

**SHELL CLAUS OFFGAS TREATMENT UNITS 1 AND 2
EMISSIONS TEST PROGRAM
VALERO DELAWARE CITY REFINERY
THE PREMCO REFINING GROUP INC.
A VALERO COMPANY
DELAWARE CITY, DELAWARE**

Testing Dates: October 17, 10 and 19, 2006

Prepared for:

The Premcor Refining Group Inc.
A Valero Company
Valero Delaware City Refinery
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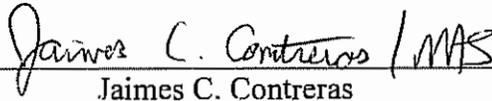
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Project No. 06-188

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A VALERO COMPANY
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Testing Dates: October 17, 18 and 19, 2006

AIR/COMPLIANCE CONSULTANTS, INC.



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1. INTRODUCTION

Air/Compliance Consultants, Inc. (ACCI) conducted a compliance testing program on the Shell Claus Offgas Treatment (SCOT) Units 1 and 2 for The Premcor Refining Group, Inc. (Premcor) at the Delaware City Refinery in Delaware City, Delaware. Testing was performed for particulate matter (PM) with an aerodynamic diameter less than 10 microns (PM₁₀), total reduced sulfur (TRS), sulfuric acid mist (H₂SO₄), nitrogen oxides (NO_x), carbon monoxide (CO), and volatile organic compounds (VOCs).

2. TEST PERSONNEL

Testing was performed October 17, 18 and 19, 2006. The ACCI test team consisted of Mr. Jaimes C. Contreras, Senior Project Scientist; Ms. Sharon Diday, Project Engineer; Mr. Richard Williams, Scientist; Mr. Kenneth Nuessmeier, Senior Technician; and Mr. Josh Varner, Technician.

Mr. Mark Lutrzykowski and Mr. Thomas Doherty of the Delaware Department of Natural Resources and Environmental Control (DNREC) observed portions of the testing program.

3. TESTING METHODOLOGY

ACCI conducted the measurements in accordance with the United States Environmental Protection Agency (USEPA) Title 40, Code of Federal Regulations (CFR) Part 60, Appendix A Testing Methods. Figure 1 represents an ACCI CEMS Sample Flow and Calibration System Schematic.

3.1. Flow Rate, Molecular Weight and Moisture Determinations

ACCI conducted testing in accordance with USEPA Methods 1 through 4 at the two SCOT Stacks. The ducts are designated as 1 and 2. USEPA Method 1 was followed for selection of traverse points. Twenty-four (24) sampling points were utilized at each location, 12 in each of 2 test ports. The ports met the criteria of USEPA Method 1. USEPA Method 2 was followed for the determination of gas velocity and volumetric flow rate. This procedure utilized an S-type Pitot tube and inclined manometer to determine stack-gas velocity head. USEPA Method 3A was utilized for the determination of carbon dioxide (CO₂), oxygen (O₂), and stack-gas molecular weight. Nitrogen (N₂) was determined by the difference.

USEPA Method 4 was followed to determine the gas moisture content of the exhaust gas. A moisture determination was performed on each test run to allow determination of dry stack-gas molecular weight and to calculate the dry standard cubic feet per minute (DSCFM) flow rate. The USEPA Method 4 train was incorporated with the Method 5/202 sampling train.

3.2. Particulate Matter and Condensable Particulate Matter Sampling

USEPA Method 5 was followed to determine PM concentrations and mass emission rates. The USEPA Method 5 sample train included an integrated glass nozzle and heated glass-lined probe, heated filter, and chilled impinger train. The front-half catch, which includes the probe, filter, and acetone front-half filter holder rinse, was gravimetrically analyzed to determine PM emissions from the source. USEPA Method 5 testing was combined with USEPA Method 202 tests. The pH was measured upon completion of test runs and was determined to be between 5 and 6.

ACCI determined the condensable particulate emission rates using USEPA Method 202. The back-half catch, which consisted of rinses of the back-half filter holder, all connecting glassware, the impinger catch, and impinger rinses, was analyzed gravimetrically to determine the condensable particulate concentration. The above rinses were conducted using distilled water followed by methylene chloride (CH₂Cl₂). The total USEPA Method 5/202 PM is reported as PM₁₀.

