TEST REPORT

EMISSIONS TEST PROGRAM
NAPHTHA REFORMER CCR SCRUBBER EXHAUST
EMISSION POINT NO. 155
REGULATED ENTITY NO. 100214386
CUSTOMER REFERENCE NO. 600127468

VALERO REFINING – TEXAS, L.P.
CORPUS CHRISTI, TEXAS

PREPARED FOR:

VALERO REFINING – TEXAS, L.P.
1147 Cantwell Lane
Corpus Christi, Texas 78407
Phone: 361.299.8968
Fax: 361.289.3126
E-mail: brian.funke@valero.com
Attention: Mr. Brian Funke
Senior Environmental Engineer

ARI Environmental, Inc.
1710 Preston Road, Unit C
Pasadena, Texas 77503
Phone: 713.946.6222
Fax: 713.946.8813
E-mail: dfitzgerald@arienv.com
Daniel E. Fitzgerald
Division Manager
Source Testing Division

ARI Project No. H555-244
ARI Proposal No. H18007
Valero Purchase Order No. 4501256282
Test Date: August 14, 2007

TABLE OF CONTENTS

SECTION		PAGE
Section 1	**INTRODUCTION**	1-1
Section 2	**TESTING AND ANALYTICAL PROCEDURES**	2-1
	2.1 Overview	2-1
	2.2 Methodology	2-1
	2.2.1 Sample and Velocity Traverse Locations (USEPA Method 1A)	2-1
	2.2.2 Velocity and Volumetric Flow Rate Determination (USEPA Method 2)	2-1
	2.2.3 Stack Gas Moisture Content (USEPA Method 4)	2-3
	2.2.4 Volatile Organic Compounds Determination (USEPA Method 25A)	2-3
	2.2.5 Hydrogen Chloride and Chlorine Determination (USEPA Method 26A)	2-3
	2.2.6 Emission Rate Calculation	2-6
Section 3	**RESULTS**	3-1

FIGURES

Figure 2-1	CCR Scrubber Exhaust Sampling Locations	2-2
Figure 2-2	USEPA Method 25A – Total Hydrocarbon Sampling System	2-4
Figure 2-3	USEPA Method 26A Sampling Train	2-5

TABLES

Table 1-1	Naphtha Reformer CCR Test Results (August 14, 2007)	1-1
Table 3-1	Summary of Test Results	3-2

APPENDICES

Appendix A	Calculation Summaries
Appendix B	Field Data
Appendix C	Laboratory Data
Appendix D	ARI Reference Method Monitoring Data
Appendix E	Calibration Data
Appendix F	Process Data
Appendix G	ARI Project Personnel

SECTIONONE Introduction

ARI Environmental, Inc. (ARI) was retained by Valero Refining – Texas, L.P. (Valero) to conduct a compliance emission test program on the Naphtha Reformer Continuous Catalyst Regenerator (CCR) scrubber exhaust located at their Bill Greehey West Refinery in Corpus Christi, Texas. The CCR Scrubber exhaust is designated Emission Point Number (EPN) 155. The testing requirements are pursuant to Valero's TCEQ Flexible Air Permit Nos. 38754 and PSD-TX-324M12.

The purpose of the test program was to determine the concentrations and mass emission rates of hydrogen chloride (HCl), chlorine (Cl_2) and total volatile organic compounds (VOC).

Test methods followed those as detailed in the Code of Federal Regulations, 40CFR, Part 60, 2006, Appendix A, USEPA Methods 1A, 2, 4, 25A and 26A; 40 CFR, Part 63, 2006, Subpart UUU – National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units and Sulfur Recovery Units; the Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III - Stationary Source Specific Methods; and the Texas Commission on Environmental Quality (TCEQ) Sampling Procedures Manual.

Mr. Dan Fitzgerald, Mr. Jeff Goldfine, Mr. Adam Hensley and Mr. Walter Page of ARI conducted the compliance test program. Mr. Brian Funke of Valero coordinated the test program. All testing activities were conducted on August 14, 2007.

A summary of the results is presented below in Table 1-1.

TABLE 1-1. NAPHTHA REFORMER CCR TEST RESULTS (AUGUST 14, 2007)

TEST RUN :	1	2	3		
TEST TIME :	11:10 – 12:13	13:45 – 14:54	15:22 – 16:30	Average	Allowable
Hydrogen Chloride (HCl)					
ppmv db @ 3% O_2	<0.03	<0.03	<0.03	<0.03	10
lb/hr	<0.000060	<0.000061	<0.000058	<0.000060	
Chlorine (Cl_2)					
ppmv db @ 3% O_2	0.10	0.02	0.03	0.05	
lb/hr	0.000458	0.000111	0.000116	0.000228	
VOC as Hexane (C_6)					
ppmv db @ 3% O_2	4.86	3.74	3.34	3.98	20
lb/hr	0.0261	0.0200	0.0172	0.0211	

SECTIONTWO Testing and Analytical Procedures

2.1 OVERVIEW

ARI was retained by Valero to conduct a compliance emission test on the Naphtha Reformer CCR Scrubber exhaust at their Bill Greehey West Refinery in Corpus Christi, Texas.

The test program consisted of three 60-minute test repetitions.

2.2 METHODOLOGY

Test methods followed those as detailed in the Code of Federal Regulations, 40CFR, Part 60, 2006, Appendix A, USEPA Methods 1A, 2, 4, 25A and 26A; the Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III - Stationary Source Specific Methods; and the TCEQ Sampling Procedures Manual.

2.2.1 Sample and Velocity Traverse Locations (USEPA Method 1A)

The sampling points at the CCR Scrubber exhaust were determined following USEPA Method 1. The pollutant and velocity sampling location as well as the number of velocity traverse points were as follows:

Duct Diameter (inches)	No. Ports	No. Downstream Diameters from Flow Disturbance	No. Upstream Diameters from Flow Disturbance	Sampling Points per Port	Total Points
8.0	2	22.5	75.0	4	8

Figure 2-1 presents a diagram of the sampling location.

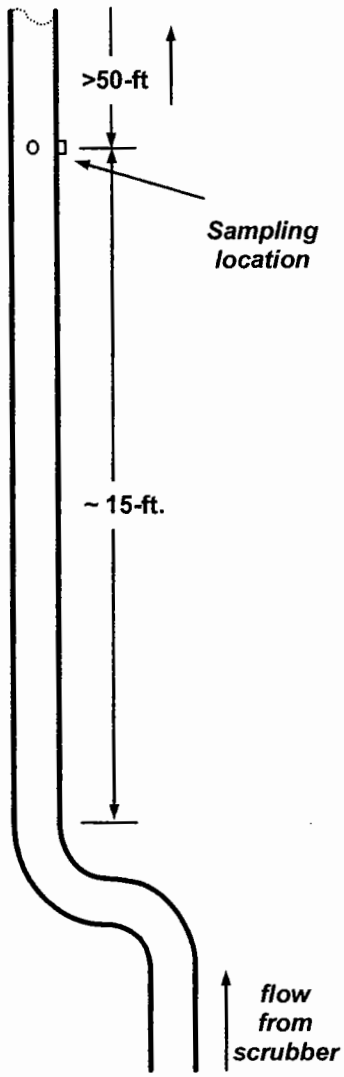
2.2.2 Velocity and Volumetric Flow Rate Determination (USEPA Method 2)

The gas velocity and volumetric flow rate were determined following USEPA Method 2.

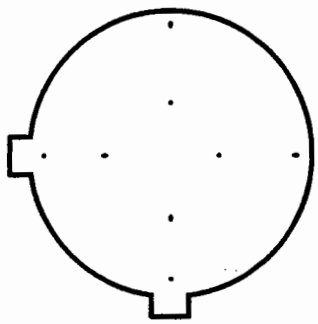
Velocity traverses were performed using a Type "S" pitot tube with the velocity head measured on a Dwyer oil gauge inclined manometer to the nearest 0.1 in. H_2O. Temperature measurements in the ducts were performed with a Chromel-Alumel thermocouple connected to a digital direct read-out potentiometer.

The molecular weight of the exhaust gas was determined following procedures described in USEPA Method 3. In conjunction with each 60-minute sample run, a sample of the exhaust gas was continuously collected at a constant rate into an aluminized Mylar bag. After each run was completed, the bag sample was analyzed by a Fyrite Combustion Gas Analyzer for contents (% by volume) of oxygen and carbon dioxide.

A cyclonic flow check was conducted prior to the beginning of the test to demonstrate that cyclonic flow conditions did not exist.



CROSS SECTION



TRAVERSE POINTS: 8
NUMBER OF PORTS: 4
POINTS/PORT: 4
STACK ID: 8 in.
PORT LENGTH: 6-1/2 in.

TRAVERSE POINT NO.	DISTANCE FROM INSIDE WALL, in.
1	0.5
2	2.0
3	6.0
4	7.5

FIGURE 2-1. SAMPLING LOCATION
VALERO REFINING – TEXAS, LLC
NAPHTHA REFORMER CCR SCRUBBER EXHAUST
EPN 155

2.2.3 Stack Gas Moisture Content (USEPA Method 4)

The stack gas moisture was determined following USEPA Method 4 procedures using the back half of the HCl/Cl_2 sampling train. The moisture was collected in a series of ice cooled impingers. The moisture collected was measured volumetrically and gravimetrically. The stack gas moisture was calculated based upon saturated condition at the relative temperature and moisture for each respective sample run.

2.2.4 Volatile Organic Compounds Determination (USEPA Method 25A)

The determination of total VOC was conducted following procedures described in USEPA Method 25A using a total hydrocarbon analyzer. The analyzer utilizes a continuous heated flame ionization detector (FID) and sample line that keeps the sample gas stream above the dew point. The sampling system consisted of a stainless steel probe with an in-stack filter holder connected to a three-way calibration valve. The sample gas was transported by a Teflon lined heated pump through a heated Teflon line (>250°F) to the intake of the hydrocarbon analyzer (see Figure 2-2).

Calibration gases were introduced at the three-way calibration tee located at the exit end of the sample probe. A pre-test and post-test system bias were performed using propane in air standards. The results of the calibration were within the ±5% of span allowed. The zero and upscale calibration gas drift values obtained after each run were within the ±3% of span allowed. The average zero and upscale calibration gas values obtained during each test run were used to correct the data for that test run.

The analyzer was calibrated with applicable zero, low-range, mid-range and high-range gases as specified in the USEPA methods. The gases met the calibration gas verification protocols of Alternate Number 1 or Alternate Number 2 as specified in USEPA Method 6C, Section 6. An Environics gas dilution system was used to prepare the calibration gases. The system was verified on-site following USEPA Method 205 procedures.

Results from the sample runs were continuously recorded by ARI's data acquisition system consisting of an Omega OMB-DAQ-56 datalogger connected to a computer for digital data archiving and data reduction.

2.2.5 Hydrogen Chloride and Chlorine Determination (USEPA Method 26A)

As depicted in Figure 2-3, sampling and analysis for HCl was conducted following USEPA Method 26A.

The gas samples were withdrawn isokinetically from the exhaust stack and collected in a heated sample probe, heated Teflon filter and a stainless steel line followed by a series of chilled impingers.

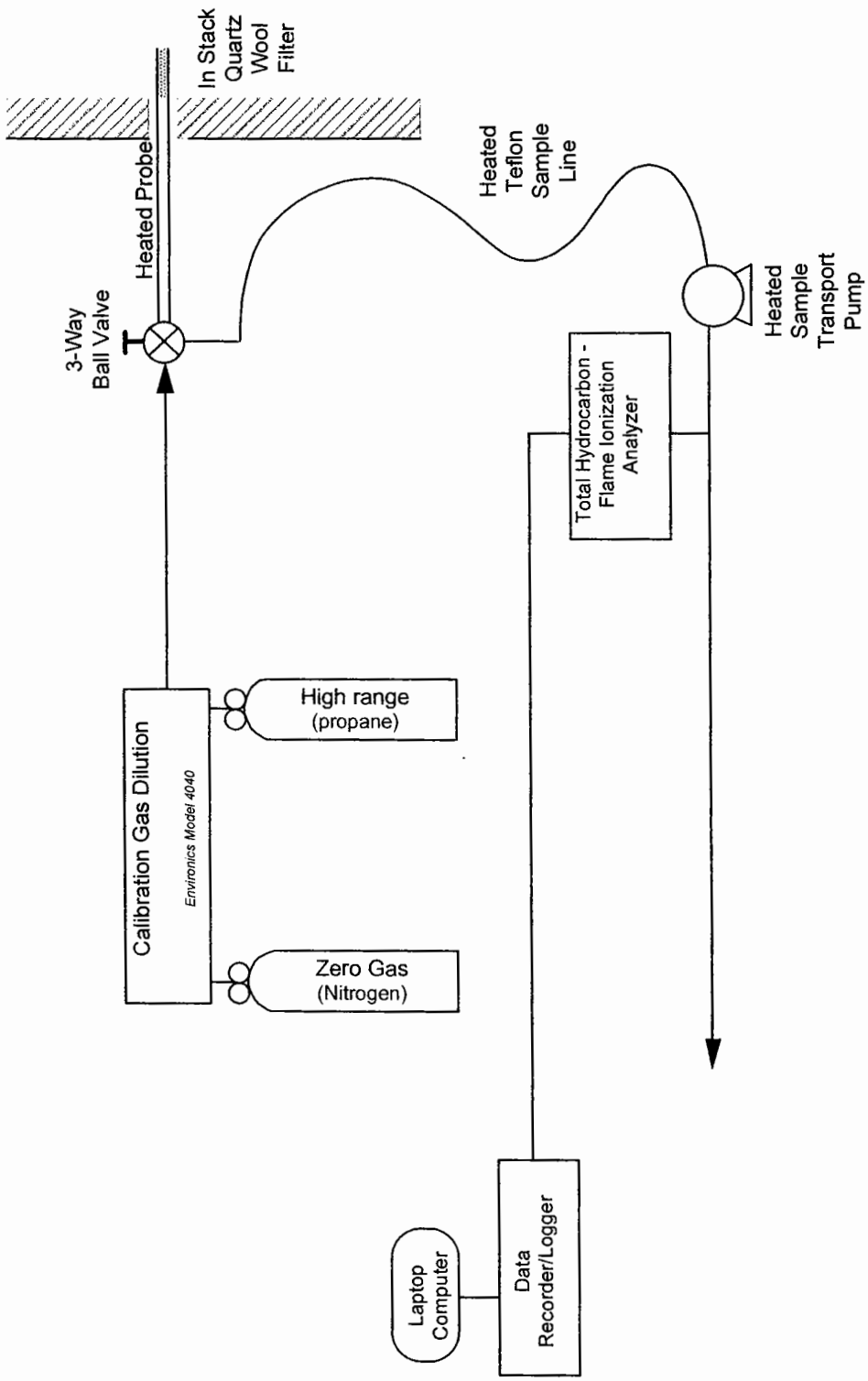


FIGURE 2-2. USEPA METHOD 25A - TOTAL HYDROCARBON SAMPLING SYSTEM

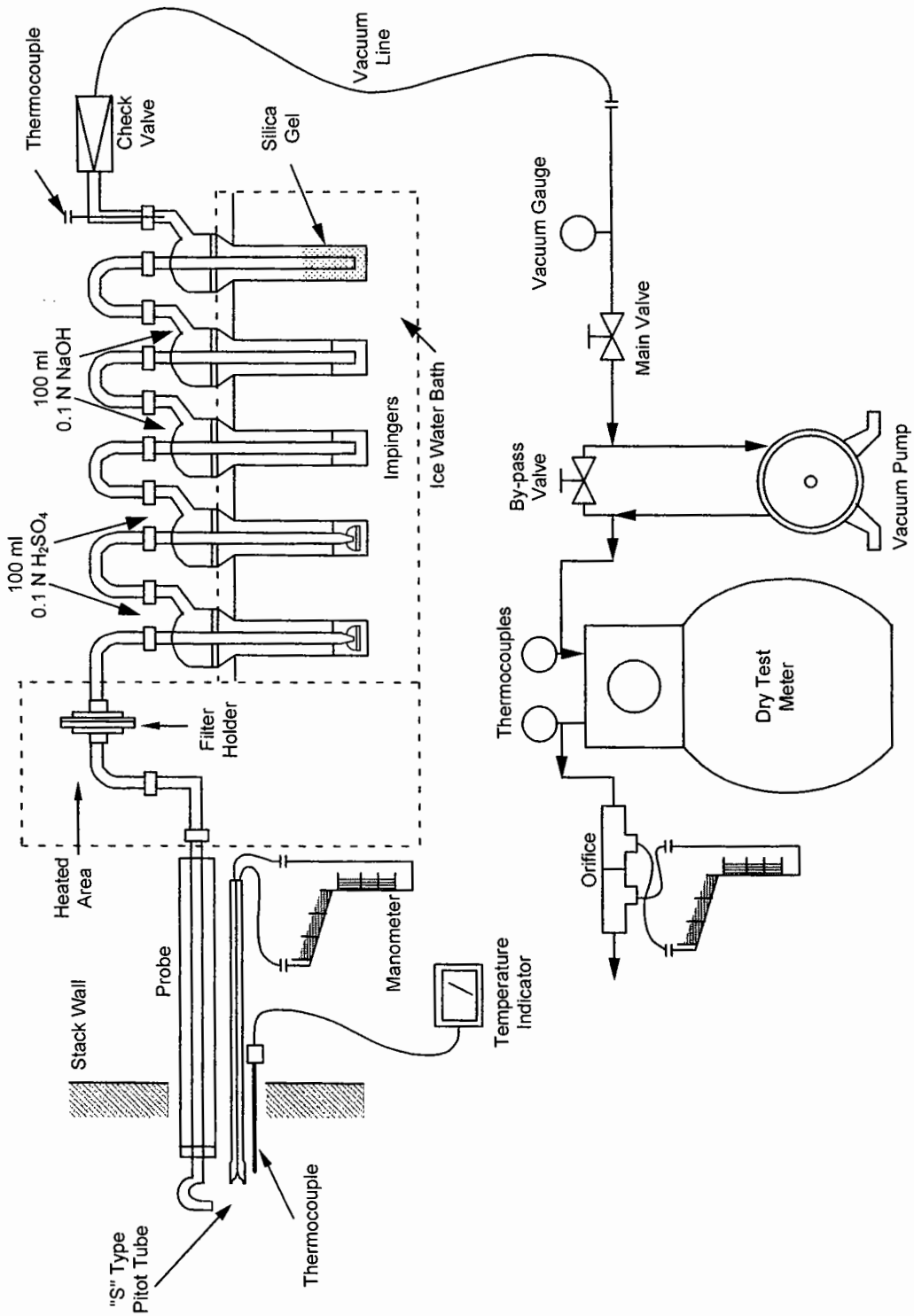


FIGURE 2-3. USEPA METHOD 26A SAMPLING TRAIN

Specifically, the front half of the sampling train consisted of a glass nozzle, heated glass lined probe and heated sample box containing a Teflon filter. A stainless steel line connected the front half to the back half. The back half of the train consisted of five (5) impingers. The first and second impingers (Greenburg-Smith) each contained 100 mls of 0.1N H_2SO_4, the third and fourth impingers contained 100 mls 0.1N NaOH and the fifth impinger contained 200 grams of silica gel.

Sampling began by placing ice into the impinger compartment and moving the probe into the stack such that the nozzle was perpendicular to the stack axis. An initial dry gas meter reading was made and the sampling rate was adjusted on the metering console to maintain an isokinetic sampling rate using calculations based upon stack temperature, pressure and estimated moisture content. The probe and filter temperatures were maintained near 250°F during each sample run.

Pretest and posttest leak checks were performed on the sampling train and pitot systems for each sample run.

The samples were recovered on-site. The back half 0.1N H_2SO_4 impinger solutions and rinses were stored in polyethylene bottles and shipped to ARI's laboratory located in Wauconda, Illinois for subsequent analysis.

HCl and Cl_2 samples were analyzed using ion chromatography utilizing an ion separation column and a conductivity detector. The sample analysis techniques followed Method 26A laboratory procedures. All QA/QC procedures and calibrations listed in the method were met.

2.2.6 Emission Rate Calculation

The pollutant emission rates in lb/hr were calculated for each run by multiplying the measured concentration (lbs/dscf) by the stack gas volumetric flow rate (dscfh).

SECTIONTHREE Results

The results of the compliance emission test program conducted on the Naphtha Reformer CCR Scrubber Exhaust are presented in Table 3-1.

Appendix A presents example calculations and computer generated printouts of calculated values from the field data. Appendix B presents all raw field data. Laboratory data are presented in Appendix C. Appendix D presents the monitoring data for the O_2, CO_2 and VOC that was recorded at 15-second intervals. Appendix E contains all test equipment calibration data. Process data are presented in Appendix F. Test personnel resumes are presented in Appendix G.

TABLE 3-1. SUMMARY OF TEST RESULTS

COMPANY	:	Valero Refining – Texas, L.P.			
LOCATION	:	Corpus Christi, Texas			
SOURCE	:	Naphtha Reformer CCR			
OPERATORS	:	D. Fitzgerald, J. Goldfine, A. Hensley, W. Page			
TEST RUN	:	1	2	3	
TEST DATE	:	8/14/07	8/14/07	8/14/07	
TEST TIME	:	11:10 – 12:13	13:45 – 14:54	15:22 – 16:30	Average
Process Data					
Scrubber pH		9.53	9.54	9.47	9.51
Feed Rate, BPD		34,461	34,456	34,321	34,413
Catalyst Circulation, lb/hr		2,000	2,000	2,000	2,000
Liquid to gas Ratio, gal/scf		0.44	0.75	0.71	0.63
Stack Gas					
Temperature, av. °F		119.6	105.6	120.6	115.3
Velocity, av. ft/sec		26.011	24.886	26.277	25.724
Volume flow, acfm		544.77	521.20	550.34	538.77
Volume flow, scfh		29,381	28,802	29,625	29,270
Volume flow, dscfh		27,258	26,842	26,069	26,723
Moisture, av. % vol		7.23	6.81	12.00	8.68
CO_2, av. % vol, db		11.4	11.5	11.4	11.4
O_2, av. % vol, db		5.1	4.9	5.1	5.0
Hydrogen Chloride (HCl)					
Concentration					
ppmv db		<0.02	<0.02	<0.02	<0.02
ppmv db @ 3% O_2		**<0.03**	**<0.03**	**<0.03**	**<0.03**
lb/dscf x 10^{-6}		<0.0022	<0.0023	<0.0022	<0.0022
Emission Rate					
lb/hr		<0.000060	<0.000061	<0.000058	<0.000060
Chlorine (Cl_2)					
Concentration					
ppmv db		0.09	0.02	0.02	0.05
ppmv db @ 3% O_2		**0.10**	**0.02**	**0.03**	**0.05**
lb/dscf x 10^{-6}		0.0168	0.0041	0.0044	0.0085
Emission Rate					
lb/hr		0.000458	0.000111	0.000116	0.000228
VOC as Hexane (C_6)					
Concentration					
ppmv db		4.29	3.34	2.95	3.52
ppmv db @ 3% O_2		**4.86**	**3.74**	**3.34**	**3.98**
lb/dscf x 10^{-6}		0.959	0.746	0.660	0.788
Emission Rate					
lb/hr		0.0261	0.0200	0.0172	0.0211

APPENDIX A Calculation Summaries

MONITOR DATA SUMMARY

COMPANY : Valero Refining - Texas, L.P.
SOURCE : Naphtha Reformer CCR
REPETITION : 1
TEST DATE : 8/14/07
START TIME : 11:10
END TIME : 12:13

GAS ANALYZER — **O_2 - Stack**

SCALE : 0 - 10 %
AVERAGE CAL. BIAS (C_m): 4.610
AVERAGE ZERO BIAS (C_o): 0.180

CALIBRATION GAS: EPA Protocol O_2
CALIBRATION % (C_{ma}): 4.50
% CORRECTED (C_{gas}): 5.11

GAS ANALYZER — **CO_2 - Stack**

SCALE : 0 - 25 %
AVERAGE CAL. BIAS (C_m): 8.975
AVERAGE ZERO BIAS (C_o): 0.060

CALIBRATION GAS: EPA Protocol CO_2
CALIBRATION % (C_{ma}): 9.00
% CORRECTED (C_{gas}): 11.37

GAS ANALYZER — **VOC - Stack**

SCALE : 0 - 100 ppm
AVERAGE CAL. BIAS (C_m):
AVERAGE ZERO BIAS (C_o):

CALIBRATION GAS: EPA Protocol C_3H_8/Air
CALIBRATION PPM (C_{ma}):
PPM CORRECTED (C_{gas}): 7.95

Example Calculation =

$$C_{gas} = \left(\overline{C} - C_o\right)\frac{C_{ma}}{C_m - C_o}$$

CLOCK TIME	ELAPSED TIME	Uncorrected O_2 - Stack % vol db	Uncorrected CO_2 - Stack % vol db	VOC - Stack ppmv wb
11:10	0	------	------	------
11:11	1	5.40	11.28	8.9
11:12	2	5.34	11.27	7.5
11:13	3	5.22	11.39	6.4
11:14	4	5.38	11.22	5.1
11:15	5	5.55	11.06	7.0
11:16	6	5.49	11.12	9.3
11:17	7	5.36	11.24	8.4
11:18	8	5.12	11.46	7.1
11:19	9	5.27	11.30	5.6
11:20	10	5.39	11.19	5.9
11:21	11	5.42	11.16	9.5
11:22	12	5.29	11.29	9.6
11:23	13	5.12	11.45	7.2
11:24	14	5.18	11.38	6.0
11:25	15	5.33	11.26	6.1
11:26	16	5.52	11.07	9.8
11:27	17	5.37	11.23	11.5
11:28	18	5.22	11.36	9.4
11:29	19	5.11	11.45	7.3
11:30	20	5.20	11.37	6.0
11:31	21	5.45	11.12	7.1
11:32	22	5.39	11.19	10.4
11:33	23	5.18	11.38	9.0
11:34	24	5.10	11.45	6.6
11:35	25	5.19	11.37	5.5
11:36	26	5.47	11.09	5.4
11:37	27	5.48	11.10	9.3
11:38	28	5.31	11.28	9.3
11:39	29	5.23	11.33	7.7
11:40/11:43	30	5.14	11.43	5.9
11:44	31	5.28	11.31	10.0
11:45	32	5.19	11.38	8.6
11:46	33	5.28	11.30	7.3
11:47	34	5.59	11.00	7.4
11:48	35	5.49	11.13	10.6
11:49	36	5.34	11.26	9.8
11:50	37	5.10	11.46	7.8
11:51	38	5.13	11.40	6.0
11:52	39	5.41	11.12	5.5
11:53	40	5.38	11.19	8.3
11:54	41	5.27	11.27	10.2
11:55	42	4.97	11.53	8.4
11:56	43	4.95	11.51	6.4
11:57	44	5.10	11.37	5.5
11:58	45	5.26	11.23	6.9
11:59	46	5.26	11.25	10.9
12:00	47	4.98	11.53	10.6
12:01	48	4.96	11.51	9.3
12:02	49	4.99	11.45	7.9
12:03	50	5.22	11.23	7.2
12:04	51	5.23	11.24	10.2
12:05	52	5.05	11.42	10.8
12:06	53	4.96	11.48	8.6
12:07	54	4.90	11.52	7.0
12:08	55	4.97	11.45	5.9
12:09	56	5.09	11.36	8.0
12:10	57	4.99	11.41	10.0
12:11	58	4.81	11.57	9.0
12:12	59	4.67	11.69	7.4
12:13	60	4.84	11.55	6.3
	Uncorrected Average =	**5.215**	**11.323**	**7.95**

ARI ENVIRONMENTAL, INC.
MOISTURE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas, L.P.
LOCATION: Corpus Christi, Texas
SOURCE: Naphtha Reformer CCR
TEST DATE: 8/14/2007
RUN NUMBER: 1

γ FACTOR:	0.994	**STACK DIAM:**	8.0 **inches**
BAROMETRIC:	29.51 **in. Hg**	**METER VOLUME:**	44.999 **ft^3**
STATIC PRES:	0.18 **$in.H_2O$**	**METER TEMP:**	86.6 **°F**
STACK TEMP:	119.6 **°F**	**LIQUID COLL:**	70.8 **milliliters**
SQ.RT ΔP:	0.4414 **$in.H_2O$**	**CO_2:**	11.37 **% by volume**
ΔH:	1.65 **$in.H_2O$**	**O_2:**	5.11 **% by volume**

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE
@ STANDARD CONDITIONS, DRY BASIS

$$V_{mstd} = \left(\frac{528}{29.92}\right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}\right] = 42.790 \text{ dscf}$$

γ = 0.994

VOLUME OF WATER IN SAMPLE
@ STANDARD CONDITIONS

$$V_{wstd} = 0.04707 \times V_{lc} = 3.333 \text{ scf}$$

V_{lc} = 70.8 mL

FRACTIONAL MOISTURE CONTENT OF STACK GAS AS MEASURED

$$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} = 0.0723$$

FRACTIONAL MOISTURE CONTENT OF STACK GAS @ SATURATION

$$B_{ws@saturation} = \frac{S.V.P.}{P_{bar} + \frac{P_{static}}{13.6}} = 0.1167$$

S.V.P. = 3.446 in. Hg

FRACTIONAL MOISTURE CONTENT USED IN CALCULATIONS

B_{ws} = 0.0723

ARI ENVIRONMENTAL, INC.
FLOW RATE CALCULATION SUMMARY

COMPANY:	Valero Refining - Texas	**SOURCE:**	Naphtha Reformer CCR
LOCATION:	Corpus Christi, Texas	**TEST DATE:**	8/14/2007
RUN NUMBER:	1		

BAROMETRIC:	29.51 **in. Hg**	**STACK DIAM:**	8.0 **inches**
STATIC PRES:	0.18 **in.H_2O**	**CO_2:**	11.37 **% by volume**
STACK TEMP:	119.6 **°F**	**O_2:**	5.11 **% by volume**
SQ.RT ΔP:	0.4414 **in.H_2O**		

DRY MOLECULAR WEIGHT OF STACK GAS			
$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO)$	=	30.02	**lb/lb-mole**
MOLECULAR WEIGHT OF STACK GAS, wet basis			
$M_s = M_d(1 - B_{ws}) + 18(B_{ws})$	=	29.16	**lb/lb-mole**
PITOT TUBE COEFFICIENT			
C_p (from calibration curve or geometric specifications)	=	0.84	
AVERAGE VELOCITY HEAD OF STACK GAS, in. H_2O			
$\overline{\sqrt{\Delta P}} = \frac{1}{n}\sum_{i=1}^{n}\sqrt{\Delta p}$	=	0.4414	**in. H_2O**
AVERAGE ABSOLUTE STACK GAS TEMPERATURE			
$T_s =$ 119.6 °F + 460	=	579.6	**°R**
ABSOLUTE STACK GAS PRESSURE			
$P_s = P_{bar} + \frac{P_{static}}{13.6}$	=	29.52	**in.Hg**
STACK GAS VELOCITY			
$V_s = (85.49)(C_p)(\text{avg}\sqrt{\Delta P})\sqrt{\frac{T_s}{(P_s)(M_s)}}$	=	26.011	**ft/sec**
STACK GAS VOLUMETRIC FLOW RATE, actual			
$Q_s = 60 \times V_s \times A_s$	=	544.77	**acfm**
Stack Area = 0.34907 ft^2			
STACK GAS VOLUMETRIC FLOW RATE, standard conditions, wet basis			
$Q_{stdw} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)$	=	489.69 29,381	**scfm, wb** **scfh, wb**
STACK GAS VOLUMETRIC FLOW RATE, standard conditions, dry basis			
$Q_{std} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)(1 - B_{ws})$	=	454.30 27,258	**dscfm** **dscfh**

HYDROGEN CHLORIDE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas, L.P.
LOCATION: Corpus Christi, Texas
SOURCE: Naphtha Reformer CCR
TEST DATE: 8/14/2007
RUN NO: 1

INPUT

V_m:	44.999	ft^3	Q_s:	27,258	dscfh
γ FACTOR:	0.994		T_s:	119.6	°F
P_{bar}:	29.51	in. Hg	Θ:	60	minutes
ΔH:	1.65		V_s:	26.011	fps
T_m:	86.6	°F	P_s:	29.52	in. Hg
HCl in sample:	< 43	µg	V_{lc}:	70.8	mL
			$\%O_2$:	5.11	%

Volume of Sample at Standard Conditions on a Dry Basis: — **English Units (29.92 in. Hg, 68 °F)**

$$V_{mstd} = \left(\frac{528}{29.92}\right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}\right] = 42.790 \text{ dscf}$$

Isokinetic Sampling Rate

$$\%ISO = \frac{(100)(T_s)\left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m}\right)(\gamma)\left(P_{bar} + \left(\frac{\Delta H}{13.6}\right)\right)\right]}{(60)(\theta)(V_s)(P_s)(A_n)} = 103.3 \text{ \% I}$$

A_n = 0.00053093 ft^2 Runtime (θ) = 60 minutes

Total µg HCl in sample (M_n) = < 43 µg

Concentration of HCl

$$C'_{s(lb/dscf)} = \frac{(2.205 \times 10^{-9} \text{ lb/µg})(M_n)}{V_{mstd}} = < 0.0022 \text{ x } 10^{-6} \text{ lbs/dscf}$$

$$C_{s(ppmvdb)} = C'_{s(lb/dscf)} \times \frac{385.26 ft^3/lb-mole}{36.45 lb/lb-mole} \times 10^6 = < 0.02 \text{ ppmv db}$$

$$C_{s(ppmv\,db@3\%O_2)} = C_{s(ppmv\,db@3\%O_2)} \times \left(\frac{17.9}{20.9 - \%O_2}\right) = < 0.03 \text{ ppmv db @ 3\% } O_2$$

HCl Mass Rate:

$$E = Q_s \times C'_{s(lb/dscf)} = < 0.000060 \text{ lbs/hr}$$

CHLORINE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas, L.P.
LOCATION: Corpus Christi, Texas
SOURCE: Naphtha Reformer CCR
TEST DATE: 8/14/2007
RUN NO: 1

INPUT

V_m:	44.999	**ft^3**	**Q_s:**	27,258	**dscfh**
γ FACTOR:	0.994		**T_s:**	119.6	**°F**
P_{bar}:	29.51	**in. Hg**	**Θ:**	60	**minutes**
ΔH:	1.65		**V_s:**	26.011	**fps**
T_m:	86.6	**°F**	**P_s:**	29.52	**in. Hg**
Cl_2 in sample:	326	**µg**	**V_{lc}:**	70.8	**mL**
			$\%O_2$:	5.11	**%**

Volume of Sample at Standard Conditions on a Dry Basis: — **English Units (29.92 in. Hg, 68 °F)**

$$V_{mstd} = \left(\frac{528}{29.92}\right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}\right] = 42.790 \text{ dscf}$$

Isokinetic Sampling Rate

$$\%ISO = \frac{(100)(T_s)\left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m}\right)(\gamma)\left(P_{bar} + \left(\frac{\Delta H}{13.6}\right)\right)\right]}{(60)(\theta)(V_s)(P_s)(A_n)} = 103.3 \text{ \% I}$$

A_n = 0.00053093 ft^2 Runtime (θ) = 60 minutes

Total µg Cl_2 in sample (M_n) = 326 µg

Concentration of Cl_2

$$C'_{s(lb/dscf)} = \frac{(2.205 \times 10^{-9} \text{ lb/µg})(M_n)}{V_{mstd}} = 0.0168 \times 10^{-6} \text{ lbs/dscf}$$

$$C_{s(ppmvdb)} = C'_{s(lb/dscf)} \times \frac{385.26 \text{ ft}^3/\text{lb-mole}}{70.906 \text{ lb/lb-mole}} \times 10^6 = 0.09 \text{ ppmv db}$$

$$C_{s(ppmv\,db@3\%O_2)} = C_{s(ppmv\,db@3\%O_2)} \times \left(\frac{17.9}{20.9 - \%O_2}\right) = 0.10 \text{ ppmv db @ 3\% } O_2$$

Cl_2 Mass Rate:

$$E = Q_s \times C'_{s(lb/dscf)} = 0.000458 \text{ lbs/hr}$$

METHOD 25A TOTAL HYDROCARBON (THC) CALCULATION SUMMARY

COMPANY: Valero Refining - Texas, L.P.
LOCATION: Corpus Christi, Texas
SOURCE: Naphtha Reformer CCR
RUN NUMBER: 1
TEST DATE: 8/14/2007

INPUT DATA

Average VOC (as propane) value (C) =	7.95 ppmv wb
	8.57 ppmv db
VOC as hexane, C_6 =	3.98 ppmv wb
	4.29 ppmv db
Stack gas volumetric flow rate (Q_s) =	27,258 dscfh
Stack gas oxygen content =	5.11 %

CALCULATIONS

VOC concentration in stack gas as hexane corrected to 3% O_2 (ppmv db @ 3% O_2)

$$VOC\,as\,C_6\,@3\%O_2 = VOC\,as\,C_6 \times \frac{17.9}{20.9 - \%O_2} =$$ 4.86 ppmv db @ 3% O_2

VOC concentration in stack gas (lbs/dscf)

$$C'_{gas(propane)} = \frac{(C_{gas(propane)})(44.09)}{(385.26 \times 10^6)} =$$ 0.981 x 10^{-6} lb/dscf as propane

$$C'_{gas(hexane)} = \frac{(C_{gas(hexane)})(86.18)}{(385.26 \times 10^6)} =$$ 0.959 x 10^{-6} lb/dscf as hexane

VOC emission rate

$$E_{VOC(propane)} = C'_{gas(propane)} \times Q_s =$$ 0.0267 lb/hr as propane

$$E_{VOC(hexane)} = C'_{gas(hexane)} \times Q_s =$$ 0.0261 lb/hr as hexane

MONITOR DATA SUMMARY

COMPANY :	Valero Refining - Texas, L.P.
SOURCE :	Naphtha Reformer CCR
REPETITION :	2
TEST DATE :	8/14/07
START TIME :	13:45
END TIME :	14:54

GAS ANALYZER — **O_2 - Stack**

SCALE :	0 - 10 %
AVERAGE CAL. BIAS (C_m):	4.565
AVERAGE ZERO BIAS (C_o):	0.170
CALIBRATION GAS:	EPA Protocol O_2
CALIBRATION % (C_{ma}):	4.50
% CORRECTED (C_{gas}):	**4.94**

GAS ANALYZER — **CO_2 - Stack**

SCALE :	0 - 25 %
AVERAGE CAL. BIAS (C_m):	8.945
AVERAGE ZERO BIAS (C_o):	0.090
CALIBRATION GAS:	EPA Protocol CO_2
CALIBRATION % (C_{ma}):	9.00
% CORRECTED (C_{gas}):	**11.47**

GAS ANALYZER — **VOC - Stack**

SCALE :	0 - 100 ppm
AVERAGE CAL. BIAS (C_m):	
AVERAGE ZERO BIAS (C_o):	
CALIBRATION GAS:	EPA Protocol C_3H_8/Air
CALIBRATION PPM (C_{ma}):	
PPM CORRECTED (C_{gas}):	**6.22**

Example Calculation =

$$C_{gas} = \left(\overline{C} - C_o\right)\frac{C_{ma}}{C_m - C_o}$$

CLOCK TIME	ELAPSED TIME	Uncorrected O_2 - Stack % vol db	Uncorrected CO_2 - Stack % vol db	Uncorrected VOC - Stack ppmv wb
13:45	0	------	------	------
13:46	1	5.06	11.28	3.6
13:47	2	5.12	11.26	6.7
13:48	3	4.92	11.47	6.9
13:49	4	4.84	11.51	6.0
13:50	5	4.91	11.43	4.9
13:51	6	5.05	11.29	4.3
13:52	7	5.17	11.20	6.4
13:53	8	5.06	11.31	8.3
13:54	9	4.87	11.48	7.0
13:55	10	4.90	11.44	5.6
13:56	11	4.99	11.36	4.7
13:57	12	5.23	11.13	5.4
13:58	13	5.07	11.31	7.6
13:59	14	4.99	11.36	6.7
14:00	15	4.83	11.51	5.0
14:01	16	4.99	11.34	4.1
14:02	17	5.16	11.19	4.2
14:03	18	5.09	11.30	6.9
14:04	19	5.00	11.39	7.6
14:05	20	4.86	11.50	6.7
14:06	21	4.88	11.47	5.8
14:07	22	5.07	11.29	5.5
14:08	23	5.11	11.29	7.0
14:09	24	5.08	11.31	8.7
14:10	25	4.92	11.47	8.2
14:11	26	4.85	11.51	6.7
14:12	27	4.99	11.35	5.4
14:13	28	5.15	11.22	5.2
14:14	29	5.13	11.26	7.2
14:15/14:24	30	4.97	11.43	6.8
14:25	31	5.05	11.32	8.2
14:26	32	4.95	11.43	8.0
14:27	33	4.79	11.55	6.9
14:28	34	4.96	11.37	5.9
14:29	35	5.08	11.27	5.1
14:30	36	5.10	11.28	6.7
14:31	37	5.00	11.38	6.9
14:32	38	4.91	11.45	5.8
14:33	39	4.85	11.49	4.7
14:34	40	4.96	11.38	3.8
14:35	41	5.13	11.22	5.1
14:36	42	5.05	11.34	6.4
14:37	43	4.99	11.38	6.0
14:38	44	4.79	11.58	5.6
14:39	45	4.93	11.41	5.3
14:40	46	5.13	11.22	5.8
14:41	47	5.17	11.21	8.3
14:42	48	4.94	11.45	8.5
14:43	49	4.89	11.46	7.5
14:44	50	4.85	11.50	6.6
14:45	51	5.01	11.35	5.7
14:46	52	5.08	11.31	7.1
14:47	53	5.01	11.38	7.6
14:48	54	4.90	11.48	6.3
14:49	55	4.85	11.52	5.3
14:50	56	4.95	11.42	4.4
14:51	57	5.12	11.27	5.2
14:52	58	5.11	11.29	7.3
14:53	59	4.92	11.46	6.7
14:54	60	4.89	11.47	5.1
	Uncorrected Average =	**4.994**	**11.371**	**6.22**

ARI ENVIRONMENTAL, INC.
MOISTURE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas, L.P.
LOCATION: Corpus Christi, Texas
SOURCE: Naphtha Reformer CCR
TEST DATE: 8/14/2007
RUN NUMBER: 2

γ FACTOR:	0.994	**STACK DIAM:**	8.0 **inches**
BAROMETRIC:	29.51 **in. Hg**	**METER VOLUME:**	44.289 **ft^3**
STATIC PRES:	0.13 **$in.H_2O$**	**METER TEMP:**	91.0 **°F**
STACK TEMP:	105.6 **°F**	**LIQUID COLL:**	64.8 **milliliters**
SQ.RT ΔP:	0.4279 **$in.H_2O$**	**CO_2:**	11.47 **% by volume**
ΔH:	1.56 **$in.H_2O$**	**O_2:**	4.94 **% by volume**

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE
@ STANDARD CONDITIONS, DRY BASIS

$$V_{mstd} = \left(\frac{528}{29.92}\right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}\right] = 41.769 \text{ dscf}$$

γ = 0.994

VOLUME OF WATER IN SAMPLE
@ STANDARD CONDITIONS

$$V_{wstd} = 0.04707 \times V_{lc} = 3.050 \text{ scf}$$

V_{lc} = 64.8 mL

FRACTIONAL MOISTURE CONTENT OF STACK GAS AS MEASURED

$$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} = 0.0681$$

FRACTIONAL MOISTURE CONTENT OF STACK GAS @ SATURATION

$$B_{ws@saturation} = \frac{S.V.P.}{P_{bar} + \frac{P_{static}}{13.6}} = 0.0783$$

