-0.379	-0.227	1.107				
High %Err:	<2.0	-0.095	-0.298	-0.553				

Initial Bias Data

Zero reading:	0.041	0.022	0.026					
Span reading:	11.46	3.942	2.588					
Zero % bias:	<5.0	-0.005	0.322	1.423				
Span % bias:	<5.0	-0.331	-0.287	0.712				

CERTIFICATE OF BATCH ANALYSIS

Grade of Product: CEM-CAL ZERO

Part Number:	NI CZ15A	Reference Number:	153-403072091-1
Cylinder Analyzed:	AAL16511	Cylinder Volume:	142.0 CF
Laboratory:	124 - Tooele (SAP) - UT	Cylinder Pressure:	2000 PSIG
Analysis Date:	Jun 12, 2024	Valve Outlet:	580
Lot Number:	153-403072091-1		

Expiration Date: Jun 12, 2032

ANALYTICAL RESULTS

Component	Requested Purity	Certified Concentration
NITROGEN	99.9995 %	99.9995 %
NOx	0.1 PPM	<LDL 0.03 PPM
SO2	0.1 PPM	<LDL 0.1 PPM
THC	0.1 PPM	<LDL 0.03 PPM
CARBON MONOXIDE	0.5 PPM	<LDL 0.03 PPM
CARBON DIOXIDE	1.0 PPM	<LDL 0.03 PPM

Permanent Notes: Airgas certifies that the contents of this cylinder meet the requirements of 40 CFR 72.2

Cylinders in Batch:

AAL16511, ALM-062410, CC-20649, CC1234015, CC1281*, CC359078, CC412861, CC438726, CC476803, CC480851, CC496803, CC59285, CC75323, EB0058844, EB0078348, EB0081808, EB0105116, EB0117622, EB0122693, EB0123064, EB0141789, XC014765B

Impurities verified against analytical standards traceable to NIST by weight and/or analysis.



Signature on file

Approved for Release

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI84E15A7419	Reference Number:	153-402744953-1
Cylinder Number:	CC31354	Cylinder Volume:	147.0 CF
Laboratory:	124 - Tooele (SAP) - UT	Cylinder Pressure:	2015 PSIG
PGVP Number:	B72023	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	May 15, 2023

Expiration Date: May 15, 2031

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	4.000 %	3.985 %	G1	+/- 0.4% NIST Traceable	05/15/2023
OXYGEN	11.50 %	11.61 %	G1	+/- 0.8% NIST Traceable	05/15/2023
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	05010521	K001540	3.000 % CARBON DIOXIDE/NITROGEN	0.3%	Jul 24, 2025
NTRM	98051010	SG9161286BAL	12.05 % OXYGEN/NITROGEN	0.7%	Dec 14, 2023

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA-510 SV4MEUTJ CO2	CO2 NDIR (Dixon)	May 04, 2023
Horiba MPA-510 W603MM58 O2	O2 Paramagnetic (DIXON)	May 04, 2023

Triad Data Available Upon Request



Signature on file

Approved for Release

W005AS-042969-RT-3582R2

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CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI70E15A7420	Reference Number:	153-402744947-1
Cylinder Number:	CC323781	Cylinder Volume:	151.0 CF
Laboratory:	124 - Tooele (SAP) - UT	Cylinder Pressure:	2015 PSIG
PGVP Number:	B72023	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	May 23, 2023

Expiration Date: May 23, 2031

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	8.500 %	8.376 %	G1	+/- 0.8% NIST Traceable	05/23/2023
OXYGEN	21.00 %	21.12 %	G1	+/- 0.4% NIST Traceable	05/23/2023
NITROGEN	Balance				

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13060405	CC411744	7.489 % CARBON DIOXIDE/NITROGEN	0.6%	May 14, 2025
NTRM	09061434	CC282492	22.53 % OXYGEN/NITROGEN	0.4%	May 13, 2025

ANALYTICAL EQUIPMENT		
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA-510 SV4MEUTJ CO2	CO2 NDIR (Dixon)	May 04, 2023
Horiba MPA-510 W603MM58 O2	O2 Paramagnetic (DIXON)	May 04, 2023

Triad Data Available Upon Request



Signature on file

Approved for Release

W005AS-042969-RT-3582R2

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CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI99E15A1471	Reference Number:	153-402897816-1
Cylinder Number:	CC754521	Cylinder Volume:	144.0 CF
Laboratory:	124 - Tooele (SAP) - UT	Cylinder Pressure:	2015 PSIG
PGVP Number:	B72023	Valve Outlet:	660
Gas Code:	CO,NO,NOX,BALN	Certification Date:	Nov 27, 2023

Expiration Date: Nov 27, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	2.500 PPM	2.488 PPM	G1	+/- 1.4% NIST Traceable	11/17/2023, 11/27/2023
CARBON MONOXIDE	2.500 PPM	2.496 PPM	G1	+/- 1.4% NIST Traceable	11/17/2023
NITRIC OXIDE	2.500 PPM	2.488 PPM	G1	+/- 1.4% NIST Traceable	11/17/2023, 11/27/2023
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12062802	CC365313	9.82 PPM CARBON MONOXIDE/NITROGEN	1.0%	Feb 12, 2024
PRM	12401	APEX1324267	5.00 PPM NITRIC OXIDE/NITROGEN	0.8%	Dec 23, 2022
GMIS	08012122B	KAL004279	5.07 PPM NITRIC OXIDE/NITROGEN	1.0%	Jul 21, 2024
PRM	12401	APEX1324267-NOX	5.00 PPM NOx/NITROGEN	0.8%	Dec 23, 2022
GMIS	08012122B	KAL004279-NOX	5.07 PPM NOx/NITROGEN	0.9%	Jul 21, 2024

The SRM, NTRM, PRM, or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Thermo 48i-TLE 1163640031 CO	CO NDIR (Mason)	Nov 16, 2023
Thermo 42i-LS 1123749327 NO	Chemiluminescence (Mason)	Nov 07, 2023
Thermo 42i-LS 1123749327 NOx	Chemiluminescence (Mason)	Nov 07, 2023

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CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI99E15A1421	Reference Number:	48-402744153-1
Cylinder Number:	CC191010	Cylinder Volume:	140.0 CF
Laboratory:	124 - Los Angeles (SAP) - CA	Cylinder Pressure:	2015 PSIG
PGVP Number:	B32023	Valve Outlet:	660
Gas Code:	CO,NO,NOX,BALN	Certification Date:	May 26, 2023

Expiration Date: May 26, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	5.000 PPM	5.074 PPM	G1	+/- 1.0% NIST Traceable	05/19/2023, 05/26/2023
CARBON MONOXIDE	5.000 PPM	5.059 PPM	G1	+/- 0.9% NIST Traceable	05/19/2023
NITRIC OXIDE	5.000 PPM	5.021 PPM	G1	+/- 1.2% NIST Traceable	05/19/2023, 05/26/2023
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	210604-37	CC84138	9.942 PPM CARBON MONOXIDE/NITROGEN	+/- 0.8%	Jul 23, 2027
PRM	12401	APEX1324267	5.00 PPM NITRIC OXIDE/NITROGEN	+/- 0.8%	Dec 23, 2022
GMIS	08012114A	KAL004249	5.08 PPM NITRIC OXIDE/NITROGEN	+/-1.0%	Apr 27, 2024
PRM	12401	APEX1324267-NOx	5.00 PPM NOx/NITROGEN	+/- 0.8%	Dec 23, 2022
GMIS	08012114A	KAL004249-NOX	5.08 PPM NOx/NITROGEN	+/- 0.9%	Apr 27, 2024

The SRM, NTRM, PRM, or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Thermo 48i-TLE 1132250557 CO	NDIR	May 02, 2023
nCLD 844 S 844N0213 NO	Chemiluminescence	May 02, 2023
nCLD 844 S 844N0213 NOx	Chemiluminescence	May 02, 2023

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CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E02AI99E15A0444	Reference Number:	153-401964341-1
Cylinder Number:	CC505035	Cylinder Volume:	146.0 CF
Laboratory:	124 - Tooele (SAP) - UT	Cylinder Pressure:	2015 PSIG
PGVP Number:	B72020	Valve Outlet:	590
Gas Code:	CH4,BALA	Certification Date:	Nov 23, 2020

Expiration Date: Nov 23, 2028

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
METHANE AIR	3.000 PPM Balance	2.978 PPM	G1	+/- 1.4% NIST Traceable	11/23/2020

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	15060115	CC351425	2.405 PPM METHANE/AIR	0.8%	Dec 01, 2022

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AMP0900119 CH4 LCH4	FTIR	Oct 29, 2020

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CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E02AI99E15A0448	Reference Number:	163-402525150-1
Cylinder Number:	ALM022488	Cylinder Volume:	146.0 CF
Laboratory:	124 - Pasadena (SG06) - TX	Cylinder Pressure:	2015 PSIG
PGVP Number:	A32022	Valve Outlet:	590
Gas Code:	CH4,BALA	Certification Date:	Sep 01, 2022

Expiration Date: Sep 01, 2030

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
METHANE AIR	5.000 PPM Balance	5.119 PPM	G1	+/- 0.9% NIST Traceable	09/01/2022

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	17060611	CC490324	4.986 PPM METHANE/AIR	+/-0.8%	Jul 27, 2023

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
C1-XL - (2) NICOLET iS50 AUP1910616	FTIR	Aug 18, 2022