3.3. Sulfuric Acid Emissions– USEPA Method 8

USEPA Method 8 was used to isokinetically determine H_2SO_4 concentration and mass emission rates. Stack gas was passed through a glass-lined, temperature-controlled probe equipped with a Type S Pitot tube and a sharp-edged glass button-hook nozzle. The exit of the probe was connected to a Teflon filter supported in a glass filter holder inside an oven heated to $248^\circ\text{F} \pm 25^\circ\text{F}$. The exit of the filter holder was connected to a series of full-sized impingers. The first impinger contained 100 milliliters (mL) of 80% isopropanol, the second and third impingers each contained 100 mL of 30% hydrogen peroxide (H_2O_2) and the fourth impinger contained a known amount of silica gel. Samples were analyzed by the barium-thorin titration method.

3.4. Total Reduced Sulfur Emissions– USEPA Method 16A

USEPA Method 16A was used to determine TRS concentration (as hydrogen sulfide [H_2S]) and mass emission rates. Stack gas was passed through a citrate buffer solution to remove sulfur dioxide (SO_2). TRS compounds were then oxidized to SO_2 and collected in a H_2O_2 solution as sulfate. Samples were analyzed by USEPA Method 6 (the barium-thorin titration method). Heated sample lines were used to transport stack gas to ovens located on the ground. The integrity of the sampling system was checked by introducing a known amount of H_2S to the sampling system at the connection of the heated sampling line to the probe. All results met USEPA Method 16A requirements.

3.5. CEM Determinations

ACCI utilized a mobile continuous emission monitoring (CEM) vehicle for determining CO , NO_x , and VOCs. USEPA Protocol Gases were used to verify the instrumentation used in the test program. CEM sampling took place from a single point in the center of each of the stacks.

3.5.1. CO Determinations

USEPA Method 10 was used to continuously measure CO concentrations. A Thermo Environmental Model 48 gas filter correlation gas analyzer was used to measure CO . An extractive gas-conditioning system was used to convey the sample gas to the analyzer.

3.5.2. NO_x Determinations

ACCI measured NO_x on a continuous basis by real-time extraction and analysis using a TECO chemiluminescent analyzer following procedures in USEPA Method 7E.

3.5.3. VOC Determinations

USEPA Method 25A was used to continuously measure VOC concentrations. A JUM flame ionization analyzer (FID) was used to measure the VOC concentrations. A gas sample was conveyed through a heated sample line directly to the instrument.

USEPA Protocol calibration gases were utilized to calibrate all RM analyzers. Data acquisition was conducted with a multi-channel Yokogawa datalogger. Data was sampled continuously and scanned into memory in 2-second intervals.

4. TEST RESULTS

Tables 1 through 4 contain the results of the testing for the SCOT Unit 1. Tables 5 through 9 contain the results of the testing for the SCOT Unit 2. Table 10 contains the table nomenclature.