S.V.P. = 2.31 in. Hg

FRACTIONAL MOISTURE CONTENT USED IN CALCULATIONS

B_{ws} = 0.0681

ARI ENVIRONMENTAL, INC.
FLOW RATE CALCULATION SUMMARY

COMPANY:	Valero Refining - Texas	**SOURCE:**	Naphtha Reformer CCR
LOCATION:	Corpus Christi, Texas	**TEST DATE:**	8/14/2007
RUN NUMBER:	2		

BAROMETRIC:	29.51 **in. Hg**	**STACK DIAM:**	8.0 **inches**
STATIC PRES:	0.13 **in.H_2O**	**CO_2:**	11.47 **% by volume**
STACK TEMP:	105.6 **°F**	**O_2:**	4.94 **% by volume**
SQ.RT ΔP:	0.4279 **in.H_2O**		

DRY MOLECULAR WEIGHT OF STACK GAS			
$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO)$	=	30.03	**lb/lb-mole**
MOLECULAR WEIGHT OF STACK GAS, wet basis			
$M_s = M_d(1 - B_{ws}) + 18(B_{ws})$	=	29.21	**lb/lb-mole**
PITOT TUBE COEFFICIENT			
C_p (from calibration curve or geometric specifications)	=	0.84	
AVERAGE VELOCITY HEAD OF STACK GAS, in. H_2O			
$\overline{\sqrt{\Delta P}} = \frac{1}{n}\sum_{i=1}^{n}\sqrt{\Delta p}$	=	0.4279	**in. H_2O**
AVERAGE ABSOLUTE STACK GAS TEMPERATURE			
$T_s =$ 105.6 °F + 460	=	565.6	**°R**
ABSOLUTE STACK GAS PRESSURE			
$P_s = P_{bar} + \frac{P_{static}}{13.6}$	=	29.52	**in.Hg**
STACK GAS VELOCITY			
$V_s = (85.49)(C_p)\left(\text{avg}\sqrt{\Delta P}\right)\sqrt{\frac{T_s}{(P_s)(M_s)}}$	=	24.886	**ft/sec**
STACK GAS VOLUMETRIC FLOW RATE, actual			
$Q_s = 60 \times V_s \times A_s$	=	521.20	**acfm**
Stack Area = 0.34907 ft^2			
STACK GAS VOLUMETRIC FLOW RATE, standard conditions, wet basis			
$Q_{stdw} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)$	=	480.04 28,802	**scfm, wb** **scfh, wb**
STACK GAS VOLUMETRIC FLOW RATE, standard conditions, dry basis			
$Q_{std} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)(1 - B_{ws})$	=	447.37 26,842	**dscfm** **dscfh**

HYDROGEN CHLORIDE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas, L.P.
LOCATION: Corpus Christi, Texas
SOURCE: Naphtha Reformer CCR
TEST DATE: 8/14/2007
RUN NO: 2

INPUT

V_m:	44.289	ft^3	Q_s:	26,842	dscfh
γ FACTOR:	0.994		T_s:	105.6	°F
P_{bar}:	29.51	in. Hg	Θ:	60	minutes
ΔH:	1.56		V_s:	24.886	fps
T_m:	91.0	°F	P_s:	29.52	in. Hg
HCl in sample:	< 43	µg	V_{lc}:	64.8	mL
			$\%O_2$:	4.94	%

Volume of Sample at Standard Conditions on a Dry Basis: — **English Units (29.92 in. Hg, 68 °F)**

$$V_{mstd} = \left(\frac{528}{29.92}\right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}\right] = 41.769 \text{ dscf}$$

Isokinetic Sampling Rate

$$\%ISO = \frac{(100)(T_s)\left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m}\right)(\gamma)\left(P_{bar} + \left(\frac{\Delta H}{13.6}\right)\right)\right]}{(60)(\theta)(V_s)(P_s)(A_n)} = 102.3 \text{ \% I}$$

A_n = 0.00053093 ft^2 Runtime (θ) = 60 minutes

Total µg HCl in sample (M_n) = < 43 µg

Concentration of HCl

$$C'_{s(lb/dscf)} = \frac{(2.205 \times 10^{-9} \text{ lb/µg})(M_n)}{V_{mstd}} = < 0.0023 \times 10^{-6} \text{ lbs/dscf}$$

$$C_{s(ppmvdb)} = C'_{s(lb/dscf)} \times \frac{385.26 ft^3/lb-mole}{36.45 lb/lb-mole} \times 10^6 = < 0.02 \text{ ppmv db}$$

$$C_{s(ppmv\,db@3\%O_2)} = C_{s(ppmv\,db@3\%O_2)} \times \left(\frac{17.9}{20.9 - \%O_2}\right) = < 0.03 \text{ ppmv db @ 3\% } O_2$$

HCl Mass Rate:

$$E = Q_s \times C'_{s(lb/dscf)} = < 0.000061 \text{ lbs/hr}$$

CHLORINE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas, L.P.
LOCATION: Corpus Christi, Texas
SOURCE: Naphtha Reformer CCR
TEST DATE: 8/14/2007
RUN NO: 2

INPUT

V_m:	44.289	ft^3	Q_s:	26,842	dscfh
γ FACTOR:	0.994		T_s:	105.6	°F
P_{bar}:	29.51	in. Hg	Θ:	60	minutes
ΔH:	1.56		V_s:	24.886	fps
T_m:	91.0	°F	P_s:	29.52	in. Hg
Cl_2 in sample:	78	µg	V_{lc}:	64.8	mL
			$\%O_2$:	4.94	%

Volume of Sample at Standard Conditions on a Dry Basis: — **English Units (29.92 in. Hg, 68 °F)**

$$V_{mstd} = \left(\frac{528}{29.92}\right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}\right] = 41.769 \text{ dscf}$$

Isokinetic Sampling Rate

$$\%ISO = \frac{(100)(T_s)\left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m}\right)(\gamma)\left(P_{bar} + \left(\frac{\Delta H}{13.6}\right)\right)\right]}{(60)(\theta)(V_s)(P_s)(A_n)} = 102.3 \text{ \% I}$$

A_n = 0.00053093 ft^2 Runtime (θ) = 60 minutes

Total µg Cl_2 in sample (M_n) = 78 µg

Concentration of Cl_2

$$C'_{s(lb/dscf)} = \frac{(2.205 \times 10^{-9} \text{ lb/µg})(M_n)}{V_{mstd}} = 0.0041 \times 10^{-6} \text{ lbs/dscf}$$

$$C_{s(ppmvdb)} = C'_{s(lb/dscf)} \times \frac{385.26 \text{ ft}^3/\text{lb-mole}}{70.906 \text{ lb/lb-mole}} \times 10^6 = 0.02 \text{ ppmv db}$$

$$C_{s(ppmv\,db@3\%O_2)} = C_{s(ppmv\,db@3\%O_2)} \times \left(\frac{17.9}{20.9 - \%O_2}\right) = 0.02 \text{ ppmv db @ 3\% } O_2$$

Cl_2 Mass Rate:

$$E = Q_s \times C'_{s(lb/dscf)} = 0.000111 \text{ lbs/hr}$$

METHOD 25A TOTAL HYDROCARBON (THC) CALCULATION SUMMARY

COMPANY: Valero Refining - Texas, L.P.
LOCATION: Corpus Christi, Texas
SOURCE: Naphtha Reformer CCR
RUN NUMBER: 2
TEST DATE: 8/14/2007

INPUT DATA

Average VOC (as propane) value (C) =	6.22 ppmv wb
	6.67 ppmv db
VOC as hexane, C_6 =	3.11 ppmv wb
	3.34 ppmv db
Stack gas volumetric flow rate (Q_s) =	26,842 dscfh
Stack gas oxygen content =	4.94 %

CALCULATIONS

VOC concentration in stack gas as hexane corrected to 3% O_2 (ppmv db @ 3% O_2)

$$VOC\,as\,C_6 @ 3\%\,O_2 = VOC\,as\,C_6 \times \frac{17.9}{20.9 - \%O_2} =$$ 3.74 ppmv db @ 3% O_2

VOC concentration in stack gas (lbs/dscf)

$$C'_{gas(propane)} = \frac{(C_{gas(propane)})(44.09)}{(385.26 \times 10^6)} =$$ 0.763 x 10^{-6} lb/dscf as propane

$$C'_{gas(hexane)} = \frac{(C_{gas(hexane)})(86.18)}{(385.26 \times 10^6)} =$$ 0.746 x 10^{-6} lb/dscf as hexane

VOC emission rate

$$E_{VOC(propane)} = C'_{gas(propane)} \times Q_s =$$ 0.0205 lb/hr as propane

$$E_{VOC(hexane)} = C'_{gas(hexane)} \times Q_s =$$ 0.0200 lb/hr as hexane

MONITOR DATA SUMMARY

COMPANY :	Valero Refining - Texas, L.P.
SOURCE :	Naphtha Reformer CCR
REPETITION :	3
TEST DATE :	8/14/07
START TIME :	15:22
END TIME :	16:30

GAS ANALYZER — **O_2 - Stack**

SCALE :	0 - 10 %
AVERAGE CAL. BIAS (C_m):	4.540
AVERAGE ZERO BIAS (C_o):	0.150
CALIBRATION GAS:	EPA Protocol O_2
CALIBRATION % (C_{ma}):	4.50
% CORRECTED (C_{gas}):	**5.08**

GAS ANALYZER — **CO_2 - Stack**

SCALE :	0 - 25 %
AVERAGE CAL. BIAS (C_m):	8.945
AVERAGE ZERO BIAS (C_o):	0.125
CALIBRATION GAS:	EPA Protocol CO_2
CALIBRATION % (C_{ma}):	9.00
% CORRECTED (C_{gas}):	**11.40**

GAS ANALYZER — **VOC - Stack**

SCALE :	0 - 100 ppm
AVERAGE CAL. BIAS (C_m):	
AVERAGE ZERO BIAS (C_o):	
CALIBRATION GAS:	EPA Protocol C_3H_8/Air
CALIBRATION PPM (C_{ma}):	
PPM CORRECTED (C_{gas}):	**5.19**

Example Calculation =

$$C_{gas} = \left(\overline{C} - C_o\right)\frac{C_{ma}}{C_m - C_o}$$

CLOCK TIME	ELAPSED TIME	Uncorrected O_2 - Stack % vol db	Uncorrected CO_2 - Stack % vol db	Uncorrected VOC - Stack ppmv wb
15:22	0	------	------	------
15:23	1	5.19	11.19	2.2
15:24	2	5.21	11.18	4.8
15:25	3	5.07	11.32	5.2
15:26	4	4.94	11.43	4.1
15:27	5	4.97	11.39	2.9
15:28	6	5.02	11.37	2.5
15:29	7	5.19	11.21	3.9
15:30	8	5.13	11.29	5.8
15:31	9	5.01	11.39	4.7
15:32	10	4.97	11.42	3.6
15:33	11	5.02	11.40	3.1
15:34	12	5.19	11.25	3.6
15:35	13	5.16	11.28	6.1
15:36	14	5.10	11.31	6.0
15:37	15	4.94	11.47	4.8
15:38	16	5.00	11.39	4.0
15:39	17	5.11	11.31	3.7
15:40	18	5.25	11.19	5.9
15:41	19	5.14	11.29	7.1
15:42	20	5.04	11.38	5.8
15:43	21	4.98	11.41	4.6
15:44	22	5.06	11.49	5.3
15:45	23	5.28	11.15	5.0
15:46	24	5.17	11.26	7.0
15:47	25	5.11	11.30	6.7
15:48	26	4.95	11.44	5.2
15:49	27	5.04	11.34	4.3
15:50	28	5.17	11.23	4.2
15:51	29	5.28	11.18	7.2
15:52/16:00	30	5.09	11.34	7.3
16:01	31	5.23	11.16	4.1
16:02	32	5.25	11.16	6.9
16:03	33	5.09	11.31	6.8
16:04	34	5.00	11.38	5.2
16:05	35	4.96	11.42	4.2
16:06	36	5.19	11.21	3.8
16:07	37	5.20	11.23	5.6
16:08	38	5.23	11.18	6.9
16:09	39	5.01	11.40	6.2
16:10	40	4.98	11.41	5.0
16:11	41	4.99	11.40	4.0
16:12	42	5.25	11.14	4.7
16:13	43	5.22	11.20	6.9
16:14	44	5.08	11.33	6.4
16:15	45	5.00	11.36	5.2
16:16	46	5.01	11.37	4.4
16:17	47	5.28	11.08	4.2
16:18	48	5.23	11.18	6.8
16:19	49	5.10	11.29	6.9
16:20	50	5.04	11.33	5.5
16:21	51	4.96	11.41	4.6
16:22	52	5.21	11.16	3.9
16:23	53	5.20	11.19	5.3
16:24	54	5.26	11.13	7.2
16:25	55	5.00	11.39	6.2
16:26	56	5.03	11.34	5.2
16:27	57	5.02	11.35	4.2
16:28	58	5.30	11.08	4.4
16:29	59	5.19	11.22	7.0
16:30	60	5.15	11.24	7.0
	Uncorrected Average =	**5.107**	**11.295**	**5.19**

ARI ENVIRONMENTAL, INC.
MOISTURE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas, L.P.
LOCATION: Corpus Christi, Texas
SOURCE: Naphtha Reformer CCR
TEST DATE: 8/14/2007
RUN NUMBER: 3

γ FACTOR:	0.994	**STACK DIAM:**	8.0 **inches**
BAROMETRIC:	29.51 **in. Hg**	**METER VOLUME:**	46.399 **ft^3**
STATIC PRES:	0.11 **$in.H_2O$**	**METER TEMP:**	104.8 **°F**
STACK TEMP:	120.6 **°F**	**LIQUID COLL:**	140.5 **milliliters**
SQ.RT ΔP:	0.4411 **$in.H_2O$**	**CO_2:**	11.40 **% by volume**
ΔH:	1.67 **$in.H_2O$**	**O_2:**	5.08 **% by volume**

ENGLISH UNITS
(29.92 in.Hg & °F)

VOLUME OF SAMPLE
@ STANDARD CONDITIONS, DRY BASIS

$$V_{mstd} = \left(\frac{528}{29.92}\right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}\right] = 42.702 \text{ dscf}$$

γ = 0.994

VOLUME OF WATER IN SAMPLE
@ STANDARD CONDITIONS

$$V_{wstd} = 0.04707 \times V_{lc} = 6.613 \text{ scf}$$

V_{lc} = 140.5 mL

FRACTIONAL MOISTURE CONTENT OF STACK GAS AS MEASURED

$$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} = 0.1341$$

FRACTIONAL MOISTURE CONTENT OF STACK GAS @ SATURATION

$$B_{ws@saturation} = \frac{S.V.P.}{P_{bar} + \frac{P_{static}}{13.6}} = 0.1200$$

S.V.P. = 3.543 in. Hg

FRACTIONAL MOISTURE CONTENT USED IN CALCULATIONS

B_{ws} = 0.1200

ARI ENVIRONMENTAL, INC.
FLOW RATE CALCULATION SUMMARY

COMPANY:	Valero Refining - Texas	**SOURCE:**	Naphtha Reformer CCR
LOCATION:	Corpus Christi, Texas	**TEST DATE:**	8/14/2007
RUN NUMBER:	3		

BAROMETRIC:	29.51 **in. Hg**	**STACK DIAM:**	8.0 **inches**
STATIC PRES:	0.11 **in.H_2O**	**CO_2:**	11.40 **% by volume**
STACK TEMP:	120.6 **°F**	**O_2:**	5.08 **% by volume**
SQ.RT ΔP:	0.4411 **in.H_2O**		

DRY MOLECULAR WEIGHT OF STACK GAS			
$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO)$	=	30.03	**lb/lb-mole**
MOLECULAR WEIGHT OF STACK GAS, wet basis			
$M_s = M_d(1 - B_{ws}) + 18(B_{ws})$	=	28.58	**lb/lb-mole**
PITOT TUBE COEFFICIENT			
C_p (from calibration curve or geometric specifications)	=	0.84	
AVERAGE VELOCITY HEAD OF STACK GAS, in. H_2O			
$\overline{\sqrt{\Delta P}} = \frac{1}{n}\sum_{i=1}^{n}\sqrt{\Delta p}$	=	0.4411	**in. H_2O**
AVERAGE ABSOLUTE STACK GAS TEMPERATURE			
$T_s =$ 120.6 °F + 460	=	580.6	**°R**
ABSOLUTE STACK GAS PRESSURE			
$P_s = P_{bar} + \frac{P_{static}}{13.6}$	=	29.52	**in.Hg**
STACK GAS VELOCITY			
$V_s = (85.49)(C_p)\left(\text{avg}\sqrt{\Delta P}\right)\sqrt{\frac{T_s}{(P_s)(M_s)}}$	=	26.277	**ft/sec**
STACK GAS VOLUMETRIC FLOW RATE, actual			
$Q_s = 60 \times V_s \times A_s$	=	550.34	**acfm**
Stack Area = 0.34907 ft^2			
STACK GAS VOLUMETRIC FLOW RATE, standard conditions, wet basis			
$Q_{stdw} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)$	=	493.76 29,625	**scfm, wb** **scfh, wb**
STACK GAS VOLUMETRIC FLOW RATE, standard conditions, dry basis			
$Q_{std} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)(1 - B_{ws})$	=	434.49 26,069	**dscfm** **dscfh**

HYDROGEN CHLORIDE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas, L.P.
LOCATION: Corpus Christi, Texas
SOURCE: Naphtha Reformer CCR
TEST DATE: 8/14/2007
RUN NO: 3

INPUT

V_m:	46.399	ft^3	Q_s:	26,069	dscfh
γ FACTOR:	0.994		T_s:	120.6	°F
P_{bar}:	29.51	in. Hg	Θ:	60	minutes
ΔH:	1.67		V_s:	26.277	fps
T_m:	104.8	°F	P_s:	29.52	in. Hg
HCl in sample:	< 43	µg	V_{lc}:	140.5	mL
			$\%O_2$:	5.08	%

Volume of Sample at Standard Conditions on a Dry Basis: — **English Units (29.92 in. Hg, 68 °F)**

$$V_{mstd} = \left(\frac{528}{29.92}\right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}\right] = 42.702 \text{ dscf}$$

Isokinetic Sampling Rate

$$\%ISO = \frac{(100)(T_s)\left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m}\right)(\gamma)\left(P_{bar} + \left(\frac{\Delta H}{13.6}\right)\right)\right]}{(60)(\theta)(V_s)(P_s)(A_n)} = 108.8 \text{ \% I}$$

*106.9 % I**

A_n = 0.00053434 ft^2 — Runtime (θ) = 60 minutes

** based upon saturation*

Total µg HCl in sample (M_n) = < 43 µg

Concentration of HCl

$$C'_{s(lb/dscf)} = \frac{(2.205 \times 10^{-9} \text{ lb/µg})(M_n)}{V_{mstd}} = < 0.0022 \times 10^{-6} \text{ lbs/dscf}$$

$$C_{s(ppmvdb)} = C'_{s(lb/dscf)} \times \frac{385.26 ft^3/lb-mole}{36.45 lb/lb-mole} \times 10^6 = < 0.02 \text{ ppmv db}$$

$$C_{s(ppmv\,db@3\%O_2)} = C_{s(ppmv\,db@3\%O_2)} \times \left(\frac{17.9}{20.9 - \%O_2}\right) = < 0.03 \text{ ppmv db @ 3\% } O_2$$

HCl Mass Rate:

$$E = Q_s \times C'_{s(lb/dscf)} = < 0.000058 \text{ lbs/hr}$$

CHLORINE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas, L.P.
LOCATION: Corpus Christi, Texas
SOURCE: Naphtha Reformer CCR
TEST DATE: 8/14/2007
RUN NO: 3

INPUT

V_m:	46.399	**ft^3**	**Q_s:**	26,069	**dscfh**
γ FACTOR:	0.994		**T_s:**	120.6	**°F**
P_{bar}:	29.51	**in. Hg**	**Θ:**	60	**minutes**
ΔH:	1.67		**V_s:**	26.277	**fps**
T_m:	104.8	**°F**	**P_s:**	29.52	**in. Hg**
Cl_2 in sample:	86	**µg**	**V_{lc}:**	140.5	**mL**
			$\%O_2$:	5.08	**%**

Volume of Sample at Standard Conditions on a Dry Basis: — **English Units (29.92 in. Hg, 68 °F)**

$$V_{mstd} = \left(\frac{528}{29.92}\right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}\right] = 42.702 \text{ dscf}$$

Isokinetic Sampling Rate

$$\%ISO = \frac{(100)(T_s)\left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m}\right)(\gamma)\left(P_{bar} + \left(\frac{\Delta H}{13.6}\right)\right)\right]}{(60)(\theta)(V_s)(P_s)(A_n)} = 108.8 \text{ \% I}$$

*106.9 % I**

A_n = 0.00053434 ft^2 — Runtime (θ) = 60 minutes

** based upon saturation*

Total µg Cl_2 in sample (M_n) = 86 µg

Concentration of Cl_2

$$C'_{s(lb/dscf)} = \frac{(2.205 \times 10^{-9} \text{ lb/µg})(M_n)}{V_{mstd}} = 0.0044 \times 10^{-6} \text{ lbs/dscf}$$

$$C_{s(ppmvdb)} = C'_{s(lb/dscf)} \times \frac{385.26 \text{ ft}^3/\text{lb-mole}}{70.906 \text{ lb/lb-mole}} \times 10^6 = 0.02 \text{ ppmv db}$$

$$C_{s(ppmv\,db@3\%O_2)} = C_{s(ppmv\,db@3\%O_2)} \times \left(\frac{17.9}{20.9 - \%O_2}\right) = 0.03 \text{ ppmv db @ 3\% } O_2$$

Cl_2 Mass Rate:

$$E = Q_s \times C'_{s(lb/dscf)} = 0.000116 \text{ lbs/hr}$$

METHOD 25A TOTAL HYDROCARBON (THC) CALCULATION SUMMARY

COMPANY: Valero Refining - Texas, L.P.
LOCATION: Corpus Christi, Texas
SOURCE: Naphtha Reformer CCR
RUN NUMBER: 3
TEST DATE: 8/14/2007

INPUT DATA

Average VOC (as propane) value (C) =	5.19 ppmv wb
	5.90 ppmv db
VOC as hexane, C_6 =	2.60 ppmv wb
	2.95 ppmv db
Stack gas volumetric flow rate (Q_s) =	26,069 dscfh
Stack gas oxygen content =	5.08 %

CALCULATIONS

VOC concentration in stack gas as hexane corrected to 3% O_2 (ppmv db @ 3% O_2)

$$\text{VOC as } C_6 @ 3\% O_2 = \text{VOC as } C_6 \times \frac{17.9}{20.9 - \%O_2} =$$ 3.34 ppmv db @ 3% O_2

VOC concentration in stack gas (lbs/dscf)

$$C'_{gas(propane)} = \frac{(C_{gas(propane)})(44.09)}{(385.26 \times 10^6)} =$$ 0.675 x 10^{-6} lb/dscf as propane

$$C'_{gas(hexane)} = \frac{(C_{gas(hexane)})(86.18)}{(385.26 \times 10^6)} =$$ 0.660 x 10^{-6} lb/dscf as hexane

VOC emission rate

$$E_{VOC(propane)} = C'_{gas(propane)} \times Q_s =$$ 0.0176 lb/hr as propane

$$E_{VOC(hexane)} = C'_{gas(hexane)} \times Q_s =$$ 0.0172 lb/hr as hexane

APPENDIX B

Field Data

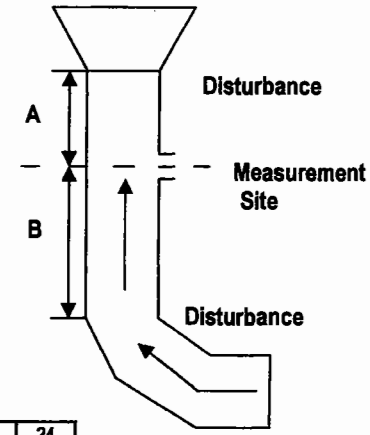
TRAVERSE POINT LOCATION FOR CIRCULAR AND RECTANGULAR DUCTS

PLANT VALERO CC.
DATE 8/14/07
SAMPLING LOCATION
INSIDE OF FAR WALL TO
OUTSIDE OF PORT (DISTANCE C) 14 1/2"
INSIDE OF NEAR WALL TO
OUTSIDE OF PORT (DISTANCE D) 6 1/2"
STACK ID 8"
NEAREST UPSTREAM DISTURBANCE (A) = 50 ft 600 (75.2d)
NEAREST DOWNSTREAM DISTURBANCE (B) = 15 ft 180" (22.5d)

CALCULATOR

Location of Traverse Points in Rectangular Stacks

	2	3	4	5	6	7	8	9	10	11	12
1	25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2	75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
3		83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4			87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
5				90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
6					91.7	78.6	68.8	61.1	55.0	50.0	45.8
7						92.9	81.3	72.2	65.0	59.1	54.2
8							93.8	83.3	75.0	68.2	62.5
9								94.4	85.0	77.3	70.8
10									95.0	86.4	79.2
11										95.5	87.5
12											95.8

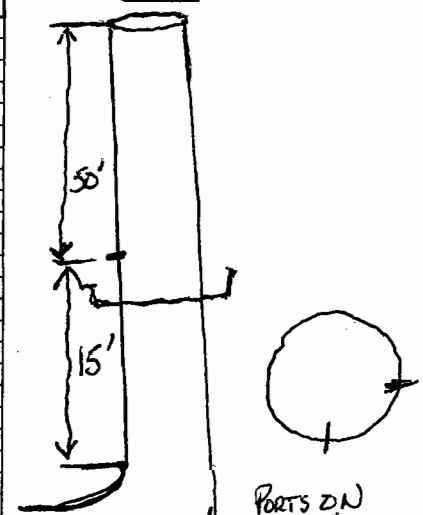


Rectangular Duct Equivalent Diameter Determination $\frac{2 \times L \times W}{L + W}$

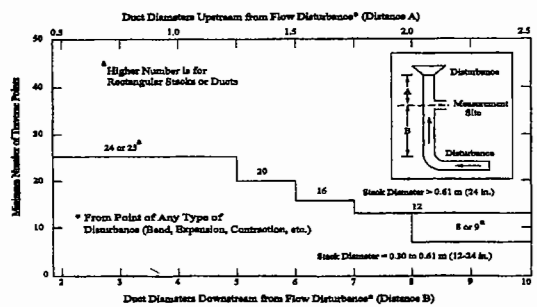
TRAVERSE POINT NUMBER	FRACTION OF STACK I.D.	STACK I.D.	PRODUCT OF COLUMNS 1 AND 2 (TO NEAREST 1/8 INCH)	DISTANCE D (PORT DEPTH)	TRAVERSE POINT LOCATION FROM OUTSIDE OF PORT (SUM OF COLUMNS 3 AND 4)
1	6.17	8.0	.53	6.5	7.03
2	25.0	8.0	2.0	6.5	8.50
3	75.0	8.0	6.0	6.5	12.50
4	93.3	8.0	7.46	6.5	13.46
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					

LOCATION OF TRAVERSE POINTS ON CIRCULAR STACKS

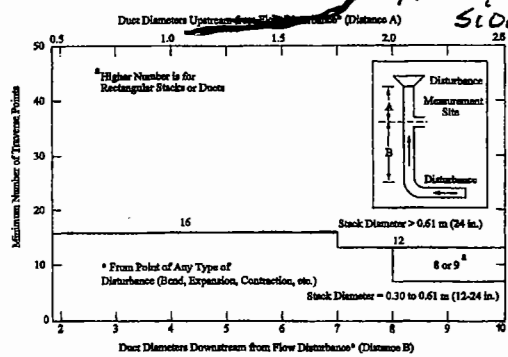
	4	6	8	10	12	14	16	18	20	22	24
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.5	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23.0
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.5	81.2	75.0	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77.0
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											98.9



PORTS ON NORTH & WEST SIDES



Minimum number of traverse points for particulate traverses.



Minimum number of traverse points for velocity (nonparticulate) traverses.

ARI REFERENCE METHOD CEMS DATA
USEPA METHOD 205
DILUTION SYSTEM VERIFICATION

Company: VALERO - CC
Location: CORPUS CHRISTI, TX
Dilution System ID: 3712
Dilution Flow Rate: 5.0 LPM
Verification date: 8/13/07

Analyzer Info

Monitor type: SERVOMEX 1440 O_2
Monitor range: 25%
Monitor Serial No.: 01440D1/3840

Initial Calibration Data

Calibration Concentration		Calibration results		Time	
Zero:	0.00	Zero:	-0.02	Zero:	1653
Low:		Low:		Low:	
Mid:	9.00	Mid:	9.11	Mid:	1702
High:	18.00	High:	18.03	High:	1659

Dilution System Verification

Mid level gas type: USEPA Protocol 1
Mid level concentration: 10.02%
Mid level tank serial #: EB0000605

High level dilution gas type: USEPA Protocol 1
High level concentration: 25.0%
High level tank serial #: EB0005505
Target concentration No. 1: 4.50
Target concentration No. 2: 13.50

Dilution System Results

Target Concentration No. 1	Instrument Response	Time	Target Concentration No. 2	Instrument Response	Time
Trial No. 1:	4.56	1707	Trial No. 1:	13.51	1710
Trial No. 2:	4.56	1716	Trial No. 2:	13.51	1719
Trial No. 3:	4.55	1725	Trial No. 3:	13.53	1728
Average:			Average:		

% Difference from target concentration: _____

% Difference from target concentration: _____

Mid Level Calibration Gas Results

	Instrument Response	Time
Trial No. 1:	9.98	1704
Trial No. 2:	9.97	1713
Trial No. 3:	9.97	1721

CEMS CALIBRATION DATA

Plant	VALERO CC
Location	CORPUS CHRISTI, TX
Source	EPN 155 CCR EXHAUST
Date	8-14-07
Run Number	1
Start Time	1110
Stop Time	~~1214~~ 1213

Plant Rep.	BRIAN FUNKE
Team Leader	DAN FITZGERALD
CEM Operator	DAN FITZGERALD

PORT CHANGE 1140-1144

Analyzer Span Values (% or ppm)		
CO		ppm
CO2	18.00	%
O2	9.00	%
THC	100.0	ppm
NOx		ppm
SO2		ppm

	CALIBRATION ERROR - 0937 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
					Pretest: 0953		Posttest: 1230 hrs			
	Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Difference (% of Span)	System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)	Drift (% of Span)	
CO Zero										Co=
CO Low										
CO Mid										Cm=
CO High										
CO_2 Zero	0.00	CC108295	0.05	0946	0.05	0953	0.07	1230		Co=
CO_2 Low		CO_2/N_2								
CO_2 Mid	9.00	EB0000597	9.11	0940	8.97	1000	8.98	1236		Cm=
CO_2 High	18.00	24.7%	18.15	0937						
O_2 Zero	0.00	CC108295	-0.04	0940	0.19	1000	0.17	1236		Co=
O_2 Low		O_2/N_2								
O_2 Mid	4.50	EB0005505	4.48	0946	4.61	0953	4.61	1230		Cm=
O_2 High	9.00	25.0%	8.95	0943						
THC Zero	0.0	CC108295	0.4	0953	0.4	0953	0.7	1230		Co=
THC Low	25.0	C_3H_8/N_2	25.8	1022						
THC Mid	50.0	SG9133705	51.3	1020	51.3	1020	49.7	1239		Cm=
THC High	85.0	2026ppm	85.2	1016						
NO_x Zero										Co=
NO_x Low										
NO_x Mid										Cm=
NO_x High										
SO_2 Zero										Co=
SO_2 Low										
SO_2 Mid										Cm=
SO_2 High										

O_2 RESPONSE TIME = 145 SEC HIGH
143 SEC LOW

CO_2 RESPONSE TIME = 151 SEC. HIGH
163 SEC LOW

B-4

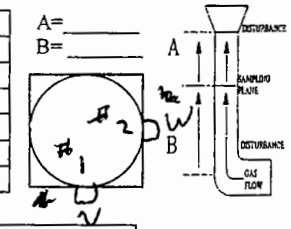
ARI ENVIRONMENTAL INC.

FIELD DATA Run #1

PLANT	Valero	METER BOX NO.	[illegible]	BAROMETER NO.	29.54		
DATE	8-14-07	AMBIENT TEMPERATURE	87	PROBE HEATER SETTING	250		
LOCATION	Corpus Christi TX	BAROMETRIC PRESSURE	27.51	HEATER BOX SETTING	250		
OPERATOR	JG	ASSUMED MOISTURE, %	5	METER H	1.68		
STACK NO.	EPN155CCR Exhaust	PROBE LENGTH, in.	36	C_d FACTOR	.84		
METHOD	26A	NOZZLE DIAMETER, in.	.312	Y FACTOR	.994		
RUN NO.	1	STACK DIAMETER, in.	8"				
METER NO.	807005	PITOT NO.	282				

PARTICULATE COLLECTED, mg		
FILTER NO.		
SAMPLE	FILTER	PROBE
FINAL WEIGHT		
TARE WEIGHT		
WEIGHT GAIN		
TOTAL		

A= B=



(11:00) flow time

CLOCK TIME	TRAVERSE POINT NUMBER	SAMPLE TIME min.	STATIC PRESSURE (in., H_2O)	STACK TEMP (T_s), °F	VELOCITY HEAD (ΔP_s)	VELOCITY HEAD ($\sqrt{\Delta P_s}$)	PRESSURE DIFFERENTIAL ACROSS ORIFICE (ΔH) In., H_2O) ACTUAL	DESIRED	GAS SAMPLE VOLUME (Vm), ft^3	GAS TEMP AT DRY GAS METER INLET (Tm_{in}) °F	OUTLET (Tm_{out}) °F	SAMPLE BOX TEMP °F	TEMP OF GAS LEAVING LAST IMPINGER	PUMP VACUUM in., Hg	Probe Temp
11:10	1 - 1	0	+ 0.18	119	0.24		2.0	1.98	271.910	95	74	251	67	2	256
	2	7.5		119	0.15		1.2	1.23	278.25	88	90	247	66	2	256
1125	3	15.0		119	0.14		1.2	1.15	283.21	88	87	252	63	2	255
	4	22.5		120	0.09		0.73	0.73	287.98	87	85	251	60	2	253
1140/1142	2 - 1	30.0		120	0.28		2.3	2.27	291.80	87	82	252	57	3	251
	2	37.5		120	0.21		1.7	1.70	298.52	87	81	253	59	3	252
1158	3	45.0		120	0.31		2.6	2.56	304.33	87	81	251	59	4	254
	4	52.5		120	0.19		1.5	1.54	311.39	87	80	249	59	2	256
1213		60.0							316.909						
TOTAL	8 pts	60 min	+ 0.18	119.6	0.4414		1.65		44.999	86.5		≈250	62.8	MAX 4	
AVERAGE															

VOLUME OR WEIGHT OF LIQUID COLLECTED	IMPINGER VOLUME (ml) OR WEIGHT (g) 1	2	3	4	SILICA GEL WEIGHT
CONTENTS	H_2SO_4	H_2SO_4	NaOH	NaOH	SG
FINAL	140	112	100	100	268.8
INITIAL	100	100	100	100	250.0
LIQUID COLLECTED	40	12	0	0	18.8
TOTAL COLLECTED (specify ml or mg)					70.8

ORSAT MEASUREMENT	TIME	CO_2	O_2	CO
1				
2				
3				
AVG				

LEAK CHECK		
SYSTEM	PRE: .001	CFM at 15" Hg
	POST: .001	CFM at 10 Hg
PITOT	PRE: +/- OK	3" H_2O for 15 sec
	POST: +/- OK	3" H_2O for 15 sec

CEMS CALIBRATION DATA

Plant	VALERO
Location	CORPUS CHRISTI, TX
Source	EPN 155 CCR EXHAUST
Date	8-14-07
Run Number	2
Start Time	1345
Stop Time	1454

Plant Rep.	BRIAN FUNKE
Team Leader	DAN FITZGERALD
CEM Operator	DAN FITZGERALD

CHANGE OF PORTS: 1415-1424

Analyzer Span Values (% or ppm)		
CO		ppm
CO2	18.00	%
O2	9.00	%
THC	100.0	ppm
NOx		ppm
SO2		ppm

	CALIBRATION ERROR - 0937 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
					Pretest: 1331		Posttest: 1459 hrs			
	Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Difference (% of Span)	System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)	Drift (% of Span)	
CO Zero										Co=
CO Low										
CO Mid										Cm=
CO High										
CO_2 Zero	0.00		0.05		0.05	1331	0.13	1459		Co=
CO_2 Low										
CO_2 Mid	9.00		9.11		8.94	1335	8.95	1504		Cm=
CO_2 High										
O_2 Zero	0.00		-0.04		0.18	1335	0.16	1504		Co=
O_2 Low										
O_2 Mid	4.50		4.48		4.59	1331	4.54	1459		Cm=
O_2 High										
THC Zero	0.0		0.4		1.2	1331	1.0	1504		Co=
THC Low										
THC Mid	50.0		51.3		49.9	1338	48.1	1509		Cm=
THC High										
NO_x Zero										Co=
NO_x Low										
NO_x Mid										Cm=
NO_x High										
SO_2 Zero										Co=
SO_2 Low										
SO_2 Mid										Cm=
SO_2 High										

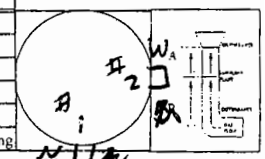
FIELD DATA

Run #2

PLANT	Valero	AMBIENT TEMPERATURE	90	PROBE HEATER SETTING	250
DATE	8-14-07	BAROMETRIC PRESSURE	29.51	HEATER BOX SETTING	250
LOCATION	Corpus Christi TX	ASSUMED MOISTURE, %	5%	METER $H_@$	1.68
OPERATOR	OG	PROBE LENGTH, in.	3.84	C_p FACTOR	.89
STACK NO	EPN 155 CCR Reboiler	NOZZLE DIAMETER, in	.312	Y_d FACTOR	.994
RUN NO	2	STACK DIAMETER, in	8"	pitot #	282
SAMPLE BOX NO	APEX	MINUTES PER POINT	7.5		
METER BOX NO	801005	NUMBER OF POINTS	8		
START TIME	1345	NUMBER OF PORTS	2		

A= ____ B= ____

WEIGHT OF PARTICULATE, mg		
Filter No.		
Sample		
Final wt		
Tare wt		
Wt. gain		
TOTAL		mg



CLOCK TIME	TRAVERSE POINT NUMBER	SAMPLING TIME (Θ) min.	STATIC PRESSURE (in. H_2O)	STACK TEMP (T_s) °F	VELOCITY HEAD (ΔP_s)	($\sqrt{\Delta P_s}$)	PRESSURE DIFFERENTIAL ACROSS ORIFICE METER (ΔH) in. H_2O ACTUAL	DESIRED	GAS SAMPLE VOLUME (V_m) ft³	GAS SAMPLE TEMP AT DRY GAS METER INLET ($T_{m_{in}}$) °F	OUTLET ($T_{m_{out}}$) °F	SAMPLE BOX TEMP. °F	Probe ~~COND. EXIT~~ TEMP °F	SORBENT MODULE TEMP. °F	LAST IMPINGER OUTLET TEMP. °F	PUMP VACUUM in. Hg
1345	1-1	0	+0.13	107	0.21		1.7	1.73	317.200	80	78	254	258	NA	53	3
	2	7.5		106	0.22		1.8	1.85	322.82	89	80	251	254		53	3
1400	3	15		105	0.20		1.7	1.68	328.85	97	83	253	259		53	3
	4	22.5		103	0.14		1.2	1.19	334.65	100	86	251	257		54	2
1415/1424	2-1	30		105	0.12		1.0	1.01	339.54	88	91	251	256		60	2
	2	37.5		106	0.23		2.0	1.95	344.03	102	89	253	251		55	2
1439	3	45		106	0.17		1.5	1.45	350.32	104	91	252	254		61	2
	4	52.5		106	0.19		1.6	1.62	355.74	105	93	251	254		62	2
1454		60							361.489							
AVERAGE	8 pts	60 min	+0.13	105.6	0.4279		1.56		44.289	91.0		~200	2250		268	MAX 3

1315 Plan time

VOLUME OR WEIGHT OF LIQUID WATER COLLECTED	IMPINGER #1 H_2SO_4	#2 H_2SO_4	#3 NaOH	#4 NaOH	SILICA GEL WEIGHT g
FINAL	146	115	100	100	252.8
INITIAL	100	100	100	100	250
LIQUID COLLECTED	46	15	0	0	2.8
TOTAL COLLECTED (specify ml or g)					64.8

ORSAT DATA	TIME	CO_2	O_2
TRIAL 1			
TRIAL 2			
TRIAL 3			
Average			

LEAK CHECK		
SYSTEM PRE:	.001	CFM@15"Hg
POST:	.001	CFM ___ "Hg
PITOT PRE:	✓ OK	@ > 3"H2O
POST:	✓ OK	@ > 3"H2O

CEMS CALIBRATION DATA

Plant	VALERO
Location	CORPUS CHRISTI, TX
Source	EPN155 CCR EXHAUST
Date	8-14-07
Run Number	3
Start Time	1522
Stop Time	1630

Plant Rep.	BRIAN FUNKE
Team Leader	DAN FITZGERALD
CEM Operator	DAN FITZGERALD

CHANGE OF PORTS: 1552-1600

Analyzer Span Values (% or ppm)		
CO		ppm
CO2	18.00	%
O2	9.00	%
THC	100.0	ppm
NOx		ppm
SO2		ppm

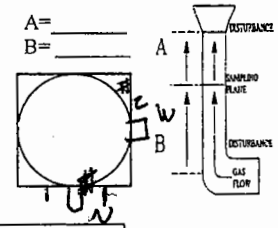
	CALIBRATION ERROR - hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
					Pretest: 1459		Posttest: 1634 hrs			
	Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Difference (% of Span)	System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)	Drift (% of Span)	
CO Zero										Co=
CO Low										
CO Mid										Cm=
CO High										
CO_2 Zero	0.00				0.13	1459	0.12	1634		Co=
CO_2 Low										
CO_2 Mid	9.00				8.95	1504	8.94	1642		Cm=
CO_2 High										
O_2 Zero	0.00				0.16	1504	0.14	1642		Co=
O_2 Low										
O_2 Mid	4.50				4.54	1459	4.54	1634		Cm=
O_2 High										
THC Zero	0.0				1.0	~~1459~~ 1504	1.1	1642		Co=
THC Low										
THC Mid	50.0				48.1	1509	48.5	1646		Cm=
THC High										
NO_x Zero										Co=
NO_x Low										
NO_x Mid										Cm=
NO_x High										
SO_2 Zero										Co=
SO_2 Low										
SO_2 Mid										Cm=
SO_2 High										

FIELD DATA Run #3

PLANT	Valero	METER BOX NO.	801005	BAROMETER NO.	
DATE	8-14-07	AMBIENT TEMPERATURE	93	PROBE HEATER SETTING	250
LOCATION	Corpus Christi TX	BAROMETRIC PRESSURE	29.51	HEATER BOX SETTING	250
OPERATOR	JC	ASSUMED MOISTURE, %	5%	METER H	1.68
STACK NO.	EPN 155 CCR Exhaust	PROBE LENGTH, in.	3ft	C_d FACTOR	.84
METHOD	26A	NOZZLE DIAMETER, in.	0.312	Y FACTOR	.994
RUN NO.	3	STACK DIAMETER, in.	3ft		
METER NO.	801005	PITOT NO.	282		