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CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E02AI99E15A0361	Reference Number:	122-402351345-1
Cylinder Number:	ALM015720	Cylinder Volume:	146.0 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22022	Valve Outlet:	590
Gas Code:	CH4,BALA	Certification Date:	Feb 15, 2022

Expiration Date: Feb 15, 2030

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
METHANE AIR	8.500 PPM Balance	8.535 PPM	G1	+/- 1.0% NIST Traceable	02/15/2022

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	01011101	ALM064263	9.92 PPM METHANE/AIR	+/- 0.8%	Jul 24, 2025

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet iS50 AUP2010249 CH4	FTIR	Feb 02, 2022

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CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E02AI99E15A0443	Reference Number:	153-402073364-1
Cylinder Number:	ALM033726	Cylinder Volume:	146.0 CF
Laboratory:	124 - Tooele (SAP) - UT	Cylinder Pressure:	2015 PSIG
PGVP Number:	B72021	Valve Outlet:	590
Gas Code:	CH4,BALA	Certification Date:	Apr 05, 2021

Expiration Date: Apr 05, 2029

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
METHANE	30.00 PPM	29.85 PPM	G1	+/- 1.4% NIST Traceable	04/05/2021
AIR	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	08012010	K012692	49.60 PPM METHANE/AIR	0.6%	May 03, 2024

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AMP0900119 CH4 LCH4	FTIR	Mar 17, 2021

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CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E02AI99E15A0447	Reference Number:	153-402589006-1
Cylinder Number:	CC710101	Cylinder Volume:	146.0 CF
Laboratory:	124 - Tooele (SAP) - UT	Cylinder Pressure:	2015 PSIG
PGVP Number:	B72022	Valve Outlet:	590
Gas Code:	CH4,BALA	Certification Date:	Nov 11, 2022

Expiration Date: Nov 11, 2030

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
METHANE	50.00 PPM	49.56 PPM	G1	+/- 0.7% NIST Traceable	11/11/2022
AIR	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	08012010	K012692	49.60 PPM METHANE/AIR	0.6%	May 03, 2024

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet iS50 AUP2110269 CH4 LCH4	FTIR	Oct 27, 2022

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CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E02AI99E15A0113	Reference Number:	153-402412743-1
Cylinder Number:	CC741764	Cylinder Volume:	146.0 CF
Laboratory:	124 - Tooele (SAP) - UT	Cylinder Pressure:	2015 PSIG
PGVP Number:	B72022	Valve Outlet:	590
Gas Code:	CH4,BALA	Certification Date:	Apr 13, 2022

Expiration Date: Apr 13, 2030

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
METHANE	85.00 PPM	85.01 PPM	G1	+/- 0.7% NIST Traceable	04/13/2022
AIR	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	08012010	K012692	49.60 PPM METHANE/AIR	0.6%	May 03, 2024

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet iS50 AUP2110269 CH4 LCH4	FTIR	Mar 16, 2022

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CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E02AI99E15W0009	Reference Number:	48-402548335-1
Cylinder Number:	CC501066	Cylinder Volume:	146.0 CF
Laboratory:	124 - Los Angeles (SAP) - CA	Cylinder Pressure:	2015 PSIG
PGVP Number:	B32022	Valve Outlet:	660
Gas Code:	NO2,BALA	Certification Date:	Oct 06, 2022

Expiration Date: Oct 06, 2025

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NITROGEN DIOXIDE AIR	5.000 PPM Balance	5.369 PPM	G1	+/- 1.8% NIST Traceable	09/29/2022, 10/06/2022

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
GMIS	1534012021101	ND73001	4.947 PPM NITROGEN DIOXIDE/NITROGEN	+/- 1.6%	Jun 15, 2025
PRM	12409	D913660	15.01 PPM NITROGEN DIOXIDE/AIR	+/- 1.5%	Feb 17, 2023

The SRM, NTRM, PRM, or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
MKS FTIR NO2 018335821	FTIR	Sep 15, 2022

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INTERFERENCE RESPONSE TEST

Date of Test: 3/07/02 Name: Tim Hertel
 Analyzer: Type / Model: CO / Thermo Env. Model 48 Serial Number: 000010

Results:

Test Gas	Concentration, ppmv or %	Analyzer Output Response, ppmv	% of Span (1000 ppmv)
SO ₂	170.3 ppmv	0.5	0
O ₂	20.95%	0.5	0
*CO ₂	10%	0.1	0

*Used bottle of CO₂ at 100% concentration and diluted it with 100% N₂ to get a concentration of about 10% CO₂.

Bias Check:

Test Gas	Concentration, ppmv	Analyzer Output Response, ppmv	Bias Check (%)
**CO	512	512	0.0

**Used CO cylinder with 5% concentration and diluted it with 100% N₂ to get a concentration of about 500 ppmv CO.

Performance Specifications:

<u>Analyzer</u>	<u>EPA Ref. Method</u>	<u>Allowable Interference (% of analyzer span)</u>	<u>Gas Values To Introduce Into Analyzers (EPA Method 20)</u>
SO ₂	6C	7%	200±20 ppm
O ₂	6C	7%	20.9±1 percent
CO ₂	6C	7%	10±1 percent
CO	20	2%	500±50 ppm

Note: Concentration for SO₂ was slightly lower than listed; 170.3 ppmv was the closest concentration cylinder available at the time of the interference checks.

INTERFERENCE CHECK TEST

Form Name: Interference Check

Implementation Date: June XX, 2018

Document Number: 001AS-OPS-FM-X

Form Owner (Department): AQS - Operations

Revision Number: 0

Form Approval: *[Signature]*

Performed By (Signature):	<i>Peto Becker</i>
Date:	9/16/2022
Analyzer ID:	718 710
Analyzer Manufacturer:	CAI
Pollutant:	THC

Analyzer Span:	100
Analyzer Model Number:	CAI MHFID Series 700LX
Analyzer Serial Number:	2204032
Analyzer Sample Type (Wet/Dry):	Wet

Interferent	Concentration (Wet Analyzer)	Concentration (Dry Analyzer)	Analyzer Response to Interferent Gas (ppmv or %v) Solo	Analyzer Response to Interferent Gas (ppmv or %v) Mixed	Cylinder Serial #
N2	100 %v		0		5620WELSP
O2	4.945 %v			0	CC484548
CO2	19.53 %v			0.4	CC484548
H2O	2%		0.1		Ambient air
NOX	100.7 ppmv		0		CA07997
CO	110.1 ppmv		0.1		CC260987
NO2	50.71 ppmv		0.1		CC504691
SO2	90.81 ppmv		0		CC165593
H2S	10.09		0		CC346228
Sum of Responses			0.3	0.4	
Sum of Responses (% of span)			0.7		

Note: Ammonia scrubbers used for sources with potential ammonia emissions. Ammonia test not performed.

Note: Only one analyzer per model number needs tested for interference.

Note: Only the higher of the two test for each interferent is displayed (I.e. worst case - with or without pollutant gas of interest in the gas stream)

Note: For analyzers measuring >20ppmv, use 80-100 ppmv. For analyzers measuring <20ppmv

Nox, use a concentration representative for the span (I.e. 10 ppmv for span of 20 ppmv).

Acceptance Criteria: Sum of responses <=2.5% of calibration span

Alternative Acceptance Criteria: <=0.5ppmv for spans 5-10ppmv

Alternative Acceptance Criteria: <=0.2ppmv for spans <5ppmv



600 Series

FID THC Analyzer



CAI 600 Series FID Analyzers use Flame Ionization Detection to determine the total hydrocarbons in a gas sample.

Features

- Measures low ppm up to percent levels
- Heated version for maximum stability and “hot/wet” sampling
- Temperature-stabilized detector
- Electronic flow control
- Automatic fuel/air shutoff
- Automatic calibration and ranging
- Fast response time
- Output options: voltage, current, RS-232 using AK Protocol and TCP/IP, Modbus
- CE Mark and ETL listed – conform to UL STD 61010-1, Certified to CAN/CSA C22.2 STD 61010.1
- 1065-compliant configurations

Applications

- Continuous emissions monitoring (CEMS)
- Process gas analysis
- Vehicle emissions
- Engine testing
- EPA Method 25A compliance monitoring
- VOC abatement/scrubber efficiency

Options

- Methane/non-methane feature – allows measurement of both methane and non-methane hydrocarbons
- Internal sample pump
- Internal solenoid valves
- 19” rack-mount slides

600 FID

Total Hydrocarbon Analyzer

Method of Operation

The CAI 600 Series total hydrocarbon analyzer utilizes the principle of Flame Ionization Detection (FID) to determine the total hydrocarbons within a gaseous sample.

The heated version has a heated oven (191°C) that contains a burner and an optional heated pump. The small flame of the burner is elevated and sustained by the regulated flows of air and either pure hydrogen or a 40/60 mixture of hydrogen and (helium or nitrogen).

The split-ring detector contains two electrodes. One electrode is negatively polarized using a precision

power supply and the other electrode, known as the "collector," is connected to a high-impedance, low-noise electronic amplifier. The two electrodes establish an electrostatic field.

When a gaseous sample is introduced to the burner, it is ionized in the flame and the electrostatic field causes the charged particles (ions) to migrate to their respective electrodes. The ion migration creates a small current between the electrodes. This current is measured by the precision electrometer amplifier and is directly proportional to the hydrocarbon concentration of the sample.