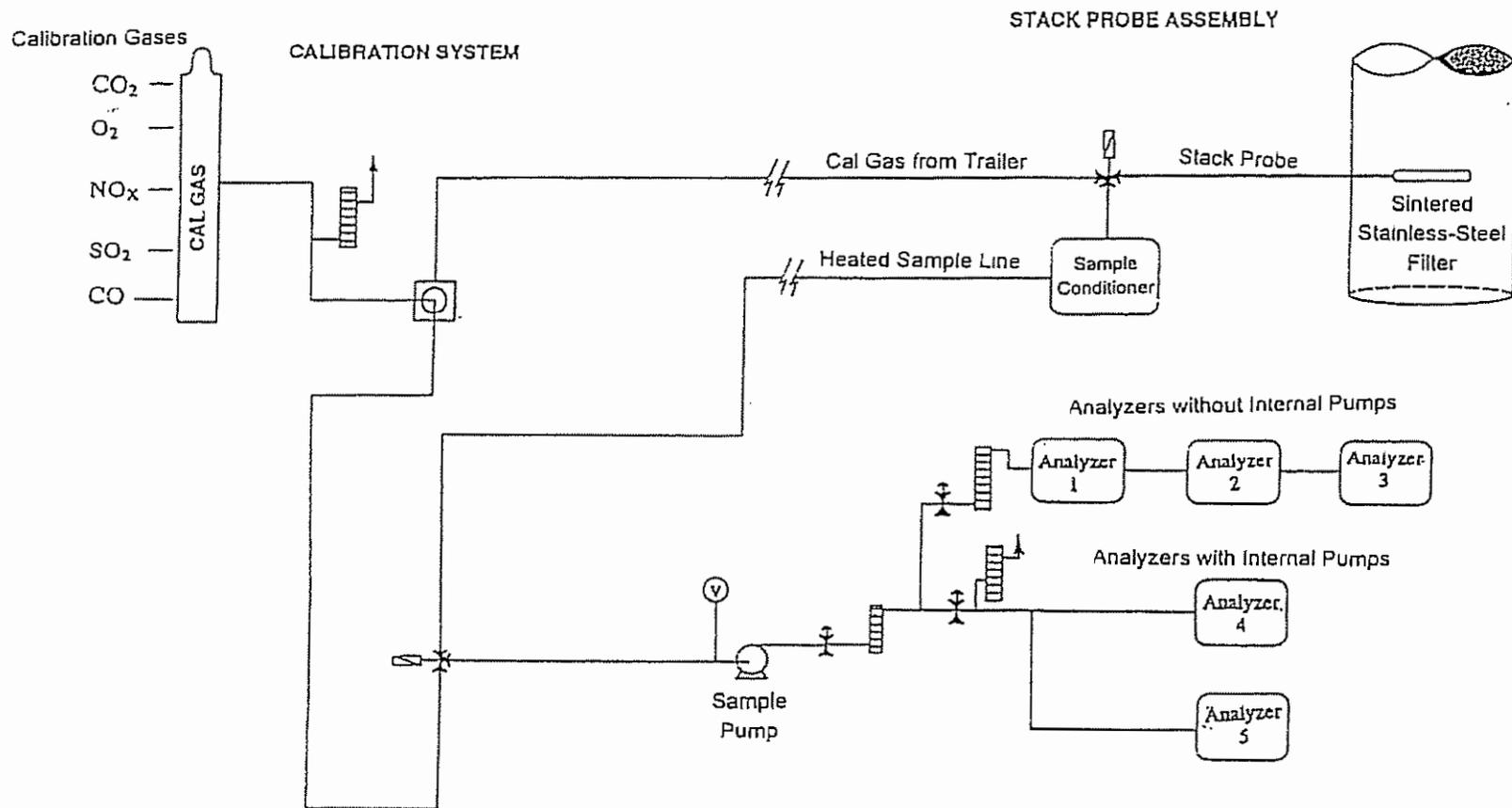
To document the work performed, Appendix A includes all field data generated during the program including all manual method field data sheets and computerized spreadsheets. Appendix B contains CEM bias sheets and 1-minute averages.

Meter box, Pitot, and nozzle calibration data sheets can be found in Appendix C. Calibration gas Certificates of Analysis are also contained in Appendix C. Results of the nitrogen dioxide (NO₂)/nitrogen oxide (NO) conversion test and the NO_x interference test for the analyzer used during testing are also located in the Appendix C. Analytical data is contained in Appendix D. Sample calculations are contained in Appendix E and relevant facility process data is contained in Appendix F.

5. CONCLUSION

A compliance test program has been conducted for SCOT 1 and 2 Units at The Premcor Refining Group, A Valero Company, at the Valero Delaware City Refinery located in Delaware City, Delaware. Testing was performed October 17, 18 and 19, 2006 for PM, NO_x, TRS, H₂SO₄, VOC, and CO. All of the testing has yielded data that is considered to be representative of the emission rates at the prevailing operating conditions.

