DOCKETED

Docket Number:	12-AFC-02C
Project Title:	Huntington Beach Energy Project - Compliance
TN #:	211427
Document Title:	South Coast Air Quality Management District Correspondance 05-06-16 Part 3
Description:	N/A
Filer:	Cindy Salazar
Organization:	CH2M HILL
Submitter Role:	Applicant Consultant
Submission Date:	5/10/2016 10:50:37 AM
Docketed Date:	5/10/2016

PARTICULATE LABORATORY DATA

Date: December 9, 2013
Client: OCSD PLANT 2
Site: ENGINE #5

Run No.	Type	Total Sample Vol. (ml)	Aliquot Vol. (ml)	Vlc less Silica gel Vol. (ml)	Gross Wt. (g)	Tare Wt. (g)	Uncorrected Final Wt. (mg)	Corrected Final Wt. (mg)
Blank	**Acetone**	NA	-----	-----	NA	NA	**NA**	-----
Blank	**H2O**	250	-----	-----	110.21465	110.2146	**0.05**	-----
Blank	**MeCl2**	200	-----	-----	118.15480	118.1548	**0.00**	-----
Average 1	**Filter**	-------	-----	-----	0.15955	0.15832	**1.23**	**1.23**
	Condensables	484	484	104.8	118.56820	118.5642	**4.00**	**3.92**
	Organics	484	484	-----	101.21790	101.2149	**3.00**	**3.00**
	Total	-------	-----	-----	-------	-------	**8.23**	**8.15**

Note: NA = Not Applicable for the test program.

SUMMARY OF PARTICULATE SOURCE TEST DATA AND CALCULATIONS

Date:	**December 9, 2013**
Client:	**OCSD PLANT 2**
Site:	**ENGINE #5**

MEASURED SOURCE PARAMETERS	SYMBOL	UNITS	RUN 1
STACK DIAMETER	Ds	IN	30.00
STACK AREA	Ds	FT^2	4.91
BAROMETERIC PRESSURE	Pbar	IN. Hg	29.99
STATIC PRESSURE	Pstat	IN. H2O	-0.690
STACK PRESSURE	Ps	IN. Hg	29.94
AVERAGE STACK TEMPERATURE	Ts	DEG. F	476.6
AVERAGE SQ. ROOT VELOCITY PRESSURE	dP	IN. H2O	0.881
SAMPLING PARAMETERS			
STANDARD TEMPERATURE	Tstd	DEG. F	60.0
STANDARD PRESSURE	Pstd	IN. Hg	29.92
PERCENT CARBON DIOXIDE	CO2	%	6.91
PERCENT OXYGEN	O2	%	12.46
PITOT CORRECTION FACTOR	Cp		0.840
NOZZLE DIAMETER	Dn	IN	0.275
NOZZLE DIAMETER	Dn	FT^2	0.00041
SAMPLING TIME	t	MIN.	72.0
GAS VOLUME SAMPLED	Vm	DCF	59.646
WATER VAPOR COLLECTED	Vlc	GRAMS	117.1
DRY GAS METER CORRECTION FACTOR	Y		0.9720
DRY GAS METER TEMPERATURE	Tm	DEG. F	60.4
ORIFICE PRESSURE	dH	IN. H2O	2.18
CALCULATED RESULTS			
CORRECTED GAS VOLUME SAMPLED	Vmstd	DSCF	58.380
VOLUME OF WATER CONDENSED	Vwstd	SCF	5.44
MOISTURE CONTENT OF FLUE GAS	Bws	%	8.53
DRY MOLECULAR WEIGHT OF FLUE GAS	MW dry	lb/lb-mole	29.60
WET MOLECULAR WEIGHT OF FLUE GAS	MW wet	lb/lb-mole	28.61
FLUE GAS VELOCITY	Vs	ft/sec	66.17
FLUE GAS FLOW RATE (ACTUAL CONDITIONS)	ACFM	ACFM	19,490
FLUE GAS FLOW RATE (STD. CONDITIONS)	SDCFM	SDCFM	9,904
PERCENT EXCESS AIR	% EA	%	141.2
PERCENT ISOKINETIC SAMPLING RATE	% ISO	%	97.4

Note: NA = Not Applicable for the test program.

SUMMARY OF SULFUR RESULTS

FACILITY:	OCSD PLANT 2	STD. TEMP:	60	DEG. F
UNIT:	ENGINE #1			
DATE:	December 10, 2013			

Parameter	**RUN 1**			**Average**
Time:	1309-1410			
Flow Rate, dscfm	9,844.9			9,844.9

Sulfur Compounds:				
H_2S, ppm	17.4			17
Carbonyl Sulfide, ppm	<0.2			<0.2
Methyl Mercaptan, ppm	<0.2			<0.2
Ethyl Mercaptan, ppm	<0.2			<0.2
Dimethyl Sulfide, ppm	<0.2			<0.2
Carbon Disulfide, ppm	<0.2			<0.2
isoprpyl mercaptan, ppm	<0.2			<0.2
n-propyl mercaptan, ppm	0.26			0.26
Dimethyl Disulfide,ppm	<0.2			<0.2
Total Sulfur Compounds :				
Total Reduced Sulfur ppm	17.7			17.7
SOx Exhaust, lb/hr (as SO_2)	1.77			1.77

EQUATIONS

TRS LB/HR = (SULFUR PPM) * (MW) * (DSCFM) * 1.583E-07

TRS = TOTAL REDUCED SULFUR (SULFUR PPM)
MW = MOLECULAR WEIGHT (64.06 LB/LB-MOLE)
1.583E-07 = CONVERSION FACTOR
DSCFM = DRY STANDARD CUBIC FEET PER MINUTE (EXHAUST FLOW RATE)

SUMMARY OF SULFUR RESULTS

FACILITY:	OCSD PLANT 2	STD. TEMP:	60	DEG. F
UNIT:	ENGINE #2			
DATE:	December 5, 2013			

Parameter	RUN 1			Average
Time:	1123-1223			
Flow Rate, dscfm	9,458.2			9,458.2

Sulfur Compounds:				
H_2S, ppm	22.4			22
Carbonyl Sulfide, ppm	<0.2			<0.2
Methyl Mercaptan, ppm	<0.2			<0.2
Ethyl Mercaptan, ppm	<0.2			<0.2
Dimethyl Sulfide, ppm	<0.2			<0.2
Carbon Disulfide, ppm	<0.2			<0.2
isoprpyl mercaptan, ppm	<0.2			<0.2
n-propyl mercaptan, ppm	0.30			0.30
Dimethyl Disulfide,ppm	<0.2			<0.2
Total Sulfur Compounds :				
Total Reduced Sulfur ppm	22.7			23
SOx Exhaust, lb/hr (as SO_2)	2.18			2.18

EQUATIONS

TRS LB/HR = (SULFUR PPM) * (MW) * (DSCFM) * 1.583E-07

TRS = TOTAL REDUCED SULFUR (SULFUR PPM)
MW = MOLECULAR WEIGHT (64.06 LB/LB-MOLE)
1.583E-07 = CONVERSION FACTOR
DSCFM = DRY STANDARD CUBIC FEET PER MINUTE (EXHAUST FLOW RATE)

SUMMARY OF SULFUR RESULTS

FACILITY:	OCSD PLANT 2	STD. TEMP:	60	DEG. F
UNIT:	ENGINE #3			
DATE:	December 11, 2013			

Parameter	**RUN 1**			**Average**
Time:	1036-1136			
Flow Rate, dscfm	9,771.0			9,771.0
Sulfur Compounds:				
H_2S, ppm	<0.5			<0.5
Carbonyl Sulfide, ppm	<0.2			<0.2
Methyl Mercaptan, ppm	<0.2			<0.2
Ethyl Mercaptan, ppm	<0.2			<0.2
Dimethyl Sulfide, ppm	<0.2			<0.2
Carbon Disulfide, ppm	<0.2			<0.2
isoprpyl mercaptan, ppm	<0.2			<0.2
n-propyl mercaptan, ppm	<0.2			<0.2
Dimethyl Disulfide,ppm	<0.2			<0.2
Total Sulfur Compounds :				
Total Reduced Sulfur ppm	<0.5			<0.5
SOx Exhaust, lb/hr (as SO_2)	<0.05			<0.05

EQUATIONS

TRS LB/HR = (SULFUR PPM) * (MW) * (DSCFM) * 1.583E-07

TRS = TOTAL REDUCED SULFUR (SULFUR PPM)
MW = MOLECULAR WEIGHT (64.06 LB/LB-MOLE)
1.583E-07 = CONVERSION FACTOR
DSCFM = DRY STANDARD CUBIC FEET PER MINUTE (EXHAUST FLOW RATE)

SUMMARY OF SULFUR RESULTS

FACILITY:	OCSD PLANT 2	STD. TEMP:	60	DEG. F
UNIT:	ENGINE #4			
DATE:	December 6, 2013			

Parameter	**RUN 1**			**Average**
Time:	1005-1105			
Flow Rate, dscfm	8,693.3			8,693.3
Sulfur Compounds:				
H_2S, ppm	18.0			18.0
Carbonyl Sulfide, ppm	<0.2			<0.2
Methyl Mercaptan, ppm	<0.2			<0.2
Ethyl Mercaptan, ppm	<0.2			<0.2
Dimethyl Sulfide, ppm	<0.2			<0.2
Carbon Disulfide, ppm	<0.2			<0.2
isoprpyl mercaptan, ppm	<0.2			<0.2
n-propyl mercaptan, ppm	0.26			0.26
Dimethyl Disulfide,ppm	<0.2			<0.2
Total Sulfur Compounds :				
Total Reduced Sulfur ppm	18.3			18.3
SOx Exhaust, lb/hr (as SO_2)	1.61			1.61

EQUATIONS

TRS LB/HR = (SULFUR PPM) * (MW) * (DSCFM) * 1.583E-07

TRS = TOTAL REDUCED SULFUR (SULFUR PPM)
MW = MOLECULAR WEIGHT (64.06 LB/LB-MOLE)
1.583E-07 = CONVERSION FACTOR
DSCFM = DRY STANDARD CUBIC FEET PER MINUTE (EXHAUST FLOW RATE)

SUMMARY OF SULFUR RESULTS

FACILITY:	OCSD PLANT 2	STD. TEMP:	60	DEG. F
UNIT:	ENGINE #5			
DATE:	December 9, 2013			

Parameter	**RUN 1**			**Average**
Time:	12/9/2013			
Flow Rate, dscfm	9,904.0			9,904.0
Sulfur Compounds:				
H_2S, ppm	16.9			17
Carbonyl Sulfide, ppm	<0.2			<0.2
Methyl Mercaptan, ppm	<0.2			<0.2
Ethyl Mercaptan, ppm	<0.2			<0.2
Dimethyl Sulfide, ppm	<0.2			<0.2
Carbon Disulfide, ppm	<0.2			<0.2
isoprpyl mercaptan, ppm	<0.2			<0.2
n-propyl mercaptan, ppm	0.28			0.28
Dimethyl Disulfide,ppm	<0.2			<0.2
Total Sulfur Compounds :				
Total Reduced Sulfur ppm	17.2			17.2
SOx Exhaust, lb/hr (as SO_2)	1.73			1.73

EQUATIONS

TRS LB/HR = (SULFUR PPM) * (MW) * (DSCFM) * 1.583E-07

TRS = TOTAL REDUCED SULFUR (SULFUR PPM)
MW = MOLECULAR WEIGHT (64.06 LB/LB-MOLE)
1.583E-07 = CONVERSION FACTOR
DSCFM = DRY STANDARD CUBIC FEET PER MINUTE (EXHAUST FLOW RATE)

Appendix B

EPA Method 323 and EPA Method TO-15 Results

SUMMARY OF ALDEHYDE EMISSIONS

CLIENT:	OCSD PLANT 2
DATE:	12/11/13
UNIT:	ENGINE #3
PROJECT No.:	2061.1053

Average Stack Oxygen (% O_2)	12.07
BTU/CF	633
DSCF/MMBTU	9303
Lb/Lb-Mole	379.5
O_2 Standard	15
Formaldehyde MW	30.05
Acetaldehyde MW	44.05

Formaldehyde Results

Sample ID	Time	Total (ug/sample)	Total (mg/sample)	Sample Volume DSCM	Avg. Volume Flow Rate DSCFM	Conc. ppm v/v	Emission Rate lb/hr	Emission Rate lb/day	Emission Corrected (15% O_2)	Emission Rate (lb/MMcf)
P2E3 RUN 1	1016-1116	546	0.55	0.023	9,771	**18.83**	**8.75E-01**	**21.00**	**12.58**	**20.79**
P2E3 RUN 2A	1207-1307	528	0.53	0.023	9,771	**18.17**	**8.44E-01**	**20.27**	**12.14**	**20.06**
P2E3 RUN 2B	1207-1307	596	0.60	0.024	9,771	**20.25**	**9.41E-01**	**22.59**	**13.54**	**22.36**
P2E3 RUN 3	1319-1419	498	0.50	0.022	9,771	**17.83**	**8.29E-01**	**19.89**	**11.92**	**19.69**
					AVG.	**18.77**	**8.72E-01**	**20.94**	**12.55**	**20.72**

Acetaldehyde Results

Sample ID	Time	Total (ug/sample)	Total (mg/sample)	Sample Volume DSCM	Avg. Volume Flow Rate DSCFM	Conc. ppm v/v	Emission Rate lb/hr	Emission Rate lb/day	Emission Corrected (15% O_2)	Emission Rate (lb/MMcf)
P2E3 RUN 1	1016-1116	3.86	0.0039	0.023	9,771	**1.33E-01**	**9.07E-03**	**0.218**	**8.90E-02**	**2.15E-01**
P2E3 RUN 2A	1207-1307	4.06	0.0041	0.023	9,771	**1.40E-01**	**9.52E-03**	**0.228**	**9.34E-02**	**2.26E-01**
P2E3 RUN 2B	1207-1307	3.35	0.0034	0.024	9,771	**1.14E-01**	**7.75E-03**	**0.186**	**7.61E-02**	**1.84E-01**
P2E3 RUN 3	1319-1419	3.29	0.0033	0.022	9,771	**1.18E-01**	**8.03E-03**	**0.193**	**7.88E-02**	**1.91E-01**
					AVG.	**1.29E-01**	**8.78E-03**	**0.211**	**8.61E-02**	**2.09E-01**

Equations

1. ppm = R /MW * (mg/Vmstd) * (1g/1000mg) * 1000000 Where R = 0.02405 dscm per g-mole, for metric units at standard conditions.

2. lb/hr = ppm × MW × DSCFM × C2 where C2 = 1.583 ×x 10^{-7} lb g-mol min / min CF hr @ 60 °F

3. lb/Day = lb/hr × 24

SUMMARY OF ALDEHYDE SAMPLING DATA AND CALCULATIONS

Date	December 11, 2013
Facility:	OCSD PLANT 2
Source I.D./Condition	ENGINE #3

SAMPLING PARAMETERS	**SYMBOL**	**UNITS**	**RUN 1**	**RUN 2**	**RUN 2B**	**RUN 3**	**AVERAGE**
BAROMETERIC PRESSURE	Pbar	IN. Hg	29.93	29.93	29.93	29.93	29.93
STANDARD TEMPERATURE	Tstd	DEG. F	60.0	60.0	60.0	60.0	60.0
STANDARD PRESSURE	Pstd	IN. Hg	29.92	29.92	29.92	29.92	29.92
SAMPLING TIME	t	MIN.	60.0	60.0	60.0	60.0	60.0
GAS VOLUME SAMPLED	Vm	Dliters	23.900	23.500	24.400	23.800	23.90
WATER VAPOR COLLECTED	Vlc	GRAMS	1.8	2.2	2.0	1.9	1.98
DRY GAS METER CORRECTION FACTOR	Y		0.9970	1.0030	0.9970	0.9970	0.999
DRY GAS METER TEMPERATURE	Tm	DEG. F	74.0	67.2	77.2	92.3	77.67
ORIFICE PRESSURE	dH	IN. H2O	0.01	0.01	0.01	0.01	0.01
CALCULATED RESULTS							
CORRECTED GAS VOLUME SAMPLED	Vmstd	DSLiter	23.212	23.258	23.557	22.349	23.09
CORRECTED GAS VOLUME SAMPLED	Vmstd	DSCF	0.820	0.821	0.832	0.789	0.815
CORRECTED GAS VOLUME SAMPLED	Vmstd	DSCM	0.02321	0.02326	0.02356	0.02235	0.02309

SUMMARY OF SPECIATED ORGANIC EMISSIONS
SCAQMD RULE 1401 CONTAMINANTS
OCSD PLANT 2
ENGINE #3
12/11/2013

Average Stack Gas Flow Rate (DSCFM)	9,771
Average Stack Gas Moisture (% VOL)	9.31
Average Stack Oxygen (% O_2)	12.07
BTU/CF	633
DSCF/MMBTU	9303
Lb/Lb-Mole	379.5
O_2 Standard	15

COMPOUND	MOL. WT. (lb/lb-mol)	Run 1 Concentration (ppbv,wet)	Run 2 Concentration (ppbv,wet)	Run 3 Concentration (ppbv,wet)	Average Concentration (ppbv,dry)	Average Mass Emission Rate (lb/hr)	Average Corrected to 15% (O_2)	Average Emission Rate (Lbs/MMcf)
Vinyl Chloride	62.5	ND @ 1.0	ND @ 1.0	ND @ 1.0	ND @ 1.10	ND @ 1.07E-04	ND @ 0.74	ND @ 2.532E-03
Methylene Chloride	84.9	ND @ 1.4	ND @ 1.4	ND @ 1.4	ND @ 1.54	ND @ 2.03E-04	ND @ 1.03	ND @ 4.815E-03
Chloroform	119.4	ND @ 1.0	ND @ 1.0	ND @ 1.0	ND @ 1.10	ND @ 2.04E-04	ND @ 0.74	ND @ 4.837E-03
1,2-dichloroethane	99.0	ND @ 1.4	ND @ 1.4	ND @ 1.4	ND @ 1.54	ND @ 2.36E-04	ND @ 1.03	ND @ 5.615E-03
1,1,1-trichloroethane	133.4	ND @ 1.0	ND @ 1.0	ND @ 1.0	ND @ 1.10	ND @ 2.28E-04	ND @ 0.74	ND @ 5.405E-03
Benzene	78.1	5.5	5.31	5.08	5.83	7.05E-04	3.90	1.674E-02
Carbon Tetrachloride	153.8	ND @ 1.0	ND @ 1.0	ND @ 1.0	ND @ 1.10	ND @ 2.62E-04	ND @ 0.74	ND @ 6.231E-03
Trichloroethylene	131.4	ND @ 1.0	ND @ 1.0	ND @ 1.0	ND @ 1.10	ND @ 2.24E-04	ND @ 0.74	ND @ 5.323E-03
Toluene	92.1	2.55	2.39	2.23	2.64	3.75E-04	1.76	8.918E-03
Tetrachloroethylene	165.8	ND @ 1.0	ND @ 1.0	ND @ 1.0	ND @ 1.10	ND @ 2.83E-04	ND @ 0.74	ND @ 6.717E-03
Ethylbenzene	107.2	ND @ 1.4	ND @ 1.4	ND @ 1.4	ND @ 1.54	ND @ 2.56E-04	ND @ 1.03	ND @ 6.079E-03
Chlorobenzene	112.6	ND @ 1.4	ND @ 1.4	ND @ 1.4	ND @ 1.54	ND @ 2.69E-04	ND @ 1.03	ND @ 6.387E-03
Xylenes (Total)	106.2	ND @ 1.4	ND @ 1.4	ND @ 1.4	ND @ 1.54	ND @ 2.54E-04	ND @ 1.03	ND @ 6.024E-03
Styrene	104.2	ND @ 1.4	ND @ 1.4	ND @ 1.4	ND @ 1.54	ND @ 2.49E-04	ND @ 1.03	ND @ 5.908E-03
Dichlorobenzene (Total)	147.0	ND @ 1.4	ND @ 1.4	ND @ 1.4	ND @ 1.54	ND @ 3.51E-04	ND @ 1.03	ND @ 8.338E-03

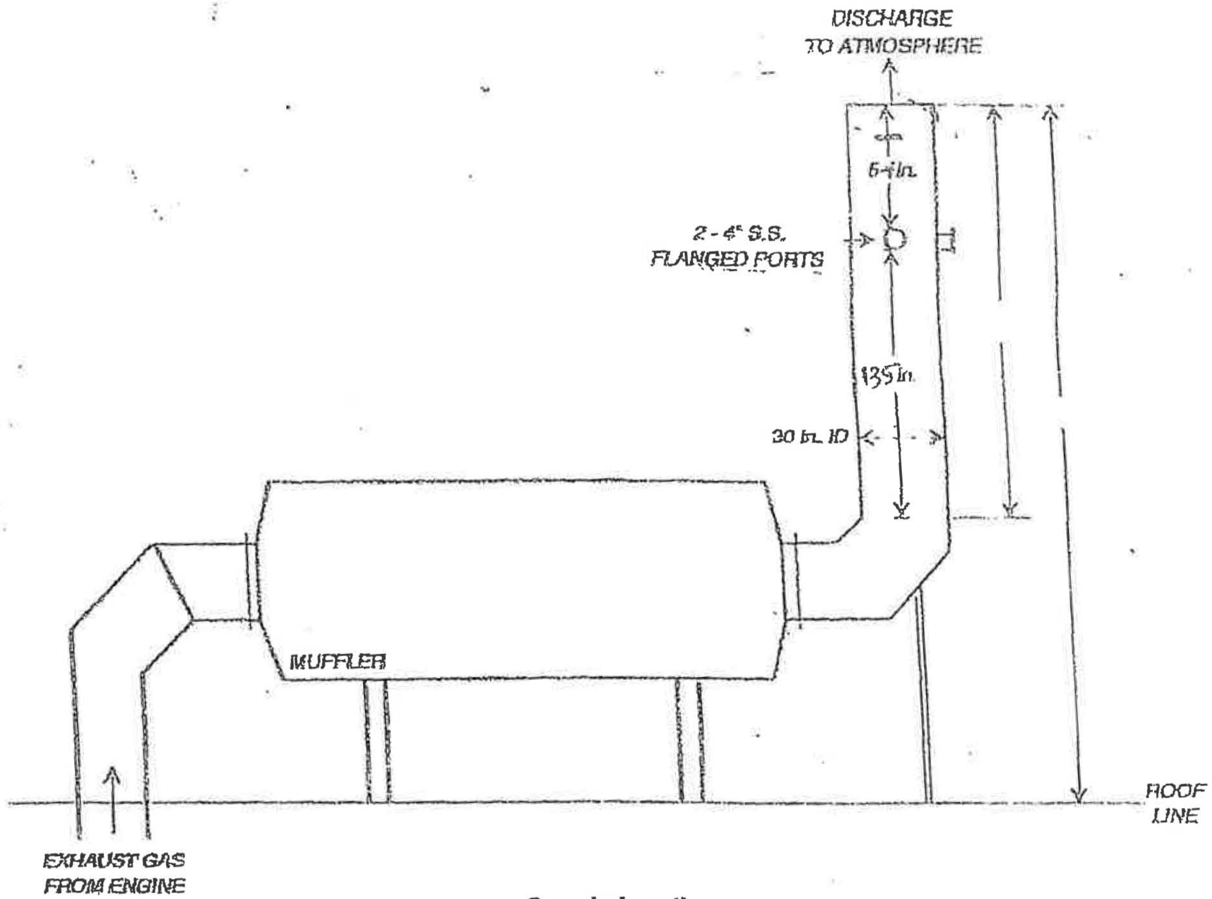
ND@ = Non-Detected @

SCEC

Appendix C

Stack Sampling Location Schematic

OCSD PLANT No. 2 CGS IC ENGINES



Sample Location

SCEC

Method 1: SAMPLE POINT LOCATION

Client/Facility:	OCSD PLANT 2	Date:	12/5/12
Sample Location:	EXHAUST	Data By:	RN
Unit ID:	1, 2, 3, 4, 5	Barometric (in Hg):	