Methane/Non-Methane Hydrocarbon Feature

The Methane/Non-Methane option allows measurement of both methane and non-methane hydrocarbons.

A solenoid valve diverts the sample through a "cutter" assembly that contains a heated catalyst that removes (cuts) the non-methane hydrocarbons, leaving the methane-only concentration. The removal

efficiency is 98% for Ethane and heavier hydrocarbons, with less than a 10% loss of methane.

The subtraction of the methane-only number from the total hydrocarbon number provides the concentration of non-methane hydrocarbons in the sample.

Specifications

Detector – Flame Ionization Detection

THC Ranges – Four user-definable ranges from 0-30 to 0-30,000 ppm as methane (contact CAI for ranges lower than 30 ppm)

Response Time – 90% Full Scale in 1.5 seconds

Resolution Detection Limit – 10 ppb carbon

Accuracy – Better than 2% of reading at or above 2.0 ppm

Precision – Better than 1% of Full Scale

Linearity – Better than 1% of Full Scale

Noise – Less than 1% of Full Scale

Zero and Span Drift – Less than 1% of Full Scale per 24 hours

O₂ Effect – Less than 3% with H₂/He fuel

CH₄ Effect – Less than 1.15 propane

Flow Control – Electronic proportional pressure controller

Sample Flow Rate – Typically 2.0 LPM (consult CAI for other flow rates)

Fuel Requirements – 40% H₂/60% He (120cc/min) or 100% H₂ (60cc/min)

Fuel Inlet Pressure – 25 psig

Air Requirements – Less than 1 ppm carbon purified or synthetic air (220cc/min for H₂/He; 300 cc/min for H₂)

Air Inlet Pressure – 25 psig

Fuel and Air Control – Electronic proportional pressure controller

Readout – As ppm CH₄ or C₃H₈

Outputs – Voltage or current, RS-232, TCP/IP and Modbus

Diagnostics – Oven Temperature, Burner Temperature, Cutter Temperature, Sample/Fuel/Air Pressures, Flow Rates and EPC Control Voltages

Special Features – Calculated NMHC, auto ranging

Ignition – Local, remote or automatic

Sample Temperature – Up to 191°C, non-condensing HFID; 50°C, non-condensing (FID)

Oven Temperature – 200°C HFID

Ambient Temperature – 5 to 40°C

Ambient Humidity – Less than 90% RH (non-condensing)

Warm-up Time – 1 hour (typical)

Fittings – ¼-inch tube

Power Requirements – 115/230 VAC, 50/60 Hz, 750 Watts max.

Dimensions – 5¼" H x 19" W x 23" D

Weight – 50 lbs.

Specifications subject to change without notice.



California Analytical Instruments
1312 West Grove Ave., Orange, CA 92865
Phone: 714-974-5560 • Fax: 714-921-2531
www.gasanalyzers.com

General Purpose Infrared Gas Analyzer

VIA-510

Application: CO, CO₂, NOx, SO₂, CH₄, C₂H₄, N₂O



This double beam infrared analyzer can measure a broad range of gases that absorb infrared energy. Its use of the synchronous rectification method makes the otherwise complex optical adjustment easier to perform. And thanks to the use of linearized coefficients processed by the CPU, linearity is improved to a wider range. The range ratio of 1 : 10 and 4 ranges are standard features, and a ratio of 1 : 20 is optionally available.

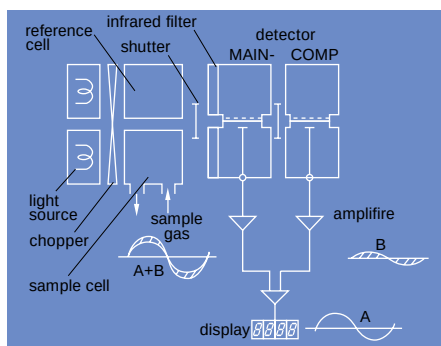
Principle

Double beam infrared absorptiometry

Infrared energy from the light sources is turned into intermittent light by the rotating chopper, passes through the measurement cells, and then enters the detector. Because part of the infrared energy is absorbed by the sample gas as it passes through the sample cell, the amount of light which enters the detector is different from that coming from the reference cell. The detector is equipped with an infrared filter designed to remove this infrared energy with a wavelength unnecessary for the measurement, and the component to be measured is sealed in the detector under certain conditions. Therefore, the detector detects only the absorption of the infrared energy of the specific wavelength matching the component, and changes in concentration of that component are measured.

The HORIBA <AS> detector* is equipped with a unique feature for measuring sample gases that contain particularly high levels of interfering substances. In the MAIN detector, the components to be measured plus any interfering substances are detected and in the COMP only the interfering substances are detected and measured, making it possible to compensate for any interference in the sample gas.

* MAIN and COMP detectors



Measuring range

Components	Standard range		High-sensitivity range
	Min.	Max.	Min.
CO	0 – 100 ppm	0 – 100%	0 – 50 ppm
CO ₂	0 – 100 ppm	0 – 100%	0 – 50 ppm
NOx	0 – 200 ppm	0 – 100%	0 – 100 ppm
SO ₂	0 – 100 ppm	0 – 100%	0 – 50 ppm
CH ₄	0 – 100 ppm	0 – 100%	0 – 50 ppm
C ₂ H ₄	0 – 200 ppm	0 – 100%	0 – 100 ppm

Choose the appropriate number of ranges and max. range ratio within the ranges shown above. Optional range ratio of 1 : 20 is available.

Specifications

Configuration: Desk top or 19" panel mount

Measuring method: Non-dispersive infrared analysis

Repeatability: ±0.5% F.S. (±1.0% F.S. for high-sensitivity range*)

Drift: ±1.0% F.S./day (±2.0% F.S./day for high-sensitivity range*)

Response time: 10 sec. (electrical)

Ambient conditions:

Temperature: 0 to 40°C

Humidity: 90% RH or less

Power: 100/115/220 V AC (to be specified), 50/60 Hz, 300 VA

Output signal: 0 – 1 V DC, 0 – 10 V DC, 0 – 16 or 4 – 20 mA DC, isolated

No. of ranges: 4 ranges

Display: LED digital display (effective 4 digits)

Operation gas: Not needed

Calibration gas:

Zero: N₂ or Air

Span: Span gas

Dimensions:

430 (w) × 132 (h) × 550 (d) mm

16.9 (w) × 5.2 (h) × 21.7 (d) in

Weight: 15 kg, 33 lb

Sample gas requirements

Dust: No dust

Mist: Completely removed

Pressure: More than 50 mm H₂O

Temperature: Ambient temperature

Moisture: 5°C saturation or below

Flow rate: 500 ml/min

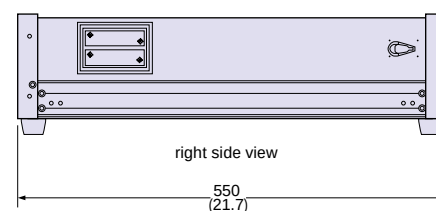
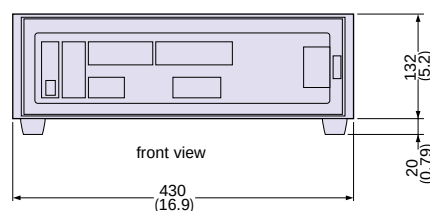
Exhaust gas: Discharged at ambient pressure

* Includes values above the high-sensitivity range but within the minimum standard range.

Dimensional Outlines

Unit: mm (in)

VIA-510, MPA-510, CLA 510SS



Appendix D.4

Accreditation Information/Certifications

June 13, 2024

Matt McCune
Regional Vice President - West
Montrose Air Quality Services, LLC
1631 East Saint Andrew Place
Santa Ana, California 92705
mmccune@montrose-env.com

Dear Matt McCune:

I am pleased to inform you that the California Air Resources Board (CARB) has renewed Montrose Air Quality Services, LLC as an Independent Contractor, by means of the enclosed Executive Order I-24-008. This approval will allow Montrose Air Quality Services, LLC. to perform CARB Methods 1, 2, 3, 4, 5, 6, 8, 17, 20, and 100 (CO, CO₂, NO_x, O₂, SO₂, THC), Visible Emission Evaluation, and U.S. Environmental Protection Agency Test Methods 201A, 202, and 205. The approval is valid through June 30, 2026, during which time additional audits of Montrose Air Quality Services, LLC's testing ability may be performed.

If you have questions or need further assistance, please contact the [Independent Contractor Program](#)¹.