FIGURE



TABLES

Table 1 Sulfuric Acid Mist Test Results, SCOT 1, October 17, 2006
 The Premcor Refining Group Inc , A Valero Company, Valero Delaware City Refinery, Delaware City, Delaware

Test Data		Run 1	Run 2	Run 3	Average	
Date		October 17, 2006	October 17, 2006	October 17, 2006		
Start Time		9:33 AM	2:55 PM	4:30 PM		
End Time		10:35 AM	3:58 PM	5:33 PM		
Flow Rate	(ACFM)	75,868	77,175	77,257	76,767	
Flow Rate	(SCFM)	23,674	23,745	23,776	23,732	
Flow Rate	(DSCFM)	21,081	21,292	21,270	21,214	
Sample Volume	(DSCF)	39,933	38,615	37,594	38,714	
Carbon Dioxide (CO ₂)	(dry volume %)	14.8	16.1	16.6	15.8	
Oxygen (O ₂)	(dry volume %)	4.3	4.0	3.5	3.9	
Water Vapor (H ₂ O)	(volume %)	11.0%	10.3%	10.5%	10.6%	
Stack Temperature	(°F)	1228	1252	1252	1,244	
Percent of Isokinetic Sampling	(%)	99.8	95.6	93.2	96.2	
Fc	(dscf/MMBtu)	1028.0	1037.8	1038.4		
Results						Permit Limit
Sulfuric Acid (H₂SO₄)						
Mass Collected	(mg)	13.70	15.52	7.10	12.11	
Emission Concentration	(lb/DSCF)	7.57E-07	8.86E-07	4.17E-07	6.86E-07	
Emission Concentration	(ppm _d)	2.97	3.48	1.64	2.70	
Emission Rate	(lb/hr)	0.96	1.13	0.53	0.87	
Emission Rate	(tons/year)	4.19	4.96	2.33	3.83	12.7
Emission Rate	(lb/MMBtu)	0.005	0.006	0.003	0.005	0.027

Table 2. CEM Test Results, SCOT 1, October 17, 2006
 The Premcor Refining Group Inc., A Valero Company, Valero Delaware City Refinery, Delaware City, Delaware

Test Data		Run 1	Run 2	Run 3	Average	
Date		October 17, 2006	October 17, 2006	October 17, 2006		
Start Time		9:33 AM	2:55 PM	4:30 PM		
End Time		10:35 AM	3:58 PM	5:33 PM		
Flow Rate	(ACFM)	75,868	77,175	77,257	76,767	
Flow Rate	(SCFM)	23,674	23,745	23,776	23,732	
Flow Rate	(DSCFM)	21,081	21,292	21,270	21,214	
Sample Volume	(DSCF)	39,933	38,615	37,594	38,714	
Carbon Dioxide (CO ₂)	(dry volume %)	14.82	16.08	16.61	15.84	
Oxygen (O ₂)	(dry volume %)	4.33	3.96	3.49	3.93	
Water Vapor (H ₂ O)	(volume %)	10.95	10.33	10.54	10.61	
Stack Temperature	(°F)	1228.3	1252.3	1251.8	1244.1	
Percent of Isokinetic Sampling	(%)	99.8	95.6	93.2	96.2	
Fc	(dscf/MMBtu)	1028.0	1037.8	1038.4		
Results						Permit Limit
Carbon Monoxide (CO)						
Emission Concentration	(ppm _{d,v})	0.73	2.76	2.64	2.04	100
Emission Rate	(lb/hr)	0.07	0.26	0.25	0.19	
Emission Rate	(tons/year)	0.29	1.12	1.07	0.83	90.4
Nitrogen Oxides (NO_x) as NO₂						
Emission Concentration	(ppm _{d,v})	23.1	27.5	19.7	23.42	
Emission Rate	(lb/hr)	3.49	4.19	2.99	3.56	
Emission Rate	(tons/year)	15.28	18.37	13.11	15.59	51.9
Emission Rate	(lb/MMBtu)	0.02	0.02	0.01	0.02	0.12
Volatile Organic Compounds (VOCs)						
Emission Conc. As Propane	(ppm _{v,v})	0.30	0.25	0.30	0.28	
Emission Conc. As Propane	(ppm _{d,v})	0.34	0.28	0.33	0.32	
Emission Conc. As Methane	(ppm _{d,v})	1.01	0.84	0.99	0.95	
Emission Rate as Methane	(lb/hr)	0.05	0.04	0.05	0.05	
Emission Rate as Methane	(tons/year)	0.23	0.20	0.23	0.22	1.3
Emission Rate as Methane	(lb/MMBtu)	0.0003	0.0002	0.0003	0.0003	0.003