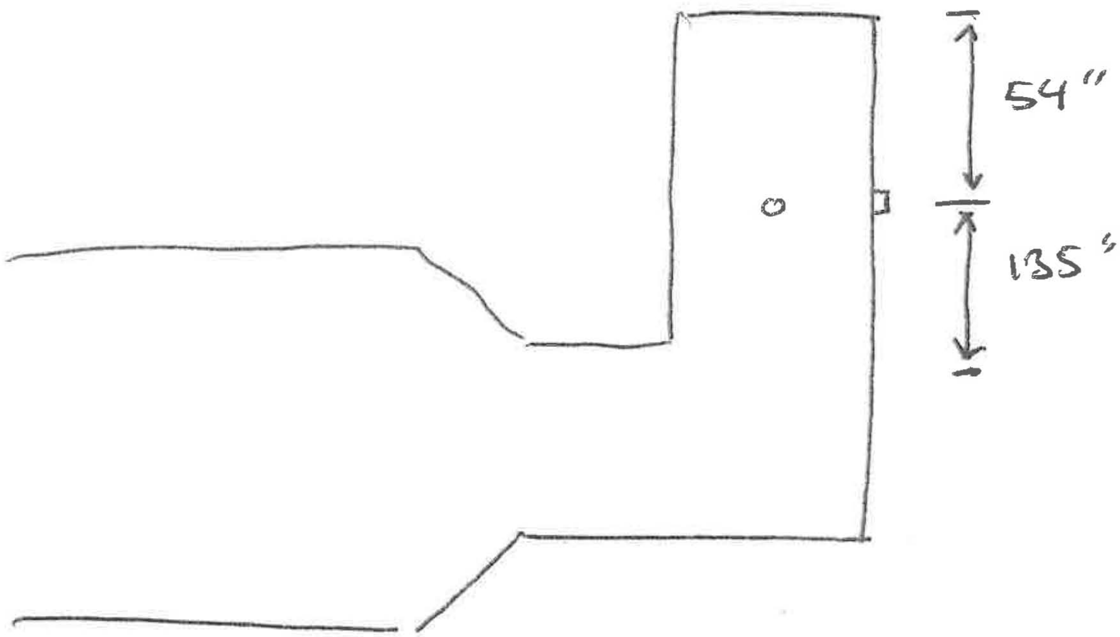


Diagram of Sample Location

Duct Dimension: 30"
Duct Area:
Upstream Dst/Dia: (1) 54"/1.8 DS
Downstream Dst/Dia: (2) 135/4.5 DS
Port Length: (3) 8"
Port Diameter: 4"
Number of Points: 24
Number of Points Per Port: 12

PM

Sample Point	% of Stack Diameter	Position in Stack (in)	Inches from Outside of Port
1	2.1	1.0	9.0
2	6.7	2.01	10.0
3	11.8	3.54	11.5
4	17.7	5.31	13.3
5	25.0	7.5	15.5
6	35.6	10.68	18.68
7	64.4	19.32	27.3
8	75.0	22.5	30.5
9	82.3	24.69	32.7
10	88.2	26.46	34.5
11	93.3	27.99	35.9
12	97.9	29.37	37.4

(1) From sample point to disturbance in direction of flow
(2) From disturbance to sample point in direction of flow
(3) Measurement from inner stack wall to end of port

SCEC

Method 1: SAMPLE POINT LOCATION

Client/Facility: OCSD PLANT 2
Date: 12/5/12
Sample Location: EXHAUST
Data By: RN
Unit ID: 1, 2, 3, 4, 5
Barometric (in Hg):

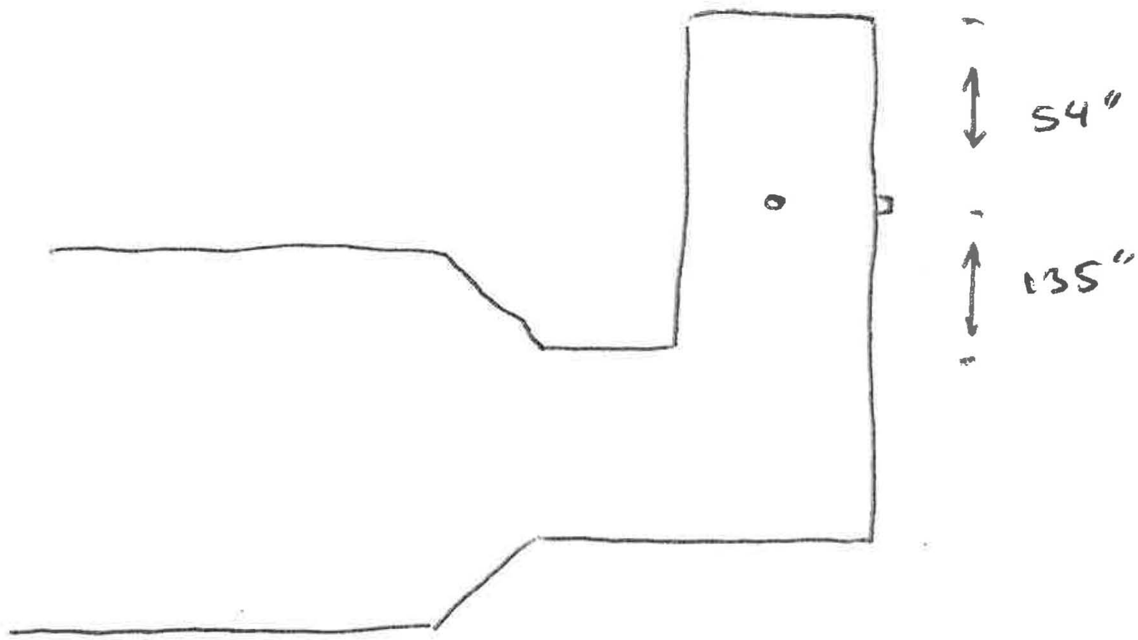


Diagram of Sample Location

VELOCITY

Duct Dimension: 30"
Duct Area:
Upstream Dst/Dia: (1) 54"/1.8
Downstream Dst/Dia: (2) 135"/4.5
Port Length: (3) 8"
Port Diameter: 4"
Number of Points: 24
Number of Points Per Port: 12

Sample Point	% of Stack Diameter	Position in Stack (in)	Inches from Outside of Port
1	3.2	0.96	8.96
2	10.5	3.15	11.15
3	19.4	5.82	13.82
4	32.3	9.69	17.69
5	67.7	20.31	28.31
6	80.6	24.18	32.18
7	89.5	26.85	34.85
8	96.8	29.04	37.04
9			
10			
11			
12			

(1) From sample point to disturbance in direction of flow
(2) From disturbance to sample point in direction of flow
(3) Measurement from inner stack wall to end of port

SCEC

Method 1: SAMPLE POINT LOCATION

Client/Facility:	OCSD PLANT 2	Date:	12/5/12
Sample Location:	EXHAUST	Data By:	RN
Unit ID:	1, 2, 3, 4, 5	Barometric (in Hg):	

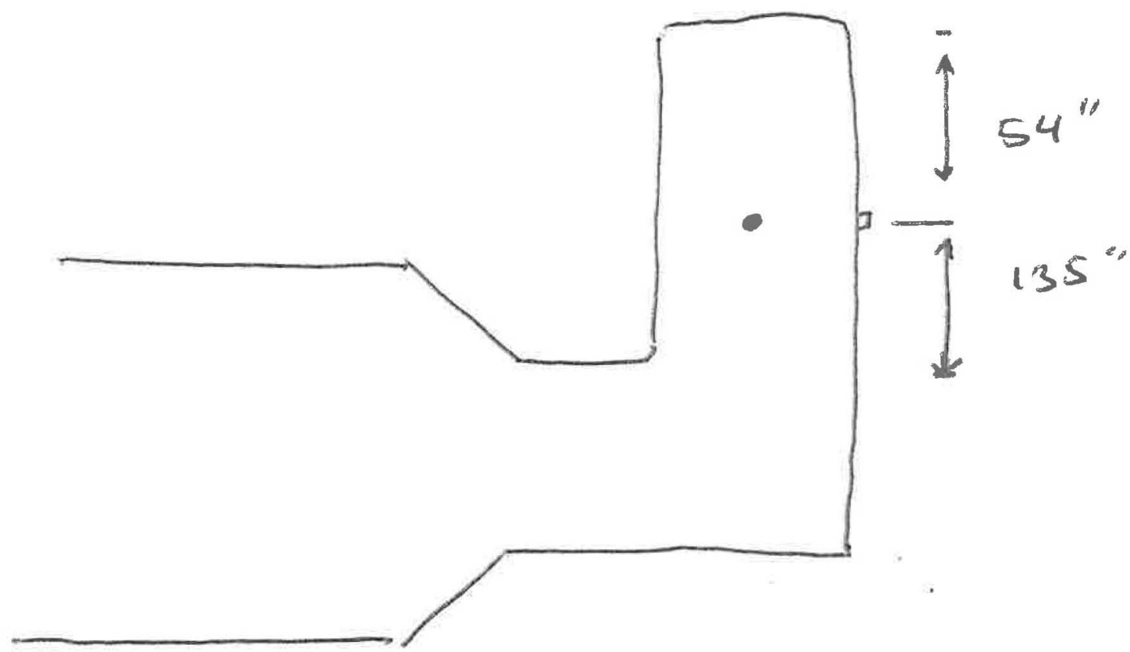


Diagram of Sample Location

Duct Dimension:	30"
Duct Area:	
Upstream Dst/Dia: (1)	54"/1.8 DS
Downstream Dst/Dia: (2)	135/4.5 DS
Port Length: (3)	8"
Port Diameter:	4"
Number of Points:	24
Number of Points Per Port:	12

CEMS

Sample Point	% of Stack Diameter	Position in Stack (in)	Inches from Outside of Port
1	16.7	5.01	13.01
2	50.0	15.0	23.0
3	83.3	24.99	32.99
4			
5			
6			
7			
8			
9			
10			
11			
12			

(1) From sample point to disturbance in direction of flow
(2) From disturbance to sample point in direction of flow
(3) Measurement from inner stack wall to end of port

SCEC

Appendix D

Field Data Sheets SCAQMD Methods 100.1, 25.1/25.3, 1.1-4.1, 5.1, EPA 323 and EPA TO-15

SCEC
CONTINUOUS EMISSIONS MONITORING SYSTEM TEST DATA

Test Number:	NORMAL	Date:	12-10-13
Client:	OCSD	Condition:	NORMAL LOAD
Location:	P2	Operator:	GM
Unit:	E1	Barometric:	29.97

Gas Temperatures

Stack:	510	Stack Knockout:	33
Probe:	480	Ambient:	71
Heated Line:	257	Chiller:	32

	Analyzer Values				
	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Analyzer Span Range	25	20	100	2000	
Low Span Cal Gas Value					
Mid Span Cal Gas Value	12.5	8.31	42.4	857	
High Span Cal Gas Value	21.0	16.7	87.4	1814	
	As Found Analyzer Readings				
Zero	0.01	-0.02	0.0	0.0	
Low Span					
Mid Span	12.55	8.44	42.3	849.6	
High Span	21.11	16.79	87.3	1813.3	
	Pre-Test Analyzer System Bias				
System Bias Zero	0.05	-0.03	0.2	-0.4	
System Bias Span	12.48	8.39	41.5	846.0	
System Bias Low Span					

Sample Point	Time		Raw Test Data				
	Start	Stop	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
NORMAL	13:09	14:10					

	Post-Test Analyzer System Bias				
System Bias Zero	0.10	0.00	1.2	0.0	
System Bias Span	12.49	8.41	41.7	850.4	
System Bias Low Span					
	Post-Test Analyzer Calibration				
Zero	0.01	-0.03	0.2	0.0	
Low Span					
Mid Span	12.56	8.46	41.8	857.3	
High Span	21.11	16.78	86.5	1811.3	
	Test Results Summary				
	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Calibration Corrected Average					
Corrected @ 3% O_2					
Corrected @ 15% O_2					

SCEC
CONTINUOUS EMISSIONS MONITORING SYSTEM TEST DATA

Test Number:	HIGH LOW	Date:	12/10/13
Client:	OCSD	Condition:	HIGH / LOW LOAD
Location:	P2	Operator:	GM
Unit:	E1	Barometric:	29.97

Gas Temperatures

Stack:	800	Stack Knockout:	33
Probe:	~~335~~ @ 450	Ambient:	71
Heated Line:	250	Chiller:	32

			Analyzer Values				
			O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Analyzer Span Range			25	20	100	2000	
Low Span Cal Gas Value							
Mid Span Cal Gas Value			12.5	8.31	42.4	857	
High Span Cal Gas Value			21.0	16.7	87.4	1814	
			As Found Analyzer Readings				
Zero			0.01	-0.03	0.2	0.0	
Low Span							
Mid Span			12.56	8.46	41.8	857.3	
High Span			21.11	16.78	86.5	1811.3	
			Pre-Test Analyzer System Bias				
System Bias Zero			0.10	0.60	1.2	0.0	
System Bias Span			12.49	8.41	41.7	850.4	
System Bias Low Span							
Sample Point	Time		**Raw Test Data**				
	Start	Stop	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
HIGH	14:44	14:58					
LOW	15:07	1522					
			Post-Test Analyzer System Bias				
System Bias Zero			0.01	-0.04	0.7	-0.4	
System Bias Span			12.46	8.38	41.6	848.8	
System Bias Low Span							
			Post-Test Analyzer Calibration				
Zero			-0.01	-0.03	0.1	0.0	
Low Span							
Mid Span			12.56	8.44	41.8	856.5	
High Span			21.10	16.77	86.6	1813.3	
			Test Results Summary				
			O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Calibration Corrected Average							
Corrected @ 3% O_2							
Corrected @ 15% O_2							

SCEC
CONTINUOUS EMISSIONS MONITORING SYSTEM TEST DATA

34.2
0.0

Test Number:	NORMAL-1	Date:	12-5-13
Client:	OCSD	Condition:	NORMAL
Location:	PLANT #2 #2	Operator:	GM
Unit:	ENGINE #2	Barometric:	30.01

Gas Temperatures

Stack:		Stack Knockout:	
Probe:		Ambient:	59°F
Heated Line:		Chiller:	

			Analyzer Values				
			O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Analyzer Span Range			25	20	100	2000	
Low Span Cal Gas Value							
Mid Span Cal Gas Value			12.5	8.31	43.6	857	
High Span Cal Gas Value			21.0	16.7	87.4	1814	
			As Found Analyzer Readings				
Zero			0.06	0.01	0.0	0.4	
Low Span							
Mid Span			12.56	8.47	43.6	849.5	
High Span			21.09	16.76	87.3	1817.7	
			Pre-Test Analyzer System Bias				
System Bias Zero			0.19	0.05	0.1	0.4	
System Bias Span			12.91	8.55	42.9	831.8	
System Bias Low Span							
Sample Point	Time		Raw Test Data				
	Start	Stop	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
12/5/13	11:23	12:23					
			Post-Test Analyzer System Bias				
System Bias Zero			0.14	0.04	0.4	0.8	
System Bias Span			12.85	8.55	43.7	830.2	
System Bias Low Span							
			Post-Test Analyzer Calibration				
Zero			-0.03	0.07	0.0	0.4	
Low Span							
Mid Span			12.53	8.46	43.8	840.6	
High Span			21.07	16.74	87.7	1797.3	
			Test Results Summary				
			O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Calibration Corrected Average							
Corrected @ 3% O_2							
Corrected @ 15% O_2							

SCEC
CONTINUOUS EMISSIONS MONITORING SYSTEM TEST DATA

Test Number:	HIGH/LOW -1	Date:	12-5-13
Client:	OCSD	Condition:	HIGH + LOW
Location:	PZ #2	Operator:	GM
Unit:	ENGINE #2	Barometric:	30.01

Gas Temperatures

Stack:		Stack Knockout:	
Probe:		Ambient:	
Heated Line:		Chiller:	

			Analyzer Values				
			O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Analyzer Span Range			25	20	100	200	
Low Span Cal Gas Value							
Mid Span Cal Gas Value			12.5	8.31	43.6	857	
High Span Cal Gas Value			21.0	16.7	87.4	1814	
			As Found Analyzer Readings				
Zero			-0.03	0.07	0.0	0.4	
Low Span							
Mid Span			12.53	8.46	43.8	840.6	
High Span			21.07	16.74	87.7	1797.3	
			Pre-Test Analyzer System Bias				
System Bias Zero			0.14	0.04	0.4	0.8	
System Bias Span			12.85	8.55	43.7	830.2	
System Bias Low Span							
Sample Point	Time		Raw Test Data				
	Start	Stop	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
HIGH	13:08	13:23					
LOW	13:37	13:52					
			Post-Test Analyzer System Bias				
System Bias Zero			0.18	0.09	0.6	0.0	
System Bias Span			12.53	8.45	43.4	834.6	
System Bias Low Span							
			Post-Test Analyzer Calibration				
Zero			-0.01	0.08	0.1	0.0	
Low Span							
Mid Span			12.58	8.57	43.6	841.0	
High Span			21.15	16.89	87.3	1804.5	
			Test Results Summary				
			O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Calibration Corrected Average							
Corrected @ 3% O_2							
Corrected @ 15% O_2							

SCEC

CONTINUOUS EMISSIONS MONITORING SYSTEM TEST DATA

Test Number:	NORMAL	Date:	12/11/13
Client:	OCSD	Condition:	NORMAL LOAD
Location:	P2	Operator:	GM
Unit:	E3	Barometric:	29.93

Gas Temperatures

Stack:	490	Stack Knockout:	34
Probe:	401	Ambient:	77
Heated Line:	257	Chiller:	33

			Analyzer Values				
			O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Analyzer Span Range			25	20	100	50	
Low Span Cal Gas Value							
Mid Span Cal Gas Value			12.5	8.31	42.4	18.4	
High Span Cal Gas Value			21.0	16.7	87.4	42.3	
			As Found Analyzer Readings				
Zero			0.00	0.07	0.0	-0.16	
Low Span							
Mid Span			12.55	8.53	42.3	18.25	
High Span			21.08	16.82	87.3	42.16	
			Pre-Test Analyzer System Bias				
System Bias Zero			0.03	0.04	0.2	-0.14	
System Bias Span			12.43	8.43	42.0	18.16	
System Bias Low Span							
Sample Point	Time		Raw Test Data				
	Start	Stop	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
NORMAL	10:36	11:30					
			Post-Test Analyzer System Bias				
System Bias Zero			0.02	-0.05	0.3	-0.14	
System Bias Span			12.49	8.36	42.4	18.12	
System Bias Low Span							
			Post-Test Analyzer Calibration				
Zero			-0.01	-0.05	0.0	-0.16	
Low Span							
Mid Span			12.54	8.40	42.6	18.21	
High Span			21.09	16.69	87.8	41.95	
			Test Results Summary				
			O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Calibration Corrected Average							
Corrected @ 3% O_2							
Corrected @ 15% O_2							

SCEC
CONTINUOUS EMISSIONS MONITORING SYSTEM TEST DATA

Test Number:	NORMAL	Date:	12-6-13
Client:	OCSD	Condition:	NORMAL LOAD
Location:	PLANT 2	Operator:	GM
Unit:	ENGINE 4	Barometric:	30.17

Gas Temperatures

Stack:		Stack Knockout:	
Probe:		Ambient:	55
Heated Line:		Chiller:	

	Analyzer Values				
	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Analyzer Span Range	25	20	100	2000	
Low Span Cal Gas Value					
Mid Span Cal Gas Value	12.5	8.31	42.4	857	
High Span Cal Gas Value	21.0	16.7	87.4	1814	
	As Found Analyzer Readings				
Zero	0.04	0.03	0.0	0.0	
Low Span					
Mid Span	12.37	8.30	42.2	862.5	
High Span	21.07	16.74	87.3	1823.7	
	Pre-Test Analyzer System Bias				
System Bias Zero	-0.25	-0.28	0.1	-0.8	
System Bias Span	12.34	8.28	42.2	851.2	
System Bias Low Span					

Sample Point	Time		Raw Test Data				
	Start	Stop	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
NORMAL	10:05	11:05					

	Post-Test Analyzer System Bias				
System Bias Zero	-0.36	-0.17	0.5	~~-0.4~~	← 0.0
System Bias Span	12.34	8.35	43.4	845.2	
System Bias Low Span					
	Post-Test Analyzer Calibration				
Zero					
Low Span					
Mid Span					
High Span					

	Test Results Summary				
	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Calibration Corrected Average					
Corrected @ 3% O_2					
Corrected @ 15% O_2					

SCEC
CONTINUOUS EMISSIONS MONITORING SYSTEM TEST DATA

Test Number:	LOW / HIGH	Date:	12-6-13
Client:	OCSD	Condition:	LOW / HIGH
Location:	PLANT 2	Operator:	GM
Unit:	ENGINE 4	Barometric:	30.17

Gas Temperatures

Stack:		Stack Knockout:	
Probe:		Ambient:	57
Heated Line:		Chiller:	

			Analyzer Values				
			O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Analyzer Span Range			25	20	100	2000	
Low Span Cal Gas Value							
Mid Span Cal Gas Value			12.5	8.31	42.2	857	
High Span Cal Gas Value			21.0	16.7	87.3	1814	
			As Found Analyzer Readings				
Zero							
Low Span							
Mid Span							
High Span							
			Pre-Test Analyzer System Bias				
System Bias Zero			-0.36	-0.17	0.5	-0.4	
System Bias Span			12.34	8.35	43.4	845.2	
System Bias Low Span							
Sample Point	Time		**Raw Test Data**				
	Start	Stop	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
LOW	11:25	11:40					
HIGH	11:58	1213					
			Post-Test Analyzer System Bias				
System Bias Zero			-0.17	-0.17	1.3	-0.6	0.8
System Bias Span			12.38	8.42	43.6	843.2	
System Bias Low Span							
			Post-Test Analyzer Calibration				
Zero			-0.38	-0.19	0.5	-0.8	
Low Span							
Mid Span			12.40	8.41	43.6	849.6	
High Span			21.15	16.90	87.[illegible]	1798	
			Test Results Summary				
			O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Calibration Corrected Average							
Corrected @ 3% O_2							
Corrected @ 15% O_2							

SCEC
CONTINUOUS EMISSIONS MONITORING SYSTEM TEST DATA

Test Number:	CEMS-1	Date:	12/9/13
Client:	OCSD	Condition:	RULE 1110.2
Location:	PLANT #2	Operator:	KN
Unit:	ICE #5	Barometric:	29.99

Gas Temperatures

Stack:	440	Stack Knockout:	33
Probe:	400	Ambient:	70
Heated Line:	257	Chiller:	34

			Analyzer Values				
			O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Analyzer Span Range			25	20	100	2000	
Low Span Cal Gas Value			x	x	x	x	
Mid Span Cal Gas Value			12.5	8.31	42.4	857	
High Span Cal Gas Value			21.0	16.7	83.3	1814	
			As Found Analyzer Readings				
Zero			0.00	0.05	0.0	-0.8	
Low Span			x	x	x	x	
Mid Span			12.43	8.43	42.3	852.0	
High Span			21.06	16.42	87.3	1815.3	
			Pre-Test Analyzer System Bias				
System Bias Zero			0.02	0.09	0.2	-0.8	
System Bias Span			12.53	8.51	42.6	843.6	
System Bias Low Span			x	x	x	x	
Sample Point	Time		**Raw Test Data**				
	Start	Stop	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
NORMAL	0933	1033					
			Post-Test Analyzer System Bias				
System Bias Zero			0.03	0.06	0.06	-0.8	
System Bias Span			~~12.53~~ @	8.44	43.6	847.2	
System Bias Low Span			12.53				
			Post-Test Analyzer Calibration				
Zero			-0.01	0.04	0.0	-1.2	
Low Span			x	x	x	x	
Mid Span			12.55	8.48	43.6	848.8	
High Span			21.19	16.84	90.5	1801.6	
			Test Results Summary				
			O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Calibration Corrected Average							
Corrected @ 3% O_2							
Corrected @ 15% O_2							

SCEC
CONTINUOUS EMISSIONS MONITORING SYSTEM TEST DATA

Test Number:	CEMS-2	Date:	12/9/13
Client:	OCSD	Condition:	RULE1110.2
Location:	PLANT #2	Operator:	RN
Unit:	ICE #5	Barometric:	29.99

Gas Temperatures

Stack:	496	Stack Knockout:	33
Probe:	400	Ambient:	70
Heated Line:	253	Chiller:	34

