

TEST REPORT

COMPLIANCE EMISSION TEST PROGRAM

SRU NO. 2 INCINERATOR: EPN V-16

TCEQ FLEXIBLE PERMIT NO. 9708/PSD-TX-861M2

REGULATED ENTITY NO. 100210517

TCEQ ACCOUNT ID NO. MR-0008-T

VALERO MCKEE REFINERY
SUNRAY, TEXAS

PREPARED FOR:

DIAMOND SHAMROCK REFINING COMPANY, L.P.
(A Valero Company)

6701 FM 119

Sunray, Texas 79086

Phone: 806.935.1202

Fax: 806.935.1216

E-mail: Kevin.jeanes@valero.com

Attention: Mr. Kevin D. Jeanes

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

ARI Project No. H545-10

ARI Proposal No. H30807

Valero Purchase Order No. 4501391012

Test Dates: June 4 and 6, 2008



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SECTION ONE

Introduction and Summary

ARI Environmental, Inc. (ARI) was retained by the Diamond Shamrock Refining Company, L.P., a Valero Company (Valero) to conduct a compliance emission test program on the SRU No. 2 Incinerator Exhaust at the Valero McKee Refinery located in Sunray, Texas. This source is designated as Emission Point Number (EPN) V-16 in Valero's Flexible Permit No. 9708/PSD-TX-861M2.

Six (6) test runs were conducted to determine the concentrations and mass emission rates of particulate matter (PM), nitrogen oxides (NO_x), carbon monoxide (CO) and total reduced sulfur (TRS). Testing was conducted on June 4 and 6, 2008.

Sampling was conducted in accordance with the following regulatory requirements and procedures:

- Texas Commission on Environmental Quality (TCEQ) Flexible Permit No. 9708/PSD-TX-861M2
- 40 CFR 51, Appendix M, USEPA Methods 202 and 205
- 40 CFR 60, Appendix A, USEPA Methods 1, 2, 3A, 4, 5, 7E, 10 and 15
- Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III, Stationary Source Specific Methods
- TCEQ Sampling Procedures Manual

The ARI test team consisted of Mr. Dan Fitzgerald, Mr. Terrence Davis and Dr. Steve Yuchs of ARI. The testing was coordinated by Mr. Kevin Jeanes of Valero.

This report details the test procedures and results of the testing. Included in the appendices is complete documentation of all field test data, calculation summary data, laboratory data, ARI reference method monitoring data, test equipment calibration data and process data.

A summary of the test results is presented in Tables 1-1 and 1-2.



SECTION ONE

Introduction and Summary

**TABLE 1-1. SRU NO. 2 INCINERATOR EXHAUST TEST RESULTS SUMMARY
(JUNE 4, 2008)**

Test Run :	1	2	3	Average	Allowable
Total Particulate Matter (PM)					
Concentration, gr/dscf	0.0255	0.0153	0.0086	0.0165	
Emission rate, lb/hr	0.98	0.59	0.32	0.63	
Nitrogen Oxides (NO_x)					
Concentration, ppmv db	11.9	12.3	12.0	12.1	
Emission rate, lb/hr	0.383	0.394	0.381	0.386	
Carbon Monoxide (CO)					
Concentration, ppmv db	1,046	725	501	757	
Emission rate, lb/hr	20.5	14.2	9.7	14.8	
Total Reduced Sulfur (TRS) as SO₂					
Concentration, ppmv db @ 3% O ₂	<2.4	<1.0	<0.8	<1.4	5.0
Emission rate, lb/hr	<0.108	<0.045	<0.036	<0.063	

**TABLE 1-2. SRU NO. 2 INCINERATOR EXHAUST TEST RESULTS SUMMARY
(JUNE 6, 2008)**

Test Run :	4	5	6	Average	Allowable
Total Particulate Matter (PM)					
Concentration, gr/dscf	0.0193	0.0055	0.0129	0.0126	
Emission rate, lb/hr	0.749	0.216	0.484	0.483	
Nitrogen Oxides (NO_x)					
Concentration, ppmv db	9.3	10.7	11.7	10.6	
Emission rate, lb/hr	0.303	0.351	0.368	0.340	
Carbon Monoxide (CO)					
Concentration, ppmv db	652	755	730	712	
Emission rate, lb/hr	12.9	15.1	13.9	14.0	
Total Reduced Sulfur (TRS) as SO₂					
Concentration, ppmv db @ 3% O ₂	<0.9	<1.0	<1.2	<1.0	5.0
Emission rate, lb/hr	<0.040	<0.043	<0.052	<0.045	



SECTION TWO

Testing and Analytical Procedures

2.1 OVERVIEW

Testing was conducted in accordance with the following procedures:

- Title 40 of the Code of Federal Regulations (40 CFR), Part 60, 2007, Appendix A - USEPA Methods 1-4, 5, 7E, 10 and 15
- Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III - Stationary Source Specific Methods
- 40 CFR, Part 51, 2007, Appendix M - USEPA Methods 202 and 205
- TCEQ Sampling Procedures Manual
- TCEQ Laboratory Methods Manual
- TCEQ Flexible Permit Nos. 9708 and PSD-TX-861M2

Six (6) 120-minute test runs were conducted for PM determination. Six (6) 180-minute test runs were conducted for NO_x, CO and TRS determination.

2.2 USEPA METHOD 1 - SAMPLING LOCATION

The sampling point locations used for the determination of velocity and volumetric flow rate were determined following USEPA Method 1 procedures. Sampling at the exhaust stack was conducted using the two sampling ports provided on the exhaust stack. The sampling port locations on the 53-inch diameter stack are located approximately 280 inches (5.3 duct diameters) upstream and approximately 196 inches (3.7 duct diameters) downstream from the nearest flow disturbances. Eight (8) sampling points were used for each sample port for a total of 16 sampling points. See Figure 2-1.

The sampling point locations used for the reference method sampling were determined following the procedures detailed in USEPA Method 7E. An initial stratification check was performed in one sample port using 3 points located at 16.7%, 50.0% and 83.3% of the stack diameter. The 3-point average of each pollutant and diluent was compared to each measurement recorded for each sample point and no measurement deviated by 5 percent of the 3-point average. Based upon this criteria, sampling was conducted during each test run at a single point located in the center of the stack.

2.3 USEPA METHOD 2 – FLUE GAS VOLUMETRIC FLOW RATE DETERMINATION

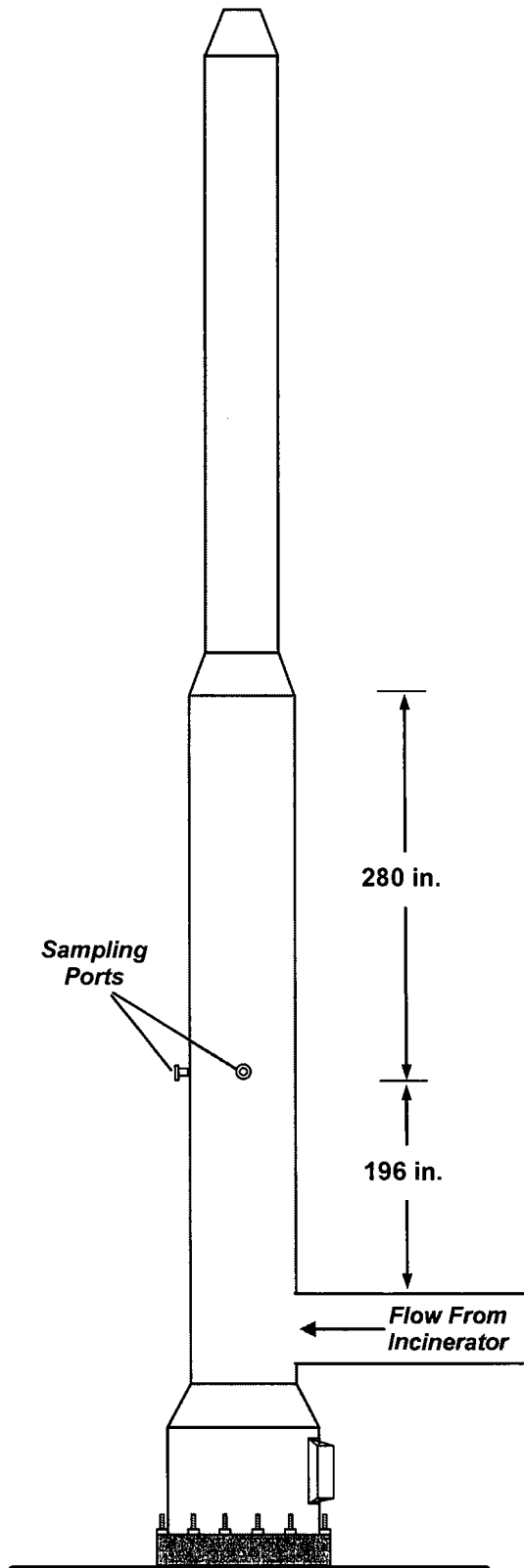
Gas velocity and volumetric flow rate were determined following USEPA Method 2. Velocity head measurements were performed using a Type S pitot tube and Dwyer inclined 0 – 10-in. water manometer. Temperature measurements were conducted using a digital temperature meter and chromel-alumel thermocouple.

2.4 USEPA METHOD 3A - FLUE GAS MOLECULAR WEIGHT

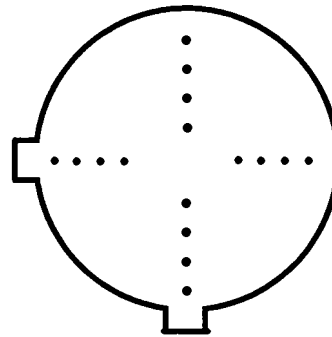
The stack gas molecular weight was determined following calculations presented in USEPA Method 3A. The concentrations of oxygen (O₂) and carbon dioxide (CO₂) were measured in association with the procedures described in Subsection 2.7.

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CROSS SECTION



TRAVERSE POINTS: 16
NUMBER OF PORTS: 2
POINTS/PORT: 8
STACK ID: 53 in.

TRAVERSE POINT NO.	DISTANCE FROM INSIDE WALL, in.
1	1.69
2	5.56
3	10.28
4	17.11
5	35.88
6	42.71
7	47.43
8	51.30

FIGURE 2-1.
VALERO MCKEE REFINERY
SRU NO. 2 INCINERATOR EXHAUST
SAMPLING LOCATION



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2.5 USEPA METHOD 4 - FLUE GAS MOISTURE CONTENT

The stack gas moisture content was determined following USEPA Method 4. This method was performed in conjunction with the USEPA Method 5/202 procedures described in Subsection 2.6.

2.6 USEPA METHODS 5 AND 202 - PARTICULATE MATTER DETERMINATION

Filterable and condensible PM were measured using the same sampling train as follows. Sampling was conducted in accordance with USEPA Methods 5 and 202 using an Apex Instruments, Inc. particulate sampling train (Figure 2-2). The back half impinger catch was analyzed for particulate in accordance with USEPA Method 202 procedures for condensible particulate determination. Each test run was conducted for 120 minutes and coincided with each of the 180-minute TRS, NO_x and CO runs described in Subsection 2.8.

2.6.1 Sampling Apparatus

Nozzle - Stainless steel (316) with sharp, tapered leading edge.

Probe - Borosilicate glass with a heating system capable of maintaining a probe exit temperature of 248°F±25°F.

Pitot Tube - Type-S attached to probe for monitoring stack gas velocity.

Filter Holder - Borosilicate glass with a glass frit filter support and a silicone rubber gasket. The holder design provided a positive seal against leakage from the outside or around the filter. The filter holder was heated to 248°F ± 25°F during sampling. A 4-inch glass fiber filter meeting the specification of USEPA Method 5 was placed in the holder.

Draft Gauge - Inclined manometer with a readability of 0.01 in. H₂O in the 0- to 1-in. range and 0.1-in. H₂O in the 1-in. to 10-in. range.

Impingers - Four (4) impingers connected in series with glass ball joints. The first and second impingers were of the Greenburg-Smith design with a standard tip. The third and fourth were of the Greenburg-Smith design, but modified by replacing the standard tip with a ½-in.-i.d. glass tube extending to within ½ in. of the bottom of the impinger flask.

Metering System - Apex Model 522. Vacuum gauge, leak-free pump, thermometers capable of measuring temperature to within 5°F, dry gas meter with ±2 percent accuracy, and related equipment as required to maintain an isokinetic sampling rate and to determine sample volume.

Barometer - Mercury barometer capable of measuring atmospheric pressure to within ±0.1 in. Hg

2.6.2 Sampling Procedures

After the minimum number of traverse points were selected, the stack pressure, temperature, moisture, and range of velocity head were measured according to procedures described in USEPA Methods 1 through 4. The first, second and third impingers initially contained 100 mL of deionized/distilled water. The fourth contained 200 g of silica gel. The train was set up with the probe and filter holder as shown in Figure 2-2.

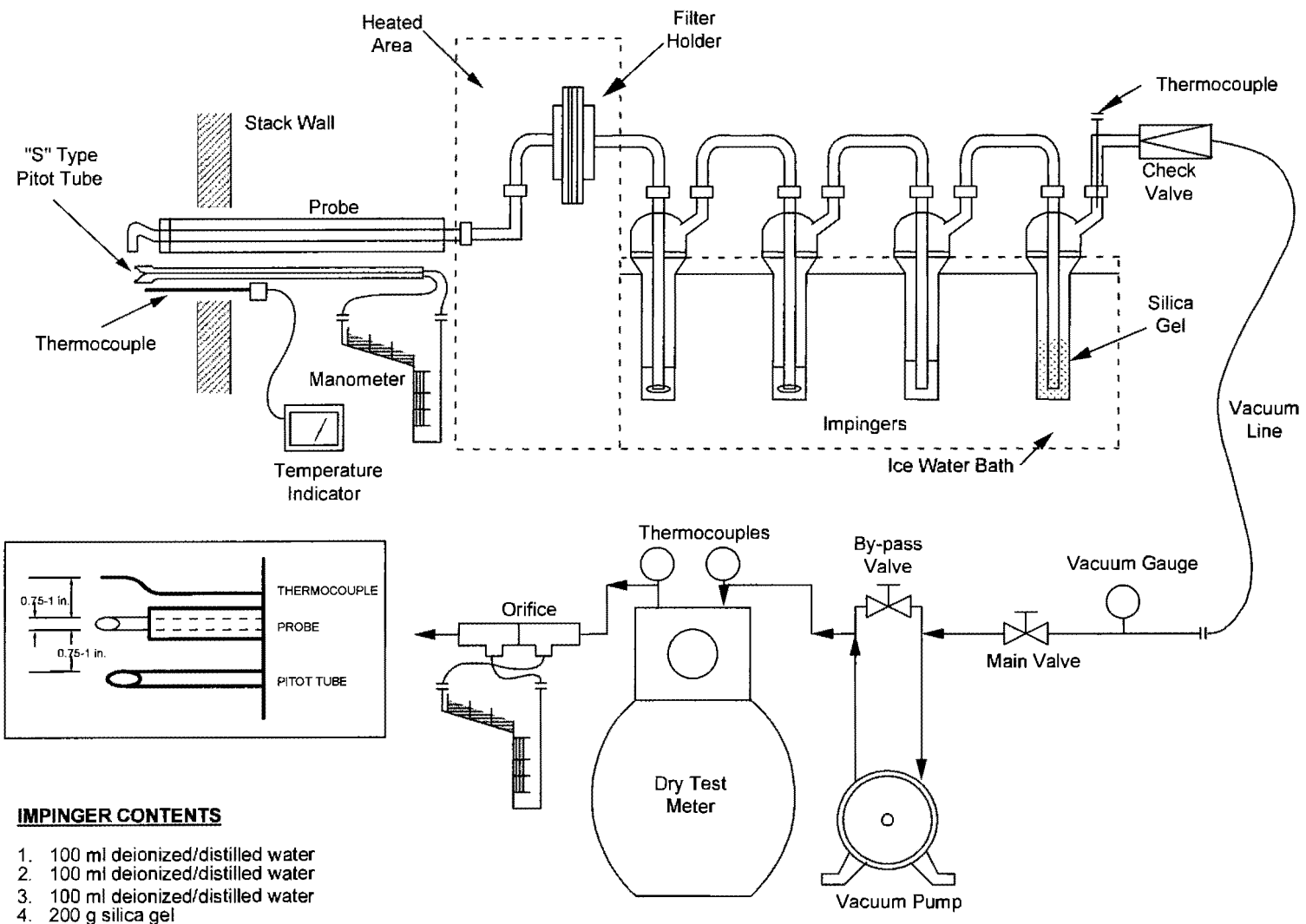


FIGURE 2-2. USEPA METHOD 5/202 PARTICULATE MATTER SAMPLING TRAIN



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The sampling train was leak-checked at the sampling site by plugging the inlet to the nozzle and pulling a vacuum of 14 in. Hg. Leak rates of less than 0.02 ft³/min at a vacuum of 14 in. Hg were recorded in all cases. At the completion of each test, the sampling train was again leak-checked by the same procedure, but at the highest vacuum attained during the test run. Both pre- and post-test leak checks of the pitot tube were made for each test run. Ice was placed around the impingers to keep the temperature of the gases leaving the last impinger at less than 68°F.

During sampling, stack gas and sampling train data were recorded at specified intervals. Isokinetic sampling rates were set throughout the sampling period with the aid of a programmable calculator.

2.6.3 Sample Recovery Procedures

After sampling was completed and the final leak checks were performed, the filter and probe (front half) were disconnected from the impinger train. A clean unused filter was placed in front of the first impinger and a post-test nitrogen purge was conducted following the procedures described in §5.21 of USEPA Method 202. The purge was conducted with the impingers still on ice at the meter $\Delta H@$ for 60 minutes.

The sample fractions were recovered as follows:

Container 1 - The filter holder was sealed.

Container 2 - Loose particulate and acetone washings from all sample-exposed surfaces prior to the filter were placed in a glass bottle, sealed, and labeled. Particulate was removed from the probe with the aid of a brush and acetone rinsing. The liquid level was marked after the container is sealed.

Container 3 - A minimum of 200 mL of acetone was taken for the blank analysis. The blank was obtained and treated in a similar manner as the contents of Container 2.

Container 4 - The contents of impingers 1 through 3 were measured volumetrically, a subsequent deionized/distilled water rinse was performed and both were placed in a glass bottle, sealed and labeled. The contents of impinger 4 were weighed and then discarded.

Container 5 - The impingers were quantitatively rinsed with methylene chloride and placed in a glass bottle, sealed and labeled.

2.6.4 Analytical Procedures

The analytical procedures followed were those described in USEPA Methods 5 and 202.

Container 1 - The filter and any loose particulate matter from this sample container were placed in a tared glass weighing dish, placed in a desiccator for 24 hours and weighed to a constant weight to the nearest 0.1 mg.



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Container 2 - The acetone washings were transferred to a tared beaker and evaporated to dryness at ambient temperature and pressure. Then the contents were placed in a desiccator for 24 hours and weighed to a constant weight to the nearest 0.1 mg.

Container 3 - The acetone blank was transferred to a tared beaker and evaporated to dryness at ambient temperature and pressure. Then the contents were placed in a desiccator for 24 hours and weighed to a constant weight to the nearest 0.1mg.

Containers 4 and 5 - The impinger water was quantitatively extracted with methylene chloride. The methylene chloride extract was combined with container 5 contents.

The impinger water was placed in a tared beaker. The beaker was placed in an oven set at 105°C, evaporated to dryness, desiccated and re-weighed. The gain in mass represents the inorganic PM collected in the sampling train back half.

The methylene chloride solution was placed in a tared beaker. The beaker was placed in a fume hood and allowed to evaporate. The beaker was then desiccated and re-weighed. The gain in mass represents the organic PM collected in the sampling train back half.

The term "constant weight" means a difference of no more than 0.5 mg or 1 percent of total weight less tare weight, whichever is greater between two consecutive readings, with no less than 6 hours of desiccation between weighings.

2.7 USEPA METHODS 3A, 7E AND 10 - CO₂, O₂, NO_x AND CO

ARI's sampling system consisted of a heated probe with in-stack filter followed by a three-way calibration valve connected to a heated Teflon sample line. The Teflon sample line was connected to an electronic sample conditioner (Universal Analyzer Model No. 3082) to remove moisture. A sample manifold was connected to the exhaust side of the sample conditioner with intake lines for ARI's O₂, CO₂, NO_x, and CO analyzers. See Figure 2-3.

Continuous O₂ sampling was conducted following USEPA Method 3A. O₂ was measured using ARI's Servomex, Inc. Model 1440C paramagnetic analyzer. A pre-test and post-test system bias along with the initial calibration error test were performed using diluted O₂ balance nitrogen standards of zero, 4.50% and 9.00% at an analyzer span of 9.00%.

Continuous CO₂ sampling was conducted following USEPA Method 3A. CO₂ was measured using ARI's Servomex, Inc. Model 1440C non-dispersive infrared (NDIR) gas analyzer. A pre-test and post-test system bias along with the initial calibration error test were performed using diluted CO₂ balance nitrogen standards of zero, 9.00% and 18.00% at an analyzer span of 18.00%.

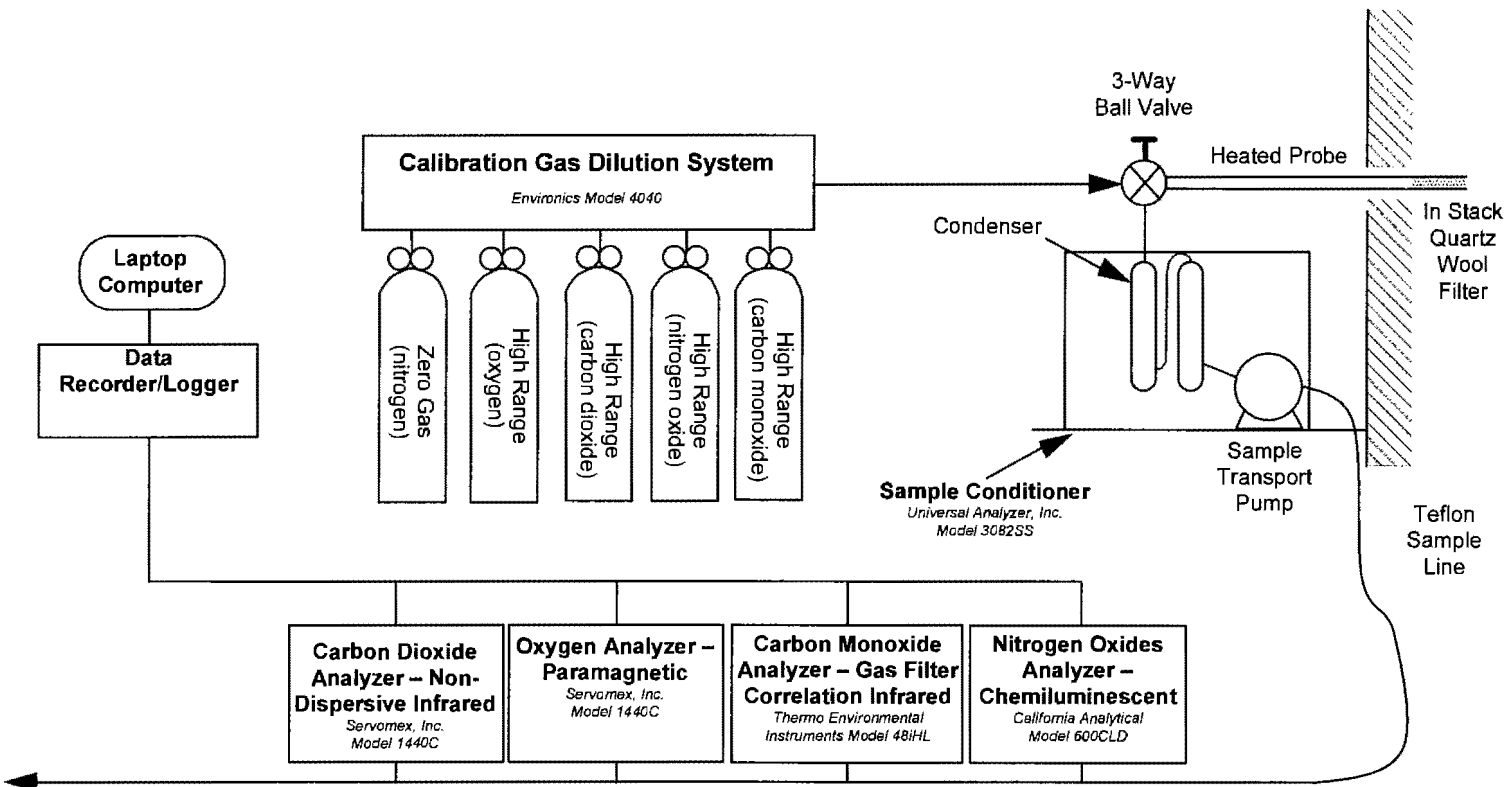


FIGURE 2-3. ARI REFERENCE METHOD CO₂, O₂, NO_x AND CO SAMPLING SYSTEM



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Continuous NO_x sampling was conducted following USEPA Method 7E procedures. NO_x was measured using ARI's California Analytical Instruments, Inc. Model 600CLD chemiluminescent analyzer. A pre-test and post-test system bias along with the initial calibration error test were performed using diluted NO_x balance nitrogen standards of zero, 45.0 ppm and 90.0 ppm at an analyzer span of 90.0 ppm. A pre-test converter efficiency test was conducted following the procedures described in paragraph 8.2.4.1 of USEPA Method 7E (40 CFR 60, Appendix A). The converter is acceptable if the NO₂ to NO conversion rate is greater than 90%. The NO_x converter check was found to have a conversion rate of 93.41% on June 4, 2008 and 92.06% on June 6, 2008. The calibration gas used was 48.9 ppm NO₂ in N₂.

Continuous CO sampling was conducted following USEPA Method 10 procedures. CO was measured using ARI's Thermo Environmental Instruments Model 48iHL gas filter correlation infrared analyzer. A pre-test and post-test system bias along with the initial calibration error test were performed using diluted CO balance nitrogen standards of zero, 1,000 ppm and 2,000 ppm at an analyzer span of 2,000 ppm.

Calibration gases were introduced at the three-way valve located at the exit end of the sample probe to perform the system bias test. The results of the initial calibration error test performed before the test program were within 2% of span for each calibration gas. The pre-test and post-test system bias results were within the 5% of span allowed for each calibration gas. The system bias drift results were within the 3% of span allowed for each test run. The zero and upscale calibration gas system bias values obtained before and after each run were averaged and used to correct the data for that test run.

Data was recorded and archived on ARI's data acquisition system consisting of an Omega OMB-DAQ-56 data acquisition module connected to a computer running DAQViewXL software for digital data archiving. Excel spreadsheet computer software was used for data reduction and emission calculations.

2.8 USEPA METHOD 15 - TRS (CARBONYL SULFIDE, CARBON DISULFIDE AND HYDROGEN SULFIDE)

Determination of total reduced sulfur (TRS) was conducted in accordance with USEPA Method 15 using a gas chromatograph for separation of sulfur compounds and measurement by a flame photometric detector.

Modifications and improvements to USEPA Method 15 during the testing included the following:

1. No sample dilution was required (GC range ~500 ppm TRS)
2. USEPA Protocol I calibration gases was used to calibrate the GC (no permeation tubes used)

The TRS gas sampling system consisted of a stainless steel probe connected to a heated Teflon sampling line. The exhaust gas was then conveyed through a series of Teflon impingers located on the sampling platform containing a citrate buffer solution to remove SO₂ from the sample stream.



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A Teflon lined sample pump transported the sample through 0.375-inch OD Teflon tubing to the ARI mobile laboratory. The sample was run to a manifold system at a flow rate of approximately 1-liter per minute from which a sample was introduced to the GC-FPD.

The GC-FPD system consisted of an SRI Model 9300B field gas chromatograph containing a heated gas sampling valve, column oven and detector. A computer based integrator utilizing Peak Simple W95 software was used for data acquisition and integration.

The GC-FPD was calibrated with a USEPA Protocol 1 TRS gas standard obtained from Scott Specialty Gases. The gas standard was generated using an Environics Model 4040 mass flow controller gas dilution system. The dilution system was verified onsite in accordance with USEPA Method 205.

The TRS results were converted to equivalent SO₂ concentration in parts per million (ppmv) using the equation:

$$\Sigma \text{SO}_2 = \text{COS} + \text{H}_2\text{S} + 2\text{CS}_2$$

During each 180-minute compliance test run, there were nominally 16 to 18 injections to the GC-FPD.

2.9 USEPA METHOD 205 - GAS DILUTION SYSTEM VERIFICATION

All diluted calibration standards were prepared using two (2) Environics Model 4040 Dilution Systems that were verified by a field evaluation at the job site prior to testing following the requirements of USEPA Method 205 (40 CFR 51, Appendix M). One dilution system (Environics No. 3901) was used to supply calibration gases to the USEPA Method 3A, 7E and 10 instruments and the second dilution system (Environics No. 3712) was used with the USEPA Method 15 sampling.

For each Environics dilution system, ARI's Servomex, Inc. Model 1440C paramagnetic O₂ gas analyzer was calibrated following USEPA Method 3A procedures. After the calibration procedure was complete, diluted standards of 3.75% and 11.25% and a mid-range EPA Protocol 1 standard of 7.54% were alternately introduced in triplicate, and an average instrument response was calculated for each standard. No single response differed by more than $\pm 2\%$ from the average response for each standard.

The difference between the instrument average and the predicted concentration was within $\pm 2\%$ for each diluted standard. The difference between the certified gas concentration, and the average instrument response for the mid-range EPA Protocol 1 standard was within $\pm 2\%$.



SECTION THREE

Results

The test results are presented in Tables 3-1 through 3-4.

The calculation summaries, field data, analytical data, ARI reference method monitoring data, calibration data, personnel qualifications, process data and Valero's Flexible Permit Nos. 9708 and PSD-TX-861M2 are included in the appendices.



SECTION THREE

Results

TABLE 3-1. SRU NO. 2 INCINERATOR EXHAUST PM TEST RESULTS (6/4/08)

COMPANY	:	Valero Refining - Texas			
LOCATION	:	Sunray, Texas			
SOURCE	:	SRU No. 2 Incinerator Exhaust			
OPERATORS	:	D. Fitzgerald, T. Davis, S. Yuchs			
TEST RUN	:	1	2	3	
TEST DATE	:	6/4/2008	6/4/2008	6/4/2008	
TEST TIME	:	12:43 - 14:57	15:52 - 17:55	19:24 - 21:27	Average
PROCESS DATA					
Sulfur Production Rate, LTPD		38.81	38.81	38.81	38.81
Sulfur Dioxide (SO ₂), ppmv db		179.1	145.8	121.9	148.9
Incinerator Temperature, °F		1,334.6	1,336.2	1,335.2	1,335.9
STACK GAS					
Temperature, av. °F		648.3	649.0	647.5	648.3
Velocity, av. ft/sec		13.206	13.096	13.122	13.141
Volume flow, acfm		12,140	12,038	12,062	12,080
Volume flow, scfm		4,995	4,927	4,933	4,952
Volume flow, dscfm		4,497	4,478	4,433	4,469
Volume flow, dscfh		269,814	268,698	265,993	268,168
Moisture, av. % vol		9.98	9.11	10.14	9.74
CO ₂ , av. % vol, db		9.42	10.08	10.22	9.91
O ₂ , av. % vol, db		2.66	3.08	3.33	3.02
PARTICULATE MATTER (PM)					
Filterable PM collected, mg		27.60	25.84	19.37	24.27
Concentration					
gr/dscf		0.00895	0.00811	0.00644	0.00783
lb/dscf x 10 ⁻⁶		1.2788	1.1594	0.9203	1.1195
Emission rate					
lb/hr		0.34	0.31	0.24	0.30
ton/yr		1.51	1.36	1.07	1.32
Condensible Inorganic PM collected, mg		41.55	22.30	5.45	23.10
Concentration					
gr/dscf		0.01347	0.00700	0.00181	0.00743
lb/dscf x 10 ⁻⁶		1.9251	1.0006	0.2589	1.0615
Emission rate					
lb/hr		0.52	0.27	0.07	0.29
ton/yr		2.27	1.18	0.30	1.25
Condensible Organic PM collected, mg		9.60	0.55	0.90	3.68
Concentration					
gr/dscf		0.00311	0.00017	0.00030	0.00119
lb/dscf x 10 ⁻⁶		0.4448	0.0247	0.0428	0.1707
Emission rate					
lb/hr		0.12	0.01	0.01	0.05
ton/yr		0.53	0.03	0.05	0.20



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Results

**TABLE 3-1 (CONTINUED). SRU NO. 2 INCINERATOR EXHAUST PM
TEST RESULTS (6/4/08)**

TEST RUN	:	1	2	3	
TEST DATE	:	6/4/2008	6/4/2008	6/4/2008	
TEST TIME	:	<u>12:43 - 14:57</u>	<u>15:52 - 17:55</u>	<u>19:24 - 21:27</u>	<u>Average</u>
Total PM collected, mg		78.75	48.69	25.72	51.05
Concentration					
gr/dscf		0.02553	0.01529	0.00855	0.01646
lb/dscf x 10 ⁻⁶		3.6486	2.1847	1.2220	2.3518
Emission rate					
lb/hr		0.98	0.59	0.32	0.63
ton/yr		4.31	2.57	1.42	2.77



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Results

TABLE 3-2. SRU NO. 2 INCINERATOR EXHAUST PM TEST RESULTS (6/6/08)

COMPANY	:	Valero Refining - Texas			
LOCATION	:	Sunray, Texas			
SOURCE	:	SRU No. 2 Incinerator Exhaust			
OPERATORS	:	D. Fitzgerald, T. Davis, S. Yuchs			
TEST RUN	:	4	5	6	
TEST DATE	:	6/6/2008	6/6/2008	6/6/2008	
TEST TIME	:	07:06 - 09:10	10:33 - 12:35	14:00 - 16:02	Average
PROCESS DATA					
Sulfur Production Rate, LTPD		42.43	42.43	42.43	42.43
Sulfur Dioxide (SO ₂), ppmv db		168.7	173.6	175.3	172.5
Incinerator Temperature, °F		1,334.6	1,334.9	1,335.3	1,334.9
STACK GAS					
Temperature, av. °F		656.8	656.6	654.7	656.0
Velocity, av. ft/sec		13.178	13.127	13.027	13.111
Volume flow, acfm		12,114	12,067	11,975	12,052
Volume flow, scfm		4,997	4,991	4,950	4,979
Volume flow, dscfm		4,541	4,576	4,379	4,498
Volume flow, dscfh		272,435	274,554	262,712	269,900
Moisture, av. % vol		9.13	8.31	11.55	9.67
CO ₂ , av. % vol, db		8.96	9.34	9.50	9.27
O ₂ , av. % vol, db		3.23	3.13	3.14	3.17
PARTICULATE MATTER (PM)					
Filterable PM collected, mg		13.11	8.81	12.83	11.58
Concentration					
gr/dscf		0.00417	0.00280	0.00423	0.00373
lb/dscf x 10 ⁻⁶		0.5965	0.4001	0.6041	0.5336
Emission rate					
lb/hr		0.162	0.110	0.159	0.144
ton/yr		0.712	0.481	0.695	0.629
Condensible Inorganic PM collected, mg		46.70	8.20	25.75	26.88
Concentration					
gr/dscf		0.01487	0.00261	0.00848	0.00865
lb/dscf x 10 ⁻⁶		2.1249	0.3724	1.2125	1.2366
Emission rate					
lb/hr		0.579	0.102	0.318	0.333
ton/yr		2.535	0.448	1.395	1.459
Condensible Organic PM collected, mg		0.65	0.30	0.55	0.50
Concentration					
gr/dscf		0.00021	0.00010	0.00018	0.00016
lb/dscf x 10 ⁻⁶		0.0296	0.0136	0.0259	0.0230
Emission rate					
lb/hr		0.008	0.004	0.007	0.006
ton/yr		0.035	0.016	0.030	0.027



SECTION THREE

Results

**TABLE 3-2 (CONTINUED). SRU NO. 2 INCINERATOR EXHAUST PM
TEST RESULTS (6/6/08)**

TEST RUN	:	4	5	6	
TEST DATE	:	6/6/2008	6/6/2008	6/6/2008	
TEST TIME	:	<u>07:06 - 09:10</u>	<u>10:33 - 12:35</u>	<u>14:00 - 16:02</u>	<u>Average</u>
Total PM collected, mg		60.46	17.31	39.13	38.97
Concentration					
gr/dscf		0.01925	0.00550	0.01289	0.01255
lb/dscf x 10 ⁻⁶		2.7510	0.7862	1.8425	1.7932
Emission rate					
lb/hr		0.749	0.216	0.484	0.483
ton/yr		3.282	0.945	2.119	2.115



SECTION THREE

Results

**TABLE 3-3. SRU NO. 2 INCINERATOR EXHAUST NO_x, CO AND TRS
 TEST RESULTS (6/4/08)**

COMPANY	:	Valero McKee Refinery			
LOCATION	:	Sunray, Texas			
SOURCE	:	No. 2 SRU Incinerator			
OPERATORS	:	D. Fitzgerald, T. Davis, S. Yuchs			
TEST RUN	:	1	2	3	
TEST DATE	:	6/4/2008	6/4/2008	6/4/2008	
TEST TIME	:	11:25 - 14:31	15:22 - 18:30	18:54 - 22:01	<u>Average</u>
<u>PROCESS DATA</u>					
Sulfur Production Rate, LTPD		38.81	38.81	38.81	38.81
Sulfur Dioxide (SO ₂), ppmv db		179.1	145.8	121.9	148.9
Incinerator Temperature, °F		1,334.6	1,336.2	1,335.2	1,335.9
<u>STACK GAS</u>					
Temperature, av. °F		648.3	649.0	647.5	648.3
Velocity, av. ft/sec		13.21	13.10	13.12	13.14
Volume flow, acfm		12,140	12,038	12,062	12,080
Volume flow, scfm		4,995	4,927	4,933	4,952
Volume flow, dscfm		4,497	4,478	4,433	4,469
Volume flow, dscfh		269,814	268,698	265,993	268,168
Moisture, av. % vol		9.98	9.11	10.14	9.74
CO ₂ , av. % vol, db		9.42	10.08	10.22	9.91
O ₂ , av. % vol, db		2.66	3.08	3.33	3.02
<u>NITROGEN OXIDES (NO_x as NO₂)</u>					
Concentration					
ppmv db		11.9	12.3	12.0	12.1
lb/dscf x 10 ⁻⁶		1.419	1.467	1.432	1.439
Emission rate					
lb/hr		0.383	0.394	0.381	0.386
<u>CARBON MONOXIDE</u>					
Concentration					
ppmv db		1,046	725	501	757
lb/dscf x 10 ⁻⁶		76.03	52.68	36.39	55.04
Emission rate					
lb/hr		20.5	14.2	9.7	14.8
<u>CARBONYL SULFIDE</u>					
Concentration					
ppmv db		1.6	0.3	0.1	0.6
lb/dscf x 10 ⁻⁶		0.253	0.039	0.009	0.100
Emission rate					
lb/hr		0.068	0.010	0.002	0.027
<u>CARBON DISULFIDE</u>					
Concentration					
ppmv db		<0.01	< 0.01	<0.01	<0.01
lb/dscf x 10 ⁻⁶		<0.002	<0.002	<0.002	<0.002
Emission rate					
lb/hr		<0.001	<0.001	<0.001	<0.001



SECTION THREE

Results

**TABLE 3-3 (CONTINUED). SRU NO. 2 INCINERATOR EXHAUST NO_x,
CO AND TRS TEST RESULTS (6/4/08)**

TEST RUN	:	1	2	3	
TEST DATE	:	6/4/2008	6/4/2008	6/4/2008	
TEST TIME	:	<u>11:25 - 14:31</u>	<u>15:22 - 18:30</u>	<u>18:54 - 22:01</u>	<u>Average</u>

HYDROGEN SULFIDE

Concentration				
ppmv db	<0.8	<0.8	<0.8	<0.8
lb/dscf x 10 ⁻⁶	<0.067	<0.067	<0.067	<0.067
Emission rate				
lb/hr	<0.018	<0.018	<0.018	<0.018

TRS as SO₂

Concentration				
ppmv db	<2.4	<1.0	<0.8	<1.4
ppmv db @ 3% O ₂	<2.4	<1.0	<0.8	<1.4
lb/dscf x 10 ⁻⁶	<0.399	<0.168	<0.136	<0.234
Emission rate				
lb/hr	<0.108	<0.045	<0.036	<0.063



SECTION THREE

Results

**TABLE 3-4. SRU NO. 2 INCINERATOR EXHAUST NO_x, CO AND TRS
 TEST RESULTS (6/6/08)**

COMPANY	:	Valero McKee Refinery			
LOCATION	:	Sunray, Texas			
SOURCE	:	No. 2 SRU Incinerator			
OPERATORS	:	Dan Fitzgerald, T. Davis, S. Yuchs			
TEST RUN	:	4	5	6	
TEST DATE	:	6/6/2008	6/6/2008	6/6/2008	
TEST TIME	:	06:36 - 09:42	10:03 - 13:09	13:30 - 16:35	Average
PROCESS DATA					
Sulfur Production Rate, LTPD		42.43	42.43	42.43	42.43
Sulfur Dioxide (SO ₂), ppmv db		168.7	173.6	175.3	172.5
Incinerator Temperature, °F		1,334.6	1,334.9	1,335.3	1,334.9
STACK GAS					
Temperature, av. °F		656.8	656.6	654.7	656.0
Velocity, av. ft/sec		13.18	13.13	13.03	13.11
Volume flow, acfm		12,114	12,067	11,975	12,052
Volume flow, scfm		4,997	4,991	4,950	4,979
Volume flow, dscfm		4,541	4,576	4,379	4,498
Volume flow, dscfh		272,435	274,554	262,712	269,900
Moisture, av. % vol		9.13	8.31	11.55	9.67
CO ₂ , av. % vol, db		8.96	9.34	9.50	9.27
O ₂ , av. % vol, db		3.23	3.13	3.14	3.17
NITROGEN OXIDES (NO_x as NO₂)					
Concentration					
ppmv db		9.3	10.7	11.7	10.6
lb/dscf x 10 ⁻⁶		1.113	1.277	1.400	1.263
Emission rate					
lb/hr		0.303	0.351	0.368	0.340
CARBON MONOXIDE					
Concentration					
ppmv db		652	755	730	712
lb/dscf x 10 ⁻⁶		47.41	54.85	53.04	51.77
Emission rate					
lb/hr		12.9	15.1	13.9	14.0
CARBONYL SULFIDE					
Concentration					
ppmv db		<0.2	<0.3	0.5	<0.3
lb/dscf x 10 ⁻⁶		<0.031	<0.041	0.080	<0.050
Emission rate					
lb/hr		<0.008	<0.011	0.021	<0.014
CARBON DISULFIDE					
Concentration					
ppmv db		<0.01	<0.01	<0.01	<0.01
lb/dscf x 10 ⁻⁶		<0.002	<0.002	<0.002	<0.002
Emission rate					
lb/hr		<0.001	<0.001	<0.001	<0.001



SECTION THREE

Results

**TABLE 3-4 (CONTINUED). SRU NO. 2 INCINERATOR EXHAUST NO_x,
CO AND TRS TEST RESULTS (6/6/08)**

TEST RUN	:	4	5	6	
TEST DATE	:	6/6/2008	6/6/2008	6/6/2008	
TEST TIME	:	<u>06:36 - 09:42</u>	<u>10:03 - 13:09</u>	<u>13:30 - 16:35</u>	<u>Average</u>

HYDROGEN SULFIDE

Concentration				
ppmv db	<0.7	<0.7	<0.7	<0.7
lb/dscf x 10 ⁻⁶	<0.059	<0.059	<0.059	<0.059
Emission rate				
lb/hr	<0.016	<0.016	<0.016	<0.016

TRS as SO₂

Concentration				
ppmv db	<0.9	<1.0	<1.2	<1.0
ppmv db @ 3% O ₂	<0.9	<1.0	<1.2	<1.0
lb/dscf x 10 ⁻⁶	<0.148	<0.158	<0.199	<0.168
Emission rate				
lb/hr	<0.040	<0.043	<0.052	<0.045



Valero McKee Refinery: Sunray, TX
SRU No. 2 Incinerator: EPN V-16
Test Dates: 6/4 & 6/6/08

APPENDIX A

Calculation Summaries

MONITOR DATA SUMMARY

COMPANY : Valero McKee Refinery
SOURCE : No. 2 SRU Incinerator
REPETITION : 1
TEST DATE : 6/4/2008
START TIME : 11:25
END TIME : 14:57

GAS ANALYZER CO

SPAN: 2,000 ppm
 AVERAGE CAL. BIAS (C_m): 974.0
 AVERAGE ZERO BIAS (C_o): -1.0
 CALIBRATION GAS: EPA Protocol CO
 CALIBRATION PPM (C_{ma}): 1,000
 PPM CORRECTED (C_{gas}): 1,046

GAS ANALYZER NO_x

SPAN: 90.0 ppm
 AVERAGE CAL. BIAS (C_m): 42.85
 AVERAGE ZERO BIAS (C_o): 0.70
 CALIBRATION GAS: EPA Protocol NO_x
 CALIBRATION PPM (C_{ma}): 45.0
 PPM CORRECTED (C_{gas}): 11.9

GAS ANALYZER O₂

SPAN: 9.00 %
 AVERAGE CAL. BIAS (C_m): 4.515
 AVERAGE ZERO BIAS (C_o): 0.010
 CALIBRATION GAS: EPA Protocol O₂
 CALIBRATION PPM (C_{ma}): 4.50
 PPM CORRECTED (C_{gas}): 2.66

GAS ANALYZER CO₂

SPAN: 18.00 %
 AVERAGE CAL. BIAS (C_m): 9.150
 AVERAGE ZERO BIAS (C_o): 0.100
 CALIBRATION GAS: EPA Protocol CO₂
 CALIBRATION % (C_{ma}): 9.00
 % CORRECTED (C_{gas}): 9.42

Example Calculation =

$$C_{\text{gas}} = (\bar{C} - C_o) \frac{C_{ma}}{C_m - C_o}$$

CLOCK TIME	ELAPSED TIME	Uncorrected			
		O ₂ % vol db	CO ₂ % vol db	NO _x ppmv db	CO ppmv db
11:25	0				
11:26	1	2.97	9.12	11.2	948
11:27	2	2.89	9.28	11.2	934
11:28	3	2.79	9.41	11.1	897
11:29	4	2.76	9.32	11.1	892
11:30	5	2.83	9.28	11.1	911
11:31	6	2.85	9.17	11.1	912
11:32	7	2.90	9.19	11.4	943
11:33	8	2.87	9.18	11.0	942
11:34	9	2.90	9.21	11.0	982
11:35	10	2.86	9.40	11.1	949
11:36	11	2.77	9.34	11.0	906
11:37	12	2.82	9.25	11.0	925
11:38	13	2.88	9.21	10.9	964
11:39	14	2.87	9.29	10.9	966
11:40	15	2.84	9.21	10.8	940
11:41	16	2.90	9.10	11.0	995
11:42	17	2.88	9.37	11.1	997
11:43	18	2.76	9.43	10.9	923
11:44	19	2.75	9.31	10.8	922
11:45	20	2.79	9.32	11.0	945
11:46	21	2.79	9.28	11.0	967
11:47	22	2.83	9.19	11.3	980
11:48	23	2.85	9.24	11.4	1007
11:49	24	2.85	9.24	11.5	1014
11:50	25	2.82	9.40	11.8	997
11:51	26	2.71	9.47	11.8	943
11:52	27	2.69	9.38	11.6	932
11:53	28	2.75	9.30	11.4	980
11:54	29	2.79	9.25	11.5	1004
11:55	30	2.81	9.34	11.5	997
11:56	31	2.76	9.30	11.6	957
11:57	32	2.78	9.27	11.6	971
11:58	33	2.77	9.36	11.9	965
11:59	34	2.79	9.28	11.8	972
12:00	35	2.81	9.40	11.5	1018
12:01	36	2.75	9.48	11.5	966
12:02	37	2.68	9.38	11.5	936
12:03	38	2.78	9.21	11.4	1009
12:04	39	2.84	9.28	11.6	1015
12:05	40	2.71	9.39	11.8	978
12:06	41	2.73	9.29	11.6	975
12:07	42	2.77	9.35	11.6	984
12:08	43	2.74	9.39	11.7	975
12:09	44	2.74	9.32	11.9	939
12:10	45	2.76	9.32	11.5	975
12:11	46	2.78	9.48	11.7	984
12:12	47	2.66	9.53	11.9	935
12:13	48	2.62	9.45	11.8	918
12:14	49	2.68	9.42	11.6	933
12:15	50	2.75	9.29	11.5	985
12:16	51	2.82	9.24	11.7	1029
12:17	52	2.79	9.42	11.8	1023
12:18	53	2.68	9.45	11.7	954
12:19	54	2.73	9.31	11.7	961
12:20	55	2.69	9.59	11.8	977
12:21	56	2.58	9.66	11.9	897
12:22	57	2.61	9.53	11.8	913
12:23	58	2.69	9.47	11.8	956
12:24	59	2.71	9.44	11.9	987
12:25	60	2.73	9.35	11.9	1009
12:26	61	2.76	9.39	12.0	1032
12:27	62	2.74	9.48	11.9	1005
12:28	63	2.67	9.46	12.9	987
12:29	64	2.69	9.45	12.0	974
12:30	65	2.70	9.53	11.8	1002
12:31	66	2.68	9.63	11.7	977
12:32	67	2.59	9.63	11.8	930
12:33	68	2.55	9.56	12.1	920
12:34	69	2.67	9.36	11.8	999
12:35	70	2.78	9.34	12.1	1053
12:36	71	2.71	9.49	12.5	1049
12:37	72	2.67	9.45	12.1	1017
12:38	73	2.68	9.45	12.0	1016
12:39	74	2.65	9.58	12.0	1007
12:40	75	2.51	9.72	12.0	946
12:41	76	2.48	9.65	11.8	938
12:42	77	2.58	9.58	12.1	948
12:43	78	2.62	9.44	11.8	994
12:44	79	2.66	9.44	11.8	1031
12:45	80	2.60	9.50	12.0	1014
12:46	81	2.57	9.45	12.2	993
12:47	82	2.59	9.54	12.2	1006
12:48	83	2.55	9.53	12.0	995
12:49	84	2.58	9.48	12.0	1018
12:50	85	2.57	9.50	12.1	1026
12:51	86	2.63	9.45	11.9	1070
12:52	87	2.64	9.58	11.8	1086
12:53	88	2.49	9.67	11.8	1038
12:54	89	2.43	9.53	11.8	1009
12:55	90	2.62	9.36	11.9	1018
12:56	91	2.61	9.54	12.0	1103

12:57	92	2.51	9.55	11.9	1071
12:58	93	2.53	9.48	12.0	1075
12:59	94	2.56	9.56	11.9	1094
13:00	95	2.52	9.47	12.0	1054
13:01	96	2.54	9.54	12.1	1071
13:02	97	2.41	9.82	12.7	995
13:03	98	2.34	9.65	12.2	955
13:04	99	2.43	9.59	12.0	976
13:05	100	2.45	9.58	11.8	998
13:06	101	2.50	9.49	11.8	1024
13:07	102	2.58	9.43	11.8	1070
13:08	103	2.54	9.54	11.7	1087
13:09	104	2.52	9.42	11.9	1077
13:10	105	2.57	9.59	11.7	1127
13:11	106	2.45	9.78	11.8	1043
13:12	107	2.38	9.67	11.9	990
13:13	108	2.53	9.59	11.7	1057
13:14	109	2.55	9.59	11.7	1067
13:15	110	2.56	9.44	11.8	1099
13:16	111	2.60	9.48	12.0	1118
13:17	112	2.55	9.54	11.8	1088
13:18	113	2.53	9.49	11.9	1105
13:19	114	2.54	9.61	12.1	1100
13:20	115	2.48	9.63	12.1	1061
13:21	116	2.48	9.59	11.8	1071
13:22	117	2.53	9.53	11.8	1096
13:23	118	2.61	9.58	11.7	1147
13:24	119	2.52	9.74	12.1	1082
13:25	120	2.38	9.78	12.2	995
13:26	121	2.43	9.64	11.8	994
13:27	122	2.95	9.40	12.1	1015
13:28	123	2.46	9.73	12.1	1009
13:29	124	2.45	9.63	11.8	1015
13:30	125	2.54	9.63	11.8	1066
13:31	126	2.49	9.70	11.6	1057
13:32	127	2.51	9.58	11.9	1068
13:33	128	2.53	9.66	12.0	1066
13:34	129	2.46	9.61	12.0	1038
13:35	130	2.54	9.64	11.9	1103
13:36	131	2.42	9.88	12.1	1013
13:37	132	2.44	9.73	12.1	998
13:38	133	2.57	9.62	11.9	1063
13:39	134	2.56	9.65	12.0	1067
13:40	135	2.56	9.53	11.9	1089
13:41	136	2.62	9.57	11.9	1123
13:42	137	2.52	9.68	11.7	1102
13:43	138	2.54	9.53	11.9	1111
13:44	139	2.57	9.78	11.8	1132
13:45	140	2.45	9.86	11.4	1063
13:46	141	2.60	9.65	11.5	1096
13:47	142	2.68	9.64	11.7	1144
13:48	143	2.61	9.67	12.0	1129
13:49	144	2.60	9.58	12.1	1125
13:50	145	2.62	9.65	12.1	1143
13:51	146	2.59	9.71	11.9	1136
13:52	147	2.60	9.64	11.6	1142
13:53/13:59	148	2.59	9.78	11.7	1153
14:00	149	2.52	9.89	12.4	1066
14:01	150	2.47	9.85	12.3	1029
14:02	151	2.53	9.76	12.1	1059
14:03	152	2.64	9.60	12.0	1109
14:04	153	2.63	9.71	12.2	1117
14:05	154	2.56	9.79	12.1	1084
14:06	155	2.52	9.75	12.0	1046
14:07	156	2.53	9.80	12.1	1067
14:08	157	2.57	9.70	11.8	1066
14:09	158	2.63	9.67	12.1	1103
14:10	159	2.62	9.81	12.1	1111
14:11	160	2.59	9.74	11.8	1076
14:12	161	2.63	9.68	11.9	1095
14:13	162	2.69	9.63	12.0	1125
14:14	163	2.71	9.74	12.0	1131
14:15	164	2.63	9.89	12.2	1063
14:16	165	2.56	9.83	12.2	1014
14:17	166	2.65	9.70	12.2	1058
14:18	167	2.72	9.75	12.4	1089
14:19	168	2.68	9.72	12.4	1071
14:20	169	2.71	9.66	12.4	1101
14:21	170	2.79	9.76	12.0	1153
14:22	171	2.72	9.71	12.5	1091
14:23	172	2.73	9.69	12.4	1096
14:24	173	2.76	9.84	12.4	1114
14:25	174	2.73	9.90	12.3	1050
14:26	175	2.61	9.93	12.0	982
14:27	176	2.64	9.81	11.7	984
14:28	177	2.75	9.68	11.7	1039
14:29	178	2.77	9.82	11.8	1063
14:30	179	2.74	9.77	11.8	1048
14:31	180	2.81	9.70	11.9	1075
14:32	181	2.85	9.80	12.2	1090
14:33	182	2.83	9.74	12.1	1071
14:34	183	2.79	9.83	12.3	1041
14:35	184	2.73	9.92	12.0	1023
14:36	185	2.72	9.83	11.8	999
14:37	186	2.77	9.86	11.9	1012
14:38	187	2.76	9.82	11.8	997

14:39	188	2.83	9.71	11.9	1035
14:40	189	2.84	10.01	12.0	1042
14:41	190	2.69	9.96	12.3	929
14:42	191	2.73	9.90	12.2	936
14:43	192	2.76	9.87	12.0	956
14:44	193	2.81	9.75	12.2	975
14:45	194	2.85	9.85	12.1	1011
14:46	195	2.76	9.92	12.3	941
14:47	196	2.73	9.86	12.2	923
14:48	197	2.79	9.89	12.2	958
14:49	198	2.79	9.86	11.7	966
14:50	199	2.82	9.85	12.0	956
14:51	200	2.79	9.96	11.8	948
14:52	201	2.75	9.90	11.8	921
14:53	202	2.84	9.83	12.1	958
14:54	203	2.87	9.87	12.2	959
14:55	204	2.84	9.82	12.3	962
14:56	205	2.84	9.89	12.3	954
14:57	206	2.84	9.91	12.2	943
Uncorrected Average =		2.668	9.572	11.83	1019.0

ARI ENVIRONMENTAL, INC.
MOISTURE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/4/2008
RUN NUMBER: 1

γ FACTOR:	1.008	STACK DIAM:	53.00 inches
BAROMETRIC:	25.81 in. Hg	METER VOLUME:	57.869 ft ³
STATIC PRES:	0.45 in.H ₂ O	METER TEMP:	99.2 °F
STACK TEMP:	648.3 °F	LIQUID COLL:	112.1 milliliters
SQ.RT ΔP:	0.1498 in.H ₂ O	CO₂:	9.42 % by volume
ΔH:	0.59 in.H ₂ O	O₂:	2.66 % by volume

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE

@ STANDARD CONDITIONS, DRY BASIS

$$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 47.591 \text{ dscf}$$

$\gamma = 1.008$

VOLUME OF WATER IN SAMPLE

@ STANDARD CONDITIONS

$$V_{wstd} = 0.04707 \times V_{lc} = 5.277 \text{ scf}$$

$V_{lc} = 112.1 \text{ mL}$

FRACTIONAL MOISTURE CONTENT OF STACK GAS AS MEASURED

$$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} = 0.0998$$

FRACTIONAL MOISTURE CONTENT OF STACK GAS @ SATURATION

$$B_{ws@saturation} = \frac{S.V.P.}{P_{bar} + \frac{P_{static}}{13.6}} = 0.8180$$

$S.V.P. = 21.14 \text{ in. Hg}$

FRACTIONAL MOISTURE CONTENT USED IN CALCULATIONS

$$B_{ws} = 0.0998$$

ARI ENVIRONMENTAL, INC.
FLOW RATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
RUN NUMBER: 1

SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/4/2008

BAROMETRIC: 25.81 in. Hg
STATIC PRES: 0.45 in.H₂O
STACK TEMP: 648.3 °F
SQ.RT ΔP: 0.1498 in.H₂O

STACK DIAM: 53.00 inches
CO₂: 9.42 % by volume
O₂: 2.66 % by volume

DRY MOLECULAR WEIGHT OF STACK GAS			
$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO)$	=	29.61	lb/lb-mole
MOLECULAR WEIGHT OF STACK GAS, wet basis			
$M_s = M_d(1 - B_{ws}) + 18B_{ws}$	=	28.45	lb/lb-mole
PITOT TUBE COEFFICIENT			
C_p (from calibration curve or geometric specifications)	=	0.84	
AVERAGE VELOCITY HEAD OF STACK GAS, in. H₂O			
$\sqrt{\Delta P} = \frac{1}{n} \sum_{i=1}^n \sqrt{\Delta p_i}$	=	0.1498	in. H ₂ O
AVERAGE ABSOLUTE STACK GAS TEMPERATURE			
$T_s = 648.3 \text{ °F} + 460$	=	1,108.3	°R
ABSOLUTE STACK GAS PRESSURE			
$P_s = P_{bar} + \frac{P_{static}}{13.6}$	=	25.84	in.Hg
STACK GAS VELOCITY			
$V_s = (85.49)(C_p)(\text{avg } \sqrt{\Delta P}) \sqrt{\frac{T_s}{(P_s)(M_s)}}$	=	13.206	ft/sec
STACK GAS VOLUMETRIC FLOW RATE, actual			
$Q_s = 60 \times V_s \times A_s$	=	12,140	acfm
Stack Area =		15.321 ft ²	
STACK GAS VOLUMETRIC FLOW RATE, standard conditions, wet basis			
$Q_{stdw} = \left(\frac{528}{29.92} \right) (Q_s) \left(\frac{P_s}{T_s} \right)$	=	4,995 299,729	scfm, wb scfh, wb
STACK GAS VOLUMETRIC FLOW RATE, standard conditions, dry basis			
$Q_{std} = \left(\frac{528}{29.92} \right) (Q_s) \left(\frac{P_s}{T_s} \right) (1 - B_{ws})$	=	4,497 269,814	dscfm dscfh

ARI ENVIRONMENTAL, INC.
USEPA METHOD 5B - FILTERABLE PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/4/08
RUN NUMBER: 1

INPUT

V_m:	57.869	ft ³	Q_s:	4,497	dscfm
γ FACTOR:	1.008		T_s:	648.3	°F
P_{bar}:	25.81	in.Hg	Runtime:	120.0	minutes
ΔH:	0.59	in.H ₂ O	V_s:	13.206	ft/sec
T_m:	99.2	°F	P_s:	25.84	in.Hg
V_{lc}:	112.1	mL	Noz. diam:	0.502	inches
M_n front:	27.60	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS					
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$		=	47.591	dscf	
$\gamma = 1.008$					
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS					
$V_{wstd} = 0.04707 \times V_{lc}$		=	5.277	scf	
FRACTIONAL MOISTURE CONTENT OF STACK GAS					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100$		=	9.98	%	
PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS					
$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right)$		Total	=	0.00895	gr/dscf
$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right)$		C' s Total	=	1.2788	x 10⁻⁶ lbs/dscf
EMISSION RATE					
$pmr = \left(\frac{C_s}{7000} \right) (Q_{std}) (60)$		Total	=	0.3449 1.5107	lbs/hr ton/yr
ISOKINETIC SAMPLING RATE					
$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)}$		=	98.31	% I	
$A_n = 0.001374 \text{ ft}^2$		Runtime =	120	minutes	

ARI ENVIRONMENTAL, INC.
USEPA METHOD 202 - CONDENSIBLE INORGANIC PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/4/08
RUN NUMBER: 1

INPUT

V_m:	57.869	ft ³	Q_s:	4,497	dscfm
γ FACTOR:	1.008		T_s:	648.3	°F
P_{bar}:	25.81	in.Hg	Runtime:	120.0	minutes
ΔH:	0.59	in.H ₂ O	V_s:	13.206	ft/sec
T_m:	99.2	°F	P_s:	25.84	in.Hg
V_{lc}:	112.1	mL	Noz. diam:	0.502	inches
M_n back inorg:	41.55	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS					
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$		=	47.591	dscf	
$\gamma =$		1.008			
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS					
$V_{wstd} = 0.04707 \times V_{lc}$		=	5.277	scf	
FRACTIONAL MOISTURE CONTENT OF STACK GAS					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100$		=	9.98	%	
PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS					
$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right)$		Total	=	0.01347	gr/dscf
$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right)$		C'_s Total	=	1.92509	x 10⁻⁴ lbs/dscf
EMISSION RATE					
$pmr = \left(\frac{C_s}{7000} \right) (Q_{std})(60)$		Total	=	0.5192 2.2743	lbs/hr ton/yr
ISOKINETIC SAMPLING RATE					
$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)}$		=	98.31	% I	
$A_n = 0.001374 \text{ ft}^2$		Runtime =	120	minutes	

ARI ENVIRONMENTAL, INC.
USEPA METHOD 202 - CONDENSIBLE ORGANIC PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/4/08
RUN NUMBER: 1

INPUT

V_m:	57.869	ft³	Q_s:	4,497	dscfm
γ FACTOR:	1.008		T_s:	648.3	°F
P_{bar}:	25.81	in.Hg	Runtime:	120.0	minutes
ΔH:	0.59	in.H₂O	V_s:	13.206	ft/sec
T_m:	99.2	°F	P_s:	25.84	in.Hg
V_{lc}:	112.1	mL	Noz. diam:	0.502	inches
M_n back org:	9.60	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS					
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$		=	47.591	dscf	
$\gamma = 1.008$					
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS					
$V_{wstd} = 0.04707 \times V_{lc}$		=	5.277	scf	
FRACTIONAL MOISTURE CONTENT OF STACK GAS					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100$		=	9.98	%	
PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS					
$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right)$		Total	=	0.00311	gr/dscf
$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right)$		C'_s Total	=	0.44479	x 10⁻⁶ lbs/dscf
EMISSION RATE					
$pmr = \left(\frac{C_s}{7000} \right) (Q_{std})(60)$		Total	=	0.1200 0.5255	lbs/hr ton/yr
ISOKINETIC SAMPLING RATE					
$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)}$		=	98.31	% I	
$A_n = 0.001374 \text{ ft}^2$		Runtime =	120	minutes	

NO_x CALIBRATION CORRECTION DATA SHEET

USEPA METHOD 7E

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: CAI Model 600 CLD
RUN NO: 1
TEST DATE: 6/4/2008

INPUT

NO _x AVERAGE CHART READING (C):	11.83 ppmv
AVG PRE/POST ZERO DRIFT READING (C _o):	0.70 ppmv
CAL GAS CONCENTRATION (C _{ma}):	45.0 ppmv
AVG CAL PRE/POST TEST READING (C _m):	42.85 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q _{std}):	269,814.1 dscfh

CALCULATIONS

STACK NO_x AVERAGE CHART READING = 11.83 ppmv

STACK NO_x CONC. CORRECTED FOR ZERO AND CALIBRATION DRIFT:

$$\text{NO}_x \text{ CONC, ppmv} = C_{\text{gas,ppm}} = (\bar{C} - C_o) \frac{C_{ma}}{C_m - C_o} = 11.9 \text{ ppmv db}$$

(corrected)

NO_x CONC.(lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left(\frac{46 \text{ lb/lb-mole}}{385.26 \times 10^6 \text{ ft}^3/\text{lb-mole}} \right) = 1.419 \times 10^{-6} \text{ lbs/dscf}$$

NO_x EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 269,814 dscfh

STACK NO_x EMISSION RATE =

$$\text{SO}_{2\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = 0.383 \text{ lbs/hr}$$

$$= 1.677 \text{ ton/yr}$$

CO CALIBRATION CORRECTION DATA SHEET
USEPA METHOD 10

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: Thermo Environmental Model 48i-CHL
RUN NO: 1
TEST DATE: 6/4/2008

INPUT

CO AVERAGE CHART READING (C):	1,019.0 ppmv
AVG PRE/POST ZERO DRIFT READING (C _o):	-1.0 ppmv
CAL GAS CONCENTRATION (C _{ma}):	1,000 ppmv
AVG CAL PRE/POST TEST READING (C _m):	974.0 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q _{std}):	269,814 dscfh

CALCULATIONS

STACK CO AVERAGE CHART READING = 1,019.0 ppmv

STACK CO CONC. CORRECTED FOR ZERO AND CALIBRATION DRIFT:

$$\text{CO CONC, ppmv} = C_{\text{gas,ppm}} = (\bar{C} - C_o) \frac{C_{ma}}{C_m - C_o} = 1,046 \text{ ppmv db}$$

(corrected)

CO CONC.(lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left(\frac{28 \text{ lb / lb - mole}}{385.26 \times 10^6 \text{ ft}^3 \text{ / lb - mole}} \right) = 76.034 \times 10^{-6} \text{ lbs/dscf}$$

CO EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 269,814 dscfh

STACK CO EMISSION RATE =

$$\text{CO}_{\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = 20.515 \text{ lbs/hr}$$
$$= 89.856 \text{ ton/yr}$$

**CARBON DISULFIDE EMISSION RATE CALCULATION SHEET
USEPA METHOD 15**

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 1
TEST DATE: 6/4/2008

INPUT

CS₂ CONCENTRATION (C): <0.01 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 269,814 dscfh

CALCULATIONS

STACK CS₂ AVERAGE CHART READING = < 0.01 ppmv

CS₂ CONCENTRATION (lbs/dscf) =

$$C_{\text{gas, lb/dscf}} = (C_{\text{gas, ppm}}) \left(\frac{76.1 \text{ lb/lb-mole}}{385.26 \times 10^{-6} \text{ ft}^3/\text{lb-mole}} \right) = < 0.0020 \times 10^{-6} \text{ lbs/dscf}$$

CS₂ EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 269,814 dscfh

STACK CS₂ EMISSION RATE =

$$CS_{2 \text{ pmr}} = (C_{\text{gas, lb/dscf}})(Q_{\text{std}}) = < 0.0005 \text{ lbs/hr} \\ = < 0.002 \text{ ton/yr}$$

**CARBONYL SULFIDE EMISSION RATE CALCULATION SHEET
USEPA METHOD 15**

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 1
TEST DATE: 6/4/2008

INPUT

COS CONCENTRATION (C): 1.62 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 269,814 dscfh

CALCULATIONS

STACK COS AVERAGE CHART READING = 1.6 ppmv

COS CONCENTRATION (lbs/dscf) =

$$C_{\text{gas, lb/dscf}} = (C_{\text{gas, ppm}}) \left(\frac{60.07 \text{ lb / lb-mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb-mole}} \right) = 0.253 \times 10^{-6} \text{ lbs/dscf}$$

COS EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 269,814 dscfh

STACK COS EMISSION RATE =

$$\text{COS}_{\text{pmr}} = (C_{\text{gas, lb/dscf}})(Q_{\text{std}}) = 0.0682 \text{ lbs/hr} = 0.299 \text{ ton/yr}$$

**HYDROGEN SULFIDE EMISSION RATE CALCULATION SHEET
USEPA METHOD 15**

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 1
TEST DATE: 6/4/2008

INPUT

H₂S CONCENTRATION (C): < 0.76 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 269,814 dscfh

CALCULATIONS

STACK H₂S AVERAGE CHART READING = < 0.76 ppmv

H₂S CONCENTRATION (lbs/dscf) =

$$C_{\text{gas, lb/dscf}} = (C_{\text{gas, ppm}}) \left(\frac{34.08 \text{ lb / lb-mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb-mole}} \right) = < 0.0672 \times 10^{-6} \text{ lbs/dscf}$$

H₂S EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 269,814 dscfh

STACK H₂S EMISSION RATE =

$$H_2S_{\text{pmr}} = (C_{\text{gas, lb/dscf}})(Q_{\text{std}}) = < 0.0181 \text{ lbs/hr}$$
$$= < 0.079 \text{ ton/yr}$$

TRS as SO₂ EMISSION RATE CALCULATION SHEET

USEPA METHOD 15

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 1
TEST DATE: 6/4/2008

INPUT

COS CONCENTRATION (C):	1.62 ppmv
CS ₂ CONCENTRATION (C):	< 0.01 ppmv
H ₂ S CONCENTRATION (C):	< 0.76 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q _{std}):	269,814 dscfh
STACK OXYGEN CONTENT (%O ₂):	2.66 % by vol db

CALCULATIONS

AVERAGE STACK TRS as SO₂ = < 2.40 ppmv

TRS CONCENTRATION CORRECTED TO 3% OXYGEN (ppmv db @ 3%O₂) =

$$C_{\text{gas, ppm @ 3\% O}_2} = (C_{\text{gas, ppm}}) \left(\frac{17.9}{20.9 - \%O_2} \right) = < 2.35 \text{ ppmv @ 3\% O}_2$$

TRS as SO₂ CONCENTRATION (lbs/dscf) =

$$C_{\text{gas, lb/dscf}} = (C_{\text{gas, ppm}}) \left(\frac{64 \text{ lb / lb - mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb - mole}} \right) = < 0.3987 \times 10^{-6} \text{ lbs/dscf}$$

TRS as SO₂ EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 269,814 dscfh

STACK TRS as SO₂ EMISSION RATE =

$$\text{TRS}_{\text{pmr}} = (C_{\text{gas, lb/dscf}})(Q_{\text{std}}) = < 0.1076 \text{ lbs/hr}$$

$$= < 0.471 \text{ ton/yr}$$

MONITOR DATA SUMMARY

COMPANY : Valero McKee Refinery
SOURCE : No. 2 SRU Incinerator
REPETITION : 2
TEST DATE : 6/4/2008
START TIME : 15:22
END TIME : 18:30

GAS ANALYZER

CO

SPAN: 2,000 ppm
 AVERAGE CAL. BIAS (C_m): 974.5
 AVERAGE ZERO BIAS (C_o): -1.0
 CALIBRATION GAS: EPA Protocol CO
 CALIBRATION PPM (C_{ma}): 1,000
 PPM CORRECTED (C_{gas}): 725

GAS ANALYZER

NO_x

SPAN: 90.0 ppm
 AVERAGE CAL. BIAS (C_m): 41.85
 AVERAGE ZERO BIAS (C_o): 0.65
 CALIBRATION GAS: EPA Protocol NO_x
 CALIBRATION PPM (C_{ma}): 45.0
 PPM CORRECTED (C_{gas}): 12.3

GAS ANALYZER

O₂

SPAN: 9.00 %
 AVERAGE CAL. BIAS (C_m): 4.500
 AVERAGE ZERO BIAS (C_o): 0.010
 CALIBRATION GAS: EPA Protocol O₂
 CALIBRATION PPM (C_{ma}): 4.50
 PPM CORRECTED (C_{gas}): 3.08

GAS ANALYZER

CO₂

SPAN: 18.00 %
 AVERAGE CAL. BIAS (C_m): 9.100
 AVERAGE ZERO BIAS (C_o): 0.110
 CALIBRATION GAS: EPA Protocol CO₂
 CALIBRATION % (C_{ma}): 9.00
 % CORRECTED (C_{gas}): 10.08

Example Calculation =

$$C_{\text{gas}} = (\bar{C} - C_o) \frac{C_{\text{ma}}}{C_m - C_o}$$

CLOCK TIME	ELAPSED TIME	Uncorrected			
		O ₂ % vol db	CO ₂ % vol db	NO _x ppmv db	CO ppmv db
15:22	0				
15:23	1	2.87	10.19	12.2	767
15:24	2	2.91	10.11	11.7	779
15:25	3	3.06	9.93	11.7	852
15:26	4	3.08	10.01	11.9	869
15:27	5	3.00	10.02	11.9	818
15:28	6	3.04	9.96	12.1	819
15:29	7	3.06	10.06	11.9	849
15:30	8	3.07	10.01	11.9	844
15:31	9	3.06	10.02	12.2	857
15:32	10	3.04	10.16	12.3	828
15:33	11	2.95	10.14	12.4	777
15:34	12	2.96	10.12	12.3	794
15:35	13	2.99	10.12	12.3	793
15:36	14	3.01	10.02	12.3	779
15:37	15	3.01	10.11	12.3	810
15:38	16	3.00	10.10	12.2	781
15:39	17	3.04	10.02	12.2	802
15:40	18	3.02	10.12	12.1	825
15:41	19	3.00	10.06	12.0	789
15:42	20	3.02	10.03	12.1	804
15:43	21	2.98	10.15	12.1	779
15:44	22	2.98	10.04	12.0	771
15:45	23	3.04	10.04	12.1	806
15:46	24	3.00	10.13	12.1	765
15:47	25	2.98	10.03	12.2	772
15:48	26	3.04	10.04	12.1	813
15:49	27	3.08	9.95	11.9	833
15:50	28	3.11	10.04	11.8	862
15:51	29	2.98	10.24	12.3	748
15:52	30	2.92	10.17	12.2	706
15:53	31	3.09	9.97	12.1	827
15:54	32	3.19	9.96	12.0	873
15:55	33	3.16	9.85	12.2	882
15:56	34	3.16	9.84	12.3	895
15:57	35	3.02	10.21	12.7	789
15:58	36	2.77	10.19	12.5	632
15:59	37	2.98	9.97	11.9	759
16:00	38	3.15	9.93	11.8	855
16:01	39	3.05	9.84	11.9	856
16:02	40	3.12	9.82	12.3	861
16:03	41	3.06	10.21	12.4	816
16:04	42	2.90	10.19	12.2	691
16:05	43	2.97	10.04	12.0	749
16:06	44	3.09	10.12	12.1	800
16:07	45	3.05	10.02	12.0	795
16:08	46	3.13	9.88	12.1	854
16:09	47	3.02	10.18	12.4	772
16:10	48	2.76	10.28	12.4	607
16:11	49	2.92	10.05	11.9	723
16:12	50	3.15	9.95	12.0	857
16:13	51	3.04	10.11	12.1	835
16:14	52	3.01	9.85	12.2	836
16:15	53	3.12	10.05	12.2	888
16:16	54	2.99	10.29	12.5	806
16:17	55	2.85	10.20	12.0	700
16:18	56	3.01	9.98	11.8	798
16:19	57	3.05	9.97	12.0	823
16:20	58	3.00	9.85	11.9	839
16:21	59	3.04	9.96	11.9	889
16:22	60	3.00	10.10	12.2	837
16:23	61	2.84	10.26	12.3	686
16:24	62	2.89	10.09	11.9	715
16:25	63	3.07	9.84	11.9	826
16:26	64	3.07	9.87	12.0	856
16:27	65	3.02	10.09	11.9	855
16:28	66	2.95	10.23	12.1	799
16:29	67	2.91	10.18	12.2	747
16:30	68	2.87	10.21	12.0	711
16:31	69	2.95	10.09	11.7	764
16:32	70	3.05	9.97	11.7	833
16:33	71	3.04	10.03	11.9	847
16:34	72	2.98	10.03	11.9	829
16:35	73	3.03	10.14	12.0	841
16:36	74	3.03	10.15	12.0	811
16:37	75	2.89	10.23	12.0	741
16:38	76	2.92	10.13	11.9	769
16:39	77	3.03	9.97	11.7	837
16:40	78	3.07	10.00	11.9	880
16:41	79	2.96	10.30	12.2	765
16:42	80	2.85	10.18	12.0	709
16:43	81	2.97	10.13	12.0	750
16:44	82	2.96	10.15	12.0	729
16:45	83	2.95	10.12	11.9	753
16:46	84	3.00	9.92	11.8	802
16:47	85	3.03	10.24	11.8	800
16:48	86	2.83	10.34	11.6	636
16:49	87	3.00	10.06	11.4	730
16:50	88	3.09	10.14	11.6	773
16:51	89	2.98	10.23	11.8	718
16:52/17:00	90	3.02	10.10	11.4	751

2 continued

17:01	91	3.18	10.10	11.9	789
17:02	92	3.12	10.31	11.9	757
17:03	93	2.95	10.40	12.1	597
17:04	94	2.84	10.47	11.8	495
17:05	95	3.02	10.29	11.5	615
17:06	96	3.18	10.11	11.7	694
17:07	97	3.15	10.06	11.8	720
17:08	98	3.13	10.13	12.0	720
17:09	99	3.04	10.34	12.0	636
17:10	100	2.99	10.33	12.0	589
17:11	101	2.99	10.34	11.9	573
17:12	102	3.04	10.27	11.7	630
17:13	103	3.15	10.17	11.7	717
17:14	104	3.17	10.12	11.8	741
17:15	105	3.16	10.16	12.0	732
17:16	106	3.08	10.33	12.2	665
17:17	107	3.00	10.27	12.1	592
17:18	108	3.07	10.28	11.9	636
17:19	109	3.08	10.29	11.9	612
17:20	110	3.10	10.23	11.9	657
17:21	111	3.17	10.17	11.7	716
17:22	112	3.19	10.19	11.8	737
17:23	113	3.21	10.12	11.7	769
17:24	114	3.21	10.29	11.9	759
17:25	115	3.10	10.41	11.8	668
17:26	116	2.90	10.45	12.1	498
17:27	117	3.05	10.30	11.9	579
17:28	118	3.12	10.24	11.8	626
17:29	119	3.11	10.34	12.1	593
17:30	120	3.09	10.27	12.0	599
17:31	121	3.24	10.04	11.8	725
17:32	122	3.31	10.32	12.0	801
17:33	123	3.17	10.53	12.2	709
17:34	124	3.08	10.40	12.1	609
17:35	125	3.13	10.37	11.7	614
17:36	126	3.14	10.38	11.6	630
17:37	127	3.18	10.24	11.4	671
17:38	128	3.28	10.06	11.6	752
17:39	129	3.33	10.23	11.9	777
17:40	130	3.21	10.44	12.1	721
17:41	131	3.08	10.38	12.2	612
17:42	132	3.09	10.40	12.0	606
17:43	133	3.13	10.35	11.7	631
17:44	134	3.20	10.23	11.6	677
17:45	135	3.21	10.22	11.9	692
17:46	136	3.18	10.26	12.1	704
17:47	137	3.13	10.18	12.1	676
17:48	138	3.03	10.43	12.2	547
17:49	139	3.04	10.45	12.0	541
17:50	140	3.10	10.34	11.8	598
17:51	141	3.21	10.18	11.6	687
17:52	142	3.25	10.23	11.8	736
17:53	143	3.19	10.36	12.0	673
17:54	144	3.13	10.27	11.6	635
17:55	145	3.24	10.09	11.5	722
17:56	146	3.29	10.42	11.8	759
17:57	147	3.06	10.52	12.4	556
17:58	148	3.07	10.33	11.5	571
17:59	149	3.18	10.30	11.6	624
18:00	150	3.15	10.32	11.8	578
18:01	151	3.17	10.19	11.5	602
18:02	152	3.28	10.07	11.8	658
18:03	153	3.30	10.26	12.1	678
18:04	154	3.14	10.54	12.4	488
18:05	155	3.04	10.46	12.0	383
18:06	156	3.17	10.37	11.4	442
18:07	157	3.20	10.37	11.4	479
18:08	158	3.21	10.29	11.4	482
18:09	159	3.29	10.17	11.4	522
18:10	160	3.33	10.16	11.4	519
18:11	161	3.22	10.44	11.8	397
18:12	162	3.08	10.49	11.9	341
18:13	163	3.21	10.36	11.6	453
18:14	164	3.29	10.30	11.1	537
18:15	165	3.28	10.26	11.8	508
18:16	166	3.28	10.16	11.7	528
18:17	167	3.28	10.24	11.9	518
18:18	168	3.21	10.18	11.5	492
18:19	169	3.32	10.17	11.6	575
18:20	170	3.23	10.38	11.7	472
18:21	171	3.11	10.44	11.7	413
18:22	172	3.21	10.23	10.9	541
18:23	173	3.35	10.04	11.2	649
18:24	174	3.26	10.17	11.6	615
18:25	175	3.21	10.09	11.4	629
18:26	176	3.30	10.12	11.5	707
18:27	177	3.26	10.33	11.4	675
18:28	178	3.10	10.33	11.2	606
18:29	179	3.01	10.25	11.3	496
18:30	180	3.16	10.14	11.1	645
Uncorrected Average =		3.080	10.176	11.90	706.1

ARI ENVIRONMENTAL, INC.
MOISTURE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/4/2008
RUN NUMBER: 2

γ FACTOR:	1.008	STACK DIAM:	53.00 inches
BAROMETRIC:	25.69 in. Hg	METER VOLUME:	60.797 ft ³
STATIC PRES:	0.45 in.H ₂ O	METER TEMP:	106.3 °F
STACK TEMP:	649.0 °F	LIQUID COLL:	104.7 milliliters
SQ.RT ΔP:	0.1487 in.H ₂ O	CO₂:	10.08 % by volume
ΔH:	0.59 in.H ₂ O	O₂:	3.08 % by volume

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS	
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$	= 49.143 dscf
γ = 1.008	
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS	
$V_{wstd} = 0.04707 \times V_{lc}$	= 4.928 scf
V _{lc} = 104.7 mL	
FRACTIONAL MOISTURE CONTENT OF STACK GAS AS MEASURED	
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}}$	= 0.0911
FRACTIONAL MOISTURE CONTENT OF STACK GAS @ SATURATION	
$B_{ws@saturation} = \frac{S.V.P.}{P_{bar} + \frac{P_{static}}{13.6}}$	= 0.8218
S.V.P. = 21.14 in. Hg	
FRACTIONAL MOISTURE CONTENT USED IN CALCULATIONS	
B _{ws} =	0.0911

ARI ENVIRONMENTAL, INC.
FLOW RATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
RUN NUMBER: 2

SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/4/2008

BAROMETRIC: 25.69 in. Hg
STATIC PRES: 0.45 in.H₂O
STACK TEMP: 649.0 °F
SQ.RT ΔP: 0.1487 in.H₂O

STACK DIAM: 53.00 inches
CO₂: 10.08 % by volume
O₂: 3.08 % by volume

DRY MOLECULAR WEIGHT OF STACK GAS			
$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO)$	=	29.74	lb/lb-mole
MOLECULAR WEIGHT OF STACK GAS, wet basis			
$M_s = M_d(1 - B_{ws}) + 18B_{ws}$	=	28.67	lb/lb-mole
PITOT TUBE COEFFICIENT			
C_p (from calibration curve or geometric specifications)	=	0.84	
AVERAGE VELOCITY HEAD OF STACK GAS, in. H₂O			
$\sqrt{\Delta P} = \frac{1}{n} \sum_{i=1}^n \sqrt{\Delta p_i}$	=	0.1487	in. H ₂ O
AVERAGE ABSOLUTE STACK GAS TEMPERATURE			
$T_s = 649.0 \text{ °F} + 460$	=	1,109.0	°R
ABSOLUTE STACK GAS PRESSURE			
$P_s = P_{bar} + \frac{P_{static}}{13.6}$	=	25.72	in.Hg
STACK GAS VELOCITY			
$V_s = (85.49)(C_p)(\text{avg } \sqrt{\Delta P}) \sqrt{\frac{T_s}{(P_s)(M_s)}}$	=	13.096	ft/sec
STACK GAS VOLUMETRIC FLOW RATE, actual			
$Q_s = 60 \times V_s \times A_s$	=	12,038	acfm
Stack Area =		15.321	ft ²
STACK GAS VOLUMETRIC FLOW RATE, standard conditions, wet basis			
$Q_{stdw} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)$	=	4,927 295,644	scfm, wb scfh, wb
STACK GAS VOLUMETRIC FLOW RATE, standard conditions, dry basis			
$Q_{std} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)(1 - B_{ws})$	=	4,478 268,698	dscfm dscfh

ARI ENVIRONMENTAL, INC.
USEPA METHOD 5B - FILTERABLE PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/4/08
RUN NUMBER: 2

INPUT

V_m:	60.797	ft ³	Q_s:	4,478	dscfm
γ FACTOR:	1.008		T_s:	649.0	°F
P_{bar}:	25.69	in.Hg	Runtime:	120.0	minutes
ΔH:	0.59	in.H ₂ O	V_s:	13.096	ft/sec
T_m:	106.3	°F	P_s:	25.72	in.Hg
V_{lc}:	104.7	mL	Noz. diam:	0.502	inches
M_n front:	25.84	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS					
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$		=	49.143	dscf	
$\gamma = 1.008$					
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS					
$V_{wstd} = 0.04707 \times V_{lc}$		=	4.928	scf	
FRACTIONAL MOISTURE CONTENT OF STACK GAS					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100$		=	9.11	%	
PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS					
$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right)$		Total	=	0.00811	gr/dscf
$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right)$		C'_s Total	=	1.1594	x 10⁻⁶ lbs/dscf
EMISSION RATE					
$pmr = \left(\frac{C_s}{7000} \right) (Q_{std}) (60)$		Total	=	0.3114 1.3641	lbs/hr ton/yr
ISOKINETIC SAMPLING RATE					
$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)}$		=	101.94	% I	
$A_n = 0.001374 \text{ ft}^2$		Runtime =	120	minutes	

ARI ENVIRONMENTAL, INC.
USEPA METHOD 202 - CONDENSIBLE INORGANIC PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/4/08
RUN NUMBER: 2

INPUT

V_m:	60.797	ft³	Q_s:	4,478	dscfm
γ FACTOR:	1.008		T_s:	649.0	°F
P_{bar}:	25.69	in.Hg	Runtime:	120.0	minutes
ΔH:	0.59	in.H₂O	V_s:	13.096	ft/sec
T_m:	106.3	°F	P_s:	25.72	in.Hg
V_{lc}:	104.7	mL	Noz. diam:	0.502	inches
M_n back inorg:	22.30	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS					
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$		=	49.143	dscf	
$\gamma = 1.008$					
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS					
$V_{wstd} = 0.04707 \times V_{lc}$		=	4.928	scf	
FRACTIONAL MOISTURE CONTENT OF STACK GAS					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100$		=	9.11	%	
PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS					
$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right)$		Total	=	0.00700	gr/dscf
$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right)$		C'_s Total	=	1.00057	x 10 ⁻⁶ lbs/dscf
EMISSION RATE					
$pmr = \left(\frac{C_s}{7000} \right) (Q_{std}) (60)$		Total	=	0.2688 1.1772	lbs/hr ton/yr
ISOKINETIC SAMPLING RATE					
$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)}$		=	101.94	% I	
$A_n = 0.001374 \text{ ft}^2$		Runtime =	120	minutes	

ARI ENVIRONMENTAL, INC.
USEPA METHOD 202 - CONDENSIBLE ORGANIC PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/4/08
RUN NUMBER: 2

INPUT

V_m:	60.797	ft ³	Q_s:	4,478	dscfm
γ FACTOR:	1.008		T_s:	649	°F
P_{bar}:	25.69	in.Hg	Runtime:	120.0	minutes
ΔH:	0.59	in.H ₂ O	V_s:	13.096	ft/sec
T_m:	106.3	°F	P_s:	25.72	in.Hg
V_{ic}:	104.7	mL	Noz. diam:	0.502	inches
M_n back org:	0.55	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS

$$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 49.143 \text{ dscf}$$

$\gamma = 1.008$

VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS

$$V_{wstd} = 0.04707 \times V_{ic} = 4.928 \text{ scf}$$

FRACTIONAL MOISTURE CONTENT OF STACK GAS

$$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100 = 9.11 \%$$

PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS

$$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right) \quad \text{Total} = 0.00017 \text{ gr/dscf}$$

$$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right) \quad C'_s \text{ Total} = 0.02468 \times 10^{-6} \text{ lbs/dscf}$$

EMISSION RATE

$$pmr = \left(\frac{C_s}{7000} \right) (Q_{std}) (60) \quad \text{Total} = \begin{matrix} 0.0066 \text{ lbs/hr} \\ 0.0290 \text{ ton/yr} \end{matrix}$$

ISOKINETIC SAMPLING RATE

$$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{ic}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)} = 101.94 \%$$

$A_n = 0.001374 \text{ ft}^2 \quad \text{Runtime} = 120 \text{ minutes}$

ARI ENVIRONMENTAL, INC.
USEPA METHOD 5/202 - TOTAL PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/4/08
RUN NUMBER: 2

INPUT

V_m:	60.797	ft ³	Q_s:	4,478	dscfm
γ FACTOR:	1.008		T_s:	649.0	°F
P_{bar}:	25.69	in.Hg	Runtime:	120.0	minutes
ΔH:	0.59	in.H ₂ O	V_s:	13.096	ft/sec
T_m:	106.3	°F	P_s:	25.72	in.Hg
V_{ic}:	104.7	mL	Noz. diam:	0.502	inches
M_n total:	48.69	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS					
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$		=	49.143	dscf	
$\gamma = 1.008$					
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS					
$V_{wstd} = 0.04707 \times V_{lc}$		=	4.928	scf	
FRACTIONAL MOISTURE CONTENT OF STACK GAS					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100$		=	9.11	%	
PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS					
$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right)$		Total	=	0.01529	gr/dscf
$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right)$		C' s Total	=	2.1847	x 10⁻⁶ lbs/dscf
EMISSION RATE					
$pmr = \left(\frac{C_s}{7000} \right) (Q_{std}) (60)$		Total	=	0.5868 2.5703	lbs/hr ton/yr
ISOKINETIC SAMPLING RATE					
$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)}$		=	101.94	% I	
$A_n = 0.001374 \text{ ft}^2$		Runtime =	120	minutes	

NO_x CALIBRATION CORRECTION DATA SHEET

USEPA METHOD 7E

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: CAI Model 600 CLD
RUN NO: 2
TEST DATE: 6/4/2008

INPUT

NO _x AVERAGE CHART READING (C):	11.90 ppmv
AVG PRE/POST ZERO DRIFT READING (C _o):	0.65 ppmv
CAL GAS CONCENTRATION (C _{ma}):	45.0 ppmv
AVG CAL PRE/POST TEST READING (C _m):	41.85 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q _{std}):	268,698 dscfh

CALCULATIONS

STACK NO_x AVERAGE CHART READING = 11.90 ppmv

STACK NO_x CONC. CORRECTED FOR ZERO AND CALIBRATION DRIFT:

$$\text{NO}_x \text{ CONC, ppmv} = C_{\text{gas,ppm}} = (\bar{C} - C_o) \frac{C_{ma}}{C_m - C_o} = 12.3 \text{ ppmv db}$$

(corrected)

NO_x CONC.(lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left(\frac{46 \text{ lb/lb-mole}}{385.26 \times 10^6 \text{ ft}^3/\text{lb-mole}} \right) = 1.467 \times 10^{-6} \text{ lbs/dscf}$$

NO_x EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 268,698 dscfh

STACK NO_x EMISSION RATE =

$$\text{SO}_{2\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = 0.394 \text{ lbs/hr}$$

$$= 1.727 \text{ ton/yr}$$

CO CALIBRATION CORRECTION DATA SHEET USEPA METHOD 10

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: Thermo Environmental Model 48i-CHL
RUN NO: 2
TEST DATE: 6/4/2008

INPUT

CO AVERAGE CHART READING (C):	706.1 ppmv
AVG PRE/POST ZERO DRIFT READING (C _o):	-1.0 ppmv
CAL GAS CONCENTRATION (C _{ma}):	1,000 ppmv
AVG CAL PRE/POST TEST READING (C _m):	974.5 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q _{std}):	268,698 dscfh

CALCULATIONS

STACK CO AVERAGE CHART READING = 706.1 ppmv

STACK CO CONC. CORRECTED FOR ZERO AND CALIBRATION DRIFT:

$$\text{CO CONC, ppmv (corrected)} = C_{\text{gas,ppm}} = (\bar{C} - C_o) \frac{C_{ma}}{C_m - C_o} = 724.8 \text{ ppmv db}$$

CO CONC. (lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left(\frac{28 \text{ lb / lb - mole}}{385.26 \times 10^6 \text{ ft}^3 \text{ / lb - mole}} \right) = 52.678 \times 10^{-6} \text{ lbs/dscf}$$

CO EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 268,698 dscfh

STACK CO EMISSION RATE =

$$\text{CO}_{\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = 14.154 \text{ lbs/hr} = 61.996 \text{ ton/yr}$$

**CARBON DISULFIDE EMISSION RATE CALCULATION SHEET
USEPA METHOD 15**

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 2
TEST DATE: 6/4/2008

INPUT

CS₂ CONCENTRATION (C): <0.01 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 268,698 dscfh

CALCULATIONS

STACK CS₂ AVERAGE CHART READING = < 0.01 ppmv

CS₂ CONCENTRATION (lbs/dscf) =

$$C_{\text{gas, lb/dscf}} = (C_{\text{gas, ppm}}) \left(\frac{76.1 \text{ lb / lb-mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb-mole}} \right) = < 0.0020 \times 10^{-6} \text{ lbs/dscf}$$

CS₂ EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 268,698 dscfh

STACK CS₂ EMISSION RATE =

$$CS_{2\text{pmr}} = (C_{\text{gas, lb/dscf}})(Q_{\text{std}}) = < 0.0005 \text{ lbs/hr} \\ = < 0.002 \text{ ton/yr}$$

CARBONYL SULFIDE EMISSION RATE CALCULATION SHEET
USEPA METHOD 15

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 2
TEST DATE: 6/4/2008

INPUT

COS CONCENTRATION (C): 0.25 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 268,698 dscfh

CALCULATIONS

STACK COS AVERAGE CHART READING = 0.3 ppmv

COS CONCENTRATION (lbs/dscf) =

$$C_{gas, lb/dscf} = (C_{gas, ppm}) \left(\frac{60.07 lb / lb - mole}{385.26 \times 10^{-6} ft^3 / lb - mole} \right) = 0.039 \times 10^{-6} \text{ lbs/dscf}$$

COS EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 268,698 dscfh

STACK COS EMISSION RATE =

$$COS_{pmr} = (C_{gas, lb/dscf})(Q_{std}) = 0.010 \text{ lbs/hr}$$
$$= 0.046 \text{ ton/yr}$$

HYDROGEN SULFIDE CALIBRATION CORRECTION DATA SHEET

USEPA METHOD 15

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 2
TEST DATE: 6/4/2008

INPUT

H₂S CONCENTRATION (C): < 0.76 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 268,698 dscfh

CALCULATIONS

STACK H₂S AVERAGE CHART READING = < 0.76 ppmv

H₂S CONCENTRATION (lbs/dscf) =

$$C_{\text{gas, lb/dscf}} = (C_{\text{gas, ppm}}) \left(\frac{34.08 \text{ lb / lb - mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb - mole}} \right) = < 0.0672 \times 10^{-6} \text{ lbs/dscf}$$

H₂S EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 268,698 dscfh

STACK H₂S EMISSION RATE =

$$H_2S_{\text{pmr}} = (C_{\text{gas, lb/dscf}})(Q_{\text{std}}) = < 0.0181 \text{ lbs/hr}$$
$$= < 0.079 \text{ ton/yr}$$

TRS as SO₂ EMISSION RATE CALCULATION SHEET

USEPA METHOD 15

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 2
TEST DATE: 6/4/2008

INPUT

COS CONCENTRATION (C): 0.25 ppmv
 CS₂ CONCENTRATION (C): < 0.00 ppmv
 H₂S CONCENTRATION (C): < 0.76 ppmv
 STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 268,698 dscfh
 STACK OXYGEN CONTENT (%O₂): 3.08 % by vol db

CALCULATIONS

AVERAGE STACK TRS as SO₂ = < 1.01 ppmv

TRS CONCENTRATION CORRECTED TO 3% OXYGEN (ppmv db @ 3%O₂) =

$$C_{\text{gas,ppm@3\%O}_2} = (C_{\text{gas,ppm}}) \left(\frac{17.9}{20.9 - \%O_2} \right) = < 1.01 \text{ ppmv @ 3\% O}_2$$

TRS as SO₂ CONCENTRATION (lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left(\frac{64 \text{ lb / lb - mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb - mole}} \right) = < 0.1678 \times 10^{-6} \text{ lbs/dscf}$$

TRS as SO₂ EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 268,698 dscfh

STACK TRS as SO₂ EMISSION RATE =

$$\text{TRS}_{\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = < 0.0451 \text{ lbs/hr}$$

$$= < 0.197 \text{ ton/yr}$$

MONITOR DATA SUMMARY

COMPANY : Valero McKee Refinery
 SOURCE : No. 2 SRU Incinerator
 REPETITION : 3
 TEST DATE : 6/4/2008
 START TIME : 18:54
 END TIME : 22:01

GAS ANALYZER CO

SPAN: 2,000 ppm
 AVERAGE CAL. BIAS (C_m): 969.5
 AVERAGE ZERO BIAS (C_o): -1.5
 CALIBRATION GAS: EPA Protocol CO
 CALIBRATION PPM (C_{ma}): 1,000
 PPM CORRECTED (C_{gas}): 501

GAS ANALYZER NO_x

SPAN: 90.0 ppm
 AVERAGE CAL. BIAS (C_m): 41.95
 AVERAGE ZERO BIAS (C_o): 0.60
 CALIBRATION GAS: EPA Protocol NO_x
 CALIBRATION PPM (C_{ma}): 45.0
 PPM CORRECTED (C_{gas}): 12.0

GAS ANALYZER O₂

SPAN: 9.00 %
 AVERAGE CAL. BIAS (C_m): 4.475
 AVERAGE ZERO BIAS (C_o): -0.005
 CALIBRATION GAS: EPA Protocol O₂
 CALIBRATION PPM (C_{ma}): 4.50
 PPM CORRECTED (C_{gas}): 3.33

GAS ANALYZER CO₂

SPAN: 18.00 %
 AVERAGE CAL. BIAS (C_m): 9.075
 AVERAGE ZERO BIAS (C_o): 0.105
 CALIBRATION GAS: EPA Protocol CO₂
 CALIBRATION % (C_{ma}): 9.00
 % CORRECTED (C_{gas}): 10.22

Example Calculation =
$$C_{\text{gas}} = \left(\bar{C} - C_o \right) \frac{C_{ma}}{C_m - C_o}$$

CLOCK TIME	ELAPSED TIME	Uncorrected			
		O ₂ % vol db	CO ₂ % vol db	NO _x ppmv db	CO ppmv db
18:54	0				
18:55	1	3.31	10.31	12.2	545
18:56	2	3.08	10.51	12.2	344
18:57	3	3.18	10.26	11.8	392
18:58	4	3.33	10.15	11.7	478
18:59	5	3.28	10.30	11.9	446
19:00	6	3.21	10.30	11.9	406
19:01	7	3.28	10.12	11.7	446
19:02	8	3.38	10.09	11.7	523
19:03	9	3.23	10.48	11.9	421
19:04	10	3.15	10.36	11.7	407
19:05	11	3.34	10.14	11.5	534
19:06	12	3.30	10.27	11.8	542
19:07	13	3.22	10.27	11.7	464
19:08	14	3.26	10.16	11.8	512
19:09	15	3.36	10.00	11.7	590
19:10	16	3.34	10.28	12.0	579
19:11	17	3.17	10.40	12.2	439
19:12	18	3.22	10.23	11.8	473
19:13	19	3.26	10.28	11.7	526
19:14	20	3.24	10.23	11.7	561
19:15	21	3.31	10.09	11.7	625
19:16	22	3.35	10.08	11.8	675
19:17	23	3.34	10.10	11.9	696
19:18	24	3.33	10.32	12.1	691
19:19	25	3.19	10.44	12.1	558
19:20	26	3.11	10.46	12.1	478
19:21	27	3.18	10.29	11.6	532
19:22	28	3.34	10.15	11.6	647
19:23	29	3.28	10.26	11.6	601
19:24	30	3.17	10.34	12.0	535
19:25	31	3.21	10.15	11.8	575
19:26	32	3.31	10.32	11.9	632
19:27	33	3.08	10.61	12.1	452
19:28	34	3.14	10.41	11.4	493
19:29	35	3.25	10.28	11.7	552
19:30	36	3.20	10.39	11.9	512
19:31	37	3.17	10.30	11.8	507
19:32	38	3.34	10.02	11.6	659
19:33	39	3.32	10.36	12.0	641
19:34	40	3.07	10.53	12.2	462
19:35	41	3.17	10.31	11.7	506
19:36	42	3.25	10.30	11.6	544
19:37	43	3.21	10.34	11.7	521
19:38	44	3.28	10.15	11.7	611
19:39	45	3.35	10.07	11.7	677
19:40	46	3.36	10.30	11.9	693
19:41	47	3.22	10.46	12.2	561
19:42	48	3.13	10.38	12.1	496
19:43	49	3.17	10.38	11.9	493
19:44	50	3.22	10.31	11.8	542
19:45	51	3.30	10.18	11.6	622
19:46	52	3.41	10.08	11.7	706
19:47	53	3.35	10.42	12.1	680
19:48	54	3.18	10.44	12.3	548
19:49	55	3.18	10.35	12.1	528
19:50	56	3.22	10.38	11.7	554
19:51	57	3.23	10.27	11.2	611
19:52	58	3.39	10.09	11.1	723
19:53	59	3.40	10.45	11.9	689
19:54	60	3.13	10.57	11.9	503
19:55	61	3.13	10.34	11.7	491
19:56	62	3.27	10.32	11.6	556
19:57	63	3.23	10.39	11.6	523
19:58	64	3.22	10.27	11.6	526
19:59	65	3.35	10.10	11.3	640
20:00	66	3.37	10.40	11.8	645
20:01	67	3.16	10.56	11.7	514
20:02	68	3.16	10.44	11.5	474
20:03	69	3.21	10.43	11.6	480
20:04	70	3.22	10.33	11.3	483
20:05	71	3.35	10.06	11.4	549
20:06	72	3.40	10.33	11.7	559
20:07	73	3.19	10.61	11.8	367
20:08	74	3.12	10.45	11.8	323
20:09	75	3.27	10.32	11.7	411
20:10	76	3.30	10.34	11.3	431
20:11	77	3.29	10.30	11.7	439
20:12	78	3.35	10.11	11.9	473
20:13	79	3.41	10.33	12.1	493
20:14	80	3.19	10.59	12.3	333
20:15	81	3.21	10.37	11.8	386
20:16	82	3.35	10.34	11.7	425
20:17	83	3.29	10.39	11.8	396
20:18	84	3.35	10.20	11.5	428
20:19	85	3.43	10.13	11.6	511
20:20	86	3.31	10.49	11.9	413
20:21	87	3.18	10.46	11.8	338
20:22	88	3.34	10.23	11.5	440
20:23	89	3.40	10.29	11.5	466
20:24/20:31	90	3.33	10.33	11.5	432

3 continued

20:32	91	3.46	10.04	11.6	494
20:33	92	3.43	10.38	11.9	453
20:34	93	3.23	10.45	11.9	309
20:35	94	3.32	10.22	11.6	367
20:36	95	3.44	10.13	11.5	435
20:37	96	3.39	10.30	11.7	421
20:38	97	3.35	10.17	11.6	387
20:39	98	3.50	10.07	11.5	496
20:40	99	3.38	10.46	11.9	395
20:41	100	3.19	10.46	11.6	291
20:42	101	3.37	10.19	11.4	405
20:43	102	3.43	10.17	11.3	439
20:44	103	3.35	10.30	11.5	379
20:45	104	3.38	10.09	11.4	413
20:46	105	3.44	10.20	11.5	481
20:47	106	3.27	10.51	11.8	334
20:48	107	3.22	10.35	11.4	348
20:49	108	3.35	10.21	11.3	431
20:50	109	3.34	10.30	11.4	412
20:51	110	3.29	10.32	11.5	383
20:52	111	3.39	10.05	11.2	481
20:53	112	3.51	10.17	11.4	576
20:54	113	3.30	10.47	11.8	401
20:55	114	3.25	10.31	11.4	387
20:56	115	3.41	10.22	11.2	453
20:57	116	3.37	10.30	11.3	432
20:58	117	3.38	10.13	11.3	457
20:59	118	3.52	10.03	11.3	558
21:00	119	3.39	10.44	11.8	462
21:01	120	3.22	10.44	11.4	339
21:02	121	3.37	10.18	11.3	435
21:03	122	3.42	10.26	11.4	433
21:04	123	3.34	10.31	11.4	379
21:05	124	3.38	10.21	11.1	422
21:06	125	3.40	10.23	11.4	414
21:07	126	3.37	10.20	11.4	384
21:08	127	3.42	10.18	11.3	457
21:09	128	3.40	10.38	11.5	413
21:10	129	3.31	10.39	11.6	336
21:11	130	3.34	10.28	11.3	392
21:12	131	3.45	10.10	11.3	478
21:13	132	3.46	10.24	11.5	472
21:14	133	3.35	10.32	11.6	388
21:15	134	3.36	10.23	11.5	403
21:16	135	3.44	10.19	11.4	474
21:17	136	3.48	10.17	11.5	471
21:18	137	3.45	10.38	11.7	460
21:19	138	3.31	10.50	11.6	357
21:20	139	3.30	10.41	11.5	355
21:21	140	3.41	10.25	11.4	415
21:22	141	3.44	10.15	11.4	448
21:23	142	3.43	10.26	11.6	432
21:24	143	3.37	10.31	11.6	374
21:25	144	3.43	10.16	11.4	444
21:26	145	3.44	10.43	11.5	448
21:27	146	3.33	10.46	11.5	365
21:28	147	3.37	10.28	11.4	389
21:29	148	3.45	10.23	11.3	436
21:30	149	3.41	10.35	11.5	384
21:31	150	3.37	10.32	11.5	368
21:32	151	3.36	10.30	11.5	368
21:33	152	3.37	10.35	11.4	391
21:34	153	3.33	10.40	11.5	362
21:35	154	3.32	10.35	11.3	385
21:36	155	3.28	10.59	11.4	340
21:37	156	3.23	10.55	11.2	347
21:38	157	3.37	10.22	11.1	466
21:39	158	3.42	10.16	11.3	551
21:40	159	3.34	10.28	11.5	520
21:41	160	3.34	10.20	11.3	528
21:42	161	3.39	10.17	11.4	553
21:43	162	3.37	10.20	11.5	550
21:44	163	3.33	10.37	11.6	565
21:45	164	3.25	10.46	11.6	469
21:46	165	3.18	10.46	11.6	397
21:47	166	3.23	10.29	11.3	448
21:48	167	3.39	10.07	11.2	580
21:49	168	3.37	10.17	11.6	592
21:50	169	3.27	10.27	11.6	548
21:51	170	3.31	10.16	11.5	584
21:52	171	3.40	10.14	11.4	650
21:53	172	3.35	10.45	11.7	600
21:54	173	3.17	10.48	11.8	455
21:55	174	3.23	10.33	11.5	520
21:56	175	3.27	10.38	11.5	527
21:57	176	3.24	10.25	11.4	523
21:58	177	3.36	10.13	11.4	602
21:59	178	3.38	10.17	11.4	650
22:00	179	3.36	10.33	11.6	654
22:01	180	3.26	10.44	11.8	581
Uncorrected Average =		3.308	10.294	11.62	484.7

ARI ENVIRONMENTAL, INC.
MOISTURE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/4/2008
RUN NUMBER: 3

γ FACTOR:	1.008	STACK DIAM:	53.00 inches
BAROMETRIC:	25.63 in. Hg	METER VOLUME:	56.897 ft ³
STATIC PRES:	0.51 in.H ₂ O	METER TEMP:	99.8 °F
STACK TEMP:	647.5 °F	LIQUID COLL:	111.2 milliliters
SQ.RT ΔP:	0.1487 in.H ₂ O	CO₂:	10.22 % by volume
ΔH:	0.53 in.H ₂ O	O₂:	3.33 % by volume

ENGLISH UNITS
(29.92 in.Hg & °F)

VOLUME OF SAMPLE

@ STANDARD CONDITIONS, DRY BASIS

$$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 46.409 \text{ dscf}$$

$\gamma = 1.008$

VOLUME OF WATER IN SAMPLE

@ STANDARD CONDITIONS

$$V_{wstd} = 0.04707 \times V_{lc} = 5.234 \text{ scf}$$

$V_{lc} = 111.2 \text{ mL}$

FRACTIONAL MOISTURE CONTENT OF STACK GAS AS MEASURED

$$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} = 0.1014$$

FRACTIONAL MOISTURE CONTENT OF STACK GAS @ SATURATION

$$B_{ws@saturation} = \frac{S.V.P.}{P_{bar} + \frac{P_{static}}{13.6}} = 0.8236$$

$S.V.P. = 21.14 \text{ in. Hg}$

FRACTIONAL MOISTURE CONTENT USED IN CALCULATIONS

$$B_{ws} = 0.1014$$

ARI ENVIRONMENTAL, INC.
FLOW RATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
RUN NUMBER: 3

SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/4/2008

BAROMETRIC: 25.63 in. Hg
STATIC PRES: 0.51 in.H₂O
STACK TEMP: 647.5 °F
SQ.RT ΔP: 0.1487 in.H₂O

STACK DIAM: 53.00 inches
CO₂: 10.22 % by volume
O₂: 3.33 % by volume

DRY MOLECULAR WEIGHT OF STACK GAS			
$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO)$	=	29.77	lb/lb-mole
MOLECULAR WEIGHT OF STACK GAS, wet basis			
$M_s = M_d(1 - B_{ws}) + 18B_{ws}$	=	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. H₂O			
$\sqrt{\Delta P} = \frac{1}{n} \sum_{i=1}^n \sqrt{\Delta p_i}$	=	0.1487	in. H ₂ O
AVERAGE ABSOLUTE STACK GAS TEMPERATURE			
$T_s = 647.5 \text{ °F} + 460$	=	1,107.5	°R
ABSOLUTE STACK GAS PRESSURE			
$P_s = P_{bar} + \frac{P_{static}}{13.6}$	=	25.67	in.Hg
STACK GAS VELOCITY			
$V_s = (85.49)(C_p)(\text{avg } \sqrt{\Delta P}) \sqrt{\frac{T_s}{(P_s)(M_s)}}$	=	13.122	ft/sec
STACK GAS VOLUMETRIC FLOW RATE, actual			
$Q_s = 60 \times V_s \times A_s$	=	12,062	acfm
Stack Area =		15.321 ft ²	
STACK GAS VOLUMETRIC FLOW RATE, standard conditions, wet basis			
$Q_{stdw} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)$	=	4,933 295,993	scfm, wb scfh, wb
STACK GAS VOLUMETRIC FLOW RATE, standard conditions, dry basis			
$Q_{std} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)(1 - B_{ws})$	=	4,433 265,993	dscfm dscfh

ARI ENVIRONMENTAL, INC.
USEPA METHOD 5B - FILTERABLE PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/4/08
RUN NUMBER: 3

INPUT

V_m:	56.897	ft³	Q_s:	4,433	dscfm
γ FACTOR:	1.008		T_s:	647.5	°F
P_{bar}:	25.63	in.Hg	Runtime:	120.0	minutes
ΔH:	0.53	in.H₂O	V_s:	13.122	ft/sec
T_m:	99.8	°F	P_s:	25.67	in.Hg
V_{ic}:	111.2	mL	Noz. diam:	0.491	inches
M_n front:	19.37	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS					
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$		=	46.409	dscf	
$\gamma = 1.008$					
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS					
$V_{wstd} = 0.04707 \times V_{lc}$		=	5.234	scf	
FRACTIONAL MOISTURE CONTENT OF STACK GAS					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100$		=	10.14	%	
PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS					
$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right)$		Total	=	0.00644	gr/dscf
$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right)$		C'_s Total	=	0.9203	x 10⁻⁶ lbs/dscf
EMISSION RATE					
$pmr = \left(\frac{C_s}{7000} \right) (Q_{std})(60)$		Total	=	0.2447 1.0719	lbs/hr ton/yr
ISOKINETIC SAMPLING RATE					
$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m} \right) \left(\gamma \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)}$		=	101.65	% I	
$A_n = 0.001315 \text{ ft}^2$		Runtime =	120	minutes	

ARI ENVIRONMENTAL, INC.
USEPA METHOD 202 - CONDENSIBLE INORGANIC PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/4/08
RUN NUMBER: 3

INPUT

V_m:	56.897	ft³	Q_s:	4,433	dscfm
γ FACTOR:	1.008		T_s:	647.5	°F
P_{bar}:	25.63	in.Hg	Runtime:	120.0	minutes
ΔH:	0.53	in.H₂O	V_s:	13.122	ft/sec
T_m:	99.8	°F	P_s:	25.67	in.Hg
V_{lc}:	111.2	mL	Noz. diam:	0.491	inches
M_n back inorg:	5.45	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS					
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$		=	46.409	dscf	
$\gamma = 1.008$					
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS					
$V_{wstd} = 0.04707 \times V_{lc}$		=	5.234	scf	
FRACTIONAL MOISTURE CONTENT OF STACK GAS					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100$		=	10.14	%	
PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS					
$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right)$		Total	=	0.00181	gr/dscf
$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right)$		C' s Total	=	0.25894	x 10 ⁻⁶ lbs/dscf
EMISSION RATE					
$pmr = \left(\frac{C_s}{7000} \right) (Q_{std})(60)$		Total	=	0.0689 0.3016	lbs/hr ton/yr
ISOKINETIC SAMPLING RATE					
$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)}$		=	101.65	% I	
$A_n = 0.001315 \text{ ft}^2$		Runtime =	120	minutes	

ARI ENVIRONMENTAL, INC.
USEPA METHOD 202 - CONDENSIBLE ORGANIC PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/4/08
RUN NUMBER: 3

INPUT

V_m:	56.897	ft ³	Q_s:	4.433	dscfm
γ FACTOR:	1.008		T_s:	647.5	°F
P_{bar}:	25.63	in.Hg	Runtime:	120.0	minutes
ΔH:	0.53	in.H ₂ O	V_s:	13.122	ft/sec
T_m:	99.8	°F	P_s:	25.67	in.Hg
V_{lc}:	111.2	mL	Noz. diam:	0.491	inches
M_n back org:	0.90	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS					
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$	=	46.409	dscf		
$\gamma = 1.008$					
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS					
$V_{wstd} = 0.04707 \times V_{lc}$	=	5.234	scf		
FRACTIONAL MOISTURE CONTENT OF STACK GAS					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100$	=	10.14	%		
PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS					
$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right)$	Total	=	0.00030	gr/dscf	
$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right)$	C'_s Total	=	0.04276	x 10⁻⁶ lbs/dscf	
EMISSION RATE					
$pmr = \left(\frac{C_s}{7000} \right) (Q_{std})(60)$	Total	=	0.0114	lbs/hr	
			0.0498	ton/yr	
ISOKINETIC SAMPLING RATE					
$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)}$	=	101.65	% I		
$A_n = 0.001315 \text{ ft}^2$	Runtime =	120	minutes		

ARI ENVIRONMENTAL, INC.
USEPA METHOD 5/202 - TOTAL PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/4/08
RUN NUMBER: 3

INPUT

V_m:	56.897	ft³	Q_s:	4,433	dscfm
γ FACTOR:	1.008		T_s:	647.5	°F
P_{bar}:	25.63	in.Hg	Runtime:	120.0	minutes
ΔH:	0.53	in.H₂O	V_s:	13.122	ft/sec
T_m:	99.8	°F	P_s:	25.67	in.Hg
V_{lc}:	111.2	mL	Noz. diam:	0.491	inches
M_n total:	25.72	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS

$$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 46.409 \text{ dscf}$$

$\gamma = 1.008$

VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS

$$V_{wstd} = 0.04707 \times V_{lc} = 5.234 \text{ scf}$$

FRACTIONAL MOISTURE CONTENT OF STACK GAS

$$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100 = 10.14 \%$$

PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS

$$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right) \quad \text{Total} = 0.00855 \text{ gr/dscf}$$

$$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right) \quad C'_s \text{ Total} = 1.2220 \times 10^{-8} \text{ lbs/dscf}$$

EMISSION RATE

$$pmr = \left(\frac{C_s}{7000} \right) (Q_{std})(60) \quad \text{Total} = \begin{matrix} 0.3249 \text{ lbs/hr} \\ 1.4233 \text{ ton/yr} \end{matrix}$$

ISOKINETIC SAMPLING RATE

$$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)} = 101.65 \%$$

$A_n = 0.001315 \text{ ft}^2 \quad \text{Runtime} = 120 \text{ minutes}$

NO_x CALIBRATION CORRECTION DATA SHEET

USEPA METHOD 7E

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: CAI Model 600 CLD
RUN NO: 3
TEST DATE: 6/4/2008

INPUT

NO _x AVERAGE CHART READING (C):	11.62 ppmv
AVG PRE/POST ZERO DRIFT READING (C _o):	0.6 ppmv
CAL GAS CONCENTRATION (C _{ma}):	45.0 ppmv
AVG CAL PRE/POST TEST READING (C _m):	42.0 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q _{std}):	265,993 dscfh

CALCULATIONS

STACK NO_x AVERAGE CHART READING = 11.62 ppmv

STACK NO_x CONC. CORRECTED FOR ZERO AND CALIBRATION DRIFT:

$$\text{NO}_x \text{ CONC, ppmv} = C_{\text{gas,ppm}} = (\bar{C} - C_o) \frac{C_{ma}}{C_m - C_o} = 12.0 \text{ ppmv db}$$

(corrected)

NO_x CONC. (lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left(\frac{46 \text{ lb/lb-mole}}{385.26 \times 10^6 \text{ ft}^3/\text{lb-mole}} \right) = 1.432 \times 10^{-6} \text{ lbs/dscf}$$

NO_x EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 265,993 dscfh

STACK NO_x EMISSION RATE =

$$\text{SO}_{2\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = 0.381 \text{ lbs/hr}$$

$$= 1.669 \text{ ton/yr}$$

CO CALIBRATION CORRECTION DATA SHEET
USEPA METHOD 10

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: Thermo Environmental Model 48i-CHL
RUN NO: 3
TEST DATE: 6/4/2008

INPUT

CO AVERAGE CHART READING (C):	484.7	ppmv
AVG PRE/POST ZERO DRIFT READING (C _o):	-1.5	ppmv
CAL GAS CONCENTRATION (C _{ma}):	1,000	ppmv
AVG CAL PRE/POST TEST READING (C _m):	969.5	ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q _{std}):	265,993	dscfh

CALCULATIONS

STACK CO AVERAGE CHART READING = 484.7 ppmv

STACK CO CONC. CORRECTED FOR ZERO AND CALIBRATION DRIFT:

$$\text{CO CONC, ppmv (corrected)} = C_{\text{gas,ppm}} = (\bar{C} - C_o) \frac{C_{ma}}{C_m - C_o} = 500.8 \text{ ppmv db}$$

CO CONC. (lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left(\frac{28 \text{ lb / lb - mole}}{385.26 \times 10^6 \text{ ft}^3 \text{ / lb - mole}} \right) = 36.394 \times 10^{-6} \text{ lbs/dscf}$$

CO EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 265,993 dscfh

STACK CO EMISSION RATE =

$$\text{CO}_{\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = 9.681 \text{ lbs/hr} \\ = 42.401 \text{ ton/yr}$$

CARBON DISULFIDE EMISSION RATE CALCULATION SHEET
USEPA METHOD 15

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 3
TEST DATE: 6/4/2008

INPUT

CS₂ CONCENTRATION (C): <0.01 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 265,993 dscfh

CALCULATIONS

STACK CS₂ AVERAGE CHART READING = < 0.01 ppmv

CS₂ CONCENTRATION (lbs/dscf) =

$$C_{\text{gas, lb/dscf}} = (C_{\text{gas, ppm}}) \left(\frac{76.1 \text{ lb / lb - mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb - mole}} \right) = < 0.0020 \times 10^{-6} \text{ lbs/dscf}$$

CS₂ EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 265,993 dscfh

STACK CS₂ EMISSION RATE =

$$CS_{2\text{pmr}} = (C_{\text{gas, lb/dscf}})(Q_{\text{std}}) = < 0.0005 \text{ lbs/hr}$$
$$= < 0.002 \text{ ton/yr}$$

CARBONYL SULFIDE EMISSION RATE CALCULATION SHEET
USEPA METHOD 15

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 3
TEST DATE: 6/4/2008

INPUT

COS CONCENTRATION (C): 0.06 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 265,993 dscfh

CALCULATIONS

STACK COS AVERAGE CHART READING = 0.1 ppmv

COS CONCENTRATION (lbs/dscf) =

$$C_{gas, lb/dscf} = (C_{gas, ppm}) \left(\frac{60.07 \text{ lb / lb-mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb-mole}} \right) = 0.009 \times 10^{-6} \text{ lbs/dscf}$$

COS EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 265,993 dscfh

STACK COS EMISSION RATE =

$$\text{COS}_{pmr} = (C_{gas, lb/dscf})(Q_{std}) = 0.002 \text{ lbs/hr}$$
$$= 0.011 \text{ ton/yr}$$

HYDROGEN SULFIDE CALIBRATION CORRECTION DATA SHEET
USEPA METHOD 15

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 3
TEST DATE: 6/4/2008

INPUT

H₂S CONCENTRATION (C): < 0.76 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 265,993 dscfh

CALCULATIONS

STACK H₂S AVERAGE CHART READING = < 0.76 ppmv

H₂S CONCENTRATION (lbs/dscf) =

$$C_{\text{gas, lb/dscf}} = (C_{\text{gas, ppm}}) \left(\frac{34.08 \text{ lb / lb - mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb - mole}} \right) = < 0.0672 \times 10^{-6} \text{ lbs/dscf}$$

H₂S EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 265,993 dscfh

STACK H₂S EMISSION RATE =

$$H_2S_{\text{pmr}} = (C_{\text{gas, lb/dscf}})(Q_{\text{std}}) = < 0.0179 \text{ lbs/hr}$$
$$= < 0.078 \text{ ton/yr}$$

TRS as SO₂ EMISSION RATE CALCULATION SHEET

USEPA METHOD 15

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 3
TEST DATE: 6/4/2008

INPUT

COS CONCENTRATION (C):	0.06 ppmv
CS ₂ CONCENTRATION (C):	< 0.00 ppmv
H ₂ S CONCENTRATION (C):	< 0.76 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q _{std}):	265,993 dscfh
STACK OXYGEN CONTENT (%O ₂):	3.33 % by vol db

CALCULATIONS

AVERAGE STACK TRS as SO₂ = < 0.82 ppmv

TRS CONCENTRATION CORRECTED TO 3% OXYGEN (ppmv db @ 3%O₂) =

$$C_{\text{gas, ppm @ 3\%O}_2} = \left(C_{\text{gas, ppm}} \right) \left(\frac{17.9}{20.9 - \%O_2} \right) = < 0.84 \text{ ppmv @ 3\% O}_2$$

TRS as SO₂ CONCENTRATION (lbs/dscf) =

$$C_{\text{gas, lb / dscf}} = \left(C_{\text{gas, ppm}} \right) \left(\frac{64 \text{ lb / lb - mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb - mole}} \right) = < 0.1362 \times 10^{-6} \text{ lbs/dscf}$$

TRS as SO₂ EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 265,993 dscfh

STACK TRS as SO₂ EMISSION RATE =

$$\text{TRS}_{\text{pmr}} = \left(C_{\text{gas, lb / dscf}} \right) (Q_{\text{std}}) = < 0.0362 \text{ lbs/hr}$$

$$= < 0.159 \text{ ton/yr}$$

MONITOR DATA SUMMARY

COMPANY : Valero McKee Refinery
 SOURCE : No. 2 SRU Incinerator
 REPETITION : 4
 TEST DATE : 6/6/2008
 START TIME : 6:36
 END TIME : 9:42

GAS ANALYZER

CO

SPAN: 2,000 ppm
 AVERAGE CAL. BIAS (C_m): 985.0
 AVERAGE ZERO BIAS (C_o): -1.0
 CALIBRATION GAS: EPA Protocol CO
 CALIBRATION PPM (C_{ma}): 1,000
 PPM CORRECTED (C_{gas}): 652

GAS ANALYZER

NO_x

SPAN: 90.0 ppm
 AVERAGE CAL. BIAS (C_m): 44.55
 AVERAGE ZERO BIAS (C_o): 0.90
 CALIBRATION GAS: EPA Protocol NO_x
 CALIBRATION PPM (C_{ma}): 45.0
 PPM CORRECTED (C_{gas}): 9.3

GAS ANALYZER

O₂

SPAN: 9.00 %
 AVERAGE CAL. BIAS (C_m): 4.615
 AVERAGE ZERO BIAS (C_o): 0.070
 CALIBRATION GAS: EPA Protocol O₂
 CALIBRATION PPM (C_{ma}): 4.50
 PPM CORRECTED (C_{gas}): 3.23

GAS ANALYZER

CO₂

SPAN: 18.00 %
 AVERAGE CAL. BIAS (C_m): 9.170
 AVERAGE ZERO BIAS (C_o): 0.100
 CALIBRATION GAS: EPA Protocol CO₂
 CALIBRATION % (C_{ma}): 9.00
 % CORRECTED (C_{gas}): 8.96

Example Calculation =

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

CLOCK TIME	ELAPSED TIME	Uncorrected			
		O ₂ % vol db	CO ₂ % vol db	NO _x ppmv db	CO ppmv db
6:36	0				
6:37	1	3.52	8.79	10.4	522
6:38	2	3.63	8.76	10.6	649
6:39	3	3.49	9.02	10.9	535
6:40	4	3.38	8.98	10.7	499
6:41	5	3.46	8.89	10.6	583
6:42	6	3.52	8.87	10.6	588
6:43	7	3.55	8.88	10.7	627
6:44	8	3.51	9.01	10.8	578
6:45	9	3.46	9.07	10.8	533
6:46	10	3.43	9.12	10.8	506
6:47	11	3.45	9.02	10.7	513
6:48	12	3.57	8.85	10.6	620
6:49	13	3.59	9.12	10.8	641
6:50	14	3.38	9.24	10.8	443
6:51	15	3.38	9.15	10.6	458
6:52	16	3.41	9.16	10.5	476
6:53	17	3.41	9.10	10.4	450
6:54	18	3.50	8.89	10.3	545
6:55	19	3.52	9.15	10.3	587
6:56	20	3.32	9.34	10.4	389
6:57	21	3.34	9.18	10.1	443
6:58	22	3.47	9.08	10.0	512
6:59	23	3.42	9.11	10.2	455
7:00	24	3.51	8.92	10.0	542
7:01	25	3.50	9.15	10.2	520
7:02	26	3.26	9.39	10.2	371
7:03	27	3.36	9.16	9.8	487
7:04	28	3.53	8.99	9.8	600
7:05	29	3.50	8.99	10.0	574
7:06	30	3.46	9.10	10.1	539
7:07	31	3.36	9.24	10.0	461
7:08	32	3.35	9.23	9.9	465
7:09	33	3.39	9.16	9.8	532
7:10	34	3.47	8.92	9.9	644
7:11	35	3.56	8.93	10.0	762
7:12	36	3.43	9.26	10.3	613
7:13	37	3.27	9.24	10.1	447
7:14	38	3.39	9.09	9.9	525
7:15	39	3.38	9.13	9.9	510
7:16	40	3.38	9.06	9.9	504
7:17	41	3.56	8.80	9.7	674
7:18	42	3.51	9.11	10.1	606
7:19	43	3.22	9.34	10.0	363
7:20	44	3.36	9.13	9.7	473
7:21	45	3.50	8.97	9.7	587
7:22	46	3.50	8.90	9.8	583
7:23	47	3.45	9.09	9.9	503
7:24	48	3.32	9.21	9.9	423
7:25	49	3.35	9.15	9.7	477
7:26	50	3.38	9.11	9.7	500
7:27	51	3.43	8.94	9.6	587
7:28	52	3.57	8.78	9.7	736
7:29	53	3.38	9.19	10.1	540
7:30	54	3.19	9.24	9.8	408
7:31	55	3.42	8.97	9.5	601
7:32	56	3.48	8.91	9.7	679
7:33	57	3.45	8.84	9.7	674
7:34	58	3.54	8.87	9.8	768
7:35	59	3.38	9.13	10.1	586
7:36	60	3.21	9.23	9.9	449
7:37	61	3.31	9.07	9.7	545
7:38	62	3.46	8.82	9.6	681
7:39	63	3.55	8.80	9.9	802
7:40	64	3.28	9.23	10.2	549
7:41	65	3.17	9.18	9.9	470
7:42	66	3.35	9.00	9.7	586
7:43	67	3.36	9.05	9.7	570
7:44	68	3.42	8.85	9.7	635
7:45	69	3.56	8.83	9.9	736
7:46	70	3.35	9.16	10.1	509
7:47	71	3.18	9.22	9.8	404
7:48	72	3.37	8.99	9.6	569
7:49	73	3.48	8.86	9.7	627
7:50	74	3.47	8.80	9.8	642
7:51	75	3.42	9.02	9.9	615
7:52	76	3.26	9.17	9.9	463
7:53	77	3.33	9.03	9.7	559
7:54	78	3.36	9.05	9.7	588
7:55	79	3.33	9.01	9.8	609
7:56	80	3.45	8.76	9.7	750
7:57	81	3.52	8.89	10.0	817
7:58	82	3.23	9.28	10.3	554
7:59	83	3.17	9.15	9.9	527
8:00	84	3.36	8.96	9.8	686
8:01	85	3.34	9.05	9.9	669
8:02	86	3.27	9.05	9.9	617
8:03	87	3.36	8.93	9.9	689
8:04	88	3.39	8.93	10.0	689

4 continued

8:05	89	3.40	8.92	10.0	708
8:06/8:12	90	3.34	9.15	10.1	622
8:13	91	3.42	9.05	10.6	695
8:14	92	3.22	9.29	10.5	521
8:15	93	3.24	9.17	10.1	567
8:16	94	3.38	8.98	10.0	690
8:17	95	3.38	8.98	10.2	694
8:18	96	3.28	9.06	10.3	621
8:19	97	3.36	8.90	10.1	741
8:20	98	3.38	9.09	10.2	740
8:21	99	3.20	9.29	10.3	562
8:22	100	3.19	9.16	10.1	596
8:23	101	3.34	8.96	9.9	777
8:24	102	3.40	8.94	10.0	846
8:25	103	3.28	9.14	10.2	743
8:26	104	3.24	8.94	10.1	733
8:27	105	3.43	8.99	10.1	903
8:28	106	3.21	9.37	10.3	653
8:29	107	3.13	9.21	9.9	598
8:30	108	3.35	8.98	9.7	786
8:31	109	3.34	9.09	9.9	762
8:32	110	3.17	9.21	10.0	602
8:33	111	3.23	9.06	9.8	666
8:34	112	3.36	8.92	9.7	805
8:35	113	3.40	9.08	9.8	841
8:36	114	3.20	9.32	10.0	635
8:37	115	3.13	9.30	9.8	570
8:38	116	3.21	9.22	9.7	619
8:39	117	3.27	9.11	9.6	686
8:40	118	3.31	9.04	9.6	727
8:41	119	3.29	9.09	9.7	709
8:42	120	3.25	9.05	9.6	694
8:43	121	3.38	8.98	9.6	830
8:44	122	3.26	9.30	9.9	683
8:45	123	3.11	9.33	9.7	583
8:46	124	3.24	9.12	9.5	697
8:47	125	3.33	9.05	9.6	759
8:48	126	3.24	9.19	9.7	680
8:49	127	3.19	9.17	9.6	649
8:50	128	3.27	9.00	9.5	755
8:51	129	3.38	9.02	9.7	857
8:52	130	3.14	9.44	9.9	620
8:53	131	3.10	9.33	9.6	621
8:54	132	3.28	9.18	9.5	720
8:55	133	3.21	9.25	9.6	644
8:56	134	3.25	9.14	9.5	714
8:57	135	3.29	9.08	9.6	778
8:58	136	3.27	9.17	9.7	765
8:59	137	3.26	9.07	9.7	776
9:00	138	3.27	9.27	9.7	767
9:01	139	3.12	9.45	9.8	584
9:02	140	3.16	9.31	9.6	641
9:03	141	3.29	9.12	9.5	774
9:04	142	3.36	9.05	9.6	849
9:05	143	3.30	9.19	9.7	790
9:06	144	3.22	9.12	9.7	746
9:07	145	3.33	9.11	9.8	864
9:08	146	3.17	9.52	10.1	656
9:09	147	3.08	9.42	9.8	803
9:10	148	3.27	9.22	9.7	782
9:11	149	3.23	9.30	9.8	715
9:12	150	3.22	9.15	9.7	727
9:13	151	3.32	9.20	9.7	831
9:14	152	3.14	9.49	9.9	628
9:15	153	3.09	9.42	9.9	605
9:16	154	3.23	9.23	9.6	723
9:17	155	3.28	9.23	9.7	763
9:18	156	3.20	9.37	9.8	864
9:19	157	3.22	9.25	9.7	707
9:20	158	3.37	9.05	9.6	878
9:21	159	3.29	9.40	9.9	814
9:22	160	3.09	9.54	9.9	591
9:23	161	3.19	9.41	9.7	670
9:24	162	3.20	9.39	9.8	697
9:25	163	3.24	9.24	9.7	771
9:26	164	3.39	9.03	9.7	936
9:27	165	3.27	9.46	10.1	770
9:28	166	3.01	9.58	10.0	573
9:29	167	3.20	9.34	9.8	729
9:30	168	3.20	9.40	9.9	716
9:31	169	3.27	9.21	9.7	828
9:32	170	3.30	9.36	10.0	840
9:33	171	3.10	9.57	10.0	651
9:34	172	3.11	9.48	9.8	622
9:35	173	3.21	9.35	9.7	741
9:36	174	3.29	9.18	9.8	862
9:37	175	3.30	9.39	9.9	860
9:38	176	3.07	9.59	9.9	636
9:39	177	3.18	9.42	9.7	716
9:40	178	3.22	9.42	9.7	721
9:41	179	3.21	9.32	9.7	765
9:42	180	3.36	9.18	9.7	819
Uncorrected Average =		3.329	9.130	9.94	642.2

ARI ENVIRONMENTAL, INC.
MOISTURE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/6/2008
RUN NUMBER: 4

γ FACTOR:	1.008	STACK DIAM:	53.00 inches
BAROMETRIC:	26.07 in. Hg	METER VOLUME:	55.895 ft ³
STATIC PRES:	0.48 in.H ₂ O	METER TEMP:	75.7 °F
STACK TEMP:	656.8 °F	LIQUID COLL:	103.5 milliliters
SQ.RT ΔP:	0.1498 in.H ₂ O	CO₂:	8.96 % by volume
ΔH:	0.54 in.H ₂ O	O₂:	3.23 % by volume

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE

@ STANDARD CONDITIONS, DRY BASIS

$$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 48.460 \text{ dscf}$$

$\gamma = 1.008$

VOLUME OF WATER IN SAMPLE

@ STANDARD CONDITIONS

$$V_{wstd} = 0.04707 \times V_{lc} = 4.872 \text{ scf}$$

$V_{lc} = 103.5 \text{ mL}$

FRACTIONAL MOISTURE CONTENT OF STACK GAS AS MEASURED

$$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} = 0.0913$$

FRACTIONAL MOISTURE CONTENT OF STACK GAS @ SATURATION

$$B_{ws@saturation} = \frac{S.V.P.}{P_{bar} + \frac{P_{static}}{13.6}} = 0.8098$$

$S.V.P. = 21.14 \text{ in. Hg}$

FRACTIONAL MOISTURE CONTENT USED IN CALCULATIONS

$$B_{ws} = 0.0913$$

ARI ENVIRONMENTAL, INC.
FLOW RATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
RUN NUMBER: 4

SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/6/2008

BAROMETRIC: 26.07 in. Hg	STACK DIAM: 53.00 inches
STATIC PRES: 0.48 in.H ₂ O	CO₂: 8.96 % by volume
STACK TEMP: 656.8 °F	O₂: 3.23 % by volume
SQ.RT ΔP: 0.1498 in.H ₂ O	

DRY MOLECULAR WEIGHT OF STACK GAS			
$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO)$	=	29.56	lb/lb-mole
MOLECULAR WEIGHT OF STACK GAS, wet basis			
$M_s = M_d(1 - B_{ws}) + 18B_{ws}$	=	28.51	lb/lb-mole
PITOT TUBE COEFFICIENT			
C_p (from calibration curve or geometric specifications)	=	0.84	
AVERAGE VELOCITY HEAD OF STACK GAS, in. H₂O			
$\sqrt{\Delta P} = \frac{1}{n} \sum_{i=1}^n \sqrt{\Delta p_i}$	=	0.1498	in. H ₂ O
AVERAGE ABSOLUTE STACK GAS TEMPERATURE			
$T_s = 656.8 \text{ °F} + 460$	=	1,116.8	°R
ABSOLUTE STACK GAS PRESSURE			
$P_s = P_{bar} + \frac{P_{static}}{13.6}$	=	26.11	in.Hg
STACK GAS VELOCITY			
$V_s = (85.49)(C_p)(\text{avg } \sqrt{\Delta P}) \sqrt{\frac{T_s}{(P_s)(M_s)}}$	=	13.178	ft/sec
STACK GAS VOLUMETRIC FLOW RATE, actual			
$Q_s = 60 \times V_s \times A_s$	=	12,114	acfm
Stack Area =	15.321 ft ²		
STACK GAS VOLUMETRIC FLOW RATE, standard conditions, wet basis			
$Q_{stdw} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)$	=	4,997 299,823	scfm, wb scfh, wb
STACK GAS VOLUMETRIC FLOW RATE, standard conditions, dry basis			
$Q_{std} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)(1 - B_{ws})$	=	4,541 272,435	dscfm dscfh

ARI ENVIRONMENTAL, INC.
USEPA METHOD 202 - CONDENSIBLE INORGANIC PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/6/08
RUN NUMBER: 4

INPUT

V_m:	55.895	ft ³	Q_s:	4,541	dscfm
γ FACTOR:	1.008		T_s:	656.8	°F
P_{bar}:	26.07	in.Hg	Runtime:	120.0	minutes
ΔH:	0.54	in.H ₂ O	V_s:	13.178	ft/sec
T_m:	75.7	°F	P_s:	26.11	in.Hg
V_{ic}:	103.5	mL	Noz. diam:	0.491	inches
M_n back inorg:	46.70	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS					
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$		=	48.460	dscf	
$\gamma = 1.008$					
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS					
$V_{wstd} = 0.04707 \times V_{ic}$		=	4.872	scf	
FRACTIONAL MOISTURE CONTENT OF STACK GAS					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100$		=	9.13	%	
PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS					
$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right)$		Total	=	0.01487	gr/dscf
$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right)$		C'_s Total	=	2.12490	x 10⁻⁶ lbs/dscf
EMISSION RATE					
$pmr = \left(\frac{C_s}{7000} \right) (Q_{std})(60)$		Total	=	0.5787 2.5347	lbs/hr ton/yr
ISOKINETIC SAMPLING RATE					
$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{ic}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)}$		=	103.64	% I	
$A_n = 0.001315 \text{ ft}^2$		Runtime =	120	minutes	

ARI ENVIRONMENTAL, INC.
USEPA METHOD 202 - CONDENSIBLE ORGANIC PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/6/08
RUN NUMBER: 4

INPUT

V_m:	55.895	ft³	Q_s:	4,541	dscfm
γ FACTOR:	1.008		T_s:	656.8	°F
P_{bar}:	26.07	in.Hg	Runtime:	120.0	minutes
ΔH:	0.54	in.H₂O	V_s:	13.178	ft/sec
T_m:	75.7	°F	P_s:	26.11	in.Hg
V_{lc}:	103.5	mL	Noz. diam:	0.491	inches
M_n back org:	0.65	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS					
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$		=	48.460	dscf	
$\gamma = 1.008$					
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS					
$V_{wstd} = 0.04707 \times V_{lc}$		=	4.872	scf	
FRACTIONAL MOISTURE CONTENT OF STACK GAS					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100$		=	9.13	%	
PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS					
$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right)$		Total	=	0.00021	gr/dscf
$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right)$		C'_s Total	=	0.02958	x 10 ⁻⁶ lbs/dscf
EMISSION RATE					
$pmr = \left(\frac{C_s}{7000} \right) (Q_{std}) (60)$		Total	=	0.0081 0.0353	lbs/hr ton/yr
ISOKINETIC SAMPLING RATE					
$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)}$		=	103.64	% I	
$A_n = 0.001315 \text{ ft}^2$		Runtime =	120	minutes	

ARI ENVIRONMENTAL, INC.
USEPA METHOD 5B - FILTERABLE PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/6/08
RUN NUMBER: 4

INPUT

V_m:	55.895	ft ³	Q_s:	4,541	dscfm
γ FACTOR:	1.008		T_s:	656.8	°F
P_{bar}:	26.07	in.Hg	Runtime:	120.0	minutes
ΔH:	0.54	in.H ₂ O	V_s:	13.178	ft/sec
T_m:	75.7	°F	P_s:	26.11	in.Hg
V_{lc}:	103.5	mL	Noz. diam:	0.491	inches
M_n front:	13.11	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS					
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$		=	48.460	dscf	
$\gamma = 1.008$					
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS					
$V_{wstd} = 0.04707 \times V_{lc}$		=	4.872	scf	
FRACTIONAL MOISTURE CONTENT OF STACK GAS					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100$		=	9.13	%	
PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS					
$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right)$		Total	=	0.00417	gr/dscf
$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right)$		C'_s Total	=	0.5965	x 10 ⁻⁶ lbs/dscf
EMISSION RATE					
$pmr = \left(\frac{C_s}{7000} \right) (Q_{std}) (60)$		Total	=	0.1625	lbs/hr
				0.7116	ton/yr
ISOKINETIC SAMPLING RATE					
$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)}$		=	103.64	% I	
$A_n = 0.001315 \text{ ft}^2$		Runtime =	120	minutes	

NO_x CALIBRATION CORRECTION DATA SHEET

USEPA METHOD 7E

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: CAI Model 600 CLD
RUN NO: 4
TEST DATE: 6/6/2008

INPUT

NO_x AVERAGE CHART READING (C): 9.94 ppmv
 AVG PRE/POST ZERO DRIFT READING (C_o): 0.90 ppmv
 CAL GAS CONCENTRATION (C_{ma}): 45.0 ppmv
 AVG CAL PRE/POST TEST READING (C_m): 44.55 ppmv
 STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 272,434.7 dscfh

CALCULATIONS

STACK NO_x AVERAGE CHART READING = 9.94 ppmv

STACK NO_x CONC. CORRECTED FOR ZERO AND CALIBRATION DRIFT:

$$\text{NO}_x \text{ CONC, ppmv} = C_{\text{gas,ppm}} = (\bar{C} - C_o) \frac{C_{ma}}{C_m - C_o} = 9.3 \text{ ppmv db (corrected)}$$

NO_x CONC.(lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left(\frac{46 \text{ lb/lb-mole}}{385.26 \times 10^6 \text{ ft}^3 / \text{lb-mole}} \right) = 1.113 \times 10^{-6} \text{ lbs/dscf}$$

NO_x EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 272,435 dscfh

STACK NO_x EMISSION RATE =

$$\text{SO}_{2\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = 0.303 \text{ lbs/hr} = 1.33 \text{ ton/yr}$$

CO CALIBRATION CORRECTION DATA SHEET USEPA METHOD 10

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: Thermo Environmental Model 48i-CHL
RUN NO: 4
TEST DATE: 6/6/2008

INPUT

CO AVERAGE CHART READING (C):	642.2 ppmv
AVG PRE/POST ZERO DRIFT READING (C _o):	-1.0 ppmv
CAL GAS CONCENTRATION (C _{ma}):	1,000 ppmv
AVG CAL PRE/POST TEST READING (C _m):	985.0 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q _{std}):	272,435 dscfh

CALCULATIONS

STACK CO AVERAGE CHART READING = 642.2 ppmv

STACK CO CONC. CORRECTED FOR ZERO AND CALIBRATION DRIFT:

$$\text{CO CONC, ppmv} = C_{\text{gas,ppm}} = (\bar{C} - C_o) \frac{C_{ma}}{C_m - C_o} = 652.3 \text{ ppmv db}$$

(corrected)

CO CONC.(lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left(\frac{28 \text{ lb / lb - mole}}{385.26 \times 10^6 \text{ ft}^3 / \text{lb - mole}} \right) = 47.407 \times 10^{-6} \text{ lbs/dscf}$$

CO EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 272,435 dscfh

STACK CO EMISSION RATE =

$$\text{CO}_{\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = 12.915 \text{ lbs/hr}$$

$$= 56.569 \text{ ton/yr}$$

CARBON DISULFIDE EMISSION RATE CALCULATION SHEET
USEPA METHOD 15

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 4
TEST DATE: 6/6/2008

INPUT

CS₂ CONCENTRATION (C): < 0.01 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 272,435 dscfh

CALCULATIONS

STACK CS₂ AVERAGE CHART READING = < 0.01 ppmv

CS₂ CONCENTRATION (lbs/dscf) =

$$C_{\text{gas, lb/dscf}} = (C_{\text{gas, ppm}}) \left(\frac{76.1 \text{ lb/lb-mole}}{385.26 \times 10^{-6} \text{ ft}^3/\text{lb-mole}} \right) = < 0.002 \times 10^{-6} \text{ lbs/dscf}$$

CS₂ EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 272,435 dscfh

STACK CS₂ EMISSION RATE =

$$CS_{2 \text{ pmr}} = (C_{\text{gas, lb/dscf}})(Q_{\text{std}}) = < 0.0005 \text{ lbs/hr} \\ = < 0.002 \text{ ton/yr}$$

CARBONYL SULFIDE EMISSION RATE CALCULATION SHEET
USEPA METHOD 15

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 4
TEST DATE: 6/6/2008

INPUT

COS CONCENTRATION (C): < 0.20 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 272,435 dscfh

CALCULATIONS

STACK COS AVERAGE CHART READING = < 0.20 ppmv

COS CONCENTRATION (lbs/dscf) =

$$C_{\text{gas, lb/dscf}} = (C_{\text{gas, ppm}}) \left(\frac{60.07 \text{ lb / lb-mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb-mole}} \right) = < 0.031 \times 10^{-6} \text{ lbs/dscf}$$

COS EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 272,435 dscfh

STACK COS EMISSION RATE =

$$\text{COS}_{\text{pmr}} = (C_{\text{gas, lb/dscf}})(Q_{\text{std}}) = < 0.0085 \text{ lbs/hr}$$
$$= < 0.037 \text{ ton/yr}$$

HYDROGEN SULFIDE EMISSION RATE CALCULATION SHEET

USEPA METHOD 15

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 4
TEST DATE: 6/6/2008

INPUT

H₂S CONCENTRATION (C): < 0.67 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 272,435 dscfh

CALCULATIONS

STACK H₂S AVERAGE CHART READING = < 0.67 ppmv

H₂S CONCENTRATION (lbs/dscf) =

$$C_{\text{gas, lb/dscf}} = (C_{\text{gas, ppm}}) \left(\frac{34.08 \text{ lb / lb - mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb - mole}} \right) = < 0.059 \times 10^{-6} \text{ lbs/dscf}$$

H₂S EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 272,435 dscfh

STACK H₂S EMISSION RATE =

$$H_2S_{\text{pmr}} = (C_{\text{gas, lb/dscf}})(Q_{\text{std}}) = < 0.0161 \text{ lbs/hr}$$
$$= < 0.071 \text{ ton/yr}$$

TRS as SO₂ EMISSION RATE CALCULATION SHEET
USEPA METHOD 15

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 4
TEST DATE: 6/6/2008

INPUT

COS CONCENTRATION (C): < 0.20 ppmv
CS₂ CONCENTRATION (C): < 0.01 ppmv
H₂S CONCENTRATION (C): < 0.67 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 272,435 dscfh
STACK OXYGEN CONTENT (%O₂): 3.23 % by vol db

CALCULATIONS

AVERAGE STACK TRS as SO₂ = < 0.89 ppmv

TRS CONCENTRATION CORRECTED TO 3% OXYGEN (ppmv db @ 3%O₂) =

$$C_{\text{gas, ppm @ 3\%O}_2} = (C_{\text{gas, ppm}}) \left(\frac{17.9}{20.9 - \%O_2} \right) = < 0.90 \text{ ppmv @ 3\% O}_2$$

TRS as SO₂ CONCENTRATION (lbs/dscf) =

$$C_{\text{gas, lb/dscf}} = (C_{\text{gas, ppm}}) \left(\frac{64 \text{ lb / lb - mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb - mole}} \right) = < 0.148 \times 10^{-6} \text{ lbs/dscf}$$

TRS as SO₂ EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 272,435 dscfh

STACK TRS as SO₂ EMISSION RATE =

$$\text{TRS}_{\text{pmr}} = (C_{\text{gas, lb/dscf}})(Q_{\text{std}}) = < 0.0403 \text{ lbs/hr}$$
$$= < 0.176 \text{ ton/yr}$$

MONITOR DATA SUMMARY

COMPANY : Valero McKee Refinery
 SOURCE : No. 2 SRU Incinerator
 REPETITION : 5
 TEST DATE : 6/6/2008
 START TIME : 10:03
 END TIME : 13:09

GAS ANALYZER

CO

SPAN: 2,000 ppm
 AVERAGE CAL. BIAS (C_m): 982.5
 AVERAGE ZERO BIAS (C_o): -1.5
 CALIBRATION GAS: EPA Protocol CO
 CALIBRATION PPM (C_{ma}): 1,000
 PPM CORRECTED (C_{gas}): 755

GAS ANALYZER

NO_x

SPAN: 90.0 ppm
 AVERAGE CAL. BIAS (C_m): 42.85
 AVERAGE ZERO BIAS (C_o): 0.75
 CALIBRATION GAS: EPA Protocol NO_x
 CALIBRATION PPM (C_{ma}): 45.0
 PPM CORRECTED (C_{gas}): 10.7

GAS ANALYZER

O₂

SPAN: 9.00 %
 AVERAGE CAL. BIAS (C_m): 4.555
 AVERAGE ZERO BIAS (C_o): 0.050
 CALIBRATION GAS: EPA Protocol O₂
 CALIBRATION PPM (C_{ma}): 4.50
 PPM CORRECTED (C_{gas}): 3.13

GAS ANALYZER

CO₂

SPAN: 18.00 %
 AVERAGE CAL. BIAS (C_m): 9.170
 AVERAGE ZERO BIAS (C_o): 0.110
 CALIBRATION GAS: EPA Protocol CO₂
 CALIBRATION % (C_{ma}): 9.00
 % CORRECTED (C_{gas}): 9.34

Example Calculation =

$$C_{\text{gas}} = (\bar{C} - C_o) \frac{C_{ma}}{C_m - C_o}$$

CLOCK TIME	ELAPSED TIME	Uncorrected			
		O ₂ % vol db	CO ₂ % vol db	NO _x ppmv db	CO ppmv db
10:03	0				
10:04	1	3.29	9.42	10.6	881
10:05	2	3.14	9.63	10.7	724
10:06	3	3.07	9.65	10.5	646
10:07	4	3.20	9.44	10.2	793
10:08	5	3.30	9.32	10.3	868
10:09	6	3.34	9.26	10.3	941
10:10	7	3.31	9.50	10.4	893
10:11	8	3.13	9.61	10.4	722
10:12	9	3.15	9.57	10.3	727
10:13	10	3.19	9.50	10.2	735
10:14	11	3.27	9.35	10.1	842
10:15	12	3.38	9.29	10.1	945
10:16	13	3.35	9.45	10.4	916
10:17	14	3.28	9.31	10.3	805
10:18	15	3.38	9.46	10.5	844
10:19	16	3.20	9.81	10.6	568
10:20	17	3.10	9.73	10.2	437
10:21	18	3.33	9.48	10.0	528
10:22	19	3.43	9.38	10.1	553
10:23	20	3.33	9.58	10.3	444
10:24	21	3.16	9.80	10.0	372
10:25	22	3.35	9.54	9.7	594
10:26	23	3.42	9.43	9.9	681
10:27	24	3.29	9.53	10.1	598
10:28	25	3.30	9.44	10.0	601
10:29	26	3.37	9.33	10.0	661
10:30	27	3.30	9.54	10.0	620
10:31	28	3.11	9.72	10.1	484
10:32	29	3.27	9.52	9.8	642
10:33	30	3.30	9.47	9.8	703
10:34	31	3.28	9.33	9.9	761
10:35	32	3.34	9.23	10.0	827
10:36	33	3.32	9.31	10.1	847
10:37	34	3.31	9.27	10.1	871
10:38	35	3.27	9.47	10.1	849
10:39	36	3.14	9.63	10.1	689
10:40	37	3.10	9.59	9.9	658
10:41	38	3.24	9.40	9.9	733
10:42	39	3.32	9.26	9.9	819
10:43	40	3.33	9.28	10.1	851
10:44	41	3.22	9.40	10.3	795
10:45	42	3.27	9.19	10.2	850
10:46	43	3.38	9.40	10.3	939
10:47	44	3.10	9.73	10.5	703
10:48	45	2.98	9.63	10.3	612
10:49	46	3.21	9.38	10.1	757
10:50	47	3.24	9.39	10.2	781
10:51	48	3.19	9.35	10.1	793
10:52	49	3.23	9.30	10.1	873
10:53	50	3.25	9.29	10.3	884
10:54	51	3.17	9.60	10.4	797
10:55	52	3.03	9.65	10.5	620
10:56	53	3.07	9.63	10.2	615
10:57	54	3.13	9.52	10.0	664
10:58	55	3.29	9.28	10.1	788
10:59	56	3.30	9.24	10.2	829
11:00	57	3.34	9.21	10.3	881
11:01	58	3.29	9.48	10.4	829
11:02	59	3.10	9.58	10.5	625
11:03	60	3.08	9.59	10.3	610
11:04	61	3.15	9.47	10.1	674
11:05	62	3.30	9.29	10.0	794
11:06	63	3.30	9.33	10.3	795
11:07	64	3.19	9.35	10.4	739
11:08	65	3.22	9.37	10.3	790
11:09	66	3.14	9.61	10.4	855
11:10	67	2.99	9.67	10.3	567
11:11	68	3.16	9.46	10.1	695
11:12	69	3.23	9.39	10.2	751
11:13	70	3.17	9.47	10.2	733
11:14	71	3.17	9.29	10.2	767
11:15	72	3.27	9.33	10.2	880
11:16	73	3.08	9.67	10.6	660
11:17	74	2.95	9.66	10.3	552
11:18	75	3.16	9.43	10.1	701
11:19	76	3.22	9.41	10.3	771
11:20	77	3.10	9.56	10.4	619
11:21	78	3.18	9.28	10.1	744
11:22	79	3.37	9.20	10.3	899
11:23	80	3.12	9.64	10.6	653
11:24	81	2.99	9.63	10.3	558
11:25	82	3.24	9.38	10.0	711
11:26	83	3.29	9.36	10.2	750
11:27	84	3.14	9.51	10.4	667
11:28	85	3.21	9.24	10.2	752
11:29	86	3.31	9.33	10.4	830
11:30	87	3.03	9.66	10.4	615
11:31	88	3.05	9.54	10.4	602
11:32	89	3.20	9.34	10.3	713
11:33/11:39	90	3.20	9.41	10.4	734

5 continued

11:40	91	3.09	9.56	11.0	619
11:41	92	3.19	9.41	10.7	709
11:42	93	3.26	9.24	10.9	778
11:43	94	3.24	9.30	11.1	790
11:44	95	3.14	9.47	11.2	672
11:45	96	3.16	9.31	11.1	692
11:46	97	3.31	9.29	11.1	849
11:47	98	3.11	9.63	11.4	625
11:48	99	3.09	9.55	11.2	616
11:49	100	3.21	9.39	11.0	714
11:50	101	3.25	9.34	11.2	727
11:51	102	3.11	9.47	11.3	615
11:52	103	3.15	9.35	11.2	653
11:53	104	3.27	9.17	11.0	785
11:54	105	3.29	9.38	11.3	801
11:55	106	3.00	9.69	11.4	555
11:56	107	3.11	9.50	11.1	647
11:57	108	3.18	9.46	11.2	678
11:58	109	3.18	9.42	11.1	715
11:59	110	3.23	9.31	11.1	751
12:00	111	3.22	9.29	11.1	802
12:01	112	3.16	9.43	11.3	763
12:02	113	3.14	9.35	11.3	738
12:03	114	3.13	9.52	11.4	732
12:04	115	2.97	9.77	11.4	575
12:05	116	3.06	9.67	11.2	636
12:06	117	3.11	9.55	11.0	693
12:07	118	3.17	9.44	11.0	741
12:08	119	3.15	9.51	11.2	713
12:09	120	3.12	9.52	11.2	687
12:10	121	3.24	9.31	11.0	797
12:11	122	3.20	9.58	11.3	782
12:12	123	2.96	9.78	11.5	590
12:13	124	3.10	9.64	11.1	670
12:14	125	3.12	9.62	11.1	708
12:15	126	3.14	9.52	11.1	736
12:16	127	3.17	9.44	11.2	793
12:17	128	3.15	9.48	11.2	783
12:18	129	3.19	9.44	11.2	815
12:19	130	3.20	9.53	11.3	786
12:20	131	3.13	9.68	11.3	704
12:21	132	3.04	9.69	11.2	648
12:22	133	3.10	9.63	11.2	707
12:23	134	3.17	9.45	11.1	792
12:24	135	3.23	9.51	11.3	830
12:25	136	3.15	9.51	11.4	766
12:26	137	3.22	9.47	11.3	833
12:27	138	3.11	9.77	11.4	695
12:28	139	3.05	9.78	11.1	645
12:29	140	3.14	9.60	11.0	776
12:30	141	3.21	9.59	11.2	779
12:31	142	3.14	9.67	11.2	714
12:32	143	3.17	9.47	11.0	820
12:33	144	3.29	9.48	11.2	859
12:34	145	3.05	9.83	11.6	661
12:35	146	3.02	9.78	11.3	641
12:36	147	3.16	9.67	11.1	753
12:37	148	3.14	9.68	11.2	752
12:38	149	3.19	9.49	11.2	797
12:39	150	3.21	9.58	11.4	841
12:40	151	3.08	9.82	11.5	710
12:41	152	3.09	9.68	11.3	759
12:42	153	3.15	9.59	11.2	832
12:43	154	3.14	9.68	11.3	784
12:44	155	3.12	9.67	11.3	767
12:45	156	3.18	9.53	11.4	856
12:46	157	3.24	9.64	11.4	905
12:47	158	3.04	9.86	11.6	727
12:48	159	3.03	9.76	11.4	733
12:49	160	3.11	9.71	11.3	765
12:50	161	3.16	9.62	11.3	791
12:51	162	3.25	9.48	11.3	878
12:52	163	3.17	9.81	11.6	826
12:53	164	2.99	9.91	11.7	656
12:54	165	3.14	9.67	11.4	753
12:55	166	3.22	9.61	11.4	827
12:56	167	3.19	9.58	11.4	834
12:57	168	3.26	9.61	11.4	882
12:58	169	3.15	9.87	11.7	758
12:59	170	3.07	9.82	11.5	731
13:00	171	3.24	9.57	11.4	880
13:01	172	3.28	9.52	11.4	952
13:02	173	3.24	9.65	11.6	948
13:03	174	3.26	9.63	11.7	927
13:04	175	3.19	9.84	11.7	918
13:05	176	3.05	9.90	11.8	770
13:06	177	3.03	9.82	11.7	741
13:07	178	3.11	9.67	11.5	810
13:08	179	3.20	9.64	11.4	899
13:09	180	3.25	9.61	11.6	949
Uncorrected Average =		3.186	9.515	10.75	741.1

ARI ENVIRONMENTAL, INC.
MOISTURE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/6/2008
RUN NUMBER: 5

γ FACTOR:	1.008	STACK DIAM:	53.00 inches
BAROMETRIC:	26.13 in. Hg	METER VOLUME:	57.602 ft ³
STATIC PRES:	0.53 in.H ₂ O	METER TEMP:	92.3 °F
STACK TEMP:	656.6 °F	LIQUID COLL:	93.5 milliliters
SQ.RT ΔP:	0.1498 in.H ₂ O	CO₂:	9.34 % by volume
ΔH:	0.54 in.H ₂ O	O₂:	3.13 % by volume

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS $V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 48.551 \text{ dscf}$ $\gamma = 1.008$
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS $V_{wstd} = 0.04707 \times V_{lc} = 4.401 \text{ scf}$ $V_{lc} = 93.5 \text{ mL}$
FRACTIONAL MOISTURE CONTENT OF STACK GAS AS MEASURED $B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} = 0.0831$
FRACTIONAL MOISTURE CONTENT OF STACK GAS @ SATURATION $B_{ws@saturation} = \frac{S.V.P.}{P_{bar} + \frac{P_{static}}{13.6}} = 0.8078$ $S.V.P. = 21.14 \text{ in. Hg}$
FRACTIONAL MOISTURE CONTENT USED IN CALCULATIONS $B_{ws} = 0.0831$

ARI ENVIRONMENTAL, INC.
FLOW RATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
RUN NUMBER: 5

SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/6/2008

BAROMETRIC: 26.13 in. Hg
STATIC PRES: 0.53 in.H₂O
STACK TEMP: 656.6 °F
SQ.RT ΔP: 0.1498 in.H₂O

STACK DIAM: 53.00 inches
CO₂: 9.34 % by volume
O₂: 3.13 % by volume

DRY MOLECULAR WEIGHT OF STACK GAS			
$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO)$	=	29.62	lb/lb-mole
MOLECULAR WEIGHT OF STACK GAS, wet basis			
$M_s = M_d(1 - B_{ws}) + 18B_{ws}$	=	28.65	lb/lb-mole
PITOT TUBE COEFFICIENT			
C_p (from calibration curve or geometric specifications)	=	0.84	
AVERAGE VELOCITY HEAD OF STACK GAS, in. H₂O			
$\sqrt{\Delta P} = \frac{1}{n} \sum_{i=1}^n \sqrt{\Delta p_i}$	=	0.1498	in. H ₂ O
AVERAGE ABSOLUTE STACK GAS TEMPERATURE			
$T_s = 656.6 \text{ °F} + 460$	=	1,116.6	°R
ABSOLUTE STACK GAS PRESSURE			
$P_s = P_{bar} + \frac{P_{static}}{13.6}$	=	26.17	in.Hg
STACK GAS VELOCITY			
$V_s = (85.49)(C_p)(\text{avg} \sqrt{\Delta P}) \sqrt{\frac{T_s}{(P_s)(M_s)}}$	=	13.127	ft/sec
STACK GAS VOLUMETRIC FLOW RATE, actual			
$Q_s = 60 \times V_s \times A_s$	=	12,067	acfm
Stack Area =		15.321 ft ²	
STACK GAS VOLUMETRIC FLOW RATE, standard conditions, wet basis			
$Q_{stdw} = \left(\frac{528}{29.92} \right) (Q_s) \left(\frac{P_s}{T_s} \right)$	=	4,991 299,443	scfm, wb scfh, wb
STACK GAS VOLUMETRIC FLOW RATE, standard conditions, dry basis			
$Q_{std} = \left(\frac{528}{29.92} \right) (Q_s) \left(\frac{P_s}{T_s} \right) (1 - B_{ws})$	=	4,576 274,554	dscfm dscfh

ARI ENVIRONMENTAL, INC.
USEPA METHOD 5B - FILTERABLE PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/6/08
RUN NUMBER: 5

INPUT

V_m:	57.602	ft ³	Q_s:	4,576	dscfm
γ FACTOR:	1.008		T_s:	656.6	°F
P_{bar}:	26.13	in.Hg	Runtime:	120.0	minutes
ΔH:	0.54	in.H ₂ O	V_s:	13.127	ft/sec
T_m:	92.3	°F	P_s:	26.17	in.Hg
V_{ic}:	93.5	mL	Noz. diam:	0.491	inches
M_n front:	8.81	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS					
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$		=	48.551	dscf	
$\gamma = 1.008$					
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS					
$V_{wstd} = 0.04707 \times V_{lc}$		=	4.401	scf	
FRACTIONAL MOISTURE CONTENT OF STACK GAS					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100$		=	8.31	%	
PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS					
$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right)$		Total	=	0.00280	gr/dscf
$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right)$		C' s Total	=	0.4001	x 10 ⁻⁸ lbs/dscf
EMISSION RATE					
$pmr = \left(\frac{C_s}{7000} \right) (Q_{std}) (60)$		Total	=	0.1098 0.4810	lbs/hr ton/yr
ISOKINETIC SAMPLING RATE					
$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)}$		=	103.03	% I	
$A_n = 0.001315 \text{ ft}^2$		Runtime =	120	minutes	

ARI ENVIRONMENTAL, INC.
USEPA METHOD 202 - CONDENSIBLE INORGANIC PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/6/08
RUN NUMBER: 5

INPUT

V_m:	57.602	ft ³	Q_s:	4,576	dscfm
γ FACTOR:	1.008		T_s:	656.6	°F
P_{bar}:	26.13	in.Hg	Runtime:	120.0	minutes
ΔH:	0.54	in.H ₂ O	V_s:	13.127	ft/sec
T_m:	92.3	°F	P_s:	26.17	in.Hg
V_{ic}:	93.5	mL	Noz. diam:	0.491	inches
M_n back inorg:	8.20	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS					
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$		=	48.551	dscf	
$\gamma = 1.008$					
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS					
$V_{wstd} = 0.04707 \times V_{lc}$		=	4.401	scf	
FRACTIONAL MOISTURE CONTENT OF STACK GAS					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100$		=	8.31	%	
PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS					
$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right)$		Total	=	0.00261	gr/dscf
$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right)$		C's Total	=	0.37242	x 10 ⁻⁶ lbs/dscf
EMISSION RATE					
$pmr = \left(\frac{C_s}{7000} \right) (Q_{std}) (60)$		Total	=	0.1022 0.4477	lbs/hr ton/yr
ISOKINETIC SAMPLING RATE					
$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)}$		=	103.03	% I	
$A_n = 0.001315 \text{ ft}^2$		Runtime =	120	minutes	

ARI ENVIRONMENTAL, INC.
USEPA METHOD 202 - CONDENSIBLE ORGANIC PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/6/08
RUN NUMBER: 5

INPUT

V_m:	57.602	ft³	Q_s:	4,576	dscfm
γ FACTOR:	1.008		T_s:	656.6	°F
P_{bar}:	26.13	in.Hg	Runtime:	120.0	minutes
ΔH:	0.54	in.H₂O	V_s:	13.127	ft/sec
T_m:	92.3	°F	P_s:	26.17	in.Hg
V_{ic}:	93.5	mL	Noz. diam:	0.491	inches
M_n back org:	0.30	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS					
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$		=	48.551	dscf	
$\gamma = 1.008$					
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS					
$V_{wstd} = 0.04707 \times V_{lc}$		=	4.401	scf	
FRACTIONAL MOISTURE CONTENT OF STACK GAS					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100$		=	8.31	%	
PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS					
$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right)$		Total	=	0.00010	gr/dscf
$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right)$		C'_s Total	=	0.01362	x 10 ⁻⁶ lbs/dscf
EMISSION RATE					
$pmr = \left(\frac{C_s}{7000} \right) (Q_{std}) (60)$		Total	=	0.0037 0.0164	lbs/hr ton/yr
ISOKINETIC SAMPLING RATE					
$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)}$		=	103.03	% I	
$A_n = 0.001315 \text{ ft}^2$		Runtime =	120	minutes	