PARTICULATE COLLECTED, mg		
FILTER NO.		
SAMPLE	FILTER	PROBE
FINAL WEIGHT		
TARE WEIGHT		
WEIGHT GAIN		
TOTAL		

A= B=



(1515) flow time

CLOCK TIME	TRAVERSE POINT NUMBER	SAMPLE TIME min.	STATIC PRESSURE (in., H_2O)	STACK TEMP (T_S), °F	VELOCITY HEAD (ΔP_S)	VELOCITY HEAD ($\sqrt{\Delta P_S}$)	PRESSURE DIFFERENTIAL ACROSS ORIFICE (ΔH) In., H_2O ACTUAL	PRESSURE DIFFERENTIAL ACROSS ORIFICE (ΔH) In., H_2O DESIRED	GAS SAMPLE VOLUME (Vm), ft^3	GAS TEMP AT DRY GAS METER INLET (Tm_{in}) °F	GAS TEMP AT DRY GAS METER OUTLET (Tm_{out}) °F	SAMPLE BOX TEMP °F	TEMP OF GAS LEAVING LAST IMPINGER	PUMP VACUUM in., Hg	Probe Temp
1522	2- 1	0	+0.11	121	0.18		1.5	1.49	361.800	99	97	252	64	2	252
	2	7.5		121	0.18		1.5	1.51	367.31	110	99	255	57	-2	257
1537	3	15		120	0.13		1.1	1.10	372.89	111	101	257	59	-2	251
	4	22.5		121	0.12		1.0	1.01	377.63	110	102	253	62	-2	249
1554/1600	3- 1	30		121	0.25		2.1	2.09	382.19	106	101	251	57	3	251
	2	37.5		121	0.31		2.6	2.61	388.75	110	102	257	59	5	250
1615	3	45		120	0.22		1.9	1.86	396.08	111	103	255	61	-3	253
	4	52.5		120	0.20		1.7	1.69	402.28	111	104	257	63	3	251
1630		60							408.199						
TOTAL	8pts	60min	+0.11	120.6	0.4411		1.67		46.399	104.8		≈250	2.68	MAX 5	

AVERAGE

VOLUME OR WEIGHT OF LIQUID COLLECTED	IMPINGER VOLUME (ml) OR WEIGHT (g) 1	2	3	4	SILICA GEL WEIGHT
CONTENTS	H_2SO_4	H_2SO_4	NaOH	NaOH	
FINAL	212	126			252.5
INITIAL	100	100	100	100	250
LIQUID COLLECTED	112	26			2.5
TOTAL _____ COLLECTED (specify ml or mg)					140.5

ORSAT MEASUREMENT	TIME	CO_2	O_2	CO
1				
2				
3				
AVG				

LEAK CHECK		
SYSTEM	PRE: .001	CFM at 15" Hg
	POST: .001	CFM at 10 Hg
PITOT	PRE: ok	3" H_2O for 15 sec
	POST: ok	3" H_2O for 15 sec

FIELD DATA

Cyclonic Flow Check

PLANT	Valero	AMBIENT TEMPERATURE	92
DATE	8-14-07	BAROMETRIC PRESSURE	29.51
LOCATION	Corpus Christi TX	ASSUMED MOISTURE, %	5
OPERATOR	JG	PROBE LENGTH, in.	3ft
STACK NO.	EPN 155 CCR Baghouse	STACK DIAMETER, in.	8"
RUN NO.	Cyclonic Flow		
SAMPLE BOX NO.	APBX		
METER BOX NO.	8G1OC5		
START TIME			

CLOCK TIME	SAMPLING TIME (Q) min.	STATIC PRESSURE (in. H_2O)	STACK TEMP (T_S) 'F	VELOCITY HEAD (ΔP_S)
9:00 AM	1	1		2
	2	2		4
	3	3		3
	4	4		0
	5	2 1		1
	6	2		1
	7	3		3
	8	4		2
	9			
	10			
	11			
	12			
	13			
	14			
	15			
	16			
	17			
	18			
	19			
	20			
	21			
	22			
	23			
	24			
	25			
	26			
	27			
	28			
	29			
	30			
AVERAGE				

CLOCK TIME	SAMPLING TIME (Q) min.	STATIC PRESSURE (in. H_2O)	STACK TEMP (T_S) 'F	VELOCITY HEAD (ΔP_S)
	31			
	32			
	33			
	34			
	35			
	36			
	37			
	38			
	39			
	40			
	41			
	42			
	43			
	44			
	45			
	46			
	47			
	48			
	49			
	50			
	51			
	52			
	53			
	54			
	55			
	56			
	57			
	58			
	59			
	60			

APPENDIX C

Analytical Data

Valero, Corpus Christi, TX, EPN 155 CCR Exhaust, 8/14/07
USEPA Method 26A 40CFR60, Appx. A
HCl & Cl_2 Determination

Calibration Curve Calculation

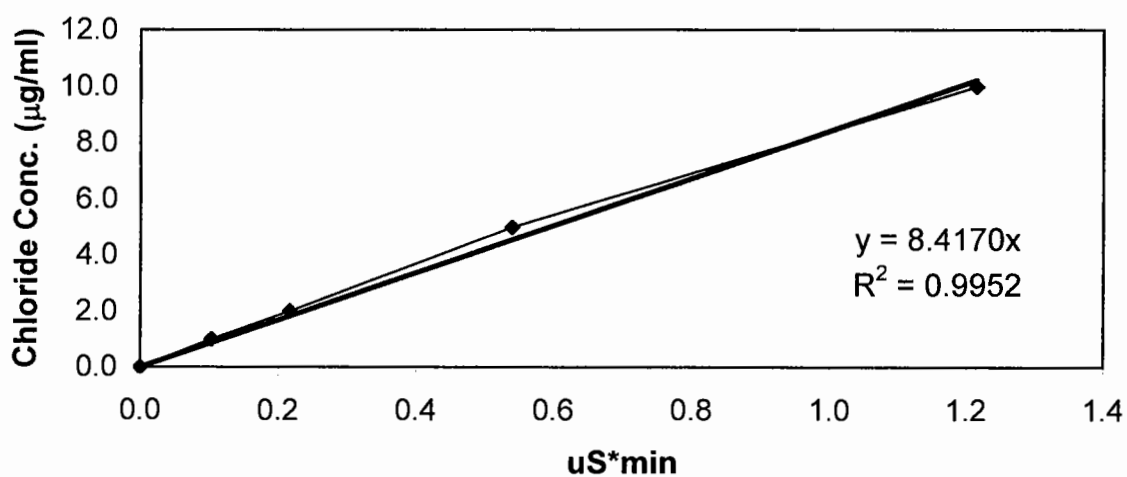
Std. (µg/ml)	Pre Cal (µS*min)	Post Cal (µS*min)	Average (µS*min)	Deviation (%)
1.0	0.104	0.102	0.103	1.96
2.0	0.220	0.213	0.217	3.29
5.0	0.538	0.541	0.540	-0.55
10.0	1.215	1.214	1.215	0.08

Sample Concentration Calculations

ID	Analysis 1 (µS*min)	Analysis 2 (µS*min)	Average (µS*min)	Concentration (µg/ml)	Deviation (%)	Sample volume(ml)	Sample HCl mass (µg)	Sample Cl_2 mass (µg)
Run 26A-1, Imps 1 & 2	<0.010	<0.010	<0.010	<0.08	0.00	500	<43	-
Run 26A-2, Imps 1 & 2	<0.010	<0.010	<0.010	<0.08	0.00	500	<43	-
Run 26A-3, Imps 1 & 2	<0.010	<0.010	<0.010	<0.08	0.00	500	<43	-
Run 26A-1, Imps 3 & 4	0.077	0.078	0.078	0.65	0.65	500	-	326
Run 26A-2, Imps 3 & 4	0.018	0.019	0.019	0.16	2.70	500	-	78
Run 26A-3, Imps 3 & 4	0.020	0.021	0.021	0.17	2.44	500	-	86
Blank 0.1 N H_2SO_4	<0.005	<0.005	<0.005	<0.04	0.00	500	<22	-
Blank 0.1 N NaOH	<0.005	<0.005	<0.005	<0.04	0.00	500	-	<21

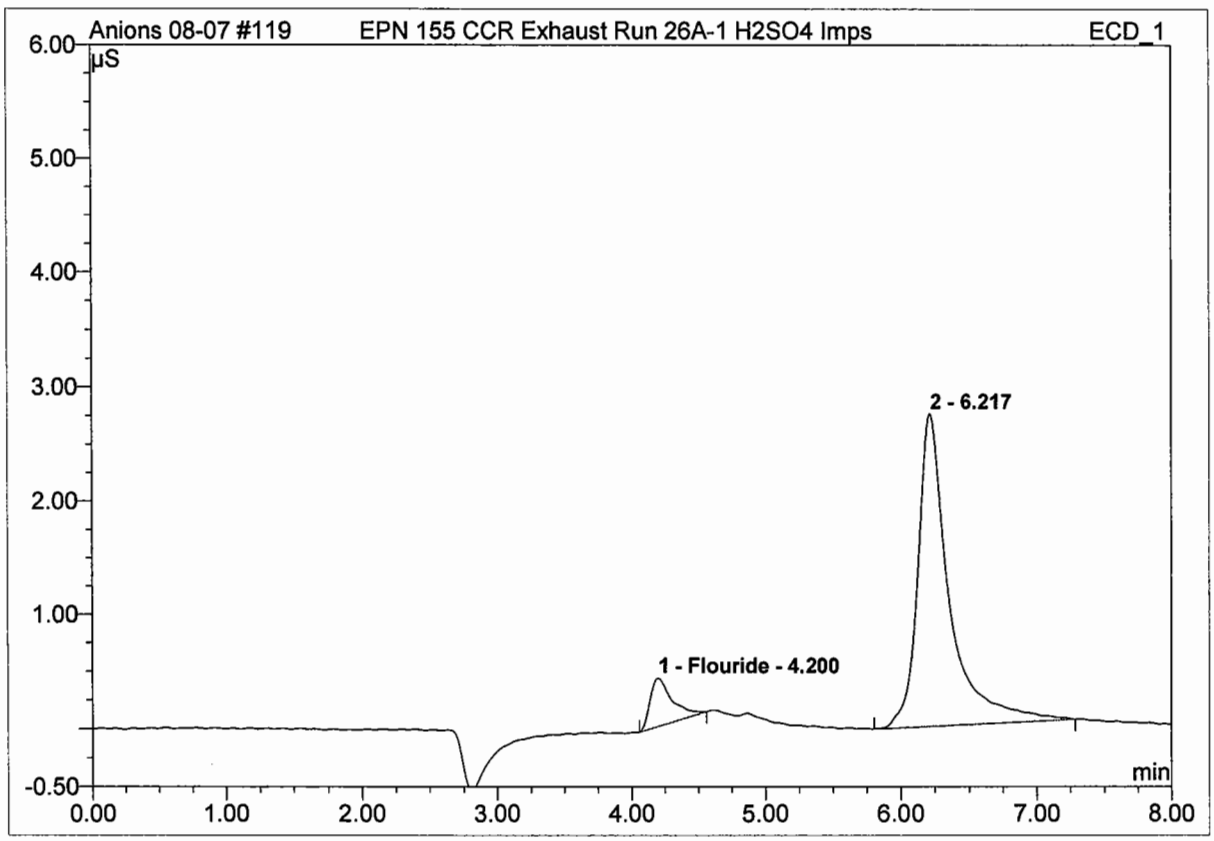
Analyst: E. Vogt
Date: 8/23/2007

Chloride Calibration Curve



119 EPN 155 CCR Exhaust Run 26A-1 H2SO4 Imps

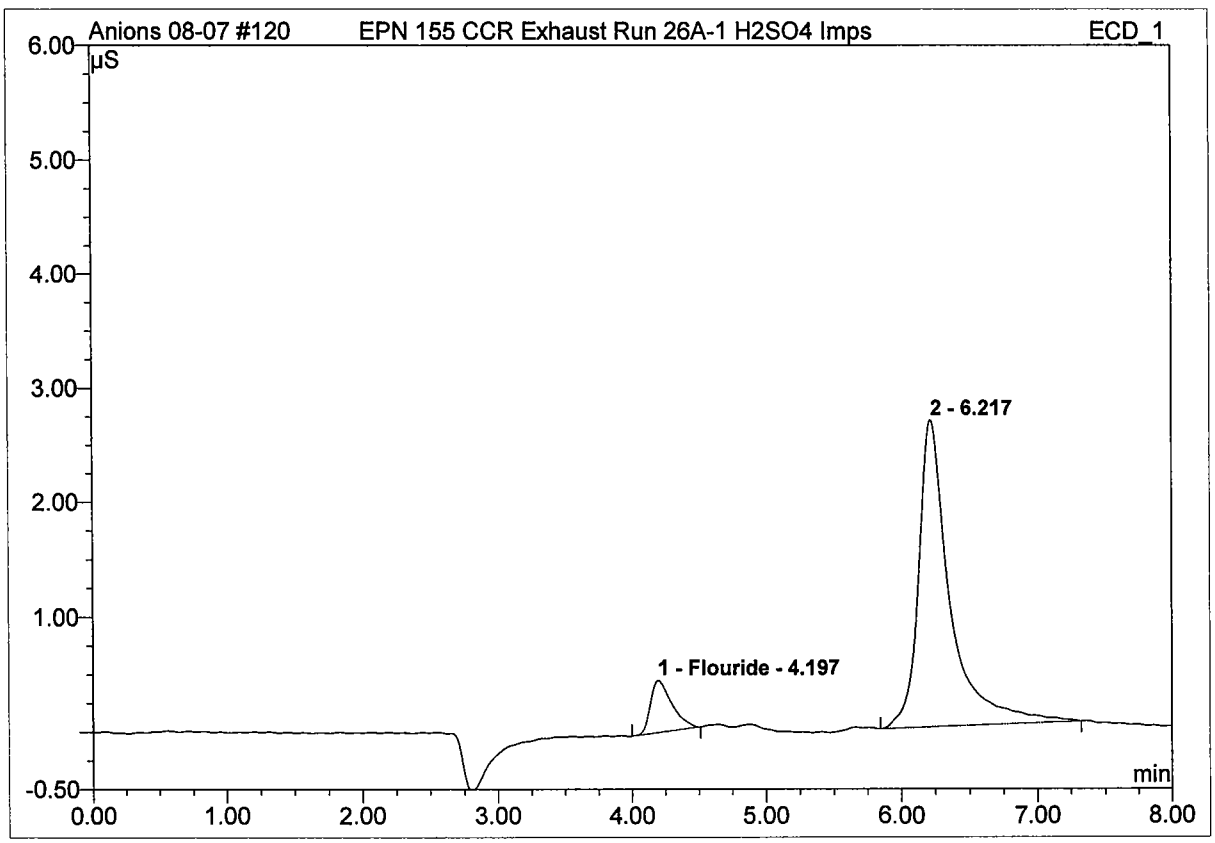
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 8:05**	*Sample Weight:*	**1.0000**
Run Time (min):	**18.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	4.20	Flouride	0.417	0.080
Total:			0.417	0.080

120 EPN 155 CCR Exhaust Run 26A-1 H2SO4 Imps

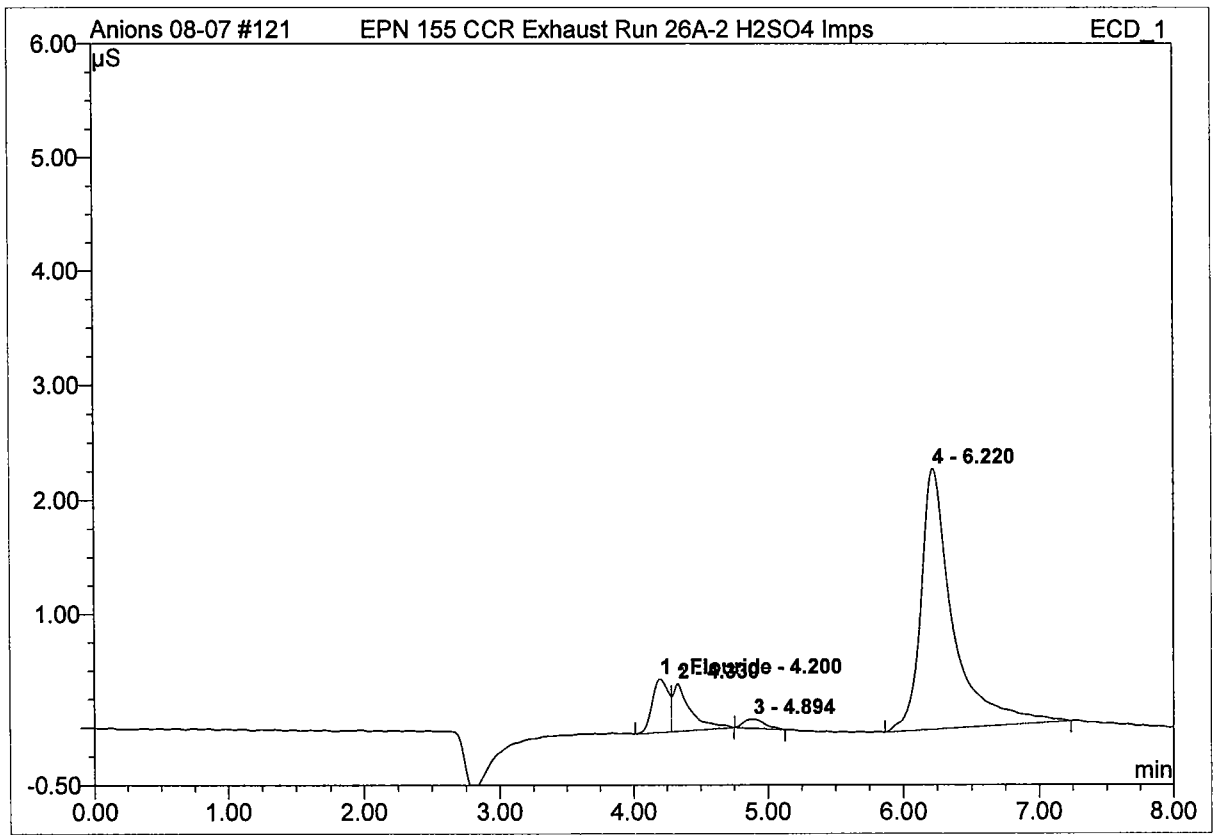
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 8:38**	*Sample Weight:*	**1.0000**
Run Time (min):	**18.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	4.20	Flouride	0.455	0.084
Total:			0.455	0.084

121 EPN 155 CCR Exhaust Run 26A-2 H2SO4 Imps

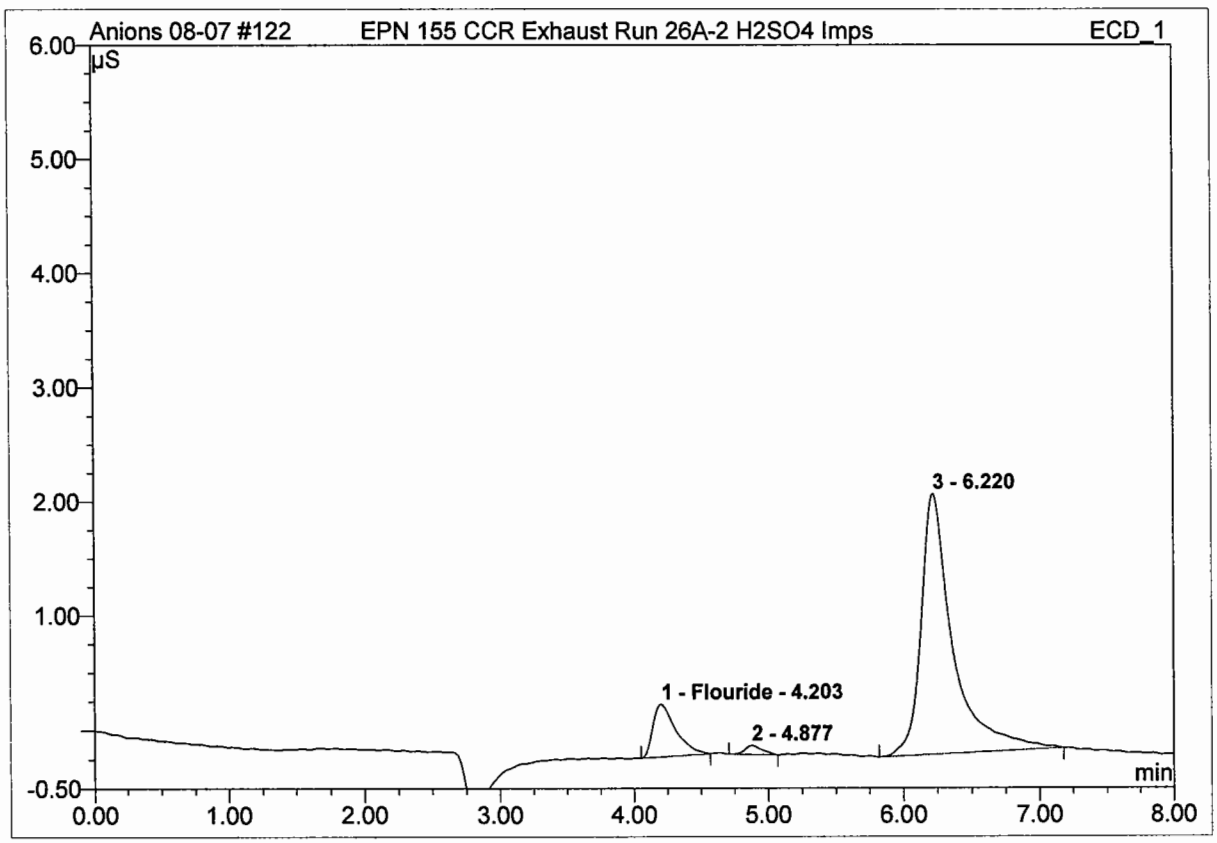
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 9:04**	*Sample Weight:*	**1.0000**
Run Time (min):	**18.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	4.20	Flouride	0.468	0.066
Total:			0.468	0.066

122 EPN 155 CCR Exhaust Run 26A-2 H2SO4 Imps

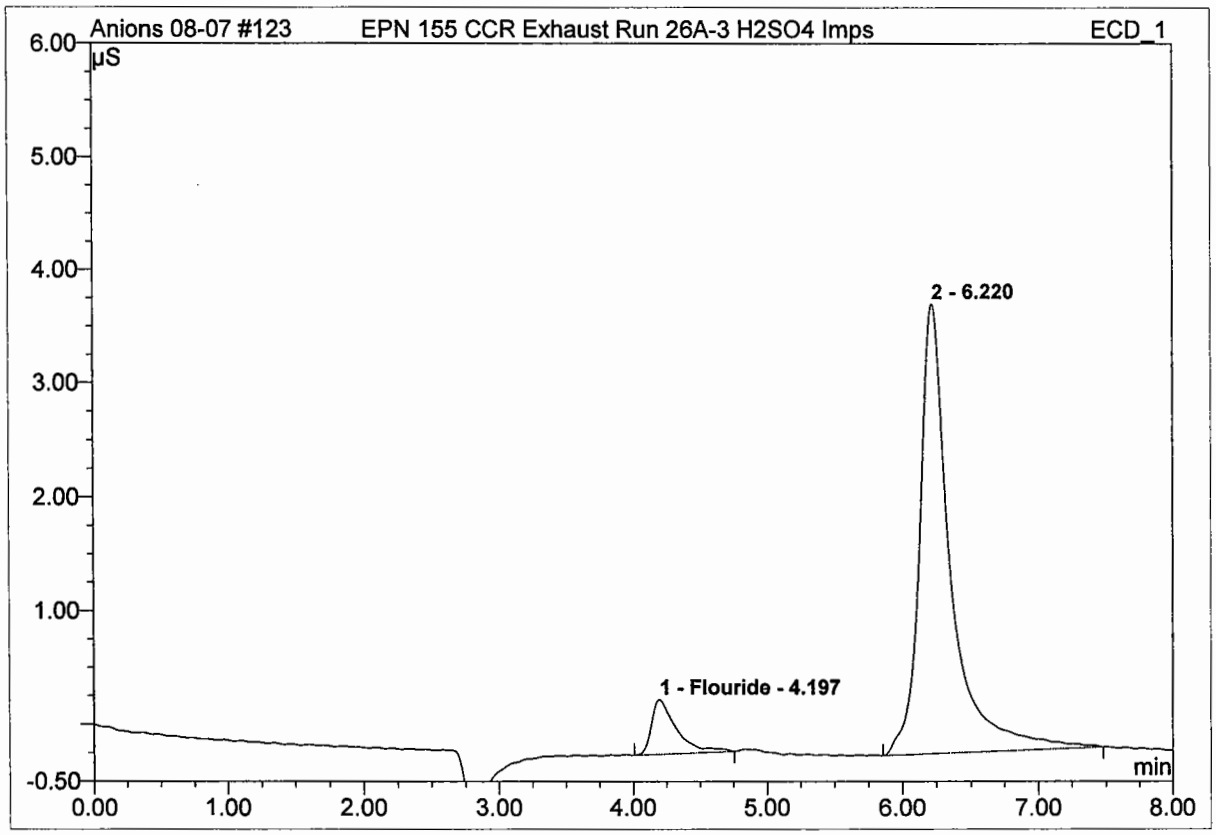
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 9:23**	*Sample Weight:*	**1.0000**
Run Time (min):	**18.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	4.20	Flouride	0.453	0.089
Total:			0.453	0.089

123 EPN 155 CCR Exhaust Run 26A-3 H2SO4 Imps

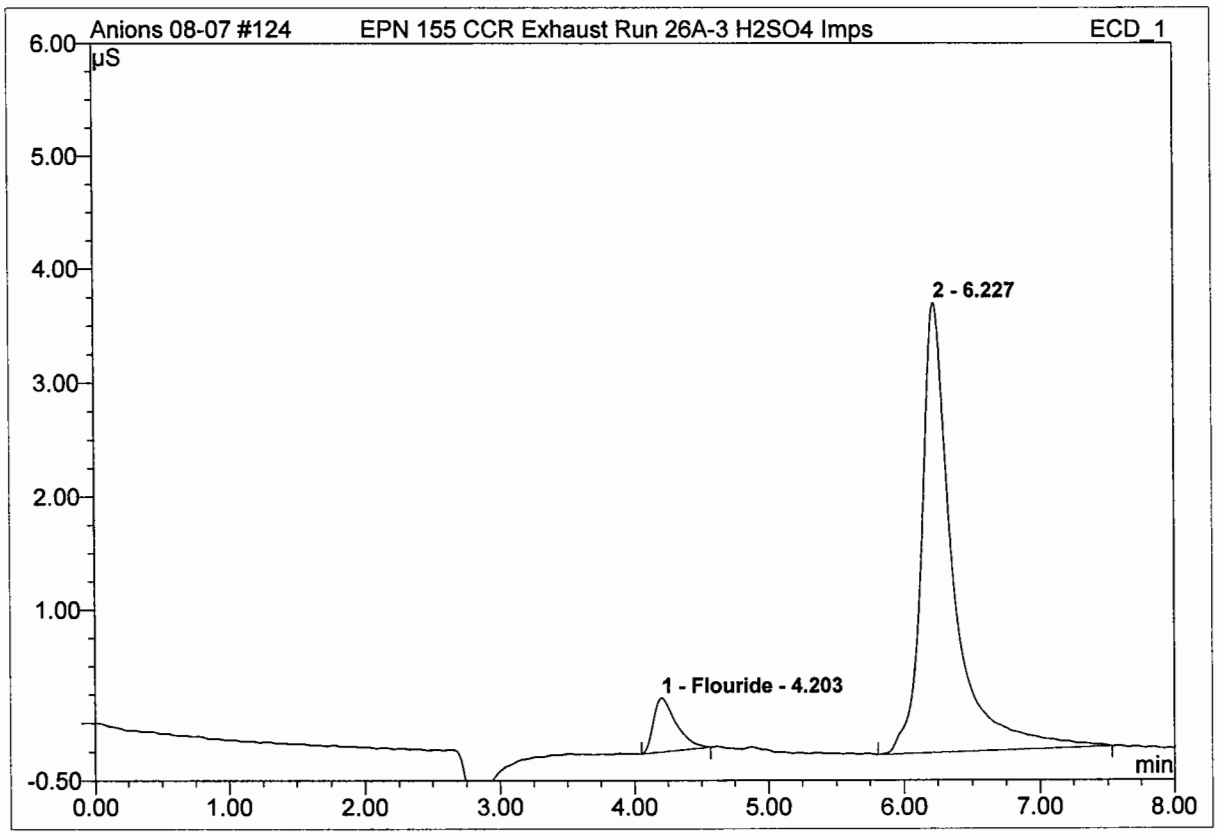
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 9:42**	*Sample Weight:*	**1.0000**
Run Time (min):	**18.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	4.20	Flouride	0.481	0.103
Total:			0.481	0.103

124 EPN 155 CCR Exhaust Run 26A-3 H2SO4 Imps

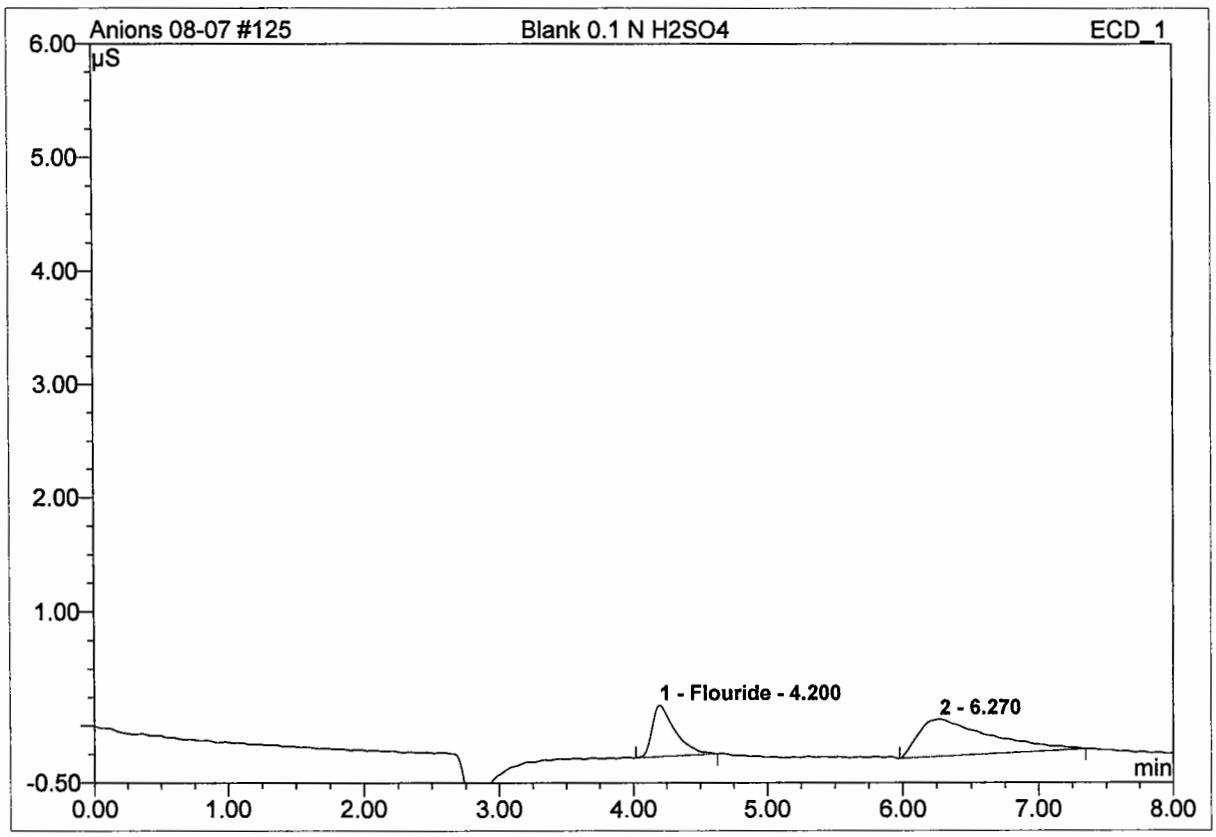
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 10:01**	*Sample Weight:*	**1.0000**
Run Time (min):	**18.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	4.20	Flouride	0.471	0.092
Total:			0.471	0.092

125 Blank 0.1 N H2SO4

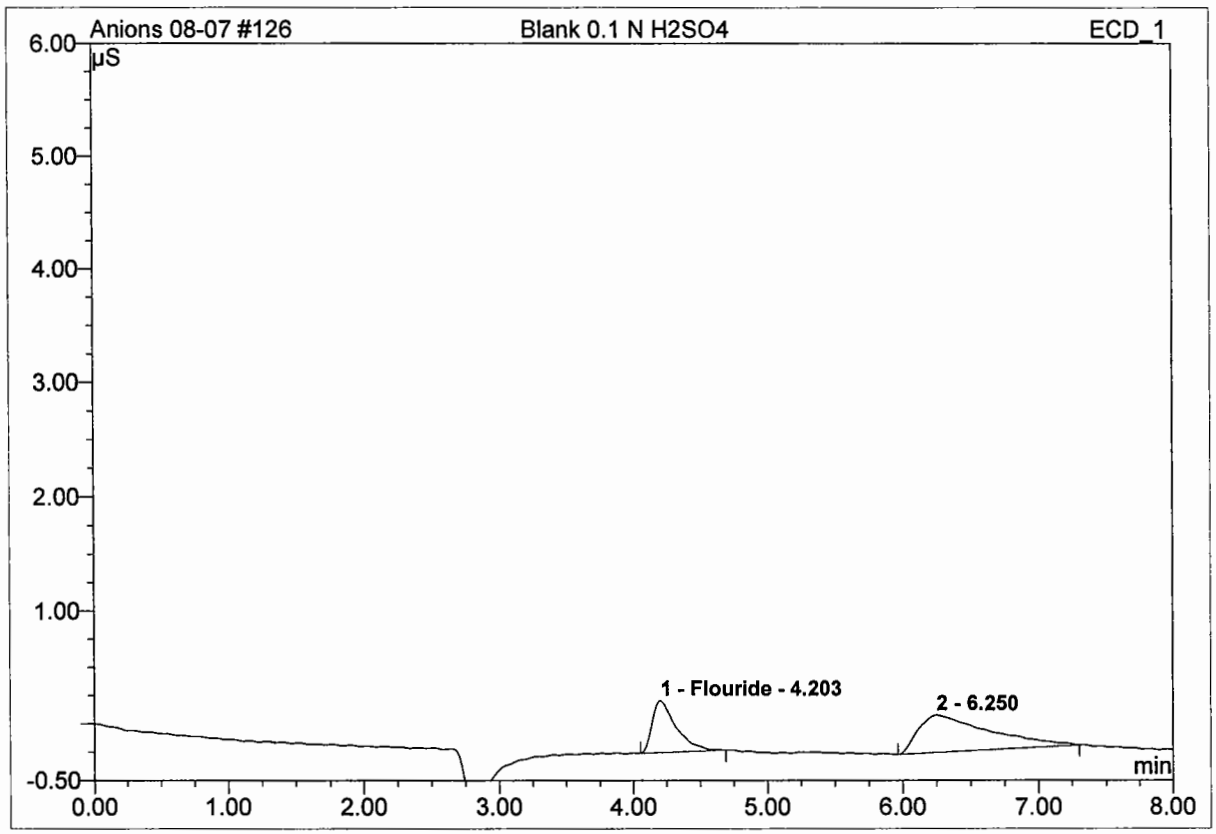
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 10:20**	*Sample Weight:*	**1.0000**
Run Time (min):	**18.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	4.20	Flouride	0.452	0.091
Total:			0.452	0.091

126 Blank 0.1 N H2SO4

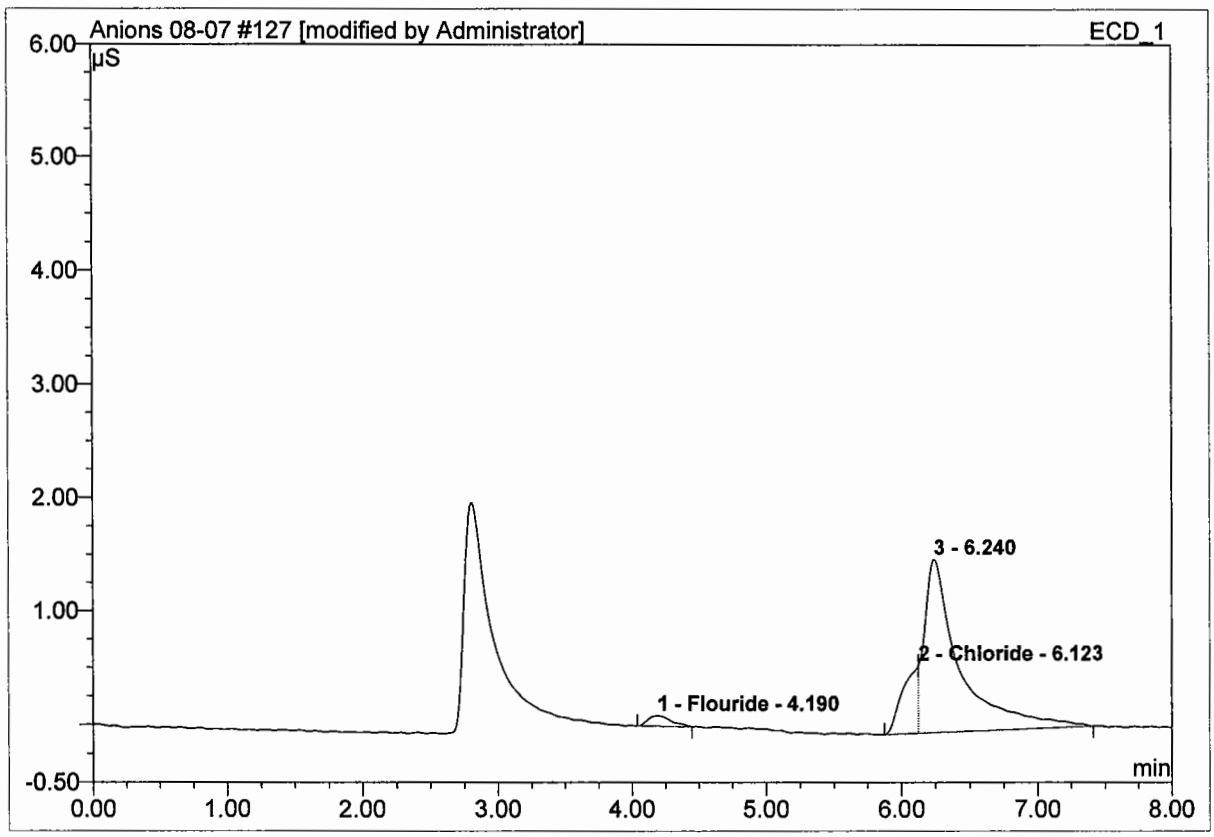
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 10:39**	*Sample Weight:*	**1.0000**
Run Time (min):	**18.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	4.20	Flouride	0.459	0.096
Total:			0.459	0.096

127 EPN 155 CCR Exhaust Run 26A-1 NaOH Imps

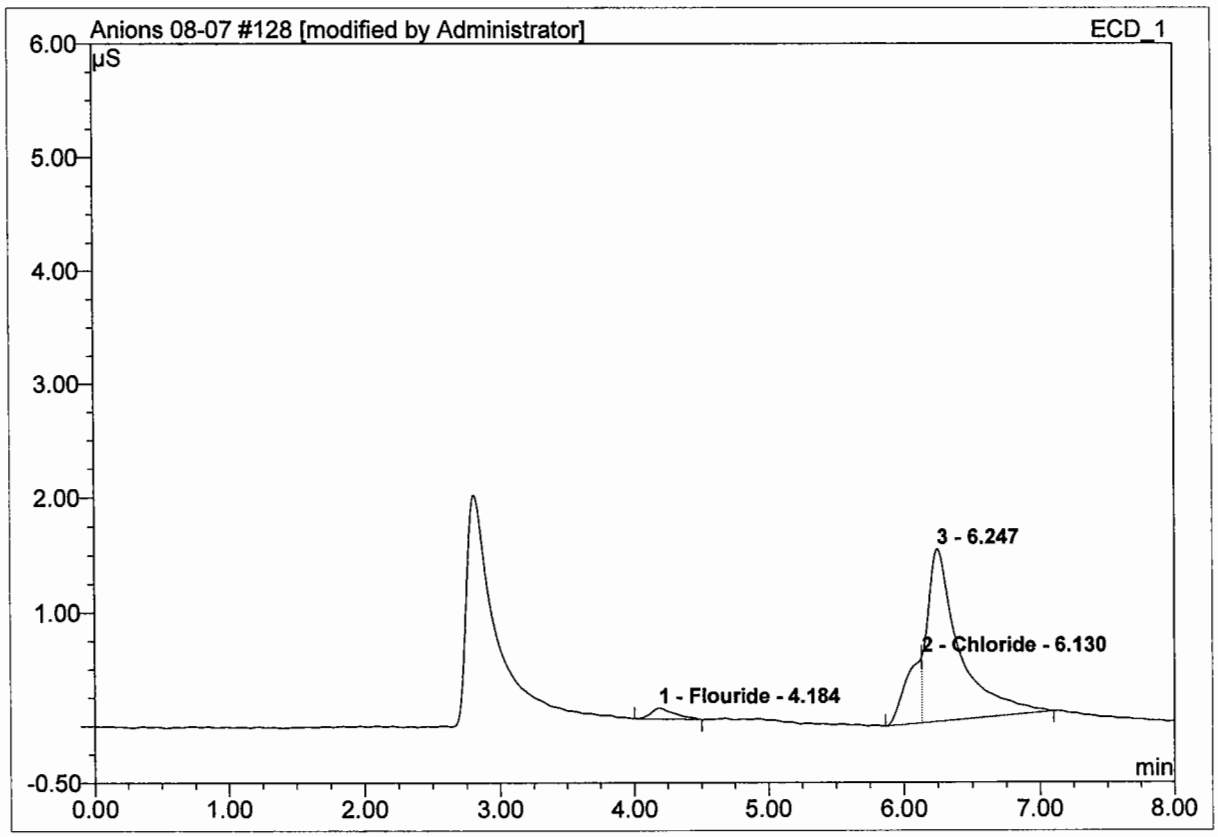
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 11:01**	*Sample Weight:*	**1.0000**
Run Time (min):	**18.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	4.19	Flouride	0.090	0.018
2	6.12	Chloride	0.590	0.077
5	16.71	Sulfate	0.454	0.235
Total:			1.134	0.330

128 EPN 155 CCR Exhaust Run 26A-1 NaOH Imps

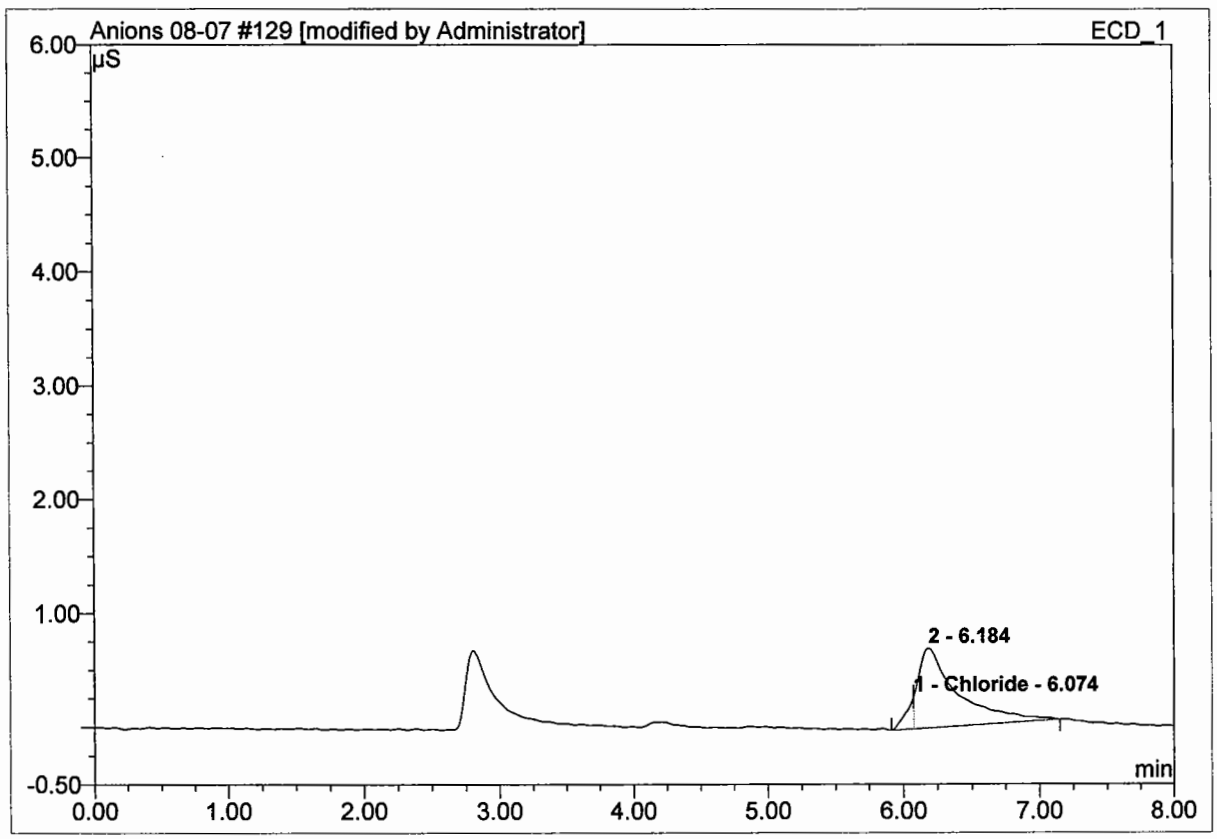
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 11:20**	*Sample Weight:*	**1.0000**
Run Time (min):	**18.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	4.18	Flouride	0.096	0.020
2	6.13	Chloride	0.580	0.078
5	16.68	Sulfate	0.390	0.180
Total:			1.067	0.278