	Analyzer Values				
	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Analyzer Span Range	25	20	100	2000	
Low Span Cal Gas Value	x	x	x	x	
Mid Span Cal Gas Value	12.5	8.31	42.4	857	
High Span Cal Gas Value	21.0	16.7	87.3	1814	
	As Found Analyzer Readings				
Zero	0.11	0.13	0.0	0.0	
Low Span	x	x	x	x	
Mid Span	12.52	8.45	42.2	858.5	
High Span	21.06	16.72	87.4	1813.3	
	Pre-Test Analyzer System Bias				
System Bias Zero	0.03	0.06	0.5	-0.4	
System Bias Span	12.47	8.37	42.1	856.1	
System Bias Low Span					

Sample Point	Time Start	Time Stop	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
	1142	1242					

	Post-Test Analyzer System Bias				
System Bias Zero	0.03	0.07	0.4	-0.4	
System Bias Span	12.43	8.36	42.0	854.8	
System Bias Low Span					
	Post-Test Analyzer Calibration				
Zero					
Low Span					
Mid Span					
High Span					

	Test Results Summary				
	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Calibration Corrected Average					
Corrected @ 3% O_2					
Corrected @ 15% O_2					

SCEC
CONTINUOUS EMISSIONS MONITORING SYSTEM TEST DATA

Test Number:	CONS-3	Date:	12/9/13
Client:	OCSD	Condition:	RULE 410.2
Location:	PLANT #2	Operator:	RN
Unit:	ICE #5	Barometric:	29.99

Gas Temperatures

Stack:	490	Stack Knockout:	33
Probe:	400	Ambient:	70
Heated Line:	257	Chiller:	34

			Analyzer Values				
			O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Analyzer Span Range			25	20	100	2000	
Low Span Cal Gas Value			X	X	X	X	
Mid Span Cal Gas Value			12.5	8.31	42.4	857	
High Span Cal Gas Value			21.0	16.7	87.3	1814	
			As Found Analyzer Readings				
Zero			0.11	0.13	0.0	0.0	
Low Span			X	X	X	X	
Mid Span			12.52	8.45	42.2	858.5	
High Span			21.06	16.72	87.4	1813.3	
			Pre-Test Analyzer System Bias				
System Bias Zero			0.03	0.07	0.9	-0.4	
System Bias Span			12.43	8.36	42.0	854.8	
System Bias Low Span			X	X	X	X	
Sample Point	Time		**Raw Test Data**				
	Start	Stop	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
HIGH	1313	1328					
LOW	1342	1357					
			Post-Test Analyzer System Bias				
System Bias Zero			0.02	0.04	0.4	0.0	
System Bias Span			12.46	8.39	41.8	859.7	
System Bias Low Span							
			Post-Test Analyzer Calibration				
Zero			-0.02	0.04	0.1	-0.8	
Low Span			X	X	X	X	
Mid Span			12.48	8.29	42.0	859.7	
High Span			20.94	16.51	86.9	1814.5	
			Test Results Summary				
			O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Calibration Corrected Average							
Corrected @ 3% O_2							
Corrected @ 15% O_2							

SCEC
Total Combustion Analysis
SCAQMD Method 25.1
Field Sampling Data Sheet

Job #: OCSD
Facility: P2
Location: Engine #1
Date: 12/10/13
Operator: ALW

Control Device:
Sample Location: Outlet
Ambient Temp: 54°
Barometric Pressure:

Sample A

Tank #: 30
Trap #: 308
Initial Vacuum: 25"
Final Vacuum: 6"

Time	Vacuum ("Hg)	Flow (cc/min)
0	25"	~.28 Lpm
10	23"	
20	19"	
30	16"	
40	12"	
50	9"	
60	6"	

Sample B

Tank #: 31
Trap #: 137
Initial Vacuum: 27"
Final Vacuum: 6"

Time	Vacuum ("Hg)	Flow (cc/min)
6	27"	~.28
10	23"	
20	18"	
30	14"	
40	11"	
50	8"	
60	6"	

Leak Rate Pre Test: ✓/✓
Leak Rate Post Test: ✓/✓

SCEC
Total Combustion Analysis
SCAQMD Method 25.1
Field Sampling Data Sheet

Job #: OCSD
Facility: Plant 2
Location: Engine #2
Date: 12/8/13
Operator: ALW

Control Device: —
Sample Location: Exhaust
Ambient Temp: –
Barometric Pressure: –

Sample A

Tank #: 58
Trap #: 305
Initial Vacuum: 28"
Final Vacuum: 8"

Time	Vacuum ("Hg)	Flow (cc/min)
0	28"	
10	25"	
20	21"	
30	17"	
40	13"	
50	10"	
60	8"	

Sample B

Tank #: 62
Trap #: 306
Initial Vacuum: 29"
Final Vacuum: 8"

Time	Vacuum ("Hg)	Flow (cc/min)
0	29"	
10	26"	
20	22"	
30	18"	
40	14"	
50	11"	
60	8"	

Leak Rate Pre Test: ✓/✓
Leak Rate Post Test: ✓/✓

SCEC
Total Combustion Analysis
SCAQMD Method ~~25.1~~ 25.3
Field Sampling Data Sheet

Job #: 2061.1053

Facility: OCSD P.2

Location: Engine #3

Date: 12/11/13

Operator: ALW

Control Device:

Sample Location: Outlet

Ambient Temp: 53°F

Barometric Pressure:

Sample A

Tank #: 131

Vial ~~Trap~~ #: A

Initial Vacuum: 30"

Final Vacuum: 7"

Time	Vacuum ("Hg)	Flow (cc/min)
0	30"	
10	25"	
20	20"	
30	16"	
40	13"	
50	10"	
60	7"	

Sample B

Tank #: 208

Vial ~~Trap~~ #: B

Initial Vacuum: 31"

Final Vacuum: 9"

Time	Vacuum ("Hg)	Flow (cc/min)
0	31"	
10	28"	
20	24"	
30	20"	
40	15"	
50	12"	
60	9"	

Leak Rate Pre Test: √/√

Leak Rate Post Test: √/√

SCEC
Total Combustion Analysis
SCAQMD Method 25.1
Field Sampling Data Sheet

Job #: OCSD
Facility: Plant 2
Location: Engine #4
Date: 12/6/13
Operator: ALW

Control Device: -
Sample Location: Exhaust
Ambient Temp:
Barometric Pressure:

Sample A

Tank #: 9
Trap #: 110
Initial Vacuum: 30"
Final Vacuum: 7"

Time	Vacuum ("Hg)	Flow (cc/min)
0	~~28~~ 30"	
10	25"	
20	21"	
30	16"	
40	13"	
50	10"	
60	7"	

Sample B

Tank #: 14
Trap #: 128
Initial Vacuum: 28"
Final Vacuum: 8"

Time	Vacuum ("Hg)	Flow (cc/min)
0	28"	
10	24"	
20	20"	
30	17"	
40	14"	
50	11"	
60	8"	

Leak Rate Pre Test: ✓/✓
Leak Rate Post Test: ✓/✓

SCEC
Total Combustion Analysis
SCAQMD Method 25.1
Field Sampling Data Sheet

Job #:
Facility: OCSD P.2
Location: Engine #5
Date: 12/9/13
Operator: ALW

Control Device:
Sample Location: Outlet
Ambient Temp:
Barometric Pressure:

Sample A

Tank #: 50
Trap #: 319
Initial Vacuum: 31"
Final Vacuum:

Time	Vacuum ("Hg)	Flow (cc/min)
0	31"	
10	27"	
20	22"	
30	17"	
40	14"	
50	12"	
60	8"	

Sample B

Tank #: 92
Trap #: 320
Initial Vacuum: 29"
Final Vacuum: 7"

Time	Vacuum ("Hg)	Flow (cc/min)
0	29"	
10	25"	
20	21"	
30	18"	
40	14"	
50	10"	
60	7"	

Leak Rate Pre Test: √/√
Leak Rate Post Test: √/√

SCEC

Method 2: VELOCITY AND TEMPERATURE TRAVERSE DATA

Client/Facility:	OCSD P.2	Date:	12/10/13
Sample Location:	Outlet	Data By:	ALW
Unit Number:	#1	Pitot ID:	59 TC ID 58
Test Condition:	High / Low	Pitot Cp:	.840
Barometric (in. Hg):	29.97	Pitot Leak Check:	✓

Test No. High Load			Static Pressure (in. H_2O) -.90"		Test No. Low load			Static Pressure (in. H_2O) -.50"	
Time	Traverse Point		ΔP	Temperature	Time	Traverse Point		ΔP	Temperature
	Port	Point	in. H_2O	°F		Port	Point	in. H_2O	°F
	East	1	1.3	510			1	.59	496
		2	1.3	510			2	.59	496
		3	1.5	510			3	.66	499
		4	1.4	510			4	.64	499
		5	1.3	506			5	.53	500
		6	1.0	506			6	.50	500
		7	.96	506			7	.48	500
		8	.96	506			8	.48	500
		9					9		
		10					10		
		11					11		
		12					12		
	South	1	1.2	510			1	.51	500
		2	1.2	510			2	.51	500
		3	1.1	510			3	.59	500
		4	1.1	510			4	.55	500
		5	1.1	510			5	.53	500
		6	1.1	510			6	.47	500
		7	1.0	510			7	.47	500
		8	1.0	510			8	.46	500
		9					9		
		10					10		
		11					11		
		12					12		
AVERAGES:		ΔP√	1.0734	509.0	AVERAGES:		ΔP√	0.7303	499.38

SCEC

Method 2: VELOCITY AND TEMPERATURE TRAVERSE DATA

Client/Facility:	OCSD Plant 2	Date:	12/5/13
Sample Location:	Exhaust	Data By:	ALW
Unit Number:	2	Pitot ID:	59 TC ID 58
Test Condition:	High / Low	Pitot Cp:	.840
Barometric (in. Hg):	30.01	Pitot Leak Check:	✓

Test No. High			Static Pressure (in. H_20) -0.9"		Test No. Low			Static Pressure (in. H_20) -.56"	
Time	Traverse Point Port	Point	ΔP in. H_20	Temperature °F	Time	Traverse Point Port	Point	ΔP in. H_20	Temperature °F
	East	1	1.5	715		East	1	.75	709
		2	1.5	715			2	.75	709
		3	1.8	716			3	.96	709
		4	1.9	716			4	1.0	709
		5	1.4	715			5	.75	709
		6	1.4	715			6	.67	709
		7	1.2	715			7	.63	709
		8	1.1	712			8	.63	709
		9					9		
		10					10		
		11					11		
		12					12		
	South	1	1.2	713		South	1	.65	706
		2	1.2	713			2	.65	706
		3	1.4	715			3	.74	706
		4	1.5	715			4	.84	706
		5	1.5	714			5	.83	706
		6	1.6	714			6	.80	706
		7	1.4	713			7	.79	706
		8	1.4	713			8	.79	706
		9					9		
		10					10		
		11					11		
		12					12		
AVERAGES: ΔP√			1.1959	714.31	AVERAGES: ΔP√			0.8723	707.50

SCEC

Method 2: VELOCITY AND TEMPERATURE TRAVERSE DATA

Client/Facility:	OCSD P.2	Date:	12/11/13
Sample Location:	Outlet	Data By:	ALW
Unit Number:	Engine #3	Pitot ID:	59 TC ID 58
Test Condition:	Low/High	Pitot Cp:	.840
Barometric (in. Hg):	29.93	Pitot Leak Check:	✓

Test No. Low			Static Pressure (in. H_20) -.35		Test No. High			Static Pressure (in. H_20) -1.1"	
Time	Traverse Point		ΔP	Temperature	Time	Traverse Point		ΔP	Temperature
	Port	Point	in. H_20	°F		Port	Point	in. H_20	°F
	East	1	.84	487		East	1	1.4	493
		2	.84	487			2	1.4	493
		3	.81	487			3	1.7	495
		4	.80	487			4	1.6	495
		5	.79	487			5	1.3	503
		6	.56	487			6	1.1	503
		7	.54	487			7	1.0	503
		8	.54	487			8	1.0	503
		9					9		
		10					10		
		11					11		
		12					12		
	South	1	.69	490		South	1	1.2	498
		2	.69	490			2	1.2	498
		3	.83	490			3	1.6	500
		4	.83	490			4	1.5	500
		5	.79	488			5	1.4	504
		6	.72	488			6	1.4	504
		7	.65	490			7	1.1	504
		8	.65	490			8	1.1	504
		9					9		
		10					10		
		11					11		
		12					12		
AVERAGES:		ΔP√	1.1418	500.00	AVERAGES:		ΔP√	0.8480	488.25

SCEC

Method 2: VELOCITY AND TEMPERATURE TRAVERSE DATA

Client/Facility:	OCSD P.2	Date:	12/6/13
Sample Location:	Engine Outlet	Data By:	AW
Unit Number:	4	Pitot ID:	59 TC ID 58
Test Condition:	High / Low	Pitot Cp:	.840
Barometric (in. Hg):	30.17	Pitot Leak Check:	✓ 3"

Test No. High			Static Pressure (in. H_2O) -.50"		Test No. Low			Static Pressure (in. H_2O) -.40"	
Time	Traverse Point		ΔP	Temperature	Time	Traverse Point		ΔP	Temperature
	Port	Point	in. H_2O	°F		Port	Point	in. H_2O	°F
	East	1	1.3	524		East	1	.65	520
		2	1.3	524			2	.65	520
		3	1.5	527			3	.69	523
		4	1.4	527			4	.70	523
		5	1.1	527			5	.54	524
		6	.99	531			6	.53	524
		7	.89	531			7	.53	523
		8	.89	531			8	.47	523
		9					9		
		10					10		
		11					11		
		12					12		
	South	1	1.3	523		South	1	.53	510
		2	1.3	523			2	.53	510
		3	1.3	525			3	.53	511
		4	1.2	525			4	.56	511
		5	1.2	526			5	.55	513
		6	1.1	526			6	.55	513
		7	.97	526			7	.53	513
		8	.97	526			8	.47	516
		9	.				9	~~.47~~	~~516~~
		10					10		
		11					11		
		12					12		
AVERAGES:		$\sqrt{\Delta P}$	1.0781	52638	AVERAGES:		$\sqrt{\Delta P}$	0.7491	517.81

SCEC

Method 2: VELOCITY AND TEMPERATURE TRAVERSE DATA

Client/Facility:	OCSD P.2	Date:	12/9/13
Sample Location:	outlet	Data By:	ALW
Unit Number:	Engine #5	Pitot ID:	59 TC ID 58
Test Condition:	High / Low	Pitot Cp:	.840
Barometric (in. Hg):	29.99	Pitot Leak Check:	√3"

Test No. High			Static Pressure (in. H_2O) -.95"		Test No. Low			Static Pressure (in. H_2O) -.30"	
Time	Traverse Point		ΔP	Temperature	Time	Traverse Point		ΔP	Temperature
	Port	Point	in. H_2O	°F		Port	Point	in. H_2O	°F
	East	1	1.4	474		East	1	.65	465
		2	1.4	474			2	.65	465
		3	1.7	475			3	.72	465
		4	1.5	475			4	.69	465
		5	1.4	475			5	.51	465
		6	1.1	476			6	.50	465
		7	1.0	475			7	.46	463
		8	1.0	475			8	.45	463
		9					9		
		10					10		
		11					11		
		12					12		
	South	1	1.0	474		South	1	.54	464
		2	1.0	474			2	.54	464
		3	1.3	475			3	.56	464
		4	1.4	475			4	.58	464
		5	1.3	475			5	.55	464
		6	1.0	474			6	.60	464
		7	1.1	474			7	.55	464
		8	1.1	474			8	-.55	464
		9					9		
		10					10		
		11					11		
		12					12		
AVERAGES: ΔP√			1.1055	474.63	AVERAGES: ΔP√			0.7526	464.25

C

SAMPLE TRAIN DATA SHEET

Test Number: PM-1	Date: 12/10/13		
Client: OCSD	Barometric: 29.92		
Test Location: P2E1	Meter ID: CB15		
Test Condition: Normal	Meter Yd: 0.972		
Test Method: Scaqmd 5.1	Meter ΔH @: 60° 1.746		
Stack Diameter: 30"	Pitot ID: 7		
Number of Points: 24	Pitot Cp: .848		
Sample Time: 72 min	Probe Length/Mat'l: 3'/qtz		
Per Point: 3 min	Nozzle Dia/Mat'l: 0.275/QTZ		
Isokinetic Factor: 2.8	Assumed Stack T: 510		
	Assumed Meter T: 70		

IMPINGER DATA

Imp #	Mat'l	Weights Final	Initial	Net
1	H2O	847.2	636.7	
2	H2O	708.9	701.1	
3	ICW	612.6	609.5	
4	SG	670.8	658.7	
5	LR		110.0 ml	
6				

Total:

Filter Number: 55-839

SAMPLE TRAIN LEAK CHECK

	CFM	Vac.	By:
Meter Pre-Test	0.00	17"	ALW
Meter Post-Test	0.00	13"	ALW
	Check	Press.	By:
Pitot Pre-Test			
Pitot Post-Test			

SAMPLE TRAIN PRE-TEST CHECK

	Time	ΔH	Meter Reading	Temp
Initial				
Final				

TEST DATA

Sample Point	Time	METER CONDITIONS ΔP	ΔH	Meter Reading	TEMPERATURES °F Stack	METER Inlet	Outlet	Imp. Out	Probe	Oven	Other	Vac	Static Press.
South 12	0	.85	2.38	984.029	500	57	55	44	–	–	–	4	-.54
11	3	.85	2.38	986.6	504	57	56	45	–	–	–	4	
10	6	.82	2.29	989.2	504	57	56	45	–	–	–	4	
9	9	.76	2.13	991.8	506	58	56	46	–	–	–	4	
8	12	.72	2.01	994.3	500	59	57	48	–	–	–	4	
7	15	.74	2.07	996.7	497	60	57	50	–	–	–	4	
6	18	.75	2.1	999.1	490	61	57	51	–	–	–	4	
5	21	.78	2.18	1001.5	485	61	57	51	–	–	–	4	
4	24	.75	2.1	1004.0	470	62	57	52	–	–	–	4	
3	27	.79	2.21	1006.5	472	62	58	53	–	–	–	4	
2	30	.74	2.07	1008.9	450	63	58	53	–	–	–	4	
1	33	.75	2.1	1011.4	450	64	58	54	–	–	–	4	
End	36	–	–	1013.8	–	–	–	–	–	–	–	–	

SAMPLE TRAIN OPERATION

Operator: ALW

Assistant:

Imp. Setup/Rec: RN

Comments:

Start 09:00

Stop 10:15

TEST SUMMARY

Calc. By: RN

Time: 72

Static Press.: -.54

Stack Temp: 489.21

ΔP (in. H_2O): $\sqrt{0.8855}$

O_2/CO_2: 11.94 / 7.29

Meter Vol. (acf): 60.114

H_2O, V_{lc}: 123.5

Meter Temp.: 60.71

Meter Pres.: 2.20

SC

SAMPLE TRAIN DATA SHEET

Test Number:	PM-1	Date:	12/10/13
Client:	OCSZ	Barometric:	29.97
Test Location:	P2 E1	Meter ID:	CB 15
Test Condition:	Normal	Meter Yd:	0.972
Test Method:	5.1	Meter ΔH @:	60° 1.746
Stack Diameter:	32"	Pitot ID:	7
Number of Points:	24	Pitot Cp:	.848
Sample Time:	72 min	Probe Length/Mat'l:	3'/a t z
Per Point:	3 min	Nozzle Dia/Mat'l:	
Isokinetic Factor:	2.8	Assumed Stack T:	
		Assumed Meter T:	

IMPINGER DATA

Imp #	Mat'l	Weights Final	Initial	Net
1				
2		SEE		
3		PAGE #1		
4				
5				
6				

Total:

Filter Number:

SAMPLE TRAIN LEAK CHECK

	CFM	Vac.	By:
Meter Pre-Test	0.00	17"	ALW
Meter Post-Test	0.00	13"	ALW
	Check	**Press.**	**By:**
Pitot Pre-Test			
Pitot Post-Test			

SAMPLE TRAIN PRE-TEST CHECK

	Time	ΔH	Meter Reading	Temp
Initial				
Final				

TEST DATA

Sample Point	Time	METER CONDITIONS ΔP	ΔH	Meter Reading	TEMPERATURES °F Stack	METER Inlet	Outlet	Imp. Out	Probe	Oven	Other	Vac	Static Press.
East 12	36	.70	1.96	1013.8	495	64	58	54	—	—	—	4	
11	39	.70	1.96	1016.3	495	64	59	54	—	—	—	4	
10	42	.72	2.01	1018.6	500	65	59	55	—	—	—	4	
9	45	.72	2.01	1020.0	503	65	59	55	—	—	—	4	
8	48	.74	2.07	1023.4	497	66	60	56	—	—	—	4	
7	51	.76	2.13	1025.8	494	66	60	56	—	—	—	4	
6	54	.90	2.52	1028.3	490	67	60	56	—	—	—	4	
5	57	.87	2.43	1030.9	483	67	60	57	—	—	—	4	
4	60	.87	2.43	1033.6	488	67	60	57	—	—	—	4	
3	63	.90	2.52	1036.2	485	68	60	58	—	—	—	4	
2	66	.85	2.38	1038.9	490	70	60	58	—	—	—	4	
1	69	.82	2.29	1041.6	493	70	60	58	—	—	—	4	
	72	—	—	1044.143	—	—	—	—	—	—	—	—	

SAMPLE TRAIN OPERATION

Operator:	ALW
Assistant:	
Imp. Setup/Rec:	RN

Comments:

Start 09:00

Stop 10:15

TEST SUMMARY

Calc. By:	
Time:	
Static Press:	
Stack Temp:	
ΔP (in. H_2O):	
O_2/CO_2:	
Meter Vol. (acf):	
H_2O, V_{lc}:	
Meter Temp.:	
Meter Pres.:	

SCEC

Method 5: SAMPLE TRAIN DATA SHEET

Test Number:	5.1 Engine #2	Date:	12/5/13
Client:	OCSD	Barometric:	30.01
Test Location:	Outlet	Meter ID:	CB15
Test Condition:	Normal	Meter Yd:	0.972
Test Method:	5.1	Meter ΔH @:	60° 1.746
Stack Diameter:		Pitot ID:	7
Number of Points:	24	Pitot Cp:	.848
Sample Time:	~~72~~ min	Probe Length/Mat'l:	3'/QTZ
Per Point:	3 min	Nozzle Dia/Mat'l:	0.275/QTZ
Isokinetic Factor:	1.9	Assumed Stack T:	500
		Assumed Meter T:	75

IMPINGER DATA

Imp #	Mat'l	Weights Final	Weights Initial	Weights Net
1	DI H2O	898.7	704.0	194.7
2	DI H2O	657.5	644.4	13.1
3	KO	614.4	612.0	2.4
4	SG	644.0	633.4	10.6
5	LR		-110.0	
6				
Total:				320.2
Filter Number:	55-837			

SAMPLE TRAIN LEAK CHECK

	CFM	Vac.	By:
Meter Pre-Test	0.00	19"	ALW
Meter Post-Test	0.00	15"	ALW
	Check	Press.	By:
Pitot Pre-Test			
Pitot Post-Test			

SAMPLE TRAIN PRE-TEST CHECK

	Time	ΔH	Meter Reading	Temp
Initial				
Final				

TEST DATA

Sample Point	Time	METER CONDITIONS ΔP	ΔH	Meter Reading	TEMPERATURES °F Stack	METER Inlet	METER Outlet	Imp. Out	Probe	Oven	Other	Vac	Static Press.
South 12	0	.84	1.59	815.277	713	73	72	64	—	—	—	3	-.61
11	3	.84	1.59	817.7	712	74	72	64	—	—	—	3	
10	6	.78	1.48	820.0	713	75	73	64	—	—	3	3	
9	9	.85	1.62	822.1	714	76	73	65	—	—	—	3	
8	12	.87	1.65	824.3	714	77	74	65	—	—	—	3	
7	15	.90	1.71	826.5	715	78	74	65	—	—	—	3	
6	18	.90	1.71	828.8	716	78	74	65	—	—	—	3	
5	21	.94	1.79	831.1	716	77	75	65	—	—	—	3	
4	24	.95	1.81	833.4	716	80	76	65	—	—	—	3	
3	27	.75	1.42	835.7	716	81	76	65	—	—	—	3	
2	30	.75	1.42	837.9	716	81	77	65	—	—	—	3	
1	33	.75	1.42	840.0	716	82	77	65	—	—	—	3	
	36	—	—	842.1	—	—	—	—	—	—	—	—	