ARI ENVIRONMENTAL, INC.
USEPA METHOD 5/202 - TOTAL PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/6/08
RUN NUMBER: 5

INPUT

V_m:	57.602	ft³	Q_s:	4,576	dscfm
γ FACTOR:	1.008		T_s:	656.6	°F
P_{bar}:	26.13	in.Hg	Runtime:	120.0	minutes
ΔH:	0.54	in.H₂O	V_s:	13.127	ft/sec
T_m:	92.3	°F	P_s:	26.17	in.Hg
V_{ic}:	93.5	mL	Noz. diam:	0.491	inches
M_n total:	17.31	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS					
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$		=	48.551	dscf	
$\gamma = 1.008$					
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS					
$V_{wstd} = 0.04707 \times V_{ic}$		=	4.401	scf	
FRACTIONAL MOISTURE CONTENT OF STACK GAS					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100$		=	8.31	%	
PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS					
$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right)$		Total	=	0.00550	gr/dscf
$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right)$		C' s Total	=	0.7862	x 10⁻⁶ lbs/dscf
EMISSION RATE					
$pmr = \left(\frac{C_s}{7000} \right) (Q_{std}) (60)$		Total	=	0.2158 0.9451	lbs/hr ton/yr
ISOKINETIC SAMPLING RATE					
$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{ic}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)}$		=	103.03	% I	
$A_n = 0.001315 \text{ ft}^2$		Runtime =	120	minutes	

NO_x CALIBRATION CORRECTION DATA SHEET

USEPA METHOD 7E

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: CAI Model 600 CLD
RUN NO: 5
TEST DATE: 6/6/2008

INPUT

NO_x AVERAGE CHART READING (C): 10.75 ppmv
 AVG PRE/POST ZERO DRIFT READING (C_o): 0.75 ppmv
 CAL GAS CONCENTRATION (C_{ma}): 45.0 ppmv
 AVG CAL PRE/POST TEST READING (C_m): 42.85 ppmv
 STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 274,554 dscfh

CALCULATIONS

STACK NO_x AVERAGE CHART READING = 10.75 ppmv

STACK NO_x CONC. CORRECTED FOR ZERO AND CALIBRATION DRIFT:

$$\text{NO}_x \text{ CONC, ppmv} = C_{\text{gas,ppm}} = (\bar{C} - C_o) \frac{C_{ma}}{C_m - C_o} = 10.7 \text{ ppmv db}$$

(corrected)

NO_x CONC.(lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left(\frac{46 \text{ lb/lb-mole}}{385.26 \times 10^6 \text{ ft}^3 / \text{lb-mole}} \right) = 1.277 \times 10^{-6} \text{ lbs/dscf}$$

NO_x EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 274,554 dscfh

STACK NO_x EMISSION RATE =

$$\text{SO}_{2\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = 0.351 \text{ lbs/hr}$$

$$= 1.54 \text{ ton/yr}$$

CO CALIBRATION CORRECTION DATA SHEET
USEPA METHOD 10

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: Thermo Environmental Model 48i-CHL
RUN NO: 5
TEST DATE: 6/6/2008

INPUT

CO AVERAGE CHART READING (C):	741.1 ppmv
AVG PRE/POST ZERO DRIFT READING (C _o):	-1.5 ppmv
CAL GAS CONCENTRATION (C _{ma}):	1,000 ppmv
AVG CAL PRE/POST TEST READING (C _m):	982.5 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q _{std}):	274,554 dscfh

CALCULATIONS

STACK CO AVERAGE CHART READING = 741.1 ppmv

STACK CO CONC. CORRECTED FOR ZERO AND CALIBRATION DRIFT:

$$\text{CO CONC, ppmv} = C_{\text{gas,ppm}} = (\bar{C} - C_o) \frac{C_{ma}}{C_m - C_o} = 754.7 \text{ ppmv db}$$

(corrected)

CO CONC. (lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left(\frac{28 \text{ lb / lb - mole}}{385.26 \times 10^6 \text{ ft}^3 / \text{lb - mole}} \right) = 54.851 \times 10^{-6} \text{ lbs/dscf}$$

CO EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 274,554 dscfh

STACK CO EMISSION RATE =

$$\text{CO}_{\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = 15.060 \text{ lbs/hr}$$
$$= 65.961 \text{ ton/yr}$$

**CARBON DISULFIDE EMISSION RATE CALCULATION SHEET
USEPA METHOD 15**

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 5
TEST DATE: 6/6/2008

INPUT

CS₂ CONCENTRATION (C): < 0.01 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 274,554 dscfh

CALCULATIONS

STACK CS₂ AVERAGE CHART READING = < 0.01 ppmv

CS₂ CONCENTRATION (lbs/dscf) =

$$C_{\text{gas, lb/dscf}} = (C_{\text{gas, ppm}}) \left(\frac{76.1 \text{ lb / lb - mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb - mole}} \right) = < 0.002 \times 10^{-6} \text{ lbs/dscf}$$

CS₂ EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 274,554 dscfh

STACK CS₂ EMISSION RATE =

$$CS_{2\text{pmr}} = (C_{\text{gas, lb/dscf}})(Q_{\text{std}}) = < 0.0005 \text{ lbs/hr} \\ = < 0.002 \text{ ton/yr}$$

CARBONYL SULFIDE EMISSION RATE CALCULATION SHEET
USEPA METHOD 15

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 5
TEST DATE: 6/6/2008

INPUT

COS CONCENTRATION (C): < 0.26 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 274,554 dscfh

CALCULATIONS

STACK COS AVERAGE CHART READING = < 0.26 ppmv

COS CONCENTRATION (lbs/dscf) =

$$C_{\text{gas, lb/dscf}} = (C_{\text{gas, ppm}}) \left(\frac{60.07 \text{ lb / lb - mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb - mole}} \right) = < 0.041 \times 10^{-6} \text{ lbs/dscf}$$

COS EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 274,554 dscfh

STACK COS EMISSION RATE =

$$\text{COS}_{\text{pmr}} = (C_{\text{gas, lb/dscf}})(Q_{\text{std}}) = < 0.0111 \text{ lbs/hr}$$
$$= < 0.049 \text{ ton/yr}$$

**HYDROGEN SULFIDE CALIBRATION CORRECTION DATA SHEET
USEPA METHOD 15**

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 5
TEST DATE: 6/6/2008

INPUT

H₂S CONCENTRATION (C): < 0.67 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 274,554 dscfh

CALCULATIONS

STACK H₂S AVERAGE CHART READING = < 0.67 ppmv

H₂S CONCENTRATION (lbs/dscf) =

$$C_{\text{gas, lb/dscf}} = (C_{\text{gas, ppm}}) \left(\frac{34.08 \text{ lb / lb - mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb - mole}} \right) = < 0.059 \times 10^{-6} \text{ lbs/dscf}$$

H₂S EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 274,554 dscfh

STACK H₂S EMISSION RATE =

$$H_2S_{\text{pmr}} = (C_{\text{gas, lb/dscf}})(Q_{\text{std}}) = < 0.0163 \text{ lbs/hr} \\ = < 0.071 \text{ ton/yr}$$

TRS as SO₂ EMISSION RATE CALCULATION SHEET
USEPA METHOD 15

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 5
TEST DATE: 6/6/2008

INPUT

COS CONCENTRATION (C): < 0.26 ppmv
CS₂ CONCENTRATION (C): < 0.01 ppmv
H₂S CONCENTRATION (C): < 0.67 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 274,554 dscfh
STACK OXYGEN CONTENT (%O₂): 3.13 % by vol db

CALCULATIONS

AVERAGE STACK TRS as SO₂ = < 0.95 ppmv

TRS CONCENTRATION CORRECTED TO 3% OXYGEN (ppmv db @ 3%O₂) =

$$C_{\text{gas,ppm@3\%O}_2} = (C_{\text{gas,ppm}}) \left(\frac{17.9}{20.9 - \%O_2} \right) = < 0.96 \text{ ppmv @ 3\% O}_2$$

TRS as SO₂ CONCENTRATION (lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left(\frac{64 \text{ lb / lb - mole}}{385.26 \times 10^{-6} \text{ ft}^3 / \text{lb - mole}} \right) = < 0.158 \times 10^{-6} \text{ lbs/dscf}$$

TRS as SO₂ EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 274,554 dscfh

STACK TRS as SO₂ EMISSION RATE =

$$\text{TRS}_{\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = < 0.0433 \text{ lbs/hr}$$
$$= < 0.190 \text{ ton/yr}$$

MONITOR DATA SUMMARY

COMPANY : Valero McKee Refinery
 SOURCE : No. 2 SRU Incinerator
 REPETITION : 6
 TEST DATE : 6/6/2008
 START TIME : 13:30
 END TIME : 16:35

GAS ANALYZER CO

SPAN: 2,000 ppm
 AVERAGE CAL. BIAS (C_m): 979.0
 AVERAGE ZERO BIAS (C_o): -2.0
 CALIBRATION GAS: EPA Protocol CO
 CALIBRATION PPM (C_{ma}): 1,000
 PPM CORRECTED (C_{pa}): 730

GAS ANALYZER NO_x

SPAN: 90.0 ppm
 AVERAGE CAL. BIAS (C_m): 42.35
 AVERAGE ZERO BIAS (C_o): 0.85
 CALIBRATION GAS: EPA Protocol NO_x
 CALIBRATION PPM (C_{ma}): 45.0
 PPM CORRECTED (C_{pa}): 11.7

GAS ANALYZER O₂

SPAN: 9.00 %
 AVERAGE CAL. BIAS (C_m): 4.515
 AVERAGE ZERO BIAS (C_o): 0.025
 CALIBRATION GAS: EPA Protocol O₂
 CALIBRATION PPM (C_{ma}): 4.50
 PPM CORRECTED (C_{pa}): 3.14

GAS ANALYZER CO₂

SPAN: 18.00 %
 AVERAGE CAL. BIAS (C_m): 9.140
 AVERAGE ZERO BIAS (C_o): 0.100
 CALIBRATION GAS: EPA Protocol CO₂
 CALIBRATION % (C_{ma}): 9.00
 % CORRECTED (C_{pa}): 9.50

Example Calculation =

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

CLOCK TIME	ELAPSED TIME	Uncorrected			
		O ₂ % vol db	CO ₂ % vol db	NO _x ppmv db	CO ppmv db
13:30	0				
13:31	1	3.16	9.78	11.5	600
13:32	2	3.28	9.59	11.6	706
13:33	3	3.25	9.59	11.6	743
13:34	4	3.20	9.77	11.8	693
13:35	5	3.14	9.68	11.7	653
13:36	6	3.24	9.69	11.8	704
13:37	7	3.12	9.91	11.9	624
13:38	8	3.11	9.84	11.5	641
13:39	9	3.24	9.63	11.5	728
13:40	10	3.29	9.58	11.5	791
13:41	11	3.25	9.57	11.6	828
13:42	12	3.22	9.66	11.6	837
13:43	13	3.11	9.78	11.8	741
13:44	14	3.06	9.81	11.7	672
13:45	15	3.10	9.71	11.6	677
13:46	16	3.17	9.56	11.5	773
13:47	17	3.24	9.57	11.5	832
13:48	18	3.21	9.59	11.7	813
13:49	19	3.16	9.65	11.7	799
13:50	20	3.09	9.78	11.9	666
13:51	21	3.07	9.77	11.7	593
13:52	22	3.07	9.73	11.6	629
13:53	23	3.16	9.65	11.4	689
13:54	24	3.21	9.55	11.5	748
13:55	25	3.27	9.41	11.6	805
13:56	26	3.16	9.71	11.9	745
13:57	27	2.97	9.84	11.7	568
13:58	28	3.12	9.64	11.5	646
13:59	29	3.17	9.59	11.6	704
14:00	30	3.14	9.67	11.4	704
14:01	31	3.19	9.53	11.4	780
14:02	32	3.25	9.42	11.5	835
14:03	33	3.25	9.47	11.7	849
14:04	34	3.09	9.78	11.9	644
14:05	35	3.02	9.70	11.6	632
14:06	36	3.15	9.57	11.4	690
14:07	37	3.16	9.59	11.6	692
14:08	38	3.18	9.51	11.5	734
14:09	39	3.21	9.43	11.5	806
14:10	40	3.19	9.45	11.6	825
14:11	41	3.12	9.61	11.8	718
14:12	42	3.10	9.55	11.6	695
14:13	43	3.21	9.42	11.4	792
14:14	44	3.24	9.54	11.5	834
14:15	45	3.19	9.50	11.6	774
14:16	46	3.20	9.59	11.6	775
14:17	47	3.10	9.65	11.6	690
14:18	48	3.08	9.57	11.4	676
14:19	49	3.21	9.43	11.4	748
14:20	50	3.27	9.35	11.5	809
14:21	51	3.23	9.44	11.6	847
14:22	52	3.15	9.60	11.7	794
14:23	53	3.06	9.63	11.6	678
14:24	54	3.17	9.43	11.5	772
14:25	55	3.17	9.70	11.6	725
14:26	56	3.04	9.75	11.6	624
14:27	57	3.15	9.54	11.5	692
14:28	58	3.20	9.46	11.4	717
14:29	59	3.17	9.51	11.6	717
14:30	60	3.09	9.57	11.6	637
14:31	61	3.13	9.48	11.4	693
14:32	62	3.20	9.46	11.4	777
14:33	63	3.15	9.63	11.7	712
14:34	64	3.13	9.48	11.5	662
14:35	65	3.26	9.47	11.5	794
14:36	66	3.11	9.75	11.8	650
14:37	67	3.05	9.62	11.7	590
14:38	68	3.19	9.45	11.6	651
14:39	69	3.23	9.35	11.5	740
14:40	70	3.22	9.48	11.6	745
14:41	71	3.10	9.57	11.6	649
14:42	72	3.12	9.52	11.6	684
14:43	73	3.19	9.52	11.6	718
14:44	74	3.12	9.67	11.7	655
14:45	75	3.11	9.55	11.5	670
14:46	76	3.28	9.49	11.6	811
14:47	77	3.10	9.84	11.7	650
14:48	78	3.05	9.71	11.6	612
14:49	79	3.17	9.53	11.7	700
14:50	80	3.22	9.59	11.4	724
14:51	81	3.12	9.71	11.6	614
14:52	82	3.16	9.59	11.5	690
14:53	83	3.24	9.47	11.5	765
14:54	84	3.25	9.62	11.6	793
14:55	85	3.07	9.81	11.6	663
14:56	86	3.10	9.68	11.5	677
14:57	87	3.13	9.67	11.6	662
14:58	88	3.14	9.63	11.5	723
14:59	89	3.17	9.54	11.6	747
15:00/15:05	90	3.19	9.64	11.6	749

6 continued

15:06	91	3.17	9.68	11.6	695
15:07	92	3.19	9.63	11.7	711
15:08	93	3.22	9.53	11.7	776
15:09	94	3.21	9.56	11.7	791
15:10	95	3.17	9.68	11.8	750
15:11	96	3.18	9.61	11.6	746
15:12	97	3.17	9.70	11.7	764
15:13	98	3.06	9.90	11.9	627
15:14	99	3.12	9.73	11.7	652
15:15	100	3.21	9.62	11.7	733
15:16	101	3.14	9.70	11.7	696
15:17	102	3.11	9.69	11.7	669
15:18	103	3.23	9.49	11.5	773
15:19	104	3.21	9.76	11.7	746
15:20	105	3.03	9.87	11.7	608
15:21	106	3.11	9.71	11.5	686
15:22	107	3.16	9.70	11.7	700
15:23	108	3.12	9.72	11.6	684
15:24	109	3.22	9.51	11.5	779
15:25	110	3.20	9.72	11.9	752
15:26	111	3.00	9.92	11.8	578
15:27	112	3.13	9.67	11.5	681
15:28	113	3.20	9.61	11.4	764
15:29	114	3.19	9.58	11.5	759
15:30	115	3.29	9.49	11.5	875
15:31	116	3.11	9.86	12.2	704
15:32	117	3.00	9.86	11.9	600
15:33	118	3.16	9.62	11.7	730
15:34	119	3.22	9.55	11.8	780
15:35	120	3.19	9.65	11.7	771
15:36	121	3.16	9.59	11.7	785
15:37	122	3.24	9.62	12.0	822
15:38	123	3.06	9.90	12.2	639
15:39	124	3.08	9.73	11.9	650
15:40	125	3.24	9.54	11.4	758
15:41	126	3.23	9.62	11.7	726
15:42	127	3.13	9.67	11.9	715
15:43	128	3.21	9.50	11.6	802
15:44	129	3.27	9.57	11.6	853
15:45	130	3.04	9.91	12.3	618
15:46	131	3.00	9.81	11.9	583
15:47	132	3.15	9.70	11.6	670
15:48	133	3.17	9.69	11.6	681
15:49	134	3.17	9.58	11.7	758
15:50	135	3.24	9.51	11.8	856
15:51	136	3.13	9.84	12.1	696
15:52	137	2.98	9.87	11.8	572
15:53	138	3.13	9.65	11.4	699
15:54	139	3.23	9.58	11.5	751
15:55	140	3.11	9.76	11.8	669
15:56	141	3.09	9.64	11.7	707
15:57	142	3.25	9.59	11.8	794
15:58	143	3.10	9.91	12.1	636
15:59	144	3.01	9.78	11.7	609
16:00	145	3.17	9.58	11.5	728
16:01	146	3.23	9.61	11.7	764
16:02	147	3.12	9.74	12.1	671
16:03	148	3.11	9.62	11.8	705
16:04	149	3.26	9.49	11.7	815
16:05	150	3.16	9.83	11.9	740
16:06	151	2.95	9.90	11.7	563
16:07	152	3.12	9.67	11.4	691
16:08	153	3.17	9.72	11.7	664
16:09	154	3.10	9.71	11.4	667
16:10	155	3.23	9.52	11.3	801
16:11	156	3.22	9.62	11.5	771
16:12	157	3.12	9.71	11.8	674
16:13	158	3.17	9.60	11.8	740
16:14	159	3.14	9.81	11.7	711
16:15	160	3.02	9.93	11.9	552
16:16	161	3.11	9.72	11.5	630
16:17	162	3.26	9.51	11.5	792
16:18	163	3.23	9.60	12.0	757
16:19	164	3.10	9.71	12.1	689
16:20	165	3.17	9.54	11.7	794
16:21	166	3.22	9.74	11.9	774
16:22	167	3.04	9.91	12.2	585
16:23	168	3.04	9.75	11.8	606
16:24	169	3.27	9.49	11.6	797
16:25	170	3.25	9.57	11.9	784
16:26	171	3.10	9.75	12.1	669
16:27	172	3.14	9.48	11.7	722
16:28	173	3.27	9.63	11.7	822
16:29	174	3.01	9.95	12.0	563
16:30	175	3.01	9.74	11.7	589
16:31	176	3.16	9.60	11.7	711
16:32	177	3.17	9.70	12.0	690
16:33	178	3.07	9.72	11.9	611
16:34	179	3.15	9.51	11.7	699
16:35	180	3.29	9.46	11.7	805
Uncorrected Average =		3.156	9.640	11.66	713.9

ARI ENVIRONMENTAL, INC.
MOISTURE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/6/2008
RUN NUMBER: 6

γ FACTOR:	1.008	STACK DIAM:	53.00 inches
BAROMETRIC:	26.07 in. Hg	METER VOLUME:	56.252 ft ³
STATIC PRES:	0.58 in.H ₂ O	METER TEMP:	97.9 °F
STACK TEMP:	654.7 °F	LIQUID COLL:	129.9 milliliters
SQ.RT ΔP:	0.1477 in.H ₂ O	CO₂:	9.50 % by volume
ΔH:	0.53 in.H ₂ O	O₂:	3.14 % by volume

ENGLISH UNITS
(29.92 in.Hg & °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS	
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$	= 46.828 dscf
$\gamma = 1.008$	
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS	
$V_{wstd} = 0.04707 \times V_{lc}$	= 6.114 scf
$V_{lc} = 129.9 \text{ mL}$	
FRACTIONAL MOISTURE CONTENT OF STACK GAS AS MEASURED	
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}}$	= 0.1155
FRACTIONAL MOISTURE CONTENT OF STACK GAS @ SATURATION	
$B_{ws@saturation} = \frac{S.V.P.}{P_{bar} + \frac{P_{static}}{13.6}}$	= 0.8096
$S.V.P. = 21.14 \text{ in. Hg}$	
FRACTIONAL MOISTURE CONTENT USED IN CALCULATIONS	
$B_{ws} =$	0.1155

ARI ENVIRONMENTAL, INC.
FLOW RATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
RUN NUMBER: 6

SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/6/2008

BAROMETRIC: 26.07 in. Hg
STATIC PRES: 0.58 in.H₂O
STACK TEMP: 654.7 °F
SQ.RT ΔP: 0.1477 in.H₂O

STACK DIAM: 53.00 inches
CO₂: 9.50 % by volume
O₂: 3.14 % by volume

DRY MOLECULAR WEIGHT OF STACK GAS			
$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO)$	=	29.65	lb/lb-mole
MOLECULAR WEIGHT OF STACK GAS, wet basis			
$M_s = M_d(1 - B_{ws}) + 18B_{ws}$	=	28.30	lb/lb-mole
PITOT TUBE COEFFICIENT			
C_p (from calibration curve or geometric specifications)	=	0.84	
AVERAGE VELOCITY HEAD OF STACK GAS, in. H₂O			
$\sqrt{\Delta P} = \frac{1}{n} \sum_{i=1}^n \sqrt{\Delta p_i}$	=	0.1477	in. H ₂ O
AVERAGE ABSOLUTE STACK GAS TEMPERATURE			
$T_s = 654.7 \text{ °F} + 460$	=	1,114.7	°R
ABSOLUTE STACK GAS PRESSURE			
$P_s = P_{bar} + \frac{P_{static}}{13.6}$	=	26.11	in.Hg
STACK GAS VELOCITY			
$V_s = (85.49)(C_p)(\text{avg } \sqrt{\Delta P}) \sqrt{\frac{T_s}{(P_s)(M_s)}}$	=	13.027	ft/sec
STACK GAS VOLUMETRIC FLOW RATE, actual			
$Q_s = 60 \times V_s \times A_s$	=	11,975	acfm
Stack Area =		15.321	ft ²
STACK GAS VOLUMETRIC FLOW RATE, standard conditions, wet basis			
$Q_{stdw} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)$	=	4,950 297,014	scfm, wb scfh, wb
STACK GAS VOLUMETRIC FLOW RATE, standard conditions, dry basis			
$Q_{std} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)(1 - B_{ws})$	=	4,379 262,712	dscfm dscfh

ARI ENVIRONMENTAL, INC.
USEPA METHOD 5B - FILTERABLE PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/6/08
RUN NUMBER: 6

INPUT

V_m:	56.252	ft ³	Q_s:	4,379	dscfm
γ FACTOR:	1.008		T_s:	654.7	°F
P_{bar}:	26.07	in.Hg	Runtime:	120.0	minutes
ΔH:	0.53	in.H ₂ O	V_s:	13.027	ft/sec
T_m:	97.9	°F	P_s:	26.11	in.Hg
V_{lc}:	129.9	mL	Noz. diam:	0.491	inches
M_n front:	12.83	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS					
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$		=	46.828	dscf	
$\gamma = 1.008$					
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS					
$V_{wstd} = 0.04707 \times V_{lc}$		=	6.114	scf	
FRACTIONAL MOISTURE CONTENT OF STACK GAS					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100$		=	11.55	%	
PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS					
$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right)$		Total	=	0.00423	gr/dscf
$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right)$		C' s Total	=	0.6041	x 10⁻⁶ lbs/dscf
EMISSION RATE					
$pmr = \left(\frac{C_s}{7000} \right) (Q_{std}) (60)$		Total	=	0.1587 0.6949	lbs/hr ton/yr
ISOKINETIC SAMPLING RATE					
$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)}$		=	103.85	% I	
$A_n = 0.001315 \text{ ft}^2$		Runtime =	120	minutes	

ARI ENVIRONMENTAL, INC.
USEPA METHOD 202 - CONDENSIBLE INORGANIC PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/6/08
RUN NUMBER: 6

INPUT

V_m:	56.252	ft³	Q_s:	4,379	dscfm
γ FACTOR:	1.008		T_s:	654.7	°F
P_{bar}:	26.07	in.Hg	Runtime:	120.0	minutes
ΔH:	0.53	in.H₂O	V_s:	13.027	ft/sec
T_m:	97.9	°F	P_s:	26.11	in.Hg
V_{lc}:	129.9	mL	Noz. diam:	0.491	inches
M_n back inorg:	25.75	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS					
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$			=	46.828	dscf
$\gamma = 1.008$					
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS					
$V_{wstd} = 0.04707 \times V_{lc}$			=	6.114	scf
FRACTIONAL MOISTURE CONTENT OF STACK GAS					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100$			=	11.55	%
PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS					
$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right)$			Total	=	0.00848 gr/dscf
$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right)$			C' _s Total	=	1.21250 x 10⁻⁶ lbs/dscf
EMISSION RATE					
$pmr = \left(\frac{C_s}{7000} \right) (Q_{std}) (60)$			Total	=	0.3184 lbs/hr 1.3947 ton/yr
ISOKINETIC SAMPLING RATE					
$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)}$			=	103.85	% I
$A_n = 0.001315 \text{ ft}^2$			Runtime =	120	minutes

ARI ENVIRONMENTAL, INC.
USEPA METHOD 202 - CONDENSIBLE ORGANIC PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/6/08
RUN NUMBER: 6

INPUT

V_m:	56.252	ft ³	Q_s:	4,379	dscfm
γ FACTOR:	1.008		T_s:	654.7	°F
P_{bar}:	26.07	in.Hg	Runtime:	120.0	minutes
ΔH:	0.53	in.H ₂ O	V_s:	13.027	ft/sec
T_m:	97.9	°F	P_s:	26.11	in.Hg
V_{lc}:	129.9	mL	Noz. diam:	0.491	inches
M_n back org:	0.55	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS					
$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$		=	46.828	dscf	
$\gamma = 1.008$					
VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS					
$V_{wstd} = 0.04707 \times V_{lc}$		=	6.114	scf	
FRACTIONAL MOISTURE CONTENT OF STACK GAS					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100$		=	11.55	%	
PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS					
$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right)$		Total	=	0.00018	gr/dscf
$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right)$		C'_s Total	=	0.02590	x 10⁻⁶ lbs/dscf
EMISSION RATE					
$pmr = \left(\frac{C_s}{7000} \right) (Q_{std})(60)$		Total	=	0.0068 0.0298	lbs/hr ton/yr
ISOKINETIC SAMPLING RATE					
$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{lc}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)}$		=	103.85	% I	
$A_n = 0.001315 \text{ ft}^2$		Runtime =	120	minutes	

ARI ENVIRONMENTAL, INC.
USEPA METHOD 5/202 - TOTAL PARTICULATE CALCULATION SUMMARY

COMPANY: Valero Refining - Texas
LOCATION: Sunray, Texas
SOURCE: SRU No. 2 Incinerator Exhaust
TEST DATE: 6/6/08
RUN NUMBER: 6

INPUT

V_m:	56.252	ft ³	Q_s:	4,379	dscfm
γ FACTOR:	1.008		T_s:	654.7	°F
P_{bar}:	26.07	in.Hg	Runtime:	120.0	minutes
ΔH:	0.53	in.H ₂ O	V_s:	13.027	ft/sec
T_m:	97.9	°F	P_s:	26.11	in.Hg
V_{ic}:	129.9	mL	Noz. diam:	0.491	inches
M_n total:	39.13	mg			

ENGLISH UNITS
(29.92 in.Hg & 68 °F)

VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS

$$V_{mstd} = \left(\frac{528}{29.92} \right) \times V_m \times \gamma \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 46.828 \text{ dscf}$$

$\gamma = 1.008$

VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS

$$V_{wstd} = 0.04707 \times V_{ic} = 6.114 \text{ scf}$$

FRACTIONAL MOISTURE CONTENT OF STACK GAS

$$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100 = 11.55 \%$$

PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS

$$C_s = (0.01543) \left(\frac{M_n}{V_{mstd}} \right) \quad \text{Total} = 0.01289 \text{ gr/dscf}$$

$$C'_s = (2.205 \times 10^{-6}) \left(\frac{M_n}{V_{mstd}} \right) \quad C'_s \text{ Total} = 1.8425 \times 10^{-6} \text{ lbs/dscf}$$

EMISSION RATE

$$pmr = \left(\frac{C_s}{7000} \right) (Q_{std})(60) \quad \text{Total} = \begin{matrix} 0.4839 \text{ lbs/hr} \\ 2.1195 \text{ ton/yr} \end{matrix}$$

ISOKINETIC SAMPLING RATE

$$\%ISO = \frac{(100)(T_s) \left[(0.002669 \times V_{ic}) + \left(\frac{V_m}{T_m} \right) (\gamma) \left(P_{bar} + \left(\frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)} = 103.85 \%$$

$A_n = 0.001315 \text{ ft}^2 \quad \text{Runtime} = 120 \text{ minutes}$

NO_x CALIBRATION CORRECTION DATA SHEET

USEPA METHOD 7E

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: CAI Model 600 CLD
RUN NO: 6
TEST DATE: 6/6/2008

INPUT

NO _x AVERAGE CHART READING (C):	11.66 ppmv
AVG PRE/POST ZERO DRIFT READING (C _o):	0.9 ppmv
CAL GAS CONCENTRATION (C _{ma}):	45.0 ppmv
AVG CAL PRE/POST TEST READING (C _m):	42.4 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q _{std}):	262,712 dscfh

CALCULATIONS

STACK NO_x AVERAGE CHART READING = 11.66 ppmv

STACK NO_x CONC. CORRECTED FOR ZERO AND CALIBRATION DRIFT:

$$\text{NO}_x \text{ CONC, ppmv} = C_{\text{gas,ppm}} = \frac{(\bar{C} - C_o) C_{ma}}{C_m - C_o} = 11.7 \text{ ppmv db}$$

(corrected)

NO_x CONC.(lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left(\frac{46 \text{ lb/lb-mole}}{385.26 \times 10^6 \text{ ft}^3/\text{lb-mole}} \right) = 1.400 \times 10^{-6} \text{ lbs/dscf}$$

NO_x EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 262,712 dscfh

STACK NO_x EMISSION RATE =

$$\text{SO}_{2\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = 0.368 \text{ lbs/hr}$$

$$= 1.61 \text{ ton/yr}$$

CO CALIBRATION CORRECTION DATA SHEET USEPA METHOD 10

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: Thermo Environmental Model 48i-CHL
RUN NO: 6
TEST DATE: 6/6/2008

INPUT

CO AVERAGE CHART READING (C):	713.9 ppmv
AVG PRE/POST ZERO DRIFT READING (C _o):	-2.0 ppmv
CAL GAS CONCENTRATION (C _{ma}):	1,000 ppmv
AVG CAL PRE/POST TEST READING (C _m):	979.0 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q _{std}):	262,712 dscfh

CALCULATIONS

STACK CO AVERAGE CHART READING = 713.9 ppmv

STACK CO CONC. CORRECTED FOR ZERO AND CALIBRATION DRIFT:

$$\text{CO CONC, ppmv} = C_{\text{gas,ppm}} = (\bar{C} - C_o) \frac{C_{ma}}{C_m - C_o} = 729.8 \text{ ppmv db}$$

(corrected)

CO CONC.(lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left(\frac{28\text{lb/lb-mole}}{385.26 \times 10^6 \text{ft}^3/\text{lb-mole}} \right) = 53.037 \times 10^{-6} \text{ lbs/dscf}$$

CO EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 262,712 dscfh

STACK CO EMISSION RATE =

$$\text{CO}_{\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = 13.933 \text{ lbs/hr}$$

$$= 61.029 \text{ ton/yr}$$

**CARBON DISULFIDE EMISSION RATE CALCULATION SHEET
USEPA METHOD 15**

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 6
TEST DATE: 6/6/2008

INPUT

CS₂ CONCENTRATION (C): < 0.01 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 262,712 dscfh

CALCULATIONS

STACK CS₂ AVERAGE CHART READING = < 0.0 ppmv

CS₂ CONCENTRATION (lbs/dscf) =

$$C_{\text{gas, lb/dscf}} = (C_{\text{gas, ppm}}) \left(\frac{76.1 \text{ lb / lb-mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb-mole}} \right) = < 0.002 \times 10^{-6} \text{ lbs/dscf}$$

CS₂ EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 262,712 dscfh

STACK CS₂ EMISSION RATE =

$$CS_{2\text{pmr}} = (C_{\text{gas, lb/dscf}})(Q_{\text{std}}) = < 0.0005 \text{ lbs/hr}$$
$$= < 0.002 \text{ ton/yr}$$

**CARBONYL SULFIDE EMISSION RATE CALCULATION SHEET
USEPA METHOD 15**

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 6
TEST DATE: 6/6/2008

INPUT

COS CONCENTRATION (C): 0.51 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 262,712 dscfh

CALCULATIONS

STACK COS AVERAGE CHART READING = 0.5 ppmv

COS CONCENTRATION (lbs/dscf) =

$$C_{\text{gas, lb/dscf}} = (C_{\text{gas, ppm}}) \left(\frac{60.07 \text{ lb / lb-mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb-mole}} \right) = 0.080 \times 10^{-6} \text{ lbs/dscf}$$

COS EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 262,712 dscfh

STACK COS EMISSION RATE =

$$\text{COS}_{\text{pmr}} = (C_{\text{gas, lb/dscf}})(Q_{\text{std}}) = 0.021 \text{ lbs/hr} = 0.092 \text{ ton/yr}$$

**HYDROGEN SULFIDE CALIBRATION CORRECTION DATA SHEET
USEPA METHOD 15**

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 6
TEST DATE: 6/6/2008

INPUT

H₂S CONCENTRATION (C): < 0.67 ppmv
STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 262,712 dscfh

CALCULATIONS

STACK H₂S AVERAGE CHART READING = < 0.67 ppmv

H₂S CONCENTRATION (lbs/dscf) =

$$C_{\text{gas, lb/dscf}} = (C_{\text{gas, ppm}}) \left(\frac{34.08 \text{ lb / lb-mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb-mole}} \right) = < 0.059 \times 10^{-6} \text{ lbs/dscf}$$

H₂S EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 262,712 dscfh

STACK H₂S EMISSION RATE =

$$H_2S_{\text{pmr}} = (C_{\text{gas, lb/dscf}})(Q_{\text{std}}) = < 0.0156 \text{ lbs/hr} \\ = < 0.068 \text{ ton/yr}$$

TRS as SO₂ EMISSION RATE CALCULATION SHEET

USEPA METHOD 15

COMPANY: Valero McKee Refinery
LOCATION: Sunray, Texas
SOURCE: No. 2 SRU Incinerator
MONITOR ID: SRI-9300B: GC-FPD
RUN NO: 6
TEST DATE: 6/6/2008

INPUT

COS CONCENTRATION (C): 0.51 ppmv
 CS₂ CONCENTRATION (C): < 0.01 ppmv
 H₂S CONCENTRATION (C): < 0.67 ppmv
 STACK GAS VOLUMETRIC FLOW RATE (Q_{std}): 262,712 dscfh
 STACK OXYGEN CONTENT (%O₂): 3.14 % by vol db

CALCULATIONS

AVERAGE STACK TRS as SO₂ = < 1.20 ppmv

TRS CONCENTRATION CORRECTED TO 3% OXYGEN (ppmv db @ 3%O₂) =

$$C_{\text{gas, ppm@3\%O}_2} = (C_{\text{gas, ppm}}) \left(\frac{17.9}{20.9 - \%O_2} \right) = < 1.21 \text{ ppmv @ 3\% O}_2$$

TRS as SO₂ CONCENTRATION (lbs/dscf) =

$$C_{\text{gas, lb/dscf}} = (C_{\text{gas, ppm}}) \left(\frac{64 \text{ lb/lb-mole}}{385.26 \times 10^{-6} \text{ ft}^3/\text{lb-mole}} \right) = < 0.199 \times 10^{-6} \text{ lbs/dscf}$$

TRS as SO₂ EMISSION RATE:

STACK GAS VOLUMETRIC FLOW RATE = 262,712 dscfh

STACK TRS as SO₂ EMISSION RATE =

$$\text{TRS}_{\text{pmr}} = (C_{\text{gas, lb/dscf}})(Q_{\text{std}}) = < 0.0524 \text{ lbs/hr}$$

$$= < 0.229 \text{ ton/yr}$$



Valero McKee Refinery: Sunray, TX
SRU No. 2 Incinerator: EPN V-16
Test Dates: 6/4 & 6/6/08

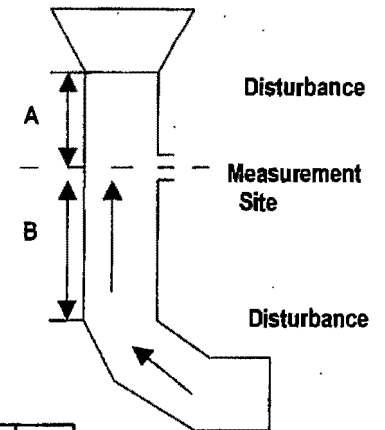
APPENDIX B

Field Data

TRAVERSE POINT LOCATION FOR CIRCULAR AND RECTANGULAR DUCTS

PLANT VAIERO M^cKEE
 DATE 06.03.08
 SAMPLING LOCATION SUNRAY TX
 INSIDE OF FAR WALL TO
 OUTSIDE OF PORT (DISTANCE C) 59.5"
 INSIDE OF NEAR WALL TO
 OUTSIDE OF PORT (DISTANCE D) 06.5"
 STACK ID 53.0"
 NEAREST UPSTREAM FROM DISTURBANCE (A) 280.0"
 NEAREST DOWNSTREAM FROM DISTURBANCE (B) 196.0"
 CALCULATOR T. DAVIS

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	60.0	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 $\frac{2 \times L \times W}{L + W}$

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

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	03.2	53.0"	01.69	06.5"	08.19
2	10.5		05.56		12.06
3	19.4		10.28		16.78
4	32.3		17.11		23.61
5	67.7		35.88		42.38
6	80.6		42.71		49.21
7	89.5		47.43		53.93
8	96.8		51.30		57.80
9					
10					
11					
12					
13					
14	16.7	53.0"	08.85	06.5"	15.35
15	50.0		26.50		33.00
16	83.3		44.14		50.64
17					
18					
19					
20					
21					
22					
23					
24					

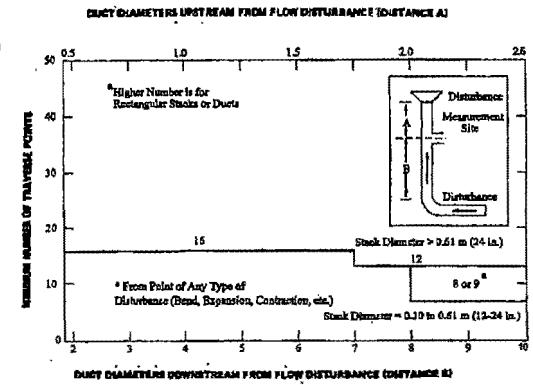
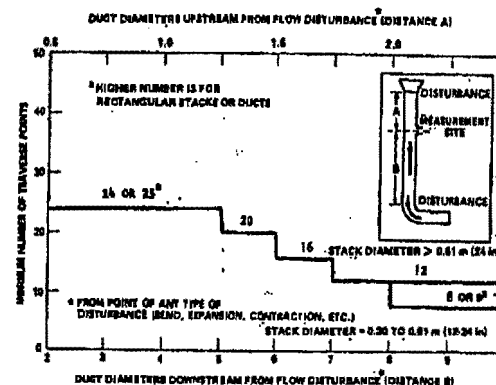


Figure 1-2. Minimum number of traverse points for velocity (nonparticulate) traverses.

**ARI REFERENCE METHOD CEMS DATA
USEPA METHOD 205
DILUTION SYSTEM VERIFICATION**

Company: VALERO/McKEE REFINERY Analyzer Info
 Location: SUNRAY, TX
 Dilution System ID: 3901 Monitor type: SERVOMEX 1440
 Dilution Flow Rate: 7.0 LPM Monitor range: 15%
 Verification date: 6-3-08 Monitor Serial No.: X1440D1/46

Initial Calibration Data

<u>Calibration Concentration</u>	<u>Calibration results</u>	<u>Time</u>
Zero: <u>0.00</u>	Zero: <u>0.02</u>	Zero: <u>1649</u>
Low: _____	Low: _____	Low: _____
Mid: <u>7.50</u>	Mid: <u>7.50</u>	Mid: <u>1654</u>
High: <u>15.00</u>	High: <u>14.80</u>	High: <u>1651</u>

Dilution System Verification

Mid level gas type: <u>USEPA Protocol 1</u>	High level dilution gas type: <u>USEPA Protocol 1</u>
Mid level concentration: <u>7.54</u>	High level concentration: <u>24.99%</u>
Mid level tank serial #: <u>ALM025227</u>	High level tank serial #: <u>EB0005305</u>
	Target concentration No. 1: <u>3.75</u>
	Target concentration No. 2: <u>11.25</u>

Dilution System Results

<u>Target Concentration No. 1</u>		<u>Target Concentration No. 2</u>	
<u>Instrument Response</u>	<u>Time</u>	<u>Instrument Response</u>	<u>Time</u>
Trial No. 1: <u>3.79</u>	<u>1700</u>	Trial No. 1: <u>11.16</u>	<u>1704</u>
Trial No. 2: <u>3.79</u>	<u>1712</u>	Trial No. 2: <u>11.13</u>	<u>1715</u>
Trial No. 3: <u>3.77</u>	<u>1720</u>	Trial No. 3: <u>11.12</u>	<u>1723</u>
Average: _____		Average: _____	

% Difference from target concentration: _____ % Difference from target concentration: _____

Mid Level Calibration Gas Results

<u>Instrument Response</u>	<u>Time</u>
Trial No. 1: <u>7.41</u>	<u>1708</u>
Trial No. 2: <u>7.41</u>	<u>1717</u>
Trial No. 3: <u>7.41</u>	<u>1725</u>

**ARI REFERENCE METHOD CEMS DATA
USEPA METHOD 205
DILUTION SYSTEM VERIFICATION**

Company: VALERO MCKEE REFINERY Analyzer Info
 Location: SUNRAY, TX
 Dilution System ID: 3712 Monitor type: SERVO-MEX 1440 O₂
 Dilution Flow Rate: 4.0 LPM Monitor range: 15%
 Verification date: 6-3-08 Monitor Serial No.: X1440 D1/46

Initial Calibration Data

<u>Calibration Concentration</u>	<u>Calibration results</u>	<u>Time</u>
Zero: <u>0.00</u>	Zero: <u>0.05</u>	Zero: <u>1742</u>
Low: _____	Low: _____	Low: _____
Mid: <u>7.50</u>	Mid: <u>7.42</u>	Mid: <u>1752</u>
High: <u>15.00</u>	High: <u>15.06</u>	High: <u>1754</u>

Dilution System Verification

Mid level gas type: <u>USEPA Protocol 1</u>	High level dilution gas type: <u>USEPA Protocol 1</u>
Mid level concentration: <u>7.54</u>	High level concentration: <u>24.9%</u>
Mid level tank serial #: <u>ALM025227</u>	High level tank serial #: <u>EB0005305</u>
	Target concentration No. 1: <u>3.75</u>
	Target concentration No. 2: <u>11.25</u>

Dilution System Results

<u>Target Concentration No. 1</u>		<u>Target Concentration No. 2</u>	
<u>Instrument Response</u>	<u>Time</u>	<u>Instrument Response</u>	<u>Time</u>
Trial No. 1: <u>3.69</u>	<u>1759</u>	Trial No. 1: <u>11.38</u>	<u>1802</u>
Trial No. 2: <u>3.70</u>	<u>1808</u>	Trial No. 2: <u>11.38</u>	<u>1811</u>
Trial No. 3: <u>3.70</u>	<u>1816</u>	Trial No. 3: <u>11.38</u>	<u>1819</u>
Average: _____		Average: _____	

% Difference from target concentration: _____ % Difference from target concentration: _____

Mid Level Calibration Gas Results

<u>Instrument Response</u>	<u>Time</u>
Trial No. 1: <u>7.66</u>	<u>1804</u>
Trial No. 2: <u>7.66</u>	<u>1813</u>
Trial No. 3: <u>7.66</u>	<u>1821</u>

CEMS CALIBRATION DATA



Plant Valero McKee Refinery
 Location Sunray, Texas
 Source No. 2 SRU Incinerator Exhaust
 Date 6/4/2008
 Run Number PRELIMINARY
 Start Time
 Stop Time

Plant Rep. Kevin Jeanes
 Team Leader Dan Fitzgerald
 CEM Operator Dan Fitzgerald

Analyzer Span Values (% or ppm)

CO	2000	ppm
CO ₂	18.00	%
O ₂	9.00	%
THC		ppm
NO _x	90.0	ppm
SO ₂		ppm

CALIBRATION ERROR - 0610 hrs					SYSTEM BIAS CHECK					Calibration Correction Factors
Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Time	Pretest: 0700 hrs		hrs				
				System Response	Time	System Response	Time	Drift (% of Span)		
CO Zero	0	AAL2263	0	0614	1	0700				Co=
CO Low		CO/N2								
CO Mid	1000	EB0001619	996	0634	981	0720				Cm=
CO High	2000	2,000 ppm	1999	0631						
CO ₂ Zero	0.00	AAL2263	0.10	0614	0.11	0700				Co=
CO ₂ Low		CO2/N2								
CO ₂ Mid	9.00	23.06%	9.26	0623	9.15	0708				Cm=
CO ₂ High	18.00	AAL11983	17.72	0625						
O ₂ Zero	0.00	AAL2263	0.02	0639	0.04	0733				Co=
O ₂ Low		O2/N2								
O ₂ Mid	4.50	EB0005305	4.60	0614	4.57	0700				Cm=
O ₂ High	9.00	24.90%	9.06	0610						
THC Zero										Co=
THC Low										
THC Mid										Cm=
THC High										
NO _x Zero	0.0	AAL2263	0.4	0614	0.5	0700				Co=
NO _x Low		NOx/N2								
NO _x Mid	45.0	EB0004890	46.0	0639	44.4	0733				Cm=
NO _x High	90.0	1,996 ppm	91.4	0637						
SO ₂ Zero										Co=
SO ₂ Low										
SO ₂ Mid										Cm=
SO ₂ High										

NO_x CONVERTER CHECK @ 0750
 CYL# AALB277 48.9 ppm NO₂/Air
 43.47% CONVERSION

O₂ RESPONSE TIME UP = 90 SECONDS
 DOWN = 90 SECONDS

CO₂ RESPONSE TIME UP = 90 SECONDS
 DOWN = 90 SECONDS

CO RESPONSE TIME UP = 90 SECONDS

DOWN = 75 SECONDS

NO_x RESPONSE TIME UP = 45 SECONDS

DOWN = 45 SECONDS

CEMS CALIBRATION DATA



Plant Valero McKee Refinery
 Location Sunray, Texas
 Source No. 2 SRU Incinerator Exhaust
 Date 6/4/2008
 Run Number 1
 Start Time 1125
 Stop Time 1457

Plant Rep. Kevin Jeanes
 Team Leader Dan Fitzgerald
 CEM Operator Dan Fitzgerald

Analyzer Span Values (% or ppm)
 CO 2000 ppm
 CO₂ 18.00 %
 O₂ 9.00 %
 THC ppm
 NO_x 90.0 ppm
 SO₂ ppm

LINE Temp = 275 °F
 CHANGE OF PORTS = 1353 - 1359

CALIBRATION ERROR - 0610 hrs					SYSTEM BIAS CHECK					Calibration Correction Factors
Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Time	Pretest: 1030 hrs	1502 hrs	System Response	Time	System Response	Time	
CO Zero	0	AAL2263	0	0614	-1	1030	-1	1502		Co=
CO Low		CO/N2								
CO Mid	1000	EB0001619	996	0634	972	1040	976	1517		Cm=
CO High	2000	2,000 ppm	1999	0631						
CO ₂ Zero	0.00	AAL2263	0.02	0614	0.09	1030	0.11	1502		Co=
CO ₂ Low		CO2/N2	0.10							
CO ₂ Mid	9.00	23.06%	9.26	0623	9.18	1035	9.12	1507		Cm=
CO ₂ High	18.00	AAL11983	17.86	0625						
O ₂ Zero	0.00	AAL2263	0.02	0639	0.00	1046	0.02	1514		Co=
O ₂ Low		O2/N2								
O ₂ Mid	4.50	EB0005305	4.60	0614	4.52	1030	4.51	1502		Cm=
O ₂ High	9.00	24.90%	9.06	0610						
THC Zero										Co=
THC Low										
THC Mid										Cm=
THC High										
NO _x Zero	0.0	AAL2263	0.4	0614	0.7	1030	0.7	1502		Co=
NO _x Low		NOx/N2								
NO _x Mid	45.0	EB0004890	46.0	0639	44.1	1046	41.6	1514		Cm=
NO _x High	90.0	1,996 ppm	91.4	0637						
SO ₂ Zero										Co=
SO ₂ Low										
SO ₂ Mid										Cm=
SO ₂ High										



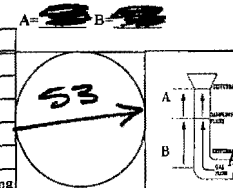
FIELD DATA

Nozzle = 0.502
0.501
0.502

PLANT VALERO McKee AMBIENT TEMPERATURE 90
DATE 6-4-08 BAROMETRIC PRESSURE 29.81
LOCATION SUNNY, TX ASSUMED MOISTURE, % 10
OPERATOR FITE/DAVIS PROBE LENGTH, in. 64
STACK NO. SRU No. 2 NOZZLE DIAMETER, in. 0.502
RUN NO. 1 STACK DIAMETER, in. 53
SAMPLE BOX NO. 50280 MINUTES PER POINT 7.5
METER BOX NO. 1243 NUMBER OF POINTS 16
START TIME 1243 NUMBER OF PORTS 2

PROBE HEATER SETTING 250
HEATER BOX SETTING 250
METER H₂O 1.62
C₂ FACTOR 0.84
Y₄ FACTOR 1.006
PITOT/THERM # 82

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



SAMPLE BOX NO.		MINUTES PER POINT		NUMBER OF POINTS		NUMBER OF PORTS		PRESSURE DIFFERENTIAL ACROSS ORIFICE METER (ΔH) in. H ₂ O		GAS SAMPLE VOLUME (V _m) ft ³		GAS SAMPLE TEMP AT DRY GAS METER		SAMPLE BOX TEMP. °F	COND. EXIT TEMP. °F	SORBENT MODULE TEMP. °F	LAST IMPINGER OUTLET TEMP. °F	PUMP VACUUM in. Hg
METER BOX NO.	START TIME	50280	1243	16	2	ACTUAL	DESIRED	INLET (T _{inlet}) °F	OUTLET (T _{outlet}) °F									
1243	N-1	0	0.45	648	0.025	0.66	0.66	83.573	100	92	254						44	3
	2	7.5		649	0.025	0.66	0.66	82.875	100	92	252						46	3
1256	3	15		649	0.025	0.66	0.66	91.4	102	92	248						48	3
	4	22.5		650	0.020	0.53	0.53	95.3	97	92	260						53	3
1313	5	30		649	0.020	0.53	0.53	98.8	99	92	246						57	3
	6	37.5		648	0.020	0.53	0.53	102.2	100	93	251						62	3
1328	7	45		648	0.025	0.66	0.66	105.78	101	94	251						63	3
	8	52.5		646	0.025	0.66	0.66	109.61	102	95	253						61	3
1343/055	E-9	60		643	0.020	0.53	0.53	113.497	100	96	243						68	3
	10	67.5		651	0.025	0.59	0.59	117.13	104	97	252						68	3
1412	11	75		650	0.020	0.53	0.53	120.46	106	98	250						68	3
	12	82.5		649	0.020	0.66	0.66	123.68	106	98	248						68	3
1427	13	90		649	0.025	0.66	0.66	127.36	108	99	252						68	3
	14	97.5		648	0.025	0.53	0.53	130.71	108	99	254						67	3
1442	15	105		647	0.020	0.53	0.53	134.10	107	100	252						66	3
	16	112.5		648	0.020	0.53	0.53	137.90	106	100	250						66	3
1457		120						141.442										

VOLUME OR WEIGHT OF LIQUID		IMPINGER VOLUME (ml) OR WEIGHT (g)				SILICA GEL WEIGHT
WATER COLLECTED		#1	#2	#3	#4	
FINAL						
INITIAL						
LIQUID COLLECTED						
TOTAL	COLLECTED (specify ml or g)					

ORSAT DATA	TIME	CO ₂	O ₂
TRIAL 1			
TRIAL 2			
TRIAL 3			
Average			

LEAK CHECK	
SYSTEM PRE: <u>0.000</u>	CFM@15" Hg
POST: <u>0.000</u>	CFM@15" Hg
PITOT PRE: <u>OK</u>	@ > 3" H ₂ O
POST: <u>OK</u>	@ > 3" H ₂ O

IMPINGER RECOVERY DATA SHEET



Company:

Valero

Location:

Sunny, TX

Source:

SRM Exhaust

Run No.:

1

Date Set-up:

6-3-08

Test Date:

6-4-08

Date Recovered:

6-4-08

USEPA Method:

51202

Corresponding Filter No:

31200

Filter Container No:

Measurement Method: Weight or Volume

Impinger No.	Impinger Contents	Initial wt/vol g/mL	Final wt/vol g/mL	Difference wt/vol g/mL	Sample Container No.
1	H ₂ O	693.6g	771.8g	78.2g	
2	H ₂ O	706.3g	711.6g	5.3g	
3	H ₂ O	709.3g	710.6g	1.3g	
4	St	291.1g	318.4g	27.3g	
5	Purge	V _{mi} =	499.968		
6		V _{mf} =	542.359		

4.55 purge
5.55 purge
end.
542.35

CEMS CALIBRATION DATA



Plant Valero McKee Refinery
 Location Sunray, Texas
 Source No. 2 SRU Incinerator Exhaust
 Date 6/4/2008
 Run Number 2
 Start Time 1522
 Stop Time 1830

Plant Rep. Kevin Jeanes
 Team Leader Dan Fitzgerald
 CEM Operator Dan Fitzgerald

Analyzer Span Values (% or ppm)
 CO 2000 ppm
 CO₂ 18.00 %
 O₂ 9.00 %
 THC ppm
 NO_x 90.0 ppm
 SO₂ ppm

LINE TEMP = 275°F
 CHANGE OF PORTS ~~1822-1830~~
 1652-1700

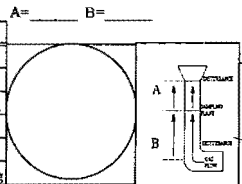
CALIBRATION ERROR - 0610 hrs					SYSTEM BIAS CHECK					Calibration Correction Factors
Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Time	Pretest: 1502 hrs 1833 hrs						
				System Response	Time	System Response	Time	Drift (% of Span)		
CO Zero	0	AAL2263	0	0614	-1	1502	-1	1833		Co=
CO Low		CO/N2								
CO Mid	1000	EB0001619	996	0634	976	1517	973	1848		Cm=
CO High	2000	2,000 ppm	1999	0631						
CO ₂ Zero	0.0	AAL2263	0.06	0614	0.11	1502	0.11	1833		Co=
CO ₂ Low		CO2/N2	0.10							
CO ₂ Mid	9.00	23.06%	9.26	0623	9.12	1507	9.08	1839		Cm=
CO ₂ High	18.00	AAL11983	17.72	0625						
O ₂ Zero	0.0	AAL2263	0.02	0639	0.02	1514	0.00	1844		Co=
O ₂ Low		O2/N2								
O ₂ Mid	4.50	EB0005305	4.60	0614	4.51	1502	4.49	1833		Cm=
O ₂ High	9.00	24.90%	9.06	0610						
THC Zero										Co=
THC Low										
THC Mid										Cm=
THC High										
NO _x Zero	0.0	AAL2263	0.4	0614	0.7	1502	0.6	1833		Co=
NO _x Low		NOx/N2								
NO _x Mid	45.0	EB0004890	46.0	0639	41.6	1514	42.1	1844		Cm=
NO _x High	90.0	1,996 ppm	91.4	0637						
SO ₂ Zero										Co=
SO ₂ Low										
SO ₂ Mid										Cm=
SO ₂ High										

FIELD DATA

PLANT	VALERO MILITARY	AMBIENT TEMPERATURE
DATE	6-4-08	BAROMETRIC PRESSURE
LOCATION	SUNRAY, TX	ASSUMED MOISTURE, %
OPERATOR	FIFE/DAVIS	PROBE LENGTH, in
STACK NO.	SRUNo. 2	NOZZLE DIAMETER, in.
RUN NO.	2	STACK DIAMETER, in.
SAMPLE BOX NO.		MINUTES PER POINT
METER BOX NO.	50280	NUMBER OF POINTS
START TIME	1552	NUMBER OF PORTS

PROBE HEATER SETTING	<u>250</u>
HEATER BOX SETTING	<u>250</u>
METER H_{2a}	<u>1.67</u>
C_p FACTOR	<u>0.84</u>
Y_d FACTOR	<u>1.008</u>
PITOT/THERM #	<u>82</u>

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

[illegible]

WEIGHT OF LIQUID ECTED		IMPINGER VOLUME (ml) OR WEIGHT (g)				SILICA GEL WEIGHT
	#1	#2	#3	#4	Σ	
LECTED						
COLLECTED (specify ml or g)						

ORSAT DATA	TIME	CO ₂	O ₂
	TRIAL 1		
TRIAL 2			
TRIAL 3			
Average			

LEAK CHECK	
SYSTEM PRE: <u>0.000</u>	CFM@15"Hg
POST: <u>0.018</u>	CFM@15"Hg
PITOT PRE: <u>OK</u>	@ > 3"H ₂ O
POST: <u>OK</u>	@ > 3"H ₂ O

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IMPINGER RECOVERY DATA SHEET

Company:

Valero McKee

Location:

Sunny, TX

Source:

SRU Exhaust

Run No.:

2

Date Set-up:

6-3-08

Test Date:

6-4-08

Date Recovered:

6-4-08

USEPA Method:

51202

Corresponding Filter No:

31216

Filter Container No:

Measurement Method: Weight or Volume

<u>Impinger No.</u>	<u>Impinger Contents</u>	<u>Initial wt/vol g/mL</u>	<u>Final wt/vol g/mL</u>	<u>Difference wt/vol g/mL</u>	<u>Sample Container No.</u>
1	<u>H₂O</u>	<u>683.3g</u>	<u>768.1 g</u>	<u>84.8g</u>	
2	<u>H₂O</u>	<u>703.1g</u>	<u>711.2g</u>	<u>8.1g</u>	
3	<u>H₂O</u>	<u>691.6g</u>	<u>691.9g</u>	<u>0.3g</u>	
4	<u>SB</u>	<u>255.9g</u>	<u>267.4g</u>	<u>11.5g</u>	
5	<u>PURGE</u>	<u>V_{mi} =</u>	<u>543.900</u>		
6		<u>V_{mff} =</u>	<u>595.017</u>		
			<u>51.117cf</u>		

1830
542.35g

CEMS CALIBRATION DATA



Plant Valero McKee Refinery
 Location Sunray, Texas
 Source No. 2 SRU Incinerator Exhaust
 Date 6/4/2008
 Run Number 3
 Start Time 1854
 Stop Time 2201

Plant Rep. Kevin Jeanes
 Team Leader Dan Fitzgerald
 CEM Operator Dan Fitzgerald

Analyzer Span Values (% or ppm)
 CO 2000 ppm
 CO₂ 18.00 %
 O₂ 9.00 %
 THC ppm
 NO_x 90.0 ppm
 SO₂ ppm

LINE Temp = 275 °F
 CHANGE OF PERITS: 2024 - 2031

CALIBRATION ERROR - 0610 hrs					SYSTEM BIAS CHECK					Calibration Correction Factors
Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Time	Pretest: 1833 hrs		2205 hrs		Drift (% of Span)		
				System Response	Time	System Response	Time			
CO Zero	0	AAL2263	0	0614	-1	1833	-2	2205	Co=	
CO Low		CO/N2								
CO Mid	1000	EB0001619	996	0634	973	1848	966	2214	Cm=	
CO High	2000	2,000 ppm	1999	0631						
CO ₂ Zero	0.00	AAL2263	0.02	0614	0.11	1833	0.10	2205	Co=	
CO ₂ Low		CO2/N2	0.10							
CO ₂ Mid	9.00	23.06%	9.26	0623	9.08	1839	9.07	2210	Cm=	
CO ₂ High	18.00	AAL11983	17.72	0625						
O ₂ Zero	0.00	AAL2263	0.02	0639	0.00	1844	-0.01	2220	Co=	
O ₂ Low		O2/N2								
O ₂ Mid	4.50	EB0005305	4.60	0614	4.49	1833	4.46	2205	Cm=	
O ₂ High	9.00	24.90%	9.06	0610						
THC Zero									Co=	
THC Low										
THC Mid									Cm=	
THC High										
NO _x Zero	0.0	AAL2263	0.4	0614	0.6	1833	0.6	2205	Co=	
NO _x Low		NOx/N2								
NO _x Mid	45.0	EB0004890	46.0	0639	42.1	1844	41.8	2220	Cm=	
NO _x High	90.0	1,996 ppm	91.4	0637						
SO ₂ Zero									Co=	
SO ₂ Low										
SO ₂ Mid									Cm=	
SO ₂ High										



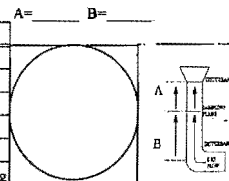
FIELD DATA

Nozzle: 0.490
0.491
0.491
Avg = 0.491

PLANT Verom McKee AMBIENT TEMPERATURE 95
DATE 6-4-08 BAROMETRIC PRESSURE 25.63
LOCATION SUNBEL TX ASSUMED MOISTURE, % 10
OPERATOR ETZ/NAVIS PROBE LENGTH, in. 84
STACK NO. SCH No. 2 NOZZLE DIAMETER, in. 0.500 0.491
RUN NO. 3 STACK DIAMETER, in. 53
SAMPLE BOX NO. MINUTES PER POINT 7.5
METER BOX NO. 50280 NUMBER OF POINTS 16
START TIME 1924 NUMBER OF PORTS 2

PROBE HEATER SETTING 250
HEATER BOX SETTING 250
METER H_{2a} 1.62
 C_p FACTOR 0.84
 Y_a FACTOR 1.008
PITOT/THERM # 82

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



CLOCK TIME	TRAVERSE POINT NUMBER	SAMPLING TIME (t) min.	STATIC PRESSURE (in. H ₂ O)	STACK TEMP (T _s) °F	VELOCITY HEAD		PRESSURE DIFFERENTIAL ACROSS ORIFICE METER (ΔH) in. H ₂ O		GAS SAMPLE VOLUME (V _m) ft ³	GAS SAMPLE TEMP AT DRY GAS METER		SAMPLE BOX TEMP. °F	COND. EXIT TEMP °F	SORBENT MODULE TEMP. °F	LAST IMPINGER OUTLET TEMP. °F	PUMP VACUUM in. Hg
					(ΔP _s)	(√ ΔP _s)	ACTUAL	DESIRED		INLET (T _{m_{in}}) °F	OUTLET (T _{m_{out}}) °F					
1924	N-1	0	0.51	640	0.020		0.48	0.48	203.347	101	101	255			53	2
	2	7.5		648	0.020		0.48	0.48	206.85	107	100	248			54	2
1939	3	15		650	0.025		0.60	0.60	210.34	106	99	247			54	3
	4	22.5		649	0.025		0.60	0.60	214.13	105	99	256			56	3
1954	5	30		650	0.025		0.60	0.60	217.96 90	105	98	258			57	3
	6	37.5		650	0.025		0.60	0.60	221.95	104	97	251			57	3
2009	7	45		647	0.020		0.48	0.48	225.45	102	96	249			57	3
	8	52.5		645	0.020		0.48	0.48	228.88	103	95	255			58	2
2024	9	60		640	0.020		0.48	0.48	232.255	101	95	246			62	2
2027	10	67.5		649	0.020		0.48	0.48	235.61	102	95	251			61	2
2042	11	75		650	0.025		0.60	0.60	238.91	102	95	253			60	3
	12	82.5		649	0.025		0.60	0.60	242.70	103	95	254			58	3
2057	13	90		650	0.025		0.60	0.60	246.45	103	95	251			58	3
	14	97.5		650	0.020		0.48	0.48	250.16	104	95	251			60	2
2112	15	105		648	0.020		0.48	0.48	253.52	102	94	237			60	2
	16	112.5		645	0.020		0.48	0.48	256.88	101	94	240			60	2
2127		120							260.244							
AVERAGE																

VOLUME OR WEIGHT OF LIQUID		IMPINGER VOLUME (ml) OR WEIGHT (g)				SILICA GEL WEIGHT
WATER COLLECTED		#1	#2	#3	#4	
FINAL						
INITIAL						
LIQUID COLLECTED						
TOTAL	COLLECTED (specify ml or g)					

ORSAT DATA	TIME	CO ₂	O ₂
TRIAL 1			
TRIAL 2			
TRIAL 3			
Average			

LEAK CHECK	
SYSTEM PRE:	0.000 CFM @ 15" Hg
POST:	0.000 CFM @ 15" Hg
PITOT PRE:	OK @ > 3" H ₂ O
POST:	OK @ > 3" H ₂ O

IMPINGER RECOVERY DATA SHEET



Company:

Location:

Source:

Run No.:

Valero McKee
Sunray, TX
SRU Exhaust
3

Date Set-up:

Test Date:

Date Recovered:

USEPA Method:

Corresponding Filter No:

Filter Container No:

6-3-08
6-4-08
6-4-08
5/202
31212
31212

Measurement Method: Weight or Volume

Impinger No.	Impinger Contents	Initial wt/vol g/mL	Final wt/vol g/mL	Difference wt/vol g/mL	Sample Container No.
1	H ₂ O	677.8g	765.5g	87.7g	
2	H ₂ O	714.3g	718.8g	4.5g	
3	H ₂ O	676.1g	678.9g	0.8g	
4	SC	255.1g	273.3g	18.2g	
5	Purge	V _{mi} =	545.017	TOTAL = 111.2	
6		V _{mf} =	643.501		

CEMS CALIBRATION DATA



Plant Valero McKee Refinery
 Location Sunray, Texas
 Source No. 2 SRU Incinerator Exhaust
 Date 6/6/2008
 Run Number 4
 Start Time 0636
 Stop Time 0942

Plant Rep. Kevin Jeanes
 Team Leader Dan Fitzgerald
 CEM Operator Dan Fitzgerald

Analyzer Span Values (% or ppm)
 CO 2000 ppm
 CO₂ 18.00 %
 O₂ 9.00 %
 THC ppm
 NO_x 90.0 ppm
 SO₂ ppm

LINE Temp = 275°F
 CHANGE OF FORTS: 0806-0812

CALIBRATION ERROR - 0523 hrs					SYSTEM BIAS CHECK					Calibration
Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Time	Pretest: 0614 hrs		0945 hrs		Drift (% of Span)	Correction Factors	
				System Response	Time	System Response	Time			
CO Zero	0	AAL17428	-2	0525	-1	0614	-1	0945	Co=	
CO Low		CO/N2								
CO Mid	1,000	EB0001619	993	0546	984	0622	986	0953	Cm=	
CO High	2,000	2,000 ppm	1998	0543						
CO ₂ Zero	0.00	AAL17428	0.07	0525	0.08	0614	0.12	0945	Co=	
CO ₂ Low		CO2/N2								
CO ₂ Mid	9.00	23.06%	9.28	0536	9.16	0619	9.18	0950	Cm=	
CO ₂ High	18.00	AAL11983	17.80	0534						
O ₂ Zero	0.00	AAL17428	0.01	0604	0.08	0626	0.06	0959	Co=	
O ₂ Low		O2/N2								
O ₂ Mid	4.50	EB0005305	4.60	0525	4.66	0614	4.57	0945	Cm=	
O ₂ High	9.00	24.90%	9.06	0523						
THC Zero									Co=	
THC Low										
THC Mid									Cm=	
THC High										
NO _x Zero	0.0	AAL17428	0.5	0525	1.0	0614	0.8	0945	Co=	
NO _x Low		NOx/N2								
NO _x Mid	45.0	EB0004890	45.7	0604	45.5	0626	43.6	0959	Cm=	
NO _x High	90.0	1,996 ppm	90.3	0602						
SO ₂ Zero									Co=	
SO ₂ Low										
SO ₂ Mid									Cm=	
SO ₂ High										

NO_x CONVERTER CHECK @ 0610
 48.9 ppm NO₂/AIR Cyl # AAL8277
 92.1% CONVERSION

FIELD DATA

IMPINGER RECOVERY DATA SHEET

Company: VALERO MCKEE
 Location: SUNRAY TX
 Source: SRU EXHAUST
 Run No.: M5/202 Run 4

Date Set-up: 6-5-08
 Test Date: 6-6-08
 Date Recovered: 6-6-08
 USEPA Method: 51202
 Corresponding Filter No: H 32837
 Filter Container No: H 32837

Measurement Method: Weight or Volume

Impinger No.	Impinger Contents	Initial wt/vol g/mL	Final wt/vol g/mL	Difference wt/vol g/mL	Sample Container No.
1	H ₂ O	679.7 g	718.6 g	38.9 g	
2	H ₂ O	714.8 614.5 g	749.6 g	34.8 g	
3	H ₂ O	666.3 g	674.1 g	7.8 g	
4	SG	799.2 g	821.2 g	22 g	
5			TOTAL =	103.5	
6					

V_{mi} 643.501
 V_{mf} 694.818

CEMS CALIBRATION DATA



Plant: Valero McKee Refinery
 Location: Sunray, Texas
 Source: No. 2 SRU Incinerator Exhaust
 Date: 6/6/2008
 Run Number: 5
 Start Time: 1003
 Stop Time: 1309

Plant Rep. Kevin Jeanes
 Team Leader Dan Fitzgerald
 CEM Operator Dan Fitzgerald

Analyzer Span Values (% or ppm)
 CO 2000 ppm
 CO₂ 18.00 %
 O₂ 9.00 %
 THC ppm
 NO_x 90.0 ppm
 SO₂ ppm

LINE TEMP = 275°F
 CHANGE of PORTS 1133-1139

CALIBRATION ERROR - 0523 hrs					SYSTEM BIAS CHECK					Calibration Correction Factors
Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Time	Pretest: 0945 hrs 1313 hrs	System Response	Time	System Response	Time	Drift (% of Span)	
CO Zero	0	AAL17428	-2	0525	-1	0945	-2	1313		Co=
CO Low		CO/N2								
CO Mid	1,000	EB0001619	993	0546	986	0953	979	1320		Cm=
CO High	2,000	2,000 ppm	1998	0543						
CO ₂ Zero	0.00	AAL17428	0.07	0525	0.12	0945	0.10	1313		Co=
CO ₂ Low		CO2/N2								
CO ₂ Mid	9.00	23.06%	9.28	0536	9.18	0950	9.16	1317		Cm=
CO ₂ High	18.00	AAL11983	17.80	0534						
O ₂ Zero	0.00	AAL17428	0.01	0604	0.06	0959	0.04	1326		Co=
O ₂ Low		O2/N2								
O ₂ Mid	4.50	EB0005305	4.60	0525	4.57	0945	4.54	1313		Cm=
O ₂ High	9.00	24.90%	9.06	0523						
THC Zero										Co=
THC Low										
THC Mid										Cm=
THC High										
NO _x Zero	0.0	AAL17428	0.5	0525	0.8	0945	0.7	1313		Co=
NO _x Low		NOx/N2								
NO _x Mid	45.0	EB0004890	45.7	0604	43.6	0959	42.1	1326		Cm=
NO _x High	90.0	1,996 ppm	90.3	0602						
SO ₂ Zero										Co=
SO ₂ Low										
SO ₂ Mid										Cm=
SO ₂ High										



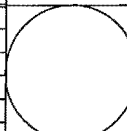
FIELD DATA

PLANT VALERO MCKEE AMBIENT TEMPERATURE 83°
DATE 06-06-08 BAROMETRIC PRESSURE 26.63
LOCATION SUNRAY TX ASSUMED MOISTURE, % 10
OPERATOR T. DAVIS / D. FIZZELL PROBE LENGTH, in. 84"
STACK NO. SRU NO. 2 NOZZLE DIAMETER, in. .491
RUN NO. 25 STACK DIAMETER, in. 53.0"
SAMPLE BOX NO. 50280 MINUTES PER POINT 7.5
METER BOX NO. 10:38 NUMBER OF POINTS 16
START TIME 10:38 NUMBER OF PORTS 2

PROBE HEATER SETTING 250°
HEATER BOX SETTING 250°
METER H₂O 1.620
C₂ FACTOR 0.84
Y₂ FACTOR 1.008
PITOT/THERM # 82

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

A= B=



SAMPLE BOX NO.		MINUTES PER POINT		NUMBER OF POINTS		PRESSURE DIFFERENTIAL ACROSS ORIFICE METER (ΔH) in. H ₂ O		GAS SAMPLE VOLUME (V _m) ft ³		GAS SAMPLE TEMP AT DRY GAS METER		SAMPLE BOX TEMP. °F	COND. EXIT TEMP °F	SORBENT MODULE TEMP. °F	LAST IMPINGER OUTLET TEMP. °F	PUMP VACUUM in. Hg
METER BOX NO.		NUMBER OF PORTS		VELOCITY HEAD		ACTUAL DESIRED		INLET (T _{m_{in}}) °F OUTLET (T _{m_{out}}) °F								
CLOCK TIME	TRAVERSE POINT NUMBER	SAMPLING TIME (t) min.	STATIC PRESSURE (in. H ₂ O)	STACK TEMP (T _s) °F	(ΔP _s)	(√ ΔP _s)										
10:33	1	7.5	0.53	656	0.020		0.48	0.48	318.100	86	81	250			48	2
	2	7.5		657	0.020		0.48	0.48	321.43	92	82	252			43	2
10:48	3	15		658	0.025		0.60	0.60	324.72	96	84	252			45	3
	4	22.5		659	0.025		0.60	0.60	328.47	97	85	248			46	3
11:03	5	30		658	0.025		0.60	0.60	332.05	99	86	252			46	3
	6	37.5		658	0.020		0.48	0.48	335.70	99	87	249			48	2
11:18	7	45		658	0.025		0.60	0.60	339.06	100	88	254			50	3
	8	52.5		655	0.020		0.48	0.48	342.78	99	88	254			50	2
11:33	9	60		650	0.020		0.48	0.48	346.120	98	88	253			51	2
11:38	10	67.5		658	0.020		0.48	0.48	351.01	101	89	251			53	2
11:50	11	75		658	0.025		0.60	0.60	354.28	99	89	253			55	3
	12	82.5		657	0.025		0.60	0.60	357.93	100	89	252			55	3
12:05	13	90		658	0.025		0.60	0.60	361.62	100	89	253			55	3
	14	97.5		658	0.025		0.60	0.60	365.28	99	89	253			57	3
12:20	15	105		656	0.020		0.48	0.48	369.01	99	89	250			57	2
	16	112.5		652	0.020		0.48	0.48	372.55	99	89	253			58	2
12:35		120							375.702							

VOLUME OR WEIGHT OF LIQUID		IMPINGER VOLUME (ml) OR WEIGHT (g)				SILICA GEL WEIGHT
WATER COLLECTED		#1	#2	#3	#4	
FINAL						
INITIAL						
LIQUID COLLECTED						
TOTAL	COLLECTED (specify ml or g)					

ORSAT DATA	TIME	CO ₂	O ₂
TRIAL 1			
TRIAL 2			
TRIAL 3			
Average			

LEAK CHECK	
SYSTEM PRE:	CFM@15"Hg
POST:	CFM@15"Hg
PITOT PRE:	@ > 3"H ₂ O
POST:	@ > 3"H ₂ O

IMPINGER RECOVERY DATA SHEET



Company: Valero McKee
 Location: Sunnyvale, TX
 Source: SRU Exhaust
 Run No.: 075/207 Run 5

Date Set-up: 6-6-08
 Test Date: 6-6-08
 Date Recovered: 6-6-08
 USEPA Method: M51702-Run 5
 Corresponding Filter No: 32899
 Filter Container No: 32899

Measurement Method: Weight or Volume

Impinger No.	Impinger Contents	Initial wt/vol g/mL	Final wt/vol g/mL	Difference wt/vol g/mL	Sample Container No.
1	H ₂ O	719.5g	783.0	63.5g	
2	H ₂ O	690.5g	701.6	11.1g	
3	H ₂ O	694.7g	695.5	0.8g	
4	SG	777.6g	795.7	18.1g	
5	$V_{mi} =$	694.801	$TOTAL =$	93.5	
6	$V_{mf} =$	747.155			

PURGE ←

CEMS CALIBRATION DATA



Plant: Valero McKee Refinery
 Location: Sunray, Texas
 Source: No. 2 SRU Incinerator Exhaust
 Date: 6/6/2008
 Run Number: 6
 Start Time: 1330
 Stop Time: 1635

Plant Rep: Kevin Jeanes
 Team Leader: Dan Fitzgerald
 CEM Operator: Dan Fitzgerald

Analyzer Span Values (% or ppm)

CO	2000 ppm
CO ₂	18.00 %
O ₂	9.00 %
THC	ppm
NO _x	90.0 ppm
SO ₂	ppm

LINE TEMP = 275 °F
 CHANGE OF PORTS: 1500-1505

CALIBRATION ERROR - 0523 hrs					SYSTEM BIAS CHECK					Calibration Correction Factors
Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Time	Pretest: 1313 hrs 1639 hrs		System Response	System Response	Drift (% of Span)		
				Time	Time					
CO Zero	0	AAL17428	-2	0525	-2	1313	-2	1639	Co=	
CO Low		CO/N2								
CO Mid	1,000	EB0001619	993	0546	979	1320	979	1647	Cm=	
CO High	2,000	2,000 ppm	1998	0543						
CO ₂ Zero	0.00	AAL17428	0.07	0525	0.10	1313	0.10	1639	Co=	
CO ₂ Low		CO2/N2								
CO ₂ Mid	9.00	23.06%	9.28	0536	9.16	1317	9.12	1644	Cm=	
CO ₂ High	18.00	AAL11983	17.80	0534						
O ₂ Zero	0.00	AAL17428	0.01	0604	0.04	1326	0.01	1653	Co=	
O ₂ Low		O2/N2								
O ₂ Mid	4.50	EB0005305	4.60	0525	4.54	1313	4.49	1639	Cm=	
O ₂ High	9.00	24.90%	9.06	0523						
THC Zero									Co=	
THC Low										
THC Mid									Cm=	
THC High										
NO _x Zero	0.0	AAL17428	0.5	0525	0.7	1313	1.0	1639	Co=	
NO _x Low		NOx/N2								
NO _x Mid	45.0	EB0004890	45.7	0604	42.1	1326	42.6	1653	Cm=	
NO _x High	90.0	1,996 ppm	90.3	0602						
SO ₂ Zero									Co=	
SO ₂ Low										
SO ₂ Mid									Cm=	
SO ₂ High										

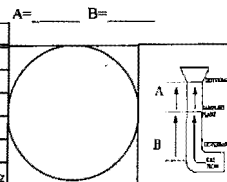


FIELD DATA

PLANT VALERO MCKEE AMBIENT TEMPERATURE 97°
DATE 06-06-08 BAROMETRIC PRESSURE 26.07
LOCATION SUNRAY TX ASSUMED MOISTURE, %
OPERATOR DAN S. D. R. R. R. PROBE LENGTH, in. 84"
STACK NO. SRU NO. 2 NOZZLE DIAMETER, in. .491
RUN NO. 8 STACK DIAMETER, in. 58.0"
SAMPLE BOX NO. 50280 MINUTES PER POINT 7.5
METER BOX NO. 1900 NUMBER OF POINTS 16
START TIME 1400 NUMBER OF PORTS 2

PROBE HEATER SETTING 250
HEATER BOX SETTING 250
METER H_{90} 1.620
 C_p FACTOR 0.84
 V_t FACTOR 1.008
PITOT/THERM # 82

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



SAMPLE BOX NO.		METER TEST POINT		CROSS SECTION												
METER BOX NO.		NUMBER OF POINTS		LAST IMPINGER												
START TIME		NUMBER OF PORTS		OUTLET TEMP.												
50280		16		PUMP												
1900		2		VACUUM												
CLOCK TIME	TRAVERSE POINT NUMBER	SAMPLING TIME (t) min.	STATIC PRESSURE (in. H ₂ O)	STACK TEMP (T _s) °F	VELOCITY HEAD		PRESSURE DIFFERENTIAL ACROSS ORIFICE METER (ΔH) in. H ₂ O		GAS SAMPLE VOLUME (V _m) ft ³	GAS SAMPLE TEMP AT DRY GAS METER		SAMPLE BOX TEMP. °F	COND. EXIT TEMP °F	SORBENT MODULE TEMP. °F	LAST IMPINGER OUTLET TEMP. °F	PUMP VACUUM in. Hg
					(ΔP _s)	(√ ΔP _s)	ACTUAL	DESIRED		INLET (T _{m_{in}}) °F	OUTLET (T _{m_{out}}) °F					
1400	E-1	0	58	648	0.020		0.48	0.48	376.000	90	90	249			51	2
	-2	7.5		654	0.020		0.48	0.48	379.38	94	90	250			48	2
1415	-3	15		657	0.020		0.48	0.48	382.81	98	91	251			50	2
	-4	22.5		656	0.020		0.48	0.48	386.04	100	93	253			52	2
1430	-5	30		656	0.025		0.60	0.60	389.31	102	94	250			53	3
	-6	37.5		656	0.025		0.60	0.60	393.06	103	94	253			53	3
1445	-7	45		656	0.026		0.48	0.48	396.79	103	95	250			55	2
	-8	52.5		656	0.020		0.48	0.48	400.15	103	95	252			55	2
1500	-9	60		656	0.020		0.48	0.48	403.49	103	96	249			55	2
	-10	67.5		655	0.020		0.48	0.48	405.60	103	96	248			55	2
1517	-11	75		657	0.025		0.60	0.60	409.98	103	96	251			55	3
	-12	82.5		656	0.025		0.60	0.60	414.08	104	96	252			54	3
1532	-13	90		655	0.025		0.60	0.60	417.81	104	96	247			56	3
	-14	97.5		654	0.025		0.60	0.60	421.52	104	96	251			56	3
1547	-15	105		653	0.020		0.48	0.48	425.31	104	97	249			57	2
	-16	112.5		650	0.020		0.48	0.48	428.82	104	97	253			57	2
1602		120							432.252							

VOLUME OR WEIGHT OF LIQUID		IMPINGER VOLUME (ml) OR WEIGHT (g)				SILICA GEL WEIGHT
WATER COLLECTED		#1	#2	#3	#4	
FINAL						
INITIAL						
LIQUID COLLECTED						
TOTAL	COLLECTED (specify ml or g)					

ORSAT DATA	TIME	CO ₂	O ₂
TRIAL 1			
TRIAL 2			
TRIAL 3			
Average			

LEAK CHECK	
SYSTEM PRE:	CFM@15"Hg
POST:	CFM@15"Hg
PITOT PRE:	@ > 3"H ₂ O
POST:	@ > 3"H ₂ O

IMPINGER RECOVERY DATA SHEET

Company:

Valeo McKee

Location:

Sunnyvale, TX

Source:

SRU Exhaust

Run No.:

MS/202 Run 6

Date Set-up:

6-6-06

Test Date:

6-6-06

Date Recovered:

6-6-06

USEPA Method:

5/202

Corresponding Filter No:

32900

Filter Container No:

32900Measurement Method: Weight or Volume

<u>Impinger No.</u>	<u>Impinger Contents</u>	<u>Initial wt/vol g/mL</u>	<u>Final wt/vol g/mL</u>	<u>Difference wt/vol g/mL</u>	<u>Sample Container No.</u>
1	<u>H₂O</u>	<u>705.5</u>	<u>791.8g</u>	<u>86.3 g</u>	
2	<u>H₂O</u>	<u>712.4</u>	<u>756.6g</u>	<u>24.2 g</u>	
3	<u>H₂O</u>	<u>693.5g</u>	<u>701.5g</u>	<u>8.0 g</u>	
4	<u>SG</u>	<u>818.0g</u>	<u>829.4</u>	<u>11.4 g</u>	
5	<u>U_{mi}</u>	<u>747.105</u>	<u>TOTAL =</u>	<u>129.9</u>	
6	<u>U_{mf}</u>	<u>792.415^{5/1}</u>			
		<u>792.415</u>			



Valero McKee Refinery: Sunray, TX
SRU No. 2 Incinerator: EPN V-16
Test Dates: 6/4 & 6/6/08

APPENDIX C

Laboratory Data

ANALYTICAL SUMMARY

CLIENT: Valero
LOCATION: McKee, TX
SOURCE: SRU Exhaust
SAMPLE DATE: 6/4 - 6/6/08
ANALYSIS: Particulates
METHOD: EPA Method 5/202

<u>Identification</u>		<u>Mass (g)</u>	<u>Tare</u>	<u>WT 1</u>	<u>WT 2</u>	<u>Particulate (mg)</u>	<u>Blank Corrected Particulate (mg)</u>	<u>Total M5 Particulate (mg)</u>
Run 1	FILTER	-	540.1	556.7	557.1	16.80		27.60
Run 2	FILTER	-	540.5	556.4	556.6	16.00		25.84
Run 3	FILTER	-	538.3	553.2	552.8	14.70		19.37
Run 4	FILTER	-	758.9	766.6	766.5	7.65		13.11
Run 5	FILTER	-	781.2	786.7	786.8	5.55		8.81
Run 6	FILTER	-	778.1	787.1	787.4	9.15		12.83
Run 1	PW	65.9	124006.8	124017.6	124018.0	11.00	10.80	
Run 2	PW	120.0	123222.1	123232.1	123232.5	10.20	9.84	
Run 3	PW	60.0	118469.0	118473.9	118473.8	4.85	4.67	
Run 4	PW	95.3	122025.9	122031.6	122031.7	5.75	5.46	
Run 5	PW	95.2	119539.2	119542.7	119542.8	3.55	3.26	
Run 6	PW	88.5	117542.2	117546.4	117545.9	3.95	3.68	
Blank	PW	132.9	120499.1	120499.5	120499.5	0.40		
Run 1	Organic	225	118409.4	118419.1	118419.2	9.75	9.60	
Run 2	Organic	225	123109.6	123110.5	123110.1	0.70	0.55	
Run 3	Organic	225	118603.5	118604.7	118604.4	1.05	0.90	
Run 4	Organic	225	119686.4	119687.4	119687.0	0.80	0.65	
Run 5	Organic	225	120798.4	120798.8	120798.9	0.45	0.30	
Run 6	Organic	225	119905.1	119906.0	119905.6	0.70	0.55	
Blank	Organic	225	113504.2	113504.2	113504.5	0.15		
Run 1	Inorganic	200	121433.5	121475.3	121475.8	42.05	41.55	
Run 2	Inorganic	200	121814.5	121837.1	121837.5	22.80	22.30	
Run 3	Inorganic	200	125227.2	125233.4	125232.9	5.95	5.45	
Run 4	Inorganic	200	126647.4	126694.4	126694.8	47.20	46.70	
Run 5	Inorganic	200	125799.6	125807.8	125808.8	8.70	8.20	
Run 6	Inorganic	200	120227.4	120253.4	120253.9	26.25	25.75	
Blank	Inorganic	200	124538.1	124538.5	124538.7	0.50		

Analyst: E. Vogt
 Date done: 6/26/08

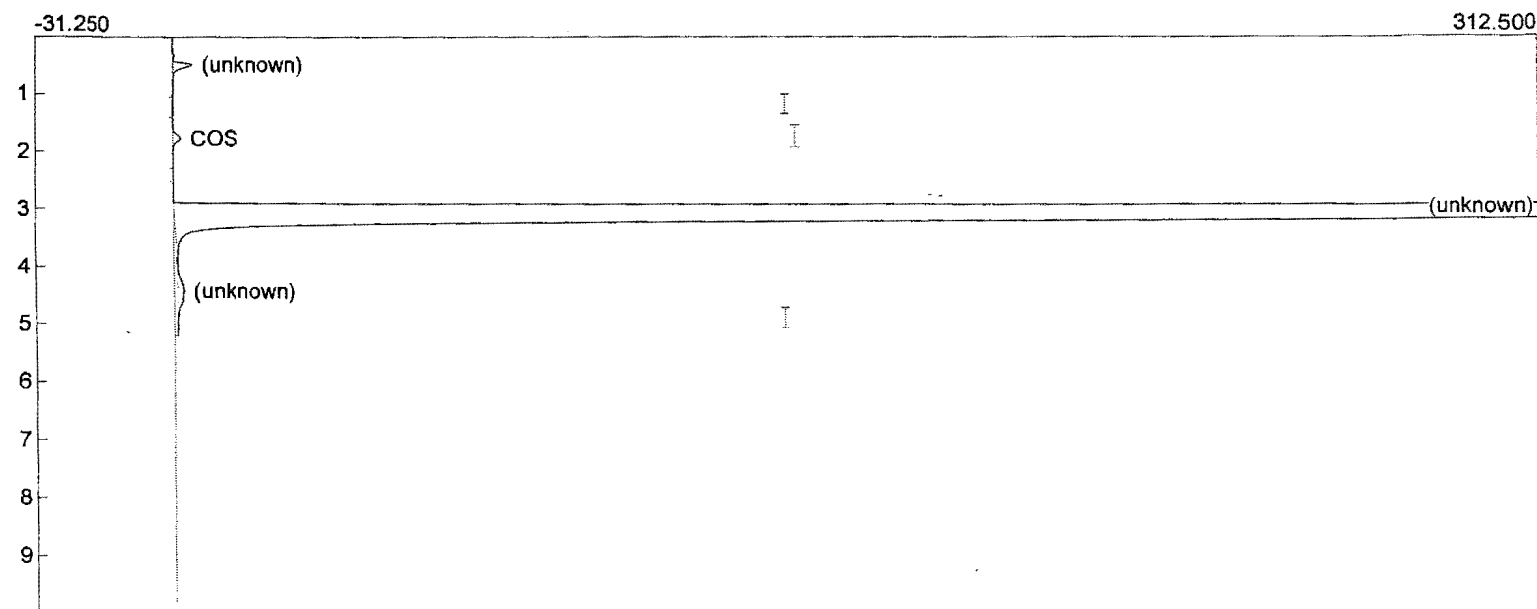
SUMMARY OF TOTAL REDUCED SULFUR COMPOUNDS

Company: Diamond Shamrock Refining Company, L.P. (A Valero Company)
Location: Sunray, Texas
Source: SRU No.2 Incinerator
Date: 6/4/2008
Run No.: 1

File Name	Date	Time	COS		H ₂ S		CS ₂		TRS	Injection
			Area (mV)	Conc (ppm v db)	Area (mV)	Conc (ppm v db)	Area (mV)	Conc (ppm v db)	Conc (ppm v db)	
valsrun01.CHR	6/4/2008	11:25:00	18.48	1.07	<0.05	<0.76	<5.50	<0.01	<1.80	1-1
valsrun02.CHR	6/4/2008	11:34:59	27.39	1.36	<0.05	<0.76	<5.50	<0.01	<2.09	1-2
valsrun03.CHR	6/4/2008	11:44:59	37.05	1.63	<0.05	<0.76	<5.50	<0.01	<2.36	1-3
valsrun04.CHR	6/4/2008	11:54:59	28.79	1.40	<0.05	<0.76	<5.50	<0.01	<2.13	1-4
valsrun05.CHR	6/4/2008	12:04:59	31.79	1.49	<0.05	<0.76	<5.50	<0.01	<2.22	1-5
valsrun06.CHR	6/4/2008	12:14:59	41.94	1.75	<0.05	<0.76	<5.50	<0.01	<2.48	1-6
valsrun07.CHR	6/4/2008	12:24:59	29.76	1.43	<0.05	<0.76	<5.50	<0.01	<2.16	1-7
valsrun08.CHR	6/4/2008	12:34:59	31.52	1.48	<0.05	<0.76	<5.50	<0.01	<2.21	1-8
valsrun09.CHR	6/4/2008	12:44:59	30.56	1.46	<0.05	<0.76	<5.50	<0.01	<2.18	1-9
valsrun10.CHR	6/4/2008	12:54:59	44.13	1.80	<0.05	<0.76	<5.50	<0.01	<2.53	1-10
valsrun11.CHR	6/4/2008	13:04:59	51.54	1.97	<0.05	<0.76	<5.50	<0.01	<2.70	1-11
valsrun12.CHR	6/4/2008	13:14:59	45.36	1.83	<0.05	<0.76	<5.50	<0.01	<2.56	1-12
valsrun13.CHR	6/4/2008	13:24:59	50.27	1.94	<0.05	<0.76	<5.50	<0.01	<2.67	1-13
valsrun14.CHR	6/4/2008	13:34:59	43.69	1.79	<0.05	<0.76	<5.50	<0.01	<2.52	1-14
valsrun15.CHR	6/4/2008	13:44:59	59.05	2.13	<0.05	<0.76	<5.50	<0.01	<2.86	1-15
valsrun17.CHR	6/4/2008	14:04:59	25.71	1.31	<0.05	<0.76	<5.50	<0.01	<2.04	1-17*
valsrun18.CHR	6/4/2008	14:14:59	40.09	1.71	<0.05	<0.76	<5.50	<0.01	<2.43	1-18
valsrun19.CHR	6/4/2008	14:24:59	26.95	1.35	<0.05	<0.76	<5.50	<0.01	<2.08	1-19
valsrun20.CHR	6/4/2008	14:34:59	20.29	1.14	<0.05	<0.76	<5.50	<0.01	<1.87	1-20
Average Values				1.62		<0.76		<0.01	<2.35	

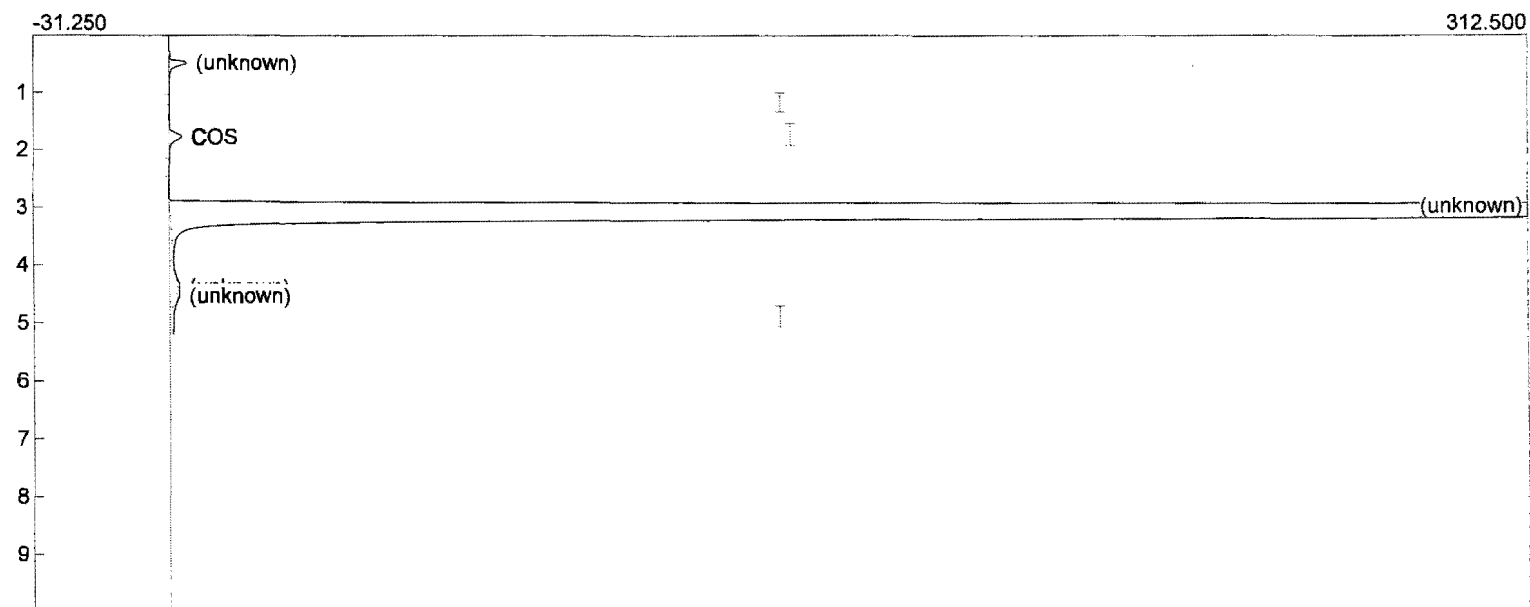
* Injection 1-16 discarded due to port change

Lab name: AKI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 11:25:00
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsrun01.CHR ()
 Sample: M15 Runs
 Operator: SY



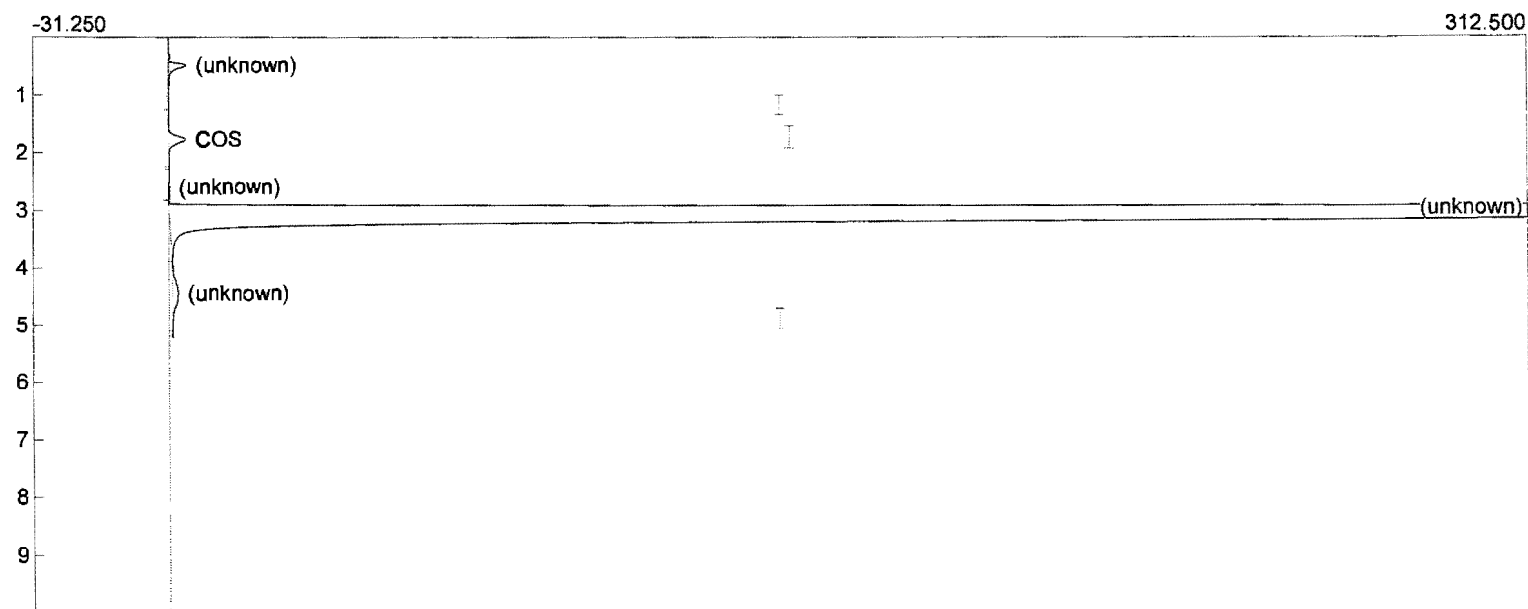
Component	Area
COS	18.4760
	18.4760

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 11:34:59
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruns02.CHR ()
Sample: M15 Runs
Operator: SY



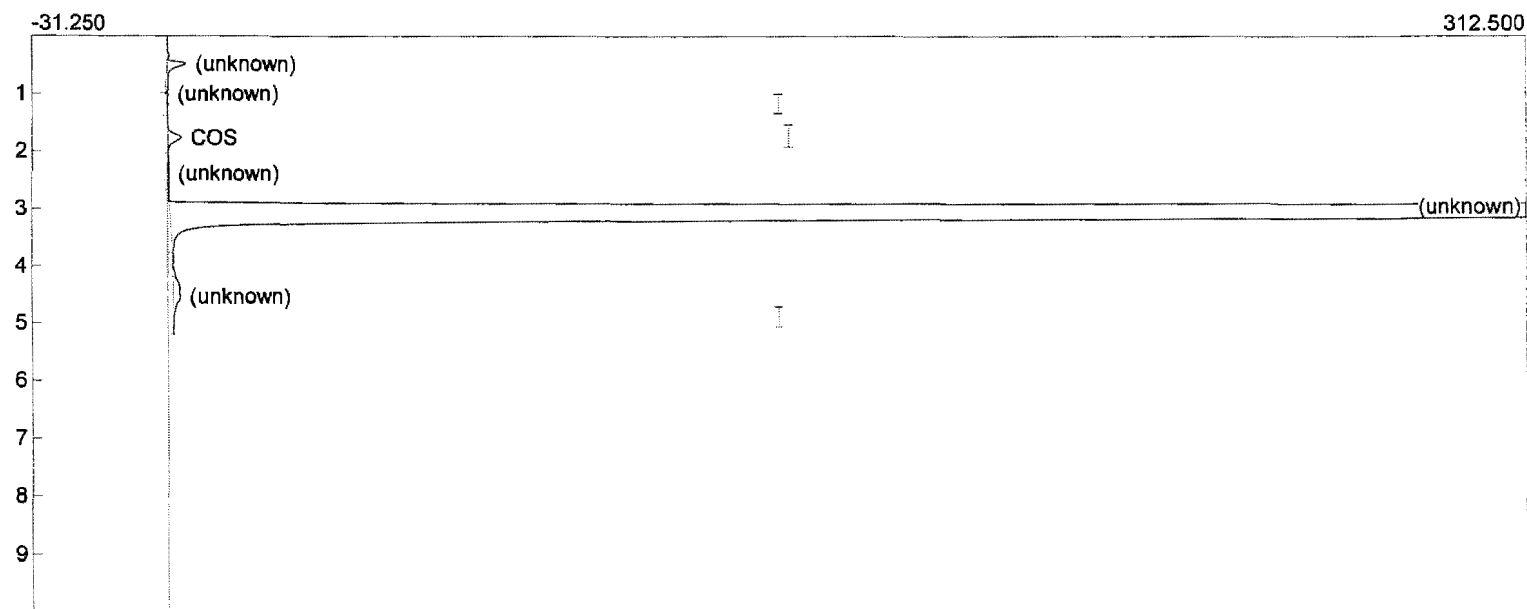
Component	Area
COS	27.3860
	27.3860

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 11:44:59
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsruns03.CHR ()
 Sample: M15 Runs
 Operator: SY



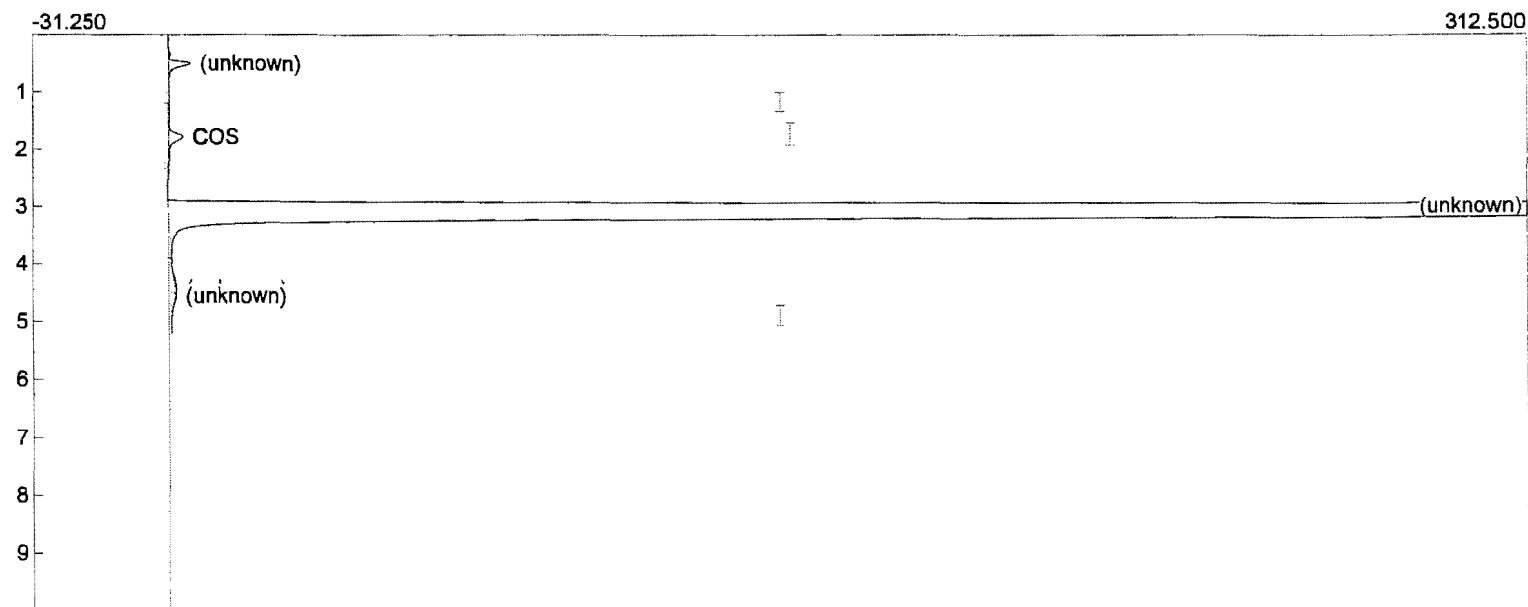
Component	Area
COS	37.0460
	37.0460

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 11:54:59
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsrun04.CHR ()
 Sample: M15 Runs
 Operator: SY



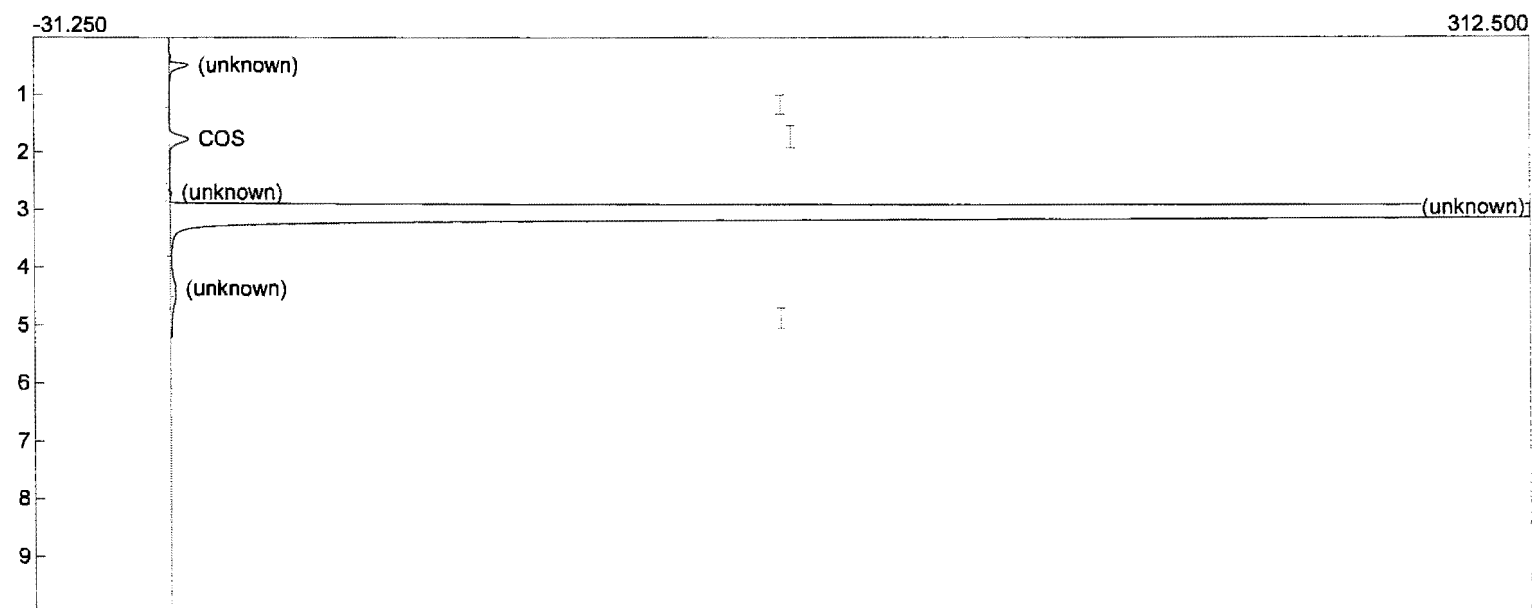
Component	Area
COS	28.7860
	28.7860

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 12:04:59
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruns05.CHR ()
Sample: M15 Runs
Operator: SY



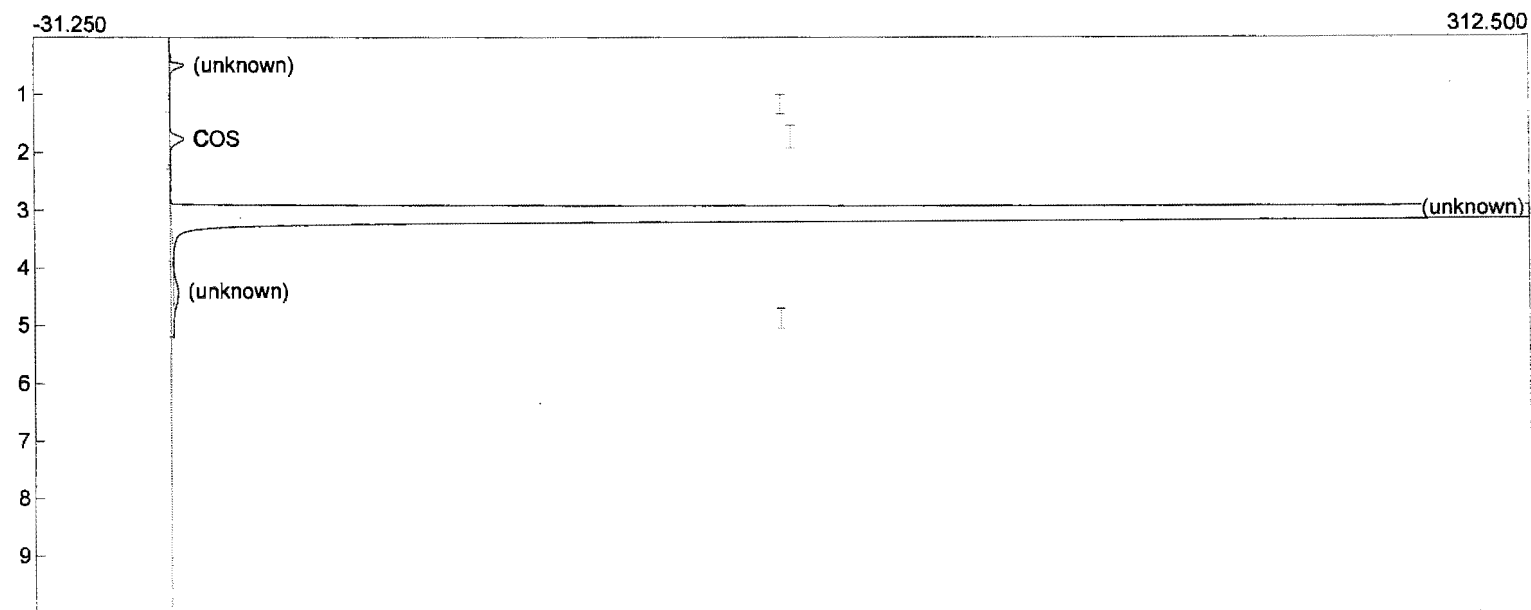
Component	Area
COS	31.7860
	31.7860

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 12:14:59
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruns06.CHR ()
Sample: M15 Runs
Operator: SY



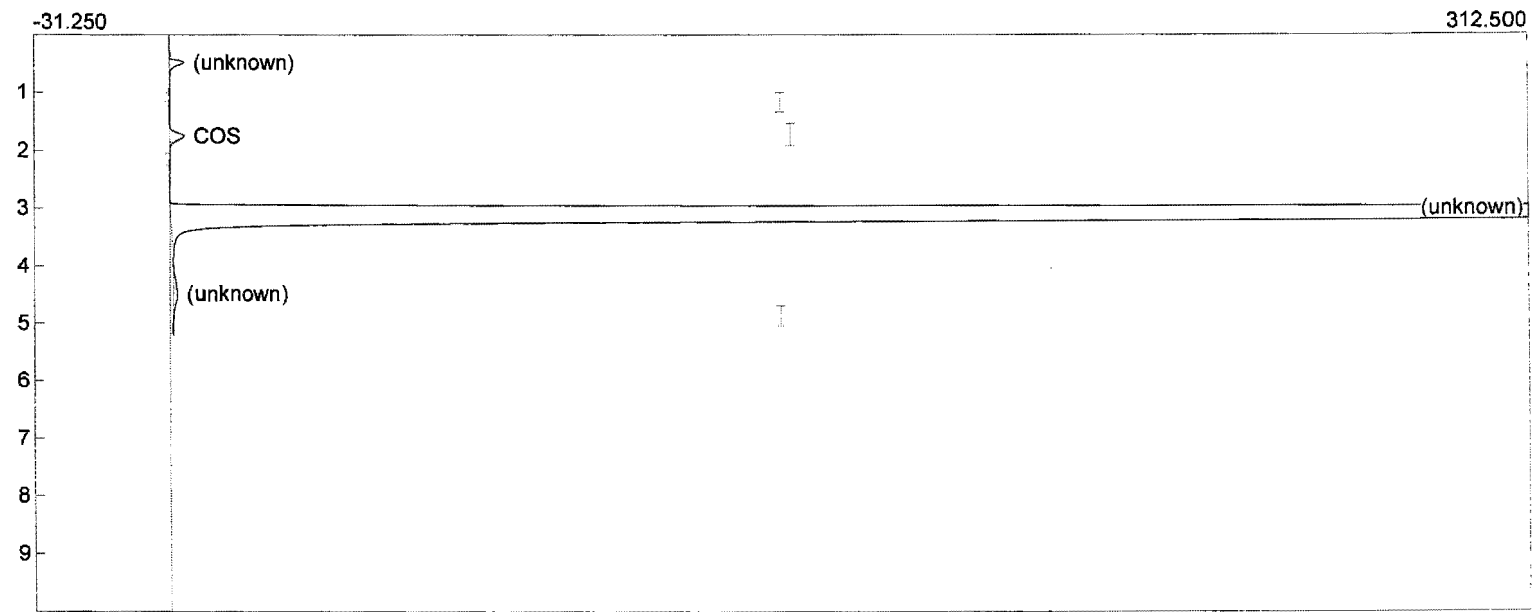
Component	Area
COS	41.9430
	41.9430

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 12:24:59
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsruns07.CHR ()
 Sample: M15 Runs
 Operator: SY



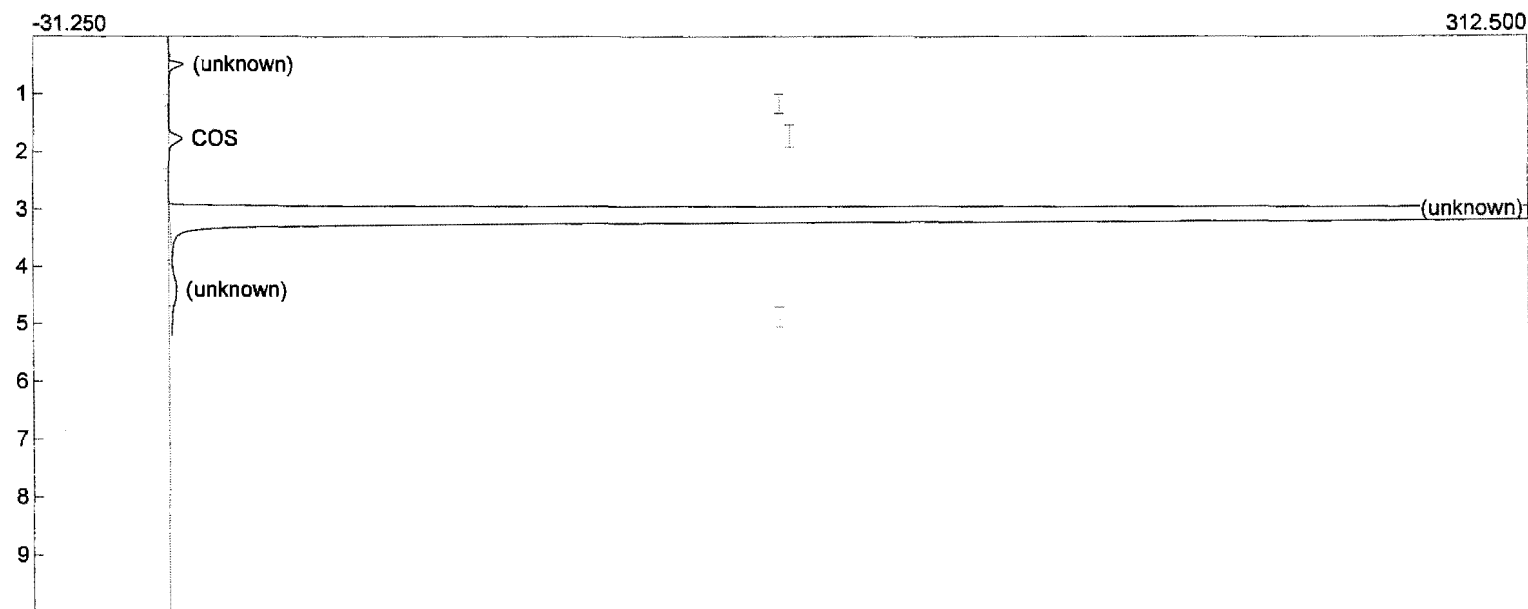
Component	Area
COS	29.7600
	29.7600

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 12:34:59
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruns08.CHR ()
Sample: M15 Runs
Operator: SY



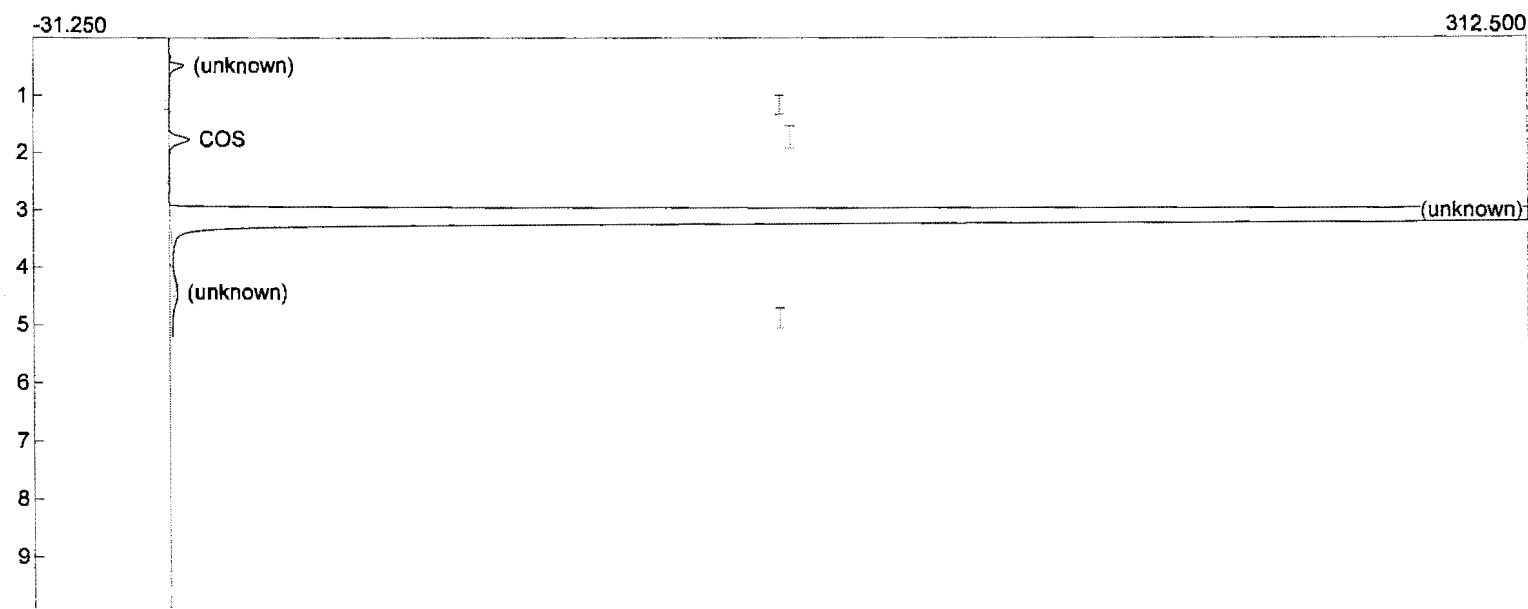
Component	Area
COS	31.5220
	31.5220

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 12:44:59
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrun09.CHR ()
Sample: M15 Runs
Operator: SY



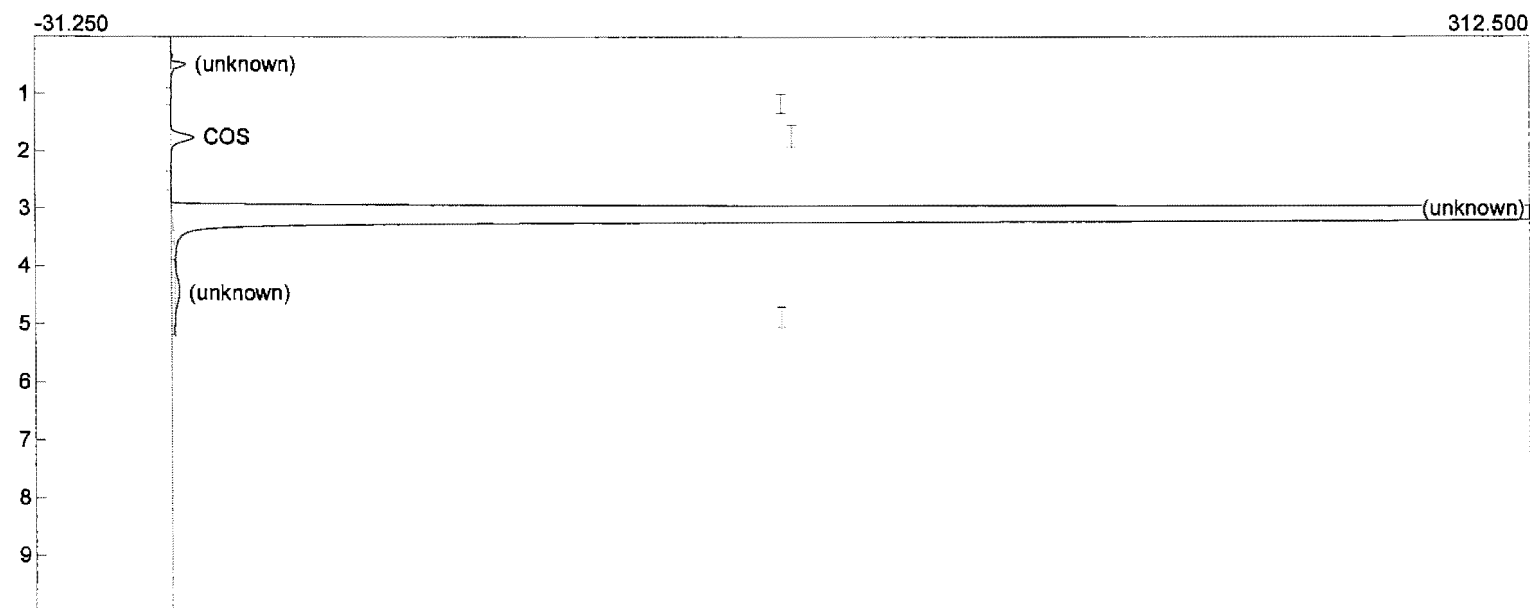
Component	Area
COS	30.5570
	30.5570

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 12:54:59
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsrun10.CHR ()
 Sample: M15 Runs
 Operator: SY



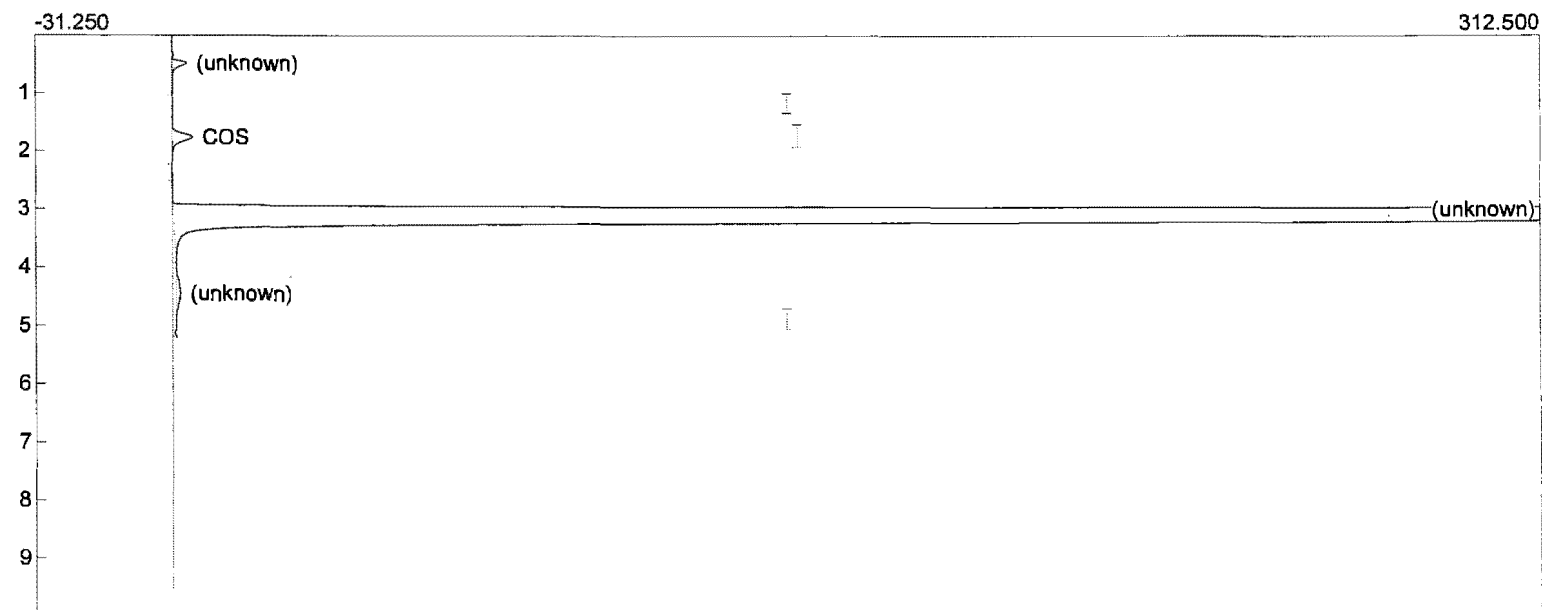
Component	Area
COS	44.1300
	44.1300

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 13:04:59
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsruruns11.CHR ()
 Sample: M15 Runs
 Operator: SY



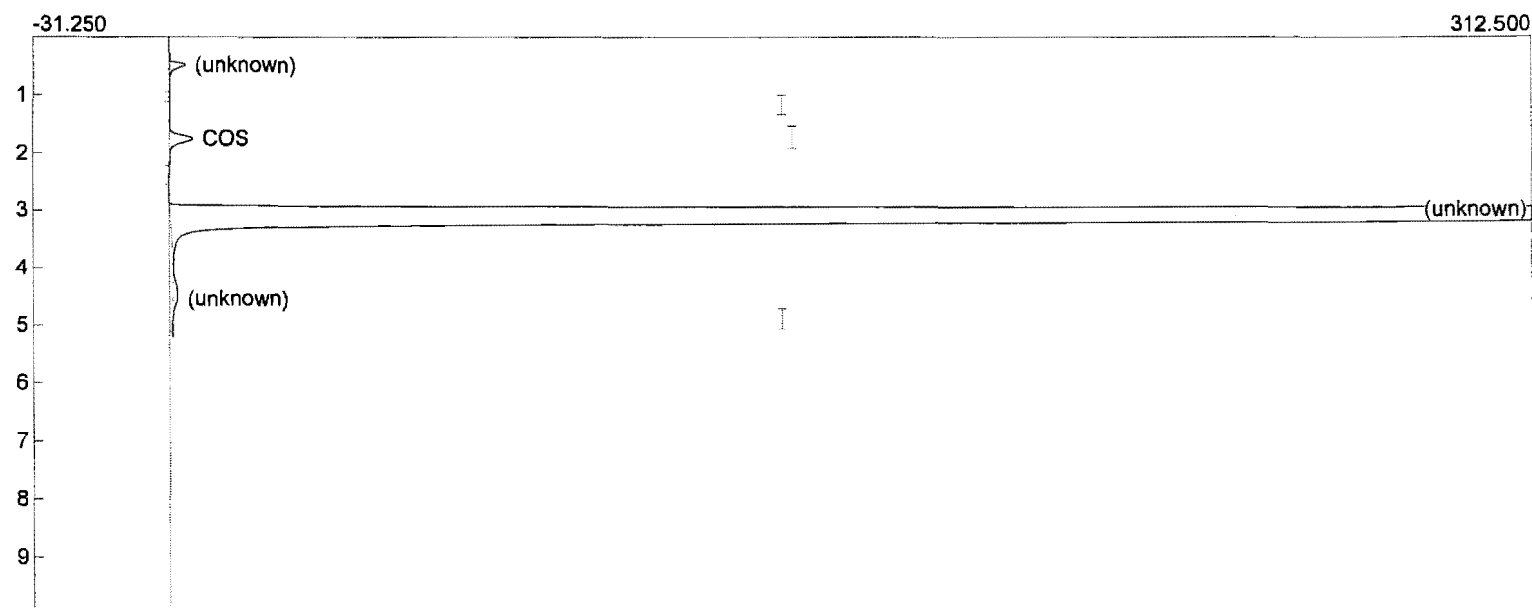
Component	Area
COS	51.5400
	51.5400

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 13:14:59
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsrun12.CHR ()
 Sample: M15 Runs
 Operator: SY



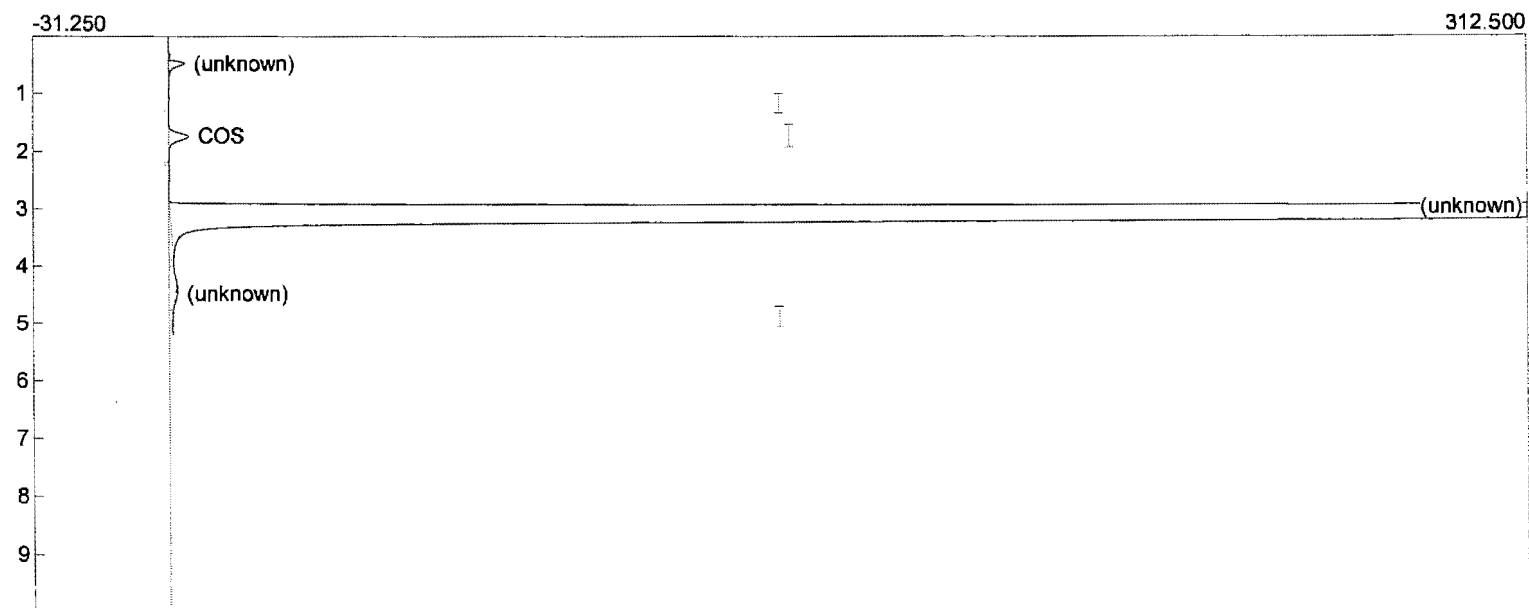
Component	Area
COS	45.3570
	45.3570

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 13:24:59
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsrun13.CHR ()
 Sample: M15 Runs
 Operator: SY



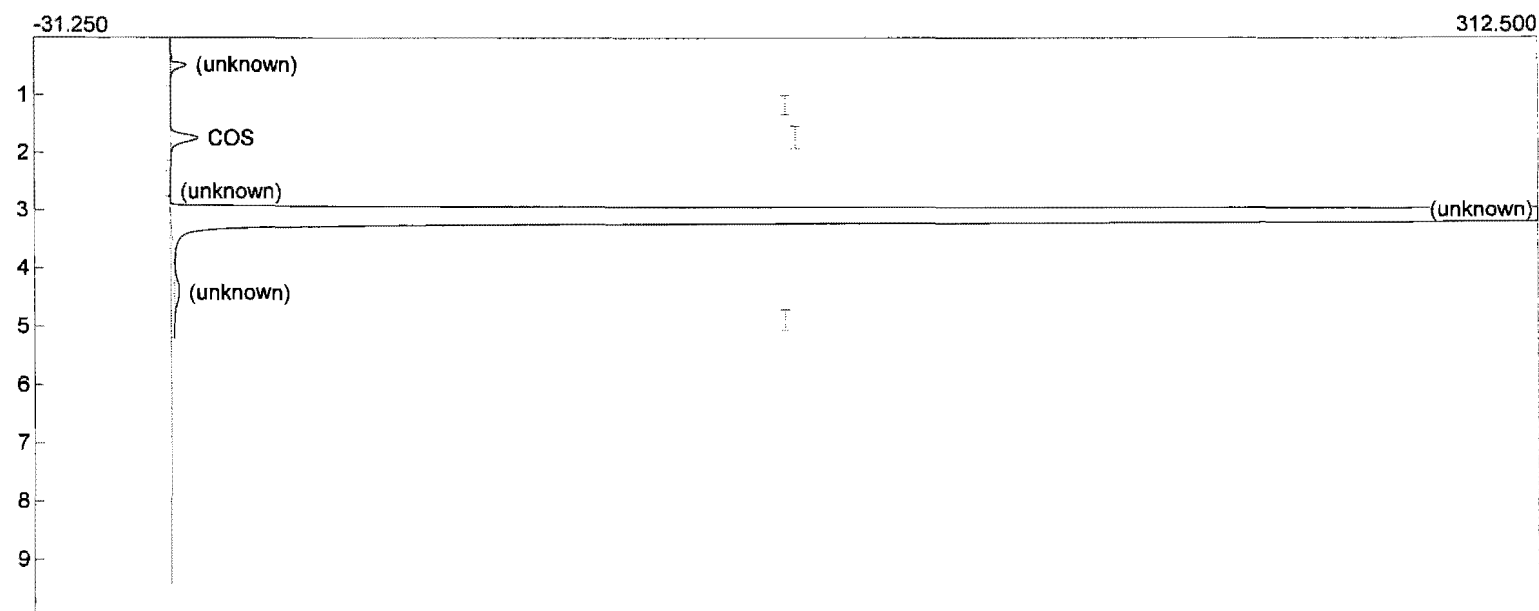
Component	Area
COS	50.2700
	50.2700

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 13:34:59
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsruns14.CHR ()
 Sample: M15 Runs
 Operator: SY



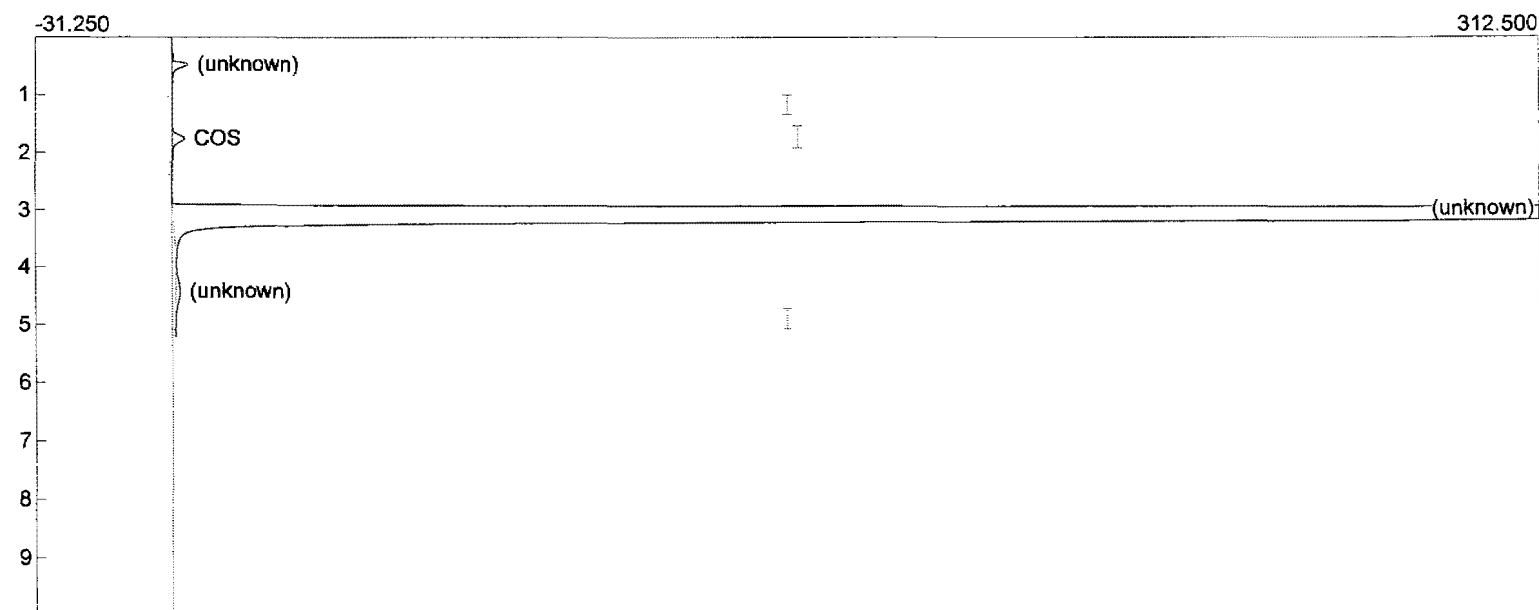
Component	Area
COS	43.6860
	43.6860

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 13:44:59
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsrun15.CHR ()
 Sample: M15 Runs
 Operator: SY



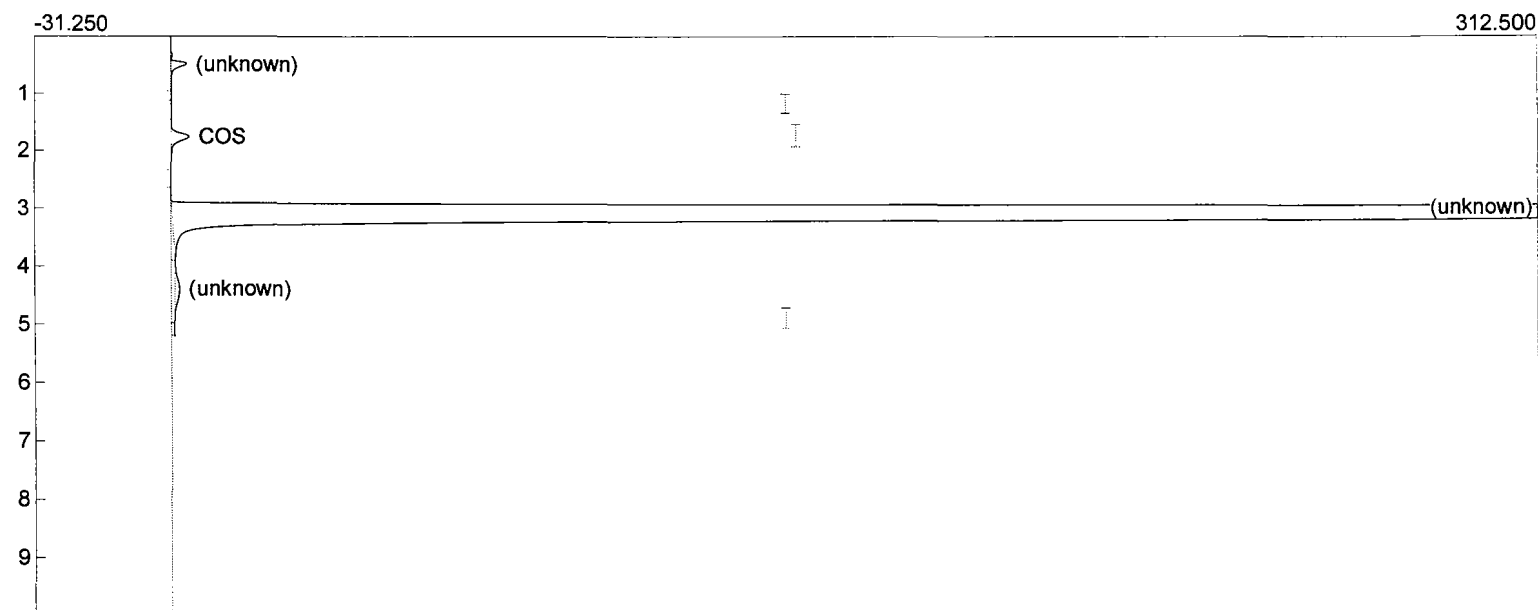
Component	Area
COS	59.0470
	59.0470

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 14:04:59
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrun17.CHR ()
Sample: M15 Runs
Operator: SY



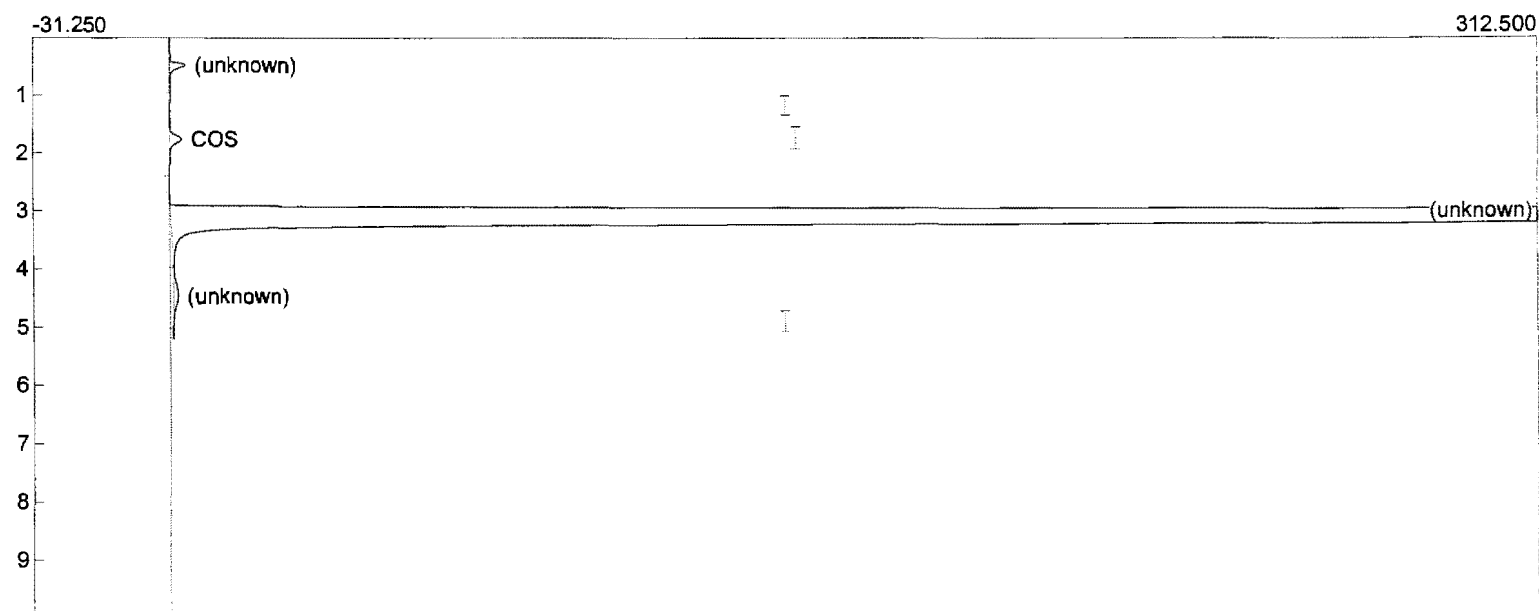
Component	Area
COS	25.7050
	25.7050

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 14:14:59
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsrun18.CHR ()
 Sample: M15 Runs
 Operator: SY



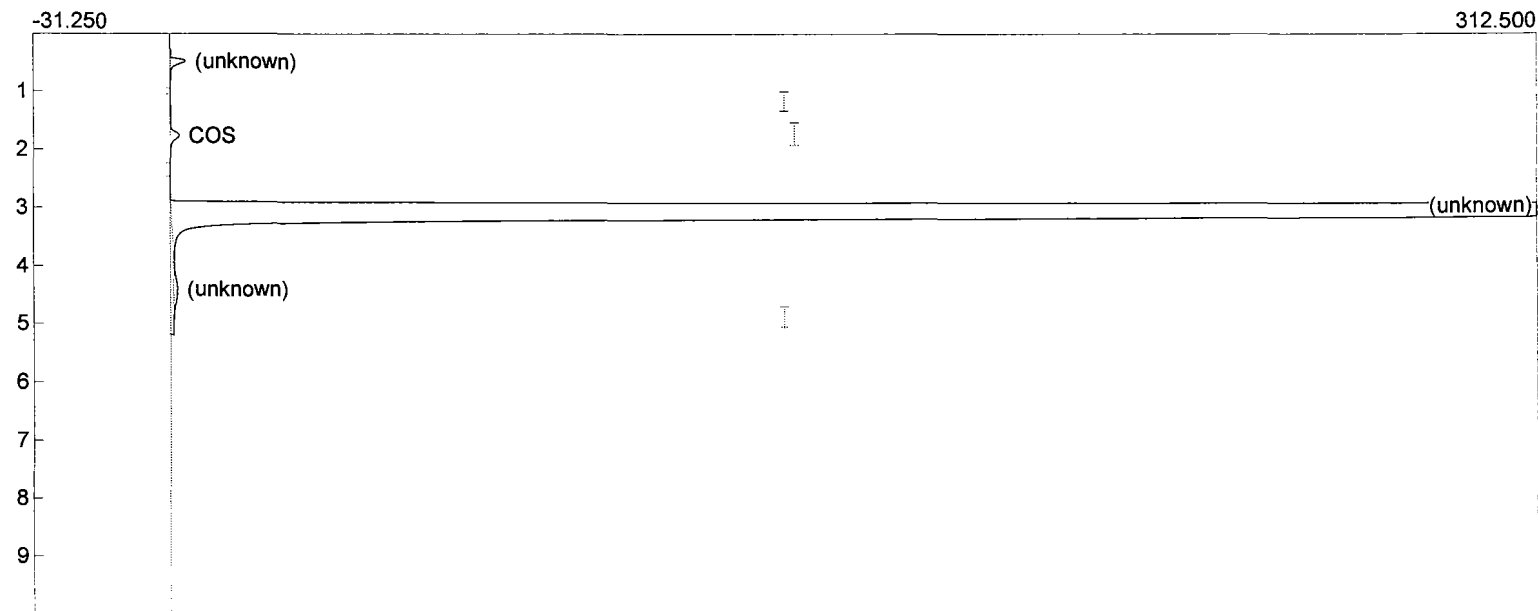
Component	Area
COS	40.0930
	40.0930

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 14:24:59
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruns19.CHR ()
Sample: M15 Runs
Operator: SY



Component	Area
COS	26.9530
	26.9530

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 14:34:59
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruns20.CHR ()
Sample: M15 Runs
Operator: SY



Component	Area
COS	20.2870
	20.2870

SUMMARY OF TOTAL REDUCED SULFUR COMPOUNDS

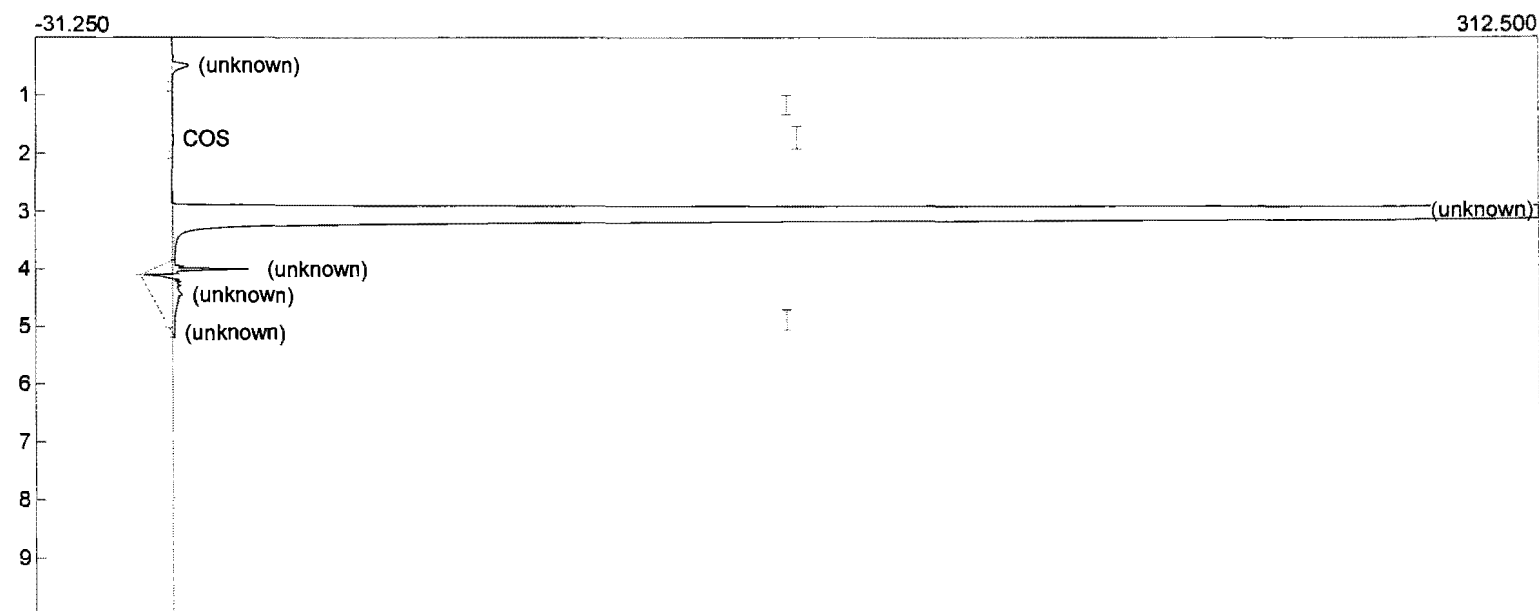
Company: Diamond Shamrock Refining Company, L.P. (A Valero Company)
Location: Sunray, Texas
Source: SRU No.2 Incinerator
Date: 6/4/2008
Run No.: 2

File Name	Date	Time	<u>COS</u>		<u>H₂S</u>		<u>CS₂</u>		<u>TRS</u>	Injection
			Area (mV)	Conc (ppm v db)	Area (mV)	Conc (ppm v db)	Area (mV)	Conc (ppm v db)	Conc (ppm v db)	
valsruns22.CHR	6/4/2008	15:30:46	2.45	0.22	<0.05	<0.76	<5.50	<-0.01	<0.95	2-1
valsruns23.CHR	6/4/2008	15:40:46	2.67	0.24	<0.05	<0.76	<5.50	<-0.01	<0.97	2-2
valsruns24.CHR	6/4/2008	15:50:46	4.44	0.39	<0.05	<0.76	<5.50	<-0.01	<1.12	2-3
valsruns25.CHR	6/4/2008	16:00:46	3.87	0.35	<0.05	<0.76	<5.50	<-0.01	<1.07	2-4
valsruns26.CHR	6/4/2008	16:10:46	4.47	0.39	<0.05	<0.76	<5.50	<-0.01	<1.12	2-5
valsruns27.CHR	6/4/2008	16:20:46	2.05	0.18	<0.05	<0.76	<5.50	<-0.01	<0.91	2-6
valsruns28.CHR	6/4/2008	16:30:46	5.40	0.46	<0.05	<0.76	<5.50	<-0.01	<1.19	2-7
valsruns29.CHR	6/4/2008	16:40:46	3.69	0.33	<0.05	<0.76	<5.50	<-0.01	<1.06	2-8
valsruns30.CHR	6/4/2008	16:50:46	4.18	0.37	<0.05	<0.76	<5.50	<-0.01	<1.10	2-9
valsruns32.CHR	6/4/2008	17:10:46	2.58	0.23	<0.05	<0.76	<5.50	<-0.01	<0.96	2-11*
valsruns33.CHR	6/4/2008	17:20:46	3.21	0.29	<0.05	<0.76	<5.50	<-0.01	<1.02	2-12
valsruns34.CHR	6/4/2008	17:30:46	<0.78	<0.01	<0.05	<0.76	<5.50	<-0.01	<0.74	2-13
valsruns35.CHR	6/4/2008	17:40:46	<0.78	<0.01	<0.05	<0.76	<5.50	<-0.01	<0.74	2-14
valsruns36.CHR	6/4/2008	17:50:46	1.79	0.15	<0.05	<0.76	<5.50	<-0.01	<0.88	2-15
valsruns37.CHR	6/4/2008	18:00:46	1.90	0.16	<0.05	<0.76	<5.50	<-0.01	<0.89	2-16
valsruns38.CHR	6/4/2008	18:10:46	0.88	0.02	<0.05	<0.76	<5.50	<-0.01	<0.75	2-17
valsruns39.CHR	6/4/2008	18:20:46	1.98	0.17	<0.05	<0.76	<5.50	<-0.01	<0.90	2-18
valsruns40.CHR	6/4/2008	18:30:46	2.43	0.22	<0.05	<0.76	<5.50	<-0.01	<0.95	2-19
Average Values				0.25		<0.76		<-0.01	<0.98	

* Injection 2-10 discarded due to double injection

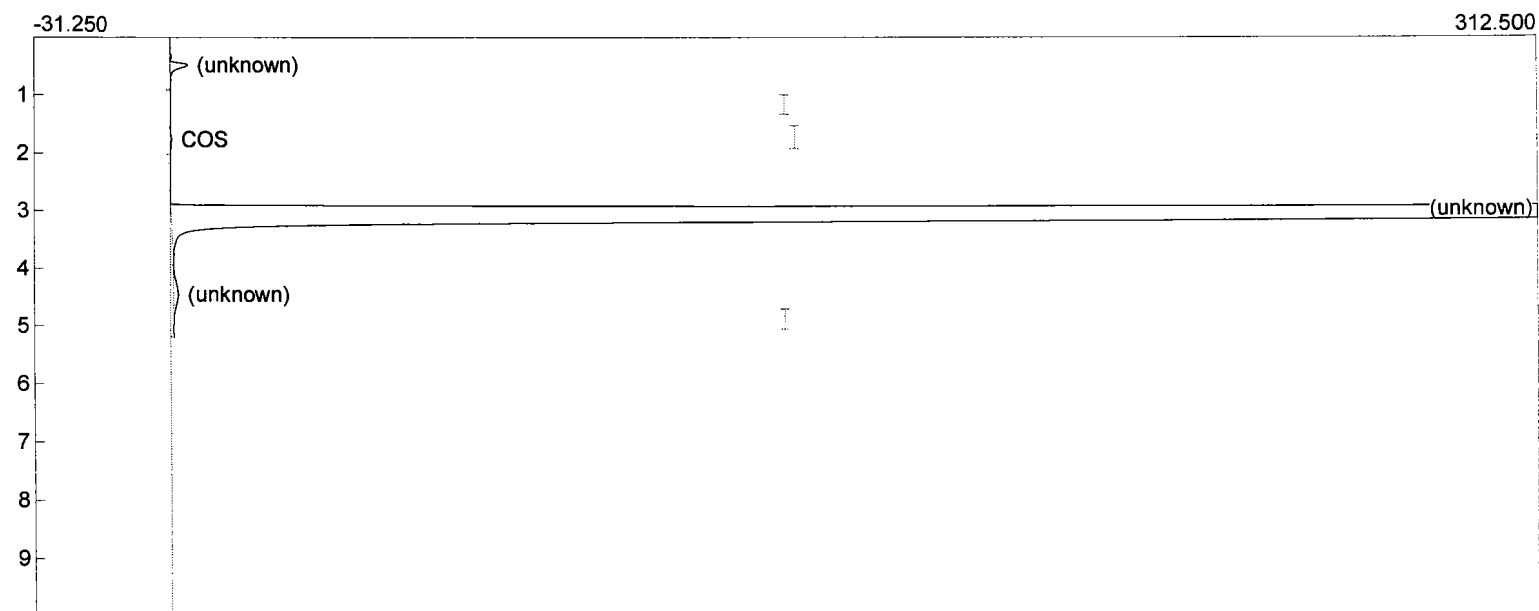
m 0.31 m 0.68 m 0.138

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 15:30:46
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsrun22.CHR ()
 Sample: M15 Runs
 Operator: SY



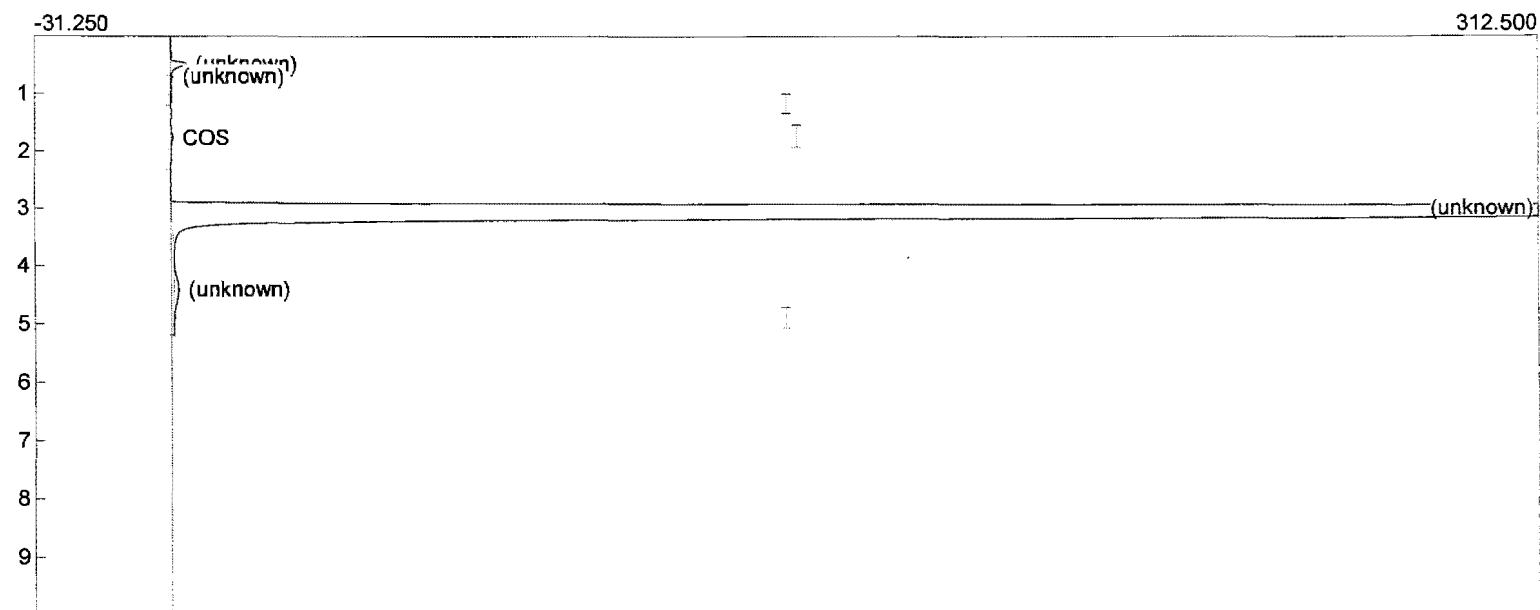
Component	Area
COS	2.4490
	2.4490

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 15:40:46
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsruns23.CHR ()
 Sample: M15 Runs
 Operator: SY



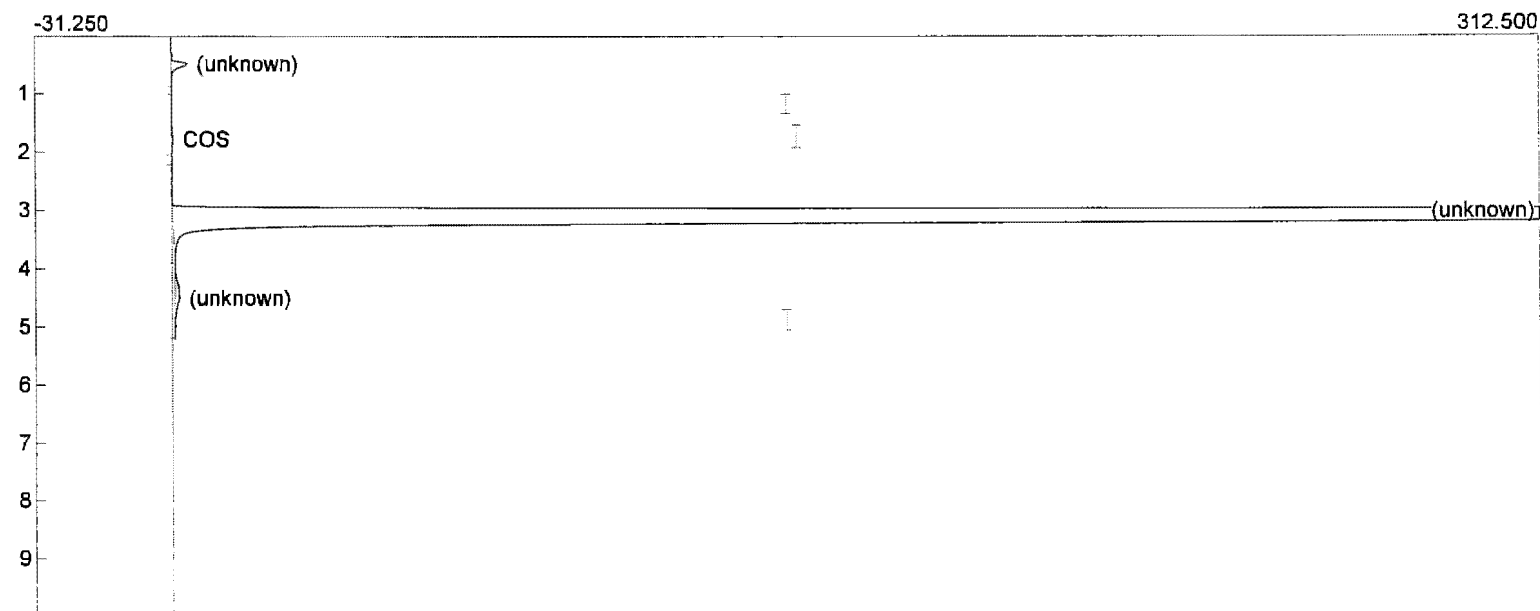
Component	Area
COS	2.6740
	2.6740

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 15:50:46
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrun24.CHR ()
Sample: M15 Runs
Operator: SY



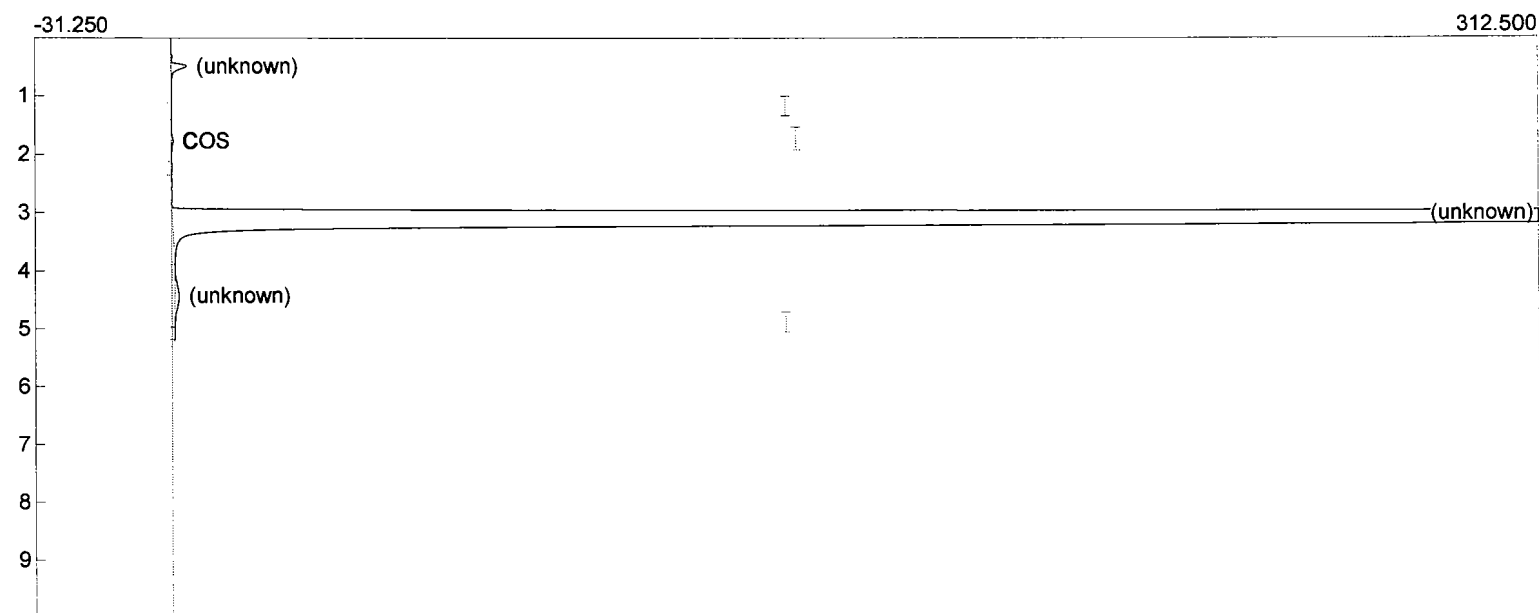
Component	Area
COS	4.4420
	4.4420

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 16:00:46
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsruns25.CHR ()
 Sample: M15 Runs
 Operator: SY