129 EPN 155 CCR Exhaust Run 26A-2 NaOH Imps

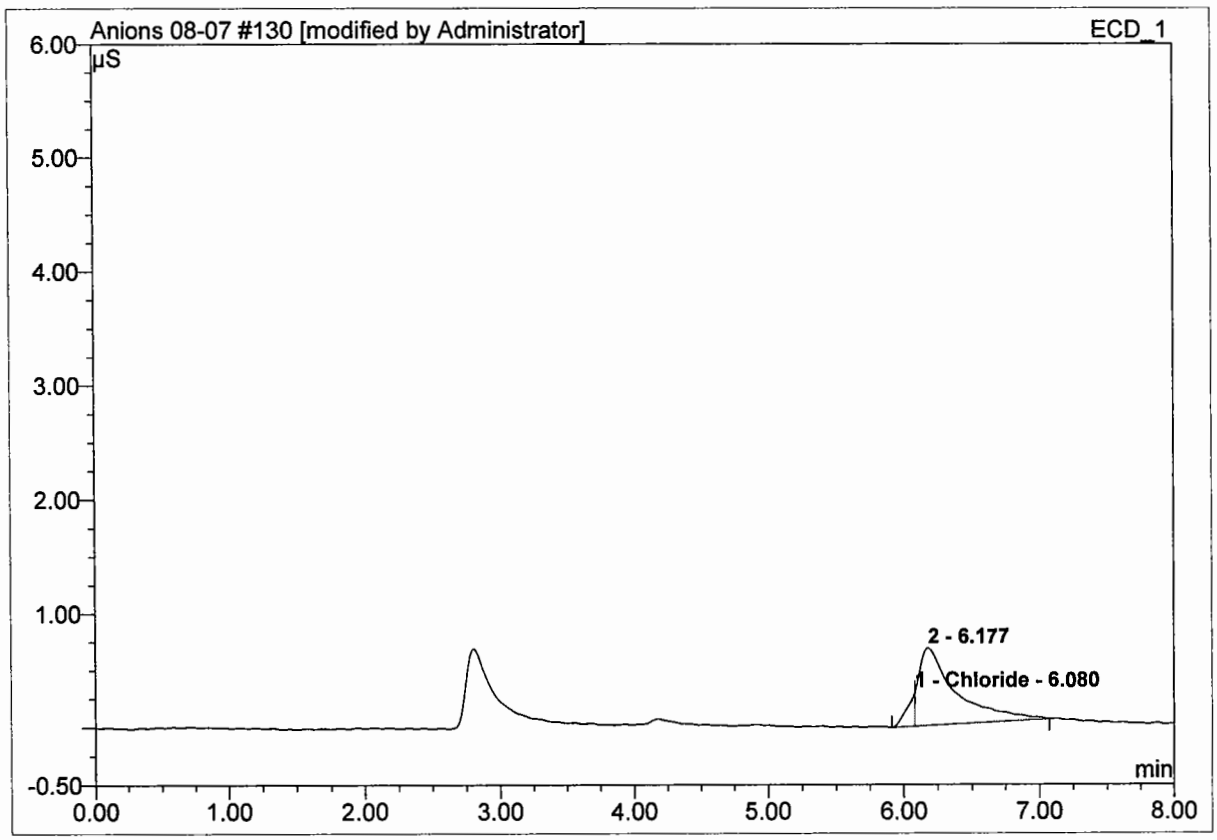
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 11:39**	*Sample Weight:*	**1.0000**
Run Time (min):	**18.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	6.07	Chloride	0.278	0.018
3	16.71	Sulfate	0.125	0.057
Total:			0.403	0.074

130 EPN 155 CCR Exhaust Run 26A-2 NaOH Imps

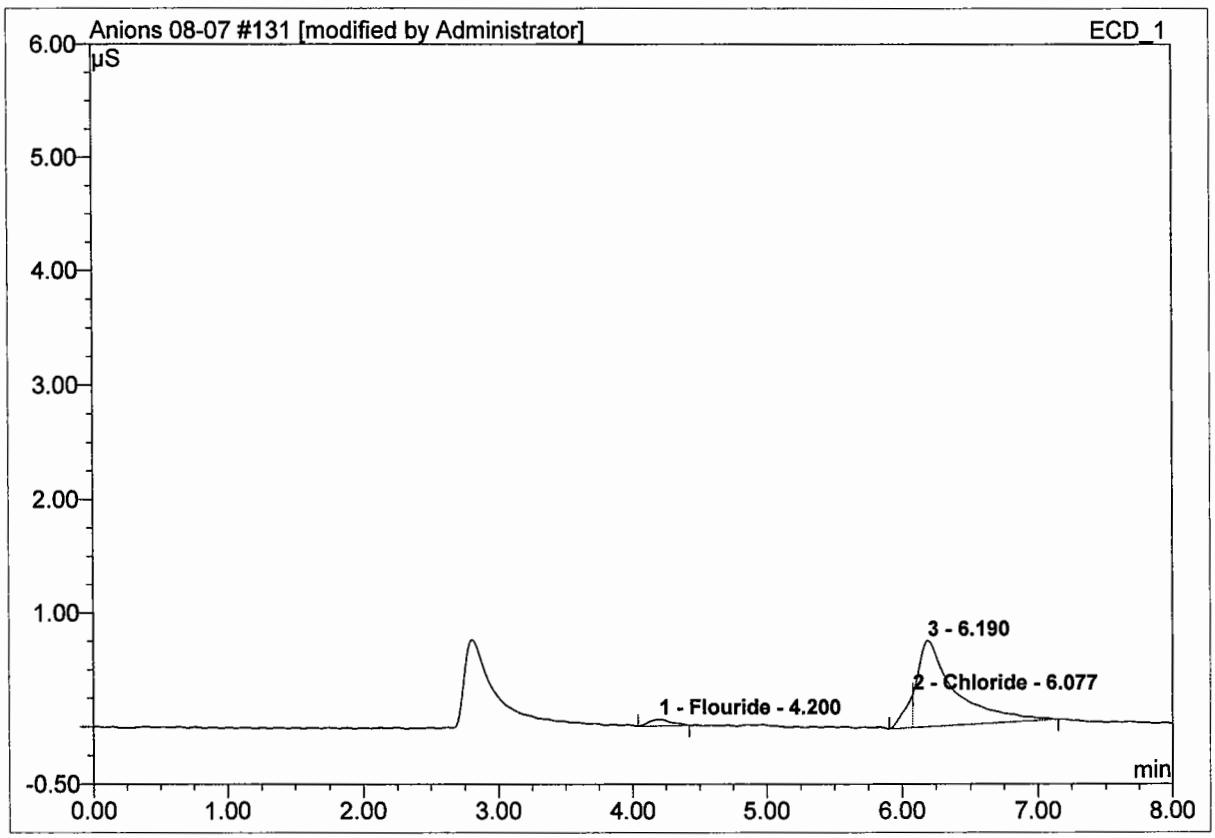
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 11:58**	*Sample Weight:*	**1.0000**
Run Time (min):	**18.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	6.08	Chloride	0.294	0.019
3	16.66	Sulfate	0.112	0.043
Total:			0.405	0.063

131 EPN 155 CCR Exhaust Run 26A-3 NaOH Imps

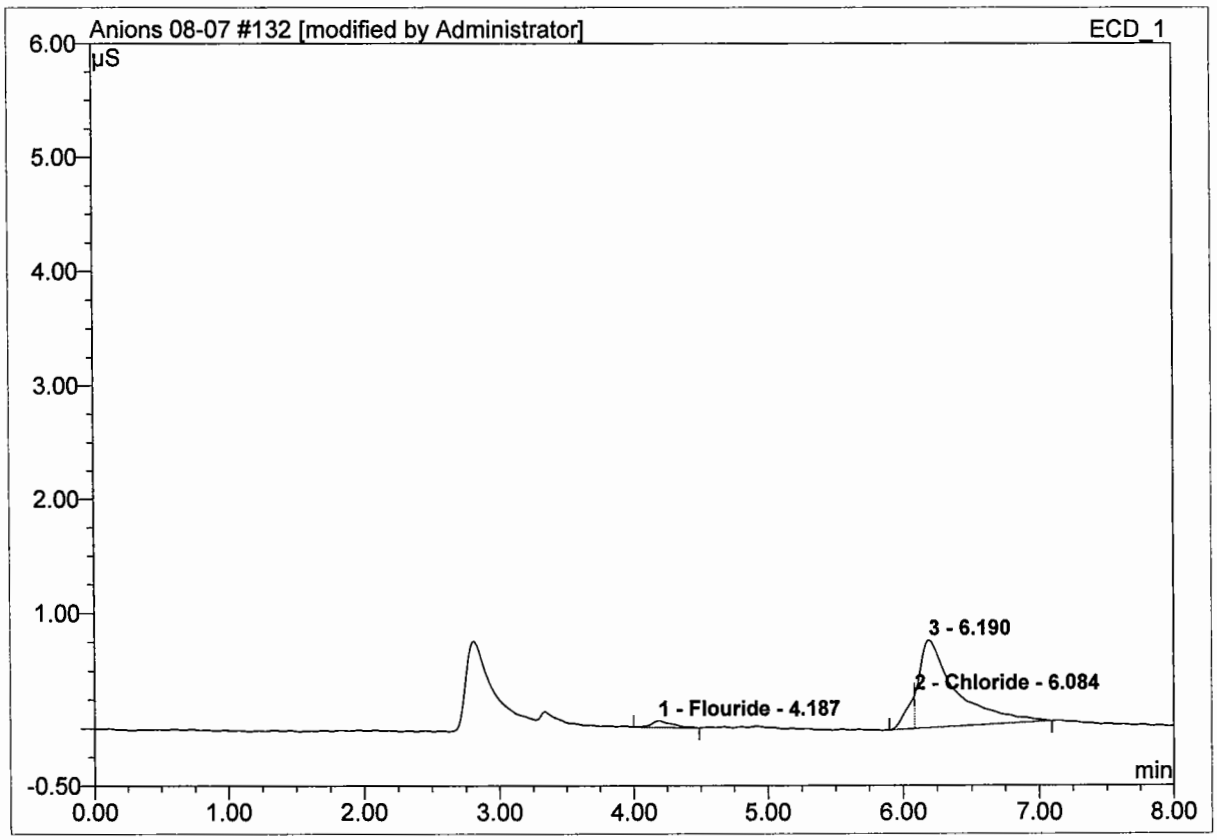
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 12:17**	*Sample Weight:*	**1.0000**
Run Time (min):	**18.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	4.20	Flouride	0.054	0.011
2	6.08	Chloride	0.287	0.020
4	16.71	Sulfate	0.128	0.055
Total:			0.469	0.085

132 EPN 155 CCR Exhaust Run 26A-3 NaOH Imps

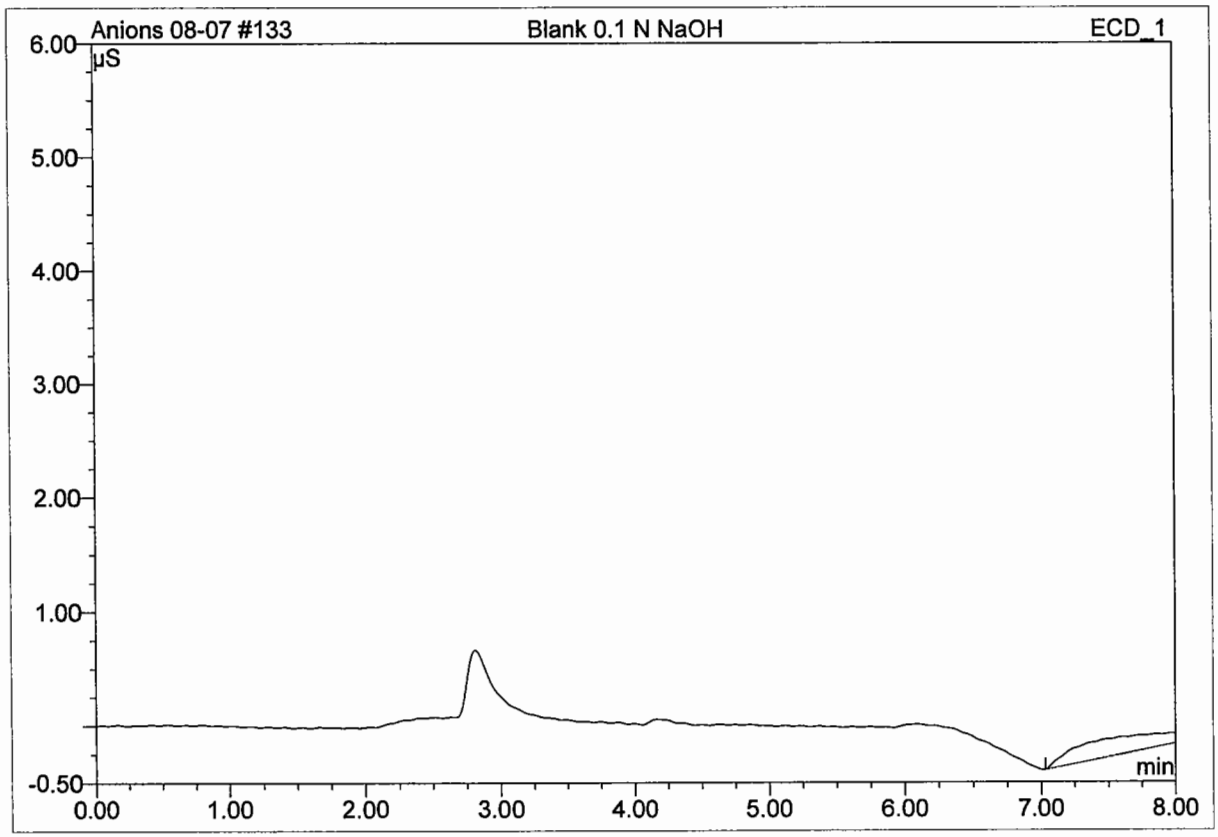
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 12:36**	*Sample Weight:*	**1.0000**
Run Time (min):	**18.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	4.19	Flouride	0.056	0.010
2	6.08	Chloride	0.293	0.021
4	16.68	Sulfate	0.127	0.050
Total:			0.476	0.081

133 Blank 0.1 N NaOH

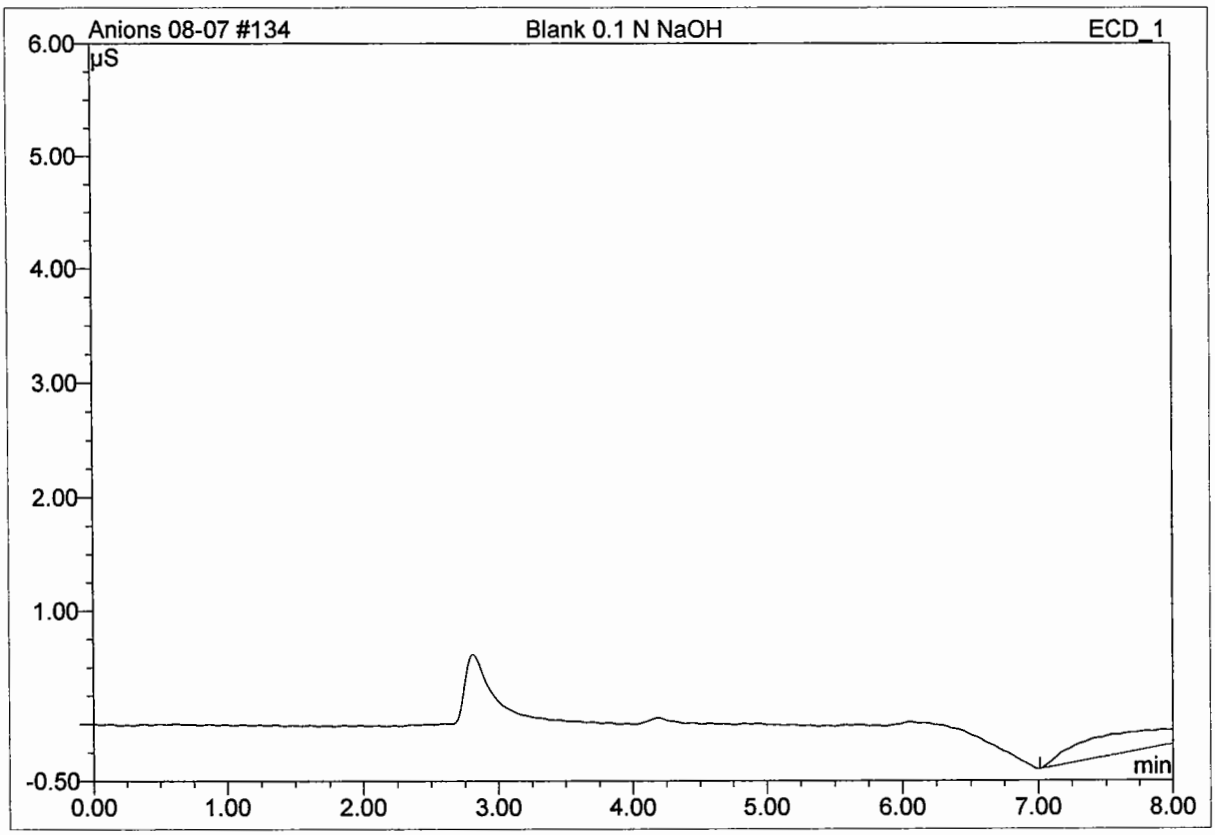
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 12:55**	*Sample Weight:*	**1.0000**
Run Time (min):	**18.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
Total:			0.000	0.000

134 Blank 0.1 N NaOH

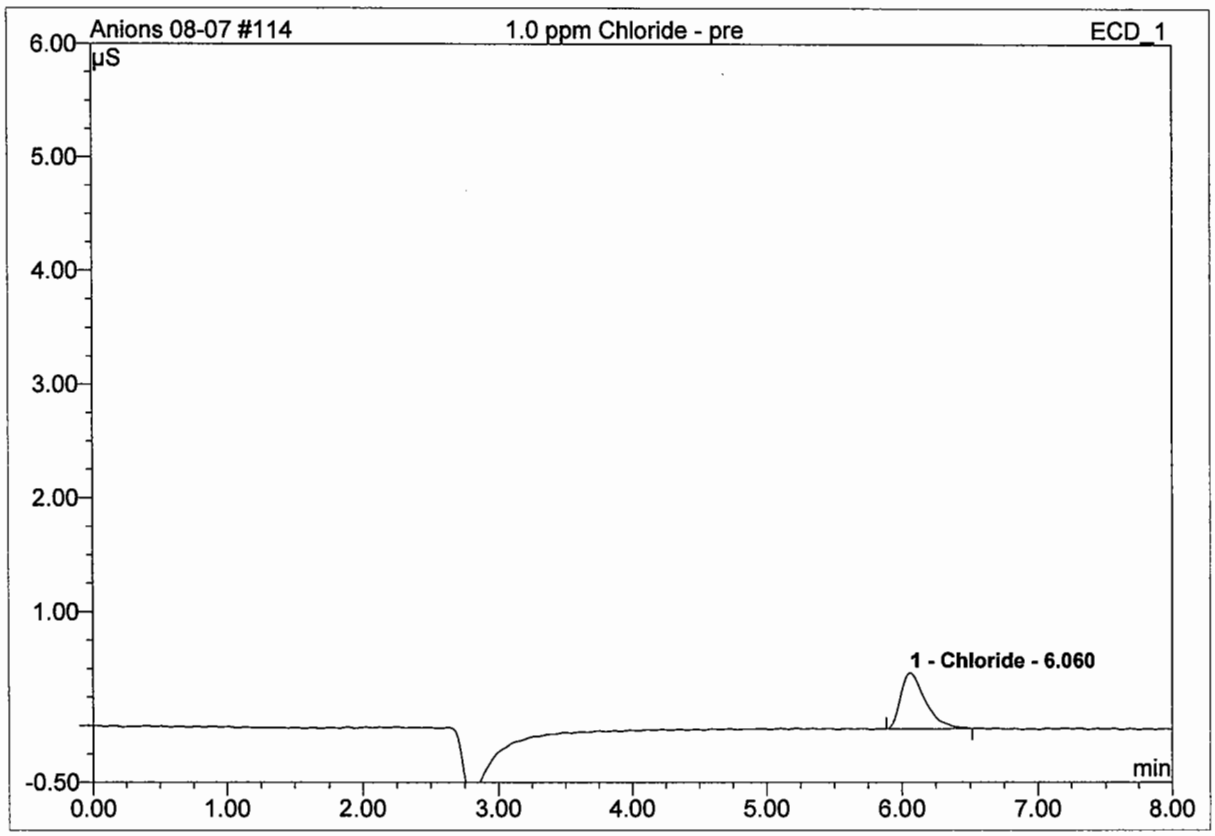
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 13:14**	*Sample Weight:*	**1.0000**
Run Time (min):	**18.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
Total:			0.000	0.000

114 1.0 ppm Chloride - pre

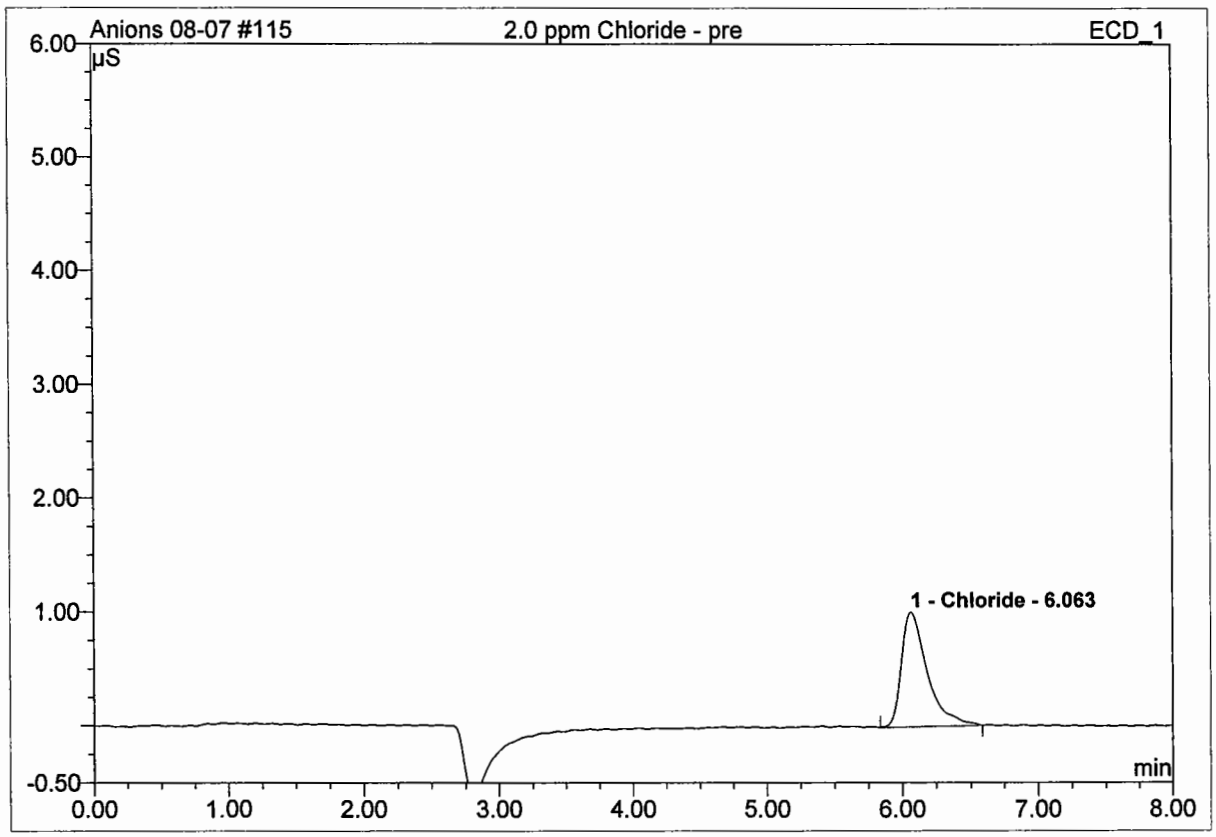
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 6:30**	*Sample Weight:*	**1.0000**
Run Time (min):	**18.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	6.06	Chloride	0.494	0.104
2	16.84	Sulfate	0.176	0.110
Total:			0.670	0.213

115 2.0 ppm Chloride - pre

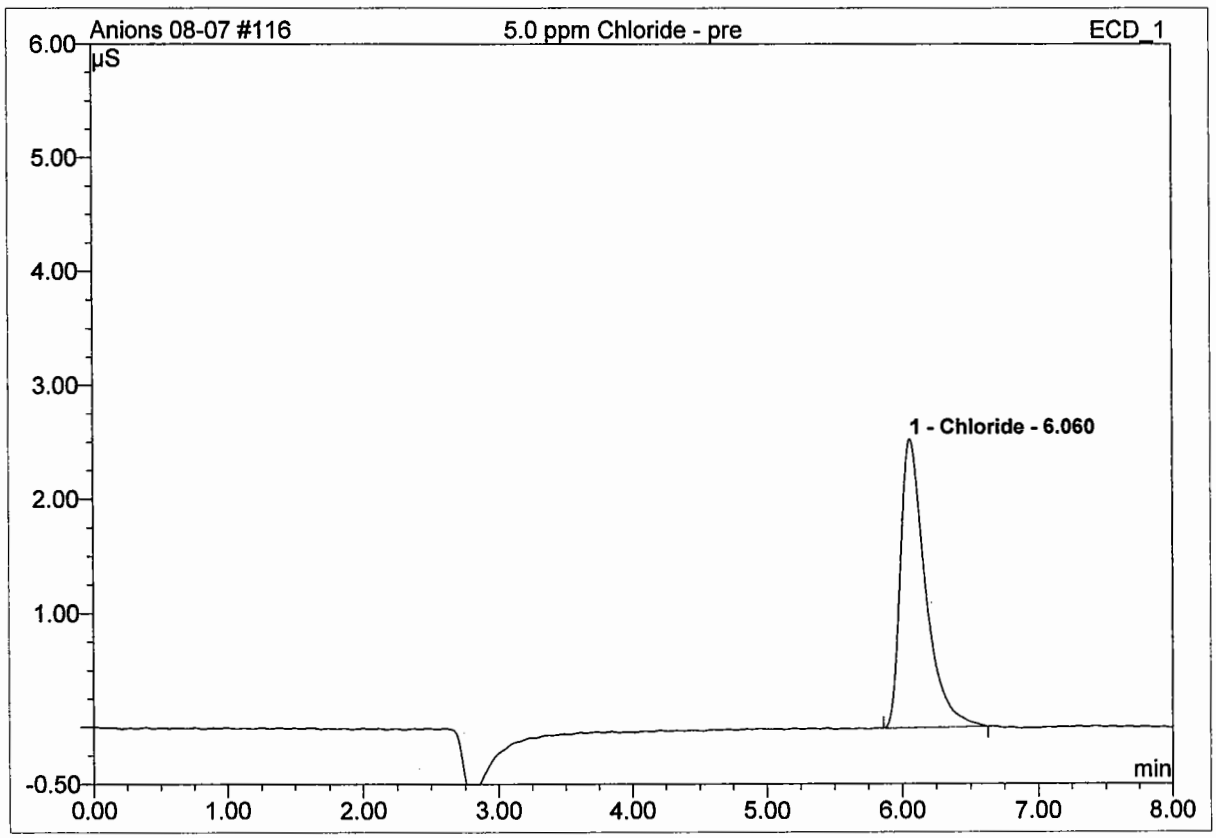
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 6:49**	*Sample Weight:*	**1.0000**
Run Time (min):	**18.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	6.06	Chloride	1.004	0.220
Total:			1.004	0.220

116 5.0 ppm Chloride - pre

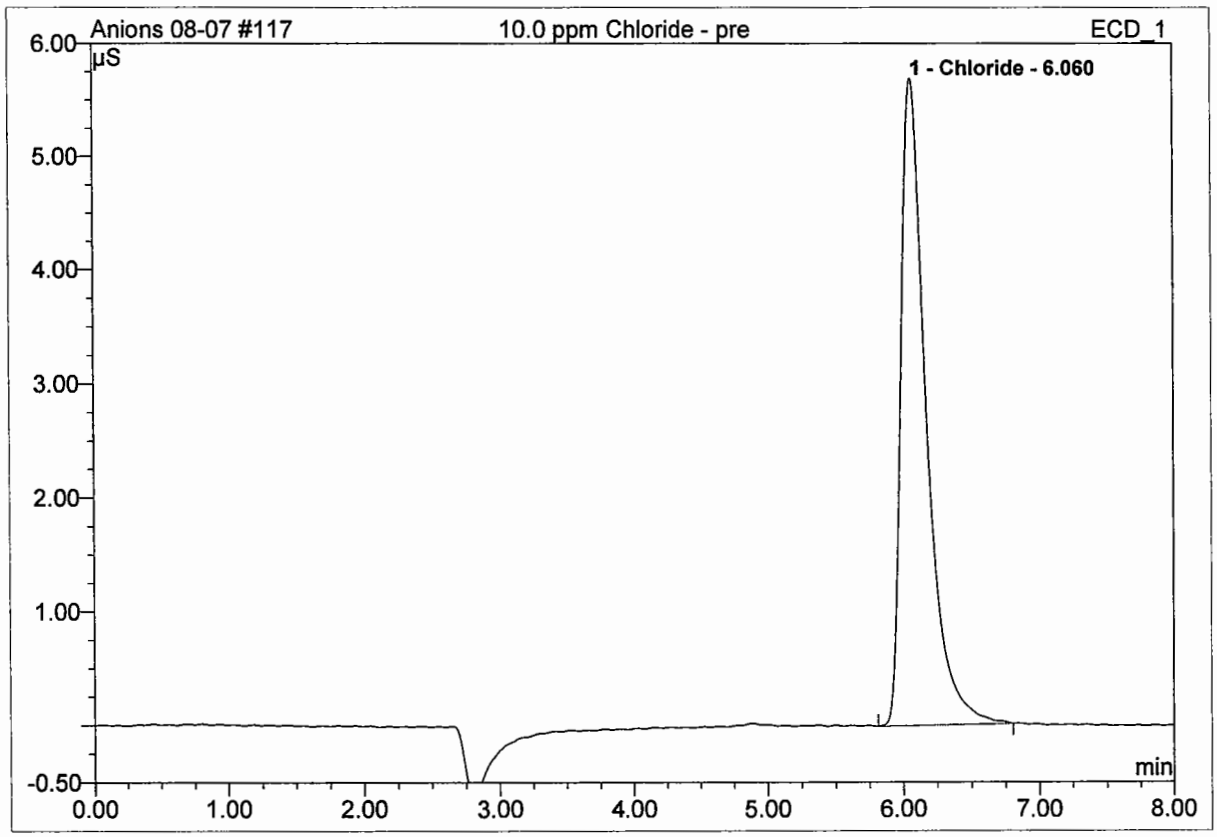
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 7:08**	*Sample Weight:*	**1.0000**
Run Time (min):	**18.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	6.06	Chloride	2.531	0.538
Total:			2.531	0.538

117 10.0 ppm Chloride - pre

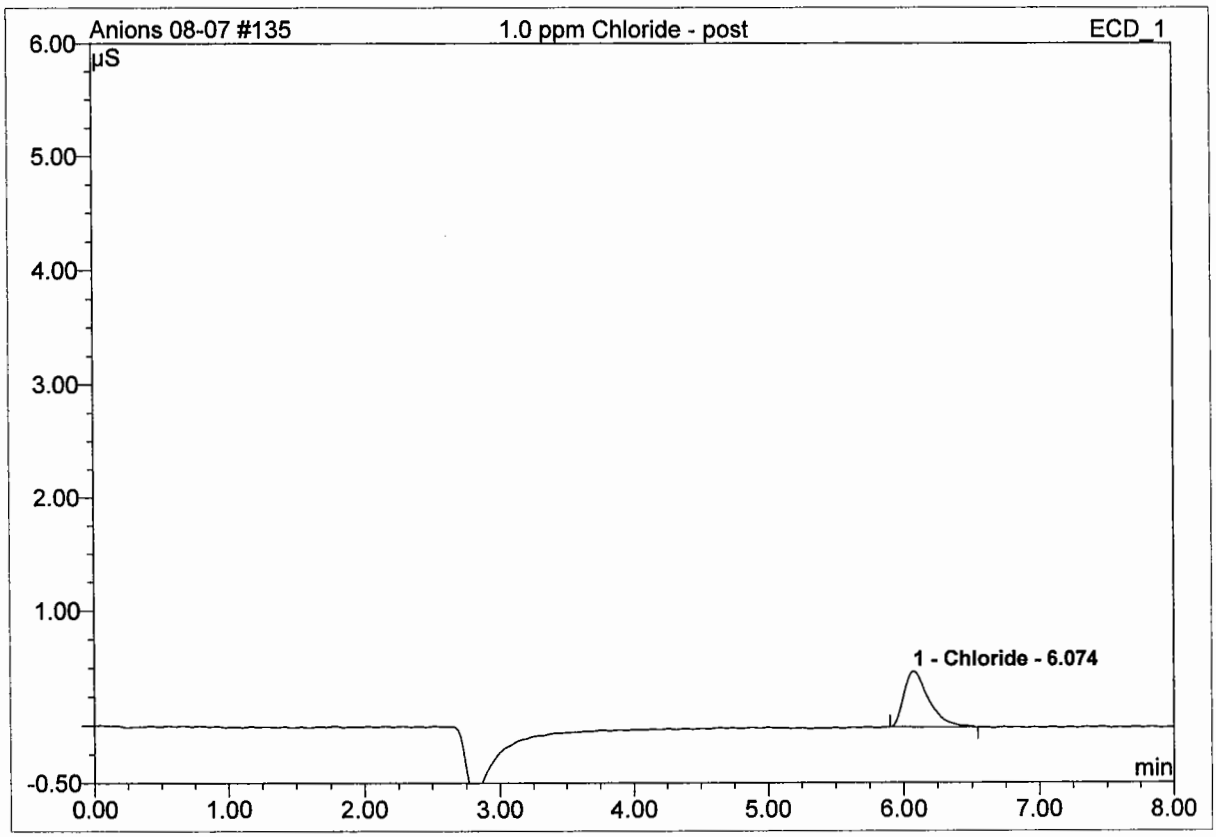
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 7:27**	*Sample Weight:*	**1.0000**
Run Time (min):	**18.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	6.06	Chloride	5.699	1.215
Total:			5.699	1.215

135 1.0 ppm Chloride - post

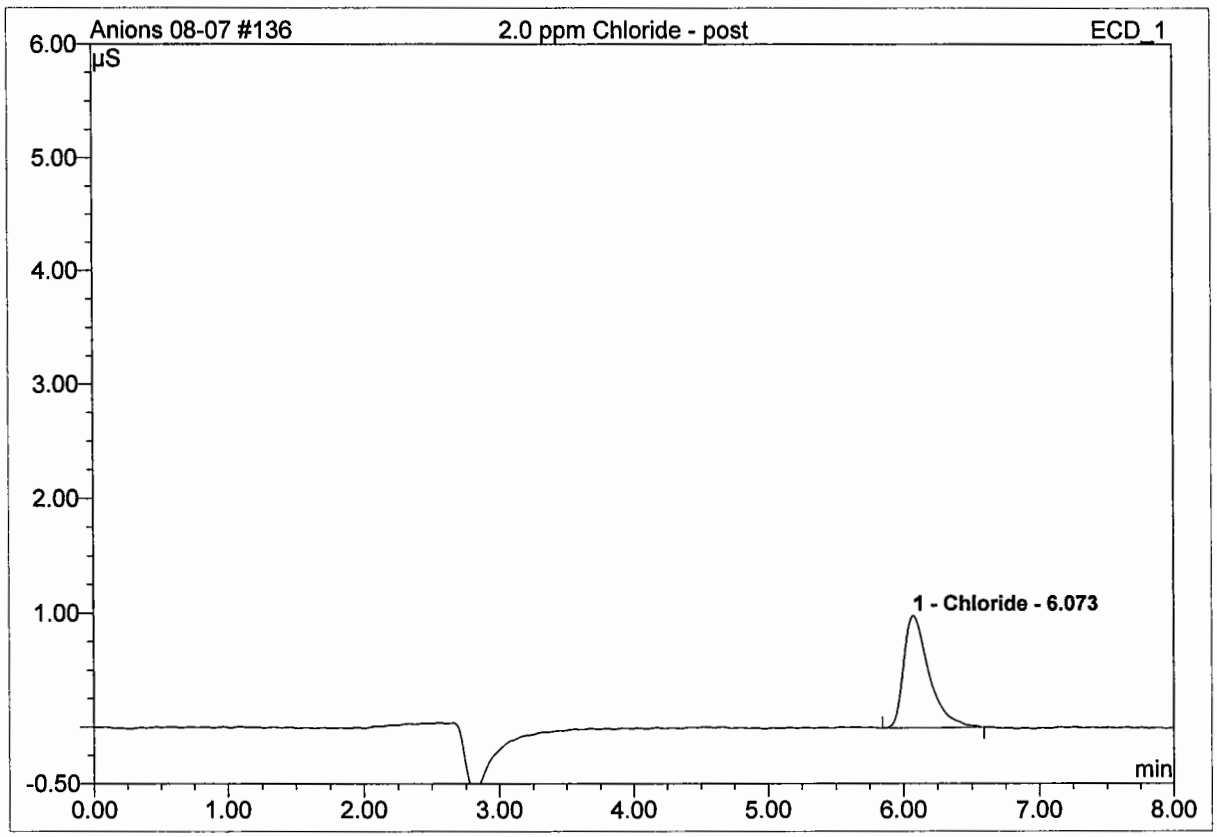
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 13:37**	*Sample Weight:*	**1.0000**
Run Time (min):	**10.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	6.07	Chloride	0.486	0.102
Total:			0.486	0.102

136 2.0 ppm Chloride - post

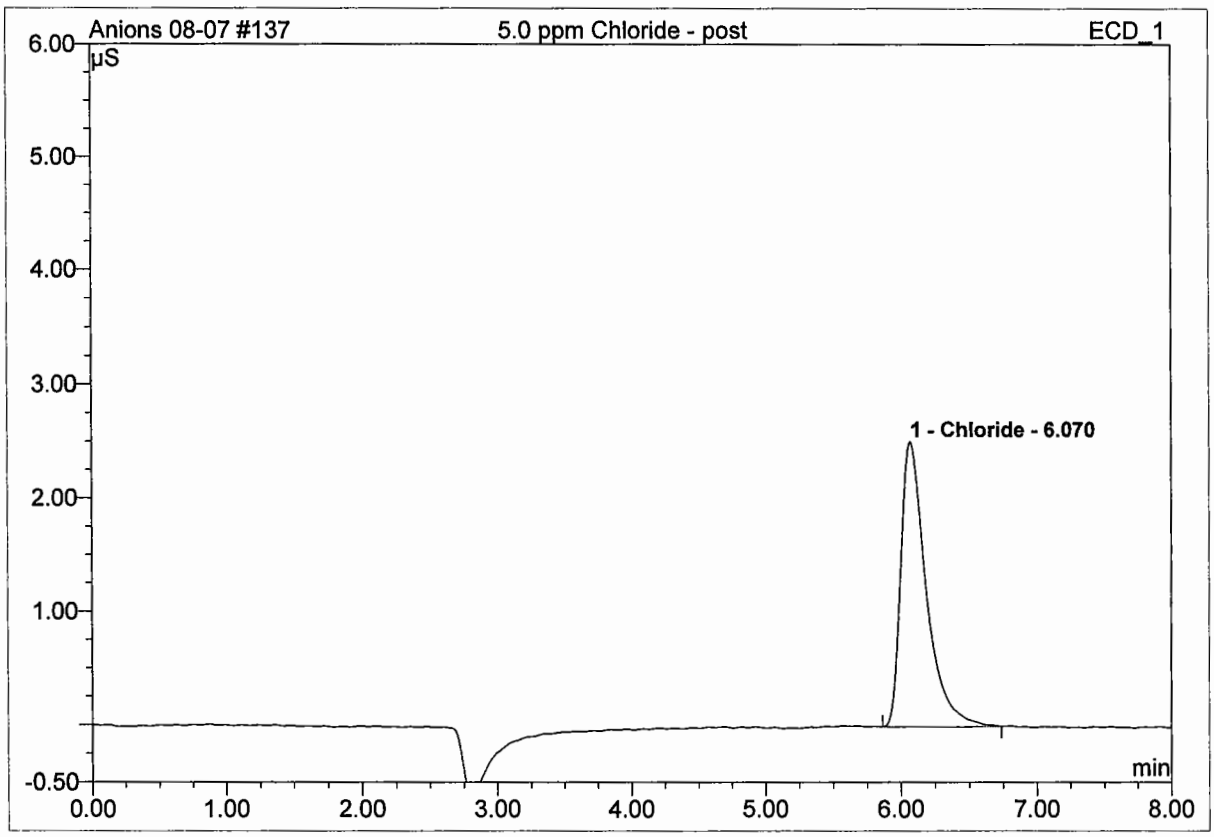
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 13:48**	*Sample Weight:*	**1.0000**
Run Time (min):	**10.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	6.07	Chloride	0.985	0.213
Total:			0.985	0.213