SAMPLE TRAIN OPERATION

Operator: ALW
Assistant:
Imp. Setup/Rec: RN

Comments: Start 10:35
Stop 11:55

TEST SUMMARY

Calc. By:
Time:
Static Press.:
Stack Temp: 715.42
ΔP (in. H_2O):
O_2/CO_2:
Meter Vol. (acf):
H_2O, V_{lc}:
Meter Temp.: 78.48
Meter Pres.:

D - 24

SCEC

Method 5: SAMPLE TRAIN DATA SHEET

Test Number:	PM-1	Date:	12/5/13
Client:	OCSD	Barometric:	30.01
Test Location:	P2E2	Meter ID:	CB-15
Test Condition:	NORMAL	Meter Yd:	0.972
Test Method:	SCAQMD 5.1	Meter ΔH @:	60' 1.744
Stack Diameter:	30	Pitot ID:	7
Number of Points:	24	Pitot Cp:	0.84
Sample Time:	~~36~~ 72	Probe Length/Mat'l:	QTZ/8'
Per Point:	3	Nozzle Dia/Mat'l:	0.275/QTZ
Isokinetic Factor:	1.9	Assumed Stack T:	500
		Assumed Meter T:	75

IMPINGER DATA

Imp #	Mat'l	Weights		
		Final	Initial	Net
1				
2				
3				
4				
5				
6				
Total:				
Filter Number:				

SAMPLE TRAIN LEAK CHECK

	CFM	Vac.	By:
Meter Pre-Test			
Meter Post-Test			
	Check	**Press.**	**By:**
Pitot Pre-Test			
Pitot Post-Test			

SAMPLE TRAIN PRE-TEST CHECK

	Time	ΔH	Meter Reading	Temp
Initial				
Final				

TEST DATA

Sample Point	Time	METER CONDITIONS			TEMPERATURES °F							Vac	Static Press.
		ΔP	ΔH	Meter Reading	Stack	METER Inlet	METER Outlet	Imp. Out	Probe	Oven	Other		
East 12	36	.85	1.62	842.1	715	82	77	59	—	—	—	3	
11	39	.85	1.62	844.2	715	82	77	57	—	—	—	3	
10	42	.87	1.65	846.4	715	82	78	59	—	—	—	3	
9	45	.90	1.71	848.6	716	83	78	58	—	—	—	3	
8	48	.90	1.71	850.8	716	83	78	58	—	—	—	3	
7	51	.91	1.73	853.1	715	83	78	57	—	—	—	3	
6	54	.94	1.79	855.4	715	84	79	57	—	—	—	3	
5	57	1.0	1.9	857.7	715	84	79	57	—	—	—	3	
4	60	1.0	1.9	860.1	716	84	79	57	—	—	—	3	
3	63	1.1	2.09	862.4	717	85	79	58	—	—	—	3	
2	66	1.1	2.09	864.9	718	85	79	58	—	—	—	3	
1	69	1.1	2.09	867.4	719	85	79	58	—	—	—	3	
	72	—	—	869.843	—	—	—	—	—	—	—	—	

SAMPLE TRAIN OPERATION

Operator:

Assistant:

Imp. Setup/Rec:

Comments:

TEST SUMMARY

Calc. By:

Time:

Static Press:

Stack Temp:

ΔP (in. H_2O):

O_2/CO_2:

Meter Vol. (acf):

H_2O, V_{lc}:

Meter Temp.:

Meter Pres.:

SAMPLE TRAIN DATA SHEET

Test Number: Run #1 Particulate	Date: 12/11/13		
Client: OCSD	Barometric: 29.93		
Test Location: Engine #3 P.2	Meter ID: CB15		
Test Condition: Normal	Meter Yd: 0.972		
Test Method: SCAQMD 5.1	Meter ΔH @: 60° 1.746		
Stack Diameter: 29"	Pitot ID: 7		
Number of Points: 24	Pitot Cp: .848		
Sample Time: 72min	Probe Length/Mat'l: 3'/qtz		
Per Point: 3min	Nozzle Dia/Mat'l: 0.275/Qtz		
Isokinetic Factor: 2.8	Assumed Stack T: 500		
	Assumed Meter T: 75		

IMPINGER DATA

Imp #	Mat'l	Weights Final	Weights Initial	Weights Net
1	DI	849.1	645.8	
2	DI	707.0	694.3	
3	KO	612.5	607.6	
4	SG	710.4	697.1	
5	LW			<-105>
6				
Total:				

Filter Number: 55-834

SAMPLE TRAIN LEAK CHECK

	CFM	Vac.	By:
Meter Pre-Test	0.00	20"	ALW
Meter Post-Test	0.00	14"	ALW
	Check	Press.	By:
Pitot Pre-Test			
Pitot Post-Test			

SAMPLE TRAIN PRE-TEST CHECK

	Time	ΔH	Meter Reading	Temp
Initial				
Final				

TEST DATA

Sample Point	Time	Meter Conditions ΔP	ΔH	Meter Reading	Temperatures °F Stack	Meter Inlet	Meter Outlet	Imp. Out	Probe	Oven	Other	Vac	Static Press.
South 12	0	.71	1.99	45.521	485	53	53	37	—	—	—	3	-0.64
11	3	.72	2.01	47.9	488	53	53	37	—	—	—	3	
10	6	.75	2.1	50.2	488	54	53	38	—	—	—	3	
9	9	.75	2.1	52.7	487	54	53	39	—	—	—	3	
8	12	.77	2.12	55.1	487	55	54	40	—	—	—	3	
7	15	.74	2.07	57.5	486	55	54	42	—	—	—	3	
6	18	.84	2.35	59.9	486	56	54	43	—	—	—	4	
5	21	.84	2.35	62.4	486	56	54	44	—	—	—	4	
4	24	.87	2.44	65.0	489	57	54	45	—	—	—	4	
3	27	.85	2.38	67.7	490	58	54	46	—	—	—	4	
2	30	.67	1.88	70.3	493	60	54	47	—	—	—	3	
1	33	.60	1.68	72.7	493	61	54	48	—	—	—	3	
End	36	—	—	74.9	—	—	—	—	—	—	—	—	

SAMPLE TRAIN OPERATION

Operator: ALW

Assistant:

Imp. Setup/Rec: GM/RN

Comments:

Start 09:46

Stop 10:00

TEST SUMMARY

Calc. By: RN

Time: 72

Static Press: -.64

Stack Temp: 488.67

ΔP (in. H_2O): √ 0.8826

O_2/CO_2: 12.07 / 7.28

Meter Vol. (acf): 59.812

H_2O, V_{lc}: 129.2

Meter Temp.: 59.48

Meter Pres.: 2.19

EC

SAMPLE TRAIN DATA SHEET

Test Number: Run # 1 Particulate	Date: 12/11/13	IMPINGER DATA					SAMPLE TRAIN LEAK CHECK				
Client: OCSD	Barometric: 29.93	Imp #	Mat'l	Weights				CFM	Vac.	By:	
Test Location: Engine #3 P2	Meter ID: CB15			Final	Initial	Net	Meter Pre-Test				
Test Condition: Normal	Meter Yd: 0.972	1					Meter Post-Test				
Test Method: Scaqmd 5.1	Meter ΔH @: 60° 1.746	2						Check	Press.	By:	
Stack Diameter: 29"	Pitot ID: 7	3					Pitot Pre-Test				
Number of Points: 24	Pitot Cp: .848	4					Pitot Post-Test				
Sample Time: 72min	Probe Length/Mat'l: 3'/qtz	5					SAMPLE TRAIN PRE-TEST CHECK				
Per Point: 3min	Nozzle Dia/Mat'l:	6						Time	ΔH	Meter Reading	Temp
Isokinetic Factor: 2.8	Assumed Stack T:	Total:					Initial				
	Assumed Meter T:	Filter Number:					Final				

TEST DATA

Sample Point	Time	METER CONDITIONS ΔP	ΔH	Meter Reading	TEMPERATURES °F Stack	METER Inlet	METER Outlet	Imp. Out	Probe	Oven	Other	Vac	Static Press.
East 12	36	.75	2.1	74.9	493	63	56	48	–	–	–	4	
11	39	.75	2.1	77.3	493	64	56	48	–	–	–	4	
10	42	.72	2.01	79.7	490	65	57	49	–	–	–	4	
9	45	.74	2.07	82.1	490	66	57	50	–	–	–	4	
8	48	.73	2.04	84.6	487	68	58	52	–	–	–	4	
7	51	.73	2.04	87.0	486	70	58	54	–	–	–	4	
6	54	.84	2.35	89.4	485	71	59	56	–	–	–	4	
5	57	.85	2.38	92.0	486	72	60	57	–	–	–	4	
4	60	.87	2.44	94.6	487	72	60	58	–	–	–	4	
3	63	.87	2.44	97.3	490	73	61	59	–	–	–	4	
2	66	.89	2.49	99.9	490	74	62	60	–	–	–	4	
1	69	.89	2.49	102.6	493	74	63	62	–	–	–	4	
End	72	–	–	105.333	–	–	–	–	–	–	–	–	

SAMPLE TRAIN OPERATION

Operator: AW

Assistant:

Imp. Setup/Rec: GM/RN

Comments:

Start 08:46

Stop 10:00

TEST SUMMARY

Calc. By:

Time:

Static Press:

Stack Temp:

ΔP (in. H_2O):

O_2/CO_2:

Meter Vol. (acf):

H_2O, V_{lc}:

Meter Temp.:

Meter Pres.:

SCEC
SAMPLE TRAIN DATA SHEET

Test Number: PM-1	Date: 12/6/13		
Client: OCSD	Barometric: 30.17		
Test Location: P2 EU	Meter ID: CB15		
Test Condition: NORMAL	Meter Yd: 0.972		
Test Method: SCAQMD 5.1	Meter ΔH @: 60° 1.746		
Stack Diameter: 29"	Pitot ID: 7		
Number of Points: 24	Pitot Cp: .848		
Sample Time: 72 min	Probe Length/Mat'l: 3' / QTZ		
Per Point: 3 min	Nozzle Dia/Mat'l: 0.275 / QTZ		
Isokinetic Factor: 2.2	Assumed Stack T: 500		
	Assumed Meter T: 75		

IMPINGER DATA

Imp #	Mat'l	Weights ON PAGE 2 Final	Initial	Net
1	DI H2O	805.8 ~~641.5~~ gm	663.5	
2	DI H2O	754 ~~619.5~~ gm	722.5	
3	KO	gm ~~648~~ 614.5	612.0	
4	SG	691.5	682.1	
5	LR		110.0	
6				
Total:				
Filter Number:		55-822		

SAMPLE TRAIN LEAK CHECK

	CFM	Vac.	By:
Meter Pre-Test	0.0	16"	ALW
Meter Post-Test	0.0	15"	ALW
	Check	Press.	By:
Pitot Pre-Test			
Pitot Post-Test			

SAMPLE TRAIN PRE-TEST CHECK

	Time	ΔH	Meter Reading	Temp
Initial				
Final				

TEST DATA

Sample Point	Time	METER CONDITIONS ΔP	ΔH	Meter Reading	TEMPERATURES °F Stack	METER Inlet	METER Outlet	Imp. Out	Probe	Oven	Other	Vac	
South 12	0	.65	1.43	871.422	524	59	59	48	—	—	—	3	-.75
1 11	3	.60	1.32	873.5	524	60	59	49	—	—	—	3	
20 10	6	.60	1.32	875.5	525	61	59	50	—	—	—	3	
60 9	9	.61	1.34	877.4	525	62	60	52	—	—	—	3	
8	12	.60	1.32	879.4	525	64	60	53	—	—	—	3	
7	15	.62	1.36	881.3	526	65	60	54	—	—	—	3	
6	18	.61	1.34	883.3	526	66	61	55	—	—	—	3	
5	21	.62	1.36	885.3	525	67	61	55	—	—	—	3	
4	24	.60	1.32	887.3	524	67	62	56	—	—	—	3	
3	27	.60	1.32	889.3	524	68	62	56	—	—	—	3	
2	30	.5	1.1	891.2	524	69	63	57	—	—	—	3	
1	33	.5	1.1	893.1	524	69	63	57	—	—	—	3	
Port Change	—36	—	—	894.9	—	—	—	—	—	—	—	—	

SAMPLE TRAIN OPERATION

- Operator: ALW
- Assistant:
- Imp. Setup/Rec: RW

Comments:

Start: 08:26
Stop: 09:46

TEST SUMMARY

- Calc. By: RN
- Time: 72
- Static Press: -.75
- Stack Temp: 522.63
- ΔP (in. Hg): √ 0.8085
- O_2/CO_2: 11.77 / 7.48
- Meter Vol. (acf): 49.317
- H_2O, V_{lc}: 127.3
- Meter Temp.: 65.75
- Meter Pres.: 1.44

SCEC

Method 5: SAMPLE TRAIN DATA SHEET ~~PRE-CTM~~

Test Number: PM-1	Date: 12/6/13		
Client: OCSD	Barometric: 30.17		
Test Location: P2 E4	Meter ID: CB15 SEE		
Test Condition: Normal	Meter Yd: 0.9022		
Test Method: 5.1	Meter ΔH @: 60 1.746 PG		
Stack Diameter: 29"	Pitot ID: 7		
Number of Points: 24	Pitot Cp: .848		
Sample Time: 72	Probe Length/Mat'l: 3'/glass		
Per Point: 3	Nozzle Dia/Mat'l:		
Isokinetic Factor: 2.2	* Assumed Stack T:		
	* Assumed Meter T:		

IMPINGER DATA

Imp #	Mat'l	Weights Final	Initial	Net
1	DI H2O	865.8	663.5	
2	H2O	745.6	722.5	
3	KO	614.5	612.0	
4	SG	691.5	682.1	
5	LR		110.0	
6				
Total:				
Filter Number:				

SAMPLE TRAIN LEAK CHECK

	CFM	Vac.	By:
Meter Pre-Test	0.0	16"	ALW
Meter Post-Test	0.0	15"	ALW
	Check	Press.	By:
Pitot Pre-Test			
Pitot Post-Test			

SAMPLE TRAIN PRE-TEST CHECK

	Time	ΔH	Meter Reading	Temp
Initial				
Final				

TEST DATA

Sample Point	Time	ΔP	ΔH	Meter Reading	Stack	Meter Inlet	Meter Outlet	Imp. Out	Probe	Oven	Other	Vac	Static Press.
East 12	36	.66	1.45	894.9	522	69	63	56	—	—	—	3	
11	39	.63	1.39	896.9	522	69	64	56	—	—	—	3	
10	42	.63	1.39	898.9	522	70	64	56	—	—	—	3	
9	45	.66	1.45	901.0	525	71	64	57	—	—	—	3	
8	48	.65	1.43	903.0	525	71	65	58	—	—	—	3	
7	51	.70	1.54	905.1	526	72	65	59	—	—	—	3	
6	54	.70	1.54	907.2	524	73	66	60	—	—	—	3	
5	57	.79	1.74	909.3	518	73	66	60	—	—	—	3	
4	60	.80	1.76	911.6	515	74	66	60	—	—	—	3	
3	63	.82	1.8	913.9	515	74	67	61	—	—	—	3	
2	66	.78	1.72	916.2	516	74	67	61	—	—	—	3	
1	69	.83	1.83	918.4	517	75	68	61	—	—	—	3	
	72	—	—	920.239	—	—	—	—	—	—	—	—	

SAMPLE TRAIN OPERATION

Operator: ALW

Assistant:

Imp. Setup/Rec: RN

Comments:

TEST SUMMARY

Calc. By:

Time:

Static Press:

Stack Temp:

ΔP (in. H_2O):

O_2/CO_2:

Meter Vol. (acf):

H_2O, V_{lc}:

Meter Temp.:

Meter Pres.:

SCEC
SAMPLE TRAIN DATA SHEET

Test Number: Run 1	Date: 12/9/13	**IMPINGER DATA**					**SAMPLE TRAIN LEAK CHECK**			
Client: OCSD	Barometric: 29.99	Imp #	Mat'l	Weights Final	Initial	Net		CFM	Vac.	By:
Test Location: Engine #5	Meter ID: CB 15	1	H2O	645.6	643.6		Meter Pre-Test	0.00	17"	ALW
Test Condition: Normal	Meter Yd: 0.972	2	H2O	698.0	640.5		Meter Post-Test	0.00	14"	ALW
Test Method: SCAQMD 5.1	Meter ΔH @: 60° 1.746	3	H2O	614.2	609.7			Check	Press.	By:
Stack Diameter: 29"	Pitot ID:	4	SG	703.9	691.6		Pitot Pre-Test			
Number of Points: 24"	Pitot Cp: 0.84	5	MW		110		Pitot Post-Test			
Sample Time: 72 min	Probe Length/Mat'l: 3'/QTZ	6								
Per Point: 3 min	Nozzle Dia/Mat'l: 0.275/QTZ	Total:								
Isokinetic Factor: 2.8	Assumed Stack T: 440°F	Filter Number: 55-835								
	Assumed Meter T: ~~59~~ 70°F									

SAMPLE TRAIN PRE-TEST CHECK

	Time	ΔH	Meter Reading	Temp
Initial				
Final				

TEST DATA

Sample Point	Time	ΔP	ΔH	Meter Reading	Stack	Meter Inlet	Meter Outlet	Imp. Out	Probe	Oven	Other	Vac	
South 12	0	.70	1.96	922.314	455	55	53	41	—	—	—	4	-.69
11	3	.75	2.1	924.7	468	56	54	40	—	—	—	4	
10	6	.76	2.1	927.1	479	56	54	38	—	—	—	4	
9	9	.75	2.1	929.6	475	57	54	40	—	—	—	4	
8	12	.72	2.01	932.0	466	59	55	42	—	—	—	4	
7	15	.72	2.01	934.4	460	60	55	45	—	—	—	4	
6	18	.77	2.16	936.7	453	61	55	48	—	—	—	4	
5	21	.77	2.16	938.9	480	62	56	50	—	—	—	4	
4	24	.80	2.24	941.7	475	63	56	51	—	—	—	4	
3	27	.70	1.96	944.2	484	63	57	52	—	—	—	4	
2	30	.70	1.96	946.5	480	64	57	53	—	—	—	4	
1	33	.68	1.90	948.9	481	65	57	54	—	—	—	4	
—	36	—	—	951.2	—	—	—	—	—	—	—	—	

SAMPLE TRAIN OPERATION

Operator: ALW
Assistant:
Imp. Setup/Rec: RN

Comments:
Start: 08:51
Stop: 10:13

TEST SUMMARY

Calc. By: RN
Time: 72
Static Press: -.69
Stack Temp: 476.63
ΔP (in. Hg): $\sqrt{0.8813}$
O_2/CO_2: 12.46/6.91
Meter Vol. (acf): 59.646
H_2O, V_{lc}: 119.1
Meter Temp.: 60.38
Meter Pres.: 2.18

SCEC
SAMPLE TRAIN DATA SHEET

Test Number:	Run 1	Date:	12/9/13
Client:	OCSD	Barometric:	29.99
Test Location:	Engine #5	Meter ID:	CB 15
Test Condition:	Normal	Meter Yd:	0.972
Test Method:	SCAQMD 5.1	Meter ΔH @:	60° 1.746
Stack Diameter:	29"	Pitot ID:	
Number of Points:	24"	Pitot Cp:	0.84
Sample Time:	72 min	Probe Length/Mat'l:	3' / QTZ
Per Point:	3 min	Nozzle Dia/Mat'l:	0.275
Isokinetic Factor:	2.8	Assumed Stack T:	480F
		Assumed Meter T:	70

IMPINGER DATA

Imp #	Mat'l	Weights Final	Weights Initial	Weights Net
1				
2				
3				
4				
5				
6				
Total:				
Filter Number:				

SAMPLE TRAIN LEAK CHECK

	CFM	Vac.	By:
Meter Pre-Test	0.00	17"	ALW
Meter Post-Test	0.00	14"	ALW
	Check	Press.	By:
Pitot Pre-Test			
Pitot Post-Test			

SAMPLE TRAIN PRE-TEST CHECK

	Time	ΔH	Meter Reading	Temp
Initial				
Final				

TEST DATA

Sample Point	Time	METER CONDITIONS ΔP	ΔH	Meter Reading	TEMPERATURES °F Stack	METER Inlet	METER Outlet	Imp. Out	Probe	Oven	Other	Vac	
East 12	36	.68	1.90	951.2	480	62	58	52	—	—	—	4	
11	39	.72	2.01	953.5	482	63	59	51	—	—	—	4	
10	42	.72	2.01	955.9	481	63	59	52	—	—	—	4	
9	45	.73	2.04	958.3	481	64	57	53	—	—	—	4	
8	48	.70	1.96	960.8	480	65	57	55	—	—	—	4	
7	51	.80	2.24	963.1	483	66	59	56	—	—	—	4	
6	54	.87	2.44	965.7	480	67	60	57	—	—	—	4	
5	57	.88	2.46	968.3	482	68	60	57	—	—	—	4	
4	60	.94	2.63	969.9	480	69	61	58	—	—	—	5	
3	63	.94	2.63	973.7	484	70	61	59	—	—	—	5	
2	66	.95	2.66	976.4	485	71	62	60	—	—	—	5	
1	69	.95	2.66	979.2	485	72	62	61	—	—	—	5	
END	72	—	—	981.960	—	—	—	—	—	—	—	—	

SAMPLE TRAIN OPERATION

Operator: ALW
Assistant:
Imp. Setup/Rec: RN

Comments:
Start 08:51
Stop 10:13

TEST SUMMARY

Calc. By:
Time:
Static Press:
Stack Temp:
ΔP (in. Hg):
O_2/CO_2:
Meter Vol. (acf):
H_2O, V_{lc}:
Meter Temp.:
Meter Pres.:

SCEC
SAMPLE TRAIN DATA SHEET

Test Number:	Run#1
Client:	OCSD
Test Location:	P2 E#3
Test Condition:	NORMAL
Test Method:	EPA 323
Stack Diameter:	30
Number of Points:	1
Sample Time:	60 min
Per Point:	10
Isokinetic Factor:	0.4LPM

Date:	12/11/13
Barometric:	29.93
Meter ID:	CB12
Meter Yd:	0.997
Meter ΔH @:	NA
Pitot ID:	NA
Pitot Cp:	NA
Probe Length/Mat'l:	3' / QTZ
Nozzle Dia/Mat'l:	NA
Assumed Stack T:	NA
Assumed Meter T:	NA

IMPINGER DATA

Imp #	Mat'l	Weights Final	Weights Initial	Net
1	KO	88.5	87.0	
2	DI H2O	99.9	99.9	
3	SG	104.7	104.4	
4				
5				
6				

Total:

Filter Number:

SAMPLE TRAIN LEAK CHECK

	CFM	Vac.	By:
Meter Pre-Test	0.0	3"	ALW
Meter Post-Test	0.0	0"	ALW
	Check	**Press.**	**By:**
Pitot Pre-Test			
Pitot Post-Test			

SAMPLE TRAIN PRE-TEST CHECK

	Time	ΔH	Meter Reading	Temp
Initial				
Final				

TEST DATA

Sample Point	Time	METER CONDITIONS ΔP	ΔH LPM	Meter Reading	TEMPERATURES °F Stack	METER Inlet	METER Outlet	Imp. Out	Probe	Oven	Other	Vac	
	0	–	0.4	581.0	495	61	61	–	–	–	–	0	
	10	–	↓	584.8	↓	66	66	–	–	–	–	0	
	20	–		588.8		73	73	–	–	–	–	0	
	30	–		593.2		79	79	–	–	–	–	0	
	40	–		596.8		82	82	–	–	–	–	0	
	50	–		601.2		83	83	–	–	–	–	0	
	60	–	–	604.9	–	–	–	–	–	–	–	–	

SAMPLE TRAIN OPERATION

Operator: ALW

Assistant: RN

Imp. Setup/Rec: GM

Comments:

Start: 10:16

Stop: 11:16

TEST SUMMARY

Calc. By: RN

Time: 60

Static Press: NA

Stack Temp: 495

ΔP (in. Hg): NA

O_2/CO_2: SEE CEMS

Meter Vol. (acf): 23.9

H_2O, V_{lc}: 1.8

Meter Temp.: 740

Meter Pres.: 0.01

S C

SAMPLE TRAIN DATA SHEET

Test Number:	Run 2A	Date:	12/11/13
Client:	OCSD	Barometric:	29.93
Test Location:	P2E3	Meter ID:	CB11
Test Condition:	Normal	Meter Yd:	1.003
Test Method:	EPA 323	Meter ΔH @:	NA
Stack Diameter:	30	Pitot ID:	NA
Number of Points:	1	Pitot Cp:	NA
Sample Time:	60min	Probe Length/Mat'l:	3'/QTZ
Per Point:	—	Nozzle Dia/Mat'l:	NA
Isokinetic Factor:	0.4LPM	Assumed Stack T:	NA
		Assumed Meter T:	NA

IMPINGER DATA

Imp #	Mat'l	Weights Final	Weights Initial	Net
1	KO	90.2	83.5	
2	HPLC DI	107.2	107.2	
3	SG	104.2	103.7	
4				
5				
6				
Total:				
Filter Number:				

SAMPLE TRAIN LEAK CHECK

	CFM	Vac.	By:
Meter Pre-Test	0.0	3"	ALW
Meter Post-Test	0.0	0"	ALW
	Check	Press.	By:
Pitot Pre-Test			
Pitot Post-Test			

SAMPLE TRAIN PRE-TEST CHECK

	Time	ΔH	Meter Reading	Temp
Initial				
Final				

TEST DATA

Sample Point	Time	METER CONDITIONS ΔP	ΔH LPM	Meter Reading	TEMPERATURES °F Stack	METER Inlet	METER Outlet	Imp. Out	Probe	Oven	Other	Vac	Static Press.
	0	—	0.4	393.0	491	64	—	—	—	—	—	0	
	10	—		396.6		64	—	—	—	—	—	0	
	20	—		400.4		64	—	—	—	—	—	0	
	30	—		405.2		66	—	—	—	—	—	0	
	40	—		409.6		69	—	—	—	—	—	0	
	50	—		413.4		70	—	—	—	—	—	0	
	60	—	—	416.5	—	—	—	—	—	—	—	—	

SAMPLE TRAIN OPERATION

Operator: ALW

Assistant: GM

Imp. Setup/Rec: RN

Comments:

Start 12:07

Stop 13:07

TEST SUMMARY

Calc. By: RN

Time: 60MIN.