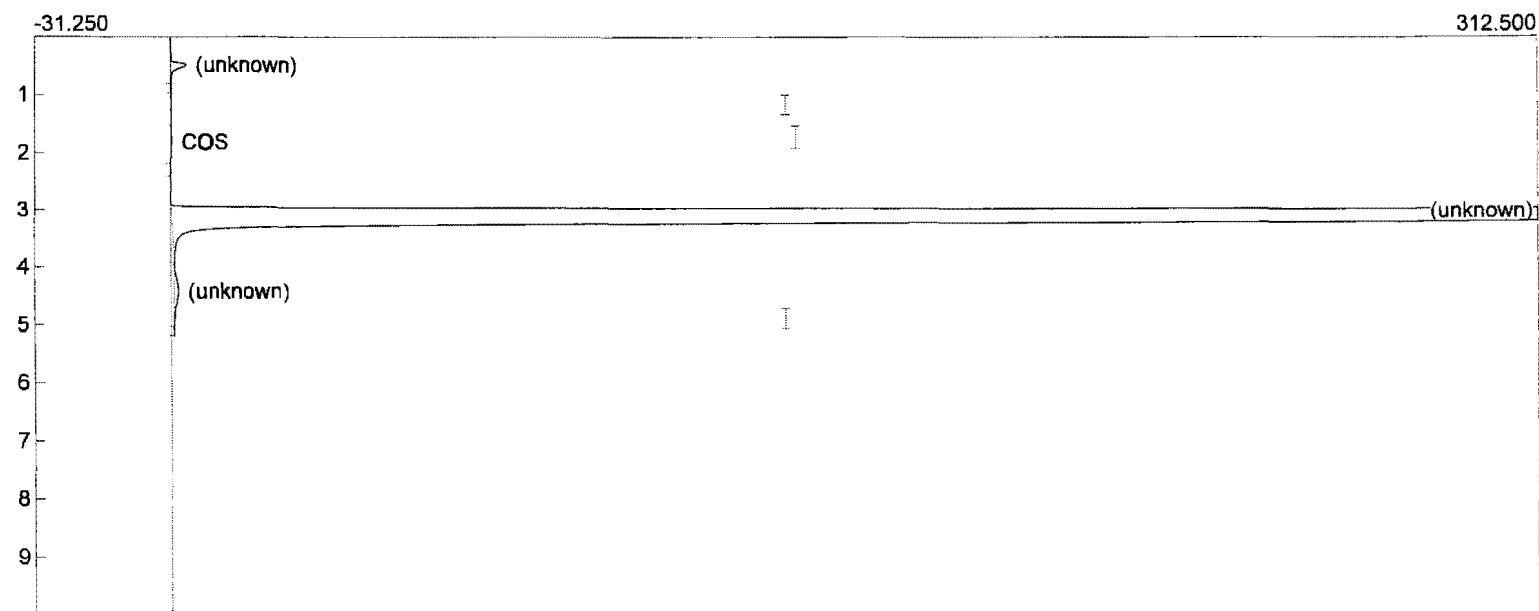
Component	Area
COS	3.8680
	3.8680

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 16:10:46
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrun26.CHR ()
Sample: M15 Runs
Operator: SY



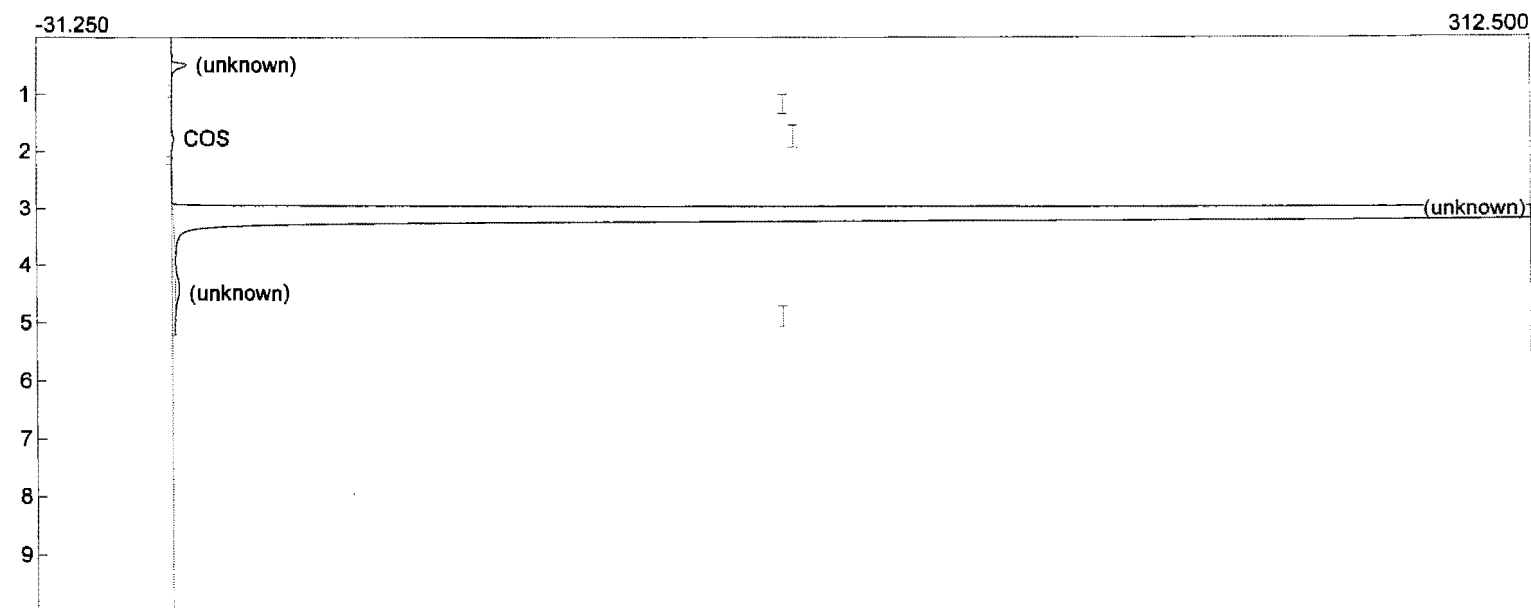
Component	Area
COS	4.4740
	4.4740

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 16:20:46
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsruns27.CHR ()
 Sample: M15 Runs
 Operator: SY



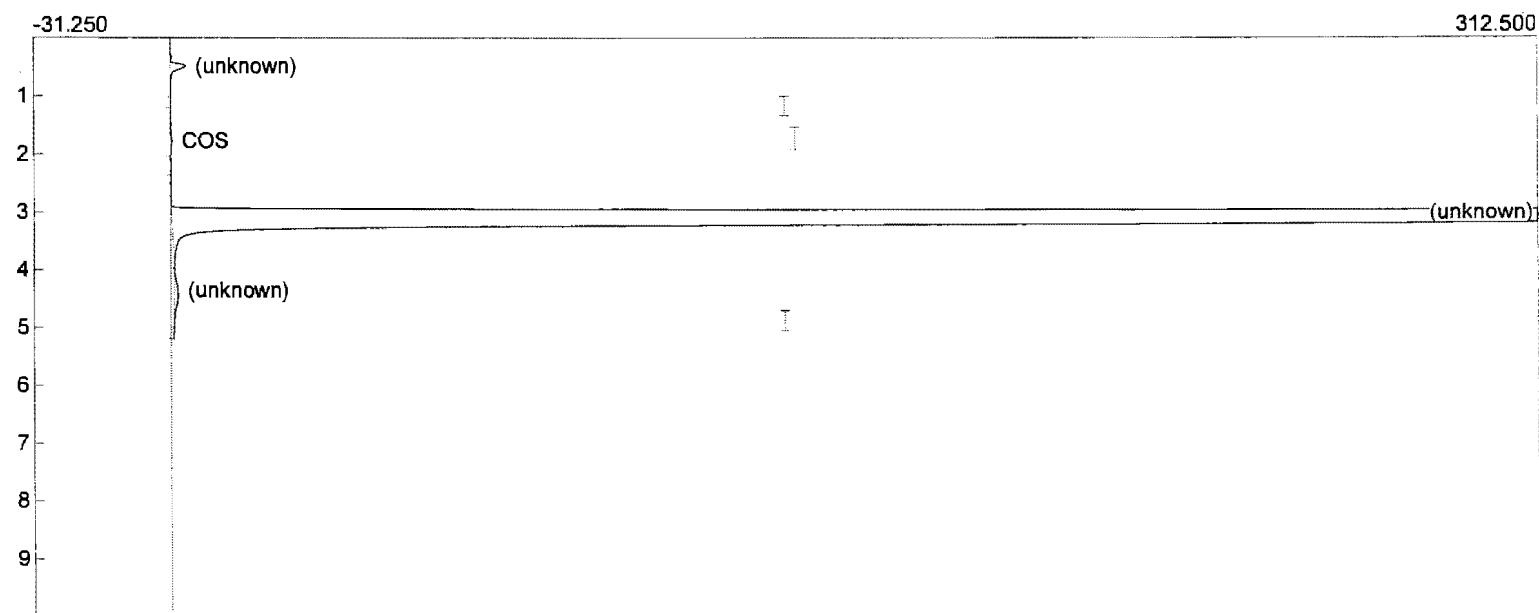
Component	Area
COS	2.0490
	2.0490

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 16:30:46
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsruns28.CHR ()
 Sample: M15 Runs
 Operator: SY



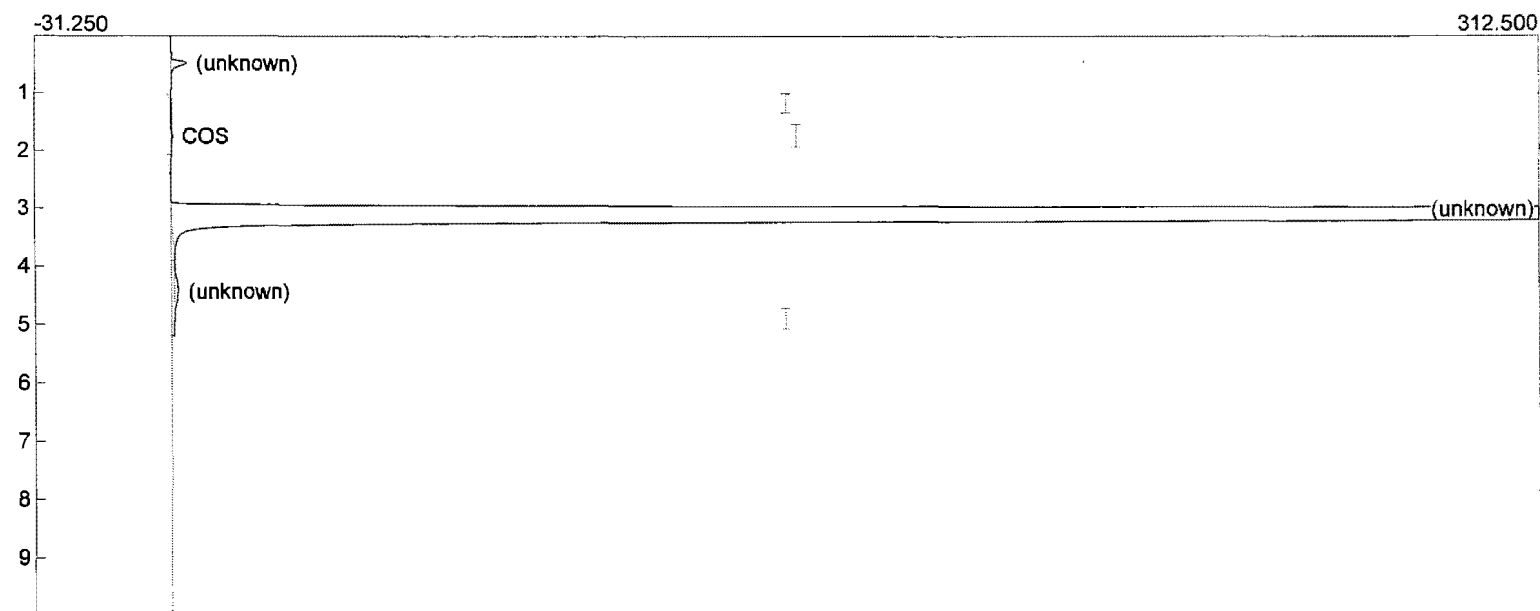
Component	Area
COS	5.4040
	5.4040

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 16:40:46
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruns29.CHR ()
Sample: M15 Runs
Operator: SY



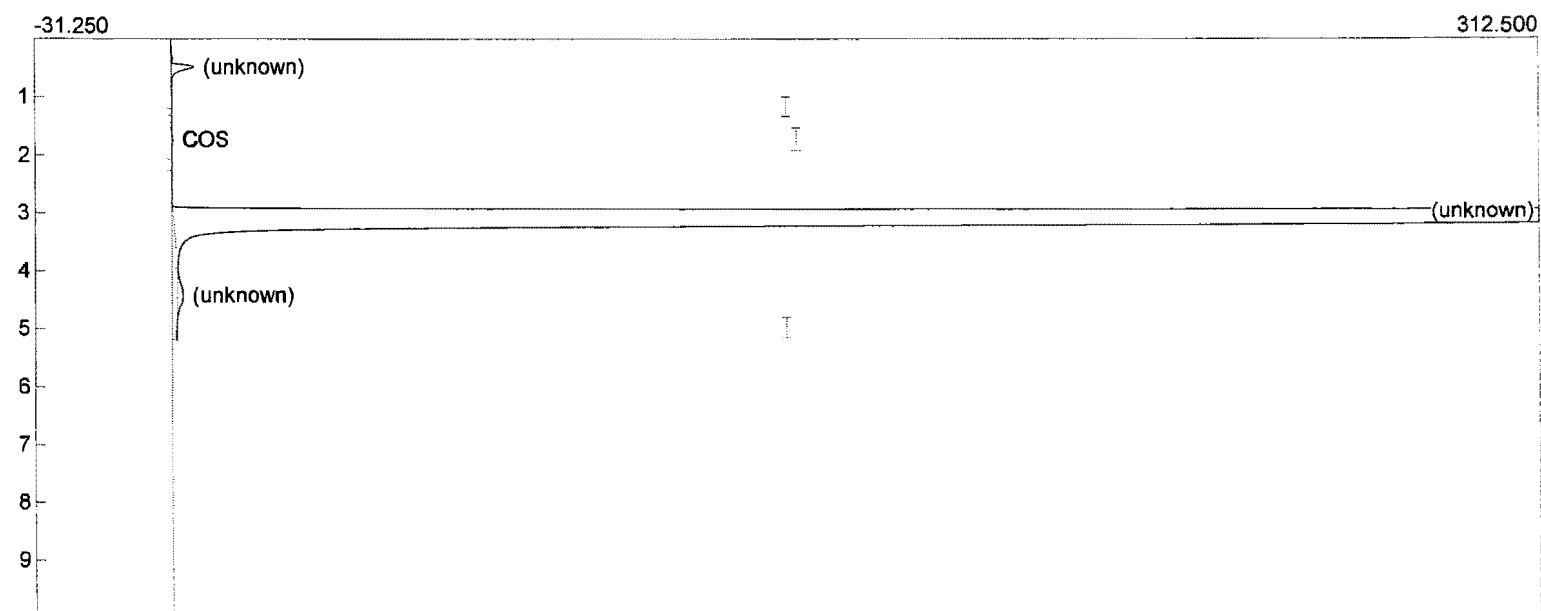
Component	Area
COS	3.6900
	3.6900

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 16:50:46
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrun30.CHR ()
Sample: M15 Runs
Operator: SY



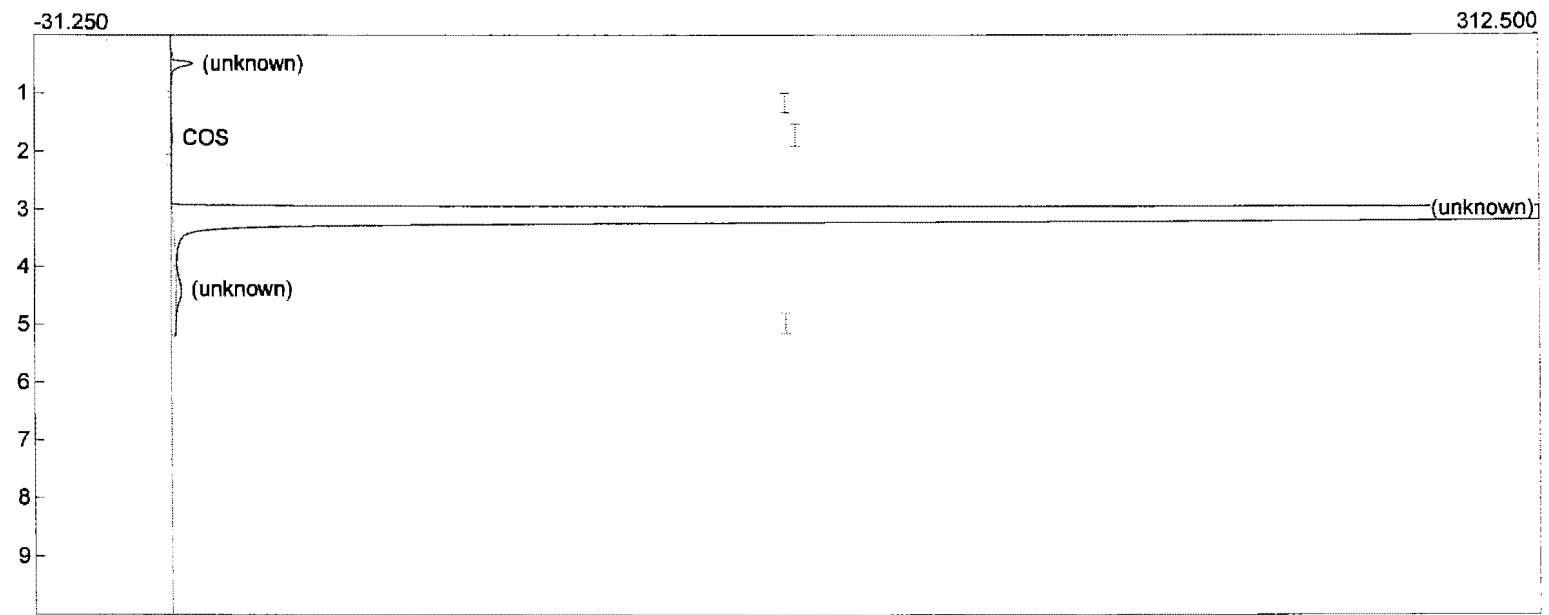
Component	Area
COS	4.1790
	4.1790

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 17:10:46
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruns32.CHR ()
Sample: M15 Runs
Operator: SY



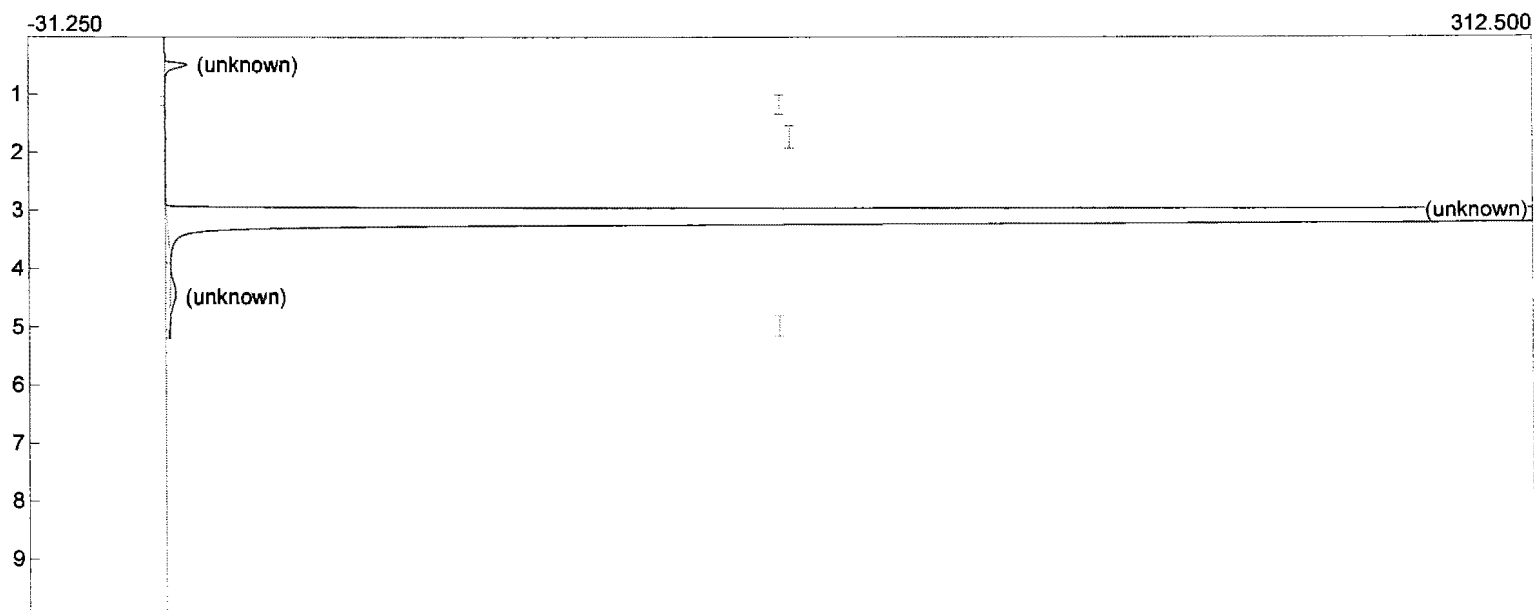
Component	Area
COS	2.5800
	2.5800

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 17:20:46
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsruns33.CHR ()
 Sample: M15 Runs
 Operator: SY



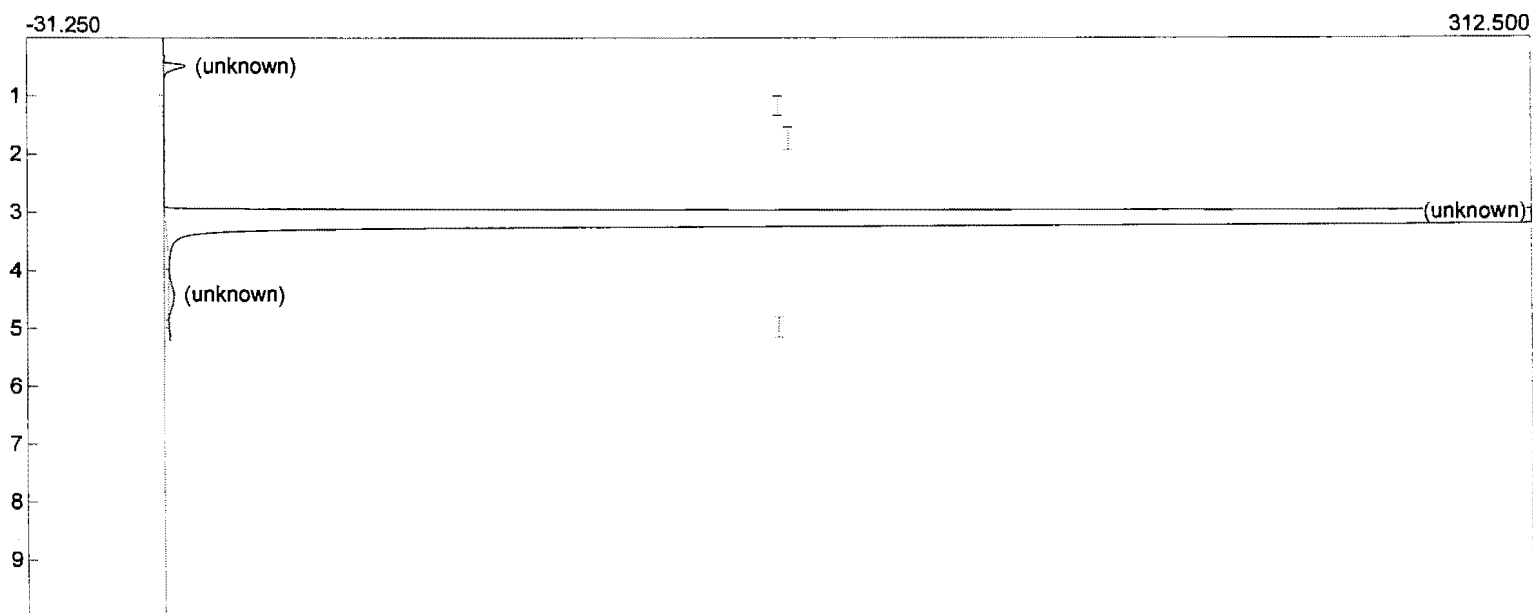
Component	Area
COS	3.2060
	3.2060

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 17:30:46
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruns34.CHR ()
Sample: M15 Runs
Operator: SY



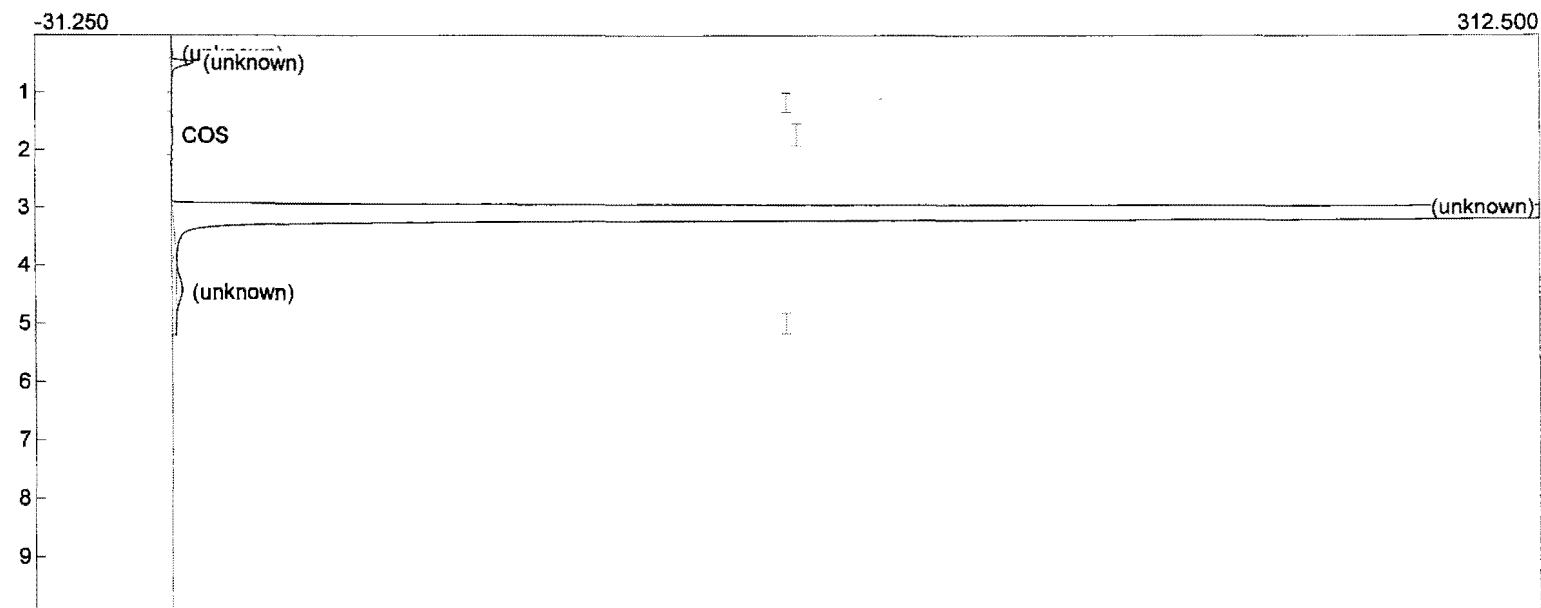
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 17:40:46
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrun35.CHR ()
Sample: M15 Runs
Operator: SY



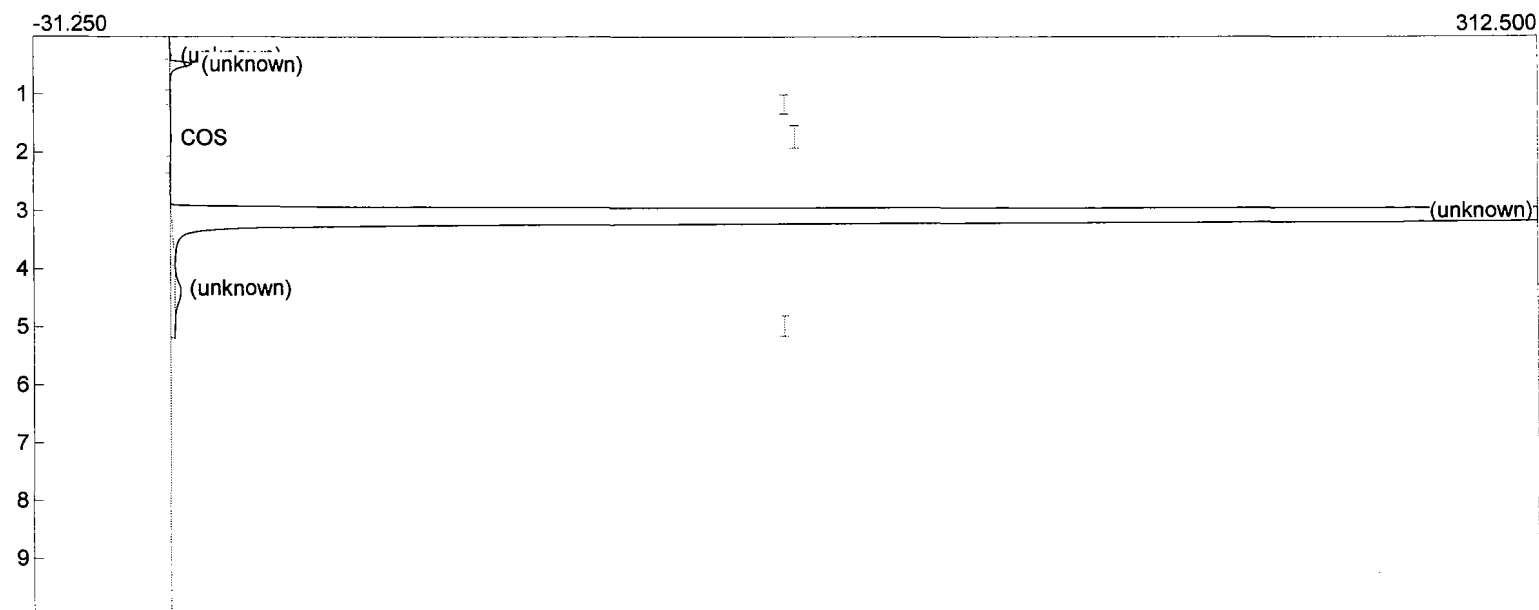
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 17:50:46
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsrun36.CHR ()
 Sample: M15 Runs
 Operator: SY



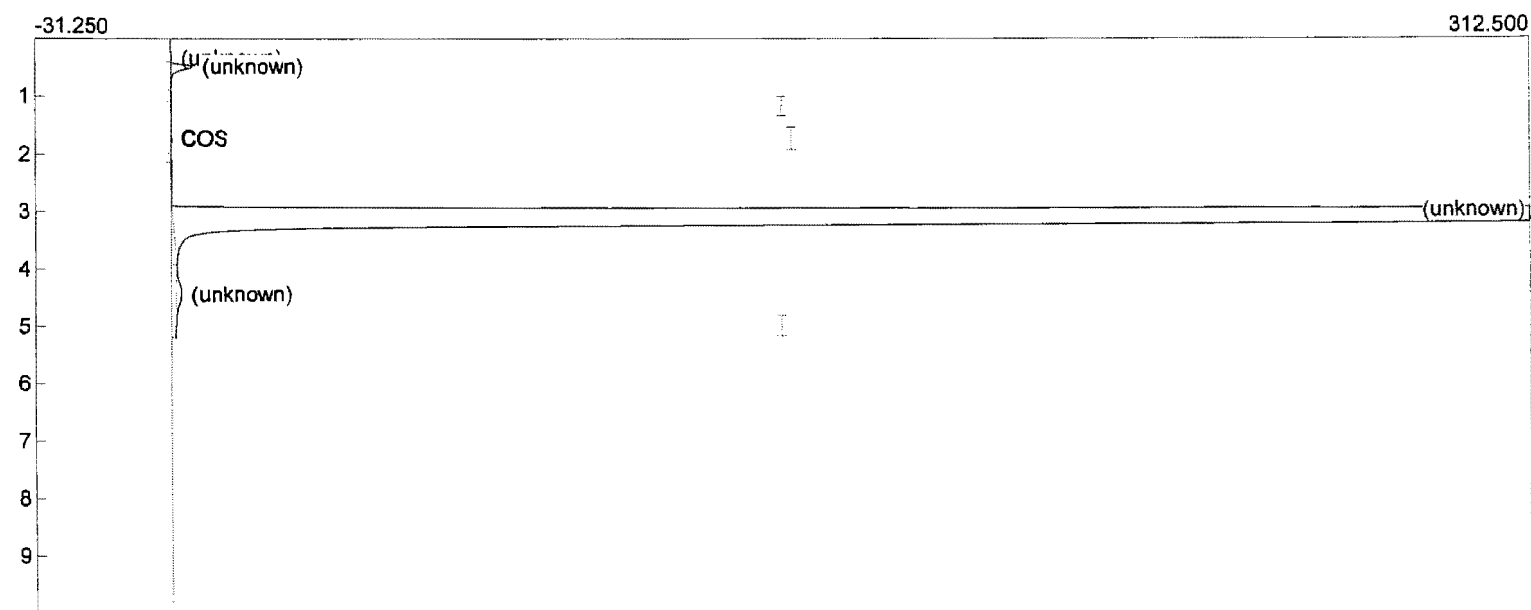
Component	Area
COS	1.7900
	1.7900

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 18:00:46
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsruns37.CHR ()
 Sample: M15 Runs
 Operator: SY



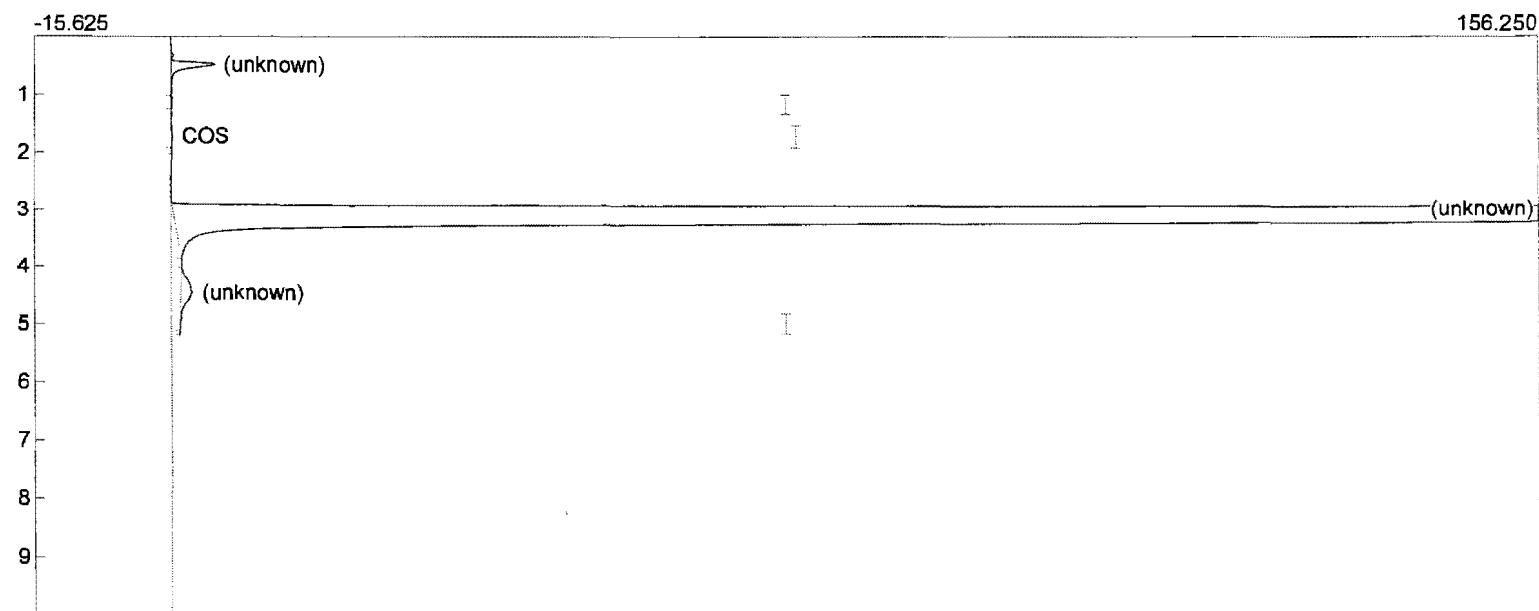
Component	Area
COS	1.8960
	1.8960

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 18:10:46
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsrun38.CHR ()
 Sample: M15 Runs
 Operator: SY



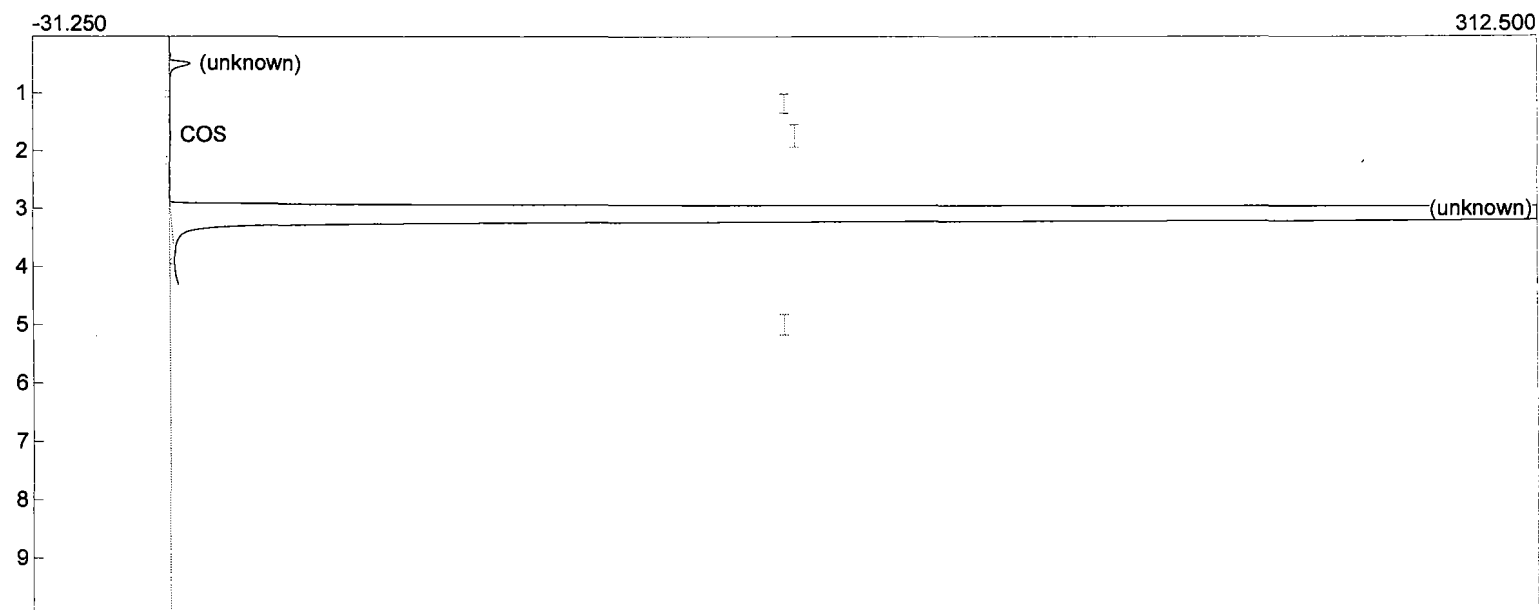
Component	Area
COS	0.8780
	0.8780

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 18:20:46
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruns39.CHR ()
Sample: M15 Runs
Operator: SY



Component	Area
COS	1.9770
	1.9770

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 18:30:46
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsrun40.CHR ()
 Sample: M15 Runs
 Operator: SY



Component	Area
COS	2.4260
	2.4260

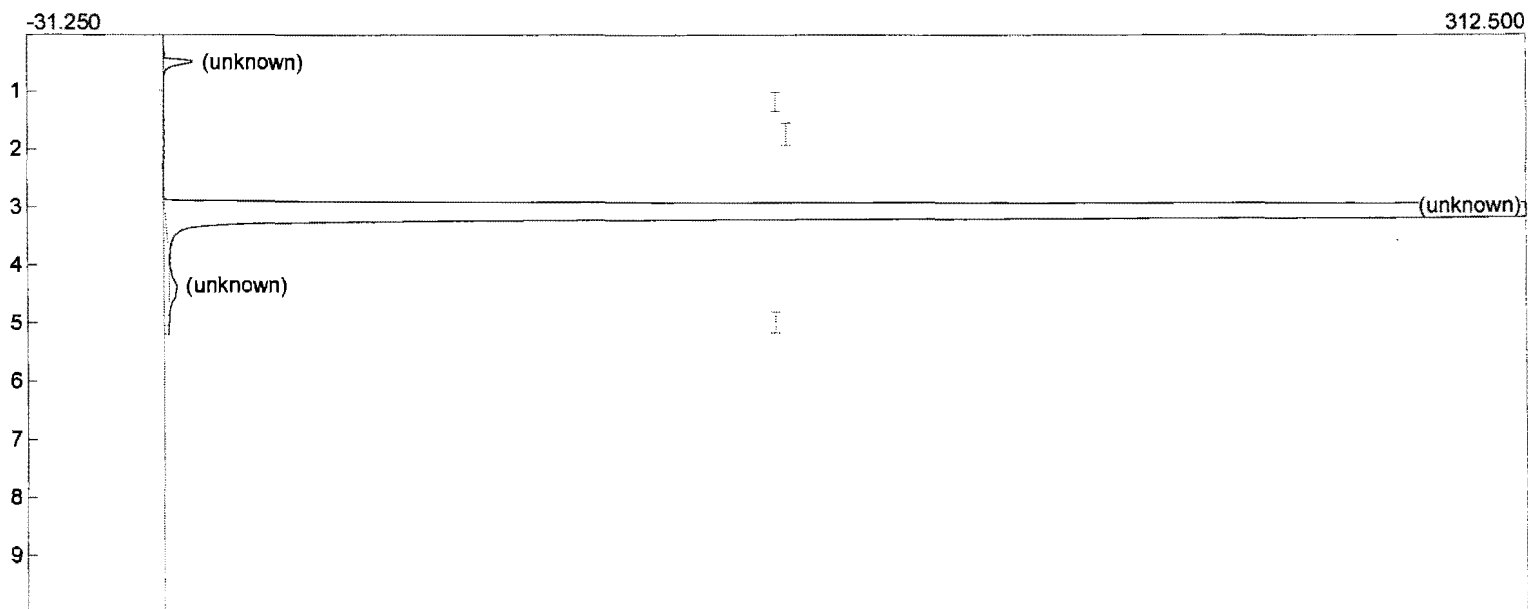
SUMMARY OF TOTAL REDUCED SULFUR COMPOUNDS



Company: Diamond Shamrock Refining Company, L.P. (A Valero Company)
Location: Sunray, Texas
Source: SRU No.2 Incinerator
Date: 6/4/2008
Run No.: 3

File Name	Date	Time	<u>COS</u>		<u>H₂S</u>		<u>CS₂</u>		<u>TRS</u>	Injection
			Area (mV)	Conc (ppm v db)	Area (mV)	Conc (ppm v db)	Area (mV)	Conc (ppm v db)	Conc (ppm v db)	
valsrun41.CHR	6/4/2008	18:52:46	<0.78	<0.01	<0.05	<0.76	<5.50	<0.01	<0.74	3-1
valsrun42.CHR	6/4/2008	19:02:46	1.52	0.12	<0.05	<0.76	<5.50	<0.01	<0.85	3-2
valsrun43.CHR	6/4/2008	19:12:45	2.31	0.21	<0.05	<0.76	<5.50	<0.01	<0.93	3-3
valsrun44.CHR	6/4/2008	19:22:45	<0.78	<0.01	<0.05	<0.76	<5.50	<0.01	<0.74	3-4
valsrun45.CHR	6/4/2008	19:32:45	<0.78	<0.01	<0.05	<0.76	<5.50	<0.01	<0.74	3-5
valsrun46.CHR	6/4/2008	19:42:45	2.55	0.23	<0.05	<0.76	<5.50	<0.01	<0.96	3-6
valsrun47.CHR	6/4/2008	19:52:45	<0.78	<0.01	<0.05	<0.76	<5.50	<0.01	<0.74	3-7
valsrun48.CHR	6/4/2008	20:02:45	2.12	0.19	<0.05	<0.76	<5.50	<0.01	<0.92	3-8
valsrun49.CHR	6/4/2008	20:12:45	<0.78	<0.01	<0.05	<0.76	<5.50	<0.01	<0.74	3-9
valsrun50.CHR	6/4/2008	20:22:45	1.88	0.16	<0.05	<0.76	<5.50	<0.01	<0.89	3-10
valsrun51.CHR	6/4/2008	20:32:45	<0.78	<0.01	<0.05	<0.76	<5.50	<0.01	<0.74	3-11
valsrun52.CHR	6/4/2008	20:42:45	<0.78	<0.01	<0.05	<0.76	<5.50	<0.01	<0.74	3-12
valsrun53.CHR	6/4/2008	20:52:45	<0.78	<0.01	<0.05	<0.76	<5.50	<0.01	<0.74	3-13
valsrun54.CHR	6/4/2008	21:02:45	<0.78	<0.01	<0.05	<0.76	<5.50	<0.01	<0.74	3-14
valsrun55.CHR	6/4/2008	21:12:45	<0.78	<0.01	<0.05	<0.76	<5.50	<0.01	<0.74	3-15
valsrun56.CHR	6/4/2008	21:22:45	<0.78	<0.01	<0.05	<0.76	<5.50	<0.01	<0.74	3-16
valsrun57.CHR	6/4/2008	21:32:45	<0.78	<0.01	<0.05	<0.76	<5.50	<0.01	<0.74	3-17
valsrun58.CHR	6/4/2008	21:42:45	<0.78	<0.01	<0.05	<0.76	<5.50	<0.01	<0.74	3-18
valsrun59.CHR	6/4/2008	21:52:45	1.96	0.17	<0.05	<0.76	<5.50	<0.01	<0.90	3-19
Average Values				0.06		<0.76		<0.01	<0.79	
			m	0.31	m	0.68	m	0.138		

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 18:52:46
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruns41.CHR ()
Sample: M15 Runs
Operator: SY

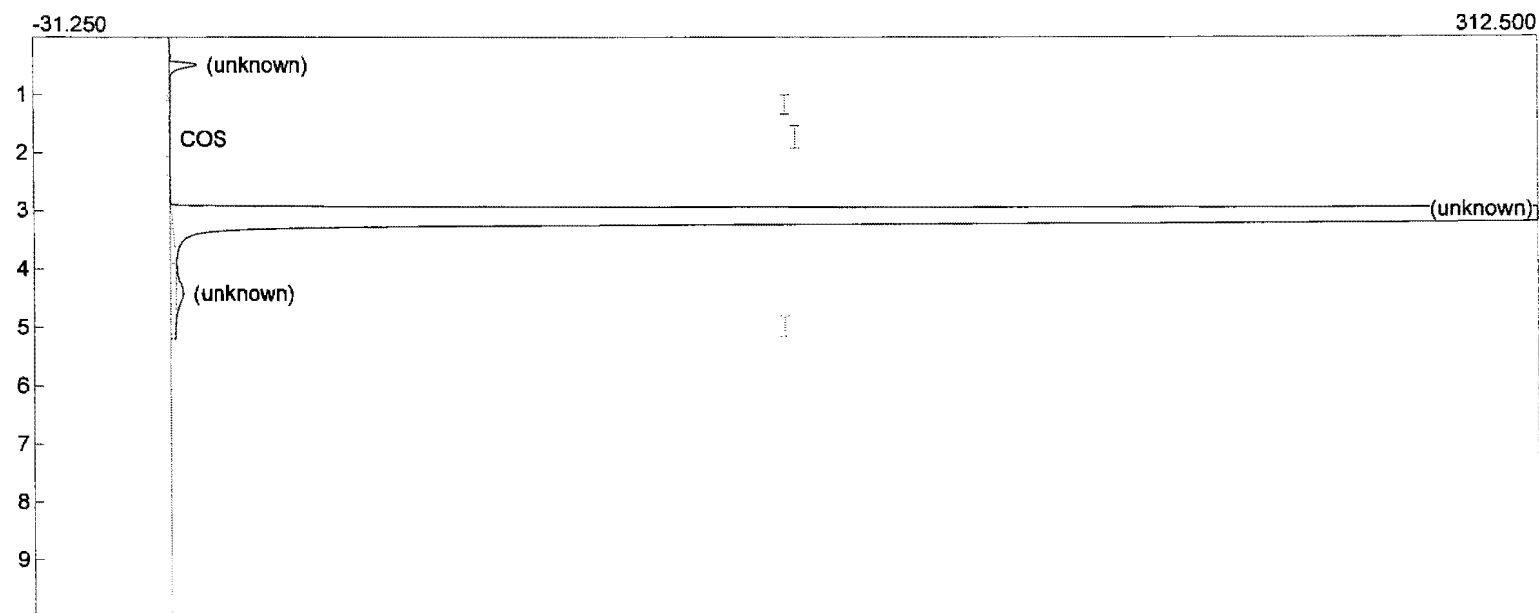


Component

Area

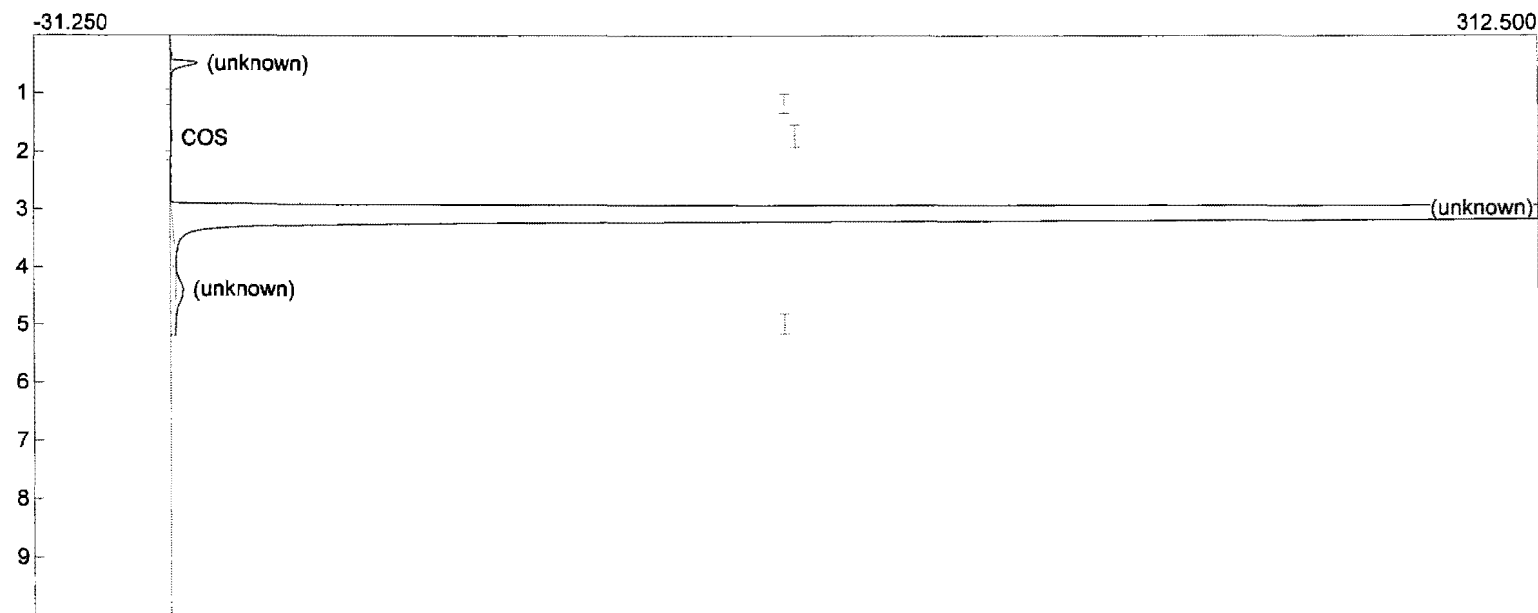
0.0000

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 19:02:46
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsruns42.CHR ()
 Sample: M15 Runs
 Operator: SY



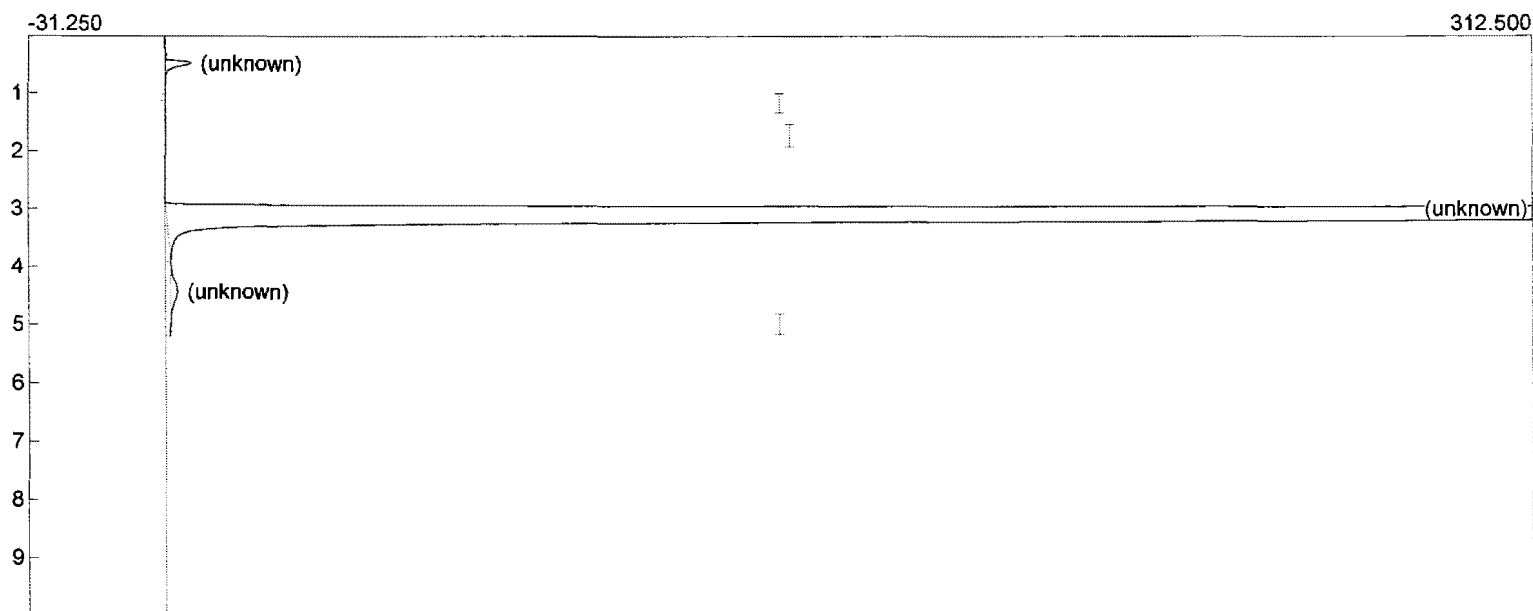
Component	Area
COS	1.5210
	1.5210

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 19:12:45
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruns43.CHR ()
Sample: M15 Runs
Operator: SY



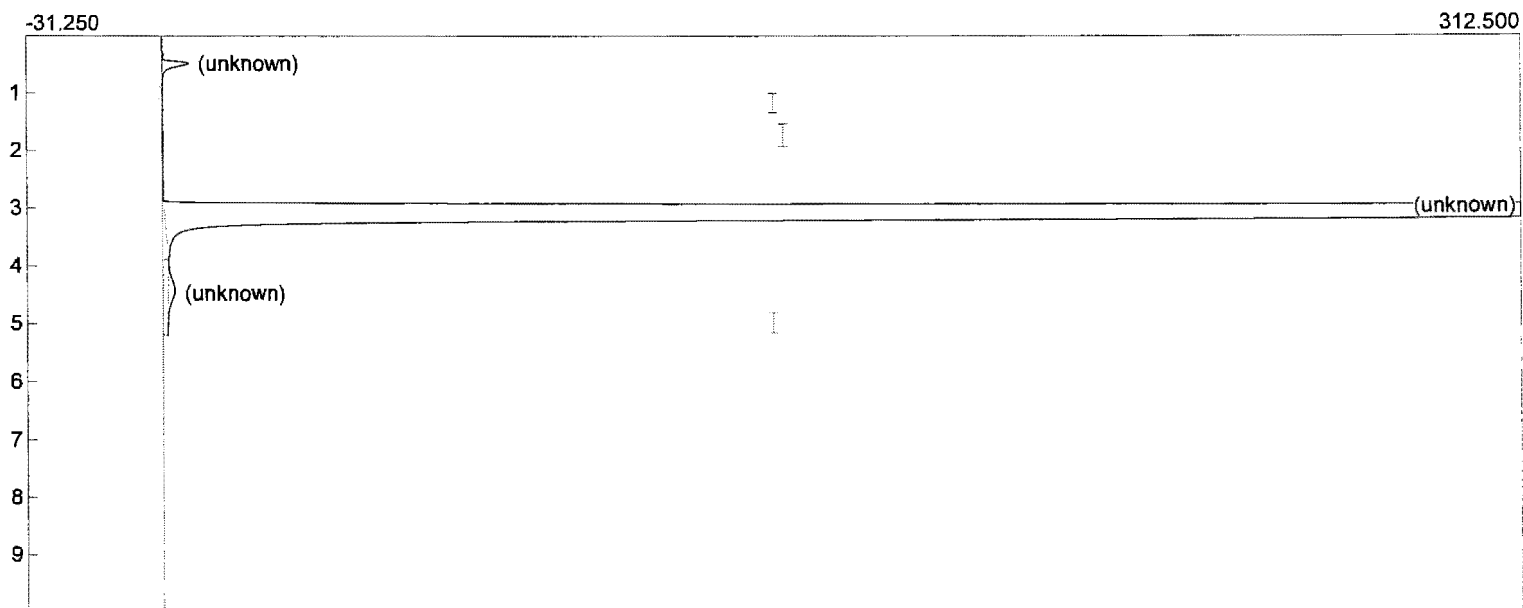
Component	Area
COS	2.3090
	2.3090

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 19:22:45
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruns44.CHR ()
Sample: M15 Runs
Operator: SY



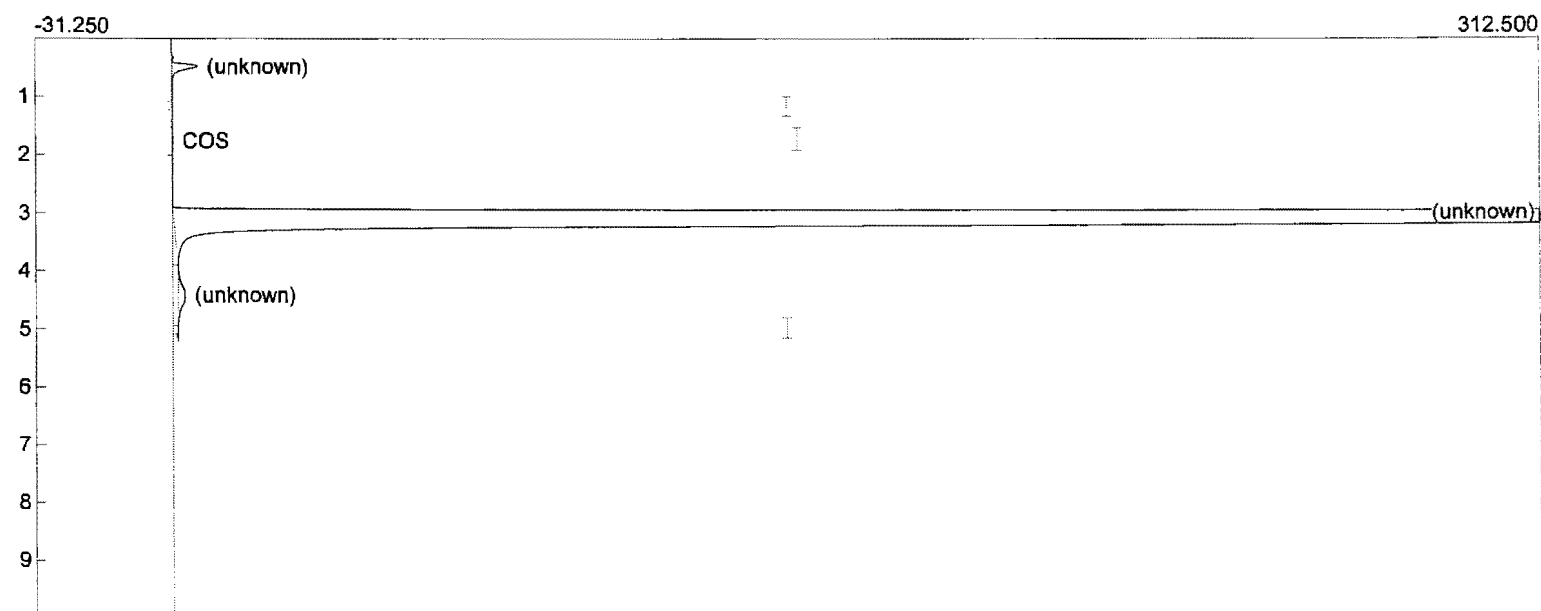
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 19:32:45
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrun45.CHR ()
Sample: M15 Runs
Operator: SY



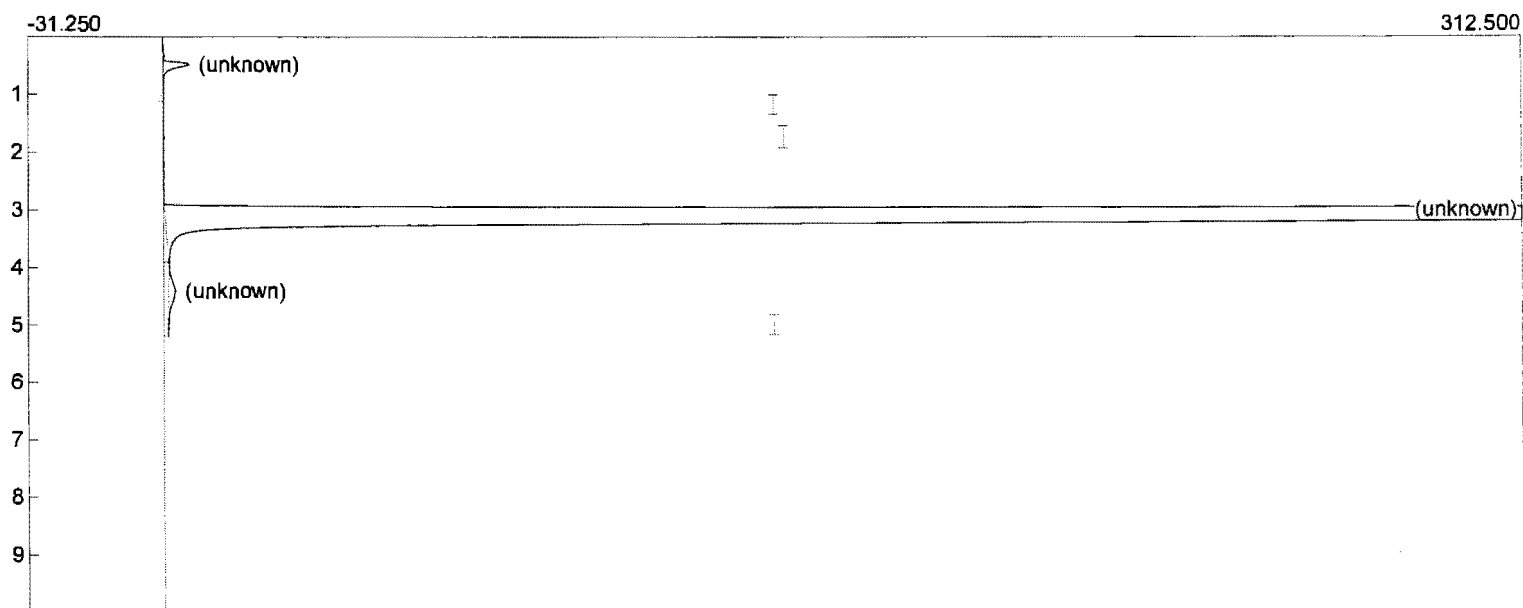
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 19:42:45
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsrun46.CHR ()
 Sample: M15 Runs
 Operator: SY



Component	Area
COS	2.5530
	2.5530

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 19:52:45
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruns47.CHR ()
Sample: M15 Runs
Operator: SY

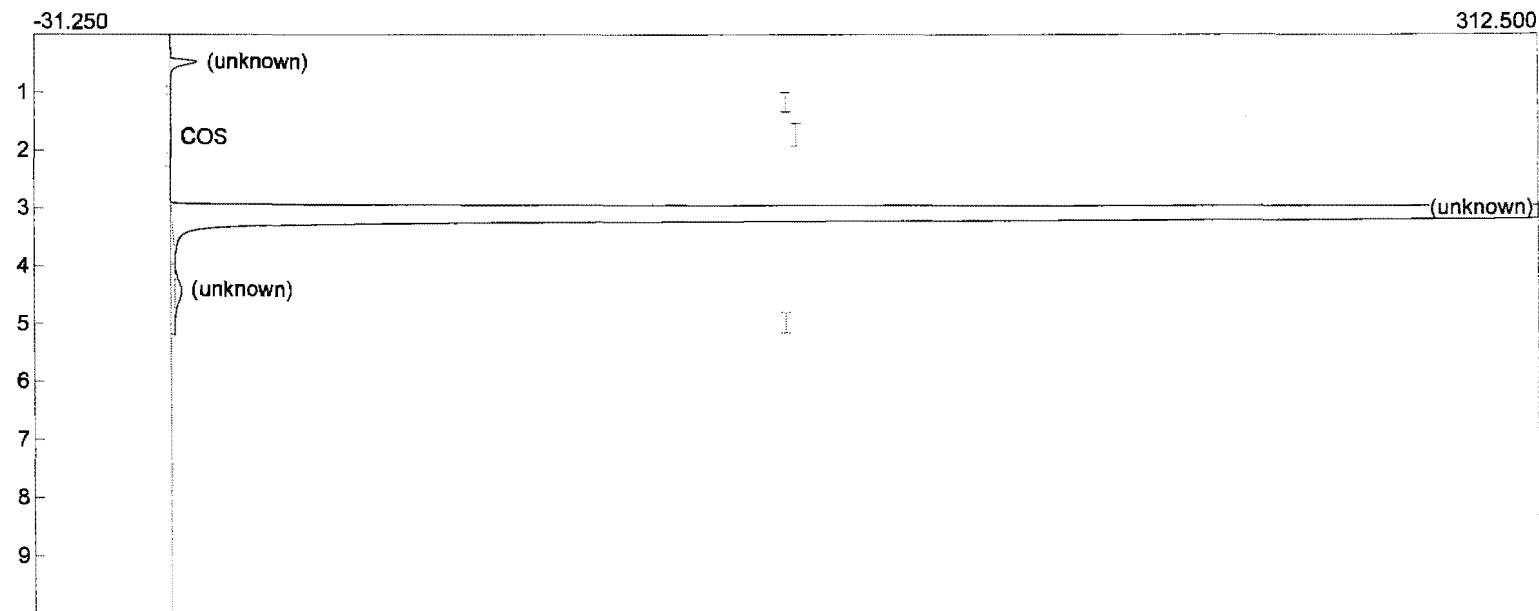


Component

Area

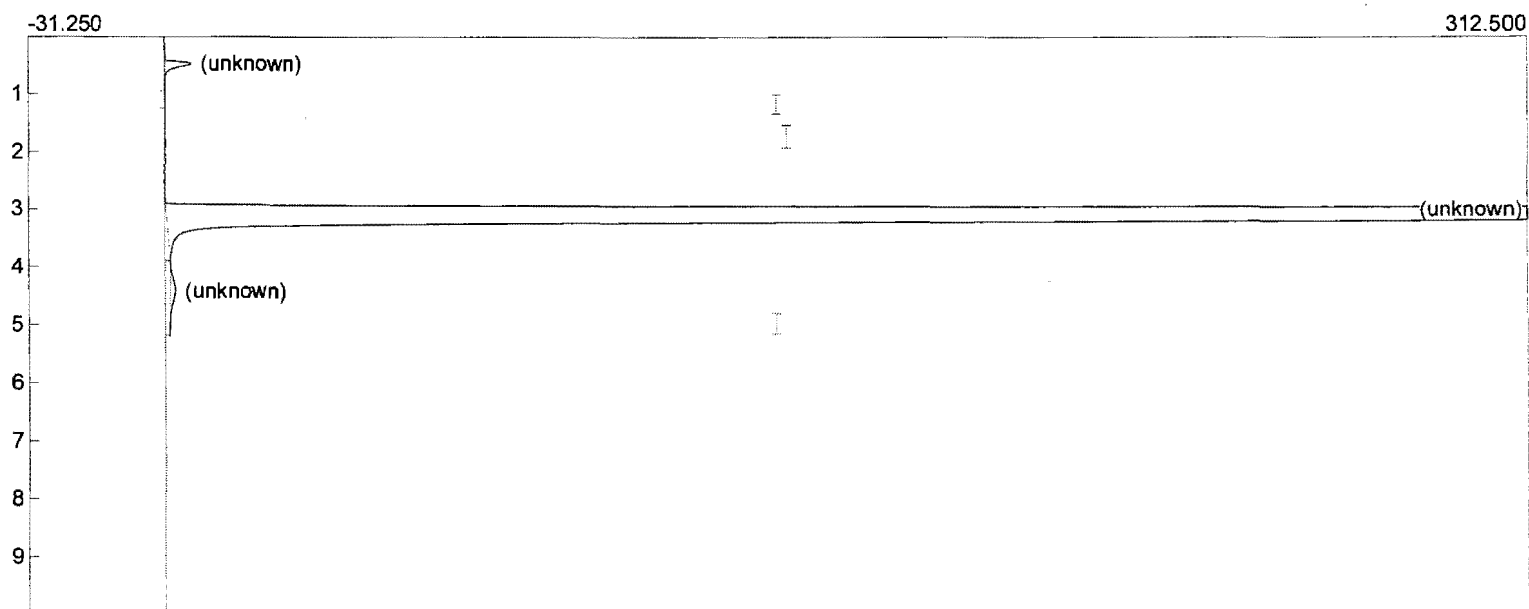
0.0000

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 20:02:45
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsrunruns48.CHR ()
 Sample: M15 Runs
 Operator: SY



Component	Area
COS	2.1200
	2.1200

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 20:12:45
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrun49.CHR ()
Sample: M15 Runs
Operator: SY

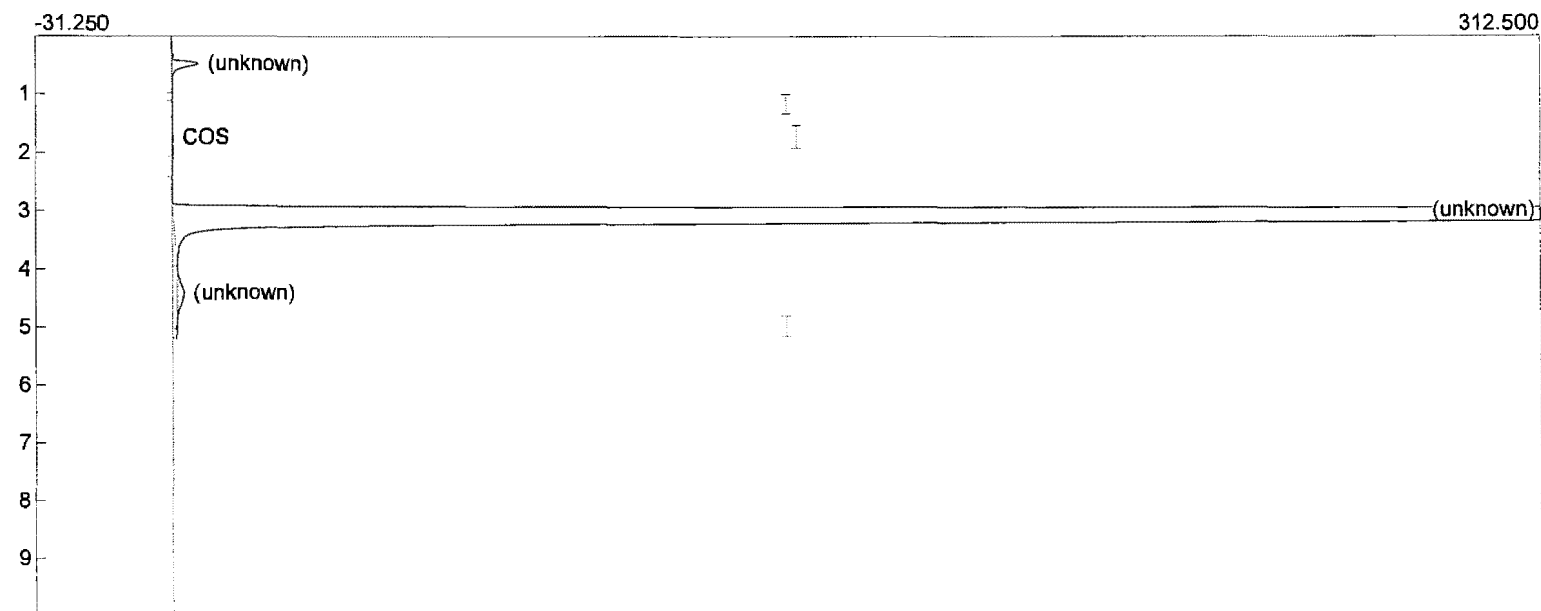


Component

Area

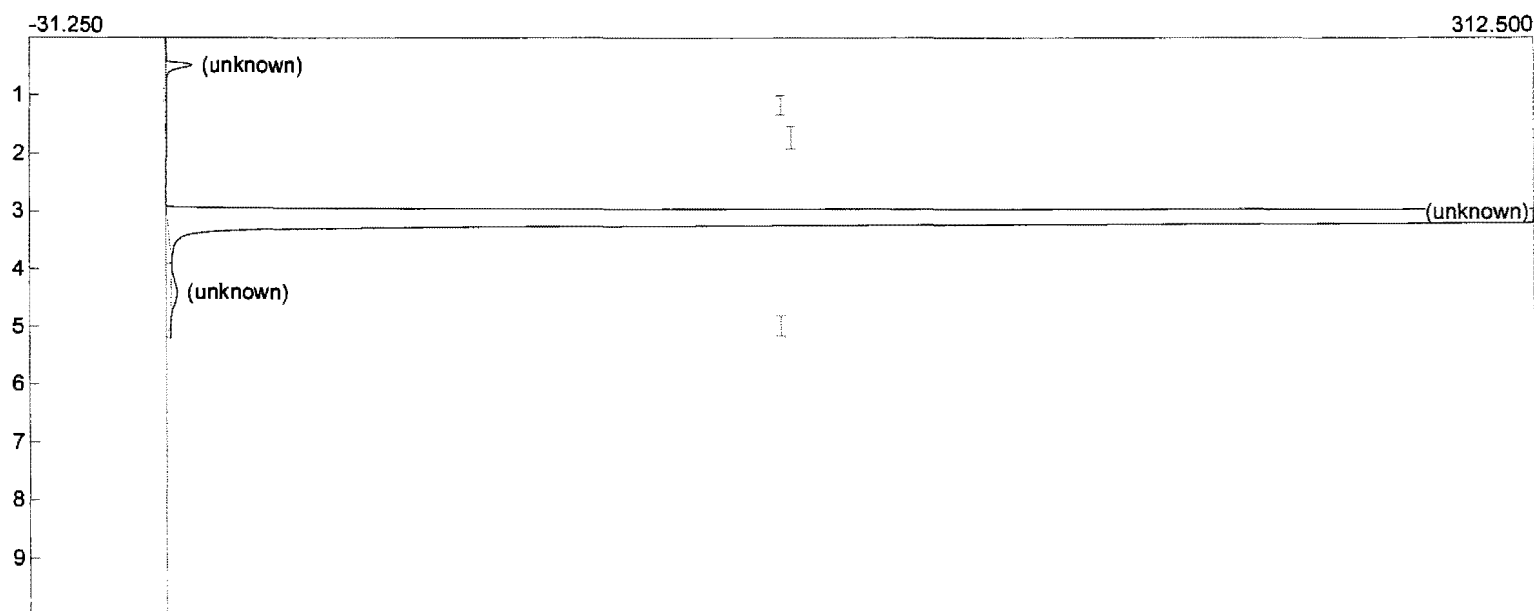
0.0000

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/04/2008 20:22:45
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsruns50.CHR ()
 Sample: M15 Runs
 Operator: SY



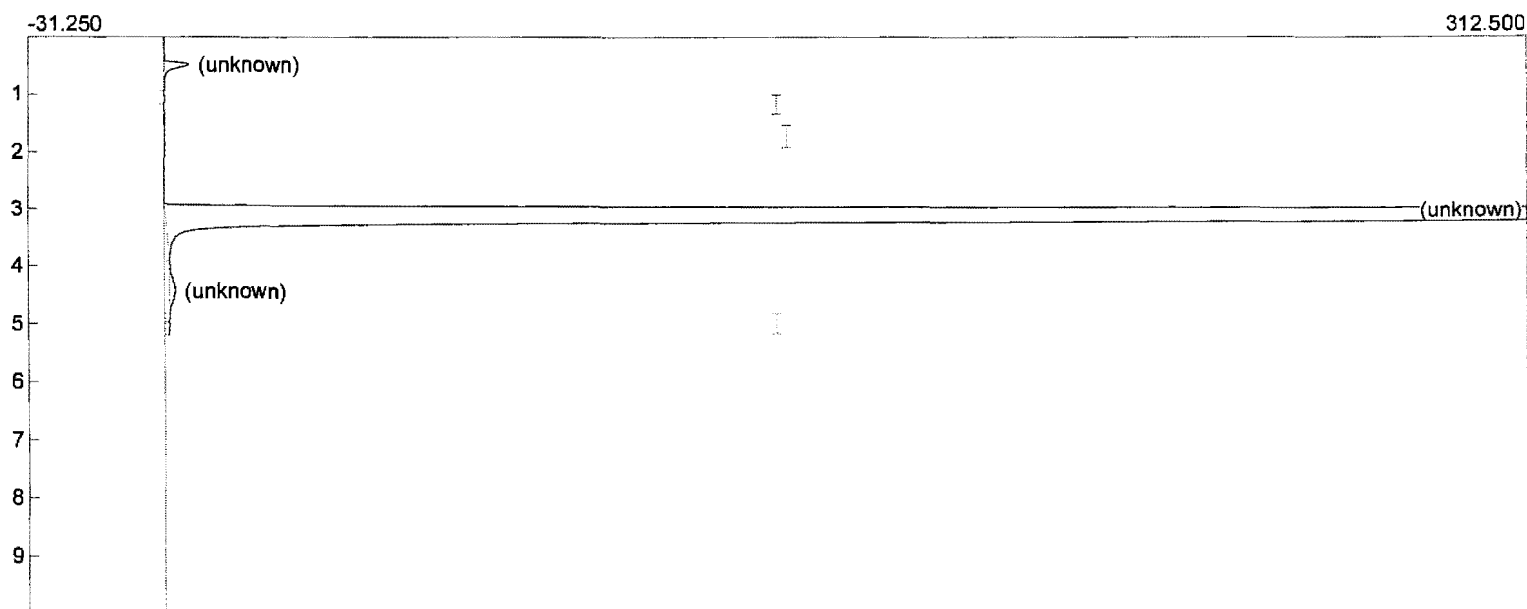
Component	Area
COS	1.8800
	1.8800

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 20:32:45
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrun51.CHR ()
Sample: M15 Runs
Operator: SY



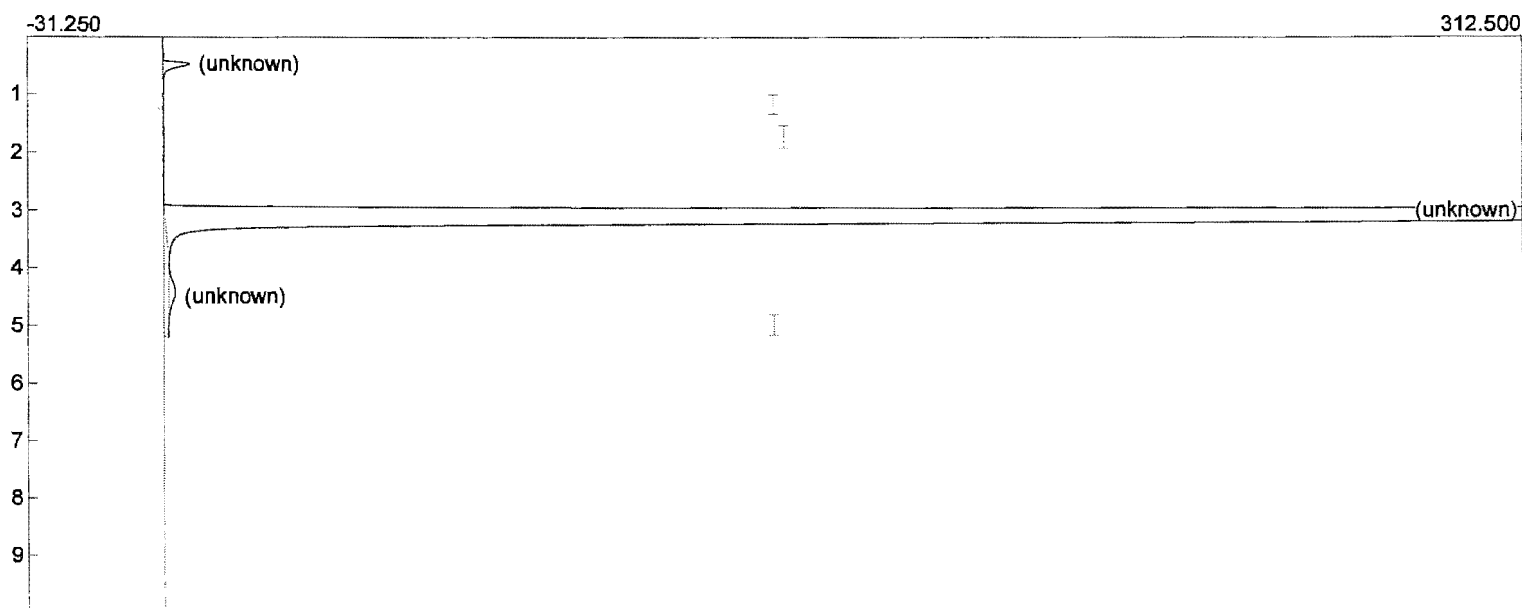
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 20:42:45
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrun52.CHR ()
Sample: M15 Runs
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 20:52:45
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrun53.CHR ()
Sample: M15 Runs
Operator: SY

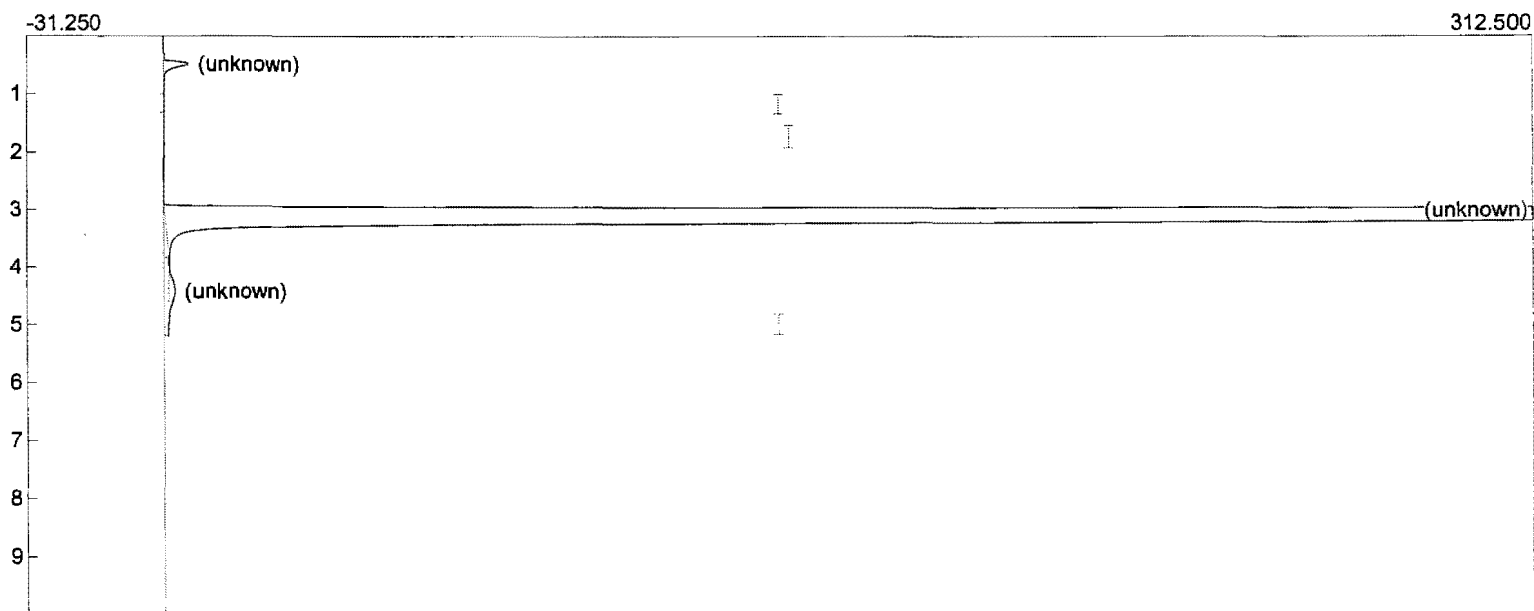


Component	Area
	0.0000

The graph displays two data series. The x-axis ranges from -31.250 to 312.500, and the y-axis ranges from 1 to 9. The first series starts at y=1 for x < -31.250, drops sharply to y=3 at x = -31.250, and remains constant at y=3 for x > -31.250. The second series starts at y=3 for x < -31.250, drops sharply to y=4 at x = -31.250, and remains constant at y=4 for x > -31.250. Both series have a label '(unknown)' near the start of the drop. There are also some small vertical tick marks on the y-axis at y=1 and y=3.

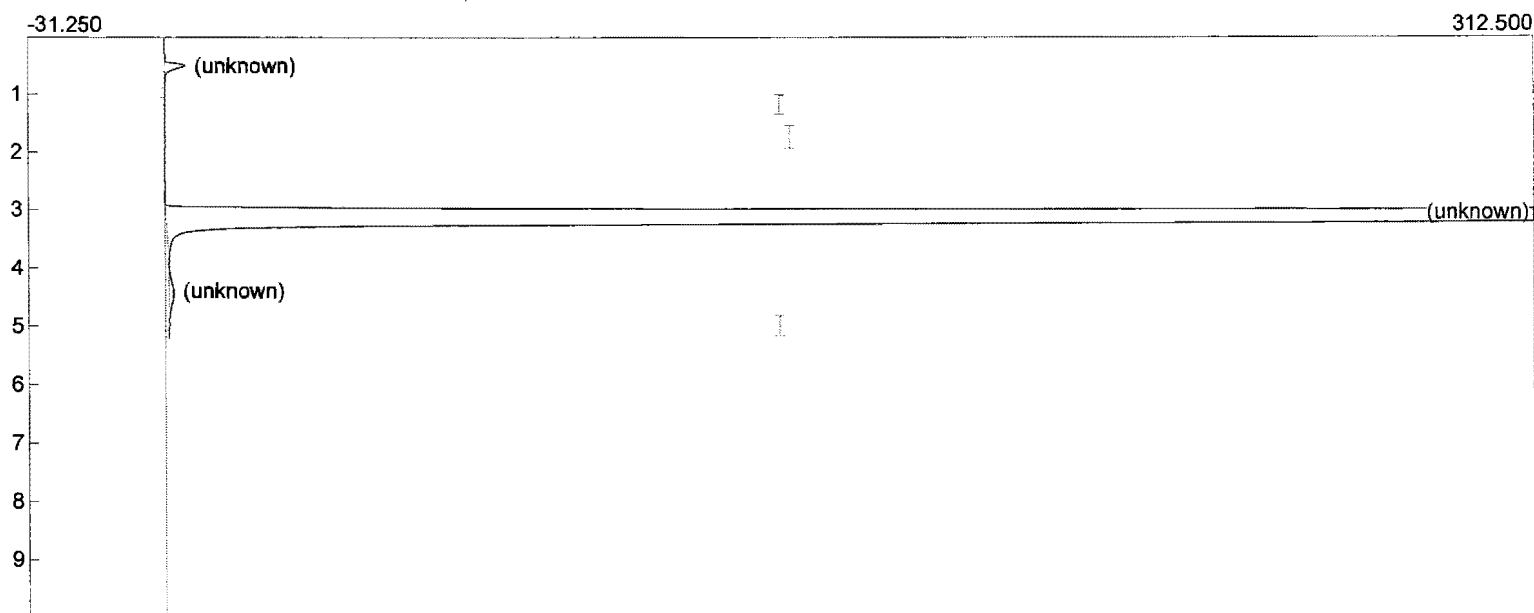
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 21:12:45
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruns55.CHR ()
Sample: M15 Runs
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 21:22:45
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrun56.CHR ()
Sample: M15 Runs
Operator: SY

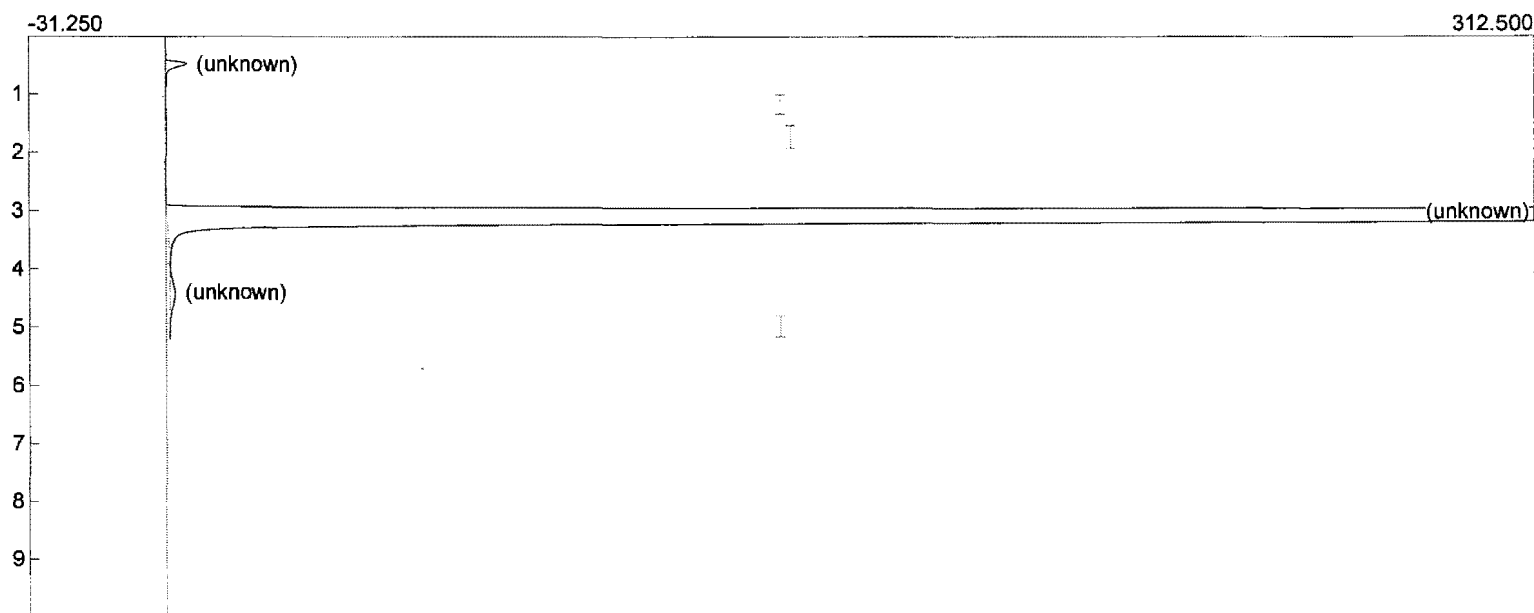


Component

Area

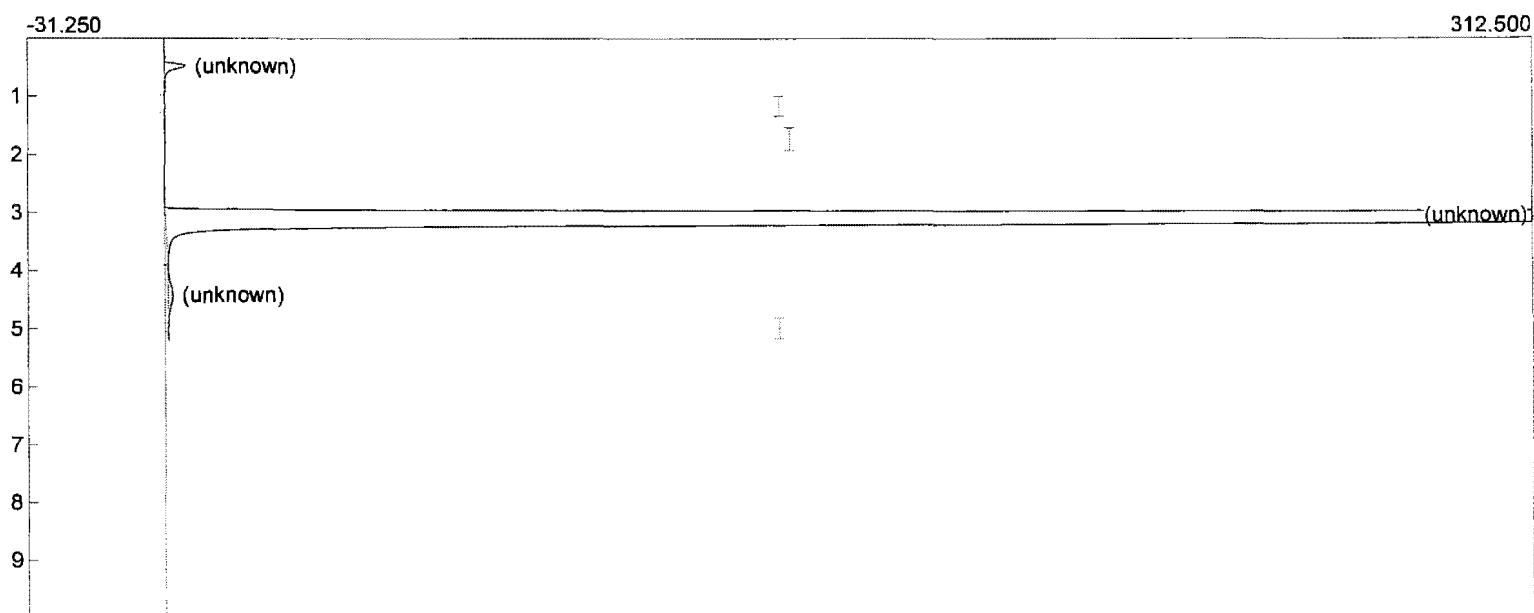
0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 21:32:45
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrun57.CHR ()
Sample: M15 Runs
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 21:42:45
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruns58.CHR ()
Sample: M15 Runs
Operator: SY

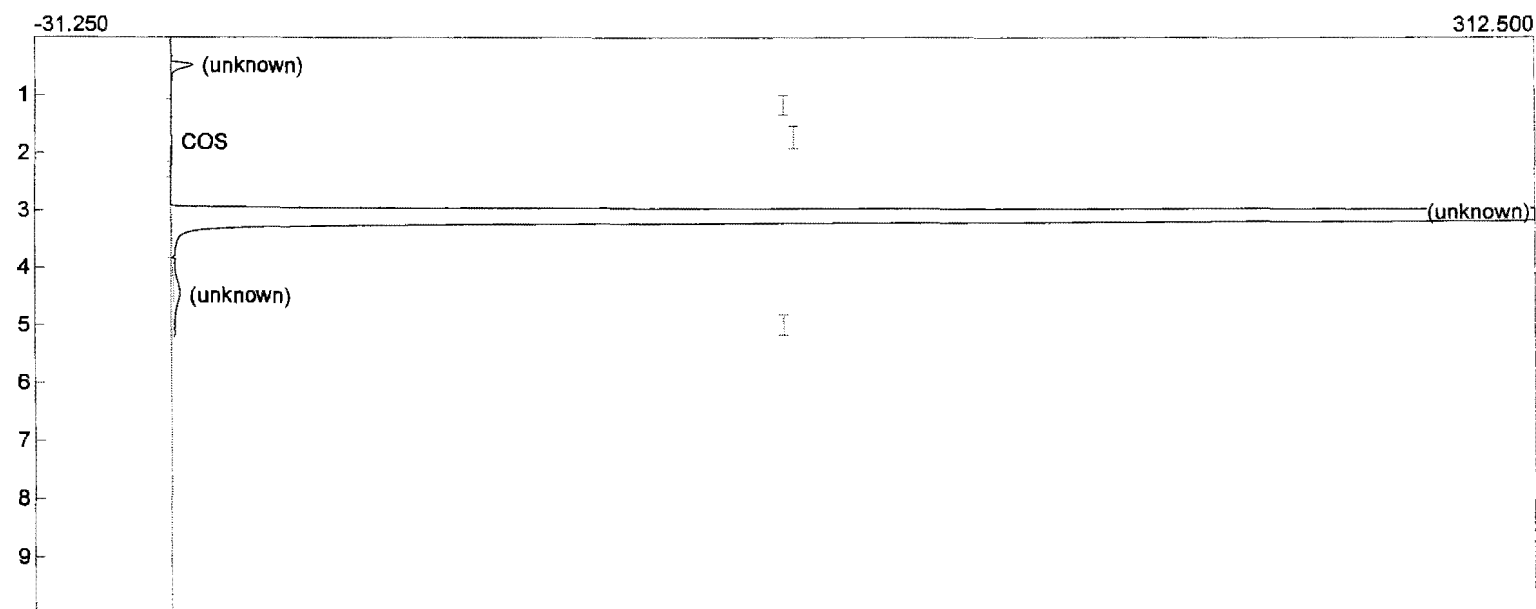


Component

Area

0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/04/2008 21:52:45
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrun59.CHR ()
Sample: M15 Runs
Operator: SY



Component	Area
COS	1.9640
	1.9640



TRS STANDARDS PRETEST DATA

Client: Diamond Shamrock Refining Company, L.P. (A Valero Company)
Location: Sunray, Texas
Source: SRU No.2 Incinerator
Date sampled: 6/4/2008
Run Number: 1-3
Compound Analyzed: TRS
Method: USEPA Method 15
Instrument: SRI-9300B
Detector: GC-FPD
Units of Detection: ppm

Carbonyl Sulfide Standards			
Standard No	Concentration	Area	Sq Rt Area Counts
1	0.0	0.0	0.0
2	4.9	300.6	17.3
3	9.7	1,057.5	32.5
4	19.4	3,939.0	62.8

Hydrogen Sulfide Standards			
Standard No	Concentration	Area	Sq Rt Area Counts
1	0.0	0.0	0.0
2	5.0	37.4	6.1
3	10.0	161.9	12.7
4	20.0	846.4	29.1

Carbon Disulfide Standards			
Standard No	Concentration	Area	Sq Rt Area Counts
1	0.0	0.0	0.0
2	5.2	1,891.9	43.5
3	10.4	6,091.1	78.0
4	20.8	23,197.0	152.3



Analytical Calculation Summary

Calibration Standards Area Linear Regression Fit

Client: Diamond Shamrock Refining Company, L.P. (A Valero Company)
Location: Sunray, Texas
Source: SRU No.2 Incinerator
Date sampled: 6/4/2008
Run Number: 1-3
Compound Analyzed: Hydrogen Sulfide
Method: USEPA Method 15
Instrument: SRI-9300B
Detector: GC-FPD
Units of Detection: ppm

Calibration Standards

Statistical Analysis Summary

Standard #	Standard Peak Area (mv)	Square Root Peak Area (mv)	Standard Concentration (ppm)
1	0.0	0.0	0.0
2	37.4	6.1	5.0
3	161.9	12.7	10.0
4	846.4	29.1	20.0

Σxy : 739.6905
 Σx : 47.9
 Σy : 35
 Σx^2 : 1046
 $\Sigma (x)^2$: 2298
N: 4
m: 0.679543
b: 0.606477

Analytical Calculation Summary

Calibration Standards Area Linear Regression Fit

Client: Diamond Shamrock Refining Company, L.P. (A Valero Company)
Location: Sunray, Texas
Source: SRU No.2 Incinerator
Date sampled: 6/4/2008
Run Number: 1-3
Compound Analyzed: Carbonyl Sulfide
Method: USEPA Method 15
Instrument: SRI-9300B
Detector: GC-FPD
Units of Detection: ppm

Calibration Standards

Statistical Analysis Summary

Standard #	Standard Peak Area (mv)	Square Root Peak Area (mv)	Standard Concentration (ppm)
1	0.0	0.0	0.0
2	300.6	17.3	4.9
3	1,057.5	32.5	9.7
4	3,939.0	62.8	19.4

Σxy : 1621.25
 Σx : 112.6
 Σy : 34.03733
 Σx^2 : 5297
 $\Sigma (x)^2$: 12683
 N : 4
 m : 0.311772
 b : -0.26836

Analytical Calculation Summary

Calibration Standards Area Linear Regression Fit

Client: Diamond Shamrock Refining Company, L.P. (A Valero Company)
Location: Sunray, Texas
Source: SRU No.2 Incinerator
Date sampled: 6/4/2008
Run Number: 1-3
Compound Analyzed: Carbon Disulfide
Method: USEPA Method 15
Instrument: SRI-9300B
Detector: GC-FPD
Units of Detection: ppm

Calibration Standards

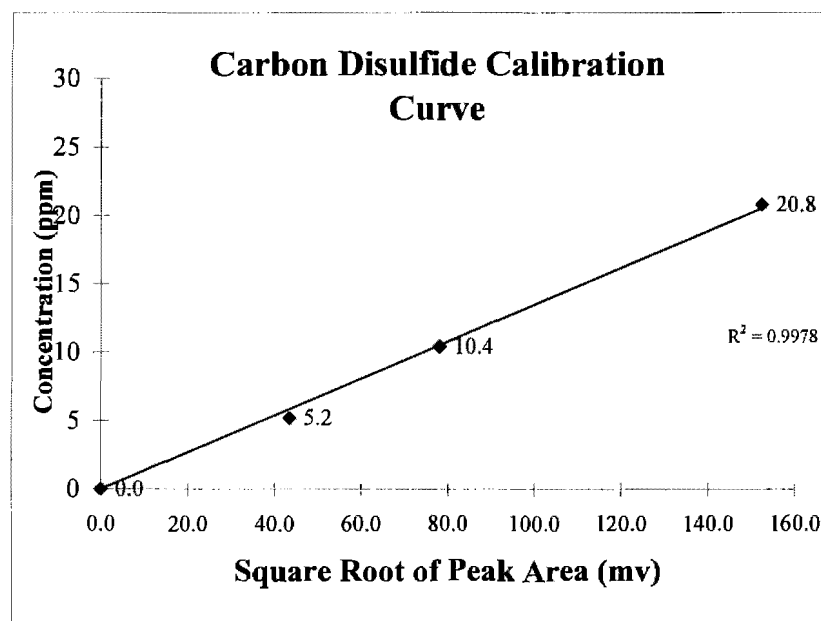
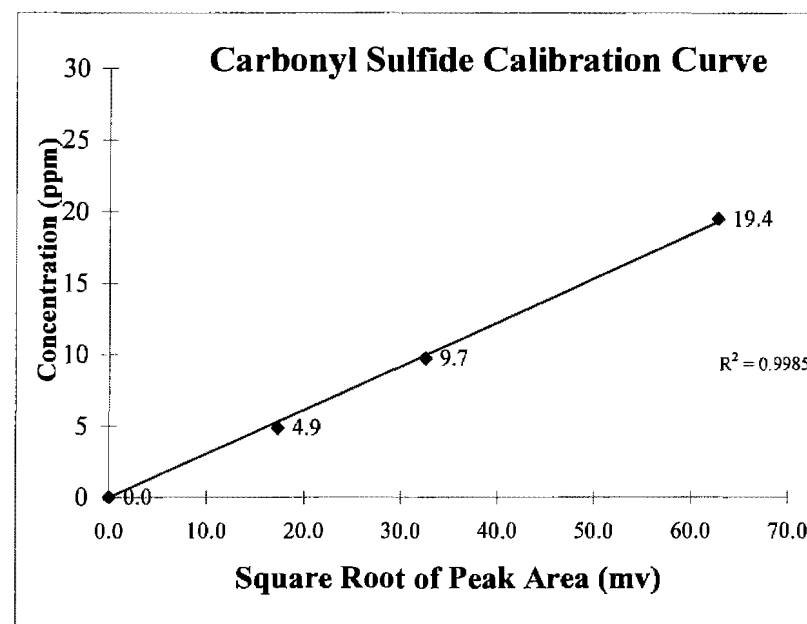
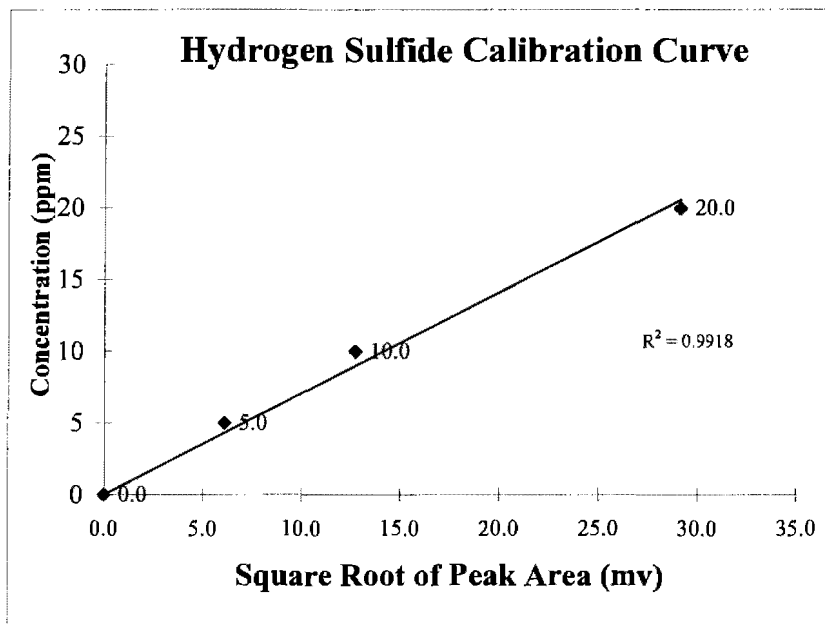
Statistical Analysis Summary

Standard #	Standard Peak Area (mv)	Square Root Peak Area (mv)	Standard Concentration (ppm)
1	0.0	0.0	0.0
2	1,891.9	43.5	5.2
3	6,091.1	78.0	10.4
4	23,197.0	152.3	20.8

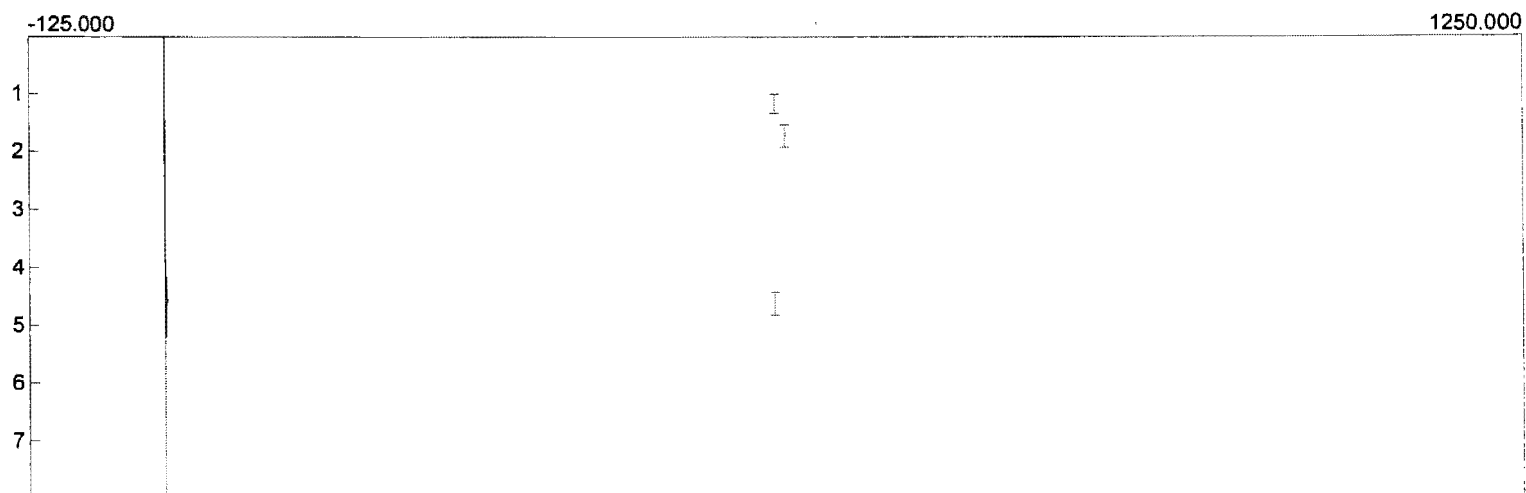
Σxy : 4210.894
 Σx : 273.8
 Σy : 36.44401
 Σx^2 : 31180
 $\Sigma (x)^2$: 74992
 N : 4
 m : 0.138021
 b : -0.33819

Calibration Curves

June 4, 2008



Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruca16.CHR ()
Sample: 0 ppm pre
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.

Client: Valero Refining

Client ID: SRU #2

Collected: 6-4-08

Method: Direct Interface

Description: FPD

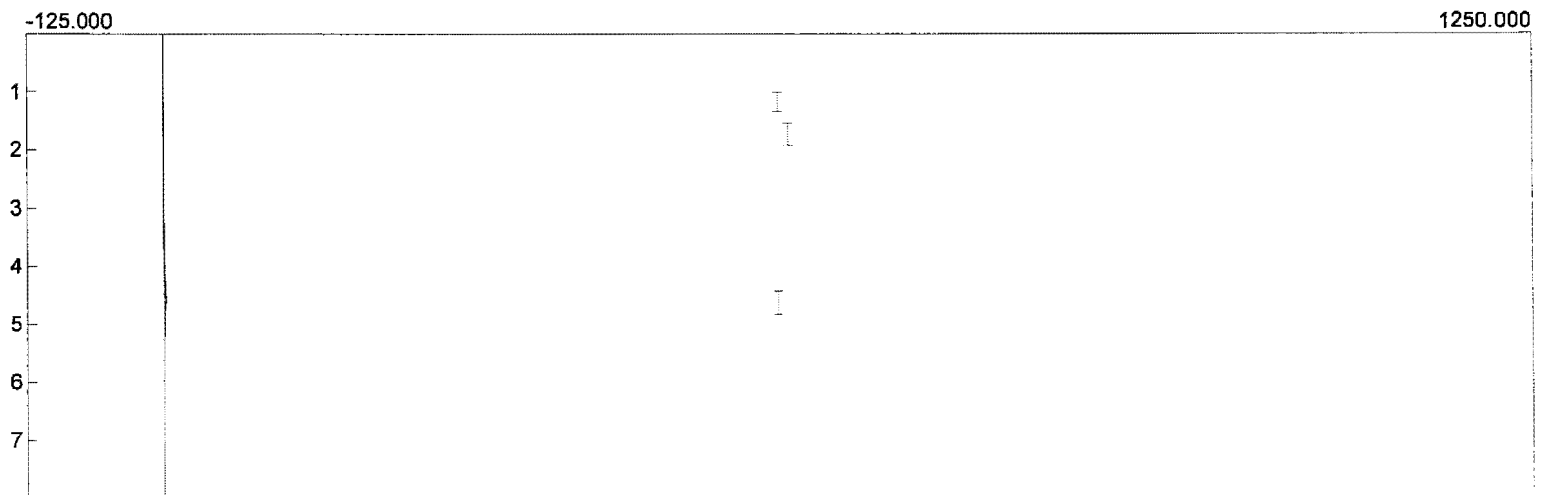
Column: RESTEK Sulfur

Carrier: Nitrogen

Data file: valsrucal17.CHR ()

Sample: 0 ppm pre

Operator: SY

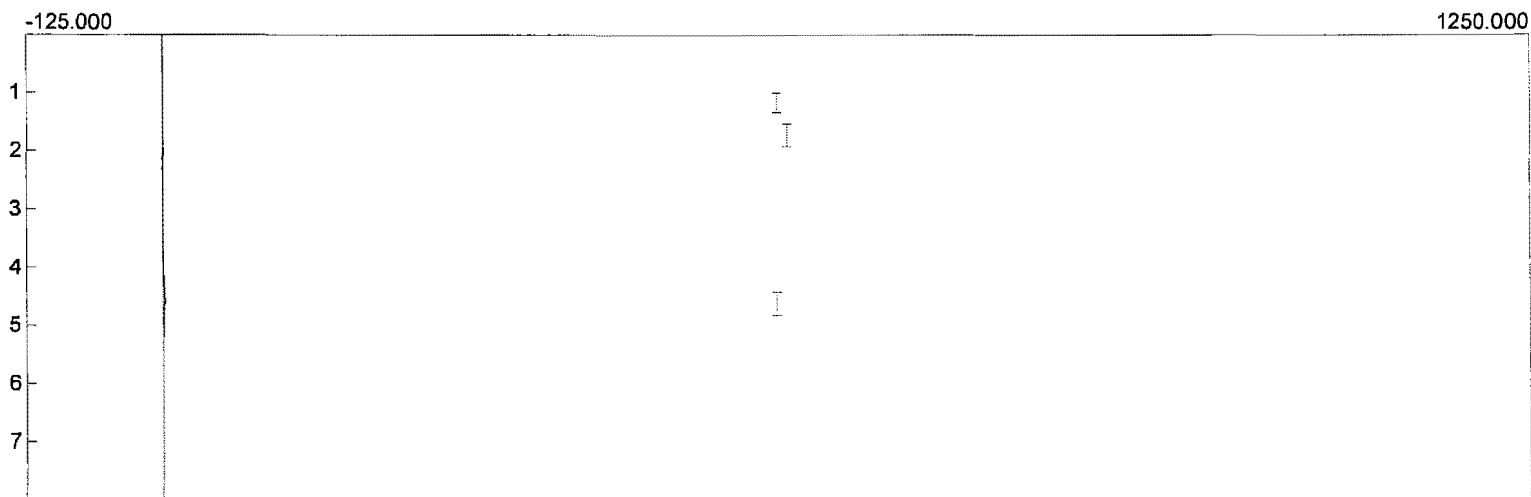


Component

Area

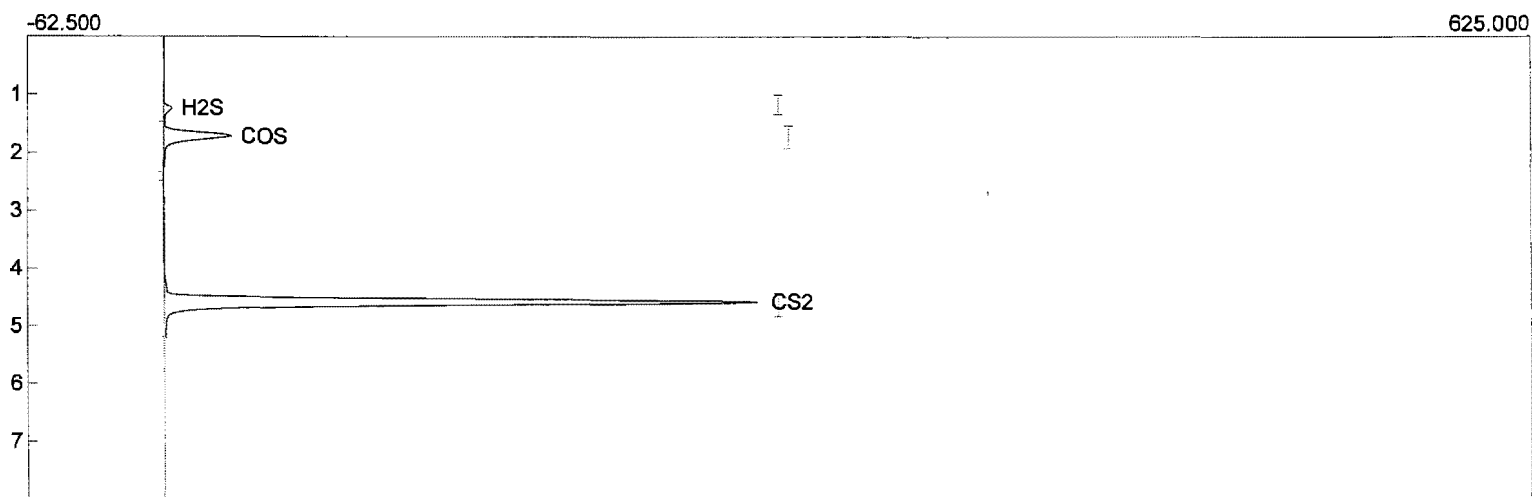
0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruca18.CHR ()
Sample: 0 ppm pre
Operator: SY



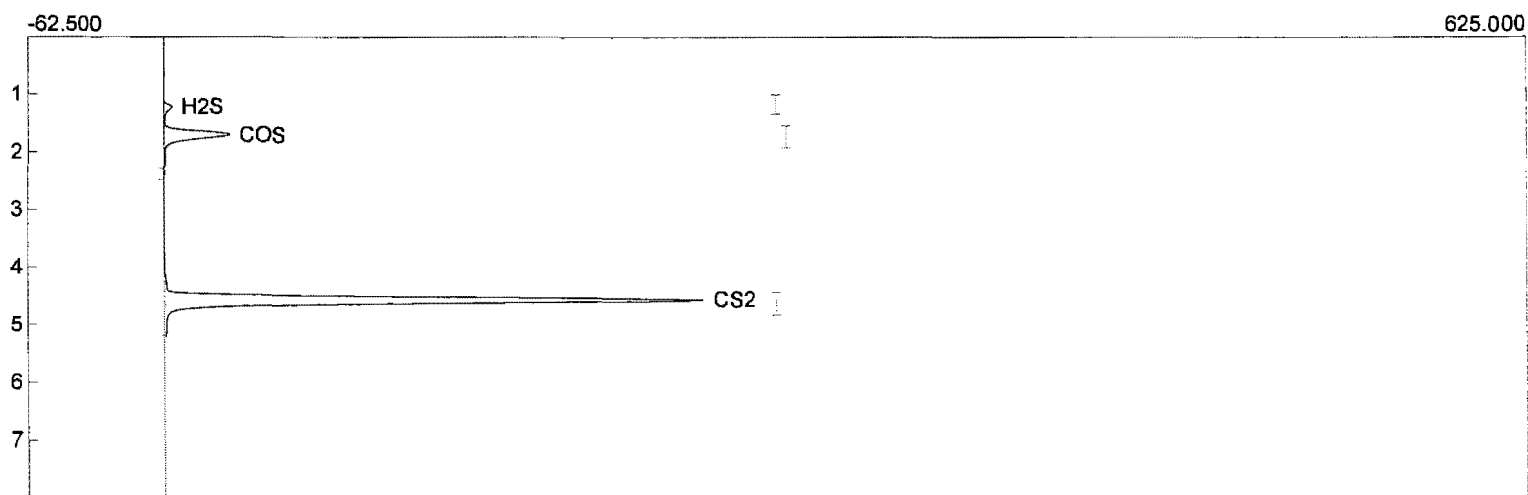
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Collected: 6-4-08
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsruca11.CHR ()
 Sample: 5 ppm pre
 Operator: SY



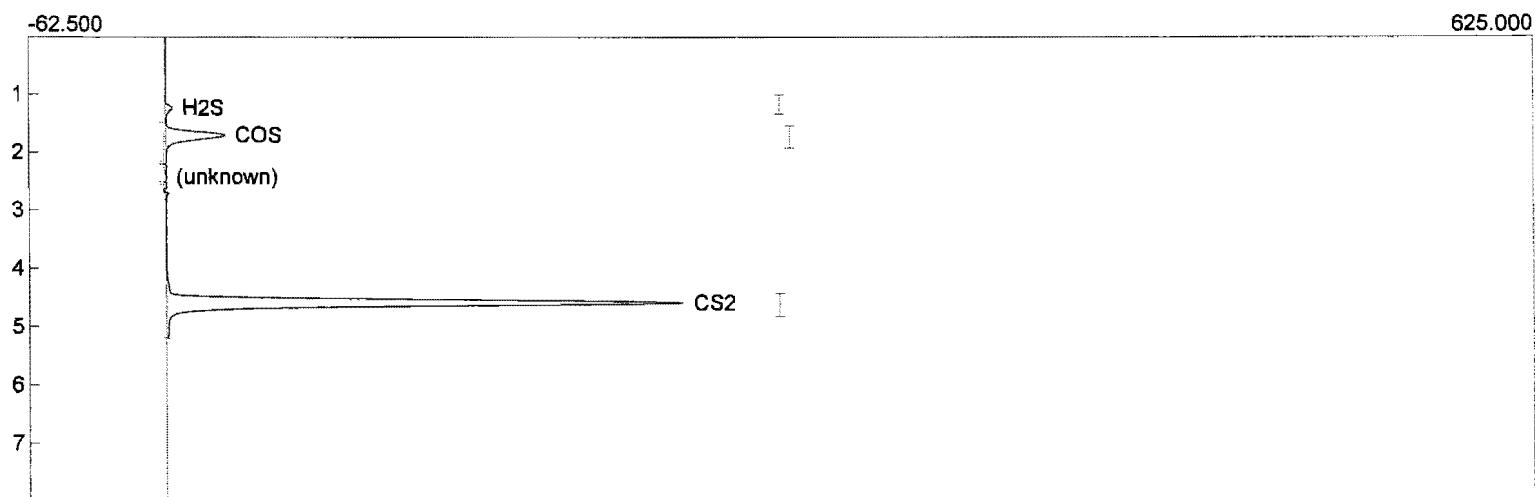
Component	Area
H2S	34.5720
COS	300.3380
CS2	1994.6340
	2329.5440

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruca12.CHR ()
Sample: 5 ppm pre
Operator: SY



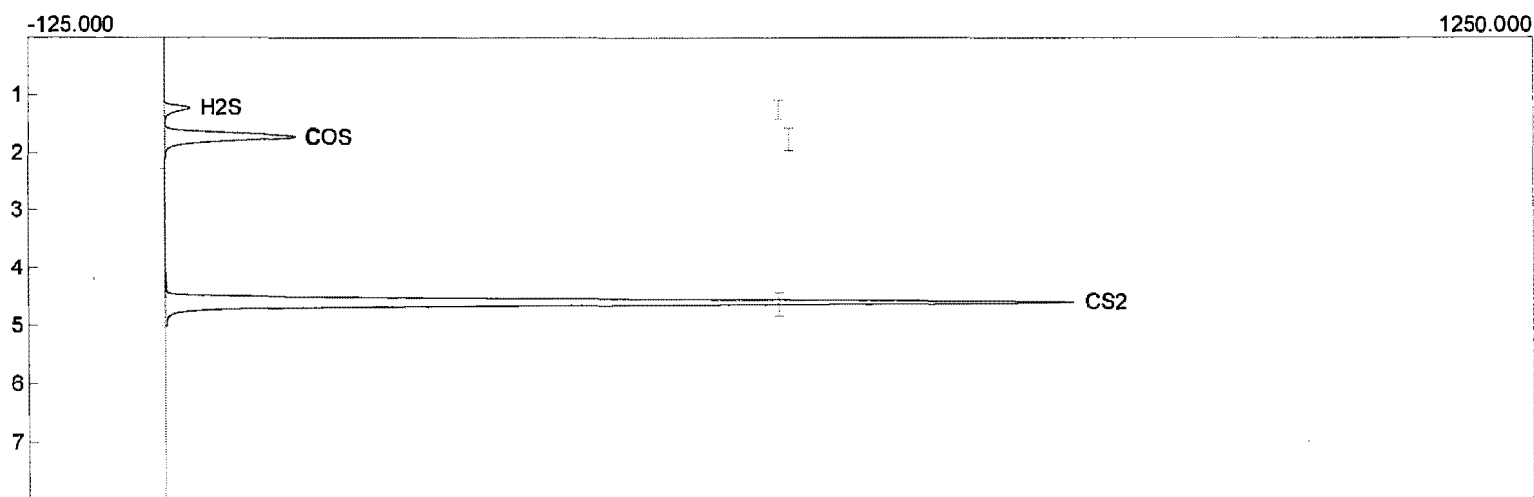
Component	Area
H2S	37.3600
COS	299.9040
CS2	1847.0340
	2184.2980

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrucal13.CHR ()
Sample: 5 ppm pre
Operator: SY



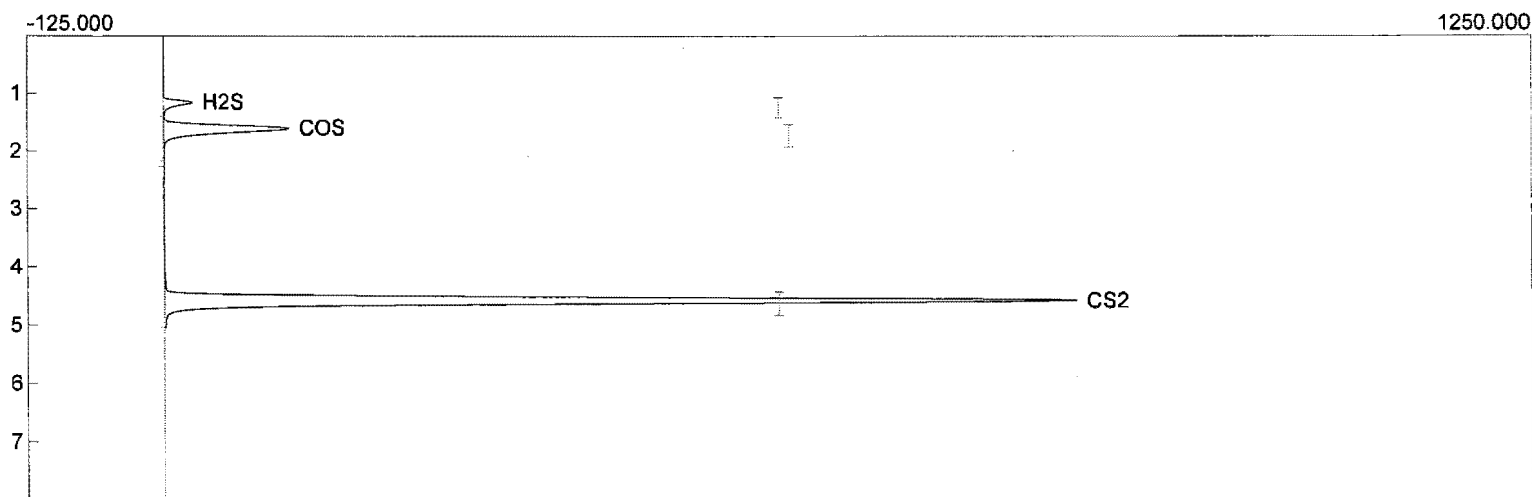
Component	Area
H2S	40.3300
COS	301.4100
CS2	1834.0370
	2175.7770

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Collected: 6-4-08
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsrucal02.CHR ()
 Sample: 10 ppm pre
 Operator: SY



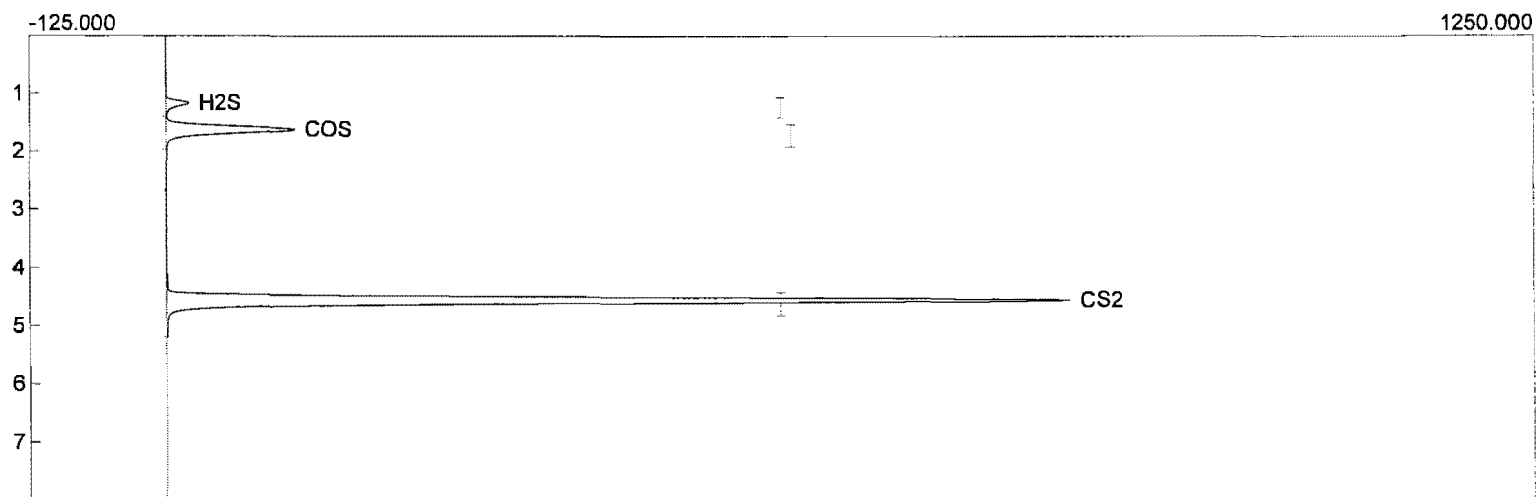
Component	Area
H2S	162.1440
COS	1079.4740
CS2	6071.5480
	7313.1660

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruca103.CHR ()
Sample: 10 ppm pre
Operator: SY



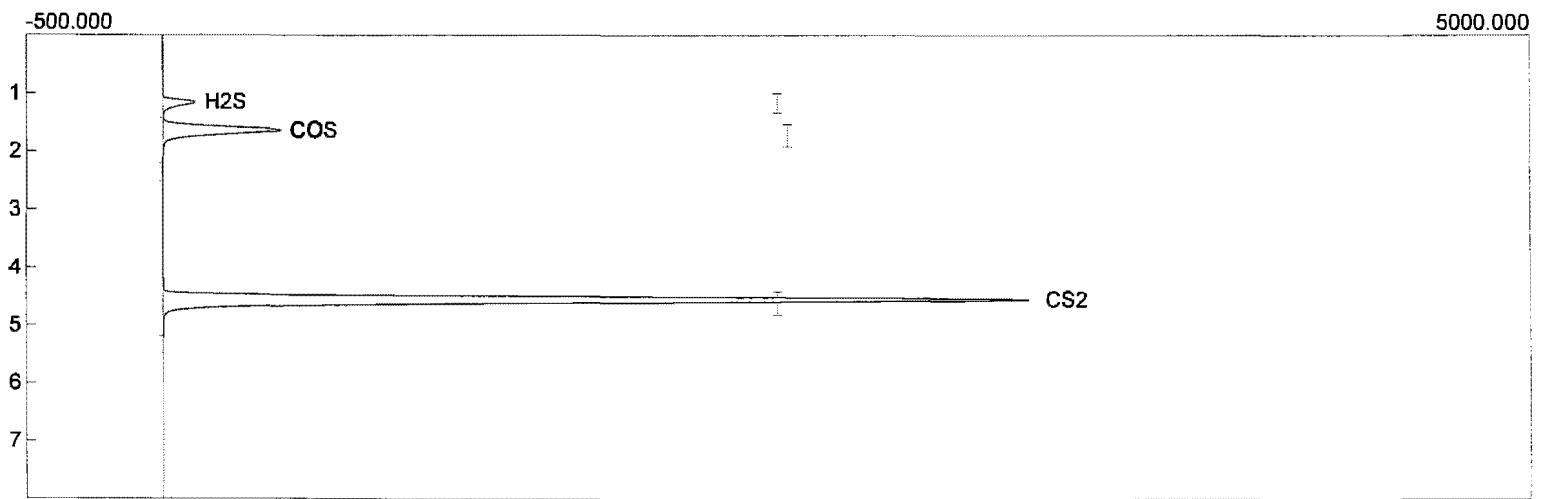
Component	Area
H2S	166.6440
COS	1049.6960
CS2	6158.9150
	7375.2550

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrucal04.CHR ()
Sample: 10 ppm pre
Operator: SY



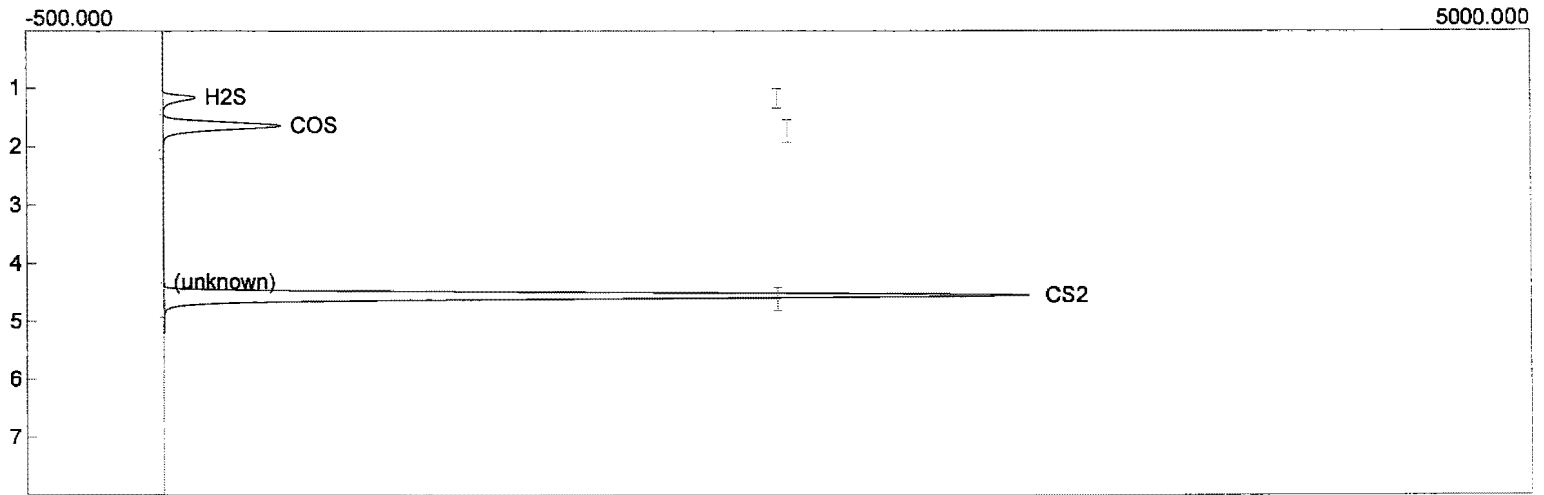
Component	Area
H2S	157.0485
COS	1043.2420
CS2	6042.9400
	7243.2305

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruca108.CHR ()
Sample: 20 ppm pre
Operator: SY



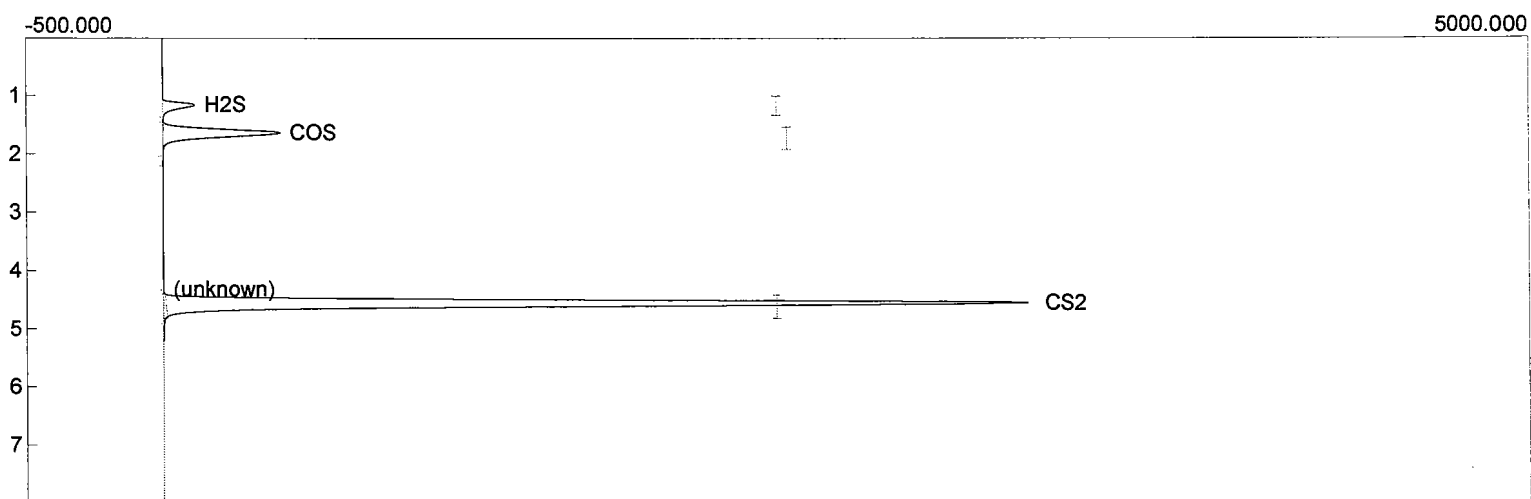
Component	Area
H2S	855.4000
COS	3950.7410
CS2	23305.8100
	28111.9510

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruca109.CHR ()
Sample: 20 ppm pre
Operator: SY



Component	Area
H2S	829.4410
COS	3940.1800
CS2	23268.2825
	28037.9035

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruca10.CHR ()
Sample: 20 ppm pre
Operator: SY



Component	Area
H2S	854.2580
COS	3926.1665
CS2	23016.7865
	27797.2110



TRS STANDARDS POSTTEST DATA

Client: Diamond Shamrock Refining Company, L.P. (A Valero Company)
Location: Sunray, Texas
Source: SRU No.2 Incinerator
Date sampled: 6/4/2008
Run Number: 1-3
Compound Analyzed: TRS
Method: USEPA Method 15
Instrument: SRI-9300B
Detector: GC-FPD
Units of Detection: ppm

Hydrogen Sulfide Standards				Drift %
Standard No	Concentration	Area	Sq Rt Area Counts	
1	0.0	0.0	0.0	0.0
2	5.0	40.4	6.4	-3.8
3	10.0	163.6	12.8	-0.5
4	20.0	827.0	28.8	1.1

Carbonyl Sulfide Standards				Drift %
Standard No	Concentration	Area	Sq Rt Area Counts	
1	0.0	0.0	0.0	0.0
2	4.9	294.4	17.2	1.0
3	9.7	1,037.1	32.2	1.0
4	19.4	3,809.6	61.7	1.7

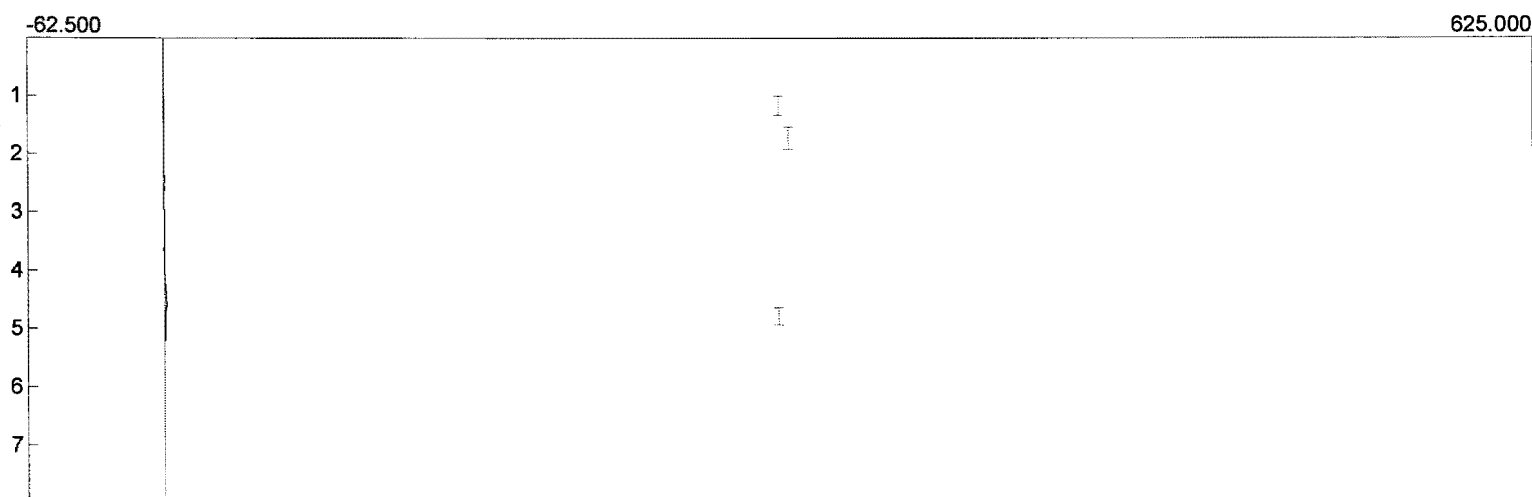
Carbon Disulfide Standards				Drift %
Standard No	Concentration	Area	Sq Rt Area Counts	
1	0.0	0.0	0.0	0.0
2	5.2	1,844.9	43.0	1.3
3	10.4	6,139.9	78.4	-0.4
4	20.8	21,978.7	148.3	2.7

Client: Diamond Shamrock Refining Company, L.P. (A Valero Company)
 Location: Sunray, Texas
 Source: SRU No.2 Incinerator
 Date: 6/4/2008



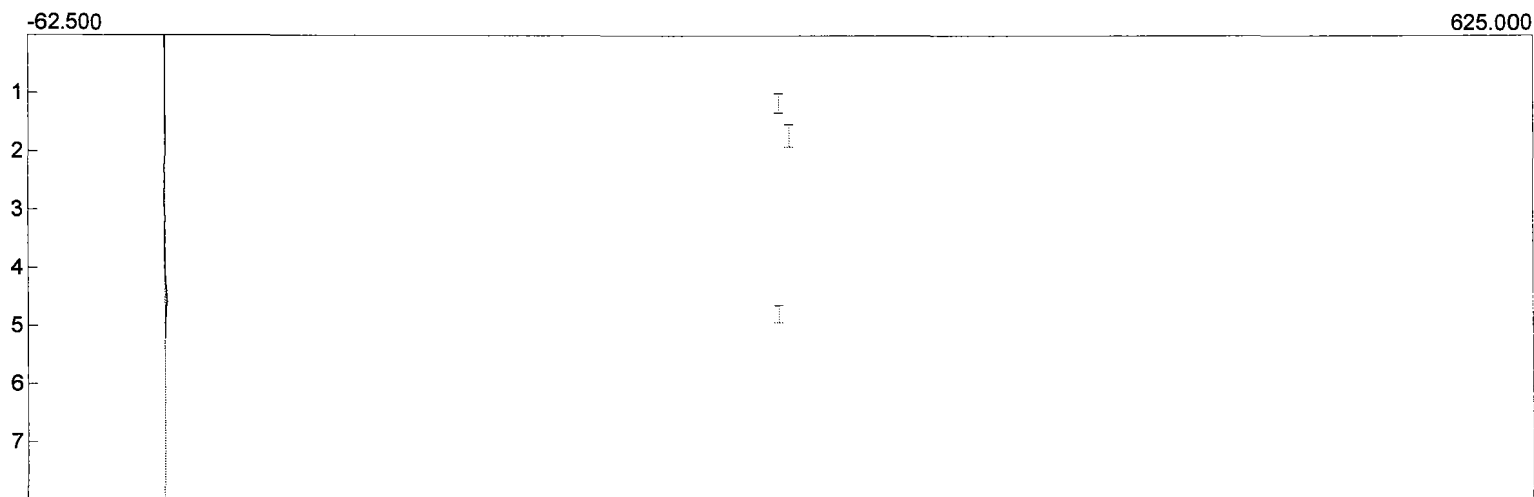
Description	File Name	H ₂ S Area (mv)	Square Root H ₂ S Area	COS Area (mv)	Square Root COS Area	CS ₂ Area (mv)	Square Root CS ₂ Area
5	11	41.49	6.44	291.12	17.06	1792.46	42.34
	12	41.60	6.45	302.38	17.39	1866.51	43.20
	13	37.96	6.16	289.63	17.02	1875.71	43.31
Average		40.35	6.35	294.38	17.16	1844.89	42.95
10	8	165.03	12.85	1042.00	32.28	6147.09	78.40
	9	159.69	12.64	1030.99	32.11	6130.35	78.30
	10	166.12	12.89	1038.41	32.22	6142.12	78.37
Average		163.61	12.79	1037.13	32.20	6139.85	78.36
20	4	823.18	28.69	3559.92	59.67	19632.91	140.12
	5	839.95	28.98	3954.56	62.89	23082.09	151.93
	6	817.91	28.60	3914.20	62.56	23221.11	152.38
Average		827.01	28.76	3809.56	61.70	21978.70	148.14
0 ppm							
	1	0.00	0.00	0.00	0.00	0.00	0.00
	2	0.00	0.00	0.00	0.00	0.00	0.00
	3	0.00	0.00	0.00	0.00	0.00	0.00
Average		0.00	0.00	0.00	0.00	0.00	0.00

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrupost03.CHR ()
Sample: 0 ppm post
Operator: SY



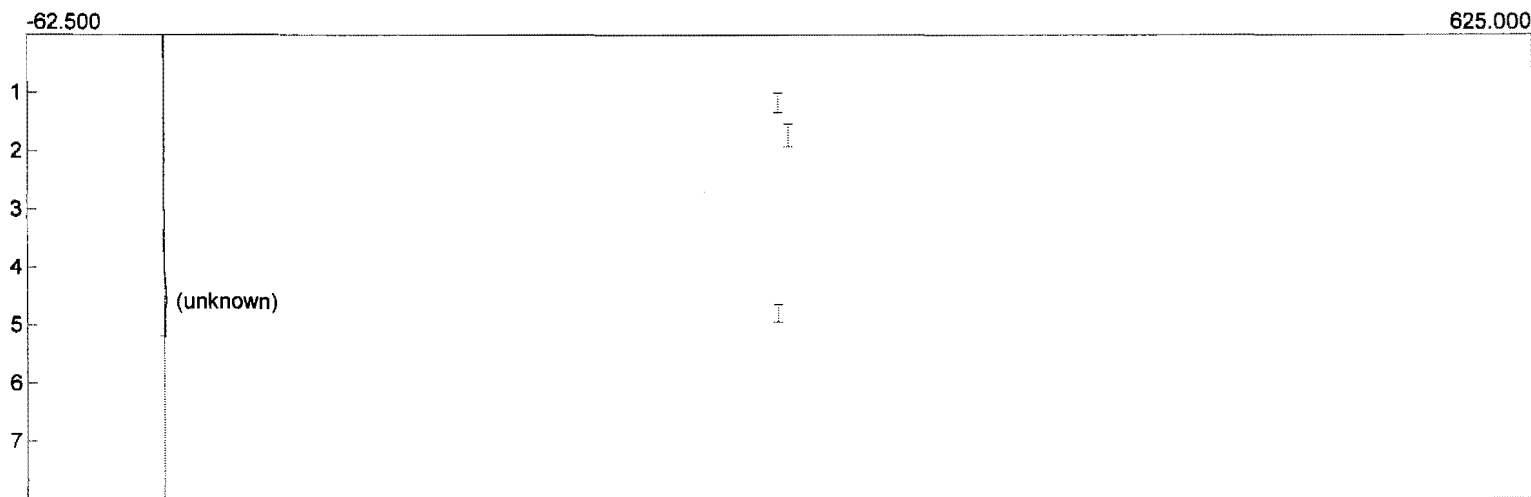
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrupost02.CHR ()
Sample: 0 ppm post
Operator: SY



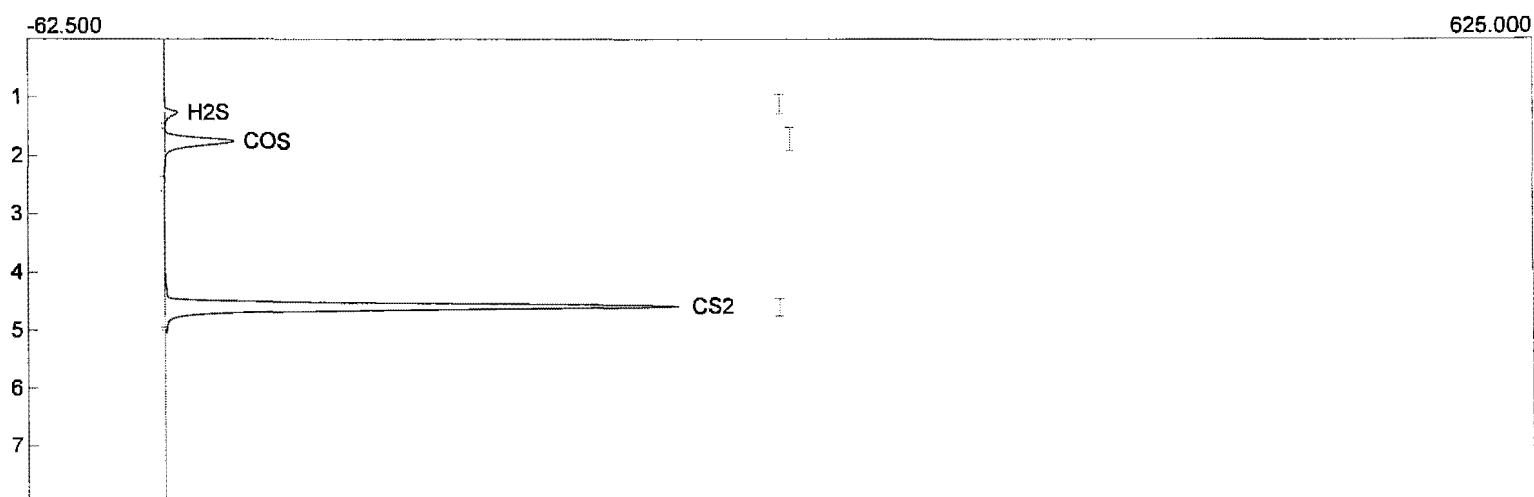
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Collected: 6-4-08
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsrupost01.CHR ()
 Sample: 0 ppm post
 Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrupost11.CHR ()
Sample: 5 ppm post
Operator: SY



Component	Area
H2S	41.4910
COS	291.1180
CS2	1792.4560
	2125.0650

Lab name: ARI Environmental, Inc.

Client: Valero Refining

Client ID: SRU #2

Collected: 6-4-08

Method: Direct Interface

Description: FPD

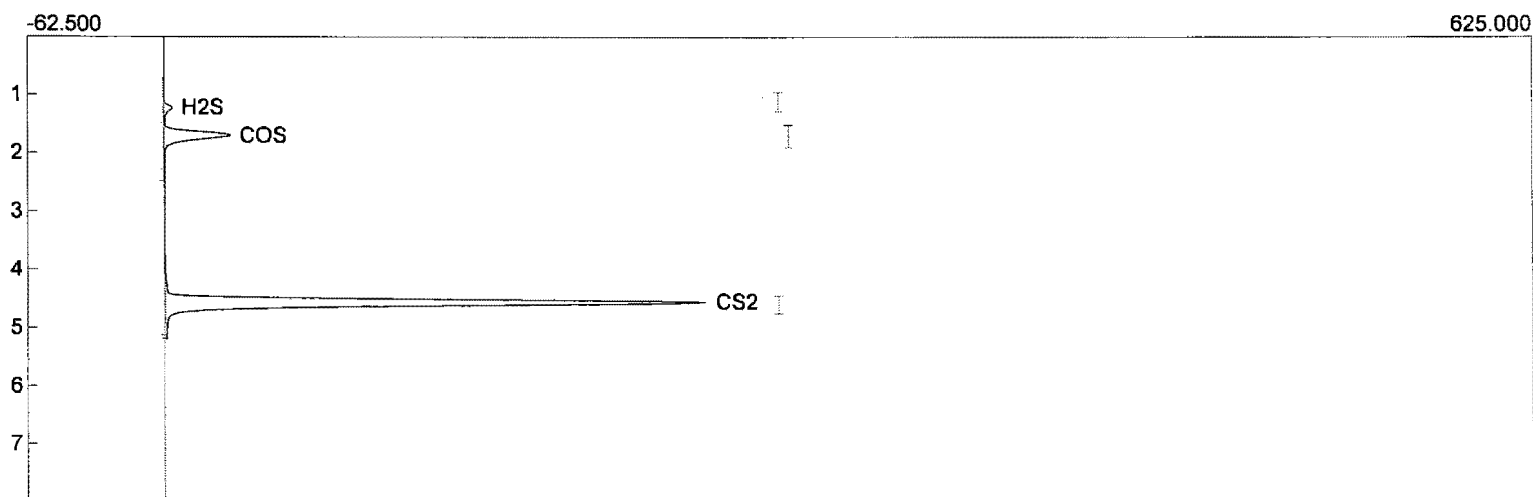
Column: RESTEK Sulfur

Carrier: Nitrogen

Data file: valsrupost12.CHR ()

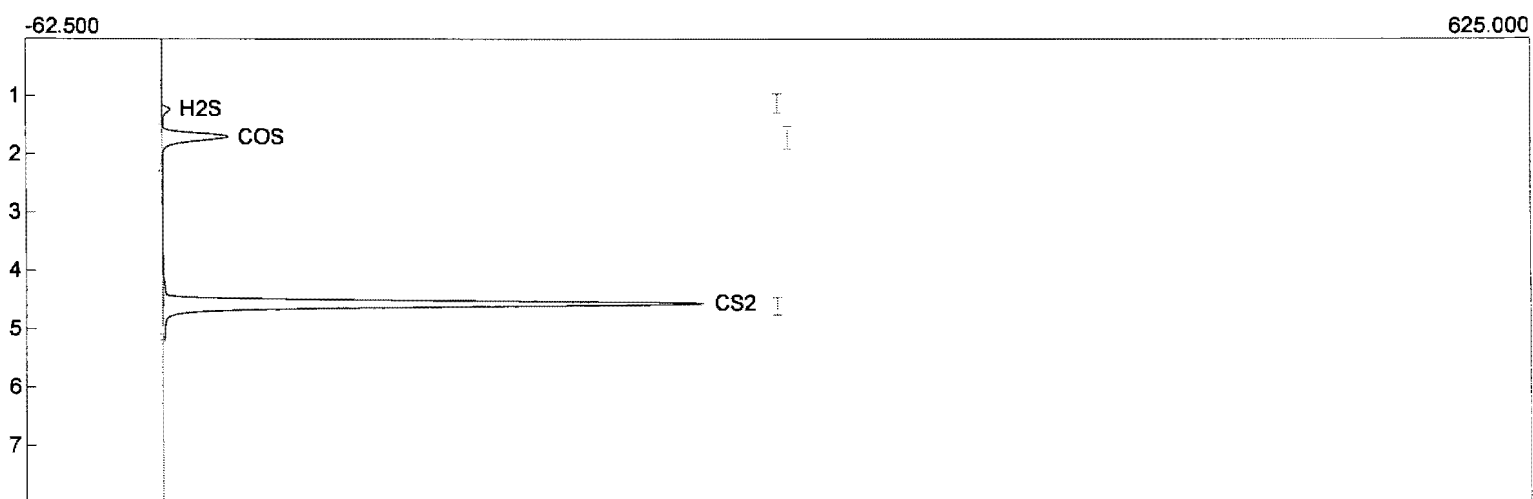
Sample: 5 ppm post

Operator: SY



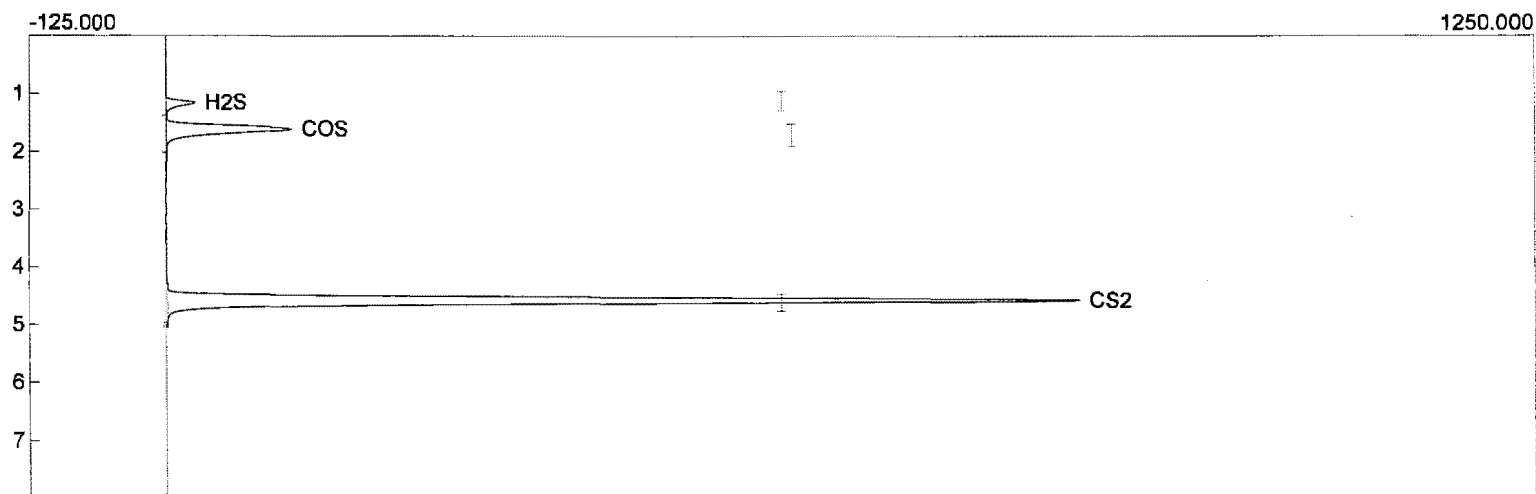
Component	Area
H2S	41.6020
COS	302.3760
CS2	1866.5115
	2210.4895

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrupost13.CHR ()
Sample: 5 ppm post
Operator: SY



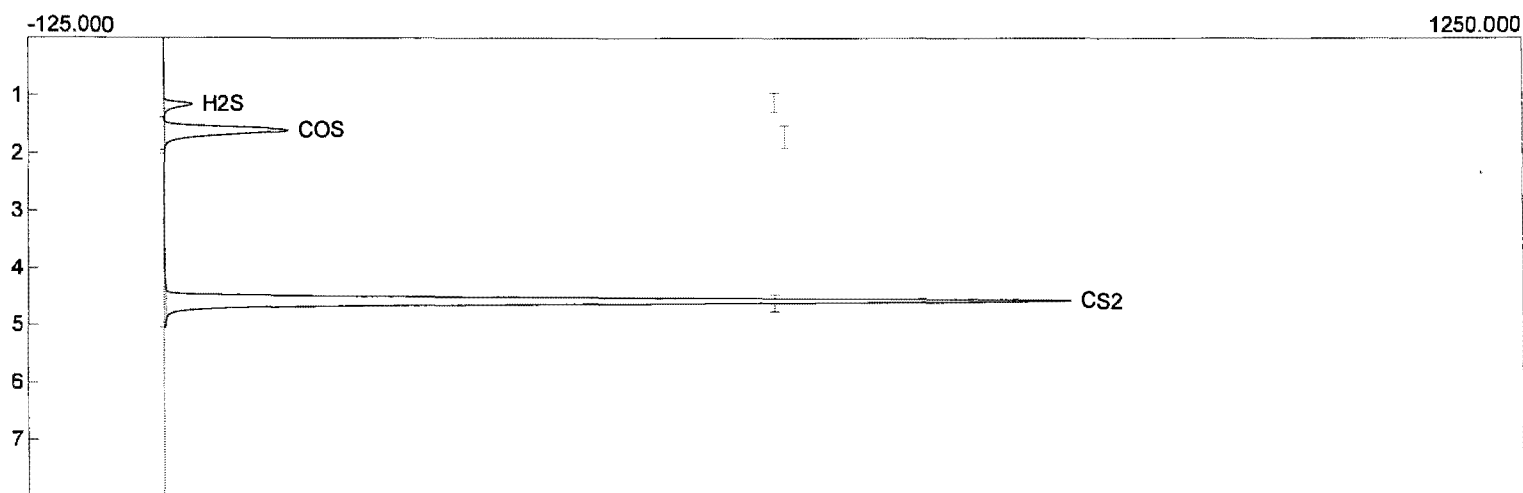
Component	Area
H2S	37.9620
COS	289.6325
CS2	1875.7085
	2203.3030

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrupost08.CHR ()
Sample: 10 ppm post
Operator: SY



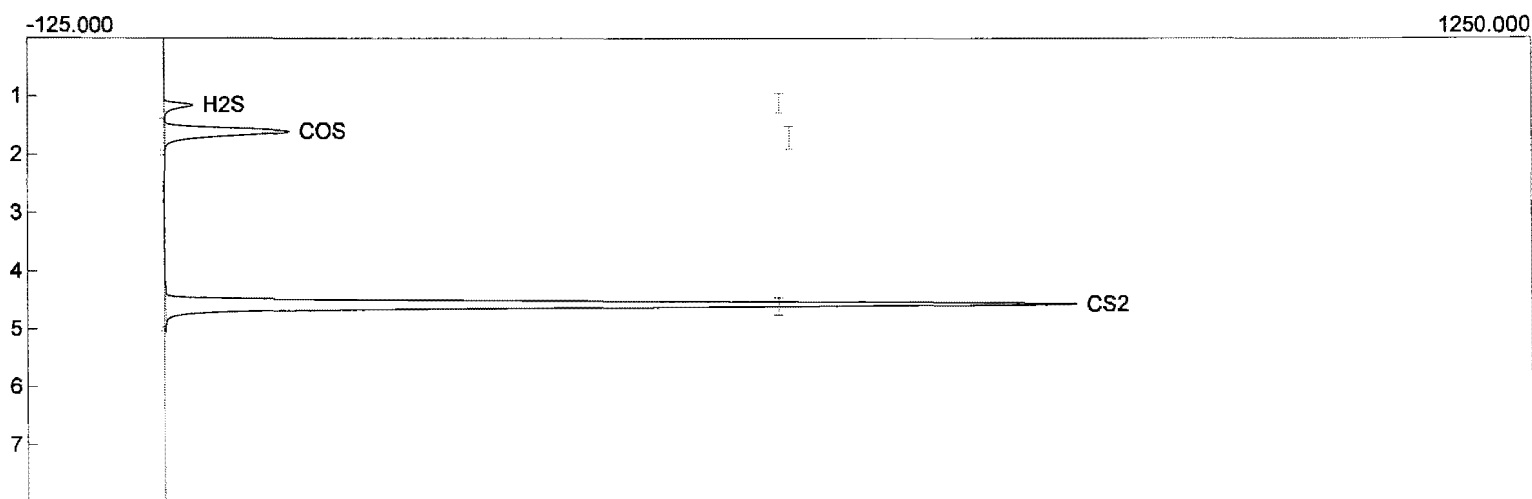
Component	Area
H2S	165.0320
COS	1041.9980
CS2	6147.0880
	7354.1180

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrupost09.CHR ()
Sample: 10 ppm post
Operator: SY



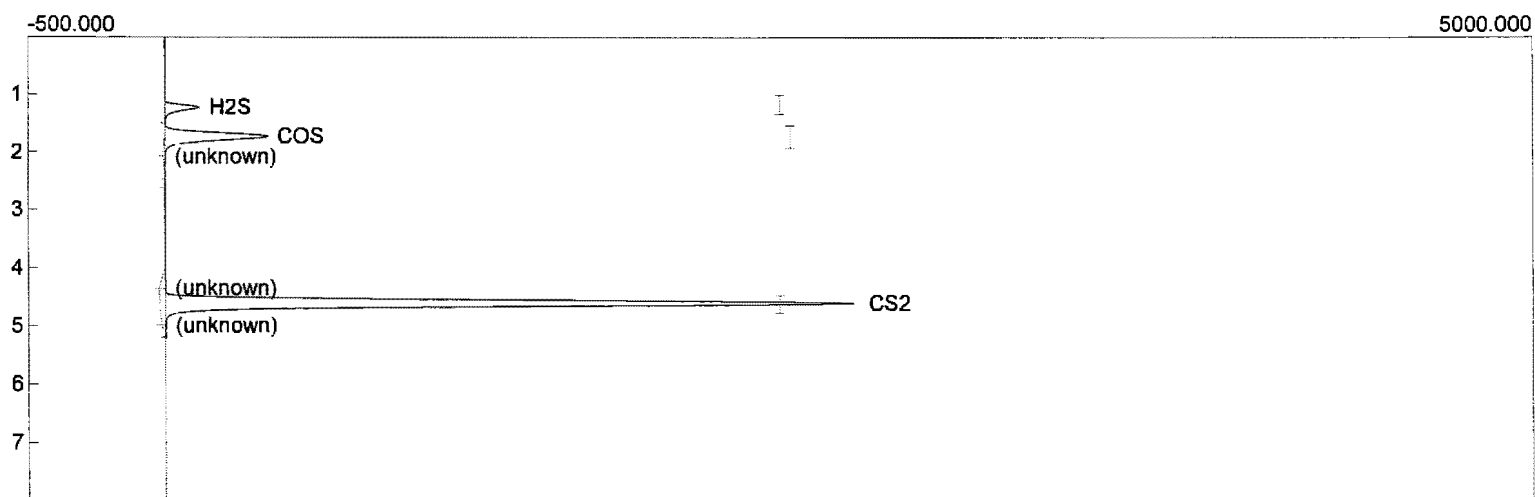
Component	Area
H2S	159.6850
COS	1030.9910
CS2	6130.3485
	7321.0245

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrupost10.CHR ()
Sample: 10 ppm post
Operator: SY



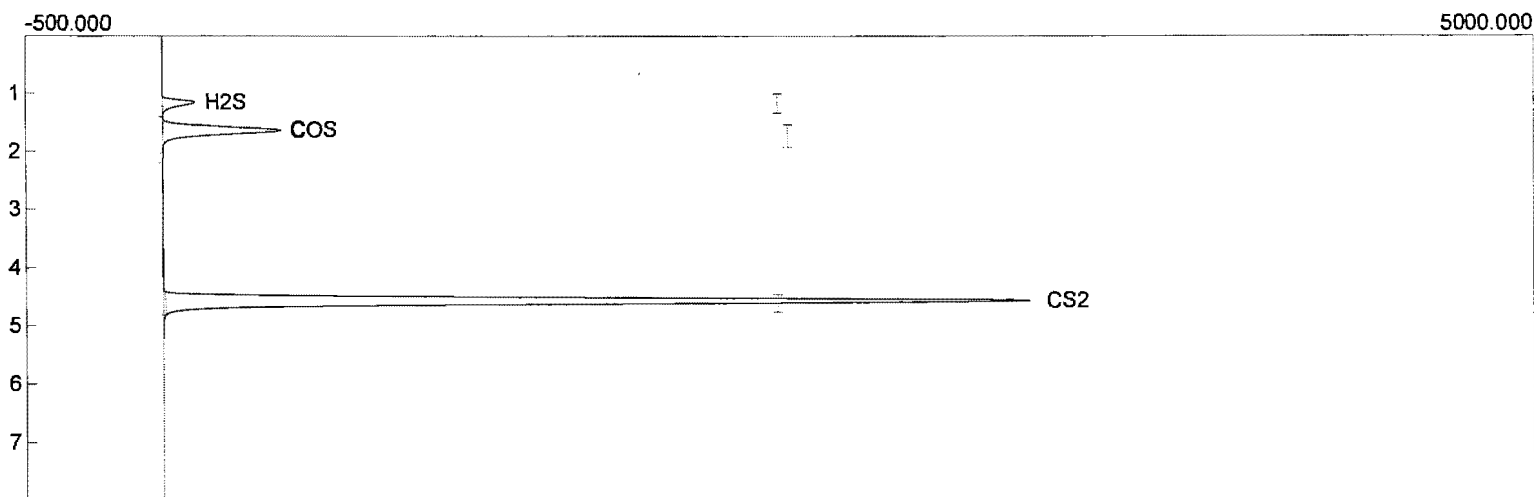
Component	Area
H2S	166.1240
COS	1038.4110
CS2	6142.1220
	7346.6570

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Collected: 6-4-08
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: valsrupost04.CHR ()
 Sample: 20 ppm post
 Operator: SY



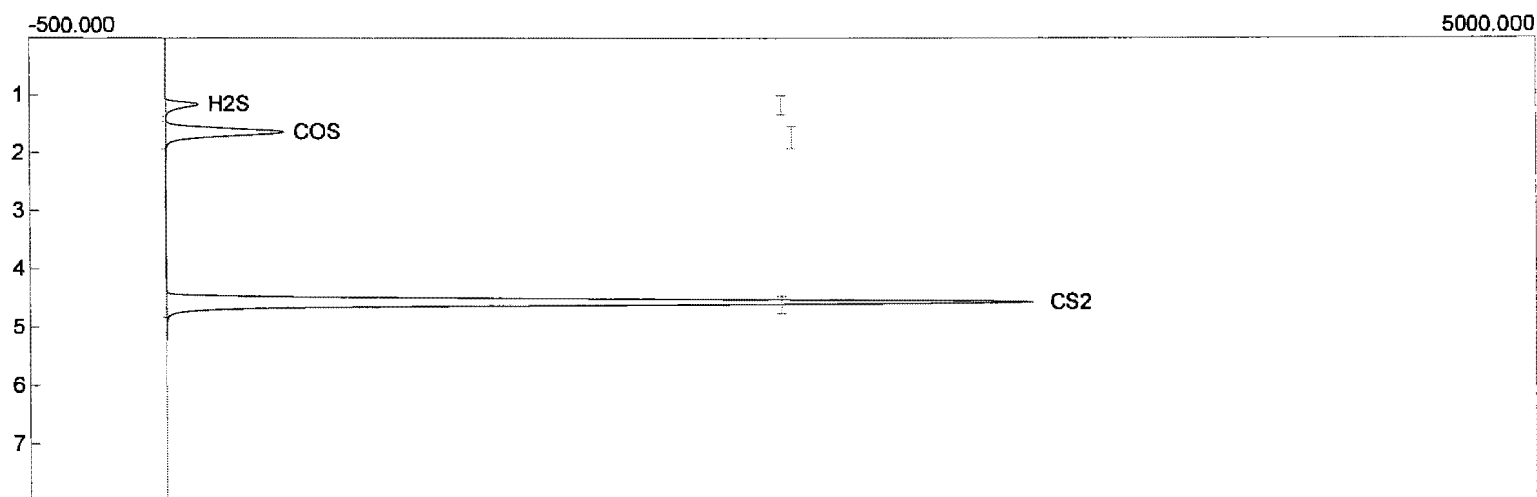
Component	Area
H2S	823.1820
COS	3559.9180
CS2	19632.9060
	24016.0060

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrupost05.CHR ()
Sample: 20 ppm post
Operator: SY



Component	Area
H2S	839.9500
COS	3954.5625
CS2	23082.0880
	27876.6005

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsrupost06.CHR ()
Sample: 20 ppm post
Operator: SY



Component	Area
H2S	817.9070
COS	3914.1960
CS2	23221.1115
	27953.2145



TRS REVERSE LINE LOSS DATA*

Client: Diamond Shamrock Refining Company, L.P. (A Valero Company)
Location: Sunray, Texas
Source: SRU No.2 Incinerator
Date sampled: 6/4/2008
Run Number: 1-3
Compound Analyzed: TRS
Method: USEPA Method 15
Instrument: SRI-9300B
Detector: GC-FPD
Units of Detection: ppm

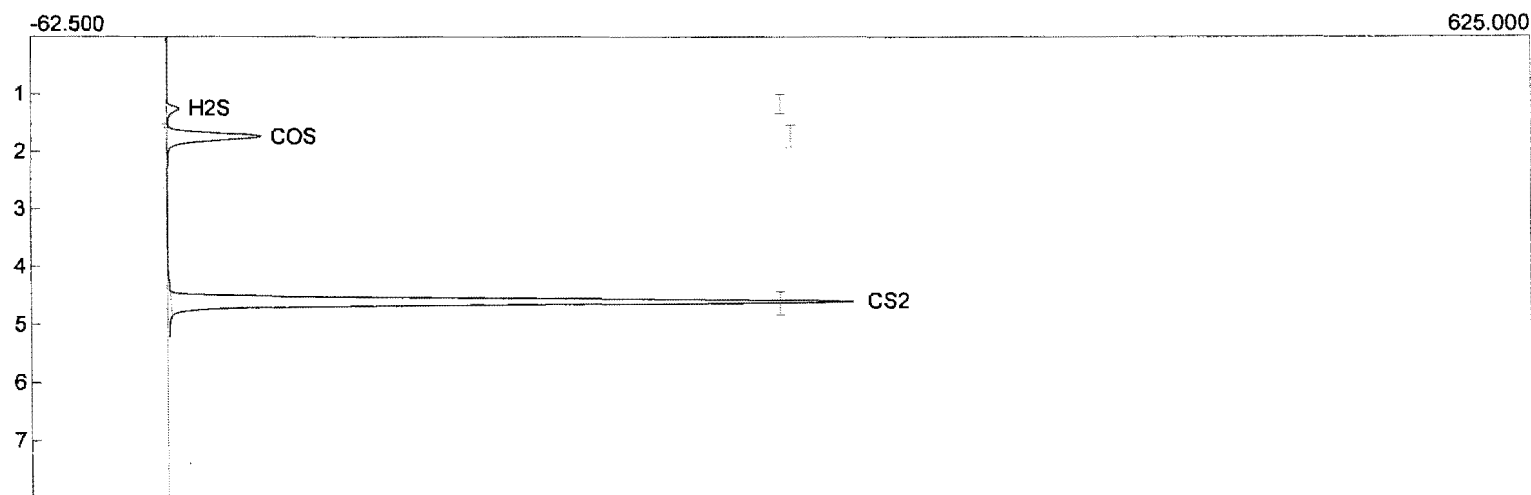
Trial #1 Compound	Injected Concentration	Area Counts	Measured Concentration	% Loss (-) or % Gain (+)
Carbonyl Sulfide	5.5	391.0	5.90	7.2
Hydrogen Sulfide	5.5	56.2	5.70	3.6
Carbon Disulfide	5.5	2,371.6	6.38	16.0

Trial #2 Compound	Injected Concentration	Area Counts	Measured Concentration	% Loss (-) or % Gain (+)
Carbonyl Sulfide	5.5	412.7	6.06	10.3
Hydrogen Sulfide	5.5	57.8	5.77	4.9
Carbon Disulfide	5.5	2,337.5	6.33	15.2

	COS		H2S		cs2
m	0.31	m	0.68	m	0.138
b	-0.27	b	0.61	b	-0.338

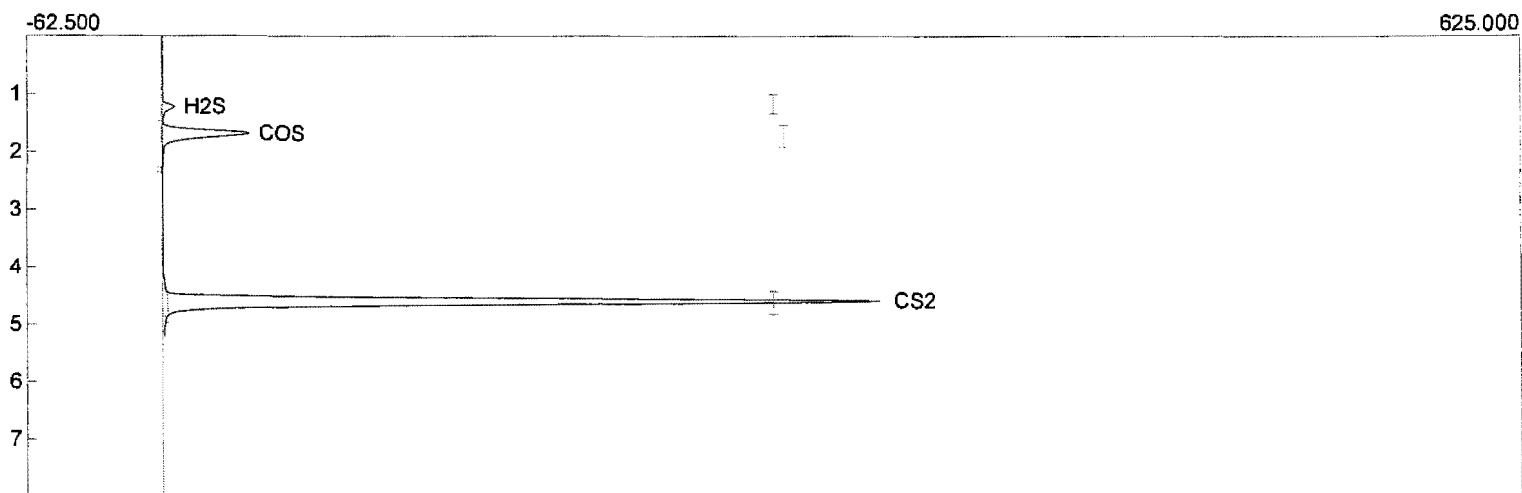
* GC was calibrated through the sampling line. This test result is based on injecting the gas straight to the back of the GC, not through the sample line. This demonstrates that the system has a negative bias average of 4.3% for Hydrogen Sulfide.