CEM results have been bias calibration corrected

Values that are less than 0 are reported as 0 in the Table and are included in the Average as 0

Table 3. Particulate Matter under 10 Microns Test Results, SCOT I. October 18 and 19, 2006
 The Premcor Refining Group Inc. A Valero Company, Valero Delaware City Refinery, Delaware City, Delaware

Test Data		Run 1	Run 2	Run 3	Average	
Date		October 18, 2006	October 18, 2006	October 19, 2006		
Start Time		12:05 PM	4:05 PM	8:30 AM		
End Time		3:08 PM	7:20 PM	11:45 AM		
Total Test Time	(hours)	1.367	1.300	1.167		
Flow Rate	(ACFM)	74,624	75,010	73,453	74,362	
Flow Rate	(SCFM)	22,995	23,096	22,847	22,979	
Flow Rate	(DSCFM)	20,292	20,317	20,217	20,275	
Sample Volume	(DSCF)	95,948	96,032	97,364	96,448	
Carbon Dioxide (CO ₂)	(dry volume %)	16.28	16.85	15.16	16.10	
Oxygen (O ₂)	(dry volume %)	4.25	4.56	4.45	4.42	
Water Vapor (H ₂ O)	(volume %)	11.75	12.03	11.51	11.77	
Stack Temperature	(°F)	1232.4	1233.8	1222.4	1229.5	
Percent of Isokinetic Sampling	(%)	105.1	105.1	107.1	105.8	
Results						Permit Limit
Particulate Matter under 10 Microns (PM-10)						
Weight of Condensable Particulate	(mg)	4.95	10.7	7.3	7.65	
Total Mass Collected	(mg)	11.25	12.00	11.20	11.48	
Emission Concentration	(gr/DSCF)	0.002	0.002	0.002	0.002	
Emission Rate	(lb/hr)	0.31	0.34	0.31	0.32	5.1
Emission Rate	(tons/year)	1.38	1.47	1.35	1.40	22.3

CEM results have been bias calibration corrected

Table 4 Total Reduced Sulfur Test Results, SCOT 1, October 19, 2006
 The Premcor Refining Group Inc. A Valero Company, Valero Delaware City Refinery, Delaware City, Delaware

Test Data		Run 1	Run 2	Run 3	Average	
Date		October 19, 2006	October 19, 2006	October 19, 2006		
Start Time		9:15 AM	12:55 PM	4:50 PM		
End Time		12:15 PM	3:55 PM	7:50 PM		
Flow Rate	(ACFM)	73,453	74,293	76,087	74,611	
Flow Rate	(SCFM)	22,847	23,054	23,559	23,153	
Flow Rate	(DSCFM)	20,217	20,692	20,669	20,526	
Sample Volume	(DSCF)	12,476	12,436	12,421	12,444	
Carbon Dioxide (CO ₂)	(dry volume %)	15.2	15.4	15.3	15.28	
Oxygen (O ₂)	(dry volume %)	4.4	4.2	4.4	4.34	
Water Vapor (H ₂ O)	(volume %)	11.51%	10.25%	12.27%	0.11	
Stack Temperature	(°F)	1,222.4	1,228.4	1,226.4	1,225.74	
Fc	(dscf/MMBtu)	1,038.8	1,042.4	1,041.7		
Results					Permit Limit	
Total Reduced Sulfur						
Mass Collected as SO ₂	(mg)	0.39	0.51	0.53	0.47	
Emission Concentration as SO ₂	(lb/DSCF)	6.87E-08	8.97E-08	9.41E-08	8.42E-08	
Emission Concentration as SO ₂	(ppm _v)	0.41	0.54	0.57	0.51	
Emission Concentration as H ₂ S	(ppm _v)	0.22	0.29	0.30	0.27	
Emission Rate as H ₂ S	(lb/hr)	0.02	0.03	0.03	0.03	
Emission Rate as H ₂ S	(tons/year)	0.10	0.14	0.14	0.13	
Emission Rate as H ₂ S	(lb/MMBtu)	0.0001	0.0002	0.0002	0.0002	12.7 0.027