Static Press: NA

Stack Temp: 491

ΔP (in. H_2O): NA

O_2/CO_2: NA

Meter Vol. (acf): 23.5

H_2O, V_{lc}: 2.2

Meter Temp.: 67.17

Meter Pres.: 0.01

S C
SAMPLE TRAIN DATA SHEET

Test Number: Run 2B	Date: 12/11/13		
Client: OCSD	Barometric: 29.93		
Test Location: P2E3	Meter ID: CB12		
Test Condition: Normal	Meter Yd: 0.997		
Test Method: EPA 323	Meter ΔH @: NA		
Stack Diameter: 30	Pitot ID: NA		
Number of Points: 1	Pitot Cp: NA		
Sample Time: 60 min	Probe Length/Mat'l: 3' / QTZ		
Per Point: 10	Nozzle Dia/Mat'l: NA		
Isokinetic Factor: RATE 0.4 LPM	Assumed Stack T: NA		
	Assumed Meter T: NA		

IMPINGER DATA

Imp #	Mat'l	Weights Final	Initial	Net
1	KO	88.5	86.9	
2	HPLC DI	106.9	106.9	
3	SG	100.5	100.1	
4				
5				
6				
Total:				
Filter Number:				

SAMPLE TRAIN LEAK CHECK

	CFM	Vac.	By:
Meter Pre-Test	0.0	3"	ALW
Meter Post-Test	0.0	3"	ALW
	Check	Press.	By:
Pitot Pre-Test			
Pitot Post-Test			

SAMPLE TRAIN PRE-TEST CHECK

	Time	ΔH	Meter Reading	Temp
Initial				
Final				

TEST DATA

Sample Point	Time	ΔP	ΔH	Meter Reading	Stack	Meter Inlet	Meter Outlet	Imp. Out	Probe	Oven	Other	Vac	Static Press.
	0	–	0.4	605.0	491	75	–	–	–	–	–	0	
	10	–	↓	609.2	↓	74	–	–	–	–	–	0	
	20	–		613.2		75	–	–	–	–	–	0	
	30	–		616.8		76	–	–	–	–	–	0	
	40	–		621.0		80	–	–	–	–	–	0	
	50	–		625.1		83	–	–	–	–	–	0	
	60	–	–	629.4	–	–	–	–	–	–	–	–	

SAMPLE TRAIN OPERATION

Operator: ALW
Assistant: GM
Imp. Setup/Rec: RN

Comments:
Start 12:07
Stop 13:07

TEST SUMMARY

Calc. By: RN
Time: 60
Static Press: NA
Stack Temp: 491
ΔP (in. H_2O): NA
O_2/CO_2: NA
Meter Vol. (acf): 24.4
H_2O, V_{lc}: 2.0
Meter Temp.: 77.17
Meter Pres.: 0.01

SAMPLE TRAIN DATA SHEET

Test Number: RUN-3	Date: 12/11/13		
Client: OCSD	Barometric: 29.93		
Test Location: P2E3	Meter ID: CB12		
Test Condition: NORMAL	Meter Yd: 0.997		
Test Method: EPA 323	Meter ΔH @: NA		
Stack Diameter: 30	Pitot ID: NA		
Number of Points: 1	Pitot Cp: NA		
Sample Time: 60	Probe Length/Mat'l: 3'/OTZ		
Per Point: 10	Nozzle Dia/Mat'l: NA		
Isokinetic ~~Factor~~: RME	Assumed Stack T: NA		
0.4 LPM	Assumed Meter T: NA		

IMPINGER DATA

Imp #	Mat'l	Weights Final	Weights Initial	Net
1	KO	88.6	87.4	
2	DI H2O	101.9	101.4	
3	SG	105.1	104.9	
4				
5				
6				
Total:				
Filter Number:				

SAMPLE TRAIN LEAK CHECK

	CFM	Vac.	By:
Meter Pre-Test	000	3"	ACW
Meter Post-Test	0.00	3"	ACW
	Check	Press.	By:
Pitot Pre-Test			
Pitot Post-Test			

SAMPLE TRAIN PRE-TEST CHECK

	Time	ΔH	Meter Reading	Temp
Initial				
Final				

TEST DATA

Sample Point	Time	ΔP	ΔH LPM	Meter Reading	Stack	Meter Inlet	Meter Outlet	Imp. Out	Probe	Oven	Other	Vac	Static Press.
	0	–	0.4	632.0	495	87	–	–	–	–	–	0	
	10	–		636.1		90	–	–	–	–	–	0	
	20	–		640.0		92	–	–	–	–	–	0	
	30	–		644.3		94	–	–	–	–	–	0	
	40	–		647.6		96	–	–	–	–	–	0	
	50	–		652.0		95	–	–	–	–	–	0	
	60	–	–	655.8	–	–	–	–	–	–	–	–	

SAMPLE TRAIN OPERATION

Operator:

Assistant:

Imp. Setup/Rec:

Comments:
Start 13:19
Stop 14:19

TEST SUMMARY

Calc. By: RN
Time: 60
Static Press: NA
Stack Temp: 495
ΔP (in. H_2O): NA
O_2/CO_2: SEE Comp
Meter Vol. (acf): 23.8
H_2O, V_{lc}: 1.9
Meter Temp.: 92.3
Meter Pres.: 0.01

SCEC

EPA Method TO-15: TOTAL ORGANIC COMPOUNDS FIELD DATA SHEET

Job #: 2061.1053

Facility: OCSD Plant 2

Location: Engine #3

Date: 12/11/13

Operator: ALW

Control Device:

Sample Location: Outlet

Ambient Temperature: 53°F

Barometric Pressure:

SAMPLE A

Tank # : 2011

Initial Vacuum: 25"

Final Vacuum: 7"

TIME	VACUUM ("Hg)
0	25"
10	21"
20	18"
30	15"
40	12"
50	9"
60	7"

Leak Rate Pre: ✓

Leak Rate Post: ✓

SAMPLE B

Tank # : 170

Initial Vacuum: 25"

Final Vacuum: 8"

TIME	VACUUM ("Hg)
0	25"
10	22"
20	19"
30	16"
40	13"
50	10"
60	8"

Leak Rate Pre: ✓

Leak Rate Post: ✓

SAMPLE C

Tank #: 366

Initial Vacuum: 25"

Final Vacuum: 8"

TIME	VACUUM ("Hg)
0	25"
10	21"
20	18"
30	16"
40	14"
50	11"
60	8"

Leak Rate Pre: ✓

Leak Rate Post: ✓

SCEC

Appendix E

QA/QC SCAQMD Method 100.1

OCSD PLANT 2
ENGINE #1
December 10, 2013

NO_2 Converter Check

NO_2 Gas Concentration, ppm (C_0)	35.80 ppm
NO_2 Gas Concentration in NO mode, ppm (C_1)	0.10 ppm
NO_2 Gas Concentration in NOx mode, ppm (C_2)	34.00 ppm

%CE = **94.7% PASS**

$C_1 < 5\%$ of C_0 **PASS**

OCSD PLANT 2
ENGINE #2
December 5, 2013

NO_2 Converter Check

NO_2 Gas Concentration, ppm (C_0)	35.80 ppm
NO_2 Gas Concentration in NO mode, ppm (C_1)	0.00 ppm
NO_2 Gas Concentration in NOx mode, ppm (C_2)	34.20 ppm

%CE = **95.5% PASS**

$C_1 < 5\%$ of C_0 **PASS**

OCSD PLANT 2
ENGINE #3
December 11, 2013

NO_2 Converter Check

NO_2 Gas Concentration, ppm (C_0)	35.80 ppm
NO_2 Gas Concentration in NO mode, ppm (C_1)	0.10 ppm
NO_2 Gas Concentration in NOx mode, ppm (C_2)	34.00 ppm

%CE = **94.7% PASS**

$C_1 < 5\%$ of C_0 **PASS**

OCSD PLANT 2
ENGINE #4
December 6, 2013

NO_2 Converter Check

NO_2 Gas Concentration, ppm (C_0)	35.80 ppm
NO_2 Gas Concentration in NO mode, ppm (C_1)	0.00 ppm
NO_2 Gas Concentration in NOx mode, ppm (C_2)	34.00 ppm

%CE = **95.0% PASS**

$C_1 < 5\%$ of C_0 **PASS**

OCSD PLANT 2
ENGINE #5
December 9, 2013

NO_2 Converter Check

NO_2 Gas Concentration, ppm (C_0)	35.80 ppm
NO_2 Gas Concentration in NO mode, ppm (C_1)	0.00 ppm
NO_2 Gas Concentration in NOx mode, ppm (C_2)	34.10 ppm

%CE = **95.3% PASS**

$C_1 < 5\%$ of C_0 **PASS**

SCEC

CEMS LINEARITY

CLIENT/LOCATION: OCSD Plant 2 Engine 1 PRE-TEST DATE: 12/10/2013
VEHICLE / CEM I.D. TV-6 POST-TEST DATE: 12/10/2013
BY: RN

SPAN GAS RECORD

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		99.999% N2		
O_2	CC272639	12.5	CC107912	21
CO_2	CC272639	8.31	CC107912	16.70
NO_x	SA13976	42.40	CC121068	87.40
CO	CC160848	857.000	CC101717	1814.00
NO2	CC74096	35.8		

PRE NORMAL TEST

	ANALYZER				
	O_2	CO_2	NO_x	CO	SO_2
Analyzer Range	25	20	100	2000	
Zero Gas Value	0	0	0	0	
Analyzer Reads	0.01	-0.02	0.00	0.00	
High Gas Value	21	16.7	87.4	1814	
Analyzer Reads	21.11	16.79	86.50	1813.30	
Mid Gas Value	12.5	8.31	42.40	857.00	
Analyzer Reads	12.55	8.44	41.7	849.6	
Slope	1.0048	1.0066	0.9897	0.9996	
Y-Intercept	0.01	-0.02	0	0	
Predicted Concentration	12.570	8.345	41.963	856.669	
Difference	-0.020	0.095	-0.263	-7.069	
Difference, %	-0.1%	0.5%	-0.3%	-0.4%	
Status	PASS	PASS	PASS	PASS	

Absolute Value of Difference must be less than 1%

POST TEST NORMAL

	ANALYZER				
	O_2	CO_2	NO_x	CO	SO_2
Analyzer Range	25	20	100	2000	
Zero Gas Value	0	0	0	0	
Analyzer Reads	0.01	-0.03	0.20	0.00	
High Gas Value	21	16.7	87.4	1814	
Analyzer Reads	21.11	16.78	86.50	1811.30	
Mid Gas Value	12.5	8.31	42.40	857.00	
Analyzer Reads	12.56	8.46	41.8	857.3	
Slope	1.0048	1.0066	0.9874	0.9985	
Y-Intercept	0.01	-0.03	0.2	0	
Predicted Concentration	12.570	8.335	42.066	855.724	
Difference	-0.010	0.125	-0.266	1.576	
Difference, %	0.0%	0.6%	-0.3%	0.1%	
Status	PASS	PASS	PASS	PASS	

Absolute Value of Difference must be less than 1%

HIGH/LOW LOAD PRETEST

	ANALYZER				
	O_2	CO_2	NO_x	CO	SO_2
Analyzer Range	25	20	100	2000	
Zero Gas Value	0	0	0	0	
Analyzer Reads	0.01	-0.03	0.20	0.00	
High Gas Value	21	16.7	87.4	1814	
Analyzer Reads	21.11	16.78	86.50	1811.30	
Mid Gas Value	12.5	8.31	42.40	857.00	
Analyzer Reads	12.56	8.46	41.8	857.3	
Slope	1.0048	1.0066	0.9874	0.9985	
Y-Intercept	0.01	-0.03	0.2	0	
Predicted Concentration	12.570	8.335	42.066	855.724	
Difference	-0.010	0.125	-0.266	1.576	
Difference, %	0.0%	0.6%	-0.3%	0.1%	
Status	PASS	PASS	PASS	PASS	

Absolute Value of Difference must be less than 1%

HIGH/LOW LOAD POSTTEST

	ANALYZER				
	O_2	CO_2	NO_x	CO	SO_2
Analyzer Range	25	20	100	2000	
Zero Gas Value	0	0	0	0	
Analyzer Reads	-0.01	-0.03	0.10	0.00	
High Gas Value	21	16.7	87.4	1814	
Analyzer Reads	21.10	16.77	86.60	1813.30	
Mid Gas Value	12.5	8.31	42.40	857.00	
Analyzer Reads	12.56	8.44	41.8	856.3	
Slope	1.0052	1.0060	0.9897	0.9996	
Y-Intercept	-0.01	-0.03	0.1	0	
Predicted Concentration	12.555	8.330	42.063	856.669	
Difference	0.005	0.110	-0.263	-0.369	
Difference, %	0.0%	0.6%	-0.3%	0.0%	
Status	PASS	PASS	PASS	PASS	

Absolute Value of Difference must be less than 1%

CALIBRATION ERROR

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUNS:	PRE NORMAL TEST
SOURCE ID:	ENGINE #1	DATE:	12/10/2013
OPERATOR:	RN	PROJECT No.:	2061.1053

PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25.00			
O_2 - ZERO	0.00	0.01	-0.01	**-0.04**
O_2 - MID CAL	12.50	12.55	-0.05	**-0.20**
O_2 -HIGH CAL	21.00	21.11	-0.11	**-0.44**
CO_2 - FULL SCALE	20.00			
CO_2 - ZERO	0.00	-0.02	0.02	**0.10**
CO_2 - MID CAL	8.31	8.44	-0.13	**-0.65**
CO_2 -HIGH CAL	16.70	16.79	-0.09	**-0.45**
NO_x - FULL SCALE	100.00			
NO_x - ZERO	0.00	0.00	0.00	**0.00**
NO_x - MID CAL	42.40	42.30	0.10	**0.10**
NO_x -HIGH CAL	87.4	87.30	0.10	**0.10**
CO - FULL SCALE	2000.00			
CO - ZERO	0.0	0.00	0.00	**0.00**
CO - MID CAL	857.0	849.60	7.40	**0.37**
CO -HIGH CAL	1814.0	1813.30	0.70	**0.04**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

CALIBRATION ERROR

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUNS:		POST TEST NORMAL
SOURCE ID:	ENGINE #1	DATE:		12/10/2013
OPERATOR:	RN	PROJECT No.:		2061.1053
PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25.00			
O_2 - ZERO	0.00	0.01	-0.01	**-0.04**
O_2 - MID CAL	12.50	12.56	-0.06	**-0.24**
O_2 -HIGH CAL	21.00	21.11	-0.11	**-0.44**
CO_2 - FULL SCALE	20.00			
CO_2 - ZERO	0.00	-0.03	0.03	**0.15**
CO_2 - MID CAL	8.31	8.46	-0.15	**-0.75**
CO_2 -HIGH CAL	16.70	16.78	-0.08	**-0.40**
NO_x - FULL SCALE	100.00			
NO_x - ZERO	0.00	0.20	-0.20	**-0.20**
NO_x - MID CAL	42.40	41.80	0.60	**0.60**
NO_x -HIGH CAL	87.40	86.50	0.90	**0.90**
CO - FULL SCALE	2000.00			
CO - ZERO	0.00	0.00	0.00	**0.00**
CO - MID CAL	857.00	857.30	-0.30	**-0.01**
CO -HIGH CAL	1814.00	1811.30	2.70	**0.14**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

CALIBRATION ERROR

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUNS:	HIGH/LOW LOAD PRETEST
SOURCE ID:	ENGINE #1	DATE:	12/10/2013
OPERATOR:	RN	PROJECT No.:	2061.1053

PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25.00			
O_2 - ZERO	0.00	0.01	-0.01	**-0.04**
O_2 - MID CAL	12.50	12.56	-0.06	**-0.24**
O_2 -HIGH CAL	21.00	21.11	-0.11	**-0.44**
CO_2 - FULL SCALE	20.00			
CO_2 - ZERO	0.00	-0.03	0.03	**0.15**
CO_2 - MID CAL	8.31	8.46	-0.15	**-0.75**
CO_2 -HIGH CAL	16.70	16.78	-0.08	**-0.40**
NO_x - FULL SCALE	100.00			
NO_x - ZERO	0.00	0.2	-0.20	**-0.20**
NO_x - MID CAL	42.40	41.8	0.60	**0.60**
NO_x -HIGH CAL	87.40	86.5	0.90	**0.90**
CO - FULL SCALE	2000.00			
CO - ZERO	0.0	0.0	0.00	**0.00**
CO - MID CAL	857.0	857.3	-0.30	**-0.01**
CO -HIGH CAL	1814.0	1811.3	2.70	**0.14**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

CALIBRATION ERROR

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUNS:	HIGH/LOW LOAD POSTTEST
SOURCE ID:	ENGINE #1	DATE:	12/10/2013
OPERATOR:	RN	PROJECT No.:	2061.1053

PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25.00			
O_2 - ZERO	0.00	-0.01	0.01	**0.04**
O_2 - MID CAL	12.50	12.56	-0.06	**-0.24**
O_2 -HIGH CAL	21.00	21.10	-0.10	**-0.40**
CO_2 - FULL SCALE	20.00			
CO_2 - ZERO	0.00	-0.03	0.03	**0.15**
CO_2 - MID CAL	8.31	8.44	-0.13	**-0.65**
CO_2 -HIGH CAL	16.70	16.77	-0.07	**-0.35**
NO_x - FULL SCALE	100.00			
NO_x - ZERO	0.00	0.1	-0.10	**-0.10**
NO_x - MID CAL	42.40	41.8	0.60	**0.60**
NO_x -HIGH CAL	87.40	86.6	0.80	**0.80**
CO - FULL SCALE	2000.00			
CO - ZERO	0.0	0.0	0.00	**0.00**
CO - MID CAL	857.0	856.5	0.50	**0.03**
CO -HIGH CAL	1814.0	1813.3	0.70	**0.04**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

SYSTEM CALIBRATION BIAS AND DRIFT DATA

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUN:		NORMAL LOAD		
SOURCE ID:	ENGINE #1	DATE:			12/10/13	
OPERATOR:	RN	PROJECT No.:			2061.1053	
		INITIAL VALUES		FINAL VALUES		
PARAMETER	ANALYZER CALIBRATION RESPONSE	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	CALIBRATION DRIFT
UNITS	PPMV or % VOL	PPMV or % VOL	% OF SPAN	PPMV or % VOL	% OF SPAN	% OF SPAN
O_2 - ZERO	0.01	0.05	**-0.16**	0.10	**-0.36**	**-0.20**
O_2 - SPAN	12.55	12.48	**0.28**	12.49	**0.24**	**-0.04**
CO_2 - ZERO	-0.02	-0.03	**0.05**	0.00	**-0.10**	**-0.15**
CO_2 - SPAN	8.44	8.39	**0.25**	8.41	**0.15**	**-0.10**
NO_x - ZERO	0.00	0.20	**-0.20**	1.20	**-1.20**	**-1.00**
NO_x - SPAN	42.30	41.50	**0.80**	41.70	**0.60**	**-0.20**
CO - ZERO	0.00	-0.40	**0.02**	0.00	**0.00**	**-0.02**
CO - SPAN	849.60	846.00	**0.18**	850.40	**-0.04**	**-0.22**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

SYSTEM CALIBRATION BIAS AND DRIFT DATA

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUN:		HIGH AND LOW LOAD		
SOURCE ID:	ENGINE #1	DATE:			12/10/13	
OPERATOR:	RN	PROJECT No.:			2061.1053	
		INITIAL VALUES		FINAL VALUES		
PARAMETER	ANALYZER CALIBRATION RESPONSE	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	CALIBRATION DRIFT
UNITS	PPMV or % VOL	PPMV or % VOL	% OF SPAN	PPMV or % VOL	% OF SPAN	% OF SPAN
O_2 - ZERO	0.01	0.10	**-0.36**	0.01	**0.00**	**0.36**
O_2 - SPAN	12.56	12.49	**0.28**	12.46	**0.40**	**0.12**
CO_2 - ZERO	-0.03	0.00	**-0.15**	-0.04	**0.05**	**0.20**
CO_2 - SPAN	8.46	8.41	**0.25**	8.38	**0.40**	**0.15**
NO_x - ZERO	0.20	1.20	**-1.00**	0.70	**-0.50**	**0.50**
NO_x - SPAN	41.80	41.70	**0.10**	41.60	**0.20**	**0.10**
CO - ZERO	0.00	0.00	**0.00**	-0.40	**0.02**	**0.02**
CO - SPAN	857.30	850.40	**0.34**	848.80	**0.43**	**0.08**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

SCEC

CEMS LINEARITY

CLIENT/LOCATION: OCSD Plant 2 Engine 2
VEHICLE / CEM I.D. TV-6

PRE-TEST DATE: 12/5/2013
POST-TEST DATE: 12/5/2013
BY: RN

SPAN GAS RECORD

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		99.999% N2		
O_2	CC272639	12.5	CC107912	21
CO_2	CC272639	8.31	CC107912	16.70
NO_x	CC307301	43.60	CC121068	87.40
CO	CC160848	857.0	CC101717	1814
NO2	CC74096	35.8		

PRETEST

	ANALYZER				
	O_2	CO_2	NO_x	CO	SO_2
Analyzer Range	25	20	100	2000	
Zero Gas Value	0	0	0	0	
Analyzer Reads	0.06	0.01	0.00	0.40	
High Gas Value	21	16.7	87.4	1814	
Analyzer Reads	21.09	16.76	87.30	1817.70	
Mid Gas Value	12.5	8.31	43.60	857.00	
Analyzer Reads	12.56	8.47	43.6	849.5	
Slope	1.0014	1.0030	0.9989	1.0018	
Y-Intercept	0.06	0.01	0	0.4	
Predicted Concentration	12.578	8.345	43.550	858.959	
Difference	-0.018	0.125	0.050	-9.459	
Difference, %	-0.1%	0.6%	0.0%	-0.5%	
Status	PASS	PASS	PASS	PASS	