Sincerely,

Walter Ham
Digitally signed by Walter Ham
Date: 2024.06.14 09:06:28
+0700

Walter Ham, Ph.D., Chief, Monitoring and Laboratory Division

Enclosure

¹ icp@arb.ca.gov

**State of California
Air Resources Board**

Executive Order I-24-008

**Relating to Independent Contractor Approval under
California Code of Regulations, title 17, section 91207 and following
Montrose Air Quality Services, LLC**

Whereas, the California Air Resources Board (CARB), pursuant to California Health and Safety Code, section 41512, has established the procedures contained in California Code of Regulations, title 17, section 91200 and following, to allow the use of independent testers for compliance tests required by CARB;

Whereas, it has been determined that Montrose Air Quality Services, LLC meets the requirements of CARB for performing CARB Test Methods 1, 2, 3, 4, 5, 6, 8, 17, 20, and 100 (CO, CO₂, NO_x, O₂, SO₂, THC), Visible Emission Evaluation (VEE), and U.S. Environmental Protection Agency (U.S. EPA) Test Methods 201A, 202, and 205 pursuant to Cal. Code Regs., title 17, section 91200 and following, when the following conditions are met:

1. Montrose Air Quality Services, LLC permanently marks or engraves an identification number on the body of each of its pitot tubes in accordance with section 2.1 of CARB Test Method 2;
2. Montrose Air Quality Services, LLC calibrates its differential pressure gauges after each test series in accordance with section 2.2 of CARB Test Method 2, and establishes and maintains a log of the calibrations;
3. Montrose Air Quality Services, LLC calibrates its temperature gauges in accordance with section 4.3 of CARB Test Method 2, and establishes and maintains a log of the calibrations;
4. Montrose Air Quality Services, LLC calibrates its metering system in accordance with section 5.3 of CARB Test Method 5, and establishes and maintains a log of the calibrations;
5. Montrose Air Quality Services, LLC acquires and uses a 5-mL burette in accordance with section 2.3.3 of CARB Test Method 6 and section 4.2 of CARB Test Method 20;
6. Montrose Air Quality Services, LLC acquires and uses 300 to 500 mL glass beakers in accordance with Section 6.2.2(c) of U.S. EPA Test Method 202;
7. Montrose Air Quality Services, LLC uses desiccant in accordance with section 3.3.2 of CARB Test Methods 5 and 17, section 7.2.2 of U.S. EPA Test Method 201A, and section 7.2.4 of U.S. EPA Test Method 202;
8. The person performing VEE passed MM104: Visible Emissions Evaluation (Online) and MM105: Visible Emissions Evaluation (In Class), and is currently certified to conduct VEE. Any recertification for VEE, following the initial passage of CARB's FOE, must be from a certifying body recognized by CARB at the time VEE is performed; and

Whereas, CARB Executive Officer, pursuant to California Health and Safety Code Section 39516, issued Executive Order G-02-008, delegating to the Chief of CARB Monitoring and Laboratory Division (MLD) the authority to approve independent testers in accordance with Cal. Code Regs., tit. 17, section 91200 and following.

Now, therefore, I, Walter Ham, Division Chief of MLD, order that Montrose Air Quality Services, LLC is granted approval from the date of execution of this Executive Order through June 30, 2026, to perform the test methods identified above subject to compliance with Cal. Code Regs., tit. 17, section 91200 and following.

Be it is further ordered that during the approved period the Executive Officer or his or her authorized representative may field audit one or more tests performed pursuant to this Executive Order for each test method identified above.

It is further ordered that Executive Order I-22-003 is superseded by this order.

Executed at Sacramento, California, this 14th day of June 2024.

Walter Ham, Ph.D., Chief
Monitoring and Laboratory Division

Accredited Air Emission Testing Body

A2LA has accredited

MONTROSE AIR QUALITY SERVICES

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this laboratory is accredited to perform testing activities in compliance with ASTM D7036:2004 - Standard Practice for Competence of Air Emission Testing Bodies.

Presented this 27th day of February 2024.



Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3925.01
Valid to February 28, 2026

This accreditation program is not included under the A2LA ILAC Mutual Recognition Arrangement.

CERTIFICATE OF COMPLETION

Nishad Patel

This document certifies that this individual has passed a comprehensive examination and is now a Qualified Individual (QI) as defined in Section 8.3 of ASTM D7036-04 for the following method(s):

Source Evaluation Society Group 1: EPA Manual Gas Volume and Flow Measurements and Isokinetic Particulate Sampling Methods

Certificate Number: 005-2022-35

Tate Strickler

Tate Strickler, VP – Quality Systems

DATE OF ISSUE: 08/24/2022

DATE OF EXPIRATION: 08/23/2027



MONTROSE
ENVIRONMENTAL

CERTIFICATE OF COMPLETION

Nishad Patel

This document certifies that this individual has passed a comprehensive examination and is now a Qualified Individual (QI) as defined in Section 8.3 of ASTM D7036-04 for the following method(s):

Source Evaluation Society Group 3: EPA Gaseous Pollutants Instrumental Sampling Methods

Certificate Number: 005-2022-33

Tate Strickler

Tate Strickler, VP – Quality Systems

DATE OF ISSUE:

07/25/2022

DATE OF EXPIRATION:

07/24/2027



MONTROSE
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CERTIFICATE OF COMPLETION

Nishad Patel

This document certifies that this individual has passed a comprehensive examination and is now a Qualified Individual (QI) as defined in Section 8.3 of ASTM D7036-04 for the following method(s):

Source Evaluation Society Group 4: EPA Hazardous Metals Measurement Methods

Certificate Number: 005-2021-29

Tate Strickler

Tate Strickler, VP – Quality Systems

DATE OF ISSUE:

7/16/21

DATE OF
EXPIRATION:

7/15/26



MONTROSE
ENVIRONMENTAL

Appendix D.5

Quality Assurance Program Summary and Equipment Calibration Schedule

QUALITY ASSURANCE PROGRAM SUMMARY AND CERTIFICATIONS

Montrose Air Quality Services, LLC (Montrose) ensures the quality and validity of its emission measurement and reporting procedures through a rigorous quality assurance (QA) program. The program is developed and administered by internal QA personnel and encompasses seven major areas:

1. Development and use of an internal QA manual
2. QA reviews of reports, laboratory work, and field testing
3. Equipment calibration and maintenance
4. Chain of custody
5. Continuous training
6. Knowledge of current test methods
7. Audit program

Each of these areas is discussed individually below.

Quality Assurance Manual. Montrose has prepared a QA Manual according to EPA guidelines and ASTM D-7036. The manual serves to document and formalize all of Montrose's QA efforts. The manual is constantly updated, and each employee involved in technical services for emission measurements is required to read, understand its contents, and sign a statement that all work they perform will conform to its practices. The manual includes details on the other seven QA areas discussed below.

QA Reviews. Montrose 's review procedure includes review of each source test report by the QA Manager or equivalent position including data input, calculations and averages, and report text. The laboratory manager or equivalent reviews all laboratory work, and the qualified individual on-site reviews all field work and data sheets.

The most important review is the one that takes place before a test program begins. The QA Manager works with testing personnel to prepare and review test protocols. Test protocol review includes selection of appropriate test procedures, evaluation of any interferences or other restrictions that might preclude use of standard test procedures, and evaluation and/or development of alternate procedures.

Equipment Calibration and Maintenance. The equipment used to conduct the emission measurements is maintained according to the manufacturer's instructions to ensure proper operation. In addition to the maintenance program, calibrations are carried out on each measurement device according to the schedule outlined below. The schedules for maintenance and calibrations are given in Tables A-1 and A-2.

Quality control checks are also conducted in the field for each test program. A partial list of checks made as part of each continuous analyzer system test series is included below as an example of the field QA procedures.

- Sample acquisition and conditioning system leak check
- 3-point analyzer calibrations (all analyzers)
- Complete system calibration check ("dynamic calibration" through entire sample system)

- Periodic analyzer calibration checks are conducted at the start and end of each test run. Any change between pre- and post-test readings are recorded.
- All calibrations are conducted using EPA Protocol gases certified by the manufacturer
- Calibration and continuous analyzer performance data are fully documented, and are included in each source test report

Chain of Custody. Montrose maintains full chain of custody documentation on all samples and data sheets. In addition to normal documentation of changes between field sample custodians, laboratory personnel, and field test personnel, Montrose documents every individual who handles any test component in the field (e.g., probe wash, impinger loading and recovery, filter loading and recovery, etc.).

Samples are stored in a locked area to which only laboratory personnel have access. Neither other Montrose employees nor cleaning crews have keys to this area.

Training. Personnel training is essential to ensure quality testing. Montrose has formal and informal training programs which may include some or all of the following:

1. Attendance at EPA-sponsored training courses
2. A requirement for all technicians to read, understand, and sign Montrose 's QA Manual
3. In-house training and Montrose meetings on a regular basis
4. Maintenance of training records
5. Administration of internal qualified individual (QI) tests for all methods performed
6. Participation in the Qualified Source Testing Individual (QSTI) program administered by the Source Evaluation Society (SES)

Knowledge of Current Test Methods. With the constant updating of standard test methods and the wide variety of emerging test methods, it is essential that any qualified source tester keep abreast of new developments. Montrose subscribes to services which provide updates on EPA reference methods, and on EPA and local agency rules and regulations. Additionally, source test personnel regularly attend and present papers at testing and emission-related seminars and conferences.

Audit Program. Montrose participates in the TNI Stationary Source Audit Sample (SSAS) audit program for all methods for which audit samples are available.