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruca15.CHR ()
Sample: reverse line loss
Operator: SY



Component	Area
H2S	57.8200
COS	412.7010
CS2	2337.4805
	2808.0015

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: valsruca14.CHR ()
Sample: reverse line loss
Operator: SY



Component	Area
H2S	56.1770
COS	391.0060
CS2	2371.6305
	2818.8135

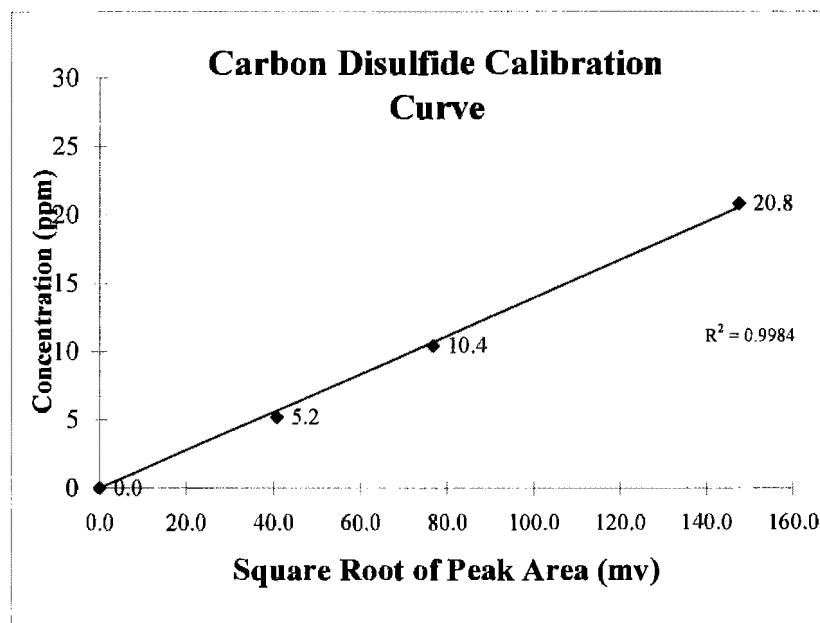
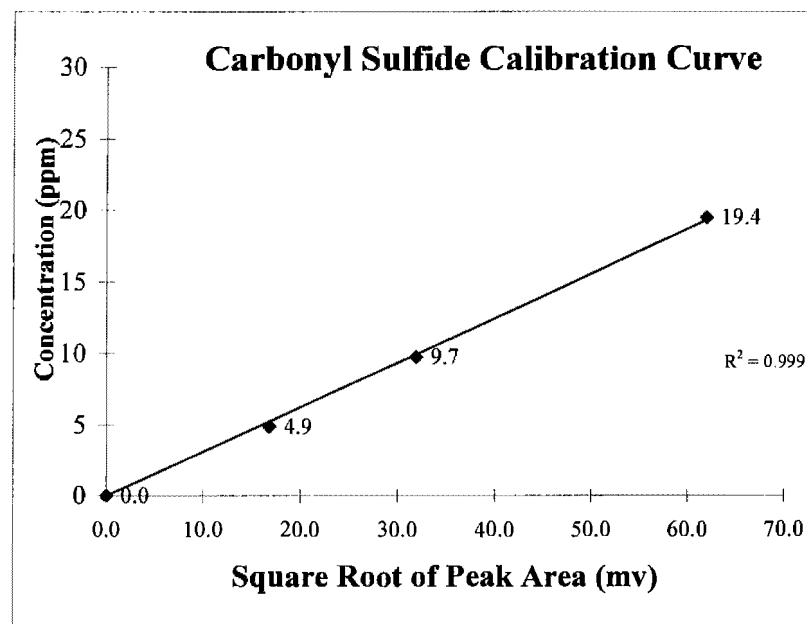
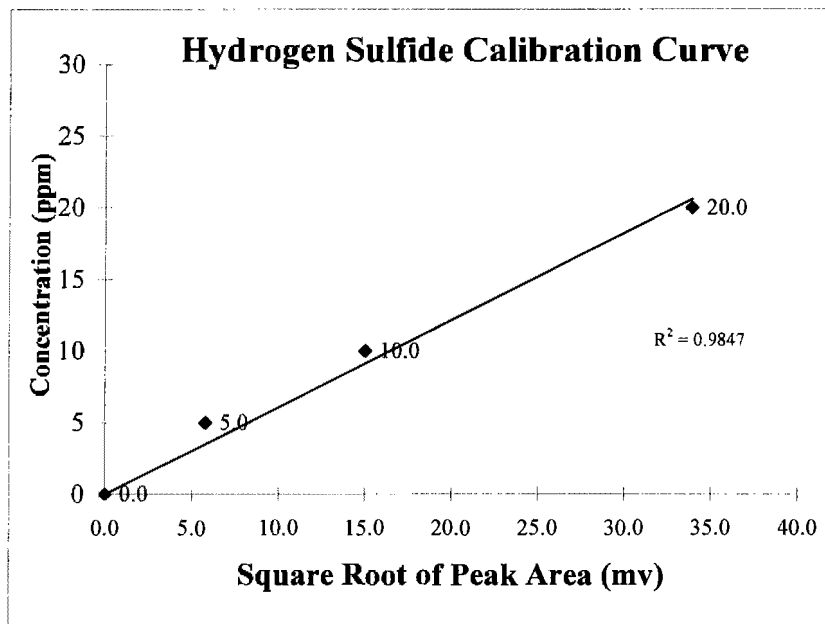
Client: Diamond Shamrock Refining Company, L.P. (A Valero Company)
 Location: Sunray, Texas
 Source: SRU No.2 Incinerator
 Date: 6/5/2008



Description	File Name	H ₂ S Area (mv)	Square Root H ₂ S Area	COS Area (mv)	Square Root COS Area	CS ₂ Area (mv)	Square Root CS ₂ Area
5	11	35.33	5.94	269.47	16.42	1670.64	40.87
	13	31.01	5.57	288.22	16.98	1652.97	40.66
	14	33.71	5.81	291.86	17.08	1649.99	40.62
Average		33.35	5.77	283.18	16.83	1657.87	40.72
10	8	232.59	15.25	1030.67	32.10	5899.50	76.81
	9	238.14	15.43	1036.17	32.19	5900.16	76.81
	10	207.42	14.40	987.66	31.43	5861.79	76.56
Average		226.05	15.03	1018.17	31.91	5887.15	76.73
20	4	1157.93	34.03	3856.37	62.10	21796.29	147.64
	6	1172.19	34.24	3896.5	62.42	21734.45	147.43
	7	1121.87	33.49	3791.27	61.57	21746.00	147.47
Average		1150.66	33.92	3848.05	62.03	21758.91	147.51
0 ppm							
	15	0.00	0.00	0.00	0.00	0.00	0.00
	16	0.00	0.00	0.00	0.00	0.00	0.00
	17	0.00	0.00	0.00	0.00	0.00	0.00
Average		0.00	0.00	0.00	0.00	0.00	0.00

Calibration Curves

June 5, 2008



Analytical Calculation Summary

Calibration Standards Area Linear Regression Fit

Client: Diamond Shamrock Refining Company, L.P. (A Valero Company)
Location: Sunray, Texas
Source: SRU No.2 Incinerator
Date sampled: 6/5/2008
Run Number: 1-3
Compound Analyzed: Hydrogen Sulfide
Method: USEPA Method 15
Instrument: SRI-9300B
Detector: GC-FPD
Units of Detection: ppm

Calibration Standards

Statistical Analysis Summary

Standard #	Standard Peak Area (mv)	Square Root Peak Area (mv)	Standard Concentration (ppm)
1	0.0	0.0	0.0
2	33.4	5.8	5.0
3	226.1	15.0	10.0
4	1,150.7	33.9	20.0

Σxy : 857.6529
 Σx : 54.7
 Σy : 35
 Σx^2 : 1410
 $\Sigma (x)^2$: 2996
 N : 4
 m : 0.572842
 b : 0.911899



Analytical Calculation Summary

Calibration Standards Area Linear Regression Fit

Client: Diamond Shamrock Refining Company, L.P. (A Valero Company)
Location: Sunray, Texas
Source: SRU No.2 Incinerator
Date sampled: 6/5/2008
Run Number: 1-3
Compound Analyzed: Carbonyl Sulfide
Method: USEPA Method 15
Instrument: SRI-9300B
Detector: GC-FPD
Units of Detection: ppm

Calibration Standards

Statistical Analysis Summary

Standard #	Standard Peak Area (mv)	Square Root Peak Area (mv)	Standard Concentration (ppm)
1	0.0	0.0	0.0
2	283.2	16.8	4.9
3	1,018.2	31.9	9.7
4	3,848.0	62.0	19.4

Σxy : 1598.665
 Σx : 110.8
 Σy : 34.03733
 Σx^2 : 5149
 $\Sigma (x)^2$: 12270
 N : 4
 m : 0.315136
 b : -0.21753

Analytical Calculation Summary

Calibration Standards Area Linear Regression Fit

Client: Diamond Shamrock Refining Company, L.P. (A Valero Company)
Location: Sunray, Texas
Source: SRU No.2 Incinerator
Date sampled: 6/5/2008
Run Number: 1-3
Compound Analyzed: Carbon Disulfide
Method: USEPA Method 15
Instrument: SRI-9300B
Detector: GC-FPD
Units of Detection: ppm

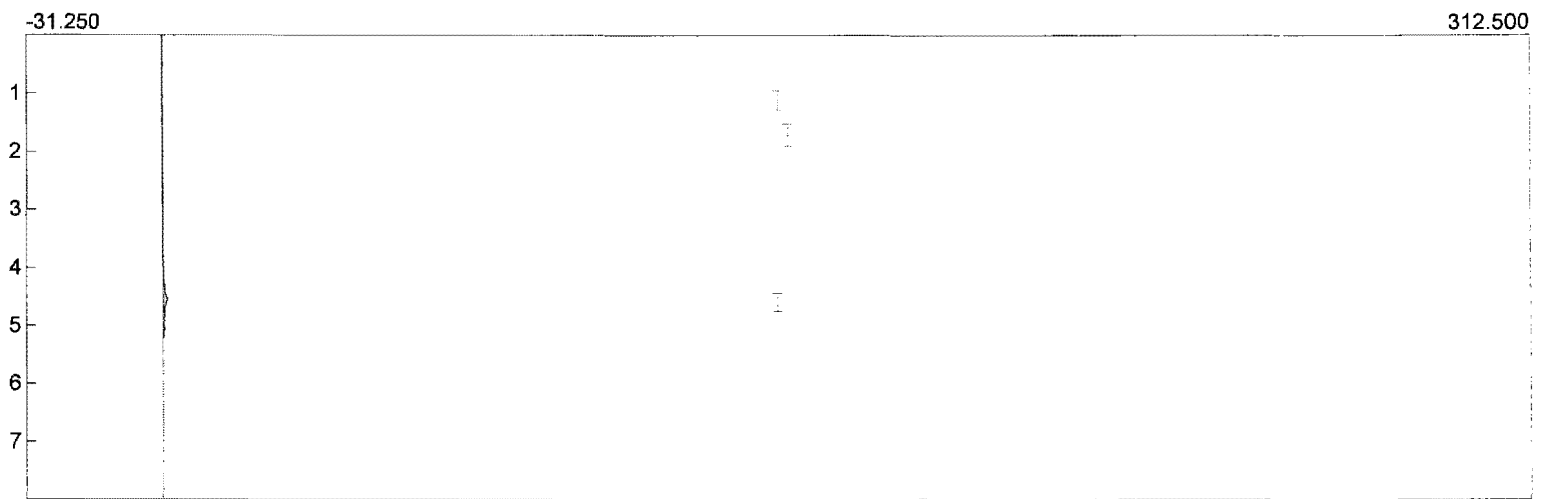
Calibration Standards

Statistical Analysis Summary

Standard #	Standard Peak Area (mv)	Square Root Peak Area (mv)	Standard Concentration (ppm)
1	0.0	0.0	0.0
2	1,657.9	40.7	5.2
3	5,887.2	76.7	10.4
4	21,758.9	147.5	20.8

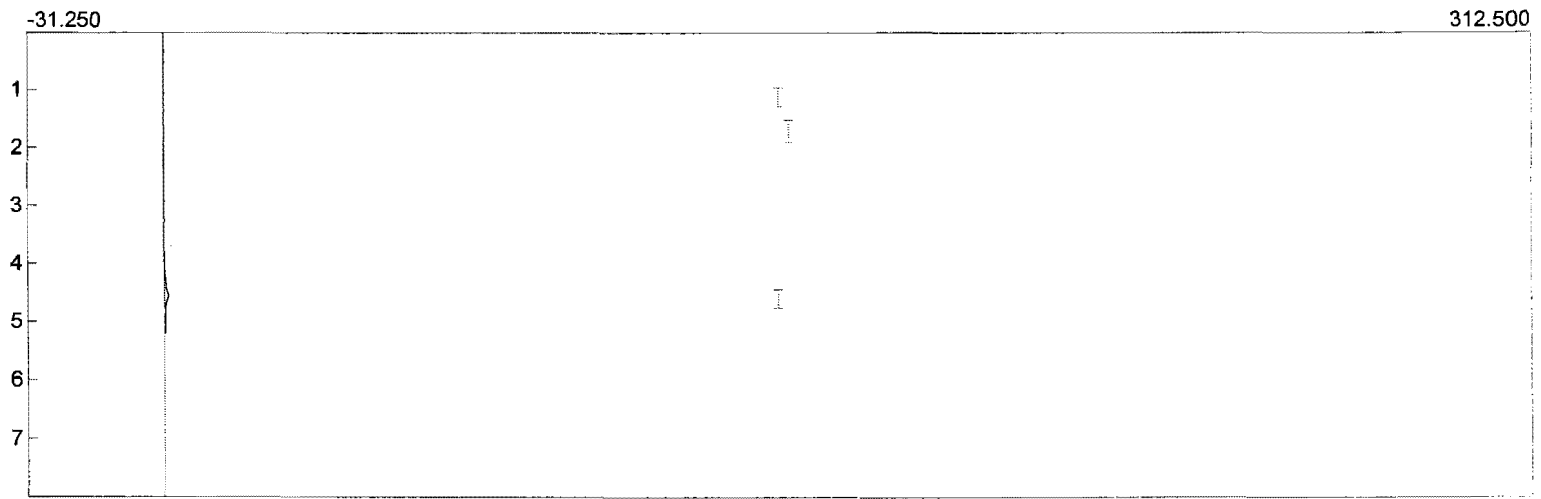
Σxy : 4082.815
 Σx : 265.0
 Σy : 36.44401
 Σx^2 : 29304
 $\Sigma (x)^2$: 70200
 N : 4
 m : 0.141981
 b : -0.29361

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-5-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-5srucal15.CHR ()
Sample: 0 ppm pre
Operator: SY



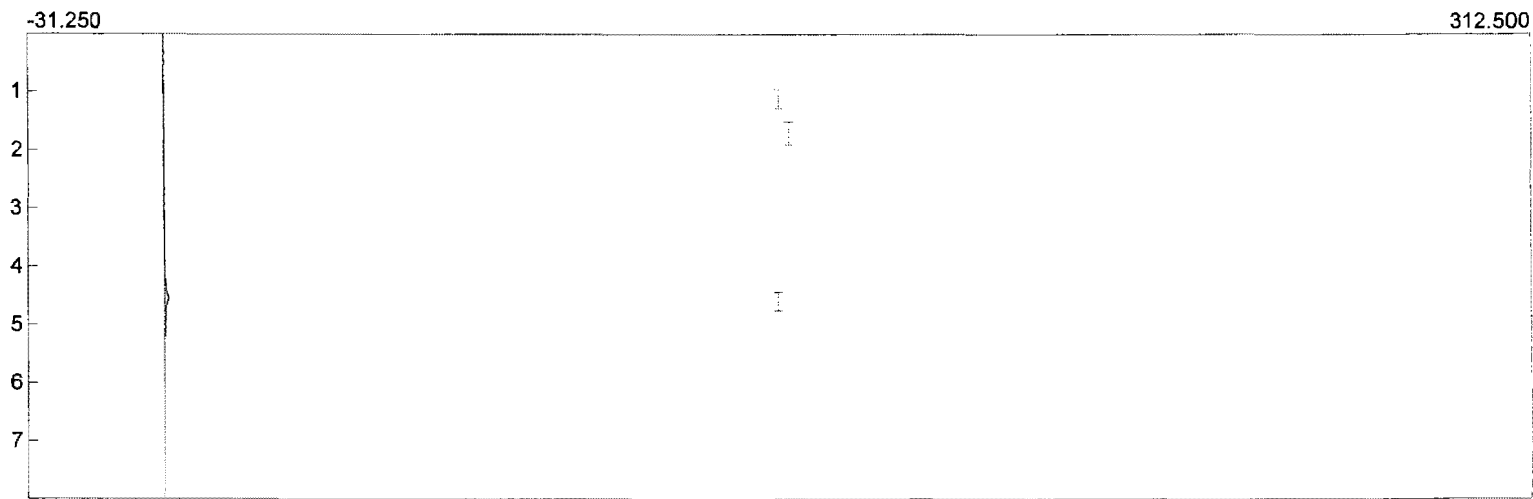
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-5-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-5srucal16.CHR ()
Sample: 0 ppm pre
Operator: SY



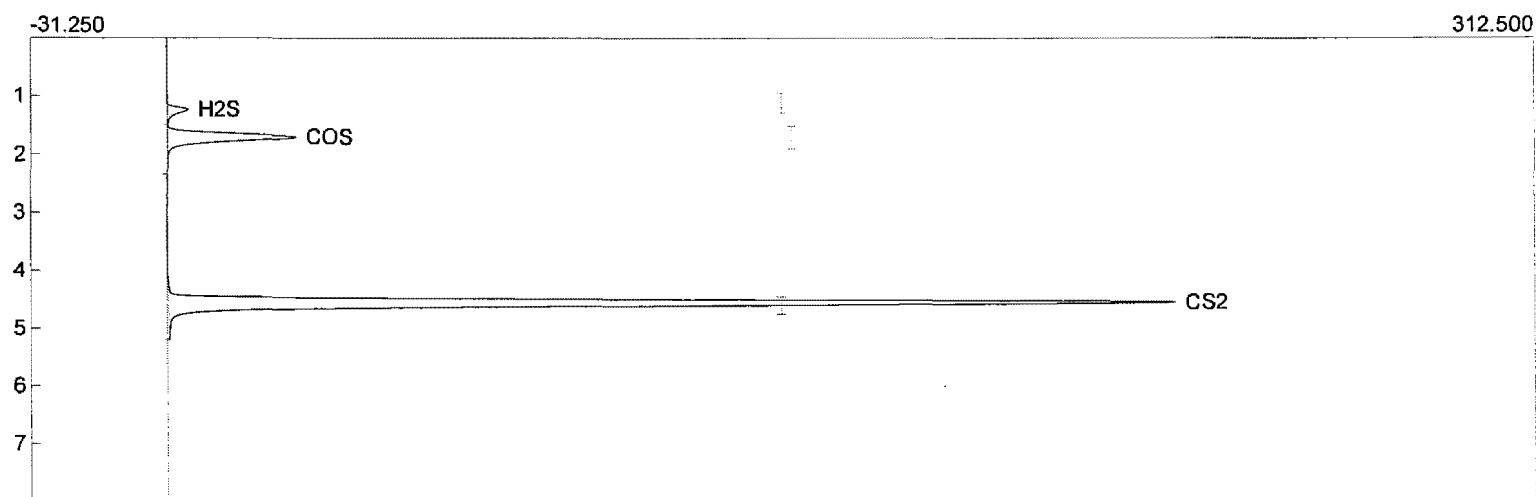
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-5-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-5srucal17.CHR ()
Sample: 0 ppm pre
Operator: SY



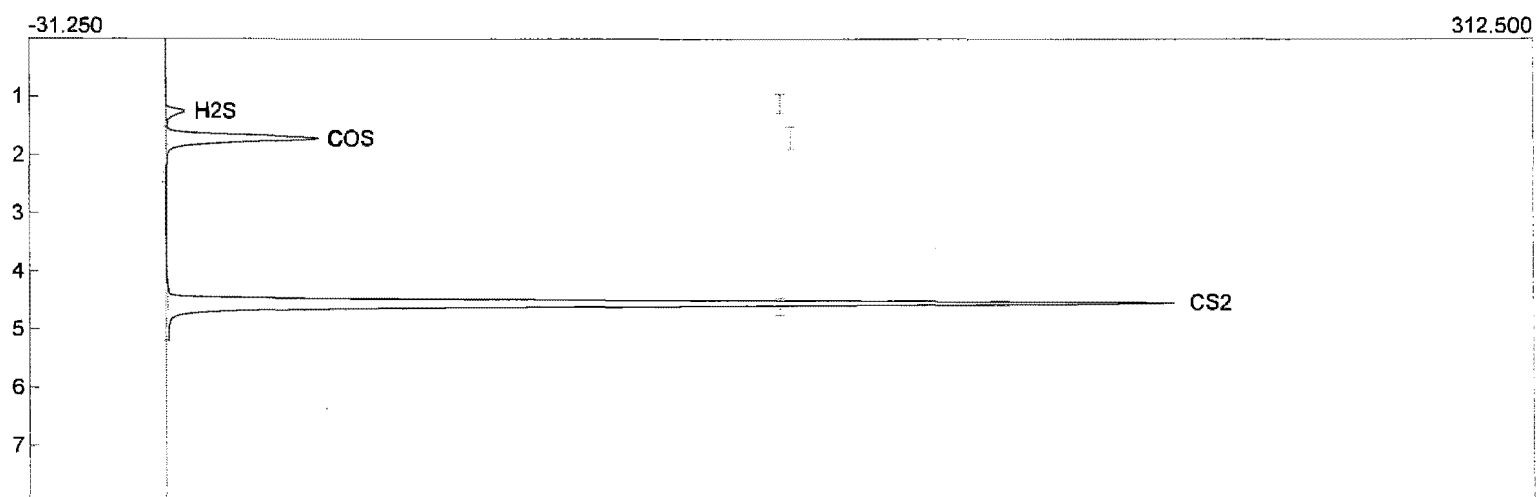
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-5-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-5srucal11.CHR ()
Sample: 5 ppm pre
Operator: SY



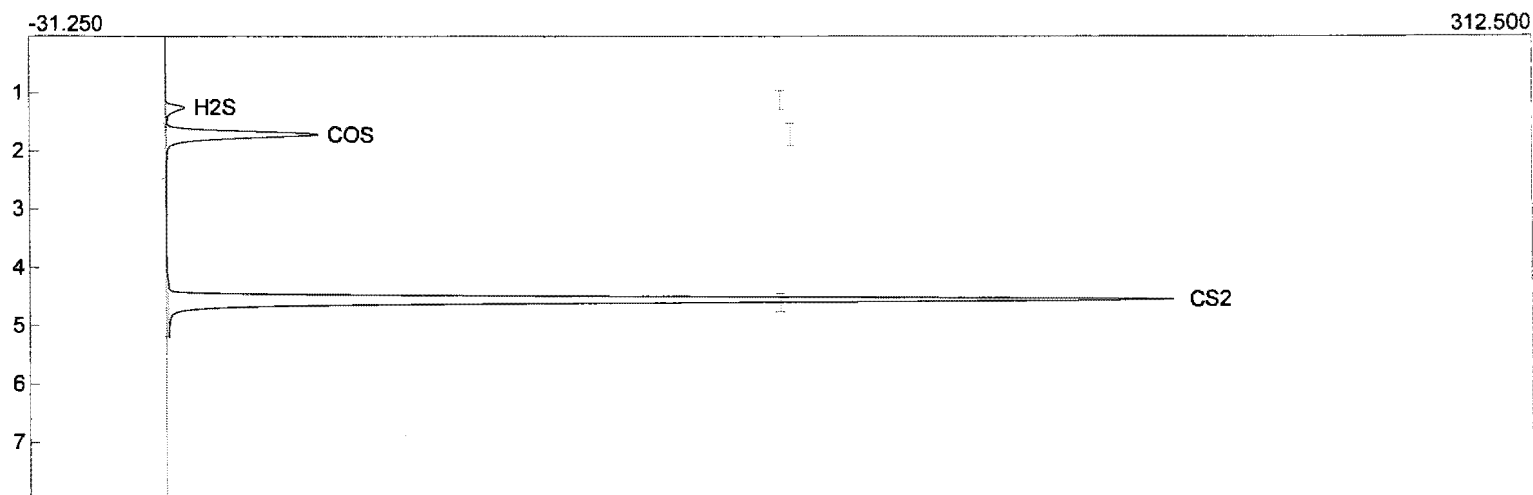
Component	Area
H2S	35.3280
COS	269.4720
CS2	1670.6430
	1975.4430

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-5-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-5srucal13.CHR ()
Sample: 5 ppm pre
Operator: SY



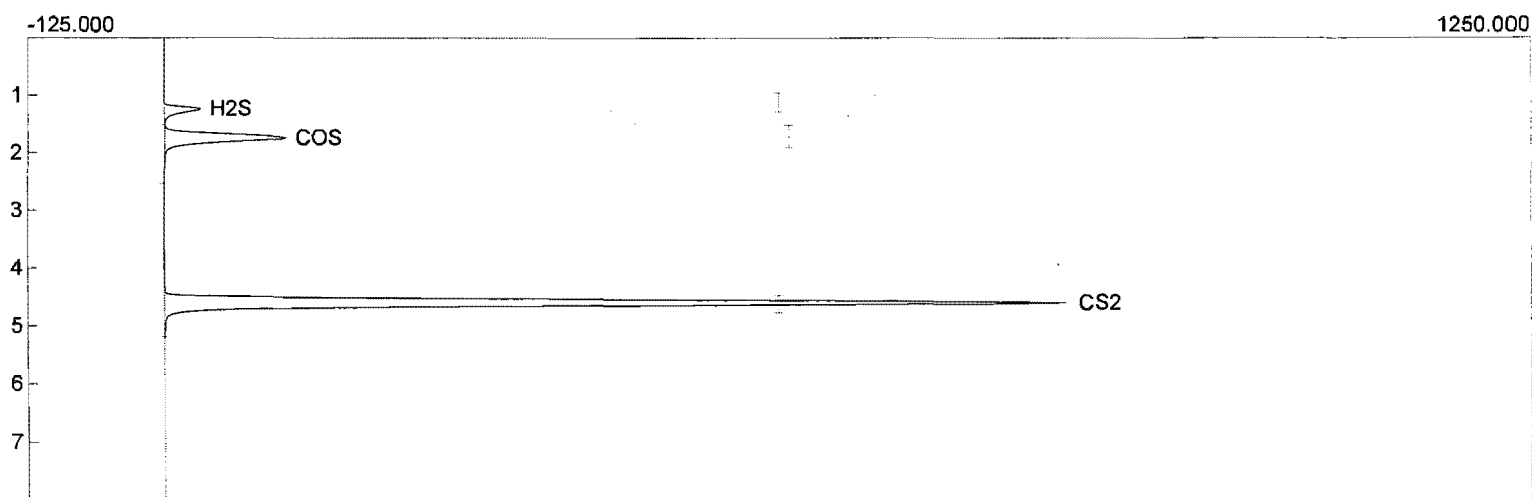
Component	Area
H2S	31.0090
COS	288.2220
CS2	1652.9720
	1972.2030

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-5-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-5srucal14.CHR ()
Sample: 5 ppm pre
Operator: SY



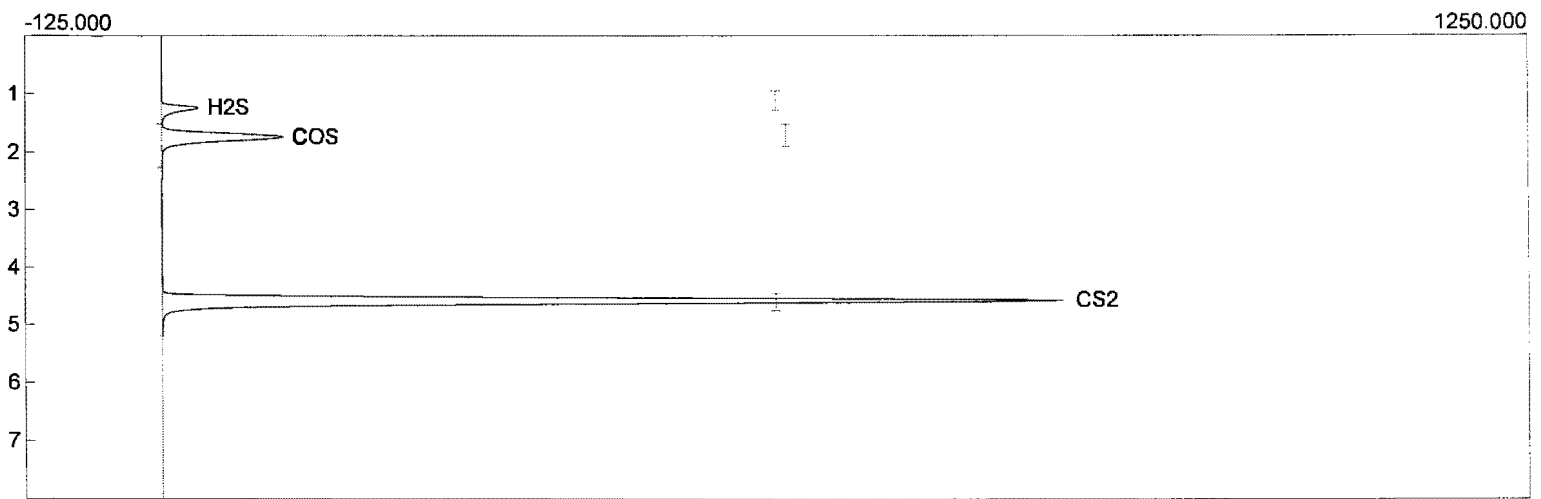
Component	Area
H2S	33.7120
COS	291.8645
CS2	1649.9900
	1975.5665

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-5-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-5srucal08.CHR ()
Sample: 10 ppm pre
Operator: SY



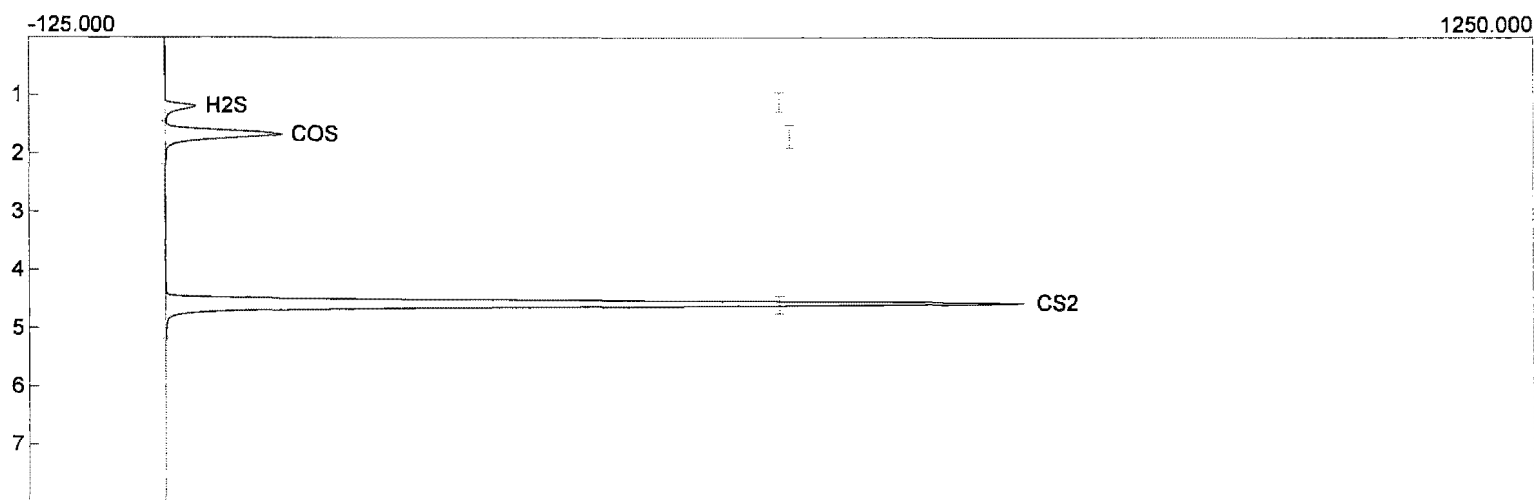
Component	Area
H2S	232.5920
COS	1030.6700
CS2	5899.5020
	7162.7640

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-5-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-5srucal09.CHR ()
Sample: 10 ppm pre
Operator: SY



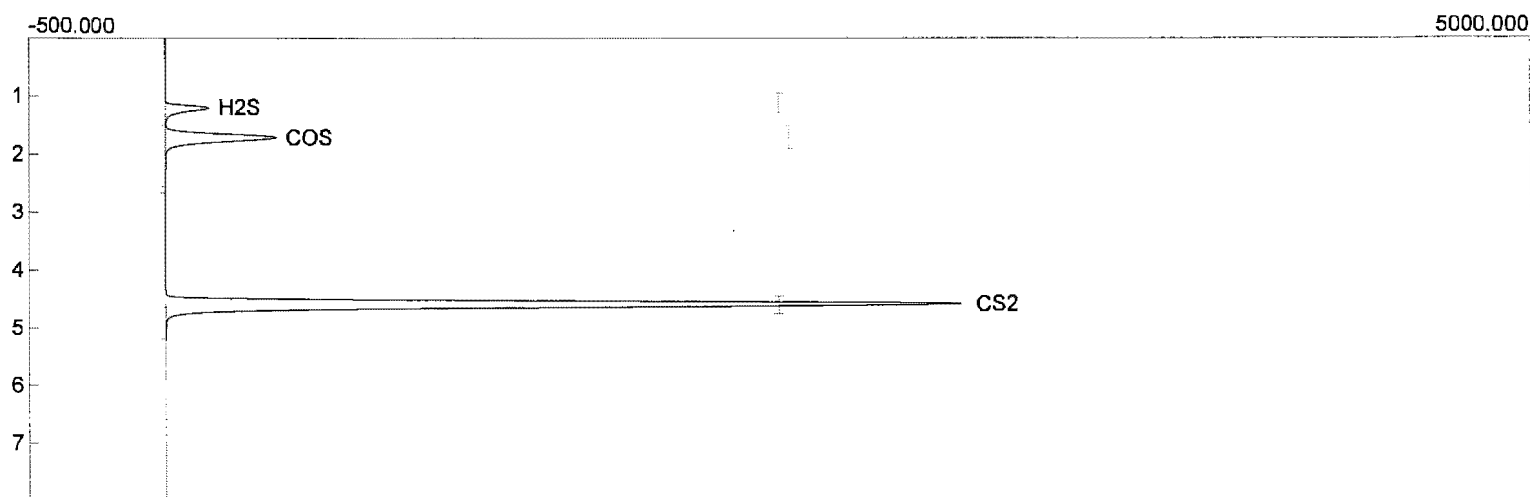
Component	Area
H2S	238.1415
COS	1036.1720
CS2	5900.1570
	7174.4705

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-5-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-5srucal10.CHR ()
Sample: 10 ppm pre
Operator: SY



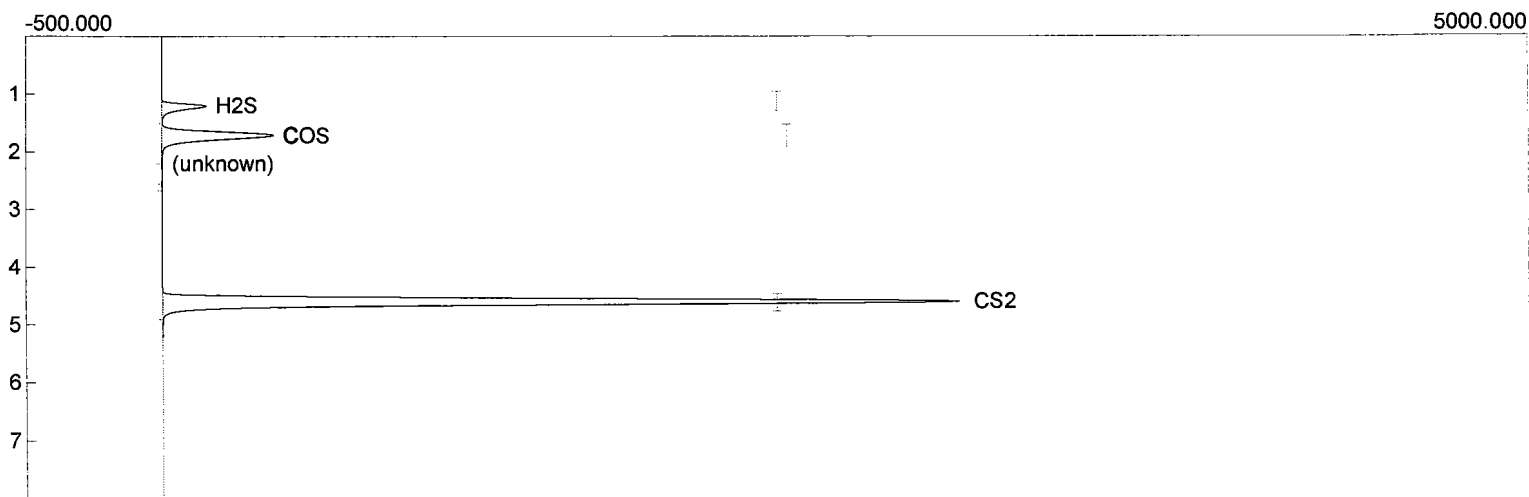
Component	Area
H2S	207.4220
COS	987.6620
CS2	5861.7870
	7056.8710

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-5-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-5srucal04.CHR ()
Sample: 20 ppm pre
Operator: SY



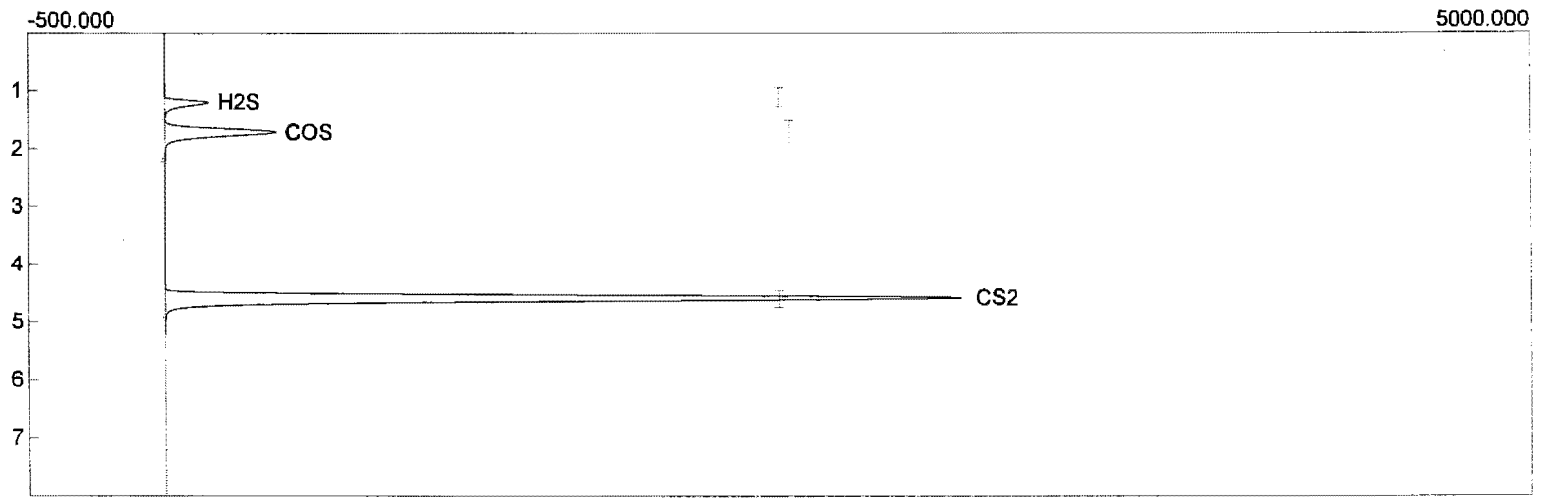
Component	Area
H2S	1157.9345
COS	3856.3660
CS2	21796.2860
	26810.5865

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-5-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-5srucal06.CHR ()
Sample: 20 ppm pre
Operator: SY



Component	Area
H2S	1172.1940
COS	3896.5020
CS2	21734.4515
	26803.1475

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-5-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-5srucal07.CHR ()
Sample: 20 ppm pre
Operator: SY



Component	Area
H2S	1121.8670
COS	3791.2680
CS2	21746.0020
	26659.1370



TRS STANDARDS PRETEST DATA

Client: Diamond Shamrock Refining Company, L.P. (A Valero Company)
Location: Sunray, Texas
Source: SRU No.2 Incinerator
Date sampled: 6/6/2008
Run Number: 4-6
Compound Analyzed: TRS
Method: USEPA Method 15
Instrument: SRI-9300B
Detector: GC-FPD
Units of Detection: ppm

Carbonyl Sulfide Standards			
Standard No	Concentration	Area	Sq Rt Area Counts
1	0.0	0.0	0.0
2	4.9	333.3	18.3
3	9.7	958.1	31.0
4	19.4	4,014.9	63.4

Hydrogen Sulfide Standards			
Standard No	Concentration	Area	Sq Rt Area Counts
1	0.0	0.0	0.0
2	5.0	56.6	7.5
3	10.0	193.3	13.9
4	20.0	1,096.9	33.1

Carbon Disulfide Standards			
Standard No	Concentration	Area	Sq Rt Area Counts
1	0.0	0.0	0.0
2	5.2	1,916.3	43.8
3	10.4	5,686.8	75.4
4	20.8	18,682.7	136.7

Analytical Calculation Summary

Calibration Standards Area Linear Regression Fit

Client: Diamond Shamrock Refining Company, L.P. (A Valero Company)
Location: Sunray, Texas
Source: SRU No.2 Incinerator
Date sampled: 6/6/2008
Run Number: 4-6
Compound Analyzed: Hydrogen Sulfide
Method: USEPA Method 15
Instrument: SRI-9300B
Detector: GC-FPD
Units of Detection: ppm

Calibration Standards

Statistical Analysis Summary

Standard #	Standard Peak Area (mv)	Square Root Peak Area (mv)	Standard Concentration (ppm)
1	0.0	0.0	0.0
2	56.6	7.5	5.0
3	193.3	13.9	10.0
4	1,096.9	33.1	20.0

Σxy : 839.0609
 Σx : 54.5
 Σy : 35
 Σx^2 : 1347
 $\Sigma (x)^2$: 2976
 N : 4
 m : 0.599963
 b : 0.568153



Analytical Calculation Summary

Calibration Standards Area Linear Regression Fit

Client: Diamond Shamrock Refining Company, L.P. (A Valero Company)
Location: Sunray, Texas
Source: SRU No.2 Incinerator
Date sampled: 6/6/2008
Run Number: 4-6
Compound Analyzed: Carbonyl Sulfide
Method: USEPA Method 15
Instrument: SRI-9300B
Detector: GC-FPD
Units of Detection: ppm

Calibration Standards

Statistical Analysis Summary

Standard #	Standard Peak Area (mv)	Square Root Peak Area (mv)	Standard Concentration (ppm)
1	0.0	0.0	0.0
2	333.3	18.3	4.9
3	958.1	31.0	9.7
4	4,014.9	63.4	19.4

Σxy : 1622.201
 Σx : 112.6
 Σy : 34.03733
 Σx^2 : 5306
 $\Sigma (x)^2$: 12673
N: 4
m: 0.310681
b: -0.23422



Analytical Calculation Summary

Calibration Standards Area Linear Regression Fit

Client: Diamond Shamrock Refining Company, L.P. (A Valero Company)
Location: Sunray, Texas
Source: SRU No.2 Incinerator
Date sampled: 6/6/2008
Run Number: 4-6
Compound Analyzed: Carbon Disulfide
Method: USEPA Method 15
Instrument: SRI-9300B
Detector: GC-FPD
Units of Detection: ppm

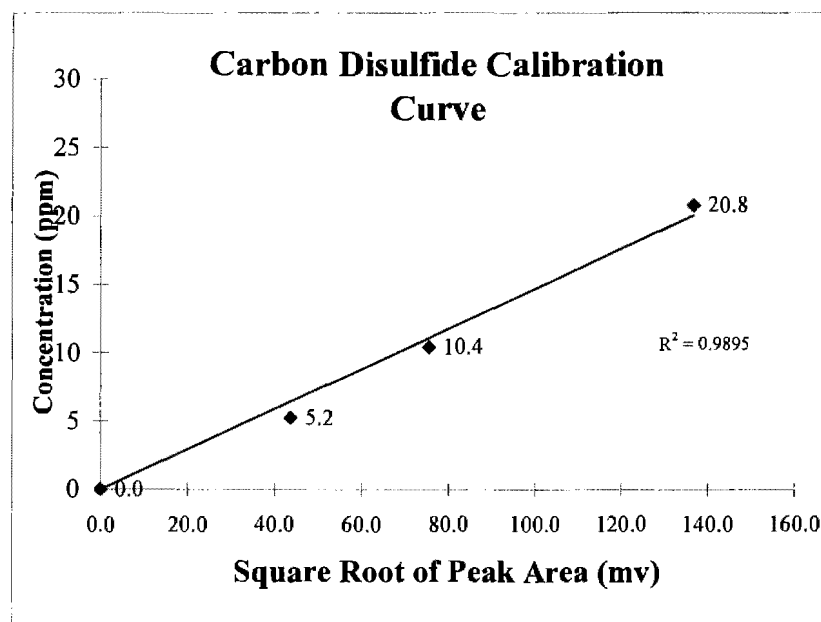
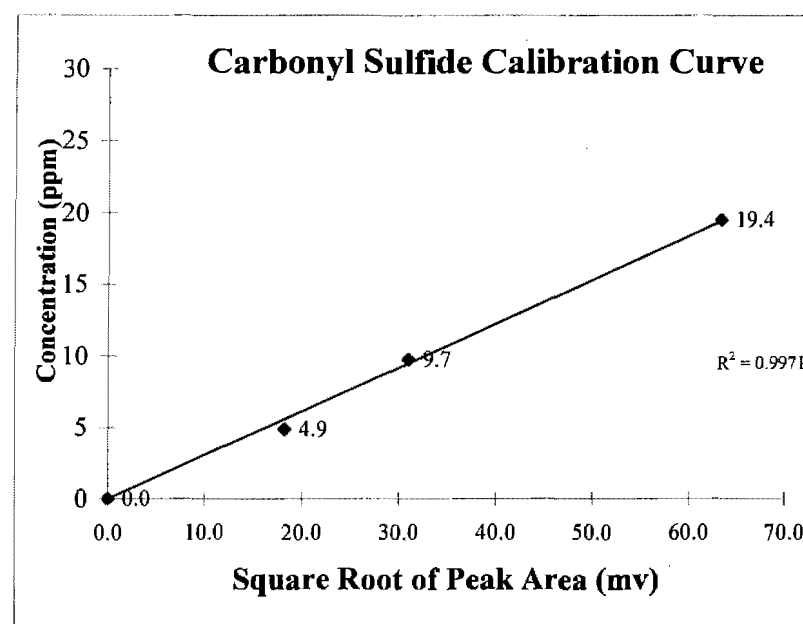
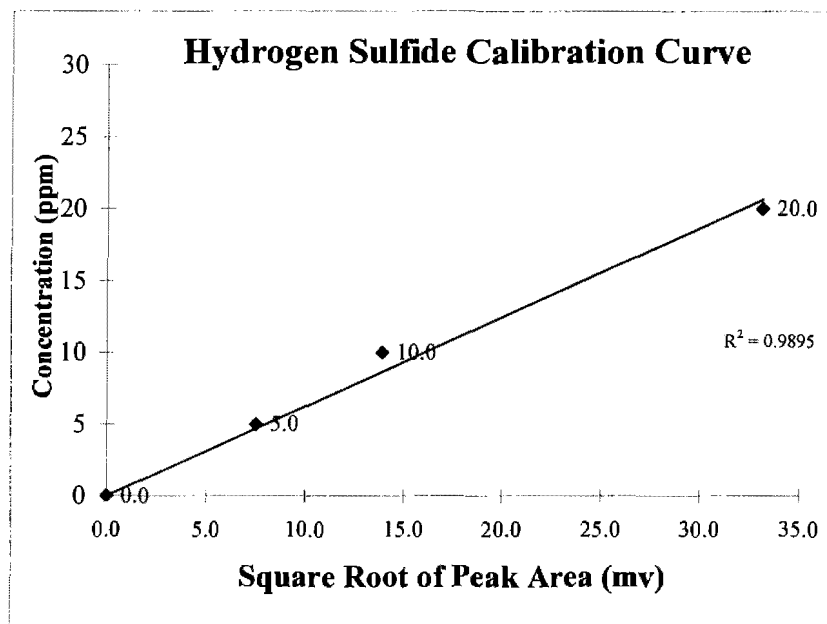
Calibration Standards

Statistical Analysis Summary

Standard #	Standard Peak Area (mv)	Square Root Peak Area (mv)	Standard Concentration (ppm)	
1	0.0	0.0	0.0	Σxy : 3859.608
2	1,916.3	43.8	5.2	Σx : 255.9
3	5,686.8	75.4	10.4	Σy : 36.44401
4	18,682.7	136.7	20.8	Σx^2 : 26286
				$\Sigma(x)^2$: 65470
				N: 4
				m: 0.154095
				b: -0.74614

Calibration Curves

June 6, 2008



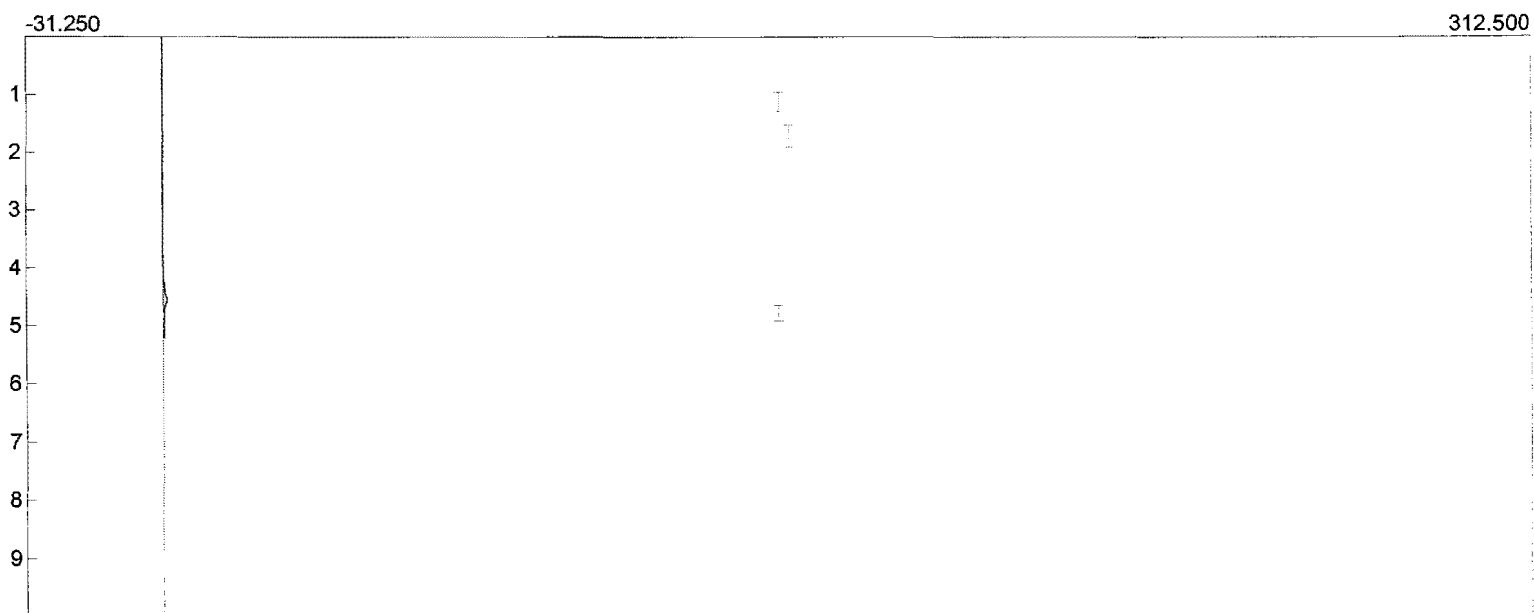
Client: Diamond Shamrock Refining Company, L.P. (A Valero Company)
 Location: Sunray, Texas
 Source: SRU No.2 Incinerator
 Date: 6/6/2008



Pre- Cal

Description	File Name	H ₂ S Area (mv)	Square Root H ₂ S Area	COS Area (mv)	Square Root COS Area	CS ₂ Area (mv)	Square Root CS ₂ Area
5	14	54.40	7.38	329.35	18.15	1906.36	43.66
	15	58.51	7.65	333.58	18.26	1894.92	43.53
	16	56.95	7.55	336.95	18.36	1947.50	44.13
Average		56.62	7.52	333.29	18.26	1916.26	43.77
10	8	207.67	14.41	1017.60	31.90	5656.51	75.21
	9	191.91	13.85	922.81	30.38	5564.728	74.60
	10	180.46	13.43	933.90	30.56	5839.28	76.42
Average		193.35	13.90	958.10	30.95	5686.84	75.41
20	5	1037.96	32.22	3977.92	63.07	18465.71	135.89
	6	1056.23	32.50	4029.90	63.48	18555.78	136.22
	7	1196.50	34.59	4036.93	63.54	19026.59	137.94
Average		1096.90	33.10	4014.92	63.36	18682.69	136.68
0 ppm							
	2	0.00	0.00	0.00	0.00	0.00	0.00
	3	0.00	0.00	0.00	0.00	0.00	0.00
	4	0.00	0.00	0.00	0.00	0.00	0.00
Average		0.00	0.00	0.00	0.00	0.00	0.00

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4608
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6srucal02.CHR ()
Sample: 0 ppm pre
Operator: SY

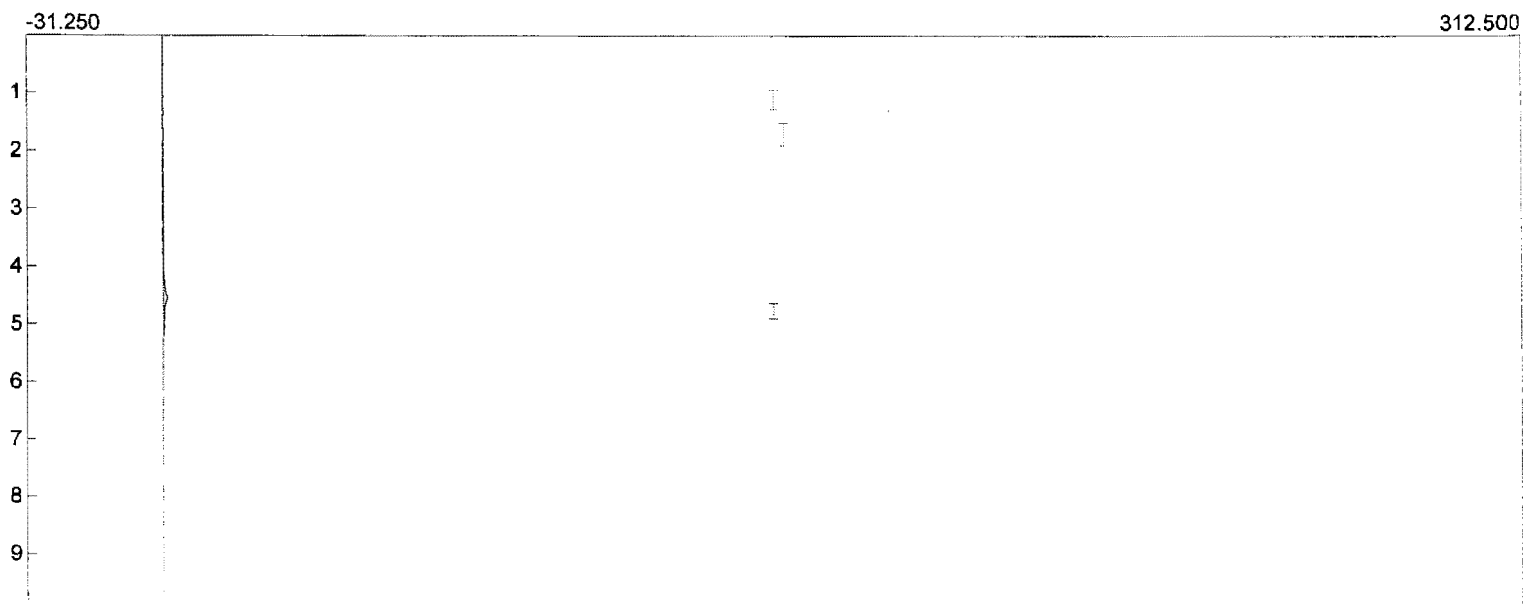


Component

Area

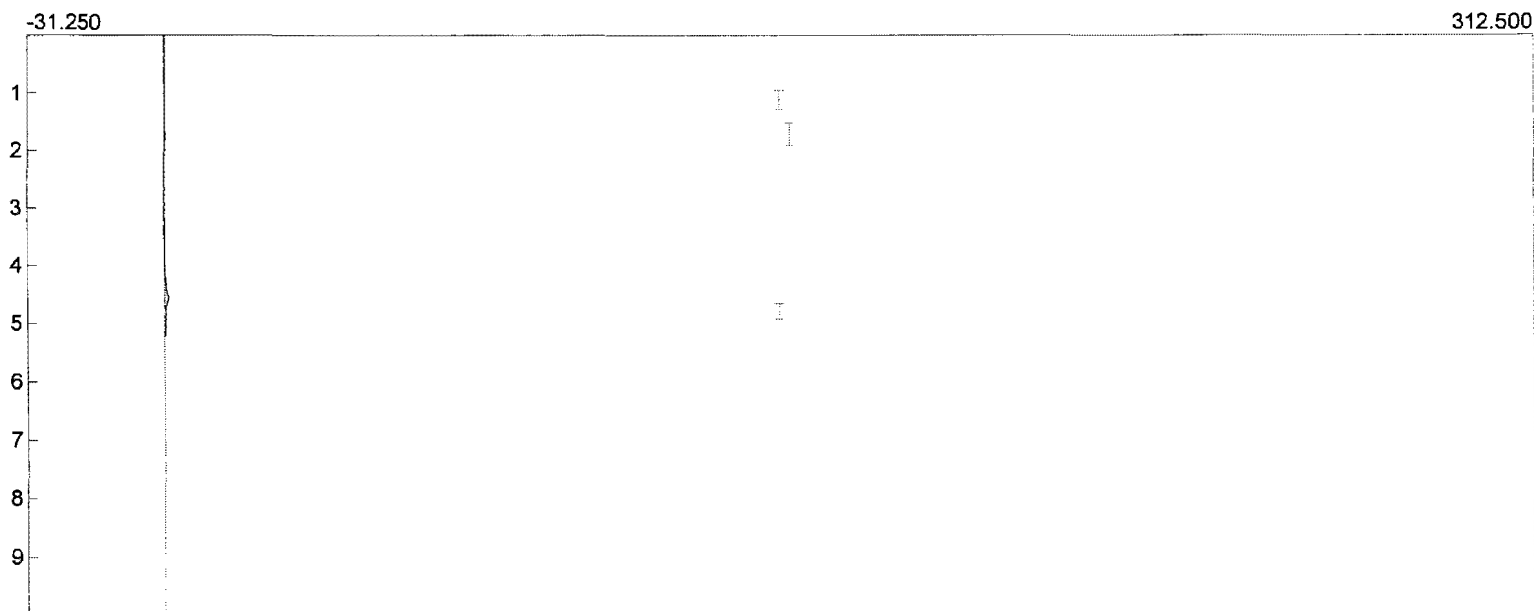
0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-5608
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6srucal03.CHR ()
Sample: 0 ppm pre
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-4608
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6srucal04.CHR ()
Sample: 0 ppm pre
Operator: SY

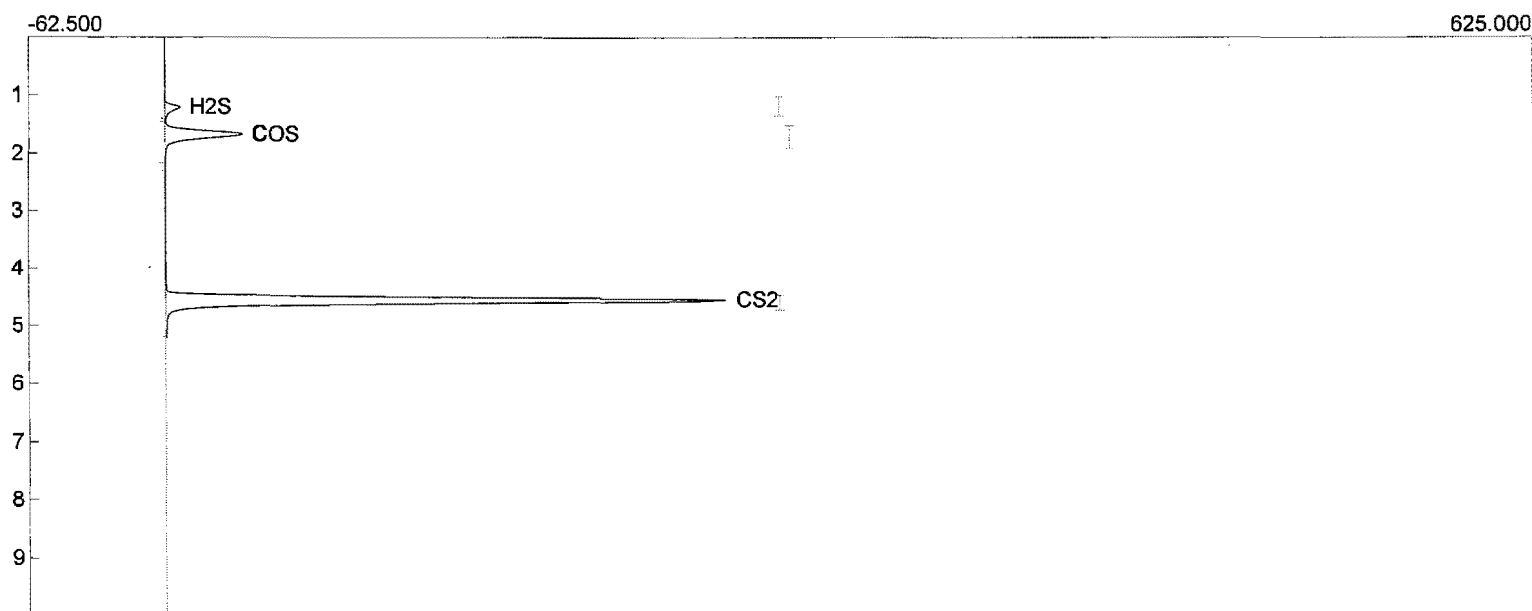


Component

Area

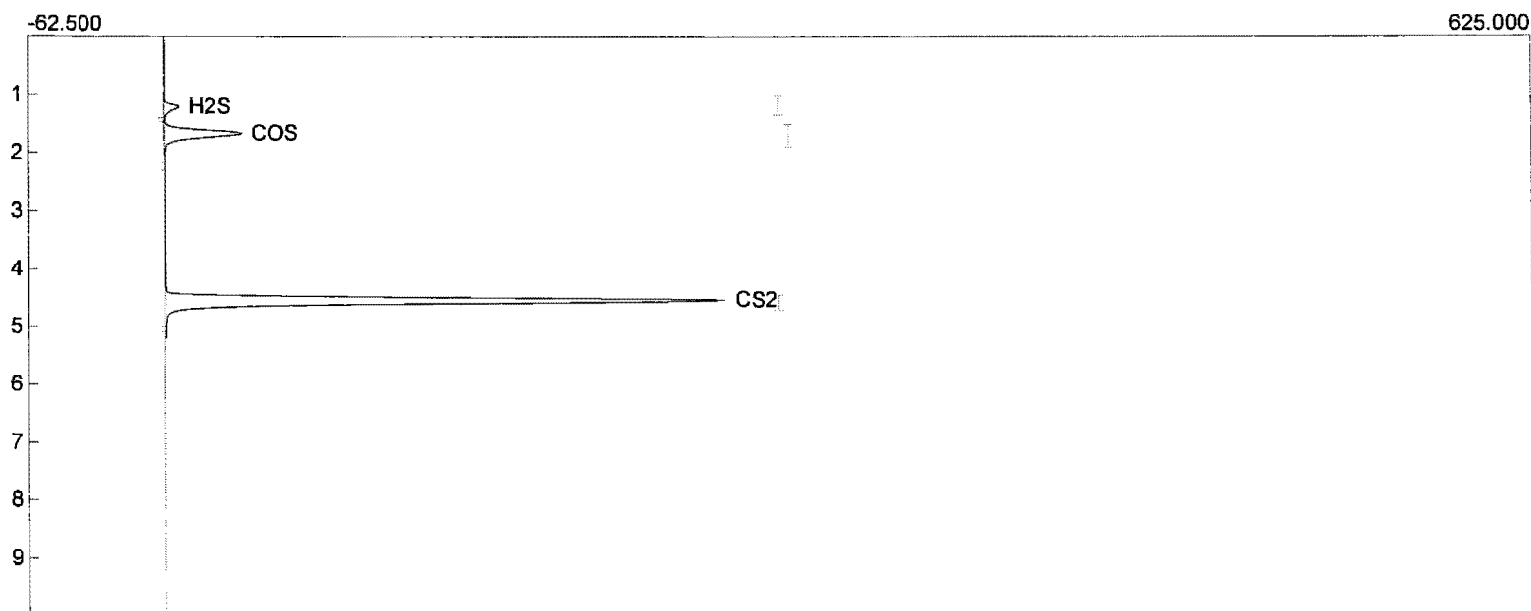
0.0000

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Collected: 6-6-08
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6srucal14.CHR ()
 Sample: 5 ppm pre
 Operator: SY



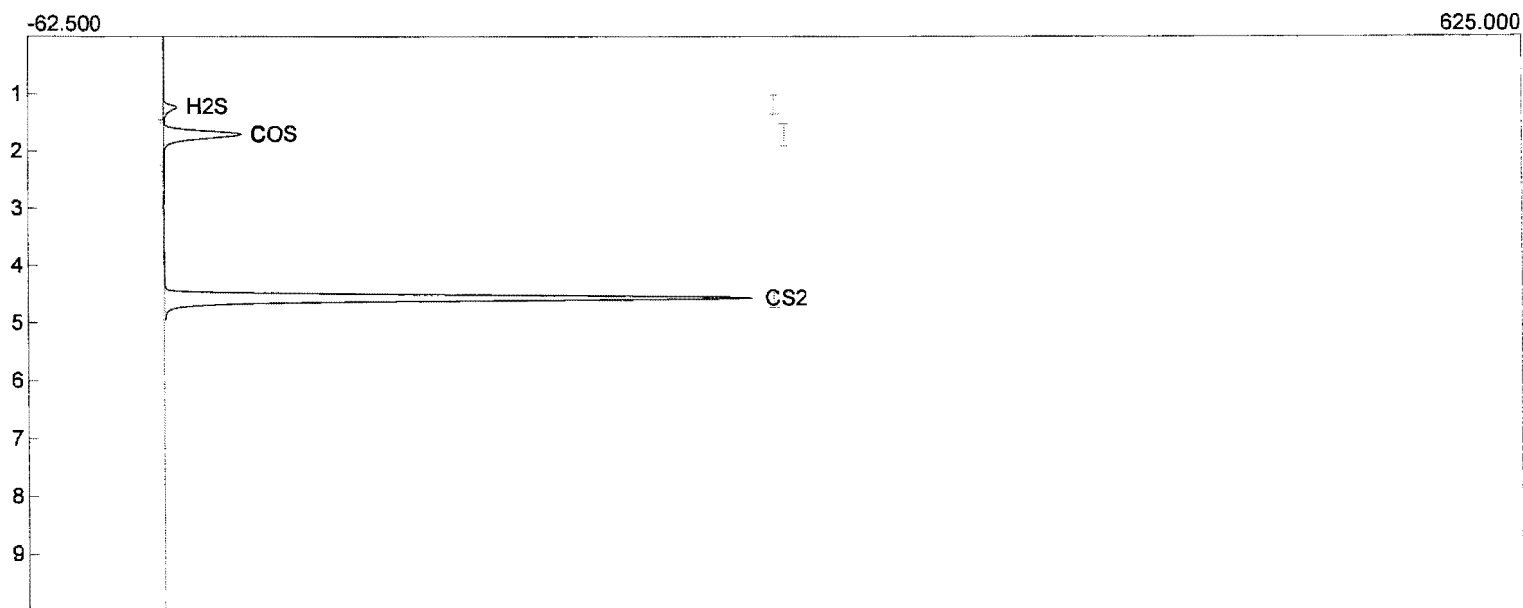
Component	Area
H2S	54.3960
COS	329.3470
CS2	1906.3630
	2290.1060

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-6-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6srucal15.CHR ()
Sample: 5 ppm pre
Operator: SY



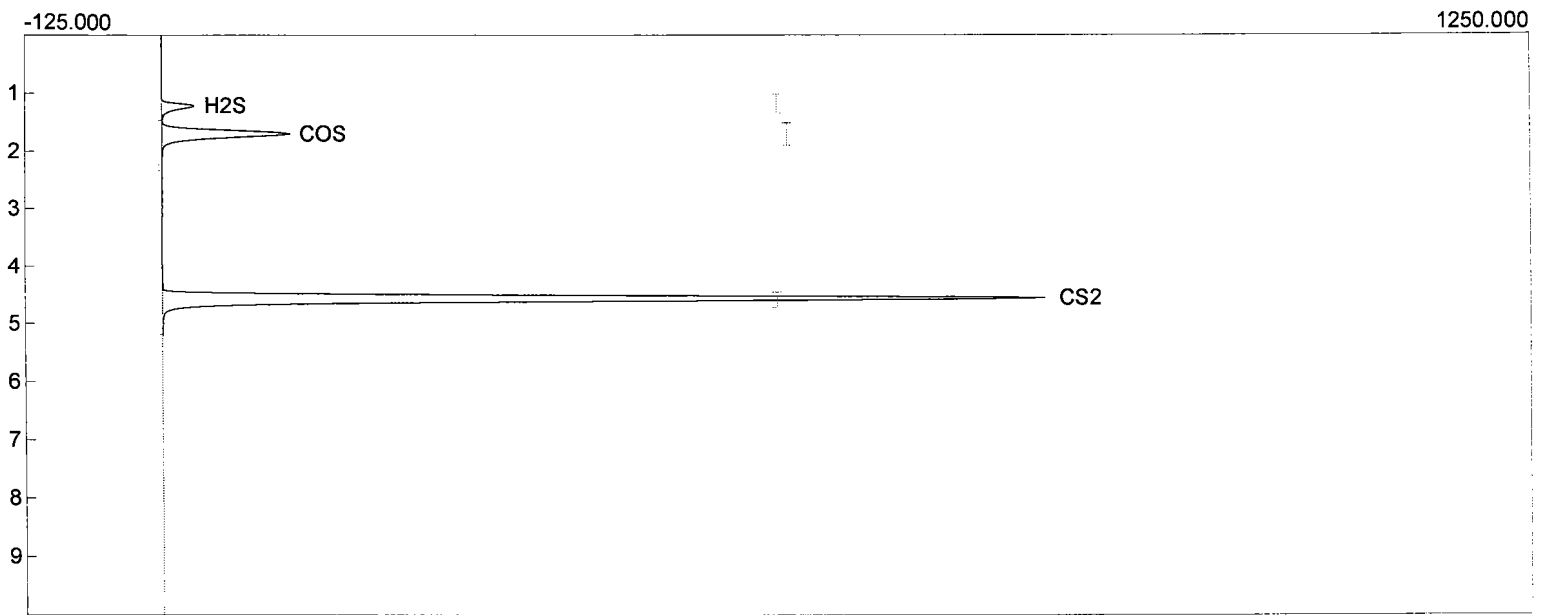
Component	Area
H2S	58.5060
COS	333.5750
CS2	1894.9160
	2286.9970

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-6-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6srucal16.CHR ()
Sample: 5 ppm pre
Operator: SY



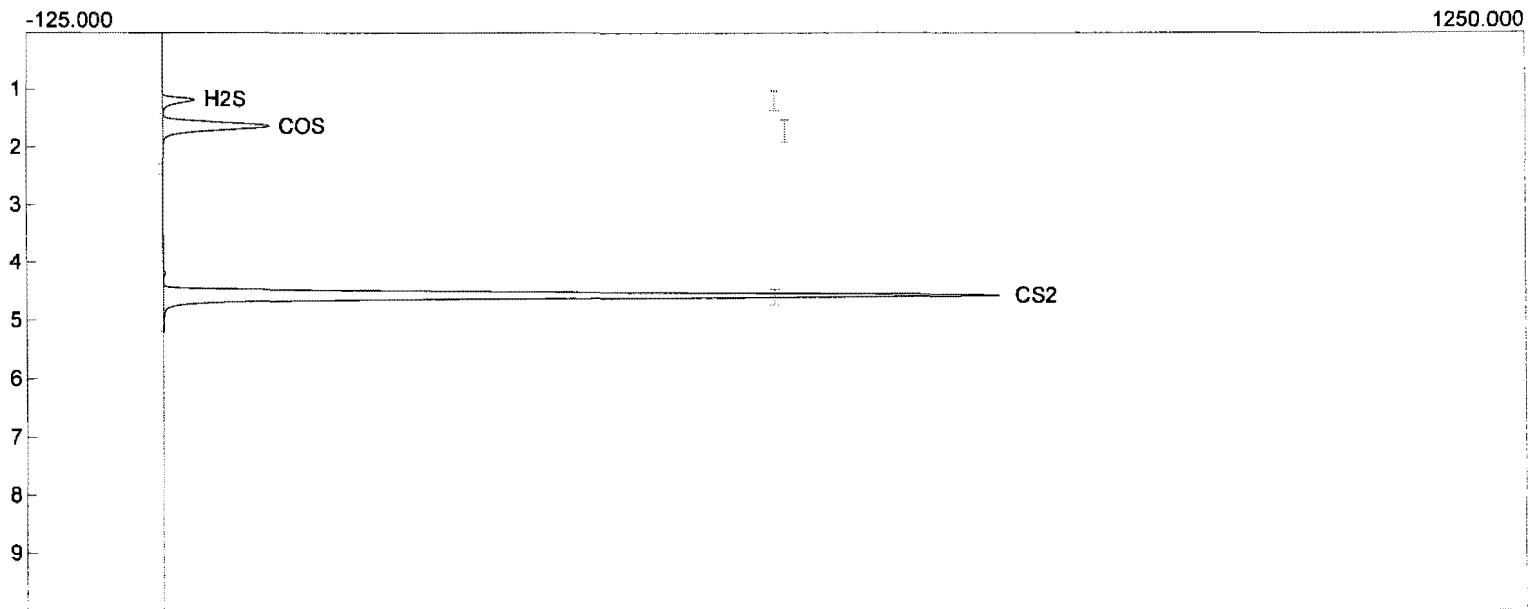
Component	Area
H2S	56.9540
COS	336.2940
CS2	1947.4950
	2340.7430

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-6-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6srucal08.CHR ()
Sample: 10 ppm pre
Operator: SY



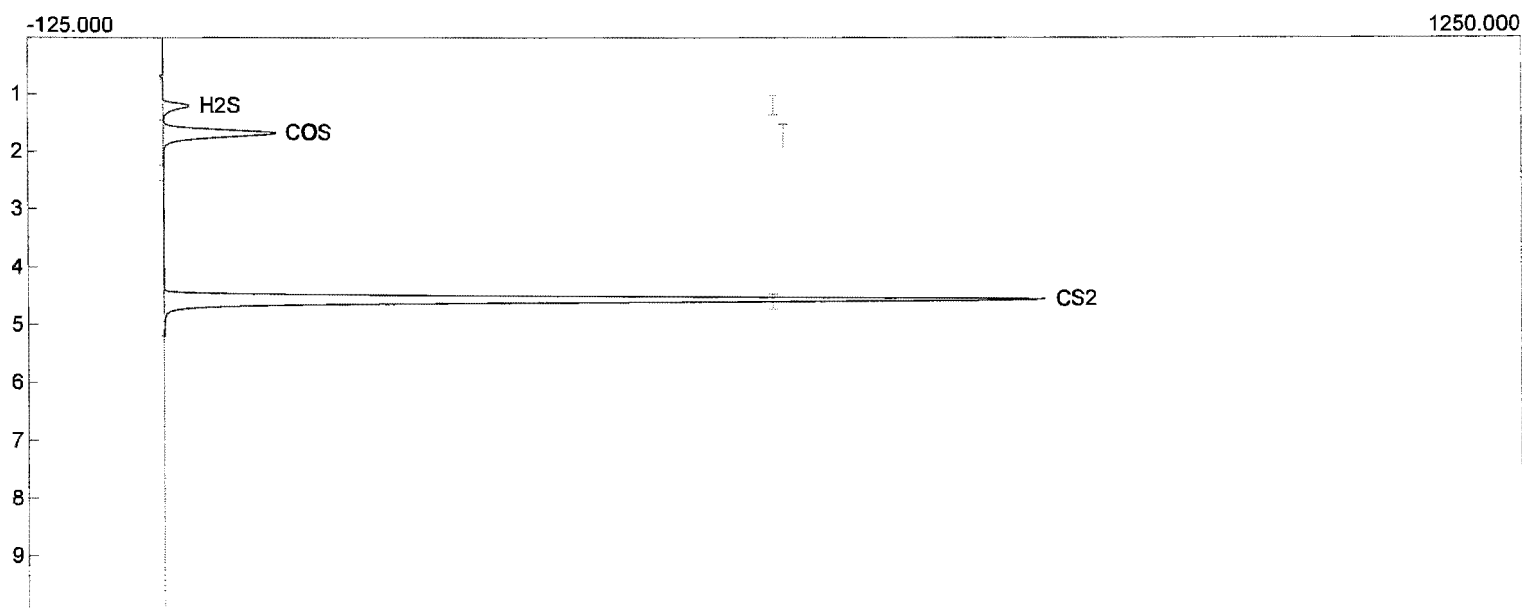
Component	Area
H2S	207.6690
COS	1017.6020
CS2	5656.5080
	6881.7790

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-6-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruca109.CHR ()
Sample: 10 ppm pre
Operator: SY



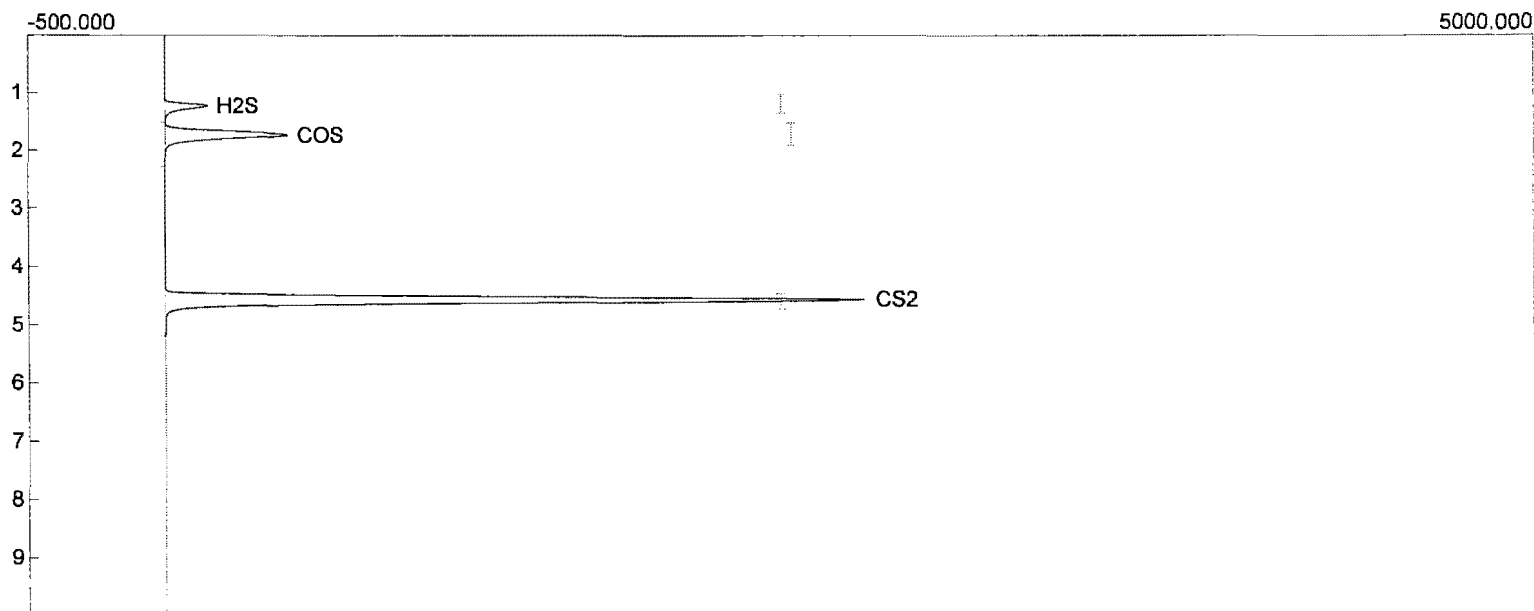
Component	Area
H2S	191.9100
COS	922.8100
CS2	5564.7280
	6679.4480

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-6-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6srucal10.chr ()
Sample: 10 ppm pre
Operator: SY



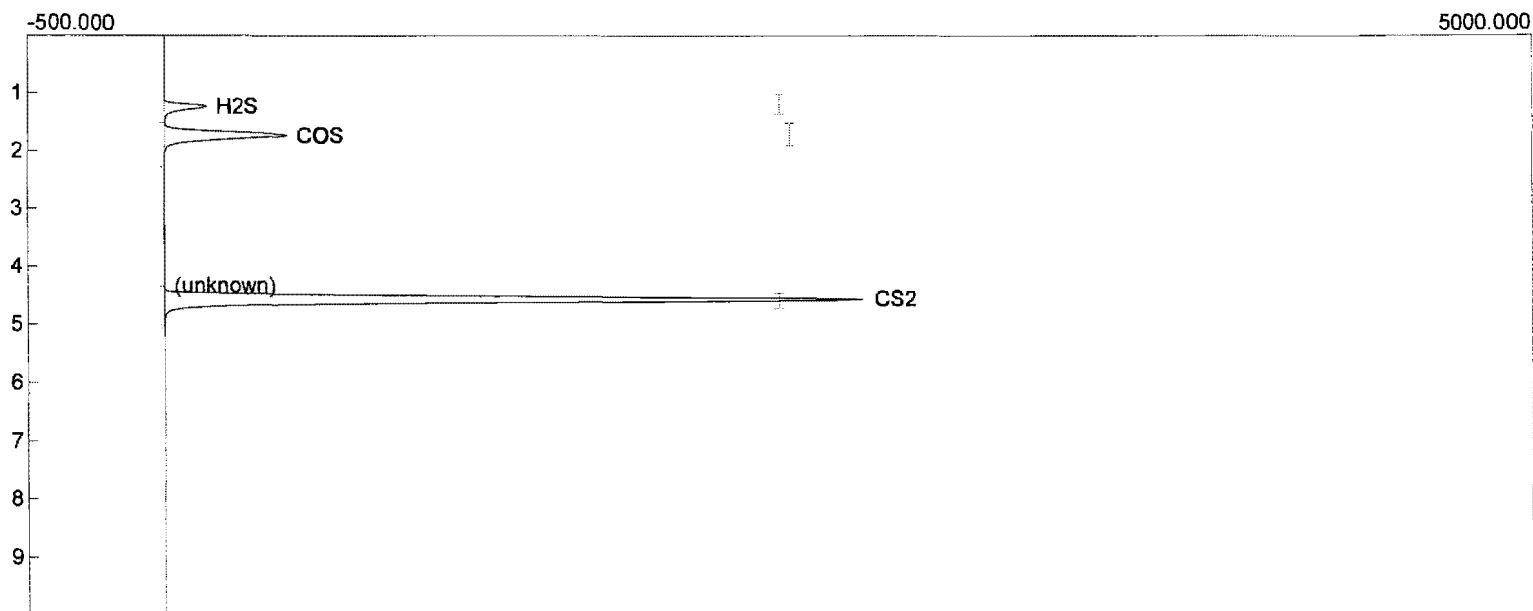
Component	Area
H2S	180.4640
COS	933.9040
CS2	5839.2780
	6953.6460

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Collected: 6-6-08
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6srucal05.CHR ()
 Sample: 20 ppm pre
 Operator: SY



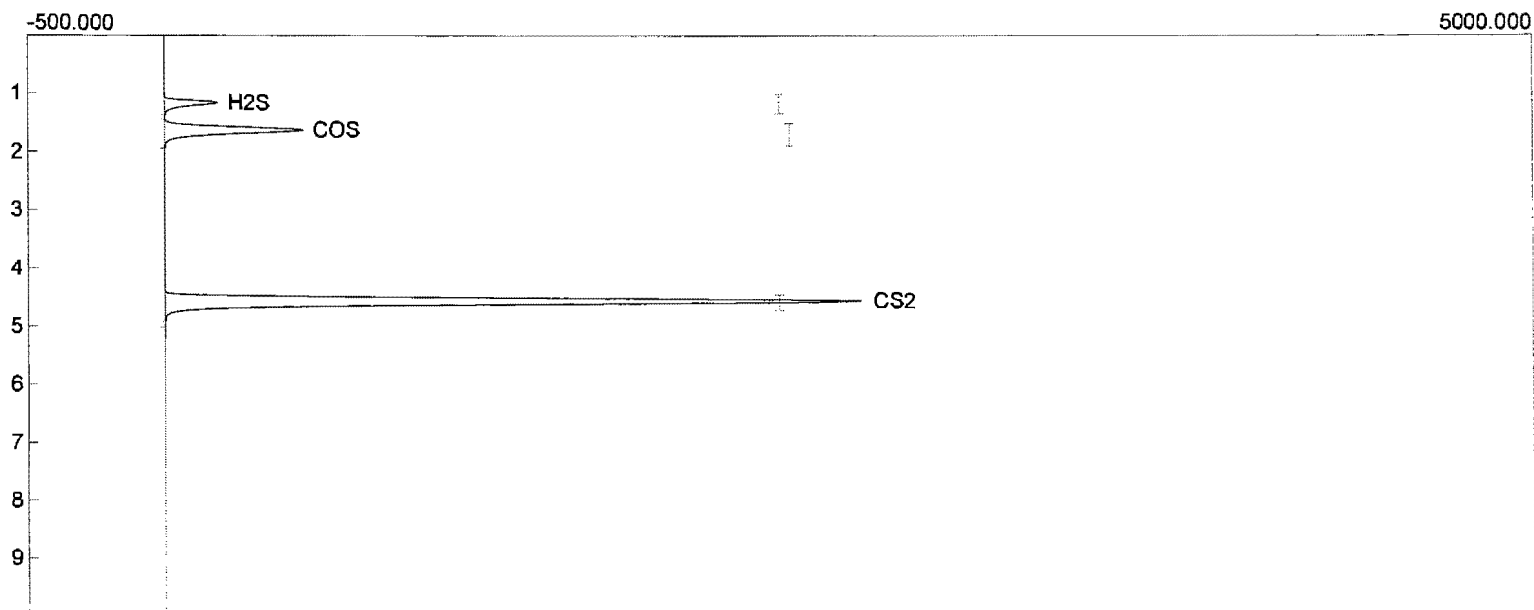
Component	Area
H2S	1037.9580
COS	3977.9200
CS2	18465.7060
	23481.5840

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-6-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruca106.CHR ()
Sample: 20 ppm pre
Operator: SY



Component	Area
H2S	1056.2330
COS	4029.9000
CS2	18555.7780
	23641.9110

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-6-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruca107.CHR ()
Sample: 20 ppm pre
Operator: SY



Component	Area
H2S	1196.4995
COS	4036.9320
CS2	19026.5940
	24260.0255

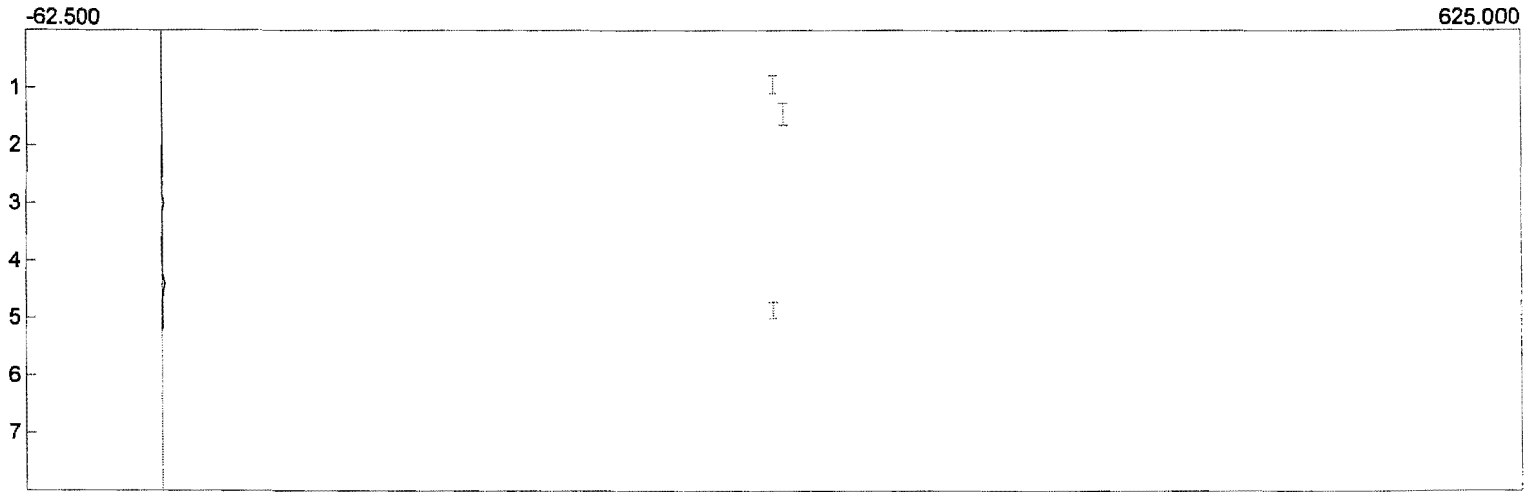
Client: Diamond Shamrock Refining Company, L.P. (A Valero Company)
 Location: Sunray, Texas
 Source: SRU No.2 Incinerator
 Date: 6/6/2008



Post Cal

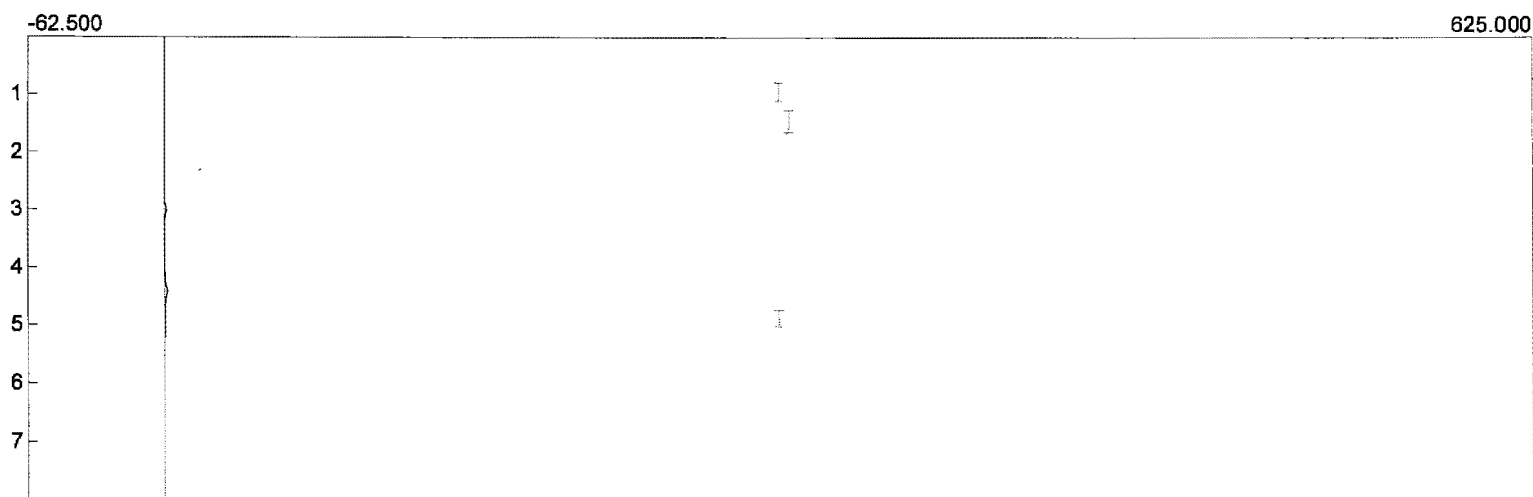
Description	File Name	H ₂ S Area (mv)	Square Root H ₂ S Area	COS Area (mv)	Square Root COS Area	CS ₂ Area (mv)	Square Root CS ₂ Area
5	13	53.24	7.30	325.66	18.05	1896.58	43.55
	14	54.62	7.39	334.66	18.29	1893.40	43.51
	15	54.41	7.38	327.26	18.09	1902.23	43.61
Average		54.09	7.35	329.19	18.14	1897.40	43.56
10	10	207.05	14.39	1006.48	31.73	5643.21	75.12
	11	209.74	14.48	1012.34	31.82	5652.98	75.19
	12	207.54	14.41	1017.86	31.90	5656.51	75.21
Average		208.11	14.43	1012.23	31.82	5650.90	75.17
20	6	1168.21	34.18	3990.13	63.17	18979.22	137.77
	7	1195.57	34.58	4035.38	63.52	19026.39	137.94
	8	1216.10	34.87	4067.47	63.78	19046.68	138.01
Average		1193.29	34.54	4030.99	63.49	19017.43	137.90
0 ppm							
	1	0.00	0.00	0.00	0.00	0.00	0.00
	2	0.00	0.00	0.00	0.00	0.00	0.00
	3	0.00	0.00	0.00	0.00	0.00	0.00
Average		0.00	0.00	0.00	0.00	0.00	0.00

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-6-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6srupost01.CHR ()
Sample: 0 ppm post
Operator: SY



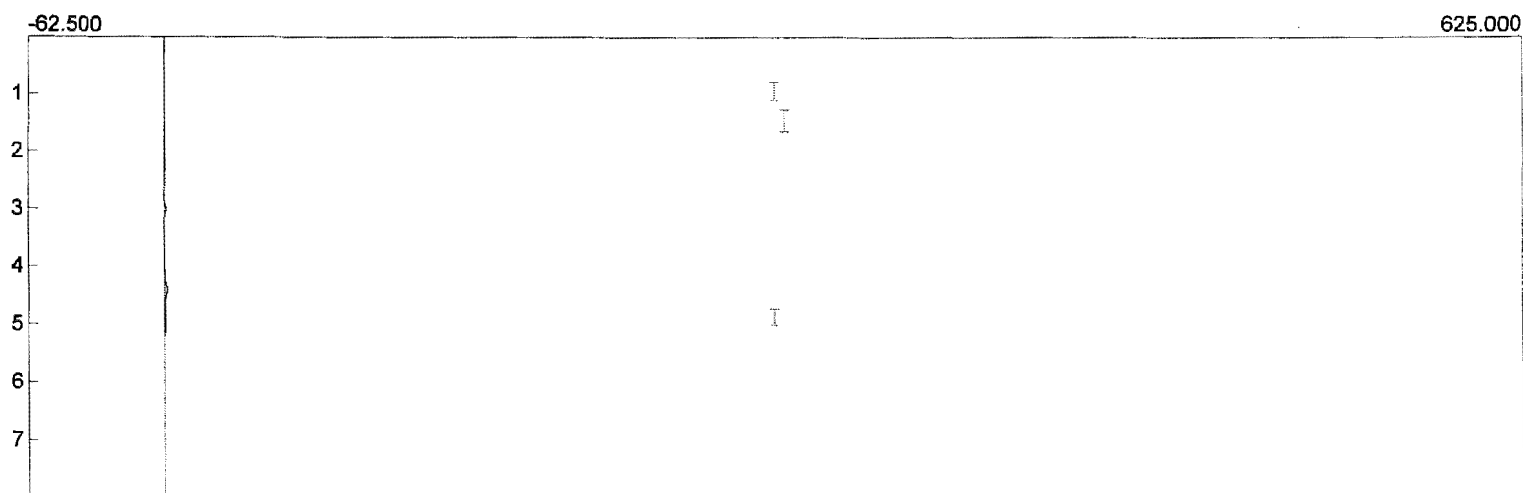
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-6-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6srupost02.CHR ()
Sample: 0 ppm post
Operator: SY



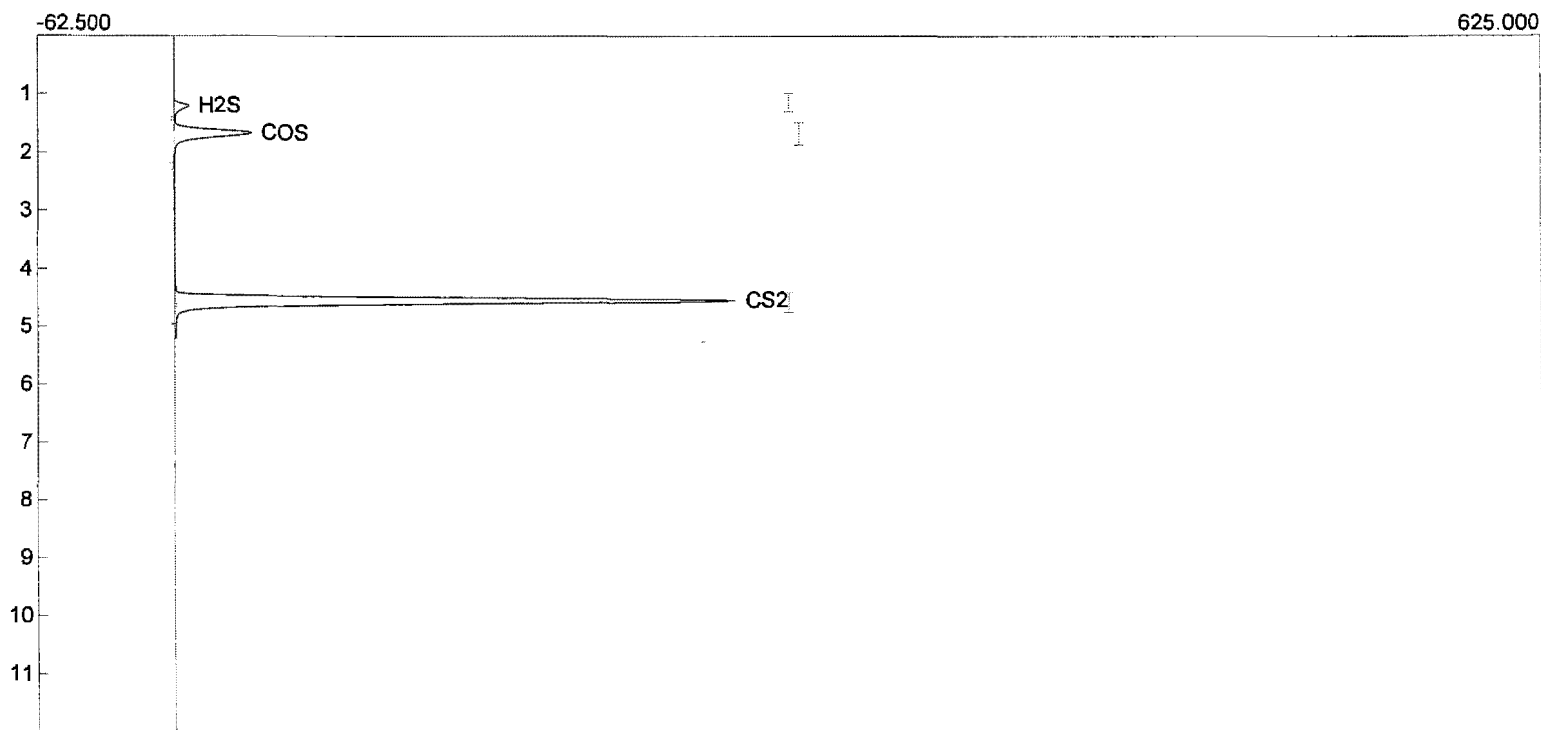
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-6-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6srupost03.CHR ()
Sample: 0 ppm post
Operator: SY



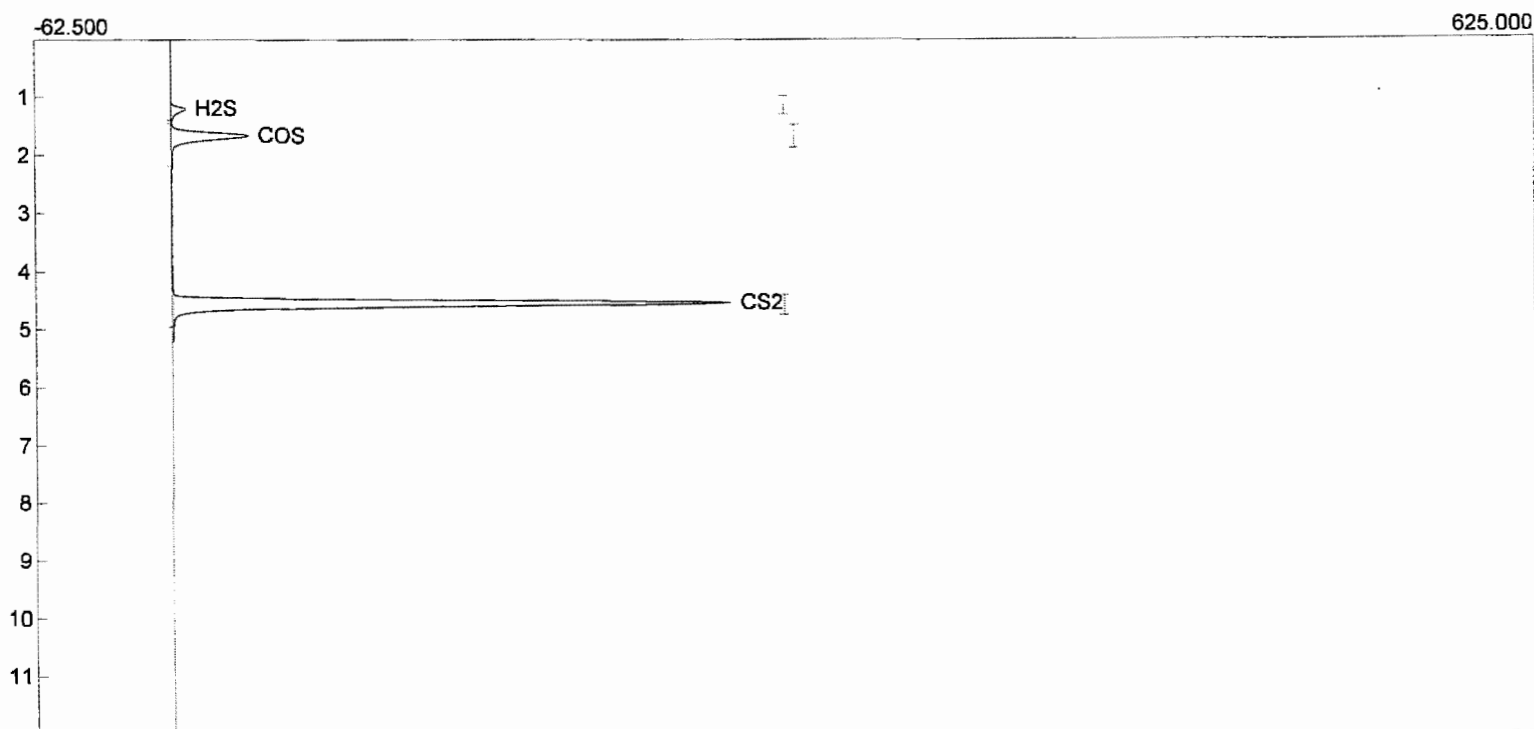
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Collected: 6-6-08
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6srupost13.CHR ()
 Sample: 5 ppm post
 Operator: SY



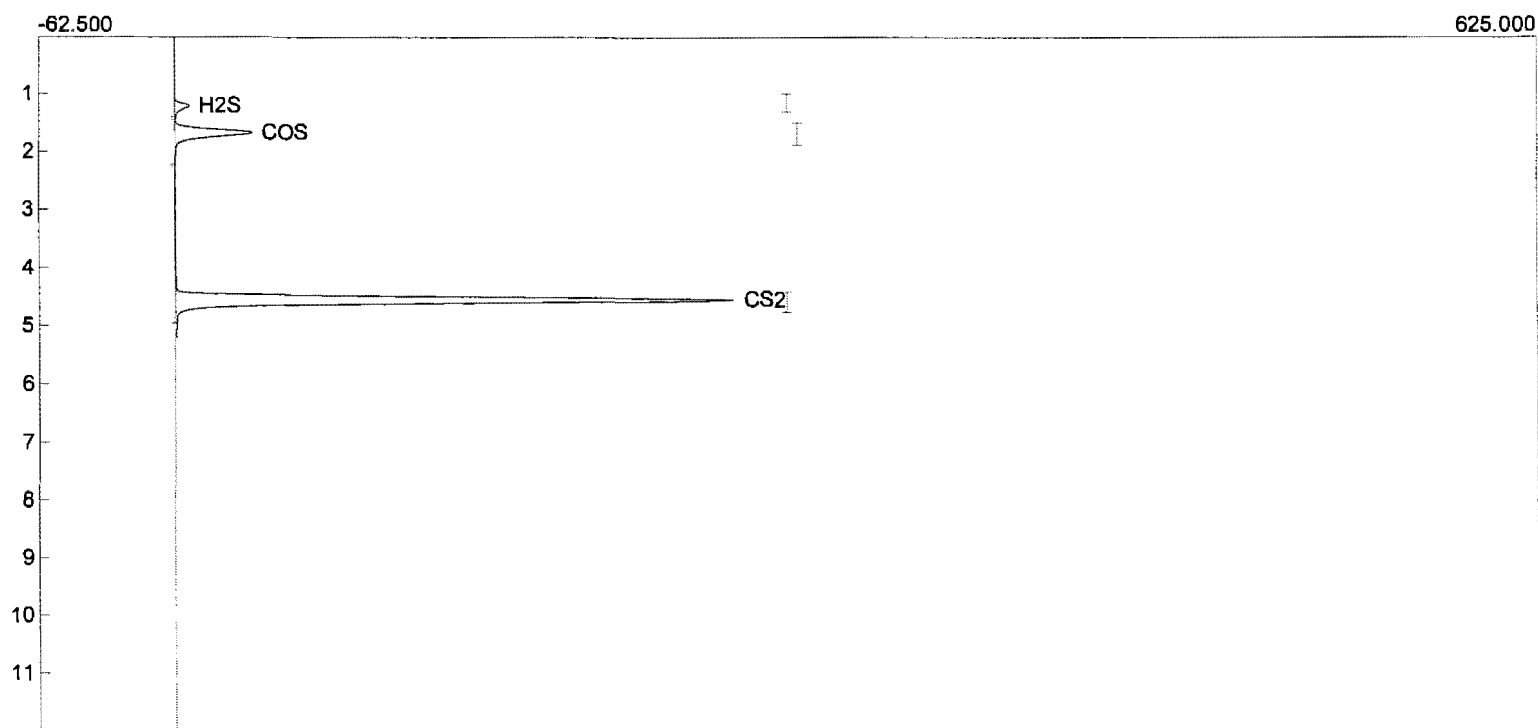
Component	Area
H2S	53.2360
COS	325.6580
CS2	1896.5770
	2275.4710

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-6-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6srupost14.CHR ()
Sample: 5 ppm post
Operator: SY



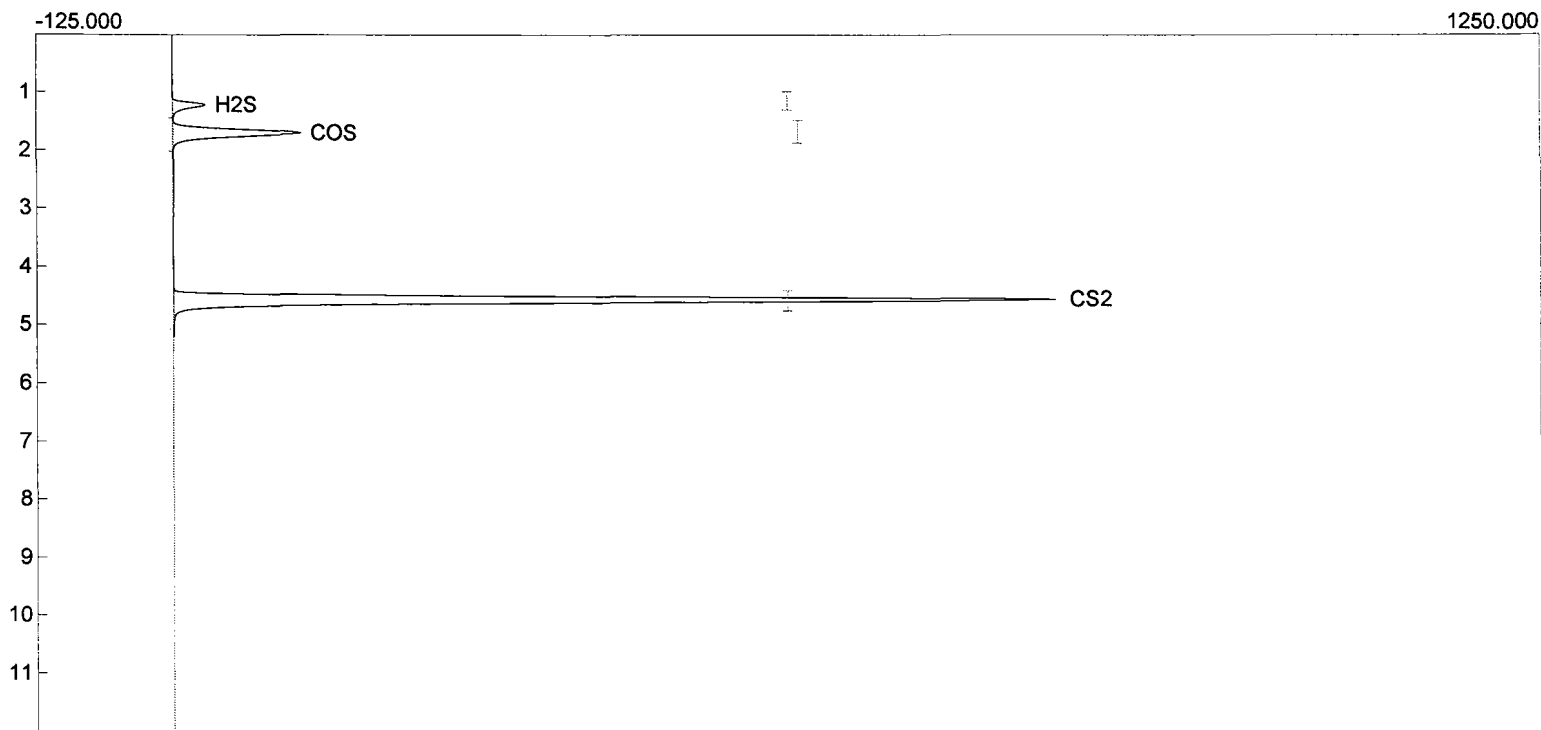
Component	Area
H2S	54.6160
COS	334.6560
CS2	1893.4040
	2282.6760

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-6-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6srupost15.CHR ()
Sample: 5 ppm post
Operator: SY



Component	Area
H2S	54.4060
COS	327.2550
CS2	1902.2280
	2283.8890

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-6-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6srupost10.CHR ()
Sample: 10 ppm post
Operator: SY



Component	Area
H2S	207.0480
COS	1006.4800
CS2	5643.2060
	6856.7340

Lab name: ARI Environmental, Inc.

Client: Valero Refining

Client ID: SRU #2

Collected: 6-6-08

Method: Direct Interface

Description: FPD

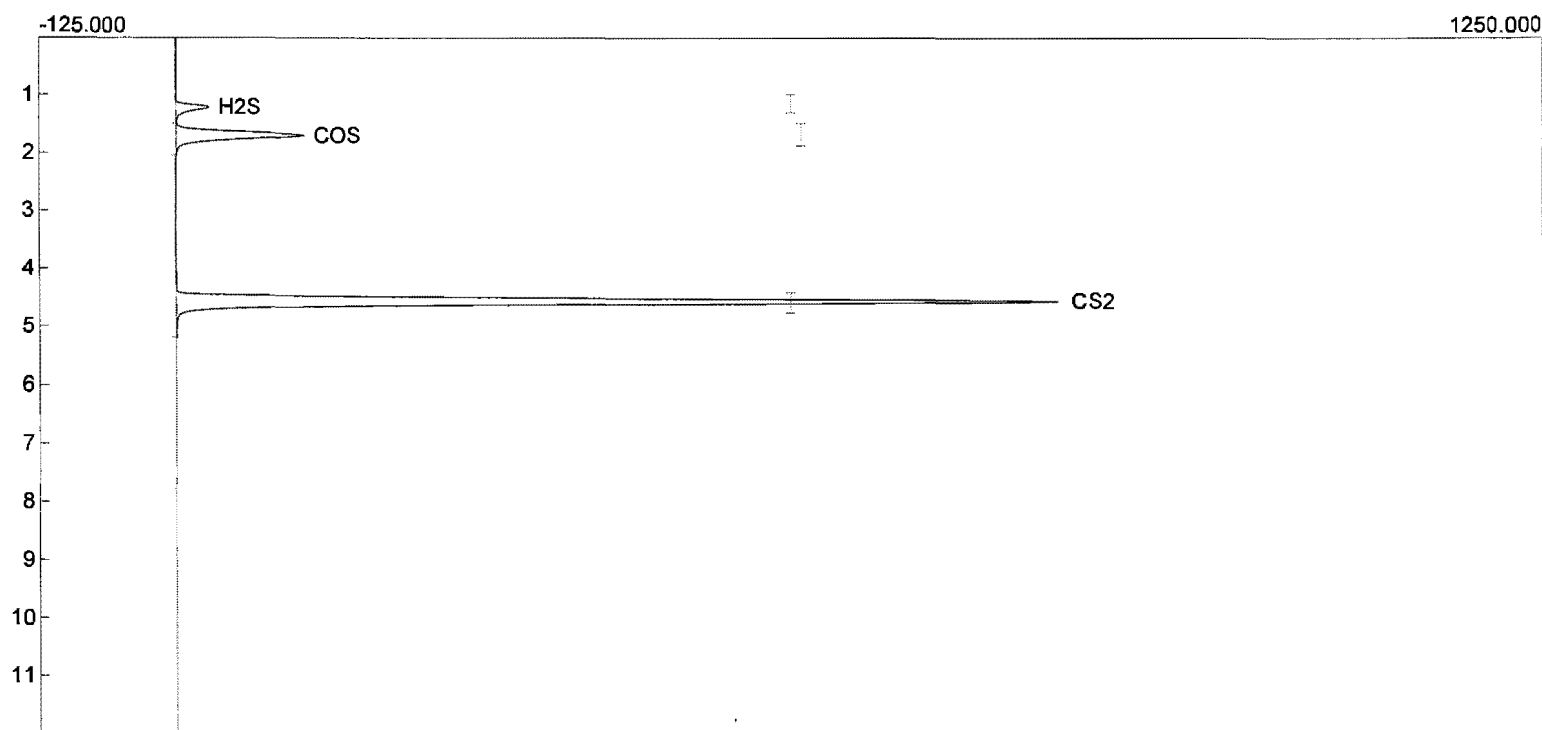
Column: RESTEK Sulfur

Carrier: Nitrogen

Data file: val6-6srupost11.CHR ()

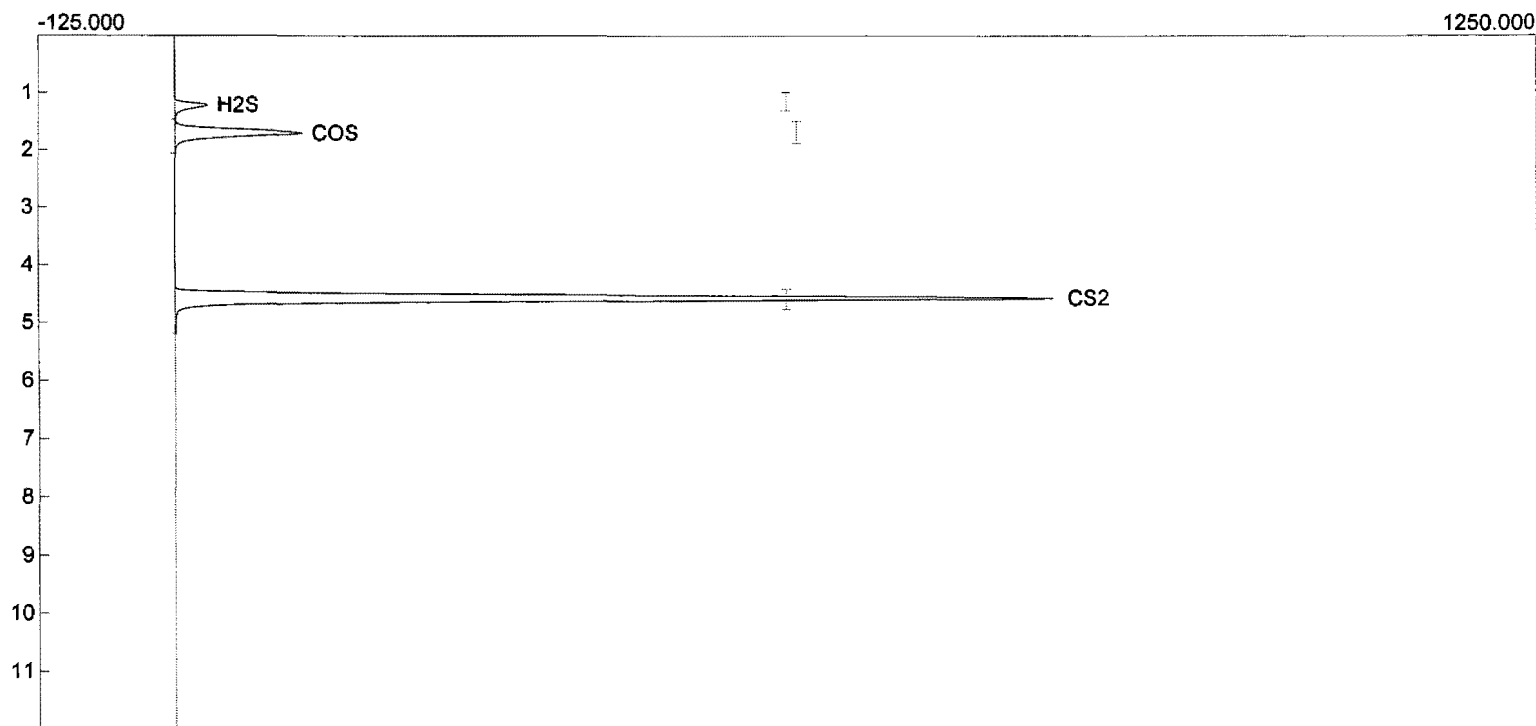
Sample: 10 ppm post

Operator: SY



Component	Area
H2S	209.7380
COS	1012.3440
CS2	5652.9800
	6875.0620

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Collected: 6-6-08
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6srupost12.CHR ()
 Sample: 10 ppm post
 Operator: SY



Component	Area
H2S	207.5440
COS	1017.8610
CS2	5656.5080
	6881.9130

Lab name: ARI Environmental, Inc.

Client: Valero Refining

Client ID: SRU #2

Collected: 6-6-08

Method: Direct Interface

Description: FPD

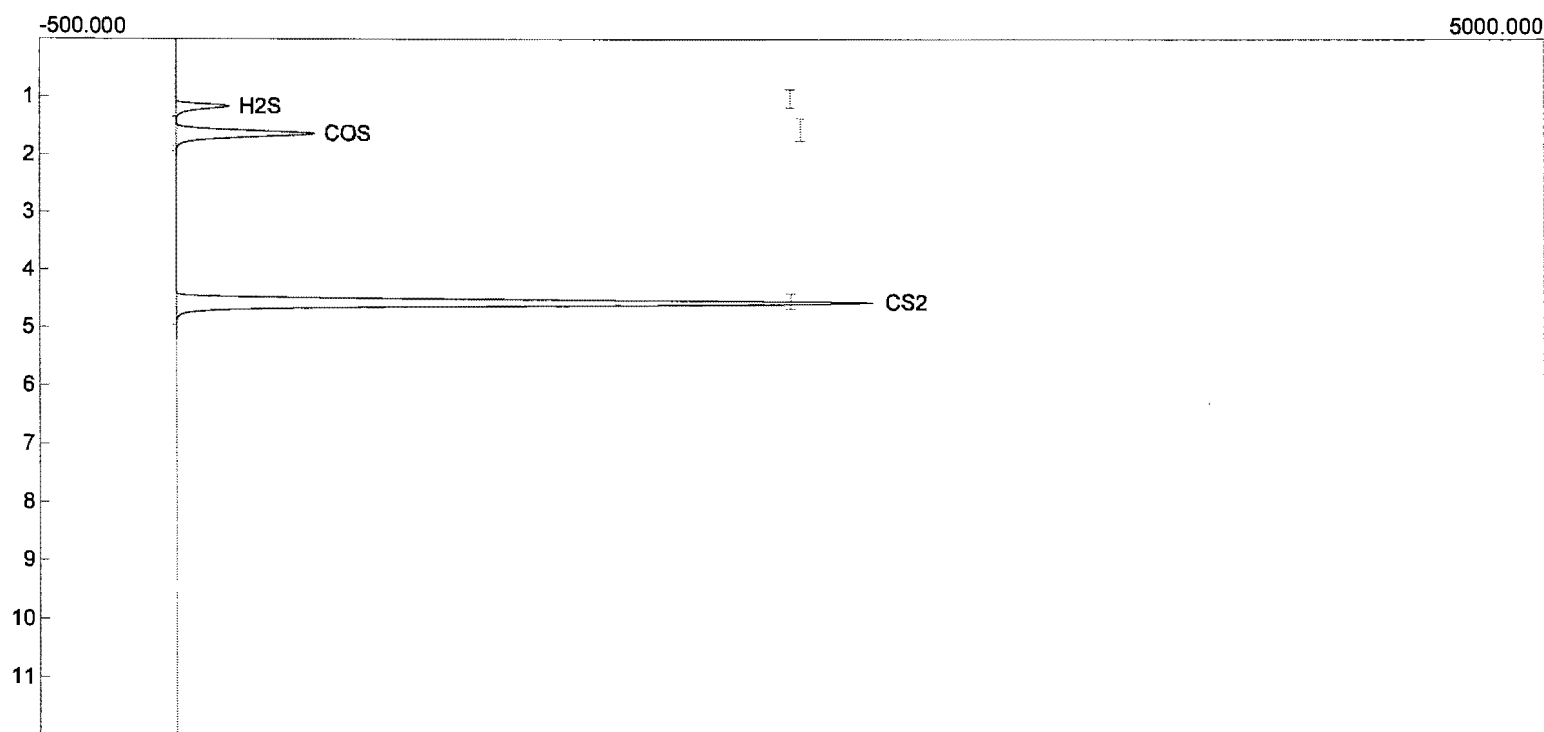
Column: RESTEK Sulfur

Carrier: Nitrogen

Data file: val6-6srupost06.CHR ()

Sample: 20 ppm post

Operator: SY



Component	Area
H2S	1168.2140
COS	3990.1290
CS2	18979.2150
	24137.5580

Lab name: ARI Environmental, Inc.

Client: Valero Refining

Client ID: SRU #2

Collected: 6-6-08

Method: Direct Interface

Description: FPD

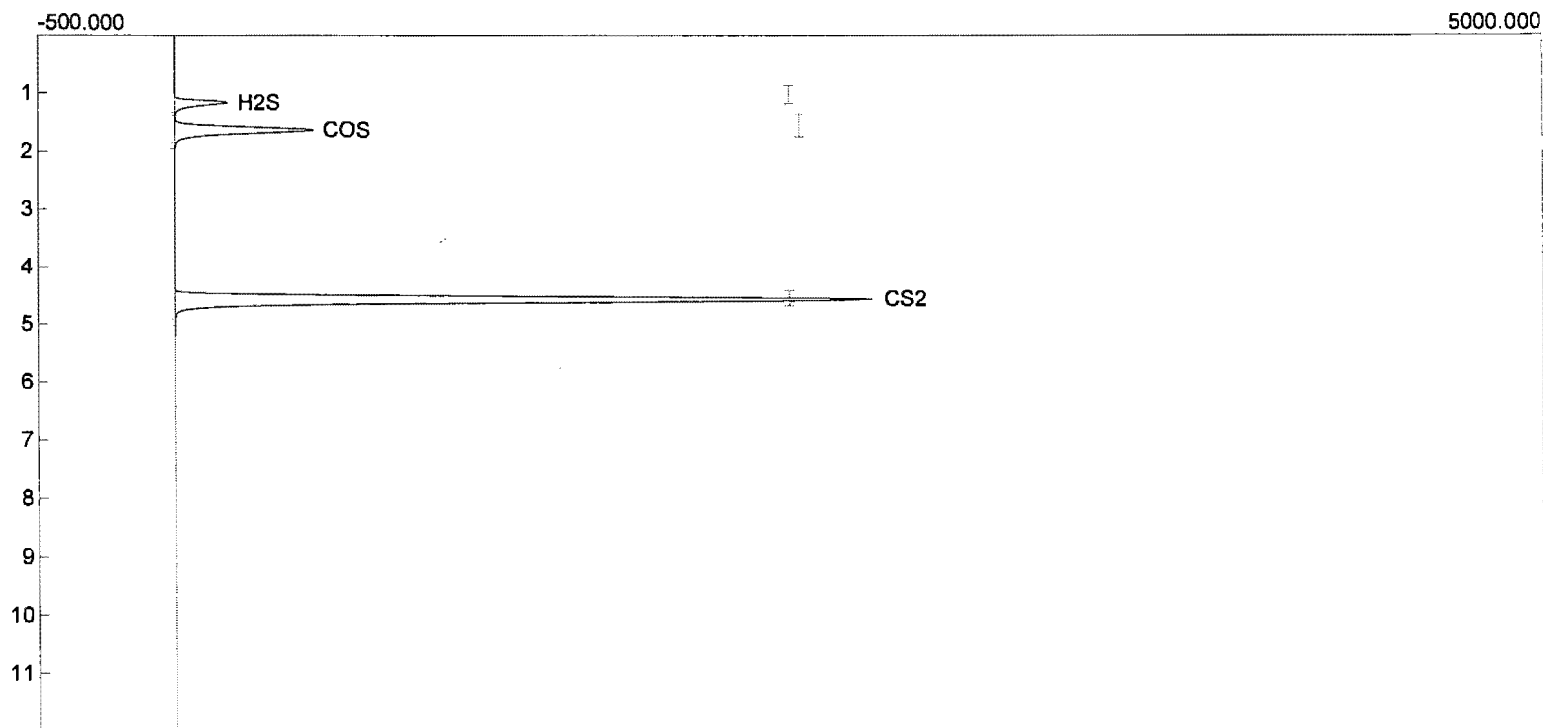
Column: RESTEK Sulfur

Carrier: Nitrogen

Data file: val6-6srupost07.CHR ()

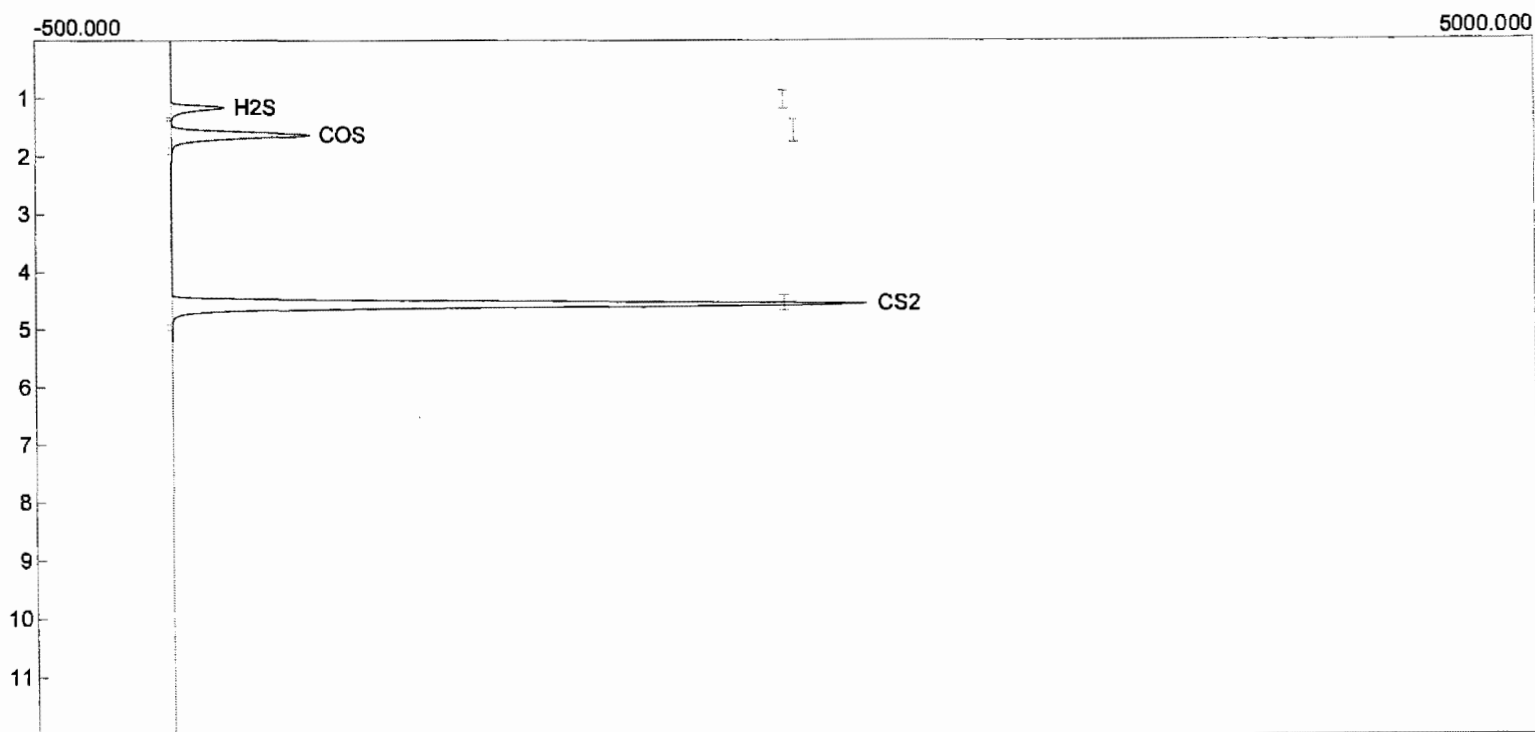
Sample: 20 ppm post

Operator: SY



Component	Area
H2S	1195.5665
COS	4035.3840
CS2	19026.3915
	24257.3420

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Collected: 6-6-08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6srupost08.CHR ()
Sample: 20 ppm post
Operator: SY



Component	Area
H2S	1216.1015
COS	4067.4720
CS2	19046.6770
	24330.2505

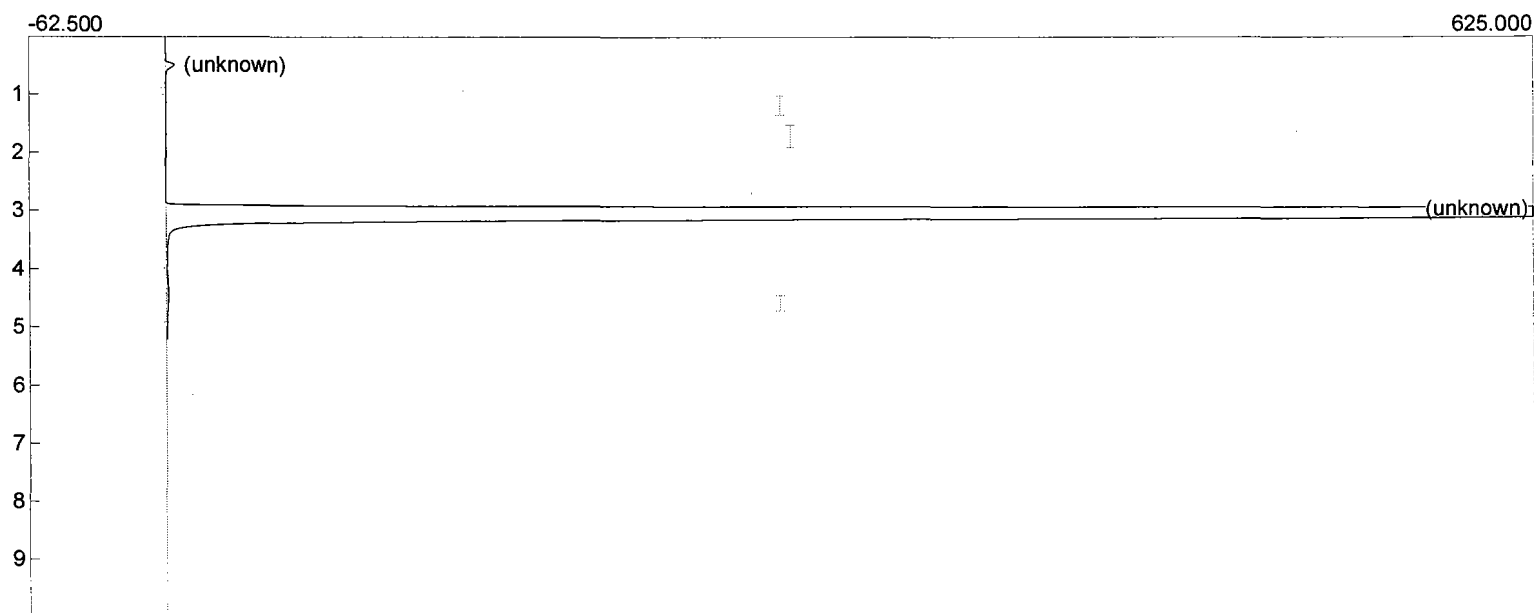
SUMMARY OF TOTAL REDUCED SULFUR COMPOUNDS



Company: Diamond Shamrock Refining Company, L.P. (A Valero Company)
Location: Sunray, Texas
Source: SRU No.2 Incinerator
Date: 6/6/2008
Run No.: 4

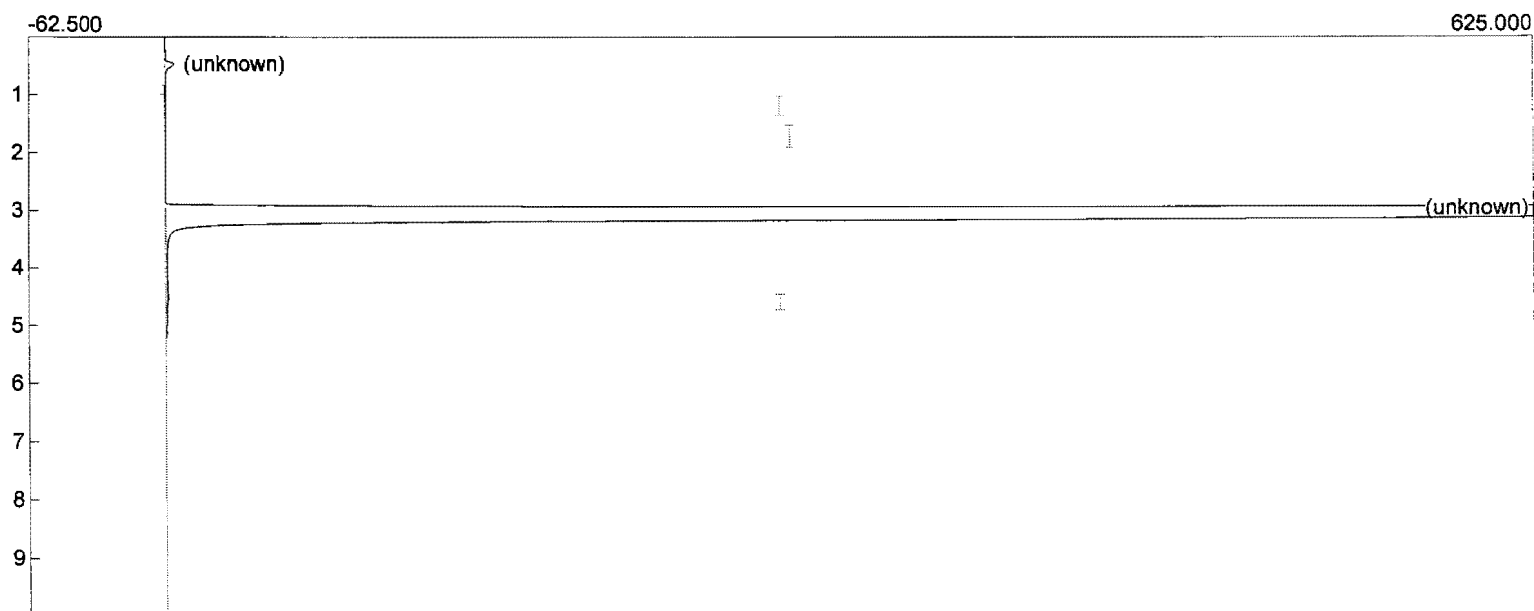
File Name	Date	Time	<u>COS</u>		<u>H₂S</u>		<u>CS₂</u>		<u>TRS</u>	Injection
			Area (mV)	Conc (ppm v db)	Area (mV)	Conc (ppm v db)	Area (mV)	Conc (ppm v db)	Conc (ppm v db)	
val6-6sruruns01.CHR	6/6/2008	6:36:04	<1.00	<0.08	<0.03	<0.67	<24.00	<0.01	<0.77	4-1
val6-6sruruns02.CHR	6/6/2008	6:46:04	<1.00	<0.08	<0.03	<0.67	<24.00	<0.01	<0.77	4-2
val6-6sruruns03.CHR	6/6/2008	6:56:04	<1.00	<0.08	<0.03	<0.67	<24.00	<0.01	<0.77	4-3
val6-6sruruns04.CHR	6/6/2008	7:06:04	<1.00	<0.08	<0.03	<0.67	<24.00	<0.01	<0.77	4-4
val6-6sruruns05.CHR	6/6/2008	7:16:04	<1.00	<0.08	<0.03	<0.67	<24.00	<0.01	<0.77	4-5
val6-6sruruns06.CHR	6/6/2008	7:26:04	<1.00	<0.08	<0.03	<0.67	<24.00	<0.01	<0.77	4-6
val6-6sruruns07.CHR	6/6/2008	7:36:04	<1.00	<0.08	<0.03	<0.67	<24.00	<0.01	<0.77	4-7
val6-6sruruns08.CHR	6/6/2008	7:46:04	<1.00	<0.08	<0.03	<0.67	<24.00	<0.01	<0.77	4-8
val6-6sruruns09.CHR	6/6/2008	7:56:04	<1.00	<0.08	<0.03	<0.67	<24.00	<0.01	<0.77	4-9
val6-6sruruns10.CHR	6/6/2008	8:06:04	<1.00	<0.08	<0.03	<0.67	<24.00	<0.01	<0.77	4-10
val6-6sruruns11.CHR	6/6/2008	8:16:04	2.27	0.23	<0.03	<0.67	<24.00	<0.01	<0.92	4-11
val6-6sruruns12.CHR	6/6/2008	8:26:04	6.95	0.59	<0.03	<0.67	<24.00	<0.01	<1.27	4-12
val6-6sruruns13.CHR	6/6/2008	8:36:04	2.51	0.26	<0.03	<0.67	<24.00	<0.01	<0.95	4-13
val6-6sruruns14.CHR	6/6/2008	8:46:04	3.62	0.36	<0.03	<0.67	<24.00	<0.01	<1.05	4-14
val6-6sruruns15.CHR	6/6/2008	8:56:04	3.99	0.39	<0.03	<0.67	<24.00	<0.01	<1.08	4-15
val6-6sruruns16.CHR	6/6/2008	9:06:04	8.43	0.67	<0.03	<0.67	<24.00	<0.01	<1.36	4-16
val6-6sruruns17.CHR	6/6/2008	9:16:04	3.75	0.37	<0.03	<0.67	<24.00	<0.01	<1.06	4-17
val6-6sruruns18.CHR	6/6/2008	9:26:04	<1.00	<0.08	<0.03	<0.67	<24.00	<0.01	<0.77	4-18
val6-6sruruns19.CHR	6/6/2008	9:36:04	3.34	0.33	<0.03	<0.67	<24.00	<0.01	<1.02	4-19
Average Values				<0.20		<0.67		<0.01	<0.89	

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 06:46:04
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns02.CHR ()
Sample: 6-6 SRU M15 Runs
Operator: SY



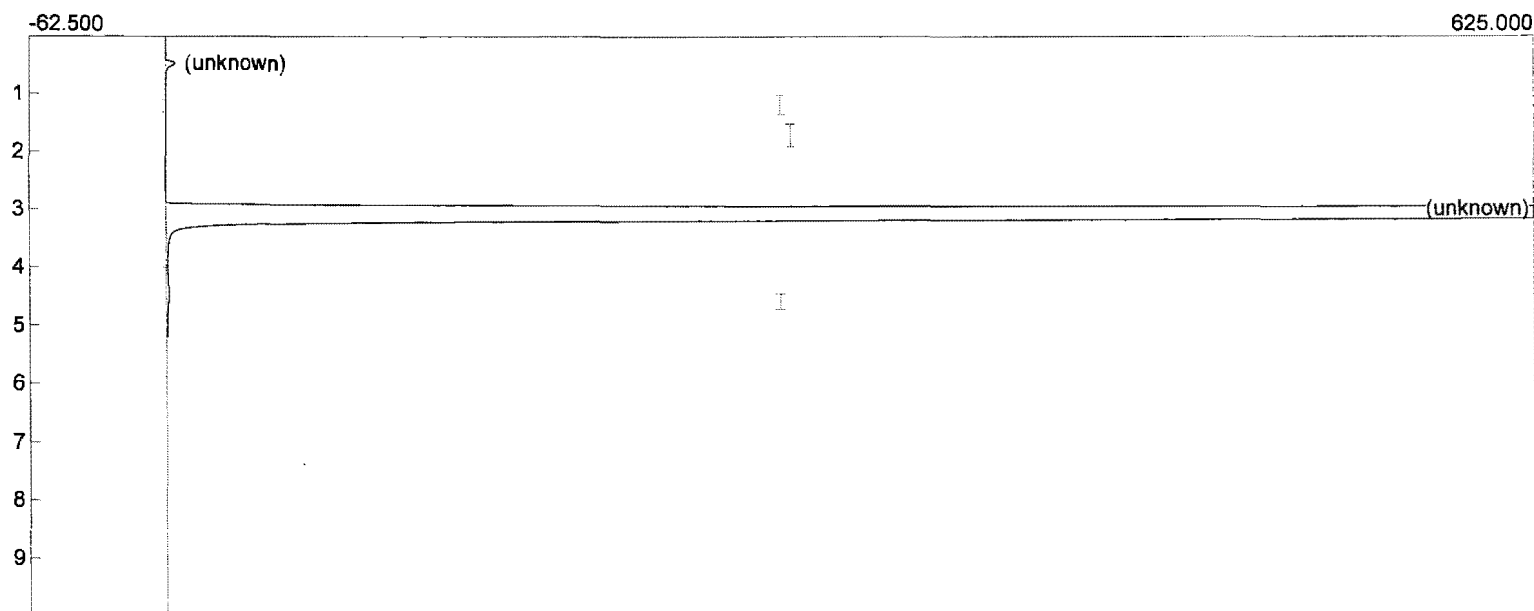
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 06:56:04
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns03.CHR ()
Sample: 6-6 SRU M15 Runs
Operator: SY



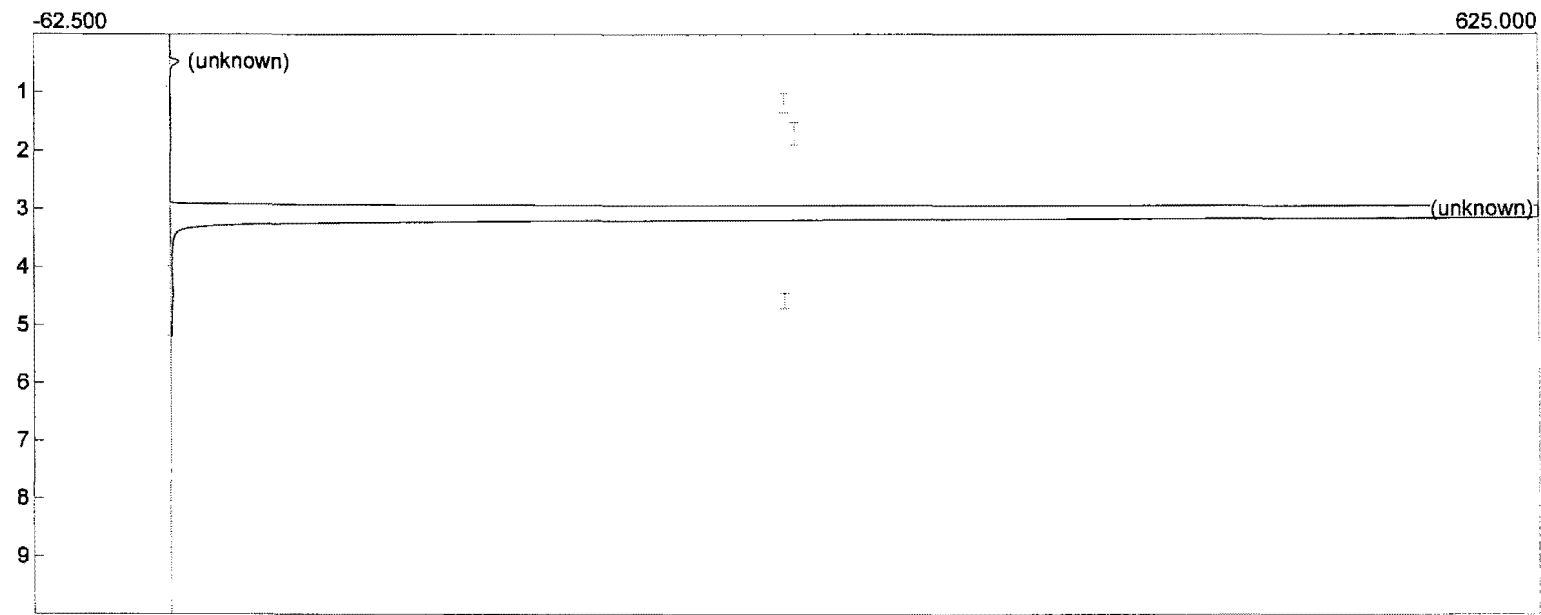
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 07:06:04
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns04.CHR ()
Sample: 6-6 SRU M15 Runs
Operator: SY



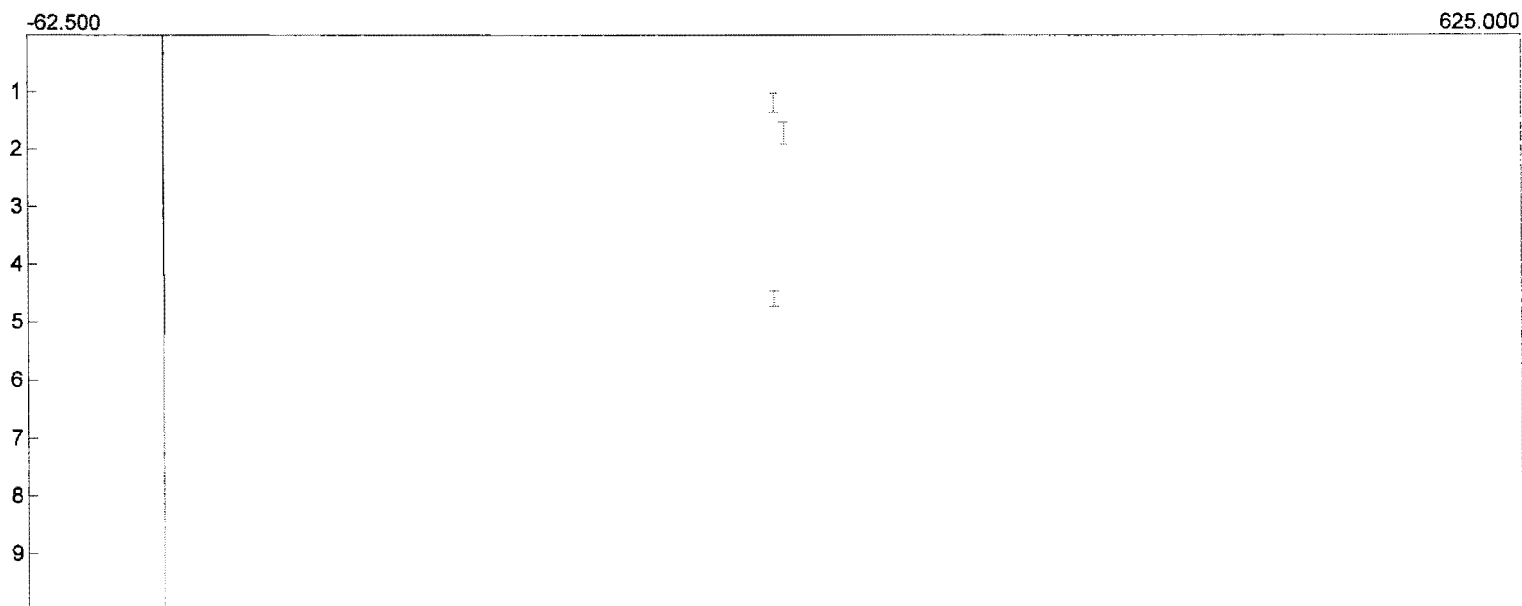
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 07:16:04
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns05.CHR ()
Sample: 6-6 SRU M15 Runs
Operator: SY



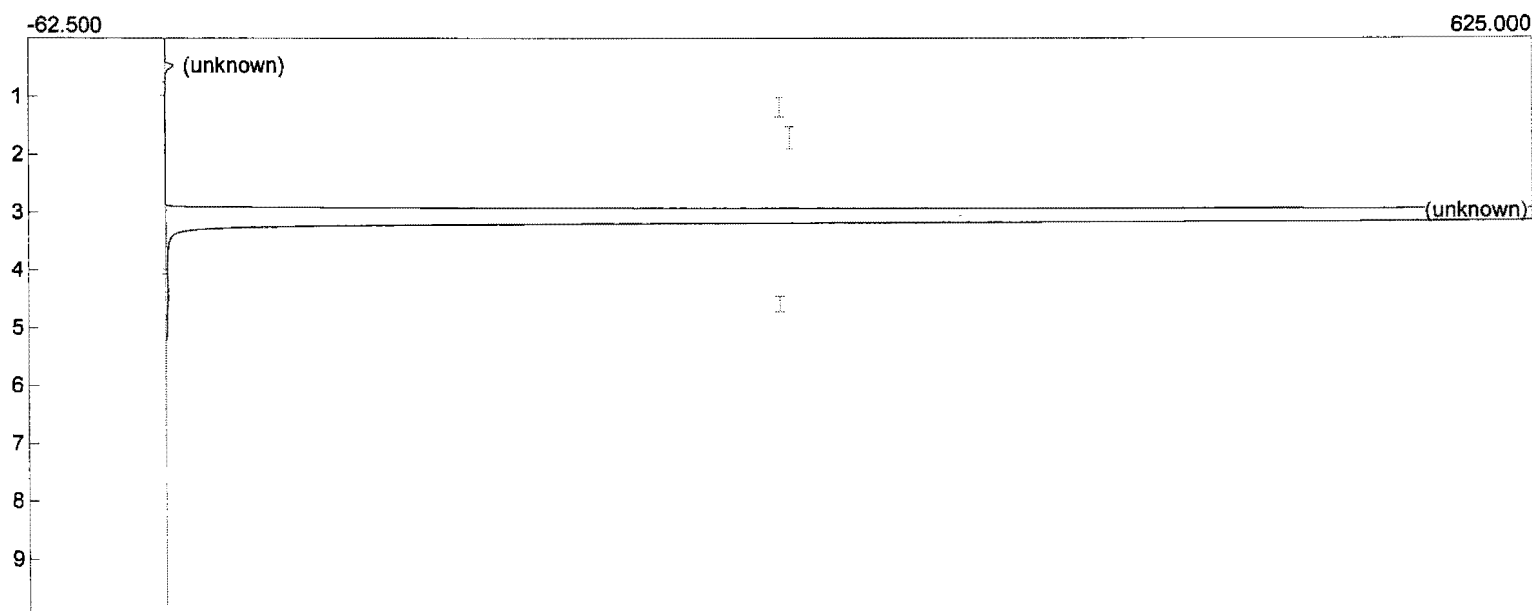
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 06:36:04
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns01.CHR ()
Sample: 6-6 SRU M15 Runs
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 07:26:04
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns06.CHR ()
Sample: 6-6 SRU M15 Runs
Operator: SY

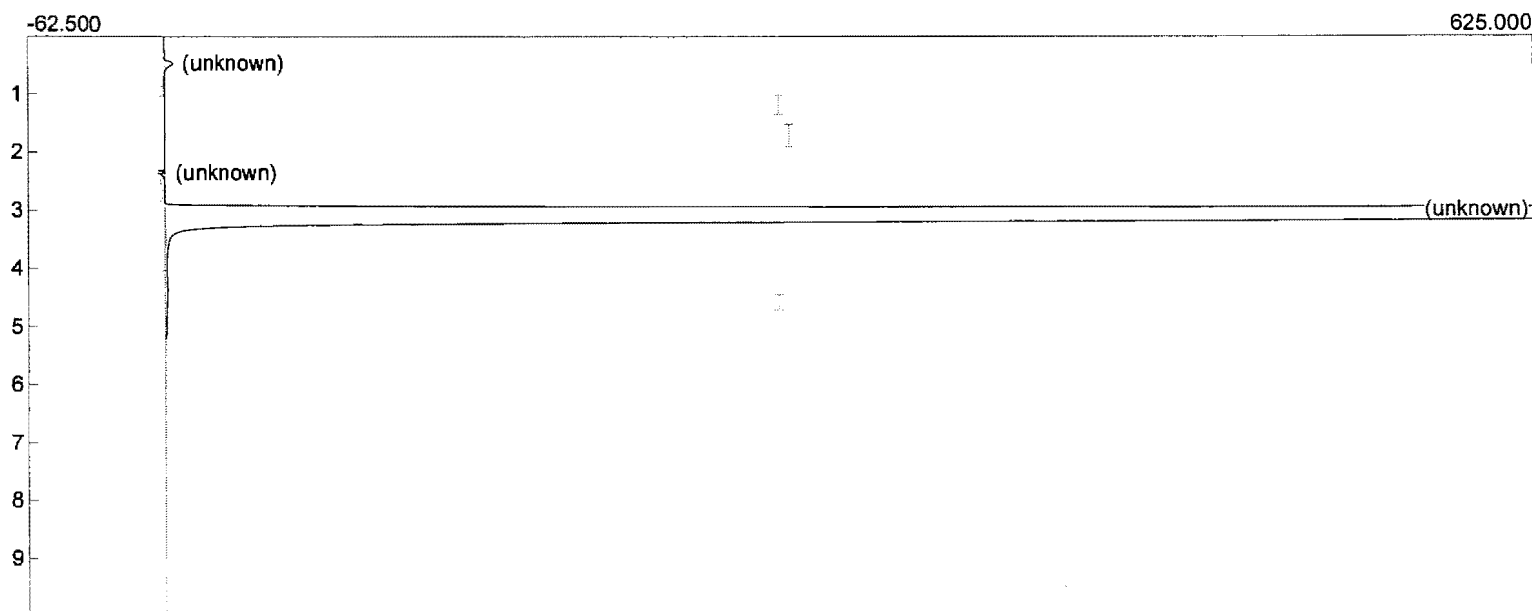


Component

Area

0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 07:36:04
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns07.CHR ()
Sample: 6-6 SRU M15 Runs
Operator: SY

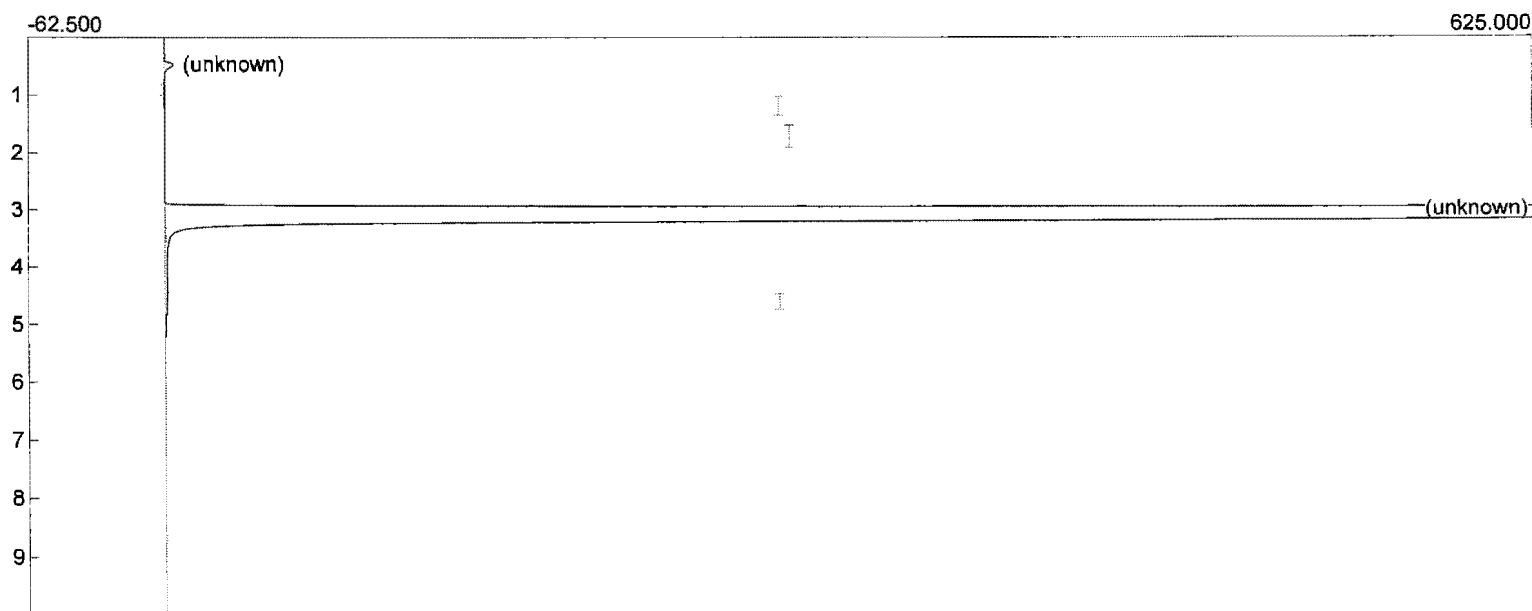


Component

Area

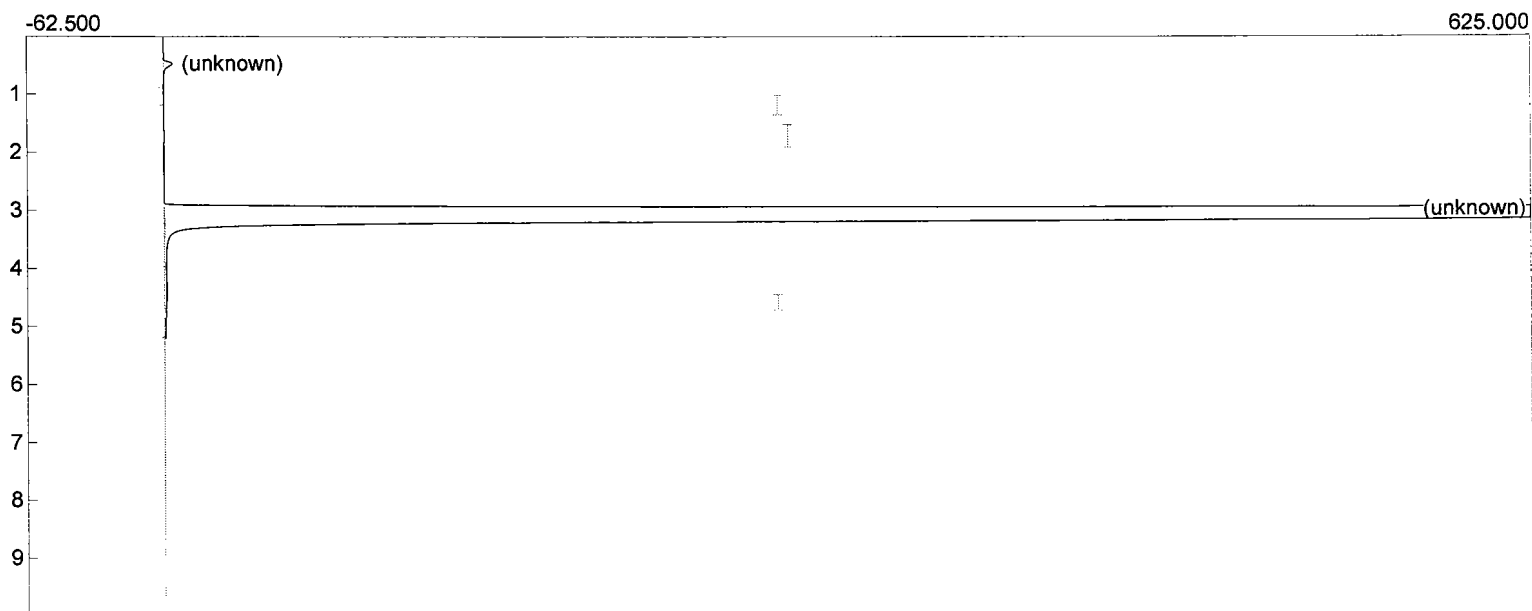
0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 07:46:04
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns08.CHR ()
Sample: 6-6 SRU M15 Runs
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 07:56:04
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns09.CHR ()
Sample: 6-6 SRU M15 Runs
Operator: SY