Absolute Value of Difference must be less than 1%

POSTTEST

	ANALYZER				
	O_2	CO_2	NO_x	CO	SO_2
Analyzer Range	25	20	100	2000	
Zero Gas Value	0	0	0	0	
Analyzer Reads	-0.03	0.07	0.00	0.40	
High Gas Value	21	16.7	87.4	1814	
Analyzer Reads	21.07	16.74	87.70	1797.30	
Mid Gas Value	12.5	8.31	43.60	857.00	
Analyzer Reads	12.53	8.46	43.8	840.6	
Slope	1.0048	0.9982	1.0034	0.9906	
Y-Intercept	-0.03	0.07	0	0.4	
Predicted Concentration	12.530	8.365	43.750	849.321	
Difference	0.000	0.095	0.050	-8.721	
Difference, %	0.0%	0.5%	0.1%	-0.4%	
Status	PASS	PASS	PASS	PASS	

Absolute Value of Difference must be less than 1%

HIGH/LOW LOAD PRETEST

	ANALYZER				
	O_2	CO_2	NO_x	CO	SO_2
Analyzer Range	25	20	100	2000	
Zero Gas Value	0	0	0	0	
Analyzer Reads	-0.03	0.07	0.00	0.40	
High Gas Value	21	16.7	87.4	1814	
Analyzer Reads	21.07	16.74	87.70	1797.30	
Mid Gas Value	12.5	8.31	43.60	857.00	
Analyzer Reads	12.53	8.46	43.8	840.6	
Slope	1.0048	0.9982	1.0034	0.9906	
Y-Intercept	-0.03	0.07	0	0.4	
Predicted Concentration	12.530	8.365	43.750	849.321	
Difference	0.000	0.095	0.050	-8.721	
Difference, %	0.0%	0.5%	0.1%	-0.4%	
Status	PASS	PASS	PASS	PASS	

Absolute Value of Difference must be less than 1%

HIGH/LOW LOAD POSTTEST

	ANALYZER				
	O_2	CO_2	NO_x	CO	SO_2
Analyzer Range	25	20	100	2000	
Zero Gas Value	0	0	0	0	
Analyzer Reads	-0.01	0.08	0.10	0.00	
High Gas Value	21	16.7	87.4	1814	
Analyzer Reads	21.15	16.89	87.30	1804.50	
Mid Gas Value	12.5	8.31	43.60	857.00	
Analyzer Reads	12.58	8.57	43.6	841	
Slope	1.0076	1.0066	0.9977	0.9948	
Y-Intercept	-0.01	0.08	0.1	0	
Predicted Concentration	12.585	8.445	43.600	852.512	
Difference	-0.005	0.125	0.000	-11.512	
Difference, %	0.0%	0.6%	0.0%	-0.6%	
Status	PASS	PASS	PASS	PASS	

Absolute Value of Difference must be less than 1%

CALIBRATION ERROR

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUNS:	PRETEST
SOURCE ID:	ENGINE #2	DATE:	12/5/2013
OPERATOR:	RN	PROJECT No.:	2061.1048

PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25.00			
O_2 - ZERO	0.00	0.06	-0.06	**-0.24**
O_2 - MID CAL	12.50	12.56	-0.06	**-0.24**
O_2 -HIGH CAL	21.00	21.09	-0.09	**-0.36**
CO_2 - FULL SCALE	20.00			
CO_2 - ZERO	0.00	0.01	-0.01	**-0.05**
CO_2 - MID CAL	8.31	8.47	-0.16	**-0.80**
CO_2 -HIGH CAL	16.70	16.76	-0.06	**-0.30**
NO_x - FULL SCALE	100.00			
NO_x - ZERO	0.0	0.00	0.00	**0.00**
NO_x - MID CAL	43.6	43.60	0.00	**0.00**
NO_x -HIGH CAL	87.4	87.30	0.10	**0.10**
CO - FULL SCALE	2000.00			
CO - ZERO	0.0	0.4	-0.40	**-0.02**
CO - MID CAL	857.0	849.5	7.50	**0.38**
CO -HIGH CAL	1814	1817.7	-3.70	**-0.19**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

CALIBRATION ERROR

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUNS:		POSTTEST
SOURCE ID:	ENGINE #2	DATE:		12/5/2013
OPERATOR:	RN	PROJECT No.:		2061.1048

PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25.00			
O_2 - ZERO	0.00	-0.03	0.03	**0.12**
O_2 - MID CAL	12.50	12.53	-0.03	**-0.12**
O_2 -HIGH CAL	21.00	21.07	-0.07	**-0.28**
CO_2 - FULL SCALE	20.00			
CO_2 - ZERO	0.00	0.07	-0.07	**-0.35**
CO_2 - MID CAL	8.31	8.46	-0.15	**-0.75**
CO_2 -HIGH CAL	16.70	16.74	-0.04	**-0.20**
NO_x - FULL SCALE	100.00			
NO_x - ZERO	0.00	0.00	0.00	**0.00**
NO_x - MID CAL	43.60	43.80	-0.20	**-0.20**
NO_x -HIGH CAL	87.40	87.70	-0.30	**-0.30**
CO - FULL SCALE	2000.00			
CO - ZERO	0.00	0.4	-0.40	**-0.02**
CO - MID CAL	857.00	840.6	16.40	**0.82**
CO -HIGH CAL	1814.00	1797.3	16.70	**0.84**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

CALIBRATION ERROR

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUNS:	HIGH/LOW LOAD PRETEST
SOURCE ID:	ENGINE #2	DATE:	12/5/2013
OPERATOR:	RN	PROJECT No.:	2061.1048

PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25.00			
O_2 - ZERO	0.00	-0.03	0.03	**0.12**
O_2 - MID CAL	12.50	12.53	-0.03	**-0.12**
O_2 -HIGH CAL	21.00	21.07	-0.07	**-0.28**
CO_2 - FULL SCALE	20.00			
CO_2 - ZERO	0.00	0.07	-0.07	**-0.35**
CO_2 - MID CAL	8.31	8.46	-0.15	**-0.75**
CO_2 -HIGH CAL	16.70	16.74	-0.04	**-0.20**
NO_x - FULL SCALE	100.00			
NO_x - ZERO	0.00	0.00	0.00	**0.00**
NO_x - MID CAL	43.60	43.80	-0.20	**-0.20**
NO_x -HIGH CAL	87.40	87.70	-0.30	**-0.30**
CO - FULL SCALE	2000.00			
CO - ZERO	0.00	0.4	-0.40	**-0.02**
CO - MID CAL	857.00	840.6	16.40	**0.82**
CO -HIGH CAL	1814.00	1797.3	16.70	**0.84**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

CALIBRATION ERROR

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUNS:		HIGH/LOW LOAD POSTTEST
SOURCE ID:	ENGINE #2	DATE:		12/5/2013
OPERATOR:	RN	PROJECT No.:		2061.1048

PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25.00			
O_2 - ZERO	0.00	-0.01	0.01	**0.04**
O_2 - MID CAL	12.50	12.58	-0.08	**-0.32**
O_2 -HIGH CAL	21.00	21.15	-0.15	**-0.60**
CO_2 - FULL SCALE	20.00			
CO_2 - ZERO	0.00	0.08	-0.08	**-0.40**
CO_2 - MID CAL	8.31	8.57	-0.26	**-1.30**
CO_2 -HIGH CAL	16.70	16.89	-0.19	**-0.95**
NO_x - FULL SCALE	100.00			
NO_x - ZERO	0.00	0.10	-0.10	**-0.10**
NO_x - MID CAL	43.60	43.60	0.00	**0.00**
NO_x -HIGH CAL	87.40	87.30	0.10	**0.10**
CO - FULL SCALE	2000.00			
CO - ZERO	0.00	0.0	0.00	**0.00**
CO - MID CAL	857.00	841.0	16.00	**0.80**
CO -HIGH CAL	1814.00	1804.5	9.50	**0.48**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

SYSTEM CALIBRATION BIAS AND DRIFT DATA

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUN:		NORMAL LOAD		
SOURCE ID:	ENGINE #2	DATE:			12/05/13	
OPERATOR:	RN	PROJECT No.:			2061.1048	
		INITIAL VALUES		FINAL VALUES		
PARAMETER	ANALYZER CALIBRATION RESPONSE	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	CALIBRATION DRIFT
UNITS	PPMV or % VOL	PPMV or % VOL	% OF SPAN	PPMV or % VOL	% OF SPAN	% OF SPAN
O_2 - ZERO	0.06	0.19	**-0.52**	0.14	**-0.32**	**0.20**
O_2 - SPAN	12.56	12.91	**-1.40**	12.85	**-1.16**	**0.24**
CO_2 - ZERO	0.01	0.05	**-0.20**	0.04	**-0.15**	**0.05**
CO_2 - SPAN	8.47	8.55	**-0.40**	8.55	**-0.40**	**0.00**
NO_x - ZERO	0.0	0.1	**-0.10**	0.4	**-0.40**	**-0.30**
NO_x - SPAN	43.6	42.9	**0.70**	43.7	**-0.10**	**-0.80**
CO - ZERO	0.4	0.4	**0.00**	0.8	**-0.02**	**-0.02**
CO - SPAN	849.5	831.8	**0.89**	828.0	**1.08**	**0.19**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

SYSTEM CALIBRATION BIAS AND DRIFT DATA

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUN:		HIGH AND LOW LOAD		
SOURCE ID:	ENGINE #2	DATE:			12/05/13	
OPERATOR:	RN	PROJECT No.:			2061.1048	
		INITIAL VALUES		FINAL VALUES		
PARAMETER	ANALYZER CALIBRATION RESPONSE	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	CALIBRATION DRIFT
UNITS	PPMV or % VOL	PPMV or % VOL	% OF SPAN	PPMV or % VOL	% OF SPAN	% OF SPAN
O_2 - ZERO	-0.03	0.14	**-0.68**	0.18	**-0.84**	**-0.16**
O_2 - SPAN	12.53	12.85	**-1.28**	12.53	**0.00**	**1.28**
CO_2 - ZERO	0.07	0.04	**0.15**	0.09	**-0.10**	**-0.25**
CO_2 - SPAN	8.46	8.55	**-0.45**	8.45	**0.05**	**0.50**
NO_x - ZERO	0.0	0.4	**-0.40**	0.6	**-0.60**	**-0.20**
NO_x - SPAN	43.8	43.7	**0.10**	43.4	**0.40**	**0.30**
CO - ZERO	0.4	0.8	**-0.02**	0.0	**0.02**	**0.04**
CO - SPAN	840.6	830.2	**0.52**	834.6	**0.30**	**-0.22**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

SCEC

CEMS LINEARITY

CLIENT/LOCATION: OCSD Plant 2 Engine 3
VEHICLE / CEM I.D. TV-6

PRE-TEST DATE: 12/11/2013
POST-TEST DATE: 12/11/2013
BY: RN

SPAN GAS RECORD

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		99.999% N2		
O_2	CC272639	12.5	CC107912	21
CO_2	CC272639	8.31	CC107912	16.70
NO_x	SA13976	42.40	CC121068	87.40
CO	SA7530	18.400	CC163770	42.30
NO2	CC74096	35.8		

PRE NORMAL TEST

	ANALYZER				
	O_2	CO_2	NO_x	CO	SO_2
Analyzer Range	25	20	100	50	
Zero Gas Value	0	0	0	0	
Analyzer Reads	0.00	0.07	0.00	-0.16	
High Gas Value	21	16.7	87.4	42.3	
Analyzer Reads	21.08	16.82	86.50	42.16	
Mid Gas Value	12.5	8.31	42.40	18.40	
Analyzer Reads	12.55	8.53	41.7	18.25	
Slope	1.0038	1.0030	0.9897	1.0005	
Y-Intercept	0	0.07	0	-0.16	
Predicted Concentration	12.548	8.405	41.963	18.249	
Difference	0.002	0.125	-0.263	0.001	
Difference, %	0.0%	0.6%	-0.3%	0.0%	
Status	PASS	PASS	PASS	PASS	

Absolute Value of Difference must be less than 1%

POST TEST NORMAL

	ANALYZER				
	O_2	CO_2	NO_x	CO	SO_2
Analyzer Range	25	20	100	50	
Zero Gas Value	0	0	0	0	
Analyzer Reads	-0.01	0.05	0.00	-0.16	
High Gas Value	21	16.7	87.4	42.3	
Analyzer Reads	21.09	16.69	87.80	41.95	
Mid Gas Value	12.5	8.31	42.40	18.40	
Analyzer Reads	12.54	8.40	42.6	18.21	
Slope	1.0048	0.9964	1.0046	0.9955	
Y-Intercept	-0.01	0.05	0	-0.16	
Predicted Concentration	12.550	8.330	42.594	18.157	
Difference	-0.010	0.070	0.006	0.053	
Difference, %	0.0%	0.3%	0.0%	0.1%	
Status	PASS	PASS	PASS	PASS	

Absolute Value of Difference must be less than 1%

HIGH/LOW LOAD PRETEST

	ANALYZER				
	O_2	CO_2	NO_x	CO	SO_2
Analyzer Range	25	20	100	50	
Zero Gas Value	0	0	0	0	
Analyzer Reads	-0.02	-0.05	0.00	-0.22	
High Gas Value	21	16.7	87.4	42.3	
Analyzer Reads	21.06	16.69	88.00	41.93	
Mid Gas Value	12.5	8.31	42.40	18.40	
Analyzer Reads	12.53	8.39	42.5	18.11	
Slope	1.0038	1.0024	1.0069	0.9965	
Y-Intercept	-0.02	-0.05	0	-0.22	
Predicted Concentration	12.528	8.280	42.691	18.115	
Difference	0.002	0.110	-0.191	-0.005	
Difference, %	0.0%	0.6%	-0.2%	0.0%	
Status	PASS	PASS	PASS	PASS	

Absolute Value of Difference must be less than 1%

HIGH/LOW LOAD POSTTEST

	ANALYZER				
	O_2	CO_2	NO_x	CO	SO_2
Analyzer Range	25	20	100	50	
Zero Gas Value	0	0	0	0	
Analyzer Reads	-0.01	-0.05	0.00	-0.22	
High Gas Value	21	16.7	87.4	42.3	
Analyzer Reads	21.09	16.70	87.70	41.91	
Mid Gas Value	12.5	8.31	42.40	18.40	
Analyzer Reads	12.54	8.39	42.5	18.2	
Slope	1.0048	1.0030	1.0034	0.9960	
Y-Intercept	-0.01	-0.05	0	-0.22	
Predicted Concentration	12.550	8.285	42.546	18.106	
Difference	-0.010	0.105	-0.046	0.094	
Difference, %	0.0%	0.5%	0.0%	0.2%	
Status	PASS	PASS	PASS	PASS	

Absolute Value of Difference must be less than 1%

CALIBRATION ERROR

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUNS:		PRE NORMAL TEST
SOURCE ID:	ENGINE #3	DATE:		12/11/2013
OPERATOR:	RN	PROJECT No.:		2061.1053
PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25.00			
O_2 - ZERO	0.00	0.00	0.00	**0.00**
O_2 - MID CAL	12.50	12.55	-0.05	**-0.20**
O_2 -HIGH CAL	21.00	21.08	-0.08	**-0.32**
CO_2 - FULL SCALE	20.00			
CO_2 - ZERO	0.00	0.07	-0.07	**-0.35**
CO_2 - MID CAL	8.31	8.53	-0.22	**-1.10**
CO_2 -HIGH CAL	16.70	16.82	-0.12	**-0.60**
NO_x - FULL SCALE	100.00			
NO_x - ZERO	0.00	0.00	0.00	**0.00**
NO_x - MID CAL	42.4	42.30	0.10	**0.10**
NO_x -HIGH CAL	87.4	87.30	0.10	**0.10**
CO - FULL SCALE	50.00			
CO - ZERO	0.0	-0.16	0.16	**0.32**
CO - MID CAL	18.4	18.25	0.15	**0.30**
CO -HIGH CAL	42.3	42.16	0.14	**0.28**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

CALIBRATION ERROR

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUNS:	POST TEST NORMAL
SOURCE ID:	ENGINE #3	DATE:	12/11/2013
OPERATOR:	RN	PROJECT No.:	2061.1053

PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25.00			
O_2 - ZERO	0.00	-0.01	0.01	**0.04**
O_2 - MID CAL	12.50	12.54	-0.04	**-0.16**
O_2 -HIGH CAL	21.00	21.09	-0.09	**-0.36**
CO_2 - FULL SCALE	20.00			
CO_2 - ZERO	0.00	-0.05	0.05	**0.25**
CO_2 - MID CAL	8.31	8.40	-0.09	**-0.45**
CO_2 -HIGH CAL	16.70	16.69	0.01	**0.05**
NO_x - FULL SCALE	100.00			
NO_x - ZERO	0.00	0.00	0.00	**0.00**
NO_x - MID CAL	42.40	42.60	-0.20	**-0.20**
NO_x -HIGH CAL	87.40	87.60	-0.20	**-0.20**
CO - FULL SCALE	50.00			
CO - ZERO	0.00	-0.16	0.16	**0.32**
CO - MID CAL	18.40	18.21	0.19	**0.38**
CO -HIGH CAL	42.30	41.95	0.35	**0.70**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

CALIBRATION ERROR

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUNS:		HIGH/LOW LOAD PRETEST
SOURCE ID:	ENGINE #3	DATE:		12/11/2013
OPERATOR:	RN	PROJECT No.:		2061.1053

PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25.00			
O_2 - ZERO	0.00	-0.02	0.02	**0.08**
O_2 - MID CAL	12.50	12.53	-0.03	**-0.12**
O_2 -HIGH CAL	21.00	21.06	-0.06	**-0.24**
CO_2 - FULL SCALE	20.00			
CO_2 - ZERO	0.00	-0.05	0.05	**0.25**
CO_2 - MID CAL	8.31	8.39	-0.08	**-0.40**
CO_2 -HIGH CAL	16.70	16.69	0.01	**0.05**
NO_x - FULL SCALE	100.00			
NO_x - ZERO	0.00	0.0	0.00	**0.00**
NO_x - MID CAL	42.40	42.5	-0.10	**-0.10**
NO_x -HIGH CAL	87.40	88.0	-0.60	**-0.60**
CO - FULL SCALE	50.00			
CO - ZERO	0.0	-0.2	0.22	**0.44**
CO - MID CAL	18.4	18.1	0.29	**0.58**
CO -HIGH CAL	42.3	41.9	0.37	**0.74**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

CALIBRATION ERROR

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUNS:	HIGH/LOW LOAD POSTTEST
SOURCE ID:	ENGINE #3	DATE:	12/11/2013
OPERATOR:	RN	PROJECT No.:	2061.1053

PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25.00			
O_2 - ZERO	0.00	-0.01	0.01	**0.04**
O_2 - MID CAL	12.50	12.54	-0.04	**-0.16**
O_2 -HIGH CAL	21.00	21.09	-0.09	**-0.36**
CO_2 - FULL SCALE	20.00			
CO_2 - ZERO	0.00	-0.05	0.05	**0.25**
CO_2 - MID CAL	8.31	8.39	-0.08	**-0.40**
CO_2 -HIGH CAL	16.70	16.70	0.00	**0.00**
NO_x - FULL SCALE	100.00			
NO_x - ZERO	0.00	0.0	0.00	**0.00**
NO_x - MID CAL	42.40	42.5	-0.10	**-0.10**
NO_x -HIGH CAL	87.40	87.7	-0.30	**-0.30**
CO - FULL SCALE	50.00			
CO - ZERO	0.0	-0.2	0.22	**0.44**
CO - MID CAL	18.4	18.2	0.20	**0.40**
CO -HIGH CAL	42.3	41.9	0.39	**0.78**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

SYSTEM CALIBRATION BIAS AND DRIFT DATA

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUN:		NORMAL LOAD		
SOURCE ID:	ENGINE #3	DATE:			12/11/13	
OPERATOR:	RN	PROJECT No.:			2061.1053	
		INITIAL VALUES		FINAL VALUES		
PARAMETER	ANALYZER CALIBRATION RESPONSE	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	CALIBRATION DRIFT
UNITS	PPMV or % VOL	PPMV or % VOL	% OF SPAN	PPMV or % VOL	% OF SPAN	% OF SPAN
O_2 - ZERO	0.00	0.03	**-0.12**	0.02	**-0.08**	**0.04**
O_2 - SPAN	12.55	12.43	**0.48**	12.49	**0.24**	**-0.24**
CO_2 - ZERO	0.07	0.04	**0.15**	-0.05	**0.60**	**0.45**
CO_2 - SPAN	8.53	8.43	**0.50**	8.36	**0.85**	**0.35**
NO_x - ZERO	0.00	0.20	**-0.20**	0.30	**-0.30**	**-0.10**
NO_x - SPAN	42.30	42.00	**0.30**	42.40	**-0.10**	**-0.40**
CO - ZERO	-0.16	-0.14	**-0.04**	-0.14	**-0.04**	**0.00**
CO - SPAN	18.25	18.16	**0.18**	18.12	**0.26**	**0.08**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

SYSTEM CALIBRATION BIAS AND DRIFT DATA

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUN:		HIGH AND LOW LOAD		
SOURCE ID:	ENGINE #3	DATE:			12/11/13	
OPERATOR:	RN	PROJECT No.:			2061.1053	
		INITIAL VALUES		FINAL VALUES		
PARAMETER	ANALYZER CALIBRATION RESPONSE	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	CALIBRATION DRIFT
UNITS	PPMV or % VOL	PPMV or % VOL	% OF SPAN	PPMV or % VOL	% OF SPAN	% OF SPAN
O_2 - ZERO	-0.02	0.03	**-0.20**	0.01	**-0.12**	**0.08**
O_2 - SPAN	12.53	12.46	**0.28**	12.47	**0.24**	**-0.04**
CO_2 - ZERO	-0.05	-0.05	**0.00**	-0.05	**0.00**	**0.00**
CO_2 - SPAN	8.39	8.35	**0.20**	8.33	**0.30**	**0.10**
NO_x - ZERO	0.00	0.20	**-0.20**	0.20	**-0.20**	**0.00**
NO_x - SPAN	42.50	42.20	**0.30**	42.10	**0.40**	**0.10**
CO - ZERO	-0.22	-0.18	**-0.08**	-0.15	**-0.14**	**-0.06**
CO - SPAN	18.11	18.09	**0.04**	18.11	**0.00**	**-0.04**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

SCEC

CEMS LINEARITY

CLIENT/LOCATION: OCSD Plant 1 Engine 4 PRE-TEST DATE: 12/6/2013
VEHICLE / CEM I.D. TV-6 POST-TEST DATE: 12/6/2013
BY: RN

SPAN GAS RECORD

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		99.999% N2		
O_2	CC272672	12.5	CC118967	21
CO_2	CC272672	8.31	CC118967	16.70
NO_x	CC121643	42.40	CC326005	87.40
CO	SG9199942	857.0	XCO11763B	1814
NO2	CA01935	17.3		

PRETEST

	ANALYZER				
	O_2	CO_2	NO_x	CO	SO_2
Analyzer Range	25	20	100	2000	
Zero Gas Value	0	0	0	0	
Analyzer Reads	0.04	0.03	0.00	0.00	
High Gas Value	21	16.7	87.4	1814	
Analyzer Reads	21.07	16.74	87.30	1823.70	
Mid Gas Value	12.5	8.31	42.40	857.00	
Analyzer Reads	12.37	8.30	42.2	862.5	
Slope	1.0014	1.0006	0.9989	1.0053	
Y-Intercept	0.04	0.03	0	0	
Predicted Concentration	12.558	8.345	42.351	861.583	
Difference	-0.188	-0.045	-0.151	0.917	
Difference, %	-0.8%	-0.2%	-0.2%	0.0%	
Status	PASS	PASS	PASS	PASS	

Absolute Value of Difference must be less than 1%

POSTTEST

	ANALYZER				
	O_2	CO_2	NO_x	CO	SO_2
Analyzer Range	25	20	100	2000	
Zero Gas Value	0	0	0	0	
Analyzer Reads	-0.38	-0.19	0.50	-0.80	
High Gas Value	21	16.7	87.4	1814	
Analyzer Reads	21.15	16.90	87.60	1798.00	
Mid Gas Value	12.5	8.31	42.40	857.00	
Analyzer Reads	12.4	8.41	43.6	849.6	
Slope	1.0252	1.0234	0.9966	0.9916	
Y-Intercept	-0.38	-0.19	0.5	-0.8	
Predicted Concentration	12.435	8.314	42.754	849.019	
Difference	-0.035	0.096	0.846	0.581	
Difference, %	-0.1%	0.5%	0.8%	0.0%	
Status	PASS	PASS	PASS	PASS	