137 5.0 ppm Chloride - post

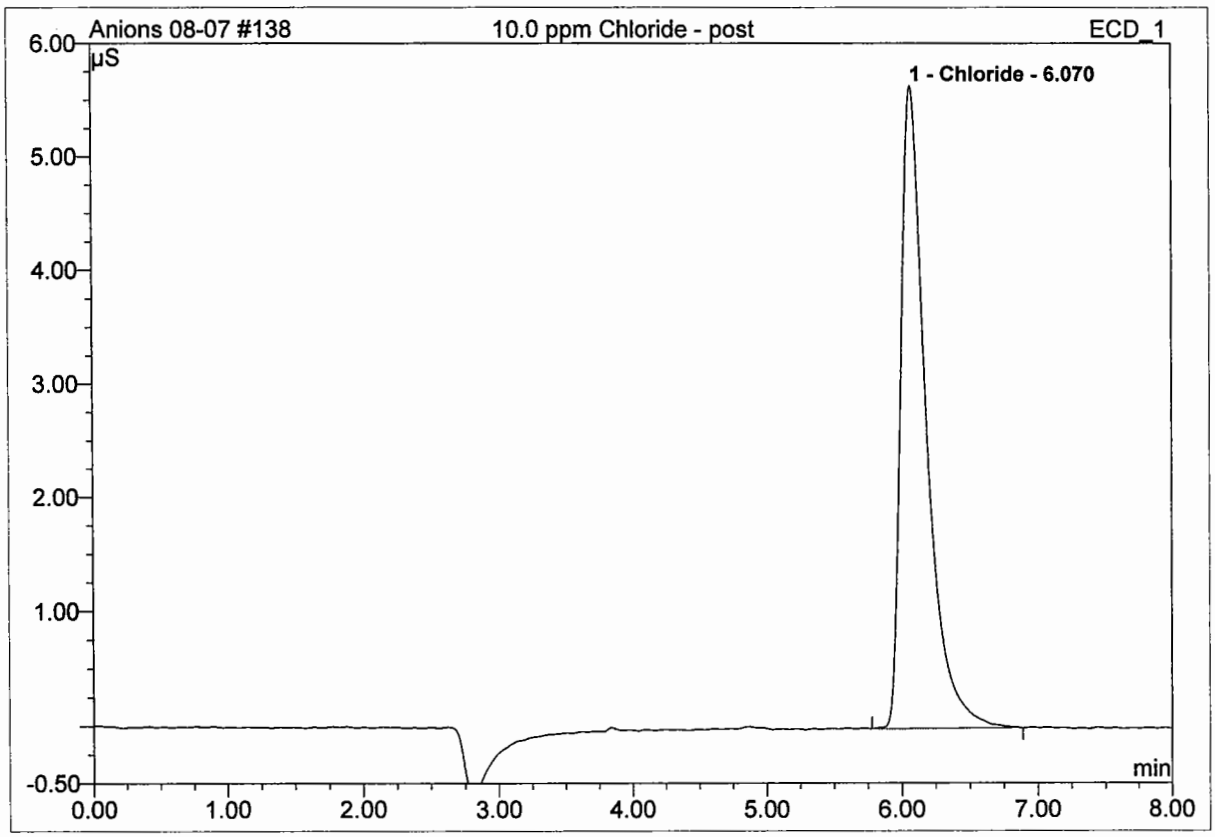
Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 13:59**	*Sample Weight:*	**1.0000**
Run Time (min):	**10.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	6.07	Chloride	2.510	0.541
Total:			2.510	0.541

138 10.0 ppm Chloride - post

Client	**Valero, Corpus Christi TX**	*Injection Volume:*	**35.0**
Vial Number:	**1**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Anions 1000**	*Bandwidth:*	**n.a.**
Quantif. Method:	**ICS_1000_Anions**	*Dilution Factor:*	**1.0000**
Recording Time:	**8/22/2007 14:11**	*Sample Weight:*	**1.0000**
Run Time (min):	**10.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min
1	6.07	Chloride	5.643	1.214
Total:			5.643	1.214

APPENDIX D ARI Reference Method Monitoring Data

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db	Comments
8/14/07 9:29:45	-2.5	20.51	0.15	
8/14/07 9:30:00	-2.6	20.55	0.13	
8/14/07 9:30:15	-2.5	20.58	0.11	
8/14/07 9:30:30	-2.5	20.56	0.12	
8/14/07 9:30:45	-2.5	20.55	0.12	
8/14/07 9:31:00	-2.5	20.53	0.14	
8/14/07 9:31:15	-2.5	20.48	0.17	
8/14/07 9:31:30	-2.5	20.48	0.17	
8/14/07 9:31:45	-2.5	20.54	0.14	
8/14/07 9:32:00	-2.5	20.57	0.11	
8/14/07 9:32:15	-2.3	20.56	0.11	
8/14/07 9:32:30	-2.3	20.55	0.11	
8/14/07 9:32:45	-2.3	20.54	0.12	
8/14/07 9:33:00	-0.5	20.54	0.12	
8/14/07 9:33:15	0.4	20.54	0.12	
8/14/07 9:33:30	0.4	20.51	0.14	
8/14/07 9:33:45	0.4	20.49	0.15	
8/14/07 9:34:00	0.4	20.50	0.15	
8/14/07 9:34:15	0.4	20.51	0.14	
8/14/07 9:34:30	0.4	20.53	0.13	
8/14/07 9:34:45	0.4	20.55	0.12	
8/14/07 9:35:00	0.4	20.55	0.11	
8/14/07 9:35:15	0.4	20.89	0.11	
8/14/07 9:35:30	0.4	18.88	1.81	
8/14/07 9:35:45	0.4	9.98	8.98	
8/14/07 9:36:00	0.4	3.54	14.40	
8/14/07 9:36:15	0.5	0.73	17.27	
8/14/07 9:36:30	0.4	0.09	18.04	
8/14/07 9:36:45	0.6	0.03	18.13	
8/14/07 9:37:00	0.5	0.01	18.14	
8/14/07 9:37:15	0.5	0.00	18.15	**Calibration Error**
8/14/07 9:37:30	0.5	-0.01	**18.15**	
8/14/07 9:37:45	0.5	-0.02	**18.15**	
8/14/07 9:38:00	0.5	-0.02	**18.15**	**18.15 18.00% CO_2**
8/14/07 9:38:15	0.5	-0.03	**18.15**	
8/14/07 9:38:30	0.5	-0.03	16.39	
8/14/07 9:38:45	0.5	-0.02	12.07	
8/14/07 9:39:00	0.6	-0.02	9.65	
8/14/07 9:39:15	0.6	-0.03	9.14	
8/14/07 9:39:30	0.5	-0.03	9.11	
8/14/07 9:39:45	0.7	-0.03	9.11	
8/14/07 9:40:00	0.7	-0.03	9.11	**Calibration Error**
8/14/07 9:40:15	0.6	**-0.03**	**9.11**	
8/14/07 9:40:30	0.6	**-0.03**	**9.10**	**-0.04 Zero O_2**
8/14/07 9:40:45	0.6	**-0.04**	**9.11**	**9.11 9.00% CO_2**
8/14/07 9:41:00	0.7	**-0.04**	**9.10**	
8/14/07 9:41:15	0.7	-0.03	9.09	
8/14/07 9:41:30	0.7	-0.04	9.11	
8/14/07 9:41:45	0.7	0.61	7.94	
8/14/07 9:42:00	0.7	4.64	3.72	
8/14/07 9:42:15	0.6	7.59	0.68	
8/14/07 9:42:30	0.7	8.05	0.14	
8/14/07 9:42:45	0.7	8.40	0.09	
8/14/07 9:43:00	0.6	8.70	0.08	
8/14/07 9:43:15	0.8	8.86	0.07	**Calibration Error**
8/14/07 9:43:30	0.7	**8.92**	0.07	
8/14/07 9:43:45	0.6	**8.95**	0.06	**8.95 9.00% O_2**
8/14/07 9:44:00	0.6	**8.96**	0.06	
8/14/07 9:44:15	0.6	**8.97**	0.06	
8/14/07 9:44:30	0.5	8.98	0.06	
8/14/07 9:44:45	0.7	8.98	0.06	
8/14/07 9:45:00	0.7	7.84	0.05	
8/14/07 9:45:15	0.7	5.08	0.05	
8/14/07 9:45:30	0.8	4.52	0.05	
8/14/07 9:45:45	0.7	4.48	0.05	**Calibration Error**
8/14/07 9:46:00	0.6	**4.48**	**0.05**	
8/14/07 9:46:15	0.6	**4.48**	**0.05**	**4.48 4.50% O_2**
8/14/07 9:46:30	0.7	**4.48**	**0.05**	**0.05 Zero CO_2**
8/14/07 9:46:45	0.8	**4.48**	**0.05**	
8/14/07 9:47:00	0.8	4.44	0.05	
8/14/07 9:47:15	0.8	4.41	0.05	
8/14/07 9:47:30	0.7	4.45	0.05	
8/14/07 9:47:45	0.8	7.01	0.07	
8/14/07 9:48:00	0.7	11.69	0.11	
8/14/07 9:48:15	0.8	17.57	0.18	
8/14/07 9:48:30	7.1	20.14	0.19	
8/14/07 9:48:45	1.9	20.47	0.21	
8/14/07 9:49:00	0.1	20.43	0.25	
8/14/07 9:49:15	-0.1	19.32	0.25	
8/14/07 9:49:30	-0.2	15.14	0.20	
8/14/07 9:49:45	-0.2	8.67	0.11	
8/14/07 9:50:00	-0.2	5.37	0.07	
8/14/07 9:50:15	-0.2	4.81	0.06	

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db	Comments
8/14/07 9:50:30	-0.2	4.73	0.06	
8/14/07 9:50:45	-0.3	4.70	0.06	
8/14/07 9:51:00	-0.3	4.68	0.06	
8/14/07 9:51:15	-0.3	4.67	0.05	
8/14/07 9:51:30	-0.3	4.66	0.05	
8/14/07 9:51:45	-0.3	4.65	0.05	
8/14/07 9:52:00	-0.3	4.64	0.05	
8/14/07 9:52:15	0.1	4.64	0.05	
8/14/07 9:52:30	0.4	4.63	0.05	
8/14/07 9:52:45	0.4	4.63	0.05	
8/14/07 9:53:00	0.4	4.62	0.05	System Bias
8/14/07 9:53:15	**0.3**	**4.62**	**0.05**	**0.4 Zero VOC**
8/14/07 9:53:30	**0.4**	**4.61**	**0.05**	**4.61 4.50% O_2**
8/14/07 9:53:45	**0.3**	**4.61**	**0.05**	**0.05 Zero CO_2**
8/14/07 9:54:00	**0.4**	**4.61**	**0.05**	
8/14/07 9:54:15	1.1	4.61	0.05	
8/14/07 9:54:30	1.3	4.61	0.05	
8/14/07 9:54:45	0.6	5.36	0.05	
8/14/07 9:55:00	0.6	8.84	0.08	
8/14/07 9:55:15	0.5	6.06	1.38	
8/14/07 9:55:30	0.5	2.22	5.50	
8/14/07 9:55:45	0.5	0.66	7.92	
8/14/07 9:56:00	0.5	0.31	8.61	
8/14/07 9:56:15	0.5	0.26	8.79	
8/14/07 9:56:30	0.5	0.24	8.85	
8/14/07 9:56:45	0.5	0.23	8.88	
8/14/07 9:57:00	0.5	0.22	8.90	
8/14/07 9:57:15	0.5	0.22	8.91	
8/14/07 9:57:30	0.5	0.21	8.92	
8/14/07 9:57:45	0.5	0.21	8.93	
8/14/07 9:58:00	0.5	0.20	8.94	
8/14/07 9:58:15	0.5	0.20	8.94	
8/14/07 9:58:30	0.5	0.20	8.95	
8/14/07 9:58:45	0.6	0.20	8.95	
8/14/07 9:59:00	0.6	0.19	8.96	
8/14/07 9:59:15	0.7	0.19	8.96	
8/14/07 9:59:30	0.8	0.19	8.96	
8/14/07 9:59:45	0.9	0.19	8.96	
8/14/07 10:00:00	1.1	0.19	8.97	System Bias
8/14/07 10:00:15	**1.2**	**0.19**	**8.97**	
8/14/07 10:00:30	**1.5**	**0.19**	**8.97**	**0.19 Zero O_2**
8/14/07 10:00:45	**1.7**	**0.19**	**8.97**	**8.97 9.00% CO_2**
8/14/07 10:01:00	**1.9**	**0.19**	**8.97**	
8/14/07 10:01:15	2.8	0.20	8.97	
8/14/07 10:01:30	3.0	0.20	8.97	
8/14/07 10:01:45	3.1	0.74	8.85	
8/14/07 10:02:00	3.1	8.42	6.35	
8/14/07 10:02:15	3.0	17.50	2.20	
8/14/07 10:02:30	2.9	19.94	0.72	**O_2 Response Time = 145 sec. HIGH**
8/14/07 10:02:45	2.9	20.33	0.46	
8/14/07 10:03:00	2.9	20.47	0.34	**CO_2 Response Time = 163 sec. LOW**
8/14/07 10:03:15	2.8	20.51	0.30	
8/14/07 10:03:30	2.8	20.48	0.31	
8/14/07 10:03:45	2.9	20.49	0.31	
8/14/07 10:04:00	2.7	20.52	0.29	
8/14/07 10:04:15	2.7	20.54	0.27	
8/14/07 10:04:30	2.9	20.52	0.28	
8/14/07 10:04:45	2.9	20.55	0.27	
8/14/07 10:05:00	2.1	20.23	0.35	
8/14/07 10:05:15	2.0	13.28	3.01	
8/14/07 10:05:30	1.9	3.89	6.62	
8/14/07 10:05:45	1.8	0.91	8.29	**O_2 Response Time = 123 sec. LOW**
8/14/07 10:06:00	1.7	0.42	8.74	**CO_2 Response Time = 151 sec. HIGH**
8/14/07 10:06:15	1.6	0.33	8.85	
8/14/07 10:06:30	1.5	0.29	8.89	
8/14/07 10:06:45	1.4	0.27	8.91	
8/14/07 10:07:00	1.4	0.26	8.93	
8/14/07 10:07:15	1.3	0.24	8.94	
8/14/07 10:07:30	1.2	0.23	8.94	
8/14/07 10:07:45	1.1	0.22	8.95	
8/14/07 10:08:00	1.1	0.22	8.95	
8/14/07 10:08:15	1.0	0.21	8.96	
8/14/07 10:08:30	1.0	0.20	8.96	
8/14/07 10:08:45	1.0	0.20	8.97	
8/14/07 10:09:00	0.9	0.19	8.97	
8/14/07 10:09:15	0.9	0.19	8.97	
8/14/07 10:09:30	0.9	0.19	8.97	
8/14/07 10:09:45	0.9	0.18	8.97	
8/14/07 10:10:00	0.8	0.19	8.97	
8/14/07 10:10:15	0.8	0.18	8.97	
8/14/07 10:10:30	0.8	0.18	8.98	
8/14/07 10:10:45	0.8	0.18	8.98	
8/14/07 10:11:00	0.8	0.18	8.98	

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db	Comments
8/14/07 10:11:15	0.8	0.18	8.98	
8/14/07 10:11:30	0.8	0.18	8.98	
8/14/07 10:11:45	1.4	0.18	8.98	
8/14/07 10:12:00	2.2	0.18	8.98	
8/14/07 10:12:15	27.9	0.44	8.93	
8/14/07 10:12:30	62.7	5.83	7.20	
8/14/07 10:12:45	76.0	6.54	5.99	
8/14/07 10:13:00	80.2	1.78	4.72	
8/14/07 10:13:15	88.8	0.55	1.88	
8/14/07 10:13:30	90.8	0.35	0.60	
8/14/07 10:13:45	91.3	0.31	0.34	
8/14/07 10:14:00	82.5	0.26	0.26	
8/14/07 10:14:15	88.1	0.23	0.22	
8/14/07 10:14:30	90.9	0.22	0.19	
8/14/07 10:14:45	87.9	0.21	0.17	
8/14/07 10:15:00	85.5	0.21	0.16	
8/14/07 10:15:15	85.6	0.21	0.15	
8/14/07 10:15:30	85.1	0.21	0.14	
8/14/07 10:15:45	85.0	0.20	0.13	
8/14/07 10:16:00	85.2	0.20	0.12	
8/14/07 10:16:15	85.2	0.20	0.12	
8/14/07 10:16:30	85.2	0.20	0.11	**Calibration**
8/14/07 10:16:45	**85.2**	0.20	0.11	**85.2 85.0 ppm Propane/N_2**
8/14/07 10:17:00	**85.1**	0.20	0.10	
8/14/07 10:17:15	**85.2**	0.20	0.10	
8/14/07 10:17:30	**85.2**	0.20	0.10	
8/14/07 10:17:45	76.8	0.20	0.10	
8/14/07 10:18:00	49.6	0.20	0.09	
8/14/07 10:18:15	50.5	0.20	0.09	
8/14/07 10:18:30	50.4	0.20	0.09	
8/14/07 10:18:45	51.1	0.20	0.09	
8/14/07 10:19:00	51.4	0.20	0.08	
8/14/07 10:19:15	51.4	0.20	0.08	
8/14/07 10:19:30	51.4	0.20	0.08	
8/14/07 10:19:45	51.4	0.20	0.08	**Calibration**
8/14/07 10:20:00	**51.4**	0.20	0.08	**51.3 50.0 ppm Propane/N_2**
8/14/07 10:20:15	**51.3**	0.20	0.08	
8/14/07 10:20:30	**51.3**	0.20	0.07	
8/14/07 10:20:45	**51.3**	0.20	0.07	
8/14/07 10:21:00	32.8	0.20	0.07	
8/14/07 10:21:15	9.9	0.20	0.07	
8/14/07 10:21:30	20.7	0.20	0.07	
8/14/07 10:21:45	24.4	0.21	0.10	
8/14/07 10:22:00	25.5	0.23	0.18	
8/14/07 10:22:15	25.8	0.22	0.18	
8/14/07 10:22:30	25.9	0.21	0.12	**Calibration**
8/14/07 10:22:45	**25.9**	0.21	0.08	**25.8 25.0 ppm Propane/N_2**
8/14/07 10:23:00	**25.8**	0.20	0.07	
8/14/07 10:23:15	**25.8**	0.21	0.06	
8/14/07 10:23:30	**25.7**	0.21	0.06	
8/14/07 10:23:45	25.3	0.21	0.06	
8/14/07 10:24:00	5.2	0.22	0.06	
8/14/07 10:24:15	1.8	0.23	0.06	
8/14/07 10:24:30	1.4	1.13	0.06	
8/14/07 10:24:45	1.3	9.41	0.14	
8/14/07 10:25:00	1.3	17.53	0.19	
8/14/07 10:25:15	1.2	20.04	0.18	
8/14/07 10:25:30	1.2	20.42	0.16	
8/14/07 10:25:45	1.1	20.44	0.21	
8/14/07 10:26:00	1.1	20.48	0.22	
8/14/07 10:26:15	1.1	20.53	0.20	
8/14/07 10:26:30	1.2	20.56	0.19	
8/14/07 10:26:45	1.1	20.59	0.17	
8/14/07 10:27:00	1.0	20.61	0.16	
8/14/07 10:27:15	1.1	20.59	0.18	
8/14/07 10:27:30	1.0	20.53	0.24	
8/14/07 10:27:45	1.0	20.46	0.29	
8/14/07 10:28:00	1.0	20.49	0.28	
8/14/07 10:28:15	1.0	20.59	0.21	
8/14/07 10:28:30	1.0	20.66	0.14	
8/14/07 10:28:45	1.1	20.66	0.14	
8/14/07 10:29:00	1.0	20.62	0.17	
8/14/07 10:29:15	1.0	20.58	0.20	
8/14/07 10:29:30	1.0	20.51	0.26	
8/14/07 10:29:45	1.0	20.55	0.25	
8/14/07 10:30:00	0.9	20.64	0.17	
8/14/07 10:30:15	1.0	20.66	0.15	
8/14/07 10:30:30	0.9	20.68	0.14	
8/14/07 10:30:45	1.0	20.67	0.15	
8/14/07 10:31:00	1.0	20.66	0.17	
8/14/07 10:31:15	0.8	20.66	0.16	
8/14/07 10:31:30	1.0	20.62	0.19	
8/14/07 10:31:45	1.0	20.59	0.22	

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db	Comments
8/14/07 10:32:00	0.9	20.61	0.21	
8/14/07 10:32:15	0.9	20.55	0.24	
8/14/07 10:32:30	1.0	20.52	0.27	
8/14/07 10:32:45	1.0	20.55	0.24	
8/14/07 10:33:00	0.9	20.65	0.18	
8/14/07 10:33:15	0.9	20.71	0.13	
8/14/07 10:33:30	0.9	20.73	0.11	
8/14/07 10:33:45	1.0	20.72	0.12	
8/14/07 10:34:00	1.1	20.68	0.14	
8/14/07 10:34:15	0.9	20.70	0.13	
8/14/07 10:34:30	0.9	20.71	0.12	
8/14/07 10:34:45	1.0	20.71	0.12	
8/14/07 10:35:00	0.9	20.71	0.12	
8/14/07 10:35:15	0.9	20.71	0.12	
8/14/07 10:35:30	1.0	20.72	0.11	
8/14/07 10:35:45	1.3	20.72	0.12	
8/14/07 10:36:00	1.0	20.73	0.12	
8/14/07 10:36:15	1.0	20.73	0.11	
8/14/07 10:36:30	0.9	20.73	0.11	
8/14/07 10:36:45	0.9	20.74	0.11	
8/14/07 10:37:00	0.9	20.74	0.10	
8/14/07 10:37:15	0.9	20.74	0.11	
8/14/07 10:37:30	1.0	20.74	0.10	
8/14/07 10:37:45	1.1	20.72	0.11	
8/14/07 10:38:00	0.9	20.73	0.11	
8/14/07 10:38:15	1.0	20.73	0.11	
8/14/07 10:38:30	0.9	20.73	0.11	
8/14/07 10:38:45	1.1	20.72	0.11	
8/14/07 10:39:00	1.1	20.73	0.11	
8/14/07 10:39:15	1.0	20.74	0.10	
8/14/07 10:39:30	1.0	20.75	0.09	
8/14/07 10:39:45	0.9	20.75	0.09	
8/14/07 10:40:00	0.9	20.74	0.09	
8/14/07 10:40:15	0.9	20.74	0.09	
8/14/07 10:40:30	1.0	20.74	0.09	
8/14/07 10:40:45	1.0	20.74	0.09	
8/14/07 10:41:00	1.0	20.74	0.09	
8/14/07 10:41:15	1.2	20.74	0.09	
8/14/07 10:41:30	1.0	20.74	0.09	
8/14/07 10:41:45	1.0	20.74	0.10	
8/14/07 10:42:00	1.0	20.74	0.09	
8/14/07 10:42:15	0.9	20.74	0.09	
8/14/07 10:42:30	1.0	20.74	0.09	
8/14/07 10:42:45	1.0	20.74	0.09	
8/14/07 10:43:00	0.9	20.74	0.09	
8/14/07 10:43:15	0.9	20.74	0.09	
8/14/07 10:43:30	0.9	20.74	0.10	
8/14/07 10:43:45	0.9	20.74	0.10	
8/14/07 10:44:00	0.9	20.74	0.10	
8/14/07 10:44:15	0.9	20.74	0.09	
8/14/07 10:44:30	1.0	20.75	0.10	
8/14/07 10:44:45	0.9	20.75	0.10	
8/14/07 10:45:00	0.9	20.74	0.10	
8/14/07 10:45:15	0.9	20.75	0.10	
8/14/07 10:45:30	0.9	20.75	0.10	
8/14/07 10:45:45	0.9	20.74	0.10	
8/14/07 10:46:00	0.9	20.74	0.10	
8/14/07 10:46:15	0.8	20.75	0.10	
8/14/07 10:46:30	0.9	20.75	0.10	
8/14/07 10:46:45	0.8	20.74	0.10	
8/14/07 10:47:00	0.7	20.75	0.10	
8/14/07 10:47:15	0.7	20.75	0.10	
8/14/07 10:47:30	0.7	20.75	0.10	
8/14/07 10:47:45	0.7	20.75	0.10	
8/14/07 10:48:00	0.7	20.75	0.10	
8/14/07 10:48:15	0.7	20.75	0.10	
8/14/07 10:48:30	0.8	20.75	0.10	
8/14/07 10:48:45	0.8	20.75	0.10	
8/14/07 10:49:00	0.8	20.75	0.10	
8/14/07 10:49:15	0.8	20.75	0.10	
8/14/07 10:49:30	0.8	20.75	0.10	
8/14/07 10:49:45	0.9	20.75	0.10	
8/14/07 10:50:00	0.9	20.75	0.10	
8/14/07 10:50:15	0.9	20.75	0.10	
8/14/07 10:50:30	1.1	20.76	0.10	
8/14/07 10:50:45	1.5	20.75	0.10	
8/14/07 10:51:00	4.2	20.75	0.10	
8/14/07 10:51:15	4.4	20.75	0.10	
8/14/07 10:51:30	4.4	18.74	1.35	
8/14/07 10:51:45	4.5	11.58	6.27	
8/14/07 10:52:00	4.5	7.07	9.49	
8/14/07 10:52:15	4.8	6.01	10.50	
8/14/07 10:52:30	5.6	5.79	10.77	

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db	Comments
8/14/07 10:52:45	6.7	5.57	11.04	
8/14/07 10:53:00	7.8	5.52	11.10	
8/14/07 10:53:15	8.5	5.62	11.00	
8/14/07 10:53:30	8.9	5.69	10.91	
8/14/07 10:53:45	8.8	5.68	10.92	
8/14/07 10:54:00	8.6	5.63	10.97	
8/14/07 10:54:15	8.4	5.58	11.03	
8/14/07 10:54:30	8.1	5.48	11.13	
8/14/07 10:54:45	7.6	5.38	11.23	
8/14/07 10:55:00	7.1	5.31	11.30	
8/14/07 10:55:15	6.7	5.29	11.32	
8/14/07 10:55:30	6.6	5.31	11.28	
8/14/07 10:55:45	7.4	5.35	11.31	
8/14/07 10:56:00	8.0	5.44	11.44	
8/14/07 10:56:15	7.7	5.50	11.35	
8/14/07 10:56:30	6.0	5.47	11.22	
8/14/07 10:56:45	5.8	5.41	11.20	
8/14/07 10:57:00	5.0	5.39	11.21	
8/14/07 10:57:15	4.8	5.43	11.18	
8/14/07 10:57:30	4.8	5.53	11.06	
8/14/07 10:57:45	5.1	5.71	10.88	
8/14/07 10:58:00	6.1	5.64	10.97	
8/14/07 10:58:15	7.2	5.52	11.10	
8/14/07 10:58:30	8.3	5.53	11.09	
8/14/07 10:58:45	9.1	5.62	11.00	
8/14/07 10:59:00	9.2	5.60	11.01	
8/14/07 10:59:15	9.0	5.51	11.09	
8/14/07 10:59:30	8.7	5.43	11.18	
8/14/07 10:59:45	8.3	5.38	11.22	
8/14/07 11:00:00	8.1	5.37	11.24	
8/14/07 11:00:15	7.6	5.36	11.24	
8/14/07 11:00:30	7.2	5.34	11.26	
8/14/07 11:00:45	7.1	5.31	11.29	
8/14/07 11:01:00	7.0	5.26	11.35	
8/14/07 11:01:15	6.8	5.24	11.39	
8/14/07 11:01:30	6.3	5.24	11.35	
8/14/07 11:01:45	5.8	5.27	11.33	
8/14/07 11:02:00	5.5	5.29	11.29	
8/14/07 11:02:15	5.2	5.31	11.27	
8/14/07 11:02:30	5.0	5.34	11.26	
8/14/07 11:02:45	4.9	5.36	11.24	
8/14/07 11:03:00	5.1	5.52	11.08	
8/14/07 11:03:15	5.9	5.55	11.06	
8/14/07 11:03:30	7.0	5.42	11.22	
8/14/07 11:03:45	8.1	5.41	11.24	
8/14/07 11:04:00	8.8	5.50	11.14	
8/14/07 11:04:15	9.1	5.55	11.07	
8/14/07 11:04:30	9.0	5.49	11.13	
8/14/07 11:04:45	8.7	5.40	11.23	
8/14/07 11:05:00	8.6	5.35	11.28	
8/14/07 11:05:15	8.2	5.35	11.27	
8/14/07 11:05:30	7.9	5.36	11.25	
8/14/07 11:05:45	7.4	5.34	11.23	
8/14/07 11:06:00	7.1	5.30	11.26	
8/14/07 11:06:15	7.0	5.25	11.35	
8/14/07 11:06:30	6.7	5.22	11.39	
8/14/07 11:06:45	6.3	5.25	11.36	
8/14/07 11:07:00	5.8	5.30	11.31	
8/14/07 11:07:15	5.5	5.33	11.27	
8/14/07 11:07:30	5.3	5.33	11.28	
8/14/07 11:07:45	5.0	5.35	11.26	
8/14/07 11:08:00	4.9	5.41	11.22	
8/14/07 11:08:15	4.9	5.47	11.16	
8/14/07 11:08:30	5.1	5.65	10.96	
8/14/07 11:08:45	5.8	5.68	10.93	
8/14/07 11:09:00	7.0	5.54	11.10	
8/14/07 11:09:15	8.1	5.52	11.13	
8/14/07 11:09:30	9.0	5.61	11.05	
8/14/07 11:09:45	9.4	5.66	10.98	**Begin Run No. 1**
8/14/07 11:10:00	**9.6**	**5.58**	**11.21**	
8/14/07 11:10:15	**9.0**	**5.41**	**11.23**	
8/14/07 11:10:30	**8.5**	**5.32**	**11.32**	
8/14/07 11:10:45	**8.3**	**5.29**	**11.35**	
8/14/07 11:11:00	**8.1**	**5.33**	**11.30**	
8/14/07 11:11:15	**7.6**	**5.38**	**11.24**	
8/14/07 11:11:30	**7.2**	**5.37**	**11.24**	
8/14/07 11:11:45	**7.1**	**5.29**	**11.32**	
8/14/07 11:12:00	**7.0**	**5.21**	**11.40**	
8/14/07 11:12:15	**6.6**	**5.20**	**11.41**	
8/14/07 11:12:30	**6.2**	**5.22**	**11.38**	
8/14/07 11:12:45	**5.8**	**5.24**	**11.36**	
8/14/07 11:13:00	**5.4**	**5.26**	**11.34**	
8/14/07 11:13:15	**5.1**	**5.32**	**11.28**	

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db	Comments
8/14/07 11:13:30	5.0	5.41	11.20	
8/14/07 11:13:45	5.0	5.53	11.07	
8/14/07 11:14:00	5.4	5.71	10.89	
8/14/07 11:14:15	6.4	5.60	11.01	
8/14/07 11:14:30	7.6	5.46	11.18	
8/14/07 11:14:45	8.5	5.46	11.18	
8/14/07 11:15:00	9.1	5.52	11.11	
8/14/07 11:15:15	9.4	5.52	11.09	
8/14/07 11:15:30	9.4	5.48	11.13	
8/14/07 11:15:45	9.1	5.44	11.17	
8/14/07 11:16:00	8.9	5.42	11.19	
8/14/07 11:16:15	8.6	5.38	11.22	
8/14/07 11:16:30	8.2	5.34	11.25	
8/14/07 11:16:45	7.8	5.30	11.30	
8/14/07 11:17:00	7.6	5.22	11.38	
8/14/07 11:17:15	7.3	5.11	11.49	
8/14/07 11:17:30	6.9	5.06	11.52	
8/14/07 11:17:45	6.5	5.12	11.46	
8/14/07 11:18:00	6.0	5.21	11.36	
8/14/07 11:18:15	5.7	5.28	11.28	
8/14/07 11:18:30	5.4	5.29	11.27	
8/14/07 11:18:45	5.2	5.29	11.28	
8/14/07 11:19:00	5.1	5.30	11.28	
8/14/07 11:19:15	5.3	5.42	11.16	
8/14/07 11:19:30	6.0	5.48	11.09	
8/14/07 11:19:45	7.2	5.36	11.23	
8/14/07 11:20:00	8.4	5.33	11.26	
8/14/07 11:20:15	9.5	5.41	11.18	
8/14/07 11:20:30	10.0	5.49	11.09	
8/14/07 11:20:45	10.2	5.48	11.09	
8/14/07 11:21:00	10.1	5.42	11.16	
8/14/07 11:21:15	9.9	5.34	11.24	
8/14/07 11:21:30	9.5	5.25	11.34	
8/14/07 11:21:45	8.8	5.16	11.42	
8/14/07 11:22:00	8.1	5.13	11.45	
8/14/07 11:22:15	7.3	5.13	11.43	
8/14/07 11:22:30	6.8	5.13	11.43	
8/14/07 11:22:45	6.4	5.09	11.47	
8/14/07 11:23:00	6.2	5.10	11.45	
8/14/07 11:23:15	6.0	5.16	11.39	
8/14/07 11:23:30	5.9	5.21	11.35	
8/14/07 11:23:45	5.9	5.23	11.34	
8/14/07 11:24:00	5.9	5.22	11.36	
8/14/07 11:24:15	6.0	5.24	11.35	
8/14/07 11:24:30	6.1	5.31	11.28	
8/14/07 11:24:45	6.6	5.54	11.05	
8/14/07 11:25:00	7.6	5.61	10.97	
8/14/07 11:25:15	9.2	5.51	11.09	
8/14/07 11:25:30	10.7	5.47	11.14	
8/14/07 11:25:45	11.7	5.51	11.10	
8/14/07 11:26:00	12.0	5.50	11.11	
8/14/07 11:26:15	11.8	5.41	11.20	
8/14/07 11:26:30	11.3	5.32	11.29	
8/14/07 11:26:45	10.9	5.26	11.34	
8/14/07 11:27:00	10.4	5.24	11.35	
8/14/07 11:27:15	9.7	5.23	11.35	
8/14/07 11:27:30	9.0	5.22	11.36	
8/14/07 11:27:45	8.4	5.18	11.38	
8/14/07 11:28:00	8.0	5.12	11.44	
8/14/07 11:28:15	7.6	5.08	11.48	
8/14/07 11:28:30	7.1	5.10	11.46	
8/14/07 11:28:45	6.7	5.13	11.44	
8/14/07 11:29:00	6.4	5.14	11.42	
8/14/07 11:29:15	6.1	5.17	11.40	
8/14/07 11:29:30	5.9	5.21	11.36	
8/14/07 11:29:45	5.7	5.26	11.31	
8/14/07 11:30:00	5.7	5.41	11.15	
8/14/07 11:30:15	6.3	5.54	11.02	
8/14/07 11:30:30	7.5	5.45	11.13	
8/14/07 11:30:45	8.8	5.40	11.20	
8/14/07 11:31:00	10.0	5.44	11.15	
8/14/07 11:31:15	10.6	5.46	11.12	
8/14/07 11:31:30	10.7	5.38	11.19	
8/14/07 11:31:45	10.2	5.27	11.30	
8/14/07 11:32:00	9.8	5.20	11.37	
8/14/07 11:32:15	9.4	5.18	11.38	
8/14/07 11:32:30	8.7	5.18	11.37	
8/14/07 11:32:45	7.9	5.16	11.38	
8/14/07 11:33:00	7.2	5.15	11.39	
8/14/07 11:33:15	6.7	5.12	11.42	
8/14/07 11:33:30	6.4	5.06	11.48	
8/14/07 11:33:45	6.1	5.06	11.48	
8/14/07 11:34:00	5.8	5.12	11.43	

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db	Comments
8/14/07 11:34:15	5.6	5.16	11.39	
8/14/07 11:34:30	5.4	5.20	11.36	
8/14/07 11:34:45	5.2	5.27	11.29	
8/14/07 11:35:00	5.1	5.33	11.23	
8/14/07 11:35:15	5.0	5.39	11.17	
8/14/07 11:35:30	5.2	5.56	11.00	
8/14/07 11:35:45	6.1	5.59	10.97	
8/14/07 11:36:00	7.7	5.46	11.12	
8/14/07 11:36:15	9.2	5.45	11.14	
8/14/07 11:36:30	10.0	5.52	11.07	
8/14/07 11:36:45	10.2	5.51	11.08	
8/14/07 11:37:00	9.8	5.40	11.18	
8/14/07 11:37:15	9.3	5.30	11.28	
8/14/07 11:37:30	9.1	5.26	11.32	
8/14/07 11:37:45	9.0	5.26	11.32	
8/14/07 11:38:00	8.7	5.26	11.31	
8/14/07 11:38:15	8.0	5.25	11.31	
8/14/07 11:38:30	7.2	5.23	11.33	
8/14/07 11:38:45	6.7	5.18	11.38	
8/14/07 11:39:00	6.3	5.12	11.45	
8/14/07 11:39:15	6.0	5.10	11.46	
8/14/07 11:39:30	5.8	5.14	11.43	
8/14/07 11:39:45	5.6	5.20	11.38	
8/14/07 11:40:00	5.4	5.25	11.33	Change Ports for USEPA Method 26A Train
8/14/07 11:40:15	5.2	5.32	11.27	
8/14/07 11:40:30	5.1	5.38	11.21	
8/14/07 11:40:45	5.2	5.49	11.14	
8/14/07 11:41:00	5.7	5.66	10.95	
8/14/07 11:41:15	7.0	5.59	11.01	
8/14/07 11:41:30	8.3	5.49	11.13	
8/14/07 11:41:45	10.2	5.52	11.15	
8/14/07 11:42:00	11.0	5.59	11.06	
8/14/07 11:42:15	11.6	5.55	11.12	
8/14/07 11:42:30	11.2	5.44	11.22	
8/14/07 11:42:45	10.8	5.35	11.26	Resume Sampling
8/14/07 11:43:00	10.4	5.30	11.30	
8/14/07 11:43:15	10.2	5.29	11.30	
8/14/07 11:43:30	9.8	5.29	11.30	
8/14/07 11:43:45	9.4	5.26	11.32	
8/14/07 11:44:00	9.2	5.23	11.35	
8/14/07 11:44:15	8.8	5.18	11.40	
8/14/07 11:44:30	8.4	5.16	11.41	
8/14/07 11:44:45	8.0	5.21	11.37	
8/14/07 11:45:00	7.7	5.25	11.32	
8/14/07 11:45:15	7.5	5.25	11.32	
8/14/07 11:45:30	7.2	5.27	11.31	
8/14/07 11:45:45	6.9	5.33	11.25	
8/14/07 11:46:00	6.7	5.44	11.15	
8/14/07 11:46:15	6.8	5.65	10.93	
8/14/07 11:46:30	7.4	5.71	10.86	
8/14/07 11:46:45	8.6	5.55	11.06	
8/14/07 11:47:00	9.9	5.47	11.15	
8/14/07 11:47:15	10.7	5.51	11.12	
8/14/07 11:47:30	11.1	5.53	11.08	
8/14/07 11:47:45	10.9	5.46	11.15	
8/14/07 11:48:00	10.4	5.38	11.22	
8/14/07 11:48:15	10.0	5.33	11.27	
8/14/07 11:48:30	9.6	5.32	11.28	
8/14/07 11:48:45	9.2	5.32	11.26	
8/14/07 11:49:00	8.7	5.27	11.30	
8/14/07 11:49:15	8.1	5.15	11.41	
8/14/07 11:49:30	7.5	5.03	11.53	
8/14/07 11:49:45	6.9	4.94	11.61	
8/14/07 11:50:00	6.5	4.98	11.57	
8/14/07 11:50:15	6.1	5.08	11.45	
8/14/07 11:50:30	5.9	5.19	11.34	
8/14/07 11:50:45	5.7	5.27	11.26	
8/14/07 11:51:00	5.5	5.32	11.21	
8/14/07 11:51:15	5.4	5.36	11.17	
8/14/07 11:51:30	5.4	5.42	11.11	
8/14/07 11:51:45	5.6	5.55	10.99	
8/14/07 11:52:00	6.5	5.45	11.10	
8/14/07 11:52:15	7.7	5.32	11.26	
8/14/07 11:52:30	9.0	5.33	11.25	
8/14/07 11:52:45	9.9	5.43	11.14	
8/14/07 11:53:00	10.4	5.45	11.10	
8/14/07 11:53:15	10.5	5.34	11.20	
8/14/07 11:53:30	10.2	5.19	11.34	
8/14/07 11:53:45	9.8	5.09	11.43	
8/14/07 11:54:00	9.5	5.03	11.49	
8/14/07 11:54:15	8.9	4.98	11.52	
8/14/07 11:54:30	8.1	4.95	11.54	
8/14/07 11:54:45	7.4	4.91	11.56	

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db	Comments
8/14/07 11:55:00	6.9	4.89	11.58	
8/14/07 11:55:15	6.5	4.89	11.57	
8/14/07 11:55:30	6.2	4.96	11.50	
8/14/07 11:55:45	5.9	5.06	11.39	
8/14/07 11:56:00	5.7	5.10	11.35	
8/14/07 11:56:15	5.6	5.10	11.37	
8/14/07 11:56:30	5.4	5.10	11.39	
8/14/07 11:56:45	5.4	5.11	11.38	
8/14/07 11:57:00	5.5	5.22	11.27	
8/14/07 11:57:15	6.1	5.35	11.12	
8/14/07 11:57:30	7.2	5.27	11.23	
8/14/07 11:57:45	8.6	5.20	11.32	
8/14/07 11:58:00	10.0	5.25	11.27	
8/14/07 11:58:15	11.0	5.31	11.19	
8/14/07 11:58:30	11.3	5.29	11.21	
8/14/07 11:58:45	11.2	5.18	11.33	
8/14/07 11:59:00	10.9	5.05	11.46	
8/14/07 11:59:15	10.7	4.96	11.55	
8/14/07 11:59:30	10.5	4.93	11.57	
8/14/07 11:59:45	10.2	4.96	11.52	
8/14/07 12:00:00	9.9	4.99	11.48	
8/14/07 12:00:15	9.5	4.99	11.47	
8/14/07 12:00:30	9.1	4.94	11.52	
8/14/07 12:00:45	8.6	4.90	11.55	
8/14/07 12:01:00	8.3	4.93	11.52	
8/14/07 12:01:15	8.0	4.98	11.46	
8/14/07 12:01:30	7.7	5.02	11.42	
8/14/07 12:01:45	7.4	5.04	11.40	
8/14/07 12:02:00	7.2	5.08	11.37	
8/14/07 12:02:15	7.0	5.12	11.33	
8/14/07 12:02:30	7.0	5.28	11.17	
8/14/07 12:02:45	7.5	5.38	11.06	
8/14/07 12:03:00	8.7	5.26	11.20	
8/14/07 12:03:15	9.9	5.20	11.29	
8/14/07 12:03:30	10.9	5.23	11.26	
8/14/07 12:03:45	11.3	5.24	11.23	
8/14/07 12:04:00	11.3	5.17	11.29	
8/14/07 12:04:15	11.0	5.06	11.40	
8/14/07 12:04:30	10.7	4.99	11.50	
8/14/07 12:04:45	10.4	4.97	11.49	
8/14/07 12:05:00	9.7	4.98	11.50	
8/14/07 12:05:15	8.9	4.98	11.45	
8/14/07 12:05:30	8.2	4.97	11.46	
8/14/07 12:05:45	7.8	4.93	11.49	
8/14/07 12:06:00	7.5	4.87	11.55	
8/14/07 12:06:15	7.2	4.86	11.57	
8/14/07 12:06:30	6.7	4.90	11.52	
8/14/07 12:06:45	6.4	4.95	11.46	
8/14/07 12:07:00	6.1	4.96	11.44	
8/14/07 12:07:15	5.9	4.96	11.46	
8/14/07 12:07:30	5.7	4.96	11.47	
8/14/07 12:07:45	5.7	5.00	11.44	
8/14/07 12:08:00	6.2	5.16	11.28	
8/14/07 12:08:15	7.0	5.15	11.27	
8/14/07 12:08:30	8.5	5.04	11.41	
8/14/07 12:08:45	10.2	5.02	11.49	
8/14/07 12:09:00	10.0	5.03	11.38	
8/14/07 12:09:15	10.2	5.02	11.37	
8/14/07 12:09:30	10.1	4.98	11.42	
8/14/07 12:09:45	9.8	4.92	11.47	
8/14/07 12:10:00	9.5	4.87	11.52	
8/14/07 12:10:15	9.1	4.82	11.56	
8/14/07 12:10:30	8.8	4.79	11.58	
8/14/07 12:10:45	8.4	4.75	11.61	
8/14/07 12:11:00	8.0	4.71	11.65	
8/14/07 12:11:15	7.7	4.67	11.69	
8/14/07 12:11:30	7.2	4.63	11.72	
8/14/07 12:11:45	6.8	4.67	11.68	
8/14/07 12:12:00	6.5	4.76	11.59	
8/14/07 12:12:15	6.3	4.83	11.51	
8/14/07 12:12:30	6.2	4.88	11.56	
8/14/07 12:12:45	6.3	4.91	11.54	
8/14/07 12:13:00	6.2	4.91	11.53	End Run No. 1
8/14/07 12:13:15	6.4	4.98	11.39	
8/14/07 12:13:30	7.0	5.07	11.32	
8/14/07 12:13:45	8.2	4.98	11.40	
8/14/07 12:14:00	9.5	4.92	11.48	
8/14/07 12:14:15	10.6	4.95	11.45	
8/14/07 12:14:30	11.3	4.99	11.40	
8/14/07 12:14:45	11.6	4.97	11.41	
8/14/07 12:15:00	11.6	4.93	11.46	
8/14/07 12:15:15	11.5	4.88	11.50	
8/14/07 12:15:30	11.3	4.83	11.55	