TABLE A-1
SAMPLING INSTRUMENTS AND
EQUIPMENT CALIBRATION SCHEDULE

Instrument Type	Frequency of Calibration ¹	Standard of Comparison or Method of Calibration	Acceptance Limits
Orifice Meter(large)	12 months	Calibrated dry test meter	± 2% of volume measured
Dry Gas Meter	6 months or when repaired	Calibrated dry test meter	± 2% of volume measured
Critical Orifice	6 months	Calibrated dry test meter	± 0.5% of average K'
S-Type Pitot (for use with EPA-type sampling train)	6 months	EPA Method 2	Geometric measurements within method-specified ranges
Vacuum Gauges	12 months	NIST-traceable gauge	≤ 1.0 in Hg difference
Temperature Measurement (thermocouples)	12 months	NBS mercury thermometer or NBS calibrated platinum RTD	±4 °F for <400 °F ± 1.5% for >400 °F
Temperature Readout Devices	6 months	Thermocouple simulator	± 2% full scale reading
Analytical Balance	12 months (check prior to each use)	NIST-traceable weights	± 0.5 mg of stated weight
Probe Nozzles	12 months	Nozzle diameter check	Range <± 0.10 mm for micrometer three measurements
Continuous Analyzers	Every field day, Depends upon use, frequency and performance	As specified by manufacturers' operating manuals, EPA NBS gases and/or reference methods	Satisfy all limits specified in operating specifications

¹ The tabulated calibration frequencies are minimum standards. In certain instances, calibrations are performed more frequently.

TABLE A-2
EQUIPMENT MAINTENANCE SCHEDULE
Based on Manufacturer's Specifications and Montrose's Experience

Equipment	Performance Requirement	Maintenance Interval ²	Corrective Action
Pumps	1. Absence of leaks 2. Ability to draw manufacturer required vacuum and flow	6 months	1. Visual inspection 2. Clean 3. Replace worn parts 4. Leak check
Flow Measuring Device	1. Free mechanical movement 2. Absence of malfunction	6 months	1. Visual inspection 2. Clean 3. Calibrate
Sampling Instruments	1. Absence of malfunction 2. Proper response to zero, span gas	As required by the manufacturer	As recommended by manufacturer
Mobile Van Sampling Systems	Absence of leaks	Depends on nature of use	1. Change filters 2. Leak check 3. Check for system contamination
Sampling Lines	Sample degradation less than 2%	After each test or test series	Blow filtered air through line until dry

² The tabulated maintenance intervals are minimum standards. In certain instances, maintenance is performed more frequently.

APPENDIX E

REGULATORY INFORMATION

Appendix E.1

Regulatory Correspondence

[External] - NST-9563(S1/2) 9564(S3/4): Final Test Plan: Silicon Valley Power - 2024 Compliance/RATA Testing, DVR Facility Units 1 and 2 (W005AS-042969-PP-1683)

Gloria Espena <GEspena@baaqmd.gov>

Wed 7/31/2024 6:28 PM

To: Dan Duncan <dduncan@montrose-env.com>; Marco Hernandez <MHernandez@baaqmd.gov>
Cc: MMeslo@SantaClaraCA.gov <MMeslo@SantaClaraCA.gov>; Sourcetest <Sourcetest@baaqmd.gov>

 2 attachments (2 MB)

W005AS-042969-PP-1683 SVP DVR Compliance and RATA Test Protocol red.pdf; Contractor ST Supplemental Form.docx;

NST-9563(S1/2) 9564(S3/4) has been assigned the 7/15-19/24 work reference below.

Also, we've introduced a new, supplemental form to be included when reports are submitted. It's just a sheet intended to help us with processing reports and prioritizing report review. The intention of the email is not to request additional testing. Please complete and submit the attached "**Contractor ST Supplemental Form**" with the final test report.

NST number(s) that are assigned for each source test notifications are for inner-office tracking purposes only, not an approval of the test plan. (For source testing methodologies please review permit conditions, BAAQMD Regulations and CFR, accordingly). Future notifications and report submittals should be made to **GEspena@baaqmd.gov** and cc: **MHernandez@baaqmd.gov**, **Sourcetest@baaqmd.gov**.

If you have other questions, please contact Marco Hernandez at mhernandez@baaqmd.gov.

Thank you,

Gloria M. Espena

Meteorology & Measurements
Source Test Section & Performance Evaluation Group
The Bay Area Air Quality Management District
375 Beale Street, Ste. 600 | San Francisco, CA 94105
Ofc (415) 749-4725 | Fax (510) 758-3087
gespena@baaqmd.gov | www.baaqmd.gov



From: Dan Duncan <dduncan@montrose-env.com>
Sent: Wednesday, June 26, 2024 10:44 AM
To: Gloria Espena <GEspena@baaqmd.gov>; Marco Hernandez <MHernandez@baaqmd.gov>
Cc: MMeslo@SantaClaraCA.gov
Subject: Final Test Plan: Silicon Valley Power - 2024 Compliance/RATA Testing, DVR Facility Units 1 and 2 (W005AS-042969-PP-1683)

CAUTION: This email originated from outside of the BAAQMD network. Do not click links or open attachments unless you recognize the sender and know the content is safe.
--

Good Morning

The final test plan for Silicon Valley Power - 2024 Compliance/RATA Testing, DVR Facility Units 1 and 2 (W005AS-042969-PP-1683) is attached. If you have any questions or concerns, please let us know.

Thank you,

Dan Duncan

Reporting Hub Manager

Montrose Environmental

Office: +1-925-680-4358 | Mobile: +1-925-408-5934

dduncan@montrose-env.com | www.montrose-env.com

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Appendix E.2

Permit Excerpts



This document does not permit the holder to violate any BAAQMD regulation or any other law.

PERMIT EXPIRATION DATE

November 01, 2024



Owner Mailing Contact:

Donald Von Raesfeld Power Plant
850 DUANE AVE
Santa Clara , CA 95054-3410
Attn: Nick Van Haeften



Facility ID: 14991

Donald Von Raesfeld Power Plant
850 Duane Avenue
Santa Clara , CA 95054-5054

Owning Entity:

Donald Von Raesfeld Power Plant



DEVICES

This document serves as your Permit to Operate the following:

- S1 Combustion Gas Turbine #1**
Combustion / Turbine / Electric Generation; 473.7 MMBTU/Hr Electrical Generation, Natural gas Permitted
- Authorized emissions flows from this device:
S1 (Combustion /Turbine /Electric Generation) --> S2 (Combustion /Boiler/Heater /Electric Generation) -->
A2 (Organic Control /Thermal Oxidizer/Catalytic Oxidizer/Afterburner /Catalytic) --> A1 (NOx Control /Selective Catalytic Reduction (SCR)) --> P1 (Emission Point 1)
- S2 Heat Recovery Steam Generator#1Low emission duct Burner**
Combustion / Boiler/Heater / Electric Generation; Electrical Generation, 136.9 MMBTU/Hr, Natural gas Permitted
- Authorized emissions flows from this device:
S2 (Combustion /Boiler/Heater /Electric Generation) --> A2 (Organic Control /Thermal Oxidizer/Catalytic Oxidizer/Afterburner /Catalytic) --> A1 (NOx Control /Selective Catalytic Reduction (SCR)) --> P1 (Emission Point 1)
- S3 Combustion Gas Turbine #2**
Combustion / Turbine / Electric Generation; 473.7 MMBTU/Hr Electrical Generation, Natural gas Permitted
- Authorized emissions flows from this device:
S3 (Combustion /Turbine /Electric Generation) --> S4 (Combustion /Boiler/Heater /Electric Generation)
S4 (Combustion /Boiler/Heater /Electric Generation) --> A4 (Organic Control /Thermal Oxidizer/Catalytic Oxidizer/Afterburner /Catalytic) --> A3 (NOx Control /Selective Catalytic Reduction (SCR)) --> P2 (Emission Point 2)
- S4 Heat Recovery Steam Generator#2Low emission duct Burner**
Combustion / Boiler/Heater / Electric Generation; Electrical Generation, 136.9 MMBTU/Hr, Natural gas Permitted
- Authorized emissions flows from this device:
S4 (Combustion /Boiler/Heater /Electric Generation)
S4 (Combustion /Boiler/Heater /Electric Generation) --> A4 (Organic Control /Thermal Oxidizer/Catalytic Oxidizer/Afterburner /Catalytic) --> A3 (NOx Control /Selective Catalytic Reduction (SCR)) --> P2 (Emission Point 2)



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PERMIT EXPIRATION DATE

November 01, 2024

S5 Water Cooling Tower, 3 Cell 34,980 gpm

Miscellaneous Process / Cooling / Tower
Exempt

S6 Temporary Combustion Gas Turbine (DVR-191-555)

Combustion / Turbine / Electric Generation; 473.7 MMBTU/Hr Electrical Generation, Natural gas
Permitted

Authorized emissions flows from this device:

S6 (Combustion /Turbine /Electric Generation) --> S2 (Combustion /Boiler/Heater /Electric Generation) -->
A2 (Organic Control /Thermal Oxidizer/Catalytic Oxidizer/Afterburner /Catalytic) --> A1 (NOx Control
/Selective Catalytic Reduction (SCR)) --> P1 (Emission Point 1)

The following pollution abatement devices are required under this Permit:

A1	NOx Control / Selective Catalytic Reduction (SCR)
A2	Organic Control / Thermal Oxidizer/Catalytic Oxidizer/Afterburner / Catalytic
A3	NOx Control / Selective Catalytic Reduction (SCR)
A4	Organic Control / Thermal Oxidizer/Catalytic Oxidizer/Afterburner / Catalytic

The operating parameters described above are based on information supplied by the permit holder and may differ from the limits set forth in the attached conditions of this Permit To Operate. The limits of operation in the permit conditions are not to be exceeded. Exceeding these limits is considered a violation of BAAQMD and is subject to enforcement action.