Absolute Value of Difference must be less than 1%

HIGH/LOW LOAD PRETEST

	ANALYZER				
	O_2	CO_2	NO_x	CO	SO_2
Analyzer Range	25	20	100	2000	
Zero Gas Value	0	0	0	0	
Analyzer Reads	-0.03	0.07	0.00	0.40	
High Gas Value	21	16.7	87.4	1814	
Analyzer Reads	21.07	16.74	87.70	1797.30	
Mid Gas Value	12.5	8.31	42.40	857.00	
Analyzer Reads	12.53	8.46	43.8	840.6	
Slope	1.0048	0.9982	1.0034	0.9906	
Y-Intercept	-0.03	0.07	0	0.4	
Predicted Concentration	12.530	8.365	42.546	849.321	
Difference	0.000	0.095	1.254	-8.721	
Difference, %	0.0%	0.5%	1.3%	-0.4%	
Status	PASS	PASS	FAIL	PASS	

Absolute Value of Difference must be less than 1%

HIGH/LOW LOAD POSTTEST

	ANALYZER				
	O_2	CO_2	NO_x	CO	SO_2
Analyzer Range	25	20	100	2000	
Zero Gas Value	0	0	0	0	
Analyzer Reads	-0.38	-0.19	0.50	-0.80	
High Gas Value	21	16.7	87.4	1814	
Analyzer Reads	21.15	16.90	87.60	1798.00	
Mid Gas Value	12.5	8.31	42.40	857.00	
Analyzer Reads	12.4	8.41	43.6	849.6	
Slope	1.0252	1.0234	0.9966	0.9916	
Y-Intercept	-0.38	-0.19	0.5	-0.8	
Predicted Concentration	12.435	8.314	42.754	849.019	
Difference	-0.035	0.096	0.846	0.581	
Difference, %	-0.1%	0.5%	0.8%	0.0%	
Status	PASS	PASS	PASS	PASS	

Absolute Value of Difference must be less than 1%

CALIBRATION ERROR

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUNS:	PRETEST
SOURCE ID:	ENGINE #4	DATE:	12/6/2013
OPERATOR:	RN	PROJECT No.:	2061.1048

PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25.00			
O_2 - ZERO	0.00	0.04	-0.04	**-0.16**
O_2 - MID CAL	12.50	12.37	0.13	**0.52**
O_2 -HIGH CAL	21.00	21.07	-0.07	**-0.28**
CO_2 - FULL SCALE	20.00			
CO_2 - ZERO	0.00	0.03	-0.03	**-0.15**
CO_2 - MID CAL	8.31	8.30	0.01	**0.05**
CO_2 -HIGH CAL	16.70	16.74	-0.04	**-0.20**
NO_x - FULL SCALE	100.00			
NO_x - ZERO	0.0	0.00	0.00	**0.00**
NO_x - MID CAL	42.4	42.20	0.20	**0.20**
NO_x -HIGH CAL	87.4	87.30	0.10	**0.10**
CO - FULL SCALE	2000.00			
CO - ZERO	0.0	0.0	0.00	**0.00**
CO - MID CAL	857.0	862.5	-5.50	**-0.28**
CO -HIGH CAL	1814	1823.7	-9.70	**-0.49**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

CALIBRATION ERROR

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUNS:		POSTTEST
SOURCE ID:	ENGINE #4	DATE:		12/6/2013
OPERATOR:	RN	PROJECT No.:		2061.1048
PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25.00			
O_2 - ZERO	0.00	-0.38	0.38	**1.52**
O_2 - MID CAL	12.50	12.40	0.10	**0.40**
O_2 -HIGH CAL	21.00	21.15	-0.15	**-0.60**
CO_2 - FULL SCALE	20.00			
CO_2 - ZERO	0.00	-0.19	0.19	**0.95**
CO_2 - MID CAL	8.31	8.41	-0.10	**-0.50**
CO_2 -HIGH CAL	16.70	16.90	-0.20	**-1.00**
NO_x - FULL SCALE	100.00			
NO_x - ZERO	0.00	0.50	-0.50	**-0.50**
NO_x - MID CAL	42.40	43.60	-1.20	**-1.20**
NO_x -HIGH CAL	87.40	87.60	-0.20	**-0.20**
CO - FULL SCALE	2000.00			
CO - ZERO	0.00	-0.8	0.80	**0.04**
CO - MID CAL	857.00	849.6	7.40	**0.37**
CO -HIGH CAL	1814.00	1798.0	16.00	**0.80**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

CALIBRATION ERROR

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUNS:	HIGH/LOW LOAD PRETEST
SOURCE ID:	ENGINE #4	DATE:	12/6/2013
OPERATOR:	RN	PROJECT No.:	2061.1048

PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25.00			
O_2 - ZERO	0.00	-0.03	0.03	**0.12**
O_2 - MID CAL	12.50	12.53	-0.03	**-0.12**
O_2 -HIGH CAL	21.00	21.07	-0.07	**-0.28**
CO_2 - FULL SCALE	20.00			
CO_2 - ZERO	0.00	0.07	-0.07	**-0.35**
CO_2 - MID CAL	8.31	8.46	-0.15	**-0.75**
CO_2 -HIGH CAL	16.70	16.74	-0.04	**-0.20**
NO_x - FULL SCALE	100.00			
NO_x - ZERO	0.00	0.00	0.00	**0.00**
NO_x - MID CAL	42.40	43.80	-1.40	**-1.40**
NO_x -HIGH CAL	87.40	87.70	-0.30	**-0.30**
CO - FULL SCALE	2000.00			
CO - ZERO	0.00	0.4	-0.40	**-0.02**
CO - MID CAL	857.00	840.6	16.40	**0.82**
CO -HIGH CAL	1814.00	1797.3	16.70	**0.84**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

CALIBRATION ERROR

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUNS:	HIGH/LOW LOAD POSTTEST
SOURCE ID:	ENGINE #4	DATE:	12/6/2013
OPERATOR:	RN	PROJECT No.:	2061.1048

PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25.00			
O_2 - ZERO	0.00	-0.01	0.01	**0.04**
O_2 - MID CAL	12.50	12.58	-0.08	**-0.32**
O_2 -HIGH CAL	21.00	21.15	-0.15	**-0.60**
CO_2 - FULL SCALE	20.00			
CO_2 - ZERO	0.00	0.08	-0.08	**-0.40**
CO_2 - MID CAL	8.31	8.57	-0.26	**-1.30**
CO_2 -HIGH CAL	16.70	16.89	-0.19	**-0.95**
NO_x - FULL SCALE	100.00			
NO_x - ZERO	0.00	0.10	-0.10	**-0.10**
NO_x - MID CAL	42.40	43.60	-1.20	**-1.20**
NO_x -HIGH CAL	87.40	87.30	0.10	**0.10**
CO - FULL SCALE	2000.00			
CO - ZERO	0.00	0.0	0.00	**0.00**
CO - MID CAL	857.00	841.0	16.00	**0.80**
CO -HIGH CAL	1814.00	1804.5	9.50	**0.48**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

SYSTEM CALIBRATION BIAS AND DRIFT DATA

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUN:		NORMAL LOAD		
SOURCE ID:	ENGINE #4	DATE:			12/06/13	
OPERATOR:	RN	PROJECT No.:			2061.1048	
		INITIAL VALUES		FINAL VALUES		
PARAMETER	ANALYZER CALIBRATION RESPONSE	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	CALIBRATION DRIFT
UNITS	PPMV or % VOL	PPMV or % VOL	% OF SPAN	PPMV or % VOL	% OF SPAN	% OF SPAN
O_2 - ZERO	0.04	-0.25	**1.16**	-0.36	**1.60**	**0.44**
O_2 - SPAN	12.37	12.34	**0.12**	12.34	**0.12**	**0.00**
CO_2 - ZERO	0.03	-0.28	**1.55**	0.17	**-0.70**	**-2.25**
CO_2 - SPAN	8.30	8.28	**0.10**	8.35	**-0.25**	**-0.35**
NO_x - ZERO	0.0	0.1	**-0.10**	0.5	**-0.50**	**-0.40**
NO_x - SPAN	42.2	42.2	**0.00**	43.4	**-1.20**	**-1.20**
CO - ZERO	0.0	-0.8	**0.04**	0.0	**0.00**	**-0.04**
CO - SPAN	862.5	851.2	**0.56**	845.2	**0.86**	**0.30**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

SYSTEM CALIBRATION BIAS AND DRIFT DATA

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUN:		HIGH AND LOW LOAD		
SOURCE ID:	ENGINE #4	DATE:			12/06/13	
OPERATOR:	RN	PROJECT No.:			2061.1048	
		INITIAL VALUES		FINAL VALUES		
PARAMETER	ANALYZER CALIBRATION RESPONSE	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	CALIBRATION DRIFT
UNITS	PPMV or % VOL	PPMV or % VOL	% OF SPAN	PPMV or % VOL	% OF SPAN	% OF SPAN
O_2 - ZERO	0.04	-0.36	**1.60**	-0.17	**0.84**	**-0.76**
O_2 - SPAN	12.37	12.34	**0.12**	12.38	**-0.04**	**-0.16**
CO_2 - ZERO	0.03	0.17	**-0.70**	-0.17	**1.00**	**1.70**
CO_2 - SPAN	8.30	8.35	**-0.25**	8.42	**-0.60**	**-0.35**
NO_x - ZERO	0.0	0.5	**-0.50**	1.3	**-1.30**	**-0.80**
NO_x - SPAN	42.2	43.4	**-1.20**	43.6	**-1.40**	**-0.20**
CO - ZERO	0.0	0.0	**0.00**	0.8	**-0.04**	**-0.04**
CO - SPAN	862.5	845.2	**0.86**	843.2	**0.96**	**0.10**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

SCEC

CEMS LINEARITY

CLIENT/LOCATION: OCSD Plant 1 Engine 5
VEHICLE / CEM I.D. TV-6

PRE-TEST DATE: 12/9/2013
POST-TEST DATE: 12/9/2013
BY: RN

SPAN GAS RECORD

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		99.999% N2		
O_2	CC272639	12.5	CC107912	21
CO_2	CC272639	8.31	CC107912	16.70
NO_x	SA13976	42.40	CC121068	87.40
CO	CC160848	857.0	CC101717	1814
NO2	CC311802	17.3		

PRETEST

	ANALYZER				
	O_2	CO_2	NO_x	CO	SO_2
Analyzer Range	25	20	100	2000	
Zero Gas Value	0	0	0	0	
Analyzer Reads	0.11	0.13	0.00	0.00	
High Gas Value	21	16.7	87.4	1814	
Analyzer Reads	21.06	16.72	87.40	1813.30	
Mid Gas Value	12.5	8.31	42.40	857.00	
Analyzer Reads	12.52	8.45	42.2	858.5	
Slope	0.9976	0.9934	1.0000	0.9996	
Y-Intercept	0.11	0.13	0	0	
Predicted Concentration	12.580	8.385	42.400	856.669	
Difference	-0.060	0.065	-0.200	1.831	
Difference, %	-0.2%	0.3%	-0.2%	0.1%	
Status	PASS	PASS	PASS	PASS	

Absolute Value of Difference must be less than 1%

POSTTEST

	ANALYZER				
	O_2	CO_2	NO_x	CO	SO_2
Analyzer Range	25	20	100	2000	
Zero Gas Value	0	0	0	0	
Analyzer Reads	-0.01	0.04	0.10	-0.80	
High Gas Value	21	16.7	87.4	1814	
Analyzer Reads	20.94	16.51	86.90	1814.50	
Mid Gas Value	12.5	8.31	42.40	857.00	
Analyzer Reads	12.48	8.29	42	859.7	
Slope	0.9976	0.9862	0.9931	1.0007	
Y-Intercept	-0.01	0.04	0.1	-0.8	
Predicted Concentration	12.460	8.236	42.209	856.814	
Difference	0.020	0.054	-0.209	2.886	
Difference, %	0.1%	0.3%	-0.2%	0.1%	
Status	PASS	PASS	PASS	PASS	

Absolute Value of Difference must be less than 1%

CALIBRATION ERROR

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUNS:	PRETEST
SOURCE ID:	ENGINE #5	DATE:	12/9/2013
OPERATOR:	RN	PROJECT No.:	2061.1053

PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25.00			
O_2 - ZERO	0.00	0.11	-0.11	**-0.44**
O_2 - MID CAL	12.50	12.52	-0.02	**-0.08**
O_2 -HIGH CAL	21.00	21.06	-0.06	**-0.24**
CO_2 - FULL SCALE	20.00			
CO_2 - ZERO	0.00	0.13	-0.13	**-0.65**
CO_2 - MID CAL	8.31	8.45	-0.14	**-0.70**
CO_2 -HIGH CAL	16.70	16.72	-0.02	**-0.10**
NO_x - FULL SCALE	100.00			
NO_x - ZERO	0.0	0.00	0.00	**0.00**
NO_x - MID CAL	42.4	42.20	0.20	**0.20**
NO_x -HIGH CAL	87.4	87.40	0.00	**0.00**
CO - FULL SCALE	2000.00			
CO - ZERO	0.0	0.0	0.00	**0.00**
CO - MID CAL	857.0	858.5	-1.50	**-0.08**
CO -HIGH CAL	1814	1813.3	0.70	**0.04**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

CALIBRATION ERROR

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUNS:		POSTTEST
SOURCE ID:	ENGINE #5	DATE:		12/9/2013
OPERATOR:	RN	PROJECT No.:		2061.1053
PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25.00			
O_2 - ZERO	0.00	0.02	-0.02	**-0.08**
O_2 - MID CAL	12.50	12.48	0.02	**0.08**
O_2 -HIGH CAL	21.00	20.94	0.06	**0.24**
CO_2 - FULL SCALE	20.00			
CO_2 - ZERO	0.00	0.04	-0.04	**-0.20**
CO_2 - MID CAL	8.31	8.29	0.02	**0.10**
CO_2 -HIGH CAL	16.70	16.51	0.19	**0.95**
NO_x - FULL SCALE	100.00			
NO_x - ZERO	0.00	0.10	-0.10	**-0.10**
NO_x - MID CAL	42.40	42.00	0.40	**0.40**
NO_x -HIGH CAL	87.40	86.90	0.50	**0.50**
CO - FULL SCALE	2000.00			
CO - ZERO	0.00	-0.8	0.80	**0.04**
CO - MID CAL	857.00	859.7	-2.70	**-0.14**
CO -HIGH CAL	1814.00	1814.5	-0.50	**-0.03**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

CALIBRATION ERROR

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUNS:	HIGH/LOW LOAD PRETEST
SOURCE ID:	ENGINE #5	DATE:	12/9/2013
OPERATOR:	RN	PROJECT No.:	2061.1053

PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25.00			
O_2 - ZERO	0.00	-0.03	0.03	**0.12**
O_2 - MID CAL	12.50	12.53	-0.03	**-0.12**
O_2 -HIGH CAL	21.00	21.07	-0.07	**-0.28**
CO_2 - FULL SCALE	20.00			
CO_2 - ZERO	0.00	0.07	-0.07	**-0.35**
CO_2 - MID CAL	8.31	8.46	-0.15	**-0.75**
CO_2 -HIGH CAL	16.70	16.74	-0.04	**-0.20**
NO_x - FULL SCALE	100.00			
NO_x - ZERO	0.00	0.00	0.00	**0.00**
NO_x - MID CAL	42.40	43.80	-1.40	**-1.40**
NO_x -HIGH CAL	87.40	87.70	-0.30	**-0.30**
CO - FULL SCALE	2000.00			
CO - ZERO	0.00	0.4	-0.40	**-0.02**
CO - MID CAL	857.00	840.6	16.40	**0.82**
CO -HIGH CAL	1814.00	1797.3	16.70	**0.84**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

CALIBRATION ERROR

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUNS:	HIGH/LOW LOAD POSTTEST
SOURCE ID:	ENGINE #5	DATE:	12/9/2013
OPERATOR:	RN	PROJECT No.:	2061.1053

PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25.00			
O_2 - ZERO	0.00	-0.01	0.01	**0.04**
O_2 - MID CAL	12.50	12.58	-0.08	**-0.32**
O_2 -HIGH CAL	21.00	21.15	-0.15	**-0.60**
CO_2 - FULL SCALE	20.00			
CO_2 - ZERO	0.00	0.08	-0.08	**-0.40**
CO_2 - MID CAL	8.31	8.57	-0.26	**-1.30**
CO_2 -HIGH CAL	16.70	16.89	-0.19	**-0.95**
NO_x - FULL SCALE	100.00			
NO_x - ZERO	0.00	0.10	-0.10	**-0.10**
NO_x - MID CAL	42.40	43.60	-1.20	**-1.20**
NO_x -HIGH CAL	87.40	87.30	0.10	**0.10**
CO - FULL SCALE	2000.00			
CO - ZERO	0.00	0.0	0.00	**0.00**
CO - MID CAL	857.00	841.0	16.00	**0.80**
CO -HIGH CAL	1814.00	1804.5	9.50	**0.48**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

SYSTEM CALIBRATION BIAS AND DRIFT DATA

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUN:	NORMAL LOAD
SOURCE ID:	ENGINE #5	DATE:	12/09/13
OPERATOR:	RN	PROJECT No.:	2061.1053

		INITIAL VALUES		FINAL VALUES		
PARAMETER	ANALYZER CALIBRATION RESPONSE	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	CALIBRATION DRIFT
UNITS	PPMV or % VOL	PPMV or % VOL	% OF SPAN	PPMV or % VOL	% OF SPAN	% OF SPAN
O_2 - ZERO	0.11	0.03	**0.32**	0.03	**0.32**	**0.00**
O_2 - SPAN	12.52	12.47	**0.20**	12.43	**0.36**	**0.16**
CO_2 - ZERO	0.13	0.06	**0.35**	0.07	**0.30**	**-0.05**
CO_2 - SPAN	8.45	8.37	**0.40**	8.36	**0.45**	**0.05**
NO_x - ZERO	0.0	0.5	**-0.50**	0.9	**-0.90**	**-0.40**
NO_x - SPAN	42.2	42.1	**0.10**	42.0	**0.20**	**0.10**
CO - ZERO	0.0	-0.4	**0.02**	-0.4	**0.02**	**0.00**
CO - SPAN	858.5	856.1	**0.12**	854.8	**0.19**	**0.07**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

SYSTEM CALIBRATION BIAS AND DRIFT DATA

FACILITY:	OCSD PLANT 2	DATA FOR SAMPLING RUN:		HIGH AND LOW LOAD		
SOURCE ID:	ENGINE #5	DATE:			12/09/13	
OPERATOR:	RN	PROJECT No.:			2061.1053	
		INITIAL VALUES		FINAL VALUES		
PARAMETER	ANALYZER CALIBRATION RESPONSE	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	CALIBRATION DRIFT
UNITS	PPMV or % VOL	PPMV or % VOL	% OF SPAN	PPMV or % VOL	% OF SPAN	% OF SPAN
O_2 - ZERO	0.02	0.03	**-0.04**	0.02	**0.00**	**0.04**
O_2 - SPAN	12.48	12.43	**0.20**	12.46	**0.08**	**-0.12**
CO_2 - ZERO	0.04	0.07	**-0.15**	-0.01	**0.25**	**0.40**
CO_2 - SPAN	8.29	8.36	**-0.35**	8.39	**-0.50**	**-0.15**
NO_x - ZERO	0.1	0.9	**-0.80**	0.7	**-0.60**	**0.20**
NO_x - SPAN	42.0	42.0	**0.00**	41.8	**0.20**	**0.20**
CO - ZERO	-0.8	-0.4	**-0.02**	0.0	**-0.04**	**-0.02**
CO - SPAN	859.7	854.8	**0.25**	859.7	**0.00**	**-0.25**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

SCEC

Appendix F

Laboratory Analytical Data

Atmospheric Analysis & Consulting, Inc.

Client	:	SCEC
Client Project Name	:	OCSD Plant 2
Client Project No.	:	2061.1053
AAC Project No.	:	131678
Reporting Date	:	12/13/2013

On December 12, 2013, Atmospheric Analysis & Consulting, Inc. received twelve (12) impinger contents for Formaldehyde and Acetaldehyde analysis by EPA Method 323 Modified. Upon receipt, the samples were assigned unique Laboratory ID numbers as follows:

Client Sample ID	AAC Sample ID
P2E1 Run-1	131678-68085
P2E1 Run-2	131678-68086
P2E1 Run-3A	131678-68087
P2E1 Run-3B	131678-68088
P2E1-FB	131678-68089
P2E1-RB	131678-68090
P2E3 Run-1	131678-68091
P2E3 Run-2A	131678-68092
P2E3 Run-2B	131678-68093
P2E3 Run-3	131678-68094
P2E3-FB	131678-68095
P2E3-RB	131678-68096

EPA 323M – A 1 mL aliquot of the sample was added to 1 mL of derivatizing reagent. A 10 μL aliquot of the solution was analyzed by HPLC/UV for Aldehydes following EPA Method 323M as specified in the chain of custody. Holding times for preparation and analysis were complied with.

No problems were encountered during receiving, preparation, and/or analysis of these samples. The test results included in this report meet all requirements of the NELAC Standards and/or AAC SOP# E.323.02.

I certify that this data is technically accurate, complete and in compliance with the terms and conditions of the contract. The Laboratory Director or his designee, as verified by the following signature, has authorized release of the data contained in this hardcopy data package.

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

Marcus Hueppe
Laboratory Director

This report consists of 50 pages.

ACCREDITED IN ACCORDANCE WITH nelap Certificate #E87437

1534 Eastman Ave., Ste. A • Ventura, • CA 93003 www.aaclab.com • (805) 650-1642 • FAX (805) 650-1644

Atmospheric Analysis & Consulting, Inc.

SAMPLE RECEIPT / LOG-IN REPORT

AAC Project **131678** **Received By:** **J. Zachman**

Sample Receipt Date	Project Desc	Clients ID	Matrix	Sampling Date/Time	Sampled By	Sample #	Analysis Requested
12/12/2013 1430	SCEC OCSD	P1E1 RUN1A	Canister & Impinger	12/4/2013	Client	68081	SCAQMD 25.3
12/12/2013 1430	SCEC OCSD	P1E1 RUN1B	Canister & Impinger	12/4/2013	Client	68082	SCAQMD 25.3
12/12/2013 1430	SCEC OCSD	P2E3 RUN1A	Canister & Impinger	12/11/2013	Client	68083	SCAQMD 25.3
12/12/2013 1430	SCEC OCSD	P2E3 RUN1B	Canister & Impinger	12/11/2013	Client	68084	SCAQMD 25.3
12/12/2013 1430	SCEC OCSD	P2E1 Run-1	Liquid	12/10/2013 1046-1146	Client	68085	EPA 323
12/12/2013 1430	SCEC OCSD	P2E1 Run-2	Liquid	12/10/2013 1150-1250	Client	68086	EPA 323
12/12/2013 1430	SCEC OCSD	P2E1 Run-3A	Liquid	12/10/2013 1255-1355	Client	68087	EPA 323
12/12/2013 1430	SCEC OCSD	P2E1 Run-3B	Liquid	12/10/2013 1255-1355	Client	68088	EPA 323
12/12/2013 1430	SCEC OCSD	P2E1 FB	Liquid	12/10/2013 1600	Client	68089	EPA 323
12/12/2013 1430	SCEC OCSD	P2E1 RB	Liquid	12/10/2013 1615	Client	68090	EPA 323
12/12/2013 1430	SCEC OCSD	P2E3 Run-1	Liquid	12/11/2013 1016-1116	Client	68091	EPA 323
12/12/2013 1430	SCEC OCSD	P2E3 Run-2A	Liquid	12/11/2013 1207-1307	Client	68092	EPA 323

SAMPLE RECEIPT / LOG-IN REPORT

AAC Project **131678** **Received By:** **J. Zachman**

Sample Receipt Date	Project Desc	Clients ID	Matrix	Sampling Date/Time	Sampled By	Sample #	Analysis Requested
12/12/2013 1430	SCEC OCSD	P2E3 Run-2B	Liquid	12/11/2013 1207-1307	Client	68093	EPA 323
12/12/2013 1430	SCEC OCSD	P2E3 Run-3	Liquid	12/11/2013 1319-1419	Client	68094	EPA 323
12/12/2013 1430	SCEC OCSD	P2E3 FB	Liquid	12/11/2013 1500	Client	68095	EPA 323
12/12/2013 1430	SCEC OCSD	P2E3 RB	Liquid	12/11/2013 1525	Client	68096	EPA 323

TURN AROUND TIME: Normal (10days)

Lab Due Date: 12/19/2013

Total Samples: 16

REMARKS:
Client returned 2 x SCAQMD 25.3 sets. EPA 323 Samples received at 0.5°C. "Please include data package."