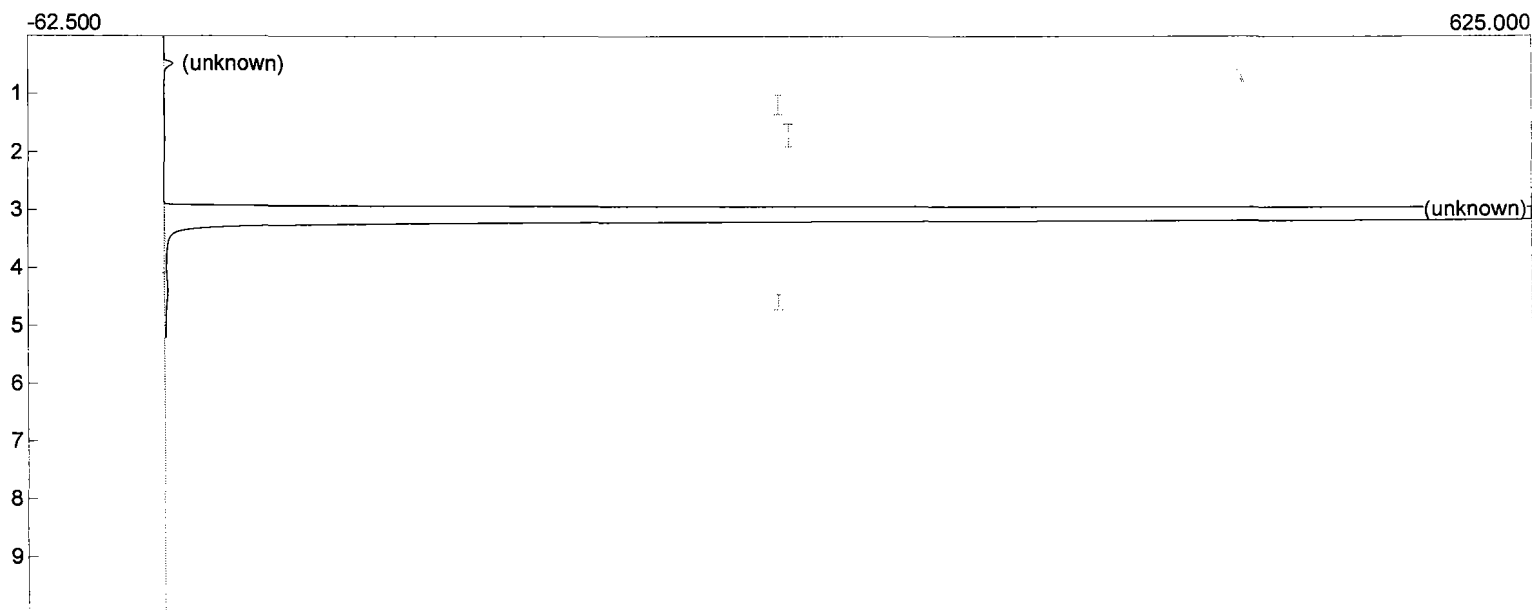


Component

Area

0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 08:06:04
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns10.CHR ()
Sample: 6-6 SRU M15 Runs
Operator: SY

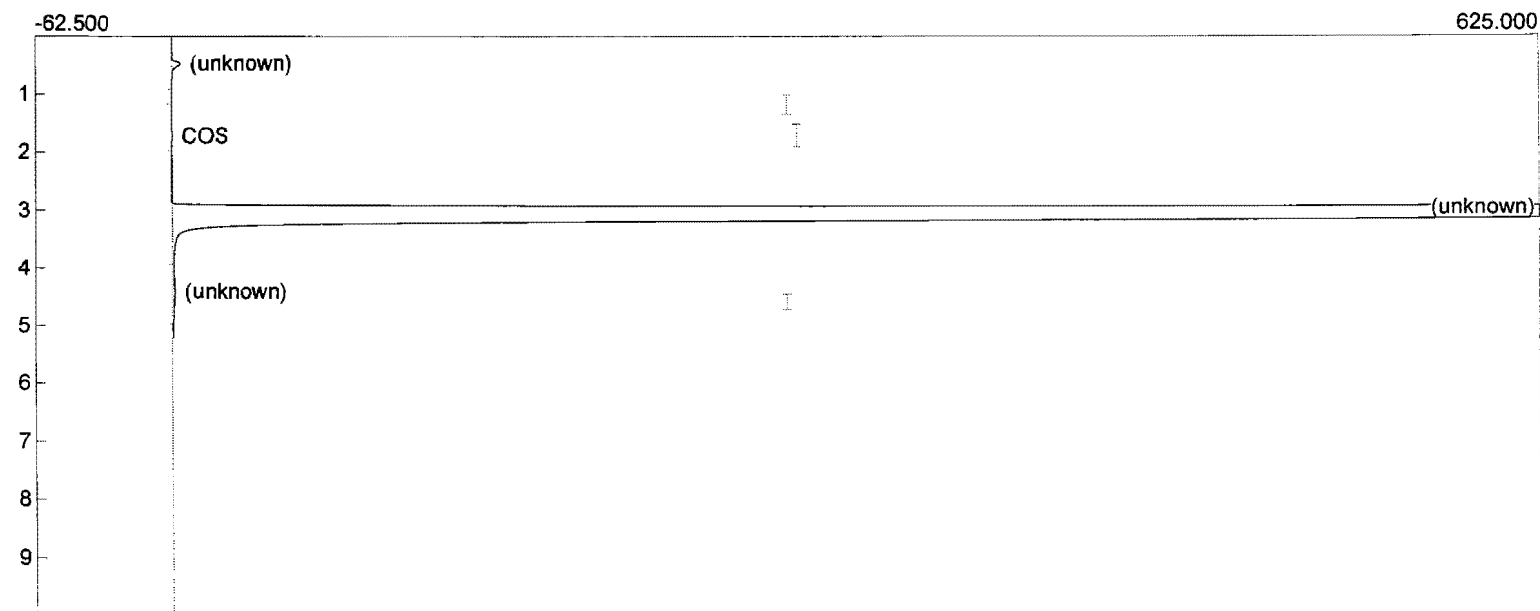


Component

Area

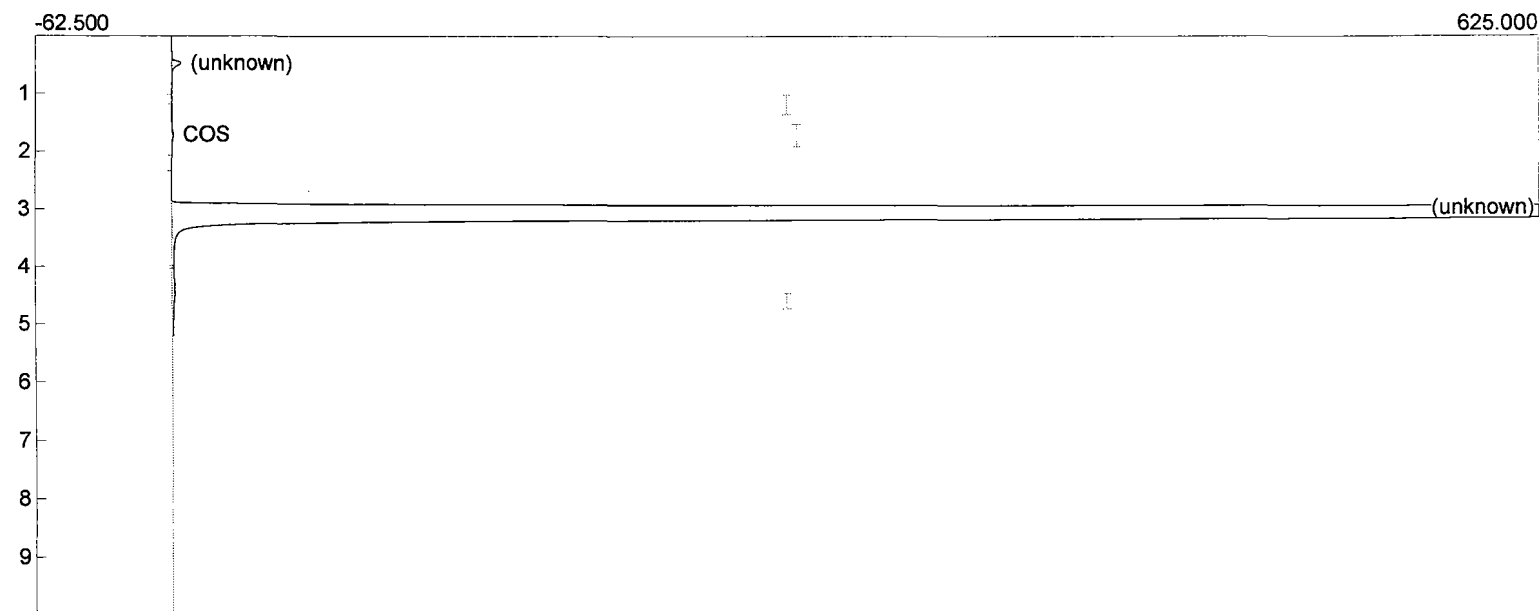
0.0000

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 08:16:04
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns11.CHR ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



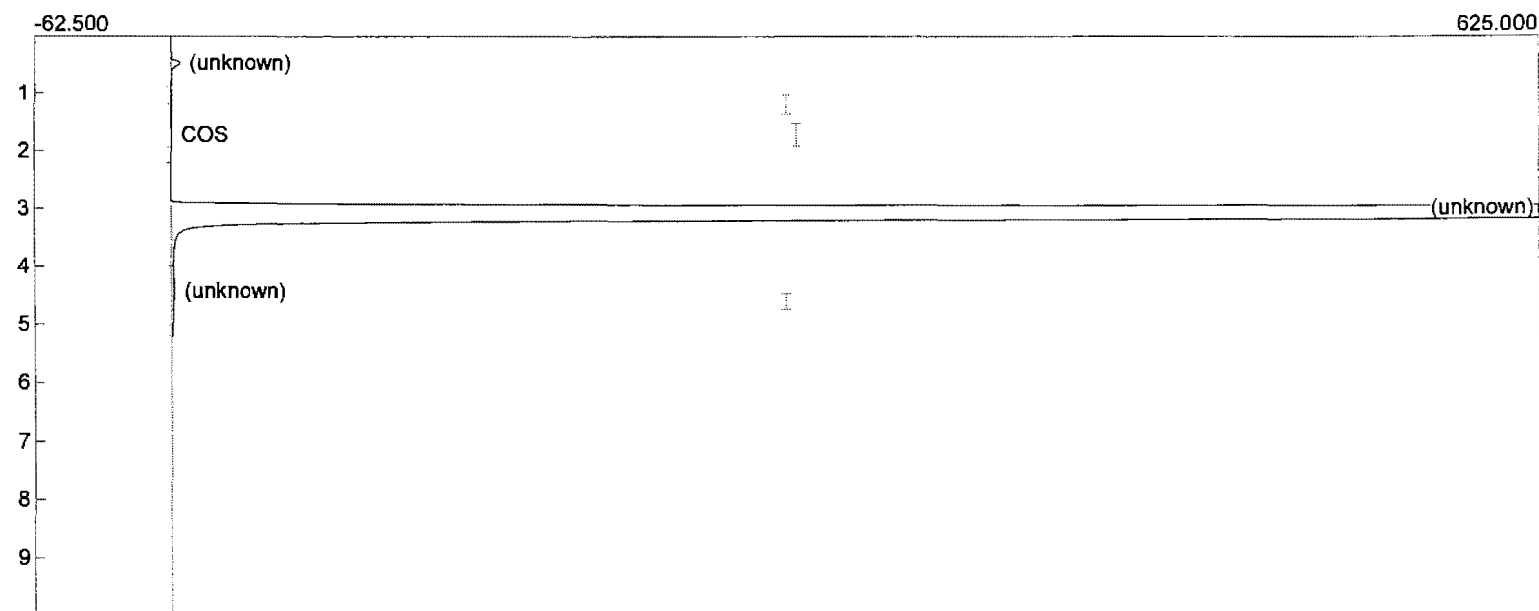
Component	Area
COS	2.2650
	2.2650

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 08:26:04
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns12.CHR ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



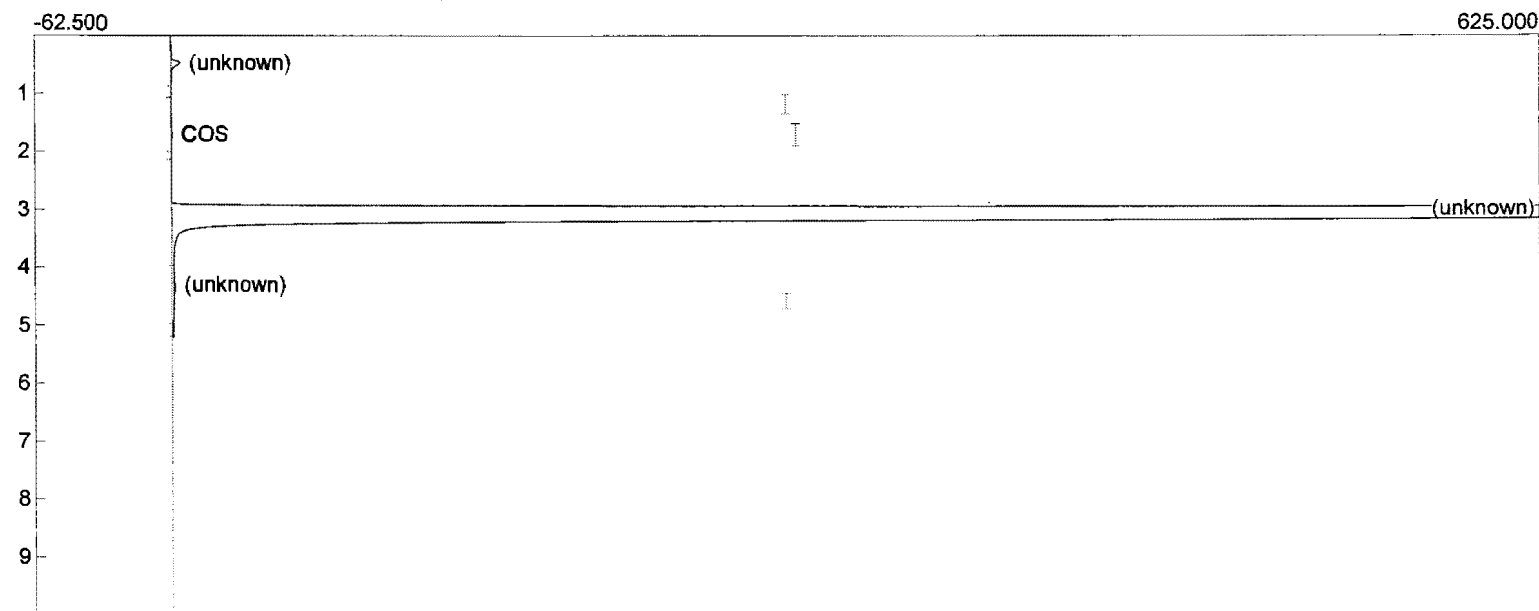
Component	Area
COS	6.9520
	6.9520

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 08:36:04
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns13.CHR ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



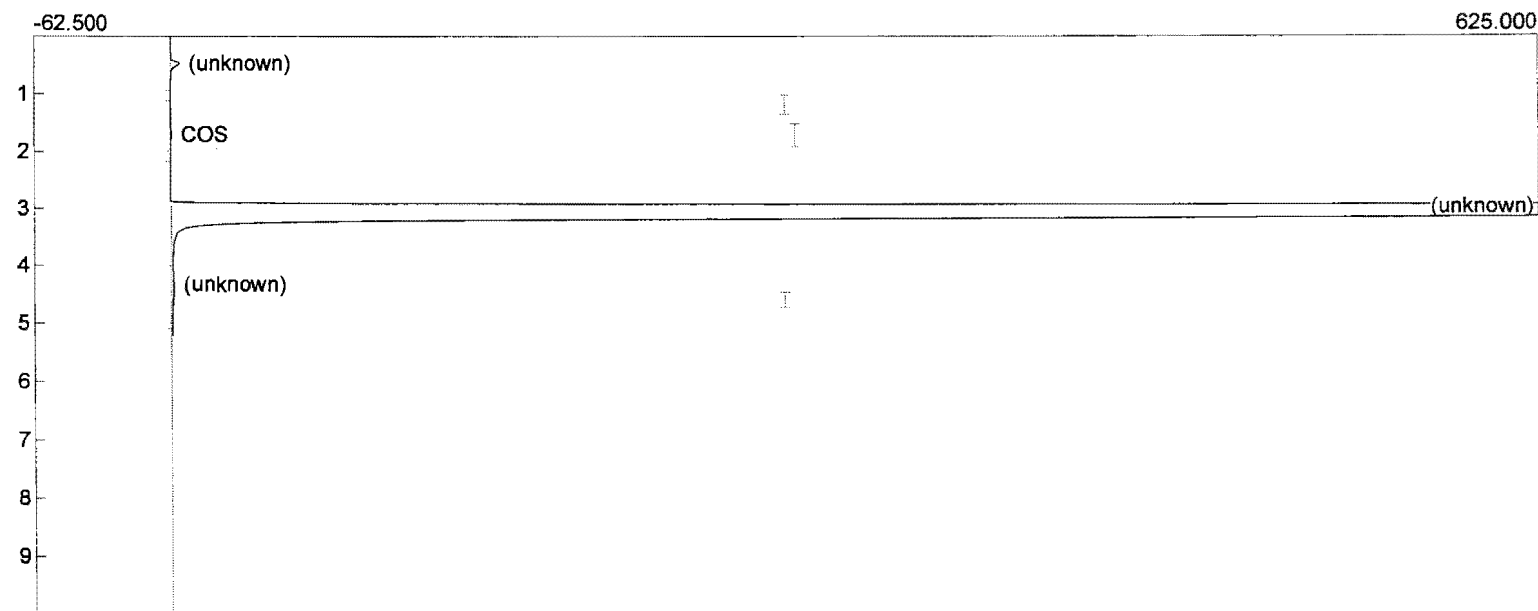
Component	Area
COS	2.5060
	2.5060

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 08:46:04
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns14.CHR ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



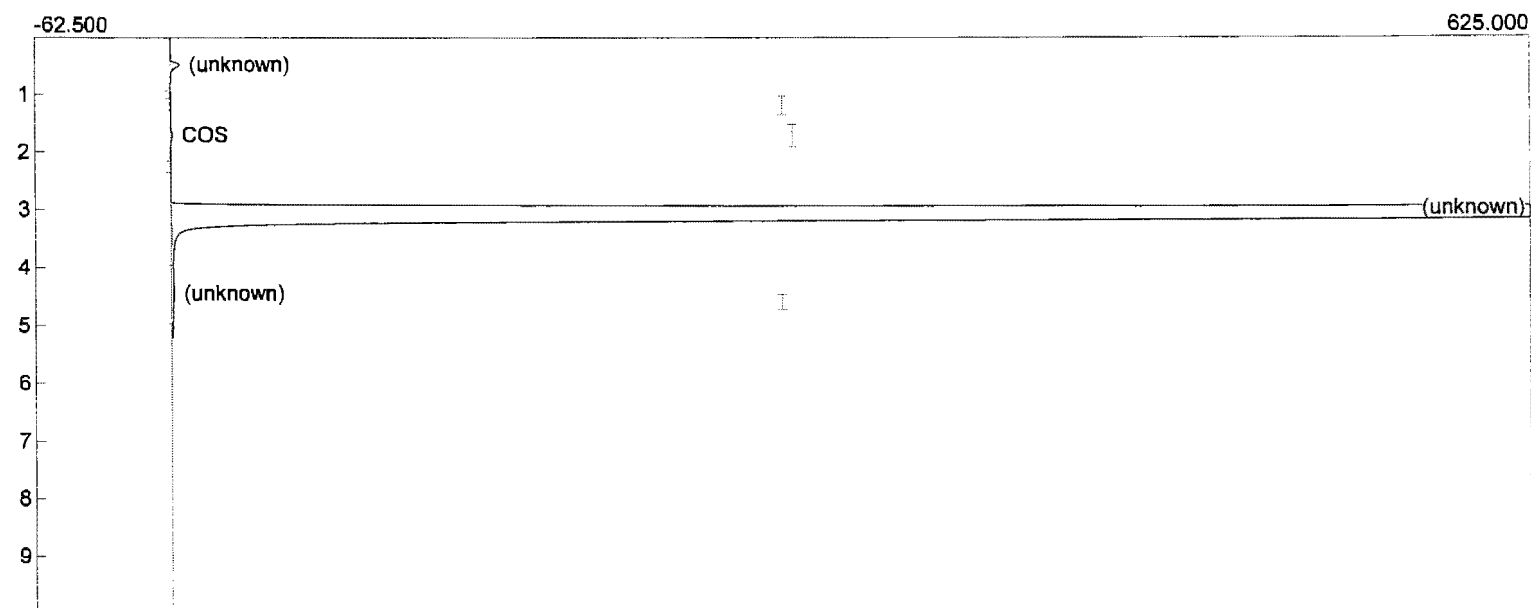
Component	Area
COS	3.6150
	3.6150

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 08:56:04
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns15.CHR ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY

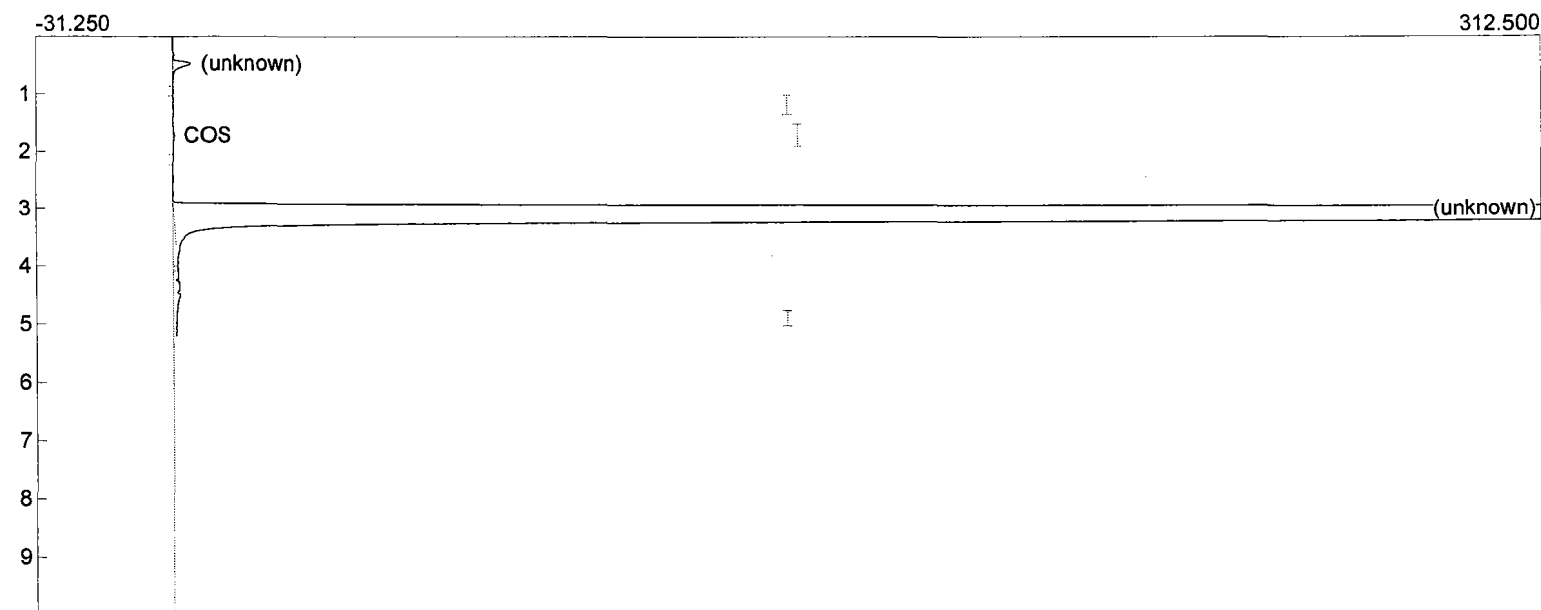


Component	Area
COS	3.9910
	3.9910

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 09:06:04
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns16.CHR ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY

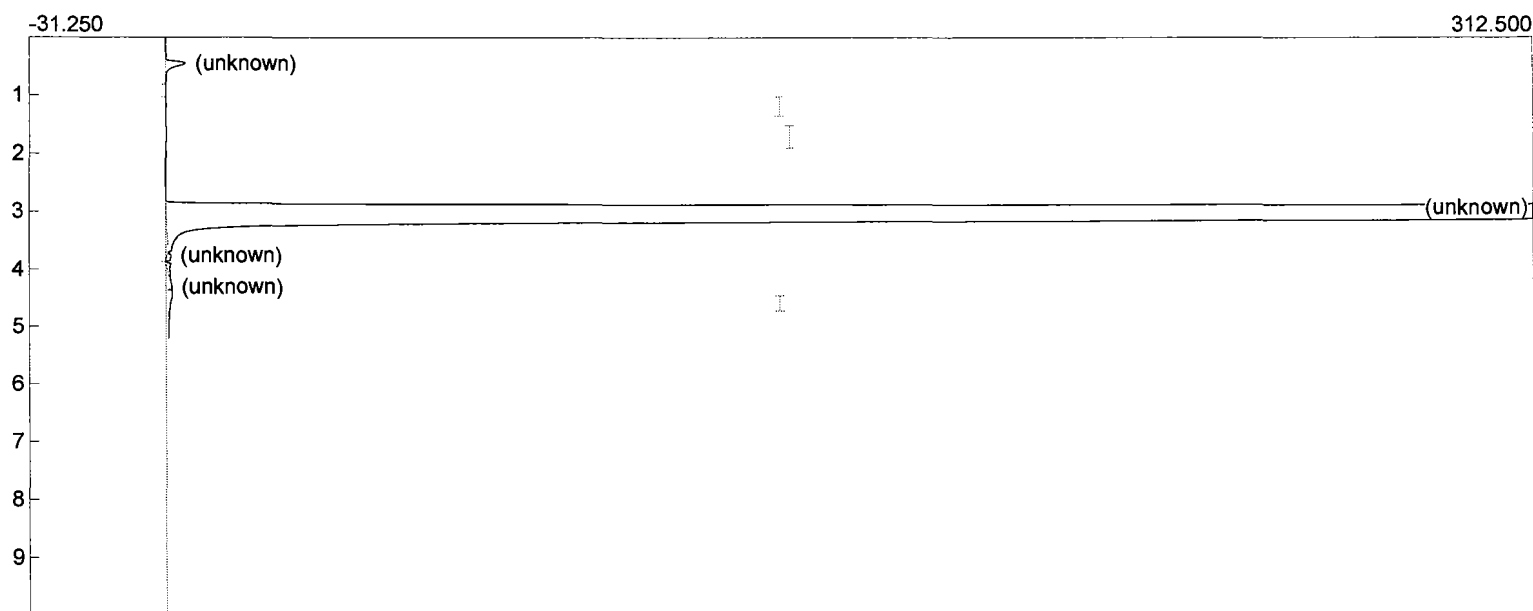


Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 09:16:04
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns17.chr ()
Sample: 6-6 SRU M15 Runs
Operator: SY



Component	Area
COS	3.7470
	3.7470

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 09:26:04
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns18.CHR ()
Sample: 6-6 SRU M15 Runs
Operator: SY

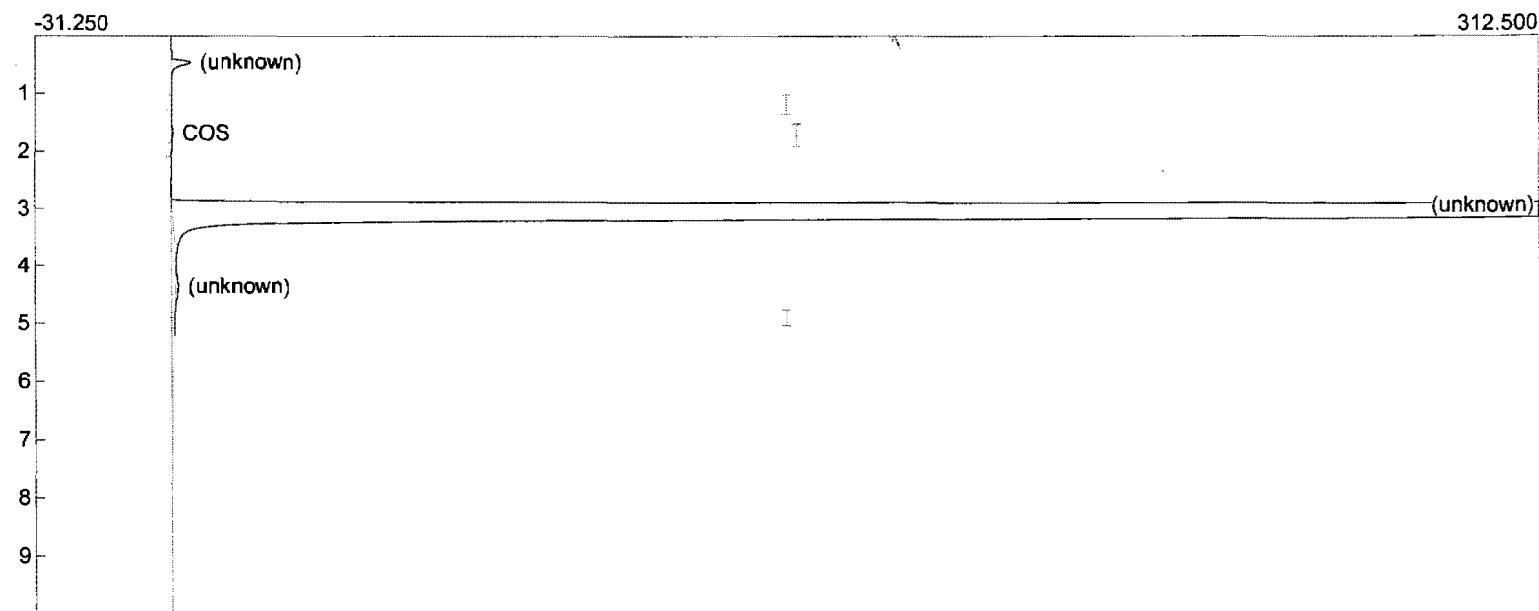


Component

Area

0.0000

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 09:36:04
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns19.CHR ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



Component	Area
COS	3.3390
	3.3390

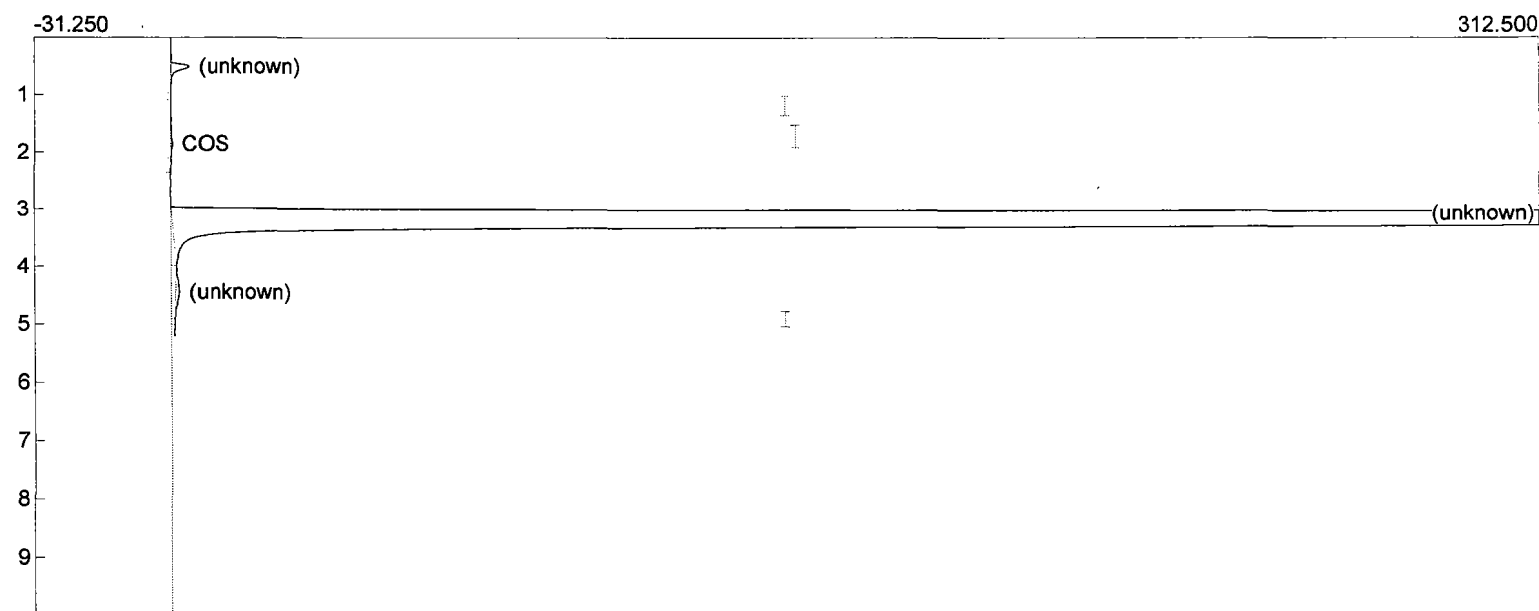
SUMMARY OF TOTAL REDUCED SULFUR COMPOUNDS



Company: Diamond Shamrock Refining Company, L.P. (A Valero Company)
Location: Sunray, Texas
Source: SRU No.2 Incinerator
Date: 6/6/2008
Run No.: 5

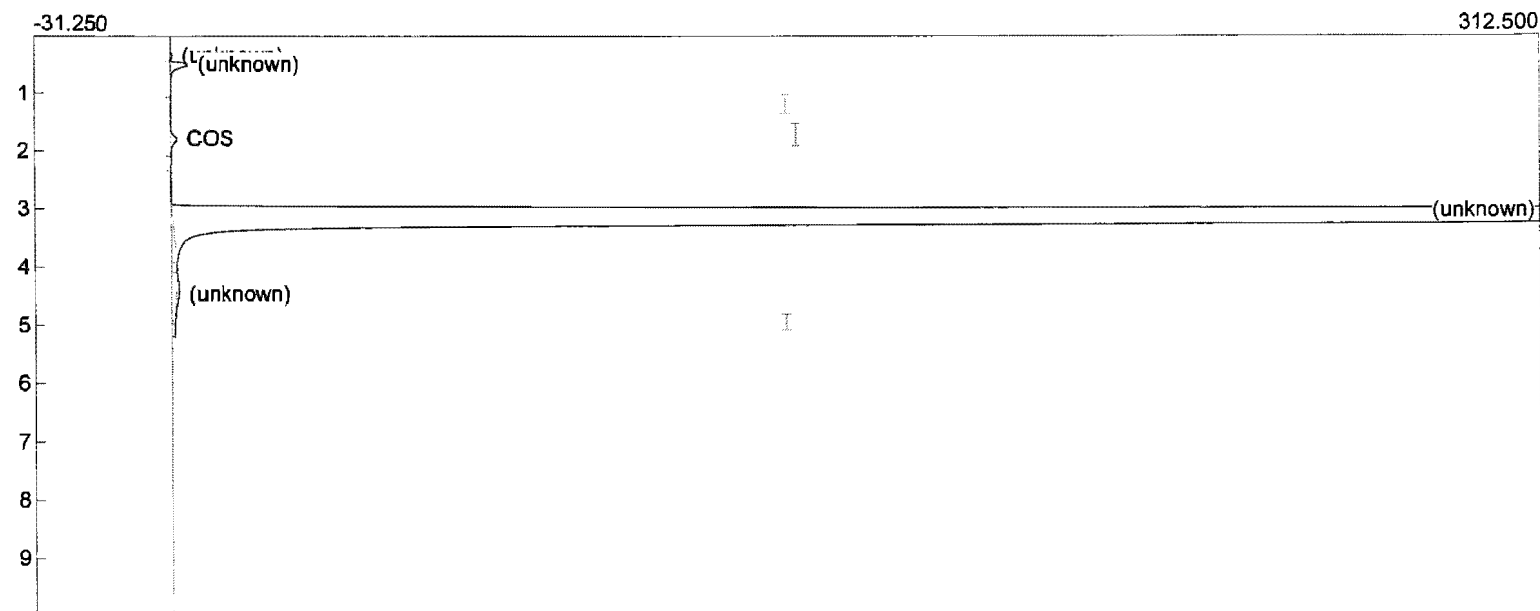
File Name	Date	Time	<u>COS</u>		<u>H2S</u>		<u>CS2</u>		<u>TRS</u>	Injection
			Area (mV)	Conc (ppm v db)	Area (mV)	Conc (ppm v db)	Area (mV)	Conc (ppm v db)	Conc (ppm v db)	
val6-6sruruns20.chr	6/6/2008	10:03:08	4.64	0.44	<0.03	<0.67	<24.00	<0.01	<1.12	5-1
val6-6sruruns21.chr	6/6/2008	10:13:08	13.24	0.90	<0.03	<0.67	<24.00	<0.01	<1.59	5-2
val6-6sruruns22.chr	6/6/2008	10:23:08	<1.00	<0.08	<0.03	<0.67	<24.00	<0.01	<0.77	5-3
val6-6sruruns23.chr	6/6/2008	10:33:08	7.88	0.64	<0.03	<0.67	<24.00	<0.01	<1.33	5-4
val6-6sruruns24.chr	6/6/2008	10:43:08	<1.00	<0.08	<0.03	<0.67	<24.00	<0.01	<0.77	5-5
val6-6sruruns25.chr	6/6/2008	10:53:08	<1.00	<0.08	<0.03	<0.67	<24.00	<0.01	<0.77	5-6
val6-6sruruns26.chr	6/6/2008	11:03:08	<1.00	<0.08	<0.03	<0.67	<24.00	<0.01	<0.77	5-7
val6-6sruruns27.chr	6/6/2008	11:13:08	<1.00	<0.08	<0.03	<0.67	<24.00	<0.01	<0.77	5-8
val6-6sruruns28.chr	6/6/2008	11:23:08	<1.00	<0.08	<0.03	<0.67	<24.00	<0.01	<0.77	5-9
val6-6sruruns29.chr	6/6/2008	11:33:08	<1.00	<0.08	<0.03	<0.67	<24.00	<0.01	<0.77	5-10
val6-6sruruns30.chr	6/6/2008	11:43:08	<1.00	<0.08	<0.03	<0.67	<24.00	<0.01	<0.77	5-11
val6-6sruruns31.chr	6/6/2008	11:53:08	<1.00	<0.08	<0.03	<0.67	<24.00	<0.01	<0.77	5-12
val6-6sruruns32.chr	6/6/2008	12:03:08	4.29	0.41	<0.03	<0.67	<24.00	<0.01	<1.10	5-13
val6-6sruruns33.CHR	6/6/2008	12:13:08	3.48	0.35	<0.03	<0.67	<24.00	<0.01	<1.03	5-14
val6-6sruruns34.CHR	6/6/2008	12:23:08	4.87	0.45	<0.03	<0.67	<24.00	<0.01	<1.14	5-15
val6-6sruruns35.CHR	6/6/2008	12:33:08	2.28	0.24	<0.03	<0.67	<24.00	<0.01	<0.92	5-16
val6-6sruruns36.CHR	6/6/2008	12:43:08	7.00	0.59	<0.03	<0.67	<24.00	<0.01	<1.28	5-17
val6-6sruruns37.CHR	6/6/2008	12:53:08	6.64	0.57	<0.03	<0.67	<24.00	<0.01	<1.26	5-18
val6-6sruruns38.CHR	6/6/2008	13:03:08	5.95	0.52	<0.03	<0.67	<24.00	<0.01	<1.21	5-19
Average Values				<0.26		<0.67		<0.01	<0.95	

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 10:03:08
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns20.chr ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



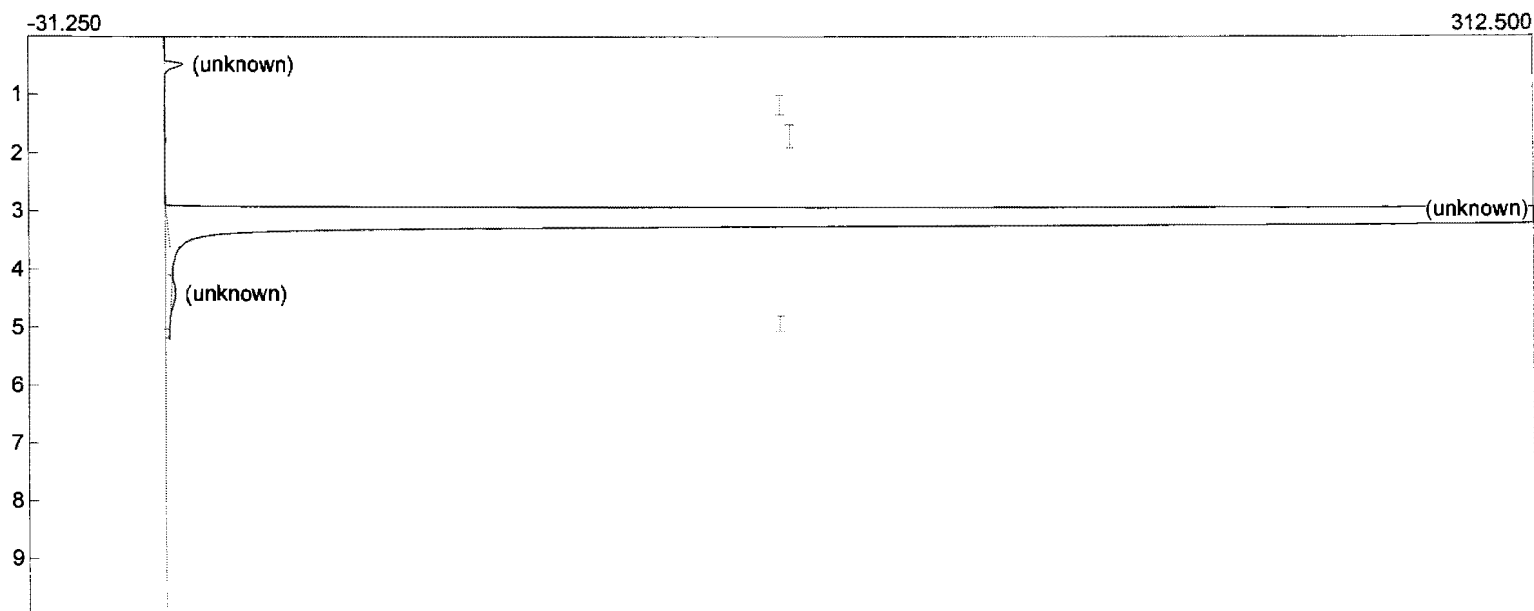
Component	Area
COS	4.6370
	4.6370

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 10:13:08
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns21.chr ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



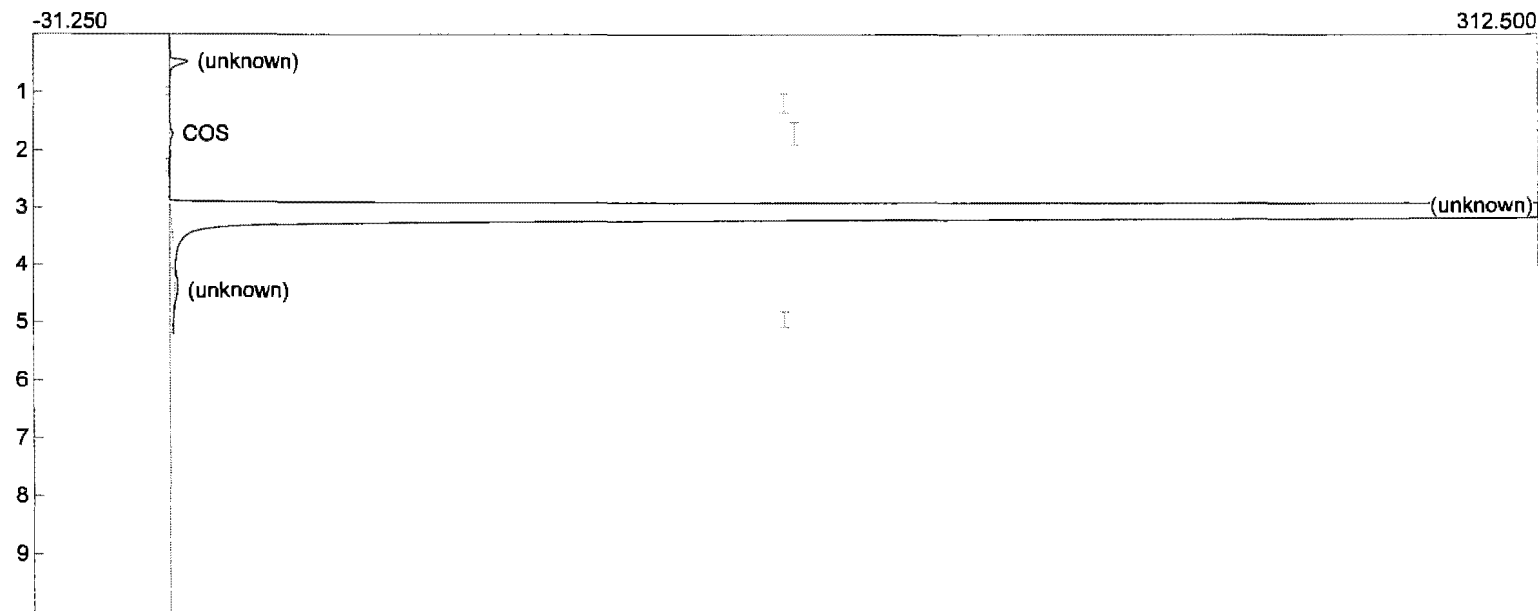
Component	Area
COS	13.2380
	13.2380

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 10:23:08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns22.chr ()
Sample: 6-6 SRU M15 Runs
Operator: SY



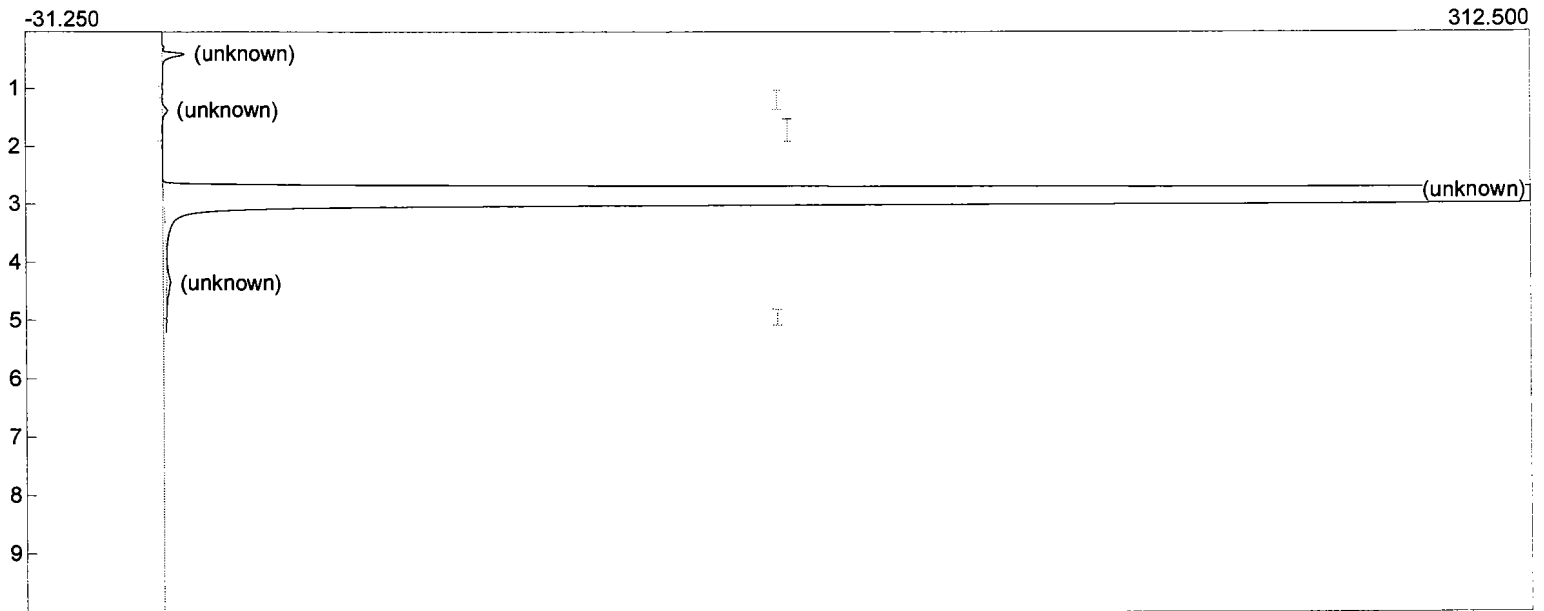
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 10:33:08
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns23.chr ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



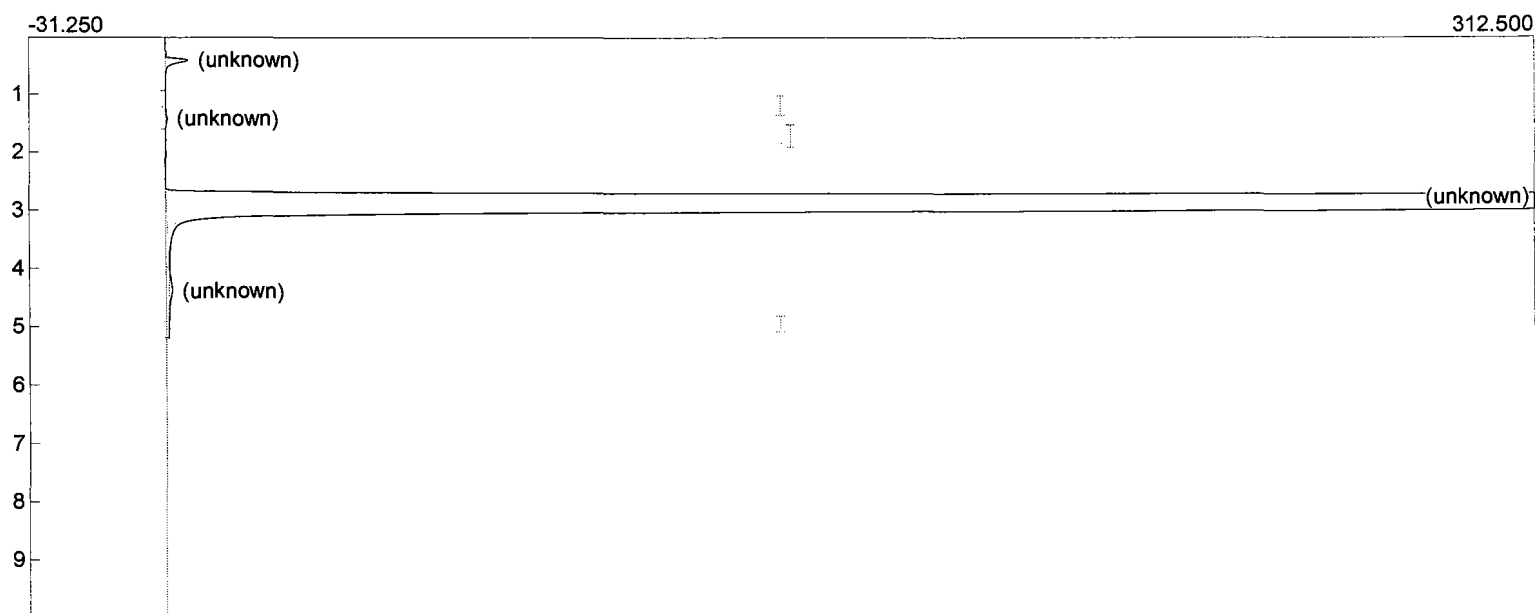
Component	Area
COS	7.8790
	7.8790

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 10:43:08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns24.chr ()
Sample: 6-6 SRU M15 Runs
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 10:53:08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns25.chr ()
Sample: 6-6 SRU M15 Runs
Operator: SY

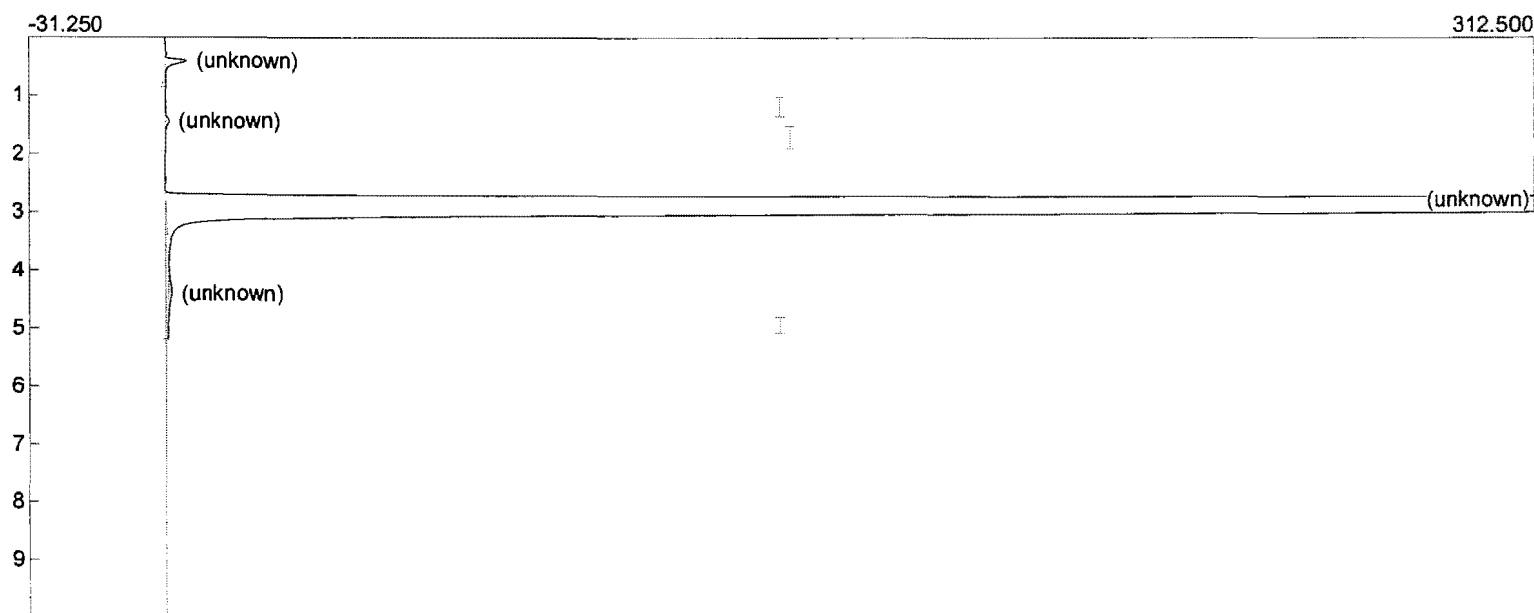


Component

Area

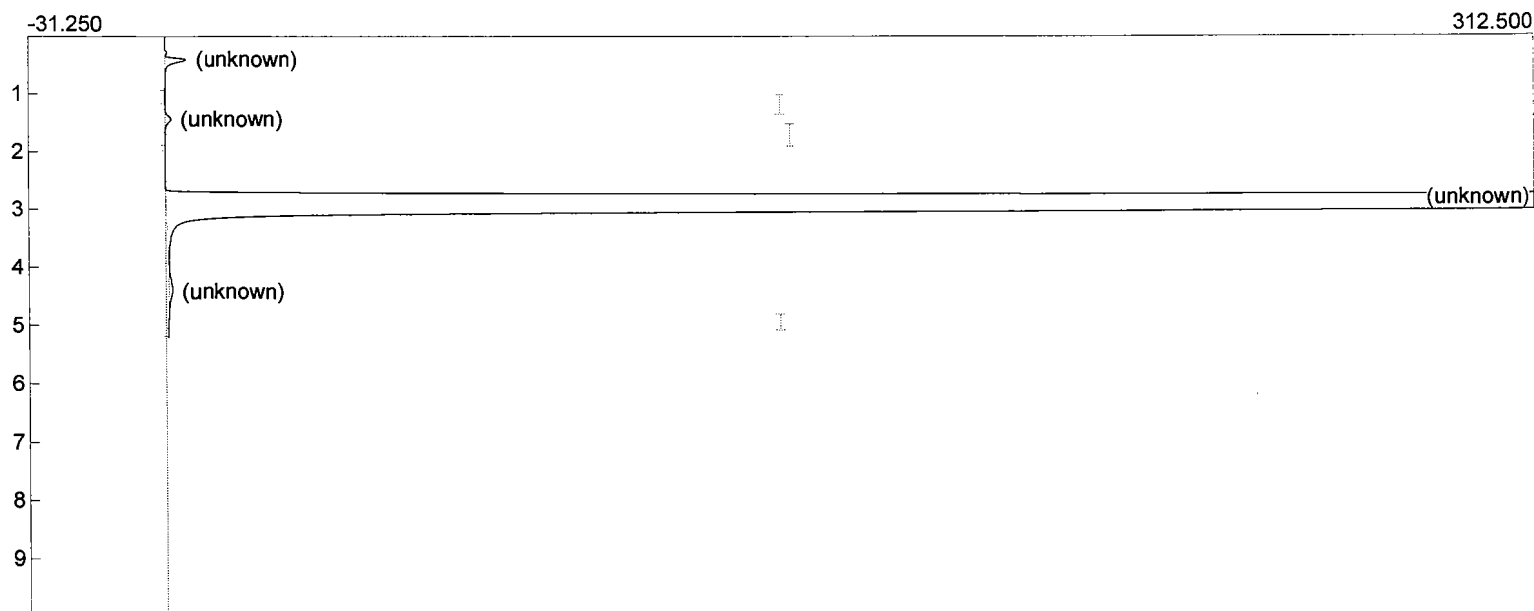
0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 11:03:08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns26.chr ()
Sample: 6-6 SRU M15 Runs
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 11:13:08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns27.chr ()
Sample: 6-6 SRU M15 Runs
Operator: SY

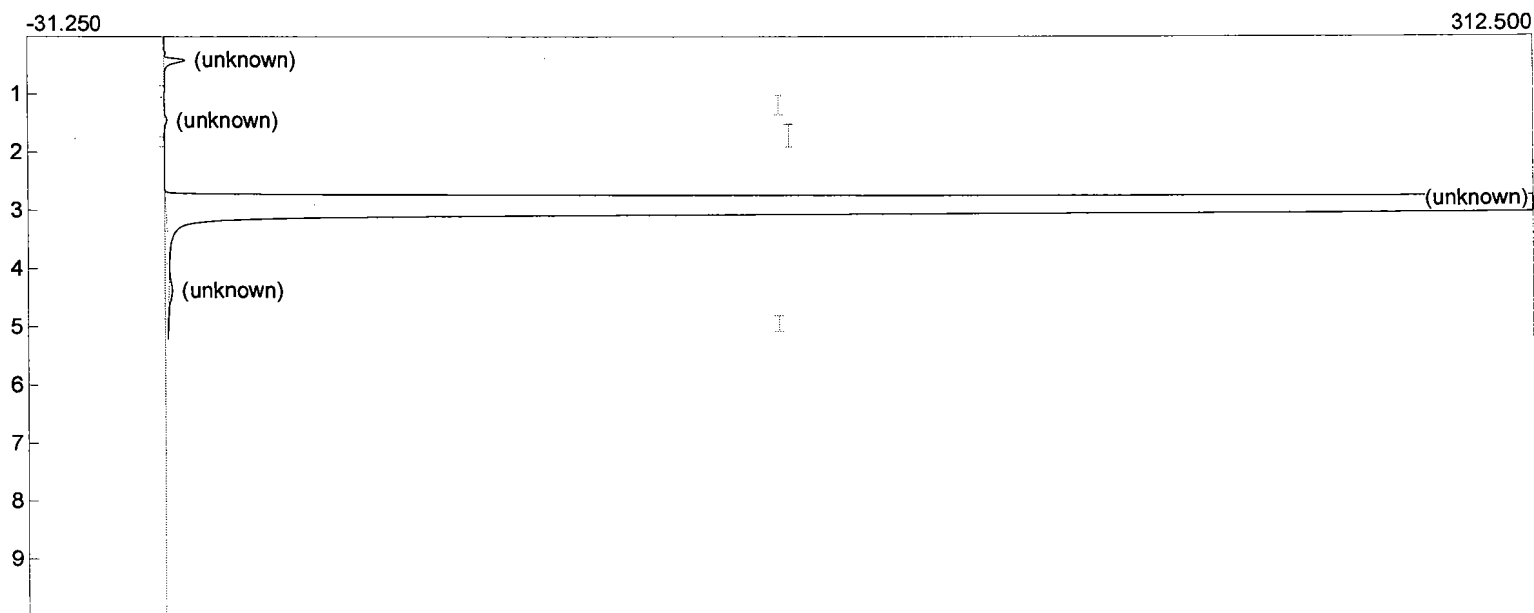


Component

Area

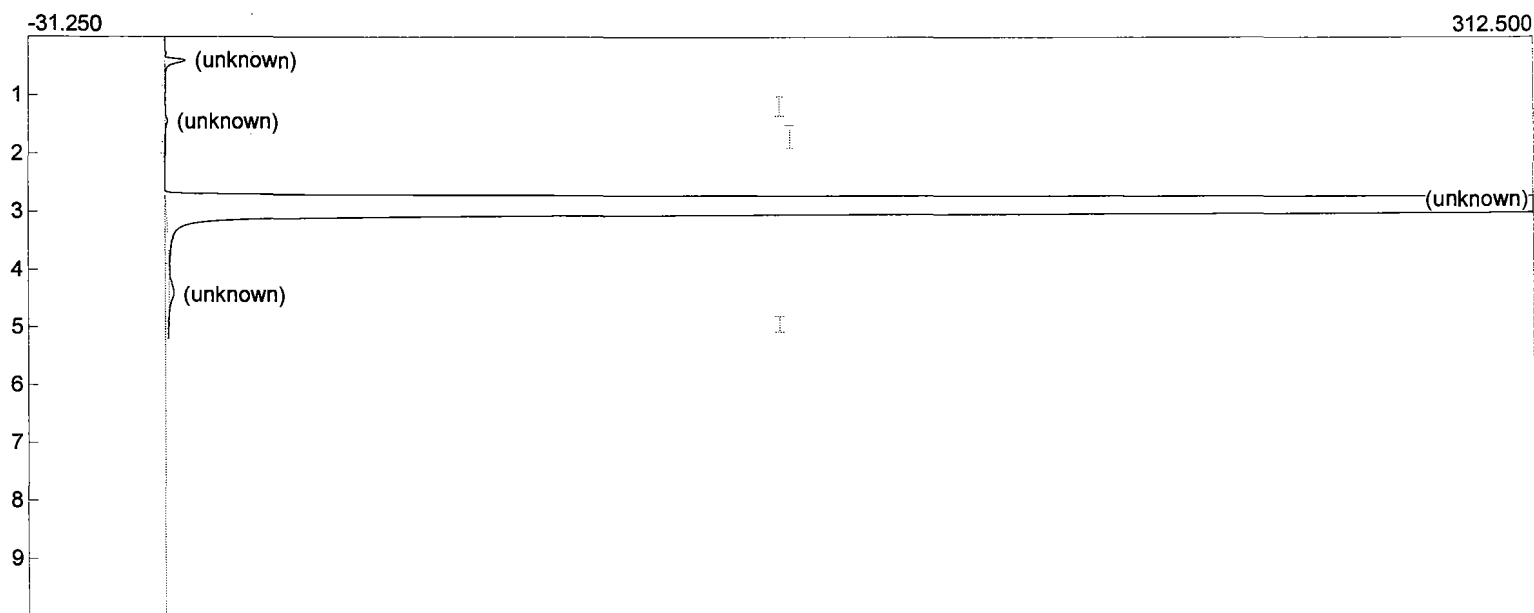
0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 11:23:08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns28.chr ()
Sample: 6-6 SRU M15 Runs
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 11:33:08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns29.chr ()
Sample: 6-6 SRU M15 Runs
Operator: SY

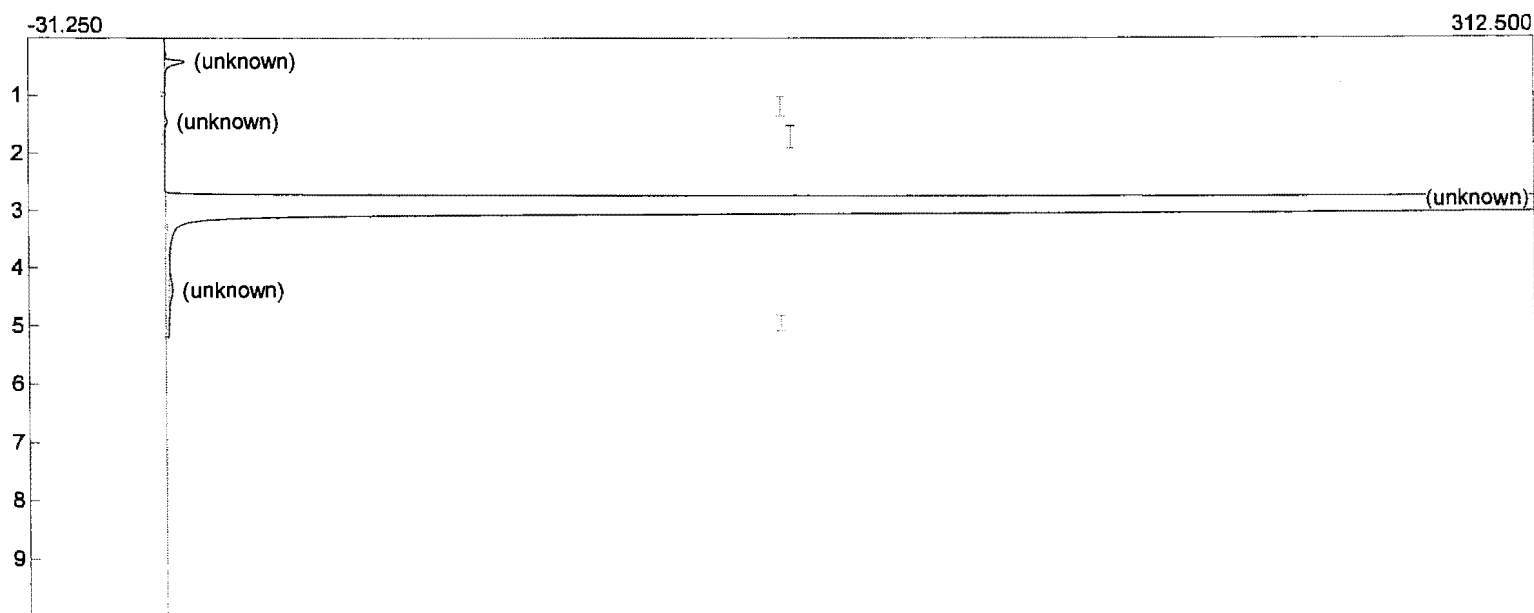


Component

Area

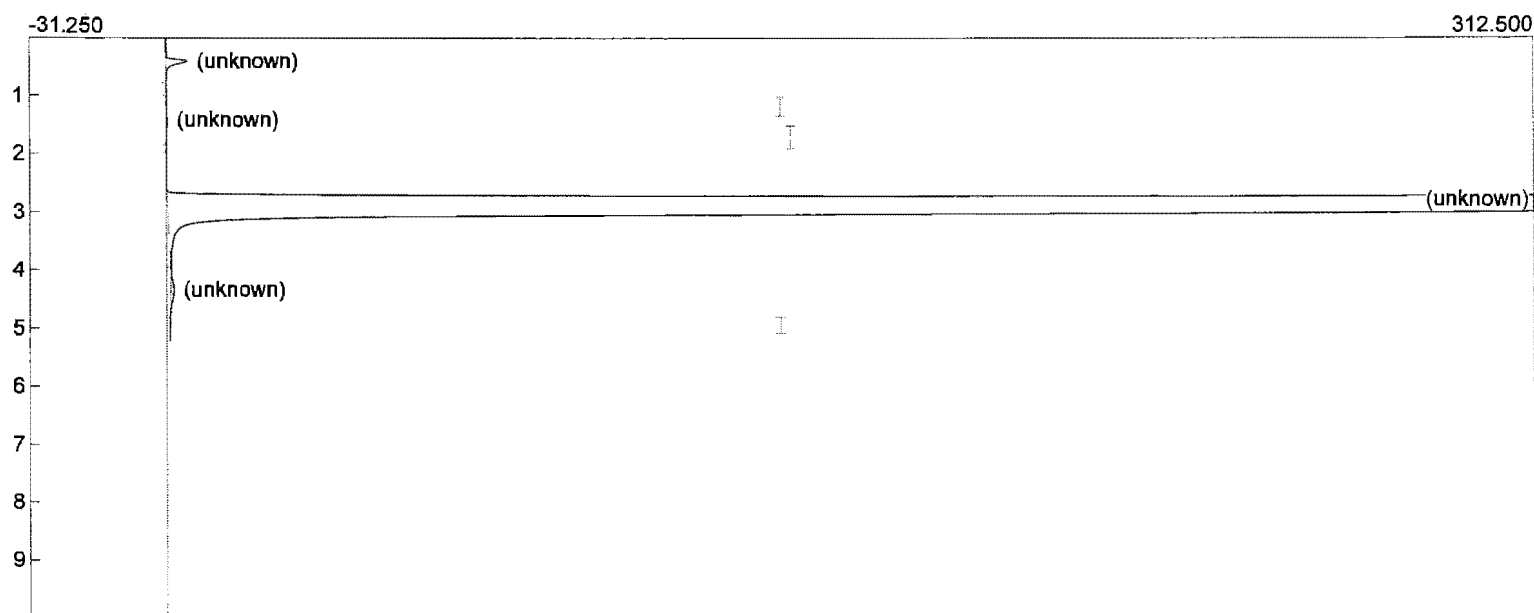
0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 11:43:08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns30.chr ()
Sample: 6-6 SRU M15 Runs
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 11:53:08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns31.chr ()
Sample: 6-6 SRU M15 Runs
Operator: SY

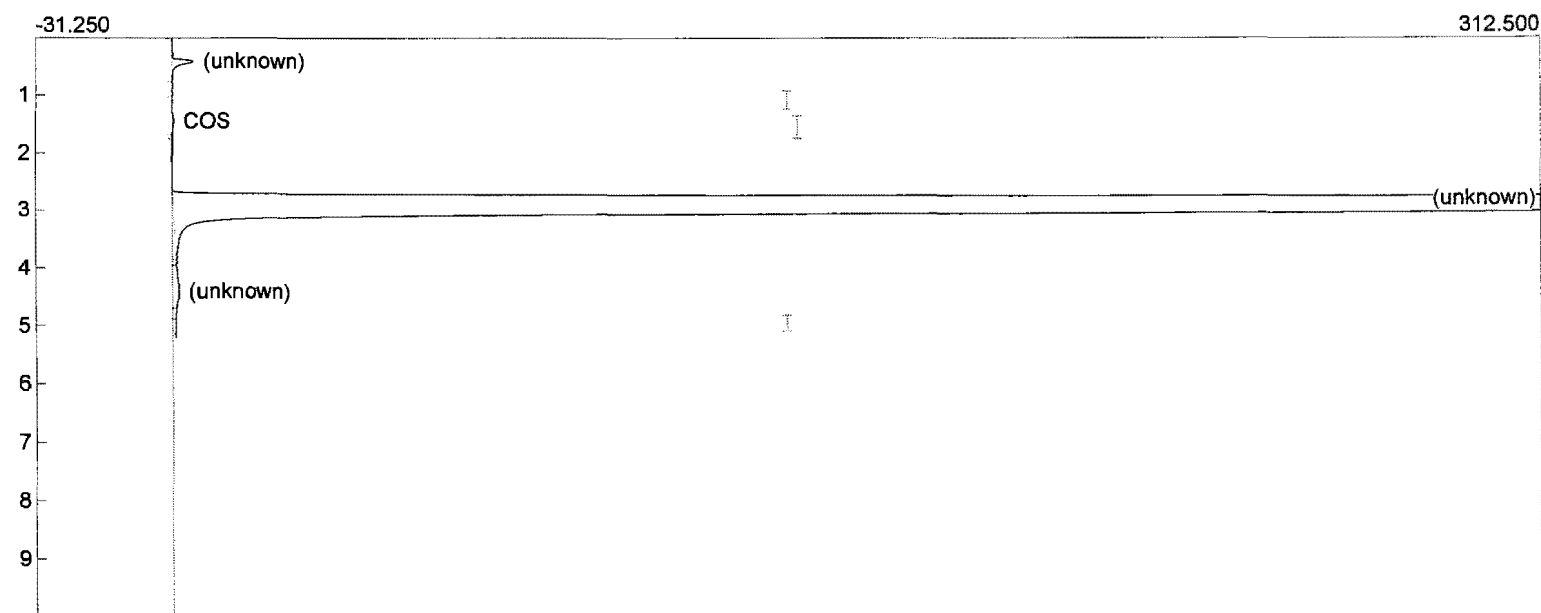


Component

Area

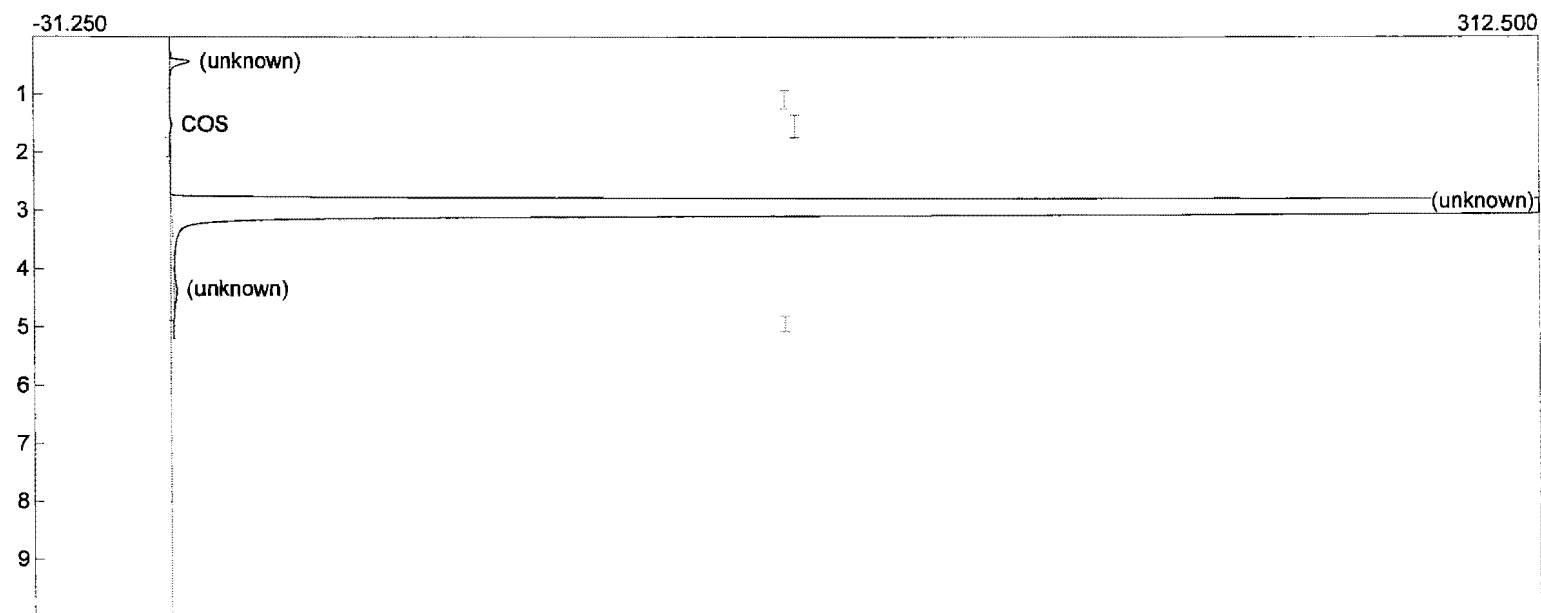
0.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 12:03:08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns32.chr ()
Sample: 6-6 SRU M15 Runs
Operator: SY



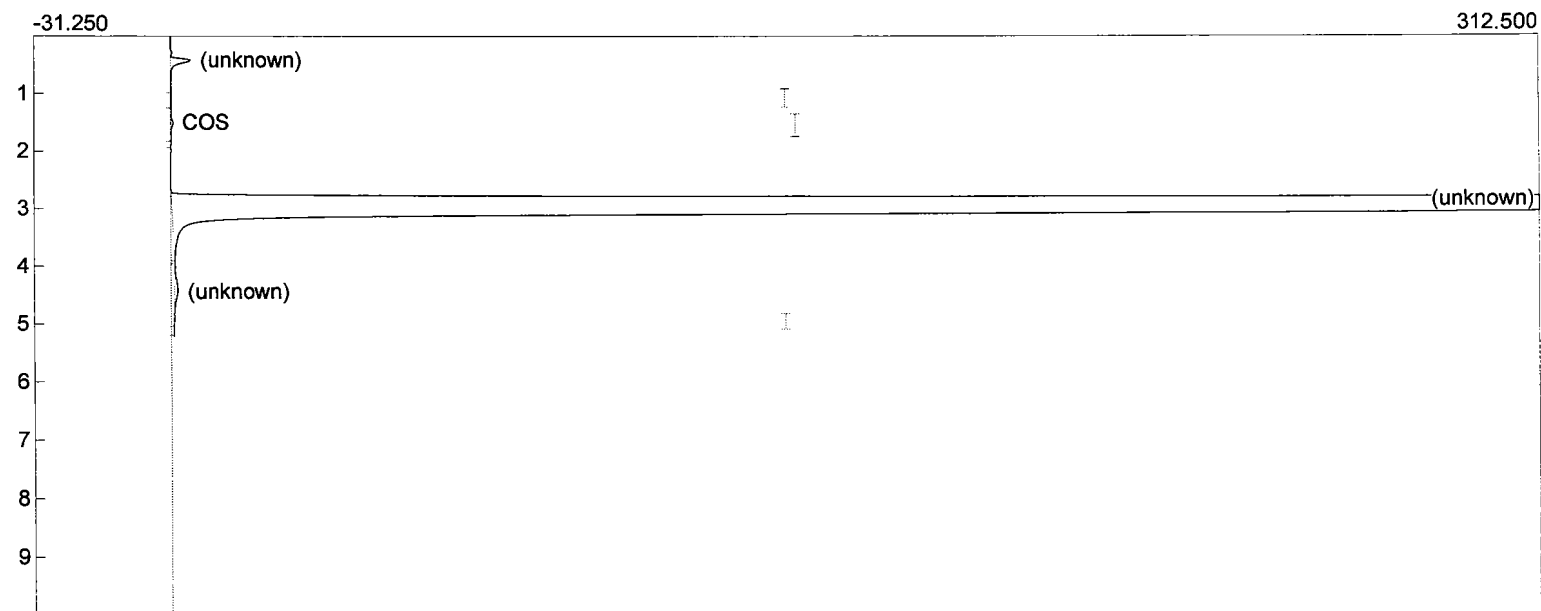
Component	Area
COS	4.2860
	4.2860

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 12:13:08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns33.CHR ()
Sample: 6-6 SRU M15 Runs
Operator: SY



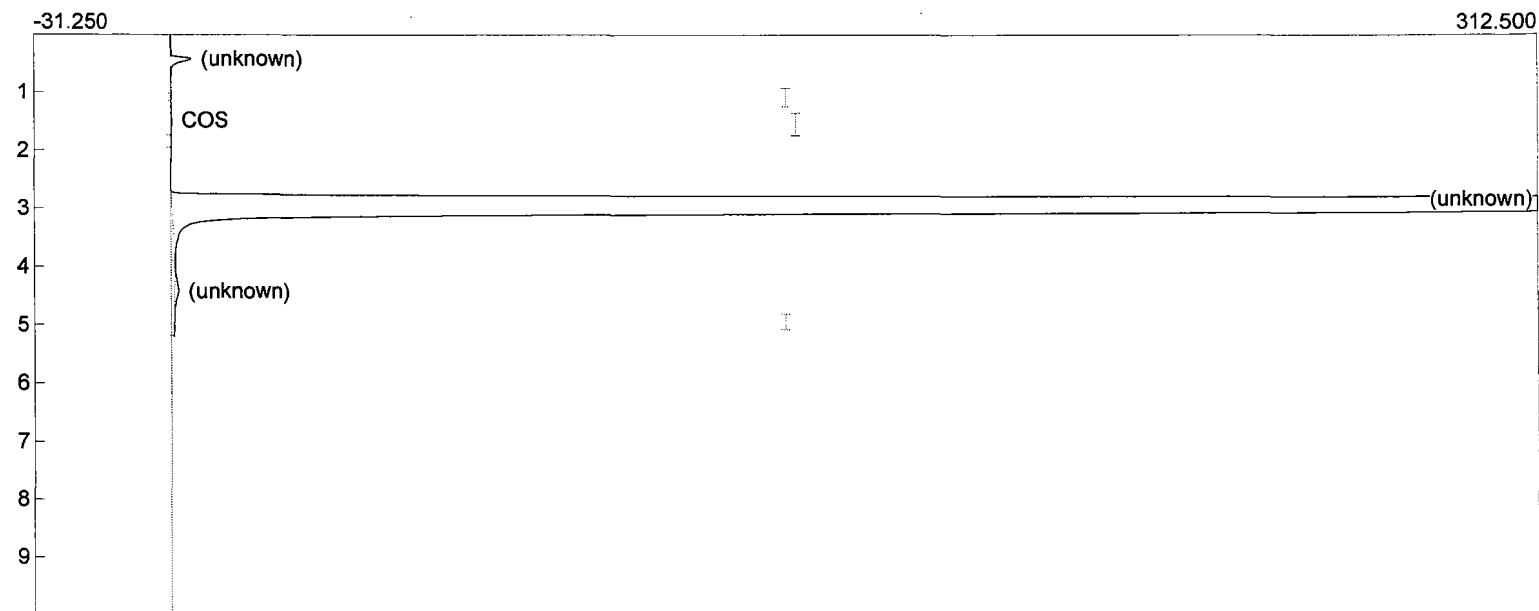
Component	Area
COS	3.4750
	3.4750

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 12:23:08
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns34.CHR ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



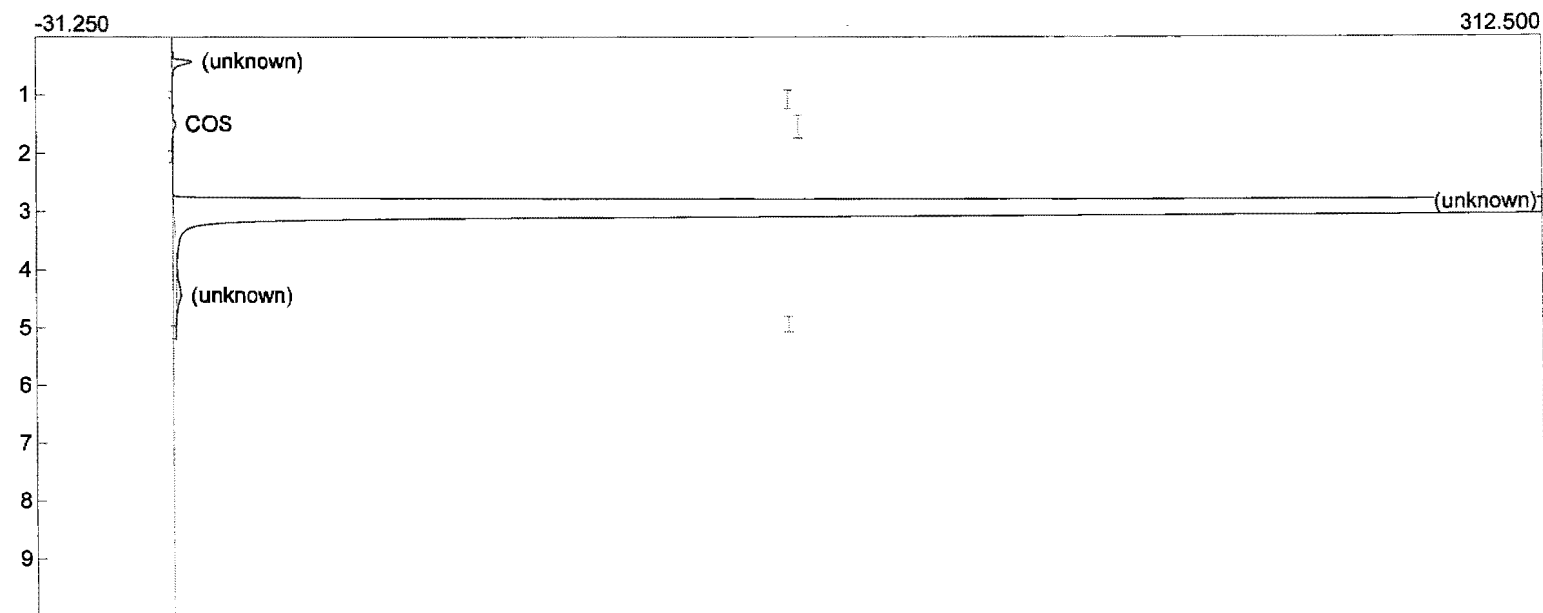
Component	Area
COS	4.8740
	4.8740

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 12:33:08
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns35.CHR ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



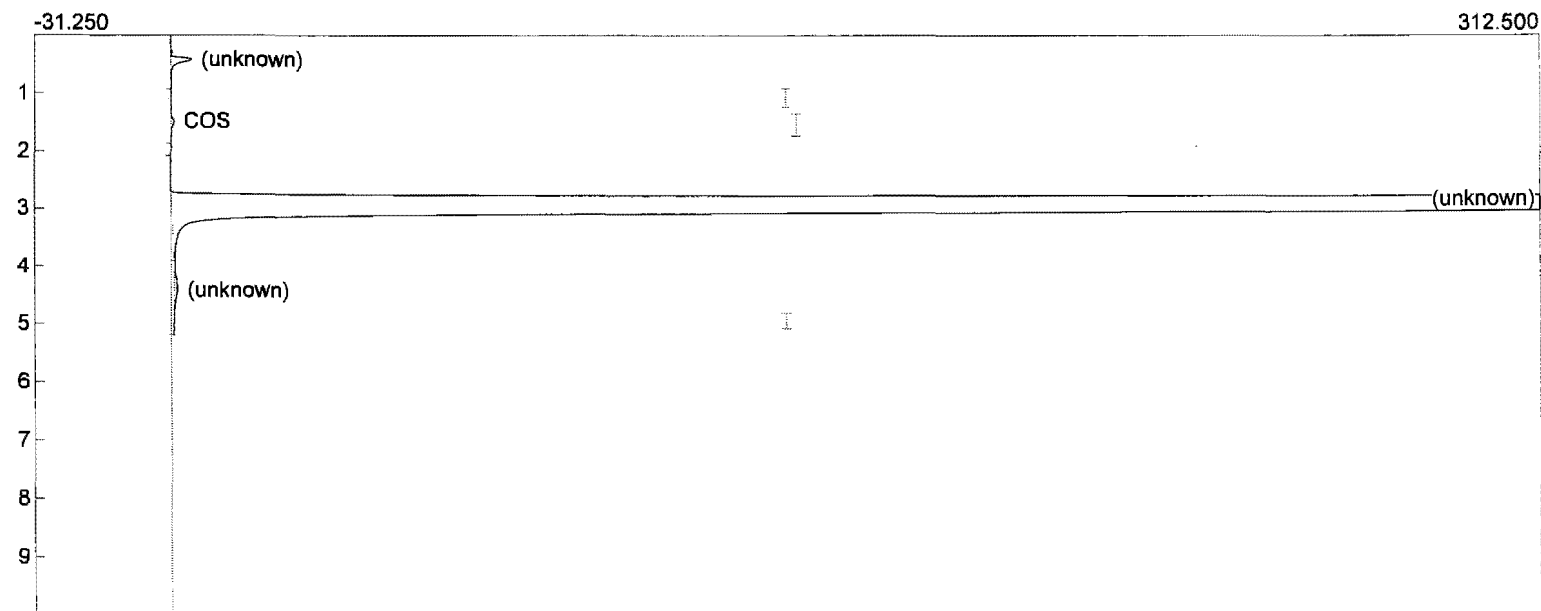
Component	Area
COS	2.2800
	2.2800

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 12:43:08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns36.CHR ()
Sample: 6-6 SRU M15 Runs
Operator: SY



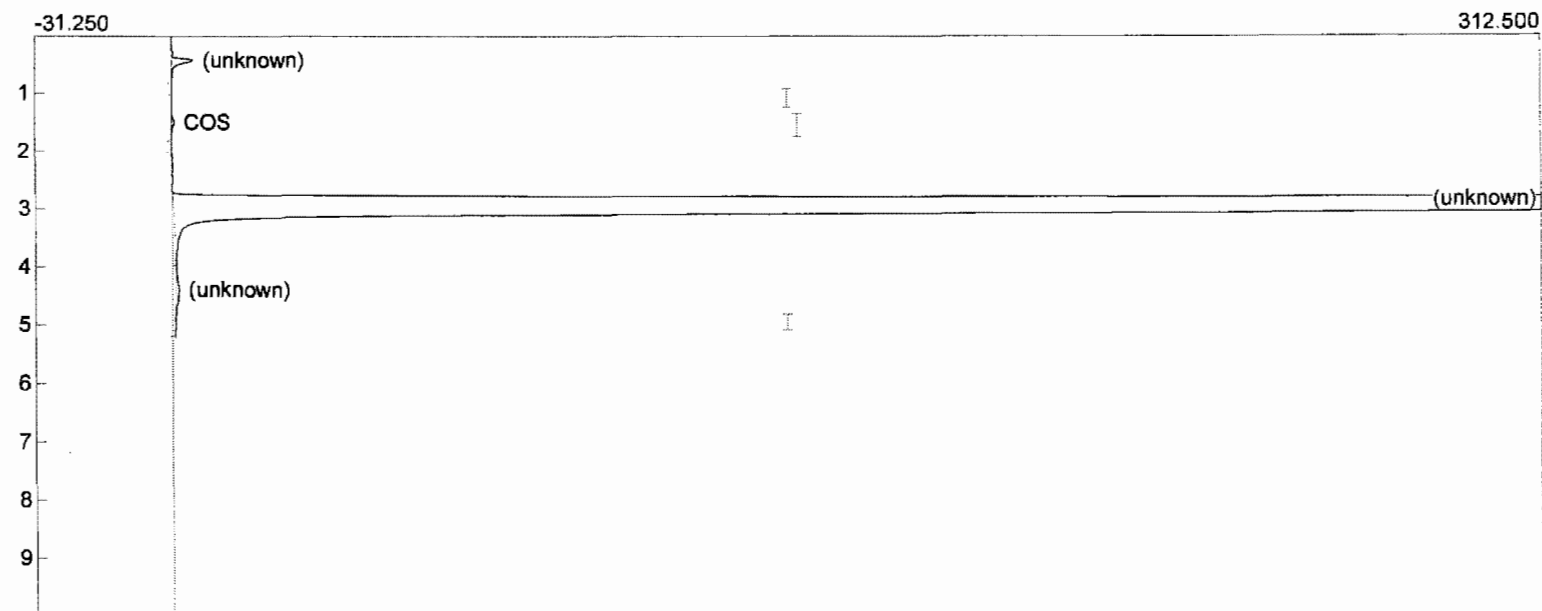
Component	Area
COS	7.0000
	7.0000

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 12:53:08
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns37.CHR ()
Sample: 6-6 SRU M15 Runs
Operator: SY



Component	Area
COS	6.6420
	6.6420

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 13:03:08
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns38.CHR ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



Component	Area
COS	5.9490
	5.9490

SUMMARY OF TOTAL REDUCED SULFUR COMPOUNDS

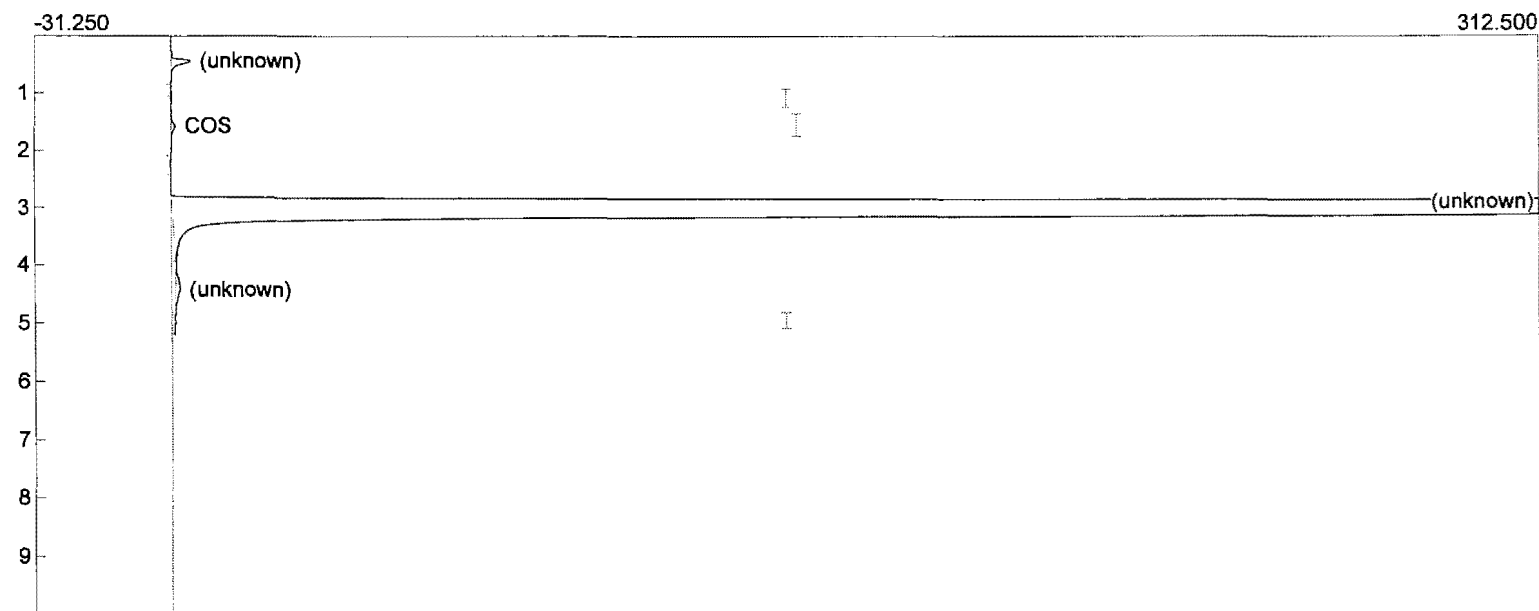


Company: Diamond Shamrock Refining Company, L.P. (A Valero Company)
Location: Sunray, Texas
Source: SRU No.2 Incinerator
Date: 6/6/2008
Run No.: 6

File Name	Date	Time	<u>COS</u>		<u>H2S</u>		<u>CS2</u>		<u>TRS</u>	Injection
			Area (mV)	Conc (ppm v db)	Area (mV)	Conc (ppm v db)	Area (mV)	Conc (ppm v db)	Conc (ppm v db)	
val6-6sruruns39.chr	6/6/2008	13:30:52	9.88	0.74	<0.03	<0.67	<24.00	<0.01	<1.43	6-1
val6-6sruruns40.chr	6/6/2008	13:40:52	6.58	0.56	<0.03	<0.67	<24.00	<0.01	<1.25	6-2
val6-6sruruns41.chr	6/6/2008	13:50:52	6.04	0.53	<0.03	<0.67	<24.00	<0.01	<1.22	6-3
val6-6sruruns42.chr	6/6/2008	14:00:52	15.42	0.99	<0.03	<0.67	<24.00	<0.01	<1.68	6-4
val6-6sruruns43.chr	6/6/2008	14:10:52	7.64	0.63	<0.03	<0.67	<24.00	<0.01	<1.31	6-5
val6-6sruruns44.chr	6/6/2008	14:20:52	5.91	0.52	<0.03	<0.67	<24.00	<0.01	<1.21	6-6
val6-6sruruns45.chr	6/6/2008	14:30:52	4.60	0.43	<0.03	<0.67	<24.00	<0.01	<1.12	6-7
val6-6sruruns46.chr	6/6/2008	14:40:52	4.83	0.45	<0.03	<0.67	<24.00	<0.01	<1.14	6-8
val6-6sruruns46.chr	6/6/2008	14:50:52	4.66	0.44	<0.03	<0.67	<24.00	<0.01	<1.13	6-10*
val6-6sruruns48.chr	6/6/2008	15:10:52	3.55	0.35	<0.03	<0.67	<24.00	<0.01	<1.04	6-11
val6-6sruruns49.chr	6/6/2008	15:20:52	4.85	0.45	<0.03	<0.67	<24.00	<0.01	<1.14	6-12
val6-6sruruns50.chr	6/6/2008	15:30:52	4.77	0.45	<0.03	<0.67	<24.00	<0.01	<1.13	6-13
val6-6sruruns51.chr	6/6/2008	15:40:52	3.51	0.35	<0.03	<0.67	<24.00	<0.01	<1.04	6-14
val6-6sruruns52.chr	6/6/2008	15:50:52	5.07	0.47	<0.03	<0.67	<24.00	<0.01	<1.16	6-15
val6-6sruruns53.chr	6/6/2008	16:00:52	3.12	0.32	<0.03	<0.67	<24.00	<0.01	<1.00	6-16
val6-6sruruns54.chr	6/6/2008	16:10:52	2.79	0.29	<0.03	<0.67	<24.00	<0.01	<0.97	6-17
val6-6sruruns55.CHR	6/6/2008	16:20:52	3.23	0.32	<0.03	<0.67	<24.00	<0.01	<1.01	6-18
val6-6sruruns56.CHR	6/6/2008	16:30:52	3.29	0.33	<0.03	<0.67	<24.00	<0.01	<1.02	6-19
Average Values				0.51		<0.67		<0.01	<1.20	

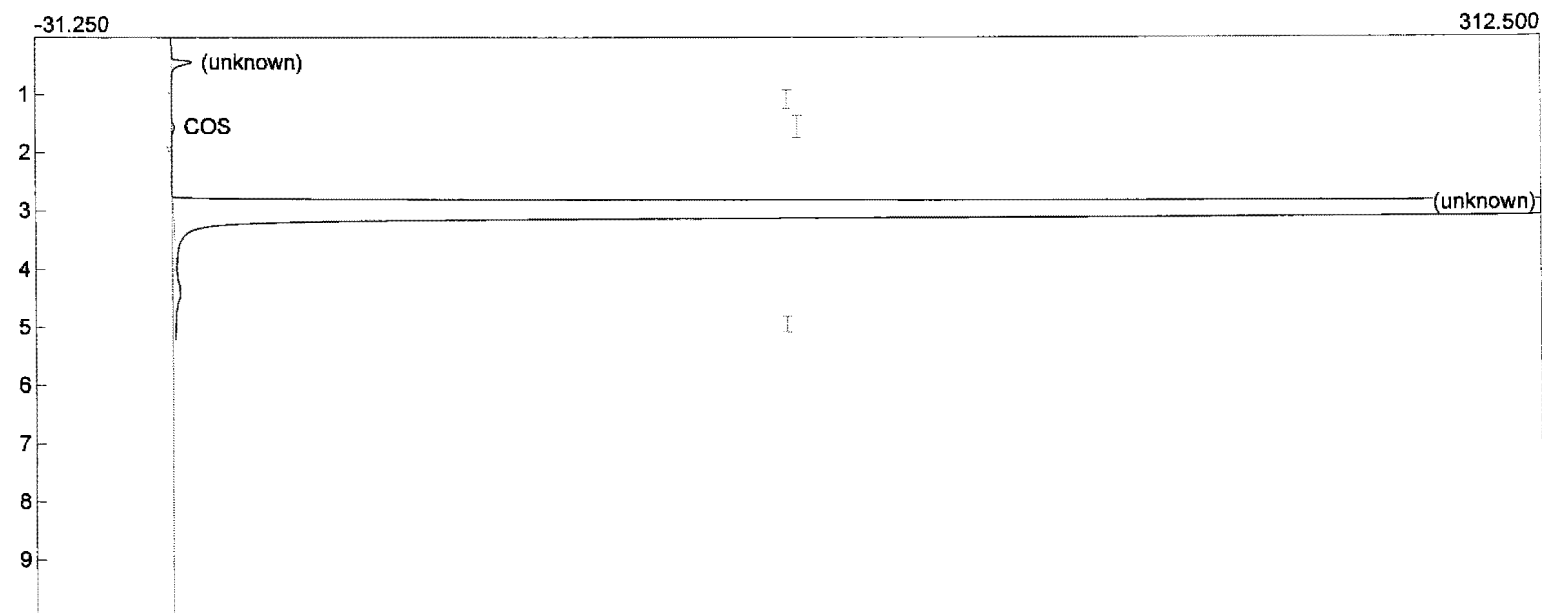
* Injection 6-9 discarded due to port change

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 13:30:52
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns39.chr ()
Sample: 6-6 SRU M15 Runs
Operator: SY



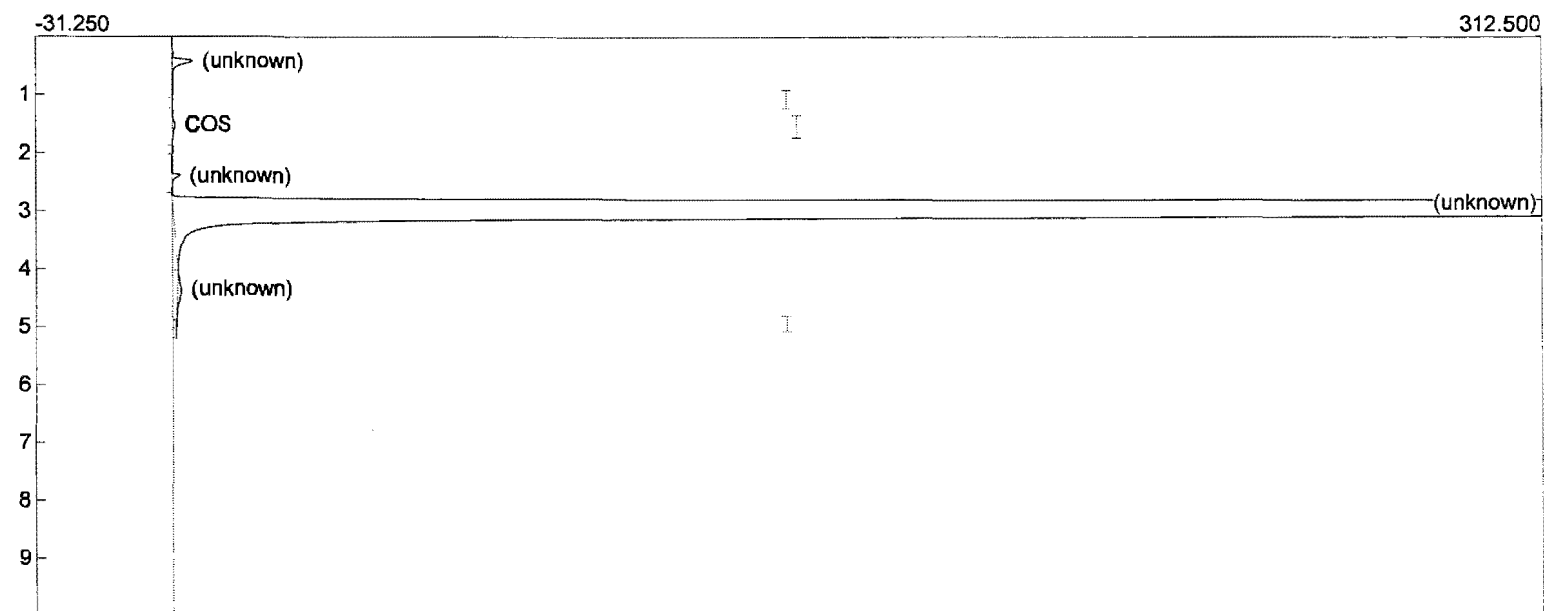
Component	Area
COS	9.8810
	9.8810

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 13:40:52
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns40.chr ()
Sample: 6-6 SRU M15 Runs
Operator: SY



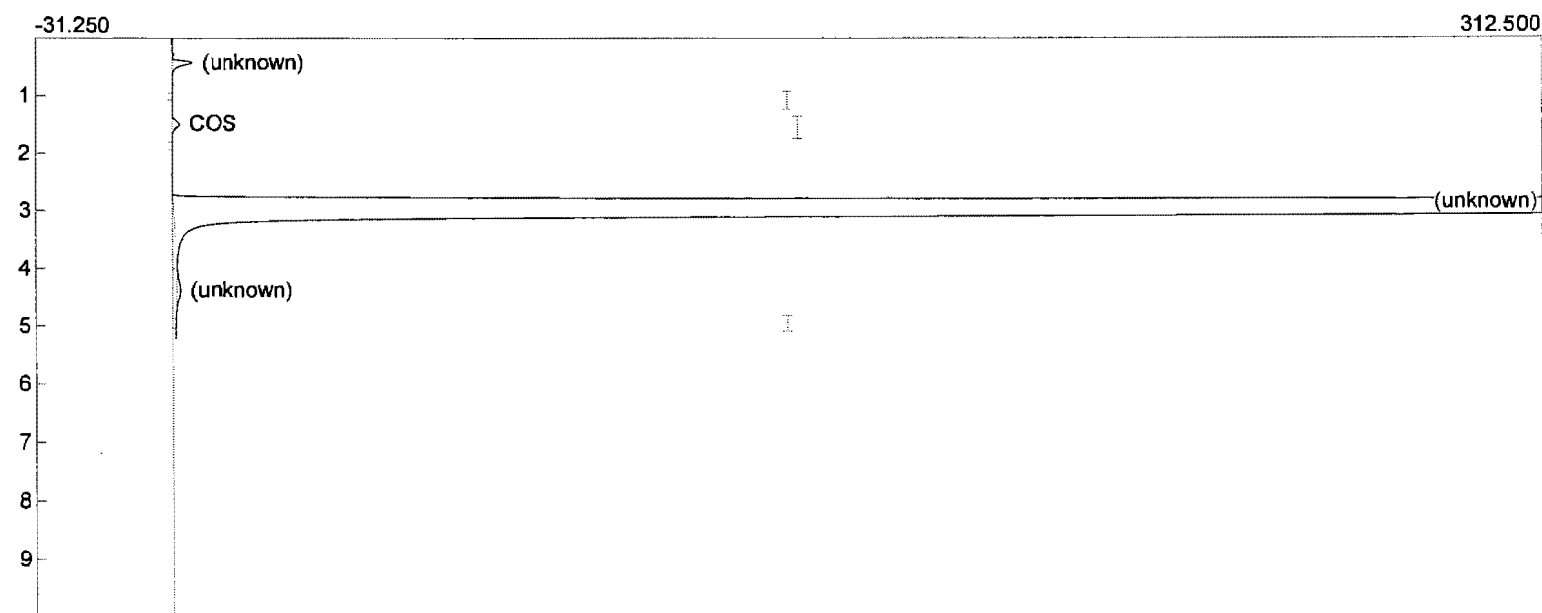
Component	Area
COS	6.5800
	6.5800

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 13:50:52
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns41.chr ()
Sample: 6-6 SRU M15 Runs
Operator: SY



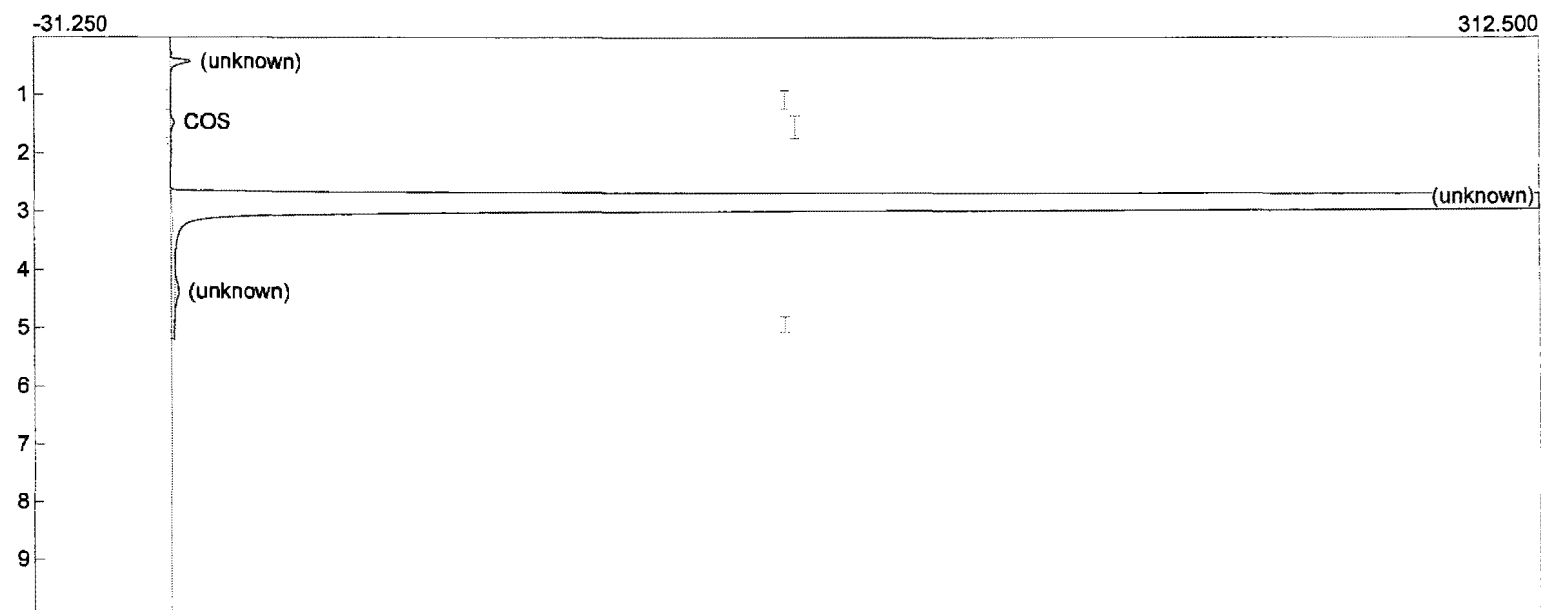
Component	Area
COS	6.0430
	6.0430

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 14:00:52
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns42.chr ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



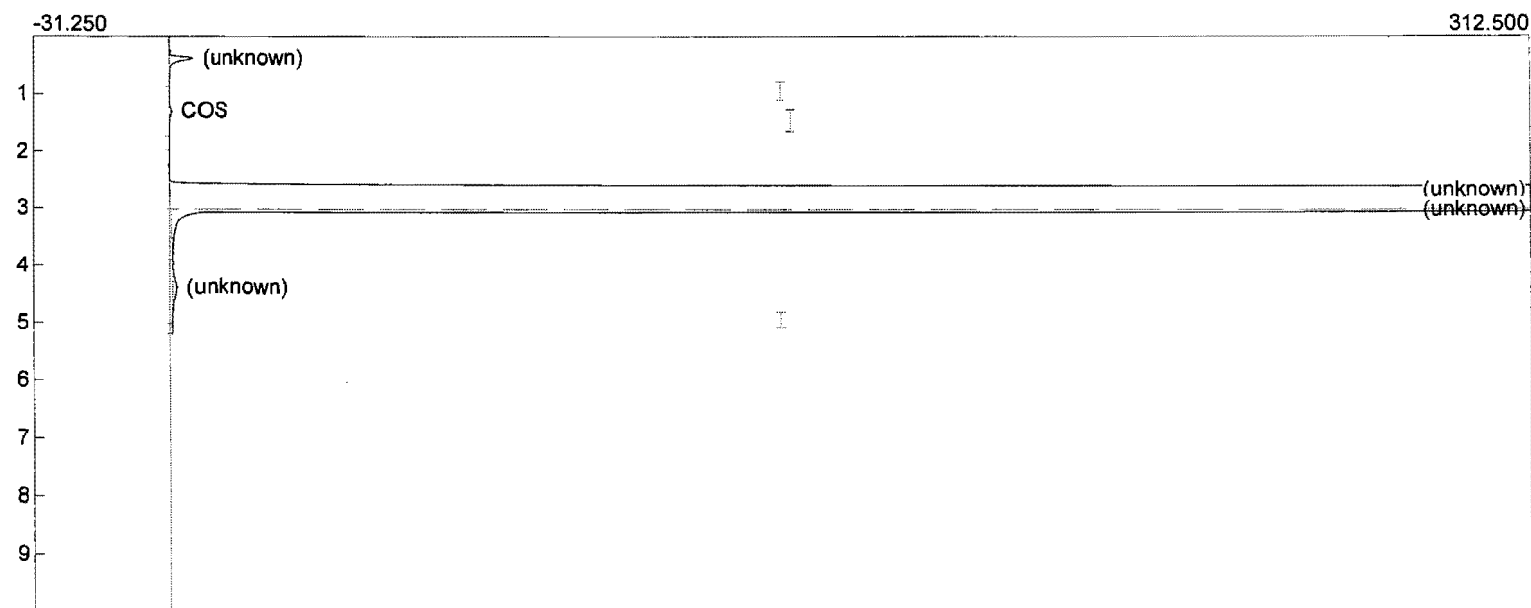
Component	Area
COS	15.4230
	15.4230

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 14:10:52
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns43.chr ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



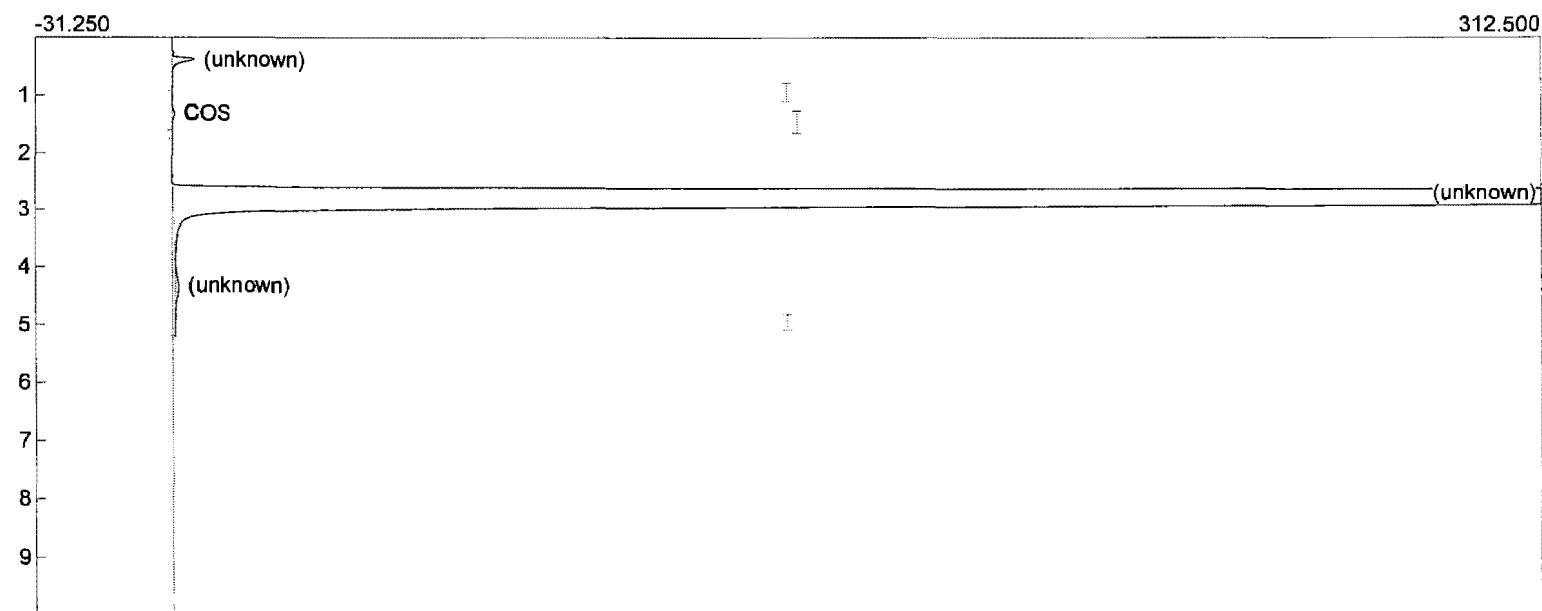
Component	Area
COS	7.6380
	7.6380

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 14:20:52
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns44.chr ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



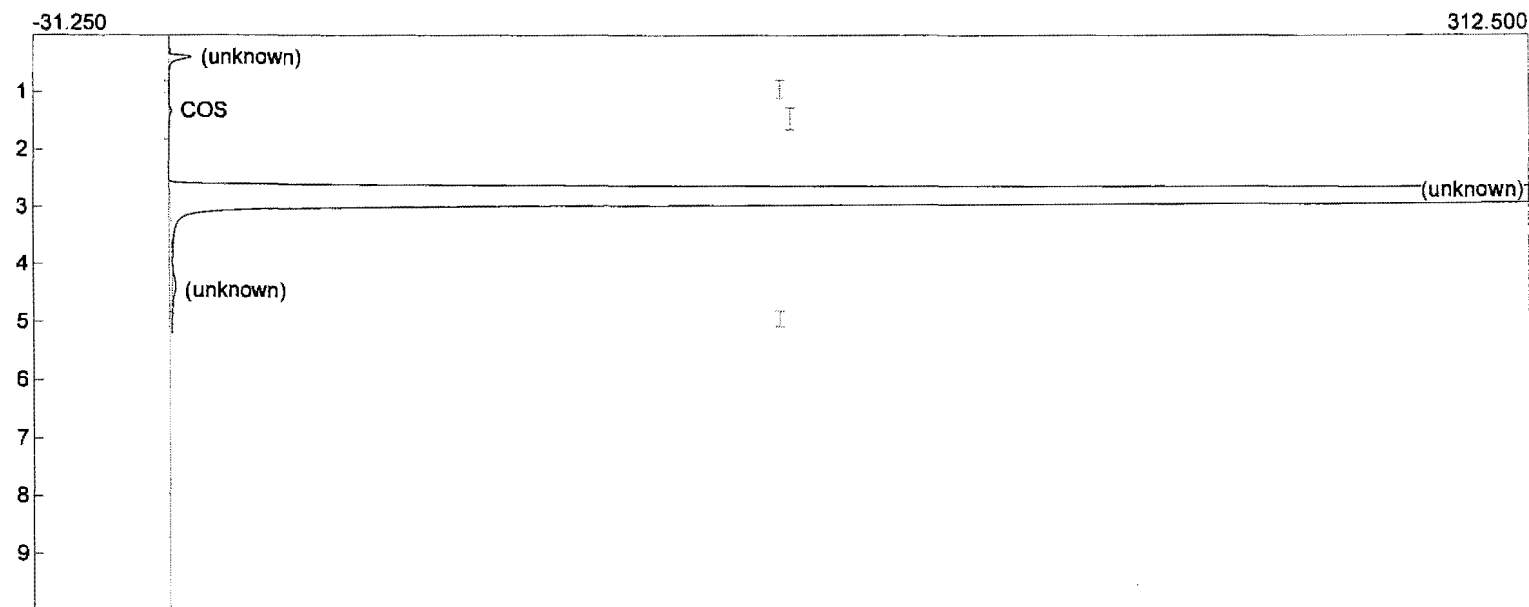
Component	Area
COS	5.9080
	5.9080

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 14:30:52
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns45.chr ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



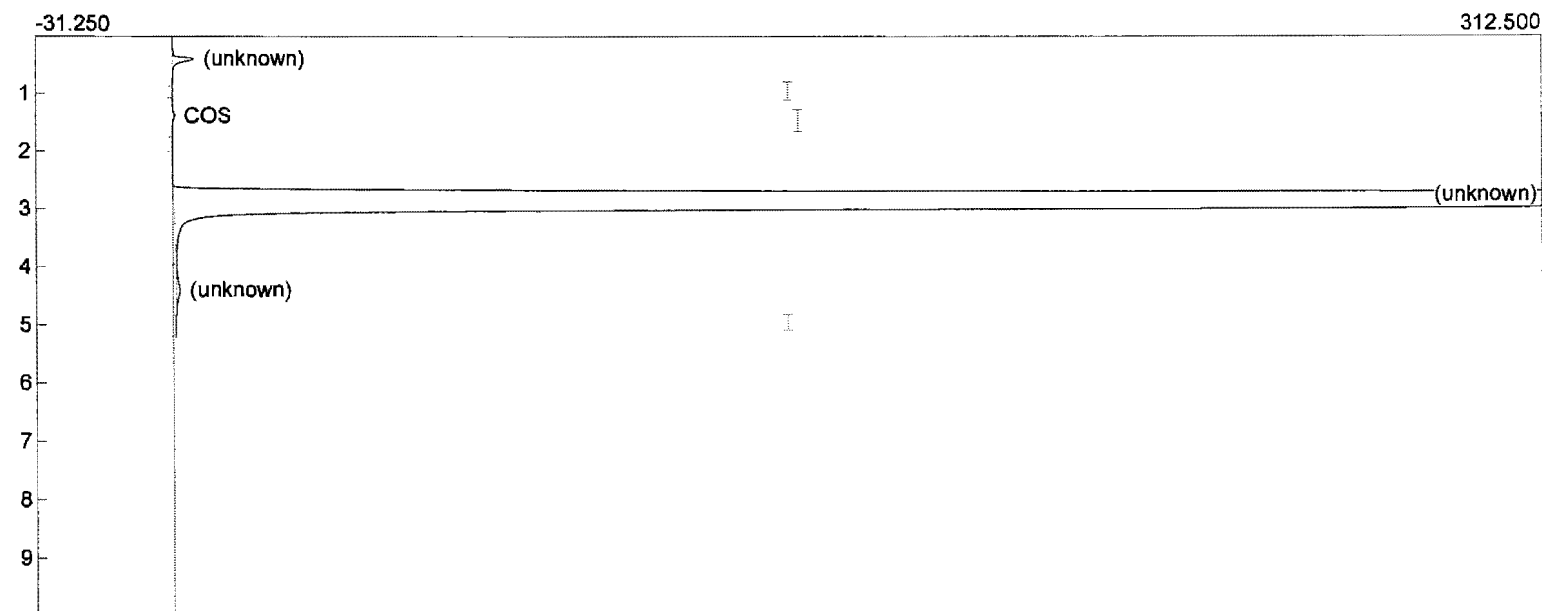
Component	Area
COS	4.5990
	4.5990

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 14:40:52
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns46.chr ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



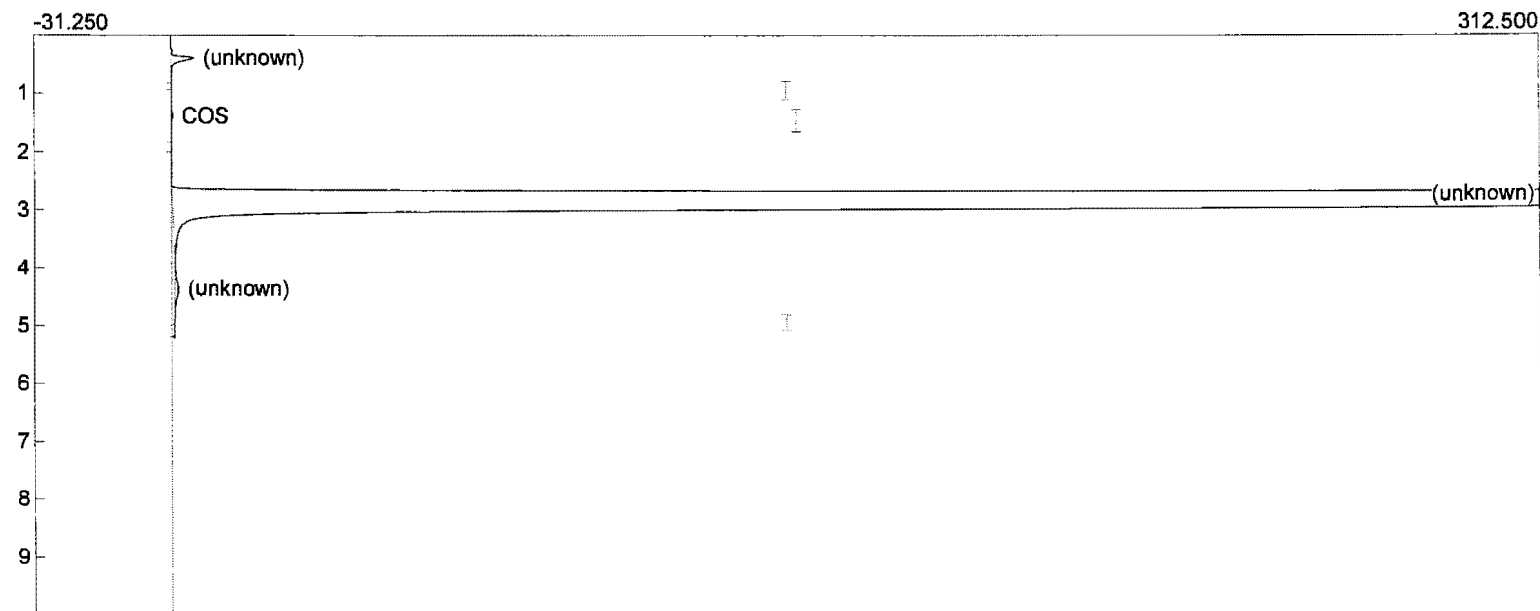
Component	Area
COS	4.8320
	4.8320

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 14:50:52
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns46.chr ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



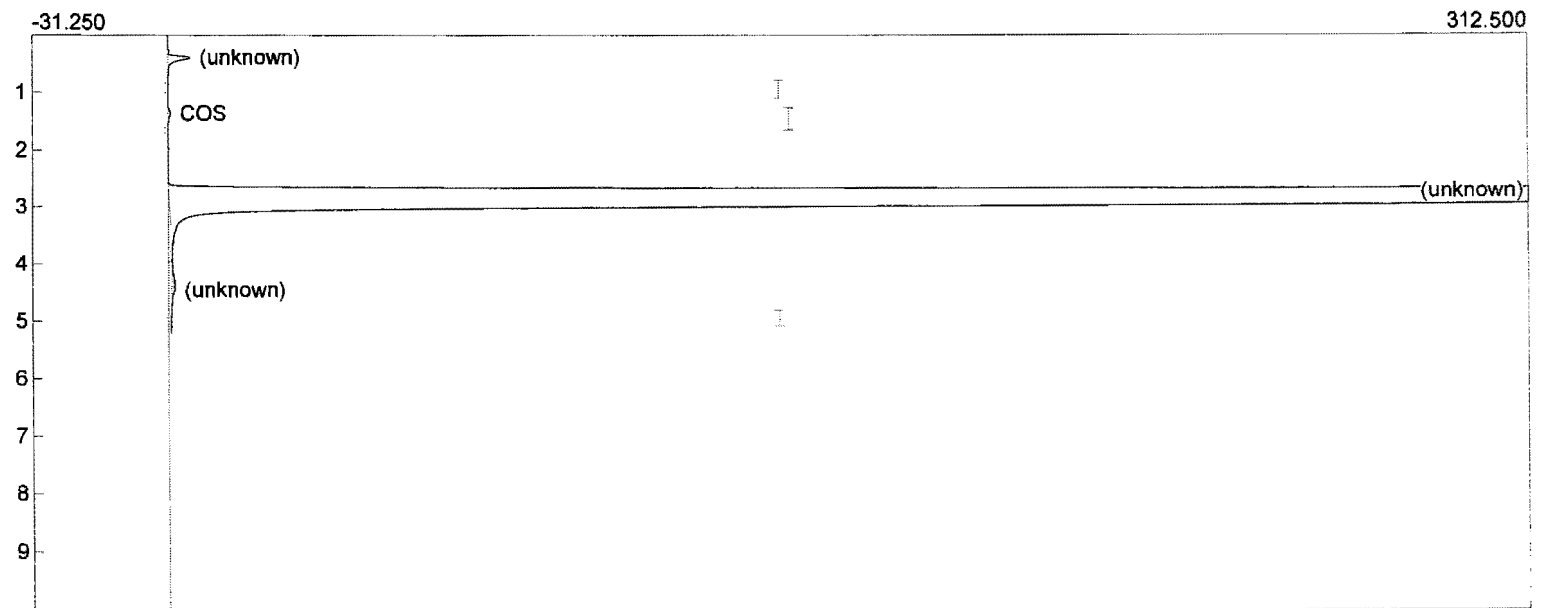
Component	Area
COS	4.6600
	4.6600

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 15:10:52
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns48.chr ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



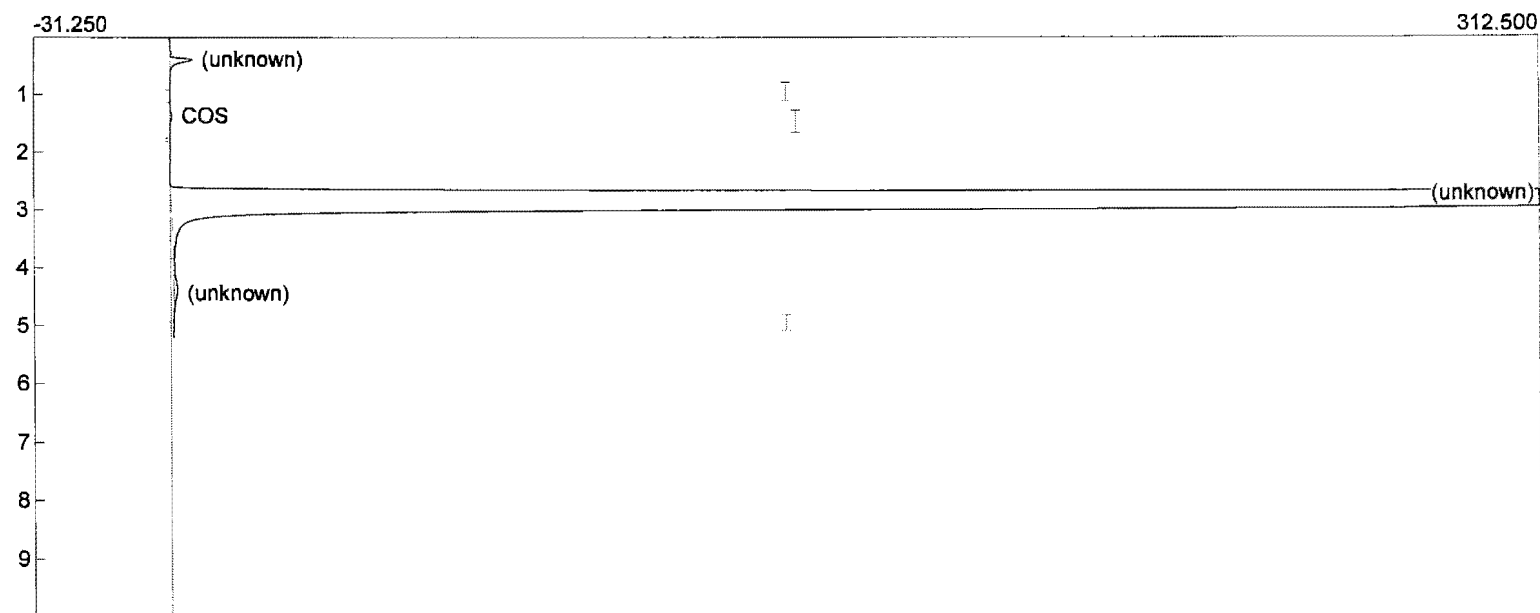
Component	Area
COS	3.5520
	3.5520

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 15:20:52
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns49.chr ()
Sample: 6-6 SRU M15 Runs
Operator: SY



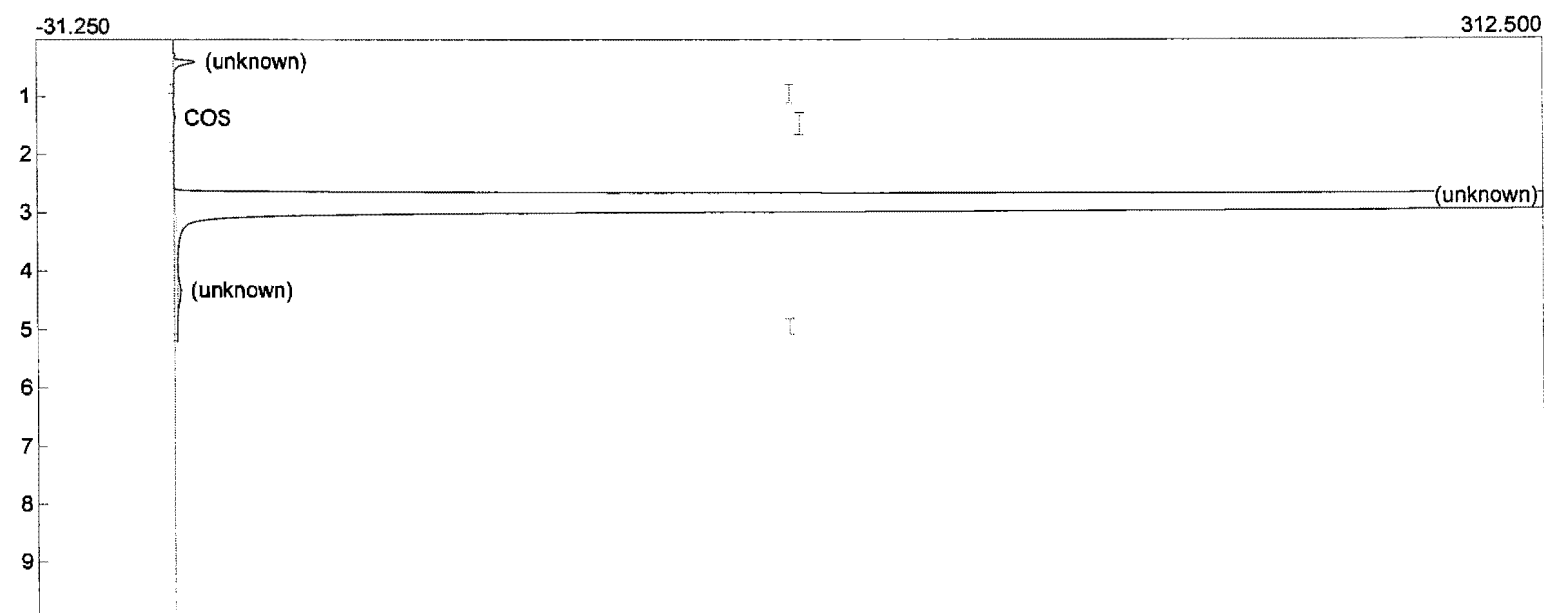
Component	Area
COS	4.8480
	4.8480

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 15:30:52
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns50.chr ()
Sample: 6-6 SRU M15 Runs
Operator: SY



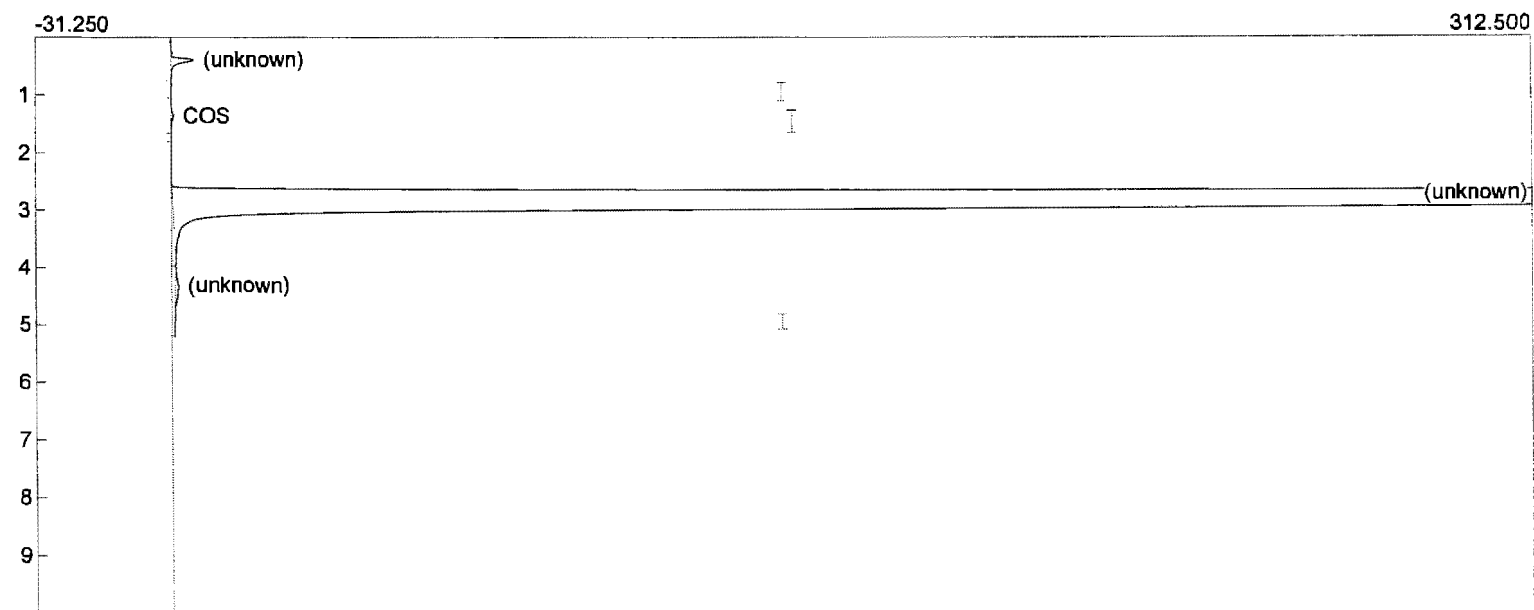
Component	Area
COS	4.7740
	4.7740

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 15:40:52
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns51.chr ()
Sample: 6-6 SRU M15 Runs
Operator: SY



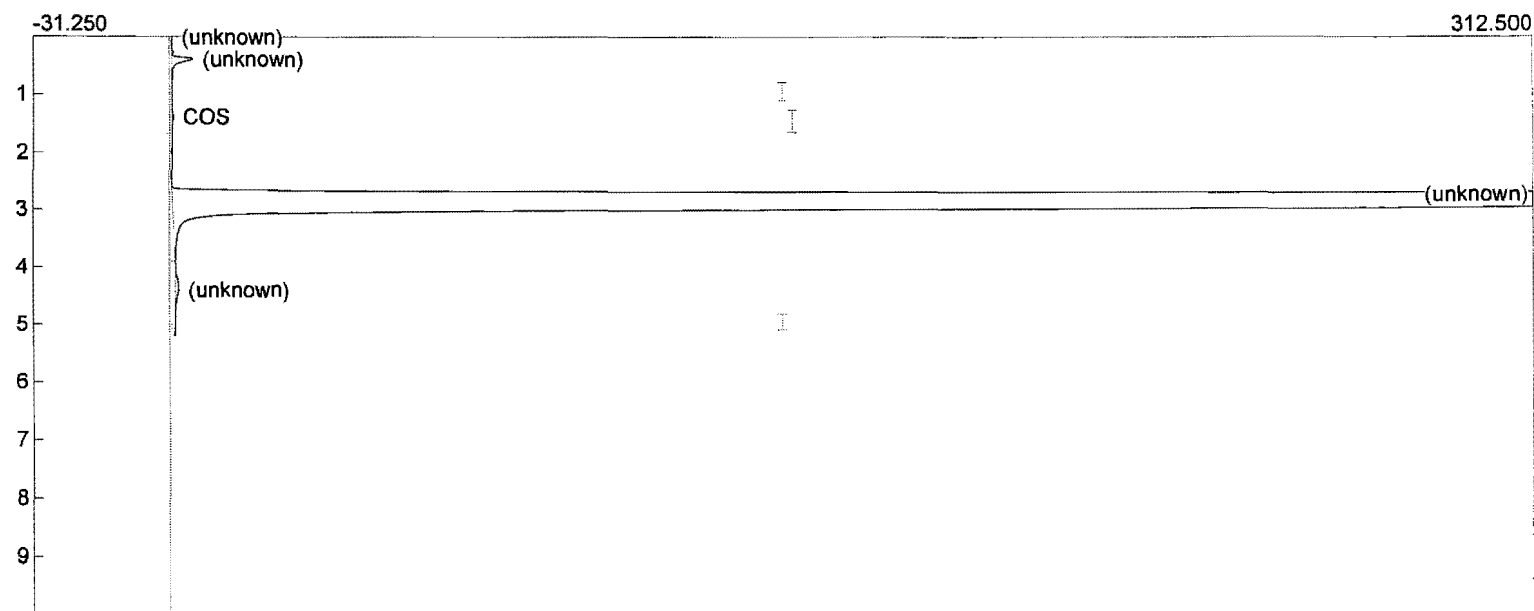
Component	Area
COS	3.5110
	3.5110

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 15:50:52
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns52.chr ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



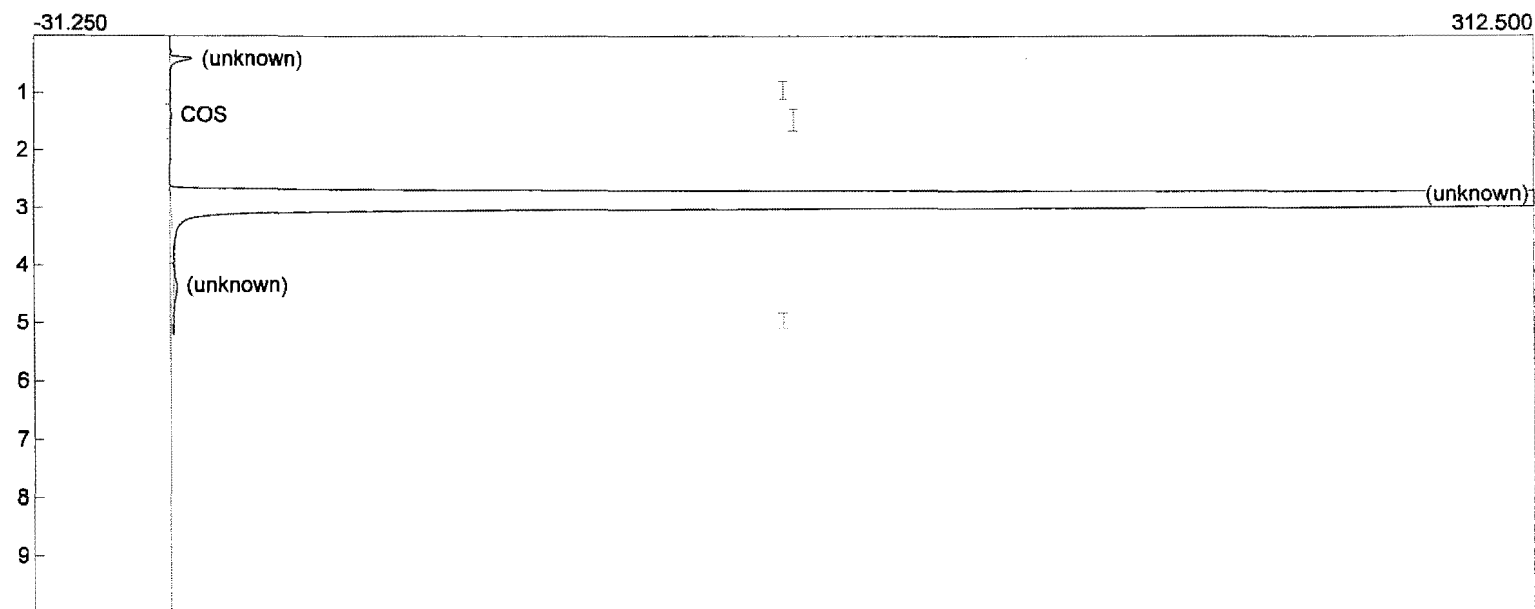
Component	Area
COS	5.0710
	5.0710

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 16:00:52
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns53.chr ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



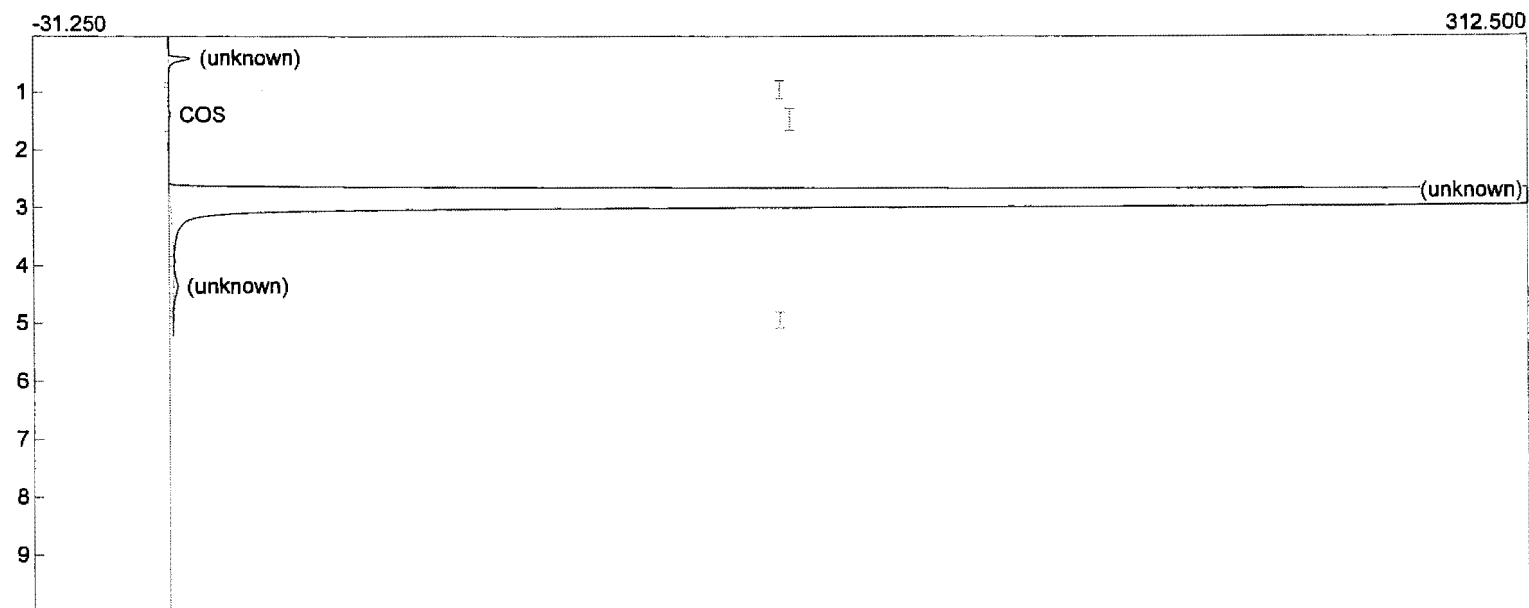
Component	Area
COS	3.1200
	3.1200

Lab name: ARI Environmental, Inc.
 Client: Valero Refining
 Client ID: SRU #2
 Analysis date: 06/06/2008 16:10:52
 Method: Direct Interface
 Description: FPD
 Column: RESTEK Sulfur
 Carrier: Nitrogen
 Data file: val6-6sruruns54.chr ()
 Sample: 6-6 SRU M15 Runs
 Operator: SY



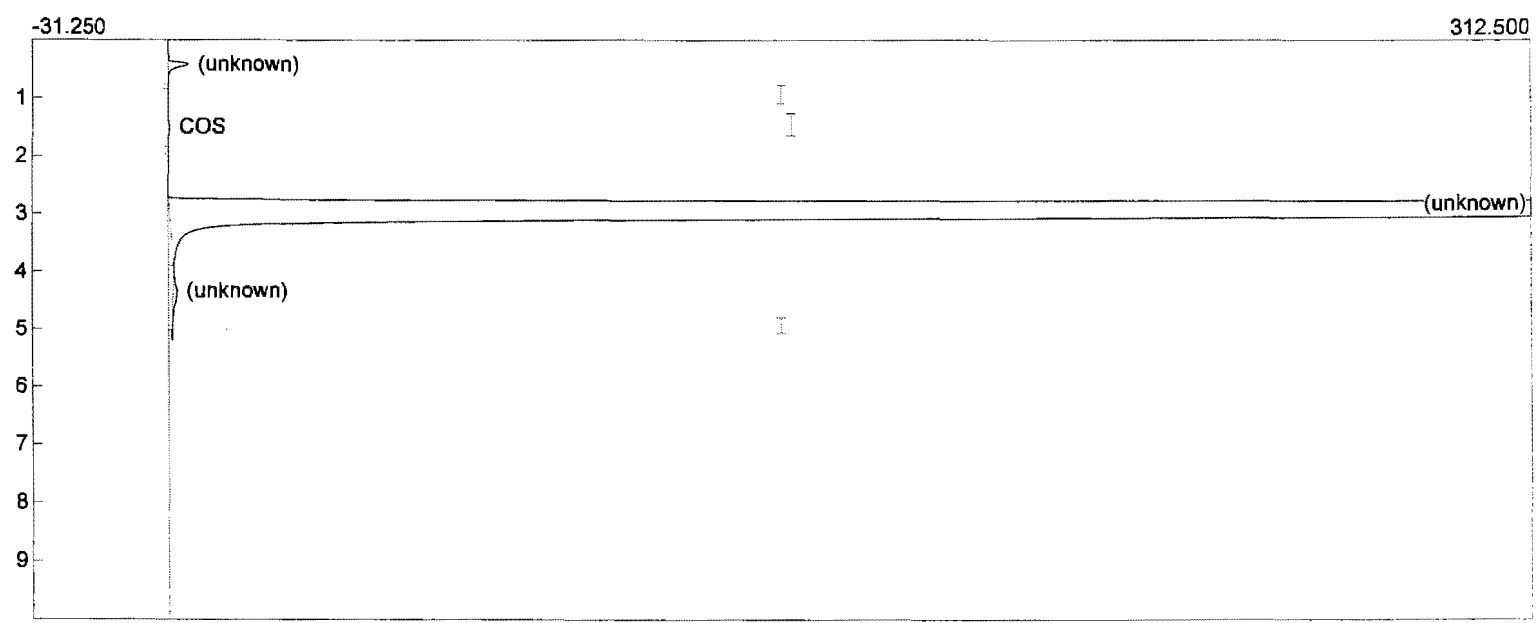
Component	Area
COS	2.7900
	2.7900

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 16:20:52
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns55.CHR ()
Sample: 6-6 SRU M15 Runs
Operator: SY



Component	Area
COS	3.2260
	3.2260

Lab name: ARI Environmental, Inc.
Client: Valero Refining
Client ID: SRU #2
Analysis date: 06/06/2008 16:30:52
Method: Direct Interface
Description: FPD
Column: RESTEK Sulfur
Carrier: Nitrogen
Data file: val6-6sruruns56.CHR ()
Sample: 6-6 SRU M15 Runs
Operator: SY



Component	Area
COS	3.2860
	3.2860



Valero McKee Refinery: Sunray, TX
SRU No. 2 Incinerator: EPN V-16
Test Dates: 6/4 & 6/6/08

APPENDIX D

ARI Reference Method Monitoring Data

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 6:05:00	20.64	0.15	0.4	11	
6/4/08 6:05:15	20.64	0.15	0.4	12	
6/4/08 6:05:30	20.64	0.15	0.4	12	
6/4/08 6:05:45	20.63	0.16	0.5	12	
6/4/08 6:06:00	20.63	0.17	0.5	12	
6/4/08 6:06:15	20.63	0.17	0.5	12	
6/4/08 6:06:30	20.62	0.17	0.5	12	
6/4/08 6:06:45	20.63	0.17	0.5	12	
6/4/08 6:07:00	20.64	0.17	0.5	12	
6/4/08 6:07:15	20.63	0.17	0.5	12	
6/4/08 6:07:30	20.63	0.17	1.6	12	
6/4/08 6:07:45	20.55	0.18	0.6	16	
6/4/08 6:08:00	15.98	0.17	0.5	16	
6/4/08 6:08:15	9.93	0.11	0.5	12	
6/4/08 6:08:30	8.85	0.09	0.5	11	
6/4/08 6:08:45	8.91	0.09	0.5	11	
6/4/08 6:09:00	9.01	0.09	0.5	11	
6/4/08 6:09:15	9.04	0.08	0.5	11	
6/4/08 6:09:30	9.04	0.08	0.5	11	
6/4/08 6:09:45	9.05	0.08	0.4	11	
6/4/08 6:10:00	9.05	0.08	0.4	11	
6/4/08 6:10:15	9.05	0.08	0.4	11	Calibration Error
6/4/08 6:10:30	9.05	0.09	0.4	11	9.06 9.00% O ₂
6/4/08 6:10:45	9.06	0.09	0.4	11	
6/4/08 6:11:00	9.06	0.09	0.4	11	
6/4/08 6:11:15	9.06	0.09	0.4	11	
6/4/08 6:11:30	9.01	0.09	0.4	12	
6/4/08 6:11:45	7.04	0.09	0.4	12	
6/4/08 6:12:00	4.93	0.09	0.4	11	
6/4/08 6:12:15	4.62	0.09	0.4	11	
6/4/08 6:12:30	4.60	0.09	0.4	11	
6/4/08 6:12:45	4.60	0.09	0.4	12	
6/4/08 6:13:00	4.60	0.09	0.4	12	
6/4/08 6:13:15	4.60	0.09	0.4	12	
6/4/08 6:13:30	4.60	0.09	0.4	11	
6/4/08 6:13:45	4.59	0.09	0.4	9	
6/4/08 6:14:00	4.60	0.09	0.4	0	Calibration Error
6/4/08 6:14:15	4.60	0.10	0.4	0	4.60 4.50% O ₂
6/4/08 6:14:30	4.59	0.10	0.4	0	0.10 Zero CO ₂
6/4/08 6:14:45	4.60	0.10	0.4	0	0.4 Zero NO _x
6/4/08 6:15:00	4.60	0.10	0.5	0	0 Zero CO
6/4/08 6:15:15	6.51	0.52	0.4	0	
6/4/08 6:15:30	7.90	6.84	0.4	-1	
6/4/08 6:15:45	3.45	12.71	0.4	-2	
6/4/08 6:16:00	0.60	15.76	0.4	-2	
6/4/08 6:16:15	0.06	17.86	0.4	-2	
6/4/08 6:16:30	0.00	18.95	0.4	-2	
6/4/08 6:16:45	-0.01	19.27	0.4	-2	
6/4/08 6:17:00	-0.02	19.35	0.4	-2	
6/4/08 6:17:15	-0.02	19.38	0.4	-2	
6/4/08 6:17:30	-0.02	19.39	0.4	-2	
6/4/08 6:17:45	-0.02	19.40	0.4	-2	
6/4/08 6:18:00	-0.02	19.40	0.4	-2	
6/4/08 6:18:15	-0.02	18.04	0.4	-2	
6/4/08 6:18:30	-0.02	18.02	0.4	-2	
6/4/08 6:18:45	-0.02	18.02	0.4	-2	
6/4/08 6:19:00	-0.02	18.02	0.4	-2	
6/4/08 6:19:15	-0.02	18.03	0.4	-2	
6/4/08 6:19:30	-0.03	18.03	0.4	-2	
6/4/08 6:19:45	-0.02	18.03	0.4	-2	
6/4/08 6:20:00	-0.03	18.03	0.4	-2	
6/4/08 6:20:15	-0.03	18.03	0.4	-2	
6/4/08 6:20:30	-0.03	18.06	0.4	-2	
6/4/08 6:20:45	-0.03	17.71	0.4	-2	
6/4/08 6:21:00	-0.02	13.64	0.4	-1	
6/4/08 6:21:15	-0.01	10.34	0.4	-1	
6/4/08 6:21:30	0.00	9.51	0.4	-1	
6/4/08 6:21:45	0.00	9.44	0.4	-1	
6/4/08 6:22:00	-0.01	9.43	0.4	-1	
6/4/08 6:22:15	-0.01	9.44	0.4	-1	
6/4/08 6:22:30	0.00	9.43	0.4	-1	
6/4/08 6:22:45	-0.01	9.34	0.4	-1	
6/4/08 6:23:00	0.00	9.26	0.4	-1	Calibration Error
6/4/08 6:23:15	-0.01	9.26	0.4	-1	9.26 9.00% CO ₂
6/4/08 6:23:30	-0.01	9.25	0.4	-1	
6/4/08 6:23:45	-0.01	9.26	0.4	-1	
6/4/08 6:24:00	-0.01	9.26	0.4	-1	
6/4/08 6:24:15	-0.01	9.25	0.4	-1	
6/4/08 6:24:30	-0.01	10.09	0.4	-1	
6/4/08 6:24:45	-0.03	14.26	0.4	-2	
6/4/08 6:25:00	-0.03	17.04	0.4	-2	
6/4/08 6:25:15	-0.04	17.65	0.4	-2	Calibration Error
6/4/08 6:25:30	-0.03	17.71	0.4	-2	17.72 18.00% CO ₂
6/4/08 6:25:45	-0.04	17.72	0.4	-2	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 6:26:00	-0.04	17.72	0.4	-2	
6/4/08 6:26:15	-0.04	17.72	0.4	-2	
6/4/08 6:26:30	-0.03	17.69	0.4	-2	
6/4/08 6:26:45	-0.03	17.69	0.5	4	
6/4/08 6:27:00	1.15	15.99	0.4	303	
6/4/08 6:27:15	4.32	8.78	0.4	1112	
6/4/08 6:27:30	2.23	3.35	0.4	1687	
6/4/08 6:27:45	0.44	0.63	0.4	1887	
6/4/08 6:28:00	0.05	0.19	0.4	1913	
6/4/08 6:28:15	0.02	0.15	0.4	1915	
6/4/08 6:28:30	0.02	0.14	0.4	1913	
6/4/08 6:28:45	0.01	0.13	0.4	1910	
6/4/08 6:29:00	0.02	0.13	0.4	1912	
6/4/08 6:29:15	0.01	0.12	0.4	1914	
6/4/08 6:29:30	0.02	0.12	0.4	1916	
6/4/08 6:29:45	0.01	0.12	0.4	1916	
6/4/08 6:30:00	0.02	0.12	0.4	1911	
6/4/08 6:30:15	0.01	0.11	0.4	1911	
6/4/08 6:30:30	0.01	0.11	0.4	1913	
6/4/08 6:30:45	0.01	0.11	0.4	1957	
6/4/08 6:31:00	0.01	0.11	0.4	2002	
6/4/08 6:31:15	0.01	0.11	0.4	2001	Calibration Error
6/4/08 6:31:30	0.01	0.11	0.4	1997	
6/4/08 6:31:45	0.02	0.11	0.4	1997	
6/4/08 6:32:00	0.01	0.11	0.4	1999	
6/4/08 6:32:15	0.02	0.10	0.4	2001	1,999 2,000 ppm CO
6/4/08 6:32:30	0.02	0.11	0.4	2008	
6/4/08 6:32:45	0.02	0.10	0.4	1907	
6/4/08 6:33:00	0.12	0.11	0.4	1503	
6/4/08 6:33:15	0.26	0.11	0.4	1124	
6/4/08 6:33:30	0.07	0.10	0.4	1012	
6/4/08 6:33:45	0.02	0.10	0.4	999	
6/4/08 6:34:00	0.02	0.10	0.4	997	Calibration Error
6/4/08 6:34:15	0.02	0.10	0.4	994	
6/4/08 6:34:30	0.02	0.10	0.4	994	
6/4/08 6:34:45	0.02	0.10	0.4	995	
6/4/08 6:35:00	0.02	0.10	0.4	1000	996 1,000 ppm CO
6/4/08 6:35:15	0.02	0.10	2.4	919	
6/4/08 6:35:30	1.40	0.11	19.4	535	
6/4/08 6:35:45	2.80	0.13	48.0	161	
6/4/08 6:36:00	0.72	0.11	77.8	25	
6/4/08 6:36:15	0.14	0.10	90.1	3	
6/4/08 6:36:30	0.04	0.10	94.6	2	
6/4/08 6:36:45	0.03	0.10	93.1	1	
6/4/08 6:37:00	0.02	0.10	92.4	1	
6/4/08 6:37:15	0.03	0.10	92.0	1	
6/4/08 6:37:30	0.02	0.10	91.7	1	Calibration Error
6/4/08 6:37:45	0.02	0.10	91.6	1	
6/4/08 6:38:00	0.02	0.10	91.4	1	
6/4/08 6:38:15	0.02	0.10	91.4	1	91.4 90.0 ppm NO _x
6/4/08 6:38:30	0.03	0.10	91.3	1	
6/4/08 6:38:45	0.02	0.09	88.7	1	
6/4/08 6:39:00	0.03	0.09	46.3	1	Calibration Error
6/4/08 6:39:15	0.02	0.09	46.0	1	0.02 Zero O ₂
6/4/08 6:39:30	0.03	0.09	46.0	1	
6/4/08 6:39:45	0.02	0.09	46.0	1	46.0 45.0 ppm NO _x
6/4/08 6:40:00	0.02	0.09	46.0	1	
6/4/08 6:40:15	0.02	0.09	44.9	1	
6/4/08 6:40:30	0.03	0.09	37.8	1	
6/4/08 6:40:45	1.56	0.10	38.7	2	
6/4/08 6:41:00	5.83	0.14	2.0	3	
6/4/08 6:41:15	2.80	0.18	1.2	2	
6/4/08 6:41:30	0.54	0.11	0.9	1	
6/4/08 6:41:45	0.10	0.09	0.8	1	
6/4/08 6:42:00	0.04	0.09	0.8	1	
6/4/08 6:42:15	0.03	0.09	0.7	1	
6/4/08 6:42:30	0.03	0.09	0.7	1	
6/4/08 6:42:45	0.03	0.09	0.7	1	
6/4/08 6:43:00	0.03	0.09	0.7	1	
6/4/08 6:43:15	0.02	0.09	0.6	1	
6/4/08 6:43:30	0.02	0.09	0.6	1	
6/4/08 6:43:45	0.03	0.09	0.6	1	
6/4/08 6:44:00	0.04	0.08	0.7	1	
6/4/08 6:44:15	1.01	0.10	0.9	1	
6/4/08 6:44:30	7.07	0.13	0.8	1	
6/4/08 6:44:45	13.30	0.16	0.8	1	
6/4/08 6:45:00	16.16	0.17	0.8	2	
6/4/08 6:45:15	17.06	0.18	0.8	2	
6/4/08 6:45:30	17.60	0.18	1.3	5	
6/4/08 6:45:45	17.27	0.18	0.7	6	
6/4/08 6:46:00	7.74	0.13	0.7	4	
6/4/08 6:46:15	1.09	0.10	0.6	1	
6/4/08 6:46:30	0.12	0.09	0.7	1	
6/4/08 6:46:45	0.05	0.09	0.6	1	

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Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 6:47:00	0.04	0.09	0.6	0	
6/4/08 6:47:15	0.04	0.09	0.6	1	
6/4/08 6:47:30	0.03	0.09	0.6	1	
6/4/08 6:47:45	0.04	0.09	0.6	1	
6/4/08 6:48:00	0.05	0.09	0.7	1	Switch from Cal. Error to System Bias
6/4/08 6:48:15	1.86	0.11	0.6	1	
6/4/08 6:48:30	8.54	0.14	0.6	1	
6/4/08 6:48:45	14.34	0.17	5.0	7	
6/4/08 6:49:00	16.83	0.18	29.1	295	
6/4/08 6:49:15	16.29	2.38	30.4	1084	
6/4/08 6:49:30	8.37	7.05	30.5	1668	
6/4/08 6:49:45	4.28	8.79	30.5	1827	
6/4/08 6:50:00	3.66	9.04	30.4	1856	
6/4/08 6:50:15	3.57	9.10	30.6	1882	
6/4/08 6:50:30	3.56	9.14	30.8	1888	
6/4/08 6:50:45	3.55	9.16	31.0	1884	
6/4/08 6:51:00	3.53	9.18	30.7	1875	
6/4/08 6:51:15	3.51	9.20	30.9	1873	
6/4/08 6:51:30	3.49	9.19	30.9	1870	
6/4/08 6:51:45	3.50	9.17	31.1	1856	
6/4/08 6:52:00	3.51	9.17	31.3	1836	
6/4/08 6:52:15	3.48	9.17	31.2	1810	
6/4/08 6:52:30	3.48	9.15	31.3	1803	
6/4/08 6:52:45	3.49	9.14	31.1	1805	
6/4/08 6:53:00	3.50	9.14	19.1	1809	
6/4/08 6:53:15	3.57	8.94	1.4	1302	
6/4/08 6:53:30	3.65	5.31	1.0	508	
6/4/08 6:53:45	1.56	1.58	0.9	99	
6/4/08 6:54:00	0.28	0.30	0.9	11	
6/4/08 6:54:15	0.10	0.15	0.8	2	
6/4/08 6:54:30	0.08	0.13	9.2	2	
6/4/08 6:54:45	0.10	0.28	30.9	371	
6/4/08 6:55:00	1.11	3.67	31.5	1152	
6/4/08 6:55:15	2.71	7.37	31.8	1611	
6/4/08 6:55:30	3.32	8.81	31.5	1753	
6/4/08 6:55:45	3.39	9.04	31.1	1793	
6/4/08 6:56:00	3.38	9.11	31.2	1814	
6/4/08 6:56:15	3.38	9.14	31.2	1823	
6/4/08 6:56:30	3.39	9.17	31.2	1840	
6/4/08 6:56:45	3.37	9.21	31.6	1855	
6/4/08 6:57:00	3.38	9.22	31.4	1849	
6/4/08 6:57:15	3.38	9.24	31.4	1840	
6/4/08 6:57:30	3.41	9.24	31.6	1830	
6/4/08 6:57:45	3.40	9.24	31.5	1816	
6/4/08 6:58:00	3.39	9.24	31.3	1812	
6/4/08 6:58:15	3.37	9.23	14.3	1739	
6/4/08 6:58:30	3.31	8.77	1.3	1125	
6/4/08 6:58:45	2.18	4.71	0.8	394	
6/4/08 6:59:00	2.76	1.20	0.7	67	
6/4/08 6:59:15	4.20	0.25	0.6	6	
6/4/08 6:59:30	4.49	0.15	0.6	2	
6/4/08 6:59:45	4.52	0.13	0.6	1	
6/4/08 7:00:00	4.53	0.13	0.6	1	
6/4/08 7:00:15	4.54	0.12	0.7	1	
6/4/08 7:00:30	4.56	0.12	0.8	1	System Bias
6/4/08 7:00:45	4.57	0.11	0.5	1	4.57 4.50% O ₂
6/4/08 7:01:00	4.57	0.11	0.5	1	0.11 Zero CO ₂
6/4/08 7:01:15	4.57	0.11	0.5	1	0.5 Zero NO _x
6/4/08 7:01:30	4.57	0.10	0.5	1	1 Zero CO
6/4/08 7:01:45	4.72	0.10	0.5	1	
6/4/08 7:02:00	10.23	0.12	0.5	1	
6/4/08 7:02:15	18.11	0.14	0.5	1	
6/4/08 7:02:30	20.33	0.15	0.5	1	O ₂ Response Time - Up = 90 seconds
6/4/08 7:02:45	20.57	0.15	0.5	1	
6/4/08 7:03:00	20.60	0.15	0.5	1	
6/4/08 7:03:15	20.61	0.15	0.5	1	
6/4/08 7:03:30	20.62	0.15	0.5	1	
6/4/08 7:03:45	20.62	0.15	0.5	1	
6/4/08 7:04:00	20.63	0.15	0.5	1	
6/4/08 7:04:15	20.63	0.15	0.5	1	
6/4/08 7:04:30	20.63	0.15	0.6	1	
6/4/08 7:04:45	20.60	0.15	0.6	1	
6/4/08 7:05:00	16.00	2.00	0.5	0	
6/4/08 7:05:15	4.94	6.87	0.5	-1	
6/4/08 7:05:30	0.77	8.75	0.5	-1	
6/4/08 7:05:45	0.16	8.98	0.5	-1	
6/4/08 7:06:00	0.09	8.93	0.5	-1	
6/4/08 7:06:15	0.08	8.92	0.5	-1	
6/4/08 7:06:30	0.07	8.95	0.5	-1	
6/4/08 7:06:45	0.06	9.01	0.5	-1	
6/4/08 7:07:00	0.06	9.07	0.4	-1	
6/4/08 7:07:15	0.05	9.11	0.5	-1	
6/4/08 7:07:30	0.05	9.12	0.5	-1	
6/4/08 7:07:45	0.05	9.13	0.5	-1	