PERMIT CONDITIONS

The devices described in this document are subject to the following permit conditions:

- S1** Subject to Condition #: **24252**
S2 Subject to Condition #: **24252**
S3 Subject to Condition #: **24252**
S4 Subject to Condition #: **24252**
S6 Subject to Condition #: **24252**

Condition #: 24252 S1, S2, S3, S4, S6

Condition #24252

For S-1 Gas Turbine #1, S-2 HRSG Duct Burner #1,
S-3 Gas Turbine #2, S-4 HRSG Duct Burner #2,
S-6 Temporary Gas Turbine

Definitions:

BACT: Best Available Control Technology



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PERMIT EXPIRATION DATE

November 01, 2024

Clock Hour: Any continuous 60 minute period beginning on the hour

Calendar Day: Any continuous 24 hour period beginning at 12:00 AM or 0000 hours

Year: Any consecutive twelve month period of time

Heat Input: All heat inputs refer to the heat input at the higher heating value (HHV) of the fuel

HHV: Higher Heating Value in BTU/scf (natural gas)

HRSG: Heat recovery steam generator

Rolling 3 hour period: Any consecutive three hour period, not including startup or shutdown periods

Firing Hours: Period of time during which fuel is flowing to a unit, measured in minutes

MMBTU: Million British Thermal Units

Startup Mode: The lesser of the first 180 minutes of continuous fuel flow to the Gas Turbine after fuel flow is initiated or the period of time from Gas Turbine fuel flow initiation until the Gas Turbine achieves two consecutive CEM data points in compliance with the emission concentration limits of Parts 20(a) and 20(c).

Shutdown Mode: The lesser of the 60 minute period immediately prior to the termination of fuel flow to the Gas Turbine or the period of time from non compliance with any requirement listed in Parts 20(a) and 20(c) until termination of fuel flow to the Gas Turbine.

Precursor Organic Compounds (POCs): Any compound of carbon, excluding methane, ethane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate.

NOX: Nitrogen oxides

PM10: Particulate matter

CO: Carbon monoxide

SO2: Sulfur dioxide

NH3: Ammonia

Specified PAHs: The polycyclic aromatic hydrocarbons (PAHs) listed below shall be considered to be Specified PAHs for these permit conditions. Any emission limits for Specified PAHs refer to the sum of the emissions for all six of the following compounds:

- Benzo[a]anthracene
- Benzo[b]fluoranthene
- Benzo[k]fluoranthene
- Benzo[a]pyrene
- Dibenzo[a,h]anthracene

October 13, 2023

375 Beale Street, Suite 600 - San Francisco, CA 94105 - WWW.BAAQMD.GOV

Page 3 of 14
FID 14991



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Indeno[1,2,3-cd]pyrene

Corrected Concentration: The concentration of any pollutant (generally NO_x, CO, POC, or NH₃) corrected to a standard stack gas oxygen concentration. For emission points P-1 (combined exhaust of S-1 Gas Turbine and S-2 HRSG duct burners) and P-2 (combined exhaust of S-3 Gas Turbine and S-4 HRSG duct burners), the standard stack gas oxygen concentration is 15% O₂ by volume on a dry basis.

Commissioning Activities: Deleted. Commissioning period completed.

Commissioning Period: Deleted. Commissioning period completed.

CEC CPM: California Energy Commission Compliance Program Manager

District: Bay Area Air Quality Management District

In addition to any applicable requirements, the Owner/Operator shall comply with the following conditions for the Gas Turbines (S-1 & S-3), the Heat Recovery Steam Generators (HRSGs; S-2 & S-4), A-1 & A-3 (SCR Systems) and A-2 & A-4 (Oxidation Catalysts):

1. Deleted. Commissioning period completed
2. Deleted. Commissioning period completed
3. Deleted. Commissioning period completed
4. Deleted. Commissioning period completed
5. Deleted. Commissioning period completed
6. Deleted. Commissioning period completed
7. Deleted. Commissioning period completed
8. Deleted. Commissioning period completed
9. Deleted. Commissioning period completed
10. Deleted. Commissioning period completed
11. Deleted. Commissioning period completed
12. Deleted. Commissioning period completed
13. The Owner/Operator shall fire S-1, S-2, S-3 and S-4 exclusively with natural gas. [Basis: BACT for SO₂ and PM₁₀]
14. The Owner/Operator shall not operate the units such that the combined heat input rate to each power train consisting of a Gas Turbine and its associated HRSG (S-1 & S-2 and S-3 & S-4) exceeds 610.6 MM BTU (HHV) per hour, averaged over any rolling 3 hour period. [Basis: BACT and Cumulative Increase]
15. The Owner/Operator shall not operate the units such that the combined heat input rate to each power train consisting of a Gas Turbine and its associated HRSG (S-1 & S-2 and S-3 & S-4) exceeds 13,559.2 MM BTU (HHV) per calendar day. [Basis: BACT and Cumulative Increase]
16. The Owner/Operator shall not operate the units such that the combined cumulative heat input rate for S-1, S-2, S-3 and S-4 exceeds 8,682,544 MM BTU (HHV) per year. [Basis: Offsets and Cumulative Increase]

October 13, 2023

375 Beale Street, Suite 600 - San Francisco, CA 94105 - WWW.BAAQMD.GOV

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PERMIT EXPIRATION DATE

November 01, 2024

17. The Owner/Operator shall not fire S-2 or S-4 unless its associated S-1 or S-3, respectively, is in operation.
[Basis: BACT for NOx]
18. The Owner/Operator shall ensure that the S-1 and S-2 are abated by the properly operated and properly maintained A-1 whenever fuel is combusted at those sources and the A-1 SCR catalyst bed has reached minimum operating temperature. [Basis: BACT for NOx]
19. The Owner/Operator shall ensure that the S-3 and S-4 are abated by the properly operated and properly maintained A-3 whenever fuel is combusted at those sources and the A-3 SCR catalyst bed has reached minimum operating temperature. [Basis: BACT for NOx]
20. The Owner/Operator shall ensure that S-1, S-2, S-3 and S-4 comply with requirements (a) through (i) under all operating scenarios, including duct burner firing mode and power augmentation mode. Requirements (a) through (i) do not apply during start-up or shutdown mode.
[Basis: BACT and Regulation 2, Rule 5]
- a. NOx emission concentration at emission points P-1 and P-2 each shall not exceed 2.0 ppmv, on a dry basis, corrected to 15% O₂, averaged over any 1-hour period. [Basis: BACT for NOx]
 - b. NOx mass emissions (calculated as NO₂) at P-1 (the combined exhaust point for S-1 and S-2 after abatement by A-1) shall not exceed 4.49 pounds per hour. Nitrogen oxide mass emissions (calculated as NO₂) at P-2 (the combined exhaust point for S-3 and S-4 after abatement by A-3) shall not exceed 4.49 pounds per hour. [Basis: BACT for NOx]
 - c. CO emission concentration at P-1 and P-2 each shall not exceed 4.0 ppmv, on a dry basis, corrected to 15% O₂, averaged over any rolling 3 hour period. [Basis: BACT for CO]
 - d. CO mass emissions at P-1 and P-2 each shall not exceed 5.47 pounds per hour, averaged over any rolling 3 hour period. [Basis: BACT for CO]
 - e. * NH₃ emission concentrations at P-1 and P-2 each shall not exceed 10 ppmv, on a dry basis, corrected to 15% O₂, averaged over any rolling 3 hour period. This NH₃ emission concentration shall be verified by the continuous recording of the NH₃ injection rate to A-1 and A-3. The correlation between the gas turbine and HRSG heat input rates, A-1 and A-3 NH₃ injection rates, and corresponding NH₃ emission concentration at emission points P-1 and P-2 shall be determined in accordance with Part 30.
[Basis: TRMP for NH₃]
 - f. POC mass emissions (as CH₄) at P-1 and P-2 each shall not exceed 2.0 ppmv, on a dry basis, corrected to 15% O₂, averaged over any rolling 3 hour period. [Basis: BACT for POC]
 - g. POC mass emissions (as CH₄) at P-1 and P-2 each shall not exceed 1.56 pounds per hour or 0.00255 lb/MM BTU of natural gas fired. [Basis: BACT for POC]
 - h. SO₂ mass emissions at P-1 and P-2 each shall not exceed 0.41 pounds per hour or 0.000676 lb/MM BTU of

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natural gas fired. [Basis: BACT for SO₂]

- i. PM₁₀ mass emissions at P-1 and P-2 each shall not exceed 3.0 pounds per hour when the HRSG duct burners are not in operation. PM₁₀ mass emissions at P-1 and P-2 each shall not exceed 4.3 pounds per hour when HRSG duct burners are in operation.

[Basis: BACT for PM₁₀]

- j. Compliance with the hourly NO_x emission limitations specified in Part 20(a) and 20(b), at both P1 and P2, shall not be required during short-term excursions, limited to a cumulative total of 160 hours per rolling 12 month period. Short-term excursions are defined as 15 minute periods designated by the Owner/Operator that are the direct result of transient load conditions, not to exceed four consecutive 15 minute periods, when the 15 minute average NO_x concentration exceeds 2.0 ppmv, dry @ 15% O₂. Examples of transient load conditions include, but are not limited to the following:

- 1) Initiation/shutdown of combustion turbine inlet air cooling
- 2) Initiation/shutdown of combustion turbine water mist or steam injection for power augmentation
- 3) Rapid combustion turbine load changes
- 4) Initiation/shutdown of HRSG duct burners
- 5) Provision of Ancillary Services and Automatic Generation Control at the direction of the California Independent System Operator (Cal-ISO)

The maximum 1 hour average NO_x concentration for short term excursions at P-1 and P-2 each shall not exceed 5 ppmv, dry @ 15% O₂ or 11.2 lb/hr (2.80 lb per 15 minute period). All emissions during short term excursions shall be included in all calculations of hourly, daily and annual mass emission rates as required by this permit.