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db	Comments
8/14/07 12:15:45	10.9	4.79	11.59	
8/14/07 12:16:00	10.3	4.76	11.61	
8/14/07 12:16:15	9.9	4.74	11.63	
8/14/07 12:16:30	9.7	4.72	11.65	
8/14/07 12:16:45	9.5	4.67	11.69	
8/14/07 12:17:00	9.0	4.67	11.69	
8/14/07 12:17:15	5.7	4.74	11.61	
8/14/07 12:17:30	4.9	4.80	11.54	
8/14/07 12:17:45	4.7	5.37	11.28	
8/14/07 12:18:00	4.5	11.74	7.61	
8/14/07 12:18:15	4.3	18.25	2.85	
8/14/07 12:18:30	4.1	20.25	0.76	
8/14/07 12:18:45	3.9	20.54	0.43	
8/14/07 12:19:00	3.8	20.60	0.34	
8/14/07 12:19:15	3.6	20.63	0.29	
8/14/07 12:19:30	3.4	20.65	0.26	
8/14/07 12:19:45	3.2	20.67	0.24	
8/14/07 12:20:00	3.1	20.68	0.22	
8/14/07 12:20:15	3.0	20.69	0.21	
8/14/07 12:20:30	2.9	20.70	0.20	
8/14/07 12:20:45	2.9	20.71	0.20	
8/14/07 12:21:00	2.7	20.71	0.18	
8/14/07 12:21:15	2.6	20.72	0.17	
8/14/07 12:21:30	2.5	20.72	0.17	
8/14/07 12:21:45	2.5	20.73	0.16	
8/14/07 12:22:00	2.4	20.73	0.16	
8/14/07 12:22:15	14.5	20.73	0.16	
8/14/07 12:22:30	10.7	20.73	0.15	
8/14/07 12:22:45	9.6	20.68	0.15	
8/14/07 12:23:00	9.4	17.58	0.20	
8/14/07 12:23:15	11.3	14.58	0.26	
8/14/07 12:23:30	2.8	15.15	0.27	
8/14/07 12:23:45	22.2	14.64	0.27	
8/14/07 12:24:00	4.1	14.29	0.25	
8/14/07 12:24:15	3.1	14.07	0.17	
8/14/07 12:24:30	2.9	15.50	0.25	
8/14/07 12:24:45	2.7	19.51	0.27	
8/14/07 12:25:00	2.7	21.44	0.17	
8/14/07 12:25:15	2.6	21.79	0.14	
8/14/07 12:25:30	2.6	21.80	0.13	
8/14/07 12:25:45	2.7	21.80	0.12	
8/14/07 12:26:00	2.8	21.85	0.12	
8/14/07 12:26:15	1.5	21.93	0.12	
8/14/07 12:26:30	0.2	21.98	0.12	
8/14/07 12:26:45	0.1	22.17	0.12	
8/14/07 12:27:00	0.3	21.96	0.11	
8/14/07 12:27:15	0.4	13.34	0.11	
8/14/07 12:27:30	0.5	6.39	0.09	
8/14/07 12:27:45	0.6	4.99	0.08	
8/14/07 12:28:00	0.7	4.78	0.08	
8/14/07 12:28:15	0.3	4.73	0.08	
8/14/07 12:28:30	0.1	4.70	0.08	
8/14/07 12:28:45	0.4	4.68	0.08	
8/14/07 12:29:00	0.4	4.66	0.08	
8/14/07 12:29:15	0.5	4.65	0.08	
8/14/07 12:29:30	0.6	4.64	0.08	
8/14/07 12:29:45	0.6	4.63	0.08	
8/14/07 12:30:00	0.7	4.62	0.08	System Bias
8/14/07 12:30:15	**0.7**	**4.62**	**0.07**	**0.7 Zero VOC**
8/14/07 12:30:30	**0.7**	**4.61**	**0.08**	**4.61 4.50% O_2**
8/14/07 12:30:45	**0.7**	**4.61**	**0.07**	**0.07 Zero CO_2**
8/14/07 12:31:00	**0.8**	**4.61**	**0.07**	
8/14/07 12:31:15	0.8	4.60	0.07	
8/14/07 12:31:30	2.6	4.59	0.07	
8/14/07 12:31:45	1.1	6.06	0.07	
8/14/07 12:32:00	1.0	9.98	0.09	
8/14/07 12:32:15	1.0	6.21	1.30	
8/14/07 12:32:30	0.9	2.16	5.21	
8/14/07 12:32:45	0.9	0.64	7.55	
8/14/07 12:33:00	0.9	0.30	8.41	
8/14/07 12:33:15	0.9	0.24	8.73	
8/14/07 12:33:30	0.8	0.22	8.84	
8/14/07 12:33:45	0.8	0.21	8.89	
8/14/07 12:34:00	0.7	0.20	8.91	
8/14/07 12:34:15	0.8	0.19	8.94	
8/14/07 12:34:30	0.6	0.19	8.94	
8/14/07 12:34:45	0.6	0.18	8.95	
8/14/07 12:35:00	0.5	0.18	8.95	
8/14/07 12:35:15	0.5	0.18	8.96	
8/14/07 12:35:30	0.4	0.18	8.97	
8/14/07 12:35:45	0.3	0.17	8.97	System Bias
8/14/07 12:36:00	0.2	**0.17**	**8.97**	
8/14/07 12:36:15	0.1	**0.17**	**8.98**	**0.17 Zero O_2**

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db		Comments
8/14/07 12:36:30	0.0	**0.17**	**8.98**		**8.98 9.00% CO_2**
8/14/07 12:36:45	-0.2	**0.17**	**8.98**		
8/14/07 12:37:00	-0.3	0.16	8.98		
8/14/07 12:37:15	15.7	0.18	8.98		
8/14/07 12:37:30	12.0	2.23	8.46		
8/14/07 12:37:45	34.2	5.86	6.75		
8/14/07 12:38:00	41.8	2.22	5.62		
8/14/07 12:38:15	46.7	0.56	2.61		
8/14/07 12:38:30	50.8	0.29	0.84		
8/14/07 12:38:45	49.8	0.24	0.42		
8/14/07 12:39:00	50.1	0.21	0.29		
8/14/07 12:39:15	50.4	0.21	0.23	**Calibration**	
8/14/07 12:39:30	**50.2**	0.20	0.20		**49.7 50.0 ppm Propane/N_2**
8/14/07 12:39:45	**50.0**	0.20	0.18		
8/14/07 12:40:00	**49.6**	0.19	0.16		
8/14/07 12:40:15	**49.2**	0.19	0.15		
8/14/07 12:40:30	48.9	0.19	0.14		
8/14/07 12:40:45	48.4	0.19	0.13		
8/14/07 12:41:00	32.0	0.19	0.12		
8/14/07 12:41:15	-2.1	0.20	0.12		
8/14/07 12:41:30	-3.1	0.22	0.11		
8/14/07 12:41:45	-3.5	3.56	0.11		
8/14/07 12:42:00	-2.2	13.48	0.12		
8/14/07 12:42:15	0.5	19.16	0.13		
8/14/07 12:42:30	0.3	20.35	0.13		
8/14/07 12:42:45	0.2	20.54	0.13		
8/14/07 12:43:00	0.1	20.58	0.13		
8/14/07 12:43:15	0.0	20.61	0.13		
8/14/07 12:43:30	33.9	20.63	0.12		
8/14/07 12:43:45	35.9	20.65	0.12		
8/14/07 12:44:00	47.7	20.44	0.12		
8/14/07 12:44:15	49.9	14.10	0.14		
8/14/07 12:44:30	51.2	4.18	0.14		
8/14/07 12:44:45	50.3	0.86	0.11		
8/14/07 12:45:00	50.4	0.40	0.10		
8/14/07 12:45:15	50.3	0.32	0.08		
8/14/07 12:45:30	50.3	0.28	0.08		
8/14/07 12:45:45	50.2	0.27	0.07		
8/14/07 12:46:00	50.9	0.25	0.07		
8/14/07 12:46:15	50.3	0.24	0.07		
8/14/07 12:46:30	50.3	0.23	0.07		
8/14/07 12:46:45	50.6	0.22	0.07		
8/14/07 12:47:00	50.9	0.21	0.07		
8/14/07 12:47:15	51.0	0.21	0.06		
8/14/07 12:47:30	47.8	0.21	0.06		
8/14/07 12:47:45	7.4	0.21	0.06		
8/14/07 12:48:00	3.5	0.22	0.06		
8/14/07 12:48:15	3.2	1.51	0.06		
8/14/07 12:48:30	3.1	10.46	0.08		
8/14/07 12:48:45	2.9	18.08	0.09		
8/14/07 12:49:00	2.7	20.19	0.10		
8/14/07 12:49:15	2.6	20.51	0.10		
8/14/07 12:49:30	2.4	20.58	0.10		
8/14/07 12:49:45	2.3	20.61	0.10		
8/14/07 12:50:00	2.1	20.63	0.10		
8/14/07 12:50:15	2.0	20.65	0.10		
8/14/07 12:50:30	8.0	20.66	0.10		
8/14/07 12:50:45	47.7	20.68	0.10		
8/14/07 12:51:00	4.3	20.69	0.10		
8/14/07 12:51:15	1.8	19.21	0.10		
8/14/07 12:51:30	1.6	9.56	0.10		
8/14/07 12:51:45	1.5	2.15	0.08		
8/14/07 12:52:00	1.4	0.57	0.06		
8/14/07 12:52:15	1.6	0.37	0.06		
8/14/07 12:52:30	1.4	0.32	0.06		
8/14/07 12:52:45	1.5	0.30	0.08		
8/14/07 12:53:00	1.4	0.27	0.07		
8/14/07 12:53:15	1.5	0.26	0.07		
8/14/07 12:53:30	1.9	0.24	0.05		
8/14/07 12:53:45	0.7	0.23	0.05		
8/14/07 12:54:00	0.4	0.23	0.05		
8/14/07 12:54:15	0.4	0.22	0.05		
8/14/07 12:54:30	0.4	0.21	0.05		
8/14/07 12:54:45	0.4	0.21	0.05		
8/14/07 12:55:00	0.4	0.21	0.05		
8/14/07 12:55:15	0.4	0.21	0.05		
8/14/07 12:55:30	0.3	0.21	0.05		
8/14/07 12:55:45	0.2	0.31	0.05		
8/14/07 12:56:00	0.2	5.41	0.06		
8/14/07 12:56:15	0.2	15.18	0.08		
8/14/07 12:56:30	0.2	19.62	0.10		
8/14/07 12:56:45	0.1	20.43	0.10		
8/14/07 12:57:00	0.1	20.55	0.10		

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db	Comments
8/14/07 12:57:15	0.1	20.60	0.10	
8/14/07 12:57:30	0.1	20.62	0.10	
8/14/07 12:57:45	0.0	20.54	0.10	
8/14/07 12:58:00	0.0	20.48	0.10	
8/14/07 12:58:15	0.0	20.63	0.10	
8/14/07 12:58:30	0.0	20.68	0.10	
8/14/07 12:58:45	0.0	20.69	0.10	
8/14/07 12:59:00	-0.1	20.70	0.10	
8/14/07 12:59:15	-0.1	20.71	0.10	
8/14/07 12:59:30	-0.1	20.72	0.10	
8/14/07 12:59:45	0.0	20.72	0.10	
8/14/07 13:00:00	0.3	20.73	0.10	
8/14/07 13:00:15	0.3	20.72	0.10	
8/14/07 13:00:30	0.3	20.73	0.10	
8/14/07 13:00:45	0.3	20.73	0.10	
8/14/07 13:01:00	0.3	20.74	0.10	
8/14/07 13:01:15	0.3	20.73	0.10	
8/14/07 13:01:30	0.3	20.74	0.10	
8/14/07 13:01:45	0.3	20.74	0.10	
8/14/07 13:02:00	0.3	20.74	0.10	
8/14/07 13:02:15	0.3	20.75	0.09	
8/14/07 13:02:30	0.3	20.74	0.09	
8/14/07 13:02:45	0.3	20.75	0.09	
8/14/07 13:03:00	0.3	20.75	0.09	
8/14/07 13:03:15	0.3	20.75	0.09	
8/14/07 13:03:30	0.3	20.75	0.09	
8/14/07 13:03:45	0.3	20.75	0.09	
8/14/07 13:04:00	0.3	20.75	0.09	
8/14/07 13:04:15	0.3	20.75	0.09	
8/14/07 13:04:30	0.3	20.75	0.09	
8/14/07 13:04:45	0.3	20.75	0.09	
8/14/07 13:05:00	0.2	20.75	0.09	
8/14/07 13:05:15	0.2	20.76	0.09	
8/14/07 13:05:30	0.2	20.75	0.09	
8/14/07 13:05:45	0.2	20.75	0.09	
8/14/07 13:06:00	0.2	20.75	0.09	
8/14/07 13:06:15	0.2	20.75	0.09	
8/14/07 13:06:30	0.2	20.75	0.09	
8/14/07 13:06:45	0.2	20.75	0.09	
8/14/07 13:07:00	0.2	20.75	0.09	
8/14/07 13:07:15	0.2	20.75	0.09	
8/14/07 13:07:30	0.2	20.76	0.09	
8/14/07 13:07:45	0.2	20.75	0.09	
8/14/07 13:08:00	0.2	20.75	0.09	
8/14/07 13:08:15	0.2	20.75	0.10	
8/14/07 13:08:30	0.2	20.76	0.10	
8/14/07 13:08:45	0.2	20.75	0.10	
8/14/07 13:09:00	0.2	20.75	0.10	
8/14/07 13:09:15	0.2	20.76	0.10	
8/14/07 13:09:30	0.1	20.76	0.10	
8/14/07 13:09:45	0.2	20.75	0.10	
8/14/07 13:10:00	0.1	20.75	0.10	
8/14/07 13:10:15	0.2	20.76	0.10	
8/14/07 13:10:30	0.2	20.75	0.10	
8/14/07 13:10:45	0.3	20.75	0.11	
8/14/07 13:11:00	0.3	20.75	0.10	
8/14/07 13:11:15	0.4	20.75	0.10	
8/14/07 13:11:30	0.5	20.75	0.10	
8/14/07 13:11:45	0.6	20.75	0.10	
8/14/07 13:12:00	0.7	20.75	0.10	
8/14/07 13:12:15	0.8	20.75	0.10	
8/14/07 13:12:30	0.8	20.75	0.10	
8/14/07 13:12:45	0.8	20.75	0.10	
8/14/07 13:13:00	0.9	20.75	0.10	
8/14/07 13:13:15	0.9	20.76	0.10	
8/14/07 13:13:30	0.9	20.76	0.10	
8/14/07 13:13:45	0.9	20.75	0.10	
8/14/07 13:14:00	0.9	20.75	0.10	
8/14/07 13:14:15	1.0	20.75	0.10	
8/14/07 13:14:30	0.9	20.75	0.10	
8/14/07 13:14:45	0.9	20.76	0.10	
8/14/07 13:15:00	0.9	20.75	0.10	
8/14/07 13:15:15	0.9	20.75	0.10	
8/14/07 13:15:30	0.8	20.75	0.10	
8/14/07 13:15:45	0.7	20.75	0.10	
8/14/07 13:16:00	0.7	20.75	0.10	
8/14/07 13:16:15	0.6	20.75	0.10	
8/14/07 13:16:30	0.5	20.75	0.10	
8/14/07 13:16:45	0.4	20.75	0.10	
8/14/07 13:17:00	0.3	20.75	0.10	
8/14/07 13:17:15	0.2	20.75	0.09	
8/14/07 13:17:30	0.1	20.75	0.09	
8/14/07 13:17:45	-0.1	20.75	0.09	

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db	Comments
8/14/07 13:18:00	-0.2	20.75	0.09	
8/14/07 13:18:15	-0.3	20.75	0.09	
8/14/07 13:18:30	-0.5	20.75	0.09	
8/14/07 13:18:45	-0.6	20.75	0.09	
8/14/07 13:19:00	-0.7	20.75	0.09	
8/14/07 13:19:15	-0.8	20.75	0.09	
8/14/07 13:19:30	-0.9	20.75	0.09	
8/14/07 13:19:45	-0.9	20.75	0.09	
8/14/07 13:20:00	-0.8	20.75	0.09	
8/14/07 13:20:15	-0.6	20.75	0.09	
8/14/07 13:20:30	-0.4	20.75	0.09	
8/14/07 13:20:45	-0.2	20.75	0.09	
8/14/07 13:21:00	0.1	20.75	0.09	
8/14/07 13:21:15	0.4	20.75	0.09	
8/14/07 13:21:30	0.6	20.75	0.09	
8/14/07 13:21:45	0.9	20.75	0.09	
8/14/07 13:22:00	1.1	20.75	0.09	
8/14/07 13:22:15	1.2	20.75	0.09	
8/14/07 13:22:30	1.3	20.75	0.09	
8/14/07 13:22:45	1.4	20.74	0.09	
8/14/07 13:23:00	1.5	20.75	0.09	
8/14/07 13:23:15	1.5	20.74	0.09	
8/14/07 13:23:30	1.5	20.75	0.09	
8/14/07 13:23:45	1.5	20.74	0.09	
8/14/07 13:24:00	1.5	20.75	0.09	
8/14/07 13:24:15	1.5	20.74	0.10	
8/14/07 13:24:30	1.4	20.74	0.10	
8/14/07 13:24:45	1.3	20.74	0.10	
8/14/07 13:25:00	1.3	20.74	0.10	
8/14/07 13:25:15	1.2	20.74	0.10	
8/14/07 13:25:30	1.1	20.74	0.10	
8/14/07 13:25:45	1.1	20.74	0.10	
8/14/07 13:26:00	1.0	20.74	0.10	
8/14/07 13:26:15	1.0	20.74	0.10	
8/14/07 13:26:30	0.9	20.74	0.10	
8/14/07 13:26:45	0.9	20.74	0.10	
8/14/07 13:27:00	0.8	20.73	0.10	
8/14/07 13:27:15	0.7	20.74	0.10	
8/14/07 13:27:30	0.7	20.74	0.10	
8/14/07 13:27:45	0.6	20.74	0.10	
8/14/07 13:28:00	0.7	20.74	0.10	
8/14/07 13:28:15	2.8	20.74	0.10	
8/14/07 13:28:30	13.2	20.74	0.10	
8/14/07 13:28:45	8.3	19.53	0.10	
8/14/07 13:29:00	1.0	10.60	0.14	
8/14/07 13:29:15	0.9	3.03	0.17	
8/14/07 13:29:30	0.8	3.03	0.20	
8/14/07 13:29:45	0.8	4.28	0.11	
8/14/07 13:30:00	0.8	4.56	0.07	
8/14/07 13:30:15	0.9	4.58	0.05	
8/14/07 13:30:30	0.9	4.57	0.05	
8/14/07 13:30:45	1.0	4.56	0.05	
8/14/07 13:31:00	1.0	4.58	0.05	System Bias
8/14/07 13:31:15	**1.0**	**4.59**	**0.05**	**1.2 Zero VOC**
8/14/07 13:31:30	**1.1**	**4.60**	**0.05**	**4.59 4.50% O_2**
8/14/07 13:31:45	**1.2**	**4.59**	**0.05**	**0.05 Zero CO_2**
8/14/07 13:32:00	**1.3**	**4.60**	**0.04**	
8/14/07 13:32:15	3.3	4.62	0.04	
8/14/07 13:32:30	1.3	6.65	0.05	
8/14/07 13:32:45	1.4	7.65	0.24	
8/14/07 13:33:00	1.4	3.61	3.45	
8/14/07 13:33:15	1.4	1.16	6.91	
8/14/07 13:33:30	1.4	0.39	8.33	
8/14/07 13:33:45	1.4	0.25	8.70	
8/14/07 13:34:00	1.3	0.23	8.82	
8/14/07 13:34:15	1.3	0.21	8.86	
8/14/07 13:34:30	1.3	0.21	8.88	
8/14/07 13:34:45	1.2	0.19	8.90	
8/14/07 13:35:00	1.2	0.19	8.91	
8/14/07 13:35:15	1.2	0.18	8.92	
8/14/07 13:35:30	1.1	0.18	8.93	System Bias
8/14/07 13:35:45	1.2	**0.18**	**8.94**	
8/14/07 13:36:00	1.3	**0.18**	**8.94**	**0.18 Zero O_2**
8/14/07 13:36:15	1.4	**0.18**	**8.94**	**8.94 9.00% CO_2**
8/14/07 13:36:30	1.5	**0.17**	**8.95**	
8/14/07 13:36:45	21.1	0.18	8.95	
8/14/07 13:37:00	14.2	2.04	8.50	
8/14/07 13:37:15	40.1	4.94	7.05	
8/14/07 13:37:30	47.7	1.77	5.47	
8/14/07 13:37:45	49.0	0.49	2.40	
8/14/07 13:38:00	49.5	0.27	0.78	Calibration
8/14/07 13:38:15	**49.8**	0.22	0.39	**49.9 50.0 ppm Propane/N_2**
8/14/07 13:38:30	**50.0**	0.20	0.26	

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db	Comments
8/14/07 13:38:45	50.2	0.18	0.21	
8/14/07 13:39:00	49.5	0.18	0.18	
8/14/07 13:39:15	48.8	0.18	0.16	
8/14/07 13:39:30	48.9	0.17	0.14	
8/14/07 13:39:45	48.7	0.19	0.13	
8/14/07 13:40:00	40.0	0.21	0.12	
8/14/07 13:40:15	6.0	0.22	0.11	
8/14/07 13:40:30	5.7	0.22	0.11	
8/14/07 13:40:45	6.4	0.94	1.56	
8/14/07 13:41:00	6.8	3.03	6.24	
8/14/07 13:41:15	6.8	4.36	9.34	
8/14/07 13:41:30	6.5	4.82	10.87	
8/14/07 13:41:45	6.2	4.86	11.23	
8/14/07 13:42:00	5.7	4.86	11.31	
8/14/07 13:42:15	5.1	4.86	11.34	
8/14/07 13:42:30	4.6	4.86	11.36	
8/14/07 13:42:45	4.2	4.84	11.39	
8/14/07 13:43:00	3.9	4.78	11.47	
8/14/07 13:43:15	3.7	4.70	11.57	
8/14/07 13:43:30	3.4	4.69	11.59	
8/14/07 13:43:45	3.2	4.77	11.51	
8/14/07 13:44:00	3.1	4.88	11.39	
8/14/07 13:44:15	3.0	4.96	11.33	
8/14/07 13:44:30	2.9	4.99	11.31	
8/14/07 13:44:45	3.1	5.01	11.38	Begin Run No. 2
8/14/07 13:45:00	2.9	5.00	11.31	
8/14/07 13:45:15	3.1	5.10	11.23	
8/14/07 13:45:30	3.8	5.12	11.21	
8/14/07 13:45:45	4.8	5.01	11.35	
8/14/07 13:46:00	5.7	5.01	11.38	
8/14/07 13:46:15	6.6	5.11	11.27	
8/14/07 13:46:30	7.1	5.19	11.18	
8/14/07 13:46:45	7.3	5.17	11.21	
8/14/07 13:47:00	7.2	5.07	11.31	
8/14/07 13:47:15	7.1	4.95	11.43	
8/14/07 13:47:30	6.8	4.85	11.54	
8/14/07 13:47:45	6.6	4.80	11.59	
8/14/07 13:48:00	6.4	4.80	11.57	
8/14/07 13:48:15	6.2	4.85	11.50	
8/14/07 13:48:30	5.9	4.87	11.48	
8/14/07 13:48:45	5.6	4.85	11.49	
8/14/07 13:49:00	5.2	4.86	11.48	
8/14/07 13:49:15	4.9	4.91	11.43	
8/14/07 13:49:30	4.7	4.94	11.40	
8/14/07 13:49:45	4.6	4.94	11.40	
8/14/07 13:50:00	4.4	4.96	11.39	
8/14/07 13:50:15	4.3	4.98	11.38	
8/14/07 13:50:30	4.2	5.05	11.30	
8/14/07 13:50:45	4.4	5.23	11.10	
8/14/07 13:51:00	5.0	5.24	11.11	
8/14/07 13:51:15	6.0	5.14	11.23	
8/14/07 13:51:30	7.0	5.13	11.25	
8/14/07 13:51:45	7.7	5.17	11.21	
8/14/07 13:52:00	8.2	5.16	11.21	
8/14/07 13:52:15	8.4	5.10	11.27	
8/14/07 13:52:30	8.3	5.02	11.35	
8/14/07 13:52:45	8.2	4.95	11.41	
8/14/07 13:53:00	7.8	4.89	11.47	
8/14/07 13:53:15	7.2	4.85	11.50	
8/14/07 13:53:30	6.7	4.86	11.49	
8/14/07 13:53:45	6.3	4.89	11.44	
8/14/07 13:54:00	6.0	4.90	11.43	
8/14/07 13:54:15	5.7	4.88	11.45	
8/14/07 13:54:30	5.5	4.90	11.44	
8/14/07 13:54:45	5.3	4.91	11.43	
8/14/07 13:55:00	5.0	4.92	11.41	
8/14/07 13:55:15	4.8	4.96	11.38	
8/14/07 13:55:30	4.5	5.01	11.34	
8/14/07 13:55:45	4.4	5.07	11.28	
8/14/07 13:56:00	4.4	5.21	11.12	
8/14/07 13:56:15	4.9	5.35	10.99	
8/14/07 13:56:30	5.8	5.24	11.13	
8/14/07 13:56:45	6.7	5.11	11.29	
8/14/07 13:57:00	7.4	5.09	11.31	
8/14/07 13:57:15	7.8	5.10	11.28	
8/14/07 13:57:30	7.7	5.07	11.31	
8/14/07 13:57:45	7.5	5.03	11.34	
8/14/07 13:58:00	7.3	5.01	11.36	
8/14/07 13:58:15	7.0	5.01	11.35	
8/14/07 13:58:30	6.6	5.00	11.35	
8/14/07 13:58:45	6.0	4.96	11.39	
8/14/07 13:59:00	5.5	4.89	11.46	
8/14/07 13:59:15	5.2	4.82	11.52	

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db	Comments
8/14/07 13:59:30	4.9	4.78	11.56	
8/14/07 13:59:45	4.6	4.82	11.52	
8/14/07 14:00:00	4.4	4.89	11.44	
8/14/07 14:00:15	4.2	4.96	11.36	
8/14/07 14:00:30	4.1	5.03	11.30	
8/14/07 14:00:45	3.9	5.08	11.26	
8/14/07 14:01:00	3.8	5.11	11.25	
8/14/07 14:01:15	3.9	5.13	11.22	
8/14/07 14:01:30	4.1	5.24	11.10	
8/14/07 14:01:45	4.8	5.17	11.20	
8/14/07 14:02:00	5.8	5.04	11.35	
8/14/07 14:02:15	6.8	5.05	11.35	
8/14/07 14:02:30	7.4	5.13	11.25	
8/14/07 14:02:45	7.7	5.15	11.23	
8/14/07 14:03:00	7.7	5.07	11.32	
8/14/07 14:03:15	7.7	4.99	11.39	
8/14/07 14:03:30	7.6	4.97	11.42	
8/14/07 14:03:45	7.4	4.96	11.42	
8/14/07 14:04:00	7.1	4.94	11.43	
8/14/07 14:04:15	6.8	4.88	11.48	
8/14/07 14:04:30	6.5	4.83	11.54	
8/14/07 14:04:45	6.2	4.79	11.57	
8/14/07 14:05:00	6.0	4.79	11.57	
8/14/07 14:05:15	5.8	4.85	11.50	
8/14/07 14:05:30	5.7	4.92	11.43	
8/14/07 14:05:45	5.6	4.96	11.39	
8/14/07 14:06:00	5.6	4.99	11.36	
8/14/07 14:06:15	5.4	5.04	11.31	
8/14/07 14:06:30	5.4	5.09	11.27	
8/14/07 14:06:45	5.5	5.16	11.20	
8/14/07 14:07:00	5.8	5.23	11.13	
8/14/07 14:07:15	6.6	5.10	11.28	
8/14/07 14:07:30	7.5	5.03	11.39	
8/14/07 14:07:45	8.3	5.07	11.35	
8/14/07 14:08:00	8.7	5.15	11.25	
8/14/07 14:08:15	8.9	5.13	11.26	
8/14/07 14:08:30	8.8	5.06	11.33	
8/14/07 14:08:45	8.6	5.00	11.40	
8/14/07 14:09:00	8.4	4.97	11.43	
8/14/07 14:09:15	8.5	4.93	11.47	
8/14/07 14:09:30	8.2	4.90	11.49	
8/14/07 14:09:45	7.7	4.89	11.49	
8/14/07 14:10:00	7.4	4.87	11.50	
8/14/07 14:10:15	6.9	4.83	11.53	
8/14/07 14:10:30	6.4	4.83	11.53	
8/14/07 14:10:45	6.1	4.87	11.47	
8/14/07 14:11:00	5.8	4.93	11.40	
8/14/07 14:11:15	5.6	4.97	11.36	
8/14/07 14:11:30	5.2	5.01	11.33	
8/14/07 14:11:45	5.0	5.04	11.31	
8/14/07 14:12:00	4.9	5.07	11.29	
8/14/07 14:12:15	4.9	5.18	11.18	
8/14/07 14:12:30	5.2	5.23	11.12	
8/14/07 14:12:45	5.8	5.11	11.28	
8/14/07 14:13:00	6.6	5.05	11.35	
8/14/07 14:13:15	7.2	5.12	11.27	
8/14/07 14:13:30	7.5	5.19	11.19	
8/14/07 14:13:45	7.5	5.15	11.23	
8/14/07 14:14:00	7.2	5.05	11.38	
8/14/07 14:14:15	6.9	4.97	11.43	
8/14/07 14:14:30	6.6	4.94	11.44	
8/14/07 14:14:45	6.3	4.91	11.46	
8/14/07 14:15:00	5.9	4.89	11.47	Change Ports for USEPA Method 26A Train
8/14/07 14:15:15	5.6	4.87	11.48	
8/14/07 14:15:30	5.5	4.87	11.48	
8/14/07 14:15:45	5.3	4.87	11.48	
8/14/07 14:16:00	5.1	4.92	11.44	
8/14/07 14:16:15	4.8	4.99	11.35	
8/14/07 14:16:30	4.3	5.02	11.31	
8/14/07 14:16:45	4.1	4.98	11.36	
8/14/07 14:17:00	3.9	4.93	11.42	
8/14/07 14:17:15	3.0	4.94	11.42	
8/14/07 14:17:30	1.8	5.03	11.33	
8/14/07 14:17:45	1.7	5.25	11.10	
8/14/07 14:18:00	1.6	7.98	9.73	
8/14/07 14:18:15	1.6	15.60	4.92	
8/14/07 14:18:30	2.1	19.62	1.40	
8/14/07 14:18:45	1.9	20.37	0.54	
8/14/07 14:19:00	1.9	20.28	0.53	
8/14/07 14:19:15	4.3	20.40	0.44	
8/14/07 14:19:30	6.0	20.55	0.30	
8/14/07 14:19:45	6.2	20.56	0.26	
8/14/07 14:20:00	6.2	17.28	2.30	

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db	Comments
8/14/07 14:20:15	5.9	9.88	7.32	
8/14/07 14:20:30	5.6	6.05	10.18	
8/14/07 14:20:45	5.5	5.14	11.13	
8/14/07 14:21:00	5.5	4.96	11.35	
8/14/07 14:21:15	5.5	4.91	11.42	
8/14/07 14:21:30	5.4	4.92	11.41	
8/14/07 14:21:45	5.3	4.93	11.39	
8/14/07 14:22:00	5.3	4.94	11.40	
8/14/07 14:22:15	5.2	4.96	11.37	
8/14/07 14:22:30	5.1	5.00	11.33	
8/14/07 14:22:45	5.2	5.06	11.27	
8/14/07 14:23:00	5.5	5.19	11.16	
8/14/07 14:23:15	6.0	5.27	11.06	
8/14/07 14:23:30	6.7	5.14	11.21	
8/14/07 14:23:45	7.4	5.03	11.35	Resume Sampling
8/14/07 14:24:00	7.9	5.02	11.36	
8/14/07 14:24:15	8.3	5.06	11.31	
8/14/07 14:24:30	8.4	5.07	11.29	
8/14/07 14:24:45	8.3	5.04	11.32	
8/14/07 14:25:00	8.2	4.99	11.36	
8/14/07 14:25:15	8.3	4.95	11.53	
8/14/07 14:25:30	7.8	4.94	11.42	
8/14/07 14:25:45	7.6	4.92	11.43	
8/14/07 14:26:00	7.4	4.87	11.47	
8/14/07 14:26:15	7.0	4.80	11.54	
8/14/07 14:26:30	6.8	4.74	11.61	
8/14/07 14:26:45	6.6	4.76	11.59	
8/14/07 14:27:00	6.6	4.87	11.50	
8/14/07 14:27:15	6.1	4.96	11.36	
8/14/07 14:27:30	5.6	5.00	11.31	
8/14/07 14:27:45	5.3	5.01	11.32	
8/14/07 14:28:00	5.1	5.00	11.34	
8/14/07 14:28:15	4.9	5.01	11.34	
8/14/07 14:28:30	5.0	5.13	11.21	
8/14/07 14:28:45	5.3	5.17	11.18	
8/14/07 14:29:00	5.9	5.06	11.31	
8/14/07 14:29:15	6.5	5.03	11.35	
8/14/07 14:29:30	7.0	5.11	11.27	
8/14/07 14:29:45	7.3	5.18	11.19	
8/14/07 14:30:00	7.3	5.15	11.22	
8/14/07 14:30:15	7.1	5.05	11.33	
8/14/07 14:30:30	6.8	4.93	11.46	
8/14/07 14:30:45	6.5	4.86	11.53	
8/14/07 14:31:00	6.1	4.85	11.52	
8/14/07 14:31:15	5.8	4.90	11.46	
8/14/07 14:31:30	5.7	4.94	11.40	
8/14/07 14:31:45	5.5	4.93	11.42	
8/14/07 14:32:00	5.2	4.88	11.47	
8/14/07 14:32:15	4.8	4.85	11.50	
8/14/07 14:32:30	4.5	4.84	11.51	
8/14/07 14:32:45	4.2	4.85	11.50	
8/14/07 14:33:00	4.0	4.87	11.47	
8/14/07 14:33:15	3.7	4.90	11.44	
8/14/07 14:33:30	3.6	4.96	11.38	
8/14/07 14:33:45	3.9	5.10	11.24	
8/14/07 14:34:00	4.0	5.28	11.05	
8/14/07 14:34:15	4.7	5.19	11.17	
8/14/07 14:34:30	5.5	5.04	11.32	
8/14/07 14:34:45	6.1	5.02	11.36	
8/14/07 14:35:00	6.4	5.06	11.33	
8/14/07 14:35:15	6.5	5.06	11.32	
8/14/07 14:35:30	6.4	5.04	11.34	
8/14/07 14:35:45	6.2	5.04	11.34	
8/14/07 14:36:00	6.2	5.03	11.35	
8/14/07 14:36:15	6.2	5.02	11.35	
8/14/07 14:36:30	6.0	4.99	11.38	
8/14/07 14:36:45	5.8	4.93	11.43	
8/14/07 14:37:00	5.7	4.85	11.52	
8/14/07 14:37:15	5.7	4.76	11.60	
8/14/07 14:37:30	5.6	4.74	11.62	
8/14/07 14:37:45	5.4	4.80	11.56	
8/14/07 14:38:00	5.3	4.87	11.47	
8/14/07 14:38:15	5.3	4.92	11.41	
8/14/07 14:38:30	5.2	4.96	11.38	
8/14/07 14:38:45	5.3	4.97	11.37	
8/14/07 14:39:00	5.3	4.99	11.36	
8/14/07 14:39:15	5.4	5.12	11.22	
8/14/07 14:39:30	5.9	5.24	11.10	
8/14/07 14:39:45	6.7	5.15	11.21	
8/14/07 14:40:00	7.5	5.11	11.27	
8/14/07 14:40:15	8.3	5.16	11.22	
8/14/07 14:40:30	8.7	5.22	11.15	
8/14/07 14:40:45	8.9	5.18	11.19	

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db	Comments
8/14/07 14:41:00	8.8	5.07	11.32	
8/14/07 14:41:15	8.6	4.95	11.44	
8/14/07 14:41:30	8.4	4.89	11.50	
8/14/07 14:41:45	8.1	4.85	11.53	
8/14/07 14:42:00	7.8	4.87	11.51	
8/14/07 14:42:15	7.5	4.91	11.45	
8/14/07 14:42:30	7.4	4.92	11.43	
8/14/07 14:42:45	7.2	4.88	11.46	
8/14/07 14:43:00	7.0	4.85	11.50	
8/14/07 14:43:15	6.8	4.84	11.52	
8/14/07 14:43:30	6.5	4.84	11.52	
8/14/07 14:43:45	6.2	4.88	11.47	
8/14/07 14:44:00	5.9	4.93	11.43	
8/14/07 14:44:15	5.7	4.94	11.42	
8/14/07 14:44:30	5.5	5.01	11.36	
8/14/07 14:44:45	5.6	5.16	11.19	
8/14/07 14:45:00	6.2	5.13	11.24	
8/14/07 14:45:15	6.9	5.05	11.35	
8/14/07 14:45:30	7.5	5.05	11.35	
8/14/07 14:45:45	7.9	5.10	11.29	
8/14/07 14:46:00	8.0	5.09	11.30	
8/14/07 14:46:15	7.8	5.03	11.36	
8/14/07 14:46:30	7.6	4.98	11.41	
8/14/07 14:46:45	7.3	4.93	11.46	
8/14/07 14:47:00	6.9	4.90	11.48	
8/14/07 14:47:15	6.5	4.90	11.48	
8/14/07 14:47:30	6.1	4.90	11.47	
8/14/07 14:47:45	5.9	4.88	11.48	
8/14/07 14:48:00	5.7	4.84	11.52	
8/14/07 14:48:15	5.4	4.83	11.53	
8/14/07 14:48:30	5.2	4.84	11.52	
8/14/07 14:48:45	4.9	4.87	11.49	
8/14/07 14:49:00	4.7	4.91	11.46	
8/14/07 14:49:15	4.4	4.94	11.43	
8/14/07 14:49:30	4.3	4.97	11.40	
8/14/07 14:49:45	4.2	4.99	11.38	
8/14/07 14:50:00	4.2	5.12	11.26	
8/14/07 14:50:15	4.7	5.19	11.19	
8/14/07 14:50:30	5.5	5.11	11.29	
8/14/07 14:50:45	6.4	5.08	11.34	
8/14/07 14:51:00	7.0	5.13	11.28	
8/14/07 14:51:15	7.4	5.16	11.24	
8/14/07 14:51:30	7.4	5.11	11.29	
8/14/07 14:51:45	7.2	5.04	11.37	
8/14/07 14:52:00	7.1	4.97	11.42	
8/14/07 14:52:15	6.9	4.93	11.46	
8/14/07 14:52:30	6.6	4.90	11.48	
8/14/07 14:52:45	6.1	4.89	11.48	
8/14/07 14:53:00	5.6	4.90	11.47	
8/14/07 14:53:15	5.2	4.90	11.46	
8/14/07 14:53:30	4.9	4.88	11.48	
8/14/07 14:53:45	4.7	4.89	11.47	
8/14/07 14:54:00	4.5	4.89	11.48	End Run No. 2
8/14/07 14:54:15	4.4	4.84	11.52	
8/14/07 14:54:30	4.3	4.83	11.55	
8/14/07 14:54:45	4.1	4.87	11.51	
8/14/07 14:55:00	4.0	4.97	11.41	
8/14/07 14:55:15	4.0	5.07	11.30	
8/14/07 14:55:30	12.9	5.22	11.15	
8/14/07 14:55:45	47.3	5.22	11.16	
8/14/07 14:56:00	21.3	5.08	11.33	
8/14/07 14:56:15	4.9	4.87	10.58	
8/14/07 14:56:30	2.7	3.71	6.43	
8/14/07 14:56:45	2.4	2.14	2.66	
8/14/07 14:57:00	2.3	3.16	0.78	
8/14/07 14:57:15	2.2	4.23	0.40	
8/14/07 14:57:30	2.1	4.44	0.28	
8/14/07 14:57:45	1.9	4.46	0.23	
8/14/07 14:58:00	1.8	4.46	0.20	
8/14/07 14:58:15	1.7	4.47	0.18	
8/14/07 14:58:30	1.6	4.50	0.17	
8/14/07 14:58:45	1.6	4.52	0.15	System Bias
8/14/07 14:59:00	1.5	4.53	0.14	
8/14/07 14:59:15	1.4	4.54	0.13	4.54 4.50% O_2
8/14/07 14:59:30	1.3	4.55	0.13	0.13 Zero CO_2
8/14/07 14:59:45	1.1	4.55	0.12	
8/14/07 15:00:00	1.3	4.55	0.11	
8/14/07 15:00:15	3.2	4.61	0.11	
8/14/07 15:00:30	1.5	7.46	0.12	
8/14/07 15:00:45	1.4	9.03	0.22	
8/14/07 15:01:00	1.4	4.19	3.01	
8/14/07 15:01:15	1.3	1.33	6.65	
8/14/07 15:01:30	1.3	0.41	8.23	