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Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 7:08:00	0.05	9.14	0.5	-1	
6/4/08 7:08:15	0.04	9.14	0.5	-1	System Bias
6/4/08 7:08:30	0.04	9.14	0.5	-1	9.15 9.00% CO ₂
6/4/08 7:08:45	0.04	9.15	0.4	-1	
6/4/08 7:09:00	0.04	9.15	0.5	-1	
6/4/08 7:09:15	0.03	9.15	0.5	-1	
6/4/08 7:09:30	0.03	10.64	0.5	-2	
6/4/08 7:09:45	0.02	14.82	0.4	-2	
6/4/08 7:10:00	0.01	17.07	0.5	-2	
6/4/08 7:10:15	0.01	17.47	0.4	-2	
6/4/08 7:10:30	0.00	17.51	0.4	-2	
6/4/08 7:10:45	0.01	17.53	0.5	-2	
6/4/08 7:11:00	0.00	17.53	0.5	-2	
6/4/08 7:11:15	0.00	17.54	0.5	-2	
6/4/08 7:11:30	0.00	17.54	0.5	-2	
6/4/08 7:11:45	0.00	17.55	0.5	-2	
6/4/08 7:12:00	0.22	17.08	0.5	-2	
6/4/08 7:12:15	6.98	10.30	0.5	-1	
6/4/08 7:12:30	16.21	3.39	0.7	0	
6/4/08 7:12:45	19.95	0.64	0.5	0	CO ₂ Response Time - Down = 90 seconds
6/4/08 7:13:00	20.51	0.28	0.6	0	
6/4/08 7:13:15	20.58	0.23	0.5	0	
6/4/08 7:13:30	20.59	0.21	0.5	0	
6/4/08 7:13:45	20.60	0.20	0.5	1	
6/4/08 7:14:00	20.61	0.19	0.7	1	
6/4/08 7:14:15	20.24	1.04	0.6	-1	
6/4/08 7:14:30	13.33	8.71	0.5	-2	
6/4/08 7:14:45	4.87	14.82	0.5	-2	
6/4/08 7:15:00	0.80	17.21	0.5	-2	CO ₂ Response Time - Up = 90 seconds
6/4/08 7:15:15	0.11	17.50	0.5	-2	O ₂ Response Time - Down = 90 seconds
6/4/08 7:15:30	0.05	17.54	0.5	-2	
6/4/08 7:15:45	0.03	17.55	0.5	-2	
6/4/08 7:16:00	0.03	17.55	0.6	-2	
6/4/08 7:16:15	0.02	17.55	0.5	-2	
6/4/08 7:16:30	0.02	17.56	0.5	-2	
6/4/08 7:16:45	0.02	17.56	0.5	-2	
6/4/08 7:17:00	0.01	17.56	0.5	-2	
6/4/08 7:17:15	0.01	17.56	0.5	-2	
6/4/08 7:17:30	0.01	17.57	0.5	-2	
6/4/08 7:17:45	0.24	17.09	0.6	33	
6/4/08 7:18:00	5.34	11.06	0.6	355	
6/4/08 7:18:15	5.14	4.94	0.6	745	
6/4/08 7:18:30	1.47	1.42	0.6	934	
6/4/08 7:18:45	0.19	0.36	0.5	977	
6/4/08 7:19:00	0.07	0.23	0.5	979	
6/4/08 7:19:15	0.06	0.20	0.5	980	
6/4/08 7:19:30	0.05	0.19	0.5	981	
6/4/08 7:19:45	0.05	0.17	0.6	981	System Bias
6/4/08 7:20:00	0.05	0.16	0.5	982	981 1,000 ppm CO
6/4/08 7:20:15	0.05	0.16	0.5	982	
6/4/08 7:20:30	0.05	0.15	0.5	980	
6/4/08 7:20:45	0.05	0.14	0.6	980	
6/4/08 7:21:00	0.04	0.14	0.6	1038	
6/4/08 7:21:15	0.04	0.14	0.5	1425	
6/4/08 7:21:30	0.04	0.13	0.6	1817	
6/4/08 7:21:45	0.04	0.13	0.5	1955	
6/4/08 7:22:00	0.04	0.12	0.5	1970	
6/4/08 7:22:15	0.04	0.12	0.6	1972	
6/4/08 7:22:30	0.04	0.12	0.6	1975	
6/4/08 7:22:45	0.04	0.12	0.5	1975	
6/4/08 7:23:00	0.04	0.11	0.6	1978	
6/4/08 7:23:15	0.04	0.11	0.6	1924	
6/4/08 7:23:30	0.30	0.11	0.5	1306	
6/4/08 7:23:45	7.68	0.13	0.6	472	
6/4/08 7:24:00	17.44	0.15	0.6	81	CO Response Time - Down = 75 seconds
6/4/08 7:24:15	20.24	0.15	0.6	8	
6/4/08 7:24:30	20.55	0.15	0.5	2	
6/4/08 7:24:45	20.58	0.15	0.5	2	
6/4/08 7:25:00	20.59	0.15	0.5	1	
6/4/08 7:25:15	20.60	0.15	0.5	1	
6/4/08 7:25:30	20.61	0.15	0.5	1	
6/4/08 7:25:45	20.61	0.15	0.6	38	
6/4/08 7:26:00	20.47	0.15	0.5	582	
6/4/08 7:26:15	13.95	0.17	0.5	1427	
6/4/08 7:26:30	3.43	0.13	0.6	1875	
6/4/08 7:26:45	0.42	0.11	0.5	1984	CO Response Time - Up = 90 seconds
6/4/08 7:27:00	0.12	0.11	0.5	1973	
6/4/08 7:27:15	0.09	0.11	0.5	1975	
6/4/08 7:27:30	0.08	0.11	0.5	1974	
6/4/08 7:27:45	0.12	0.11	0.6	1570	
6/4/08 7:28:00	3.78	0.12	7.2	776	
6/4/08 7:28:15	4.16	0.11	28.4	206	
6/4/08 7:28:30	0.77	0.12	32.6	34	
6/4/08 7:28:45	0.13	0.11	35.1	6	

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Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 7:29:00	0.07	0.10	38.0	3	
6/4/08 7:29:15	0.06	0.10	37.3	2	
6/4/08 7:29:30	0.06	0.10	37.5	1	
6/4/08 7:29:45	0.06	0.10	43.2	1	
6/4/08 7:30:00	0.06	0.10	47.9	1	
6/4/08 7:30:15	0.06	0.10	46.6	1	
6/4/08 7:30:30	0.05	0.10	45.9	1	
6/4/08 7:30:45	0.05	0.10	45.6	1	
6/4/08 7:31:00	0.05	0.09	45.3	1	
6/4/08 7:31:15	0.05	0.09	45.2	1	
6/4/08 7:31:30	0.05	0.09	45.1	1	
6/4/08 7:31:45	0.05	0.09	45.0	1	
6/4/08 7:32:00	0.04	0.09	44.9	1	
6/4/08 7:32:15	0.05	0.09	44.8	1	
6/4/08 7:32:30	0.04	0.09	44.7	0	
6/4/08 7:32:45	0.04	0.09	44.7	0	
6/4/08 7:33:00	0.04	0.09	44.6	0	
6/4/08 7:33:15	0.04	0.09	44.5	0	
6/4/08 7:33:30	0.04	0.09	44.5	0	System Bias
6/4/08 7:33:45	0.04	0.09	44.5	0	0.04 Zero O ₂
6/4/08 7:34:00	0.04	0.09	44.4	0	
6/4/08 7:34:15	0.04	0.09	44.4	0	44.4 45.0 ppm NO _x
6/4/08 7:34:30	0.04	0.09	44.3	0	
6/4/08 7:34:45	0.04	0.09	69.1	0	
6/4/08 7:35:00	0.04	0.09	87.2	0	
6/4/08 7:35:15	0.04	0.09	86.8	0	
6/4/08 7:35:30	0.04	0.09	86.7	0	
6/4/08 7:35:45	0.04	0.09	86.6	0	
6/4/08 7:36:00	0.04	0.09	86.5	0	
6/4/08 7:36:15	0.04	0.09	86.5	0	
6/4/08 7:36:30	0.04	0.09	86.5	0	
6/4/08 7:36:45	0.04	0.09	86.6	0	
6/4/08 7:37:00	0.04	0.09	86.6	0	
6/4/08 7:37:15	0.04	0.09	86.6	0	
6/4/08 7:37:30	0.04	0.09	86.6	0	
6/4/08 7:37:45	0.04	0.09	86.7	0	
6/4/08 7:38:00	0.04	0.09	86.7	0	
6/4/08 7:38:15	0.04	0.09	86.7	0	
6/4/08 7:38:30	0.04	0.09	59.5	0	
6/4/08 7:38:45	0.30	0.09	1.6	0	NO _x Response Time - Down = 45 seconds
6/4/08 7:39:00	7.70	0.11	0.9	0	
6/4/08 7:39:15	17.42	0.13	0.8	0	
6/4/08 7:39:30	20.23	0.14	0.7	0	
6/4/08 7:39:45	20.54	0.14	0.7	0	
6/4/08 7:40:00	20.58	0.14	0.6	0	
6/4/08 7:40:15	20.59	0.14	0.6	0	
6/4/08 7:40:30	20.59	0.14	0.6	0	
6/4/08 7:40:45	20.60	0.14	0.6	0	
6/4/08 7:41:00	20.61	0.14	0.6	0	
6/4/08 7:41:15	20.61	0.13	0.6	0	
6/4/08 7:41:30	20.62	0.13	0.6	0	
6/4/08 7:41:45	20.62	0.13	0.5	0	
6/4/08 7:42:00	20.62	0.13	0.5	0	
6/4/08 7:42:15	20.62	0.13	0.5	0	
6/4/08 7:42:30	20.63	0.13	34.5	0	
6/4/08 7:42:45	20.52	0.13	85.4	1	NO _x Response Time - Up = 45 seconds
6/4/08 7:43:00	14.40	0.12	86.6	1	
6/4/08 7:43:15	3.70	0.10	86.7	0	
6/4/08 7:43:30	0.46	0.08	88.9	0	Switch from System Bias to Cal. Error
6/4/08 7:43:45	0.13	0.08	81.1	0	
6/4/08 7:44:00	0.07	0.08	42.1	0	
6/4/08 7:44:15	2.73	0.09	40.2	0	
6/4/08 7:44:30	12.86	0.09	41.2	0	
6/4/08 7:44:45	19.07	0.08	42.0	0	
6/4/08 7:45:00	20.18	0.08	42.8	0	
6/4/08 7:45:15	20.30	0.08	43.4	0	
6/4/08 7:45:30	20.32	0.08	43.9	0	
6/4/08 7:45:45	20.33	0.08	44.3	0	
6/4/08 7:46:00	20.34	0.08	44.5	0	
6/4/08 7:46:15	20.35	0.08	44.7	0	
6/4/08 7:46:30	20.36	0.08	44.9	0	
6/4/08 7:46:45	20.36	0.08	45.0	0	
6/4/08 7:47:00	20.37	0.08	45.1	0	
6/4/08 7:47:15	20.37	0.08	45.1	0	
6/4/08 7:47:30	20.37	0.08	45.2	0	
6/4/08 7:47:45	20.38	0.08	45.2	0	
6/4/08 7:48:00	20.38	0.08	45.2	0	
6/4/08 7:48:15	20.38	0.08	45.2	0	
6/4/08 7:48:30	20.39	0.08	45.3	0	
6/4/08 7:48:45	20.39	0.08	45.3	0	
6/4/08 7:49:00	20.39	0.08	45.3	0	
6/4/08 7:49:15	20.39	0.08	45.4	0	
6/4/08 7:49:30	20.39	0.08	45.4	0	
6/4/08 7:49:45	20.40	0.08	45.5	0	NO _x Converter Check

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 7:50:00	20.40	0.08	45.6	0	45.7 48.9 ppm NO _x /Air cyl# AAL8277
6/4/08 7:50:15	20.40	0.08	45.7	0	
6/4/08 7:50:30	20.40	0.08	45.7	0	
6/4/08 7:50:45	20.40	0.08	45.8	0	
6/4/08 7:51:00	20.41	0.08	43.8	0	93.41 % Conversion
6/4/08 7:51:15	20.41	0.08	63.7	0	Switch from Cal. Error to System Bias
6/4/08 7:51:30	20.13	0.08	26.8	2	
6/4/08 7:51:45	13.76	0.10	1.4	4	
6/4/08 7:52:00	13.72	0.12	1.1	2	
6/4/08 7:52:15	19.28	0.13	1.0	0	
6/4/08 7:52:30	20.62	0.13	0.9	0	
6/4/08 7:52:45	20.75	0.13	0.8	0	
6/4/08 7:53:00	20.76	0.13	0.8	0	
6/4/08 7:53:15	20.76	0.13	0.8	0	
6/4/08 7:53:30	20.75	0.14	0.8	0	
6/4/08 7:53:45	20.73	0.14	0.7	0	
6/4/08 7:54:00	20.72	0.14	0.7	0	
6/4/08 7:54:15	20.71	0.14	0.7	0	
6/4/08 7:54:30	20.71	0.14	0.7	0	
6/4/08 7:54:45	20.70	0.14	0.7	0	
6/4/08 7:55:00	20.69	0.14	0.7	0	
6/4/08 7:55:15	20.69	0.14	0.7	0	
6/4/08 7:55:30	20.68	0.14	0.7	0	
6/4/08 7:55:45	20.67	0.14	0.7	0	
6/4/08 7:56:00	20.66	0.15	0.7	0	
6/4/08 7:56:15	20.65	0.14	0.6	0	
6/4/08 7:56:30	20.65	0.14	0.7	0	
6/4/08 7:56:45	20.65	0.14	0.7	0	
6/4/08 7:57:00	20.65	0.14	0.7	0	
6/4/08 7:57:15	20.65	0.14	0.7	0	
6/4/08 7:57:30	20.65	0.15	0.5	0	
6/4/08 7:57:45	20.65	0.15	0.6	0	
6/4/08 7:58:00	20.65	0.14	0.6	0	
6/4/08 7:58:15	20.65	0.14	0.6	0	
6/4/08 7:58:30	20.65	0.14	0.6	0	
6/4/08 7:58:45	20.65	0.14	0.6	0	
6/4/08 7:59:00	20.65	0.15	0.6	0	
6/4/08 7:59:15	20.65	0.15	0.6	0	
6/4/08 7:59:30	20.64	0.15	0.5	0	
6/4/08 7:59:45	20.65	0.14	7.7	20	
6/4/08 8:00:00	20.61	0.18	39.1	464	
6/4/08 8:00:15	17.46	2.44	40.6	2060	
6/4/08 8:00:30	7.87	6.88	40.6	2332	
6/4/08 8:00:45	3.36	8.57	40.1	2332	
6/4/08 8:01:00	2.63	8.82	40.2	2331	
6/4/08 8:01:15	2.58	8.84	40.6	2332	
6/4/08 8:01:30	2.58	8.83	40.6	2332	
6/4/08 8:01:45	2.58	8.82	40.1	2332	
6/4/08 8:02:00	2.57	8.83	40.6	2332	
6/4/08 8:02:15	2.58	8.83	40.8	2332	
6/4/08 8:02:30	2.58	8.82	40.9	2332	
6/4/08 8:02:45	2.58	8.82	40.9	2331	
6/4/08 8:03:00	2.57	8.82	40.3	2332	
6/4/08 8:03:15	2.59	8.79	40.6	2331	
6/4/08 8:03:30	2.62	8.77	40.8	2332	
6/4/08 8:03:45	2.61	8.77	40.3	2331	
6/4/08 8:04:00	2.60	8.75	40.7	2331	
6/4/08 8:04:15	2.62	8.71	40.9	2332	
6/4/08 8:04:30	2.61	8.70	40.8	2332	
6/4/08 8:04:45	2.59	8.72	41.0	2332	
6/4/08 8:05:00	2.57	8.76	41.6	2332	
6/4/08 8:05:15	2.52	8.81	41.5	2332	
6/4/08 8:05:30	2.43	8.85	41.2	2332	
6/4/08 8:05:45	2.38	8.88	41.5	2332	
6/4/08 8:06:00	2.33	8.90	40.9	2332	
6/4/08 8:06:15	2.30	8.93	39.9	2332	
6/4/08 8:06:30	2.33	8.92	38.7	2332	
6/4/08 8:06:45	2.42	8.85	38.2	2332	
6/4/08 8:07:00	2.53	8.77	37.9	2332	
6/4/08 8:07:15	2.62	8.73	37.6	2332	
6/4/08 8:07:30	2.63	8.75	38.1	2332	
6/4/08 8:07:45	2.67	8.74	38.1	2332	
6/4/08 8:08:00	2.66	8.72	37.9	2332	
6/4/08 8:08:15	2.66	8.73	38.0	2332	
6/4/08 8:08:30	2.66	8.76	38.3	2332	
6/4/08 8:08:45	2.63	8.78	37.8	2332	
6/4/08 8:09:00	2.62	8.76	38.1	2331	
6/4/08 8:09:15	2.67	8.71	38.7	2332	
6/4/08 8:09:30	2.65	8.69	38.7	2332	
6/4/08 8:09:45	2.65	8.67	38.8	2332	
6/4/08 8:10:00	2.68	8.66	39.0	2332	
6/4/08 8:10:15	2.66	8.70	39.0	2332	
6/4/08 8:10:30	2.62	8.74	38.7	2332	
6/4/08 8:10:45	2.59	8.76	39.2	2332	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 8:11:00	2.58	8.80	39.2	2332	
6/4/08 8:11:15	2.51	8.86	39.4	2332	
6/4/08 8:11:30	2.47	8.88	39.7	2332	
6/4/08 8:11:45	2.43	8.88	39.6	2332	
6/4/08 8:12:00	2.42	8.87	39.8	2332	
6/4/08 8:12:15	2.44	8.86	39.7	2332	
6/4/08 8:12:30	2.45	8.95	39.6	2332	
6/4/08 8:12:45	2.47	8.82	36.1	2332	
6/4/08 8:13:00	2.43	8.08	1.2	1968	
6/4/08 8:13:15	1.42	3.97	0.9	595	
6/4/08 8:13:30	0.37	0.98	0.8	142	
6/4/08 8:13:45	0.06	0.22	17.3	73	
6/4/08 8:14:00	0.07	0.44	39.2	787	
6/4/08 8:14:15	0.94	4.11	39.4	2332	
6/4/08 8:14:30	2.05	7.43	39.8	2332	
6/4/08 8:14:45	2.50	8.63	40.1	2332	
6/4/08 8:15:00	2.54	8.78	40.3	2332	
6/4/08 8:15:15	2.52	8.78	40.5	2332	
6/4/08 8:15:30	2.51	8.77	40.9	2332	
6/4/08 8:15:45	2.48	8.76	40.9	2332	
6/4/08 8:16:00	2.44	8.76	40.3	2332	
6/4/08 8:16:15	2.42	8.80	40.2	2332	
6/4/08 8:16:30	2.43	8.82	40.5	2332	
6/4/08 8:16:45	2.44	8.82	40.1	2332	
6/4/08 8:17:00	2.45	8.82	40.0	2332	
6/4/08 8:17:15	2.44	8.86	40.0	2332	
6/4/08 8:17:30	2.42	8.91	40.1	2332	
6/4/08 8:17:45	2.41	8.94	40.7	2332	
6/4/08 8:18:00	2.39	8.93	40.6	2332	
6/4/08 8:18:15	2.36	8.92	40.7	2332	
6/4/08 8:18:30	2.36	8.91	40.3	2332	
6/4/08 8:18:45	2.39	8.90	40.5	2332	
6/4/08 8:19:00	2.44	8.87	38.6	2332	
6/4/08 8:19:15	2.44	8.86	38.2	2332	
6/4/08 8:19:30	2.58	8.81	41.1	2332	
6/4/08 8:19:45	2.80	8.74	41.1	2332	
6/4/08 8:20:00	2.70	8.71	41.9	2332	
6/4/08 8:20:15	2.41	8.81	42.9	2332	
6/4/08 8:20:30	2.22	8.95	42.9	2332	
6/4/08 8:20:45	2.04	9.02	39.6	2332	
6/4/08 8:21:00	2.06	8.98	37.5	2332	
6/4/08 8:21:15	2.37	8.84	39.6	2332	
6/4/08 8:21:30	2.80	8.67	39.3	2332	
6/4/08 8:21:45	2.85	8.58	37.8	2332	
6/4/08 8:22:00	2.68	8.61	40.6	2332	
6/4/08 8:22:15	2.71	8.67	43.0	2332	
6/4/08 8:22:30	2.73	8.67	42.1	2332	
6/4/08 8:22:45	2.38	8.69	42.5	2332	
6/4/08 8:23:00	2.22	8.83	42.8	2332	
6/4/08 8:23:15	2.09	8.96	38.6	2208	
6/4/08 8:23:30	1.97	8.87	34.2	1637	
6/4/08 8:23:45	1.89	8.89	31.6	1154	
6/4/08 8:24:00	2.00	8.91	28.0	1039	
6/4/08 8:24:15	2.45	8.84	26.2	1098	
6/4/08 8:24:30	2.99	8.70	25.3	1226	
6/4/08 8:24:45	3.31	8.64	25.0	1388	
6/4/08 8:25:00	3.42	8.64	25.1	1437	
6/4/08 8:25:15	3.44	8.68	25.1	1841	
6/4/08 8:25:30	3.34	8.73	28.5	2332	
6/4/08 8:25:45	3.41	8.67	32.4	2332	
6/4/08 8:26:00	3.57	8.54	35.8	2332	
6/4/08 8:26:15	3.41	8.62	34.7	2260	
6/4/08 8:26:30	2.84	8.89	33.1	1775	
6/4/08 8:26:45	2.31	9.10	31.9	1185	
6/4/08 8:27:00	2.04	9.18	29.4	1075	
6/4/08 8:27:15	2.27	9.03	27.7	1088	
6/4/08 8:27:30	2.68	8.84	26.7	1175	
6/4/08 8:27:45	3.00	8.71	26.0	1306	
6/4/08 8:28:00	3.18	8.66	25.3	1388	
6/4/08 8:28:15	3.28	8.64	24.1	1740	
6/4/08 8:28:30	3.32	8.64	28.3	2332	
6/4/08 8:28:45	3.39	8.66	33.0	2332	
6/4/08 8:29:00	3.80	8.56	35.1	2332	
6/4/08 8:29:15	3.91	8.29	37.7	2332	
6/4/08 8:29:30	3.45	8.36	43.6	2332	
6/4/08 8:29:45	2.82	8.85	44.4	2332	
6/4/08 8:30:00	1.91	9.19	42.7	2332	
6/4/08 8:30:15	1.63	9.26	40.8	2332	
6/4/08 8:30:30	1.83	9.24	39.1	2332	
6/4/08 8:30:45	2.13	9.12	38.4	2332	
6/4/08 8:31:00	2.42	8.96	38.6	2331	
6/4/08 8:31:15	2.65	8.84	35.7	2218	
6/4/08 8:31:30	2.74	8.75	32.5	1579	
6/4/08 8:31:45	2.46	8.82	30.1	913	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 8:32:00	2.22	8.95	26.7	832	
6/4/08 8:32:15	2.56	8.83	25.0	979	
6/4/08 8:32:30	3.12	8.67	24.4	1154	
6/4/08 8:32:45	3.44	8.59	24.1	1333	
6/4/08 8:33:00	3.53	8.59	24.8	1393	
6/4/08 8:33:15	3.52	8.63	25.5	1362	
6/4/08 8:33:30	3.41	8.74	26.4	1291	
6/4/08 8:33:45	3.24	8.86	27.2	1175	
6/4/08 8:34:00	3.12	8.93	27.4	1110	
6/4/08 8:34:15	3.04	8.94	27.4	1080	
6/4/08 8:34:30	2.96	8.94	27.0	1081	
6/4/08 8:34:45	2.88	8.97	26.9	1094	
6/4/08 8:35:00	2.87	8.94	26.6	1110	
6/4/08 8:35:15	2.94	8.90	26.5	1131	
6/4/08 8:35:30	3.00	8.82	26.0	1141	
6/4/08 8:35:45	3.02	8.76	26.2	1288	
6/4/08 8:36:00	3.07	8.73	27.5	1842	
6/4/08 8:36:15	3.22	8.68	29.2	2332	
6/4/08 8:36:30	3.44	8.59	29.9	2332	
6/4/08 8:36:45	3.40	8.65	28.9	1666	
6/4/08 8:37:00	3.11	8.81	29.1	1210	
6/4/08 8:37:15	2.72	9.02	28.6	1062	
6/4/08 8:37:30	2.67	9.05	27.7	1091	
6/4/08 8:37:45	2.77	9.02	26.8	1155	
6/4/08 8:38:00	2.90	8.95	27.5	1671	
6/4/08 8:38:15	3.00	8.88	30.0	2332	
6/4/08 8:38:30	3.30	8.71	31.6	2332	
6/4/08 8:38:45	3.66	8.48	34.4	2332	
6/4/08 8:39:00	3.65	8.48	37.8	2332	
6/4/08 8:39:15	3.26	8.71	39.8	2332	
6/4/08 8:39:30	2.78	8.86	40.6	2332	
6/4/08 8:39:45	2.48	8.93	40.7	2332	
6/4/08 8:40:00	2.30	9.04	40.3	2332	
6/4/08 8:40:15	2.28	9.06	39.5	2332	
6/4/08 8:40:30	2.31	9.01	39.3	2332	
6/4/08 8:40:45	2.37	8.96	38.9	2332	
6/4/08 8:41:00	2.42	8.95	38.6	2332	
6/4/08 8:41:15	2.48	8.93	38.2	2332	
6/4/08 8:41:30	2.55	8.89	38.0	2332	
6/4/08 8:41:45	2.62	8.83	37.8	2332	
6/4/08 8:42:00	2.67	8.81	38.1	2332	
6/4/08 8:42:15	2.68	8.82	38.2	2332	
6/4/08 8:42:30	2.66	8.84	38.7	2332	
6/4/08 8:42:45	2.64	8.85	39.3	2332	
6/4/08 8:43:00	2.60	8.88	39.6	2332	
6/4/08 8:43:15	2.57	8.90	39.3	2332	
6/4/08 8:43:30	2.57	8.88	39.3	2332	
6/4/08 8:43:45	2.56	8.85	39.1	2332	
6/4/08 8:44:00	2.61	8.82	39.3	2332	
6/4/08 8:44:15	2.62	8.79	39.4	2332	
6/4/08 8:44:30	2.61	8.77	39.0	2332	
6/4/08 8:44:45	2.58	8.81	38.4	2332	
6/4/08 8:45:00	2.59	8.82	38.0	2332	
6/4/08 8:45:15	2.63	8.81	39.1	2332	
6/4/08 8:45:30	2.70	8.81	38.2	2332	
6/4/08 8:45:45	2.67	8.86	39.4	2332	
6/4/08 8:46:00	2.67	8.88	40.2	2331	
6/4/08 8:46:15	2.77	8.83	39.4	2332	
6/4/08 8:46:30	2.59	8.86	39.6	2332	
6/4/08 8:46:45	2.52	8.95	39.3	2332	
6/4/08 8:47:00	2.49	8.99	38.3	2332	
6/4/08 8:47:15	2.52	8.95	37.5	2332	
6/4/08 8:47:30	2.67	8.88	37.3	2332	
6/4/08 8:47:45	2.77	8.83	34.0	2225	
6/4/08 8:48:00	2.86	8.76	29.8	1567	
6/4/08 8:48:15	2.70	8.75	28.6	778	
6/4/08 8:48:30	2.21	8.99	25.8	652	
6/4/08 8:48:45	2.34	8.93	20.6	608	
6/4/08 8:49:00	2.92	8.74	17.5	449	
6/4/08 8:49:15	3.41	8.58	16.3	288	
6/4/08 8:49:30	3.48	8.61	15.3	314	
6/4/08 8:49:45	3.53	8.64	14.8	412	
6/4/08 8:50:00	3.64	8.66	14.5	469	
6/4/08 8:50:15	3.65	8.73	14.7	512	
6/4/08 8:50:30	3.62	8.76	15.1	505	
6/4/08 8:50:45	3.55	8.77	15.3	473	
6/4/08 8:51:00	3.43	8.84	15.3	457	
6/4/08 8:51:15	3.33	8.90	17.4	498	
6/4/08 8:51:30	3.27	8.93	23.2	951	
6/4/08 8:51:45	3.09	8.95	24.5	2002	
6/4/08 8:52:00	3.16	8.76	26.0	2316	
6/4/08 8:52:15	3.37	8.61	21.6	1876	
6/4/08 8:52:30	3.35	8.61	19.4	1156	
6/4/08 8:52:45	3.13	8.71	20.6	601	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 8:53:00	2.84	8.77	21.1	737	
6/4/08 8:53:15	2.82	8.72	20.6	1056	
6/4/08 8:53:30	3.08	8.62	20.8	1166	
6/4/08 8:53:45	3.28	8.60	20.8	1198	
6/4/08 8:54:00	3.32	8.67	20.7	1195	
6/4/08 8:54:15	3.32	8.77	21.0	1184	
6/4/08 8:54:30	3.33	8.84	21.6	1160	
6/4/08 8:54:45	3.31	8.90	22.0	1104	
6/4/08 8:55:00	3.26	8.92	22.1	1063	
6/4/08 8:55:15	3.18	8.87	22.4	1020	
6/4/08 8:55:30	3.11	8.84	22.5	992	
6/4/08 8:55:45	3.03	8.86	22.7	965	
6/4/08 8:56:00	2.97	8.88	23.0	949	
6/4/08 8:56:15	2.95	8.88	23.1	931	
6/4/08 8:56:30	2.98	8.87	23.3	921	
6/4/08 8:56:45	3.02	8.86	23.0	915	
6/4/08 8:57:00	3.00	8.82	23.3	919	
6/4/08 8:57:15	2.99	8.80	23.0	903	
6/4/08 8:57:30	3.00	8.79	24.2	950	
6/4/08 8:57:45	3.07	8.76	26.4	1499	
6/4/08 8:58:00	3.13	8.72	21.4	1675	
6/4/08 8:58:15	3.39	8.55	20.5	1009	
6/4/08 8:58:30	3.41	8.56	23.5	735	
6/4/08 8:58:45	3.04	8.73	23.6	926	
6/4/08 8:59:00	3.01	8.75	23.8	1059	
6/4/08 8:59:15	3.12	8.73	23.7	1093	
6/4/08 8:59:30	3.14	8.72	23.7	1093	
6/4/08 8:59:45	3.15	8.70	23.9	1086	
6/4/08 9:00:00	3.17	8.68	23.9	1071	
6/4/08 9:00:15	3.14	8.71	24.0	1068	
6/4/08 9:00:30	3.08	8.73	24.0	1066	
6/4/08 9:00:45	3.09	8.72	24.1	1047	
6/4/08 9:01:00	3.11	8.69	24.0	1040	
6/4/08 9:01:15	3.15	8.66	24.1	1034	
6/4/08 9:01:30	3.15	8.64	24.1	1022	
6/4/08 9:01:45	3.13	8.64	24.1	1022	
6/4/08 9:02:00	3.11	8.65	24.2	1029	
6/4/08 9:02:15	3.06	8.67	23.4	1004	
6/4/08 9:02:30	3.05	8.67	23.5	967	
6/4/08 9:02:45	3.07	8.67	23.5	985	
6/4/08 9:03:00	3.10	8.68	21.8	986	
6/4/08 9:03:15	3.13	8.69	19.9	756	
6/4/08 9:03:30	3.19	8.69	22.3	695	
6/4/08 9:03:45	3.05	8.75	22.2	897	
6/4/08 9:04:00	3.05	8.73	22.3	1015	
6/4/08 9:04:15	3.20	8.66	22.3	1051	
6/4/08 9:04:30	3.26	8.61	24.0	1196	
6/4/08 9:04:45	3.25	8.60	27.6	2332	
6/4/08 9:05:00	3.24	8.56	27.8	2332	
6/4/08 9:05:15	3.63	8.34	22.3	2084	
6/4/08 9:05:30	3.74	8.30	24.1	1047	
6/4/08 9:05:45	2.91	8.76	21.7	531	
6/4/08 9:06:00	2.65	8.81	23.2	633	
6/4/08 9:06:15	2.86	8.74	22.3	957	
6/4/08 9:06:30	3.10	8.64	22.3	1119	
6/4/08 9:06:45	3.30	8.54	22.2	1188	
6/4/08 9:07:00	3.37	8.50	22.1	1191	
6/4/08 9:07:15	3.36	8.56	22.4	1193	
6/4/08 9:07:30	3.32	8.63	22.9	1184	
6/4/08 9:07:45	3.27	8.64	23.3	1158	
6/4/08 9:08:00	3.23	8.66	23.5	1129	
6/4/08 9:08:15	3.18	8.70	23.7	1096	
6/4/08 9:08:30	3.10	8.77	23.7	1095	
6/4/08 9:08:45	3.06	8.82	21.8	1016	
6/4/08 9:09:00	3.09	8.82	23.2	896	
6/4/08 9:09:15	3.10	8.83	21.8	927	
6/4/08 9:09:30	3.02	8.83	16.5	817	
6/4/08 9:09:45	3.15	8.73	15.8	452	
6/4/08 9:10:00	3.18	8.71	15.1	357	
6/4/08 9:10:15	3.06	8.70	15.6	467	
6/4/08 9:10:30	3.10	8.65	20.1	844	
6/4/08 9:10:45	3.20	8.63	21.9	1952	
6/4/08 9:11:00	3.49	8.50	24.4	2332	
6/4/08 9:11:15	3.80	8.38	27.4	2332	
6/4/08 9:11:30	3.67	8.47	28.6	2321	
6/4/08 9:11:45	3.33	8.63	24.5	1582	
6/4/08 9:12:00	3.06	8.74	24.8	995	
6/4/08 9:12:15	2.68	8.91	24.0	687	
6/4/08 9:12:30	2.48	9.94	22.9	700	
6/4/08 9:12:45	2.58	8.85	22.0	777	
6/4/08 9:13:00	2.75	8.76	21.1	840	
6/4/08 9:13:15	2.91	8.69	20.5	930	
6/4/08 9:13:30	3.07	8.63	20.4	993	
6/4/08 9:13:45	3.24	8.57	20.2	1039	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 9:14:00	3.33	8.56	16.3	944	
6/4/08 9:14:15	3.37	8.57	15.2	612	
6/4/08 9:14:30	3.35	8.59	15.1	484	
6/4/08 9:14:45	3.21	8.63	16.5	536	
6/4/08 9:15:00	3.08	8.66	18.7	719	
6/4/08 9:15:15	3.07	8.67	22.1	1256	
6/4/08 9:15:30	3.23	8.62	24.4	1992	
6/4/08 9:15:45	3.38	8.55	27.0	2332	
6/4/08 9:16:00	3.51	8.51	29.3	2332	
6/4/08 9:16:15	3.28	8.65	30.6	2126	
6/4/08 9:16:30	2.90	8.80	31.4	1913	
6/4/08 9:16:45	2.62	8.88	31.3	1736	
6/4/08 9:17:00	2.52	8.87	31.1	1662	
6/4/08 9:17:15	2.52	8.80	30.4	1613	
6/4/08 9:17:30	2.55	8.76	29.1	1619	
6/4/08 9:17:45	2.59	8.71	28.7	1665	
6/4/08 9:18:00	2.72	8.62	28.3	1696	
6/4/08 9:18:15	2.85	8.58	28.0	1727	
6/4/08 9:18:30	2.90	8.59	28.0	1748	
6/4/08 9:18:45	2.96	8.61	28.2	1781	
6/4/08 9:19:00	3.01	8.65	28.4	1792	
6/4/08 9:19:15	3.00	8.72	28.8	1792	
6/4/08 9:19:30	2.95	8.79	29.5	1779	
6/4/08 9:19:45	2.93	8.82	30.0	1740	
6/4/08 9:20:00	2.90	8.83	30.2	1703	
6/4/08 9:20:15	2.84	8.84	30.4	1666	
6/4/08 9:20:30	2.77	8.85	30.8	1649	
6/4/08 9:20:45	2.75	8.83	30.7	1611	
6/4/08 9:21:00	2.74	8.80	30.7	1599	
6/4/08 9:21:15	2.71	8.78	30.8	1604	
6/4/08 9:21:30	2.70	8.76	30.6	1593	
6/4/08 9:21:45	2.72	8.74	30.3	1592	
6/4/08 9:22:00	2.75	8.73	30.5	1614	
6/4/08 9:22:15	2.75	8.74	30.4	1622	
6/4/08 9:22:30	2.78	8.73	30.5	1618	
6/4/08 9:22:45	2.81	8.72	30.4	1620	
6/4/08 9:23:00	2.80	8.72	30.5	1620	
6/4/08 9:23:15	2.79	8.72	30.5	1618	
6/4/08 9:23:30	2.78	8.72	30.9	1608	
6/4/08 9:23:45	2.75	8.72	30.3	1593	
6/4/08 9:24:00	2.73	8.72	30.2	1594	
6/4/08 9:24:15	2.77	8.69	22.4	1346	
6/4/08 9:24:30	2.90	8.62	15.6	788	
6/4/08 9:24:45	3.05	8.55	14.1	238	
6/4/08 9:25:00	2.82	8.65	13.6	180	
6/4/08 9:25:15	2.84	8.64	12.9	302	
6/4/08 9:25:30	2.95	8.58	12.2	430	
6/4/08 9:25:45	2.95	8.53	11.1	533	
6/4/08 9:26:00	3.07	8.53	10.7	561	
6/4/08 9:26:15	3.28	8.58	10.4	592	
6/4/08 9:26:30	3.37	8.62	10.8	601	
6/4/08 9:26:45	3.40	8.67	10.8	570	
6/4/08 9:27:00	3.36	8.74	10.7	535	
6/4/08 9:27:15	3.35	8.72	10.7	494	
6/4/08 9:27:30	3.33	8.71	10.7	478	
6/4/08 9:27:45	3.27	8.71	11.4	496	
6/4/08 9:28:00	3.22	8.71	10.8	544	
6/4/08 9:28:15	3.10	8.73	10.6	595	
6/4/08 9:28:30	3.13	8.73	10.4	616	
6/4/08 9:28:45	3.16	8.71	10.3	662	
6/4/08 9:29:00	3.21	8.69	10.3	707	
6/4/08 9:29:15	3.26	8.67	10.4	759	
6/4/08 9:29:30	3.28	8.67	10.4	789	
6/4/08 9:29:45	3.27	8.67	10.5	809	
6/4/08 9:30:00	3.32	8.65	10.6	805	
6/4/08 9:30:15	3.30	8.63	10.3	789	
6/4/08 9:30:30	3.26	8.63	10.3	777	
6/4/08 9:30:45	3.23	8.67	10.3	767	
6/4/08 9:31:00	3.21	8.70	10.5	764	
6/4/08 9:31:15	3.21	8.71	10.5	760	
6/4/08 9:31:30	3.24	8.71	10.5	753	
6/4/08 9:31:45	3.21	8.73	10.4	746	
6/4/08 9:32:00	3.15	8.78	10.4	738	
6/4/08 9:32:15	3.14	8.81	10.6	721	
6/4/08 9:32:30	3.13	8.82	10.4	707	
6/4/08 9:32:45	3.11	8.82	10.5	695	
6/4/08 9:33:00	3.10	8.82	10.8	683	
6/4/08 9:33:15	3.09	8.82	8.0	646	
6/4/08 9:33:30	3.06	8.65	1.0	474	
6/4/08 9:33:45	2.32	5.25	0.7	153	
6/4/08 9:34:00	0.80	1.59	0.6	41	
6/4/08 9:34:15	0.12	0.31	0.6	1	
6/4/08 9:34:30	0.02	0.15	0.6	-1	
6/4/08 9:34:45	0.01	0.13	0.6	-1	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 9:35:00	0.01	0.11	0.6	-1	
6/4/08 9:35:15	0.01	0.11	1.4	1	
6/4/08 9:35:30	0.01	0.11	9.4	79	
6/4/08 9:35:45	0.49	2.16	10.5	362	
6/4/08 9:36:00	2.05	6.22	10.4	605	
6/4/08 9:36:15	2.95	8.34	10.2	707	
6/4/08 9:36:30	3.10	8.74	10.4	744	
6/4/08 9:36:45	3.11	8.77	10.4	767	
6/4/08 9:37:00	3.12	8.74	10.4	772	
6/4/08 9:37:15	3.11	8.70	10.4	756	
6/4/08 9:37:30	3.12	8.65	10.3	743	
6/4/08 9:37:45	3.11	8.64	10.3	744	
6/4/08 9:38:00	3.11	8.64	10.3	759	
6/4/08 9:38:15	3.13	8.66	10.5	766	
6/4/08 9:38:30	3.09	8.69	10.7	780	
6/4/08 9:38:45	3.07	8.71	10.4	751	
6/4/08 9:39:00	3.05	8.71	10.4	751	
6/4/08 9:39:15	3.06	8.71	10.4	750	
6/4/08 9:39:30	3.09	8.71	10.5	748	
6/4/08 9:39:45	3.07	8.71	10.3	748	
6/4/08 9:40:00	3.08	8.67	10.4	756	
6/4/08 9:40:15	3.11	8.61	10.2	763	
6/4/08 9:40:30	3.11	8.59	10.2	761	
6/4/08 9:40:45	3.10	8.58	10.2	767	
6/4/08 9:41:00	3.13	8.57	10.3	780	
6/4/08 9:41:15	3.15	8.56	10.4	788	
6/4/08 9:41:30	3.15	8.58	10.5	779	
6/4/08 9:41:45	3.18	8.60	10.4	771	
6/4/08 9:42:00	3.16	8.64	10.2	775	
6/4/08 9:42:15	3.18	8.66	10.3	779	
6/4/08 9:42:30	3.20	8.67	10.4	770	
6/4/08 9:42:45	3.17	8.70	10.4	753	
6/4/08 9:43:00	3.15	8.69	10.4	744	
6/4/08 9:43:15	3.14	8.66	10.5	744	
6/4/08 9:43:30	3.13	8.62	10.4	743	
6/4/08 9:43:45	3.14	8.61	10.3	754	
6/4/08 9:44:00	3.14	8.64	10.6	767	
6/4/08 9:44:15	3.15	8.66	10.4	773	
6/4/08 9:44:30	3.11	8.71	10.3	778	
6/4/08 9:44:45	3.09	8.76	10.6	777	
6/4/08 9:45:00	3.04	8.84	10.4	760	
6/4/08 9:45:15	3.02	8.89	10.3	745	
6/4/08 9:45:30	3.02	8.92	10.5	738	
6/4/08 9:45:45	2.99	8.91	10.3	742	
6/4/08 9:46:00	3.00	8.85	10.3	744	
6/4/08 9:46:15	3.05	8.78	10.2	746	
6/4/08 9:46:30	3.06	8.74	10.1	761	
6/4/08 9:46:45	3.05	8.72	10.1	779	
6/4/08 9:47:00	3.08	8.68	10.2	798	
6/4/08 9:47:15	3.10	8.66	10.2	811	
6/4/08 9:47:30	3.09	8.65	10.3	808	
6/4/08 9:47:45	3.09	8.66	10.2	812	
6/4/08 9:48:00	3.08	8.67	10.3	830	
6/4/08 9:48:15	3.05	8.70	10.3	832	
6/4/08 9:48:30	3.00	8.73	10.2	828	
6/4/08 9:48:45	2.99	8.73	10.5	832	
6/4/08 9:49:00	2.99	8.72	10.4	839	
6/4/08 9:49:15	2.99	8.70	10.3	846	
6/4/08 9:49:30	3.01	8.66	10.8	851	
6/4/08 9:49:45	3.03	8.63	16.0	1094	
6/4/08 9:50:00	3.00	8.62	18.2	1796	
6/4/08 9:50:15	3.02	8.54	19.5	2266	
6/4/08 9:50:30	3.23	8.44	20.5	2313	
6/4/08 9:50:45	3.16	8.50	21.3	2131	
6/4/08 9:51:00	2.96	8.60	21.7	1927	
6/4/08 9:51:15	2.80	8.67	22.3	1805	
6/4/08 9:51:30	2.70	8.71	22.3	1724	
6/4/08 9:51:45	2.60	8.75	22.3	1671	
6/4/08 9:52:00	2.49	8.79	21.9	1637	
6/4/08 9:52:15	2.47	8.78	21.6	1633	
6/4/08 9:52:30	2.59	8.74	21.4	1647	
6/4/08 9:52:45	2.70	8.71	21.6	1670	
6/4/08 9:53:00	2.74	8.71	21.7	1688	
6/4/08 9:53:15	2.77	8.71	21.9	1696	
6/4/08 9:53:30	2.80	8.68	22.1	1693	
6/4/08 9:53:45	2.81	8.66	22.4	1680	
6/4/08 9:54:00	2.78	8.67	22.7	1670	
6/4/08 9:54:15	2.73	8.69	22.4	1656	
6/4/08 9:54:30	2.67	8.75	18.7	1526	
6/4/08 9:54:45	2.70	8.80	14.2	1033	
6/4/08 9:55:00	2.75	8.85	13.1	597	
6/4/08 9:55:15	2.55	8.95	14.8	516	
6/4/08 9:55:30	2.52	8.93	13.0	564	
6/4/08 9:55:45	2.68	8.86	11.8	624	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 9:56:00	2.81	8.83	11.2	683	
6/4/08 9:56:15	2.92	8.79	10.9	736	
6/4/08 9:56:30	3.03	8.74	10.6	788	
6/4/08 9:56:45	3.09	8.70	10.5	826	
6/4/08 9:57:00	3.08	8.74	10.8	830	
6/4/08 9:57:15	3.05	8.77	10.8	803	
6/4/08 9:57:30	2.98	8.80	10.8	760	
6/4/08 9:57:45	2.89	8.85	11.1	719	
6/4/08 9:58:00	2.82	8.88	11.0	690	
6/4/08 9:58:15	2.79	8.88	10.9	680	
6/4/08 9:58:30	2.79	8.86	10.9	687	
6/4/08 9:58:45	2.83	8.82	10.6	710	
6/4/08 9:59:00	2.86	8.79	10.7	747	
6/4/08 9:59:15	2.89	8.74	10.3	779	
6/4/08 9:59:30	2.94	8.67	10.3	805	
6/4/08 9:59:45	2.99	8.61	10.4	837	
6/4/08 10:00:00	3.02	8.60	10.4	868	
6/4/08 10:00:15	3.00	8.62	10.6	877	
6/4/08 10:00:30	3.00	8.61	10.6	867	
6/4/08 10:00:45	2.98	8.61	10.8	855	
6/4/08 10:01:00	2.92	8.65	10.6	849	
6/4/08 10:01:15	2.89	8.68	10.6	847	
6/4/08 10:01:30	2.86	8.72	10.9	844	
6/4/08 10:01:45	2.84	8.74	10.8	845	
6/4/08 10:02:00	2.85	8.75	10.6	848	
6/4/08 10:02:15	2.87	8.75	10.8	853	
6/4/08 10:02:30	2.89	8.75	10.9	861	
6/4/08 10:02:45	2.88	8.74	10.5	873	
6/4/08 10:03:00	2.87	8.69	10.5	886	
6/4/08 10:03:15	2.91	8.64	10.7	897	
6/4/08 10:03:30	2.91	8.65	10.7	903	
6/4/08 10:03:45	2.94	8.67	10.6	903	
6/4/08 10:04:00	2.95	8.68	10.3	903	
6/4/08 10:04:15	2.94	8.69	10.5	909	
6/4/08 10:04:30	2.94	8.71	10.5	912	
6/4/08 10:04:45	2.94	8.72	10.6	911	
6/4/08 10:05:00	2.93	8.72	10.8	902	
6/4/08 10:05:15	2.92	8.74	10.5	902	
6/4/08 10:05:30	2.90	8.77	10.6	906	
6/4/08 10:05:45	2.88	8.78	10.7	893	
6/4/08 10:06:00	2.88	8.74	10.7	875	
6/4/08 10:06:15	2.88	8.71	10.6	871	
6/4/08 10:06:30	2.86	8.69	10.6	877	
6/4/08 10:06:45	2.87	8.68	11.1	889	
6/4/08 10:07:00	2.86	8.72	10.8	904	
6/4/08 10:07:15	2.83	8.76	10.4	907	
6/4/08 10:07:30	2.84	8.81	10.6	902	
6/4/08 10:07:45	2.84	8.86	10.8	904	
6/4/08 10:08:00	2.83	8.90	10.8	900	
6/4/08 10:08:15	2.80	8.94	10.5	885	
6/4/08 10:08:30	2.77	8.96	10.4	871	
6/4/08 10:08:45	2.73	8.93	10.3	859	
6/4/08 10:09:00	2.73	8.85	10.4	848	
6/4/08 10:09:15	2.79	8.74	10.5	847	
6/4/08 10:09:30	2.87	8.67	10.5	857	
6/4/08 10:09:45	2.91	8.66	10.6	867	
6/4/08 10:10:00	2.93	8.68	11.0	877	
6/4/08 10:10:15	2.96	8.69	10.8	896	
6/4/08 10:10:30	3.04	8.69	10.6	912	
6/4/08 10:10:45	3.13	8.70	10.4	926	
6/4/08 10:11:00	3.19	8.74	10.4	942	
6/4/08 10:11:15	3.21	8.76	10.6	948	
6/4/08 10:11:30	3.23	8.75	10.7	922	
6/4/08 10:11:45	3.19	8.78	10.6	878	
6/4/08 10:12:00	3.13	8.83	10.8	850	
6/4/08 10:12:15	3.09	8.87	10.7	824	
6/4/08 10:12:30	3.07	8.89	10.6	791	
6/4/08 10:12:45	3.04	8.89	10.8	768	
6/4/08 10:13:00	2.99	8.89	10.8	748	
6/4/08 10:13:15	2.94	8.88	10.7	732	
6/4/08 10:13:30	2.94	8.86	10.9	718	
6/4/08 10:13:45	2.93	8.87	10.3	702	
6/4/08 10:14:00	2.94	8.87	7.9	699	
6/4/08 10:14:15	2.95	8.87	9.9	705	
6/4/08 10:14:30	2.96	8.89	10.3	711	
6/4/08 10:14:45	2.96	8.91	10.7	718	
6/4/08 10:15:00	2.98	8.91	10.9	726	
6/4/08 10:15:15	3.00	8.91	10.6	728	
6/4/08 10:15:30	3.01	8.91	10.5	728	
6/4/08 10:15:45	3.02	8.89	10.6	723	
6/4/08 10:16:00	3.01	8.87	10.4	726	
6/4/08 10:16:15	3.01	8.84	10.6	732	
6/4/08 10:16:30	3.01	8.80	10.7	736	
6/4/08 10:16:45	3.01	8.76	10.8	738	

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No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 10:17:00	3.02	8.78	10.4	745	
6/4/08 10:17:15	3.03	8.83	10.5	785	
6/4/08 10:17:30	3.03	8.86	10.7	780	
6/4/08 10:17:45	3.03	8.92	10.6	773	
6/4/08 10:18:00	3.01	9.01	10.7	759	
6/4/08 10:18:15	3.00	9.08	10.6	746	
6/4/08 10:18:30	2.97	9.11	10.5	732	
6/4/08 10:18:45	2.98	9.06	10.4	728	
6/4/08 10:19:00	2.97	9.03	10.3	732	
6/4/08 10:19:15	2.94	9.00	10.5	734	
6/4/08 10:19:30	2.95	8.94	10.7	744	
6/4/08 10:19:45	2.96	8.89	10.7	744	
6/4/08 10:20:00	2.95	8.87	10.6	739	
6/4/08 10:20:15	2.97	8.84	10.4	760	
6/4/08 10:20:30	3.00	8.83	10.4	789	
6/4/08 10:20:45	3.03	8.85	10.4	794	
6/4/08 10:21:00	3.06	8.86	10.4	792	
6/4/08 10:21:15	3.09	8.87	10.3	798	
6/4/08 10:21:30	3.06	8.91	10.4	795	
6/4/08 10:21:45	3.03	8.94	10.6	774	
6/4/08 10:22:00	2.99	8.94	11.0	752	
6/4/08 10:22:15	2.98	8.92	11.3	750	
6/4/08 10:22:30	2.99	8.89	10.9	761	
6/4/08 10:22:45	3.00	8.86	10.5	778	
6/4/08 10:23:00	2.99	8.84	10.4	795	
6/4/08 10:23:15	3.03	8.81	10.4	806	
6/4/08 10:23:30	3.06	8.81	10.4	818	
6/4/08 10:23:45	3.08	8.83	10.4	828	
6/4/08 10:24:00	3.07	8.84	10.5	820	
6/4/08 10:24:15	3.05	8.87	10.7	802	
6/4/08 10:24:30	3.04	8.89	10.7	778	
6/4/08 10:24:45	3.01	8.93	10.7	762	
6/4/08 10:25:00	2.97	8.96	10.9	759	
6/4/08 10:25:15	2.96	8.94	10.8	756	
6/4/08 10:25:30	2.98	8.92	10.5	752	
6/4/08 10:25:45	2.96	8.90	10.5	761	
6/4/08 10:26:00	2.96	8.88	10.5	776	
6/4/08 10:26:15	3.00	8.85	10.5	790	
6/4/08 10:26:30	3.02	8.83	6.2	762	
6/4/08 10:26:45	2.98	8.36	12.7	495	
6/4/08 10:27:00	2.17	4.50	2.2	180	
6/4/08 10:27:15	2.75	1.18	1.5	40	
6/4/08 10:27:30	4.08	0.26	1.2	3	
6/4/08 10:27:45	4.41	0.15	1.1	0	
6/4/08 10:28:00	4.42	0.12	1.0	-1	
6/4/08 10:28:15	4.42	0.12	0.9	-1	
6/4/08 10:28:30	4.46	0.11	0.9	-1	
6/4/08 10:28:45	4.49	0.11	0.9	-1	
6/4/08 10:29:00	4.50	0.10	0.8	-2	
6/4/08 10:29:15	4.51	0.10	0.8	-1	
6/4/08 10:29:30	4.51	0.10	0.8	-1	
6/4/08 10:29:45	4.51	0.10	0.8	-1	System Bias
6/4/08 10:30:00	4.52	0.10	0.8	-1	4.52 4.50% O ₂
6/4/08 10:30:15	4.52	0.09	0.7	-1	0.09 Zero CO ₂
6/4/08 10:30:30	4.52	0.09	0.7	-1	0.7 Zero NO _x
6/4/08 10:30:45	4.52	0.09	0.7	-1	-1 Zero CO
6/4/08 10:31:00	4.52	0.09	4.0	6	
6/4/08 10:31:15	4.51	0.27	3.6	117	
6/4/08 10:31:30	4.10	2.95	0.8	146	
6/4/08 10:31:45	2.46	6.28	0.7	62	
6/4/08 10:32:00	0.58	8.43	0.7	7	
6/4/08 10:32:15	0.07	8.72	0.7	-2	
6/4/08 10:32:30	0.01	8.58	0.7	-3	
6/4/08 10:32:45	0.00	8.50	0.7	-3	
6/4/08 10:33:00	-0.01	8.58	0.6	-3	
6/4/08 10:33:15	-0.01	8.77	0.6	-3	
6/4/08 10:33:30	-0.01	8.95	0.6	-3	
6/4/08 10:33:45	-0.02	9.06	0.6	-3	
6/4/08 10:34:00	-0.02	9.12	0.6	-3	
6/4/08 10:34:15	-0.02	9.14	0.6	-3	
6/4/08 10:34:30	-0.02	9.16	0.6	-3	
6/4/08 10:34:45	-0.02	9.16	0.6	-3	
6/4/08 10:35:00	-0.02	9.17	0.6	-3	
6/4/08 10:35:15	-0.02	9.17	0.6	-3	
6/4/08 10:35:30	-0.02	9.17	0.6	-3	System Bias
6/4/08 10:35:45	-0.02	9.18	0.6	-3	
6/4/08 10:36:00	-0.02	9.18	0.6	-3	9.18 9.00% CO ₂
6/4/08 10:36:15	-0.03	9.18	0.6	-3	
6/4/08 10:36:30	-0.03	9.18	0.6	-3	
6/4/08 10:36:45	-0.03	9.18	6.0	31	
6/4/08 10:37:00	0.01	9.17	8.1	237	
6/4/08 10:37:15	1.12	9.01	1.2	540	
6/4/08 10:37:30	1.81	6.80	0.7	788	
6/4/08 10:37:45	0.67	2.55	0.6	914	

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Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 10:38:00	0.10	0.50	0.6	964	
6/4/08 10:38:15	0.01	0.19	0.6	971	
6/4/08 10:38:30	0.00	0.15	0.6	972	
6/4/08 10:38:45	0.00	0.13	0.6	972	
6/4/08 10:39:00	0.00	0.12	0.6	972	
6/4/08 10:39:15	0.00	0.12	0.6	973	
6/4/08 10:39:30	0.00	0.11	0.6	973	
6/4/08 10:39:45	0.00	0.11	0.6	971	
6/4/08 10:40:00	0.00	0.11	0.6	971	System Bias
6/4/08 10:40:15	0.00	0.10	0.6	971	
6/4/08 10:40:30	0.00	0.10	0.6	972	
6/4/08 10:40:45	0.00	0.10	0.6	973	
6/4/08 10:41:00	0.00	0.10	0.6	973	972 1,000 ppm CO
6/4/08 10:41:15	0.00	0.10	3.8	969	
6/4/08 10:41:30	0.03	0.35	12.6	866	
6/4/08 10:41:45	0.62	2.33	13.0	486	
6/4/08 10:42:00	0.50	1.38	22.0	141	
6/4/08 10:42:15	0.09	0.30	24.6	27	
6/4/08 10:42:30	0.02	0.12	26.8	3	
6/4/08 10:42:45	0.01	0.10	28.6	0	
6/4/08 10:43:00	0.01	0.09	28.4	0	
6/4/08 10:43:15	0.01	0.09	30.1	0	
6/4/08 10:43:30	0.01	0.09	46.0	0	
6/4/08 10:43:45	0.01	0.09	47.7	-1	
6/4/08 10:44:00	0.00	0.08	46.5	-1	
6/4/08 10:44:15	0.00	0.08	45.8	-1	
6/4/08 10:44:30	0.00	0.08	45.4	-1	
6/4/08 10:44:45	0.00	0.08	45.0	-1	
6/4/08 10:45:00	0.00	0.08	44.8	-1	
6/4/08 10:45:15	0.00	0.08	44.5	-1	
6/4/08 10:45:30	0.00	0.08	44.4	-1	
6/4/08 10:45:45	0.00	0.08	44.3	-1	System Bias
6/4/08 10:46:00	0.00	0.07	44.1	-1	0.00 Zero O ₂
6/4/08 10:46:15	0.00	0.07	44.1	-1	
6/4/08 10:46:30	0.00	0.07	44.0	-1	44.1 45.0 ppm NO _x
6/4/08 10:46:45	0.00	0.07	44.0	-1	
6/4/08 10:47:00	0.00	0.07	43.4	-1	
6/4/08 10:47:15	0.00	0.07	18.6	99	
6/4/08 10:47:30	0.36	1.91	11.8	406	
6/4/08 10:47:45	1.77	6.19	11.6	679	
6/4/08 10:48:00	2.66	8.49	11.6	796	
6/4/08 10:48:15	2.89	8.93	11.5	811	
6/4/08 10:48:30	2.90	9.01	11.3	822	
6/4/08 10:48:45	2.92	9.04	11.5	837	
6/4/08 10:49:00	2.94	9.05	11.4	835	
6/4/08 10:49:15	2.93	9.06	11.1	828	
6/4/08 10:49:30	2.93	9.01	11.1	834	
6/4/08 10:49:45	2.99	8.93	11.2	842	
6/4/08 10:50:00	3.02	8.90	11.2	846	Begin Stratification Check
6/4/08 10:50:15	3.02	8.87	11.3	848	
6/4/08 10:50:30	3.04	8.83	11.2	851	
6/4/08 10:50:45	3.06	8.80	10.9	862	
6/4/08 10:51:00	3.07	8.83	11.2	889	
6/4/08 10:51:15	3.08	8.91	11.3	909	
6/4/08 10:51:30	3.08	9.00	11.2	920	
6/4/08 10:51:45	3.07	9.07	11.3	916	Point #1
6/4/08 10:52:00	3.08	9.14	11.4	899	2.97 Point #1 O ₂
6/4/08 10:52:15	3.02	9.22	11.7	858	9.21 Point #1 CO ₂
6/4/08 10:52:30	2.93	9.25	11.8	805	11.7 Point #1 NO _x
6/4/08 10:52:45	2.86	9.23	11.8	759	830 Point #1 CO
6/4/08 10:53:00	2.82	9.21	11.6	736	
6/4/08 10:53:15	2.79	9.19	11.7	738	
6/4/08 10:53:30	2.81	9.14	11.8	749	
6/4/08 10:53:45	2.84	9.09	11.6	762	
6/4/08 10:54:00	2.87	9.04	11.8	778	
6/4/08 10:54:15	2.90	9.01	12.1	793	
6/4/08 10:54:30	2.92	9.01	11.8	811	
6/4/08 10:54:45	2.94	9.01	11.6	827	Point #2
6/4/08 10:55:00	2.95	9.03	11.4	829	2.94 Point #2 O ₂
6/4/08 10:55:15	2.94	9.07	11.2	837	9.08 Point #2 CO ₂
6/4/08 10:55:30	2.94	9.10	11.3	847	11.3 Point #2 NO _x
6/4/08 10:55:45	2.94	9.13	11.3	836	837 Point #2 CO
6/4/08 10:56:00	2.95	9.11	11.5	811	
6/4/08 10:56:15	2.93	9.09	11.6	789	
6/4/08 10:56:30	2.93	9.07	11.5	779	
6/4/08 10:56:45	2.93	9.04	11.3	782	
6/4/08 10:57:00	2.97	8.98	11.3	802	
6/4/08 10:57:15	3.02	8.91	11.5	822	
6/4/08 10:57:30	3.02	8.88	11.2	819	
6/4/08 10:57:45	3.01	8.92	11.4	832	Point #3
6/4/08 10:58:00	3.02	9.00	11.2	859	3.00 Point #3 O ₂
6/4/08 10:58:15	3.01	9.12	11.1	878	9.16 Point #3 CO ₂
6/4/08 10:58:30	3.00	9.21	11.4	877	11.4 Point #3 NO _x
6/4/08 10:58:45	2.98	9.29	11.6	841	863 Point #3 CO

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Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 10:59:00	2.94	9.32	11.5	788	
6/4/08 10:59:15	2.90	9.32	11.2	756	2.97 = 3-Point Average O ₂
6/4/08 10:59:30	2.88	9.28	11.2	752	9.15 = 3-Point Average CO ₂
6/4/08 10:59:45	2.86	9.23	11.0	758	11.4 = 3-Point Average NO _x
6/4/08 11:00:00	2.85	9.17	10.8	764	844 = 3-Point Average CO
6/4/08 11:00:15	2.87	9.11	10.8	786	
6/4/08 11:00:30	2.90	9.08	11.2	809	1.03 = % Difference O ₂
6/4/08 11:00:45	2.94	9.06	11.1	813	-0.72 = % Difference CO ₂
6/4/08 11:01:00	2.95	9.06	11.0	819	1.89 = % Difference NO _x
6/4/08 11:01:15	2.95	9.07	11.0	832	2.34 = % Difference CO
6/4/08 11:01:30	2.97	9.10	11.1	836	
6/4/08 11:01:45	2.96	9.15	11.3	824	
6/4/08 11:02:00	2.95	9.16	11.5	808	
6/4/08 11:02:15	2.94	9.16	11.6	796	
6/4/08 11:02:30	2.94	9.14	11.7	788	
6/4/08 11:02:45	2.95	9.12	11.3	792	
6/4/08 11:03:00	2.96	9.10	11.1	800	
6/4/08 11:03:15	2.96	9.04	11.4	815	
6/4/08 11:03:30	2.97	8.98	11.4	831	
6/4/08 11:03:45	3.01	8.96	11.1	846	
6/4/08 11:04:00	3.02	9.03	11.2	854	
6/4/08 11:04:15	3.04	9.09	11.2	862	
6/4/08 11:04:30	3.03	9.16	11.4	860	
6/4/08 11:04:45	3.00	9.23	11.2	848	
6/4/08 11:05:00	2.96	9.28	11.5	835	
6/4/08 11:05:15	2.93	9.29	11.5	812	
6/4/08 11:05:30	2.90	9.28	11.7	791	
6/4/08 11:05:45	2.88	9.28	11.6	778	
6/4/08 11:06:00	2.88	9.23	11.7	777	
6/4/08 11:06:15	2.91	9.16	11.4	786	
6/4/08 11:06:30	2.92	9.14	11.3	810	
6/4/08 11:06:45	2.93	9.12	11.5	831	
6/4/08 11:07:00	2.95	9.08	11.4	833	
6/4/08 11:07:15	2.98	9.05	11.3	846	
6/4/08 11:07:30	3.00	9.04	11.4	870	
6/4/08 11:07:45	3.00	9.04	11.3	881	
6/4/08 11:08:00	3.02	9.05	11.1	884	
6/4/08 11:08:15	3.03	9.06	11.1	889	
6/4/08 11:08:30	3.03	9.09	11.1	894	
6/4/08 11:08:45	3.01	9.14	11.2	894	
6/4/08 11:09:00	2.99	9.18	11.0	886	
6/4/08 11:09:15	2.96	9.20	11.2	873	
6/4/08 11:09:30	2.96	9.18	11.5	846	
6/4/08 11:09:45	2.94	9.16	11.6	810	
6/4/08 11:10:00	2.92	9.13	11.4	799	
6/4/08 11:10:15	2.91	9.10	11.6	811	
6/4/08 11:10:30	2.92	9.04	11.5	819	
6/4/08 11:10:45	2.96	9.00	11.2	833	
6/4/08 11:11:00	2.99	9.03	11.3	858	
6/4/08 11:11:15	3.01	9.08	11.3	883	
6/4/08 11:11:30	3.00	9.17	11.4	907	
6/4/08 11:11:45	3.00	9.24	11.4	915	
6/4/08 11:12:00	2.99	9.30	11.5	912	
6/4/08 11:12:15	2.98	9.31	11.3	901	
6/4/08 11:12:30	2.95	9.29	11.3	891	
6/4/08 11:12:45	2.92	9.26	11.5	883	
6/4/08 11:13:00	2.90	9.21	11.5	876	
6/4/08 11:13:15	2.89	9.18	11.5	880	
6/4/08 11:13:30	2.92	9.15	11.6	888	
6/4/08 11:13:45	2.94	9.12	11.3	893	
6/4/08 11:14:00	2.95	9.10	11.5	897	
6/4/08 11:14:15	2.96	9.09	11.4	902	
6/4/08 11:14:30	2.97	9.09	11.2	916	
6/4/08 11:14:45	2.97	9.12	11.4	938	
6/4/08 11:15:00	2.99	9.14	11.7	949	
6/4/08 11:15:15	3.00	9.16	11.7	956	
6/4/08 11:15:30	3.00	9.18	11.7	949	
6/4/08 11:15:45	2.97	9.20	11.6	929	
6/4/08 11:16:00	2.93	9.20	11.6	909	
6/4/08 11:16:15	2.89	9.21	11.4	896	
6/4/08 11:16:30	2.89	9.20	11.3	896	
6/4/08 11:16:45	2.90	9.17	11.3	899	
6/4/08 11:17:00	2.90	9.15	11.2	907	
6/4/08 11:17:15	2.90	9.09	11.3	912	
6/4/08 11:17:30	2.94	9.01	11.3	916	
6/4/08 11:17:45	2.99	8.99	11.3	926	
6/4/08 11:18:00	2.99	9.04	11.3	941	
6/4/08 11:18:15	2.99	9.11	11.3	947	
6/4/08 11:18:30	2.97	9.20	11.2	955	
6/4/08 11:18:45	2.97	9.27	11.2	951	
6/4/08 11:19:00	2.96	9.33	11.3	932	
6/4/08 11:19:15	2.91	9.37	11.2	900	
6/4/08 11:19:30	2.85	9.39	11.1	880	
6/4/08 11:19:45	2.82	9.36	11.2	876	

**Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data**

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 11:20:00	2.82	9.28	11.1	874	
6/4/08 11:20:15	2.84	9.23	11.0	878	
6/4/08 11:20:30	2.85	9.20	11.1	894	
6/4/08 11:20:45	2.89	9.15	11.1	919	
6/4/08 11:21:00	2.94	9.13	11.1	933	
6/4/08 11:21:15	2.94	9.14	11.0	939	
6/4/08 11:21:30	2.94	9.16	11.1	943	
6/4/08 11:21:45	2.93	9.19	11.0	937	
6/4/08 11:22:00	2.92	9.21	10.9	926	
6/4/08 11:22:15	2.93	9.21	11.0	926	
6/4/08 11:22:30	2.93	9.20	10.9	930	
6/4/08 11:22:45	2.91	9.19	11.1	936	
6/4/08 11:23:00	2.89	9.18	10.9	934	
6/4/08 11:23:15	2.93	9.14	11.4	936	
6/4/08 11:23:30	2.95	9.11	11.2	948	
6/4/08 11:23:45	2.97	9.07	11.1	967	
6/4/08 11:24:00	2.99	9.03	11.1	984	
6/4/08 11:24:15	3.02	9.01	11.1	984	
6/4/08 11:24:30	3.03	9.02	11.3	980	
6/4/08 11:24:45	3.04	9.06	11.1	964	Begin Run No. 1
6/4/08 11:25:00	2.99	9.11	11.2	952	
6/4/08 11:25:15	2.99	9.10	11.2	950	
6/4/08 11:25:30	2.96	9.11	11.2	946	
6/4/08 11:25:45	2.94	9.15	11.2	944	
6/4/08 11:26:00	2.92	9.19	11.3	942	
6/4/08 11:26:15	2.90	9.25	11.1	935	
6/4/08 11:26:30	2.88	9.31	11.1	931	
6/4/08 11:26:45	2.85	9.36	11.2	929	
6/4/08 11:27:00	2.83	9.39	11.1	917	
6/4/08 11:27:15	2.80	9.42	11.1	903	
6/4/08 11:27:30	2.78	9.42	11.2	888	
6/4/08 11:27:45	2.76	9.40	11.0	881	
6/4/08 11:28:00	2.75	9.37	11.0	881	
6/4/08 11:28:15	2.75	9.32	10.9	888	
6/4/08 11:28:30	2.76	9.30	11.1	900	
6/4/08 11:28:45	2.78	9.31	11.1	897	
6/4/08 11:29:00	2.80	9.31	11.2	900	
6/4/08 11:29:15	2.83	9.30	11.0	914	
6/4/08 11:29:30	2.87	9.27	11.2	917	
6/4/08 11:29:45	2.85	9.26	11.0	913	
6/4/08 11:30:00	2.83	9.23	11.2	912	
6/4/08 11:30:15	2.85	9.18	11.1	910	
6/4/08 11:30:30	2.85	9.16	11.0	911	
6/4/08 11:30:45	2.88	9.13	11.0	916	
6/4/08 11:31:00	2.91	9.13	11.2	936	
6/4/08 11:31:15	2.91	9.15	11.4	945	
6/4/08 11:31:30	2.90	9.20	11.5	946	
6/4/08 11:31:45	2.88	9.26	11.5	945	
6/4/08 11:32:00	2.89	9.25	11.2	936	
6/4/08 11:32:15	2.86	9.22	11.0	939	
6/4/08 11:32:30	2.86	9.15	11.0	947	
6/4/08 11:32:45	2.89	9.09	11.0	946	
6/4/08 11:33:00	2.89	9.12	11.0	962	
6/4/08 11:33:15	2.89	9.19	10.9	974	
6/4/08 11:33:30	2.90	9.25	11.0	991	
6/4/08 11:33:45	2.92	9.30	11.2	1002	
6/4/08 11:34:00	2.91	9.36	11.2	983	
6/4/08 11:34:15	2.88	9.41	11.2	959	
6/4/08 11:34:30	2.85	9.41	10.9	932	
6/4/08 11:34:45	2.81	9.40	11.0	921	
6/4/08 11:35:00	2.79	9.38	11.1	914	
6/4/08 11:35:15	2.76	9.37	11.2	909	
6/4/08 11:35:30	2.75	9.34	11.0	902	
6/4/08 11:35:45	2.77	9.29	10.9	899	
6/4/08 11:36:00	2.80	9.27	11.0	904	
6/4/08 11:36:15	2.80	9.27	11.1	920	
6/4/08 11:36:30	2.83	9.25	11.0	935	
6/4/08 11:36:45	2.85	9.22	11.0	940	
6/4/08 11:37:00	2.85	9.22	10.9	952	
6/4/08 11:37:15	2.88	9.21	10.9	967	
6/4/08 11:37:30	2.90	9.20	11.0	972	
6/4/08 11:37:45	2.88	9.23	10.8	965	
6/4/08 11:38:00	2.86	9.28	10.8	969	
6/4/08 11:38:15	2.87	9.29	10.8	974	
6/4/08 11:38:30	2.88	9.29	11.0	966	
6/4/08 11:38:45	2.86	9.28	10.7	956	
6/4/08 11:39:00	2.82	9.26	10.8	947	
6/4/08 11:39:15	2.84	9.22	10.8	940	
6/4/08 11:39:30	2.84	9.19	10.8	933	
6/4/08 11:39:45	2.87	9.15	10.9	940	
6/4/08 11:40:00	2.87	9.11	10.9	968	
6/4/08 11:40:15	2.88	9.08	11.1	990	
6/4/08 11:40:30	2.92	9.08	10.9	1006	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 11:40:45	2.93	9.13	11.0	1015	
6/4/08 11:41:00	2.93	9.22	11.1	1018	
6/4/08 11:41:15	2.90	9.34	11.1	1008	
6/4/08 11:41:30	2.86	9.44	11.0	992	
6/4/08 11:41:45	2.83	9.47	11.0	972	
6/4/08 11:42:00	2.80	9.46	11.0	939	
6/4/08 11:42:15	2.77	9.45	10.9	930	
6/4/08 11:42:30	2.74	9.41	11.0	916	
6/4/08 11:42:45	2.73	9.38	10.8	907	
6/4/08 11:43:00	2.72	9.35	10.7	913	
6/4/08 11:43:15	2.74	9.31	10.7	924	
6/4/08 11:43:30	2.78	9.28	10.8	923	
6/4/08 11:43:45	2.78	9.30	10.9	928	
6/4/08 11:44:00	2.77	9.30	11.1	943	
6/4/08 11:44:15	2.81	9.30	11.1	939	
6/4/08 11:44:30	2.80	9.34	10.9	945	
6/4/08 11:44:45	2.79	9.34	11.0	953	
6/4/08 11:45:00	2.79	9.32	10.9	962	
6/4/08 11:45:15	2.78	9.30	11.0	963	
6/4/08 11:45:30	2.78	9.27	11.1	969	
6/4/08 11:45:45	2.80	9.24	11.1	973	
6/4/08 11:46:00	2.81	9.22	11.1	974	
6/4/08 11:46:15	2.81	9.20	11.4	981	
6/4/08 11:46:30	2.84	9.17	11.3	981	
6/4/08 11:46:45	2.86	9.17	11.4	986	
6/4/08 11:47:00	2.86	9.19	11.2	994	
6/4/08 11:47:15	2.85	9.24	11.4	1006	
6/4/08 11:47:30	2.85	9.26	11.4	1016	
6/4/08 11:47:45	2.86	9.25	11.5	1014	
6/4/08 11:48:00	2.86	9.21	11.6	1009	
6/4/08 11:48:15	2.86	9.20	11.3	1008	
6/4/08 11:48:30	2.86	9.24	11.5	1018	
6/4/08 11:48:45	2.85	9.30	11.5	1022	
6/4/08 11:49:00	2.84	9.35	11.7	1018	
6/4/08 11:49:15	2.84	9.38	11.9	1005	
6/4/08 11:49:30	2.82	9.42	11.8	988	
6/4/08 11:49:45	2.79	9.47	12.0	977	
6/4/08 11:50:00	2.74	9.50	11.9	968	
6/4/08 11:50:15	2.72	9.48	11.8	954	
6/4/08 11:50:30	2.70	9.46	11.7	930	
6/4/08 11:50:45	2.69	9.44	11.7	921	
6/4/08 11:51:00	2.68	9.42	11.4	923	
6/4/08 11:51:15	2.68	9.40	11.5	929	
6/4/08 11:51:30	2.70	9.37	11.6	937	
6/4/08 11:51:45	2.71	9.35	11.6	940	
6/4/08 11:52:00	2.71	9.33	11.4	954	
6/4/08 11:52:15	2.73	9.32	11.4	970	
6/4/08 11:52:30	2.76	9.30	11.3	993	
6/4/08 11:52:45	2.79	9.27	11.4	1001	
6/4/08 11:53:00	2.79	9.25	11.5	1006	
6/4/08 11:53:15	2.79	9.23	11.4	1009	
6/4/08 11:53:30	2.79	9.25	11.5	999	
6/4/08 11:53:45	2.80	9.29	11.5	1001	
6/4/08 11:54:00	2.82	9.32	11.6	1012	
6/4/08 11:54:15	2.81	9.36	11.6	1011	
6/4/08 11:54:30	2.80	9.34	11.5	987	
6/4/08 11:54:45	2.79	9.33	11.5	979	
6/4/08 11:55:00	2.77	9.33	11.6	972	
6/4/08 11:55:15	2.76	9.30	11.6	962	
6/4/08 11:55:30	2.76	9.29	11.5	947	
6/4/08 11:55:45	2.74	9.28	11.6	948	
6/4/08 11:56:00	2.75	9.26	11.5	965	
6/4/08 11:56:15	2.77	9.26	11.4	973	
6/4/08 11:56:30	2.79	9.27	11.6	973	
6/4/08 11:56:45	2.80	9.30	11.8	973	
6/4/08 11:57:00	2.77	9.34	11.8	975	
6/4/08 11:57:15	2.77	9.36	11.8	971	
6/4/08 11:57:30	2.77	9.37	11.9	962	
6/4/08 11:57:45	2.76	9.35	11.9	955	
6/4/08 11:58:00	2.76	9.29	11.9	952	
6/4/08 11:58:15	2.77	9.25	12.0	965	
6/4/08 11:58:30	2.79	9.27	11.9	980	
6/4/08 11:58:45	2.81	9.31	11.5	990	
6/4/08 11:59:00	2.82	9.35	11.4	1013	
6/4/08 11:59:15	2.81	9.39	11.5	1024	
6/4/08 11:59:30	2.80	9.42	11.5	1021	
6/4/08 11:59:45	2.81	9.45	11.6	1014	
6/4/08 12:00:00	2.81	9.46	11.6	995	
6/4/08 12:00:15	2.78	9.47	11.5	977	
6/4/08 12:00:30	2.74	9.48	11.5	964	
6/4/08 12:00:45	2.69	9.49	11.4	940	
6/4/08 12:01:00	2.67	9.46	11.6	933	
6/4/08 12:01:15	2.68	9.40	11.6	927	
6/4/08 12:01:30	2.68	9.35	11.3	929	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 12:01:45	2.70	9.30	11.3	954	
6/4/08 12:02:00	2.73	9.25	11.3	984	
6/4/08 12:02:15	2.76	9.21	11.3	999	
6/4/08 12:02:30	2.81	9.19	11.4	1021	
6/4/08 12:02:45	2.83	9.18	11.7	1032	
6/4/08 12:03:00	2.85	9.21	11.7	1028	
6/4/08 12:03:15	2.87	9.24	11.5	1015	
6/4/08 12:03:30	2.85	9.30	11.5	1005	
6/4/08 12:03:45	2.78	9.37	11.8	1012	
6/4/08 12:04:00	2.74	9.40	11.9	1005	
6/4/08 12:04:15	2.72	9.40	12.0	984	
6/4/08 12:04:30	2.69	9.38	11.7	984	
6/4/08 12:04:45	2.68	9.36	11.5	960	
6/4/08 12:05:00	2.69	9.33	11.4	965	
6/4/08 12:05:15	2.70	9.30	11.6	973	
6/4/08 12:05:30	2.74	9.27	11.6	981	
6/4/08 12:05:45	2.78	9.26	11.6	982	
6/4/08 12:06:00	2.78	9.30	11.5	986	
6/4/08 12:06:15	2.77	9.34	11.6	989	
6/4/08 12:06:30	2.78	9.37	11.6	984	
6/4/08 12:06:45	2.76	9.40	11.6	977	
6/4/08 12:07:00	2.74	9.41	11.7	981	
6/4/08 12:07:15	2.75	9.40	11.7	981	
6/4/08 12:07:30	2.75	9.37	11.8	973	
6/4/08 12:07:45	2.73	9.36	11.9	963	
6/4/08 12:08:00	2.72	9.34	11.9	947	
6/4/08 12:08:15	2.75	9.31	11.8	937	
6/4/08 12:08:30	2.75	9.31	11.9	937	
6/4/08 12:08:45	2.73	9.32	11.8	937	
6/4/08 12:09:00	2.72	9.33	11.6	942	
6/4/08 12:09:15	2.74	9.31	11.4	965	
6/4/08 12:09:30	2.77	9.30	11.5	993	
6/4/08 12:09:45	2.79	9.32	11.6	999	
6/4/08 12:10:00	2.79	9.40	11.9	993	
6/4/08 12:10:15	2.78	9.47	11.8	987	
6/4/08 12:10:30	2.78	9.51	11.6	980	
6/4/08 12:10:45	2.76	9.53	11.6	978	
6/4/08 12:11:00	2.71	9.55	11.8	976	
6/4/08 12:11:15	2.67	9.55	12.0	959	
6/4/08 12:11:30	2.65	9.54	12.1	912	
6/4/08 12:11:45	2.83	9.50	11.9	893	
6/4/08 12:12:00	2.60	9.49	11.7	901	
6/4/08 12:12:15	2.60	9.45	11.8	918	
6/4/08 12:12:30	2.63	9.42	11.6	927	
6/4/08 12:12:45	2.65	9.43	11.9	925	
6/4/08 12:13:00	2.65	9.44	11.5	925	
6/4/08 12:13:15	2.67	9.44	11.6	934	
6/4/08 12:13:30	2.68	9.42	11.8	937	
6/4/08 12:13:45	2.71	9.38	11.6	935	
6/4/08 12:14:00	2.72	9.35	11.3	956	
6/4/08 12:14:15	2.75	9.31	11.7	979	
6/4/08 12:14:30	2.78	9.27	11.5	996	
6/4/08 12:14:45	2.77	9.25	11.4	1009	
6/4/08 12:15:00	2.79	9.23	11.4	1028	
6/4/08 12:15:15	2.83	9.20	11.7	1031	
6/4/08 12:15:30	2.85	9.23	11.8	1028	
6/4/08 12:15:45	2.82	9.30	11.9	1029	
6/4/08 12:16:00	2.83	9.35	12.0	1023	
6/4/08 12:16:15	2.82	9.40	11.7	1027	
6/4/08 12:16:30	2.79	9.45	11.7	1026	
6/4/08 12:16:45	2.74	9.49	11.8	1016	
6/4/08 12:17:00	2.70	9.50	11.9	978	
6/4/08 12:17:15	2.68	9.48	11.9	950	
6/4/08 12:17:30	2.68	9.44	11.5	939	
6/4/08 12:17:45	2.68	9.40	11.5	949	
6/4/08 12:18:00	2.70	9.34	11.7	954	
6/4/08 12:18:15	2.73	9.29	11.5	956	
6/4/08 12:18:30	2.73	9.28	11.7	964	
6/4/08 12:18:45	2.76	9.32	11.7	972	
6/4/08 12:19:00	2.73	9.43	11.8	984	
6/4/08 12:19:15	2.71	9.56	11.6	989	
6/4/08 12:19:30	2.68	9.68	11.9	983	
6/4/08 12:19:45	2.65	9.71	12.0	954	
6/4/08 12:20:00	2.61	9.70	11.9	908	
6/4/08 12:20:15	2.57	9.69	12.0	898	
6/4/08 12:20:30	2.58	9.66	11.9	893	
6/4/08 12:20:45	2.56	9.61	11.9	891	
6/4/08 12:21:00	2.58	9.57	11.8	894	
6/4/08 12:21:15	2.59	9.54	11.8	901	
6/4/08 12:21:30	2.62	9.50	11.8	922	
6/4/08 12:21:45	2.84	9.50	11.8	935	
6/4/08 12:22:00	2.66	9.49	11.6	950	
6/4/08 12:22:15	2.69	9.46	11.9	955	
6/4/08 12:22:30	2.70	9.48	11.9	956	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 12:22:45	2.71	9.46	11.7	962	
6/4/08 12:23:00	2.71	9.46	11.9	978	
6/4/08 12:23:15	2.71	9.45	11.9	982	
6/4/08 12:23:30	2.70	9.43	11.8	986	
6/4/08 12:23:45	2.71	9.41	11.8	1001	
6/4/08 12:24:00	2.71	9.39	11.7	1005	
6/4/08 12:24:15	2.73	9.36	11.8	1002	
6/4/08 12:24:30	2.74	9.33	12.0	1010	
6/4/08 12:24:45	2.76	9.32	12.1	1019	
6/4/08 12:25:00	2.76	9.33	12.1	1027	
6/4/08 12:25:15	2.76	9.36	12.0	1029	
6/4/08 12:25:30	2.76	9.41	12.0	1033	
6/4/08 12:25:45	2.75	9.46	12.0	1037	
6/4/08 12:26:00	2.77	9.48	11.9	1018	
6/4/08 12:26:15	2.76	9.49	11.9	1002	
6/4/08 12:26:30	2.74	9.48	11.8	997	
6/4/08 12:26:45	2.71	9.47	12.0	1003	
6/4/08 12:27:00	2.70	9.45	14.9	1005	
6/4/08 12:27:15	2.67	9.45	12.3	999	
6/4/08 12:27:30	2.64	9.46	12.2	978	
6/4/08 12:27:45	2.67	9.47	12.0	967	
6/4/08 12:28:00	2.67	9.48	12.1	969	
6/4/08 12:28:15	2.68	9.47	12.0	968	
6/4/08 12:28:30	2.71	9.43	12.0	973	
6/4/08 12:28:45	2.70	9.43	12.0	987	
6/4/08 12:29:00	2.70	9.46	12.1	999	
6/4/08 12:29:15	2.69	9.51	12.1	1002	
6/4/08 12:29:30	2.71	9.56	11.6	1006	
6/4/08 12:29:45	2.72	9.60	11.6	1003	
6/4/08 12:30:00	2.72	9.63	11.7	999	
6/4/08 12:30:15	2.70	9.64	11.6	990	
6/4/08 12:30:30	2.68	9.63	11.7	970	
6/4/08 12:30:45	2.64	9.62	11.9	949	
6/4/08 12:31:00	2.61	9.62	11.7	930	
6/4/08 12:31:15	2.59	9.63	11.7	932	
6/4/08 12:31:30	2.58	9.63	11.9	933	
6/4/08 12:31:45	2.56	9.63	11.9	925	
6/4/08 12:32:00	2.55	9.62	12.5	915	
6/4/08 12:32:15	2.53	9.59	12.1	911	
6/4/08 12:32:30	2.54	9.55	11.9	918	
6/4/08 12:32:45	2.59	9.49	11.9	936	
6/4/08 12:33:00	2.62	9.44	11.8	973	
6/4/08 12:33:15	2.67	9.38	11.9	990	
6/4/08 12:33:30	2.69	9.33	11.7	1008	
6/4/08 12:33:45	2.72	9.29	11.8	1025	
6/4/08 12:34:00	2.76	9.28	11.6	1040	
6/4/08 12:34:15	2.78	9.31	11.8	1049	
6/4/08 12:34:30	2.79	9.36	12.0	1060	
6/4/08 12:34:45	2.77	9.41	13.1	1063	
6/4/08 12:35:00	2.75	9.46	13.6	1060	
6/4/08 12:35:15	2.71	9.50	12.1	1057	
6/4/08 12:35:30	2.68	9.51	12.0	1045	
6/4/08 12:35:45	2.68	9.49	12.2	1034	
6/4/08 12:36:00	2.68	9.47	12.2	1023	
6/4/08 12:36:15	2.67	9.44	12.2	1015	
6/4/08 12:36:30	2.67	9.44	12.0	1015	
6/4/08 12:36:45	2.66	9.44	12.1	1017	
6/4/08 12:37:00	2.68	9.46	12.2	1016	
6/4/08 12:37:15	2.67	9.47	12.1	1016	
6/4/08 12:37:30	2.68	9.44	11.9	1015	
6/4/08 12:37:45	2.68	9.43	11.8	1016	
6/4/08 12:38:00	2.68	9.47	11.9	1013	
6/4/08 12:38:15	2.66	9.55	11.8	1010	
6/4/08 12:38:30	2.64	9.63	11.9	1006	
6/4/08 12:38:45	2.62	9.67	12.3	998	
6/4/08 12:39:00	2.59	9.69	12.2	975	
6/4/08 12:39:15	2.53	9.73	11.9	958	
6/4/08 12:39:30	2.48	9.74	12.0	930	
6/4/08 12:39:45	2.45	9.72	12.0	919	
6/4/08 12:40:00	2.44	9.67	11.8	919	
6/4/08 12:40:15	2.47	9.65	11.6	926	
6/4/08 12:40:30	2.50	9.64	11.8	950	
6/4/08 12:40:45	2.53	9.64	12.1	956	
6/4/08 12:41:00	2.55	9.63	12.1	948	
6/4/08 12:41:15	2.55	9.59	12.2	946	
6/4/08 12:41:30	2.56	9.56	12.1	947	
6/4/08 12:41:45	2.57	9.52	12.0	950	
6/4/08 12:42:00	2.58	9.49	11.6	968	
6/4/08 12:42:15	2.60	9.46	11.7	965	
6/4/08 12:42:30	2.63	9.42	11.9	1006	
6/4/08 12:42:45	2.66	9.40	11.9	1016	
6/4/08 12:43:00	2.67	9.40	12.0	1023	
6/4/08 12:43:15	2.67	9.41	11.7	1028	
6/4/08 12:43:30	2.65	9.45	11.8	1039	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 12:43:45	2.65	9.49	11.8	1034	
6/4/08 12:44:00	2.63	9.51	12.1	1017	
6/4/08 12:44:15	2.60	9.52	11.9	1012	
6/4/08 12:44:30	2.59	9.51	11.9	1013	
6/4/08 12:44:45	2.58	9.48	12.2	1013	
6/4/08 12:45:00	2.58	9.46	12.2	998	
6/4/08 12:45:15	2.56	9.45	12.2	985	
6/4/08 12:45:30	2.56	9.43	12.2	987	
6/4/08 12:45:45	2.58	9.44	12.2	1000	
6/4/08 12:46:00	2.60	9.48	12.1	1009	
6/4/08 12:46:15	2.60	9.51	12.2	1009	
6/4/08 12:46:30	2.58	9.57	12.2	1006	
6/4/08 12:46:45	2.57	9.59	12.2	1002	
6/4/08 12:47:00	2.57	9.57	12.1	992	
6/4/08 12:47:15	2.54	9.56	12.0	994	
6/4/08 12:47:30	2.54	9.52	12.1	997	
6/4/08 12:47:45	2.56	9.48	11.8	998	
6/4/08 12:48:00	2.57	9.46	12.0	1007	
6/4/08 12:48:15	2.58	9.48	12.0	1011	
6/4/08 12:48:30	2.58	9.50	12.0	1023	
6/4/08 12:48:45	2.59	9.50	12.1	1031	
6/4/08 12:49:00	2.59	9.49	12.2	1029	
6/4/08 12:49:15	2.57	9.51	12.2	1022	
6/4/08 12:49:30	2.56	9.52	12.2	1020	
6/4/08 12:49:45	2.57	9.48	11.8	1034	
6/4/08 12:50:00	2.61	9.42	11.7	1053	
6/4/08 12:50:15	2.64	9.41	12.1	1061	
6/4/08 12:50:30	2.63	9.46	11.8	1076	
6/4/08 12:50:45	2.64	9.52	12.0	1091	
6/4/08 12:51:00	2.66	9.54	12.0	1097	
6/4/08 12:51:15	2.66	9.56	11.9	1084	
6/4/08 12:51:30	2.63	9.60	11.8	1081	
6/4/08 12:51:45	2.60	9.63	11.6	1082	
6/4/08 12:52:00	2.55	9.65	11.5	1067	
6/4/08 12:52:15	2.52	9.66	11.7	1051	
6/4/08 12:52:30	2.47	9.68	11.9	1025	
6/4/08 12:52:45	2.40	9.69	12.2	1011	
6/4/08 12:53:00	2.39	9.63	11.8	990	
6/4/08 12:53:15	2.41	9.55	11.6	993	
6/4/08 12:53:30	2.44	9.49	11.8	1018	
6/4/08 12:53:45	2.50	9.44	12.1	1035	
6/4/08 12:54:00	2.58	9.37	11.9	1061	
6/4/08 12:54:15	2.62	9.34	11.8	1082	
6/4/08 12:54:30	2.64	9.34	11.9	1102	
6/4/08 12:54:45	2.65	9.40	12.0	1108	
6/4/08 12:55:00	2.65	9.46	12.0	1116	
6/4/08 12:55:15	2.63	9.53	12.1	1113	
6/4/08 12:55:30	2.60	9.57	11.9	1095	
6/4/08 12:55:45	2.58	9.59	12.0	1087	
6/4/08 12:56:00	2.55	9.59	11.9	1076	
6/4/08 12:56:15	2.52	9.57	12.0	1073	
6/4/08 12:56:30	2.49	9.53	12.0	1070	
6/4/08 12:56:45	2.48	9.51	11.8	1066	
6/4/08 12:57:00	2.49	9.48	12.2	1067	
6/4/08 12:57:15	2.52	9.47	12.0	1070	
6/4/08 12:57:30	2.54	9.48	12.0	1076	
6/4/08 12:57:45	2.55	9.51	11.7	1086	
6/4/08 12:58:00	2.55	9.53	11.8	1103	
6/4/08 12:58:15	2.56	9.55	11.7	1104	
6/4/08 12:58:30	2.57	9.57	12.1	1091	
6/4/08 12:58:45	2.55	9.58	12.0	1077	
6/4/08 12:59:00	2.52	9.57	12.0	1060	
6/4/08 12:59:15	2.51	9.51	12.0	1054	
6/4/08 12:59:30	2.53	9.42	12.0	1048	
6/4/08 12:59:45	2.53	9.38	11.8	1053	
6/4/08 13:00:00	2.55	9.41	11.9	1070	
6/4/08 13:00:15	2.55	9.49	12.0	1079	
6/4/08 13:00:30	2.54	9.58	12.3	1075	
6/4/08 13:00:45	2.52	9.69	12.3	1059	
6/4/08 13:01:00	2.48	9.80	12.6	1034	
6/4/08 13:01:15	2.43	9.86	12.3	1013	
6/4/08 13:01:30	2.40	9.84	13.0	972	
6/4/08 13:01:45	2.34	9.80	13.0	960	
6/4/08 13:02:00	2.30	9.74	12.3	954	
6/4/08 13:02:15	2.31	9.68	12.2	952	
6/4/08 13:02:30	2.35	9.62	12.1	956	
6/4/08 13:02:45	2.38	9.58	12.2	958	
6/4/08 13:03:00	2.42	9.58	12.2	966	
6/4/08 13:03:15	2.43	9.58	12.2	976	
6/4/08 13:03:30	2.43	9.59	12.0	980	
6/4/08 13:03:45	2.43	9.61	11.6	981	
6/4/08 13:04:00	2.42	9.62	11.7	992	
6/4/08 13:04:15	2.46	9.58	11.8	998	
6/4/08 13:04:30	2.47	9.57	11.9	1001	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 13:04:45	2.47	9.55	11.8	1001	
6/4/08 13:05:00	2.48	9.53	11.8	1005	
6/4/08 13:05:15	2.48	9.51	11.9	1015	
6/4/08 13:05:30	2.51	9.48	11.6	1032	
6/4/08 13:05:45	2.54	9.43	11.8	1045	
6/4/08 13:06:00	2.57	9.40	11.8	1056	
6/4/08 13:06:15	2.59	9.40	11.9	1059	
6/4/08 13:06:30	2.59	9.43	11.7	1074	
6/4/08 13:06:45	2.58	9.48	11.8	1091	
6/4/08 13:07:00	2.57	9.52	11.7	1092	
6/4/08 13:07:15	2.55	9.54	11.8	1089	
6/4/08 13:07:30	2.53	9.55	11.8	1088	
6/4/08 13:07:45	2.52	9.54	11.6	1078	
6/4/08 13:08:00	2.50	9.49	12.0	1067	
6/4/08 13:08:15	2.50	9.41	11.8	1067	
6/4/08 13:08:30	2.53	9.38	11.8	1079	
6/4/08 13:08:45	2.54	9.40	11.8	1094	
6/4/08 13:09:00	2.56	9.47	11.6	1116	
6/4/08 13:09:15	2.59	9.54	11.7	1135	
6/4/08 13:09:30	2.58	9.64	11.9	1135	
6/4/08 13:09:45	2.55	9.72	11.7	1123	
6/4/08 13:10:00	2.52	9.78	11.6	1096	
6/4/08 13:10:15	2.47	9.80	11.7	1065	
6/4/08 13:10:30	2.41	9.78	12.0	1018	
6/4/08 13:10:45	2.36	9.75	11.8	995	
6/4/08 13:11:00	2.36	9.71	11.8	977	
6/4/08 13:11:15	2.36	9.68	11.9	981	
6/4/08 13:11:30	2.38	9.67	11.9	995	
6/4/08 13:11:45	2.42	9.63	11.9	1006	
6/4/08 13:12:00	2.49	9.58	11.6	1030	
6/4/08 13:12:15	2.53	9.57	11.6	1054	
6/4/08 13:12:30	2.55	9.60	11.9	1073	
6/4/08 13:12:45	2.56	9.61	11.8	1071	
6/4/08 13:13:00	2.56	9.61	11.8	1068	
6/4/08 13:13:15	2.56	9.60	11.9	1068	
6/4/08 13:13:30	2.55	9.59	11.8	1068	
6/4/08 13:13:45	2.53	9.54	11.4	1064	
6/4/08 13:14:00	2.53	9.49	11.6	1078	
6/4/08 13:14:15	2.55	9.44	11.8	1091	
6/4/08 13:14:30	2.57	9.41	11.7	1109	
6/4/08 13:14:45	2.59	9.40	12.0	1118	
6/4/08 13:15:00	2.60	9.42	12.0	1124	
6/4/08 13:15:15	2.61	9.45	12.0	1125	
6/4/08 13:15:30	2.61	9.50	11.8	1114	
6/4/08 13:15:45	2.58	9.56	12.0	1110	
6/4/08 13:16:00	2.58	9.57	11.8	1101	
6/4/08 13:16:15	2.56	9.56	11.6	1091	
6/4/08 13:16:30	2.55	9.53	12.0	1082	
6/4/08 13:16:45	2.52	9.51	11.9	1076	
6/4/08 13:17:00	2.51	9.50	11.6	1087	
6/4/08 13:17:15	2.52	9.49	11.7	1102	
6/4/08 13:17:30	2.54	9.49	12.0	1116	
6/4/08 13:17:45	2.55	9.50	12.1	1117	
6/4/08 13:18:00	2.55	9.55	11.9	1106	
6/4/08 13:18:15	2.53	9.60	12.0	1102	
6/4/08 13:18:30	2.54	9.64	12.2	1101	
6/4/08 13:18:45	2.53	9.66	12.2	1092	
6/4/08 13:19:00	2.50	9.66	12.1	1069	
6/4/08 13:19:15	2.48	9.64	12.1	1050	
6/4/08 13:19:30	2.47	9.62	12.1	1053	
6/4/08 13:19:45	2.46	9.61	12.0	1072	
6/4/08 13:20:00	2.45	9.60	12.0	1068	
6/4/08 13:20:15	2.47	9.59	11.8	1067	
6/4/08 13:20:30	2.50	9.59	11.9	1074	
6/4/08 13:20:45	2.50	9.60	11.6	1076	
6/4/08 13:21:00	2.50	9.60	11.9	1084	
6/4/08 13:21:15	2.50	9.56	12.0	1087	
6/4/08 13:21:30	2.53	9.49	11.9	1097	
6/4/08 13:21:45	2.58	9.46	11.6	1114	
6/4/08 13:22:00	2.60	9.49	11.5	1137	
6/4/08 13:22:15	2.61	9.55	11.5	1155	
6/4/08 13:22:30	2.61	9.61	11.9	1156	
6/4/08 13:22:45	2.60	9.65	11.8	1141	
6/4/08 13:23:00	2.58	9.68	12.0	1120	
6/4/08 13:23:15	2.55	9.72	12.1	1093	
6/4/08 13:23:30	2.50	9.77	12.2	1071	
6/4/08 13:23:45	2.46	9.78	12.2	1043	
6/4/08 13:24:00	2.42	9.79	12.2	1021	
6/4/08 13:24:15	2.38	9.79	12.1	993	
6/4/08 13:24:30	2.36	9.79	12.2	981	
6/4/08 13:24:45	2.38	9.75	12.2	988	
6/4/08 13:25:00	2.40	9.70	12.1	987	
6/4/08 13:25:15	2.41	9.67	12.1	988	
6/4/08 13:25:30	2.43	9.63	12.0	1004	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 13:25:45	2.49	9.57	10.9	998	
6/4/08 13:26:00	2.65	9.44	12.0	969	
6/4/08 13:26:15	3.59	9.03	12.1	998	
6/4/08 13:26:30	2.98	9.46	12.1	1041	
6/4/08 13:26:45	2.59	9.67	12.1	1051	
6/4/08 13:27:00	2.51	9.72	12.1	1043	
6/4/08 13:27:15	2.47	9.74	12.1	1022	
6/4/08 13:27:30	2.44	9.75	12.2	992	
6/4/08 13:27:45	2.42	9.72	12.0	981	
6/4/08 13:28:00	2.42	9.69	11.9	986	
6/4/08 13:28:15	2.44	9.64	11.9	1004	
6/4/08 13:28:30	2.46	9.61	11.5	1021	
6/4/08 13:28:45	2.49	9.59	11.8	1049	
6/4/08 13:29:00	2.53	9.58	11.6	1057	
6/4/08 13:29:15	2.55	9.61	11.7	1066	
6/4/08 13:29:30	2.54	9.65	11.9	1076	
6/4/08 13:29:45	2.54	9.68	12.0	1086	
6/4/08 13:30:00	2.50	9.71	11.9	1060	
6/4/08 13:30:15	2.49	9.71	11.6	1058	
6/4/08 13:30:30	2.47	9.70	11.5	1055	
6/4/08 13:30:45	2.48	9.66	11.4	1058	
6/4/08 13:31:00	2.50	9.63	11.8	1067	
6/4/08 13:31:15	2.51	9.58	12.0	1067	
6/4/08 13:31:30	2.52	9.55	11.9	1066	
6/4/08 13:31:45	2.52	9.55	12.0	1074	
6/4/08 13:32:00	2.55	9.58	12.0	1074	
6/4/08 13:32:15	2.55	9.63	12.0	1069	
6/4/08 13:32:30	2.53	9.69	12.0	1065	
6/4/08 13:32:45	2.50	9.72	12.0	1056	
6/4/08 13:33:00	2.46	9.71	12.0	1040	
6/4/08 13:33:15	2.44	9.65	12.0	1028	
6/4/08 13:33:30	2.45	9.57	11.9	1030	
6/4/08 13:33:45	2.48	9.52	11.8	1053	
6/4/08 13:34:00	2.53	9.53	11.7	1091	
6/4/08 13:34:15	2.57	9.59	11.9	1121	
6/4/08 13:34:30	2.56	9.67	12.0	1111	
6/4/08 13:34:45	2.53	9.76	12.1	1087	
6/4/08 13:35:00	2.48	9.86	12.1	1047	
6/4/08 13:35:15	2.43	9.91	12.0	1015	
6/4/08 13:35:30	2.40	9.89	12.1	1000	
6/4/08 13:35:45	2.38	9.86	12.2	991	
6/4/08 13:36:00	2.39	9.81	12.0	987	
6/4/08 13:36:15	2.41	9.75	12.1	989	
6/4/08 13:36:30	2.46	9.69	12.2	998	
6/4/08 13:36:45	2.49	9.65	12.1	1017	
6/4/08 13:37:00	2.53	9.62	12.1	1037	
6/4/08 13:37:15	2.55	9.62	11.9	1058	
6/4/08 13:37:30	2.59	9.62	11.8	1075	
6/4/08 13:37:45	2.61	9.63	11.8	1082	
6/4/08 13:38:00	2.60	9.66	12.0	1083	
6/4/08 13:38:15	2.57	9.67	12.0	1074	
6/4/08 13:38:30	2.54	9.66	12.0	1053	
6/4/08 13:38:45	2.53	9.62	11.9	1057	
6/4/08 13:39:00	2.53	9.58	11.9	1070	
6/4/08 13:39:15	2.56	9.54	11.9	1079	
6/4/08 13:39:30	2.57	9.52	11.9	1095	
6/4/08 13:39:45	2.60	9.50	11.8	1111	
6/4/08 13:40:00	2.63	9.51	11.9	1126	
6/4/08 13:40:15	2.64	9.54	12.0	1129	
6/4/08 13:40:30	2.62	9.59	11.9	1122	
6/4/08 13:40:45	2.59	9.64	11.8	1113	
6/4/08 13:41:00	2.55	9.68	11.3	1106	
6/4/08 13:41:15	2.53	9.71	11.5	1110	
6/4/08 13:41:30	2.51	9.69	11.9	1105	
6/4/08 13:41:45	2.50	9.63	12.0	1088	
6/4/08 13:42:00	2.50	9.64	12.1	1077	
6/4/08 13:42:15	2.53	9.48	12.0	1092	
6/4/08 13:42:30	2.56	9.51	11.7	1123	
6/4/08 13:42:45	2.58	9.58	11.8	1154	
6/4/08 13:43:00	2.60	9.66	12.0	1165	
6/4/08 13:43:15	2.59	9.75	12.0	1144	
6/4/08 13:43:30	2.57	9.83	11.7	1118	
6/4/08 13:43:45	2.54	9.89	11.5	1101	
6/4/08 13:44:00	2.48	9.91	11.5	1083	
6/4/08 13:44:15	2.45	9.90	11.6	1059	
6/4/08 13:44:30	2.43	9.86	11.2	1049	
6/4/08 13:44:45	2.45	9.80	11.1	1060	
6/4/08 13:45:00	2.53	9.73	11.4	1079	
6/4/08 13:45:15	2.58	9.66	11.4	1090	
6/4/08 13:45:30	2.63	9.62	11.6	1101	
6/4/08 13:45:45	2.66	9.60	11.6	1115	
6/4/08 13:46:00	2.68	9.61	11.5	1132	
6/4/08 13:46:15	2.68	9.64	11.8	1145	
6/4/08 13:46:30	2.67	9.67	11.7	1153	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 13:46:45	2.68	9.66	11.8	1145	
6/4/08 13:47:00	2.65	9.68	12.0	1136	
6/4/08 13:47:15	2.61	9.70	12.0	1134	
6/4/08 13:47:30	2.59	9.68	12.1	1127	
6/4/08 13:47:45	2.59	9.64	12.0	1119	
6/4/08 13:48:00	2.59	9.60	12.1	1119	
6/4/08 13:48:15	2.59	9.58	12.1	1120	
6/4/08 13:48:30	2.60	9.57	12.1	1125	
6/4/08 13:48:45	2.61	9.58	12.1	1136	
6/4/08 13:49:00	2.62	9.60	12.1	1142	
6/4/08 13:49:15	2.62	9.63	12.0	1137	
6/4/08 13:49:30	2.62	9.68	12.1	1143	
6/4/08 13:49:45	2.62	9.71	12.1	1150	
6/4/08 13:50:00	2.61	9.72	12.1	1142	
6/4/08 13:50:15	2.60	9.72	12.0	1131	
6/4/08 13:50:30	2.58	9.70	11.9	1131	
6/4/08 13:50:45	2.58	9.67	11.7	1138	
6/4/08 13:51:00	2.59	9.64	11.7	1135	
6/4/08 13:51:15	2.60	9.62	11.6	1133	
6/4/08 13:51:30	2.61	9.64	11.6	1143	
6/4/08 13:51:45	2.61	9.68	11.4	1158	
6/4/08 13:52:00	2.60	9.72	11.6	1171	
6/4/08 13:52:15	2.61	9.77	11.8	1165	
6/4/08 13:52:30	2.59	9.82	11.6	1143	
6/4/08 13:52:45	2.56	9.83	11.9	1133	
6/4/08 13:53:00	2.55	9.80	11.5	1120	Change of Ports
6/4/08 13:53:15	2.55	9.77	11.9	1114	
6/4/08 13:53:30	2.54	9.75	10.9	1110	
6/4/08 13:53:45	2.54	9.75	2.0	981	
6/4/08 13:54:00	4.16	8.44	0.7	513	
6/4/08 13:54:15	13.72	3.16	0.6	130	
6/4/08 13:54:30	19.43	0.62	0.6	16	
6/4/08 13:54:45	20.33	0.27	0.6	2	
6/4/08 13:55:00	20.44	0.22	0.6	1	
6/4/08 13:55:15	20.47	0.19	0.6	0	
6/4/08 13:55:30	20.48	0.19	0.5	0	
6/4/08 13:55:45	20.48	0.16	0.5	0	
6/4/08 13:56:00	20.49	0.18	0.5	0	
6/4/08 13:56:15	20.50	0.17	3.8	0	
6/4/08 13:56:30	20.46	0.24	11.6	234	
6/4/08 13:56:45	16.16	3.37	11.4	727	
6/4/08 13:57:00	6.75	7.97	11.5	1050	
6/4/08 13:57:15	3.24	9.28	11.5	1145	
6/4/08 13:57:30	2.78	9.45	11.8	1164	
6/4/08 13:57:45	2.74	9.52	11.8	1178	
6/4/08 13:58:00	2.75	9.61	11.3	1184	
6/4/08 13:58:15	2.72	9.72	11.4	1186	
6/4/08 13:58:30	2.69	9.82	12.0	1181	Resume Sampling
6/4/08 13:58:45	2.64	9.89	12.1	1147	
6/4/08 13:59:00	2.57	9.93	12.2	1114	
6/4/08 13:59:15	2.54	9.90	12.4	1088	
6/4/08 13:59:30	2.50	9.87	12.5	1046	
6/4/08 13:59:45	2.46	9.85	12.4	1017	
6/4/08 14:00:00	2.44	9.86	12.3	1018	
6/4/08 14:00:15	2.46	9.85	12.3	1028	
6/4/08 14:00:30	2.48	9.85	12.3	1033	
6/4/08 14:00:45	2.48	9.85	12.2	1036	
6/4/08 14:01:00	2.50	9.82	12.2	1046	
6/4/08 14:01:15	2.53	9.79	12.1	1054	
6/4/08 14:01:30	2.54	9.75	12.1	1058	
6/4/08 14:01:45	2.56	9.89	12.1	1077	
6/4/08 14:02:00	2.60	9.64	11.9	1089	
6/4/08 14:02:15	2.63	9.60	11.9	1101	
6/4/08 14:02:30	2.66	9.57	12.0	1119	
6/4/08 14:02:45	2.67	9.59	12.1	1128	
6/4/08 14:03:00	2.66	9.64	12.2	1133	
6/4/08 14:03:15	2.64	9.69	12.3	1129	
6/4/08 14:03:30	2.62	9.75	12.3	1112	
6/4/08 14:03:45	2.59	9.79	11.8	1096	
6/4/08 14:04:00	2.58	9.80	11.9	1092	
6/4/08 14:04:15	2.56	9.80	12.0	1090	
6/4/08 14:04:30	2.54	9.80	12.2	1085	
6/4/08 14:04:45	2.54	9.77	12.3	1069	
6/4/08 14:05:00	2.51	9.76	12.2	1050	
6/4/08 14:05:15	2.51	9.74	11.9	1037	
6/4/08 14:05:30	2.52	9.74	12.1	1045	
6/4/08 14:05:45	2.52	9.77	11.9	1053	
6/4/08 14:06:00	2.52	9.80	11.9	1062	
6/4/08 14:06:15	2.52	9.82	12.0	1073	
6/4/08 14:06:30	2.53	9.81	12.2	1073	
6/4/08 14:06:45	2.54	9.79	12.1	1058	
6/4/08 14:07:00	2.56	9.76	12.0	1050	
6/4/08 14:07:15	2.55	9.73	11.6	1058	
6/4/08 14:07:30	2.57	9.68	11.8	1075	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 14:07:45	2.60	9.64	11.8	1082	
6/4/08 14:08:00	2.61	9.63	11.8	1095	
6/4/08 14:08:15	2.63	9.64	12.1	1105	
6/4/08 14:08:30	2.64	9.68	12.2	1103	
6/4/08 14:08:45	2.65	9.73	12.2	1108	
6/4/08 14:09:00	2.64	9.79	12.3	1122	
6/4/08 14:09:15	2.64	9.82	12.2	1115	
6/4/08 14:09:30	2.61	9.83	12.0	1108	
6/4/08 14:09:45	2.60	9.81	12.2	1098	
6/4/08 14:10:00	2.60	9.79	11.9	1080	
6/4/08 14:10:15	2.58	9.76	11.9	1075	
6/4/08 14:10:30	2.60	9.72	12.0	1071	
6/4/08 14:10:45	2.60	9.70	11.6	1079	
6/4/08 14:11:00	2.59	9.68	11.8	1088	
6/4/08 14:11:15	2.62	9.66	11.8	1090	
6/4/08 14:11:30	2.64	9.68	11.9	1096	
6/4/08 14:11:45	2.66	9.69	12.0	1106	
6/4/08 14:12:00	2.68	9.68	12.1	1117	
6/4/08 14:12:15	2.69	9.63	12.0	1126	
6/4/08 14:12:30	2.69	9.61	12.1	1126	
6/4/08 14:12:45	2.70	9.62	12.0	1128	
6/4/08 14:13:00	2.71	9.65	12.0	1134	
6/4/08 14:13:15	2.72	9.69	12.1	1137	
6/4/08 14:13:30	2.72	9.76	11.8	1128	
6/4/08 14:13:45	2.70	9.84	11.9	1125	
6/4/08 14:14:00	2.68	9.89	12.0	1110	
6/4/08 14:14:15	2.65	9.90	12.2	1085	
6/4/08 14:14:30	2.61	9.89	12.3	1046	
6/4/08 14:14:45	2.57	9.89	12.4	1012	
6/4/08 14:15:00	2.54	9.89	12.3	1005	
6/4/08 14:15:15	2.53	9.86	12.2	1005	
6/4/08 14:15:30	2.56	9.80	12.2	1013	
6/4/08 14:15:45	2.59	9.75	12.2	1033	
6/4/08 14:16:00	2.63	9.71	12.2	1039	
6/4/08 14:16:15	2.64	9.70	12.1	1041	
6/4/08 14:16:30	2.66	9.70	12.2	1064	
6/4/08 14:16:45	2.69	9.71	12.2	1087	
6/4/08 14:17:00	2.72	9.72	12.3	1096	
6/4/08 14:17:15	2.72	9.74	12.4	1091	
6/4/08 14:17:30	2.71	9.77	12.4	1084	
6/4/08 14:17:45	2.71	9.77	12.4	1087	
6/4/08 14:18:00	2.71	9.77	12.4	1084	
6/4/08 14:18:15	2.69	9.74	12.4	1069	
6/4/08 14:18:30	2.67	9.71	12.4	1066	
6/4/08 14:18:45	2.65	9.66	12.4	1066	
6/4/08 14:19:00	2.67	9.63	12.4	1069	
6/4/08 14:19:15	2.69	9.63	12.3	1090	
6/4/08 14:19:30	2.72	9.67	12.4	1112	
6/4/08 14:19:45	2.74	9.72	12.4	1131	
6/4/08 14:20:00	2.77	9.75	12.3	1150	
6/4/08 14:20:15	2.79	9.77	11.9	1162	
6/4/08 14:20:30	2.80	9.77	11.9	1157	
6/4/08 14:20:45	2.80	9.74	12.0	1144	
6/4/08 14:21:00	2.78	9.72	12.4	1118	
6/4/08 14:21:15	2.73	9.71	12.5	1092	
6/4/08 14:21:30	2.69	9.71	12.6	1081	
6/4/08 14:21:45	2.68	9.70	12.4	1074	
6/4/08 14:22:00	2.70	9.68	12.4	1077	
6/4/08 14:22:15	2.73	9.66	12.3	1082	
6/4/08 14:22:30	2.75	9.68	12.4	1102	
6/4/08 14:22:45	2.75	9.74	12.4	1113	
6/4/08 14:23:00	2.75	9.80	12.4	1117	
6/4/08 14:23:15	2.76	9.84	12.4	1121	
6/4/08 14:23:30	2.78	9.86	12.3	1117	
6/4/08 14:23:45	2.76	9.88	12.3	1100	
6/4/08 14:24:00	2.76	9.90	12.3	1071	
6/4/08 14:24:15	2.74	9.89	12.4	1055	
6/4/08 14:24:30	2.72	9.90	12.3	1048	
6/4/08 14:24:45	2.69	9.92	12.3	1024	
6/4/08 14:25:00	2.65	9.94	12.1	1006	
6/4/08 14:25:15	2.61	9.93	12.0	995	
6/4/08 14:25:30	2.59	9.93	12.0	971	
6/4/08 14:25:45	2.58	9.92	11.8	957	
6/4/08 14:26:00	2.59	9.88	11.8	967	
6/4/08 14:26:15	2.62	9.83	11.6	973	
6/4/08 14:26:30	2.65	9.80	11.7	988	
6/4/08 14:26:45	2.70	9.74	11.8	1010	
6/4/08 14:27:00	2.74	9.68	11.7	1022	
6/4/08 14:27:15	2.75	9.66	11.9	1034	
6/4/08 14:27:30	2.76	9.67	11.6	1044	
6/4/08 14:27:45	2.76	9.72	11.6	1057	
6/4/08 14:28:00	2.78	9.77	11.7	1065	
6/4/08 14:28:15	2.78	9.82	11.8	1069	
6/4/08 14:28:30	2.77	9.85	11.9	1062	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 14:28:45	2.76	9.84	11.8	1058	
6/4/08 14:29:00	2.74	9.82	12.1	1046	
6/4/08 14:29:15	2.73	9.80	11.8	1032	
6/4/08 14:29:30	2.73	9.77	11.4	1044	
6/4/08 14:29:45	2.77	9.71	11.7	1089	
6/4/08 14:30:00	2.80	9.69	11.8	1075	
6/4/08 14:30:15	2.80	9.69	11.7	1071	
6/4/08 14:30:30	2.82	9.70	12.0	1072	
6/4/08 14:30:45	2.82	9.74	12.1	1082	
6/4/08 14:31:00	2.84	9.78	12.1	1089	
6/4/08 14:31:15	2.84	9.82	12.1	1087	
6/4/08 14:31:30	2.85	9.82	12.2	1093	
6/4/08 14:31:45	2.85	9.80	12.3	1092	
6/4/08 14:32:00	2.84	9.77	12.1	1080	
6/4/08 14:32:15	2.83	9.74	11.9	1073	
6/4/08 14:32:30	2.84	9.72	12.1	1070	
6/4/08 14:32:45	2.83	9.73	12.3	1062	
6/4/08 14:33:00	2.80	9.77	12.4	1050	
6/4/08 14:33:15	2.80	9.81	12.4	1041	
6/4/08 14:33:30	2.79	9.86	12.3	1036	
6/4/08 14:33:45	2.78	9.89	12.0	1036	
6/4/08 14:34:00	2.75	9.92	11.7	1042	
6/4/08 14:34:15	2.74	9.93	12.2	1037	
6/4/08 14:34:30	2.72	9.92	12.1	1011	
6/4/08 14:34:45	2.70	9.91	11.9	1004	
6/4/08 14:35:00	2.71	9.87	11.9	1004	
6/4/08 14:35:15	2.72	9.82	11.6	999	
6/4/08 14:35:30	2.73	9.80	11.8	998	
6/4/08 14:35:45	2.74	9.80	12.0	996	
6/4/08 14:36:00	2.76	9.81	11.8	1000	
6/4/08 14:36:15	2.77	9.84	12.0	1024	
6/4/08 14:36:30	2.78	9.87	11.9	1022	
6/4/08 14:36:45	2.78	9.90	12.0	1004	
6/4/08 14:37:00	2.78	9.90	11.8	1004	
6/4/08 14:37:15	2.75	9.87	11.8	999	
6/4/08 14:37:30	2.74	9.80	11.8	993	
6/4/08 14:37:45	2.76	9.70	11.8	990	
6/4/08 14:38:00	2.79	9.63	11.9	1004	
6/4/08 14:38:15	2.82	9.64	11.9	1020	
6/4/08 14:38:30	2.84	9.73	11.7	1047	
6/4/08 14:38:45	2.86	9.83	12.0	1071	
6/4/08 14:39:00	2.87	9.91	11.9	1069	
6/4/08 14:39:15	2.86	10.00	11.7	1057	
6/4/08 14:39:30	2.83	10.07	12.1	1042	
6/4/08 14:39:45	2.80	10.07	12.3	1000	
6/4/08 14:40:00	2.73	10.05	12.4	955	
6/4/08 14:40:15	2.68	9.99	12.3	935	
6/4/08 14:40:30	2.67	9.92	12.4	918	
6/4/08 14:40:45	2.68	9.90	12.3	907	
6/4/08 14:41:00	2.70	9.89	12.3	914	
6/4/08 14:41:15	2.73	9.88	12.2	939	
6/4/08 14:41:30	2.75	9.89	12.2	948	
6/4/08 14:41:45	2.75	9.93	12.2	943	
6/4/08 14:42:00	2.75	9.93	12.1	946	
6/4/08 14:42:15	2.76	9.89	12.0	955	
6/4/08 14:42:30	2.75	9.86	11.8	960	
6/4/08 14:42:45	2.76	9.82	12.0	961	
6/4/08 14:43:00	2.79	9.78	12.1	962	
6/4/08 14:43:15	2.80	9.76	12.2	970	
6/4/08 14:43:30	2.82	9.73	12.2	980	
6/4/08 14:43:45	2.84	9.74	12.2	988	
6/4/08 14:44:00	2.85	9.78	12.0	1010	
6/4/08 14:44:15	2.86	9.82	12.1	1024	
6/4/08 14:44:30	2.84	9.88	12.1	1017	
6/4/08 14:44:45	2.83	9.91	12.3	994	
6/4/08 14:45:00	2.82	9.92	12.3	962	
6/4/08 14:45:15	2.76	9.93	12.3	939	
6/4/08 14:45:30	2.74	9.92	12.2	934	
6/4/08 14:45:45	2.72	9.90	12.2	928	
6/4/08 14:46:00	2.72	9.87	12.3	905	
6/4/08 14:46:15	2.71	9.86	12.2	909	
6/4/08 14:46:30	2.72	9.86	12.1	931	
6/4/08 14:46:45	2.75	9.85	12.2	946	
6/4/08 14:47:00	2.78	9.86	12.2	953	
6/4/08 14:47:15	2.79	9.89	12.2	956	
6/4/08 14:47:30	2.81	9.91	12.2	961	
6/4/08 14:47:45	2.80	9.91	12.2	960	
6/4/08 14:48:00	2.78	9.90	11.7	954	
6/4/08 14:48:15	2.79	9.87	11.7	960	
6/4/08 14:48:30	2.79	9.84	11.5	969	
6/4/08 14:48:45	2.81	9.82	11.9	980	
6/4/08 14:49:00	2.82	9.82	12.0	974	
6/4/08 14:49:15	2.82	9.83	12.0	959	
6/4/08 14:49:30	2.82	9.85	11.8	945	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 14:49:45	2.81	9.91	12.2	947	
6/4/08 14:50:00	2.80	9.94	11.7	954	
6/4/08 14:50:15	2.79	9.97	11.6	956	
6/4/08 14:50:30	2.79	9.97	11.8	945	
6/4/08 14:50:45	2.77	9.97	12.0	937	
6/4/08 14:51:00	2.75	9.96	12.0	925	
6/4/08 14:51:15	2.74	9.92	11.8	908	
6/4/08 14:51:30	2.75	9.87	11.8	916	
6/4/08 14:51:45	2.77	9.85	11.7	935	
6/4/08 14:52:00	2.80	9.82	11.8	953	
6/4/08 14:52:15	2.85	9.80	12.1	962	
6/4/08 14:52:30	2.86	9.83	12.1	961	
6/4/08 14:52:45	2.85	9.86	12.2	956	
6/4/08 14:53:00	2.86	9.89	12.1	954	
6/4/08 14:53:15	2.87	9.89	12.1	960	
6/4/08 14:53:30	2.87	9.87	12.2	964	
6/4/08 14:53:45	2.87	9.85	12.2	957	
6/4/08 14:54:00	2.85	9.83	12.2	954	
6/4/08 14:54:15	2.83	9.82	12.2	954	
6/4/08 14:54:30	2.83	9.82	12.3	965	
6/4/08 14:54:45	2.85	9.81	12.4	975	
6/4/08 14:55:00	2.86	9.84	12.3	964	
6/4/08 14:55:15	2.83	9.89	12.3	953	
6/4/08 14:55:30	2.83	9.92	12.3	948	
6/4/08 14:55:45	2.85	9.93	12.2	951	
6/4/08 14:56:00	2.84	9.93	12.3	952	
6/4/08 14:56:15	2.84	9.92	12.3	942	
6/4/08 14:56:30	2.84	9.90	11.9	939	
6/4/08 14:56:45	2.84	9.88	12.1	940	
6/4/08 14:57:00	2.83	9.88	12.3	932	End of Run No. 1
6/4/08 14:57:15	2.82	9.87	12.3	928	
6/4/08 14:57:30	2.84	9.87	12.3	923	
6/4/08 14:57:45	2.86	9.88	15.8	922	
6/4/08 14:58:00	2.87	9.85	4.8	726	
6/4/08 14:58:15	2.75	6.85	0.9	315	
6/4/08 14:58:30	1.32	2.43	5.5	91	
6/4/08 14:58:45	0.28	0.82	7.3	235	
6/4/08 14:59:00	0.90	3.74	9.4	264	
6/4/08 14:59:15	1.22	3.04	1.8	112	
6/4/08 14:59:30	2.77	0.71	1.3	18	
6/4/08 14:59:45	4.13	0.21	1.1	2	
6/4/08 15:00:00	4.40	0.14	1.0	0	
6/4/08 15:00:15	4.41	0.13	0.9	0	
6/4/08 15:00:30	4.41	0.12	0.9	0	
6/4/08 15:00:45	4.45	0.12	0.9	0	
6/4/08 15:01:00	4.48	0.11	0.8	0	
6/4/08 15:01:15	4.49	0.11	0.8	0	
6/4/08 15:01:30	4.50	0.11	0.8	0	
6/4/08 15:01:45	4.51	0.11	0.7	-1	System Bias
6/4/08 15:02:00	4.51	0.11	0.7	-1	4.51 4.50% O ₂
6/4/08 15:02:15	4.51	0.11	0.7	-1	0.11 Zero CO ₂
6/4/08 15:02:30	4.52	0.10	0.7	0	0.7 Zero NO _x
6/4/08 15:02:45	4.52	0.10	0.7	0	-1 Zero CO
6/4/08 15:03:00	4.52	0.10	3.3	7	
6/4/08 15:03:15	4.52	0.21	7.0	185	
6/4/08 15:03:30	4.14	3.23	1.0	274	
6/4/08 15:03:45	3.15	5.90	0.7	130	
6/4/08 15:04:00	1.06	7.94	0.7	22	
6/4/08 15:04:15	0.16	8.52	0.7	0	
6/4/08 15:04:30	0.03	8.43	0.6	-2	
6/4/08 15:04:45	0.01	8.31	0.6	-2	
6/4/08 15:05:00	0.00	8.33	0.6	-2	
6/4/08 15:05:15	0.00	8.55	0.6	-2	
6/4/08 15:05:30	0.00	8.81	0.6	-2	
6/4/08 15:05:45	-0.01	8.95	0.6	-2	
6/4/08 15:06:00	-0.01	9.03	0.6	-2	
6/4/08 15:06:15	-0.01	9.07	0.6	-2	
6/4/08 15:06:30	-0.01	9.10	0.6	-2	
6/4/08 15:06:45	-0.01	9.11	0.6	-2	
6/4/08 15:07:00	-0.01	9.11	0.6	-2	System Bias
6/4/08 15:07:15	-0.01	9.11	0.6	-2	
6/4/08 15:07:30	-0.01	9.12	0.6	-2	9.12 9.00% CO ₂
6/4/08 15:07:45	-0.01	9.12	2.5	-2	
6/4/08 15:08:00	-0.01	9.12	8.8	136	
6/4/08 15:08:15	0.47	9.28	1.6	479	
6/4/08 15:08:30	1.38	7.27	6.5	770	
6/4/08 15:08:45	0.82	3.88	16.8	722	
6/4/08 15:09:00	1.01	3.70	13.5	337	
6/4/08 15:09:15	0.42	1.27	21.7	107	
6/4/08 15:09:30	0.08	0.31	23.2	11	
6/4/08 15:09:45	0.03	0.17	25.6	2	
6/4/08 15:10:00	0.02	0.14	27.1	0	
6/4/08 15:10:15	0.03	0.13	26.2	0	

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Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 15:10:30	0.03	0.12	31.3	0	
6/4/08 15:10:45	0.03	0.12	45.5	0	
6/4/08 15:11:00	0.02	0.11	44.8	0	
6/4/08 15:11:15	0.01	0.11	43.9	0	
6/4/08 15:11:30	0.01	0.11	43.4	0	
6/4/08 15:11:45	0.01	0.11	43.0	0	
6/4/08 15:12:00	0.01	0.10	42.7	0	
6/4/08 15:12:15	0.01	0.10	42.5	0	
6/4/08 15:12:30	0.01	0.10	42.3	0	
6/4/08 15:12:45	0.01	0.10	42.2	-1	
6/4/08 15:13:00	0.01	0.10	42.0	-1	
6/4/08 15:13:15	0.01	0.10	42.0	-1	
6/4/08 15:13:30	0.01	0.10	41.9	0	
6/4/08 15:13:45	0.01	0.10	46.3	0	
6/4/08 15:14:00	0.02	0.17	25.0	47	
6/4/08 15:14:15	0.24	1.02	42.0	46	
6/4/08 15:14:30	0.20	0.64	41.5	14	System Bias
6/4/08 15:14:45	0.03	0.18	41.6	1	0.02 Zero O ₂
6/4/08 15:15:00	0.01	0.11	41.6	0	
6/4/08 15:15:15	0.01	0.10	41.6	-1	41.6 45.0 ppm NO _x
6/4/08 15:15:30	0.01	0.10	41.5	0	
6/4/08 15:15:45	0.01	0.10	41.5	0	
6/4/08 15:16:00	0.01	0.10	34.7	26	
6/4/08 15:16:15	0.10	0.77	31.4	209	
6/4/08 15:16:30	0.95	3.62	2.0	636	
6/4/08 15:16:45	0.72	2.13	1.5	855	
6/4/08 15:17:00	0.13	0.41	1.3	967	System Bias
6/4/08 15:17:15	0.02	0.13	1.2	977	
6/4/08 15:17:30	0.01	0.10	1.1	976	
6/4/08 15:17:45	0.01	0.10	1.0	975	
6/4/08 15:18:00	0.01	0.10	0.9	975	976 1,000 ppm CO
6/4/08 15:18:15	0.01	0.09	1.2	976	
6/4/08 15:18:30	0.01	0.09	10.4	959	
6/4/08 15:18:45	0.28	1.72	12.4	892	
6/4/08 15:19:00	1.62	6.41	12.4	839	
6/4/08 15:19:15	2.59	9.16	12.4	835	
6/4/08 15:19:30	2.89	9.83	12.3	828	
6/4/08 15:19:45	2.95	9.92	12.4	827	
6/4/08 15:20:00	2.95	9.96	12.2	824	
6/4/08 15:20:15	2.92	9.95	12.3	821	
6/4/08 15:20:30	2.91	9.91	12.3	821	
6/4/08 15:20:45	2.94	9.89	12.4	828	
6/4/08 15:21:00	2.96	9.90	12.4	832	
6/4/08 15:21:15	2.97	9.94	12.3	830	
6/4/08 15:21:30	2.95	10.00	12.5	828	
6/4/08 15:21:45	2.94	10.08	12.1	826	Begin Run No. 2
6/4/08 15:22:00	2.90	10.17	12.3	812	
6/4/08 15:22:15	2.90	10.19	12.2	788	
6/4/08 15:22:30	2.88	10.20	12.4	744	
6/4/08 15:22:45	2.82	10.22	11.8	722	
6/4/08 15:23:00	2.83	10.19	11.9	741	
6/4/08 15:23:15	2.90	10.13	11.6	766	
6/4/08 15:23:30	2.94	10.08	11.6	796	
6/4/08 15:23:45	2.98	10.02	11.7	813	
6/4/08 15:24:00	3.00	9.97	11.7	838	
6/4/08 15:24:15	3.05	9.93	11.8	852	
6/4/08 15:24:30	3.08	9.91	11.6	858	
6/4/08 15:24:45	3.10	9.92	11.6	862	
6/4/08 15:25:00	3.11	9.94	11.8	872	
6/4/08 15:25:15	3.08	10.00	11.9	875	
6/4/08 15:25:30	3.08	10.04	11.8	863	
6/4/08 15:25:45	3.04	10.05	11.9	865	
6/4/08 15:26:00	3.03	10.04	12.1	843	
6/4/08 15:26:15	3.00	10.03	11.9	812	
6/4/08 15:26:30	2.98	10.01	11.8	802	
6/4/08 15:26:45	2.99	9.99	11.9	816	
6/4/08 15:27:00	3.01	9.96	12.1	825	
6/4/08 15:27:15	3.03	9.95	12.2	822	
6/4/08 15:27:30	3.05	9.95	12.1	815	
6/4/08 15:27:45	3.06	9.97	12.0	816	
6/4/08 15:28:00	3.05	10.01	11.8	828	
6/4/08 15:28:15	3.05	10.05	11.8	842	
6/4/08 15:28:30	3.07	10.08	12.1	862	
6/4/08 15:28:45	3.09	10.08	11.7	866	
6/4/08 15:29:00	3.09	10.07	11.7	860	
6/4/08 15:29:15	3.08	10.03	11.9	853	
6/4/08 15:29:30	3.07	10.00	12.0	836	
6/4/08 15:29:45	3.06	9.96	12.1	826	
6/4/08 15:30:00	3.05	9.96	12.2	846	
6/4/08 15:30:15	3.05	10.00	12.3	858	
6/4/08 15:30:30	3.07	10.04	12.0	861	
6/4/08 15:30:45	3.08	10.09	12.3	863	
6/4/08 15:31:00	3.08	10.12	12.3	852	

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No. 2 SRU Incinerator Exhaust
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Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 15:31:15	3.05	10.16	12.3	832	
6/4/08 15:31:30	3.02	10.17	12.1	818	
6/4/08 15:31:45	3.00	10.17	12.4	810	
6/4/08 15:32:00	2.97	10.16	12.4	786	
6/4/08 15:32:15	2.95	10.15	12.4	778	
6/4/08 15:32:30	2.94	10.13	12.4	773	
6/4/08 15:32:45	2.94	10.12	12.4	769	
6/4/08 15:33:00	2.95	10.10	12.4	770	
6/4/08 15:33:15	2.96	10.10	12.3	784	
6/4/08 15:33:30	2.97	10.13	12.3	808	
6/4/08 15:33:45	2.99	10.16	12.3	812	
6/4/08 15:34:00	3.00	10.16	12.3	799	
6/4/08 15:34:15	2.99	10.15	12.3	795	
6/4/08 15:34:30	2.98	10.11	12.3	794	
6/4/08 15:34:45	3.00	10.05	12.2	785	
6/4/08 15:35:00	3.00	10.03	12.3	768	
6/4/08 15:35:15	3.01	10.01	12.3	764	
6/4/08 15:35:30	3.00	10.02	12.3	780	
6/4/08 15:35:45	3.01	10.04	12.4	804	
6/4/08 15:36:00	3.01	10.07	12.3	821	
6/4/08 15:36:15	3.01	10.09	12.3	816	
6/4/08 15:36:30	3.00	10.12	12.3	803	
6/4/08 15:36:45	3.01	10.14	12.4	798	
6/4/08 15:37:00	3.00	10.14	12.3	787	
6/4/08 15:37:15	3.00	10.12	12.3	777	
6/4/08 15:37:30	3.01	10.09	12.2	772	
6/4/08 15:37:45	3.00	10.06	12.2	789	
6/4/08 15:38:00	3.02	10.01	12.1	801	
6/4/08 15:38:15	3.05	10.00	12.1	793	
6/4/08 15:38:30	3.04	10.04	12.2	800	
6/4/08 15:38:45	3.06	10.05	12.2	814	
6/4/08 15:39:00	3.05	10.07	12.1	829	
6/4/08 15:39:15	3.03	10.11	12.0	835	
6/4/08 15:39:30	3.01	10.15	12.1	825	
6/4/08 15:39:45	3.00	10.14	12.1	811	
6/4/08 15:40:00	2.99	10.11	12.1	791	
6/4/08 15:40:15	2.99	10.07	12.0	786	
6/4/08 15:40:30	3.00	10.04	12.0	787	
6/4/08 15:40:45	3.01	10.01	12.0	793	
6/4/08 15:41:00	3.02	10.00	12.1	797	
6/4/08 15:41:15	3.03	10.00	12.1	798	
6/4/08 15:41:30	3.03	10.04	12.1	811	
6/4/08 15:41:45	3.01	10.09	12.2	811	
6/4/08 15:42:00	3.00	10.12	12.1	797	
6/4/08 15:42:15	2.98	10.16	12.2	790	
6/4/08 15:42:30	2.96	10.17	12.2	771	
6/4/08 15:42:45	2.96	10.15	12.1	759	
6/4/08 15:43:00	2.97	10.09	12.1	758	
6/4/08 15:43:15	2.96	10.04	12.0	765	
6/4/08 15:43:30	2.98	10.02	12.0	779	
6/4/08 15:43:45	3.00	10.00	12.0	783	
6/4/08 15:44:00	3.02	10.01	11.9	803	
6/4/08 15:44:15	3.05	10.01	12.1	815	
6/4/08 15:44:30	3.06	10.05	12.1	811	
6/4/08 15:44:45	3.03	10.11	12.1	793	
6/4/08 15:45:00	3.02	10.13	12.1	781	
6/4/08 15:45:15	3.01	10.15	12.0	772	
6/4/08 15:45:30	2.99	10.14	12.1	756	
6/4/08 15:45:45	2.98	10.11	12.2	749	
6/4/08 15:46:00	2.97	10.06	12.2	750	
6/4/08 15:46:15	2.97	10.02	12.3	761	
6/4/08 15:46:30	2.98	10.01	12.2	779	
6/4/08 15:46:45	3.01	10.01	12.1	796	
6/4/08 15:47:00	3.04	10.01	12.2	814	
6/4/08 15:47:15	3.05	10.03	12.2	814	
6/4/08 15:47:30	3.04	10.05	12.0	814	
6/4/08 15:47:45	3.04	10.06	12.1	811	
6/4/08 15:48:00	3.06	10.01	12.1	820	
6/4/08 15:48:15	3.08	9.96	12.1	832	
6/4/08 15:48:30	3.09	9.91	11.7	835	
6/4/08 15:48:45	3.10	9.92	11.8	845	
6/4/08 15:49:00	3.12	9.95	11.5	875	
6/4/08 15:49:15	3.11	10.02	11.7	883	
6/4/08 15:49:30	3.11	10.07	12.0	860	
6/4/08 15:49:45	3.08	10.13	12.1	830	
6/4/08 15:50:00	3.02	10.20	12.0	791	
6/4/08 15:50:15	2.99	10.24	12.3	765	
6/4/08 15:50:30	2.97	10.26	12.4	731	
6/4/08 15:50:45	2.94	10.27	12.4	704	
6/4/08 15:51:00	2.89	10.26	12.3	685	
6/4/08 15:51:15	2.89	10.21	12.3	690	
6/4/08 15:51:30	2.92	10.14	12.2	713	
6/4/08 15:51:45	2.96	10.08	12.1	735	
6/4/08 15:52:00	3.01	10.02	12.0	780	

**Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data**

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 15:52:15	3.08	9.97	12.1	814	
6/4/08 15:52:30	3.14	9.93	12.1	851	
6/4/08 15:52:45	3.15	9.94	12.0	863	
6/4/08 15:53:00	3.16	9.95	12.0	870	
6/4/08 15:53:15	3.19	9.95	11.9	873	
6/4/08 15:53:30	3.20	9.96	12.0	872	
6/4/08 15:53:45	3.20	9.96	12.1	877	
6/4/08 15:54:00	3.19	9.95	12.1	884	
6/4/08 15:54:15	3.17	9.90	12.2	885	
6/4/08 15:54:30	3.16	9.81	12.2	879	
6/4/08 15:54:45	3.13	9.75	12.2	882	
6/4/08 15:55:00	3.14	9.72	12.2	895	
6/4/08 15:55:15	3.16	9.77	12.3	901	
6/4/08 15:55:30	3.17	9.87	12.4	901	
6/4/08 15:55:45	3.16	10.00	12.5	885	
6/4/08 15:56:00	3.12	10.11	12.6	854	
6/4/08 15:56:15	3.06	10.20	12.7	823	
6/4/08 15:56:30	2.99	10.26	12.8	766	
6/4/08 15:56:45	2.90	10.29	12.8	713	
6/4/08 15:57:00	2.82	10.27	12.8	630	
6/4/08 15:57:15	2.77	10.23	12.6	605	
6/4/08 15:57:30	2.73	10.17	12.5	631	
6/4/08 15:57:45	2.78	10.11	12.3	661	
6/4/08 15:58:00	2.86	10.03	12.2	707	
6/4/08 15:58:15	2.95	9.98	12.0	742	
6/4/08 15:58:30	3.02	9.95	11.7	779	
6/4/08 15:58:45	3.09	9.93	11.5	807	
6/4/08 15:59:00	3.14	9.93	11.7	839	
6/4/08 15:59:15	3.17	9.94	11.7	852	
6/4/08 15:59:30	3.16	9.93	12.0	862	
6/4/08 15:59:45	3.13	9.93	11.9	865	
6/4/08 16:00:00	3.08	9.93	11.9	858	
6/4/08 16:00:15	3.03	9.89	11.9	851	
6/4/08 16:00:30	3.02	9.81	11.8	853	
6/4/08 16:00:45	3.06	9.74	12.2	864	
6/4/08 16:01:00	3.10	9.71	12.3	865	
6/4/08 16:01:15	3.12	9.75	12.2	860	
6/4/08 16:01:30	3.13	9.86	12.3	859	
6/4/08 16:01:45	3.13	9.97	12.4	860	
6/4/08 16:02:00	3.11	10.11	12.4	855	
6/4/08 16:02:15	3.07	10.22	12.3	841	
6/4/08 16:02:30	3.06	10.26	12.4	805	
6/4/08 16:02:45	2.99	10.26	12.3	765	
6/4/08 16:03:00	2.94	10.24	12.1	704	
6/4/08 16:03:15	2.91	10.21	12.3	685	
6/4/08 16:03:30	2.88	10.18	12.2	684	
6/4/08 16:03:45	2.86	10.14	12.0	692	
6/4/08 16:04:00	2.89	10.09	11.9	709	
6/4/08 16:04:15	2.93	10.06	12.0	728	
6/4/08 16:04:30	3.00	10.03	12.0	771	
6/4/08 16:04:45	3.05	10.00	12.0	790	
6/4/08 16:05:00	3.08	10.04	12.0	791	
6/4/08 16:05:15	3.10	10.08	12.1	790	
6/4/08 16:05:30	3.11	10.14	12.0	804	
6/4/08 16:05:45	3.09	10.20	12.2	814	
6/4/08 16:06:00	3.07	10.17	12.1	802	
6/4/08 16:06:15	3.04	10.09	11.9	786	
6/4/08 16:06:30	3.03	9.96	12.0	789	
6/4/08 16:06:45	3.05	9.85	12.0	801	
6/4/08 16:07:00	3.08	9.81	12.0	823	
6/4/08 16:07:15	3.11	9.84	12.0	848	
6/4/08 16:07:30	3.14	9.90	12.2	872	
6/4/08 16:07:45	3.16	9.98	12.2	872	
6/4/08 16:08:00	3.12	10.07	12.3	849	
6/4/08 16:08:15	3.06	10.15	12.5	813	
6/4/08 16:08:30	2.99	10.22	12.5	740	
6/4/08 16:08:45	2.90	10.27	12.4	686	
6/4/08 16:09:00	2.83	10.29	12.6	625	
6/4/08 16:09:15	2.76	10.30	12.4	598	
6/4/08 16:09:30	2.70	10.30	12.3	595	
6/4/08 16:09:45	2.74	10.24	12.2	611	
6/4/08 16:10:00	2.80	10.16	12.1	652	
6/4/08 16:10:15	2.89	10.08	12.0	684	
6/4/08 16:10:30	2.96	10.02	11.9	754	
6/4/08 16:10:45	3.04	9.95	11.8	801	
6/4/08 16:11:00	3.11	9.91	11.8	838	
6/4/08 16:11:15	3.16	9.91	11.9	853	
6/4/08 16:11:30	3.17	9.95	12.1	868	
6/4/08 16:11:45	3.15	10.03	12.1	867	
6/4/08 16:12:00	3.13	10.09	12.0	855	
6/4/08 16:12:15	3.08	10.14	12.2	852	
6/4/08 16:12:30	3.01	10.14	12.2	826	
6/4/08 16:12:45	2.96	10.06	12.2	806	
6/4/08 16:13:00	2.96	9.93	12.2	810	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 16:13:15	3.01	9.81	12.2	823	
6/4/08 16:13:30	3.03	9.80	12.2	846	
6/4/08 16:13:45	3.04	9.88	12.2	866	
6/4/08 16:14:00	3.10	9.95	12.2	893	
6/4/08 16:14:15	3.13	10.02	12.2	903	
6/4/08 16:14:30	3.13	10.08	12.2	888	
6/4/08 16:14:45	3.11	10.16	12.2	867	
6/4/08 16:15:00	3.05	10.26	12.3	850	
6/4/08 16:15:15	3.00	10.30	12.4	838	
6/4/08 16:15:30	2.98	10.30	12.6	794	
6/4/08 16:15:45	2.91	10.30	12.5	743	
6/4/08 16:16:00	2.84	10.29	12.4	693	
6/4/08 16:16:15	2.83	10.23	12.3	679	
6/4/08 16:16:30	2.86	10.17	12.1	698	
6/4/08 16:16:45	2.89	10.11	11.3	731	
6/4/08 16:17:00	2.94	10.05	11.7	776	
6/4/08 16:17:15	3.00	9.99	11.7	794	
6/4/08 16:17:30	3.03	9.95	11.8	810	
6/4/08 16:17:45	3.07	9.92	11.9	813	
6/4/08 16:18:00	3.08	9.93	11.9	812	
6/4/08 16:18:15	3.06	9.97	11.9	817	
6/4/08 16:18:30	3.04	10.00	12.0	829	
6/4/08 16:18:45	3.04	9.99	12.1	837	
6/4/08 16:19:00	3.00	9.96	12.0	831	
6/4/08 16:19:15	2.89	9.86	11.9	834	
6/4/08 16:19:30	3.01	9.77	11.9	840	
6/4/08 16:19:45	3.01	9.80	11.8	851	
6/4/08 16:20:00	3.02	9.87	11.8	878	
6/4/08 16:20:15	3.04	9.93	11.9	896	
6/4/08 16:20:30	3.06	9.99	12.0	898	
6/4/08 16:20:45	3.05	10.03	12.1	883	
6/4/08 16:21:00	3.03	10.05	12.1	868	
6/4/08 16:21:15	3.04	10.06	12.2	854	
6/4/08 16:21:30	3.00	10.10	12.2	827	
6/4/08 16:21:45	2.94	10.17	12.4	800	
6/4/08 16:22:00	2.91	10.22	12.4	748	
6/4/08 16:22:15	2.85	10.27	12.4	708	
6/4/08 16:22:30	2.81	10.28	12.3	652	
6/4/08 16:22:45	2.78	10.26	12.1	638	
6/4/08 16:23:00	2.79	10.20	12.0	659	
6/4/08 16:23:15	2.85	10.13	11.9	696	
6/4/08 16:23:30	2.93	10.05	11.9	742	
6/4/08 16:23:45	3.00	9.99	11.8	761	
6/4/08 16:24:00	3.03	9.96	11.8	786	
6/4/08 16:24:15	3.06	9.95	11.8	814	
6/4/08 16:24:30	3.09	9.94	11.9	847	
6/4/08 16:24:45	3.12	9.92	12.0	857	
6/4/08 16:25:00	3.10	9.90	12.0	857	
6/4/08 16:25:15	3.08	9.87	11.9	851	
6/4/08 16:25:30	3.05	9.85	12.0	855	
6/4/08 16:25:45	3.04	9.86	11.9	863	
6/4/08 16:26:00	3.04	9.95	11.7	858	
6/4/08 16:26:15	3.02	10.06	11.9	860	
6/4/08 16:26:30	3.01	10.14	11.9	854	
6/4/08 16:26:45	2.99	10.22	12.1	845	
6/4/08 16:27:00	2.87	10.26	12.1	823	
6/4/08 16:27:15	2.96	10.25	12.2	807	
6/4/08 16:27:30	2.85	10.22	12.1	789	
6/4/08 16:27:45	2.93	10.20	12.1	778	
6/4/08 16:28:00	2.93	10.18	12.2	774	
6/4/08 16:28:15	2.93	10.16	12.2	770	
6/4/08 16:28:30	2.91	10.18	12.2	733	
6/4/08 16:28:45	2.88	10.21	12.2	712	
6/4/08 16:29:00	2.86	10.22	12.1	708	
6/4/08 16:29:15	2.86	10.22	12.0	706	
6/4/08 16:29:30	2.88	10.20	12.0	709	
6/4/08 16:29:45	2.89	10.19	11.9	722	
6/4/08 16:30:00	2.90	10.16	11.8	744	
6/4/08 16:30:15	2.94	10.11	11.8	750	
6/4/08 16:30:30	2.98	10.06	11.6	771	
6/4/08 16:30:45	3.00	10.03	11.7	782	
6/4/08 16:31:00	3.03	10.00	11.7	820	
6/4/08 16:31:15	3.06	9.96	11.7	829	
6/4/08 16:31:30	3.05	9.95	11.8	837	
6/4/08 16:31:45	3.05	9.98	11.7	844	
6/4/08 16:32:00	3.05	10.02	11.8	857	
6/4/08 16:32:15	3.06	10.04	11.9	857	
6/4/08 16:32:30	3.04	10.03	12.0	843	
6/4/08 16:32:45	3.00	10.01	12.0	833	
6/4/08 16:33:00	2.98	9.98	11.9	820	
6/4/08 16:33:15	2.97	9.99	11.8	819	
6/4/08 16:33:30	2.96	10.05	11.8	833	
6/4/08 16:33:45	2.99	10.10	11.9	845	
6/4/08 16:34:00	3.00	10.13	11.8	846	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 16:34:15	3.02	10.14	11.9	843	
6/4/08 16:34:30	3.05	10.13	12.1	837	
6/4/08 16:34:45	3.05	10.15	12.0	837	
6/4/08 16:35:00	3.04	10.15	12.1	841	
6/4/08 16:35:15	3.04	10.14	12.0	830	
6/4/08 16:35:30	3.04	10.14	12.0	796	
6/4/08 16:35:45	3.01	10.17	12.0	775	
6/4/08 16:36:00	2.96	10.20	12.1	759	
6/4/08 16:36:15	2.90	10.23	12.0	737	
6/4/08 16:36:30	2.85	10.25	12.0	726	
6/4/08 16:36:45	2.87	10.23	11.9	742	
6/4/08 16:37:00	2.89	10.19	11.9	757	
6/4/08 16:37:15	2.89	10.15	11.9	758	
6/4/08 16:37:30	2.92	10.11	11.9	771	
6/4/08 16:37:45	2.97	10.07	11.8	790	
6/4/08 16:38:00	3.01	10.04	11.7	818	
6/4/08 16:38:15	3.03	10.00	11.7	839	
6/4/08 16:38:30	3.05	9.94	11.8	848	
6/4/08 16:38:45	3.05	9.91	11.8	843	
6/4/08 16:39:00	3.04	9.90	11.8	861	
6/4/08 16:39:15	3.08	9.93	11.8	881	
6/4/08 16:39:30	3.08	10.02	11.9	893	
6/4/08 16:39:45	3.07	10.14	12.1	883	
6/4/08 16:40:00	3.04	10.26	12.1	839	
6/4/08 16:40:15	2.98	10.33	12.1	793	
6/4/08 16:40:30	2.94	10.32	12.2	732	
6/4/08 16:40:45	2.88	10.29	12.2	694	
6/4/08 16:41:00	2.84	10.25	12.2	690	
6/4/08 16:41:15	2.83	10.19	12.0	707	
6/4/08 16:41:30	2.83	10.15	12.0	719	
6/4/08 16:41:45	2.89	10.13	12.0	720	
6/4/08 16:42:00	2.93	10.12	12.0	733	
6/4/08 16:42:15	2.97	10.11	12.1	749	
6/4/08 16:42:30	2.99	10.13	12.0	759	
6/4/08 16:42:45	2.99	10.14	12.0	759	
6/4/08 16:43:00	2.98	10.14	12.0	737	
6/4/08 16:43:15	2.98	10.15	12.0	725	
6/4/08 16:43:30	2.95	10.15	12.0	725	
6/4/08 16:43:45	2.94	10.16	12.0	729	
6/4/08 16:44:00	2.94	10.15	11.9	737	
6/4/08 16:44:15	2.95	10.14	11.9	749	
6/4/08 16:44:30	2.95	10.13	11.8	766	
6/4/08 16:44:45	2.95	10.06	11.9	760	
6/4/08 16:45:00	2.96	9.96	11.8	769	
6/4/08 16:45:15	2.98	9.88	11.8	797	
6/4/08 16:45:30	3.01	9.87	11.8	814	
6/4/08 16:45:45	3.03	9.95	11.8	826	
6/4/08 16:46:00	3.05	10.07	11.3	836	
6/4/08 16:46:15	3.05	10.20	11.6	833	
6/4/08 16:46:30	3.03	10.32	12.0	793	
6/4/08 16:46:45	2.97	10.39	12.1	739	
6/4/08 16:47:00	2.88	10.42	11.7	659	
6/4/08 16:47:15	2.83	10.39	11.7	626	
6/4/08 16:47:30	2.79	10.32	11.6	618	
6/4/08 16:47:45	2.81	10.23	11.3	642	
6/4/08 16:48:00	2.88	10.14	11.4	693	
6/4/08 16:48:15	2.98	10.06	11.5	717	
6/4/08 16:48:30	3.04	10.03	11.4	746	
6/4/08 16:48:45	3.08	10.03	11.3	765	
6/4/08 16:49:00	3.10	10.05	11.7	788	
6/4/08 16:49:15	3.10	10.11	11.8	786	
6/4/08 16:49:30	3.09	10.19	11.4	763	
6/4/08 16:49:45	3.04	10.22	11.5	754	
6/4/08 16:50:00	3.02	10.21	11.8	736	
6/4/08 16:50:15	2.99	10.21	12.0	724	
6/4/08 16:50:30	2.97	10.23	11.8	703	
6/4/08 16:50:45	2.96	10.24	11.5	709	
6/4/08 16:51:00	2.98	10.20	11.6	739	
6/4/08 16:51:15	3.02	10.13	11.5	738	
6/4/08 16:51:30	3.02	10.07	11.3	751	
6/4/08 16:51:45	3.05	9.98	11.4	774	
6/4/08 16:52:00	3.10	9.89	11.5	785	Change of Ports
6/4/08 16:52:15	3.13	9.89	11.1	794	
6/4/08 16:52:30	3.15	9.96	11.1	796	
6/4/08 16:52:45	3.15	10.08	11.3	786	
6/4/08 16:53:00	3.14	10.21	11.5	786	
6/4/08 16:53:15	3.11	10.30	11.9	758	
6/4/08 16:53:30	3.06	10.36	11.9	682	
6/4/08 16:53:45	2.96	10.38	11.8	630	
6/4/08 16:54:00	2.90	10.37	4.1	543	
6/4/08 16:54:15	3.51	9.70	0.7	344	
6/4/08 16:54:30	11.33	4.70	0.6	87	
6/4/08 16:54:45	18.57	1.02	0.6	19	
6/4/08 16:55:00	20.19	0.32	0.6	0	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 16:55:15	20.37	0.23	0.6	0	
6/4/08 16:55:30	20.40	0.20	0.5	0	
6/4/08 16:55:45	20.42	0.19	0.5	0	
6/4/08 16:56:00	20.43	0.18	0.5	0	
6/4/08 16:56:15	20.44	0.18	0.6	0	
6/4/08 16:56:30	20.44	0.17	8.8	57	
6/4/08 16:56:45	19.55	1.16	11.4	278	
6/4/08 16:57:00	11.51	6.31	11.4	581	
6/4/08 16:57:15	4.75	9.49	11.6	663	
6/4/08 16:57:30	3.24	10.06	11.7	678	
6/4/08 16:57:45	3.10	10.09	11.7	673	
6/4/08 16:58:00	3.09	10.05	11.8	676	
6/4/08 16:58:15	3.10	10.02	11.8	682	
6/4/08 16:58:30	3.11	10.02	11.8	699	
6/4/08 16:58:45	3.13	10.03	11.7	724	
6/4/08 16:59:00	3.15	10.04	11.5	761	
6/4/08 16:59:15	3.18	10.04	11.8	792	
6/4/08 16:59:30	3.20	10.04	11.8	789	
6/4/08 16:59:45	3.19	10.01	11.8	777	Resume Sampling
6/4/08 17:00:00	3.19	10.01	11.8	778	
6/4/08 17:00:15	3.19	10.06	11.9	781	
6/4/08 17:00:30	3.17	10.13	11.9	797	
6/4/08 17:00:45	3.17	10.21	11.9	799	
6/4/08 17:01:00	3.15	10.27	11.8	793	
6/4/08 17:01:15	3.14	10.30	11.9	783	
6/4/08 17:01:30	3.12	10.32	12.0	745	
6/4/08 17:01:45	3.06	10.36	12.0	706	
6/4/08 17:02:00	3.01	10.38	12.0	659	
6/4/08 17:02:15	2.98	10.37	12.1	629	
6/4/08 17:02:30	2.93	10.40	12.2	572	
6/4/08 17:02:45	2.87	10.46	12.0	527	
6/4/08 17:03:00	2.87	10.48	11.9	493	
6/4/08 17:03:15	2.85	10.49	11.9	485	
6/4/08 17:03:30	2.82	10.49	11.9	491	
6/4/08 17:03:45	2.85	10.45	11.7	512	
6/4/08 17:04:00	2.91	10.38	11.6	564	
6/4/08 17:04:15	2.99	10.31	11.5	597	
6/4/08 17:04:30	3.07	10.26	11.5	634	
6/4/08 17:04:45	3.11	10.20	11.5	663	
6/4/08 17:05:00	3.16	10.15	11.5	683	
6/4/08 17:05:15	3.20	10.10	11.7	697	
6/4/08 17:05:30	3.19	10.09	11.7	698	
6/4/08 17:05:45	3.17	10.09	11.7	697	
6/4/08 17:06:00	3.18	10.07	11.5	712	
6/4/08 17:06:15	3.16	10.07	11.8	727	
6/4/08 17:06:30	3.13	10.07	11.8	722	
6/4/08 17:06:45	3.12	10.05	11.9	720	
6/4/08 17:07:00	3.13	10.04	12.0	717	
6/4/08 17:07:15	3.13	10.10	11.8	717	
6/4/08 17:07:30	3.13	10.16	12.0	726	
6/4/08 17:07:45	3.13	10.22	12.1	721	
6/4/08 17:08:00	3.09	10.30	12.0	689	
6/4/08 17:08:15	3.06	10.35	12.2	648	
6/4/08 17:08:30	3.02	10.36	12.0	611	
6/4/08 17:08:45	2.97	10.37	11.9	599	
6/4/08 17:09:00	2.97	10.36	12.0	596	
6/4/08 17:09:15	2.98	10.33	12.0	588	
6/4/08 17:09:30	2.99	10.33	12.0	589	
6/4/08 17:09:45	3.01	10.32	12.1	581	
6/4/08 17:10:00	3.01	10.31	12.0	572	
6/4/08 17:10:15	3.00	10.33	11.9	570	
6/4/08 17:10:30	2.99	10.35	12.0	573	
6/4/08 17:10:45	2.98	10.35	11.9	577	
6/4/08 17:11:00	2.99	10.33	11.4	593	
6/4/08 17:11:15	3.02	10.29	11.8	615	
6/4/08 17:11:30	3.06	10.25	11.8	642	
6/4/08 17:11:45	3.07	10.22	11.8	670	
6/4/08 17:12:00	3.11	10.18	11.7	692	
6/4/08 17:12:15	3.13	10.17	11.6	719	
6/4/08 17:12:30	3.16	10.17	11.8	728	
6/4/08 17:12:45	3.18	10.15	11.8	726	
6/4/08 17:13:00	3.16	10.15	11.7	733	
6/4/08 17:13:15	3.15	10.15	11.6	740	
6/4/08 17:13:30	3.18	10.11	11.8	746	
6/4/08 17:13:45	3.19	10.06	11.8	744	
6/4/08 17:14:00	3.16	10.06	11.9	741	
6/4/08 17:14:15	3.17	10.11	12.0	738	
6/4/08 17:14:30	3.16	10.21	11.9	728	
6/4/08 17:14:45	3.15	10.26	12.0	720	
6/4/08 17:15:00	3.14	10.30	12.1	701	
6/4/08 17:15:15	3.10	10.34	12.2	679	
6/4/08 17:15:30	3.06	10.35	12.2	658	
6/4/08 17:15:45	3.02	10.34	12.3	623	
6/4/08 17:16:00	2.99	10.31	12.2	595	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 17:16:15	2.99	10.27	12.1	584	
6/4/08 17:16:30	3.00	10.25	12.0	587	
6/4/08 17:16:45	3.01	10.25	12.0	602	
6/4/08 17:17:00	3.06	10.26	11.9	631	
6/4/08 17:17:15	3.07	10.29	11.9	654	
6/4/08 17:17:30	3.07	10.29	11.9	645	
6/4/08 17:17:45	3.08	10.30	11.8	615	
6/4/08 17:18:00	3.07	10.32	12.0	596	
6/4/08 17:18:15	3.07	10.30	11.8	601	
6/4/08 17:18:30	3.07	10.28	11.8	619	
6/4/08 17:18:45	3.09	10.25	11.9	632	
6/4/08 17:19:00	3.10	10.26	12.0	640	
6/4/08 17:19:15	3.09	10.26	12.0	648	
6/4/08 17:19:30	3.10	10.22	11.9	682	
6/4/08 17:19:45	3.13	10.17	11.9	676	
6/4/08 17:20:00	3.14	10.16	11.7	698	
6/4/08 17:20:15	3.15	10.16	11.7	721	
6/4/08 17:20:30	3.18	10.17	11.6	726	
6/4/08 17:20:45	3.19	10.20	11.7	720	
6/4/08 17:21:00	3.20	10.23	11.7	735	
6/4/08 17:21:15	3.19	10.24	11.8	744	
6/4/08 17:21:30	3.19	10.18	11.7	736	
6/4/08 17:21:45	3.19	10.09	11.8	732	
6/4/08 17:22:00	3.21	10.03	11.8	741	
6/4/08 17:22:15	3.20	10.08	11.8	754	
6/4/08 17:22:30	3.21	10.15	11.5	773	
6/4/08 17:22:45	3.21	10.21	11.8	806	
6/4/08 17:23:00	3.23	10.24	11.9	819	
6/4/08 17:23:15	3.24	10.26	11.9	783	
6/4/08 17:23:30	3.21	10.30	11.9	732	
6/4/08 17:23:45	3.18	10.34	11.9	703	
6/4/08 17:24:00	3.16	10.35	11.4	705	
6/4/08 17:24:15	3.12	10.39	11.4	705	
6/4/08 17:24:30	3.09	10.44	12.0	666	
6/4/08 17:24:45	3.03	10.47	12.4	596	
6/4/08 17:25:00	2.95	10.47	12.4	520	
6/4/08 17:25:15	2.87	10.48	12.3	474	
6/4/08 17:25:30	2.87	10.45	11.8	481	
6/4/08 17:25:45	2.92	10.40	11.8	516	
6/4/08 17:26:00	3.00	10.35	12.0	553	
6/4/08 17:26:15	3.05	10.31	11.9	574	
6/4/08 17:26:30	3.07	10.27	11.9	591	
6/4/08 17:26:45	3.08	10.26	12.0	601	
6/4/08 17:27:00	3.08	10.25	11.9	602	
6/4/08 17:27:15	3.11	10.24	11.9	623	
6/4/08 17:27:30	3.14	10.23	11.7	639	
6/4/08 17:27:45	3.15	10.25	11.7	640	
6/4/08 17:28:00	3.14	10.31	12.0	625	
6/4/08 17:28:15	3.12	10.36	12.2	606	
6/4/08 17:28:30	3.10	10.36	12.2	582	
6/4/08 17:28:45	3.07	10.35	12.0	559	
6/4/08 17:29:00	3.06	10.33	12.0	562	
6/4/08 17:29:15	3.08	10.29	12.0	575	
6/4/08 17:29:30	3.09	10.26	12.0	606	
6/4/08 17:29:45	3.12	10.21	11.9	651	
6/4/08 17:30:00	3.17	10.14	11.8	682	
6/4/08 17:30:15	3.22	10.04	11.8	706	
6/4/08 17:30:30	3.27	9.96	11.7	741	
6/4/08 17:30:45	3.31	10.00	11.9	769	
6/4/08 17:31:00	3.34	10.10	11.9	780	
6/4/08 17:31:15	3.33	10.25	11.9	792	
6/4/08 17:31:30	3.30	10.42	12.0	813	
6/4/08 17:31:45	3.27	10.53	12.1	819	
6/4/08 17:32:00	3.25	10.57	12.1	789	
6/4/08 17:32:15	3.19	10.57	12.2	742	
6/4/08 17:32:30	3.14	10.52	12.2	682	
6/4/08 17:32:45	3.10	10.47	12.2	622	
6/4/08 17:33:00	3.09	10.42	12.2	595	
6/4/08 17:33:15	3.07	10.42	12.2	587	
6/4/08 17:33:30	3.08	10.39	12.1	615	
6/4/08 17:33:45	3.09	10.36	12.1	628	
6/4/08 17:34:00	3.12	10.36	11.9	612	
6/4/08 17:34:15	3.14	10.37	12.0	603	
6/4/08 17:34:30	3.13	10.38	11.7	616	
6/4/08 17:34:45	3.11	10.39	11.3	623	
6/4/08 17:35:00	3.12	10.39	11.5	626	
6/4/08 17:35:15	3.13	10.38	11.7	627	
6/4/08 17:35:30	3.16	10.37	11.6	628	
6/4/08 17:35:45	3.15	10.37	11.8	639	
6/4/08 17:36:00	3.15	10.31	11.4	650	
6/4/08 17:36:15	3.17	10.26	11.2	659	
6/4/08 17:36:30	3.19	10.21	11.5	677	
6/4/08 17:36:45	3.22	10.16	11.7	698	
6/4/08 17:37:00	3.25	10.11	11.6	719	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 17:37:15	3.26	10.07	11.6	743	
6/4/08 17:37:30	3.29	10.04	11.6	765	
6/4/08 17:37:45	3.33	10.03	11.7	782	
6/4/08 17:38:00	3.34	10.09	11.7	781	
6/4/08 17:38:15	3.34	10.19	11.8	775	
6/4/08 17:38:30	3.32	10.28	11.9	773	
6/4/08 17:38:45	3.30	10.35	12.0	778	
6/4/08 17:39:00	3.27	10.41	12.1	783	
6/4/08 17:39:15	3.23	10.45	12.0	735	
6/4/08 17:39:30	3.19	10.46	12.0	710	
6/4/08 17:39:45	3.16	10.44	12.3	677	
6/4/08 17:40:00	3.11	10.41	12.3	641	
6/4/08 17:40:15	3.07	10.38	12.2	608	
6/4/08 17:40:30	3.07	10.37	12.1	597	
6/4/08 17:40:45	3.08	10.36	12.1	606	
6/4/08 17:41:00	3.08	10.39	12.1	609	
6/4/08 17:41:15	3.08	10.40	12.1	603	
6/4/08 17:41:30	3.09	10.40	12.0	603	
6/4/08 17:41:45	3.10	10.40	11.7	608	
6/4/08 17:42:00	3.11	10.39	11.8	618	
6/4/08 17:42:15	3.12	10.37	11.7	628	
6/4/08 17:42:30	3.14	10.34	11.7	634	
6/4/08 17:42:45	3.15	10.30	11.6	643	
6/4/08 17:43:00	3.17	10.27	11.3	655	
6/4/08 17:43:15	3.19	10.24	11.6	679	
6/4/08 17:43:30	3.22	10.22	11.8	689	
6/4/08 17:43:45	3.23	10.21	11.8	686	
6/4/08 17:44:00	3.22	10.20	11.9	685	
6/4/08 17:44:15	3.23	10.19	11.9	686	
6/4/08 17:44:30	3.21	10.23	11.9	693	
6/4/08 17:44:45	3.20	10.27	12.0	703	
6/4/08 17:45:00	3.21	10.29	12.0	721	
6/4/08 17:45:15	3.20	10.30	12.1	717	
6/4/08 17:45:30	3.18	10.27	12.1	694	
6/4/08 17:45:45	3.15	10.19	12.0	683	
6/4/08 17:46:00	3.14	10.12	12.1	682	
6/4/08 17:46:15	3.13	10.12	12.0	675	
6/4/08 17:46:30	3.12	10.20	12.1	677	
6/4/08 17:46:45	3.13	10.28	12.2	670	
6/4/08 17:47:00	3.11	10.34	12.2	617	
6/4/08 17:47:15	3.05	10.42	12.2	552	
6/4/08 17:47:30	2.99	10.47	12.2	515	
6/4/08 17:47:45	2.97	10.50	12.1	504	
6/4/08 17:48:00	2.97	10.49	11.9	516	
6/4/08 17:48:15	3.02	10.45	12.0	538	
6/4/08 17:48:30	3.07	10.44	12.0	551	
6/4/08 17:48:45	3.08	10.44	12.0	561	
6/4/08 17:49:00	3.07	10.41	12.0	576	
6/4/08 17:49:15	3.09	10.36	11.7	591	
6/4/08 17:49:30	3.11	10.31	11.8	604	
6/4/08 17:49:45	3.13	10.28	11.8	620	
6/4/08 17:50:00	3.15	10.24	11.8	639	
6/4/08 17:50:15	3.21	10.18	11.7	668	
6/4/08 17:50:30	3.24	10.16	11.4	707	
6/4/08 17:50:45	3.26	10.16	11.5	735	
6/4/08 17:51:00	3.26	10.17	11.7	746	
6/4/08 17:51:15	3.25	10.21	11.8	752	
6/4/08 17:51:30	3.25	10.24	11.9	736	
6/4/08 17:51:45	3.24	10.29	11.7	710	
6/4/08 17:52:00	3.22	10.34	12.0	699	
6/4/08 17:52:15	3.21	10.37	12.0	681	
6/4/08 17:52:30	3.17	10.37	12.1	663	
6/4/08 17:52:45	3.15	10.35	11.8	650	
6/4/08 17:53:00	3.13	10.32	11.7	642	
6/4/08 17:53:15	3.11	10.31	11.7	628	
6/4/08 17:53:30	3.13	10.27	11.4	622	
6/4/08 17:53:45	3.14	10.20	11.5	646	
6/4/08 17:54:00	3.17	10.10	11.7	677	
6/4/08 17:54:15	3.24	10.03	11.6	703	
6/4/08 17:54:30	3.27	10.07	11.5	735	
6/4/08 17:54:45	3.28	10.18	11.4	773	
6/4/08 17:55:00	3.31	10.27	11.5	800	
6/4/08 17:55:15	3.34	10.36	11.8	789	
6/4/08 17:55:30	3.29	10.49	11.7	746	
6/4/08 17:55:45	3.22	10.58	12.1	700	
6/4/08 17:56:00	3.16	10.59	12.4	638	
6/4/08 17:56:15	3.08	10.55	12.6	571	
6/4/08 17:56:30	3.02	10.49	12.4	522	
6/4/08 17:56:45	2.98	10.45	12.3	483	
6/4/08 17:57:00	2.99	10.41	12.0	514	
6/4/08 17:57:15	3.02	10.35	11.7	564	
6/4/08 17:57:30	3.10	10.30	11.2	592	
6/4/08 17:57:45	3.15	10.27	11.1	625	
6/4/08 17:58:00	3.19	10.26	11.3	637	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 17:58:15	3.21	10.29	11.5	633	
6/4/08 17:58:30	3.18	10.32	11.6	617	
6/4/08 17:58:45	3.16	10.33	11.9	609	
6/4/08 17:59:00	3.16	10.33	11.9	601	
6/4/08 17:59:15	3.13	10.34	11.7	584	
6/4/08 17:59:30	3.14	10.32	11.9	566	
6/4/08 17:59:45	3.16	10.29	11.6	560	
6/4/08 18:00:00	3.14	10.26	11.5	575	
6/4/08 18:00:15	3.15	10.21	11.4	599	
6/4/08 18:00:30	3.19	10.16	11.5	612	
6/4/08 18:00:45	3.23	10.12	11.5	622	
6/4/08 18:01:00	3.25	10.10	11.7	637	
6/4/08 18:01:15	3.27	10.08	11.8	648	
6/4/08 18:01:30	3.28	10.06	11.9	667	
6/4/08 18:01:45	3.31	10.05	11.9	681	
6/4/08 18:02:00	3.32	10.11	12.0	689	
6/4/08 18:02:15	3.30	10.22	12.1	702	
6/4/08 18:02:30	3.30	10.32	12.2	683	
6/4/08 18:02:45	3.27	10.40	12.2	639	
6/4/08 18:03:00	3.23	10.46	12.4	586	
6/4/08 18:03:15	3.17	10.55	12.2	526	
6/4/08 18:03:30	3.10	10.59	12.5	453	
6/4/08 18:03:45	3.08	10.56	12.4	385	
6/4/08 18:04:00	3.01	10.51	12.2	360	
6/4/08 18:04:15	3.01	10.46	12.0	362	
6/4/08 18:04:30	3.04	10.44	12.0	391	
6/4/08 18:04:45	3.08	10.42	11.6	417	
6/4/08 18:05:00	3.12	10.40	11.5	429	
6/4/08 18:05:15	3.16	10.37	11.2	434	
6/4/08 18:05:30	3.18	10.38	11.4	447	
6/4/08 18:05:45	3.21	10.35	11.4	457	
6/4/08 18:06:00	3.21	10.35	11.4	470	
6/4/08 18:06:15	3.19	10.37	11.3	483	
6/4/08 18:06:30	3.19	10.37	11.5	484	
6/4/08 18:06:45	3.20	10.38	11.5	477	
6/4/08 18:07:00	3.20	10.35	11.4	468	
6/4/08 18:07:15	3.21	10.30	11.5	474	
6/4/08 18:07:30	3.22	10.26	11.4	485	
6/4/08 18:07:45	3.23	10.22	11.4	501	
6/4/08 18:08:00	3.26	10.19	11.4	510	
6/4/08 18:08:15	3.29	10.17	11.6	521	
6/4/08 18:08:30	3.31	10.16	11.5	525	
6/4/08 18:08:45	3.31	10.17	11.3	531	
6/4/08 18:09:00	3.32	10.13	11.3	531	
6/4/08 18:09:15	3.34	10.11	11.4	528	
6/4/08 18:09:30	3.34	10.16	11.3	521	
6/4/08 18:09:45	3.32	10.25	11.4	497	
6/4/08 18:10:00	3.29	10.35	11.6	461	
6/4/08 18:10:15	3.24	10.42	11.6	418	
6/4/08 18:10:30	3.21	10.47	11.8	373	
6/4/08 18:10:45	3.14	10.52	12.1	335	
6/4/08 18:11:00	3.08	10.56	11.9	314	
6/4/08 18:11:15	3.05	10.53	12.0	318	
6/4/08 18:11:30	3.07	10.47	11.9	346	
6/4/08 18:11:45	3.11	10.41	11.8	385	
6/4/08 18:12:00	3.17	10.37	11.8	418	
6/4/08 18:12:15	3.20	10.36	11.7	448	
6/4/08 18:12:30	3.23	10.35	11.5	488	
6/4/08 18:12:45	3.25	10.33	11.6	479	
6/4/08 18:13:00	3.27	10.31	11.1	499	
6/4/08 18:13:15	3.29	10.30	11.0	533	
6/4/08 18:13:30	3.30	10.29	11.0	555	
6/4/08 18:13:45	3.30	10.29	11.2	563	
6/4/08 18:14:00	3.31	10.27	11.8	544	
6/4/08 18:14:15	3.29	10.26	11.8	514	
6/4/08 18:14:30	3.25	10.28	11.6	492	
6/4/08 18:14:45	3.26	10.24	11.8	483	
6/4/08 18:15:00	3.27	10.19	11.8	505	
6/4/08 18:15:15	3.27	10.16	11.7	529	
6/4/08 18:15:30	3.29	10.14	11.5	538	
6/4/08 18:15:45	3.30	10.15	11.7	540	
6/4/08 18:16:00	3.29	10.19	11.7	542	
6/4/08 18:16:15	3.31	10.21	11.9	533	
6/4/08 18:16:30	3.28	10.26	11.9	510	
6/4/08 18:16:45	3.24	10.31	11.9	486	
6/4/08 18:17:00	3.21	10.30	11.8	470	
6/4/08 18:17:15	3.19	10.24	11.4	467	
6/4/08 18:17:30	3.20	10.13	11.4	499	
6/4/08 18:17:45	3.23	10.07	11.4	531	
6/4/08 18:18:00	3.30	10.08	11.2	560	
6/4/08 18:18:15	3.33	10.14	11.7	593	
6/4/08 18:18:30	3.33	10.21	11.7	589	
6/4/08 18:18:45	3.31	10.27	11.8	558	
6/4/08 18:19:00	3.28	10.32	11.3	522	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 18:19:15	3.24	10.37	11.6	486	
6/4/08 18:19:30	3.22	10.39	12.0	454	
6/4/08 18:19:45	3.17	10.43	11.9	426	
6/4/08 18:20:00	3.13	10.44	11.9	411	
6/4/08 18:20:15	3.11	10.45	12.0	407	
6/4/08 18:20:30	3.09	10.45	11.8	412	
6/4/08 18:20:45	3.09	10.42	11.3	423	
6/4/08 18:21:00	3.12	10.36	11.0	466	
6/4/08 18:21:15	3.19	10.26	11.2	523	
6/4/08 18:21:30	3.26	10.18	10.9	565	
6/4/08 18:21:45	3.28	10.13	10.7	609	
6/4/08 18:22:00	3.32	10.08	10.9	641	
6/4/08 18:22:15	3.38	10.03	11.0	654	
6/4/08 18:22:30	3.37	10.02	11.2	656	
6/4/08 18:22:45	3.35	10.04	11.6	646	
6/4/08 18:23:00	3.31	10.09	11.5	625	
6/4/08 18:23:15	3.27	10.15	11.6	613	
6/4/08 18:23:30	3.25	10.19	11.7	613	
6/4/08 18:23:45	3.23	10.23	11.5	610	
6/4/08 18:24:00	3.19	10.22	11.3	616	
6/4/08 18:24:15	3.20	10.14	11.6	625	
6/4/08 18:24:30	3.22	10.03	11.4	632	
6/4/08 18:24:45	3.24	9.98	11.1	644	
6/4/08 18:25:00	3.27	10.00	11.2	667	
6/4/08 18:25:15	3.31	10.09	11.5	698	
6/4/08 18:25:30	3.31	10.17	11.7	727	
6/4/08 18:25:45	3.32	10.20	11.8	738	
6/4/08 18:26:00	3.30	10.28	11.4	715	
6/4/08 18:26:15	3.26	10.35	11.4	683	
6/4/08 18:26:30	3.25	10.35	11.6	661	
6/4/08 18:26:45	3.21	10.34	11.3	641	
6/4/08 18:27:00	3.15	10.34	11.1	635	
6/4/08 18:27:15	3.10	10.34	11.2	629	
6/4/08 18:27:30	3.09	10.33	11.0	594	
6/4/08 18:27:45	3.05	10.29	11.4	566	
6/4/08 18:28:00	3.06	10.27	11.4	546	
6/4/08 18:28:15	3.04	10.24	11.5	500	
6/4/08 18:28:30	2.99	10.24	11.2	462	
6/4/08 18:28:45	2.97	10.26	11.1	475	
6/4/08 18:29:00	3.03	10.23	11.2	544	
6/4/08 18:29:15	3.11	10.17	11.1	629	
6/4/08 18:29:30	3.21	10.11	11.0	688	
6/4/08 18:29:45	3.30	10.06	11.1	718	
6/4/08 18:30:00	3.33	10.06	11.5	742	End Run No. 2
6/4/08 18:30:15	3.35	10.08	11.4	730	
6/4/08 18:30:30	3.35	10.13	7.6	683	
6/4/08 18:30:45	3.29	9.16	6.0	477	
6/4/08 18:31:00	2.70	4.49	1.4	197	
6/4/08 18:31:15	3.31	1.13	1.1	38	
6/4/08 18:31:30	4.21	0.28	0.9	5	
6/4/08 18:31:45	4.40	0.17	0.8	0	
6/4/08 18:32:00	4.40	0.15	0.8	-1	
6/4/08 18:32:15	4.41	0.14	0.8	-1	
6/4/08 18:32:30	4.44	0.14	0.7	-1	
6/4/08 18:32:45	4.46	0.13	0.7	-1	
6/4/08 18:33:00	4.48	0.13	0.7	-1	
6/4/08 18:33:15	4.48	0.12	0.7	-1	System Bias
6/4/08 18:33:30	4.48	0.12	0.6	-1	4.49 4.50% O ₂
6/4/08 18:33:45	4.49	0.11	0.6	-1	0.11 Zero CO ₂
6/4/08 18:34:00	4.49	0.11	0.6	-1	0.6 Zero NO _x
6/4/08 18:34:15	4.49	0.11	0.6	-1	-1 Zero CO
6/4/08 18:34:30	4.49	0.11	1.9	3	
6/4/08 18:34:45	4.49	0.12	6.6	71	
6/4/08 18:35:00	4.27	2.37	0.9	134	
6/4/08 18:35:15	3.32	5.51	0.7	80	
6/4/08 18:35:30	1.16	7.91	0.6	18	
6/4/08 18:35:45	0.17	8.58	0.6	-1	
6/4/08 18:36:00	0.02	8.52	0.6	-3	
6/4/08 18:36:15	0.00	8.39	0.6	-3	
6/4/08 18:36:30	0.00	8.40	0.6	-3	
6/4/08 18:36:45	0.00	8.57	0.5	-3	
6/4/08 18:37:00	-0.01	8.80	0.5	-3	
6/4/08 18:37:15	-0.01	8.93	0.5	-3	
6/4/08 18:37:30	-0.01	9.00	0.5	-3	
6/4/08 18:37:45	-0.01	9.03	0.5	-3	
6/4/08 18:38:00	-0.02	9.05	0.5	-3	
6/4/08 18:38:15	-0.02	9.06	0.5	-3	
6/4/08 18:38:30	-0.02	9.07	0.5	-3	
6/4/08 18:38:45	-0.02	9.07	0.5	-3	
6/4/08 18:39:00	-0.02	9.07	0.5	-3	System Bias
6/4/08 18:39:15	-0.02	9.07	0.5	-3	
6/4/08 18:39:30	-0.02	9.08	0.5	-3	9.08 9.00% CO ₂
6/4/08 18:39:45	-0.02	9.08	0.9	-3	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 18:40:00	-0.02	9.08	9.5	92	
6/4/08 18:40:15	0.20	9.21	12.5	357	
6/4/08 18:40:30	1.80	9.45	21.4	350	
6/4/08 18:40:45	1.55	5.73	24.6	148	
6/4/08 18:41:00	0.45	1.84	24.9	33	
6/4/08 18:41:15	0.07	0.40	26.6	1	
6/4/08 18:41:30	0.02	0.20	27.2	-1	
6/4/08 18:41:45	0.02	0.16	26.8	-1	
6/4/08 18:42:00	0.02	0.15	32.3	-1	
6/4/08 18:42:15	0.02	0.14	45.4	-1	
6/4/08 18:42:30	0.01	0.13	44.7	-1	
6/4/08 18:42:45	0.01	0.13	43.9	-2	
6/4/08 18:43:00	0.00	0.12	43.4	-2	
6/4/08 18:43:15	0.00	0.12	43.0	-2	
6/4/08 18:43:30	0.00	0.12	42.7	-2	
6/4/08 18:43:45	0.00	0.11	42.5	-1	
6/4/08 18:44:00	0.00	0.11	42.4	-1	
6/4/08 18:44:15	0.00	0.11	42.3	-1	System Bias
6/4/08 18:44:30	0.00	0.10	42.2	-2	0.00 Zero O ₂
6/4/08 18:44:45	0.00	0.10	42.2	-2	
6/4/08 18:45:00	0.00	0.10	42.1	-2	42.1 45.0 ppm NO _x
6/4/08 18:45:15	0.00	0.10	42.1	-2	
6/4/08 18:45:30	0.00	0.10	39.7	14	
6/4/08 18:45:45	0.03	0.34	36.3	137	
6/4/08 18:46:00	0.72	2.95	2.2	488	
6/4/08 18:46:15	0.77	2.25	1.5	818	
6/4/08 18:46:30	0.17	0.48	1.3	942	
6/4/08 18:46:45	0.02	0.14	1.2	970	
6/4/08 18:47:00	0.00	0.10	1.0	973	
6/4/08 18:47:15	0.00	0.10	1.0	973	
6/4/08 18:47:30	0.00	0.09	0.9	974	
6/4/08 18:47:45	0.00	0.09	0.9	974	
6/4/08 18:48:00	0.00	0.09	0.8	972	
6/4/08 18:48:15	0.00	0.09	0.8	971	
6/4/08 18:48:30	0.00	0.09	0.8	972	System Bias
6/4/08 18:48:45	0.00	0.09	0.8	972	
6/4/08 18:49:00	0.00	0.09	0.7	973	
6/4/08 18:49:15	0.00	0.09	0.7	974	
6/4/08 18:49:30	0.00	0.09	0.7	974	973 1,000 ppm CO
6/4/08 18:49:45	0.00	0.09	5.0	966	
6/4/08 18:50:00	0.03	0.36	11.8	843	
6/4/08 18:50:15	1.06	4.43	11.7	674	
6/4/08 18:50:30	2.50	8.35	11.7	590	
6/4/08 18:50:45	3.12	9.86	11.7	574	
6/4/08 18:51:00	3.22	10.11	11.6	588	
6/4/08 18:51:15	3.24	10.16	11.8	577	
6/4/08 18:51:30	3.22	10.22	12.0	547	
6/4/08 18:51:45	3.19	10.25	12.0	516	
6/4/08 18:52:00	3.17	10.25	12.0	511	
6/4/08 18:52:15	3.18	10.23	12.1	513	
6/4/08 18:52:30	3.17	10.22	12.0	509	
6/4/08 18:52:45	3.16	10.17	11.9	523	
6/4/08 18:53:00	3.19	10.08	11.8	538	
6/4/08 18:53:15	3.25	9.97	11.7	548	
6/4/08 18:53:30	3.31	9.93	11.8	563	
6/4/08 18:53:45	3.34	9.99	11.9	589	Begin Run No. 3
6/4/08 18:54:00	3.34	10.12	12.0	597	
6/4/08 18:54:15	3.34	10.27	12.2	579	
6/4/08 18:54:30	3.31	10.39	12.2	542	
6/4/08 18:54:45	3.25	10.45	12.3	463	
6/4/08 18:55:00	3.17	10.51	12.2	388	
6/4/08 18:55:15	3.09	10.53	12.3	343	
6/4/08 18:55:30	3.04	10.52	12.1	325	
6/4/08 18:55:45	3.03	10.47	11.9	321	
6/4/08 18:56:00	3.07	10.38	11.8	338	
6/4/08 18:56:15	3.14	10.28	11.8	380	
6/4/08 18:56:30	3.22	10.21	11.7	413	
6/4/08 18:56:45	3.27	10.17	11.8	438	
6/4/08 18:57:00	3.31	10.15	11.7	463	
6/4/08 18:57:15	3.32	10.15	11.6	488	
6/4/08 18:57:30	3.33	10.14	11.6	483	
6/4/08 18:57:45	3.35	10.16	11.7	478	
6/4/08 18:58:00	3.33	10.23	11.9	478	
6/4/08 18:58:15	3.31	10.30	11.8	455	
6/4/08 18:58:30	3.26	10.33	11.9	430	
6/4/08 18:58:45	3.22	10.34	11.9	420	
6/4/08 18:59:00	3.20	10.34	11.9	412	
6/4/08 18:59:15	3.21	10.31	11.9	398	
6/4/08 18:59:30	3.21	10.29	11.8	400	
6/4/08 18:59:45	3.22	10.27	11.8	415	
6/4/08 19:00:00	3.24	10.23	11.8	425	
6/4/08 19:00:15	3.26	10.17	11.8	440	
6/4/08 19:00:30	3.30	10.08	11.7	450	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 19:00:45	3.33	10.00	11.7	468	
6/4/08 19:01:00	3.36	9.96	11.7	496	
6/4/08 19:01:15	3.38	10.01	11.6	534	
6/4/08 19:01:30	3.39	10.12	11.8	542	
6/4/08 19:01:45	3.38	10.26	11.7	521	
6/4/08 19:02:00	3.33	10.39	11.7	494	
6/4/08 19:02:15	3.26	10.48	11.8	441	
6/4/08 19:02:30	3.19	10.52	12.0	394	
6/4/08 19:02:45	3.12	10.54	12.1	355	
6/4/08 19:03:00	3.10	10.49	11.9	347	
6/4/08 19:03:15	3.11	10.41	11.8	379	
6/4/08 19:03:30	3.16	10.32	11.6	422	
6/4/08 19:03:45	3.23	10.22	11.6	481	
6/4/08 19:04:00	3.30	10.16	11.4	508	
6/4/08 19:04:15	3.34	10.12	11.4	525	
6/4/08 19:04:30	3.37	10.12	11.6	542	
6/4/08 19:04:45	3.37	10.15	11.7	559	
6/4/08 19:05:00	3.35	10.20	11.8	562	
6/4/08 19:05:15	3.33	10.27	11.9	558	
6/4/08 19:05:30	3.28	10.31	11.6	542	
6/4/08 19:05:45	3.24	10.31	11.8	507	
6/4/08 19:06:00	3.22	10.30	11.8	480	
6/4/08 19:06:15	3.21	10.29	11.8	454	
6/4/08 19:06:30	3.22	10.26	11.4	452	
6/4/08 19:06:45	3.23	10.22	11.8	471	
6/4/08 19:07:00	3.24	10.19	11.8	483	
6/4/08 19:07:15	3.25	10.17	11.9	506	
6/4/08 19:07:30	3.26	10.15	11.8	520	
6/4/08 19:07:45	3.28	10.12	11.8	540	
6/4/08 19:08:00	3.31	10.05	11.7	559	
6/4/08 19:08:15	3.35	9.98	11.7	582	
6/4/08 19:08:30	3.36	9.96	11.7	604	
6/4/08 19:08:45	3.39	10.02	11.6	616	
6/4/08 19:09:00	3.38	10.14	11.9	607	
6/4/08 19:09:15	3.36	10.26	11.9	594	
6/4/08 19:09:30	3.33	10.34	12.1	580	
6/4/08 19:09:45	3.30	10.40	12.2	535	
6/4/08 19:10:00	3.24	10.44	12.2	491	
6/4/08 19:10:15	3.18	10.43	12.2	438	
6/4/08 19:10:30	3.14	10.38	12.2	415	
6/4/08 19:10:45	3.13	10.33	12.0	412	
6/4/08 19:11:00	3.14	10.27	11.8	435	
6/4/08 19:11:15	3.19	10.22	11.8	469	
6/4/08 19:11:30	3.27	10.20	11.8	483	
6/4/08 19:11:45	3.29	10.21	11.7	506	
6/4/08 19:12:00	3.29	10.25	11.7	514	
6/4/08 19:12:15	3.28	10.27	11.8	521	
6/4/08 19:12:30	3.25	10.29	11.8	531	
6/4/08 19:12:45	3.24	10.29	11.7	538	
6/4/08 19:13:00	3.24	10.27	11.6	540	
6/4/08 19:13:15	3.23	10.26	11.8	550	
6/4/08 19:13:30	3.24	10.22	11.8	565	
6/4/08 19:13:45	3.26	10.17	11.7	589	
6/4/08 19:14:00	3.28	10.13	11.7	601	
6/4/08 19:14:15	3.30	10.10	11.7	626	
6/4/08 19:14:30	3.32	10.08	11.6	635	
6/4/08 19:14:45	3.34	10.06	11.7	640	
6/4/08 19:15:00	3.34	10.07	11.7	649	
6/4/08 19:15:15	3.35	10.08	11.7	672	
6/4/08 19:15:30	3.35	10.09	11.7	680	
6/4/08 19:15:45	3.35	10.09	11.9	697	
6/4/08 19:16:00	3.34	10.08	11.9	701	
6/4/08 19:16:15	3.34	10.07	11.9	685	
6/4/08 19:16:30	3.34	10.10	11.9	683	
6/4/08 19:16:45	3.33	10.18	12.0	714	
6/4/08 19:17:00	3.35	10.26	11.9	718	
6/4/08 19:17:15	3.34	10.32	12.1	709	
6/4/08 19:17:30	3.33	10.34	12.2	691	
6/4/08 19:17:45	3.30	10.37	12.3	646	
6/4/08 19:18:00	3.24	10.40	12.3	613	
6/4/08 19:18:15	3.20	10.43	12.2	566	
6/4/08 19:18:30	3.16	10.45	12.0	538	
6/4/08 19:18:45	3.15	10.47	11.9	516	
6/4/08 19:19:00	3.13	10.48	12.1	506	
6/4/08 19:19:15	3.11	10.49	12.1	487	
6/4/08 19:19:30	3.11	10.47	12.1	464	
6/4/08 19:19:45	3.10	10.41	12.0	457	
6/4/08 19:20:00	3.12	10.36	11.8	473	
6/4/08 19:20:15	3.14	10.33	11.6	505	
6/4/08 19:20:30	3.19	10.27	11.4	545	
6/4/08 19:20:45	3.26	10.20	11.5	606	
6/4/08 19:21:00	3.31	10.15	11.5	625	
6/4/08 19:21:15	3.34	10.14	11.5	650	
6/4/08 19:21:30	3.35	10.15	11.7	664	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 19:21:45	3.35	10.16	11.7	647	
6/4/08 19:22:00	3.32	10.18	11.6	627	
6/4/08 19:22:15	3.30	10.23	11.5	609	
6/4/08 19:22:30	3.26	10.30	11.7	596	
6/4/08 19:22:45	3.23	10.33	11.7	573	
6/4/08 19:23:00	3.19	10.36	11.9	566	
6/4/08 19:23:15	3.17	10.36	12.0	542	
6/4/08 19:23:30	3.17	10.34	12.1	518	
6/4/08 19:23:45	3.14	10.30	12.0	515	
6/4/08 19:24:00	3.14	10.23	11.9	538	
6/4/08 19:24:15	3.17	10.17	11.8	564	
6/4/08 19:24:30	3.23	10.12	11.8	580	
6/4/08 19:24:45	3.28	10.10	11.6	619	
6/4/08 19:25:00	3.32	10.15	11.6	647	
6/4/08 19:25:15	3.35	10.24	11.9	656	
6/4/08 19:25:30	3.33	10.38	12.1	640	
6/4/08 19:25:45	3.25	10.51	12.2	584	
6/4/08 19:26:00	3.17	10.59	12.3	525	
6/4/08 19:26:15	3.10	10.63	12.3	446	
6/4/08 19:26:30	3.03	10.64	12.1	418	
6/4/08 19:26:45	3.02	10.59	11.9	418	
6/4/08 19:27:00	3.05	10.52	11.4	441	
6/4/08 19:27:15	3.11	10.44	11.1	483	
6/4/08 19:27:30	3.17	10.37	11.5	511	
6/4/08 19:27:45	3.21	10.32	11.5	538	
6/4/08 19:28:00	3.23	10.29	11.6	551	
6/4/08 19:28:15	3.26	10.26	11.7	557	
6/4/08 19:28:30	3.27	10.27	11.8	554	
6/4/08 19:28:45	3.26	10.30	11.8	544	
6/4/08 19:29:00	3.24	10.34	11.9	543	
6/4/08 19:29:15	3.21	10.38	11.9	525	
6/4/08 19:29:30	3.19	10.41	12.0	504	
6/4/08 19:29:45	3.16	10.43	11.8	478	
6/4/08 19:30:00	3.14	10.42	11.9	474	
6/4/08 19:30:15	3.16	10.34	11.9	488	
6/4/08 19:30:30	3.18	10.26	11.7	507	
6/4/08 19:30:45	3.21	10.19	11.6	560	
6/4/08 19:31:00	3.26	10.08	11.6	611	
6/4/08 19:31:15	3.32	9.99	11.5	652	
6/4/08 19:31:30	3.36	9.97	11.6	676	
6/4/08 19:31:45	3.39	10.04	11.7	696	
6/4/08 19:32:00	3.41	10.16	11.8	704	
6/4/08 19:32:15	3.36	10.31	11.9	674	
6/4/08 19:32:30	3.29	10.44	12.2	634	
6/4/08 19:32:45	3.23	10.52	12.3	551	
6/4/08 19:33:00	3.14	10.56	12.3	498	
6/4/08 19:33:15	3.07	10.56	12.2	459	
6/4/08 19:33:30	3.03	10.53	12.2	446	
6/4/08 19:33:45	3.04	10.46	12.0	446	
6/4/08 19:34:00	3.10	10.38	11.9	463	
6/4/08 19:34:15	3.17	10.31	11.8	504	
6/4/08 19:34:30	3.21	10.27	11.8	525	
6/4/08 19:34:45	3.22	10.26	11.6	530	
6/4/08 19:35:00	3.24	10.27	11.6	539	
6/4/08 19:35:15	3.27	10.28	11.6	554	
6/4/08 19:35:30	3.26	10.31	11.7	545	
6/4/08 19:35:45	3.23	10.34	11.7	537	
6/4/08 19:36:00	3.22	10.37	11.7	537	
6/4/08 19:36:15	3.21	10.36	11.8	513	
6/4/08 19:36:30	3.19	10.33	11.8	507	
6/4/08 19:36:45	3.20	10.29	11.7	528	
6/4/08 19:37:00	3.23	10.23	11.7	557	
6/4/08 19:37:15	3.28	10.16	11.7	607	
6/4/08 19:37:30	3.30	10.12	11.6	628	
6/4/08 19:37:45	3.31	10.10	11.7	652	
6/4/08 19:38:00	3.33	10.11	11.8	668	
6/4/08 19:38:15	3.34	10.08	11.7	675	
6/4/08 19:38:30	3.36	10.04	11.8	678	
6/4/08 19:38:45	3.37	10.06	11.7	687	
6/4/08 19:39:00	3.37	10.14	11.8	703	
6/4/08 19:39:15	3.37	10.27	11.9	703	
6/4/08 19:39:30	3.36	10.37	12.0	698	
6/4/08 19:39:45	3.34	10.43	12.0	669	
6/4/08 19:40:00	3.31	10.46	12.2	627	
6/4/08 19:40:15	3.25	10.49	12.3	566	
6/4/08 19:40:30	3.18	10.47	12.2	540	
6/4/08 19:40:45	3.15	10.42	12.2	512	
6/4/08 19:41:00	3.13	10.39	12.2	496	
6/4/08 19:41:15	3.12	10.37	12.1	493	
6/4/08 19:41:30	3.12	10.37	12.0	498	
6/4/08 19:41:45	3.15	10.38	12.0	499	
6/4/08 19:42:00	3.17	10.38	12.0	496	
6/4/08 19:42:15	3.17	10.38	12.0	489	
6/4/08 19:42:30	3.16	10.37	11.9	487	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 19:42:45	3.17	10.37	11.8	501	
6/4/08 19:43:00	3.18	10.37	11.8	523	
6/4/08 19:43:15	3.22	10.35	11.8	535	
6/4/08 19:43:30	3.24	10.29	11.8	540	
6/4/08 19:43:45	3.25	10.25	11.7	572	
6/4/08 19:44:00	3.27	10.23	11.7	594	
6/4/08 19:44:15	3.29	10.21	11.6	608	
6/4/08 19:44:30	3.31	10.17	11.5	621	
6/4/08 19:44:45	3.34	10.11	11.4	668	
6/4/08 19:45:00	3.37	10.04	11.6	698	
6/4/08 19:45:15	3.42	10.01	11.7	708	
6/4/08 19:45:30	3.44	10.07	11.8	709	
6/4/08 19:45:45	3.43	10.18	11.9	711	
6/4/08 19:46:00	3.40	10.31	12.0	704	
6/4/08 19:46:15	3.38	10.41	12.0	693	
6/4/08 19:46:30	3.33	10.47	12.1	682	
6/4/08 19:46:45	3.29	10.50	12.3	639	
6/4/08 19:47:00	3.23	10.51	12.3	602	
6/4/08 19:47:15	3.19	10.47	12.4	556	
6/4/08 19:47:30	3.16	10.41	12.3	528	
6/4/08 19:47:45	3.14	10.35	12.2	507	
6/4/08 19:48:00	3.16	10.31	12.2	505	
6/4/08 19:48:15	3.18	10.33	12.1	520	
6/4/08 19:48:30	3.18	10.38	12.1	538	
6/4/08 19:48:45	3.21	10.39	12.1	550	
6/4/08 19:49:00	3.23	10.39	11.7	550	
6/4/08 19:49:15	3.21	10.39	11.9	552	
6/4/08 19:49:30	3.22	10.37	11.5	551	
6/4/08 19:49:45	3.21	10.36	11.8	561	
6/4/08 19:50:00	3.21	10.32	11.6	580	
6/4/08 19:50:15	3.21	10.30	11.2	595	
6/4/08 19:50:30	3.23	10.25	11.2	614	
6/4/08 19:50:45	3.28	10.18	10.8	657	
6/4/08 19:51:00	3.33	10.09	11.2	684	
6/4/08 19:51:15	3.39	10.04	11.0	710	
6/4/08 19:51:30	3.41	10.07	11.0	738	
6/4/08 19:51:45	3.42	10.16	11.4	761	
6/4/08 19:52:00	3.43	10.30	11.4	755	
6/4/08 19:52:15	3.43	10.42	11.9	722	
6/4/08 19:52:30	3.40	10.51	12.2	677	
6/4/08 19:52:45	3.32	10.59	12.1	601	
6/4/08 19:53:00	3.22	10.62	12.0	559	
6/4/08 19:53:15	3.14	10.60	12.0	507	
6/4/08 19:53:30	3.08	10.55	11.7	479	
6/4/08 19:53:45	3.05	10.49	11.7	466	
6/4/08 19:54:00	3.07	10.43	11.7	464	
6/4/08 19:54:15	3.09	10.37	11.8	474	
6/4/08 19:54:30	3.14	10.30	11.4	496	
6/4/08 19:54:45	3.22	10.25	11.7	531	
6/4/08 19:55:00	3.26	10.27	11.6	553	
6/4/08 19:55:15	3.26	10.30	11.5	561	
6/4/08 19:55:30	3.28	10.33	11.7	557	
6/4/08 19:55:45	3.28	10.37	11.7	555	
6/4/08 19:56:00	3.26	10.40	11.4	544	
6/4/08 19:56:15	3.22	10.41	11.6	523	
6/4/08 19:56:30	3.23	10.39	11.6	513	
6/4/08 19:56:45	3.22	10.37	11.9	511	
6/4/08 19:57:00	3.21	10.34	12.0	502	
6/4/08 19:57:15	3.21	10.29	11.7	486	
6/4/08 19:57:30	3.21	10.26	11.4	527	
6/4/08 19:57:45	3.25	10.20	11.4	578	
6/4/08 19:58:00	3.31	10.14	11.4	602	
6/4/08 19:58:15	3.33	10.09	11.0	628	
6/4/08 19:58:30	3.37	10.07	11.3	663	
6/4/08 19:58:45	3.41	10.11	11.5	680	
6/4/08 19:59:00	3.42	10.22	11.8	668	
6/4/08 19:59:15	3.39	10.36	11.8	644	
6/4/08 19:59:30	3.35	10.47	11.8	635	
6/4/08 19:59:45	3.30	10.54	11.8	631	
6/4/08 20:00:00	3.24	10.58	11.8	595	
6/4/08 20:00:15	3.18	10.58	11.8	517	
6/4/08 20:00:30	3.13	10.55	11.8	482	
6/4/08 20:00:45	3.10	10.53	11.6	460	
6/4/08 20:01:00	3.09	10.48	11.6	453	
6/4/08 20:01:15	3.15	10.42	11.4	463	
6/4/08 20:01:30	3.18	10.42	11.5	479	
6/4/08 20:01:45	3.21	10.42	11.7	502	
6/4/08 20:02:00	3.23	10.40	11.8	506	
6/4/08 20:02:15	3.22	10.43	11.7	479	
6/4/08 20:02:30	3.19	10.45	11.4	466	
6/4/08 20:02:45	3.18	10.44	11.4	469	
6/4/08 20:03:00	3.18	10.40	11.6	461	
6/4/08 20:03:15	3.22	10.36	11.3	467	
6/4/08 20:03:30	3.23	10.32	11.1	489	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 20:03:45	3.25	10.24	11.3	513	
6/4/08 20:04:00	3.30	10.12	11.5	521	
6/4/08 20:04:15	3.34	10.03	11.2	538	
6/4/08 20:04:30	3.37	10.02	11.2	558	
6/4/08 20:04:45	3.40	10.05	11.6	580	
6/4/08 20:05:00	3.42	10.13	11.5	592	
6/4/08 20:05:15	3.43	10.26	11.8	581	
6/4/08 20:05:30	3.41	10.40	11.9	555	
6/4/08 20:05:45	3.36	10.52	11.6	507	
6/4/08 20:06:00	3.31	10.58	11.7	457	
6/4/08 20:06:15	3.25	10.61	11.7	379	
6/4/08 20:06:30	3.14	10.63	11.7	332	
6/4/08 20:06:45	3.07	10.62	12.0	299	
6/4/08 20:07:00	3.07	10.55	12.1	300	
6/4/08 20:07:15	3.10	10.47	11.8	312	
6/4/08 20:07:30	3.14	10.41	11.5	324	
6/4/08 20:07:45	3.18	10.36	11.6	354	
6/4/08 20:08:00	3.23	10.32	11.8	377	
6/4/08 20:08:15	3.26	10.32	11.8	413	
6/4/08 20:08:30	3.29	10.32	11.5	429	
6/4/08 20:08:45	3.31	10.32	11.7	427	
6/4/08 20:09:00	3.31	10.34	11.3	418	
6/4/08 20:09:15	3.31	10.36	11.1	427	
6/4/08 20:09:30	3.31	10.35	11.1	437	
6/4/08 20:09:45	3.29	10.33	11.7	441	
6/4/08 20:10:00	3.28	10.33	11.5	434	
6/4/08 20:10:15	3.26	10.34	11.5	438	
6/4/08 20:10:30	3.29	10.30	11.9	442	
6/4/08 20:10:45	3.32	10.25	12.0	443	
6/4/08 20:11:00	3.31	10.20	12.0	440	
6/4/08 20:11:15	3.34	10.12	11.9	461	
6/4/08 20:11:30	3.35	10.06	11.9	490	
6/4/08 20:11:45	3.38	10.07	11.8	501	
6/4/08 20:12:00	3.41	10.15	11.9	508	
6/4/08 20:12:15	3.42	10.27	11.9	513	
6/4/08 20:12:30	3.42	10.40	12.1	502	
6/4/08 20:12:45	3.37	10.50	12.3	450	
6/4/08 20:13:00	3.30	10.59	12.3	396	
6/4/08 20:13:15	3.21	10.63	12.3	329	
6/4/08 20:13:30	3.13	10.62	12.3	303	
6/4/08 20:13:45	3.10	10.53	12.2	304	
6/4/08 20:14:00	3.11	10.45	11.9	332	
6/4/08 20:14:15	3.17	10.39	11.8	380	
6/4/08 20:14:30	3.26	10.32	11.7	405	
6/4/08 20:14:45	3.31	10.30	11.7	426	
6/4/08 20:15:00	3.34	10.30	11.6	435	
6/4/08 20:15:15	3.36	10.32	11.7	434	
6/4/08 20:15:30	3.36	10.36	11.8	423	
6/4/08 20:15:45	3.34	10.39	11.8	410	
6/4/08 20:16:00	3.31	10.42	11.8	401	
6/4/08 20:16:15	3.29	10.41	11.7	394	
6/4/08 20:16:30	3.28	10.38	11.7	396	
6/4/08 20:16:45	3.29	10.34	11.8	394	
6/4/08 20:17:00	3.32	10.30	11.4	395	
6/4/08 20:17:15	3.33	10.25	11.5	422	
6/4/08 20:17:30	3.36	10.17	11.6	441	
6/4/08 20:17:45	3.38	10.10	11.5	454	
6/4/08 20:18:00	3.41	10.04	11.5	468	
6/4/08 20:18:15	3.44	10.05	11.5	507	
6/4/08 20:18:30	3.43	10.15	11.6	534	
6/4/08 20:18:45	3.43	10.28	11.8	534	
6/4/08 20:19:00	3.40	10.40	12.0	499	
6/4/08 20:19:15	3.36	10.49	12.0	427	
6/4/08 20:19:30	3.27	10.53	11.8	384	
6/4/08 20:19:45	3.21	10.54	11.9	341	
6/4/08 20:20:00	3.16	10.55	11.9	322	
6/4/08 20:20:15	3.14	10.52	11.8	315	
6/4/08 20:20:30	3.17	10.43	11.7	341	
6/4/08 20:20:45	3.23	10.35	11.6	376	
6/4/08 20:21:00	3.28	10.28	11.5	394	
6/4/08 20:21:15	3.32	10.24	11.5	435	
6/4/08 20:21:30	3.37	10.20	11.4	457	
6/4/08 20:21:45	3.40	10.19	11.4	472	
6/4/08 20:22:00	3.41	10.22	11.6	480	
6/4/08 20:22:15	3.42	10.26	11.6	477	
6/4/08 20:22:30	3.40	10.32	11.5	459	
6/4/08 20:22:45	3.36	10.36	11.2	446	
6/4/08 20:23:00	3.35	10.35	11.5	445	
6/4/08 20:23:15	3.34	10.33	11.7	431	
6/4/08 20:23:30	3.32	10.32	11.7	426	
6/4/08 20:23:45	3.32	10.32	11.3	424	
6/4/08 20:24:00	3.33	10.26	11.4	446	Change of Ports
6/4/08 20:24:15	3.36	10.14	11.6	477	
6/4/08 20:24:30	3.39	10.04	11.6	501	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 20:24:45	3.42	10.02	11.5	531	
6/4/08 20:25:00	3.46	10.06	11.6	549	
6/4/08 20:25:15	3.48	10.17	11.8	557	
6/4/08 20:25:30	3.48	10.29	11.9	538	
6/4/08 20:25:45	3.43	10.42	7.8	482	
6/4/08 20:26:00	3.45	10.39	0.8	348	
6/4/08 20:26:15	8.20	6.80	0.8	114	
6/4/08 20:26:30	16.87	1.89	0.7	28	
6/4/08 20:26:45	19.84	0.43	0.7	1	
6/4/08 20:27:00	20.22	0.25	0.7	0	
6/4/08 20:27:15	20.27	0.22	0.6	-1	
6/4/08 20:27:30	20.29	0.20	0.7	-1	
6/4/08 20:27:45	20.30	0.19	0.6	-1	
6/4/08 20:28:00	20.30	0.19	0.6	-1	
6/4/08 20:28:15	20.31	0.18	6.0	17	
6/4/08 20:28:30	20.12	0.45	11.4	137	
6/4/08 20:28:45	14.41	4.77	11.6	356	
6/4/08 20:29:00	6.36	9.01	11.7	426	
6/4/08 20:29:15	3.77	10.14	11.7	432	
6/4/08 20:29:30	3.44	10.28	11.8	419	
6/4/08 20:29:45	3.37	10.30	11.9	396	
6/4/08 20:30:00	3.32	10.32	11.8	388	
6/4/08 20:30:15	3.32	10.29	11.8	398	
6/4/08 20:30:30	3.34	10.20	11.7	410	
6/4/08 20:30:45	3.38	10.08	11.7	436	Resume Sampling
6/4/08 20:31:00	3.42	9.99	11.6	462	
6/4/08 20:31:15	3.46	9.99	11.6	491	
6/4/08 20:31:30	3.48	10.05	11.6	501	
6/4/08 20:31:45	3.49	10.13	11.6	522	
6/4/08 20:32:00	3.50	10.21	11.7	527	
6/4/08 20:32:15	3.48	10.32	11.9	477	
6/4/08 20:32:30	3.41	10.45	11.9	434	
6/4/08 20:32:45	3.33	10.52	12.0	374	
6/4/08 20:33:00	3.28	10.51	12.0	329	
6/4/08 20:33:15	3.23	10.49	12.0	297	
6/4/08 20:33:30	3.20	10.44	11.8	297	
6/4/08 20:33:45	3.20	10.38	11.7	313	
6/4/08 20:34:00	3.25	10.31	11.7	329	
6/4/08 20:34:15	3.31	10.25	11.6	356	
6/4/08 20:34:30	3.34	10.20	11.5	378	
6/4/08 20:34:45	3.40	10.14	11.5	406	
6/4/08 20:35:00	3.42	10.11	11.4	420	
6/4/08 20:35:15	3.44	10.11	11.4	439	
6/4/08 20:35:30	3.46	10.12	11.5	444	
6/4/08 20:35:45	3.46	10.17	11.6	437	
6/4/08 20:36:00	3.43	10.23	11.5	436	
6/4/08 20:36:15	3.40	10.29	11.7	437	
6/4/08 20:36:30	3.39	10.33	11.8	423	
6/4/08 20:36:45	3.35	10.34	11.8	389	
6/4/08 20:37:00	3.32	10.31	11.8	365	
6/4/08 20:37:15	3.32	10.22	11.6	363	
6/4/08 20:37:30	3.34	10.12	11.5	389	
6/4/08 20:37:45	3.40	10.02	11.4	431	
6/4/08 20:38:00	3.47	9.98	11.4	461	
6/4/08 20:38:15	3.50	10.02	11.4	493	
6/4/08 20:38:30	3.52	10.09	11.4	511	
6/4/08 20:38:45	3.52	10.18	11.7	519	
6/4/08 20:39:00	3.50	10.30	11.8	489	
6/4/08 20:39:15	3.42	10.43	11.9	416	
6/4/08 20:39:30	3.33	10.53	12.0	365	
6/4/08 20:39:45	3.25	10.57	12.0	309	
6/4/08 20:40:00	3.20	10.55	12.0	276	
6/4/08 20:40:15	3.17	10.49	11.8	265	
6/4/08 20:40:30	3.17	10.43	11.4	289	
6/4/08 20:40:45	3.21	10.35	11.4	335	
6/4/08 20:41:00	3.30	10.27	11.4	361	
6/4/08 20:41:15	3.35	10.21	11.4	399	
6/4/08 20:41:30	3.38	10.15	11.4	422	
6/4/08 20:41:45	3.42	10.11	11.3	440	
6/4/08 20:42:00	3.44	10.12	11.3	454	
6/4/08 20:42:15	3.43	10.15	11.1	449	
6/4/08 20:42:30	3.44	10.18	11.2	435	
6/4/08 20:42:45	3.43	10.25	11.4	416	
6/4/08 20:43:00	3.39	10.31	11.5	401	
6/4/08 20:43:15	3.37	10.32	11.5	384	
6/4/08 20:43:30	3.34	10.29	11.5	370	
6/4/08 20:43:45	3.32	10.27	11.6	362	
6/4/08 20:44:00	3.33	10.21	11.5	370	
6/4/08 20:44:15	3.35	10.12	11.4	397	
6/4/08 20:44:30	3.39	10.03	11.4	428	
6/4/08 20:44:45	3.44	9.99	11.4	460	
6/4/08 20:45:00	3.45	10.05	11.5	482	
6/4/08 20:45:15	3.45	10.14	11.5	500	
6/4/08 20:45:30	3.44	10.25	11.6	493	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 20:45:45	3.41	10.35	11.6	448	
6/4/08 20:46:00	3.37	10.46	11.7	393	
6/4/08 20:46:15	3.31	10.52	11.8	341	
6/4/08 20:46:30	3.23	10.54	11.8	309	
6/4/08 20:46:45	3.18	10.51	11.8	292	
6/4/08 20:47:00	3.17	10.45	11.5	298	
6/4/08 20:47:15	3.19	10.38	11.5	334	
6/4/08 20:47:30	3.25	10.32	11.4	366	
6/4/08 20:47:45	3.30	10.26	11.4	396	
6/4/08 20:48:00	3.33	10.22	11.4	410	
6/4/08 20:48:15	3.34	10.20	11.3	433	
6/4/08 20:48:30	3.36	10.20	11.3	442	
6/4/08 20:48:45	3.37	10.22	11.2	438	
6/4/08 20:49:00	3.37	10.26	11.4	439	
6/4/08 20:49:15	3.36	10.28	11.5	427	
6/4/08 20:49:30	3.34	10.32	11.5	401	
6/4/08 20:49:45	3.30	10.35	11.5	382	
6/4/08 20:50:00	3.29	10.34	11.5	369	
6/4/08 20:50:15	3.29	10.34	11.5	370	
6/4/08 20:50:30	3.29	10.32	11.4	386	
6/4/08 20:50:45	3.30	10.26	11.4	406	
6/4/08 20:51:00	3.33	10.18	11.3	422	
6/4/08 20:51:15	3.36	10.08	11.2	456	
6/4/08 20:51:30	3.40	9.99	11.1	497	
6/4/08 20:51:45	3.45	9.85	11.1	550	
6/4/08 20:52:00	3.50	9.99	11.1	589	
6/4/08 20:52:15	3.53	10.09	11.3	605	
6/4/08 20:52:30	3.53	10.23	11.5	583	
6/4/08 20:52:45	3.48	10.35	11.8	528	
6/4/08 20:53:00	3.40	10.43	11.6	481	
6/4/08 20:53:15	3.32	10.49	11.7	411	
6/4/08 20:53:30	3.27	10.50	11.8	376	
6/4/08 20:53:45	3.23	10.46	11.8	356	
6/4/08 20:54:00	3.20	10.40	11.5	360	
6/4/08 20:54:15	3.21	10.34	11.5	377	
6/4/08 20:54:30	3.26	10.27	11.3	397	
6/4/08 20:54:45	3.32	10.21	11.2	415	
6/4/08 20:55:00	3.38	10.19	11.2	431	
6/4/08 20:55:15	3.41	10.20	11.3	457	
6/4/08 20:55:30	3.42	10.22	11.3	468	
6/4/08 20:55:45	3.42	10.26	11.2	455	
6/4/08 20:56:00	3.39	10.28	11.3	444	
6/4/08 20:56:15	3.39	10.29	11.3	431	
6/4/08 20:56:30	3.36	10.32	11.4	422	
6/4/08 20:56:45	3.34	10.31	11.4	429	
6/4/08 20:57:00	3.34	10.25	11.3	432	
6/4/08 20:57:15	3.36	10.18	11.3	437	
6/4/08 20:57:30	3.40	10.09	11.3	459	
6/4/08 20:57:45	3.44	10.01	11.2	499	
6/4/08 20:58:00	3.49	9.96	11.3	543	
6/4/08 20:58:15	3.53	9.95	11.3	567	
6/4/08 20:58:30	3.54	10.02	11.4	567	
6/4/08 20:58:45	3.52	10.17	11.3	556	
6/4/08 20:59:00	3.48	10.31	11.6	535	
6/4/08 20:59:15	3.44	10.42	11.9	500	
6/4/08 20:59:30	3.36	10.48	11.9	444	
6/4/08 20:59:45	3.27	10.54	11.7	371	
6/4/08 21:00:00	3.21	10.53	11.4	323	
6/4/08 21:00:15	3.20	10.49	11.5	317	
6/4/08 21:00:30	3.20	10.42	11.4	340	
6/4/08 21:00:45	3.26	10.31	11.4	378	
6/4/08 21:01:00	3.32	10.23	11.4	412	
6/4/08 21:01:15	3.36	10.18	11.4	436	
6/4/08 21:01:30	3.39	10.15	11.3	447	
6/4/08 21:01:45	3.41	10.16	11.3	445	
6/4/08 21:02:00	3.43	10.20	11.3	443	
6/4/08 21:02:15	3.44	10.25	11.3	446	
6/4/08 21:02:30	3.42	10.29	11.4	435	
6/4/08 21:02:45	3.38	10.32	11.5	407	
6/4/08 21:03:00	3.35	10.33	11.5	382	
6/4/08 21:03:15	3.33	10.32	11.5	369	
6/4/08 21:03:30	3.32	10.32	11.3	371	
6/4/08 21:03:45	3.34	10.28	11.4	396	
6/4/08 21:04:00	3.36	10.24	11.4	419	
6/4/08 21:04:15	3.37	10.21	11.1	418	
6/4/08 21:04:30	3.38	10.19	10.9	424	
6/4/08 21:04:45	3.40	10.18	11.3	429	
6/4/08 21:05:00	3.40	10.19	11.3	426	
6/4/08 21:05:15	3.41	10.21	11.4	423	
6/4/08 21:05:30	3.40	10.24	11.3	411	
6/4/08 21:05:45	3.39	10.27	11.4	396	
6/4/08 21:06:00	3.38	10.27	11.4	383	
6/4/08 21:06:15	3.36	10.24	11.5	386	
6/4/08 21:06:30	3.36	10.18	11.4	379	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 21:06:45	3.37	10.13	11.4	386	
6/4/08 21:07:00	3.40	10.10	11.4	428	
6/4/08 21:07:15	3.42	10.15	11.3	466	
6/4/08 21:07:30	3.42	10.22	11.2	471	
6/4/08 21:07:45	3.44	10.26	11.4	463	
6/4/08 21:08:00	3.43	10.30	11.5	447	
6/4/08 21:08:15	3.42	10.35	11.5	427	
6/4/08 21:08:30	3.39	10.43	11.5	402	
6/4/08 21:08:45	3.36	10.44	11.6	375	
6/4/08 21:09:00	3.34	10.42	11.6	352	
6/4/08 21:09:15	3.31	10.40	11.6	333	
6/4/08 21:09:30	3.30	10.39	11.7	326	
6/4/08 21:09:45	3.30	10.37	11.6	332	
6/4/08 21:10:00	3.28	10.38	11.3	356	
6/4/08 21:10:15	3.31	10.33	11.4	387	
6/4/08 21:10:30	3.36	10.24	11.3	404	
6/4/08 21:10:45	3.39	10.18	11.3	420	
6/4/08 21:11:00	3.40	10.14	11.3	443	
6/4/08 21:11:15	3.45	10.09	11.4	469	
6/4/08 21:11:30	3.48	10.08	11.3	493	
6/4/08 21:11:45	3.47	10.10	11.3	509	
6/4/08 21:12:00	3.49	10.13	11.4	504	
6/4/08 21:12:15	3.48	10.20	11.5	482	
6/4/08 21:12:30	3.44	10.28	11.5	457	
6/4/08 21:12:45	3.42	10.33	11.7	443	
6/4/08 21:13:00	3.39	10.34	11.6	423	
6/4/08 21:13:15	3.35	10.34	11.6	389	
6/4/08 21:13:30	3.32	10.33	11.6	367	
6/4/08 21:13:45	3.34	10.29	11.6	374	
6/4/08 21:14:00	3.35	10.26	11.6	393	
6/4/08 21:14:15	3.35	10.24	11.5	395	
6/4/08 21:14:30	3.37	10.21	11.4	401	
6/4/08 21:14:45	3.39	10.19	11.5	423	
6/4/08 21:15:00	3.42	10.19	11.4	448	
6/4/08 21:15:15	3.43	10.19	11.4	468	
6/4/08 21:15:30	3.45	10.19	11.4	487	
6/4/08 21:15:45	3.46	10.19	11.4	494	
6/4/08 21:16:00	3.48	10.16	11.5	477	
6/4/08 21:16:15	3.49	10.14	11.5	459	
6/4/08 21:16:30	3.49	10.15	11.4	460	
6/4/08 21:16:45	3.48	10.21	11.6	488	
6/4/08 21:17:00	3.49	10.27	11.6	486	
6/4/08 21:17:15	3.47	10.35	11.6	470	
6/4/08 21:17:30	3.44	10.41	11.7	457	
6/4/08 21:17:45	3.41	10.47	11.7	426	
6/4/08 21:18:00	3.35	10.51	11.7	385	
6/4/08 21:18:15	3.30	10.53	11.5	363	
6/4/08 21:18:30	3.29	10.49	11.6	344	
6/4/08 21:18:45	3.28	10.46	11.7	336	
6/4/08 21:19:00	3.27	10.44	11.6	336	
6/4/08 21:19:15	3.29	10.43	11.5	338	
6/4/08 21:19:30	3.31	10.40	11.4	360	
6/4/08 21:19:45	3.34	10.37	11.3	387	
6/4/08 21:20:00	3.37	10.33	11.3	402	
6/4/08 21:20:15	3.41	10.26	11.4	407	
6/4/08 21:20:30	3.42	10.22	11.4	419	
6/4/08 21:20:45	3.43	10.20	11.4	432	
6/4/08 21:21:00	3.44	10.17	11.4	444	
6/4/08 21:21:15	3.44	10.15	11.4	443	
6/4/08 21:21:30	3.44	10.14	11.5	443	
6/4/08 21:21:45	3.44	10.15	11.5	460	
6/4/08 21:22:00	3.44	10.17	11.5	460	
6/4/08 21:22:15	3.44	10.22	11.6	444	
6/4/08 21:22:30	3.43	10.28	11.6	420	
6/4/08 21:22:45	3.41	10.34	11.6	402	
6/4/08 21:23:00	3.39	10.37	11.6	390	
6/4/08 21:23:15	3.37	10.38	11.6	376	
6/4/08 21:23:30	3.36	10.29	11.6	366	
6/4/08 21:23:45	3.36	10.21	11.5	365	
6/4/08 21:24:00	3.38	10.13	11.5	386	
6/4/08 21:24:15	3.42	10.12	11.4	433	
6/4/08 21:24:30	3.45	10.17	11.4	472	
6/4/08 21:24:45	3.49	10.21	11.3	486	
6/4/08 21:25:00	3.49	10.29	11.4	488	
6/4/08 21:25:15	3.47	10.39	11.5	467	
6/4/08 21:25:30	3.43	10.49	11.5	437	
6/4/08 21:25:45	3.39	10.53	11.5	401	
6/4/08 21:26:00	3.36	10.50	11.5	377	
6/4/08 21:26:15	3.33	10.49	11.5	365	
6/4/08 21:26:30	3.31	10.45	11.5	359	
6/4/08 21:26:45	3.32	10.41	11.5	359	
6/4/08 21:27:00	3.32	10.39	11.4	368	
6/4/08 21:27:15	3.35	10.31	11.3	388	
6/4/08 21:27:30	3.39	10.23	11.3	395	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 21:27:45	3.42	10.20	11.3	403	
6/4/08 21:28:00	3.44	10.19	11.4	430	
6/4/08 21:28:15	3.45	10.20	11.4	443	
6/4/08 21:28:30	3.47	10.24	11.2	442	
6/4/08 21:28:45	3.46	10.28	11.3	429	
6/4/08 21:29:00	3.45	10.33	11.5	404	
6/4/08 21:29:15	3.42	10.35	11.5	391	
6/4/08 21:29:30	3.40	10.36	11.6	379	
6/4/08 21:29:45	3.38	10.37	11.4	363	
6/4/08 21:30:00	3.37	10.36	11.3	364	
6/4/08 21:30:15	3.35	10.32	11.5	372	
6/4/08 21:30:30	3.37	10.31	11.5	368	
6/4/08 21:30:45	3.38	10.31	11.6	369	
6/4/08 21:31:00	3.37	10.31	11.6	374	
6/4/08 21:31:15	3.35	10.30	11.5	366	
6/4/08 21:31:30	3.36	10.29	11.5	365	
6/4/08 21:31:45	3.36	10.29	11.5	368	
6/4/08 21:32:00	3.36	10.31	11.3	378	
6/4/08 21:32:15	3.37	10.34	11.3	394	
6/4/08 21:32:30	3.37	10.37	11.3	402	
6/4/08 21:32:45	3.37	10.39	11.5	392	
6/4/08 21:33:00	3.35	10.40	11.5	373	
6/4/08 21:33:15	3.33	10.40	11.5	359	
6/4/08 21:33:30	3.32	10.41	11.5	353	
6/4/08 21:33:45	3.32	10.38	11.4	361	
6/4/08 21:34:00	3.32	10.34	11.5	375	
6/4/08 21:34:15	3.33	10.31	11.5	388	
6/4/08 21:34:30	3.32	10.35	10.9	390	
6/4/08 21:34:45	3.32	10.41	11.2	386	
6/4/08 21:35:00	3.33	10.47	11.4	374	
6/4/08 21:35:15	3.30	10.57	11.4	350	
6/4/08 21:35:30	3.26	10.64	11.4	328	
6/4/08 21:35:45	3.22	10.68	11.4	309	
6/4/08 21:36:00	3.20	10.67	11.3	311	
6/4/08 21:36:15	3.21	10.61	11.2	326	
6/4/08 21:36:30	3.23	10.51	11.2	354	
6/4/08 21:36:45	3.27	10.42	11.2	395	
6/4/08 21:37:00	3.32	10.33	11.2	434	
6/4/08 21:37:15	3.36	10.24	11.1	454	
6/4/08 21:37:30	3.39	10.18	11.1	477	
6/4/08 21:37:45	3.41	10.14	11.1	501	
6/4/08 21:38:00	3.44	10.11	11.2	533	
6/4/08 21:38:15	3.43	10.13	11.3	560	
6/4/08 21:38:30	3.40	10.17	11.4	563	
6/4/08 21:38:45	3.39	10.23	11.4	548	
6/4/08 21:39:00	3.36	10.27	11.5	534	
6/4/08 21:39:15	3.34	10.29	11.5	527	
6/4/08 21:39:30	3.33	10.28	11.6	519	
6/4/08 21:39:45	3.33	10.26	11.4	501	
6/4/08 21:40:00	3.32	10.24	11.4	504	
6/4/08 21:40:15	3.33	10.21	11.4	520	
6/4/08 21:40:30	3.35	10.19	11.3	531	
6/4/08 21:40:45	3.37	10.17	11.3	556	
6/4/08 21:41:00	3.40	10.16	11.3	556	
6/4/08 21:41:15	3.39	10.18	11.3	556	
6/4/08 21:41:30	3.39	10.18	11.4	556	
6/4/08 21:41:45	3.39	10.17	11.4	543	
6/4/08 21:42:00	3.39	10.16	11.5	535	
6/4/08 21:42:15	3.38	10.19	11.4	541	
6/4/08 21:42:30	3.35	10.22	11.5	554	
6/4/08 21:42:45	3.36	10.24	11.4	569	
6/4/08 21:43:00	3.35	10.31	11.5	572	
6/4/08 21:43:15	3.35	10.35	11.5	573	
6/4/08 21:43:30	3.33	10.40	11.6	571	
6/4/08 21:43:45	3.30	10.43	11.7	544	
6/4/08 21:44:00	3.27	10.46	11.5	502	
6/4/08 21:44:15	3.25	10.47	11.6	472	
6/4/08 21:44:30	3.26	10.46	11.7	458	
6/4/08 21:44:45	3.23	10.46	11.7	445	
6/4/08 21:45:00	3.21	10.47	11.7	426	
6/4/08 21:45:15	3.18	10.47	11.6	401	
6/4/08 21:45:30	3.18	10.45	11.6	385	
6/4/08 21:45:45	3.17	10.44	11.4	374	
6/4/08 21:46:00	3.16	10.40	11.4	387	
6/4/08 21:46:15	3.21	10.32	11.3	421	
6/4/08 21:46:30	3.26	10.25	11.3	473	
6/4/08 21:46:45	3.30	10.18	11.3	512	
6/4/08 21:47:00	3.34	10.13	11.1	544	
6/4/08 21:47:15	3.38	10.08	11.1	573	
6/4/08 21:47:30	3.42	10.04	11.3	598	
6/4/08 21:47:45	3.43	10.05	11.3	604	
6/4/08 21:48:00	3.40	10.10	11.5	600	
6/4/08 21:48:15	3.38	10.15	11.6	607	
6/4/08 21:48:30	3.36	10.19	11.6	593	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 21:48:45	3.33	10.25	11.6	567	
6/4/08 21:49:00	3.30	10.28	11.7	558	
6/4/08 21:49:15	3.28	10.27	11.6	551	
6/4/08 21:49:30	3.25	10.27	11.5	541	
6/4/08 21:49:45	3.26	10.24	11.5	541	
6/4/08 21:50:00	3.28	10.20	11.5	546	
6/4/08 21:50:15	3.30	10.15	11.5	570	
6/4/08 21:50:30	3.31	10.15	11.5	601	
6/4/08 21:50:45	3.33	10.15	11.4	618	
6/4/08 21:51:00	3.37	10.12	11.4	624	
6/4/08 21:51:15	3.41	10.09	11.5	644	
6/4/08 21:51:30	3.42	10.13	11.4	665	
6/4/08 21:51:45	3.42	10.22	11.5	667	
6/4/08 21:52:00	3.42	10.32	11.6	642	
6/4/08 21:52:15	3.37	10.42	11.6	608	
6/4/08 21:52:30	3.32	10.50	11.7	591	
6/4/08 21:52:45	3.27	10.54	11.8	557	
6/4/08 21:53:00	3.22	10.54	11.8	502	
6/4/08 21:53:15	3.17	10.53	11.9	449	
6/4/08 21:53:30	3.14	10.46	11.7	426	
6/4/08 21:53:45	3.13	10.38	11.6	441	
6/4/08 21:54:00	3.18	10.32	11.6	478	
6/4/08 21:54:15	3.21	10.31	11.5	517	
6/4/08 21:54:30	3.25	10.33	11.5	540	
6/4/08 21:54:45	3.28	10.35	11.4	546	
6/4/08 21:55:00	3.29	10.38	11.4	542	
6/4/08 21:55:15	3.29	10.39	11.5	535	
6/4/08 21:55:30	3.27	10.39	11.5	519	
6/4/08 21:55:45	3.25	10.36	11.5	510	
6/4/08 21:56:00	3.23	10.32	11.6	507	
6/4/08 21:56:15	3.21	10.29	11.5	509	
6/4/08 21:56:30	3.23	10.23	11.3	527	
6/4/08 21:56:45	3.27	10.16	11.2	549	
6/4/08 21:57:00	3.33	10.10	11.4	565	
6/4/08 21:57:15	3.36	10.08	11.4	586	
6/4/08 21:57:30	3.36	10.14	11.3	619	
6/4/08 21:57:45	3.38	10.18	11.4	638	
6/4/08 21:58:00	3.40	10.19	11.4	643	
6/4/08 21:58:15	3.38	10.18	11.5	643	
6/4/08 21:58:30	3.38	10.15	11.5	655	
6/4/08 21:58:45	3.37	10.18	11.2	657	
6/4/08 21:59:00	3.36	10.26	11.2	666	
6/4/08 21:59:15	3.37	10.32	11.6	675	
6/4/08 21:59:30	3.38	10.35	11.8	652	
6/4/08 21:59:45	3.34	10.39	11.8	623	
6/4/08 22:00:00	3.29	10.42	11.8	614	
6/4/08 22:00:15	3.26	10.43	11.9	597	
6/4/08 22:00:30	3.25	10.44	11.8	562	
6/4/08 22:00:45	3.24	10.47	11.9	549	
6/4/08 22:01:00	3.21	10.50	11.9	533	End Run No. 3
6/4/08 22:01:15	3.17	10.50	11.9	496	
6/4/08 22:01:30	3.14	10.49	8.6	475	
6/4/08 22:01:45	3.14	10.32	7.0	432	
6/4/08 22:02:00	2.84	6.68	1.5	227	
6/4/08 22:02:15	2.81	2.33	1.0	66	
6/4/08 22:02:30	3.90	0.46	0.9	9	
6/4/08 22:02:45	4.32	0.19	0.8	0	
6/4/08 22:03:00	4.37	0.15	0.8	-1	
6/4/08 22:03:15	4.36	0.14	0.7	-1	
6/4/08 22:03:30	4.39	0.13	0.7	-1	
6/4/08 22:03:45	4.42	0.12	0.7	-2	
6/4/08 22:04:00	4.43	0.12	0.7	-2	
6/4/08 22:04:15	4.44	0.12	0.7	-2	
6/4/08 22:04:30	4.45	0.11	0.7	-2	
6/4/08 22:04:45	4.45	0.11	0.6	-2	
6/4/08 22:05:00	4.45	0.11	0.6	-2	
6/4/08 22:05:15	4.45	0.10	0.6	-2	System Bias
6/4/08 22:05:30	4.45	0.10	0.6	-2	4.46 4.50% O ₂
6/4/08 22:05:45	4.46	0.10	0.6	-2	0.10 Zero CO ₂
6/4/08 22:06:00	4.46	0.10	0.6	-2	0.6 Zero NO _x
6/4/08 22:06:15	4.46	0.10	0.6	-2	-2 Zero CO
6/4/08 22:06:30	4.46	0.10	1.7	-2	
6/4/08 22:06:45	4.46	0.11	5.2	60	
6/4/08 22:07:00	4.32	2.18	0.7	138	
6/4/08 22:07:15	3.28	5.47	0.6	77	
6/4/08 22:07:30	1.01	8.00	0.6	13	
6/4/08 22:07:45	0.13	8.59	0.6	-2	
6/4/08 22:08:00	0.00	8.50	0.6	-3	
6/4/08 22:08:15	-0.01	8.38	0.6	-3	
6/4/08 22:08:30	-0.02	8.41	0.5	-3	
6/4/08 22:08:45	-0.02	8.60	0.5	-3	
6/4/08 22:09:00	-0.03	8.81	0.5	-3	
6/4/08 22:09:15	-0.03	8.94	0.5	-3	

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Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/4/08 22:09:30	-0.03	8.99	0.5	-3	
6/4/08 22:09:45	-0.03	9.03	0.5	-3	
6/4/08 22:10:00	-0.03	9.04	0.5	-3	
6/4/08 22:10:15	-0.03	9.05	0.5	-3	
6/4/08 22:10:30	-0.03	9.06	0.5	-3	System Bias
6/4/08 22:10:45	-0.03	9.06	0.5	-3	
6/4/08 22:11:00	-0.03	9.06	0.5	-3	9.07 9.00% CO ₂
6/4/08 22:11:15	-0.03	9.07	0.5	-3	
6/4/08 22:11:30	-0.03	9.07	6.6	12	
6/4/08 22:11:45	0.05	9.13	1.8	196	
6/4/08 22:12:00	0.95	8.25	0.6	571	
6/4/08 22:12:15	0.72	3.74	0.6	846	
6/4/08 22:12:30	0.15	0.85	0.5	945	
6/4/08 22:12:45	0.01	0.24	0.5	965	
6/4/08 22:13:00	-0.01	0.16	0.5	987	
6/4/08 22:13:15	-0.01	0.14	0.5	965	
6/4/08 22:13:30	-0.01	0.13	0.5	963	
6/4/08 22:13:45	-0.01	0.13	0.5	964	
6/4/08 22:14:00	-0.01	0.12	0.5	964	
6/4/08 22:14:15	-0.01	0.12	0.5	965	System Bias
6/4/08 22:14:30	-0.01	0.11	0.5	965	
6/4/08 22:14:45	-0.01	0.11	0.5	966	
6/4/08 22:15:00	-0.01	0.11	0.5	966	
6/4/08 22:15:15	-0.01	0.11	0.5	965	966 1,000 ppm CO
6/4/08 22:15:30	-0.01	0.11	0.7	964	
6/4/08 22:15:45	-0.01	0.10	5.5	938	
6/4/08 22:16:00	0.20	1.28	14.8	702	
6/4/08 22:16:15	0.82	2.93	15.9	313	
6/4/08 22:16:30	0.36	1.08	24.1	75	
6/4/08 22:16:45	0.05	0.25	25.1	11	
6/4/08 22:17:00	0.01	0.12	25.2	1	
6/4/08 22:17:15	0.00	0.10	24.9	-1	
6/4/08 22:17:30	0.00	0.10	25.5	-1	
6/4/08 22:17:45	0.00	0.10	32.9	-1	
6/4/08 22:18:00	0.00	0.10	45.1	-1	
6/4/08 22:18:15	0.00	0.10	44.0	-1	
6/4/08 22:18:30	-0.01	0.10	43.2	-2	
6/4/08 22:18:45	-0.01	0.09	42.8	-2	
6/4/08 22:19:00	-0.01	0.09	42.4	-2	
6/4/08 22:19:15	-0.01	0.09	42.2	-2	
6/4/08 22:19:30	-0.01	0.09	42.1	-2	
6/4/08 22:19:45	-0.01	0.09	42.0	-2	System Bias
6/4/08 22:20:00	-0.01	0.09	41.9	-2	-0.01 Zero O ₂
6/4/08 22:20:15	-0.01	0.09	41.8	-2	
6/4/08 22:20:30	-0.01	0.09	41.8	-2	41.8 45.0 ppm NO _x
6/4/08 22:20:45	-0.01	0.09	41.8	-2	
6/4/08 22:21:00	-0.01	0.09	43.0	-2	
6/4/08 22:21:15	-0.01	0.09	21.3	47	
6/4/08 22:21:30	0.47	2.54	12.5	249	
6/4/08 22:21:45	1.98	7.32	12.0	413	
6/4/08 22:22:00	2.93	9.82	11.9	493	
6/4/08 22:22:15	3.18	10.36	12.0	517	
6/4/08 22:22:30	3.23	10.40	11.9	512	
6/4/08 22:22:45	3.22	10.43	16.2	510	
6/4/08 22:23:00	3.23	10.44	11.6	424	

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Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 5:19:00	20.82	0.16	0.5	-1	
6/6/08 5:19:15	20.81	0.16	9.7	0	
6/6/08 5:19:30	20.63	0.16	1.7	3	
6/6/08 5:19:45	15.28	0.14	1.1	2	
6/6/08 5:20:00	9.60	0.09	1.0	-1	
6/6/08 5:20:15	8.83	0.08	0.8	-2	
6/6/08 5:20:30	9.01	0.08	0.8	-2	
6/6/08 5:20:45	9.11	0.08	0.7	-2	
6/6/08 5:21:00	9.13	0.08	0.7	-2	
6/6/08 5:21:15	9.13	0.08	0.6	-2	
6/6/08 5:21:30	9.14	0.08	0.6	-2	
6/6/08 5:21:45	9.14	0.07	0.6	-3	
6/6/08 5:22:00	9.14	0.07	0.6	-2	
6/6/08 5:22:15	9.14	0.07	0.6	-2	
6/6/08 5:22:30	9.14	0.07	0.6	-2	
6/6/08 5:22:45	9.05	0.07	0.6	-2	
6/6/08 5:23:00	9.05	0.07	0.6	-2	Calibration Error
6/6/08 5:23:15	9.06	0.07	0.6	-2	9.06 9.00% O ₂
6/6/08 5:23:30	9.06	0.07	0.5	-2	
6/6/08 5:23:45	9.06	0.07	0.5	-2	
6/6/08 5:24:00	9.06	0.07	0.5	-2	
6/6/08 5:24:15	8.12	0.07	0.5	-2	
6/6/08 5:24:30	5.38	0.07	0.5	-2	
6/6/08 5:24:45	4.67	0.07	0.5	-2	
6/6/08 5:25:00	4.61	0.07	0.5	-2	
6/6/08 5:25:15	4.60	0.07	0.5	-2	Calibration Error
6/6/08 5:25:30	4.60	0.07	0.5	-2	4.60 4.50% O ₂ 0.07 Zero CO ₂ 0.5 Zero NO _x -2 Zero CO
6/6/08 5:25:45	4.60	0.07	0.5	-2	
6/6/08 5:26:00	4.60	0.07	0.5	-2	
6/6/08 5:26:15	4.60	0.07	0.6	-2	
6/6/08 5:26:30	4.66	0.07	1.0	-2	
6/6/08 5:26:45	6.45	2.64	0.5	-4	
6/6/08 5:27:00	4.66	8.81	0.5	-4	
6/6/08 5:27:15	1.25	13.10	0.5	-5	
6/6/08 5:27:30	0.17	16.21	0.5	-5	
6/6/08 5:27:45	0.02	17.63	0.5	-5	
6/6/08 5:28:00	-0.01	18.00	0.5	-5	
6/6/08 5:28:15	-0.01	18.09	0.5	-5	
6/6/08 5:28:30	-0.01	18.12	0.5	-5	
6/6/08 5:28:45	-0.01	18.13	0.5	-5	
6/6/08 5:29:00	-0.02	18.14	0.5	-5	
6/6/08 5:29:15	-0.02	18.15	0.5	-5	
6/6/08 5:29:30	-0.02	18.16	0.5	-5	
6/6/08 5:29:45	-0.02	18.16	0.5	-5	
6/6/08 5:30:00	-0.02	18.16	0.5	-5	
6/6/08 5:30:15	-0.02	18.16	0.5	-4	
6/6/08 5:30:30	-0.02	18.17	0.5	-5	
6/6/08 5:30:45	-0.02	18.17	0.4	-5	
6/6/08 5:31:00	-0.02	18.17	0.5	-5	
6/6/08 5:31:15	-0.03	18.18	0.4	-5	
6/6/08 5:31:30	-0.03	18.18	0.4	-4	
6/6/08 5:31:45	-0.03	18.18	0.4	-4	
6/6/08 5:32:00	-0.03	18.18	0.4	-4	
6/6/08 5:32:15	-0.03	18.18	0.4	-5	
6/6/08 5:32:30	-0.03	17.98	0.4	-5	
6/6/08 5:32:45	-0.03	17.79	0.4	-5	
6/6/08 5:33:00	-0.03	17.80	0.4	-4	
6/6/08 5:33:15	-0.03	17.80	0.4	-4	
6/6/08 5:33:30	-0.03	17.80	0.4	-4	
6/6/08 5:33:45	-0.03	17.80	0.4	-4	Calibration Error
6/6/08 5:34:00	-0.03	17.80	0.4	-4	17.80 18.00% CO ₂
6/6/08 5:34:15	-0.03	17.80	0.4	-5	
6/6/08 5:34:30	-0.03	17.80	0.4	-5	
6/6/08 5:34:45	-0.03	17.80	0.4	-4	
6/6/08 5:35:00	-0.03	16.10	0.4	-4	
6/6/08 5:35:15	-0.02	11.69	0.4	-3	
6/6/08 5:35:30	-0.01	9.64	0.4	-3	
6/6/08 5:35:45	-0.01	9.33	0.4	-3	
6/6/08 5:36:00	-0.01	9.30	0.4	-3	Calibration Error
6/6/08 5:36:15	-0.01	9.29	0.4	-3	9.28 9.00% CO ₂
6/6/08 5:36:30	-0.01	9.28	0.4	-3	
6/6/08 5:36:45	-0.01	9.28	0.4	-3	
6/6/08 5:37:00	-0.01	9.28	0.4	-3	
6/6/08 5:37:15	0.00	9.26	0.5	-3	
6/6/08 5:37:30	0.01	9.26	0.8	109	
6/6/08 5:37:45	2.00	7.47	0.5	844	
6/6/08 5:38:00	2.39	3.15	0.5	1618	
6/6/08 5:38:15	0.55	0.64	0.5	1934	
6/6/08 5:38:30	0.07	0.18	0.4	1999	
6/6/08 5:38:45	0.02	0.13	0.4	2000	
6/6/08 5:39:00	0.01	0.12	0.4	2000	
6/6/08 5:39:15	0.02	0.12	0.4	2001	
6/6/08 5:39:30	0.02	0.12	0.4	1997	
6/6/08 5:39:45	0.01	0.11	0.4	1996	

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Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 5:40:00	0.01	0.11	0.4	1997	
6/6/08 5:40:15	0.01	0.11	0.4	1999	
6/6/08 5:40:30	0.01	0.11	0.4	2000	
6/6/08 5:40:45	0.01	0.11	0.4	2000	
6/6/08 5:41:00	0.01	0.10	0.4	2001	
6/6/08 5:41:15	0.01	0.10	0.4	1999	
6/6/08 5:41:30	0.01	0.10	0.4	1996	
6/6/08 5:41:45	0.01	0.10	0.4	1997	
6/6/08 5:42:00	0.01	0.10	0.4	1998	
6/6/08 5:42:15	0.01	0.10	0.4	1999	
6/6/08 5:42:30	0.01	0.10	0.4	2000	
6/6/08 5:42:45	0.01	0.09	0.4	2002	
6/6/08 5:43:00	0.01	0.09	0.4	2001	
6/6/08 5:43:15	0.01	0.09	0.4	1997	Calibration Error
6/6/08 5:43:30	0.01	0.09	0.4	1997	
6/6/08 5:43:45	0.01	0.09	0.4	1998	
6/6/08 5:44:00	0.01	0.09	0.4	1999	
6/6/08 5:44:15	0.01	0.09	0.4	2000	1,998 2,000 ppm CO
6/6/08 5:44:30	0.01	0.09	0.4	1975	
6/6/08 5:44:45	0.03	0.09	0.4	1701	
6/6/08 5:45:00	0.27	0.09	0.4	1270	
6/6/08 5:45:15	0.13	0.08	0.4	1050	
6/6/08 5:45:30	0.03	0.08	0.4	999	
6/6/08 5:45:45	0.01	0.08	0.4	996	
6/6/08 5:46:00	0.01	0.08	0.4	995	
6/6/08 5:46:15	0.01	0.08	0.4	995	
6/6/08 5:46:30	0.01	0.08	0.4	995	Calibration Error
6/6/08 5:46:45	0.01	0.08	0.4	995	
6/6/08 5:47:00	0.01	0.08	0.4	993	
6/6/08 5:47:15	0.01	0.08	0.4	992	
6/6/08 5:47:30	0.01	0.08	0.4	993	993 1,000 ppm CO
6/6/08 5:47:45	0.02	0.09	4.6	980	
6/6/08 5:48:00	0.12	0.09	33.2	781	
6/6/08 5:48:15	2.11	0.11	77.1	379	
6/6/08 5:48:30	1.47	0.11	82.3	84	
6/6/08 5:48:45	0.29	0.09	81.3	12	
6/6/08 5:49:00	0.06	0.09	92.0	0	
6/6/08 5:49:15	0.02	0.09	90.3	-1	
6/6/08 5:49:30	0.02	0.09	89.5	-1	
6/6/08 5:49:45	0.02	0.09	89.0	-1	
6/6/08 5:50:00	0.01	0.09	88.7	-1	
6/6/08 5:50:15	0.01	0.09	88.5	-1	
6/6/08 5:50:30	0.02	0.08	88.4	-1	
6/6/08 5:50:45	0.01	0.08	88.3	-1	
6/6/08 5:51:00	0.01	0.08	88.2	-1	
6/6/08 5:51:15	0.02	0.08	88.0	-1	
6/6/08 5:51:30	0.01	0.08	87.8	-1	
6/6/08 5:51:45	0.01	0.08	87.7	-1	
6/6/08 5:52:00	0.02	0.08	87.5	-1	
6/6/08 5:52:15	0.01	0.08	87.3	-1	
6/6/08 5:52:30	0.01	0.08	87.1	-1	
6/6/08 5:52:45	0.01	0.08	87.0	-1	
6/6/08 5:53:00	0.01	0.08	86.8	-1	
6/6/08 5:53:15	0.01	0.08	86.7	-1	
6/6/08 5:53:30	0.01	0.08	86.6	-1	
6/6/08 5:53:45	0.01	0.07	86.5	-1	
6/6/08 5:54:00	0.01	0.07	86.4	-1	
6/6/08 5:54:15	0.01	0.07	86.3	-1	
6/6/08 5:54:30	0.01	0.07	86.3	-1	
6/6/08 5:54:45	0.01	0.07	86.2	-1	
6/6/08 5:55:00	0.01	0.07	86.1	-1	
6/6/08 5:55:15	0.01	0.07	86.1	-1	
6/6/08 5:55:30	0.01	0.07	86.0	-1	
6/6/08 5:55:45	0.02	0.07	85.9	-1	
6/6/08 5:56:00	0.01	0.07	85.9	-1	
6/6/08 5:56:15	0.01	0.07	85.9	-1	
6/6/08 5:56:30	0.01	0.07	85.8	-1	
6/6/08 5:56:45	0.01	0.08	85.6	-1	
6/6/08 5:57:00	0.01	0.08	23.7	-1	
6/6/08 5:57:15	0.01	0.08	4.9	-1	
6/6/08 5:57:30	0.01	0.08	15.7	-1	
6/6/08 5:57:45	0.01	0.08	86.4	-1	
6/6/08 5:58:00	0.01	0.08	85.9	-1	
6/6/08 5:58:15	0.01	0.08	85.9	-1	
6/6/08 5:58:30	0.01	0.08	86.0	-1	
6/6/08 5:58:45	0.01	0.08	81.1	-1	
6/6/08 5:59:00	0.01	0.08	80.4	-1	
6/6/08 5:59:15	0.01	0.08	86.6	-1	
6/6/08 5:59:30	0.01	0.08	86.5	-1	
6/6/08 5:59:45	0.01	0.08	86.6	-1	
6/6/08 6:00:00	0.01	0.08	86.7	-1	
6/6/08 6:00:15	0.01	0.08	86.8	-1	
6/6/08 6:00:30	0.01	0.08	86.9	-1	
6/6/08 6:00:45	0.01	0.08	87.0	-1	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 6:01:00	0.01	0.08	87.2	-1	
6/6/08 6:01:15	0.01	0.08	87.2	-1	
6/6/08 6:01:30	0.01	0.08	87.6	-1	
6/6/08 6:01:45	0.01	0.08	89.2	-1	
6/6/08 6:02:00	0.02	0.08	89.6	-1	
6/6/08 6:02:15	0.02	0.08	83.0	-1	
6/6/08 6:02:30	0.02	0.08	93.1	-1	Calibration Error
6/6/08 6:02:45	0.01	0.08	90.3	-1	
6/6/08 6:03:00	0.02	0.08	90.3	-1	
6/6/08 6:03:15	0.01	0.08	90.3	-1	90.3 90.0 ppm NO _x
6/6/08 6:03:30	0.02	0.08	90.3	-1	
6/6/08 6:03:45	0.01	0.08	86.6	-1	
6/6/08 6:04:00	0.01	0.08	45.4	-1	
6/6/08 6:04:15	0.01	0.08	45.7	-1	Calibration Error
6/6/08 6:04:30	0.01	0.08	45.7	-1	0.01 Zero O ₂
6/6/08 6:04:45	0.01	0.08	45.7	-1	
6/6/08 6:05:00	0.01	0.08	45.7	-1	45.7 45.0 ppm NO _x
6/6/08 6:05:15	0.01	0.08	45.7	-1	
6/6/08 6:05:30	0.01	0.08	45.0	-1	
6/6/08 6:05:45	0.06	0.08	39.5	-1	
6/6/08 6:06:00	3.49	0.10	42.0	-1	
6/6/08 6:06:15	13.26	0.10	42.8	-1	
6/6/08 6:06:30	19.19	0.08	43.3	-1	
6/6/08 6:06:45	20.26	0.07	43.6	-1	
6/6/08 6:07:00	20.36	0.07	43.8	-1	
6/6/08 6:07:15	20.38	0.07	43.9	-1	
6/6/08 6:07:30	20.38	0.07	44.0	-1	
6/6/08 6:07:45	20.39	0.07	44.2	-1	
6/6/08 6:08:00	20.39	0.07	44.3	-1	
6/6/08 6:08:15	20.39	0.07	44.4	-1	
6/6/08 6:08:30	20.40	0.07	44.5	-1	
6/6/08 6:08:45	20.39	0.07	44.6	-1	
6/6/08 6:09:00	20.40	0.07	44.6	-1	
6/6/08 6:09:15	20.40	0.07	44.7	-1	
6/6/08 6:09:30	20.40	0.07	44.8	-1	
6/6/08 6:09:45	20.41	0.07	44.8	-1	
6/6/08 6:10:00	20.41	0.07	44.9	-1	
6/6/08 6:10:15	20.41	0.07	44.9	-1	NO ₂ Converter Check
6/6/08 6:10:30	20.42	0.08	45.0	-1	45.0 48.9 ppm NO ₂ /Air
6/6/08 6:10:45	20.42	0.08	45.0	-1	cyl# AAL8277
6/6/08 6:11:00	20.42	0.08	45.0	-1	
6/6/08 6:11:15	20.42	0.08	45.1	-1	92.06 % Conversion
6/6/08 6:11:30	20.42	0.08	37.5	-1	
6/6/08 6:11:45	20.41	0.08	3.7	6	
6/6/08 6:12:00	19.94	0.13	18.5	27	
6/6/08 6:12:15	19.70	0.22	19.6	42	
6/6/08 6:12:30	12.82	0.25	2.7	25	
6/6/08 6:12:45	5.49	0.16	2.0	5	
6/6/08 6:13:00	4.65	0.10	1.7	0	
6/6/08 6:13:15	4.65	0.09	1.5	0	
6/6/08 6:13:30	4.65	0.09	1.3	-1	
6/6/08 6:13:45	4.64	0.08	1.3	-1	
6/6/08 6:14:00	4.65	0.08	1.2	-1	
6/6/08 6:14:15	4.66	0.08	1.1	-1	
6/6/08 6:14:30	4.66	0.08	1.1	-1	System Bias
6/6/08 6:14:45	4.66	0.08	1.0	-1	4.66 4.50% O ₂
6/6/08 6:15:00	4.66	0.08	1.0	-1	0.08 Zero CO ₂
6/6/08 6:15:15	4.66	0.08	0.9	-1	1.0 Zero NO _x
6/6/08 6:15:30	4.66	0.08	0.9	-1	-1 Zero CO
6/6/08 6:15:45	4.67	0.08	2.7	-1	
6/6/08 6:16:00	7.41	0.22	1.1	-1	
6/6/08 6:16:15	8.34	3.60	0.9	-3	
6/6/08 6:16:30	2.53	7.75	0.9	-3	
6/6/08 6:16:45	0.41	8.85	0.8	-3	
6/6/08 6:17:00	0.14	8.90	0.8	-3	
6/6/08 6:17:15	0.11	8.86	0.8	-3	
6/6/08 6:17:30	0.09	8.88	0.7	-3	
6/6/08 6:17:45	0.09	8.97	0.7	-3	
6/6/08 6:18:00	0.09	9.06	0.7	-3	
6/6/08 6:18:15	0.08	9.11	0.7	-3	
6/6/08 6:18:30	0.08	9.14	0.7	-3	
6/6/08 6:18:45	0.08	9.15	0.7	-3	
6/6/08 6:19:00	0.07	9.15	0.7	-3	System Bias
6/6/08 6:19:15	0.07	9.15	0.7	-3	
6/6/08 6:19:30	0.07	9.16	0.6	-3	9.16 9.00% CO ₂
6/6/08 6:19:45	0.07	9.16	0.6	-3	
6/6/08 6:20:00	0.07	9.16	0.7	-3	
6/6/08 6:20:15	0.32	8.94	2.3	49	
6/6/08 6:20:30	6.40	5.43	0.7	373	
6/6/08 6:20:45	5.64	2.16	0.6	796	
6/6/08 6:21:00	1.15	0.54	0.6	955	
6/6/08 6:21:15	0.19	0.19	0.6	979	
6/6/08 6:21:30	0.11	0.15	0.6	982	
6/6/08 6:21:45	0.10	0.13	0.6	982	

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ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 6:22:00	0.09	0.13	0.6	983	
6/6/08 6:22:15	0.09	0.12	0.6	984	System Bias
6/6/08 6:22:30	0.09	0.12	0.6	985	
6/6/08 6:22:45	0.09	0.11	0.6	985	
6/6/08 6:23:00	0.09	0.11	0.6	983	
6/6/08 6:23:15	0.09	0.11	0.5	983	984 1,000 ppm CO
6/6/08 6:23:30	0.09	0.11	0.6	973	
6/6/08 6:23:45	0.27	0.11	13.1	728	
6/6/08 6:24:00	4.52	0.16	20.4	355	
6/6/08 6:24:15	3.73	0.15	38.8	85	
6/6/08 6:24:30	0.68	0.12	42.3	19	
6/6/08 6:24:45	0.14	0.10	43.0	3	
6/6/08 6:25:00	0.09	0.10	42.6	0	
6/6/08 6:25:15	0.08	0.09	42.6	0	
6/6/08 6:25:30	0.08	0.09	42.7	0	
6/6/08 6:25:45	0.09	0.09	44.9	0	
6/6/08 6:26:00	0.08	0.09	46.1	0	
6/6/08 6:26:15	0.08	0.09	45.7	-1	
6/6/08 6:26:30	0.08	0.09	45.6	-1	System Bias
6/6/08 6:26:45	0.08	0.08	45.5	-1	0.08 Zero O ₂
6/6/08 6:27:00	0.09	0.08	45.5	-1	
6/6/08 6:27:15	0.08	0.08	45.5	-1	45.5 45.0 ppm NO _x
6/6/08 6:27:30	0.08	0.08	45.5	-1	
6/6/08 6:27:45	0.08	0.08	45.4	-1	
6/6/08 6:28:00	0.08	0.08	17.0	-1	
6/6/08 6:28:15	1.15	0.09	1.2	0	
6/6/08 6:28:30	10.67	0.14	0.9	1	
6/6/08 6:28:45	18.63	0.19	1.0	1	
6/6/08 6:29:00	20.41	0.18	0.9	2	
6/6/08 6:29:15	20.47	0.25	0.9	2	
6/6/08 6:29:30	20.50	0.22	0.8	2	
6/6/08 6:29:45	20.56	0.19	0.7	1	
6/6/08 6:30:00	20.60	0.17	0.8	1	
6/6/08 6:30:15	20.62	0.16	0.8	2	
6/6/08 6:30:30	20.57	0.20	0.9	3	
6/6/08 6:30:45	20.50	0.24	0.7	6	
6/6/08 6:31:00	20.35	0.33	0.7	5	
6/6/08 6:31:15	20.46	0.24	0.7	3	
6/6/08 6:31:30	20.57	0.20	0.9	2	
6/6/08 6:31:45	20.54	0.21	0.9	4	
6/6/08 6:32:00	20.52	0.24	0.7	6	
6/6/08 6:32:15	20.41	0.28	0.7	4	
6/6/08 6:32:30	20.53	0.20	0.7	2	
6/6/08 6:32:45	20.62	0.16	0.7	2	
6/6/08 6:33:00	20.63	0.16	6.4	10	
6/6/08 6:33:15	20.30	0.54	10.8	157	
6/6/08 6:33:30	13.66	4.62	10.8	310	
6/6/08 6:33:45	5.81	8.07	10.8	423	
6/6/08 6:34:00	3.75	8.80	10.7	441	
6/6/08 6:34:15	3.50	8.92	10.7	445	
6/6/08 6:34:30	3.46	8.98	10.7	440	
6/6/08 6:34:45	3.44	9.00	10.7	441	
6/6/08 6:35:00	3.44	9.01	10.7	433	
6/6/08 6:35:15	3.43	9.01	10.7	418	
6/6/08 6:35:30	3.45	8.99	10.7	420	
6/6/08 6:35:45	3.45	8.98	10.6	429	Begin Run No. 4
6/6/08 6:36:00	3.47	8.93	10.6	455	
6/6/08 6:36:15	3.50	8.84	10.4	501	
6/6/08 6:36:30	3.52	8.73	10.4	540	
6/6/08 6:36:45	3.57	8.65	10.3	582	
6/6/08 6:37:00	3.61	8.66	10.4	632	
6/6/08 6:37:15	3.64	8.71	10.5	659	
6/6/08 6:37:30	3.64	8.80	10.6	662	
6/6/08 6:37:45	3.62	8.86	10.8	644	
6/6/08 6:38:00	3.59	8.95	10.9	608	
6/6/08 6:38:15	3.52	9.02	10.9	543	
6/6/08 6:38:30	3.45	9.05	10.9	506	
6/6/08 6:38:45	3.41	9.04	10.8	483	
6/6/08 6:39:00	3.39	9.02	10.8	476	
6/6/08 6:39:15	3.37	9.00	10.8	484	
6/6/08 6:39:30	3.36	8.97	10.8	503	
6/6/08 6:39:45	3.40	8.93	10.6	534	
6/6/08 6:40:00	3.42	8.90	10.6	552	
6/6/08 6:40:15	3.44	8.88	10.6	577	
6/6/08 6:40:30	3.48	8.88	10.7	599	
6/6/08 6:40:45	3.50	8.90	10.6	603	
6/6/08 6:41:00	3.51	8.93	10.6	591	
6/6/08 6:41:15	3.52	8.90	10.6	585	
6/6/08 6:41:30	3.52	8.84	10.6	584	
6/6/08 6:41:45	3.54	8.79	10.7	589	
6/6/08 6:42:00	3.54	8.81	10.7	604	
6/6/08 6:42:15	3.53	8.88	10.7	637	
6/6/08 6:42:30	3.55	8.91	10.8	645	

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No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 8:42:45	3.56	8.93	10.8	623	
6/6/08 8:43:00	3.54	8.96	10.7	602	
6/6/08 8:43:15	3.52	9.00	10.8	588	
6/6/08 8:43:30	3.50	9.03	10.9	578	
6/6/08 8:43:45	3.49	9.04	10.9	545	
6/6/08 8:44:00	3.47	9.05	10.9	532	
6/6/08 8:44:15	3.47	9.06	10.9	524	
6/6/08 8:44:30	3.46	9.07	10.8	532	
6/6/08 8:44:45	3.45	9.10	10.9	544	
6/6/08 8:45:00	3.44	9.12	10.9	531	
6/6/08 8:45:15	3.44	9.13	10.9	502	
6/6/08 8:45:30	3.43	9.12	10.8	490	
6/6/08 8:45:45	3.43	9.10	10.7	500	
6/6/08 8:46:00	3.43	9.07	10.8	499	
6/6/08 8:46:15	3.43	9.05	10.7	496	
6/6/08 8:46:30	3.45	9.02	10.7	506	
6/6/08 8:46:45	3.48	8.95	10.7	550	
6/6/08 8:47:00	3.52	8.85	10.7	583	
6/6/08 8:47:15	3.56	8.80	10.6	614	
6/6/08 8:47:30	3.59	8.84	10.7	629	
6/6/08 8:47:45	3.61	8.92	10.6	653	
6/6/08 8:48:00	3.62	9.01	10.6	678	
6/6/08 8:48:15	3.61	9.09	10.8	682	
6/6/08 8:48:30	3.59	9.15	10.9	648	
6/6/08 8:48:45	3.53	9.21	10.9	555	
6/6/08 8:49:00	3.45	9.26	10.9	488	
6/6/08 8:49:15	3.39	9.26	10.8	435	
6/6/08 8:49:30	3.35	9.24	10.8	423	
6/6/08 8:49:45	3.34	9.20	10.8	426	
6/6/08 8:50:00	3.35	9.17	10.7	430	
6/6/08 8:50:15	3.36	9.15	10.6	449	
6/6/08 8:50:30	3.39	9.14	10.6	469	
6/6/08 8:50:45	3.41	9.14	10.6	485	
6/6/08 8:51:00	3.43	9.15	10.6	486	
6/6/08 8:51:15	3.41	9.17	10.4	489	
6/6/08 8:51:30	3.40	9.17	10.5	479	
6/6/08 8:51:45	3.40	9.15	10.5	452	
6/6/08 8:52:00	3.40	9.15	10.4	439	
6/6/08 8:52:15	3.40	9.13	10.4	444	
6/6/08 8:52:30	3.41	9.10	10.3	450	
6/6/08 8:52:45	3.43	9.03	10.4	467	
6/6/08 8:53:00	3.46	8.92	10.3	490	
6/6/08 8:53:15	3.49	8.85	10.3	522	
6/6/08 8:53:30	3.52	8.86	10.3	552	
6/6/08 8:53:45	3.54	8.95	10.3	615	
6/6/08 8:54:00	3.54	9.04	10.2	642	
6/6/08 8:54:15	3.55	9.11	10.3	627	
6/6/08 8:54:30	3.53	9.18	10.4	582	
6/6/08 8:54:45	3.47	9.27	10.4	496	
6/6/08 8:55:00	3.39	9.34	10.5	433	
6/6/08 8:55:15	3.33	9.36	10.4	375	
6/6/08 8:55:30	3.29	9.35	10.4	365	
6/6/08 8:55:45	3.26	9.32	10.3	384	
6/6/08 8:56:00	3.28	9.27	10.3	405	
6/6/08 8:56:15	3.30	9.20	10.1	431	
6/6/08 8:56:30	3.36	9.14	10.0	454	
6/6/08 8:56:45	3.42	9.09	9.9	482	
6/6/08 8:57:00	3.45	9.07	9.9	509	
6/6/08 8:57:15	3.48	9.05	10.0	531	
6/6/08 8:57:30	3.48	9.07	10.1	521	
6/6/08 8:57:45	3.46	9.12	10.1	486	
6/6/08 8:58:00	3.43	9.16	10.3	486	
6/6/08 8:58:15	3.41	9.16	10.1	445	
6/6/08 8:58:30	3.41	9.11	10.1	447	
6/6/08 8:58:45	3.43	9.01	10.2	481	
6/6/08 8:59:00	3.46	8.92	10.1	483	
6/6/08 8:59:15	3.50	8.88	9.9	534	
6/6/08 8:59:30	3.53	8.90	9.9	563	
6/6/08 8:59:45	3.55	8.97	9.9	588	
6/6/08 7:00:00	3.55	9.04	10.0	596	
6/6/08 7:00:15	3.54	9.10	10.1	559	
6/6/08 7:00:30	3.49	9.19	10.3	498	
6/6/08 7:00:45	3.41	9.30	10.3	427	
6/6/08 7:01:00	3.33	9.38	10.3	393	
6/6/08 7:01:15	3.26	9.41	10.2	388	
6/6/08 7:01:30	3.24	9.40	10.2	360	
6/6/08 7:01:45	3.23	9.36	10.1	364	
6/6/08 7:02:00	3.28	9.29	9.9	389	
6/6/08 7:02:15	3.33	9.21	9.9	471	
6/6/08 7:02:30	3.39	9.11	9.8	523	
6/6/08 7:02:45	3.45	9.04	9.8	565	
6/6/08 7:03:00	3.51	9.00	9.7	590	
6/6/08 7:03:15	3.53	8.98	9.8	608	
6/6/08 7:03:30	3.55	8.97	9.9	606	

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Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 7:03:45	3.54	9.00	9.9	595	
6/6/08 7:04:00	3.53	9.03	9.9	593	
6/6/08 7:04:15	3.51	9.00	10.1	586	
6/6/08 7:04:30	3.48	8.97	10.1	571	
6/6/08 7:04:45	3.48	8.97	10.0	546	
6/6/08 7:05:00	3.49	9.03	10.1	551	
6/6/08 7:05:15	3.46	9.09	10.0	559	
6/6/08 7:05:30	3.45	9.12	10.1	545	
6/6/08 7:05:45	3.43	9.16	10.1	502	
6/6/08 7:06:00	3.39	9.21	10.0	476	
6/6/08 7:06:15	3.36	9.25	10.0	458	
6/6/08 7:06:30	3.33	9.26	10.1	456	
6/6/08 7:06:45	3.34	9.25	10.0	455	
6/6/08 7:07:00	3.34	9.24	10.0	451	
6/6/08 7:07:15	3.34	9.23	9.9	453	
6/6/08 7:07:30	3.37	9.22	9.9	467	
6/6/08 7:07:45	3.37	9.22	9.9	487	
6/6/08 7:08:00	3.38	9.20	9.9	496	
6/6/08 7:08:15	3.39	9.17	9.7	518	
6/6/08 7:08:30	3.39	9.16	9.7	544	
6/6/08 7:08:45	3.40	9.13	9.7	569	
6/6/08 7:09:00	3.43	9.09	9.8	586	
6/6/08 7:09:15	3.46	8.99	9.9	632	
6/6/08 7:09:30	3.47	8.85	9.9	659	
6/6/08 7:09:45	3.52	8.77	10.0	700	
6/6/08 7:10:00	3.55	8.79	9.9	730	
6/6/08 7:10:15	3.56	8.88	10.0	769	
6/6/08 7:10:30	3.58	8.97	10.0	781	
6/6/08 7:10:45	3.56	9.07	10.0	768	
6/6/08 7:11:00	3.52	9.16	10.1	738	
6/6/08 7:11:15	3.46	9.26	10.3	650	
6/6/08 7:11:30	3.40	9.31	10.3	575	
6/6/08 7:11:45	3.34	9.31	10.4	492	
6/6/08 7:12:00	3.28	9.30	10.3	449	
6/6/08 7:12:15	3.24	9.27	10.1	426	
6/6/08 7:12:30	3.26	9.22	10.1	442	
6/6/08 7:12:45	3.31	9.17	9.9	472	
6/6/08 7:13:00	3.35	9.13	9.9	497	
6/6/08 7:13:15	3.39	9.08	9.9	523	
6/6/08 7:13:30	3.41	9.07	9.8	535	
6/6/08 7:13:45	3.42	9.09	9.9	543	
6/6/08 7:14:00	3.41	9.11	9.9	524	
6/6/08 7:14:15	3.39	9.13	9.8	510	
6/6/08 7:14:30	3.37	9.14	9.8	511	
6/6/08 7:14:45	3.36	9.16	10.0	494	
6/6/08 7:15:00	3.37	9.16	10.0	477	
6/6/08 7:15:15	3.37	9.13	9.9	478	
6/6/08 7:15:30	3.37	9.05	9.8	501	
6/6/08 7:15:45	3.41	8.90	9.8	560	
6/6/08 7:16:00	3.49	8.77	9.7	611	
6/6/08 7:16:15	3.56	8.73	9.7	665	
6/6/08 7:16:30	3.59	8.81	9.7	694	
6/6/08 7:16:45	3.61	8.88	9.8	727	
6/6/08 7:17:00	3.62	8.95	9.9	718	
6/6/08 7:17:15	3.57	9.05	10.1	653	
6/6/08 7:17:30	3.49	9.16	10.2	581	
6/6/08 7:17:45	3.38	9.28	10.3	472	
6/6/08 7:18:00	3.28	9.35	10.2	403	
6/6/08 7:18:15	3.21	9.37	10.2	346	
6/6/08 7:18:30	3.17	9.35	9.9	337	
6/6/08 7:18:45	3.21	9.30	9.8	366	
6/6/08 7:19:00	3.27	9.24	9.7	403	
6/6/08 7:19:15	3.33	9.17	9.7	456	
6/6/08 7:19:30	3.39	9.09	9.6	494	
6/6/08 7:19:45	3.45	9.01	9.6	539	
6/6/08 7:20:00	3.49	8.98	9.6	560	
6/6/08 7:20:15	3.49	8.98	9.7	590	
6/6/08 7:20:30	3.51	8.98	9.6	602	
6/6/08 7:20:45	3.52	8.96	9.7	595	
6/6/08 7:21:00	3.50	8.91	9.8	579	
6/6/08 7:21:15	3.51	8.86	9.9	575	
6/6/08 7:21:30	3.50	8.88	9.8	585	
6/6/08 7:21:45	3.50	8.94	9.8	594	
6/6/08 7:22:00	3.50	9.01	9.9	579	
6/6/08 7:22:15	3.49	9.05	9.9	520	
6/6/08 7:22:30	3.45	9.11	9.9	478	
6/6/08 7:22:45	3.39	9.17	10.0	435	
6/6/08 7:23:00	3.34	9.21	9.9	417	
6/6/08 7:23:15	3.31	9.23	9.9	411	
6/6/08 7:23:30	3.29	9.22	9.8	419	
6/6/08 7:23:45	3.32	9.17	9.8	446	
6/6/08 7:24:00	3.32	9.16	9.7	475	
6/6/08 7:24:15	3.34	9.16	9.7	491	
6/6/08 7:24:30	3.36	9.14	9.7	479	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 7:24:45	3.37	8.13	9.7	463	
6/6/08 7:25:00	3.37	9.12	9.7	482	
6/6/08 7:25:15	3.38	8.11	9.7	505	
6/6/08 7:25:30	3.38	9.10	9.7	505	
6/6/08 7:25:45	3.39	9.10	9.7	509	
6/6/08 7:26:00	3.40	9.07	9.6	532	
6/6/08 7:26:15	3.42	9.00	9.7	576	
6/6/08 7:26:30	3.43	8.89	9.6	598	
6/6/08 7:26:45	3.46	8.78	9.6	644	
6/6/08 7:27:00	3.54	8.69	9.6	689	
6/6/08 7:27:15	3.60	8.71	9.6	739	
6/6/08 7:27:30	3.58	8.81	9.7	768	
6/6/08 7:27:45	3.57	8.91	9.9	747	
6/6/08 7:28:00	3.52	9.03	10.0	676	
6/6/08 7:28:15	3.43	9.15	10.0	567	
6/6/08 7:28:30	3.32	9.26	10.1	496	
6/6/08 7:28:45	3.23	9.32	10.2	418	
6/6/08 7:29:00	3.17	9.33	10.1	385	
6/6/08 7:29:15	3.15	9.30	9.9	378	
6/6/08 7:29:30	3.19	9.22	9.7	404	
6/6/08 7:29:45	3.25	9.13	9.8	465	
6/6/08 7:30:00	3.33	9.06	9.5	514	
6/6/08 7:30:15	3.40	8.99	9.4	586	
6/6/08 7:30:30	3.45	8.93	9.4	627	
6/6/08 7:30:45	3.48	8.89	9.5	674	
6/6/08 7:31:00	3.50	8.87	9.7	690	
6/6/08 7:31:15	3.50	8.88	9.8	686	
6/6/08 7:31:30	3.48	8.92	9.7	681	
6/6/08 7:31:45	3.45	8.95	9.7	661	
6/6/08 7:32:00	3.43	8.94	9.8	645	
6/6/08 7:32:15	3.42	8.87	9.7	652	
6/6/08 7:32:30	3.44	8.79	9.7	678	
6/6/08 7:32:45	3.48	8.76	9.7	723	
6/6/08 7:33:00	3.53	8.80	9.6	763	
6/6/08 7:33:15	3.55	8.84	9.8	798	
6/6/08 7:33:30	3.56	8.89	9.9	787	
6/6/08 7:33:45	3.52	8.96	9.9	722	
6/6/08 7:34:00	3.47	9.03	9.9	681	
6/6/08 7:34:15	3.41	9.11	10.0	603	
6/6/08 7:34:30	3.35	9.17	10.1	570	
6/6/08 7:34:45	3.30	9.21	10.1	508	
6/6/08 7:35:00	3.25	9.22	10.1	485	
6/6/08 7:35:15	3.21	9.23	9.9	435	
6/6/08 7:35:30	3.18	9.25	9.9	435	
6/6/08 7:35:45	3.19	9.22	9.8	463	
6/6/08 7:36:00	3.23	9.15	9.7	485	
6/6/08 7:36:15	3.29	9.09	9.7	525	
6/6/08 7:36:30	3.34	9.05	9.7	566	
6/6/08 7:36:45	3.39	8.99	9.6	604	
6/6/08 7:37:00	3.43	8.94	9.6	622	
6/6/08 7:37:15	3.44	8.89	9.6	654	
6/6/08 7:37:30	3.48	8.77	9.6	692	
6/6/08 7:37:45	3.50	8.67	9.6	755	
6/6/08 7:38:00	3.54	8.65	9.7	800	
6/6/08 7:38:15	3.59	8.73	9.8	831	
6/6/08 7:38:30	3.57	8.85	9.9	819	
6/6/08 7:38:45	3.51	8.98	10.1	757	
6/6/08 7:39:00	3.42	9.12	10.2	694	
6/6/08 7:39:15	3.32	9.23	10.2	582	
6/6/08 7:39:30	3.24	9.28	10.2	500	
6/6/08 7:39:45	3.15	9.29	10.1	422	
6/6/08 7:40:00	3.10	9.27	10.1	410	
6/6/08 7:40:15	3.12	9.23	9.9	443	
6/6/08 7:40:30	3.19	9.15	9.8	489	
6/6/08 7:40:45	3.25	9.06	9.8	540	
6/6/08 7:41:00	3.30	9.01	9.7	556	
6/6/08 7:41:15	3.34	8.99	9.7	584	
6/6/08 7:41:30	3.36	8.99	9.7	599	
6/6/08 7:41:45	3.37	8.99	9.6	605	
6/6/08 7:42:00	3.37	9.01	9.6	605	
6/6/08 7:42:15	3.37	9.05	9.7	583	
6/6/08 7:42:30	3.35	9.07	9.7	556	
6/6/08 7:42:45	3.34	9.07	9.6	537	
6/6/08 7:43:00	3.34	9.02	9.7	555	
6/6/08 7:43:15	3.38	8.90	9.7	617	
6/6/08 7:43:30	3.45	8.77	9.7	858	
6/6/08 7:43:45	3.50	8.72	9.7	708	
6/6/08 7:44:00	3.54	8.75	9.7	744	
6/6/08 7:44:15	3.57	8.80	9.9	769	
6/6/08 7:44:30	3.58	8.85	9.9	747	
6/6/08 7:44:45	3.54	8.94	10.0	685	
6/6/08 7:45:00	3.47	9.03	10.1	619	
6/6/08 7:45:15	3.38	9.14	10.1	530	
6/6/08 7:45:30	3.30	9.21	10.1	476	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 7:45:45	3.24	9.25	10.1	412	
6/6/08 7:46:00	3.20	9.25	10.0	384	
6/6/08 7:46:15	3.17	9.24	9.9	376	
6/6/08 7:46:30	3.16	9.22	9.8	398	
6/6/08 7:46:45	3.21	9.17	9.7	460	
6/6/08 7:47:00	3.28	9.11	9.6	513	
6/6/08 7:47:15	3.34	9.02	9.6	567	
6/6/08 7:47:30	3.41	8.95	9.5	588	
6/6/08 7:47:45	3.46	8.90	9.6	608	
6/6/08 7:48:00	3.49	8.86	9.6	616	
6/6/08 7:48:15	3.49	8.85	9.6	632	
6/6/08 7:48:30	3.48	8.86	9.6	633	
6/6/08 7:48:45	3.47	8.86	9.8	626	
6/6/08 7:49:00	3.46	8.84	9.7	620	
6/6/08 7:49:15	3.46	8.80	9.8	628	
6/6/08 7:49:30	3.47	8.76	9.8	651	
6/6/08 7:49:45	3.48	8.79	9.8	668	
6/6/08 7:50:00	3.46	8.88	9.8	676	
6/6/08 7:50:15	3.44	8.99	9.9	655	
6/6/08 7:50:30	3.41	9.06	10.0	608	
6/6/08 7:50:45	3.36	9.14	9.9	519	
6/6/08 7:51:00	3.29	9.19	9.9	472	
6/6/08 7:51:15	3.26	9.20	9.9	449	
6/6/08 7:51:30	3.24	9.17	9.8	450	
6/6/08 7:51:45	3.25	9.13	9.8	479	
6/6/08 7:52:00	3.27	9.09	9.7	518	
6/6/08 7:52:15	3.31	9.03	9.7	557	
6/6/08 7:52:30	3.36	8.99	9.7	568	
6/6/08 7:52:45	3.38	9.00	9.7	591	
6/6/08 7:53:00	3.38	9.02	9.7	604	
6/6/08 7:53:15	3.38	9.03	9.8	599	
6/6/08 7:53:30	3.35	9.06	9.7	584	
6/6/08 7:53:45	3.33	9.09	9.8	567	
6/6/08 7:54:00	3.32	9.08	9.8	570	
6/6/08 7:54:15	3.32	9.03	9.8	596	
6/6/08 7:54:30	3.34	8.97	9.8	627	
6/6/08 7:54:45	3.36	8.94	9.7	644	
6/6/08 7:55:00	3.39	8.89	9.7	669	
6/6/08 7:55:15	3.43	8.80	9.7	734	
6/6/08 7:55:30	3.48	8.70	9.8	778	
6/6/08 7:55:45	3.53	8.66	9.8	822	
6/6/08 7:56:00	3.54	8.72	9.9	841	
6/6/08 7:56:15	3.55	8.82	10.0	848	
6/6/08 7:56:30	3.52	8.95	10.1	824	
6/6/08 7:56:45	3.46	9.08	10.1	757	
6/6/08 7:57:00	3.38	9.20	10.3	687	
6/6/08 7:57:15	3.27	9.29	10.3	574	
6/6/08 7:57:30	3.17	9.32	10.3	504	
6/6/08 7:57:45	3.08	9.31	10.2	450	
6/6/08 7:58:00	3.07	9.26	10.1	462	
6/6/08 7:58:15	3.13	9.18	9.9	503	
6/6/08 7:58:30	3.21	9.10	9.8	546	
6/6/08 7:58:45	3.25	9.04	9.7	606	
6/6/08 7:59:00	3.32	8.98	9.8	648	
6/6/08 7:59:15	3.35	8.96	9.8	691	
6/6/08 7:59:30	3.38	8.95	9.8	703	
6/6/08 7:59:45	3.40	8.96	9.9	700	
6/6/08 8:00:00	3.39	9.00	9.9	698	
6/6/08 8:00:15	3.37	9.05	9.8	685	
6/6/08 8:00:30	3.33	9.08	9.9	669	
6/6/08 8:00:45	3.29	9.09	10.0	627	
6/6/08 8:01:00	3.26	9.10	9.9	603	
6/6/08 8:01:15	3.26	9.08	9.9	611	
6/6/08 8:01:30	3.28	9.03	9.9	623	
6/6/08 8:01:45	3.29	8.99	9.9	631	
6/6/08 8:02:00	3.33	8.96	9.8	654	
6/6/08 8:02:15	3.37	8.93	9.8	691	
6/6/08 8:02:30	3.38	8.92	9.9	707	
6/6/08 8:02:45	3.39	8.92	9.9	702	
6/6/08 8:03:00	3.39	8.93	9.9	694	
6/6/08 8:03:15	3.38	8.95	10.0	695	
6/6/08 8:03:30	3.39	8.94	10.0	689	
6/6/08 8:03:45	3.40	8.89	10.0	677	
6/6/08 8:04:00	3.40	8.86	9.9	680	
6/6/08 8:04:15	3.40	8.87	10.0	703	
6/6/08 8:04:30	3.41	8.94	10.0	716	
6/6/08 8:04:45	3.41	9.02	10.1	733	
6/6/08 8:05:00	3.40	9.06	10.1	712	
6/6/08 8:05:15	3.38	9.11	10.1	637	
6/6/08 8:05:30	3.32	9.18	10.0	590	
6/6/08 8:05:45	3.28	9.23	10.1	546	
6/6/08 8:06:00	3.23	9.25	10.1	529	Change of Ports
6/6/08 8:06:15	3.22	9.21	10.0	524	
6/6/08 8:06:30	3.22	9.18	9.9	539	

**Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data**

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 8:06:45	3.23	9.17	9.8	559	
6/6/08 8:07:00	3.25	9.14	9.2	577	
6/6/08 8:07:15	3.28	9.11	2.0	496	
6/6/08 8:07:30	4.99	7.77	0.8	276	
6/6/08 8:07:45	14.34	2.80	0.7	55	
6/6/08 8:08:00	19.63	0.56	0.7	12	
6/6/08 8:08:15	20.42	0.27	0.7	3	
6/6/08 8:08:30	20.50	0.22	0.7	2	
6/6/08 8:08:45	20.53	0.20	0.6	1	
6/6/08 8:09:00	20.54	0.20	0.6	1	
6/6/08 8:09:15	20.54	0.19	5.2	23	
6/6/08 8:09:30	20.39	0.39	10.6	192	
6/6/08 8:09:45	14.81	4.01	10.6	551	
6/6/08 8:10:00	6.36	7.83	10.6	692	
6/6/08 8:10:15	3.83	8.76	10.7	742	
6/6/08 8:10:30	3.52	8.91	10.6	743	
6/6/08 8:10:45	3.46	8.95	10.6	737	
6/6/08 8:11:00	3.43	8.92	10.5	725	
6/6/08 8:11:15	3.42	8.85	10.5	722	
6/6/08 8:11:30	3.43	8.84	10.3	738	
6/6/08 8:11:45	3.45	8.88	10.4	757	Resume Testing
6/6/08 8:12:00	3.46	8.95	10.4	750	
6/6/08 8:12:15	3.45	9.02	10.5	723	
6/6/08 8:12:30	3.41	9.08	10.7	685	
6/6/08 8:12:45	3.36	9.15	10.6	623	
6/6/08 8:13:00	3.29	9.24	10.6	576	
6/6/08 8:13:15	3.24	9.29	10.6	513	
6/6/08 8:13:30	3.18	9.32	10.6	498	
6/6/08 8:13:45	3.16	9.31	10.4	498	
6/6/08 8:14:00	3.17	9.28	10.2	506	
6/6/08 8:14:15	3.21	9.20	10.2	548	
6/6/08 8:14:30	3.27	9.13	10.0	588	
6/6/08 8:14:45	3.30	9.09	10.0	625	
6/6/08 8:15:00	3.34	9.04	10.0	652	
6/6/08 8:15:15	3.38	8.98	10.1	691	
6/6/08 8:15:30	3.41	8.94	10.1	706	
6/6/08 8:15:45	3.41	8.94	10.0	712	
6/6/08 8:16:00	3.40	8.94	10.1	710	
6/6/08 8:16:15	3.40	8.96	10.2	695	
6/6/08 8:16:30	3.38	9.00	10.2	688	
6/6/08 8:16:45	3.36	9.04	10.3	684	
6/6/08 8:17:00	3.33	9.07	10.3	655	
6/6/08 8:17:15	3.28	9.10	10.3	601	
6/6/08 8:17:30	3.26	9.08	10.3	596	
6/6/08 8:17:45	3.26	8.99	10.1	629	
6/6/08 8:18:00	3.30	8.88	10.1	678	
6/6/08 8:18:15	3.38	8.85	10.2	731	
6/6/08 8:18:30	3.40	8.89	10.1	762	
6/6/08 8:18:45	3.40	8.96	10.1	793	
6/6/08 8:19:00	3.43	8.88	10.2	802	
6/6/08 8:19:15	3.42	9.04	10.2	763	
6/6/08 8:19:30	3.35	9.13	10.2	721	
6/6/08 8:19:45	3.31	9.20	10.3	673	
6/6/08 8:20:00	3.27	9.25	10.3	626	
6/6/08 8:20:15	3.22	9.30	10.4	572	
6/6/08 8:20:30	3.17	9.31	10.4	535	
6/6/08 8:20:45	3.14	9.29	10.2	515	
6/6/08 8:21:00	3.14	9.25	10.2	526	
6/6/08 8:21:15	3.17	9.19	10.1	569	
6/6/08 8:21:30	3.21	9.12	10.0	616	
6/6/08 8:21:45	3.24	9.08	10.0	671	
6/6/08 8:22:00	3.28	9.04	9.9	726	
6/6/08 8:22:15	3.32	8.99	9.9	770	
6/6/08 8:22:30	3.36	8.93	9.9	798	
6/6/08 8:22:45	3.40	8.87	10.0	818	
6/6/08 8:23:00	3.42	8.85	10.0	838	
6/6/08 8:23:15	3.42	8.90	10.0	852	
6/6/08 8:23:30	3.40	8.97	10.0	855	
6/6/08 8:23:45	3.39	9.03	10.1	839	
6/6/08 8:24:00	3.35	9.09	10.2	801	
6/6/08 8:24:15	3.31	9.14	10.2	760	
6/6/08 8:24:30	3.26	9.16	10.2	724	
6/6/08 8:24:45	3.21	9.16	10.2	687	
6/6/08 8:25:00	3.18	9.10	10.1	678	
6/6/08 8:25:15	3.20	8.98	10.1	711	
6/6/08 8:25:30	3.26	8.85	10.1	746	
6/6/08 8:25:45	3.31	8.81	10.2	798	
6/6/08 8:26:00	3.37	8.96	10.0	867	
6/6/08 8:26:15	3.42	8.95	10.0	919	
6/6/08 8:26:30	3.46	9.03	10.1	934	
6/6/08 8:26:45	3.45	9.14	10.3	890	
6/6/08 8:27:00	3.38	9.28	10.3	800	
6/6/08 8:27:15	3.26	9.37	10.4	690	
6/6/08 8:27:30	3.14	9.42	10.3	586	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 8:27:45	3.07	9.41	10.2	538	
6/6/08 8:28:00	3.05	9.35	10.1	537	
6/6/08 8:28:15	3.09	9.26	10.0	569	
6/6/08 8:28:30	3.14	9.16	9.9	613	
6/6/08 8:28:45	3.22	9.08	9.7	671	
6/6/08 8:29:00	3.29	9.01	9.7	732	
6/6/08 8:29:15	3.34	8.97	9.7	777	
6/6/08 8:29:30	3.36	8.96	9.7	809	
6/6/08 8:29:45	3.38	8.97	9.8	825	
6/6/08 8:30:00	3.39	9.00	9.8	822	
6/6/08 8:30:15	3.37	9.06	9.9	789	
6/6/08 8:30:30	3.32	9.13	10.0	741	
6/6/08 8:30:45	3.27	9.18	10.0	695	
6/6/08 8:31:00	3.22	9.22	10.0	657	
6/6/08 8:31:15	3.18	9.23	10.0	613	
6/6/08 8:31:30	3.15	9.22	10.0	573	
6/6/08 8:31:45	3.13	9.18	10.0	566	
6/6/08 8:32:00	3.16	9.13	9.9	589	
6/6/08 8:32:15	3.21	9.07	9.8	644	
6/6/08 8:32:30	3.25	9.04	9.8	699	
6/6/08 8:32:45	3.29	9.02	9.8	732	
6/6/08 8:33:00	3.32	8.98	9.7	764	
6/6/08 8:33:15	3.34	8.92	9.8	794	
6/6/08 8:33:30	3.38	8.88	9.7	817	
6/6/08 8:33:45	3.40	8.90	9.7	847	
6/6/08 8:34:00	3.42	8.96	9.7	875	
6/6/08 8:34:15	3.42	9.05	9.8	867	
6/6/08 8:34:30	3.39	9.13	9.9	834	
6/6/08 8:34:45	3.36	9.18	9.9	787	
6/6/08 8:35:00	3.30	9.25	10.0	728	
6/6/08 8:35:15	3.23	9.32	10.0	658	
6/6/08 8:35:30	3.16	9.36	10.0	595	
6/6/08 8:35:45	3.11	9.35	10.0	557	
6/6/08 8:36:00	3.10	9.32	9.8	549	
6/6/08 8:36:15	3.11	9.30	9.8	569	
6/6/08 8:36:30	3.15	9.29	9.8	581	
6/6/08 8:36:45	3.17	9.29	9.8	582	
6/6/08 8:37:00	3.18	9.27	9.7	594	
6/6/08 8:37:15	3.20	9.23	9.7	609	
6/6/08 8:37:30	3.23	9.19	9.7	625	
6/6/08 8:37:45	3.24	9.17	9.6	648	
6/6/08 8:38:00	3.26	9.14	9.6	666	
6/6/08 8:38:15	3.27	9.11	9.6	674	
6/6/08 8:38:30	3.27	9.11	9.6	695	
6/6/08 8:38:45	3.29	9.08	9.6	710	
6/6/08 8:39:00	3.31	9.05	9.6	715	
6/6/08 8:39:15	3.30	9.04	9.6	725	
6/6/08 8:39:30	3.31	9.03	9.6	733	
6/6/08 8:39:45	3.33	9.02	9.7	735	
6/6/08 8:40:00	3.32	9.03	9.7	724	
6/6/08 8:40:15	3.29	9.07	9.6	708	
6/6/08 8:40:30	3.28	9.10	9.6	703	
6/6/08 8:40:45	3.26	9.14	9.7	702	
6/6/08 8:41:00	3.25	9.15	9.7	685	
6/6/08 8:41:15	3.24	9.11	9.7	670	
6/6/08 8:41:30	3.23	9.02	9.6	685	
6/6/08 8:41:45	3.27	8.92	9.6	736	
6/6/08 8:42:00	3.32	8.90	9.5	793	
6/6/08 8:42:15	3.38	8.94	9.6	839	
6/6/08 8:42:30	3.41	9.00	9.7	858	
6/6/08 8:42:45	3.41	9.07	9.7	830	
6/6/08 8:43:00	3.37	9.16	9.8	783	
6/6/08 8:43:15	3.29	9.29	9.9	721	
6/6/08 8:43:30	3.21	9.37	9.9	649	
6/6/08 8:43:45	3.15	9.38	9.9	578	
6/6/08 8:44:00	3.09	9.38	9.8	548	
6/6/08 8:44:15	3.09	9.35	9.8	566	
6/6/08 8:44:30	3.11	9.32	9.8	593	
6/6/08 8:44:45	3.15	9.27	9.6	624	
6/6/08 8:45:00	3.19	9.20	9.6	656	
6/6/08 8:45:15	3.24	9.14	9.6	683	
6/6/08 8:45:30	3.26	9.09	9.5	713	
6/6/08 8:45:45	3.29	9.05	9.5	739	
6/6/08 8:46:00	3.32	9.03	9.6	753	
6/6/08 8:46:15	3.35	9.03	9.6	763	
6/6/08 8:46:30	3.34	9.06	9.5	767	
6/6/08 8:46:45	3.32	9.10	9.6	754	
6/6/08 8:47:00	3.29	9.15	9.7	731	
6/6/08 8:47:15	3.26	9.20	9.7	699	
6/6/08 8:47:30	3.22	9.22	9.7	662	
6/6/08 8:47:45	3.19	9.21	9.8	630	
6/6/08 8:48:00	3.17	9.20	9.6	619	
6/6/08 8:48:15	3.17	9.19	9.6	641	
6/6/08 8:48:30	3.19	9.16	9.6	660	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 8:48:45	3.22	9.13	9.6	674	
6/6/08 8:49:00	3.22	9.10	9.6	695	
6/6/08 8:49:15	3.24	9.05	9.5	728	
6/6/08 8:49:30	3.28	8.96	9.5	775	
6/6/08 8:49:45	3.33	8.89	9.5	822	
6/6/08 8:50:00	3.37	8.88	9.6	853	
6/6/08 8:50:15	3.40	8.94	9.7	876	
6/6/08 8:50:30	3.40	9.07	9.8	872	
6/6/08 8:50:45	3.37	9.20	9.9	825	
6/6/08 8:51:00	3.29	9.31	9.9	745	
6/6/08 8:51:15	3.17	9.43	9.9	648	
6/6/08 8:51:30	3.07	9.50	10.0	564	
6/6/08 8:51:45	3.01	9.50	9.8	525	
6/6/08 8:52:00	3.01	9.45	9.7	543	
6/6/08 8:52:15	3.05	9.36	9.6	595	
6/6/08 8:52:30	3.13	9.28	9.5	649	
6/6/08 8:52:45	3.20	9.23	9.5	697	
6/6/08 8:53:00	3.25	9.18	9.5	719	
6/6/08 8:53:15	3.29	9.17	9.5	728	
6/6/08 8:53:30	3.30	9.18	9.5	731	
6/6/08 8:53:45	3.28	9.21	9.6	702	
6/6/08 8:54:00	3.25	9.24	9.6	662	
6/6/08 8:54:15	3.21	9.26	9.6	642	
6/6/08 8:54:30	3.19	9.25	9.6	636	
6/6/08 8:54:45	3.19	9.23	9.6	637	
6/6/08 8:55:00	3.21	9.20	9.6	667	
6/6/08 8:55:15	3.24	9.15	9.6	706	
6/6/08 8:55:30	3.28	9.12	9.5	732	
6/6/08 8:55:45	3.28	9.10	9.5	750	
6/6/08 8:56:00	3.28	9.08	9.6	761	
6/6/08 8:56:15	3.29	9.07	9.6	775	
6/6/08 8:56:30	3.31	9.07	9.6	783	
6/6/08 8:56:45	3.30	9.10	9.6	793	
6/6/08 8:57:00	3.28	9.15	9.7	794	
6/6/08 8:57:15	3.28	9.19	9.7	770	
6/6/08 8:57:30	3.27	9.19	9.7	751	
6/6/08 8:57:45	3.25	9.15	9.7	743	
6/6/08 8:58:00	3.24	9.08	9.7	747	
6/6/08 8:58:15	3.25	9.04	9.7	760	
6/6/08 8:58:30	3.27	9.06	9.7	784	
6/6/08 8:58:45	3.29	9.11	9.8	812	
6/6/08 8:59:00	3.30	9.17	9.7	819	
6/6/08 8:59:15	3.29	9.23	9.7	800	
6/6/08 8:59:30	3.26	9.30	9.7	755	
6/6/08 8:59:45	3.23	9.37	9.8	692	
6/6/08 9:00:00	3.17	9.44	9.9	635	
6/6/08 9:00:15	3.12	9.46	9.9	591	
6/6/08 9:00:30	3.09	9.45	9.8	556	
6/6/08 9:00:45	3.09	9.44	9.7	553	
6/6/08 9:01:00	3.10	9.40	9.6	582	
6/6/08 9:01:15	3.14	9.35	9.6	823	
6/6/08 9:01:30	3.18	9.28	9.6	661	
6/6/08 9:01:45	3.23	9.23	9.6	696	
6/6/08 9:02:00	3.26	9.18	9.6	727	
6/6/08 9:02:15	3.28	9.14	9.5	780	
6/6/08 9:02:30	3.30	9.10	9.5	788	
6/6/08 9:02:45	3.32	9.06	9.6	822	
6/6/08 9:03:00	3.34	9.04	9.6	839	
6/6/08 9:03:15	3.35	9.04	9.6	844	
6/6/08 9:03:30	3.36	9.05	9.5	852	
6/6/08 9:03:45	3.37	9.07	9.6	859	
6/6/08 9:04:00	3.34	9.12	9.7	841	
6/6/08 9:04:15	3.31	9.17	9.7	803	
6/6/08 9:04:30	3.28	9.21	9.7	772	
6/6/08 9:04:45	3.25	9.23	9.8	742	
6/6/08 9:05:00	3.21	9.23	9.8	721	
6/6/08 9:05:15	3.19	9.18	9.6	730	
6/6/08 9:05:30	3.22	9.07	9.8	753	
6/6/08 9:05:45	3.26	8.98	9.7	779	
6/6/08 9:06:00	3.31	6.97	9.7	809	
6/6/08 9:06:15	3.33	9.05	9.7	853	
6/6/08 9:06:30	3.34	9.16	9.7	899	
6/6/08 9:06:45	3.35	9.27	9.9	893	
6/6/08 9:07:00	3.32	9.37	10.1	816	
6/6/08 9:07:15	3.24	9.48	10.2	898	
6/6/08 9:07:30	3.10	9.59	10.2	586	
6/6/08 9:07:45	3.00	9.63	10.1	524	
6/6/08 9:08:00	2.99	9.57	10.0	520	
6/6/08 9:08:15	3.01	9.47	9.8	567	
6/6/08 9:08:30	3.10	9.37	9.7	627	
6/6/08 9:08:45	3.19	9.29	9.6	698	
6/6/08 9:09:00	3.25	9.23	9.6	754	
6/6/08 9:09:15	3.27	9.21	9.7	788	
6/6/08 9:09:30	3.27	9.21	9.8	802	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 9:09:45	3.28	9.23	9.8	786	
6/6/08 9:10:00	3.25	9.26	9.7	750	
6/6/08 9:10:15	3.23	9.29	9.7	728	
6/6/08 9:10:30	3.23	9.32	9.9	706	
6/6/08 9:10:45	3.21	9.32	9.8	675	
6/6/08 9:11:00	3.17	9.27	9.8	654	
6/6/08 9:11:15	3.19	9.17	9.7	693	
6/6/08 9:11:30	3.23	9.08	9.7	758	
6/6/08 9:11:45	3.29	9.07	9.6	802	
6/6/08 9:12:00	3.32	9.12	9.7	836	
6/6/08 9:12:15	3.33	9.17	9.7	852	
6/6/08 9:12:30	3.32	9.22	9.6	843	
6/6/08 9:12:45	3.29	9.29	9.8	791	
6/6/08 9:13:00	3.24	9.40	9.8	713	
6/6/08 9:13:15	3.16	9.50	10.0	641	
6/6/08 9:13:30	3.10	9.53	10.0	589	
6/6/08 9:13:45	3.06	9.52	9.9	571	
6/6/08 9:14:00	3.05	9.50	9.9	572	
6/6/08 9:14:15	3.06	9.45	9.9	586	
6/6/08 9:14:30	3.10	9.39	9.8	615	
6/6/08 9:14:45	3.13	9.35	9.7	646	
6/6/08 9:15:00	3.16	9.30	9.7	678	
6/6/08 9:15:15	3.22	9.24	9.7	707	
6/6/08 9:15:30	3.27	9.20	9.6	738	
6/6/08 9:15:45	3.28	9.19	9.6	767	
6/6/08 9:16:00	3.29	9.19	9.7	779	
6/6/08 9:16:15	3.30	9.21	9.7	771	
6/6/08 9:16:30	3.29	9.24	9.7	760	
6/6/08 9:16:45	3.27	9.30	9.7	740	
6/6/08 9:17:00	3.23	9.35	9.9	710	
6/6/08 9:17:15	3.21	9.38	9.9	669	
6/6/08 9:17:30	3.18	9.39	9.8	639	
6/6/08 9:17:45	3.17	9.37	9.8	637	
6/6/08 9:18:00	3.19	9.32	9.8	648	
6/6/08 9:18:15	3.21	9.28	9.8	678	
6/6/08 9:18:30	3.23	9.24	9.7	724	
6/6/08 9:18:45	3.25	9.17	9.6	779	
6/6/08 9:19:00	3.30	9.06	9.7	830	
6/6/08 9:19:15	3.36	9.00	9.7	863	
6/6/08 9:19:30	3.40	9.03	9.6	893	
6/6/08 9:19:45	3.41	9.11	9.7	926	
6/6/08 9:20:00	3.39	9.24	9.8	926	
6/6/08 9:20:15	3.34	9.37	9.9	869	
6/6/08 9:20:30	3.26	9.46	10.0	785	
6/6/08 9:20:45	3.18	9.54	10.0	678	
6/6/08 9:21:00	3.12	9.58	10.1	595	
6/6/08 9:21:15	3.08	9.56	10.0	576	
6/6/08 9:21:30	3.07	9.52	9.8	589	
6/6/08 9:21:45	3.09	9.49	9.7	605	
6/6/08 9:22:00	3.14	9.45	9.7	620	
6/6/08 9:22:15	3.20	9.41	9.7	656	
6/6/08 9:22:30	3.22	9.39	9.7	692	
6/6/08 9:22:45	3.22	9.39	9.7	710	
6/6/08 9:23:00	3.21	9.40	9.7	710	
6/6/08 9:23:15	3.21	9.40	9.8	705	
6/6/08 9:23:30	3.19	9.39	9.8	690	
6/6/08 9:23:45	3.19	9.36	9.8	684	
6/6/08 9:24:00	3.20	9.33	9.7	701	
6/6/08 9:24:15	3.21	9.30	9.7	746	
6/6/08 9:24:30	3.25	9.22	9.6	798	
6/6/08 9:24:45	3.30	9.11	9.6	839	
6/6/08 9:25:00	3.33	9.01	9.5	877	
6/6/08 9:25:15	3.38	8.96	9.6	927	
6/6/08 9:25:30	3.42	9.01	9.7	970	
6/6/08 9:25:45	3.42	9.14	9.9	968	
6/6/08 9:26:00	3.40	9.28	9.8	927	
6/6/08 9:26:15	3.34	9.41	10.1	838	
6/6/08 9:26:30	3.24	9.52	10.2	713	
6/6/08 9:26:45	3.12	9.63	10.3	603	
6/6/08 9:27:00	3.02	9.67	10.2	532	
6/6/08 9:27:15	2.95	9.64	10.0	534	
6/6/08 9:27:30	2.98	9.55	10.0	585	
6/6/08 9:27:45	3.08	9.44	9.8	643	
6/6/08 9:28:00	3.12	9.39	9.7	697	
6/6/08 9:28:15	3.19	9.33	9.8	740	
6/6/08 9:28:30	3.24	9.31	9.8	749	
6/6/08 9:28:45	3.25	9.33	9.8	731	
6/6/08 9:29:00	3.24	9.38	9.9	718	
6/6/08 9:29:15	3.22	9.42	9.9	719	
6/6/08 9:29:30	3.18	9.43	9.9	713	
6/6/08 9:29:45	3.16	9.36	9.8	717	
6/6/08 9:30:00	3.18	9.26	9.7	750	
6/6/08 9:30:15	3.25	9.18	9.7	799	
6/6/08 9:30:30	3.30	9.17	9.7	858	

**Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data**

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 9:30:45	3.35	9.21	9.8	905	
6/6/08 9:31:00	3.36	9.26	9.9	906	
6/6/08 9:31:15	3.33	9.31	10.0	867	
6/6/08 9:31:30	3.27	9.39	10.1	820	
6/6/08 9:31:45	3.22	9.47	10.1	767	
6/6/08 9:32:00	3.16	9.53	10.1	710	
6/6/08 9:32:15	3.11	9.57	10.1	661	
6/6/08 9:32:30	3.07	9.60	10.0	629	
6/6/08 9:32:45	3.05	9.59	9.9	604	
6/6/08 9:33:00	3.06	9.56	9.9	587	
6/6/08 9:33:15	3.09	9.51	9.8	606	
6/6/08 9:33:30	3.12	9.45	9.9	633	
6/6/08 9:33:45	3.17	9.40	9.8	660	
6/6/08 9:34:00	3.19	9.38	9.8	701	
6/6/08 9:34:15	3.20	9.36	9.7	737	
6/6/08 9:34:30	3.21	9.35	9.8	754	
6/6/08 9:34:45	3.23	9.32	9.7	769	
6/6/08 9:35:00	3.24	9.26	9.8	803	
6/6/08 9:35:15	3.27	9.18	9.7	849	
6/6/08 9:35:30	3.31	9.13	9.8	889	
6/6/08 9:35:45	3.35	9.16	9.8	907	
6/6/08 9:36:00	3.36	9.25	9.8	917	
6/6/08 9:36:15	3.34	9.35	9.9	905	
6/6/08 9:36:30	3.30	9.43	9.9	856	
6/6/08 9:36:45	3.22	9.52	10.0	763	
6/6/08 9:37:00	3.12	9.61	10.0	677	
6/6/08 9:37:15	3.07	9.62	10.0	626	
6/6/08 9:37:30	3.04	9.59	9.9	607	
6/6/08 9:37:45	3.05	9.54	9.9	634	
6/6/08 9:38:00	3.10	9.48	9.8	681	
6/6/08 9:38:15	3.18	9.42	9.7	713	
6/6/08 9:38:30	3.22	9.39	9.7	730	
6/6/08 9:38:45	3.24	9.39	9.8	740	
6/6/08 9:39:00	3.24	9.40	9.7	745	
6/6/08 9:39:15	3.23	9.42	9.8	740	
6/6/08 9:39:30	3.21	9.42	9.7	707	
6/6/08 9:39:45	3.20	9.42	9.7	694	
6/6/08 9:40:00	3.19	9.42	9.6	711	
6/6/08 9:40:15	3.18	9.39	9.7	743	
6/6/08 9:40:30	3.21	9.30	9.7	778	
6/6/08 9:40:45	3.26	9.18	9.7	827	
6/6/08 9:41:00	3.32	9.11	9.7	870	
6/6/08 9:41:15	3.35	9.13	9.6	910	
6/6/08 9:41:30	3.37	9.20	9.7	946	
6/6/08 9:41:45	3.38	9.28	9.8	952	
6/6/08 9:42:00	3.37	9.39	9.9	919	End Run No. 4
6/6/08 9:42:15	3.31	9.51	9.9	817	
6/6/08 9:42:30	3.20	9.62	18.2	695	
6/6/08 9:42:45	3.12	9.50	17.7	454	
6/6/08 9:43:00	2.80	5.91	2.6	179	
6/6/08 9:43:15	2.85	1.85	1.7	45	
6/6/08 9:43:30	4.07	0.36	1.4	4	
6/6/08 9:43:45	4.46	0.18	1.2	0	
6/6/08 9:44:00	4.49	0.15	1.1	0	
6/6/08 9:44:15	4.48	0.14	1.0	0	
6/6/08 9:44:30	4.51	0.13	0.9	0	
6/6/08 9:44:45	4.54	0.13	0.9	0	
6/6/08 9:45:00	4.56	0.12	0.9	0	System Bias
6/6/08 9:45:15	4.57	0.12	0.8	-1	4.57 4.50% O ₂
6/6/08 9:45:30	4.57	0.12	0.8	-1	0.12 Zero CO ₂
6/6/08 9:45:45	4.57	0.12	0.8	-1	0.8 Zero NO _x
6/6/08 9:46:00	4.57	0.11	0.8	-1	-1 Zero CO
6/6/08 9:46:15	4.58	0.11	1.7	5	
6/6/08 9:46:30	4.58	0.13	6.6	101	
6/6/08 9:46:45	4.34	2.41	1.5	202	
6/6/08 9:47:00	3.52	5.36	0.8	126	
6/6/08 9:47:15	1.41	7.78	0.7	31	
6/6/08 9:47:30	0.28	8.64	0.7	1	
6/6/08 9:47:45	0.08	8.58	0.7	-2	
6/6/08 9:48:00	0.06	8.44	0.6	-2	
6/6/08 9:48:15	0.05	8.48	0.6	-2	
6/6/08 9:48:30	0.05	8.67	0.6	-2	
6/6/08 9:48:45	0.05	8.90	0.6	-2	
6/6/08 9:49:00	0.04	9.05	0.6	-3	
6/6/08 9:49:15	0.04	9.12	0.6	-3	
6/6/08 9:49:30	0.04	9.15	0.6	-3	
6/6/08 9:49:45	0.04	9.16	0.6	-3	
6/6/08 9:50:00	0.04	9.17	0.6	-2	
6/6/08 9:50:15	0.04	9.18	0.6	-2	System Bias
6/6/08 9:50:30	0.04	9.18	0.6	-2	
6/6/08 9:50:45	0.04	9.18	0.6	-3	9.18 9.00% CO ₂
6/6/08 9:51:00	0.04	9.18	0.6	-3	
6/6/08 9:51:15	0.04	9.19	0.6	-3	

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Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 9:51:30	0.04	9.19	1.3	-3	
6/6/08 9:51:45	0.04	9.19	5.3	94	
6/6/08 9:52:00	0.35	9.13	0.7	393	
6/6/08 9:52:15	0.94	6.02	0.6	747	
6/6/08 9:52:30	0.40	1.90	0.6	934	
6/6/08 9:52:45	0.10	0.37	0.5	978	
6/6/08 9:53:00	0.07	0.19	0.5	986	System Bias
6/6/08 9:53:15	0.06	0.16	0.5	986	
6/6/08 9:53:30	0.06	0.15	0.5	986	
6/6/08 9:53:45	0.06	0.14	0.5	986	
6/6/08 9:54:00	0.06	0.13	0.5	985	986 1,000 ppm CO
6/6/08 9:54:15	0.06	0.13	3.1	983	
6/6/08 9:54:30	0.08	0.29	9.7	934	
6/6/08 9:54:45	0.80	2.65	16.1	591	
6/6/08 9:55:00	0.87	2.09	20.5	200	
6/6/08 9:55:15	0.24	0.48	23.8	42	
6/6/08 9:55:30	0.09	0.17	23.9	6	
6/6/08 9:55:45	0.07	0.12	24.6	1	
6/6/08 9:56:00	0.06	0.11	25.0	0	
6/6/08 9:56:15	0.07	0.11	24.7	0	
6/6/08 9:56:30	0.06	0.11	34.5	0	
6/6/08 9:56:45	0.06	0.11	47.0	0	
6/6/08 9:57:00	0.06	0.11	46.0	0	
6/6/08 9:57:15	0.06	0.11	45.3	0	
6/6/08 9:57:30	0.06	0.11	44.9	-1	
6/6/08 9:57:45	0.06	0.11	44.6	-1	
6/6/08 9:58:00	0.06	0.11	44.4	-1	
6/6/08 9:58:15	0.06	0.11	44.2	-1	
6/6/08 9:58:30	0.06	0.11	44.1	-1	
6/6/08 9:58:45	0.06	0.11	44.0	-1	
6/6/08 9:59:00	0.06	0.10	43.9	0	
6/6/08 9:59:15	0.06	0.10	43.8	-1	System Bias
6/6/08 9:59:30	0.06	0.10	43.7	-1	0.06 Zero O ₂
6/6/08 9:59:45	0.05	0.10	43.7	-1	
6/6/08 10:00:00	0.05	0.10	43.6	-1	43.6 45.0 ppm NO _x
6/6/08 10:00:15	0.06	0.10	43.5	-1	
6/6/08 10:00:30	0.06	0.10	44.7	0	
6/6/08 10:00:45	0.06	0.15	16.7	172	
6/6/08 10:01:00	0.78	3.03	11.2	528	
6/6/08 10:01:15	2.34	7.12	10.8	761	
6/6/08 10:01:30	3.10	8.98	10.6	837	
6/6/08 10:01:45	3.20	9.30	10.5	848	
6/6/08 10:02:00	3.23	9.26	10.5	867	
6/6/08 10:02:15	3.27	9.19	10.6	894	
6/6/08 10:02:30	3.31	9.18	10.5	912	
6/6/08 10:02:45	3.33	9.24	10.6	914	Begin Run No. 5
6/6/08 10:03:00	3.32	9.33	10.6	914	
6/6/08 10:03:15	3.30	9.39	10.6	902	
6/6/08 10:03:30	3.28	9.45	10.7	876	
6/6/08 10:03:45	3.24	9.52	10.7	833	
6/6/08 10:04:00	3.19	9.58	10.7	780	
6/6/08 10:04:15	3.15	9.62	10.7	730	
6/6/08 10:04:30	3.12	9.65	10.7	705	
6/6/08 10:04:45	3.09	9.67	10.7	679	
6/6/08 10:05:00	3.07	9.69	10.6	641	
6/6/08 10:05:15	3.05	9.69	10.6	630	
6/6/08 10:05:30	3.07	9.64	10.6	640	
6/6/08 10:05:45	3.10	9.58	10.3	672	
6/6/08 10:06:00	3.13	9.52	10.2	734	
6/6/08 10:06:15	3.19	9.46	10.2	784	
6/6/08 10:06:30	3.24	9.40	10.1	812	
6/6/08 10:06:45	3.26	9.37	10.2	842	
6/6/08 10:07:00	3.29	9.34	10.2	868	
6/6/08 10:07:15	3.30	9.33	10.2	866	
6/6/08 10:07:30	3.30	9.33	10.3	861	
6/6/08 10:07:45	3.30	9.29	10.3	877	
6/6/08 10:08:00	3.31	9.24	10.2	896	
6/6/08 10:08:15	3.32	9.22	10.3	927	
6/6/08 10:08:30	3.36	9.25	10.3	967	
6/6/08 10:08:45	3.37	9.33	10.4	974	
6/6/08 10:09:00	3.38	9.41	10.4	957	
6/6/08 10:09:15	3.35	9.48	10.3	923	
6/6/08 10:09:30	3.28	9.54	10.4	869	
6/6/08 10:09:45	3.22	9.59	10.5	825	
6/6/08 10:10:00	3.19	9.61	10.5	772	
6/6/08 10:10:15	3.14	9.62	10.5	728	
6/6/08 10:10:30	3.11	9.61	10.4	694	
6/6/08 10:10:45	3.09	9.60	10.4	693	
6/6/08 10:11:00	3.12	9.57	10.3	705	
6/6/08 10:11:15	3.15	9.57	10.3	727	
6/6/08 10:11:30	3.16	9.57	10.3	745	
6/6/08 10:11:45	3.18	9.56	10.3	731	
6/6/08 10:12:00	3.18	9.54	10.2	712	

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Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 10:12:15	3.17	9.52	10.2	718	
6/6/08 10:12:30	3.19	9.49	10.3	746	
6/6/08 10:12:45	3.22	9.45	10.3	764	
6/6/08 10:13:00	3.24	9.41	10.1	788	
6/6/08 10:13:15	3.24	9.38	10.1	823	
6/6/08 10:13:30	3.28	9.33	10.1	868	
6/6/08 10:13:45	3.32	9.30	10.1	891	
6/6/08 10:14:00	3.33	9.29	10.0	916	
6/6/08 10:14:15	3.38	9.27	10.0	944	
6/6/08 10:14:30	3.41	9.28	10.1	963	
6/6/08 10:14:45	3.41	9.33	10.1	958	
6/6/08 10:15:00	3.40	9.39	10.3	954	
6/6/08 10:15:15	3.38	9.45	10.4	936	
6/6/08 10:15:30	3.34	9.50	10.3	902	
6/6/08 10:15:45	3.29	9.48	10.4	872	
6/6/08 10:16:00	3.27	9.41	10.3	814	
6/6/08 10:16:15	3.28	9.31	10.4	792	
6/6/08 10:16:30	3.26	9.28	10.3	795	
6/6/08 10:16:45	3.31	9.27	10.3	819	
6/6/08 10:17:00	3.37	9.33	10.4	863	
6/6/08 10:17:15	3.41	9.41	10.4	865	
6/6/08 10:17:30	3.40	9.50	10.5	838	
6/6/08 10:17:45	3.36	9.60	10.5	808	
6/6/08 10:18:00	3.30	9.72	10.6	712	
6/6/08 10:18:15	3.25	9.81	10.6	617	
6/6/08 10:18:30	3.16	9.86	10.6	504	
6/6/08 10:18:45	3.08	9.86	10.5	439	
6/6/08 10:19:00	3.04	9.82	10.4	406	
6/6/08 10:19:15	3.05	9.77	10.2	420	
6/6/08 10:19:30	3.12	9.70	10.1	450	
6/6/08 10:19:45	3.19	9.63	10.0	471	
6/6/08 10:20:00	3.26	9.57	10.1	494	
6/6/08 10:20:15	3.32	9.50	10.1	505	
6/6/08 10:20:30	3.38	9.44	10.0	540	
6/6/08 10:20:45	3.39	9.43	10.0	573	
6/6/08 10:21:00	3.41	9.42	10.0	585	
6/6/08 10:21:15	3.43	9.38	10.0	566	
6/6/08 10:21:30	3.43	9.36	10.1	538	
6/6/08 10:21:45	3.44	9.35	10.2	523	
6/6/08 10:22:00	3.42	9.41	10.3	510	
6/6/08 10:22:15	3.36	9.53	10.4	490	
6/6/08 10:22:30	3.30	9.64	10.2	413	
6/6/08 10:22:45	3.23	9.73	10.2	363	
6/6/08 10:23:00	3.18	9.80	10.1	342	
6/6/08 10:23:15	3.13	9.84	10.1	350	
6/6/08 10:23:30	3.16	9.82	9.9	378	
6/6/08 10:23:45	3.20	9.75	9.9	417	
6/6/08 10:24:00	3.25	9.67	9.8	494	
6/6/08 10:24:15	3.31	9.58	9.7	556	
6/6/08 10:24:30	3.39	9.49	9.7	643	
6/6/08 10:24:45	3.45	9.42	9.7	684	
6/6/08 10:25:00	3.46	9.40	9.9	698	
6/6/08 10:25:15	3.46	9.41	9.8	699	
6/6/08 10:25:30	3.42	9.44	9.9	674	
6/6/08 10:25:45	3.36	9.49	10.0	652	
6/6/08 10:26:00	3.31	9.52	10.1	624	
6/6/08 10:26:15	3.29	9.54	10.1	603	
6/6/08 10:26:30	3.28	9.53	10.0	587	
6/6/08 10:26:45	3.29	9.51	10.1	580	
6/6/08 10:27:00	3.28	9.48	10.0	580	
6/6/08 10:27:15	3.28	9.45	9.9	595	
6/6/08 10:27:30	3.31	9.43	10.0	616	
6/6/08 10:27:45	3.34	9.40	10.0	612	
6/6/08 10:28:00	3.36	9.37	10.0	624	
6/6/08 10:28:15	3.37	9.33	10.0	652	
6/6/08 10:28:30	3.36	9.31	10.0	683	
6/6/08 10:28:45	3.36	9.34	10.0	687	
6/6/08 10:29:00	3.36	9.42	10.0	677	
6/6/08 10:29:15	3.33	9.50	10.0	658	
6/6/08 10:29:30	3.29	9.58	10.0	600	
6/6/08 10:29:45	3.21	9.66	10.1	544	
6/6/08 10:30:00	3.14	9.72	10.2	480	
6/6/08 10:30:15	3.10	9.75	10.2	466	
6/6/08 10:30:30	3.09	9.74	10.1	481	
6/6/08 10:30:45	3.11	9.67	9.9	510	
6/6/08 10:31:00	3.18	9.59	9.8	572	
6/6/08 10:31:15	3.26	9.53	9.7	616	
6/6/08 10:31:30	3.32	9.48	9.8	674	
6/6/08 10:31:45	3.34	9.46	9.8	705	
6/6/08 10:32:00	3.33	9.46	9.8	706	
6/6/08 10:32:15	3.29	9.50	9.8	705	
6/6/08 10:32:30	3.28	9.49	9.9	706	
6/6/08 10:32:45	3.29	9.43	9.8	696	
6/6/08 10:33:00	3.27	9.40	9.7	717	