21. The Owner/Operator shall ensure that the regulated air pollutant mass emission rates from S-1 or S-3 during startup or shutdown mode does not exceed the respective limits established below.

	Startup (lb/startup)
• Nitrogen Oxides (as NO ₂)	41
• Carbon Monoxide (CO)	35
• POC (as CH ₄)	2
• Particulate Matter (PM ₁₀)	3

	Shutdown (lb/shutdown)
• Nitrogen Oxides (as NO ₂)	8
• Carbon Monoxide (CO)	10
• POC (as CH ₄)	1
• Particulate Matter (PM ₁₀)	3

22. The Owner/Operator shall not allow total combined emissions from S-1, S-2, S-3 and S-4 including emissions generated during startup mode, shutdown mode and transient excursions to exceed the following limits during any calendar day:

- a. 358.9 pounds of NO_x (as NO₂) per day

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- b. 377.9 pounds of CO per day
- c. 71.9 pounds of POC (as CH₄) per day
- d. 197.8 pounds of PM₁₀ per day
- e. 18.2 pounds of SO₂ per day

23. The Owner/Operator shall not allow cumulative combined emissions from S-1, S-2, S-3 and S-4 including emissions generated during startup mode, shutdown mode and transient excursions to exceed the following limits during any consecutive twelve month period:

- a. 43.3 tons of NO_x (as NO₂) per year
- b. 48.4 tons of CO per year
- c. 11.2 tons of POC (as CH₄) per year
- d. 28.1 tons of PM₁₀ per year
- e. 2.93 tons of SO₂ per year

.[Basis: Offsets and Cumulative Increase]

24. Deleted. Redundant requirement to Part 15.

25. Deleted. Redundant requirement to Part 16.

26. * The Owner/Operator shall not allow the maximum projected annual toxic air contaminant emissions (per Parts 29 and 33) from the Gas Turbines and HRSGs (S-1 & S-2 and S-3 & S-4) combined to exceed the following limits:

Acetaldehyde	1,155 pounds per year
Formaldehyde	2,706 pounds per year
Benzene	112 pounds per year
Specified PAHs	0.71 pounds per year

unless the following requirement is satisfied:

The Owner/Operator shall perform a health risk assessment to determine the total facility risk using the emission rates determined by District approved source testing and the most current Bay Area Air Quality Management District approved procedures and unit risk factors in effect at the time of the analysis. This risk analysis shall be submitted to the District and the CEC CPM within 60 days of the source test date. The Owner/Operator may request that the District and the CEC CPM revise the carcinogenic compound emission limits specified above. If the Owner/Operator demonstrates to the satisfaction of the Air Pollution Control Officer (APCO) that these revised emission limits will not result in a significant cancer risk, the District and the CEC CPM may, at their discretion, adjust the carcinogenic compound emission limits listed above. [Basis: Regulation 2, Rule 5]

27. The Owner/Operator shall demonstrate compliance with Parts 14 through 17, 20(a) through 20(d), 21, 22(a), 22(b), 23(a), and 23(b) by using properly operated and maintained continuous monitors (during all hours of operation including startup and shutdown mode) for all of the following parameters:

- a. Firing Hours and Fuel Flow Rates for each of the following sources: S-1 & S-2 combined, S-3 & S-4 combined.
- b. Oxygen (O₂) concentration, nitrogen oxides (NO_x)

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concentration, and carbon monoxide (CO)
concentration at each of the following exhaust
points: P-1 and P-2.

- c. Ammonia injection rate at A-1 and A-3 SCR Systems
- d. Any transient load conditions recorded in Part 27(a)
above and as described in 20(j) shall be fully
characterized and recorded on a quarter hour (15
minute period) basis.

The Owner/Operator shall record all of the above
parameters every 15 minutes (excluding normal
calibration periods) and shall summarize all of the
above parameters for each clock hour. For each calendar
day, the Owner/Operator shall calculate and record the
total firing hours, the average hourly fuel flow rates,
and pollutant emission concentrations.

The Owner/Operator shall use the parameters measured
above and District approved calculation methods to
calculate the following parameters:

- e. Heat Input Rate for each of the following
sources: S-1 & S-2 combined and S-3 & S-4 combined.
- f. Corrected NOx concentration, NOx mass emission rate
(as NO2), corrected CO concentration, and CO mass
emission rate at each of the following exhaust
points: P-1 and P-2.

For each source, source grouping, or exhaust point, the
Owner/Operator shall record the parameters specified in
Parts 27(e) and 27(f) at least once every 15 minutes
(excluding normal calibration periods). As specified
below, the Owner/Operator shall calculate and record the
following data:

- g. Total Heat Input Rate for every clock hour and the
average hourly Heat Input Rate for every rolling 3
hour period.
- h. On an hourly basis, the cumulative total Heat Input
Rate for each calendar day for the following: each
Gas Turbine and associated HRSG combined and all
four sources (S-1, S-2, S-3, and S-4) combined.
- i. The average NOx mass emission rate (as NO2) and
corrected NOx emission concentration for every clock
hour and for every quarter hour (15 minute) period.
- j. The average CO mass emission rate and corrected CO
emission concentration for every clock hour and for
every rolling 3 hour period.
- k. On an hourly basis, the cumulative total NOx mass
emissions (as NO2) and the cumulative total CO mass
emissions, for each calendar day for each Gas
Turbine and associated HRSG combined, and all four
sources (S-1, S-2, S-3, and S-4) combined.
- l. For each calendar day, the average hourly Heat Input
Rates, Corrected NOx emission concentration, NOx
mass emission rate (as NO2), corrected CO emission
concentration, and CO mass emission rate for each
Gas Turbine and associated HRSG combined
- m. On a daily basis, the cumulative total NOx mass
emissions (as NO2) and cumulative total CO mass
emissions, for the previous consecutive twelve month
period for all four sources (S-1, S-2, S-3, and S-4)
combined.

.[Basis: Regulation 1-520.1, 9-9-501, BACT, NSPS,
Cumulative Increase]



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28. To demonstrate compliance with Parts 20(f), 20(g), 20(h), 20(i), 21, 22(c) through 22(e), and 23c through 23(e), the Owner/Operator shall calculate and record on a daily basis, the POC mass emissions, PM10 mass emissions (including condensable particulate matter), and SO2 mass emissions from each power train. The Owner/Operator shall use the actual Heat Input Rates calculated pursuant to Part 27, actual Startup Mode Times, actual Shutdown Mode Times, and CEC and District approved emission factors to calculate these emissions. The calculated emissions shall be presented as follows:
- For each calendar day, POC, PM10, and SO2 emissions shall be summarized for: each power train (Gas Turbine and its respective HRSG combined) and all four sources (S-1, S-2, S-3, and S-4) combined.
 - On a daily basis, the cumulative total POC, PM10, and SO2 mass emissions, for each year for all four sources (S-1, S-2, S-3, and S-4) combined.
- [Basis: Offsets, Cumulative Increase]

29. * To demonstrate compliance with Part 26, the Owner/Operator shall calculate and record on an annual basis the maximum projected annual emissions of: acetaldehyde, formaldehyde, benzene, and Specified PAHs. Maximum projected annual emissions shall be calculated using the maximum Heat Input Rate of 8,682,544 MMBTU/year and the highest emission factor (pounds of pollutant per MMBTU of heat input) determined by any District approved source test of the S-1 and S-3 Gas Turbines and/or S-2 and S-4 Heat Recovery Steam Generators. If the highest emission factor for a given pollutant occurs during minimum-load turbine operation, a reduced annual heat input rate may be utilized to calculate the maximum projected annual emissions to reflect the reduced heat input rates during gas turbine startup and minimum-load operation. The reduced annual heat input rate shall be subject to District review and approval. [Basis: Regulation 2, Rule 5]

30. * Within 60 days of start-up, the Owner/Operator shall conduct District approved source tests on exhaust point P-1 and P-2 to determine the corrected NH3 emission concentration to determine compliance with Part 20(e). The source test shall determine the correlation between the heat input rates of each gas turbine (S-1 and S-3) and associated HRSG (S-2 and S-4), A-1, and A-3 SCR System ammonia injection rates, and the corresponding NH3 emission concentrations at emission point P-1 and P-2. The source tests shall be conducted over the expected operating range of the turbine and HRSG (including, but not limited to, minimum and full load, and SPRINT power augmentation mode) to establish the range of ammonia injection rates necessary to achieve required NOx emission reductions while maintaining ammonia slip levels. Source testing shall be repeated on an annual basis thereafter. Ongoing compliance with Part 20(e) shall be demonstrated through calculations of corrected ammonia concentrations based upon the source test correlations and continuous records of ammonia injection rate. Source test results shall be submitted to the District and the CEC CPM within 90 days of

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conducting the tests. [Basis: Regulation 2, Rule 5]