Table 5 Sulfuric Acid Mist Test Results, SCOT 2, October 17, 2006
 The Premcor Refining Group Inc. A Valero Company, Valero Delaware City Refinery, Delaware City, Delaware

Test Data		Run 1	Run 2	Run 3	Average	
Date		October 17, 2006	October 17, 2006	October 17, 2006		
Start Time		9:32 AM	2:55 PM	4:32 PM		
End Time		10:47 AM	3:59 PM	5:35 PM		
Flow Rate	(ACFM)	105,636	118,665	117,482	113,928	
Flow Rate	(SCFM)	29,796	32,691	32,387	31,625	
Flow Rate	(DSCFM)	26,376	29,653	28,524	28,184	
Sample Volume	(DSCF)	41,204	56,511	54,669	50,795	
Carbon Dioxide (CO ₂)	(dry volume %)	6.6	6.4	6.2	6.4	
Oxygen (O ₂)	(dry volume %)	6.3	6.1	6.1	6.2	
Water Vapor (H ₂ O)	(volume %)	11.5%	9.3%	11.9%	10.9%	
Stack Temperature	(°F)	1410	1455	1454	1,440	
Percent of Isokinetic Sampling	(%)	96.0	103.0	103.6	100.9	
Results						Permit Limit
Sulfuric Acid (H₂SO₄)						
Mass Collected	(mg)	23.87	26.00	21.40	23.76	
Emission Concentration	(lb/DSCF)	1.28E-06	1.01E-06	8.63E-07	1.05E-06	
Emission Concentration	(ppm _{av})	5.02	3.99	3.39	4.13	
Emission Rate	(lb/hr)	2.02	1.80	1.48	1.77	
Emission Rate	(Tons/Year)	8.85	7.91	6.47	7.74	12.7
Emission Rate	(lb/MMBtu)	0.020	0.016	0.014	0.017	0.027

Table 6. CEM Test Results, SCOT 2, October 17, 2006
 The Premcor Refining Group Inc., A Valero Company, Valero Delaware City Refinery, Delaware City, Delaware

Test Data		Run 1	Run 2	Run 3	Average	
Date		October 17, 2006	October 17, 2006	October 17, 2006		
Start Time		9:32 AM	2:55 PM	4:32 PM		
End Time		10:47 AM	3:59 PM	5:35 PM		
Flow Rate	(ACFM)	105,636	118,665	117,482	113,928	
Flow Rate	(SCFM)	29,796	32,691	32,387	31,625	
Flow Rate	(DSCFM)	26,376	29,653	28,524	28,184	
Sample Volume	(DSCF)	41,204	56,511	54,669	50,795	
Carbon Dioxide (CO ₂)	(dry volume %)	6.63	6.44	6.20	6.42	
Oxygen (O ₂)	(dry volume %)	6.30	6.13	6.07	6.17	
Water Vapor (H ₂ O)	(volume %)	11.48	9.29	11.93	10.90	
Stack Temperature	(°F)	1410.0	1454.6	1453.8	1439.5	
Fc	(dscf/MMBtu)	1028.0	1037.8	1038.4		
Results						Permit Limit
Carbon Monoxide (CO)						
Emission Concentration	(ppm _{d,v})	0.95	2.25	2.27	1.82	100
Emission Rate	(lb/hr)	0.11	0.29	0.28	0.23	
Emission Rate	(tons/year)	0.48	1.27	1.24	0.99	90.4
Nitrogen Oxides (NO_x) as NO₂						
Emission Concentration	(ppm _{d,v})	14.6	14.7	14.2	14.53	
Emission Rate	(lb/hr)	2.77	3.12	2.91	2.93	
Emission Rate	(tons/year)	12.11	13.68	12.75	12.85	51.9
Emission Rate	(lb/MMBtu)	0.03	0.03	0.03	0.03	0.12

CEM results have been bias calibration corrected.