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db	Comments
8/14/07 15:01:45	1.3	0.25	8.67	
8/14/07 15:02:00	1.2	0.21	8.82	
8/14/07 15:02:15	1.2	0.20	8.86	
8/14/07 15:02:30	1.2	0.19	8.89	
8/14/07 15:02:45	1.2	0.19	8.91	
8/14/07 15:03:00	1.1	0.18	8.92	
8/14/07 15:03:15	1.1	0.17	8.92	
8/14/07 15:03:30	1.1	0.17	8.93	
8/14/07 15:03:45	1.1	0.16	8.94	System Bias
8/14/07 15:04:00	**1.1**	**0.16**	**8.94**	**1.0 Zero VOC**
8/14/07 15:04:15	**1.0**	**0.16**	**8.95**	**0.16 Zero O_2**
8/14/07 15:04:30	**1.0**	**0.16**	**8.95**	**8.95 9.00% CO_2**
8/14/07 15:04:45	**1.0**	**0.16**	**8.95**	
8/14/07 15:05:00	0.9	0.16	8.95	
8/14/07 15:05:15	0.9	0.16	8.95	
8/14/07 15:05:30	16.1	0.16	8.95	
8/14/07 15:05:45	14.2	1.06	8.74	
8/14/07 15:06:00	34.1	4.15	7.51	
8/14/07 15:06:15	45.5	1.91	6.02	
8/14/07 15:06:30	46.9	0.53	2.86	
8/14/07 15:06:45	47.3	0.27	0.94	
8/14/07 15:07:00	47.6	0.22	0.47	
8/14/07 15:07:15	47.9	0.20	0.31	
8/14/07 15:07:30	48.1	0.18	0.25	
8/14/07 15:07:45	48.1	0.18	0.21	
8/14/07 15:08:00	48.2	0.18	0.19	
8/14/07 15:08:15	48.3	0.18	0.17	
8/14/07 15:08:30	48.4	0.18	0.16	
8/14/07 15:08:45	48.4	0.18	0.15	Calibration
8/14/07 15:09:00	**48.3**	0.18	0.14	**48.1 50.0 ppm Propane/N_2**
8/14/07 15:09:15	**48.1**	0.18	0.13	
8/14/07 15:09:30	**48.0**	0.18	0.12	
8/14/07 15:09:45	**48.0**	0.18	0.12	
8/14/07 15:10:00	46.1	0.18	0.11	
8/14/07 15:10:15	5.6	0.18	0.11	
8/14/07 15:10:30	0.5	0.18	0.10	
8/14/07 15:10:45	0.4	1.17	0.10	
8/14/07 15:11:00	0.3	9.59	0.13	
8/14/07 15:11:15	0.4	17.51	0.20	
8/14/07 15:11:30	0.2	19.97	0.20	
8/14/07 15:11:45	0.1	20.39	0.16	
8/14/07 15:12:00	0.1	20.48	0.14	
8/14/07 15:12:15	0.0	20.52	0.13	
8/14/07 15:12:30	0.0	20.55	0.13	
8/14/07 15:12:45	0.0	20.57	0.12	
8/14/07 15:13:00	0.0	20.59	0.12	
8/14/07 15:13:15	0.0	20.60	0.12	
8/14/07 15:13:30	0.1	20.61	0.12	
8/14/07 15:13:45	-0.1	20.61	0.12	
8/14/07 15:14:00	0.4	20.63	0.12	
8/14/07 15:14:15	-0.1	20.63	0.12	
8/14/07 15:14:30	-0.2	20.64	0.12	
8/14/07 15:14:45	-0.2	20.62	0.13	
8/14/07 15:15:00	-0.2	20.62	0.14	
8/14/07 15:15:15	-0.2	20.63	0.13	
8/14/07 15:15:30	-0.2	20.64	0.11	
8/14/07 15:15:45	-0.3	20.65	0.12	
8/14/07 15:16:00	-0.3	20.64	0.12	
8/14/07 15:16:15	-0.3	20.65	0.12	
8/14/07 15:16:30	-0.2	20.66	0.12	
8/14/07 15:16:45	-0.2	20.66	0.12	
8/14/07 15:17:00	-0.1	20.66	0.11	
8/14/07 15:17:15	-0.1	20.66	0.12	
8/14/07 15:17:30	-0.2	20.66	0.12	
8/14/07 15:17:45	-0.2	20.66	0.11	
8/14/07 15:18:00	1.8	20.64	0.13	
8/14/07 15:18:15	4.1	20.61	0.15	
8/14/07 15:18:30	4.4	20.51	0.19	
8/14/07 15:18:45	4.5	16.12	3.02	
8/14/07 15:19:00	4.4	9.11	7.83	
8/14/07 15:19:15	4.3	5.97	10.29	
8/14/07 15:19:30	4.0	5.30	11.02	
8/14/07 15:19:45	3.6	5.16	11.18	
8/14/07 15:20:00	3.6	5.09	11.32	
8/14/07 15:20:15	3.0	5.00	11.39	
8/14/07 15:20:30	2.6	4.92	11.44	
8/14/07 15:20:45	2.4	4.90	11.45	
8/14/07 15:21:00	2.2	4.96	11.39	
8/14/07 15:21:15	2.1	5.04	11.31	
8/14/07 15:21:30	2.1	5.10	11.24	
8/14/07 15:21:45	2.0	5.14	11.21	Begin Run No. 3
8/14/07 15:22:00	**1.9**	**5.13**	**11.23**	
8/14/07 15:22:15	**2.0**	**5.12**	**11.26**	

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db	Comments
8/14/07 15:22:30	2.2	5.24	11.14	
8/14/07 15:22:45	2.7	5.26	11.12	
8/14/07 15:23:00	3.6	5.16	11.23	
8/14/07 15:23:15	4.6	5.16	11.25	
8/14/07 15:23:30	5.4	5.24	11.16	
8/14/07 15:23:45	5.7	5.29	11.10	
8/14/07 15:24:00	5.6	5.24	11.15	
8/14/07 15:24:15	5.3	5.12	11.28	
8/14/07 15:24:30	5.1	5.00	11.40	
8/14/07 15:24:45	4.9	4.94	11.46	
8/14/07 15:25:00	4.7	4.92	11.47	
8/14/07 15:25:15	4.3	4.93	11.44	
8/14/07 15:25:30	3.9	4.95	11.41	
8/14/07 15:25:45	3.5	4.95	11.41	
8/14/07 15:26:00	3.2	4.94	11.42	
8/14/07 15:26:15	3.0	4.96	11.40	
8/14/07 15:26:30	2.8	4.98	11.38	
8/14/07 15:26:45	2.7	4.99	11.38	
8/14/07 15:27:00	2.6	4.99	11.39	
8/14/07 15:27:15	2.4	4.99	11.40	
8/14/07 15:27:30	2.4	5.00	11.40	
8/14/07 15:27:45	2.4	5.09	11.31	
8/14/07 15:28:00	2.7	5.25	11.13	
8/14/07 15:28:15	3.5	5.22	11.18	
8/14/07 15:28:30	4.4	5.14	11.27	
8/14/07 15:28:45	5.1	5.15	11.28	
8/14/07 15:29:00	5.7	5.18	11.24	
8/14/07 15:29:15	5.9	5.17	11.25	
8/14/07 15:29:30	5.8	5.12	11.30	
8/14/07 15:29:45	5.6	5.07	11.35	
8/14/07 15:30:00	5.3	5.03	11.38	
8/14/07 15:30:15	5.0	5.02	11.39	
8/14/07 15:30:30	4.5	5.00	11.39	
8/14/07 15:30:45	4.1	4.99	11.39	
8/14/07 15:31:00	3.9	4.98	11.41	
8/14/07 15:31:15	3.7	4.96	11.43	
8/14/07 15:31:30	3.6	4.96	11.43	
8/14/07 15:31:45	3.3	4.98	11.42	
8/14/07 15:32:00	3.3	4.99	11.46	
8/14/07 15:32:15	3.2	5.00	11.41	
8/14/07 15:32:30	3.0	5.02	11.37	
8/14/07 15:32:45	2.9	5.05	11.37	
8/14/07 15:33:00	2.9	5.09	11.35	
8/14/07 15:33:15	3.0	5.23	11.20	
8/14/07 15:33:30	3.7	5.28	11.19	
8/14/07 15:33:45	4.6	5.15	11.28	
8/14/07 15:34:00	5.5	5.11	11.34	
8/14/07 15:34:15	6.2	5.16	11.29	
8/14/07 15:34:30	6.5	5.19	11.24	
8/14/07 15:34:45	6.4	5.17	11.25	
8/14/07 15:35:00	6.2	5.14	11.28	
8/14/07 15:35:15	6.1	5.12	11.30	
8/14/07 15:35:30	6.0	5.10	11.32	
8/14/07 15:35:45	5.7	5.06	11.36	
8/14/07 15:36:00	5.3	4.99	11.42	
8/14/07 15:36:15	4.9	4.94	11.47	
8/14/07 15:36:30	4.6	4.92	11.49	
8/14/07 15:36:45	4.3	4.90	11.50	
8/14/07 15:37:00	4.1	4.93	11.46	
8/14/07 15:37:15	4.0	4.99	11.40	
8/14/07 15:37:30	3.9	5.03	11.36	
8/14/07 15:37:45	3.8	5.04	11.36	
8/14/07 15:38:00	3.7	5.04	11.36	
8/14/07 15:38:15	3.6	5.05	11.37	
8/14/07 15:38:30	3.7	5.09	11.33	
8/14/07 15:38:45	3.9	5.26	11.16	
8/14/07 15:39:00	4.5	5.27	11.15	
8/14/07 15:39:15	5.5	5.20	11.24	
8/14/07 15:39:30	6.5	5.23	11.22	
8/14/07 15:39:45	7.2	5.30	11.13	
8/14/07 15:40:00	7.3	5.28	11.14	
8/14/07 15:40:15	7.2	5.17	11.26	
8/14/07 15:40:30	6.9	5.08	11.36	
8/14/07 15:40:45	6.7	5.04	11.40	
8/14/07 15:41:00	6.5	5.02	11.41	
8/14/07 15:41:15	6.0	5.02	11.40	
8/14/07 15:41:30	5.5	5.04	11.36	
8/14/07 15:41:45	5.1	5.06	11.34	
8/14/07 15:42:00	4.9	5.04	11.35	
8/14/07 15:42:15	4.6	5.00	11.40	
8/14/07 15:42:30	4.4	4.96	11.44	
8/14/07 15:42:45	4.4	4.93	11.47	
8/14/07 15:43:00	4.1	4.95	11.54	

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db	Comments
8/14/07 15:43:15	6.4	5.01	11.56	
8/14/07 15:43:30	5.9	5.11	11.52	
8/14/07 15:43:45	4.9	5.19	11.33	
8/14/07 15:44:00	4.1	5.30	11.11	
8/14/07 15:44:15	4.5	5.42	11.00	
8/14/07 15:44:30	5.3	5.28	11.16	
8/14/07 15:44:45	6.2	5.12	11.33	
8/14/07 15:45:00	6.8	5.12	11.34	
8/14/07 15:45:15	7.1	5.19	11.25	
8/14/07 15:45:30	7.1	5.20	11.22	
8/14/07 15:45:45	7.1	5.17	11.24	
8/14/07 15:46:00	7.0	5.14	11.27	
8/14/07 15:46:15	6.9	5.13	11.29	
8/14/07 15:46:30	6.7	5.11	11.30	
8/14/07 15:46:45	6.3	5.05	11.35	
8/14/07 15:47:00	5.8	5.00	11.41	
8/14/07 15:47:15	5.4	4.96	11.44	
8/14/07 15:47:30	5.0	4.92	11.47	
8/14/07 15:47:45	4.7	4.94	11.44	
8/14/07 15:48:00	4.5	5.01	11.37	
8/14/07 15:48:15	4.3	5.06	11.32	
8/14/07 15:48:30	4.2	5.06	11.32	
8/14/07 15:48:45	4.0	5.03	11.36	
8/14/07 15:49:00	4.0	5.04	11.36	
8/14/07 15:49:15	4.0	5.08	11.32	
8/14/07 15:49:30	4.1	5.25	11.15	
8/14/07 15:49:45	4.7	5.29	11.10	
8/14/07 15:50:00	5.7	5.22	11.19	
8/14/07 15:50:15	6.7	5.24	11.19	
8/14/07 15:50:30	8.4	5.32	11.21	
8/14/07 15:50:45	7.9	5.31	11.13	
8/14/07 15:51:00	7.4	5.19	11.22	
8/14/07 15:51:15	7.8	5.08	11.39	
8/14/07 15:51:30	7.0	5.04	11.39	
8/14/07 15:51:45	6.8	5.04	11.36	
8/14/07 15:52:00	6.4	5.07	11.31	Change Ports for USEPA Method 26A Train
8/14/07 15:52:15	5.8	5.09	11.28	
8/14/07 15:52:30	5.4	5.05	11.32	
8/14/07 15:52:45	5.1	4.97	11.43	
8/14/07 15:53:00	4.8	4.89	11.48	
8/14/07 15:53:15	4.6	4.89	11.50	
8/14/07 15:53:30	4.3	4.92	11.46	
8/14/07 15:53:45	4.2	4.96	11.42	
8/14/07 15:54:00	4.1	5.01	11.38	
8/14/07 15:54:15	3.9	5.07	11.32	
8/14/07 15:54:30	2.3	5.15	11.25	
8/14/07 15:54:45	1.9	5.25	11.15	
8/14/07 15:55:00	1.7	5.75	10.87	
8/14/07 15:55:15	1.7	11.42	7.71	
8/14/07 15:55:30	1.6	17.96	3.03	
8/14/07 15:55:45	1.6	20.13	0.78	
8/14/07 15:56:00	4.5	20.45	0.42	
8/14/07 15:56:15	6.9	20.52	0.34	
8/14/07 15:56:30	6.9	20.38	0.35	
8/14/07 15:56:45	6.6	15.71	3.32	
8/14/07 15:57:00	6.6	8.80	8.08	
8/14/07 15:57:15	6.3	5.78	10.52	
8/14/07 15:57:30	5.9	5.15	11.20	
8/14/07 15:57:45	5.4	5.07	11.30	
8/14/07 15:58:00	5.1	5.06	11.31	
8/14/07 15:58:15	4.7	5.05	11.32	
8/14/07 15:58:30	4.4	5.04	11.34	
8/14/07 15:58:45	4.2	5.06	11.32	
8/14/07 15:59:00	4.1	5.07	11.30	
8/14/07 15:59:15	4.3	5.03	11.47	
8/14/07 15:59:30	3.8	4.97	11.42	
8/14/07 15:59:45	3.7	4.98	11.42	Resume Sampling
8/14/07 16:00:00	3.6	5.04	11.36	
8/14/07 16:00:15	3.7	5.22	11.18	
8/14/07 16:00:30	4.1	5.38	11.00	
8/14/07 16:00:45	4.9	5.29	11.11	
8/14/07 16:01:00	6.0	5.21	11.20	
8/14/07 16:01:15	6.9	5.26	11.15	
8/14/07 16:01:30	7.4	5.29	11.11	
8/14/07 16:01:45	7.4	5.22	11.18	
8/14/07 16:02:00	7.1	5.12	11.28	
8/14/07 16:02:15	6.9	5.07	11.33	
8/14/07 16:02:30	6.7	5.08	11.33	
8/14/07 16:02:45	6.3	5.09	11.30	
8/14/07 16:03:00	5.7	5.09	11.30	
8/14/07 16:03:15	5.3	5.05	11.33	
8/14/07 16:03:30	5.0	4.96	11.41	
8/14/07 16:03:45	4.7	4.89	11.50	

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db	Comments
8/14/07 16:04:00	4.5	4.88	11.50	
8/14/07 16:04:15	4.3	4.93	11.45	
8/14/07 16:04:30	4.1	5.00	11.39	
8/14/07 16:04:45	4.0	5.04	11.35	
8/14/07 16:05:00	3.8	5.08	11.31	
8/14/07 16:05:15	3.8	5.13	11.27	
8/14/07 16:05:30	3.8	5.20	11.19	
8/14/07 16:05:45	3.9	5.35	11.05	
8/14/07 16:06:00	4.4	5.24	11.17	
8/14/07 16:06:15	5.3	5.11	11.33	
8/14/07 16:06:30	6.1	5.15	11.29	
8/14/07 16:06:45	6.6	5.29	11.13	
8/14/07 16:07:00	7.0	5.36	11.05	
8/14/07 16:07:15	7.0	5.31	11.10	
8/14/07 16:07:30	6.9	5.19	11.22	
8/14/07 16:07:45	6.7	5.07	11.35	
8/14/07 16:08:00	6.4	4.99	11.43	
8/14/07 16:08:15	6.3	4.98	11.43	
8/14/07 16:08:30	6.1	5.01	11.39	
8/14/07 16:08:45	5.9	5.04	11.35	
8/14/07 16:09:00	5.6	5.01	11.38	
8/14/07 16:09:15	5.2	4.97	11.42	
8/14/07 16:09:30	4.8	4.97	11.42	
8/14/07 16:09:45	4.5	4.96	11.42	
8/14/07 16:10:00	4.3	4.95	11.43	
8/14/07 16:10:15	4.1	4.97	11.42	
8/14/07 16:10:30	3.9	4.99	11.40	
8/14/07 16:10:45	3.9	5.04	11.35	
8/14/07 16:11:00	3.9	5.21	11.18	
8/14/07 16:11:15	4.2	5.36	11.02	
8/14/07 16:11:30	4.9	5.27	11.13	
8/14/07 16:11:45	5.8	5.19	11.23	
8/14/07 16:12:00	6.5	5.22	11.21	
8/14/07 16:12:15	7.0	5.24	11.17	
8/14/07 16:12:30	7.1	5.23	11.19	
8/14/07 16:12:45	7.0	5.19	11.22	
8/14/07 16:13:00	6.8	5.13	11.28	
8/14/07 16:13:15	6.5	5.08	11.32	
8/14/07 16:13:30	6.5	5.04	11.35	
8/14/07 16:13:45	5.7	5.04	11.35	
8/14/07 16:14:00	5.4	5.04	11.34	
8/14/07 16:14:15	5.3	5.01	11.32	
8/14/07 16:14:30	5.2	4.98	11.37	
8/14/07 16:14:45	5.1	4.98	11.40	
8/14/07 16:15:00	4.8	4.98	11.40	
8/14/07 16:15:15	4.5	4.98	11.40	
8/14/07 16:15:30	4.3	5.00	11.38	
8/14/07 16:15:45	4.1	5.06	11.31	
8/14/07 16:16:00	3.9	5.14	11.23	
8/14/07 16:16:15	3.9	5.26	11.10	
8/14/07 16:16:30	4.1	5.42	10.93	
8/14/07 16:16:45	4.9	5.32	11.06	
8/14/07 16:17:00	6.0	5.21	11.20	
8/14/07 16:17:15	6.8	5.22	11.19	
8/14/07 16:17:30	7.2	5.26	11.14	
8/14/07 16:17:45	7.3	5.22	11.17	
8/14/07 16:18:00	7.3	5.15	11.25	
8/14/07 16:18:15	7.0	5.10	11.29	
8/14/07 16:18:30	6.8	5.08	11.31	
8/14/07 16:18:45	6.4	5.07	11.30	
8/14/07 16:19:00	6.0	5.08	11.30	
8/14/07 16:19:15	5.5	5.07	11.30	
8/14/07 16:19:30	5.3	5.04	11.32	
8/14/07 16:19:45	5.1	4.96	11.40	
8/14/07 16:20:00	5.0	4.91	11.46	
8/14/07 16:20:15	4.7	4.93	11.44	
8/14/07 16:20:30	4.5	4.97	11.40	
8/14/07 16:20:45	4.2	5.04	11.33	
8/14/07 16:21:00	4.1	5.12	11.24	
8/14/07 16:21:15	3.9	5.21	11.15	
8/14/07 16:21:30	3.8	5.24	11.12	
8/14/07 16:21:45	3.9	5.27	11.10	
8/14/07 16:22:00	4.1	5.28	11.09	
8/14/07 16:22:15	4.9	5.14	11.24	
8/14/07 16:22:30	5.7	5.13	11.27	
8/14/07 16:22:45	6.6	5.24	11.16	
8/14/07 16:23:00	7.1	5.33	11.06	
8/14/07 16:23:15	7.3	5.33	11.05	
8/14/07 16:23:30	7.3	5.24	11.14	
8/14/07 16:23:45	7.1	5.13	11.26	
8/14/07 16:24:00	6.9	5.04	11.35	
8/14/07 16:24:15	6.4	4.98	11.41	
8/14/07 16:24:30	6.0	4.97	11.42	

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db	Comments
8/14/07 16:24:45	**5.6**	**5.00**	**11.38**	
8/14/07 16:25:00	**5.5**	**5.04**	**11.33**	
8/14/07 16:25:15	**5.4**	**5.05**	**11.32**	
8/14/07 16:25:30	**5.2**	**5.03**	**11.34**	
8/14/07 16:25:45	**4.8**	**4.99**	**11.38**	
8/14/07 16:26:00	**4.5**	**4.96**	**11.41**	
8/14/07 16:26:15	**4.4**	**4.97**	**11.40**	
8/14/07 16:26:30	**4.1**	**5.03**	**11.34**	
8/14/07 16:26:45	**4.0**	**5.12**	**11.25**	
8/14/07 16:27:00	**3.9**	**5.20**	**11.17**	
8/14/07 16:27:15	**4.0**	**5.37**	**11.00**	
8/14/07 16:27:30	**4.4**	**5.40**	**10.97**	
8/14/07 16:27:45	**5.3**	**5.21**	**11.19**	
8/14/07 16:28:00	**6.3**	**5.12**	**11.30**	
8/14/07 16:28:15	**7.0**	**5.17**	**11.24**	
8/14/07 16:28:30	**7.3**	**5.23**	**11.17**	
8/14/07 16:28:45	**7.4**	**5.24**	**11.16**	
8/14/07 16:29:00	**7.2**	**5.21**	**11.18**	
8/14/07 16:29:15	**7.1**	**5.19**	**11.21**	
8/14/07 16:29:30	**7.0**	**5.14**	**11.25**	
8/14/07 16:29:45	**6.7**	**5.06**	**11.32**	
8/14/07 16:30:00	6.4	4.97	11.41	**End Run No. 3**
8/14/07 16:30:15	6.1	4.91	11.46	
8/14/07 16:30:30	37.2	4.90	11.46	
8/14/07 16:30:45	25.6	4.93	11.43	
8/14/07 16:31:00	7.3	4.96	11.17	
8/14/07 16:31:15	3.1	4.12	7.79	
8/14/07 16:31:30	2.7	2.50	3.64	
8/14/07 16:31:45	2.5	3.17	1.03	
8/14/07 16:32:00	2.4	4.22	0.42	
8/14/07 16:32:15	2.3	4.43	0.28	
8/14/07 16:32:30	2.2	4.47	0.24	
8/14/07 16:32:45	2.1	4.47	0.21	
8/14/07 16:33:00	2.1	4.47	0.18	
8/14/07 16:33:15	2.0	4.48	0.16	
8/14/07 16:33:30	1.9	4.51	0.15	
8/14/07 16:33:45	1.8	4.53	0.14	
8/14/07 16:34:00	1.7	4.53	0.13	**System Bias**
8/14/07 16:34:15	1.6	**4.54**	**0.12**	
8/14/07 16:34:30	1.6	**4.54**	**0.12**	**4.54 4.50% O_2**
8/14/07 16:34:45	1.5	**4.55**	**0.11**	**0.12 Zero CO_2**
8/14/07 16:35:00	1.3	**4.54**	**0.11**	
8/14/07 16:35:15	2.9	4.54	0.10	
8/14/07 16:35:30	2.2	4.96	0.10	
8/14/07 16:35:45	1.7	8.47	0.11	
8/14/07 16:36:00	1.7	6.61	0.93	
8/14/07 16:36:15	1.6	2.43	4.94	
8/14/07 16:36:30	1.6	0.69	7.61	
8/14/07 16:36:45	1.6	0.28	8.48	
8/14/07 16:37:00	1.5	0.21	8.73	
8/14/07 16:37:15	1.5	0.20	8.82	
8/14/07 16:37:30	1.5	0.18	8.86	
8/14/07 16:37:45	1.7	0.18	8.90	
8/14/07 16:38:00	1.6	0.17	8.90	
8/14/07 16:38:15	1.7	0.17	8.96	
8/14/07 16:38:30	1.4	0.16	8.91	
8/14/07 16:38:45	1.4	0.16	8.91	
8/14/07 16:39:00	1.4	0.15	8.92	
8/14/07 16:39:15	1.4	0.15	8.92	
8/14/07 16:39:30	1.3	0.15	8.92	
8/14/07 16:39:45	1.3	0.15	8.93	
8/14/07 16:40:00	1.3	0.15	8.93	
8/14/07 16:40:15	1.3	0.15	8.93	
8/14/07 16:40:30	1.3	0.14	8.93	
8/14/07 16:40:45	1.2	0.14	8.94	
8/14/07 16:41:00	1.2	0.15	8.94	
8/14/07 16:41:15	1.2	0.14	8.94	
8/14/07 16:41:30	1.2	0.14	8.94	
8/14/07 16:41:45	1.2	0.14	8.94	**System Bias**
8/14/07 16:42:00	**1.1**	**0.14**	**8.94**	**1.1 Zero VOC**
8/14/07 16:42:15	**1.1**	**0.14**	**8.94**	**0.14 Zero O_2**
8/14/07 16:42:30	**1.1**	**0.14**	**8.94**	**8.94 9.00% CO_2**
8/14/07 16:42:45	**1.1**	**0.14**	**8.94**	
8/14/07 16:43:00	1.0	0.14	8.94	
8/14/07 16:43:15	1.3	0.14	8.94	
8/14/07 16:43:30	24.1	0.34	8.91	
8/14/07 16:43:45	19.6	3.57	7.87	
8/14/07 16:44:00	42.3	2.89	6.78	
8/14/07 16:44:15	44.9	0.75	3.84	
8/14/07 16:44:30	45.8	0.29	1.31	
8/14/07 16:44:45	46.8	0.22	0.55	
8/14/07 16:45:00	47.6	0.19	0.34	
8/14/07 16:45:15	48.1	0.18	0.26	

Valero Refining - Texas, L.P.: Bill Greehey Refinery - East Plant
Naphtha Reformer CCR Scrubber Exhaust - EPN 155
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	VOC ppmv wb	O_2 % vol db	CO_2 % vol db		Comments
8/14/07 16:45:30	48.2	0.18	0.22		
8/14/07 16:45:45	48.4	0.17	0.19		
8/14/07 16:46:00	48.4	0.17	0.17		
8/14/07 16:46:15	48.4	0.17	0.16	Calibration	
8/14/07 16:46:30	**48.4**	0.16	0.15		**48.5 50.0 ppm Propane/N_2**
8/14/07 16:46:45	**48.5**	0.16	0.14		
8/14/07 16:47:00	**48.6**	0.16	0.13		
8/14/07 16:47:15	**48.6**	0.16	0.12		
8/14/07 16:47:30	33.4	0.16	0.12		
8/14/07 16:47:45	1.6	0.16	0.11		
8/14/07 16:48:00	1.0	0.16	0.11		
8/14/07 16:48:15					
8/14/07 16:48:30					
8/14/07 16:48:45					
8/14/07 16:49:00					
8/14/07 16:49:15					
8/14/07 16:49:30					
8/14/07 16:49:45					
8/14/07 16:50:00					
8/14/07 16:50:15					
8/14/07 16:50:30					
8/14/07 16:50:45					
8/14/07 16:51:00					
8/14/07 16:51:15					
8/14/07 16:51:30					
8/14/07 16:51:45					
8/14/07 16:52:00					
8/14/07 16:52:15					
8/14/07 16:52:30					
8/14/07 16:52:45					
8/14/07 16:53:00					
8/14/07 16:53:15					
8/14/07 16:53:30					
8/14/07 16:53:45					
8/14/07 16:54:00					
8/14/07 16:54:15					
8/14/07 16:54:30					
8/14/07 16:54:45					
8/14/07 16:55:00					
8/14/07 16:55:15					
8/14/07 16:55:30					
8/14/07 16:55:45					
8/14/07 16:56:00					
8/14/07 16:56:15					
8/14/07 16:56:30					
8/14/07 16:56:45					
8/14/07 16:57:00					
8/14/07 16:57:15					
8/14/07 16:57:30					
8/14/07 16:57:45					
8/14/07 16:58:00					
8/14/07 16:58:15					
8/14/07 16:58:30					
8/14/07 16:58:45					
8/14/07 16:59:00					
8/14/07 16:59:15					
8/14/07 16:59:30					
8/14/07 16:59:45					
8/14/07 17:00:00					
8/14/07 17:00:15					
8/14/07 17:00:30					
8/14/07 17:00:45					
8/14/07 17:01:00					
8/14/07 17:01:15					
8/14/07 17:01:30					
8/14/07 17:01:45					
8/14/07 17:02:00					
8/14/07 17:02:15					
8/14/07 17:02:30					
8/14/07 17:02:45					
8/14/07 17:03:00					
8/14/07 17:03:15					
8/14/07 17:03:30					
8/14/07 17:03:45					
8/14/07 17:04:00					
8/14/07 17:04:15					
8/14/07 17:04:30					
8/14/07 17:04:45					
8/14/07 17:05:00					
8/14/07 17:05:15					
8/14/07 17:05:30					
8/14/07 17:05:45					
8/14/07 17:06:00					

APPENDIX E

Calibration Data

CEMS CALIBRATION DATA

Plant	Valero Refining - Texas, L.P.
Location	Corpus Christi, Texas
Source	Naphtha Reformer CCR
Date	8/14/2007
Run Numbers	1
Start Time	11:10
Stop Time	12:13

Plant Rep.	Brian Funke
Team Leader	Dan Fitzgerald
CEM Operator	Dan Fitzgerald

Analyzer Span Values (% or ppm)

Stack	O_2	9.00	%
Stack	CO_2	18.00	%
Stack	VOC	100.0	ppm

		INITIAL CALIBRATION - 9:37 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
						Pretest: 9:53		Posttest: 12:30 hrs			
		Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Difference (% of Span)	System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)	Drift (% of Span)	
Stack	O_2 Zero	0.00	CC108295	-0.04	-0.4	0.19	2.6	0.17	2.3	-0.2	C_o =
	O_2 Low		O_2/N_2								**0.180**
	O_2 Mid	4.50	EB0005505	4.48	-0.2	4.61	1.4	4.61	1.4	0.0	C_m =
	O_2 High	9.00	25.00%	8.95	-0.6						**4.610**
Stack	CO_2 Zero	0.00	CC108295	0.05	0.3	0.05	0.0	0.07	0.1	0.1	C_o =
	CO_2 Low		CO_2/N_2								**0.060**
	CO_2 Mid	9.00	EB0000597	9.11	0.6	8.97	-0.8	8.98	-0.7	0.1	C_m =
	CO_2 High	18.00	24.70%	18.15	0.8						**8.975**
Stack	VOC Zero	0.0	CC108295	0.4	0.4	0.4	0.4	0.7	0.7	0.3	C_o =
	VOC Low	25.0	C_3H_8/N_2	25.8	3.2						**0.55**
	VOC Mid	50.0	SG9133705	51.3	2.6	51.3	2.6	49.7	-0.6	-1.6	C_m =
	VOC High	85.0	2,026 ppm	85.2	0.2						**50.50**
											C_o =
											C_m =
											C_o =
											C_m =
											C_o =
											C_m =

CEMS CALIBRATION DATA

Plant	Valero Refining - Texas, L.P.
Location	Corpus Christi, Texas
Source	Naphtha Reformer CCR
Date	8/14/2007
Run Numbers	2
Start Time	13:45
Stop Time	14:54

Plant Rep.	Brian Funke
Team Leader	Dan Fitzgerald
CEM Operator	Dan Fitzgerald

Analyzer Span Values (% or ppm)

Stack	O_2	9.00	%
Stack	CO_2	18.00	%
Stack	VOC	100.0	ppm

		INITIAL CALIBRATION - 9:37 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
						Pretest: 13:31		Posttest: 14:59 hrs			
		Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Difference (% of Span)	System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)	Drift (% of Span)	
Stack	O_2 Zero	0.00	CC108295	-0.04	-0.4	0.18	2.4	0.16	2.2	-0.2	C_o =
	O_2 Low		O2/N2								**0.170**
	O_2 Mid	4.50	EB0005505	4.48	-0.2	4.59	1.2	4.54	0.7	-0.6	C_m =
	O_2 High	9.00	25.00%	8.95	-0.6						**4.565**
Stack	CO_2 Zero	0.00	CC108295	0.05	0.3	0.05	0.0	0.13	0.4	0.4	C_o =
	CO_2 Low		CO2/N2								**0.090**
	CO_2 Mid	9.00	EB0000597	9.11	0.6	8.94	-0.9	8.95	-0.9	0.1	C_m =
	CO_2 High	18.00	24.70%	18.15	0.8						**8.945**
Stack	VOC Zero	0.0	CC108295	0.4	0.4	1.2	1.2	1.0	1.0	-0.2	C_o =
	VOC Low	25.0	C3H8/N2	25.8	3.2						**1.10**
	VOC Mid	50.0	SG9133705	51.3	2.6	49.9	-0.2	48.1	-3.8	-1.8	C_m =
	VOC High	85.0	2,026 ppm	85.2	0.2						**49.00**
											C_o =
											C_m =
											C_o =
											C_m =
											C_o =
											C_m =

CEMS CALIBRATION DATA

Plant	Valero Refining - Texas, L.P.
Location	Corpus Christi, Texas
Source	Naphtha Reformer CCR
Date	8/14/2007
Run Numbers	3
Start Time	15:22
Stop Time	16:30

Plant Rep.	Brian Funke
Team Leader	Dan Fitzgerald
CEM Operator	Dan Fitzgerald

Analyzer Span Values (% or ppm)

Stack	O_2	9.00	%
Stack	CO_2	18.00	%
Stack	VOC	100.0	ppm

		INITIAL CALIBRATION - 9:37 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
						Pretest: 14:59		Posttest: 16:34 hrs			
		Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Difference (% of Span)	System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)	Drift (% of Span)	
Stack	O_2 Zero	0.00	CC108295	-0.04	-0.4	0.16	2.2	0.14	2.0	-0.2	C_o =
	O_2 Low		O2/N2								**0.150**
	O_2 Mid	4.50	EB0005505	4.48	-0.2	4.54	0.7	4.54	0.7	0.0	C_m =
	O_2 High	9.00	25.00%	8.95	-0.6						**4.540**
Stack	CO_2 Zero	0.00	CC108295	0.05	0.3	0.13	0.4	0.12	0.4	-0.1	C_o =
	CO_2 Low		CO2/N2								**0.125**
	CO_2 Mid	9.00	EB0000597	9.11	0.6	8.95	-0.9	8.94	-0.9	-0.1	C_m =
	CO_2 High	18.00	24.70%	18.15	0.8						**8.945**
Stack	VOC Zero	0.0	CC108295	0.4	0.4	1.0	1.0	1.1	1.1	0.1	C_o =
	VOC Low	25.0	C3H8/N2	25.8	3.2						**1.05**
	VOC Mid	50.0	SG9133705	51.3	2.6	48.1	-3.8	48.5	-3.0	0.4	C_m =
	VOC High	85.0	2,026 ppm	85.2	0.2						**48.30**
											C_o =
											C_m =
											C_o =
											C_m =
											C_o =
											C_m =

ARI REFERENCE METHOD CEMS DATA
USEPA METHOD 205
DILUTION SYSTEM VERIFICATION

Company: Valero Refining - Texas, LP
Location: Corpus Christi, Texas
Dilution System ID: 3712
Dilution Flow Rate: 5.0 Lpm
Verification date: 8/13/2007

Analyzer Info

Monitor type: Servomex 1440 O_2
Monitor range: 18 %
Monitor Serial No.: 01440D1/3840

Initial Calibration Data

Calibration Concentration		Calibration results		% Difference	
Zero:	0.00	Zero:	-0.02	Zero:	0.11
Low:		Low:		Low:	
Mid:	9.00	Mid:	9.11	Mid:	0.61
High:	18.00	High:	18.03	High:	0.17

Dilution System Verification

Mid level gas type: USEPA Protocol 1
Mid level concentration: 10.02 %
Mid level tank serial #: EB0000605

High level dilution gas type: USEPA Protocol 1
High level concentration: 25.0 %
High level tank serial #: EB0005505
Target concentration No. 1: 4.50
Target concentration No. 2: 13.50

Dilution System Results

Target Concentration No. 1			Target Concentration No. 2		
	Instrument Response	% difference from average*		Instrument Response	% difference from average*
Trial No. 1:	4.56	0.07	Trial No. 1:	13.51	0.05
Trial No. 2:	4.56	0.07	Trial No. 2:	13.51	0.05
Trial No. 3:	4.55	0.15	Trial No. 3:	13.53	0.10
Average:	4.557		Average:	13.517	

% Difference from target concentration: 1.26%

% Difference from target concentration: 0.12%

Mid Level Calibration Gas Results

	Instrument Response
Trial No. 1:	9.98
Trial No. 2:	9.97
Trial No. 3:	9.97

Mid Level calibration gas concentration: 10.02%
Average analyzer response: 9.97
Percent difference: 0.47 *

* Must be less than 2 %

USEPA Method 205 Gas Dilution System Verification
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	O_2 % vol db	Comments
8/13/07 16:49:00	50.91	
8/13/07 16:49:15	50.92	
8/13/07 16:49:30	50.93	
8/13/07 16:49:45	51.36	
8/13/07 16:50:00	49.39	
8/13/07 16:50:15	28.19	
8/13/07 16:50:30	6.03	
8/13/07 16:50:45	0.75	
8/13/07 16:51:00	0.29	
8/13/07 16:51:15	0.09	
8/13/07 16:51:30	0.08	
8/13/07 16:51:45	0.07	
8/13/07 16:52:00	0.06	
8/13/07 16:52:15	0.06	
8/13/07 16:52:30	0.05	
8/13/07 16:52:45	0.04	
8/13/07 16:53:00	-0.05	
8/13/07 16:53:15	-0.01	**Calibration Error**
8/13/07 16:53:30	**-0.01**	**-0.02 Zero O_2**
8/13/07 16:53:45	**-0.02**	
8/13/07 16:54:00	**-0.02**	
8/13/07 16:54:15	**-0.02**	
8/13/07 16:54:30	0.07	
8/13/07 16:54:45	4.42	
8/13/07 16:55:00	11.57	
8/13/07 16:55:15	16.03	
8/13/07 16:55:30	17.43	
8/13/07 16:55:45	17.71	
8/13/07 16:56:00	17.79	
8/13/07 16:56:15	17.82	
8/13/07 16:56:30	17.84	
8/13/07 16:56:45	17.85	
8/13/07 16:57:00	17.87	
8/13/07 16:57:15	17.87	
8/13/07 16:57:30	17.88	
8/13/07 16:57:45	17.88	
8/13/07 16:58:00	17.89	
8/13/07 16:58:15	17.94	
8/13/07 16:58:30	18.05	
8/13/07 16:58:45	18.05	**Calibration Error**
8/13/07 16:59:00	**18.03**	**18.03 18.00% O_2**
8/13/07 16:59:15	**18.03**	
8/13/07 16:59:30	**18.03**	
8/13/07 16:59:45	**18.04**	
8/13/07 17:00:00	18.14	
8/13/07 17:00:15	17.97	
8/13/07 17:00:30	12.99	
8/13/07 17:00:45	9.38	
8/13/07 17:01:00	9.14	
8/13/07 17:01:15	9.13	
8/13/07 17:01:30	9.12	
8/13/07 17:01:45	9.12	
8/13/07 17:02:00	9.12	**Calibration Error**
8/13/07 17:02:15	**9.11**	**9.11 9.00% O_2**
8/13/07 17:02:30	**9.10**	
8/13/07 17:02:45	**9.11**	
8/13/07 17:03:00	**9.10**	
8/13/07 17:03:15	9.04	
8/13/07 17:03:30	9.16	
8/13/07 17:03:45	9.65	
8/13/07 17:04:00	11.40	
8/13/07 17:04:15	10.62	
8/13/07 17:04:30	10.08	**Mid-Level Concentration; Trial #1**
8/13/07 17:04:45	**9.98**	**9.98 10.02% O_2**
8/13/07 17:05:00	**9.98**	
8/13/07 17:05:15	**9.98**	
8/13/07 17:05:30	**9.98**	
8/13/07 17:05:45	10.05	
8/13/07 17:06:00	10.08	
8/13/07 17:06:15	9.07	
8/13/07 17:06:30	5.67	
8/13/07 17:06:45	4.67	
8/13/07 17:07:00	4.59	
8/13/07 17:07:15	4.57	**Target Concentration #1; Trial #1**
8/13/07 17:07:30	**4.56**	**4.56 4.50% O_2**
8/13/07 17:07:45	**4.56**	
8/13/07 17:08:00	**4.55**	
8/13/07 17:08:15	**4.55**	
8/13/07 17:08:30	4.51	
8/13/07 17:08:45	4.54	
8/13/07 17:09:00	7.74	
8/13/07 17:09:15	12.46	
8/13/07 17:09:30	13.37	

USEPA Method 205 Gas Dilution System Verification
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	O_2 % vol db	Comments
8/13/07 17:09:45	13.47	
8/13/07 17:10:00	13.49	**Target Concentration #2; Trial #1**
8/13/07 17:10:15	**13.50**	**13.51 13.50% O_2**
8/13/07 17:10:30	**13.51**	
8/13/07 17:10:45	**13.51**	
8/13/07 17:11:00	**13.52**	
8/13/07 17:11:15	13.48	
8/13/07 17:11:30	13.49	
8/13/07 17:11:45	12.61	
8/13/07 17:12:00	10.54	
8/13/07 17:12:15	10.02	
8/13/07 17:12:30	9.98	
8/13/07 17:12:45	9.97	
8/13/07 17:13:00	9.97	**Mid-Level Concentration; Trial #2**
8/13/07 17:13:15	**9.97**	**9.97 10.02% O_2**
8/13/07 17:13:30	**9.97**	
8/13/07 17:13:45	**9.97**	
8/13/07 17:14:00	**9.97**	
8/13/07 17:14:15	9.94	
8/13/07 17:14:30	10.08	
8/13/07 17:14:45	10.80	
8/13/07 17:15:00	8.01	
8/13/07 17:15:15	4.99	
8/13/07 17:15:30	4.60	
8/13/07 17:15:45	4.57	**Target Concentration #1; Trial #2**
8/13/07 17:16:00	**4.57**	**4.56 4.50% O_2**
8/13/07 17:16:15	**4.56**	
8/13/07 17:16:30	**4.56**	
8/13/07 17:16:45	**4.55**	
8/13/07 17:17:00	4.52	
8/13/07 17:17:15	4.56	
8/13/07 17:17:30	7.99	
8/13/07 17:17:45	12.56	
8/13/07 17:18:00	13.39	
8/13/07 17:18:15	13.47	
8/13/07 17:18:30	13.49	
8/13/07 17:18:45	13.50	**Target Concentration #2; Trial #2**
8/13/07 17:19:00	**13.51**	**13.51 13.50% O_2**
8/13/07 17:19:15	**13.52**	
8/13/07 17:19:30	**13.52**	
8/13/07 17:19:45	**13.52**	
8/13/07 17:20:00	13.47	
8/13/07 17:20:15	13.49	
8/13/07 17:20:30	12.59	
8/13/07 17:20:45	10.53	
8/13/07 17:21:00	10.02	
8/13/07 17:21:15	9.98	**Mid-Level Concentration; Trial #3**
8/13/07 17:21:30	**9.97**	**9.97 10.02% O_2**
8/13/07 17:21:45	**9.97**	
8/13/07 17:22:00	**9.97**	
8/13/07 17:22:15	**9.97**	
8/13/07 17:22:30	10.05	
8/13/07 17:22:45	10.08	
8/13/07 17:23:00	8.90	
8/13/07 17:23:15	5.52	
8/13/07 17:23:30	4.66	
8/13/07 17:23:45	4.59	
8/13/07 17:24:00	4.57	
8/13/07 17:24:15	4.56	
8/13/07 17:24:30	4.56	
8/13/07 17:24:45	4.56	
8/13/07 17:25:00	4.55	**Target Concentration #1; Trial #3**
8/13/07 17:25:15	**4.55**	**4.55 4.50% O_2**
8/13/07 17:25:30	**4.55**	
8/13/07 17:25:45	**4.55**	
8/13/07 17:26:00	**4.54**	
8/13/07 17:26:15	4.53	
8/13/07 17:26:30	4.65	
8/13/07 17:26:45	8.38	
8/13/07 17:27:00	12.66	
8/13/07 17:27:15	13.40	
8/13/07 17:27:30	13.47	
8/13/07 17:27:45	13.49	
8/13/07 17:28:00	13.50	
8/13/07 17:28:15	13.51	
8/13/07 17:28:30	13.52	**Target Concentration #2; Trial #3**
8/13/07 17:28:45	**13.52**	**13.53 13.50% O_2**
8/13/07 17:29:00	**13.53**	
8/13/07 17:29:15	**13.53**	
8/13/07 17:29:30	**13.53**	
8/13/07 17:29:45	13.41	
8/13/07 17:30:00	13.34	
8/13/07 17:30:15	13.45	

USEPA Method 205 Gas Dilution System Verification
ARI Reference Method Monitoring Data (15 second intervals)