31. Within 90 days of start-up and on an annual basis thereafter, the Owner/Operator shall conduct a District approved source test on exhaust points P-1 and P-2 while each Gas Turbine and associated Heat Recovery Steam Generator are operating at maximum load (including SPRINT power augmentation mode) to determine compliance with Parts 20(a), (b), c, (d), (f), (g), (h), and (i) while each Gas Turbine and associated Heat Recovery Steam Generator are operating at minimum load to determine compliance with Parts 20c and (d), and to verify the accuracy of the continuous emission monitors required in Part 27. The Owner/Operator shall test for (at a minimum): water content, stack gas flow rate, oxygen concentration, precursor organic compound concentration and mass emissions, nitrogen oxide concentration and mass emissions (as NO₂), carbon monoxide concentration and mass emissions, sulfur dioxide concentration and mass emissions, methane, ethane, and PM₁₀ emissions including condensable particulate matter. Source test results shall be submitted to the District and the CEC CPM within 60 days of conducting the tests. [Basis: BACT]

32. The Owner/Operator shall obtain approval for all source test procedures from the District's Source Test Section and the CEC CPM prior to conducting any tests. The Owner/Operator shall comply with all applicable testing requirements for continuous emission monitors as specified in Volume V of the District's Manual of Procedures. The Owner/Operator shall notify the District's Source Test Section and the CEC CPM in writing of the source test protocols and projected test dates at least 7 days prior to the testing date(s). As indicated in Part 31 above, the Owner/Operator shall measure and include the contribution of condensable PM (back half) to the total PM₁₀ emissions. However, the Owner/Operator may propose alternative measuring techniques to measure condensable PM such as the use of a dilution tunnel or other appropriate method used to capture semi-volatile organic compounds. Source test results shall be submitted to the District and the CEC CPM within 60 days of conducting the tests. [Basis: BACT]

33. * Within 90 days of start-up, the Owner/Operator shall conduct a District-approved source tests on exhaust point P-1 and P-2 while the Gas Turbine and associated Heat Recovery Steam Generator are operating at maximum allowable operating rates to demonstrate compliance with Part 26. [Basis: TRMP]

34. The Owner/Operator shall submit all reports (including, but not limited to monthly CEM reports, monitor breakdown reports, emission excess reports, equipment breakdown reports, etc.) as required by District Rules or Regulations and in accordance with all procedures and time limits specified in the Rule, Regulation, Manual of Procedures, or Enforcement Division Policies & Procedures Manual. [Basis: Regulation 2-6-502]

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35. The Owner/Operator shall maintain all records and reports on site for a minimum of 5 years. These records shall include but are not limited to: continuous monitoring records (firing hours, fuel flows, emission rates, monitor excesses, breakdowns, etc.), source test and analytical records, natural gas sulfur content analysis results, emission calculation records, records of plant upsets and related incidents. The Owner/Operator shall make all records and reports available to District and the CEC CPM staff upon request. [Basis: Regulation 2-6-501]
36. The Owner/Operator shall notify the District and the CEC CPM of any violations of these permit conditions. Notification shall be submitted in a timely manner, in accordance with all applicable District Rules, Regulations, and the Manual of Procedures. Notwithstanding the notification and reporting requirements given in any District Rule, Regulation, or the Manual of Procedures, the Owner/Operator shall submit written notification (facsimile is acceptable) to the Enforcement Division within 96 hours of the violation of any permit condition. [Basis: Regulation 2-1-403]
37. * The Owner/Operator shall ensure that the stack height of emission points P-1 and P-2 is each at least 95 feet above grade level at the stack base. [Basis: Regulation 2, Rule 5]
38. Deleted Authority to Construct Condition
39. Deleted Authority to Construct Condition
40. Deleted Authority to Construct Condition
41. Deleted Authority to Construct Condition
42. Deleted Authority to Construct Condition
43. Deleted Authority to Construct Condition
44. The Owner/Operator shall comply with the continuous emission monitoring requirements of 40 CFR Part 75. [Basis: Regulation 2, Rule 7]
45. The Owner/Operator shall maintain records specifying the maximum sulfur content of the natural gas combusted at S-1, S-2, S-3 and S-4 is 20 grains or less. These records shall be in the form of a current valid purchase contract, tariff sheet, or transportation contract or equivalent as deemed by the BAAQMD. [Basis: 40 CFR 60.334(h)(3)(i)]

Conditions for S-6, Temporary Gas Turbine:

46. The Owner/Operator shall only operate S-6 on a temporary basis when S-1 or S-3 is being repaired or maintained (Basis: Cumulative Increase; Offsets)



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47. The Owner/Operator shall not operate S-6 when both S-1 and S-3 are in operation. (Basis: Cumulative Increase; Offsets)
48. The Owner/Operator shall operate S-6 in compliance with all regulatory requirements and permit conditions that apply to S-1 or S-3, except the source testing frequency specified in Part 31. (Basis: Cumulative Increase, Offsets; BACT)
49. Within 60 days of S-6 initial start-up and at least once every 8760 hours of S-6 operation thereafter, the Owner/Operator shall conduct a District approved source test on exhaust points P-1 or P-2 while S-6 and associated Heat Recovery Steam Generator are operating at maximum load (including SPRINT power augmentation mode) to determine compliance with Parts 20(a),(b),(c),(d),(f),(g)(h) and (i) while S-6 and associated Heat Recovery Steam Generator are operating at minimum load to determine compliance with Parts 20(c) and (d), and to verify the accuracy of the continuous emission monitors required in Part 27. The Owner/Operator shall test for (at a minimum): water content, stack gas flow rate, oxygen concentration, precursor organic compound concentration and mass emissions, nitrogen oxide concentration and mass emissions (as NO₂), carbon monoxide concentration and mass emissions, sulfur dioxide concentration and mass emissions, methane, ethane, and PM₁₀ emissions including condensable particulate matter. Source test results shall be submitted to the District and the CEC CPM within 60 days of conducting the tests. [Basis: BACT]
50. The Owner/Operator shall include all emissions from S-6 as part of S-1 or S-3 total emissions to demonstrate compliance with all regulatory requirements and permit conditions that apply to S-1 or S-3. (Basis: Cumulative Increase; Offset)
51. The Owner/Operator shall notify the District's Director of Compliance and Enforcement Division, in writing, no later than 24 hours of putting S-6 in service and taking S-6 out of service. The notification shall include:
- a. Plant number
 - b. The date when S-6 is put in service or taken out of service;
 - c. A brief description of the reason(s) to put S-6 in service.
52. The Owner/Operator shall maintain the following records on site for a minimum of 5 years and make them available to District and the CEC CPM staff upon request:
- a. Identify the turbine(s) in operation and in source tests by their serial number(s) for S-1 (DVR 191-498), S-3 (DVR 191-502), and S-6 (DVR 191-555).
 - b. The starting and ending dates and times when S-1 or S-3 is being taken out of service for repair, inspection, maintenance, or other activity deemed necessary by the Owner/Operator.
 - c. A description of each activity required under part 52 (b).

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- d. A copy of any notification required under part 51.
(Basis: Cumulative Increase; Regulation 2-6-501)

END OF CONDITIONS



IMPLIED CONDITIONS

Unless your specific permit conditions state otherwise, the throughputs, fuel and material consumptions, capacities and hours of operation described in your permit application will be considered maximum allowable limits.

A new permit will be required before any increase in parameters, such as throughputs, fuel and material consumption, capacities, and hours of operation, or change in materials, equipment or permit conditions may be made.



RIGHT OF ACCESS

In accordance with Regulation 1-440, BAAQMD shall be granted the right of access to any premises on which an air pollution source is located for the purposes of:

- The inspection of the source,
- The sampling of materials used at the source,
- The conduct of an emission source test, and
- The inspection of any records required by BAAQMD rule or permit condition



REGULATORY COMPLIANCE

This Permit To Operate does not authorize violations of the rules and regulations of BAAQMD (may be viewed at www.baaqmd.gov), California or Federal law. Compliance with conditions in this permit does not mean that the permit holder is currently in compliance with BAAQMD Rules and Regulations. It is the responsibility of the permit holder to have knowledge of and be in compliance with all BAAQMD rules and regulations.



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Reported Source Emissions

For Renewal Period 11/1/2023 to 11/1/2024

Source	Facility Source Description	Annual Average lbs/day				
		PM	Org	NOx	SO2	CO
S1	Combustion Gas Turbine #1	2.14	3.84	28.50	3.12	31.52
S2	Heat Recovery Steam Generator#1Low emission duct Burner	0.39	0.68	5.16	0.57	5.71
S3	Combustion Gas Turbine #2	10.15	7.70	53.72	5.77	49.22
S4	Heat Recovery Steam Generator#2Low emission duct Burner	1.01	0.75	5.35	0.57	4.90
S5	Water Cooling Tower, 3 Cell 34,980 gpm	0.16	0.00	0.00	0.00	0.00
S6	Temporary Combustion Gas Turbine (DVR- 191-555)	53.33	63.22	157.42	2.16	87.62
	TOTALS	67.19	76.18	250.15	12.19	178.97

FACILITY TOTALS FOR EACH EMITTED TOXIC POLLUTANT

Pollutant Name	Emissions lbs/day
Benzene	0.40
Formaldehyde	2.34
Ammonia (NH3) pollutant	176.58

Adjusted Prioritization Score: 72

Adjusted Prioritization scores are calculated based on the quantity of toxic air contaminant emissions, the toxicity of the toxic air contaminants, and the proximity of the facility to potential receptors such as residences, hospitals, schools, and workers.

END OF DOCUMENT

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If you have any questions, please contact one of the following individuals by email or phone.

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