Table 7 THC Test Results, SCOT 2, October 17 and 18, 2006
 The Premcor Refining Group Inc., A Valero Company, Valero Delaware City Refinery, Delaware City, Delaware

Test Data		Run 1	Run 2	Run 3	Average	
Date		October 17, 2006	October 17, 2006	October 18, 2006		
Start Time		2:55 PM	4:32 PM	12:05 PM		
End Time		3:59 PM	5:35 PM	3:25 PM		
Flow Rate	(ACFM)	118,665	117,482	117,761	117,969	
Flow Rate	(SCFM)	32,691	32,387	32,354	32,477	
Flow Rate	(DSCFM)	29,653	28,524	29,174	29,117	
Carbon Dioxide (CO ₂)	(dry volume %)	6.439	6.198	6.637	6.425	
Oxygen (O ₂)	(dry volume %)	6.13	6.07	6.00	6.07	
Water Vapor (H ₂ O)	(volume %)	9.29	11.93	9.83	10.35	
Stack Temperature	(°F)	1454.6	1453.8	1440.6	1449.7	
Fc	(dscf/MMBtu)	1037.8	1038.4	1061.5		
Results						Permit Limit
Volatile Organic Compounds (VOCs)						
Emission Conc. As Propane	(ppm _{av})	0.15	0.30	0.21	0.22	
Emission Conc. As Propane	(ppm _{av})	0.17	0.34	0.23	0.25	
Emission Conc. As Methane	(ppm _{av})	0.50	1.01	0.70	0.74	
Emission Rate as Methane	(lb/hr)	0.04	0.07	0.05	0.05	
Emission Rate as Methane	(tons/year)	0.16	0.31	0.22	0.23	1.3
Emission Rate as Methane	(lb/MMBtu)	0.0003	0.0007	0.0005	0.0005	0.603

CEM results have been bias calibration corrected
 Values that are less than 0 are reported as 0 in the Table and are included in the Average as 0.

Table 8 Particulate Matter under 10 Microns Test Results, SCOT 2, October 18 and 19, 2006
 The Premcor Refining Group Inc., A Valero Company, Valero Delaware City Refinery, Delaware City, Delaware

Test Data		Run 1 pm	Run 2 pm	Run 3 pm run 1 trs	Average	
Date		October 18, 2006	October 18, 2006	October 19, 2006		
Start Time		12:05 PM	4:05 PM	8:30 AM		
End Time		3:25 PM	7:15 PM	11:42 AM		
Flow Rate	(ACFM)	117,761	124,729	119,802	120,764	
Flow Rate	(SCFM)	32,354	34,101	32,866	33,107	
Flow Rate	(DSCFM)	29,174	30,812	29,609	29,865	
Sample Volume	(DSCF)	169,284	176,003	175,676	173,654	
Carbon Dioxide (CO ₂)	(dry volume %)	6.64	6.47	6.37	6.49	
Oxygen (O ₂)	(dry volume %)	6.00	6.03	6.51	6.18	
Water Vapor (H ₂ O)	(volume %)	9.83	9.65	9.91	9.79	
Stack Temperature	(°F)	1440.6	1449.9	1449.8	1446.8	
Percent of Isokinetic Sampling	(%)	104.5	102.9	106.9	104.7	
Results						Permit Limit
Particulate Matter under 10 Microns (PM-10)						
Weight of Condensable Particulate	(mg)	6.5	20.95	14.5	13.98	
Total Mass Collected	(mg)	47.15	81.40	45.75	58.10	
Emission Concentration	(gr/DSCF)	0.004	0.007	0.004	0.005	
Emission Rate	(lb/hr)	1.07	1.88	1.02	1.33	5.1
Emission Rate	(tons/year)	4.71	8.26	4.47	5.81	22.3

CEM results have been bias calibration corrected

Table 9 Total Reduced Sulfur Test Results, SCOT 2, October 19, 2006
 The Premcor Refining Group Inc , A Valero Company, Valero Delaware City Refinery, Delaware City, Delaware