Date/Time	O_2 % vol db	Comments
8/13/07 17:30:30	13.47	
8/13/07 17:30:45	14.18	
8/13/07 17:31:00	17.15	
8/13/07 17:31:15	19.73	
8/13/07 17:31:30	18.56	
8/13/07 17:31:45	7.71	
8/13/07 17:32:00	0.98	
8/13/07 17:32:15	0.10	
8/13/07 17:32:30	0.04	
8/13/07 17:32:45	0.03	
8/13/07 17:33:00	0.02	

Instrument: 3712 MFC: 1

MAX Flow: 10,000.00 CCM
Cal Date: 12/01/2006 , 09:50:29
Reference Gas: NITROGEN
Description: Factory MFC #1 Calibration Table

- Table is selected

Set Flow	True Flow
500.00	494.01
1,000.00	1,005.09
2,000.00	2,021.91
3,000.00	3,032.88
4,000.00	4,045.68
5,000.00	5,051.95
6,000.00	6,063.62
7,000.00	7,073.44
8,000.00	8,083.35
9,000.00	9,104.91
10,000.00	10,137.45

Instrument: 3712 MFC: 2

MAX Flow: 10,000.00 CCM
Cal Date: 12/01/2006 , 09:50:54
Reference Gas: NITROGEN
Description: Factory MFC #2 Calibration Table

- Table is selected

Set Flow	True Flow
500.00	487.11
1,000.00	1,010.40
2,000.00	2,045.76
3,000.00	3,067.13
4,000.00	4,082.80
5,000.00	5,088.79
6,000.00	6,100.97
7,000.00	7,105.54
8,000.00	8,107.25
9,000.00	9,125.18
10,000.00	10,143.14

Instrument: 3712 MFC: 3

MAX Flow: 1,000.00 CCM
Cal Date: 12/01/2006 , 09:51:17
Reference Gas: NITROGEN
Description: Factory MFC #3 Calibration Table

- Table is selected

Set Flow	True Flow
50.00	49.07
100.00	98.96

200.00	198.68
300.00	298.32
400.00	398.49
500.00	499.18
600.00	599.87
700.00	701.86
800.00	805.52
900.00	909.30
1,000.00	1,014.59

Instrument: 3712 **MFC: 4**

MAX Flow: 100.00 CCM
Cal Date: 12/01/2006 , 09:51:59
Reference Gas: NITROGEN
Description: Factory MFC #4 Calibration Table

Set Flow	True Flow
5.00	4.95
10.00	10.14
20.00	20.47
30.00	30.65
40.00	40.74
50.00	50.79
60.00	60.79
70.00	70.77
80.00	80.90
90.00	91.07
100.00	101.45

- Table is selected

Interference Response

Analyzer Type:	Oxygen (O_2)
Manufacturer:	Servomex
Detector Type:	Paramagnetic
Model No.:	1440
Serial No.:	1420C/2765
Calibration Span (%):	11.27

Test Gas	Test Gas Conc.	High Standard			Zero			Maximum % Interference
		O_2 without interferent	O_2 with interferent	% Interference	Zero without interferent	Zero with interferent	% Interference	
NH_3	10 ppm	11.27	11.27	0.00	0.03	0.01	0.18	0.18
SO_2	20 ppm	11.25	11.25	0.00	0.01	0.01	0.00	0.00
CH_4	50 ppm	11.24	11.25	0.09	0.02	0.04	-0.18	0.18
CO	50 ppm	11.23	11.24	0.09	0.00	0.01	-0.09	0.09
CO_2	5%	11.23	11.26	0.27	0.00	-0.01	0.09	0.27
CO_2	12.55%	11.25	11.27	0.18	0.03	-0.02	0.44	0.44
NO_2	15 ppm	11.22	11.24	0.18	0.01	0.00	0.09	0.18
NO_x	15 ppm	11.22	11.25	0.27	0.01	0.01	0.00	0.27
H_2	1,020 ppm	11.24	11.23	-0.09	0.02	0.01	0.09	0.09
HCl	10 ppm	11.29	11.31	0.18	0.00	-0.01	0.09	0.18

Sum of the highest absolute value obtained with and without the pollutant present: 1.88 %
Allowable interference response: 2.5 %

Certification Date: 8/9/2006
Operator: [signature]

Interference Response

Analyzer Type: Carbon Dioxide (CO_2)
Manufacturer: Servomex
Detector Type: ~~Paramagnetic~~ NON-DISPERSIVE INFRARED
Model No.: 1440
Serial No.: 1415C
Calibration Span (%): 11.41

Test Gas	Test Gas Conc.	High Standard			Zero			Maximum % Interference
		CO_2 without interferent	CO_2 with interferent	% Interference	Zero without interferent	Zero with interferent	% Interference	
NH_3	10 ppm	11.41	11.39	-0.18	0.01	0.01	0.00	0.18
SO_2	20 ppm	11.37	11.37	0.00	0.01	0.01	0.00	0.00
CH_4	50 ppm	11.37	11.37	0.00	0.01	0.01	0.00	0.00
CO	50 ppm	11.41	11.41	0.00	0.01	0.01	0.00	0.00
NO_2	15 ppm	11.37	11.37	0.00	0.01	0.01	0.00	0.00
NO_x	15 ppm	11.37	11.37	0.00	0.01	0.01	0.00	0.00
H_2	1,020 ppm	11.37	11.37	0.00	0.01	0.01	0.00	0.00
HCl	10 ppm	11.41	11.38	-0.26	0.01	0.01	0.00	0.26

Sum of the highest absolute value obtained with and without the pollutant present: 0.44 %
Allowable interference response: 2.5 %

Certification Date: 8-9-06
Operator: [signature]

COASTAL
Specialty Gas

COASTAL SPECIALTY GAS
25 NORTH FOURTH STREET
BEAUMONT, TX 77071
409-838-3757

Customer:	Coastal Welding	Protocol:	Reference #	Lot#
Cylinder Number:	EB0005505	G2		30881
Cylinder Pressure:	1950 PSIG			
Last Analysis Date:	7/6/2007			
Expiration Date:	7/6/2010			

DO NOT USE THIS CYLINDER WHEN THE PRESSURE FALLS BELOW 150 PSIG

Component:	OXYGEN
Mean Conc:	25.0% +/- 2% rel
BALANCE GAS:	Nitrogen

REFERENCE STANDARDS:

Component:	OXYGEN
Reference Standard:	NTRM
Cylinder #:	EB0000798
Concentration:	9.984%
Exp. Date:	1/1/2010

CERTIFICATION INSTRUMENTS

Component:	OXYGEN
Make/Model:	Horiba MPA-510
Serial Number:	576022023
Measurement Principle:	PM
Last Calibration:	7/6/2007

Notes:

This Certification was performed according to EPA Traceability Protocol for Assay & Certification of Gaseous Calibration Standards September 1997, using procedure G1 and/or G2.

Analyst: Ling Wen Date: 7/6/2007

Manufactured By Specialty Gas Products, a Matheson Tri-Gas Company, Pasadena, Texas.

COASTAL
Specialty Gas

COASTAL SPECIALTY GAS
25 NORTH FOURTH STREET
BEAUMONT, TX 77071
409-838-3757

Customer:	Coastal Welding	Protocol:	Reference #	Lot#
Cylinder Number:	EB0000605	G1		23553
Cylinder Pressure:	1900 PSIG			
Last Analysis Date:	6/23/2006			
Expiration Date:	6/23/2009			

DO NOT USE THIS CYLINDER WHEN THE PRESSURE FALLS BELOW 150 PSIG

REPLICATE RESPONSES

Component:	Carbon Monoxide	Date:	6/16/2006	Date: 6/23/2006
Mean Conc:	110 ppm +/- 1% rel		109.6 109.6 109.80	110.10 110.00 110
Component:	Oxygen	Date:	6/23/2006	
Mean Conc:	10.02 +/- 1% rel		10.02 10.01 10.02	
BALANCE GAS:	Nitrogen			

REFERENCE STANDARDS:

Component:	Carbon Monoxide	Component:	Oxygen
Reference Standard:	GMIS	Reference Standard:	NTRM
Cylinder #:	CC177685	Cylinder #:	EM0000797
Concentration:	244.2 ppm	Concentration:	9.984%
Exp. Date:	7/18/2007	Exp. Date:	1/1/2010

CERTIFICATION INSTRUMENTS

Component:	Carbon Monoxide	Component:	Oxygen
Make/Model:	Horiba VIA-510	Make/Model:	Horiba MPA-510
Serial Number:	42321590021	Serial Number:	576022023
asurement Principle:	NDIR	Measurement Principle:	PM
Last Calibration:	6/23/2006	Last Calibration:	5/22/2006

Notes:

This Certification was performed according to EPA Traceability Protocol for Assay & Certification of Gaseous Calibration Standards September 1997, using procedure G1 and/or G2.

Analyst: _____ Date: 6/23/2006

Manufactured By Specialty Gas Products, a Matheson Tri-Gas Company, Pasadena, Texas.

COASTAL
Specialty Gas

COASTAL SPECIALTY GAS
25 NORTH FOURTH STREET
BEAUMONT, TX 77071
409-838-3757

Customer:	Coastal Welding	Protocol:	Lot#
Cylinder Number:	EB0000597	G2	30184
Cylinder Pressure:	1950 PSIG		
Last Analysis Date:	5/22/2007		
Expiration Date:	5/22/2010		

DO NOT USE THIS CYLINDER WHEN THE PRESSURE FALLS BELOW 150 PSIG

REPLICATE RESPONSES

Component:	Carbon Dioxide
Mean Conc:	24.7% +/- 2% rel
BALANCE GAS:	Nitrogen

REFERENCE STANDARDS:

Component:	Carbon Dioxide
Reference Standard:	gmis
Cylinder #:	CC179427
Concentration:	19.91%
Exp. Date:	3/16/2008

CERTIFICATION INSTRUMENTS

Component:	Carbon Dioxide
Make/Model:	Horiba VIA-510
Serial Number:	41679080021
asurement Principle:	NDIR
Last Calibration:	4/27/2007

Notes: REF: 03-009-07

This Certification was performed according to EPA Traceability Protocol for Assay & Certification of Gaseous Calibration Standards September 1997, using procedure G1 and/or G2.

Analyst: LING WEN Date: 5/22/2007

Manufactured By Specialty Gas Products, a Matheson Tri-Gas Company, Pasadena, Texas.

COASTAL
Specialty Gas

COASTAL SPECIALTY GAS
25 NORTH FOURTH STREET
BEAUMONT, TX 77071
409-838-3757

Customer:	Coastal Welding	Protocol:	Lot#
Cylinder Number:	SG9133705	G1	23572
Cylinder Pressure:	1950 PSIG		
Last Analysis Date:	6/16/2006		
Expiration Date:	6/16/2009		

DO NOT USE THIS CYLINDER WHEN THE PRESSURE FALLS BELOW 150 PSIG

REPLICATE RESPONSES

Component:	PROPANE	Date:	6/16/2006
Mean Conc:	2026 PPM +/- 2% rel		2026 2025 2026
BALANCE GAS:	Nitrogen		

REFERENCE STANDARDS:

Component:	PROPANE
Reference Standard:	SRM
Cylinder #:	XF003019B
Concentration:	4927 PPM
Exp. Date:	1/1/2009

CERTIFICATION INSTRUMENTS

Component:	PROPANE
Make/Model:	Horiba FIA-510
Serial Number:	41679080101
asurement Principle:	FID
Last Calibration:	6/16/2006

Notes:

This Certification was performed according to EPA Traceability Protocol for Assay & Certification of Gaseous Calibration Standards September 1997, using procedure G1 and/or G2.

Analyst: _____ Date: 6/16/06

Manufactured By Specialty Gas Products, a Matheson Tri-Gas Company, Pasadena, Texas.

ARI ENVIRONMENTAL, INC.
EPA Method 5
Model 522 Meter Box Calibration
Post-Test Orifice Method
English Volume Units, English K' Factor

Model #: Apex
Serial #: 801005

Date: 8/18/2007
Barometric Pressu: 29.74 **in Hg**

DRY GAS METER READINGS								CALIBRATION ORIFICE READING					
						Temperature					Ambient Temperature		
ΔH (in H20)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)		Tmi Inlet (deg F)	Tmo Outlet (deg F)	Orifice Serial No	K' FACTOR (number)	Vacuum (in Hg)	Initial (deg F)	Final (deg F)	Average (deg F)
1.70	10.0	571.500	578.900	7.400	Initial>	88	84	63	0.5720	19.000	87	88	87.500
					Final >	92	87						
1.70	10.0	580.000	587.385	7.385	Initial>	92	87	63	0.5720	19.000	88	90	89.000
					Final >	94	88						
1.70	10.1	587.700	595.200	7.500	Initial>	93	88	63	0.5720	19.000	90	91	90.500
					Final >	95	90						

METER CALIBRATION

METER FLOW (cu ft)	ORIFICE FLOW (cu ft)	FACTOR, Yc (number)	ΔH@ (in H2O)
7.1201	7.2847	1.023	1.85
7.0734	7.2893	1.031	1.88
7.1672	7.3083	1.020	1.84

AVERAGE METER CALIBRATION FACTOR, Yc **1.024**

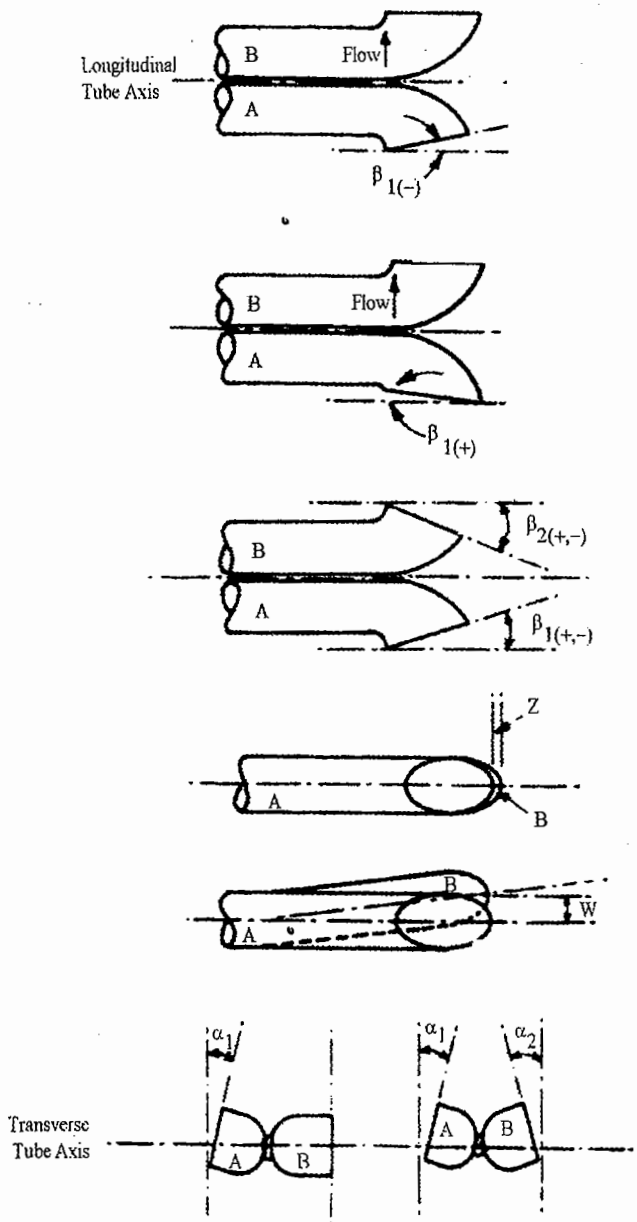
FULL TEST CALIBRATION FACTOR, Yd 0.994 ***% DIFFERENCE:*** -3.0 *(+or- 5.0% allowable)*

Pitot Tube Inspection Data

Client Name: Valero C.C.

Pre-Sample Date: _____

Post-Sample Date: 8-17-07



	level?	Y
	obstructions?	N
	damaged?	N
	$-10^\circ < \alpha_1 < +10^\circ$	1
	$-10^\circ < \alpha_2 < +10^\circ$	0
	$-5^\circ < \beta_1 < +5^\circ$	1
	$-5^\circ < \beta_2 < +5^\circ$	1
	γ	0
	θ	0
	A	.906
	$0 < P_A < 0$	.453
	$0 < P_B < 0$	.453
	3/16" <= D_t <= 3/8"	.375
	A tan γ < 0.125"	
	A tan θ < 0.03125"	
TRUE	$P_A = P_B$ +/- 0.063	

Comments:

Pitot tube/probe number 282 meets or exceeds all specifications and criteria and/or applicable design features (per 40CFR60 Appendix A; Method 2) and is heareby assigned a pitot tube calibration factor of 0.84.

Signature:

Date: 8-17-07

APPENDIX F

Process Data

Run	Feedrate, bpd	Catalyst Circulation, lb/hr	Flow Rate To Scrubber via upper vent, LBH	Flow Rate To Scrubber via upper vent, SCFH	Flow Rate To Scrubber via lower vent, SCFH	Total Flow Rate To Scrubber, SCFH	Total Caustic To Scrubber, lb/h	Total Caustic To Scrubber, gallon/h	Liquid to gas Ratio, Gallon/SCF
1	34461	2000	1937.99	25733.66	24165.00	49898.66	199305.00	21724.98	0.44
2	34456	2000	1920.66	25503.46	3497.00	29000.46	199051.00	21697.30	0.75
3	34321	2000	1942.50	25793.52	4599.00	30392.52	198746.00	21664.05	0.71

CRU Feed Rate

Report Start: Tuesday, August 14, 2007 11:10:00 AM
Report End: Tuesday, August 14, 2007 12:14:00 PM

	CRUFR
PV Label	
PV Name	CRUFR
Eng Units	bbl/day
Aggregate	1MIN
8/14/2007 11:12:07 AM	34367.54
8/14/2007 11:15:07 AM	34369.55
8/14/2007 11:18:05 AM	34313.56
8/14/2007 11:21:05 AM	34381.26
8/14/2007 11:24:05 AM	34425.36
8/14/2007 11:27:06 AM	34341.38
8/14/2007 11:30:07 AM	34458.05
8/14/2007 11:33:06 AM	34351.09
8/14/2007 11:36:05 AM	34556.85
8/14/2007 11:39:07 AM	34538.55
8/14/2007 11:42:05 AM	34490.92
8/14/2007 11:45:13 AM	34445.72
8/14/2007 11:48:05 AM	34430.81
8/14/2007 11:51:06 AM	34595.17
8/14/2007 11:54:06 AM	34454.32
8/14/2007 11:57:05 AM	34506.09
8/14/2007 12:00:07 PM	34474.46
8/14/2007 12:03:06 PM	34594.28
8/14/2007 12:06:06 PM	34490.98
8/14/2007 12:09:05 PM	34497.41
8/14/2007 12:12:05 PM	34607.28
	34461

CRU Feed Rate

Report Start: Tuesday, August 14, 2007 1:45:00 PM
Report End: Tuesday, August 14, 2007 2:55:00 PM

	CRUFR
PV Label	
PV Name	CRUFR
Eng Units	bbl/day
Aggregate	1MIN
8/14/2007 1:45:06 PM	34505.08
8/14/2007 1:48:06 PM	34504.55
8/14/2007 1:51:05 PM	34541.11
8/14/2007 1:54:06 PM	34542.23
8/14/2007 1:57:06 PM	34510.25
8/14/2007 2:00:06 PM	34539.68
8/14/2007 2:03:06 PM	34444.66
8/14/2007 2:06:06 PM	34478.87
8/14/2007 2:09:05 PM	34498.41
8/14/2007 2:12:06 PM	34452.36
8/14/2007 2:15:07 PM	34401.11
8/14/2007 2:18:10 PM	34438.01
8/14/2007 2:21:06 PM	34433.37
8/14/2007 2:24:05 PM	34449.02
8/14/2007 2:27:05 PM	34493.02
8/14/2007 2:30:06 PM	34479.23
8/14/2007 2:33:06 PM	34439.7
8/14/2007 2:36:08 PM	34379.61
8/14/2007 2:39:06 PM	34445.82
8/14/2007 2:42:06 PM	34317.31
8/14/2007 2:45:06 PM	34401.2
8/14/2007 2:48:06 PM	34413.84
8/14/2007 2:51:06 PM	34416.64
8/14/2007 2:54:06 PM	34423.46
	34456

CRU Feed Rate

Report Start: Tuesday, August 14, 2007 3:22:00 PM
Report End: Tuesday, August 14, 2007 4:31:00 PM

	CRUFR
PV Label	
PV Name	CRUFR
Eng Units	bbl/day
Aggregate	1MIN
8/14/2007 3:24:06 PM	34331.99
8/14/2007 3:27:09 PM	34356.5
8/14/2007 3:30:06 PM	34389.93
8/14/2007 3:33:06 PM	34368.04
8/14/2007 3:36:05 PM	34319.96
8/14/2007 3:39:06 PM	34394.57
8/14/2007 3:42:05 PM	34350.59
8/14/2007 3:45:06 PM	34282.87
8/14/2007 3:48:07 PM	34276.62
8/14/2007 3:51:06 PM	34243.57
8/14/2007 3:54:06 PM	34235.53
8/14/2007 3:57:05 PM	34290.48
8/14/2007 4:00:24 PM	34384.25
8/14/2007 4:03:05 PM	34371.75
8/14/2007 4:06:06 PM	34344.36
8/14/2007 4:09:04 PM	34216.9
8/14/2007 4:12:05 PM	34341.02
8/14/2007 4:15:07 PM	34276.7
8/14/2007 4:18:08 PM	34309.59
8/14/2007 4:21:06 PM	34366.09
8/14/2007 4:24:05 PM	34355.41
8/14/2007 4:27:07 PM	34255.5
8/14/2007 4:30:07 PM	34322.59
	34321

Naphtha CCR pH

Report Start: Tuesday, August 14, 2007 11:00:00 AM
Report End: Tuesday, August 14, 2007 5:00:00 PM

PV Name	CCRSCRUBB		
Eng Units	pH		
Aggregate	1MIN		
8/14/2007 11:00:59 AM	9.46		
8/14/2007 11:01:59 AM	9.46		
8/14/2007 11:02:59 AM	9.46		
8/14/2007 11:04:00 AM	9.46		
8/14/2007 11:05:00 AM	9.46		
8/14/2007 11:06:00 AM	9.46		
8/14/2007 11:07:00 AM	9.46		
8/14/2007 11:08:00 AM	9.46		
8/14/2007 11:09:00 AM	9.46	Run 1	
8/14/2007 11:10:00 AM	**9.46**	**Avg =**	**9.53**
8/14/2007 11:11:00 AM	**9.46**		
8/14/2007 11:12:00 AM	**9.46**		
8/14/2007 11:13:00 AM	**9.46**		
8/14/2007 11:14:00 AM	**9.47**		
8/14/2007 11:15:00 AM	**9.47**		
8/14/2007 11:16:01 AM	**9.47**		
8/14/2007 11:17:01 AM	**9.48**		
8/14/2007 11:18:01 AM	**9.48**		
8/14/2007 11:19:01 AM	**9.49**		
8/14/2007 11:20:01 AM	**9.49**		
8/14/2007 11:21:01 AM	**9.50**		
8/14/2007 11:22:01 AM	**9.50**		
8/14/2007 11:23:01 AM	**9.50**		
8/14/2007 11:24:01 AM	**9.51**		
8/14/2007 11:25:01 AM	**9.51**		
8/14/2007 11:26:01 AM	**9.51**		
8/14/2007 11:27:01 AM	**9.52**		
8/14/2007 11:28:01 AM	**9.52**		
8/14/2007 11:29:01 AM	**9.52**		
8/14/2007 11:30:01 AM	**9.52**		
8/14/2007 11:31:02 AM	**9.52**		
8/14/2007 11:32:02 AM	**9.53**		
8/14/2007 11:33:02 AM	**9.53**		
8/14/2007 11:34:02 AM	**9.53**		
8/14/2007 11:35:02 AM	**9.53**		
8/14/2007 11:36:02 AM	**9.53**		
8/14/2007 11:37:02 AM	**9.53**		
8/14/2007 11:38:02 AM	**9.53**		
8/14/2007 11:39:02 AM	**9.53**		
8/14/2007 11:40:02 AM	**9.54**		
8/14/2007 11:41:02 AM	**9.54**		
8/14/2007 11:42:02 AM	**9.54**		
8/14/2007 11:43:02 AM	**9.54**		
8/14/2007 11:44:02 AM	**9.54**		
8/14/2007 11:45:02 AM	**9.54**		
8/14/2007 11:46:02 AM	**9.54**		
8/14/2007 11:47:03 AM	**9.54**		
8/14/2007 11:48:03 AM	**9.55**		
8/14/2007 11:49:03 AM	**9.55**		
8/14/2007 11:50:03 AM	**9.55**		

Naphtha CCR pH

Report Start: Tuesday, August 14, 2007 11:00:00 AM
Report End: Tuesday, August 14, 2007 5:00:00 PM

PV Name	CCRSCRUBB
Eng Units	pH
Aggregate	1MIN
8/14/2007 11:51:03 AM	**9.55**
8/14/2007 11:52:03 AM	**9.55**
8/14/2007 11:53:03 AM	**9.55**
8/14/2007 11:54:03 AM	**9.55**
8/14/2007 11:55:03 AM	**9.55**
8/14/2007 11:56:03 AM	**9.55**
8/14/2007 11:57:03 AM	**9.55**
8/14/2007 11:58:03 AM	**9.55**
8/14/2007 11:59:03 AM	**9.56**
8/14/2007 12:00:03 PM	**9.56**
8/14/2007 12:01:03 PM	**9.56**
8/14/2007 12:02:03 PM	**9.56**
8/14/2007 12:03:04 PM	**9.56**
8/14/2007 12:04:04 PM	**9.56**
8/14/2007 12:05:04 PM	**9.56**
8/14/2007 12:06:04 PM	**9.56**
8/14/2007 12:07:04 PM	**9.56**
8/14/2007 12:08:04 PM	**9.56**
8/14/2007 12:09:04 PM	**9.57**
8/14/2007 12:10:04 PM	**9.57**
8/14/2007 12:11:04 PM	**9.57**
8/14/2007 12:12:04 PM	**9.57**
8/14/2007 12:13:04 PM	9.57
8/14/2007 12:14:04 PM	9.57
8/14/2007 12:15:04 PM	9.57
8/14/2007 12:16:04 PM	9.57
8/14/2007 12:17:04 PM	9.57
8/14/2007 12:18:04 PM	9.57
8/14/2007 12:19:04 PM	9.57
8/14/2007 12:20:04 PM	9.57
8/14/2007 12:21:04 PM	9.58
8/14/2007 12:22:04 PM	9.58
8/14/2007 12:23:04 PM	9.58
8/14/2007 12:24:04 PM	9.58
8/14/2007 12:25:04 PM	9.58
8/14/2007 12:26:04 PM	9.58
8/14/2007 12:27:04 PM	9.58
8/14/2007 12:28:05 PM	9.58
8/14/2007 12:29:05 PM	9.58
8/14/2007 12:30:05 PM	9.58
8/14/2007 12:31:05 PM	9.58
8/14/2007 12:32:05 PM	9.58
8/14/2007 12:33:05 PM	9.58
8/14/2007 12:34:05 PM	9.58
8/14/2007 12:35:05 PM	9.58
8/14/2007 12:36:05 PM	9.58
8/14/2007 12:37:05 PM	9.58
8/14/2007 12:38:05 PM	9.58
8/14/2007 12:39:05 PM	9.58
8/14/2007 12:40:05 PM	9.58

Naphtha CCR pH

Report Start: Tuesday, August 14, 2007 11:00:00 AM
Report End: Tuesday, August 14, 2007 5:00:00 PM

PV Name	CCRSCRUBB
Eng Units	pH
Aggregate	1MIN
8/14/2007 12:41:05 PM	9.58
8/14/2007 12:42:06 PM	9.58
8/14/2007 12:43:06 PM	9.58
8/14/2007 12:44:06 PM	9.58
8/14/2007 12:45:06 PM	9.58
8/14/2007 12:46:06 PM	9.58
8/14/2007 12:47:06 PM	9.58
8/14/2007 12:48:06 PM	9.58
8/14/2007 12:49:06 PM	9.58
8/14/2007 12:50:06 PM	9.58
8/14/2007 12:51:06 PM	9.58
8/14/2007 12:52:06 PM	9.58
8/14/2007 12:53:06 PM	9.58
8/14/2007 12:54:06 PM	9.58
8/14/2007 12:55:06 PM	9.58
8/14/2007 12:56:07 PM	9.58
8/14/2007 12:57:07 PM	9.58
8/14/2007 12:58:07 PM	9.58
8/14/2007 12:59:07 PM	9.58
8/14/2007 1:00:07 PM	9.58
8/14/2007 1:01:07 PM	9.58
8/14/2007 1:02:07 PM	9.58
8/14/2007 1:03:07 PM	9.58
8/14/2007 1:04:07 PM	9.58
8/14/2007 1:05:07 PM	9.58
8/14/2007 1:06:07 PM	9.58
8/14/2007 1:07:07 PM	9.58
8/14/2007 1:08:07 PM	9.58
8/14/2007 1:09:07 PM	9.58
8/14/2007 1:10:07 PM	9.58
8/14/2007 1:11:08 PM	9.58
8/14/2007 1:12:08 PM	9.58
8/14/2007 1:13:08 PM	9.58
8/14/2007 1:14:08 PM	9.58
8/14/2007 1:15:08 PM	9.58
8/14/2007 1:16:08 PM	9.58
8/14/2007 1:17:08 PM	9.58
8/14/2007 1:18:08 PM	9.58
8/14/2007 1:19:08 PM	9.58
8/14/2007 1:20:08 PM	9.58
8/14/2007 1:21:08 PM	9.58
8/14/2007 1:22:08 PM	9.58
8/14/2007 1:23:08 PM	9.58
8/14/2007 1:24:08 PM	9.58
8/14/2007 1:25:08 PM	9.58
8/14/2007 1:26:08 PM	9.58
8/14/2007 1:27:08 PM	9.58
8/14/2007 1:28:09 PM	9.58
8/14/2007 1:29:09 PM	9.58
8/14/2007 1:30:09 PM	9.58

Naphtha CCR pH

Report Start: Tuesday, August 14, 2007 11:00:00 AM
Report End: Tuesday, August 14, 2007 5:00:00 PM

PV Name	CCRSCRUBB		
Eng Units	pH		
Aggregate	1MIN		
8/14/2007 1:31:09 PM	9.57		
8/14/2007 1:32:09 PM	9.57		
8/14/2007 1:33:09 PM	9.57		
8/14/2007 1:34:09 PM	9.57		
8/14/2007 1:35:09 PM	9.57		
8/14/2007 1:36:09 PM	9.57		
8/14/2007 1:37:09 PM	9.57		
8/14/2007 1:38:09 PM	9.57		
8/14/2007 1:39:09 PM	9.57		
8/14/2007 1:40:09 PM	9.57		
8/14/2007 1:41:09 PM	9.57		
8/14/2007 1:42:09 PM	9.57		
8/14/2007 1:43:10 PM	9.57		
8/14/2007 1:44:10 PM	9.56	**Run 2**	
8/14/2007 1:45:10 PM	**9.56**	**Avg =**	**9.54**
8/14/2007 1:46:10 PM	**9.56**		
8/14/2007 1:47:10 PM	**9.56**		
8/14/2007 1:48:10 PM	**9.56**		
8/14/2007 1:49:10 PM	**9.56**		
8/14/2007 1:50:10 PM	**9.56**		
8/14/2007 1:51:10 PM	**9.56**		
8/14/2007 1:52:10 PM	**9.56**		
8/14/2007 1:53:10 PM	**9.56**		
8/14/2007 1:54:10 PM	**9.56**		
8/14/2007 1:55:10 PM	**9.56**		
8/14/2007 1:56:10 PM	**9.55**		
8/14/2007 1:57:10 PM	**9.55**		
8/14/2007 1:58:10 PM	**9.55**		
8/14/2007 1:59:10 PM	**9.55**		
8/14/2007 2:00:10 PM	**9.55**		
8/14/2007 2:01:10 PM	**9.55**		
8/14/2007 2:02:10 PM	**9.55**		
8/14/2007 2:03:10 PM	**9.54**		
8/14/2007 2:04:11 PM	**9.54**		
8/14/2007 2:05:11 PM	**9.54**		
8/14/2007 2:06:11 PM	**9.54**		
8/14/2007 2:07:11 PM	**9.54**		
8/14/2007 2:08:11 PM	**9.54**		
8/14/2007 2:09:11 PM	**9.54**		
8/14/2007 2:10:11 PM	**9.54**		
8/14/2007 2:11:11 PM	**9.54**		
8/14/2007 2:12:11 PM	**9.54**		
8/14/2007 2:13:11 PM	**9.54**		
8/14/2007 2:14:11 PM	**9.54**		
8/14/2007 2:15:11 PM	**9.54**		
8/14/2007 2:16:11 PM	**9.54**		
8/14/2007 2:17:11 PM	**9.53**		
8/14/2007 2:18:11 PM	**9.53**		
8/14/2007 2:19:11 PM	**9.53**		
8/14/2007 2:20:11 PM	**9.53**		

Naphtha CCR pH

Report Start: Tuesday, August 14, 2007 11:00:00 AM
Report End: Tuesday, August 14, 2007 5:00:00 PM

PV Name	CCRSCRUBB
Eng Units	pH
Aggregate	1MIN
8/14/2007 2:21:11 PM	**9.53**
8/14/2007 2:22:11 PM	**9.53**
8/14/2007 2:23:11 PM	**9.53**
8/14/2007 2:24:11 PM	**9.53**
8/14/2007 2:25:11 PM	**9.53**
8/14/2007 2:26:12 PM	**9.53**
8/14/2007 2:27:12 PM	**9.53**
8/14/2007 2:28:12 PM	**9.53**
8/14/2007 2:29:12 PM	**9.53**
8/14/2007 2:30:12 PM	**9.53**
8/14/2007 2:31:12 PM	**9.53**
8/14/2007 2:32:12 PM	**9.53**
8/14/2007 2:33:12 PM	**9.53**
8/14/2007 2:34:12 PM	**9.53**
8/14/2007 2:35:12 PM	**9.53**
8/14/2007 2:36:12 PM	**9.53**
8/14/2007 2:37:12 PM	**9.53**
8/14/2007 2:38:12 PM	**9.53**
8/14/2007 2:39:12 PM	**9.53**
8/14/2007 2:40:12 PM	**9.53**
8/14/2007 2:41:12 PM	**9.52**
8/14/2007 2:42:13 PM	**9.52**
8/14/2007 2:43:13 PM	**9.52**
8/14/2007 2:44:13 PM	**9.52**
8/14/2007 2:45:13 PM	**9.52**
8/14/2007 2:46:13 PM	**9.52**
8/14/2007 2:47:13 PM	**9.52**
8/14/2007 2:48:13 PM	**9.52**
8/14/2007 2:49:13 PM	**9.52**
8/14/2007 2:50:13 PM	**9.52**
8/14/2007 2:51:13 PM	**9.51**
8/14/2007 2:52:13 PM	**9.51**
8/14/2007 2:53:13 PM	**9.51**
8/14/2007 2:54:13 PM	9.51
8/14/2007 2:55:13 PM	9.51
8/14/2007 2:56:13 PM	9.51
8/14/2007 2:57:13 PM	9.51
8/14/2007 2:58:13 PM	9.5
8/14/2007 2:59:13 PM	9.5
8/14/2007 3:00:13 PM	9.5
8/14/2007 3:01:13 PM	9.5
8/14/2007 3:02:13 PM	9.5
8/14/2007 3:03:13 PM	9.5
8/14/2007 3:04:13 PM	9.5
8/14/2007 3:05:13 PM	9.5
8/14/2007 3:06:13 PM	9.49
8/14/2007 3:07:13 PM	9.49
8/14/2007 3:08:13 PM	9.49
8/14/2007 3:09:14 PM	9.49
8/14/2007 3:10:14 PM	9.49

Naphtha CCR pH

Report Start: Tuesday, August 14, 2007 11:00:00 AM
Report End: Tuesday, August 14, 2007 5:00:00 PM

PV Name	CCRSCRUBB		
Eng Units	pH		
Aggregate	1MIN		
8/14/2007 3:11:14 PM	9.49		
8/14/2007 3:12:14 PM	9.48		
8/14/2007 3:13:14 PM	9.48		
8/14/2007 3:14:14 PM	9.48		
8/14/2007 3:15:14 PM	9.48		
8/14/2007 3:16:14 PM	9.48		
8/14/2007 3:17:14 PM	9.48		
8/14/2007 3:18:14 PM	9.48		
8/14/2007 3:19:14 PM	9.48		
8/14/2007 3:20:14 PM	9.48		
8/14/2007 3:21:14 PM	9.48	**Run 3**	
8/14/2007 3:22:14 PM	**9.48**	**Avg =**	**9.47**
8/14/2007 3:23:14 PM	**9.48**		
8/14/2007 3:24:14 PM	**9.48**		
8/14/2007 3:25:14 PM	**9.48**		
8/14/2007 3:26:14 PM	**9.48**		
8/14/2007 3:27:14 PM	**9.47**		
8/14/2007 3:28:14 PM	**9.47**		
8/14/2007 3:29:14 PM	**9.47**		
8/14/2007 3:30:14 PM	**9.47**		
8/14/2007 3:31:14 PM	**9.47**		
8/14/2007 3:32:14 PM	**9.47**		
8/14/2007 3:33:14 PM	**9.47**		
8/14/2007 3:34:14 PM	**9.47**		
8/14/2007 3:35:14 PM	**9.47**		
8/14/2007 3:36:15 PM	**9.47**		
8/14/2007 3:37:15 PM	**9.47**		
8/14/2007 3:38:15 PM	**9.47**		
8/14/2007 3:39:15 PM	**9.47**		
8/14/2007 3:40:15 PM	**9.47**		
8/14/2007 3:41:15 PM	**9.47**		
8/14/2007 3:42:15 PM	**9.47**		
8/14/2007 3:43:15 PM	**9.47**		
8/14/2007 3:44:15 PM	**9.47**		
8/14/2007 3:45:15 PM	**9.47**		
8/14/2007 3:46:15 PM	**9.47**		
8/14/2007 3:47:15 PM	**9.47**		
8/14/2007 3:48:15 PM	**9.47**		
8/14/2007 3:49:15 PM	**9.47**		
8/14/2007 3:50:15 PM	**9.47**		
8/14/2007 3:51:15 PM	**9.47**		
8/14/2007 3:52:15 PM	**9.47**		
8/14/2007 3:53:15 PM	**9.47**		
8/14/2007 3:54:15 PM	**9.47**		
8/14/2007 3:55:15 PM	**9.47**		
8/14/2007 3:56:15 PM	**9.47**		
8/14/2007 3:57:15 PM	**9.47**		
8/14/2007 3:58:15 PM	**9.47**		
8/14/2007 3:59:15 PM	**9.47**		
8/14/2007 4:00:15 PM	**9.47**		

Naphtha CCR pH

Report Start: Tuesday, August 14, 2007 11:00:00 AM
Report End: Tuesday, August 14, 2007 5:00:00 PM

PV Name	CCRSCRUBB
Eng Units	pH
Aggregate	1MIN
8/14/2007 4:01:15 PM	9.47
8/14/2007 4:02:15 PM	9.47
8/14/2007 4:03:16 PM	9.47
8/14/2007 4:04:16 PM	9.47
8/14/2007 4:05:16 PM	9.47
8/14/2007 4:06:16 PM	9.47
8/14/2007 4:07:16 PM	9.47
8/14/2007 4:08:16 PM	9.47
8/14/2007 4:09:16 PM	9.47
8/14/2007 4:10:16 PM	9.46
8/14/2007 4:11:16 PM	9.46
8/14/2007 4:12:16 PM	9.46
8/14/2007 4:13:16 PM	9.46
8/14/2007 4:14:16 PM	9.46
8/14/2007 4:15:16 PM	9.46
8/14/2007 4:16:16 PM	9.46
8/14/2007 4:17:16 PM	9.46
8/14/2007 4:18:16 PM	9.46
8/14/2007 4:19:16 PM	9.46
8/14/2007 4:20:16 PM	9.46
8/14/2007 4:21:16 PM	9.46
8/14/2007 4:22:16 PM	9.46
8/14/2007 4:23:16 PM	9.46
8/14/2007 4:24:16 PM	9.46
8/14/2007 4:25:16 PM	9.46
8/14/2007 4:26:16 PM	9.46
8/14/2007 4:27:16 PM	9.46
8/14/2007 4:28:16 PM	9.46
8/14/2007 4:29:16 PM	9.46
8/14/2007 4:30:16 PM	9.46
8/14/2007 4:31:16 PM	9.46
8/14/2007 4:32:17 PM	9.46
8/14/2007 4:33:17 PM	9.46
8/14/2007 4:34:17 PM	9.46
8/14/2007 4:35:17 PM	9.46
8/14/2007 4:36:17 PM	9.46
8/14/2007 4:37:17 PM	9.46
8/14/2007 4:38:17 PM	9.46
8/14/2007 4:39:17 PM	9.46
8/14/2007 4:40:17 PM	9.46
8/14/2007 4:41:17 PM	9.46
8/14/2007 4:42:17 PM	9.46
8/14/2007 4:43:17 PM	9.46
8/14/2007 4:44:17 PM	9.46
8/14/2007 4:45:17 PM	9.46
8/14/2007 4:46:17 PM	9.46
8/14/2007 4:47:17 PM	9.46
8/14/2007 4:48:17 PM	9.45
8/14/2007 4:49:17 PM	9.45
8/14/2007 4:50:17 PM	9.45

Naphtha CCR pH

Report Start: Tuesday, August 14, 2007 11:00:00 AM
Report End: Tuesday, August 14, 2007 5:00:00 PM

PV Name	CCRSCRUBB
Eng Units	pH
Aggregate	1MIN
8/14/2007 4:51:17 PM	9.45
8/14/2007 4:52:17 PM	9.45
8/14/2007 4:53:17 PM	9.45
8/14/2007 4:54:17 PM	9.45
8/14/2007 4:55:17 PM	9.45
8/14/2007 4:56:17 PM	9.45
8/14/2007 4:57:17 PM	9.45
8/14/2007 4:58:17 PM	9.45
8/14/2007 4:59:17 PM	9.45

APPENDIX G

ARI Project Participants

Personnel Qualifications

Daniel Fitzgerald
Mr. Fitzgerald is the Division Manager of ARI's Source Testing Division with offices located in Wauconda, Illinois and Houston, Texas. With over 28 years experience in process evaluation, emission compliance and control equipment efficiency test programs, Mr. Fitzgerald specializes in the technical planning, coordination and performance of environmental test programs. Mr. Fitzgerald has an extensive background in EPA sampling and analysis applications, incinerator design and optimization, VOC sampling and analysis, RCRA trial burn testing, sampling equipment design and fabrication, implementation of innovative sampling and analysis techniques, methods validation and R&D.

His source sampling experience includes conducting over 1000 separate test programs involving emissions testing at steel mills, refineries, printing operations, food processing, chemical plants, fume incineration systems, hazardous waste incinerators, bulk gasoline terminals and power plants.

Jeff Goldfine
Mr. Goldfine is a field technician specializing in sampling equipment preparation, maintenance and calibration, equipment setup, field sampling, sample recovery, and posttest equipment clean up. Mr. Goldfine has over 3 years experience in conducting various source emission test programs.

Walter Page
Mr. Page is a field technician specializing in sampling equipment preparation, maintenance and calibration, equipment setup, field sampling, sample recovery, and posttest equipment clean up.

Adam Hensley
Mr. Hensley is a Source Sampling Field Technician. Mr. Hensley is well versed in the operation and maintenance of manual source sampling equipment and has performed these functions on numerous tests for various clients.

Mr. Hensley's responsibilities include field sampling, sample analysis, data reduction and interpretation, and maintenance and calibration of continuous and manual source sampling equipment.