Results

Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

Formaldehyde and Acetaldehyde by EPA 323M

Client : SCEC
Client Project Name : OCSD Plant 2
AAC Project No. : 131678
Analyst : EG
Units : ug/sample

Sampling Date : 12/10-11/2013
Receiving Date : 12/12/2013
Analysis Date : 12/13/2013
Reporting Date : 12/13/2013

Client Sample ID	AAC Sample ID	Sample Volume (mL)	Formaldehyde			Acetaldehyde		
			Concentration (ug/sample)	Analysis Dilution Factor	SRL (ug/sample)	Concentration (ug/sample)	Analysis Dilution Factor	SRL (ug/sample)
P2E1 Run-1	131678-68085	43.0	1620	10	21.5	17.4	1	2.15
P2E1 Run-2	131678-68086	43.0	1600	10	21.5	18.0	1	2.15
P2E1 Run-3A	131678-68087	43.0	1480	10	21.5	16.8	1	2.15
P2E1 Run-3B	131678-68088	43.0	1860	10	21.5	19.1	1	2.15
P2E1-FB	131678-68089	43.0	<SRL	1	2.15	<SRL	1	2.15
P2E1-RB	131678-68090	43.0	<SRL	1	2.15	<SRL	1	2.15
P2E3 Run-1	131678-68091	43.0	546	1	2.15	3.86	1	2.15
P2E3 Run-2A	131678-68092	43.0	528	1	2.15	4.06	1	2.15
P2E3 Run-2B	131678-68093	43.0	596	1	2.15	3.35	1	2.15
P2E3 Run-3	131678-68094	43.0	498	1	2.15	3.29	1	2.15
P2E3-FB	131678-68095	43.0	<SRL	1	2.15	<SRL	1	2.15
P2E3-RB	131678-68096	43.0	<SRL	1	2.15	<SRL	1	2.15

<SRL-compound was analyzed for but not detected at or above the SRL (Sample Reporting Limit)
SRL (ug/sample) = MRL (ug/mL) x Sample Volume (mL) x Analysis Dilution Factor x Method Dilution Factor
Method Reporting Limit - MRL = 0.025

Marcus Hueppe
Laboratory Director

1534 Eastman Ave., Ste. A • Ventura, • CA 93003 www.aaclab.com • (805) 650-1642 • FAX (805) 650-1644

AtmAA Inc.
23917 Craftsman Rd., Calabasas, CA 91302 • (818) 223-3277 • FAX (818) 223-8250

environmental consultants
laboratory services

LABORATORY ANALYSIS REPORT

CO, CH_4, CO_2, TGNMO, and Ethane Analysis in Tanks and Traps by SCAQMD Method 25 (FID/TCA)

Report Date: January 2, 2014
Client: SCEC
Client Project No.: 2061.1053
Source Location: OCSD
Source ID: Plant 1 Exhuast Samples

Date Received: December 12, 2013
Date Analyzed: December 12, - 20, 2013

	AtmAA Lab No.	Sample ID Tank	Sample ID Trap	Sample ID ICV	Tank CO (ppmv)	Tank CH_4 (ppmv)	Tank CO_2 (ppmv)	Tank Ethane (ppmv)	Tank TGNMO (ppmv)	Trap CO2 in ICV (ppmv)	Tank & Trap Total TGNMO (ppmv)	Tank Oxygen (%v)	P_1	P_2
P1E3	13463-53	206	303	2	526	4320	66800	19.3	36.8	624	103	12.7	659	820
P1E3	13463-54	207	304	3	488	4050	61300	17.3	38.3	577	103	13.3	622	820
P1E2	13463-55	91	170	4	567	4570	71700	16.7	40.3	658	132	12.1	501	820
P1E2	13463-56	93	181	5	583	4680	71800	19.0	32.8	567	104	12.2	560	820
P2E2	13463-57	58	305	8	522	4100	74600	16.1	35.3	502	100	11.4	540	821
P2E2	13463-58	62	306	9	515	4040	73600	16.6	31.6	310	71.7	11.9	541	821
	trap burn system blank			1						9.19				

TGNMO is total gaseous non-methane organics (excluding ethane) reported as ppmvC.
Ethane is reported as ppmvC.

P_1 - Initial Pressure, mm Hg
P_2 - Final Pressure, mm Hg

Michael L. Porter
Laboratory Director

LABORATORY ANALYSIS REPORT

CO, CH_4, CO_2, TGNMO, and Ethane Analysis in Tanks and Traps by SCAQMD Method 25 (FID/TCA)

Report Date: January 2, 2014
Client: SCEC
Client Project No.: 2061.1053
Source Location: OCSD
Source ID: Plant 2 Exhuast Samples

Date Received: December 12, 2013
Date Analyzed: December 12, - 20, 2013

	AtmAA Lab No.	Sample ID Tank	Sample ID Trap	Sample ID ICV	Tank CO (ppmv)	Tank CH_4 (ppmv)	Tank CO_2 (ppmv)	Tank Ethane (ppmv)	Tank TGNMO (ppmv)	Trap CO2 in ICV (ppmv)	Tank & Trap Total TGNMO (ppmv)	Tank O_2 (%v)	P_1	P_2
P2E4	13463-59	9	110	15	531	4810	73600	20.4	37.3	664	116	11.7	593	821
P2E4	13463-60	14	128	16	515	4690	73800	19.4	30.2	867	134	11.9	584	823
P2E5	13463-61	50	319	17	568	5160	68600	20.1	37.3	643	114	12.5	585	821
P2E5	13463-62	92	320	19	461	4240	57300	18.7	30.9	587	94.9	13.7	643	822
P2E1	13463-63	30	308	22	493	4560	72800	20.9	27.2	633	110	12.0	535	821
P2E1	13463-64	31	137	25	529	4860	72000	21.4	32.2	827	129	11.9	553	822

TGNMO is total gaseous non-methane organics (excluding ethane) reported as ppmvC.
Ethane is reported as ppmvC.

P_1 - Initial Pressure, mm Hg
P_2 - Final Pressure, mm Hg

Michael L. Porter
Laboratory Director

QUALITY ASSURANCE SUMMARY
(Repeat Analyses)

Client Project No.: 2061.1053
Date Received: December 12, 2013
Date Analyzed: December 12, - 20, 2013

Components	Sample ID	Repeat Analysis Run #1	Repeat Analysis Run #2	Mean Conc.	% Diff. From Mean
		(Concentration in ppmv)			
CO	TK 206	527	525	526	0.12
	TK 50	568	569	568	0.07
CH_4	TK 206	4320	4330	4320	0.12
	TK 50	5160	5160	5160	0.0
CO_2	TK 206	66800	66700	66800	0.07
Ethane	TK 206	19.3	19.2	19.3	0.24
	TK 50	20.2	20.1	20.1	0.23
TGNMO	TK 206	37.5	36.1	36.8	1.9
	TK 50	36.8	37.8	37.3	1.4
CO_2 in ICV	ICV 2	625	622	624	0.22
(in trap, transfer tanks)	ICV 19	586	588	587	0.14
Oxygen	TK 206	12.7	12.7	12.7	0.25

A set of 12 TCA samples, laboratory numbers 13463-(53-64), was analyzed for CO, CH_4, CO_2, O2, total gaseous non-methane organics (TGNMO), and ethane. Agreement between repeat analyses is a measure of precision and is shown in the column "% Difference from Mean". The average % Difference from Mean for 12 repeat measurements from the sample set of 12 TCA samples is 0.39%.

Gas standards (containing CO, CH_4, CO_2 and isobutane) used for TCA analyses, were prepared and certified by Praxair.

Atmospheric Analysis & Consulting, Inc.

CLIENT : SCEC
PROJECT NAME : OCSD
PROJECT NO. : 2061.1053
AAC PROJECT NO. : 131678
REPORT DATE : 12/13/2013

On December 12, 2013, Atmospheric Analysis & Consulting, Inc. received four (4) Six-Liter Summa Canisters and four (4) Impinger vials for Methane and TNMNEOC analysis by SCAQMD 25.3 and Fixed Gases analysis by EPA 3C. Upon receipt, the samples were assigned unique Laboratory ID numbers as follows:

Client ID	Lab No.	Initial Pressure (mmHg)
P1E1 RUN1A	131678-68081	594.1
P1E1 RUN1B	131678-68082	581.9
P2E3 RUN1A	131678-68083	617.2
P2E3 RUN1B	131678-68084	539.5

SCAQMD 25.3 Analysis - An aliquot of the gaseous sample is injected into the GC/FID and an aliquot of the impinger sample is injected into the TOC Analyzer for analysis following SCAQMD 25.3 as specified in the SOW.

EPA 3C Analysis - An aliquot of the gaseous sample is injected into the GC/TCD for analysis following EPA 3C as specified in the SOW.

The low closing CCV (0.5 ppmC) for the TOC analysis was above method acceptance limits. Insufficient sample remains for re-analysis, therefore the results were reported and the QA/QC was flagged.

No other problems were encountered during receiving, preparation, and/or analysis of these samples. The test results included in this report meet all requirements of the NELAC Standards and/or AAC SOP# AACI-SCAQMD 25.3 and EPA 3C.

I certify that this data is technically accurate, complete, and in compliance with the terms and conditions of the contract. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature.

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

Marcus Hueppe
Laboratory Director

ACCREDITED IN ACCORDANCE WITH nelac Certificate #E87837

This report consists of 47 pages.

Atmospheric Analysis & Consulting, Inc.

SAMPLE RECEIPT / LOG-IN REPORT

AAC Project **131678**

Received By: **J. Zachman**

Sample Receipt Date	Project Desc	Clients ID	Matrix	Sampling Date/Time	Sampled By	Sample #	Analysis Requested
12/12/2013 1430	SCEC OCSD	P1E1 RUN1A	Canister & Impinger	12/4/2013	Client	68081	SCAQMD 25.3
12/12/2013 1430	SCEC OCSD	P1E1 RUN1B	Canister & Impinger	12/4/2013	Client	68082	SCAQMD 25.3
12/12/2013 1430	SCEC OCSD	P2E3 RUN1A	Canister & Impinger	12/11/2013	Client	68083	SCAQMD 25.3
12/12/2013 1430	SCEC OCSD	P2E3 RUN1B	Canister & Impinger	12/11/2013	Client	68084	SCAQMD 25.3
12/12/2013 1430	SCEC OCSD	P2E1 Run-1	Liquid	12/10/2013 1046-1146	Client	68085	EPA 323
12/12/2013 1430	SCEC OCSD	P2E1 Run-2	Liquid	12/10/2013 1150-1250	Client	68086	EPA 323
12/12/2013 1430	SCEC OCSD	P2E1 Run-3A	Liquid	12/10/2013 1255-1355	Client	68087	EPA 323
12/12/2013 1430	SCEC OCSD	P2E1 Run-3B	Liquid	12/10/2013 1255-1355	Client	68088	EPA 323
12/12/2013 1430	SCEC OCSD	P2E1 FB	Liquid	12/10/2013 1600	Client	68089	EPA 323
12/12/2013 1430	SCEC OCSD	P2E1 RB	Liquid	12/10/2013 1615	Client	68090	EPA 323
12/12/2013 1430	SCEC OCSD	P2E3 Run-1	Liquid	12/11/2013 1016-1116	Client	68091	EPA 323
12/12/2013 1430	SCEC OCSD	P2E3 Run-2A	Liquid	12/11/2013 1207-1307	Client	68092	EPA 323

SAMPLE RECEIPT / LOG-IN REPORT

AAC Project **131678** **Received By: J. Zachman**

Sample Receipt Date	Project Desc	Clients ID	Matrix	Sampling Date/Time	Sampled By	Sample #	Analysis Requested
12/12/2013 1430	SCEC OCSD	P2E3 Run-2B	Liquid	12/11/2013 1207-1307	Client	68093	EPA 323
12/12/2013 1430	SCEC OCSD	P2E3 Run-3	Liquid	12/11/2013 1319-1419	Client	68094	EPA 323
12/12/2013 1430	SCEC OCSD	P2E3 FB	Liquid	12/11/2013 1500	Client	68095	EPA 323
12/12/2013 1430	SCEC OCSD	P2E3 RB	Liquid	12/11/2013 1525	Client	68096	EPA 323

TURN AROUND TIME: Normal (10days)

Lab Due Date: 12/19/2013

Total Samples: 16

REMARKS:
Client returned 2 x SCAQMD 25.3 sets. EPA 323 Samples received at 0.5°C. "Please include data package."

CANISTER PRESSURE LOG

Client: SCEC

Project No.: 131678

Date: 12/12/2013

Canister #	Sample #	Initial Pressure	Final Pressure
256	68081	594.1	930.0
255	68082	581.9	917.6
131	68083	617.2	906.0
208	68084	539.5	908.0

Equipment Prep Sheets

Atmospheric Analysis & Consulting, Inc.

Equipment Preparation Data Sheet
SCAQMD 25.3

Analyst: JZ   Date and Time: 11/19/2013, 12/06/2013 8:00:00 AM

Client: : SCEC   Project Name: OCSD

Thermometer ID: #5   Gauge ID: Ashcroft   Box #: 000216

SAMPLE	1
Can #	256
Can Cleaning Date	11/18/2013
Initial Pressure (mmHg)	2.7
Flow #	NA
Flow Cleaning Date	11/19/2013
Impinger #	NA
Impinger Cleaning Date	11/19/2013
Vial #	A
HPLC Water Lot #	L091213 A1
Probes washed	Y
Probes Baked in Oven	Y
System Purged	Y
Leak Checked	Y
Gauge Checked	Y

Comments:

SAMPLE	2
Can #	255
Can Cleaning Date	11/18/2013
Initial Pressure (mmHg)	2.2
Flow #	NA
Flow Cleaning Date	11/19/2013
Impinger #	NA
Impinger Cleaning Date	11/19/2013
Vial #	B
HPLC Water Lot #	L091213 A1
Probes washed	Y
Probes Baked in Oven	Y
System Purged	Y
Leak Checked	Y
Gauge Checked	Y

Comments:

Atmospheric Analysis & Consulting, Inc

Sample Receiving Data Sheet
SCAQMD 25.3

Analyst: JZ Project #: 131678 Courier:

Sample Receiving Date and Time: 12/12/2013 14:30

Thermometer ID: #5 Gauge ID: Ashcroft Box #: 000216

SAMPLE	1
Sample ID	68081
Can #	256
Flow #	NA
Tank vol	6L
InitialPressure (mmHg)	2.7
Return Pressure (mmHg)	594.1
Vial #	A
Imp #	NA
Return Volume (mL)	10
Temperature	8 C
Purged Date	12/12/2013
Purge Start Time	3:35 PM
Purge End Time	3:45 PM
Post Purge Pres (mmHg)	644.3
Final Pressure (mmHg)	930.0
Dilution Factor	1.57

SAMPLE	2
Sample ID	68082
Can #	255
Flow #	NA
Tank vol	6L
InitialPressure (mmHg)	2.2
Return Pressure (mmHg)	581.9
Vial #	B
Imp #	NA
Return Volume (mL)	10.2
Temperature	8 C
Purged Date	12/12/2013
Purge Start Time	3:55 PM
Purge End Time	4:05 PM
Post Purge Pres (mmHg)	628.5
Final Pressure (mmHg)	917.6
Dilution Factor	1.58

Comments:

Comments:

Atmospheric Analysis & Consulting, Inc

Equipment Preparation Data Sheet
SCAQMD 25.3

Analyst: JZ   Date and Time: 11/19/2013, 12/06/2013 8:00:00 AM

Client: : SCEC   Project Name: OCSD

Thermometer ID: #5   Gauge ID: Ashcroft   Box #: 000217

SAMPLE	3
Can #	131
Can Cleaning Date	11/21/2013
Initial Pressure (mmHg)	2.9
Flow #	NA
Flow Cleaning Date	12/6/2013
Impinger #	NA
Impinger Cleaning Date	12/6/2013
Vial #	A
HPLC Water Lot #	L091213 C3
Probes washed	Y
Probes Baked in Oven	Y
System Purged	Y
Leak Checked	Y
Gauge Checked	Y

Comments:

SAMPLE	4
Can #	208
Can Cleaning Date	11/20/2013
Initial Pressure (mmHg)	2.0
Flow #	NA
Flow Cleaning Date	12/6/2013
Impinger #	NA
Impinger Cleaning Date	12/6/2013
Vial #	B
HPLC Water Lot #	L091213 C3
Probes washed	Y
Probes Baked in Oven	Y
System Purged	Y
Leak Checked	Y
Gauge Checked	Y

Comments:

Atmospheric Analysis & Consulting, Inc

Sample Receiving Data Sheet
SCAQMD 25.3

Analyst: JZ Project #: 131678 Courier:

Sample Receiving Date and Time: 12/12/2013 14:30

Thermometer ID: #5 Gauge ID: Ashcroft Box #: 000217

SAMPLE	3	SAMPLE	4
Sample ID	68083	Sample ID	68084
Can #	131	Can #	208
Flow #	NA	Flow #	NA
Tank vol	6L	Tank vol	6L
InitialPressure (mmHg)	2.9	InitialPressure (mmHg)	2.0
Return Pressure (mmHg)	617.2	Return Pressure (mmHg)	539.5
Vial #	A	Vial #	B
Imp #	NA	Imp #	NA
Return Volume (mL)	9.9	Return Volume (mL)	9.9
Temperature	8 C	Temperature	8 C
Purged Date	12/12/2013	Purged Date	12/12/2013
Purge Start Time	4:35 PM	Purge Start Time	4:12 PM
Purge End Time	4:45 PM	Purge End Time	4:22 PM
Post Purge Pres (mmHg)	617.2	Post Purge Pres (mmHg)	583.4
Final Pressure (mmHg)	906.0	Final Pressure (mmHg)	908.0
Dilution Factor	1.47	Dilution Factor	1.68

Comments:

Comments:

Results

Atmospheric Analysis & Consulting, Inc.

F - 20

LABORATORY ANALYSIS REPORT

CLIENT : SCEC
PROJECT NO. : 131678
MATRIX : Air
UNITS : ppmC

SAMPLING DATE : 12/04,11/2013
RECEIVING DATE : 12/12/2013
ANALYSIS DATE : 12/12-13/2013
REPORT DATE : 12/13/2013

ANALYSIS METHOD: SCAQMD 25.3

Client ID	Lab ID #	Tank Vol Liters (V_{Tank})	Initial Pressure mmHg (P_i)	Return Pressure mmHg (P_r)	Final Pressure mmHg (P_f)	Sample Vol. (L) (V_{Sample})	Tank Dil Factor (DF_{Tank})	NMNEOC Tank (C_{Tank})	NMNEOC Trap (C_{Trap})	TNMNEOC (Total VOC ppmC)
P1E1 RUN1A	131678-68081	6.00	2.7	594.1	930.0	4.67	1.57	<PQL	0.7	0.7
P1E1 RUN1B	131678-68082	6.00	2.2	581.9	917.6	4.58	1.58	0.7	1.8	2.7
P2E3 RUN1A	131678-68083	6.00	2.9	617.2	906.0	4.85	1.47	1.4	18.3	21.4
P2E3 RUN1B	131678-68084	6.00	2.0	539.5	908.0	4.24	1.68	1.2	17.6	20.5

* TNMNEOC Includes Bias Correction=1.086, as per method

EPA 3C

Reporting Limit: 0.1 %		Analyte			
Client ID	Lab ID #	O_2	CO	CH_4	CO_2
P1E1 RUN1A	131678-68081	20.9	<PQL	<PQL	<PQL
P1E1 RUN1B	131678-68082	12.2	<PQL	0.49	8.4
P2E3 RUN1A	131678-68083	12.1	<PQL	0.48	8.2
P2E3 RUN1B	131678-68084	12.1	<PQL	0.50	8.4

All Fixed Gases normalized to 100% on a dry weight basis

Marcus Hueppe
Laboratory Director

AtmAA Inc.
23917 Craftsman Rd., Calabasas, CA 91302 • (818) 223-3277 • FAX (818) 223-8250

environmental consultants
laboratory services

LABORATORY ANALYSIS REPORT

Hydrogen Sulfide and Reduced Sulfur Compounds
Analysis in Tedlar Bag Sample

Report Date: December 18, 2013
Client: SCEC
Project Location: OCSD Plant 2 / Fuel Samples
Project No.: 2061.1053
Date Received: December 11, 2013
Date Analyzed: December 11, 2013

ANALYSIS DESCRIPTION

Hydrogen sulfide was analyzed by gas chromatography with a Hall electrolytic conductivity detector operated in the oxidative sulfur mode. All other components were measured by GC/ Mass Spec.

AtmAA Lab No.:	13453-9
Sample I.D.:	P2E1
	(Concentration in ppmv)
Components	
Hydrogen sulfide	17.4
Carbonyl sulfide	<0.2
Methyl mercaptan	<0.2
Ethyl mercaptan	<0.2
Dimethyl sulfide	<0.2
Carbon disulfide	<0.2
isopropyl mercaptan	<0.2
n-propyl mercaptan	0.26
Dimethyl disulfide	<0.2
TRS	17.7

TRS - total reduced sulfur

Michael L. Porter
Laboratory Director

QUALITY ASSURANCE SUMMARY

(Repeat Analyses)

Project Location: OCSD Plant 2 / Fuel Samples
Date Received: December 11, 2013
Date Analyzed: December 11, 2013

Components	Sample ID	Repeat Analysis Run #1	Repeat Analysis Run #2	Mean Conc.	% Diff. From Mean
		(Concentration in ppmv)			
Hydrogen sulfide	P2E1	17.4	17.3	17.4	0.29
Carbonyl sulfide	P2E1	<0.2	<0.2	---	---
Methyl mercaptan	P2E1	<0.2	<0.2	---	---
Ethyl mercaptan	P2E1	<0.2	<0.2	---	---
Dimethyl sulfide	P2E1	<0.2	<0.2	---	---
Carbon disulfide	P2E1	<0.2	<0.2	---	---
iso-propyl mercaptan	P2E1	<0.2	<0.2	---	---
n-propyl mercaptan	P2E1	0.26	0.26	0.26	0.0
Dimethyl disulfide	P2E1	<0.2	<0.2	---	---

One Tedlar bag sample, laboratory number 13453-9, was analyzed for total reduced sulfur compounds. Agreement between repeat analyses is a measure of precision and is shown above in the column "% Difference from Mean". The average % difference from mean for 2 repeat measurements from one Tedlar bag sample is 0.14%.

AtmAA Inc.
23917 Craftsman Rd., Calabasas, CA 91302 • (818) 223-3277 • FAX (818) 223-8250

environmental consultants
laboratory services

LABORATORY ANALYSIS REPORT

Speciated Hydrocarbons Analysis in Tedlar Bag Samples

Report Date: December 18, 2013
Client: SCEC
Site: OCSD
Project: Plant 2 / Fuel Samples
Project No.: 2061.1053

Date Received: December 11, 2013
Date Analyzed: December 11, 2013

ANALYSIS DESCRIPTION

Hydrocarbon Speciation analysis was performed by flame ionization detection/gas chromatography (FID/GC), modified EPA-18.

AtmAA Lab No.:	13453-9	(repeat)
Sample ID:	P2E1	P2E1
	(Concentration in ppmv, component)	
Methane	619000	623000
non-methane hydrocarbons analysis by carbon number grouping		
C2	2.24	3.44
C3	2.10	2.09
C4	0.66	0.64
C5	1.00	0.93
C6	0.77	0.83
C7	1.02	0.83
C8	1.61	1.68
C9	4.05	4.52
C10	18.82	22.59
C11	26.17	32.41
C12	2.79	2.41
C13	1.22	1.32
TNMHC	605	714

TNMHC - total non-methane hydrocarbons as ppmvC.

Michael L. Porter
Laboratory Director