Test Data		Run 1	Run 2	Run 3	Average	
Date		October 19, 2006	October 19, 2006	October 19, 2006		
Start Time		9:20 AM	12:52 PM	4:50 PM		
End Time		12:20 PM	3:52 PM	7:50 PM		
Flow Rate	(ACFM)	119,802	112,756	115,291	115,950	
Flow Rate	(SCFM)	32,866	30,819	31,536	31,741	
Flow Rate	(DSCFM)	29.609	27.792	28.614	28,672	
Sample Volume	(DSCF)	12.446	12.364	12.355	12.388	
Carbon Dioxide (CO ₂)	(dry volume %)	6.4	6.5	6.4	6.44	
Oxygen (O ₂)	(dry volume %)	6.5	6.3	6.5	6.44	
Water Vapor (H ₂ O)	(volume %)	9.91%	9.82%	9.26%	0.10	
Stack Temperature	(°F)	1,449.8	1,456.9	1,455.4	1,454.04	
Fc	(dscf/MMBtu)	1,038.8	1,042.4	1,041.7		
Results						Permit Limits
Total Reduced Sulfur						
Mass Collected as SO ₂	(mg)	0.54	0.43	0.53	0.50	
Emission Concentration as SO ₂	(lb/DSCF)	9.61E-08	7.75E-08	9.46E-08	8.94E-08	
Emission Concentration as SO ₂	(ppm _{dv})	0.58	0.47	0.57	0.54	
Emission Concentration as H ₂ S	(ppm _{dv})	0.31	0.25	0.30	0.29	
Emission Rate as H ₂ S	(lb/hr)	0.05	0.04	0.05	0.04	
Emission Rate as H ₂ S	(tons/year)	0.21	0.16	0.20	0.19	12.7
Emission Rate as H ₂ S	(lb/MMBtu)	0.0004	0.0003	0.0004	0.0004	0.027

Table 10

TABLE NOMENCLATURE

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
ACFM	- Actual cubic feet per minute	mg	- Milligrams
AB	- Acetone Blank	mg/g	- Milligrams per gram
BTU	- British thermal units	mL	- Milliliter
C ₃ H ₈	- Propane	MMBtu	- Million British thermal units
CEMS	- Continuous emission monitor system	MMBtu/hr	- Million British thermal units per hour
cf	- Cubic foot	mm HG	- Millimeters of mercury
CFR	- Code of Federal Regulations	N ₂	- Nitrogen
CO	- Carbon monoxide	ng	- Nanograms
CO ₂	- Carbon dioxide	NMNVOC	- Non-methane, non-ethane volatile organic compounds
DACF	- Dry actual cubic feet	NMVOC	- Non-methane volatile organic compound
DSCF	- Dry standard cubic feet	NO _x	- Oxides of Nitrogen
DACM	- Dry actual cubic meters	NO ₂	- Nitrous Oxide
DSCFM	- Dry standard cubic feet per minute	O ₂	- Oxygen
°F	- Degrees Fahrenheit	%	- Percent
ft	- Foot	% Volume	- Percent by volume
ft ²	- Square feet	ppm	- Parts per million
ft ³	- Cubic feet	ppb	- Parts per billion
ft ³ /lb-mole	- Cubic feet per pound mole	ppm _{dv}	- Parts per million, dry volume
ft/sec	- Feet per second	ppm _{wv}	- Parts per million, wet volume
g	- Grams	RMD	- Relative mean difference
g/mL	- Gram per milliliter	RM	- Reference Method
gr/DSCF	- Grains per dry standard cubic feet	S	- Sulfur
H ₂ O	- Water	SCFM	- Standard cubic feet per minute
Hg	- Mercury	SCM	- Standard cubic meters
HI	- Heat input	SCF	- Standard cubic feet
hr	- Hour	SO ₂	- Sulfur dioxide
in Hg	- Inches of Mercury	STD	- Standard
in H ₂ O	- Inches of Water	THC	- Total hydrocarbons
Kg	- Kilograms	tph	- Tons per hour
lb	- Pound	μg	- Micrograms
lb/hr	- Pound per hour	μg/DSCM	- Micrograms per dry standard cubic meter
lb/lb-mole	- Pound per pound mole	USEPA	- United States Environmental Protection Agency
lb/MMBTU	- Pound per million British thermal units	vol.	- Volume
m ³	- Cubic meters	w/o	- With out