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Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 10:33:15	3.25	9.36	9.9	750	
6/6/08 10:33:30	3.28	9.30	9.8	779	
6/6/08 10:33:45	3.31	9.27	10.0	801	
6/6/08 10:34:00	3.34	9.24	10.0	817	
6/6/08 10:34:15	3.34	9.23	10.1	825	
6/6/08 10:34:30	3.34	9.22	10.1	833	
6/6/08 10:34:45	3.32	9.24	10.0	832	
6/6/08 10:35:00	3.32	9.28	10.1	829	
6/6/08 10:35:15	3.32	9.32	10.2	843	
6/6/08 10:35:30	3.32	9.33	10.1	859	
6/6/08 10:35:45	3.30	9.31	10.0	858	
6/6/08 10:36:00	3.30	9.26	10.1	858	
6/6/08 10:36:15	3.30	9.24	10.1	872	
6/6/08 10:36:30	3.31	9.25	10.1	878	
6/6/08 10:36:45	3.31	9.32	10.1	878	
6/6/08 10:37:00	3.30	9.39	10.1	892	
6/6/08 10:37:15	3.30	9.44	10.1	891	
6/6/08 10:37:30	3.27	9.49	10.2	835	
6/6/08 10:37:45	3.21	9.56	10.1	776	
6/6/08 10:38:00	3.16	9.62	10.1	717	
6/6/08 10:38:15	3.15	9.63	10.1	698	
6/6/08 10:38:30	3.14	9.63	10.1	677	
6/6/08 10:38:45	3.09	9.66	10.0	662	
6/6/08 10:39:00	3.06	9.66	10.0	660	
6/6/08 10:39:15	3.08	9.62	9.9	657	
6/6/08 10:39:30	3.12	9.57	9.8	656	
6/6/08 10:39:45	3.15	9.51	10.0	660	
6/6/08 10:40:00	3.18	9.46	9.9	686	
6/6/08 10:40:15	3.22	9.41	9.9	717	
6/6/08 10:40:30	3.26	9.38	9.8	752	
6/6/08 10:40:45	3.28	9.34	9.9	776	
6/6/08 10:41:00	3.30	9.30	9.8	803	
6/6/08 10:41:15	3.31	9.27	9.9	810	
6/6/08 10:41:30	3.32	9.25	10.0	823	
6/6/08 10:41:45	3.35	9.21	10.0	839	
6/6/08 10:42:00	3.36	9.22	10.0	844	
6/6/08 10:42:15	3.34	9.26	10.1	846	
6/6/08 10:42:30	3.32	9.30	10.2	859	
6/6/08 10:42:45	3.31	9.34	10.2	855	
6/6/08 10:43:00	3.27	9.39	10.3	832	
6/6/08 10:43:15	3.23	9.42	10.3	813	
6/6/08 10:43:30	3.20	9.42	10.3	777	
6/6/08 10:43:45	3.19	9.38	10.3	760	
6/6/08 10:44:00	3.19	9.28	10.3	777	
6/6/08 10:44:15	3.22	9.18	10.2	824	
6/6/08 10:44:30	3.29	9.13	10.2	883	
6/6/08 10:44:45	3.36	9.16	10.2	916	
6/6/08 10:45:00	3.40	9.25	10.3	947	
6/6/08 10:45:15	3.41	9.35	10.3	951	
6/6/08 10:45:30	3.38	9.46	10.3	943	
6/6/08 10:45:45	3.31	9.56	10.2	915	
6/6/08 10:46:00	3.23	9.66	10.4	825	
6/6/08 10:46:15	3.13	9.74	10.6	756	
6/6/08 10:46:30	3.04	9.77	10.6	643	
6/6/08 10:46:45	2.98	9.75	10.5	587	
6/6/08 10:47:00	2.92	9.73	10.4	580	
6/6/08 10:47:15	2.94	9.67	10.2	600	
6/6/08 10:47:30	3.00	9.60	10.2	620	
6/6/08 10:47:45	3.07	9.52	10.2	649	
6/6/08 10:48:00	3.14	9.44	10.1	703	
6/6/08 10:48:15	3.19	9.40	10.1	746	
6/6/08 10:48:30	3.24	9.36	10.0	785	
6/6/08 10:48:45	3.29	9.33	10.0	794	
6/6/08 10:49:00	3.28	9.35	10.1	790	
6/6/08 10:49:15	3.25	9.39	10.2	782	
6/6/08 10:49:30	3.23	9.40	10.2	777	
6/6/08 10:49:45	3.20	9.41	10.2	776	
6/6/08 10:50:00	3.18	9.41	10.0	779	
6/6/08 10:50:15	3.18	9.37	10.1	782	
6/6/08 10:50:30	3.19	9.33	10.1	796	
6/6/08 10:50:45	3.21	9.30	10.1	817	
6/6/08 10:51:00	3.22	9.30	10.1	844	
6/6/08 10:51:15	3.22	9.32	10.1	865	
6/6/08 10:51:30	3.21	9.32	10.2	892	
6/6/08 10:51:45	3.25	9.26	10.1	889	
6/6/08 10:52:00	3.28	9.22	10.2	881	
6/6/08 10:52:15	3.25	9.23	10.2	881	
6/6/08 10:52:30	3.26	9.29	10.3	886	
6/6/08 10:52:45	3.25	9.41	10.4	887	
6/6/08 10:53:00	3.23	9.53	10.4	877	
6/6/08 10:53:15	3.20	9.59	10.3	845	
6/6/08 10:53:30	3.17	9.62	10.4	766	
6/6/08 10:53:45	3.10	9.65	10.6	702	
6/6/08 10:54:00	3.07	9.67	10.5	648	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 10:54:15	3.03	9.66	10.5	627	
6/6/08 10:54:30	3.02	9.63	10.5	605	
6/6/08 10:54:45	3.02	9.63	10.3	602	
6/6/08 10:55:00	3.05	9.62	10.3	619	
6/6/08 10:55:15	3.08	9.62	10.3	616	
6/6/08 10:55:30	3.08	9.63	10.2	614	
6/6/08 10:55:45	3.09	9.63	10.2	610	
6/6/08 10:56:00	3.11	9.61	10.1	621	
6/6/08 10:56:15	3.11	9.56	10.0	634	
6/6/08 10:56:30	3.14	9.49	10.0	681	
6/6/08 10:56:45	3.18	9.41	10.0	720	
6/6/08 10:57:00	3.24	9.34	10.0	767	
6/6/08 10:57:15	3.28	9.30	10.0	790	
6/6/08 10:57:30	3.31	9.26	10.1	799	
6/6/08 10:57:45	3.33	9.24	10.1	797	
6/6/08 10:58:00	3.32	9.23	10.2	812	
6/6/08 10:58:15	3.29	9.25	10.2	828	
6/6/08 10:58:30	3.29	9.26	10.2	833	
6/6/08 10:58:45	3.30	9.24	10.2	843	
6/6/08 10:59:00	3.30	9.19	10.2	858	
6/6/08 10:59:15	3.33	9.14	10.3	873	
6/6/08 10:59:30	3.36	9.18	10.3	889	
6/6/08 10:59:45	3.35	9.31	10.3	904	
6/6/08 11:00:00	3.33	9.42	10.4	910	
6/6/08 11:00:15	3.32	9.46	10.4	880	
6/6/08 11:00:30	3.29	9.49	10.5	796	
6/6/08 11:00:45	3.21	9.55	10.5	730	
6/6/08 11:01:00	3.15	9.59	10.5	648	
6/6/08 11:01:15	3.11	9.60	10.4	613	
6/6/08 11:01:30	3.07	9.58	10.4	616	
6/6/08 11:01:45	3.08	9.56	10.4	624	
6/6/08 11:02:00	3.08	9.58	10.3	614	
6/6/08 11:02:15	3.06	9.61	10.3	612	
6/6/08 11:02:30	3.08	9.60	10.2	607	
6/6/08 11:02:45	3.08	9.58	10.2	606	
6/6/08 11:03:00	3.10	9.53	10.2	617	
6/6/08 11:03:15	3.12	9.49	10.1	636	
6/6/08 11:03:30	3.15	9.44	10.0	696	
6/6/08 11:03:45	3.20	9.40	10.0	747	
6/6/08 11:04:00	3.26	9.36	9.9	796	
6/6/08 11:04:15	3.31	9.31	10.0	799	
6/6/08 11:04:30	3.32	9.26	10.1	792	
6/6/08 11:04:45	3.33	9.24	10.2	790	
6/6/08 11:05:00	3.32	9.26	10.2	799	
6/6/08 11:05:15	3.30	9.30	10.2	815	
6/6/08 11:05:30	3.30	9.35	10.4	798	
6/6/08 11:05:45	3.26	9.42	10.4	768	
6/6/08 11:06:00	3.21	9.45	10.4	741	
6/6/08 11:06:15	3.18	9.39	10.4	727	
6/6/08 11:06:30	3.18	9.29	10.4	736	
6/6/08 11:06:45	3.18	9.26	10.2	750	
6/6/08 11:07:00	3.18	9.30	10.2	763	
6/6/08 11:07:15	3.20	9.36	10.3	788	
6/6/08 11:07:30	3.24	9.40	10.3	815	
6/6/08 11:07:45	3.26	9.43	10.3	795	
6/6/08 11:08:00	3.23	9.50	10.4	726	
6/6/08 11:08:15	3.17	9.59	10.4	675	
6/6/08 11:08:30	3.11	9.66	10.4	623	
6/6/08 11:08:45	3.05	9.68	10.4	594	
6/6/08 11:09:00	3.01	9.70	10.4	561	
6/6/08 11:09:15	2.97	9.71	10.3	544	
6/6/08 11:09:30	2.97	9.67	10.1	566	
6/6/08 11:09:45	3.02	9.60	10.2	597	
6/6/08 11:10:00	3.09	9.53	10.1	642	
6/6/08 11:10:15	3.14	9.48	10.0	676	
6/6/08 11:10:30	3.19	9.42	10.0	720	
6/6/08 11:10:45	3.21	9.39	10.0	744	
6/6/08 11:11:00	3.22	9.40	10.1	763	
6/6/08 11:11:15	3.25	9.39	10.2	757	
6/6/08 11:11:30	3.25	9.38	10.3	743	
6/6/08 11:11:45	3.21	9.40	10.2	740	
6/6/08 11:12:00	3.19	9.43	10.1	746	
6/6/08 11:12:15	3.18	9.46	10.2	744	
6/6/08 11:12:30	3.17	9.49	10.2	727	
6/6/08 11:12:45	3.15	9.49	10.4	713	
6/6/08 11:13:00	3.13	9.44	10.3	716	
6/6/08 11:13:15	3.13	9.31	10.3	736	
6/6/08 11:13:30	3.19	9.20	10.2	793	
6/6/08 11:13:45	3.22	9.19	10.2	824	
6/6/08 11:14:00	3.25	9.25	10.2	881	
6/6/08 11:14:15	3.26	9.31	10.2	891	
6/6/08 11:14:30	3.29	9.35	10.2	903	
6/6/08 11:14:45	3.29	9.42	10.4	868	
6/6/08 11:15:00	3.22	9.55	10.8	778	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 11:15:15	3.12	9.66	10.6	701	
6/6/08 11:15:30	3.04	9.71	10.6	608	
6/6/08 11:15:45	2.95	9.75	10.6	555	
6/6/08 11:16:00	2.90	9.74	10.5	518	
6/6/08 11:16:15	2.91	9.70	10.4	522	
6/6/08 11:16:30	2.97	9.63	10.2	563	
6/6/08 11:16:45	3.03	9.57	10.2	603	
6/6/08 11:17:00	3.09	9.51	10.1	654	
6/6/08 11:17:15	3.14	9.46	10.1	685	
6/6/08 11:17:30	3.18	9.40	10.1	718	
6/6/08 11:17:45	3.21	9.37	10.0	748	
6/6/08 11:18:00	3.23	9.35	10.1	782	
6/6/08 11:18:15	3.23	9.37	10.2	788	
6/6/08 11:18:30	3.23	9.42	10.3	775	
6/6/08 11:18:45	3.20	9.50	10.5	738	
6/6/08 11:19:00	3.16	9.56	10.5	664	
6/6/08 11:19:15	3.09	9.59	10.4	627	
6/6/08 11:19:30	3.07	9.56	10.4	593	
6/6/08 11:19:45	3.08	9.52	10.3	593	
6/6/08 11:20:00	3.09	9.46	10.3	661	
6/6/08 11:20:15	3.13	9.35	10.2	708	
6/6/08 11:20:30	3.21	9.21	10.1	778	
6/6/08 11:20:45	3.30	9.09	10.1	829	
6/6/08 11:21:00	3.37	9.07	10.1	893	
6/6/08 11:21:15	3.41	9.13	10.3	917	
6/6/08 11:21:30	3.39	9.24	10.4	912	
6/6/08 11:21:45	3.33	9.37	10.4	876	
6/6/08 11:22:00	3.25	9.49	10.6	785	
6/6/08 11:22:15	3.17	9.62	10.6	700	
6/6/08 11:22:30	3.07	9.71	10.6	587	
6/6/08 11:22:45	2.98	9.74	10.6	539	
6/6/08 11:23:00	2.93	9.72	10.5	514	
6/6/08 11:23:15	2.93	9.68	10.3	526	
6/6/08 11:23:30	3.00	9.61	10.3	577	
6/6/08 11:23:45	3.09	9.51	10.2	615	
6/6/08 11:24:00	3.17	9.43	10.1	658	
6/6/08 11:24:15	3.22	9.39	10.1	686	
6/6/08 11:24:30	3.26	9.36	10.0	737	
6/6/08 11:24:45	3.30	9.33	10.0	764	
6/6/08 11:25:00	3.31	9.33	10.1	760	
6/6/08 11:25:15	3.31	9.33	10.2	754	
6/6/08 11:25:30	3.29	9.36	10.3	756	
6/6/08 11:25:45	3.25	9.43	10.3	729	
6/6/08 11:26:00	3.18	9.51	10.3	690	
6/6/08 11:26:15	3.13	9.52	10.3	669	
6/6/08 11:26:30	3.12	9.52	10.3	651	
6/6/08 11:26:45	3.12	9.49	10.4	658	
6/6/08 11:27:00	3.14	9.41	10.3	679	
6/6/08 11:27:15	3.17	9.29	10.3	722	
6/6/08 11:27:30	3.24	9.16	10.2	786	
6/6/08 11:27:45	3.30	9.12	10.2	823	
6/6/08 11:28:00	3.33	9.19	10.3	872	
6/6/08 11:28:15	3.34	9.28	10.3	873	
6/6/08 11:28:30	3.32	9.37	10.4	812	
6/6/08 11:28:45	3.25	9.47	10.5	764	
6/6/08 11:29:00	3.15	9.60	10.5	691	
6/6/08 11:29:15	3.05	9.67	10.4	633	
6/6/08 11:29:30	2.98	9.69	10.4	575	
6/6/08 11:29:45	2.95	9.88	10.4	558	
6/6/08 11:30:00	2.96	9.84	10.4	579	
6/6/08 11:30:15	3.03	9.56	10.4	600	
6/6/08 11:30:30	3.08	9.51	10.4	605	
6/6/08 11:30:45	3.12	9.46	10.4	622	
6/6/08 11:31:00	3.15	9.39	10.3	688	
6/6/08 11:31:15	3.18	9.34	10.2	707	
6/6/08 11:31:30	3.23	9.32	10.3	737	
6/6/08 11:31:45	3.25	9.31	10.4	741	
6/6/08 11:32:00	3.24	9.33	10.3	748	
6/6/08 11:32:15	3.21	9.37	10.4	748	
6/6/08 11:32:30	3.20	9.43	10.4	727	
6/6/08 11:32:45	3.16	9.51	10.5	712	
6/6/08 11:33:00	3.14	9.56	10.4	668	Change of Ports
6/6/08 11:33:15	3.12	9.54	10.5	638	
6/6/08 11:33:30	3.10	9.51	10.4	639	
6/6/08 11:33:45	3.11	9.47	10.3	654	
6/6/08 11:34:00	3.13	9.43	8.7	681	
6/6/08 11:34:15	3.17	9.39	1.1	584	
6/6/08 11:34:30	6.02	7.27	0.9	241	
6/6/08 11:34:45	15.48	2.32	0.9	73	
6/6/08 11:35:00	19.72	0.50	1.0	9	
6/6/08 11:35:15	20.33	0.26	0.9	3	
6/6/08 11:35:30	20.40	0.22	0.7	2	
6/6/08 11:35:45	20.43	0.21	1.0	1	
6/6/08 11:36:00	20.45	0.19	2.8	5	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 11:36:15	20.43	0.22	11.0	127	
6/6/08 11:36:30	17.58	2.52	11.7	537	
6/6/08 11:36:45	8.44	7.33	11.7	731	
6/6/08 11:37:00	3.98	9.19	11.7	747	
6/6/08 11:37:15	3.22	9.52	11.6	694	
6/6/08 11:37:30	3.10	9.62	11.6	622	
6/6/08 11:37:45	3.04	9.65	11.6	596	
6/6/08 11:38:00	3.00	9.63	11.6	575	
6/6/08 11:38:15	3.01	9.59	11.4	574	
6/6/08 11:38:30	3.04	9.59	11.4	584	
6/6/08 11:38:45	3.06	9.60	11.3	589	Resume Sampling
6/6/08 11:39:00	3.06	9.60	11.1	606	
6/6/08 11:39:15	3.08	9.57	11.1	618	
6/6/08 11:39:30	3.10	9.54	11.0	621	
6/6/08 11:39:45	3.12	9.54	10.8	632	
6/6/08 11:40:00	3.14	9.50	10.8	669	
6/6/08 11:40:15	3.16	9.44	10.8	693	
6/6/08 11:40:30	3.20	9.38	10.7	723	
6/6/08 11:40:45	3.25	9.32	10.7	752	
6/6/08 11:41:00	3.28	9.27	10.9	777	
6/6/08 11:41:15	3.28	9.24	10.9	780	
6/6/08 11:41:30	3.25	9.23	11.0	772	
6/6/08 11:41:45	3.24	9.22	10.9	784	
6/6/08 11:42:00	3.25	9.23	11.0	807	
6/6/08 11:42:15	3.25	9.27	11.1	808	
6/6/08 11:42:30	3.24	9.32	11.2	788	
6/6/08 11:42:45	3.23	9.37	11.2	759	
6/6/08 11:43:00	3.20	9.42	11.2	723	
6/6/08 11:43:15	3.15	9.46	11.3	698	
6/6/08 11:43:30	3.12	9.49	11.3	647	
6/6/08 11:43:45	3.10	9.51	11.3	622	
6/6/08 11:44:00	3.11	9.48	11.2	629	
6/6/08 11:44:15	3.13	9.37	11.1	855	
6/6/08 11:44:30	3.17	9.24	11.0	713	
6/6/08 11:44:45	3.24	9.16	11.0	770	
6/6/08 11:45:00	3.30	9.17	10.9	848	
6/6/08 11:45:15	3.32	9.24	10.9	872	
6/6/08 11:45:30	3.32	9.33	11.1	856	
6/6/08 11:45:45	3.31	9.41	11.4	820	
6/6/08 11:46:00	3.23	9.53	11.4	724	
6/6/08 11:46:15	3.13	9.64	11.4	650	
6/6/08 11:46:30	3.06	9.68	11.4	577	
6/6/08 11:46:45	3.03	9.66	11.4	551	
6/6/08 11:47:00	3.03	9.63	11.3	565	
6/6/08 11:47:15	3.06	9.58	11.2	596	
6/6/08 11:47:30	3.11	9.51	11.1	640	
6/6/08 11:47:45	3.15	9.47	11.0	662	
6/6/08 11:48:00	3.18	9.45	11.0	700	
6/6/08 11:48:15	3.20	9.42	11.0	713	
6/6/08 11:48:30	3.22	9.36	11.0	712	
6/6/08 11:48:45	3.24	9.32	11.0	730	
6/6/08 11:49:00	3.25	9.30	11.1	755	
6/6/08 11:49:15	3.26	9.31	11.1	748	
6/6/08 11:49:30	3.26	9.34	11.3	720	
6/6/08 11:49:45	3.23	9.39	11.3	683	
6/6/08 11:50:00	3.17	9.45	11.3	643	
6/6/08 11:50:15	3.12	9.49	11.4	614	
6/6/08 11:50:30	3.10	9.48	11.2	594	
6/6/08 11:50:45	3.07	9.47	11.2	611	
6/6/08 11:51:00	3.10	9.42	11.2	628	
6/6/08 11:51:15	3.16	9.37	11.2	639	
6/6/08 11:51:30	3.17	9.33	11.2	662	
6/6/08 11:51:45	3.18	9.30	11.2	681	
6/6/08 11:52:00	3.21	9.24	11.1	730	
6/6/08 11:52:15	3.25	9.17	11.1	761	
6/6/08 11:52:30	3.29	9.12	11.0	807	
6/6/08 11:52:45	3.32	9.13	11.0	841	
6/6/08 11:53:00	3.34	9.20	11.1	860	
6/6/08 11:53:15	3.34	9.30	11.3	848	
6/6/08 11:53:30	3.28	9.44	11.4	782	
6/6/08 11:53:45	3.19	9.56	11.5	714	
6/6/08 11:54:00	3.09	9.66	11.6	619	
6/6/08 11:54:15	3.00	9.73	11.5	559	
6/6/08 11:54:30	2.95	9.72	11.4	516	
6/6/08 11:54:45	2.96	9.65	11.2	527	
6/6/08 11:55:00	3.02	9.57	11.1	594	
6/6/08 11:55:15	3.11	9.51	11.1	638	
6/6/08 11:55:30	3.15	9.47	11.1	670	
6/6/08 11:55:45	3.17	9.46	11.1	686	
6/6/08 11:56:00	3.20	9.45	11.2	687	
6/6/08 11:56:15	3.19	9.46	11.2	678	
6/6/08 11:56:30	3.17	9.47	11.1	668	
6/6/08 11:56:45	3.16	9.45	11.2	679	
6/6/08 11:57:00	3.17	9.44	11.2	704	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 11:57:15	3.17	9.44	11.1	714	
6/6/08 11:57:30	3.19	9.42	11.2	720	
6/6/08 11:57:45	3.20	9.39	11.0	722	
6/6/08 11:58:00	3.20	9.36	11.1	724	
6/6/08 11:58:15	3.23	9.32	11.1	738	
6/6/08 11:58:30	3.24	9.30	11.0	768	
6/6/08 11:58:45	3.23	9.27	11.2	774	
6/6/08 11:59:00	3.24	9.24	11.2	788	
6/6/08 11:59:15	3.21	9.26	11.1	803	
6/6/08 11:59:30	3.21	9.30	11.1	815	
6/6/08 11:59:45	3.21	9.34	11.1	804	
6/6/08 12:00:00	3.20	9.39	11.2	795	
6/6/08 12:00:15	3.18	9.43	11.3	792	
6/6/08 12:00:30	3.16	9.45	11.4	750	
6/6/08 12:00:45	3.11	9.46	11.3	714	
6/6/08 12:01:00	3.11	9.40	11.3	701	
6/6/08 12:01:15	3.14	9.33	11.3	719	
6/6/08 12:01:30	3.16	9.32	11.3	751	
6/6/08 12:01:45	3.17	9.36	11.2	782	
6/6/08 12:02:00	3.17	9.41	11.3	790	
6/6/08 12:02:15	3.16	9.48	11.3	766	
6/6/08 12:02:30	3.12	9.55	11.4	712	
6/6/08 12:02:45	3.07	9.64	11.4	659	
6/6/08 12:03:00	3.01	9.74	11.4	607	
6/6/08 12:03:15	2.97	9.79	11.5	572	
6/6/08 12:03:30	2.95	9.79	11.4	557	
6/6/08 12:03:45	2.95	9.75	11.2	563	
6/6/08 12:04:00	3.00	9.71	11.2	589	
6/6/08 12:04:15	3.05	9.69	11.2	638	
6/6/08 12:04:30	3.09	9.64	11.2	659	
6/6/08 12:04:45	3.11	9.63	11.1	658	
6/6/08 12:05:00	3.10	9.61	11.1	666	
6/6/08 12:05:15	3.10	9.57	11.0	683	
6/6/08 12:05:30	3.11	9.53	11.0	707	
6/6/08 12:05:45	3.12	9.49	10.9	717	
6/6/08 12:06:00	3.15	9.44	10.9	727	
6/6/08 12:06:15	3.17	9.43	10.9	742	
6/6/08 12:06:30	3.18	9.42	11.1	750	
6/6/08 12:06:45	3.16	9.45	11.1	746	
6/6/08 12:07:00	3.16	9.47	11.3	735	
6/6/08 12:07:15	3.17	9.49	11.2	721	
6/6/08 12:07:30	3.15	9.52	11.2	702	
6/6/08 12:07:45	3.12	9.55	11.2	693	
6/6/08 12:08:00	3.11	9.56	11.2	688	
6/6/08 12:08:15	3.11	9.54	11.2	680	
6/6/08 12:08:30	3.13	9.51	11.1	688	
6/6/08 12:08:45	3.14	9.47	11.1	691	
6/6/08 12:09:00	3.17	9.39	11.1	730	
6/6/08 12:09:15	3.22	9.31	11.1	789	
6/6/08 12:09:30	3.26	9.26	11.0	824	
6/6/08 12:09:45	3.29	9.29	11.0	844	
6/6/08 12:10:00	3.30	9.38	11.2	858	
6/6/08 12:10:15	3.25	9.51	11.2	833	
6/6/08 12:10:30	3.16	9.67	11.4	761	
6/6/08 12:10:45	3.07	9.76	11.6	675	
6/6/08 12:11:00	2.98	9.83	11.6	601	
6/6/08 12:11:15	2.93	9.84	11.6	563	
6/6/08 12:11:30	2.93	9.76	11.4	575	
6/6/08 12:11:45	2.99	9.68	11.3	620	
6/6/08 12:12:00	3.05	9.66	11.1	650	
6/6/08 12:12:15	3.11	9.66	11.1	660	
6/6/08 12:12:30	3.13	9.63	11.0	673	
6/6/08 12:12:45	3.12	9.61	11.0	695	
6/6/08 12:13:00	3.12	9.60	11.0	711	
6/6/08 12:13:15	3.14	9.60	11.1	714	
6/6/08 12:13:30	3.13	9.63	11.2	705	
6/6/08 12:13:45	3.11	9.64	11.1	701	
6/6/08 12:14:00	3.09	9.60	11.1	719	
6/6/08 12:14:15	3.13	9.53	11.1	732	
6/6/08 12:14:30	3.16	9.49	11.2	740	
6/6/08 12:14:45	3.19	9.46	11.2	754	
6/6/08 12:15:00	3.17	9.45	11.2	776	
6/6/08 12:15:15	3.16	9.45	11.2	808	
6/6/08 12:15:30	3.18	9.43	11.3	810	
6/6/08 12:15:45	3.18	9.42	11.1	777	
6/6/08 12:16:00	3.17	9.43	11.1	769	
6/6/08 12:16:15	3.15	9.47	11.2	785	
6/6/08 12:16:30	3.14	9.51	11.2	787	
6/6/08 12:16:45	3.15	9.50	11.3	792	
6/6/08 12:17:00	3.17	9.46	11.3	789	
6/6/08 12:17:15	3.17	9.43	11.2	803	
6/6/08 12:17:30	3.20	9.43	11.2	837	
6/6/08 12:17:45	3.22	9.45	11.3	832	
6/6/08 12:18:00	3.21	9.47	11.3	801	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 12:18:15	3.19	9.50	11.3	783	
6/6/08 12:18:30	3.20	9.54	11.2	784	
6/6/08 12:18:45	3.19	9.59	11.3	774	
6/6/08 12:19:00	3.16	9.64	11.2	745	
6/6/08 12:19:15	3.13	9.68	11.3	715	
6/6/08 12:19:30	3.11	9.70	11.3	685	
6/6/08 12:19:45	3.10	9.72	11.4	670	
6/6/08 12:20:00	3.06	9.72	11.2	646	
6/6/08 12:20:15	3.04	9.70	11.2	630	
6/6/08 12:20:30	3.03	9.69	11.2	643	
6/6/08 12:20:45	3.05	9.66	11.2	674	
6/6/08 12:21:00	3.10	9.64	11.2	686	
6/6/08 12:21:15	3.10	9.66	11.3	704	
6/6/08 12:21:30	3.09	9.65	11.1	720	
6/6/08 12:21:45	3.10	9.58	11.2	719	
6/6/08 12:22:00	3.11	9.52	11.1	732	
6/6/08 12:22:15	3.15	9.46	11.1	771	
6/6/08 12:22:30	3.20	9.43	11.1	821	
6/6/08 12:22:45	3.23	9.41	11.2	843	
6/6/08 12:23:00	3.25	9.44	11.3	848	
6/6/08 12:23:15	3.24	9.50	11.3	848	
6/6/08 12:23:30	3.23	9.54	11.3	834	
6/6/08 12:23:45	3.20	9.58	11.3	789	
6/6/08 12:24:00	3.16	9.58	11.3	758	
6/6/08 12:24:15	3.14	9.56	11.4	753	
6/6/08 12:24:30	3.14	9.49	11.4	767	
6/6/08 12:24:45	3.17	9.40	11.4	784	
6/6/08 12:25:00	3.19	9.39	11.3	802	
6/6/08 12:25:15	3.22	9.42	11.3	831	
6/6/08 12:25:30	3.24	9.49	11.3	851	
6/6/08 12:25:45	3.23	9.57	11.3	847	
6/6/08 12:26:00	3.20	9.65	11.3	787	
6/6/08 12:26:15	3.14	9.74	11.4	721	
6/6/08 12:26:30	3.08	9.83	11.4	854	
6/6/08 12:26:45	3.03	9.85	11.4	807	
6/6/08 12:27:00	3.01	9.84	11.3	598	
6/6/08 12:27:15	3.03	9.81	11.1	627	
6/6/08 12:27:30	3.06	9.76	11.1	661	
6/6/08 12:27:45	3.10	9.71	11.0	695	
6/6/08 12:28:00	3.11	9.67	11.1	736	
6/6/08 12:28:15	3.13	9.61	11.1	766	
6/6/08 12:28:30	3.14	9.56	11.0	795	
6/6/08 12:28:45	3.18	9.54	11.0	809	
6/6/08 12:29:00	3.20	9.54	11.2	795	
6/6/08 12:29:15	3.23	9.56	11.1	776	
6/6/08 12:29:30	3.21	9.60	11.2	778	
6/6/08 12:29:45	3.20	9.64	11.2	768	
6/6/08 12:30:00	3.18	9.68	11.3	739	
6/6/08 12:30:15	3.14	9.70	11.2	696	
6/6/08 12:30:30	3.12	9.67	11.2	694	
6/6/08 12:30:45	3.10	9.62	11.1	725	
6/6/08 12:31:00	3.11	9.57	11.0	772	
6/6/08 12:31:15	3.15	9.51	10.9	813	
6/6/08 12:31:30	3.18	9.44	11.0	837	
6/6/08 12:31:45	3.24	9.37	11.0	856	
6/6/08 12:32:00	3.28	9.37	11.1	881	
6/6/08 12:32:15	3.30	9.43	11.2	873	
6/6/08 12:32:30	3.32	9.51	11.3	874	
6/6/08 12:32:45	3.28	9.61	11.4	828	
6/6/08 12:33:00	3.18	9.71	11.5	751	
6/6/08 12:33:15	3.07	9.80	11.6	679	
6/6/08 12:33:30	3.00	9.88	11.7	824	
6/6/08 12:33:45	2.96	9.91	11.6	589	
6/6/08 12:34:00	2.94	9.88	11.5	582	
6/6/08 12:34:15	2.97	9.81	11.3	609	
6/6/08 12:34:30	3.06	9.73	11.1	661	
6/6/08 12:34:45	3.12	9.69	11.1	711	
6/6/08 12:35:00	3.15	9.68	11.1	744	
6/6/08 12:35:15	3.16	9.68	11.1	748	
6/6/08 12:35:30	3.17	9.67	11.1	758	
6/6/08 12:35:45	3.16	9.66	11.2	763	
6/6/08 12:36:00	3.16	9.66	11.3	755	
6/6/08 12:36:15	3.14	9.69	11.1	750	
6/6/08 12:36:30	3.14	9.70	11.2	749	
6/6/08 12:36:45	3.15	9.68	11.2	753	
6/6/08 12:37:00	3.15	9.62	11.2	756	
6/6/08 12:37:15	3.17	9.54	11.2	778	
6/6/08 12:37:30	3.20	9.43	11.3	815	
6/6/08 12:37:45	3.23	9.38	11.3	838	
6/6/08 12:38:00	3.23	9.45	11.3	854	
6/6/08 12:38:15	3.21	9.54	11.3	870	
6/6/08 12:38:30	3.21	9.62	11.5	852	
6/6/08 12:38:45	3.18	9.72	11.5	789	
6/6/08 12:39:00	3.14	9.79	11.5	739	

**Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data**

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 12:39:15	3.09	9.83	11.6	711	
6/6/08 12:39:30	3.08	9.83	11.5	695	
6/6/08 12:39:45	3.05	9.81	11.5	697	
6/6/08 12:40:00	3.06	9.78	11.4	697	
6/6/08 12:40:15	3.08	9.71	11.3	728	
6/6/08 12:40:30	3.11	9.65	11.2	783	
6/6/08 12:40:45	3.13	9.60	11.2	828	
6/6/08 12:41:00	3.14	9.58	11.2	846	
6/6/08 12:41:15	3.15	9.59	11.3	838	
6/6/08 12:41:30	3.18	9.80	11.2	820	
6/6/08 12:41:45	3.17	9.81	11.2	825	
6/6/08 12:42:00	3.17	9.63	11.3	820	
6/6/08 12:42:15	3.14	9.68	11.4	796	
6/6/08 12:42:30	3.12	9.71	11.3	767	
6/6/08 12:42:45	3.12	9.71	11.4	755	
6/6/08 12:43:00	3.13	9.69	11.4	749	
6/6/08 12:43:15	3.12	9.68	11.3	750	
6/6/08 12:43:30	3.11	9.68	11.3	768	
6/6/08 12:43:45	3.10	9.65	11.2	803	
6/6/08 12:44:00	3.12	9.60	11.2	830	
6/6/08 12:44:15	3.15	9.54	11.4	841	
6/6/08 12:44:30	3.20	9.49	11.5	864	
6/6/08 12:44:45	3.25	9.48	11.4	889	
6/6/08 12:45:00	3.26	9.53	11.4	897	
6/6/08 12:45:15	3.26	9.61	11.4	918	
6/6/08 12:45:30	3.24	9.69	11.4	924	
6/6/08 12:45:45	3.22	9.75	11.5	880	
6/6/08 12:46:00	3.15	9.81	11.6	816	
6/6/08 12:46:15	3.08	9.87	11.7	744	
6/6/08 12:46:30	3.00	9.89	11.6	681	
6/6/08 12:46:45	2.96	9.87	11.5	686	
6/6/08 12:47:00	2.96	9.82	11.5	691	
6/6/08 12:47:15	3.02	9.76	11.5	726	
6/6/08 12:47:30	3.06	9.73	11.4	752	
6/6/08 12:47:45	3.08	9.73	11.3	764	
6/6/08 12:48:00	3.09	9.73	11.2	766	
6/6/08 12:48:15	3.10	9.73	11.2	759	
6/6/08 12:48:30	3.11	9.70	11.3	765	
6/6/08 12:48:45	3.12	9.68	11.4	771	
6/6/08 12:49:00	3.13	9.67	11.4	767	
6/6/08 12:49:15	3.15	9.65	11.3	780	
6/6/08 12:49:30	3.17	9.61	11.3	800	
6/6/08 12:49:45	3.18	9.54	11.4	819	
6/6/08 12:50:00	3.22	9.45	11.4	841	
6/6/08 12:50:15	3.26	9.41	11.2	868	
6/6/08 12:50:30	3.27	9.47	11.3	894	
6/6/08 12:50:45	3.27	9.58	11.4	910	
6/6/08 12:51:00	3.25	9.67	11.5	901	
6/6/08 12:51:15	3.22	9.77	11.5	864	
6/6/08 12:51:30	3.14	9.87	11.7	813	
6/6/08 12:51:45	3.07	9.92	11.8	727	
6/6/08 12:52:00	3.01	9.95	11.9	655	
6/6/08 12:52:15	2.96	9.94	11.8	640	
6/6/08 12:52:30	2.97	9.91	11.6	652	
6/6/08 12:52:45	3.02	9.85	11.5	677	
6/6/08 12:53:00	3.07	9.76	11.4	712	
6/6/08 12:53:15	3.12	9.68	11.4	733	
6/6/08 12:53:30	3.16	9.62	11.4	753	
6/6/08 12:53:45	3.19	9.59	11.3	806	
6/6/08 12:54:00	3.22	9.58	11.3	830	
6/6/08 12:54:15	3.23	9.59	11.4	832	
6/6/08 12:54:30	3.21	9.62	11.5	834	
6/6/08 12:54:45	3.21	9.65	11.4	811	
6/6/08 12:55:00	3.19	9.67	11.5	817	
6/6/08 12:55:15	3.17	9.62	11.5	835	
6/6/08 12:55:30	3.19	9.54	11.5	840	
6/6/08 12:55:45	3.22	9.50	11.4	847	
6/6/08 12:56:00	3.25	9.52	11.3	871	
6/6/08 12:56:15	3.26	9.58	11.4	892	
6/6/08 12:56:30	3.27	9.65	11.3	890	
6/6/08 12:56:45	3.28	9.70	11.5	874	
6/6/08 12:57:00	3.26	9.76	11.7	839	
6/6/08 12:57:15	3.20	9.86	11.8	788	
6/6/08 12:57:30	3.10	9.93	11.8	728	
6/6/08 12:57:45	3.05	9.94	11.7	679	
6/6/08 12:58:00	3.02	9.92	11.6	871	
6/6/08 12:58:15	3.04	9.86	11.5	709	
6/6/08 12:58:30	3.08	9.79	11.4	753	
6/6/08 12:58:45	3.13	9.71	11.4	792	
6/6/08 12:59:00	3.18	9.65	11.4	837	
6/6/08 12:59:15	3.22	9.59	11.4	870	
6/6/08 12:59:30	3.26	9.55	11.4	894	
6/6/08 12:59:45	3.28	9.51	11.3	919	
6/6/08 13:00:00	3.30	9.48	11.3	940	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 13:00:15	3.30	9.49	11.4	959	
6/6/08 13:00:30	3.29	9.53	11.4	954	
6/6/08 13:00:45	3.25	9.60	11.5	955	
6/6/08 13:01:00	3.23	9.66	11.5	961	
6/6/08 13:01:15	3.23	9.68	11.6	958	
6/6/08 13:01:30	3.24	9.65	11.7	944	
6/6/08 13:01:45	3.24	9.60	11.7	928	
6/6/08 13:02:00	3.24	9.58	11.7	912	
6/6/08 13:02:15	3.25	9.61	11.7	915	
6/6/08 13:02:30	3.26	9.65	11.7	930	
6/6/08 13:02:45	3.27	9.70	11.8	950	
6/6/08 13:03:00	3.23	9.76	11.7	956	
6/6/08 13:03:15	3.19	9.82	11.8	943	
6/6/08 13:03:30	3.17	9.87	11.6	906	
6/6/08 13:03:45	3.16	9.91	11.8	868	
6/6/08 13:04:00	3.13	9.92	11.8	825	
6/6/08 13:04:15	3.07	9.91	11.9	778	
6/6/08 13:04:30	3.02	9.90	11.9	746	
6/6/08 13:04:45	2.98	9.88	11.7	730	
6/6/08 13:05:00	2.98	9.87	11.8	723	
6/6/08 13:05:15	3.01	9.85	11.7	733	
6/6/08 13:05:30	3.03	9.81	11.6	745	
6/6/08 13:05:45	3.08	9.74	11.8	765	
6/6/08 13:06:00	3.10	9.70	11.6	781	
6/6/08 13:06:15	3.10	9.68	11.5	796	
6/6/08 13:06:30	3.10	9.66	11.5	818	
6/6/08 13:06:45	3.13	9.64	11.5	844	
6/6/08 13:07:00	3.16	9.64	11.4	859	
6/6/08 13:07:15	3.20	9.65	11.4	884	
6/6/08 13:07:30	3.22	9.66	11.4	920	
6/6/08 13:07:45	3.22	9.63	11.5	933	
6/6/08 13:08:00	3.24	9.59	11.6	937	
6/6/08 13:08:15	3.26	9.58	11.6	944	
6/6/08 13:08:30	3.26	9.62	11.6	951	
6/6/08 13:08:45	3.25	9.67	11.5	965	
6/6/08 13:09:00	3.24	9.73	11.6	985	End Run No. 5
6/6/08 13:09:15	3.23	9.78	19.6	965	
6/6/08 13:09:30	3.24	9.53	17.4	654	
6/6/08 13:09:45	2.82	5.65	2.6	249	
6/6/08 13:10:00	2.92	1.72	1.7	50	
6/6/08 13:10:15	4.08	0.34	1.4	4	
6/6/08 13:10:30	4.42	0.17	1.2	-1	
6/6/08 13:10:45	4.44	0.15	1.1	-1	
6/6/08 13:11:00	4.44	0.13	1.0	-2	
6/6/08 13:11:15	4.48	0.13	0.9	-2	
6/6/08 13:11:30	4.50	0.12	0.9	-2	
6/6/08 13:11:45	4.52	0.12	0.9	-2	
6/6/08 13:12:00	4.52	0.11	0.8	-2	
6/6/08 13:12:15	4.53	0.11	0.8	-2	
6/6/08 13:12:30	4.53	0.11	0.8	-2	
6/6/08 13:12:45	4.53	0.10	0.8	-2	System Bias
6/6/08 13:13:00	4.54	0.10	0.7	-2	4.54 4.50% O ₂
6/6/08 13:13:15	4.54	0.10	0.7	-2	0.10 Zero CO ₂
6/6/08 13:13:30	4.54	0.10	0.7	-2	0.7 Zero NO _x
6/6/08 13:13:45	4.54	0.09	0.7	-2	-2 Zero CO
6/6/08 13:14:00	4.54	0.09	5.6	23	
6/6/08 13:14:15	4.51	0.61	2.6	176	
6/6/08 13:14:30	4.04	3.72	0.7	162	
6/6/08 13:14:45	2.10	6.94	0.7	50	
6/6/08 13:15:00	0.44	8.54	0.7	4	
6/6/08 13:15:15	0.08	8.62	0.6	-3	
6/6/08 13:15:30	0.04	8.46	0.6	-3	
6/6/08 13:15:45	0.03	8.44	0.6	-3	
6/6/08 13:16:00	0.02	8.60	0.6	-3	
6/6/08 13:16:15	0.02	8.84	0.6	-3	
6/6/08 13:16:30	0.01	9.01	0.6	-3	
6/6/08 13:16:45	0.01	9.09	0.6	-3	
6/6/08 13:17:00	0.01	9.13	0.6	-3	
6/6/08 13:17:15	0.01	9.14	0.5	-3	
6/6/08 13:17:30	0.01	9.15	0.6	-4	System Bias
6/6/08 13:17:45	0.01	9.16	0.5	-4	
6/6/08 13:18:00	0.01	9.16	0.5	-4	9.16 9.00% CO ₂
6/6/08 13:18:15	0.01	9.16	0.5	-4	
6/6/08 13:18:30	0.01	9.16	0.8	-3	
6/6/08 13:18:45	0.01	9.17	9.4	59	
6/6/08 13:19:00	0.21	9.20	10.9	408	
6/6/08 13:19:15	1.84	9.41	3.0	709	
6/6/08 13:19:30	2.62	8.43	0.7	836	
6/6/08 13:19:45	1.20	3.93	0.6	917	
6/6/08 13:20:00	0.27	0.91	0.6	967	
6/6/08 13:20:15	0.06	0.24	0.5	979	System Bias
6/6/08 13:20:30	0.04	0.16	0.5	980	
6/6/08 13:20:45	0.04	0.14	0.5	980	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 13:21:00	0.04	0.13	0.5	979	
6/6/08 13:21:15	0.04	0.13	0.5	978	979 1,000 ppm CO
6/6/08 13:21:30	0.04	0.12	0.9	977	
6/6/08 13:21:45	0.04	0.12	6.0	952	
6/6/08 13:22:00	0.30	1.39	18.7	687	
6/6/08 13:22:15	0.78	2.44	19.2	272	
6/6/08 13:22:30	0.31	0.73	26.0	54	
6/6/08 13:22:45	0.08	0.19	27.0	8	
6/6/08 13:23:00	0.05	0.12	28.2	0	
6/6/08 13:23:15	0.05	0.10	29.5	-1	
6/6/08 13:23:30	0.05	0.10	28.8	-1	
6/6/08 13:23:45	0.05	0.09	33.7	-1	
6/6/08 13:24:00	0.05	0.09	45.8	-2	
6/6/08 13:24:15	0.05	0.09	44.8	-2	
6/6/08 13:24:30	0.04	0.09	44.0	-2	
6/6/08 13:24:45	0.04	0.09	43.5	-2	
6/6/08 13:25:00	0.04	0.08	43.1	-2	
6/6/08 13:25:15	0.04	0.08	42.9	-2	
6/6/08 13:25:30	0.04	0.08	42.7	-2	
6/6/08 13:25:45	0.04	0.08	42.5	-2	
6/6/08 13:26:00	0.04	0.08	42.3	-2	
6/6/08 13:26:15	0.04	0.08	42.2	-2	System Bias
6/6/08 13:26:30	0.04	0.08	42.1	-2	0.04 Zero O ₂
6/6/08 13:26:45	0.04	0.08	42.1	-2	
6/6/08 13:27:00	0.04	0.08	42.1	-2	42.1 45.0 ppm NO _x
6/6/08 13:27:15	0.04	0.08	42.1	-2	
6/6/08 13:27:30	0.04	0.08	43.5	1	
6/6/08 13:27:45	0.04	0.14	17.7	120	
6/6/08 13:28:00	0.78	3.29	12.7	417	
6/6/08 13:28:15	2.29	7.52	12.3	615	
6/6/08 13:28:30	3.00	9.46	12.3	634	
6/6/08 13:28:45	3.08	9.89	12.2	573	
6/6/08 13:29:00	3.03	9.98	12.1	509	
6/6/08 13:29:15	3.01	9.99	12.1	475	
6/6/08 13:29:30	3.01	9.97	11.9	478	
6/6/08 13:29:45	3.04	9.91	11.8	504	Begin Run No. 6
6/6/08 13:30:00	3.10	9.85	11.6	532	
6/6/08 13:30:15	3.14	9.81	11.5	572	
6/6/08 13:30:30	3.18	9.76	11.5	623	
6/6/08 13:30:45	3.23	9.70	11.5	671	
6/6/08 13:31:00	3.26	9.64	11.6	700	
6/6/08 13:31:15	3.29	9.59	11.5	703	
6/6/08 13:31:30	3.29	9.57	11.6	703	
6/6/08 13:31:45	3.29	9.56	11.6	719	
6/6/08 13:32:00	3.26	9.57	11.6	738	
6/6/08 13:32:15	3.23	9.58	11.5	743	
6/6/08 13:32:30	3.25	9.59	11.6	746	
6/6/08 13:32:45	3.26	9.63	11.7	744	
6/6/08 13:33:00	3.24	9.70	11.7	729	
6/6/08 13:33:15	3.23	9.75	11.8	719	
6/6/08 13:33:30	3.19	9.80	11.8	686	
6/6/08 13:33:45	3.14	9.82	11.7	640	
6/6/08 13:34:00	3.10	9.77	11.8	624	
6/6/08 13:34:15	3.11	9.68	11.8	640	
6/6/08 13:34:30	3.15	9.62	11.7	663	
6/6/08 13:34:45	3.20	9.62	11.7	685	
6/6/08 13:35:00	3.23	9.64	11.7	719	
6/6/08 13:35:15	3.25	9.66	11.7	729	
6/6/08 13:35:30	3.25	9.70	11.8	704	
6/6/08 13:35:45	3.21	9.77	11.9	664	
6/6/08 13:36:00	3.15	9.87	11.9	634	
6/6/08 13:36:15	3.11	9.93	11.9	633	
6/6/08 13:36:30	3.10	9.93	11.9	627	
6/6/08 13:36:45	3.10	9.90	11.7	602	
6/6/08 13:37:00	3.08	9.88	11.5	602	
6/6/08 13:37:15	3.08	9.87	11.6	636	
6/6/08 13:37:30	3.11	9.84	11.6	659	
6/6/08 13:37:45	3.15	9.77	11.4	667	
6/6/08 13:38:00	3.20	9.69	11.4	689	
6/6/08 13:38:15	3.23	9.65	11.4	722	
6/6/08 13:38:30	3.25	9.61	11.5	746	
6/6/08 13:38:45	3.26	9.59	11.5	757	
6/6/08 13:39:00	3.28	9.59	11.4	774	
6/6/08 13:39:15	3.29	9.59	11.5	793	
6/6/08 13:39:30	3.31	9.57	11.5	797	
6/6/08 13:39:45	3.28	9.59	11.6	801	
6/6/08 13:40:00	3.25	9.61	11.7	811	
6/6/08 13:40:15	3.25	9.58	11.6	829	
6/6/08 13:40:30	3.25	9.54	11.6	840	
6/6/08 13:40:45	3.24	9.56	11.5	833	
6/6/08 13:41:00	3.23	9.61	11.5	843	
6/6/08 13:41:15	3.23	9.66	11.5	855	
6/6/08 13:41:30	3.22	9.69	11.7	844	

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Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 13:41:45	3.20	9.70	11.8	806	
6/6/08 13:42:00	3.18	9.74	11.8	762	
6/6/08 13:42:15	3.13	9.79	11.9	751	
6/6/08 13:42:30	3.08	9.81	11.8	740	
6/6/08 13:42:45	3.06	9.80	11.7	712	
6/6/08 13:43:00	3.06	9.80	11.7	700	
6/6/08 13:43:15	3.06	9.81	11.8	688	
6/6/08 13:43:30	3.08	9.82	11.7	656	
6/6/08 13:43:45	3.06	9.80	11.7	643	
6/6/08 13:44:00	3.08	9.76	11.6	648	
6/6/08 13:44:15	3.10	9.73	11.6	666	
6/6/08 13:44:30	3.12	9.69	11.5	681	
6/6/08 13:44:45	3.12	9.66	11.6	713	
6/6/08 13:45:00	3.13	9.61	11.6	748	
6/6/08 13:45:15	3.15	9.57	11.5	763	
6/6/08 13:45:30	3.18	9.53	11.4	780	
6/6/08 13:45:45	3.22	9.52	11.4	802	
6/6/08 13:46:00	3.24	9.54	11.4	820	
6/6/08 13:46:15	3.23	9.58	11.6	840	
6/6/08 13:46:30	3.23	9.60	11.5	840	
6/6/08 13:46:45	3.25	9.58	11.5	827	
6/6/08 13:47:00	3.24	9.58	11.7	832	
6/6/08 13:47:15	3.21	9.61	11.7	831	
6/6/08 13:47:30	3.20	9.60	11.7	801	
6/6/08 13:47:45	3.20	9.59	11.6	789	
6/6/08 13:48:00	3.17	9.59	11.6	809	
6/6/08 13:48:15	3.18	9.61	11.6	818	
6/6/08 13:48:30	3.16	9.67	11.7	800	
6/6/08 13:48:45	3.14	9.73	11.8	771	
6/6/08 13:49:00	3.12	9.76	11.6	731	
6/6/08 13:49:15	3.11	9.77	11.8	681	
6/6/08 13:49:30	3.08	9.79	12.0	636	
6/6/08 13:49:45	3.05	9.80	12.0	616	
6/6/08 13:50:00	3.08	9.78	11.9	589	
6/6/08 13:50:15	3.06	9.78	11.8	583	
6/6/08 13:50:30	3.06	9.78	11.6	591	
6/6/08 13:50:45	3.09	9.75	11.6	587	
6/6/08 13:51:00	3.08	9.74	11.6	587	
6/6/08 13:51:15	3.04	9.75	11.5	607	
6/6/08 13:51:30	3.05	9.73	11.5	638	
6/6/08 13:51:45	3.10	9.70	11.5	673	
6/6/08 13:52:00	3.13	9.67	11.5	692	
6/6/08 13:52:15	3.16	9.65	11.4	685	
6/6/08 13:52:30	3.16	9.64	11.4	684	
6/6/08 13:52:45	3.17	9.62	11.4	694	
6/6/08 13:53:00	3.19	9.60	11.5	713	
6/6/08 13:53:15	3.20	9.58	11.4	728	
6/6/08 13:53:30	3.23	9.54	11.5	766	
6/6/08 13:53:45	3.24	9.50	11.5	787	
6/6/08 13:54:00	3.26	9.44	11.5	793	
6/6/08 13:54:15	3.28	9.38	11.6	798	
6/6/08 13:54:30	3.29	9.37	11.7	813	
6/6/08 13:54:45	3.26	9.44	11.6	820	
6/6/08 13:55:00	3.23	9.54	11.7	814	
6/6/08 13:55:15	3.20	9.68	11.9	795	
6/6/08 13:55:30	3.14	9.79	11.9	724	
6/6/08 13:55:45	3.07	9.83	12.0	648	
6/6/08 13:56:00	2.97	9.88	11.9	581	
6/6/08 13:56:15	2.92	9.90	11.8	551	
6/6/08 13:56:30	2.86	9.84	11.6	571	
6/6/08 13:56:45	3.02	9.76	11.5	580	
6/6/08 13:57:00	3.09	9.70	11.5	622	
6/6/08 13:57:15	3.13	9.66	11.5	642	
6/6/08 13:57:30	3.13	9.62	11.4	649	
6/6/08 13:57:45	3.15	9.58	11.5	672	
6/6/08 13:58:00	3.15	9.58	11.5	701	
6/6/08 13:58:15	3.16	9.58	11.6	704	
6/6/08 13:58:30	3.19	9.58	11.6	706	
6/6/08 13:58:45	3.19	9.63	11.6	707	
6/6/08 13:59:00	3.17	9.70	11.5	698	
6/6/08 13:59:15	3.15	9.70	11.5	694	
6/6/08 13:59:30	3.13	9.66	11.3	700	
6/6/08 13:59:45	3.12	9.61	11.4	728	
6/6/08 14:00:00	3.16	9.57	11.4	766	
6/6/08 14:00:15	3.18	9.54	11.4	768	
6/6/08 14:00:30	3.20	9.51	11.4	794	
6/6/08 14:00:45	3.22	9.49	11.3	803	
6/6/08 14:01:00	3.23	9.48	11.3	832	
6/6/08 14:01:15	3.26	9.44	11.5	845	
6/6/08 14:01:30	3.26	9.39	11.6	836	
6/6/08 14:01:45	3.24	9.36	11.5	827	
6/6/08 14:02:00	3.25	9.34	11.6	854	
6/6/08 14:02:15	3.26	9.41	11.7	866	
6/6/08 14:02:30	3.26	9.51	11.7	852	

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ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 14:02:45	3.24	9.62	11.7	824	
6/6/08 14:03:00	3.19	9.72	11.8	733	
6/6/08 14:03:15	3.12	9.79	12.0	669	
6/6/08 14:03:30	3.06	9.80	11.9	599	
6/6/08 14:03:45	3.01	9.80	11.9	576	
6/6/08 14:04:00	2.99	9.77	11.7	588	
6/6/08 14:04:15	3.00	9.72	11.5	613	
6/6/08 14:04:30	3.01	9.68	11.5	659	
6/6/08 14:04:45	3.08	9.63	11.4	669	
6/6/08 14:05:00	3.14	9.59	11.5	668	
6/6/08 14:05:15	3.16	9.57	11.5	679	
6/6/08 14:05:30	3.16	9.57	11.3	700	
6/6/08 14:05:45	3.15	9.56	11.5	715	
6/6/08 14:06:00	3.16	9.56	11.6	710	
6/6/08 14:06:15	3.16	9.58	11.6	689	
6/6/08 14:06:30	3.16	9.61	11.6	681	
6/6/08 14:06:45	3.17	9.60	11.6	687	
6/6/08 14:07:00	3.18	9.56	11.5	706	
6/6/08 14:07:15	3.17	9.53	11.5	719	
6/6/08 14:07:30	3.17	9.49	11.5	744	
6/6/08 14:07:45	3.19	9.46	11.5	766	
6/6/08 14:08:00	3.22	9.44	11.5	794	
6/6/08 14:08:15	3.22	9.42	11.5	802	
6/6/08 14:08:30	3.20	9.43	11.5	808	
6/6/08 14:08:45	3.19	9.42	11.6	820	
6/6/08 14:09:00	3.19	9.41	11.5	825	
6/6/08 14:09:15	3.19	9.42	11.6	831	
6/6/08 14:09:30	3.20	9.45	11.6	827	
6/6/08 14:09:45	3.18	9.52	11.7	816	
6/6/08 14:10:00	3.17	9.57	11.8	772	
6/6/08 14:10:15	3.14	9.62	11.8	735	
6/6/08 14:10:30	3.10	9.64	11.8	690	
6/6/08 14:10:45	3.08	9.63	11.8	676	
6/6/08 14:11:00	3.09	9.60	11.7	670	
6/6/08 14:11:15	3.10	9.57	11.8	671	
6/6/08 14:11:30	3.11	9.54	11.6	708	
6/6/08 14:11:45	3.13	9.50	11.5	729	
6/6/08 14:12:00	3.17	9.48	11.5	746	
6/6/08 14:12:15	3.21	9.42	11.4	767	
6/6/08 14:12:30	3.23	9.40	11.4	815	
6/6/08 14:12:45	3.24	9.41	11.5	840	
6/6/08 14:13:00	3.27	9.45	11.5	843	
6/6/08 14:13:15	3.26	9.54	11.5	845	
6/6/08 14:13:30	3.23	9.59	11.6	837	
6/6/08 14:13:45	3.21	9.59	11.6	811	
6/6/08 14:14:00	3.18	9.54	11.7	791	
6/6/08 14:14:15	3.22	9.47	11.7	780	
6/6/08 14:14:30	3.20	9.48	11.7	762	
6/6/08 14:14:45	3.17	9.52	11.5	761	
6/6/08 14:15:00	3.20	9.53	11.6	779	
6/6/08 14:15:15	3.22	9.57	11.6	788	
6/6/08 14:15:30	3.20	9.62	11.6	775	
6/6/08 14:15:45	3.17	9.65	11.6	758	
6/6/08 14:16:00	3.15	9.66	11.6	745	
6/6/08 14:16:15	3.13	9.65	11.6	708	
6/6/08 14:16:30	3.10	9.63	11.6	659	
6/6/08 14:16:45	3.04	9.64	11.5	647	
6/6/08 14:17:00	3.02	9.64	11.4	658	
6/6/08 14:17:15	3.06	9.59	11.5	674	
6/6/08 14:17:30	3.11	9.54	11.4	679	
6/6/08 14:17:45	3.14	9.51	11.3	693	
6/6/08 14:18:00	3.16	9.48	11.3	725	
6/6/08 14:18:15	3.19	9.45	11.3	744	
6/6/08 14:18:30	3.23	9.42	11.4	753	
6/6/08 14:18:45	3.25	9.39	11.4	771	
6/6/08 14:19:00	3.27	9.35	11.6	792	
6/6/08 14:19:15	3.29	9.33	11.5	794	
6/6/08 14:19:30	3.26	9.35	11.5	816	
6/6/08 14:19:45	3.26	9.38	11.6	836	
6/6/08 14:20:00	3.26	9.40	11.4	836	
6/6/08 14:20:15	3.22	9.43	11.5	841	
6/6/08 14:20:30	3.21	9.45	11.6	860	
6/6/08 14:20:45	3.21	9.47	11.7	849	
6/6/08 14:21:00	3.19	9.52	11.7	819	
6/6/08 14:21:15	3.16	9.57	11.6	805	
6/6/08 14:21:30	3.14	9.63	11.8	794	
6/6/08 14:21:45	3.12	9.68	11.7	758	
6/6/08 14:22:00	3.08	9.69	11.6	693	
6/6/08 14:22:15	3.04	9.68	11.5	675	
6/6/08 14:22:30	3.04	9.63	11.7	671	
6/6/08 14:22:45	3.07	9.53	11.7	673	
6/6/08 14:23:00	3.10	9.42	11.6	705	
6/6/08 14:23:15	3.16	9.37	11.5	750	
6/6/08 14:23:30	3.20	9.42	11.5	806	

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ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 14:23:45	3.23	9.50	11.5	828	
6/6/08 14:24:00	3.25	9.58	11.5	823	
6/6/08 14:24:15	3.23	9.67	11.6	770	
6/6/08 14:24:30	3.15	9.76	11.7	679	
6/6/08 14:24:45	3.07	9.80	11.7	628	
6/6/08 14:25:00	3.04	9.82	11.7	601	
6/6/08 14:25:15	3.02	9.79	11.6	613	
6/6/08 14:25:30	3.03	9.74	11.6	637	
6/6/08 14:25:45	3.08	9.66	11.5	646	
6/6/08 14:26:00	3.11	9.59	11.4	666	
6/6/08 14:26:15	3.13	9.55	11.5	692	
6/6/08 14:26:30	3.17	9.51	11.6	711	
6/6/08 14:26:45	3.19	9.49	11.5	701	
6/6/08 14:27:00	3.18	9.49	11.4	702	
6/6/08 14:27:15	3.21	9.46	11.4	715	
6/6/08 14:27:30	3.22	9.43	11.5	724	
6/6/08 14:27:45	3.19	9.45	11.4	729	
6/6/08 14:28:00	3.17	9.47	11.6	736	
6/6/08 14:28:15	3.18	9.49	11.7	740	
6/6/08 14:28:30	3.19	9.52	11.6	714	
6/6/08 14:28:45	3.15	9.56	11.6	678	
6/6/08 14:29:00	3.12	9.59	11.7	641	
6/6/08 14:29:15	3.08	9.60	11.7	636	
6/6/08 14:29:30	3.08	9.57	11.5	637	
6/6/08 14:29:45	3.09	9.54	11.4	632	
6/6/08 14:30:00	3.11	9.51	11.4	650	
6/6/08 14:30:15	3.11	9.50	11.3	678	
6/6/08 14:30:30	3.14	9.47	11.5	716	
6/6/08 14:30:45	3.17	9.43	11.5	730	
6/6/08 14:31:00	3.19	9.43	11.4	750	
6/6/08 14:31:15	3.20	9.44	11.4	778	
6/6/08 14:31:30	3.21	9.46	11.5	796	
6/6/08 14:31:45	3.19	9.51	11.5	783	
6/6/08 14:32:00	3.19	9.56	11.6	748	
6/6/08 14:32:15	3.15	9.63	11.6	731	
6/6/08 14:32:30	3.13	9.66	11.7	702	
6/6/08 14:32:45	3.11	9.66	11.6	669	
6/6/08 14:33:00	3.08	9.62	11.6	631	
6/6/08 14:33:15	3.11	9.52	11.5	627	
6/6/08 14:33:30	3.15	9.43	11.6	674	
6/6/08 14:33:45	3.20	9.37	11.5	718	
6/6/08 14:34:00	3.24	9.37	11.5	783	
6/6/08 14:34:15	3.28	9.41	11.5	802	
6/6/08 14:34:30	3.28	9.50	11.5	800	
6/6/08 14:34:45	3.25	9.59	11.6	791	
6/6/08 14:35:00	3.22	9.68	11.6	745	
6/6/08 14:35:15	3.14	9.77	11.8	683	
6/6/08 14:35:30	3.06	9.79	12.0	604	
6/6/08 14:35:45	3.03	9.74	12.0	566	
6/6/08 14:36:00	3.01	9.67	11.8	558	
6/6/08 14:36:15	3.02	9.63	11.5	569	
6/6/08 14:36:30	3.06	9.61	11.7	603	
6/6/08 14:36:45	3.11	9.56	11.7	629	
6/6/08 14:37:00	3.16	9.51	11.5	644	
6/6/08 14:37:15	3.19	9.46	11.6	644	
6/6/08 14:37:30	3.20	9.42	11.7	651	
6/6/08 14:37:45	3.20	9.41	11.5	665	
6/6/08 14:38:00	3.21	9.38	11.4	707	
6/6/08 14:38:15	3.23	9.35	11.5	737	
6/6/08 14:38:30	3.24	9.33	11.6	753	
6/6/08 14:38:45	3.25	9.35	11.6	760	
6/6/08 14:39:00	3.25	9.40	11.6	774	
6/6/08 14:39:15	3.25	9.46	11.6	771	
6/6/08 14:39:30	3.22	9.51	11.5	735	
6/6/08 14:39:45	3.18	9.55	11.6	702	
6/6/08 14:40:00	3.14	9.57	11.8	666	
6/6/08 14:40:15	3.10	9.59	11.7	655	
6/6/08 14:40:30	3.07	9.57	11.6	639	
6/6/08 14:40:45	3.10	9.54	11.4	637	
6/6/08 14:41:00	3.11	9.53	11.5	664	
6/6/08 14:41:15	3.10	9.53	11.7	681	
6/6/08 14:41:30	3.11	9.52	11.6	689	
6/6/08 14:41:45	3.15	9.50	11.5	703	
6/6/08 14:42:00	3.18	9.48	11.5	717	
6/6/08 14:42:15	3.20	9.50	11.6	717	
6/6/08 14:42:30	3.20	9.53	11.5	719	
6/6/08 14:42:45	3.18	9.57	11.6	722	
6/6/08 14:43:00	3.16	9.63	11.7	709	
6/6/08 14:43:15	3.13	9.68	11.7	677	
6/6/08 14:43:30	3.11	9.70	11.6	628	
6/6/08 14:43:45	3.09	9.69	11.6	606	
6/6/08 14:44:00	3.07	9.66	11.5	611	
6/6/08 14:44:15	3.07	9.62	11.5	639	
6/6/08 14:44:30	3.12	9.51	11.5	697	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 14:44:45	3.19	9.40	11.5	731	
6/6/08 14:45:00	3.24	9.38	11.5	782	
6/6/08 14:45:15	3.29	9.43	11.4	810	
6/6/08 14:45:30	3.30	9.52	11.7	837	
6/6/08 14:45:45	3.27	9.62	11.7	816	
6/6/08 14:46:00	3.19	9.75	11.6	749	
6/6/08 14:46:15	3.14	9.85	11.7	687	
6/6/08 14:46:30	3.07	9.90	11.8	600	
6/6/08 14:46:45	3.00	9.87	11.8	563	
6/6/08 14:47:00	3.00	9.80	11.7	554	
6/6/08 14:47:15	3.02	9.74	11.6	581	
6/6/08 14:47:30	3.07	9.67	11.6	639	
6/6/08 14:47:45	3.11	9.61	11.6	673	
6/6/08 14:48:00	3.14	9.57	11.7	696	
6/6/08 14:48:15	3.17	9.54	11.7	701	
6/6/08 14:48:30	3.19	9.51	11.6	698	
6/6/08 14:48:45	3.20	9.49	11.6	707	
6/6/08 14:49:00	3.21	9.52	11.4	721	
6/6/08 14:49:15	3.21	9.56	11.3	728	
6/6/08 14:49:30	3.23	9.60	11.1	732	
6/6/08 14:49:45	3.21	9.66	11.6	714	
6/6/08 14:50:00	3.16	9.72	11.6	652	
6/6/08 14:50:15	3.11	9.74	11.7	618	
6/6/08 14:50:30	3.10	9.71	11.6	589	
6/6/08 14:50:45	3.11	9.68	11.6	597	
6/6/08 14:51:00	3.13	9.64	11.5	649	
6/6/08 14:51:15	3.15	9.60	11.5	684	
6/6/08 14:51:30	3.17	9.57	11.5	715	
6/6/08 14:51:45	3.19	9.54	11.5	713	
6/6/08 14:52:00	3.21	9.53	11.6	737	
6/6/08 14:52:15	3.23	9.49	11.4	756	
6/6/08 14:52:30	3.25	9.44	11.5	782	
6/6/08 14:52:45	3.27	9.43	11.5	787	
6/6/08 14:53:00	3.28	9.49	11.5	785	
6/6/08 14:53:15	3.27	9.58	11.5	802	
6/6/08 14:53:30	3.24	9.66	11.7	808	
6/6/08 14:53:45	3.21	9.73	11.6	775	
6/6/08 14:54:00	3.13	9.80	11.6	718	
6/6/08 14:54:15	3.07	9.84	11.6	674	
6/6/08 14:54:30	3.04	9.82	11.7	628	
6/6/08 14:54:45	3.03	9.76	11.5	631	
6/6/08 14:55:00	3.05	9.70	11.4	656	
6/6/08 14:55:15	3.08	9.67	11.4	675	
6/6/08 14:55:30	3.12	9.67	11.5	690	
6/6/08 14:55:45	3.15	9.69	11.6	686	
6/6/08 14:56:00	3.16	9.68	11.6	668	
6/6/08 14:56:15	3.13	9.68	11.6	653	
6/6/08 14:56:30	3.11	9.67	11.6	654	
6/6/08 14:56:45	3.12	9.66	11.6	661	
6/6/08 14:57:00	3.15	9.65	11.5	687	
6/6/08 14:57:15	3.14	9.65	11.6	732	
6/6/08 14:57:30	3.15	9.62	11.6	743	
6/6/08 14:57:45	3.15	9.60	11.5	729	
6/6/08 14:58:00	3.15	9.57	11.7	739	
6/6/08 14:58:15	3.16	9.54	11.7	748	
6/6/08 14:58:30	3.18	9.52	11.6	747	
6/6/08 14:58:45	3.17	9.54	11.5	754	
6/6/08 14:59:00	3.19	9.58	11.6	777	
6/6/08 14:59:15	3.22	9.61	11.6	778	
6/6/08 14:59:30	3.21	9.66	11.6	741	
6/6/08 14:59:45	3.15	9.73	11.7	700	
6/6/08 15:00:00	3.12	9.77	11.8	644	Change of Ports
6/6/08 15:00:15	3.11	9.76	11.8	612	
6/6/08 15:00:30	3.06	9.74	11.5	611	
6/6/08 15:00:45	3.04	9.71	11.5	649	
6/6/08 15:01:00	3.09	9.68	9.2	703	
6/6/08 15:01:15	3.14	9.62	1.0	597	
6/6/08 15:01:30	6.56	7.07	0.7	230	
6/6/08 15:01:45	16.03	2.11	0.6	64	
6/6/08 15:02:00	19.84	0.45	0.6	4	
6/6/08 15:02:15	20.35	0.24	0.6	0	
6/6/08 15:02:30	20.41	0.20	0.6	-1	
6/6/08 15:02:45	20.43	0.19	3.4	0	
6/6/08 15:03:00	20.41	0.23	12.1	167	
6/6/08 15:03:15	16.70	3.19	12.0	418	
6/6/08 15:03:30	7.60	8.04	12.0	603	
6/6/08 15:03:45	3.71	9.65	12.1	603	
6/6/08 15:04:00	3.11	9.84	12.0	577	
6/6/08 15:04:15	3.01	9.84	11.9	572	
6/6/08 15:04:30	3.03	9.79	11.7	601	
6/6/08 15:04:45	3.08	9.74	11.6	631	Resume Sampling
6/6/08 15:05:00	3.14	9.70	11.6	667	
6/6/08 15:05:15	3.18	9.68	11.6	687	
6/6/08 15:05:30	3.18	9.68	11.6	716	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 15:05:45	3.18	9.66	11.7	709	
6/6/08 15:06:00	3.19	9.65	11.7	688	
6/6/08 15:06:15	3.18	9.64	11.6	697	
6/6/08 15:06:30	3.18	9.63	12.0	723	
6/6/08 15:06:45	3.19	9.61	11.7	737	
6/6/08 15:07:00	3.19	9.58	11.6	753	
6/6/08 15:07:15	3.22	9.53	11.6	770	
6/6/08 15:07:30	3.24	9.50	11.7	788	
6/6/08 15:07:45	3.23	9.49	11.8	792	
6/6/08 15:08:00	3.22	9.51	11.7	788	
6/6/08 15:08:15	3.20	9.56	11.7	791	
6/6/08 15:08:30	3.21	9.58	11.8	796	
6/6/08 15:08:45	3.23	9.59	11.7	789	
6/6/08 15:09:00	3.20	9.62	11.7	754	
6/6/08 15:09:15	3.18	9.66	11.8	739	
6/6/08 15:09:30	3.16	9.71	11.9	751	
6/6/08 15:09:45	3.16	9.72	11.9	756	
6/6/08 15:10:00	3.16	9.69	11.7	740	
6/6/08 15:10:15	3.17	9.63	11.7	728	
6/6/08 15:10:30	3.20	9.57	11.6	746	
6/6/08 15:10:45	3.22	9.56	11.4	770	
6/6/08 15:11:00	3.20	9.61	11.6	791	
6/6/08 15:11:15	3.18	9.67	11.4	785	
6/6/08 15:11:30	3.16	9.73	11.7	759	
6/6/08 15:11:45	3.13	9.80	11.9	721	
6/6/08 15:12:00	3.08	9.89	12.0	671	
6/6/08 15:12:15	3.05	9.93	11.9	634	
6/6/08 15:12:30	3.04	9.91	11.9	600	
6/6/08 15:12:45	3.05	9.85	11.9	603	
6/6/08 15:13:00	3.09	9.78	12.0	622	
6/6/08 15:13:15	3.11	9.75	11.7	627	
6/6/08 15:13:30	3.12	9.71	11.6	662	
6/6/08 15:13:45	3.16	9.66	11.6	696	
6/6/08 15:14:00	3.22	9.62	11.6	736	
6/6/08 15:14:15	3.23	9.61	11.7	739	
6/6/08 15:14:30	3.21	9.62	11.8	731	
6/6/08 15:14:45	3.19	9.63	11.7	725	
6/6/08 15:15:00	3.17	9.66	11.6	717	
6/6/08 15:15:15	3.14	9.70	11.6	705	
6/6/08 15:15:30	3.13	9.72	11.8	693	
6/6/08 15:15:45	3.12	9.74	11.8	669	
6/6/08 15:16:00	3.10	9.75	11.7	649	
6/6/08 15:16:15	3.09	9.73	11.7	657	
6/6/08 15:16:30	3.10	9.68	11.6	676	
6/6/08 15:16:45	3.13	9.60	11.7	693	
6/6/08 15:17:00	3.16	9.51	11.7	717	
6/6/08 15:17:15	3.21	9.46	11.6	737	
6/6/08 15:17:30	3.25	9.47	11.3	800	
6/6/08 15:17:45	3.29	9.51	11.5	836	
6/6/08 15:18:00	3.31	9.59	11.6	834	
6/6/08 15:18:15	3.25	9.70	11.8	792	
6/6/08 15:18:30	3.18	9.82	11.8	707	
6/6/08 15:18:45	3.10	9.91	11.8	652	
6/6/08 15:19:00	3.05	9.93	11.8	604	
6/6/08 15:19:15	3.03	9.89	11.8	591	
6/6/08 15:19:30	3.02	9.86	11.7	605	
6/6/08 15:19:45	3.04	9.82	11.7	630	
6/6/08 15:20:00	3.07	9.77	11.6	660	
6/6/08 15:20:15	3.10	9.73	11.4	681	
6/6/08 15:20:30	3.12	9.69	11.5	706	
6/6/08 15:20:45	3.16	9.65	11.5	699	
6/6/08 15:21:00	3.17	9.66	11.6	686	
6/6/08 15:21:15	3.17	9.70	11.6	700	
6/6/08 15:21:30	3.16	9.72	11.7	713	
6/6/08 15:21:45	3.15	9.74	11.8	701	
6/6/08 15:22:00	3.13	9.75	11.4	682	
6/6/08 15:22:15	3.11	9.74	11.7	680	
6/6/08 15:22:30	3.13	9.71	11.8	681	
6/6/08 15:22:45	3.12	9.68	11.8	691	
6/6/08 15:23:00	3.14	9.60	11.6	730	
6/6/08 15:23:15	3.20	9.48	11.6	764	
6/6/08 15:23:30	3.25	9.44	11.4	803	
6/6/08 15:23:45	3.28	9.49	11.6	818	
6/6/08 15:24:00	3.27	9.58	11.6	819	
6/6/08 15:24:15	3.24	9.67	11.9	799	
6/6/08 15:24:30	3.19	9.76	12.0	727	
6/6/08 15:24:45	3.09	9.87	12.0	661	
6/6/08 15:25:00	3.01	9.95	11.9	580	
6/6/08 15:25:15	2.98	9.97	11.8	563	
6/6/08 15:25:30	2.98	9.91	11.7	573	
6/6/08 15:25:45	3.02	9.84	11.6	593	
6/6/08 15:26:00	3.06	9.77	11.7	646	
6/6/08 15:26:15	3.11	9.69	11.6	667	
6/6/08 15:26:30	3.16	9.62	11.3	691	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 15:26:45	3.20	9.59	11.3	721	
6/6/08 15:27:00	3.20	9.60	11.3	752	
6/6/08 15:27:15	3.21	9.60	11.3	773	
6/6/08 15:27:30	3.20	9.62	11.5	776	
6/6/08 15:27:45	3.20	9.63	11.5	754	
6/6/08 15:28:00	3.18	9.64	11.6	742	
6/6/08 15:28:15	3.18	9.62	11.5	735	
6/6/08 15:28:30	3.20	9.57	11.4	759	
6/6/08 15:28:45	3.21	9.50	11.3	800	
6/6/08 15:29:00	3.26	9.43	11.4	863	
6/6/08 15:29:15	3.30	9.44	11.2	889	
6/6/08 15:29:30	3.32	9.49	11.6	890	
6/6/08 15:29:45	3.30	9.59	11.9	859	
6/6/08 15:30:00	3.23	9.73	12.1	804	
6/6/08 15:30:15	3.14	9.66	12.0	752	
6/6/08 15:30:30	3.06	9.93	12.2	660	
6/6/08 15:30:45	3.03	9.93	12.4	598	
6/6/08 15:31:00	2.98	9.93	12.2	556	
6/6/08 15:31:15	2.95	9.90	12.0	574	
6/6/08 15:31:30	2.99	9.83	11.9	622	
6/6/08 15:31:45	3.08	9.78	11.7	650	
6/6/08 15:32:00	3.11	9.70	11.6	707	
6/6/08 15:32:15	3.15	9.63	11.7	735	
6/6/08 15:32:30	3.18	9.59	11.7	741	
6/6/08 15:32:45	3.19	9.55	11.7	737	
6/6/08 15:33:00	3.18	9.55	11.7	753	
6/6/08 15:33:15	3.21	9.54	11.7	774	
6/6/08 15:33:30	3.24	9.54	11.8	798	
6/6/08 15:33:45	3.24	9.58	11.8	793	
6/6/08 15:34:00	3.20	9.62	11.9	767	
6/6/08 15:34:15	3.17	9.68	11.6	784	
6/6/08 15:34:30	3.18	9.67	11.6	773	
6/6/08 15:34:45	3.19	9.67	11.8	778	
6/6/08 15:35:00	3.16	9.69	11.8	780	
6/6/08 15:35:15	3.13	9.65	11.6	784	
6/6/08 15:35:30	3.16	9.55	11.8	782	
6/6/08 15:35:45	3.22	9.48	11.8	791	
6/6/08 15:36:00	3.24	9.50	11.9	827	
6/6/08 15:36:15	3.26	9.57	12.0	832	
6/6/08 15:36:30	3.25	9.65	12.0	826	
6/6/08 15:36:45	3.22	9.75	12.0	804	
6/6/08 15:37:00	3.16	9.86	12.3	738	
6/6/08 15:37:15	3.08	9.92	12.3	670	
6/6/08 15:37:30	3.01	9.93	12.3	588	
6/6/08 15:37:45	2.99	9.89	12.1	562	
6/6/08 15:38:00	3.01	9.83	11.9	591	
6/6/08 15:38:15	3.05	9.75	11.9	836	
6/6/08 15:38:30	3.12	9.68	11.9	677	
6/6/08 15:38:45	3.15	9.64	11.8	697	
6/6/08 15:39:00	3.18	9.59	11.4	720	
6/6/08 15:39:15	3.24	9.53	11.1	754	
6/6/08 15:39:30	3.27	9.51	11.4	781	
6/6/08 15:39:45	3.27	9.53	11.6	777	
6/6/08 15:40:00	3.26	9.57	11.6	752	
6/6/08 15:40:15	3.23	9.62	11.7	738	
6/6/08 15:40:30	3.22	9.64	11.8	715	
6/6/08 15:40:45	3.20	9.67	11.8	697	
6/6/08 15:41:00	3.16	9.69	11.8	688	
6/6/08 15:41:15	3.13	9.69	11.9	701	
6/6/08 15:41:30	3.10	9.67	11.9	726	
6/6/08 15:41:45	3.12	9.63	11.8	744	
6/6/08 15:42:00	3.17	9.56	11.7	753	
6/6/08 15:42:15	3.20	9.52	11.8	786	
6/6/08 15:42:30	3.22	9.48	11.6	822	
6/6/08 15:42:45	3.26	9.45	11.1	845	
6/6/08 15:43:00	3.29	9.47	11.4	889	
6/6/08 15:43:15	3.31	9.50	11.7	891	
6/6/08 15:43:30	3.27	9.59	11.5	834	
6/6/08 15:43:45	3.21	9.71	11.8	800	
6/6/08 15:44:00	3.15	9.82	12.1	730	
6/6/08 15:44:15	3.06	9.91	12.2	654	
6/6/08 15:44:30	3.01	9.96	12.4	568	
6/6/08 15:44:45	2.95	9.96	12.3	521	
6/6/08 15:45:00	2.92	9.90	12.2	522	
6/6/08 15:45:15	2.96	9.84	11.9	558	
6/6/08 15:45:30	3.01	9.79	11.8	612	
6/6/08 15:45:45	3.10	9.72	11.8	641	
6/6/08 15:46:00	3.14	9.68	11.6	650	
6/6/08 15:46:15	3.15	9.69	11.5	668	
6/6/08 15:46:30	3.16	9.70	11.6	681	
6/6/08 15:46:45	3.15	9.72	11.7	680	
6/6/08 15:47:00	3.16	9.71	11.5	664	
6/6/08 15:47:15	3.18	9.68	11.6	659	
6/6/08 15:47:30	3.18	9.68	11.8	686	

**Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data**

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 15:47:45	3.16	9.68	11.7	712	
6/6/08 15:48:00	3.15	9.66	11.7	726	
6/6/08 15:48:15	3.17	9.62	11.7	741	
6/6/08 15:48:30	3.19	9.56	11.6	766	
6/6/08 15:48:45	3.20	9.47	11.7	800	
6/6/08 15:49:00	3.22	9.43	11.7	836	
6/6/08 15:49:15	3.24	9.46	11.7	860	
6/6/08 15:49:30	3.25	9.52	11.8	870	
6/6/08 15:49:45	3.24	9.61	11.8	858	
6/6/08 15:50:00	3.22	9.70	12.0	800	
6/6/08 15:50:15	3.17	9.81	12.1	722	
6/6/08 15:50:30	3.10	9.91	12.2	655	
6/6/08 15:50:45	3.05	9.96	12.1	606	
6/6/08 15:51:00	3.00	9.94	12.0	559	
6/6/08 15:51:15	2.98	9.90	11.8	535	
6/6/08 15:51:30	2.95	9.86	11.6	568	
6/6/08 15:51:45	2.99	9.79	11.7	625	
6/6/08 15:52:00	3.07	9.72	11.3	655	
6/6/08 15:52:15	3.13	9.67	11.4	684	
6/6/08 15:52:30	3.16	9.63	11.5	719	
6/6/08 15:52:45	3.17	9.59	11.3	740	
6/6/08 15:53:00	3.21	9.55	11.3	750	
6/6/08 15:53:15	3.25	9.54	11.4	763	
6/6/08 15:53:30	3.26	9.57	11.5	755	
6/6/08 15:53:45	3.21	9.66	11.7	737	
6/6/08 15:54:00	3.16	9.73	11.8	708	
6/6/08 15:54:15	3.13	9.76	11.8	674	
6/6/08 15:54:30	3.10	9.77	11.7	649	
6/6/08 15:54:45	3.06	9.79	11.8	646	
6/6/08 15:55:00	3.06	9.76	11.5	659	
6/6/08 15:55:15	3.05	9.71	11.6	686	
6/6/08 15:55:30	3.08	9.59	11.9	727	
6/6/08 15:55:45	3.16	9.48	11.9	757	
6/6/08 15:56:00	3.23	9.47	11.8	776	
6/6/08 15:56:15	3.24	9.54	11.8	800	
6/6/08 15:56:30	3.26	9.63	11.8	810	
6/6/08 15:56:45	3.27	9.72	12.0	790	
6/6/08 15:57:00	3.22	9.82	12.0	726	
6/6/08 15:57:15	3.13	9.93	12.0	661	
6/6/08 15:57:30	3.04	9.96	12.1	600	
6/6/08 15:57:45	3.01	9.91	12.1	555	
6/6/08 15:58:00	2.99	9.85	11.9	554	
6/6/08 15:58:15	2.98	9.81	11.7	587	
6/6/08 15:58:30	3.00	9.76	11.7	632	
6/6/08 15:58:45	3.06	9.69	11.5	664	
6/6/08 15:59:00	3.12	9.62	11.5	686	
6/6/08 15:59:15	3.17	9.57	11.5	710	
6/6/08 15:59:30	3.18	9.56	11.4	742	
6/6/08 15:59:45	3.21	9.54	11.5	774	
6/6/08 16:00:00	3.23	9.55	11.7	782	
6/6/08 16:00:15	3.23	9.58	11.6	779	
6/6/08 16:00:30	3.23	9.62	11.8	762	
6/6/08 16:00:45	3.21	9.69	11.9	733	
6/6/08 16:01:00	3.17	9.74	12.1	707	
6/6/08 16:01:15	3.14	9.75	12.1	673	
6/6/08 16:01:30	3.10	9.74	12.1	650	
6/6/08 16:01:45	3.08	9.72	12.0	654	
6/6/08 16:02:00	3.09	9.70	11.9	670	
6/6/08 16:02:15	3.09	9.66	11.9	687	
6/6/08 16:02:30	3.12	9.60	11.9	715	
6/6/08 16:02:45	3.15	9.52	11.6	747	
6/6/08 16:03:00	3.22	9.44	11.7	778	
6/6/08 16:03:15	3.25	9.44	11.6	811	
6/6/08 16:03:30	3.28	9.49	11.9	834	
6/6/08 16:03:45	3.28	9.58	11.8	838	
6/6/08 16:04:00	3.25	9.68	11.9	834	
6/6/08 16:04:15	3.21	9.78	11.6	796	
6/6/08 16:04:30	3.13	9.89	11.8	710	
6/6/08 16:04:45	3.05	9.98	12.1	622	
6/6/08 16:05:00	2.97	10.00	12.2	559	
6/6/08 16:05:15	2.92	9.95	11.8	531	
6/6/08 16:05:30	2.92	9.87	11.6	555	
6/6/08 16:05:45	2.99	9.79	11.3	608	
6/6/08 16:06:00	3.05	9.73	11.3	658	
6/6/08 16:06:15	3.12	9.67	11.3	691	
6/6/08 16:06:30	3.16	9.64	11.5	706	
6/6/08 16:06:45	3.16	9.64	11.6	708	
6/6/08 16:07:00	3.18	9.65	11.6	705	
6/6/08 16:07:15	3.17	9.70	11.7	685	
6/6/08 16:07:30	3.17	9.76	11.7	646	
6/6/08 16:07:45	3.17	9.78	11.8	620	
6/6/08 16:08:00	3.13	9.78	11.7	620	
6/6/08 16:08:15	3.08	9.74	11.5	643	
6/6/08 16:08:30	3.09	9.69	11.2	678	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 16:08:45	3.11	9.63	11.1	725	
6/6/08 16:09:00	3.17	9.57	11.0	769	
6/6/08 16:09:15	3.22	9.52	11.2	805	
6/6/08 16:09:30	3.26	9.49	11.3	818	
6/6/08 16:09:45	3.27	9.49	11.6	811	
6/6/08 16:10:00	3.28	9.52	11.7	793	
6/6/08 16:10:15	3.24	9.59	11.6	779	
6/6/08 16:10:30	3.20	9.66	11.3	771	
6/6/08 16:10:45	3.17	9.71	11.6	743	
6/6/08 16:11:00	3.16	9.73	11.7	697	
6/6/08 16:11:15	3.14	9.76	11.8	668	
6/6/08 16:11:30	3.10	9.73	11.9	663	
6/6/08 16:11:45	3.09	9.64	11.7	669	
6/6/08 16:12:00	3.14	9.54	11.8	694	
6/6/08 16:12:15	3.18	9.54	11.9	727	
6/6/08 16:12:30	3.18	9.62	11.8	757	
6/6/08 16:12:45	3.18	9.70	11.5	782	
6/6/08 16:13:00	3.20	9.73	11.5	784	
6/6/08 16:13:15	3.18	9.77	11.6	743	
6/6/08 16:13:30	3.12	9.85	11.8	684	
6/6/08 16:13:45	3.08	9.90	11.7	635	
6/6/08 16:14:00	3.04	9.91	11.8	592	
6/6/08 16:14:15	3.01	9.95	11.9	552	
6/6/08 16:14:30	3.00	9.95	12.0	532	
6/6/08 16:14:45	3.04	9.90	12.0	530	
6/6/08 16:15:00	3.05	9.84	11.8	563	
6/6/08 16:15:15	3.08	9.75	11.6	604	
6/6/08 16:15:30	3.14	9.66	11.4	652	
6/6/08 16:15:45	3.18	9.61	11.3	703	
6/6/08 16:16:00	3.23	9.55	11.3	749	
6/6/08 16:16:15	3.26	9.49	11.4	787	
6/6/08 16:16:30	3.28	9.48	11.5	809	
6/6/08 16:16:45	3.27	9.51	11.7	821	
6/6/08 16:17:00	3.26	9.54	11.8	810	
6/6/08 16:17:15	3.24	9.58	11.9	774	
6/6/08 16:17:30	3.22	9.62	12.0	736	
6/6/08 16:17:45	3.19	9.66	12.1	710	
6/6/08 16:18:00	3.15	9.71	12.1	696	
6/6/08 16:18:15	3.10	9.75	12.1	681	
6/6/08 16:18:30	3.08	9.72	12.0	679	
6/6/08 16:18:45	3.07	9.64	11.9	698	
6/6/08 16:19:00	3.11	9.54	11.7	733	
6/6/08 16:19:15	3.16	9.50	11.7	775	
6/6/08 16:19:30	3.20	9.54	11.8	825	
6/6/08 16:19:45	3.23	9.59	11.8	845	
6/6/08 16:20:00	3.26	9.64	11.9	824	
6/6/08 16:20:15	3.24	9.70	11.9	791	
6/6/08 16:20:30	3.21	9.77	11.7	756	
6/6/08 16:20:45	3.16	9.84	12.1	726	
6/6/08 16:21:00	3.12	9.89	12.2	677	
6/6/08 16:21:15	3.05	9.92	12.2	611	
6/6/08 16:21:30	3.00	9.92	12.2	544	
6/6/08 16:21:45	2.98	9.90	12.1	508	
6/6/08 16:22:00	2.98	9.85	12.0	526	
6/6/08 16:22:15	3.01	9.79	11.9	572	
6/6/08 16:22:30	3.05	9.72	11.7	632	
6/6/08 16:22:45	3.11	9.65	11.7	693	
6/6/08 16:23:00	3.21	9.55	11.6	744	
6/6/08 16:23:15	3.26	9.49	11.4	795	
6/6/08 16:23:30	3.29	9.46	11.6	820	
6/6/08 16:23:45	3.32	9.46	11.7	829	
6/6/08 16:24:00	3.30	9.49	11.7	821	
6/6/08 16:24:15	3.27	9.53	11.7	799	
6/6/08 16:24:30	3.23	9.59	12.0	771	
6/6/08 16:24:45	3.21	9.66	12.0	744	
6/6/08 16:25:00	3.15	9.74	12.1	707	
6/6/08 16:25:15	3.11	9.77	12.1	676	
6/6/08 16:25:30	3.08	9.76	12.1	651	
6/6/08 16:25:45	3.06	9.73	12.0	641	
6/6/08 16:26:00	3.06	9.63	12.0	655	
6/6/08 16:26:15	3.09	9.49	11.7	687	
6/6/08 16:26:30	3.16	9.41	11.7	744	
6/6/08 16:26:45	3.23	9.41	11.5	803	
6/6/08 16:27:00	3.28	9.48	11.5	853	
6/6/08 16:27:15	3.30	9.58	11.6	876	
6/6/08 16:27:30	3.29	9.67	11.8	829	
6/6/08 16:27:45	3.22	9.79	11.9	732	
6/6/08 16:28:00	3.11	9.93	12.0	642	
6/6/08 16:28:15	3.02	9.98	12.0	575	
6/6/08 16:28:30	2.97	9.96	12.0	529	
6/6/08 16:28:45	2.93	9.92	11.8	506	
6/6/08 16:29:00	2.93	9.85	11.8	522	
6/6/08 16:29:15	2.98	9.77	11.8	563	
6/6/08 16:29:30	3.03	9.70	11.6	615	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 16:29:45	3.10	9.64	11.7	657	
6/6/08 16:30:00	3.12	9.62	11.7	685	
6/6/08 16:30:15	3.15	9.59	11.7	701	
6/6/08 16:30:30	3.18	9.58	11.7	717	
6/6/08 16:30:45	3.18	9.61	11.6	740	
6/6/08 16:31:00	3.20	9.63	11.9	733	
6/6/08 16:31:15	3.20	9.67	11.9	700	
6/6/08 16:31:30	3.15	9.73	12.0	678	
6/6/08 16:31:45	3.13	9.75	12.1	652	
6/6/08 16:32:00	3.10	9.75	12.0	616	
6/6/08 16:32:15	3.07	9.74	11.7	596	
6/6/08 16:32:30	3.06	9.71	11.8	607	
6/6/08 16:32:45	3.06	9.66	11.9	626	
6/6/08 16:33:00	3.10	9.61	11.9	648	
6/6/08 16:33:15	3.14	9.57	11.9	679	
6/6/08 16:33:30	3.17	9.49	11.6	715	
6/6/08 16:33:45	3.21	9.38	11.4	752	
6/6/08 16:34:00	3.26	9.34	11.5	790	
6/6/08 16:34:15	3.30	9.37	11.7	814	
6/6/08 16:34:30	3.31	9.48	11.8	820	
6/6/08 16:34:45	3.28	9.63	11.9	797	
6/6/08 16:35:00	3.21	9.76	12.1	730	End Run No. 6
6/6/08 16:35:15	3.12	9.87	12.3	639	
6/6/08 16:35:30	3.03	9.94	12.2	555	
6/6/08 16:35:45	2.95	9.96	12.0	500	
6/6/08 16:36:00	2.92	9.90	21.2	457	
6/6/08 16:36:15	2.96	9.15	13.9	305	
6/6/08 16:36:30	2.54	4.78	2.2	120	
6/6/08 16:36:45	3.07	1.29	1.6	23	
6/6/08 16:37:00	4.14	0.28	1.3	2	
6/6/08 16:37:15	4.39	0.16	1.2	-1	
6/6/08 16:37:30	4.40	0.14	1.1	-2	
6/6/08 16:37:45	4.41	0.13	1.0	-2	
6/6/08 16:38:00	4.44	0.12	0.9	-2	
6/6/08 16:38:15	4.47	0.11	0.9	-2	
6/6/08 16:38:30	4.48	0.11	0.8	-2	
6/6/08 16:38:45	4.49	0.11	0.8	-2	System Bias
6/6/08 16:39:00	4.49	0.10	0.8	-2	4.49 4.50% O ₂
6/6/08 16:39:15	4.49	0.10	0.8	-2	0.10 Zero CO ₂
6/6/08 16:39:30	4.49	0.10	0.7	-2	1.0 Zero NO _x
6/6/08 16:39:45	4.49	0.10	1.5	-2	-2 Zero CO
6/6/08 16:40:00	6.07	0.11	1.5	-2	
6/6/08 16:40:15	10.03	1.83	0.8	-2	
6/6/08 16:40:30	4.21	6.48	0.7	-3	
6/6/08 16:40:45	0.65	9.44	0.7	-3	
6/6/08 16:41:00	0.07	8.52	0.7	-3	
6/6/08 16:41:15	0.02	8.39	0.6	-3	
6/6/08 16:41:30	0.01	8.42	0.6	-3	
6/6/08 16:41:45	0.00	8.62	0.6	-3	
6/6/08 16:42:00	0.00	8.65	0.6	-3	
6/6/08 16:42:15	0.00	8.99	0.6	-3	
6/6/08 16:42:30	0.00	9.05	0.6	-4	
6/6/08 16:42:45	0.00	9.08	0.6	-4	
6/6/08 16:43:00	0.00	9.09	0.6	-4	
6/6/08 16:43:15	-0.01	9.10	0.6	-3	
6/6/08 16:43:30	0.00	9.11	0.6	-3	
6/6/08 16:43:45	-0.01	9.11	0.6	-3	System Bias
6/6/08 16:44:00	-0.01	9.11	0.5	-3	
6/6/08 16:44:15	-0.01	9.11	0.6	-3	9.12 9.00% CO ₂
6/6/08 16:44:30	-0.01	9.12	0.6	-4	
6/6/08 16:44:45	-0.01	9.12	1.1	-4	
6/6/08 16:45:00	0.84	8.51	1.5	121	
6/6/08 16:45:15	7.11	4.53	0.6	494	
6/6/08 16:45:30	3.98	1.66	0.6	824	
6/6/08 16:45:45	0.62	0.40	0.6	960	
6/6/08 16:46:00	0.07	0.18	0.5	977	
6/6/08 16:46:15	0.03	0.15	0.5	979	
6/6/08 16:46:30	0.02	0.13	0.5	978	
6/6/08 16:46:45	0.02	0.13	0.5	977	
6/6/08 16:47:00	0.02	0.12	0.5	976	
6/6/08 16:47:15	0.02	0.11	0.5	977	System Bias
6/6/08 16:47:30	0.02	0.11	0.5	978	
6/6/08 16:47:45	0.01	0.11	0.5	978	
6/6/08 16:48:00	0.02	0.10	0.5	979	
6/6/08 16:48:15	0.01	0.10	0.5	979	979 1,000 ppm CO
6/6/08 16:48:30	0.01	0.10	0.5	954	
6/6/08 16:48:45	0.10	0.09	11.4	764	
6/6/08 16:49:00	3.72	0.11	14.6	380	
6/6/08 16:49:15	3.47	0.11	24.7	101	
6/6/08 16:49:30	0.60	0.11	26.9	21	
6/6/08 16:49:45	0.08	0.10	27.2	3	
6/6/08 16:50:00	0.03	0.09	28.3	0	
6/6/08 16:50:15	0.03	0.09	28.2	-1	

Valero McKee Refinery - Sunray, Texas
No. 2 SRU Incinerator Exhaust
ARI Reference Method Monitoring Data

Date/Time	O ₂ % by vol. db	CO ₂ % by vol. db	NO _x ppmv db	CO ppmv db	Comments
6/6/08 16:50:30	0.03	0.09	28.3	-1	
6/6/08 16:50:45	0.03	0.08	41.3	-1	
6/6/08 16:51:00	0.02	0.06	45.6	-2	
6/6/08 16:51:15	0.02	0.08	44.5	-2	
6/6/08 16:51:30	0.01	0.08	43.9	-2	
6/6/08 16:51:45	0.01	0.08	43.6	-2	
6/6/08 16:52:00	0.01	0.08	43.3	-2	
6/6/08 16:52:15	0.01	0.08	43.1	-2	
6/6/08 16:52:30	0.01	0.09	43.0	-2	
6/6/08 16:52:45	0.01	0.09	42.9	-2	
6/6/08 16:53:00	0.01	0.09	42.9	-2	
6/6/08 16:53:15	0.01	0.09	42.8	-2	System Bias
6/6/08 16:53:30	0.01	0.09	42.8	-2	0.01 Zero O ₂
6/6/08 16:53:45	0.01	0.09	42.7	-2	
6/6/08 16:54:00	0.01	0.09	42.6	-2	42.6 45.0 ppm NO _x
6/6/08 16:54:15	0.01	0.09	42.6	-2	
6/6/08 16:54:30	0.01	0.09	33.2	-2	
6/6/08 16:54:45	0.30	0.09	15.7	-2	
6/6/08 16:55:00	7.62	0.11	5.1	-2	
6/6/08 16:55:15	12.13	0.11	0.9	-2	
6/6/08 16:55:30	3.90	0.09	0.8	-2	
6/6/08 16:55:45	0.45	0.08	0.7	-2	
6/6/08 16:56:00	0.06	0.08	0.7	-2	



Valero McKee Refinery: Sunray, TX
SRU No. 2 Incinerator: EPN V-16
Test Dates: 6/4 & 6/6/08

APPENDIX E

Calibration Data

CEMS CALIBRATION DATA

Plant Name **Valero McKee Refinery**
 Sampling Location **No. 2 SRU Incinerator**
 Date **6/4/2008**
 Run Number **1**
 Start Time **11:25**
 Stop Time **14:57**

Plant Rep. **Kevin Jeanes**
 Team Leader **Dan Fitzgerald**
 CEM Operator **Dan Fitzgerald**

Analyzer Span Values (% or ppm)
 CO **2,000** ppm
 CO₂ **18.00** %
 O₂ **9.00** %
 NO_x **90.0** ppm

	CALIBRATION ERROR - 6:10 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
	Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Difference (% of Span)	Pretest: 10:30		Posttest: 15:02 hrs		Drift	
					System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)		
CO Zero	0	AAL2263	0	0.0	-1	-0.1	-1	-0.1	0.0	Co=
CO Low		Diluted from								-1.0
CO Mid	1,000	EB0001619	996	-0.2	972	-1.2	976	-1.0	0.2	Cm=
CO High	2,000	2,000 ppm	1,999	-0.1						974.0
CO ₂ Zero	0.00	AAL2263	0.10	0.6	0.09	-0.1	0.11	0.1	0.1	Co=
CO ₂ Low		Diluted from								0.100
CO ₂ Mid	9.00	AAL11983	9.26	1.4	9.18	-0.4	9.12	-0.8	-0.3	Cm=
CO ₂ High	18.00	23.06%	17.72	-1.6						9.150
O ₂ Zero	0.00	AAL2263	0.02	0.2	0.00	-0.2	0.02	0.0	0.2	Co=
O ₂ Low		Diluted from								0.010
O ₂ Mid	4.50	EB0005305	4.60	1.1	4.52	-0.9	4.51	-1.0	-0.1	Cm=
O ₂ High	9.00	24.90 %	9.06	0.7						4.515
NO _x Zero	0.0	AAL2263	0.4	0.4	0.7	0.3	0.7	0.3	0.0	Co=
NO _x Low		Diluted from								0.70
NO _x Mid	45.0	EB0004890	46.0	1.1	44.1	-2.1	41.6	-4.9	-2.8	Cm=
NO _x High	90.0	1,996 ppm	91.4	1.6						42.85

CEMS CALIBRATION DATA

Plant Name Valero McKee Refinery
 Sampling Location No. 2 SRU Incinerator
 Date 6/4/2008
 Run Number 2
 Start Time 15:22
 Stop Time 18:30

Plant Rep. Kevin Jeanes
 Team Leader Dan Fitzgerald
 CEM Operator Dan Fitzgerald

Analyzer Span Values (% or ppm)
 CO 2,000 ppm
 CO₂ 18.00 %
 O₂ 9.00 %
 NO_x 90.0 ppm

	CALIBRATION ERROR - 6:10 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
	Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Difference (% of Span)	Pretest: 15:02		Posttest: 18:33 hrs			
					System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)	Drift (% of Span)	
CO Zero	0	AAL2263	0	0.0	-1	-0.1	-1	-0.1	0.0	Co=
CO Low		Diluted from								-1.0
CO Mid	1,000	EB0001619	996	-0.2	976	-1.0	973	-1.2	-0.2	Cm=
CO High	2,000	2,000 ppm	1,999	-0.1						974.5
CO ₂ Zero	0.00	AAL2263	0.10	0.6	0.11	0.1	0.11	0.1	0.0	Co=
CO ₂ Low		Diluted from								0.110
CO ₂ Mid	9.00	AAL11983	9.26	1.4	9.12	-0.8	9.08	-1.0	-0.2	Cm=
CO ₂ High	18.00	23.06%	17.72	-1.6						9.100
O ₂ Zero	0.00	AAL2263	0.02	0.2	0.02	0.0	0.00	-0.2	-0.2	Co=
O ₂ Low		Diluted from								0.010
O ₂ Mid	4.50	EB0005305	4.60	1.1	4.51	-1.0	4.49	-1.2	-0.2	Cm=
O ₂ High	9.00	24.9	9.06	0.7						4.500
NO _x Zero	0.0	AAL2263	0.4	0.4	0.7	0.3	0.6	0.2	-0.1	Co=
NO _x Low		Diluted from								0.65
NO _x Mid	45.0	EB0004890	46.0	1.1	41.6	-4.9	42.1	-4.3	0.6	Cm=
NO _x High	90.0	1,996 ppm	91.4	1.6						41.85

CEMS CALIBRATION DATA

Plant Name	Valero McKee Refinery
Sampling Location	No. 2 SRU Incinerator
Date	6/4/2008
Run Number	3
Start Time	18:54
Stop Time	22:01

Plant Rep.	Kevin Jeanes
Team Leader	Dan Fitzgerald
CEM Operator	Dan Fitzgerald

Analyzer Span Values (% or ppm)	
CO	2,000 ppm
CO ₂	18.00 %
O ₂	9.00 %
NO _x	90.0 ppm

	CALIBRATION ERROR - 6:10 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
	Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Difference (% of Span)	Pretest: 18:33		Posttest: 22:05 hrs			
					System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)	Drift (% of Span)	
CO Zero	0	AAL2263	0	0.0	-1	-0.1	-2	-0.1	-0.1	Co=
CO Low		Diluted from								-1.5
CO Mid	1,000	EB0001619	996	-0.2	973	-1.2	966	-1.5	-0.4	Cm=
CO High	2,000	2,000 ppm	1,999	-0.1						969.5
CO ₂ Zero	0.00	AAL2263	0.10	0.6	0.11	0.1	0.10	0.0	-0.1	Co=
CO ₂ Low		Diluted from								0.105
CO ₂ Mid	9.00	AAL11983	9.26	1.4	9.08	-1.0	9.07	-1.1	-0.1	Cm=
CO ₂ High	18.00	23.06%	17.72	-1.6						9.075
O ₂ Zero	0.00	AAL2263	0.02	0.2	0.00	-0.2	-0.01	-0.3	-0.1	Co=
O ₂ Low		Diluted from								-0.005
O ₂ Mid	4.50	EB0005305	4.60	1.1	4.49	-1.2	4.46	-1.6	-0.3	Cm=
O ₂ High	9.00	24.9	9.06	0.7						4.475
NO _x Zero	0.0	AAL2263	0.4	0.4	0.6	0.2	0.6	0.2	0.0	Co=
NO _x Low		Diluted from								0.60
NO _x Mid	45.0	EB0004890	46.0	1.1	42.1	-4.3	41.8	-4.7	-0.3	Cm=
NO _x High	90.0	1,996 ppm	91.4	1.6						41.95

CEMS CALIBRATION DATA

Plant Name Valero McKee Refinery
 Sampling Location No. 2 SRU Incinerator
 Date 6/6/2008
 Run Number 4
 Start Time 6:36
 Stop Time 9:42

Plant Rep. Kevin Jeanes
 Team Leader Dan Fitzgerald
 CEM Operator Dan Fitzgerald

Analyzer Span Values (% or ppm)
 CO 2,000 ppm
 CO₂ 18.00 %
 O₂ 9.00 %
 NO_x 90.0 ppm

	CALIBRATION ERROR - 5:23 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
	Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Difference (% of Span)	Pretest: 6:14		Posttest: 9:45 hrs			
					System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)	Drift (% of Span)	
CO Zero	0	AAL17428	-2	-0.1	-1	0.1	-1	0.1	0.0	Co=
CO Low		Diluted from								-1.0
CO Mid	1,000	EB0001619	993	-0.4	984	-0.5	986	-0.4	0.1	Cm=
CO High	2,000	2,000 ppm	1,998	-0.1						985.0
CO ₂ Zero	0.00	AAL17428	0.07	0.4	0.08	0.1	0.12	0.3	0.2	Co=
CO ₂ Low		Diluted from								0.100
CO ₂ Mid	9.00	AAL11983	9.28	1.6	9.16	-0.7	9.18	-0.6	0.1	Cm=
CO ₂ High	18.00	23.06%	17.80	-1.1						9.170
O ₂ Zero	0.00	AAL17428	0.01	0.1	0.08	0.8	0.06	0.6	-0.2	Co=
O ₂ Low		Diluted from								0.070
O ₂ Mid	4.50	EB0005305	4.60	1.1	4.66	0.7	4.57	-0.3	-1.0	Cm=
O ₂ High	9.00	24.90 %	9.06	0.7						4.615
NO _x Zero	0.0	AAL17428	0.5	0.6	1.0	0.6	0.8	0.3	-0.2	Co=
NO _x Low		Diluted from								0.90
NO _x Mid	45.0	EB0004890	45.7	0.8	45.5	-0.2	43.6	-2.3	-2.1	Cm=
NO _x High	90.0	1,996 ppm	90.3	0.3						44.55

CEMS CALIBRATION DATA

Plant Name Valero McKee Refinery
 Sampling Location No. 2 SRU Incinerator
 Date 6/6/2008
 Run Number 5
 Start Time 10:03
 Stop Time 13:09

Plant Rep. Kevin Jeanes
 Team Leader Dan Fitzgerald
 CEM Operator Dan Fitzgerald

Analyzer Span Values (% or ppm)
 CO 2,000 ppm
 CO₂ 18.00 %
 O₂ 9.00 %
 NO_x 90.0 ppm

	CALIBRATION ERROR - 5:23 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
	Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Difference (% of Span)	Pretest: 9:45		Posttest: 13:13 hrs			
					System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)	Drift (% of Span)	
CO Zero	0	AAL17428	-2	-0.1	-1	0.1	-2	0.0	-0.1	Co=
CO Low		Diluted from								-1.5
CO Mid	1,000	EB0001619	993	-0.4	986	-0.4	979	-0.7	-0.4	Cm=
CO High	2,000	2,000 ppm	1,998	-0.1						982.5
CO ₂ Zero	0.00	AAL17428	0.07	0.4	0.12	0.3	0.10	0.2	-0.1	Co=
CO ₂ Low		Diluted from								0.110
CO ₂ Mid	9.00	AAL11983	9.28	1.6	9.18	-0.6	9.16	-0.7	-0.1	Cm=
CO ₂ High	18.00	23.06%	17.80	-1.1						9.170
O ₂ Zero	0.00	AAL17428	0.01	0.1	0.06	0.6	0.04	0.3	-0.2	Co=
O ₂ Low		Diluted from								0.050
O ₂ Mid	4.50	EB0005305	4.60	1.1	4.57	-0.3	4.54	-0.7	-0.3	Cm=
O ₂ High	9.00	24.9	9.06	0.7						4.555
NO _x Zero	0.0	AAL17428	0.5	0.6	0.8	0.3	0.7	0.2	-0.1	Co=
NO _x Low		Diluted from								0.75
NO _x Mid	45.0	EB0004890	45.7	0.8	43.6	-2.3	42.1	-4.0	-1.7	Cm=
NO _x High	90.0	1,996 ppm	90.3	0.3						42.85

CEMS CALIBRATION DATA

Plant Name: Valero McKee Refinery
 Sampling Location: No. 2 SRU Incinerator
 Date: 6/6/2008
 Run Number: 6
 Start Time: 13:30
 Stop Time: 16:35

Plant Rep: Kevin Jeanes
 Team Leader: Dan Fitzgerald
 CEM Operator: Dan Fitzgerald

Analyzer Span Values (% or ppm)
 CO: 2,000 ppm
 CO₂: 18.00 %
 O₂: 9.00 %
 NO_x: 90.0 ppm

	CALIBRATION ERROR - 5:23 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
	Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Difference (% of Span)	Pretest: 13:13		Posttest: 16:39 hrs			
					System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)	Drift (% of Span)	
CO Zero	0	AAL17428	-2	-0.1	-2	0.0	-2	0.0	0.0	Co=
CO Low		Diluted from								-2.0
CO Mid	1,000	EB0001619	993	-0.4	979	-0.7	979	-0.7	0.0	Cm=
CO High	2,000	2,000 ppm	1,998	-0.1						979.0
CO ₂ Zero	0.00	AAL17428	0.07	0.4	0.10	0.2	0.10	0.2	0.0	Co=
CO ₂ Low		Diluted from								0.100
CO ₂ Mid	9.00	AAL11983	9.28	1.6	9.16	-0.7	9.12	-0.9	-0.2	Cm=
CO ₂ High	18.00	23.06%	17.80	-1.1						9.140
O ₂ Zero	0.00	AAL17428	0.01	0.1	0.04	0.3	0.01	0.0	-0.3	Co=
O ₂ Low		Diluted from								0.025
O ₂ Mid	4.50	EB0005305	4.60	1.1	4.54	-0.7	4.49	-1.2	-0.6	Cm=
O ₂ High	9.00	24.9	9.06	0.7						4.515
NO _x Zero	0.0	AAL17428	0.5	0.6	0.7	0.2	1.0	0.6	0.3	Co=
NO _x Low		Diluted from								0.85
NO _x Mid	45.0	EB0004890	45.7	0.8	42.1	-4.0	42.6	-3.4	0.6	Cm=
NO _x High	90.0	1,996 ppm	90.3	0.3						42.35

**ARI REFERENCE METHOD CEMS DATA
USEPA METHOD 205
DILUTION SYSTEM VERIFICATION**

Company: Valero McKee Refinery
Location: Sunray, Texas
Source: SRU No. 2 Incinerator
Dilution System ID: 3901
Dilution Flow Rate: 7.0 Lpm
Verification date: 6/3/2008

Analyzer Info
Monitor type: O₂
Monitor range: 15
Monitor Serial No.: X1440D1/46

Initial Calibration Data

<u>Calibration Concentration</u>	<u>Calibration results</u>	<u>% Difference</u>
Zero: <u>0.00</u>	Zero: <u>0.02</u>	Zero: <u>0.13</u>
Low: <u> </u>	Low: <u> </u>	Low: <u> </u>
Mid: <u>7.50</u>	Mid: <u>7.50</u>	Mid: <u>0.00</u>
High: <u>15.00</u>	High: <u>14.80</u>	High: <u>1.33</u>

Dilution System Verification

Mid level gas type: <u>EPA Protocol 1</u>	High level dilution gas type: <u>O₂/N₂</u>
Mid level concentration: <u>7.54</u>	High level concentration: <u>24.9</u>
Mid level tank serial #: <u>ALM025227</u>	High level tank serial #: <u>EB0005305</u>
	Target concentration No. 1: <u>3.75</u>
	Target concentration No. 2: <u>11.25</u>

Dilution System Results

<u>Target Concentration No. 1</u>			<u>Target Concentration No. 2</u>	
	<u>Instrument Response</u>	<u>% difference from average*</u>		<u>% difference from average*</u>
Trial No. 1:	<u>3.79</u>	<u>0.18</u>	Trial No. 1:	<u>11.16</u>
Trial No. 2:	<u>3.79</u>	<u>0.18</u>	Trial No. 2:	<u>11.13</u>
Trial No. 3:	<u>3.77</u>	<u>0.35</u>	Trial No. 3:	<u>11.12</u>
Average:	<u>3.78</u>		Average:	<u>11.14</u>

% Difference from target concentration: 0.89% % Difference from target concentration: 1.01%

Mid Level Calibration Gas Results

Instrument Response	
Trial No. 1: <u>7.41</u>	Mid Level calibration gas concentration: <u>7.54</u>
Trial No. 2: <u>7.41</u>	Average analyzer response: <u>7.410</u>
Trial No. 3: <u>7.41</u>	Percent difference: <u>1.72</u> *

* Must be less than 2 %

Valero McKee Refinery: Sunray, Texas
SRU No. 2 Incinerator Exhaust: EPN V-16
USEPA Method 205 Dilution System Verification - 15 second data
Enviroic No. 3901

Date/Time	O ₂ % by vol db	Comments
6/3/08 16:47:00	7.50	
6/3/08 16:47:15	6.54	
6/3/08 16:47:30	2.18	
6/3/08 16:47:45	0.29	
6/3/08 16:48:00	0.06	
6/3/08 16:48:15	0.03	
6/3/08 16:48:30	0.03	
6/3/08 16:48:45	0.03	
6/3/08 16:49:00	0.03	Calibration Error
6/3/08 16:49:15	0.03	0.02 Zero O ₂
6/3/08 16:49:30	0.02	
6/3/08 16:49:45	0.02	
6/3/08 16:50:00	0.02	
6/3/08 16:50:15	0.16	
6/3/08 16:50:30	5.67	
6/3/08 16:50:45	12.91	
6/3/08 16:51:00	14.59	
6/3/08 16:51:15	14.76	
6/3/08 16:51:30	14.78	Calibration Error
6/3/08 16:51:45	14.79	14.80 15.00% O ₂
6/3/08 16:52:00	14.79	
6/3/08 16:52:15	14.80	
6/3/08 16:52:30	14.80	
6/3/08 16:52:45	14.53	
6/3/08 16:53:00	10.62	
6/3/08 16:53:15	7.86	
6/3/08 16:53:30	7.53	
6/3/08 16:53:45	7.51	
6/3/08 16:54:00	7.51	Calibration Error
6/3/08 16:54:15	7.50	7.50 7.50% O ₂
6/3/08 16:54:30	7.50	
6/3/08 16:54:45	7.50	
6/3/08 16:55:00	7.50	
6/3/08 16:55:15	7.47	
6/3/08 16:55:30	6.01	
6/3/08 16:55:45	4.15	
6/3/08 16:56:00	3.83	
6/3/08 16:56:15	3.81	
6/3/08 16:56:30	3.80	
6/3/08 16:56:45	3.80	
6/3/08 16:57:00	3.80	
6/3/08 16:57:15	3.80	
6/3/08 16:57:30	3.80	
6/3/08 16:57:45	3.80	
6/3/08 16:58:00	3.80	
6/3/08 16:58:15	3.79	
6/3/08 16:58:30	3.79	
6/3/08 16:58:45	3.79	
6/3/08 16:59:00	3.79	
6/3/08 16:59:15	3.79	
6/3/08 16:59:30	3.79	
6/3/08 16:59:45	3.79	
6/3/08 17:00:00	3.79	
6/3/08 17:00:15	3.79	Target Concentration #1; Trial #1
6/3/08 17:00:30	3.79	3.79 3.75% O ₂
6/3/08 17:00:45	3.79	
6/3/08 17:01:00	3.79	
6/3/08 17:01:15	3.79	
6/3/08 17:01:30	3.79	
6/3/08 17:01:45	3.95	
6/3/08 17:02:00	7.83	
6/3/08 17:02:15	11.06	
6/3/08 17:02:30	11.20	
6/3/08 17:02:45	11.16	
6/3/08 17:03:00	11.15	
6/3/08 17:03:15	11.15	
6/3/08 17:03:30	11.15	
6/3/08 17:03:45	11.15	
6/3/08 17:04:00	11.16	
6/3/08 17:04:15	11.16	Target Concentration #2; Trial #1
6/3/08 17:04:30	11.16	11.16 11.25% O ₂
6/3/08 17:04:45	11.16	
6/3/08 17:05:00	11.16	
6/3/08 17:05:15	11.16	
6/3/08 17:05:30	11.62	
6/3/08 17:05:45	11.89	
6/3/08 17:06:00	8.70	
6/3/08 17:06:15	7.50	
6/3/08 17:06:30	7.30	
6/3/08 17:06:45	7.30	
6/3/08 17:07:00	7.36	
6/3/08 17:07:15	7.40	
6/3/08 17:07:30	7.41	

Valero McKee Refinery: Sunray, Texas
SRU No. 2 Incinerator Exhaust: EPN V-16
USEPA Method 205 Dilution System Verification - 15 second data
Enviroic No. 3901

Date/Time	O ₂ % by vol db	Comments
6/3/08 17:07:45	7.41	
6/3/08 17:08:00	7.41	
6/3/08 17:08:15	7.41	Mid-Level Concentration; Trial #1
6/3/08 17:08:30	7.42	7.41 7.54% O ₂
6/3/08 17:08:45	7.41	
6/3/08 17:09:00	7.41	
6/3/08 17:09:15	7.41	
6/3/08 17:09:30	7.41	
6/3/08 17:09:45	6.67	
6/3/08 17:10:00	3.33	
6/3/08 17:10:15	3.34	
6/3/08 17:10:30	3.70	
6/3/08 17:10:45	3.75	
6/3/08 17:11:00	3.77	
6/3/08 17:11:15	3.77	
6/3/08 17:11:30	3.78	
6/3/08 17:11:45	3.78	
6/3/08 17:12:00	3.78	
6/3/08 17:12:15	3.79	
6/3/08 17:12:30	3.79	Target Concentration #1; Trial #2
6/3/08 17:12:45	3.79	3.79 3.75% O ₂
6/3/08 17:13:00	3.79	
6/3/08 17:13:15	3.79	
6/3/08 17:13:30	3.79	
6/3/08 17:13:45	3.79	
6/3/08 17:14:00	3.88	
6/3/08 17:14:15	6.99	
6/3/08 17:14:30	10.46	
6/3/08 17:14:45	11.08	
6/3/08 17:15:00	11.13	Target Concentration #2; Trial #2
6/3/08 17:15:15	11.13	11.13 11.25% O ₂
6/3/08 17:15:30	11.13	
6/3/08 17:15:45	11.13	
6/3/08 17:16:00	11.13	
6/3/08 17:16:15	11.14	
6/3/08 17:16:30	11.13	
6/3/08 17:16:45	10.31	
6/3/08 17:17:00	8.19	
6/3/08 17:17:15	7.49	
6/3/08 17:17:30	7.41	Mid-Level Concentration; Trial #2
6/3/08 17:17:45	7.41	7.41 7.54% O ₂
6/3/08 17:18:00	7.41	
6/3/08 17:18:15	7.41	
6/3/08 17:18:30	7.41	
6/3/08 17:18:45	7.41	
6/3/08 17:19:00	7.11	
6/3/08 17:19:15	3.85	
6/3/08 17:19:30	3.18	
6/3/08 17:19:45	3.66	
6/3/08 17:20:00	3.74	
6/3/08 17:20:15	3.76	
6/3/08 17:20:30	3.76	Target Concentration #1; Trial #3
6/3/08 17:20:45	3.76	3.77 3.75% O ₂
6/3/08 17:21:00	3.77	
6/3/08 17:21:15	3.77	
6/3/08 17:21:30	3.78	
6/3/08 17:21:45	4.93	
6/3/08 17:22:00	7.11	
6/3/08 17:22:15	9.87	
6/3/08 17:22:30	10.97	
6/3/08 17:22:45	11.11	
6/3/08 17:23:00	11.12	Target Concentration #2; Trial #3
6/3/08 17:23:15	11.12	11.12 11.25% O ₂
6/3/08 17:23:30	11.12	
6/3/08 17:23:45	11.13	
6/3/08 17:24:00	11.13	
6/3/08 17:24:15	11.07	
6/3/08 17:24:30	9.61	
6/3/08 17:24:45	7.84	
6/3/08 17:25:00	7.45	
6/3/08 17:25:15	7.41	Mid-Level Concentration; Trial #3
6/3/08 17:25:30	7.41	7.41 7.54% O ₂
6/3/08 17:25:45	7.41	
6/3/08 17:26:00	7.41	
6/3/08 17:26:15	7.41	
6/3/08 17:26:30	7.41	
6/3/08 17:26:45	7.48	
6/3/08 17:27:00	9.49	
6/3/08 17:27:15	13.85	
6/3/08 17:27:30	16.82	

Instrument: 3901 MFC: 1

MAX Flow: 10,000.00 CCM
 Cal Date: 10/18/2007 , 15:18:21
 Reference Gas: NITROGEN
 Description: Factory MFC #1 Calibration Table

Set Flow	True Flow	- Table is selected
500.00	524.30	
1,000.00	1,051.84	
2,000.00	2,119.50	
3,000.00	3,182.80	
4,000.00	4,197.70	
5,000.00	5,218.77	
6,000.00	6,236.30	
7,000.00	7,244.20	
8,000.00	8,270.53	
9,000.00	9,322.40	
10,000.00	104,930.00	

Instrument: 3901 MFC: 2

MAX Flow: 10,000.00 CCM
 Cal Date: 10/18/2007 , 15:45:24
 Reference Gas: NITROGEN
 Description: Factory MFC #2 Calibration Table

Set Flow	True Flow	- Table is selected
500.00	529.44	
1,000.00	1,057.12	
2,000.00	2,116.90	
3,000.00	3,160.81	
4,000.00	4,202.98	
5,000.00	5,246.03	
6,000.00	6,302.27	
7,000.00	7,354.12	
8,000.00	8,428.30	
9,000.00	9,524.65	
10,000.00	10,623.98	

Instrument: 3901 MFC: 3

MAX Flow: 1,000.00 CCM
 Cal Date: 10/18/2007 , 16:21:11
 Reference Gas: NITROGEN
 Description: Factory MFC #3 Calibration Table

Set Flow	True Flow	- Table is selected
50.00	54.83	
100.00	109.05	

200.00	214.77
300.00	320.13
400.00	427.69
500.00	531.02
600.00	637.26
700.00	741.57
800.00	849.61
900.00	956.86
1,000.00	1,079.11

Instrument: 3901

MFC: 4

MAX Flow: 100.00 CCM

Cal Date: 10/18/2007 , 16:46:37

Reference Gas: NITROGEN

Description: Factory MFC #4 Calibration Table

Set Flow True Flow - Table is selected

5.00	5.17
10.00	10.75
20.00	21.74
30.00	32.71
40.00	43.96
50.00	54.25
60.00	64.82
70.00	77.49
80.00	86.03
90.00	96.57
100.00	106.86

**ARI REFERENCE METHOD CEMS DATA
USEPA METHOD 205
DILUTION SYSTEM VERIFICATION**

Company: Valero McKee Refinery
Location: Sunray, Texas
Source: SRU No. 2 Incinerator
Dilution System ID: 3712
Dilution Flow Rate: 7.0 Lpm
Verification date: 6/3/2008

Analyzer Info
Monitor type: O₂
Monitor range: 15
Monitor Serial No.: X1440D1/46

Initial Calibration Data

<u>Calibration Concentration</u>	<u>Calibration results</u>	<u>% Difference</u>
Zero: 0.00	Zero: 0.05	Zero: 0.33
Low:	Low:	Low:
Mid: 7.50	Mid: 7.42	Mid: 0.53
High: 15.00	High: 15.06	High: 0.40

Dilution System Verification

Mid level gas type: <u>EPA Protocol 1</u>	High level dilution gas type: <u>O₂/N₂</u>
Mid level concentration: <u>7.54</u>	High level concentration: <u>24.9</u>
Mid level tank serial #: <u>ALM025227</u>	High level tank serial #: <u>EB0005305</u>
	Target concentration No. 1: <u>3.75</u>
	Target concentration No. 2: <u>11.25</u>

Dilution System Results

<u>Target Concentration No. 1</u>			<u>Target Concentration No. 2</u>	
	<u>Instrument Response</u>	<u>% difference from average*</u>	<u>Instrument Response</u>	<u>% difference from average*</u>
Trial No. 1:	3.69	0.18	Trial No. 1:	11.38
Trial No. 2:	3.70	0.09	Trial No. 2:	11.38
Trial No. 3:	3.70	0.09	Trial No. 3:	11.38
Average:	3.70		Average:	11.38

% Difference from target concentration: 1.42% % Difference from target concentration: 1.16%

Mid Level Calibration Gas Results

<u>Instrument Response</u>	
Trial No. 1: 7.66	Mid Level calibration gas concentration: <u>7.54</u>
Trial No. 2: 7.66	Average analyzer response: <u>7.660</u>
Trial No. 3: 7.66	Percent difference: <u>1.59</u> *

* Must be less than 2 %

Valero McKee Refinery: Sunray, Texas
 SRU No. 2 Incinerator Exhaust: EPN V-16
 USEPA Method 205 Dilution System Verification - 15 second data
 Enviroic No. 3712

Date/Time	O ₂ % by vol db	Comments
6/3/08 17:40:00	20.31	
6/3/08 17:40:15	20.30	
6/3/08 17:40:30	20.19	
6/3/08 17:40:45	13.96	
6/3/08 17:41:00	3.48	
6/3/08 17:41:15	0.43	
6/3/08 17:41:30	0.10	
6/3/08 17:41:45	0.06	
6/3/08 17:42:00	0.05	
6/3/08 17:42:15	0.05	Calibration Error
6/3/08 17:42:30	0.05	0.05 Zero O ₂
6/3/08 17:42:45	0.04	
6/3/08 17:43:00	0.04	
6/3/08 17:43:15	0.05	
6/3/08 17:43:30	0.54	
6/3/08 17:43:45	4.30	
6/3/08 17:44:00	3.16	
6/3/08 17:44:15	6.42	
6/3/08 17:44:30	12.76	
6/3/08 17:44:45	14.34	
6/3/08 17:45:00	14.52	
6/3/08 17:45:15	14.53	
6/3/08 17:45:30	14.54	
6/3/08 17:45:45	14.55	
6/3/08 17:46:00	14.55	
6/3/08 17:46:15	14.55	
6/3/08 17:46:30	14.55	
6/3/08 17:46:45	14.55	
6/3/08 17:47:00	14.56	
6/3/08 17:47:15	14.63	
6/3/08 17:47:30	14.19	
6/3/08 17:47:45	7.56	
6/3/08 17:48:00	5.38	
6/3/08 17:48:15	4.99	
6/3/08 17:48:30	6.74	
6/3/08 17:48:45	7.10	
6/3/08 17:49:00	7.14	
6/3/08 17:49:15	7.15	
6/3/08 17:49:30	7.15	
6/3/08 17:49:45	7.15	
6/3/08 17:50:00	7.16	
6/3/08 17:50:15	7.16	
6/3/08 17:50:30	7.16	
6/3/08 17:50:45	7.31	
6/3/08 17:51:00	7.42	
6/3/08 17:51:15	7.42	
6/3/08 17:51:30	7.41	
6/3/08 17:51:45	7.41	Calibration Error
6/3/08 17:52:00	7.41	7.42 7.50% O ₂
6/3/08 17:52:15	7.42	
6/3/08 17:52:30	7.42	
6/3/08 17:52:45	7.42	
6/3/08 17:53:00	7.97	
6/3/08 17:53:15	11.94	
6/3/08 17:53:30	14.84	
6/3/08 17:53:45	15.07	Calibration Error
6/3/08 17:54:00	15.06	15.06 15.00% O ₂
6/3/08 17:54:15	15.05	
6/3/08 17:54:30	15.05	
6/3/08 17:54:45	15.06	
6/3/08 17:55:00	15.06	
6/3/08 17:55:15	15.32	
6/3/08 17:55:30	12.23	
6/3/08 17:55:45	4.69	
6/3/08 17:56:00	2.56	
6/3/08 17:56:15	2.35	
6/3/08 17:56:30	3.43	
6/3/08 17:56:45	3.45	
6/3/08 17:57:00	2.50	
6/3/08 17:57:15	2.23	
6/3/08 17:57:30	1.17	
6/3/08 17:57:45	1.89	
6/3/08 17:58:00	3.35	
6/3/08 17:58:15	3.62	
6/3/08 17:58:30	3.66	
6/3/08 17:58:45	3.67	
6/3/08 17:59:00	3.68	
6/3/08 17:59:15	3.69	Target Concentration #1; Trial #1
6/3/08 17:59:30	3.69	3.69 3.75% O ₂
6/3/08 17:59:45	3.69	
6/3/08 18:00:00	3.70	
6/3/08 18:00:15	3.70	
6/3/08 18:00:30	4.12	

Valero McKee Refinery: Sunray, Texas
 SRU No. 2 Incinerator Exhaust: EPN V-16
 USEPA Method 205 Dilution System Verification - 15 second data
 Enviroic No. 3712

Date/Time	O ₂ % by vol db	Comments
6/3/08 18:00:45	7.60	
6/3/08 18:01:00	10.48	
6/3/08 18:01:15	11.27	
6/3/08 18:01:30	11.37	
6/3/08 18:01:45	11.38	
6/3/08 18:02:00	11.38	Target Concentration #2; Trial #1
6/3/08 18:02:15	11.38	11.38 11.25% O ₂
6/3/08 18:02:30	11.38	
6/3/08 18:02:45	11.39	
6/3/08 18:03:00	11.39	
6/3/08 18:03:15	11.33	
6/3/08 18:03:30	9.28	
6/3/08 18:03:45	7.84	
6/3/08 18:04:00	7.64	
6/3/08 18:04:15	7.65	Mid-Level Concentration; Trial #1
6/3/08 18:04:30	7.66	7.66 7.54% O ₂
6/3/08 18:04:45	7.66	
6/3/08 18:05:00	7.66	
6/3/08 18:05:15	7.66	
6/3/08 18:05:30	7.66	
6/3/08 18:05:45	8.29	
6/3/08 18:06:00	5.48	
6/3/08 18:06:15	2.58	
6/3/08 18:06:30	3.41	
6/3/08 18:06:45	3.63	
6/3/08 18:07:00	3.66	
6/3/08 18:07:15	3.67	
6/3/08 18:07:30	3.68	
6/3/08 18:07:45	3.69	
6/3/08 18:08:00	3.69	Target Concentration #1; Trial #2
6/3/08 18:08:15	3.69	3.70 3.75% O ₂
6/3/08 18:08:30	3.70	
6/3/08 18:08:45	3.70	
6/3/08 18:09:00	3.70	
6/3/08 18:09:15	4.27	
6/3/08 18:09:30	8.71	
6/3/08 18:09:45	11.09	
6/3/08 18:10:00	11.36	
6/3/08 18:10:15	11.38	
6/3/08 18:10:30	11.38	
6/3/08 18:10:45	11.38	Target Concentration #2; Trial #2
6/3/08 18:11:00	11.38	11.38 11.25% O ₂
6/3/08 18:11:15	11.38	
6/3/08 18:11:30	11.38	
6/3/08 18:11:45	11.38	
6/3/08 18:12:00	9.61	
6/3/08 18:12:15	7.96	
6/3/08 18:12:30	7.68	
6/3/08 18:12:45	7.66	
6/3/08 18:13:00	7.66	Mid-Level Concentration; Trial #2
6/3/08 18:13:15	7.66	7.66 7.54% O ₂
6/3/08 18:13:30	7.66	
6/3/08 18:13:45	7.66	
6/3/08 18:14:00	7.66	
6/3/08 18:14:15	7.67	
6/3/08 18:14:30	8.40	
6/3/08 18:14:45	5.34	
6/3/08 18:15:00	2.61	
6/3/08 18:15:15	3.43	
6/3/08 18:15:30	3.64	
6/3/08 18:15:45	3.67	
6/3/08 18:16:00	3.68	
6/3/08 18:16:15	3.68	
6/3/08 18:16:30	3.69	Target Concentration #1; Trial #3
6/3/08 18:16:45	3.69	3.70 3.75% O ₂
6/3/08 18:17:00	3.70	
6/3/08 18:17:15	3.70	
6/3/08 18:17:30	3.70	
6/3/08 18:17:45	3.70	
6/3/08 18:18:00	4.08	
6/3/08 18:18:15	8.26	
6/3/08 18:18:30	11.00	
6/3/08 18:18:45	11.35	
6/3/08 18:19:00	11.38	
6/3/08 18:19:15	11.38	
6/3/08 18:19:30	11.38	Target Concentration #2; Trial #3
6/3/08 18:19:45	11.38	11.38 11.25% O ₂
6/3/08 18:20:00	11.38	
6/3/08 18:20:15	11.38	
6/3/08 18:20:30	11.38	
6/3/08 18:20:45	11.25	
6/3/08 18:21:00	9.48	
6/3/08 18:21:15	7.94	

Valero McKee Refinery: Sunray, Texas
SRU No. 2 Incinerator Exhaust: EPN V-16
USEPA Method 205 Dilution System Verification - 15 second data
Enviroic No. 3712

Date/Time	O ₂ % by vol db	Comments
6/3/08 18:21:30	7.68	Mid-Level Concentration; Trial #3
6/3/08 18:21:45	7.66	7.66 7.54% O ₂
6/3/08 18:22:00	7.66	
6/3/08 18:22:15	7.66	
6/3/08 18:22:30	7.66	
6/3/08 18:22:45	7.67	
6/3/08 18:23:00	7.68	
6/3/08 18:23:15	9.40	
6/3/08 18:23:30	13.97	
6/3/08 18:23:45	17.36	
6/3/08 18:24:00	18.94	
6/3/08 18:24:15	19.69	
6/3/08 18:24:30	19.91	
6/3/08 18:24:45	20.19	
6/3/08 18:25:00	20.49	
6/3/08 18:25:15	20.73	
6/3/08 18:25:30	20.93	
6/3/08 18:25:45	21.00	

Instrument: 3712 MFC: 1

MAX Flow: 10,000.00 CCM
 Cal Date: 01/21/2008 , 01:53:47
 Reference Gas: NITROGEN
 Description: Factory MFC #1 Calibration Table

Set Flow	True Flow	- Table is selected
500.00	522.65	
1,000.00	1,046.39	
2,000.00	2,089.17	
3,000.00	3,121.08	
4,000.00	4,149.37	
5,000.00	5,176.76	
6,000.00	6,200.52	
7,000.00	7,213.43	
8,000.00	8,246.24	
9,000.00	9,314.36	
10,000.00	10,409.64	

Instrument: 3712 MFC: 2

MAX Flow: 10,000.00 CCM
 Cal Date: 01/21/2008 , 01:52:18
 Reference Gas: NITROGEN
 Description: Factory MFC #2 Calibration Table

Set Flow	True Flow	- Table is selected
500.00	495.95	
1,000.00	1,027.39	
2,000.00	2,102.75	
3,000.00	3,143.71	
4,000.00	4,183.77	
5,000.00	5,213.87	
6,000.00	6,247.59	
7,000.00	7,298.51	
8,000.00	8,367.54	
9,000.00	9,413.93	
10,000.00	10,500.16	

Instrument: 3712 MFC: 3

MAX Flow: 1,000.00 CCM
 Cal Date: 01/21/2008 , 01:53:18
 Reference Gas: NITROGEN
 Description: Factory MFC #3 Calibration Table

Set Flow	True Flow	- Table is selected
50.00	51.80	
100.00	103.82	

200.00	208.65
300.00	312.56
400.00	418.56
500.00	520.12
600.00	625.57
700.00	730.12
800.00	838.47
900.00	944.11
1,000.00	1,055.45

Instrument: 3712

MFC: 4

MAX Flow: 100.00 CCM
 Cal Date: 01/19/2008 , 02:39:01
 Reference Gas: NITROGEN
 Description: Factory MFC #4 Calibration Table

Set Flow True Flow - Table is selected

5.00	5.49
10.00	10.92
20.00	21.71
30.00	32.36
40.00	42.93
50.00	53.34
60.00	64.27
70.00	74.50
80.00	85.38
90.00	96.05
100.00	107.51

Interference Response

Analyzer Type: Oxygen (O₂)
 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: 

Interference Response

Analyzer Type: Carbon Dioxide (CO₂)
 Manufacturer: Servomex
 Detector Type: NDIR
 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: 8/9/2006
 Operator: 



Model 600 HCLD NO Interference Data

Interference Response

Date of Test 7/26/2006

Analyzer Type NO

Model No. 600-HCLD

Serial No. S050301

Calibration Span 3000ppm

Test Gas Type		Concentration	Analyzer Response	
		(ppm)	Wet	Dry
H2O		2.5%	0	0
CO2		5%	0	0
CO2		15%	0	0
CO		50	0	0
CH4		50	0	0
SO2		N/A	N/A	N/A
NH3		15	0	0
NO		N/A	N/A	N/A
N2O		9	0	0
NO2		N/A	N/A	N/A

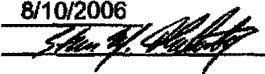
Interference Response

Analyzer Type: Carbon Monoxide (CO)
 Manufacturer: Thermo Electron Corporation
 Detector Type: Non-Dispersive Infrared (NDIR)
 Model No.: 48C
 Serial No.: 506610701
 Calibration Span (ppm): 100

Test Gas	Test Gas Conc.	High Standard			Zero			Maximum % Interference
		CO without interferent	CO with interferent	% Interference	Zero without interferent	Zero with interferent	% Interference	
NH ₃	10 ppm	100.0	100.0	0.0	0.0	0.0	0.0	0.0
SO ₂	20 ppm	100.0	100.0	0.0	0.0	0.3	0.3	0.3
CH ₄	50 ppm	100.0	100.0	0.0	0.0	0.1	0.1	0.1
CO ₂	5%	100.0	99.8	-0.2	0.0	0.2	0.2	0.2
CO ₂	12.55%	100.0	99.6	-0.4	0.0	-0.1	-0.1	0.4
NO ₂	15 ppm	100.0	100.0	0.0	0.0	0.2	0.2	0.2
NO _x	15 ppm	100.0	100.0	0.0	0.0	0.2	0.2	0.2
H ₂	1020 ppm	100.0	100.0	0.0	0.0	0.1	0.1	0.1
HCl	10 ppm	100.0	100.0	0.0	0.0	0.1	0.1	0.1

Sum of the highest absolute value obtained with and without the pollutant present: 1.6 %
 Allowable interference response: 2.5 %

Certification Date: 8/10/2006

Operator: 



Scott Specialty Gases
Air Liquide America Specialty Gases LLC

RATA CLASS

Dual-Analyzed Calibration Standard

9810 BAY AREA BLVD, PASADENA, TX 77507

Phone: 281-474-5800

Fax: 281-474-5857

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
9810 BAY AREA BLVD
PASADENA, TX 77507

P.O. No.: 03-042-08

Project No.: 04-63459-008

Customer

ARI ENVIRONMENTAL, INC.
GREG BURCH
1710 C PRESTON RD
PASADENA TX 77503

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number:

ALM025227

Certification Date:

08May2008

Exp. Date: 08May2011

Cylinder Pressure***:

1950 PSIG

ANALYTICAL

ACCURACY**

TRACEABILITY

COMPONENT

CERTIFIED CONCENTRATION (Moles)

OXYGEN

7.54 %

+/- 1%

Direct NIST and NMI

NITROGEN

BALANCE

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.

EXPIRATION DATE

CYLINDER NUMBER

CONCENTRATION

COMPONENT

NTRM 2658

01Jan2010

K025996

10.03 %

OXYGEN

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#

DATE LAST CALIBRATED

ANALYTICAL PRINCIPLE

SERVOMEX/MODEL 244A/701/716

15Apr2008

PARAMAGNETIC

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis

Second Triad Analysis

Calibration Curve

OXYGEN

Date: 08May2008 Response Unit: %

Z1=0.00000 R1=0.99000 T1=0.74110

R2=0.99010 Z2=0.00000 T2=0.74110

Z3=0.00000 T3=0.74110 R3=0.99040

Avg. Concentration: 7.541 %

Concentration = A + Bx + Cx2 + Dx3 + Ex4

r = .9999767

Constants: A = 0.008852882

B = 10.1649257 C =

D = E =

APPROVED BY:

Mark Soliz
MARK SOLIZ

SUPERVISOR:

Susan Brandon
SUSAN BRANDON



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

Customer: Coastal Welding

Protocol: Reference # Lot#

Cylinder Number: EB0005305

G2

30183

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: OXYGEN

Mean Conc: 24.9% +/- 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

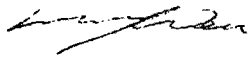
Serial Number: 576022023

Measurement Principle: PM

Last Calibration: 4/30/2007

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:

5/22/2007

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



Scott Specialty Gases



AIR LIQUIDE

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1290 COMBERMERE STREET, TROY, MI 48063 Phone: 248-589-2950 Fax: 248-589-2134

Dual-Analyzed Calibration Standard**CERTIFICATE OF ACCURACY: EPA Protocol Gas****Assay Laboratory**AIR LIQUIDE AMERICA SPECIALTY GASES LLC
1290 COMBERMERE STREET
TROY, MI 48063P.O. No.: 03-005-08
Project No.: 05 -62440 -007**Customer**ARI ENVIRONMENTAL, INC.
GREG BURCH
1710 C PRESTON RD
PASADENA TX 77503**ANALYTICAL INFORMATION**This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards;
Procedure G-1; September, 1997.**Cylinder Number:** AAL11983
Cylinder Pressure*:** 1777 PSIG**Certification Date:** 11Feb2008**Exp. Date:** 10Feb2011

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ANALYTICAL ACCURACY**	TRACEABILITY
CARBON DIOXIDE	23.06 %	+/- 1%	Direct NIST and NMI
NITROGEN	BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1675	04Jul2008	K008336	13.93 %	CARBON DIOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR/0928621	24Jan2008	FTIR

ANALYZER READINGS

(Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

First Triad Analysis**CARBON DIOXIDE**Date: 11Feb2008 Response Unit: %
Z1=0.01060 R1=13.85387 T1=22.89188
R2=13.85903 Z2=0.01068 T2=22.94728
Z3=0.01564 T3=23.02019 R3=13.90089
Avg. Concentration: 23.06 %**Second Triad Analysis****Calibration Curve**Concentration=A+Bx+Cx2+Dx3+Ex4
r=9.99995E-1
Constants: A=0.00000E+0
B=6.39266E-1 C=5.14900E-3
D=0.00000E+0 E=0.00000E+0**QUALITY ASSURANCE**APPROVED BY: Rob McCrandall
(signature on file)



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

Customer: Coastal Welding
Cylinder Number: EB0004890
Cylinder Pressure: 1900 PSIG
Last Analysis Date: 6/8/2007
Expiration Date: 6/8/2009

Protocol: Reference # Lot#
G1 30376

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

REPLICATE RESPONSES

Component:	Nitric Oxide	Date:	6/1/2007	Date:	6/8/2007
Mean Conc:	1988 ppm +/- 1% rel		1988		1988
			1989		1985
			1990		1988
BALANCE GAS:	Nitrogen				
		NOx:	1996 ppm		

REFERENCE STANDARDS:

Component: Nitric Oxide
Reference Standard: GMIS
Cylinder #: EB0000102
Concentration: 1929 ppm
Exp. Date: 3/23/2009

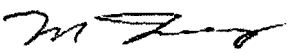
CERTIFICATION INSTRUMENTS

Component: Nitric Oxide
Make/Model: Horiba CLA-510
Serial Number: 42312910013
Measurement Principle: CHEMI
Last Calibration: 5/17/2007

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:


MICHAEL TANG

Date:

6/8/2007

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

**AIR LIQUIDE**Scott Specialty Gases
Air Liquide America Specialty Gases LLC**COMPLIANCE CLASS***Dual-Analyzed Calibration Standard*

500 WEAVER PARK RD, LONGMONT, CO 80501

Phone: 888-253-1635

Fax: 303-772-7673

CERTIFICATE OF ACCURACY: EPA Protocol Gas**Assay Laboratory**SCOTT SPECIALTY GASES
500 WEAVER PARK RD
LONGMONT, CO 80501

P.O. No.: 03-108

Project No.: 08-57189-001

CustomerARI ENVIRONMENTAL, INC.
GREG BURCH
1710 C PRESTON RD
PASADENA TX 77503**ANALYTICAL INFORMATION**

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number:

AAL8272

Certification Date:

28Dec2007

Exp. Date: 27Jun2008**Cylinder Pressure***:**

2000 PSIG

<u>COMPONENT</u>	<u>CERTIFIED CONCENTRATION (Moles)</u>		<u>ANALYTICAL ACCURACY**</u>	<u>TRACEABILITY</u>
NITROGEN DIOXIDE	48.9	PPM	+/- 2%	GMIS
AIR		BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol procedures, September 1997.

REFERENCE STANDARD

<u>TYPE/SRM NO.</u>	<u>EXPIRATION DATE</u>	<u>CYLINDER NUMBER</u>	<u>CONCENTRATION</u>	<u>COMPONENT</u>
GMIS NO2/AIR	20Mar2009	ALM010232	98.60 PPM	NITROGEN DIOXIDE

INSTRUMENTATION**INSTRUMENT/MODEL/SERIAL#**

NONOX/CLA-220/41528750062

DATE LAST CALIBRATED

07Dec2007

ANALYTICAL PRINCIPLE

CHEMILUMINESCENT

APPROVED BY: _____

JON WITZAK



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

Customer: Coastal Welding
Cylinder Number: EB0001619
Cylinder Pressure: 1900 PSIG
Last Analysis Date: 11/14/2006
Expiration Date: 11/14/2009

Protocol: Reference # Lot#
G1 25949

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

REPLICATE RESPONSES

Component:	Carbon Monoxide	Date: 11/7/2006	Date: 11/14/2006
Mean Conc:	2000 ppm +/- 1% rel	2001.5	1999.3
		2001.8	1995.5
		2003.7	1986.2
BALANCE GAS:	Nitrogen		

REFERENCE STANDARDS:

Component: Carbon Monoxide
Reference Standard: GMIS
Cylinder #: CC38906
Concentration: 2483 ppm
Exp. Date: 7/11/2007

CERTIFICATION INSTRUMENTS

Component: Carbon Monoxide
Make/Model: Horiba VIA-510
Serial Number: 42321590022
Measurement Principle: NDIR
Last Calibration: 11/09/2006

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:

11/14/2006

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

ARI Environmental, Inc.
EPA METHOD 5
Initial Meter Box Calibration

Model No: Apex 522
 Serial No. 50280

Operator: DWM
 Date: 4/23/2008

Pre-Test, Orifice Method
 English Units

Barometric Pressure: 29.83 in.Hg

ΔH in. H ₂ O	Time		DRY GAS METER VOLUME			METER TEMPERATURE		ORIFICE		VAC. in. Hg ²	AMBIENT TEMPERATURE		
						INLET	OUTLET						
	Minutes	Seconds	Initial	Final	Total ¹	Initial	Initial				Initial	Final	Avg.
0.49	15	10	128.200	134.600	6.400	78	79	AJ47	0.3234	24.0	78	79	78.5
0.94	10	35	135.100	141.200	6.100	80	79	AJ55	0.4400	22.5	79	80	79.5
1.55	10	41	141.600	149.500	7.900	82	80	AJ63	0.5720	21.0	80	80	80.0
3.00	11	28	150.100	161.900	11.800	88	81	AJ73	0.7781	18.0	80	80	80.0
4.50	11	37	162.800	177.400	14.600	96	83	AJ81	0.9528	15.0	80	81	80.5

METER FLOW (cubic feet)	ORIFICE FLOW (cubic feet)	METER CALIBRATION FACTOR, Yc ³	DH @ ⁴
6.258	6.305	1.0075	1.563
5.955	5.980	1.0043	1.621
7.691	7.844	1.0199	1.582
11.445	11.453	1.0007	1.654
14.103	14.202	1.0070	1.655

AVG. PRETEST METER CALIBRATION FACTOR: Y⁵ = 1.008 ΔH@⁶ = 1.62
--

¹ Must pull at least 5 cubic feet per orifice
² Vacuum must be 15" of Hg or greater
³ Individual Ys can not vary from +/-0.02Y of the average

⁴ Delta H@ can not be more than +/- 0.15 of average delta H
⁵ Ideal Y is 1.000 and can vary no more than +/- 0.05
⁶ Ideal Delta H@ is 1.84 and should not vary more than 0.25

ARI Environmental, Inc.
EPA METHOD 5
Post-test Meter Box Calibration

Model #: Apex 522
 Serial #: 50280
 Pretest Y: 1.008
 Pretest $\Delta H@$: 1.62

Operator: DWM
 Date: 5/30/2008

Post-Test, Orifice Method
 English Units

Barometric Pressure: 29.77 in.Hg

ΔH	Time		DRY GAS METER VOLUME			METER TEMPERATURE		ORIFICE		VAC.	AMBIENT TEMPERATURE		
						INLET	OUTLET						
	Minutes	Seconds	Initial	Final	Total ¹	Initial	Initial						
						Final	Final	Number	K factor	in. Hg ²	Initial	Final	Avg.
1.50	10	31	34.200	41.900	7.700	82	81	AJ63	0.5720	18.0	84	83	83.5
						86	82						
1.50	12	31	42.400	51.600	9.200	86	82	AJ63	0.5720	18.0	83	85	84.0
						90	85						
1.50	10	1	52.000	59.400	7.400	90	85	AJ63	0.5720	18.0	85	84	84.5
						92	86						

METER FLOW (cubic feet)	ORIFICE FLOW (cubic feet)	METER CALIBRATION FACTOR, Y_c^3	DH @ ⁴
7.481	7.682	1.0268	1.543
8.889	9.138	1.0281	1.536
7.117	7.310	1.0270	1.531

AVG. POST-TEST METER CALIBRATION FACTOR =	1.027	1.54
--	--------------	-------------

PERCENT DIFFERENCE FROM PRETEST Y= 1.92
MAXIMUM ALLOWABLE DIFFERENCE= 5.00

¹ Must pull at least 5 cubic feet per orifice
² Vacuum must be 15" of Hg or greater

³ Individual Ys can not vary from +/-0.02Y of the average

⁴ Delta H@ can not be more than +/- 0.15 of average ΔH

ARI ENVIRONMENTAL, INC.
EPA METHOD 5
THERMOCOUPLE DIGITAL INDICATOR CALIBRATION DATA SHEET

Operator: DWM
 Date: 4/23/2008

Meterbox No.: 50280
 Calibrator No.: CL-300-21001

Calibrator	Digital Temperature Readout									
Setting	PROBE		STACK		FILTER		EXIT		AUX	
° F	Actual	Diff.	Actual	Diff.	Actual	Diff.	Actual	Diff.	Actual	Diff.
0	4	0.87	3	0.65	4	0.87	4	0.87	4	0.87
200	198	0.30	198	0.30	198	0.30	198	0.30	198	0.30
400	394	0.70	395	0.58	394	0.70	394	0.70	394	0.70
600	598	0.19	598	0.19	598	0.19	598	0.19	598	0.19
800	800	0.00	800	0.00	800	0.00	800	0.00	800	0.00
1000	1000	0.00	1000	0.00	999	0.07	1000	0.00	1000	0.00
1200	1198	0.12	1198	0.12	1198	0.12	1198	0.12	1198	0.12
1400	1396	0.22	1396	0.22	1396	0.22	1396	0.22	1396	0.22
1600	1599	0.05	1599	0.05	1599	0.05	1599	0.05	1599	0.05
1800	1798	0.09	1798	0.09	1798	0.09	1798	0.09	1798	0.09

Actual Maximum Difference = 0.87 %
 Allowable Maximum Difference = 1.50 %

ARI ENVIRONMENTAL, INC.
EPA METHOD 5
THERMOCOUPLE DIGITAL INDICATOR CALIBRATION DATA SHEET

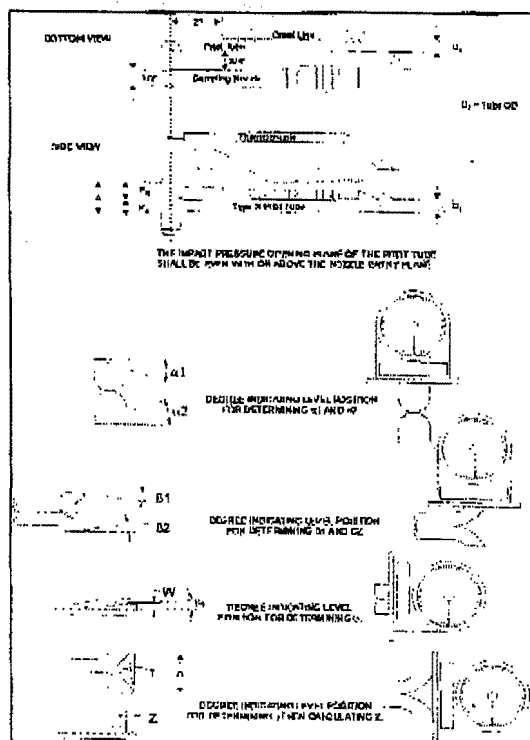
Operator: DWM
 Date: 5/30/2008

Meterbox No.: 50280
 Calibrator No.: CL-300-21001

Calibrator	Digital Temperature Readout									
Setting	PROBE		STACK		FILTER		EXIT		AUX	
° F	Acutal	Diff.	Acutal	Diff.	Acutal	Diff.	Acutal	Diff.	Acutal	Diff.
0	-3	0.65	-3	0.65	-3	0.65	-3	0.65	-3	0.65
200	198	0.30	199	0.15	198	0.30	198	0.30	198	0.30
400	395	0.58	395	0.58	395	0.58	395	0.58	395	0.58
600	599	0.09	599	0.09	598	0.19	599	0.09	599	0.09
800	801	0.08	801	0.08	801	0.08	801	0.08	801	0.08
1000	1001	0.07	1001	0.07	1001	0.07	1001	0.07	1001	0.07
1200	1199	0.06	1199	0.06	1199	0.06	1199	0.06	1199	0.06
1400	1398	0.11	1398	0.11	1398	0.11	1398	0.11	1398	0.11
1600	1601	0.05	1601	0.05	1601	0.05	1601	0.05	1601	0.05
1800	1800	0.00	1800	0.00	1799	0.04	1800	0.00	1800	0.00

Actual Maximum Difference = 0.65 %
 Allowable Maximum Difference = 1.50 %

Type S Pitot Tube Inspection Form



PITOT TUBE/PROBE # P82

Parameter	Value	Allowable Range	Check
Assembly Level?	Y	Yes	OK
Ports Damaged?	N	No	OK
α_1	0	$-10^\circ < \alpha_1 < +10^\circ$	OK
α_2	0	$-10^\circ < \alpha_2 < +10^\circ$	OK
β_1	0	$-5^\circ < \beta_1 < +5^\circ$	OK
β_2	0	$-5^\circ < \beta_2 < +5^\circ$	OK
γ	0		
θ	0		
$Z = A \tan \gamma$	0.000	$Z \leq .125"$	OK
$W = A \tan \theta$	0.000	$W \leq .031"$	OK
D_t	0.367	.188" to .375"	OK
$A/2D_t$	1.228883	$1.05 \leq P_A/D_t \leq 1.5$	OK
A	0.902	$2.1D_t \leq A \leq 3D_t$	OK

Certification

I certify that pitot tube/probe number P82 meets or exceeds all specifications, criteria and/or applicable design features and is hereby assigned a pitot tube certification factor of 0.84. See 40 CFR Pt. 60, App. A, EPA Method 2.

Certified by:

10-5-07
Personnel (Signature/Date)

Team Leader (Signature/Date)

Type S Pitot Tube Inspection Form

PITOT TUBE/PROBE # P82

Parameter	Value	Allowable Range	Check
Assembly Level?	Y	Yes	OK
Ports Damaged?	N	No	OK
$\alpha 1$	0	$-10^\circ < \alpha 1 < +10^\circ$	OK
$\alpha 2$	0	$-10^\circ < \alpha 2 < +10^\circ$	OK
$\beta 1$	0	$-5^\circ < \beta 1 < +5^\circ$	OK
$\beta 2$	0	$-5^\circ < \beta 2 < +5^\circ$	OK
γ	0		
θ	0		
$Z = A \tan \gamma$	0.000	$Z \leq .125"$	OK
$W = A \tan \theta$	0.000	$W \leq .031"$	OK
D_t	0.367	.188" to .375"	OK
$A/2D_t$	1.22752	$1.05 \leq P_A/D_t \leq 1.5$	OK
A	0.901	$2.1D_t \leq A \leq 3D_t$	OK

Certification

I certify that pitot tube/probe number P82 meets or exceeds all specifications, criteria and/or applicable design features and is hereby assigned a pitot tube certification factor of 0.84. See 40 CFR Pt. 60, App. A, EPA Method 2.

Certified by:

Ady C. H. H. 6/27/08
Personnel (Signature/Date)

Team Leader (Signature/Date)

Pitot Thermocouple Calibration Form

Pitot Tube No: P82
Calibration Date: 2/1/08
Calibrator: ASH

Ambient Temperature		
Thermocouple Reading	Reference Reading	Difference (+/- 2 °F)
<u>61</u>	<u>61</u>	<u>0</u>

Ice Bath Temperature		
Thermocouple Reading	Reference Reading	Difference (+/- 2 °F)
<u>36</u>	<u>36</u>	<u>0</u>

Pitot Thermocouple Calibration Form

Pitot Tube No: P82
Calibration Date: 6/27/08
Calibrator: AT

Ambient Temperature		
Thermocouple Reading	Reference Reading	Difference (+/- 2 °F)
<u>90</u>	<u>90</u>	<u>0</u>

Ice Bath Temperature		
Thermocouple Reading	Reference Reading	Difference (+/- 2 °F)
<u>53</u>	<u>52</u>	<u>1</u>

BAROMETER CALIBRATION LOG

BAROMETER NO.	004852						
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PRETEST

BAROMETER READING	29.71						
REFERENCE BAROMETER READING	29.73						
DIFFERENCE	0.02						
DATE	4/11/08						
CALIBRATOR	ZRM						

POST-TEST

BAROMETER READING	29.71						
REFERENCE BAROMETER READING	29.72						
DIFFERENCE	0.01						
DATE	6/11/08						
CALIBRATOR	AH						

*Allowable difference in post barometer calibration is 0.2 in.



Valero McKee Refinery: Sunray, TX
SRU No. 2 Incinerator: EPN V-16
Test Dates: 6/4 & 6/6/08

APPENDIX F

Personnel Qualifications



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 29 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.

Steven Yuchs, PhD.

Dr. Yuchs has 11 years experience in environmental analysis and research and development. His experience includes industrial, academic and governmental laboratory management, with an emphasis in the environmental remediation sector. He is currently the Analytical Services section manager, and is responsible for all laboratory activities for ARI. He is also responsible for coordinating and developing laboratory analysis procedures, laboratory quality assurance, new methods of laboratory analysis, and laboratory data reduction.

Terrence Davis

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



Valero McKee Refinery: Sunray, TX
SRU No. 2 Incinerator: EPN V-16
Test Dates: 6/4 & 6/6/08

APPENDIX G

Process Data

No. 2 SRU Vent

Date	Hour	V-16	V-16	V-16	V-16
		SRU Prod. Rate (LTPD)	SO2 (ppmvd)	CEMS O2 (ppmvd)	TGT2 INCNRTCHAMB ER Hour Avg TEMP
6/4/2008	11	38.81	187.5	2.3	1333.41
6/4/2008	12	38.81	168.0	2.0	1333.7
6/4/2008	13	38.81	192.5	1.9	1335.71
6/4/2008	14	38.81	165.4	2.1	1335.67
6/4/2008	15	38.81	145.1	2.3	1336.96
6/4/2008	16	38.81	138.7	2.4	1335.8
6/4/2008	17	38.81	151.1	2.5	1336.31
6/4/2008	18	38.81	150.4	2.6	1336
6/4/2008	19	38.81	137.3	2.7	1334.68
6/4/2008	20	38.81	117.1	2.7	1337.15
6/4/2008	21	38.81	108.9	2.8	1333.6
6/4/2008	22	38.81	94.1	2.6	1333.38
6/4/2008	23	38.81	95.5	2.6	1336.36
6/6/2008	6	42.43	220.0	2.6	1334.62
6/6/2008	7	42.43	151.5	2.6	1334.98
6/6/2008	8	42.43	158.9	2.5	1334.28
6/6/2008	9	42.43	178.0	2.5	1334.6
6/6/2008	10	42.43	169.2	2.5	1334.74
6/6/2008	11	42.43	174.5	2.5	1335.51
6/6/2008	12	42.43	179.4	2.4	1334.29
6/6/2008	13	42.43	156.7	2.5	1335.27
6/6/2008	14	42.43	173.7	2.5	1335.46
6/6/2008	15	42.43	182.2	2.5	1334.93
6/6/2008	16	42.43	182.1	2.5	1335.44
6/6/2008	17	42.43	159.6	2.5	1332.36

6-4-08

$$\begin{aligned}
 1) & \frac{(187.5 \times 35) + (168 \times 60) + (142.5 \times 60) + (165.4 \times 31)}{35 + 60 + 60 + 31} = 179.1 \text{ ppm SO}_2 \\
 & \frac{(1333.41 \times 35) + (1333.7 \times 60) + (1335.71 \times 60) + (1335.67 \times 31)}{35 + 60 + 60 + 31} = 1334.6^\circ \text{F} \\
 2) & \frac{(145.1 \times 38) + (138.7 \times 60) + (151.1 \times 60) + (150.4 \times 30)}{38 + 60 + 60 + 30} = 145.8 \text{ ppm SO}_2 \\
 & \frac{(1336.96 \times 38) + (1335.8 \times 60) + (1336.31 \times 60) + (1336 \times 30)}{38 + 60 + 60 + 30} = 1336.2^\circ \text{F} \\
 3) & \frac{(150.4 \times 6) + (137.3 \times 60) + (117.1 \times 60) + (108.9 \times 60) + (94.1 \times 1)}{6 + 60 + 60 + 60 + 1} = 121.9 \text{ ppm SO}_2 \\
 & \frac{(1336 \times 6) + (1334.68 \times 60) + (1337.15 \times 60) + (1333.6 \times 60) + (1333.38 \times 1)}{6 + 60 + 60 + 60 + 1} = 1336.2^\circ \text{F}
 \end{aligned}$$

No. 2 SRU Vent

Date	Hour	V-16	V-16	V-16	V-16
		SRU Prod. Rate (LTPD)	SO2 (ppmvd)	CEMS O2 (ppmvd)	TGT2 INCNRTCHAMB ER Hour Avg TEMP
6/4/2008	11	38.81	187.5	2.3	1333.41
6/4/2008	12	38.81	168.0	2.0	1333.7
6/4/2008	13	38.81	192.5	1.9	1335.71
6/4/2008	14	38.81	165.4	2.1	1335.67
6/4/2008	15	38.81	145.1	2.3	1336.96
6/4/2008	16	38.81	138.7	2.4	1335.8
6/4/2008	17	38.81	151.1	2.5	1336.31
6/4/2008	18	38.81	150.4	2.6	1336
6/4/2008	19	38.81	137.3	2.7	1334.68
6/4/2008	20	38.81	117.1	2.7	1337.15
6/4/2008	21	38.81	108.9	2.8	1333.6
6/4/2008	22	38.81	94.1	2.6	1333.38
6/4/2008	23	38.81	95.5	2.6	1336.36
6/6/2008	6	42.43	220.0	2.6	1334.62
6/6/2008	7	42.43	151.5	2.6	1334.98
6/6/2008	8	42.43	158.9	2.5	1334.28
6/6/2008	9	42.43	178.0	2.5	1334.6
6/6/2008	10	42.43	169.2	2.5	1334.74
6/6/2008	11	42.43	174.5	2.5	1335.51
6/6/2008	12	42.43	179.4	2.4	1334.29
6/6/2008	13	42.43	156.7	2.5	1335.27
6/6/2008	14	42.43	173.7	2.5	1335.46
6/6/2008	15	42.43	182.2	2.5	1334.93
6/6/2008	16	42.43	182.1	2.5	1335.44
6/6/2008	17	42.43	159.6	2.5	1332.36

6-6-08

$$4) \frac{(220.0 \times 24) + (151.5 \times 60) + (158.9 \times 60) + (178 \times 42)}{24 + 60 + 60 + 42} = 168.7 \text{ ppm SO}_2$$

$$\frac{(1334.62 \times 24) + (1334.98 \times 60) + (1334.28 \times 60) + (1334.6 \times 42)}{24 + 60 + 60 + 42} = 1334.6^\circ \text{F}$$

$$5) \frac{(169.2 \times 57) + (174.5 \times 60) + (174.4 \times 60) + (156.7 \times 9)}{57 + 60 + 60 + 9} = 173.6 \text{ ppm SO}_2$$

$$\frac{(1334.71 \times 57) + (1335.51 \times 60) + (1334.29 \times 60) + (1335.27 \times 9)}{57 + 60 + 60 + 9} = 1334.9^\circ \text{F}$$

$$6) \frac{(156.7 \times 30) + (173.7 \times 60) + (182.2 \times 60) + (182.1 \times 35)}{30 + 60 + 60 + 35} = 175.3 \text{ ppm SO}_2$$

$$\frac{(1335.27 \times 30) + (1335.46 \times 60) + (1334.93 \times 60) + (1335.44 \times 35)}{30 + 60 + 60 + 35} = 1335.3^\circ \text{F}$$



Valero McKee Refinery: Sunray, TX
SRU No. 2 Incinerator: EPN V-16
Test Dates: 6/4 & 6/6/08

APPENDIX H

TCEQ Flexible Permit No. 9708/PSD-TX-861M2

SPECIAL CONDITIONS

Flexible Permit Numbers 9708 and PSD-TX-861M2

EMISSION CAPS AND INDIVIDUAL LIMITATIONS

1. This permit authorizes emissions only from those points listed in the attached table entitled "Attachment I - Source Categories, Emission Point Numbers and Source Names," and the facilities covered by this permit are authorized to emit subject to the emission rate limits on the attached table entitled "Emission Sources - Emission Caps" and other operating conditions specified in this permit. If a facility was inadvertently left out of the flexible permit and is discovered after issuance of the flexible permit, the applicant shall inform the Texas Commission on Environmental Quality (TCEQ) Regional Office within one week of discovery of the facility and shall submit a permit amendment application within 60 days to add the facility to the flexible permit.

STORAGE AND LOADING OF VOLATILE ORGANIC COMPOUNDS (VOC)

2. A. The control requirements specified in paragraphs B through E of this condition shall not apply (1) where the VOC has an aggregate partial pressure of less than 0.5 pound per square inch, absolute (psia) at the maximum expected operating temperature or (2) to storage tanks smaller than 25,000 gallons.
- B. An internal floating deck or "roof" or equivalent control shall be installed in all tanks. The floating roof shall be equipped with one of the following closure devices between the wall of the storage vessel and the edge of the internal floating roof (IFR): (1) a liquid-mounted seal, (2) two continuous seals mounted one above the other, or (3) a mechanical shoe seal. Installation of equivalent control requires prior review and approval by the TCEQ Executive Director.
- C. An open-top tank containing a floating roof (external floating roof tank) which uses double seal or secondary seal technology shall be an approved control alternative to an IFR tank provided the primary seal consists of either a mechanical shoe seal or a liquid-mounted seal and the secondary seal is rim-mounted. A weathershield is not approvable as a secondary seal unless specifically reviewed by the TCEQ and determined to be vapor-tight.
- D. For any tank equipped with a floating roof, the holder of this permit shall follow Title 40 Code of Federal Regulations (40 CFR) § 60.113b, Testing and Procedures, to verify seal integrity. Additionally, the permit holder shall follow 40 CFR § 60.115b, Reporting and Recordkeeping Requirements, to provide records of the dates seals were inspected, seal integrity, and corrective actions taken.
- E. The floating roof design shall incorporate sufficient flotation to conform to the requirements of American Petroleum Institute (API) Code 650 or an equivalent

SPECIAL CONDITIONS

Flexible Permit Numbers 9708 and PSD-TX-861M2

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degree of flotation, except that an internal floating cover need not be designed to meet rainfall support requirements and the materials of construction may be steel or other materials.

- F. Uninsulated tank exterior surfaces exposed to the sun shall be white, aluminum, or an equivalent light color, except where a dark color is necessary to help the tank absorb or retain heat in order to maintain the material in the tank in a liquid state.
 - G. For purposes of assuring compliance with VOC emission limitations, the holder of this permit shall maintain a monthly emissions record which describes calculated emissions of VOC from all storage tanks and loading operations. The record shall include tank or loading point identification number, control method used, tank or vessel capacity in gallons or barrels, name of the material stored or loaded, VOC molecular weight, VOC monthly average temperature in degrees Fahrenheit, VOC vapor pressure at the monthly average material temperature in psia, VOC throughput for the previous month and year-to-date. Records of VOC monthly average temperature are not required to be kept for unheated tanks which receive liquids that are at or below ambient temperatures. These records shall be updated not less than once per calendar quarter, shall be maintained at the plant site for at least two years, and be made available to representatives of the TCEQ upon request. For compliance demonstration purposes, the holder of this permit may use the meteorological data contained in AP-42 dated March 1998, or later version.
 - H. For the purposes of this permit, emissions for tanks shall be calculated using:
 - (a) AP-42 "Compilation of Air Pollution Emission Factors, Chapter 7 - Storage of Organic Liquids" dated March 1998, and (b) the TCEQ publication titled "Technical Guidance Package for Chemical Sources - Storage Tanks" dated February 1995.
- 3. The permittee shall not allow gasoline to be loaded into a tank truck or railcar unless the tank truck or railcar has passed a leak-tight test within the past 12 months. Certification of testing shall be presented for each vessel which demonstrates that the vessel passed a leak test conforming to the requirements of 40 CFR Part 63, Subpart R. All tank trucks loading other materials with a vapor pressure greater than 0.5 psia. at this facility shall be leak-tight tested a minimum of once per year using the method described in the U.S. Environmental Protection Agency's (EPA) regulations in 40 CFR Part 60, Subparts A and XX on Standards of Performance for New Stationary Sources promulgated for Bulk Gasoline Terminals.
 - 4. When loading materials with a vapor pressure greater than or equal to 0.5 psia at maximum loading temperature at locations other than the asphalt truck loading rack

SPECIAL CONDITIONS

Flexible Permit Numbers 9708 and PSD-TX-861M2

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(Emission Point No. [EPN] L-2), the loading emissions shall be routed to the vapor combustion unit (VCU) (EPN FL-7). The VCU shall meet the requirements of Maximum Available Control Technology Subpart R for gasoline loading (emissions of VOC no greater than 10 milligrams/liter of gasoline loaded), and a destruction efficiency of no less than 98 percent for materials other than gasoline.

5. For the purposes of this permit, emissions for loading operations shall be calculated using AP-42, Fifth Edition (January 1995), Equation 1 (Section 5.2.2.1.1, Loading Losses).
6. Operation without visible liquid leaks or spills shall be maintained at all loading/unloading facilities, regardless of vapor pressure. This does not apply to momentary dripping associated with the initial connection or disconnection of fittings. Sustained dripping from fittings during loading/unloading operations is not permitted. Any liquid spill that occurs during loading/unloading activities that results in emissions that exceed a reportable quantity shall be reported pursuant to Title 30 Texas Administrative Code (30 TAC) §§ 101.201 or 101.211 and shall be cleaned up immediately to minimize air emissions.

OPERATING PARAMETERS AND CONDITIONS

7. Non-fugitive emissions from relief valves, safety valves, or rupture discs of gases containing VOCs at a concentration of greater than 1 weight percent are not authorized by this permit unless authorized on the maximum allowable emission rates table. Any releases directly to atmosphere from relief valves, safety valves, or rupture discs of gases containing VOCs at a concentration greater than 1 weight percent are not consistent with good practice for minimizing emissions.
8. Flares shall be designed and operated in accordance with the following requirements:
 - A. The combined refinery fuel natural gas and waste stream to the flare shall meet the 40 CFR § 60.18 specifications of minimum heating value and maximum tip velocity under normal and maintenance flow conditions. Compliance with this condition shall be demonstrated by monitoring required in Section D below. Flare testing per 40 CFR § 60.18(f) may be requested by the TCEQ Regional Office, in addition to New Source Performance Standards (NSPS) or federal requirements, to demonstrate compliance with this condition. Testing to confirm the heating value (Btu/per standard cubic foot) may be requested by the TCEQ Regional Office to demonstrate compliance with this condition.
 - B. The flare shall be operated with a pilot flame present at all times and have a constant pilot flame or an automatic reignition system. The pilot flame shall be

SPECIAL CONDITIONS

Flexible Permit Numbers 9708 and PSD-TX-861M2

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monitored by a thermocouple, an infrared monitor or an ultraviolet monitor.

- C. The flare shall be operated with no visible emissions except periods not to exceed a total of five minutes during any two consecutive hours and hours as exempted by 30 TAC § 111.111 to allow visible emission for incidents exempted under 30 TAC Chapter 101. This shall be ensured by the use of steam assist to the flare (for steam-assisted flares). The permit holder shall ensure proper flare operation through monitoring by Section D below.
 - D. The holder of this permit shall install continuous flow monitors that provide a record of the vent stream flows to the flares consistent with the schedule in Section E below. The flow monitor sensor should be installed in the vent streams such that the total vent streams to the flares are measured. The average hourly values of the flow shall be recorded and maintained electronically. The holder of this permit shall provide the daily average flow rate (24-hour average) to each flare and the hourly average flow rates. Fluctuations in flow rate readings due to monitor malfunctions or calibrations are not required to be used in determining compliance. Records of the flows shall be maintained for a period of two years and be made available to the Executive Director of the TCEQ upon request.
 - E. The holder of this permit shall install the continuous flow monitors required by Section D consistent with the following schedule:

Main Refinery Flares - The monitoring system will be installed in the new main refinery flare (EPN FL-8) when it is constructed but not later than 42 months following the issuance of the flexible permit. The monitoring system will be installed in the existing main refinery flare (EPN FL-1) when it is expanded but not later than three years following the issuance of the flexible permit.

Other Refinery Flares - The monitoring systems will be installed in the other refinery flares as soon as practicable after the new main Refinery Flare (EPN FL-8) is constructed or the existing main Refinery Flare (EPN FL-1) is expanded. These monitoring systems shall be installed not later than five years after flexible permit issuance.
9. All combustion sources covered under this permit shall be fired with either sweet natural gas as defined in 30 TAC Chapter 101 or with refinery fuel gas containing no more than 0.10 grain total sulfur expressed as hydrogen sulfide (H₂S) per dry standard cubic feet (dscf) on an hourly and annual average basis.
10. There shall be no visible emissions from the heaters, boilers, or sulfur recovery unit

SPECIAL CONDITIONS

Flexible Permit Numbers 9708 and PSD-TX-861M2

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(SRU) Incinerators except for those periods described in 30 TAC § 111.111(a).

11. The following limitations apply to Boiler B-12:

- A. Emissions of nitrogen dioxide shall not exceed 0.2 pound per MMBtu (lb/MMBtu).
- B. Emissions of particulates shall not exceed 0.012 lb/MMBtu.
- C. Emissions of sulfur dioxide (SO₂) shall not exceed 0.0376 lb/MMBtu. Compliance with the SO₂ emission limit shall be based on the H₂S content of the fuel gas, assuming 100 percent conversion of H₂S to SO₂.

12. The Asphalt Blowstill Incinerator (V-22) shall be operated with not less than 1272°F incinerator firebox temperature. The incinerator firebox exit temperature shall continuously be monitored and recorded.

PIPING, VALVES, CONNECTORS, PUMPS, AND COMPRESSORS IN VOC SERVICE - 28VHP

13. Except as may be provided for in the special conditions of this permit, the following requirements apply to the above-referenced equipment effective no later than 180 days after issuance of this permit:

- A. These conditions shall not apply (1) where the VOC has an aggregate partial pressure or vapor pressure of less than 0.044 psia at 68°F or (2) operating pressure is at least 5 kilopascals (0.725 pound per square inch) below ambient pressure. Equipment excluded from this condition shall be identified in a list to be made available upon request.
- B. Construction of new and reworked piping, valves, pump systems, and compressor systems shall conform to applicable American National Standards Institute, API, American Society of Mechanical Engineers, or equivalent codes.
- C. New and reworked underground process pipelines shall contain no buried valves such that fugitive emission monitoring is rendered impractical.
- D. To the extent that good engineering practice will permit, new and reworked valves and piping connections shall be so located to be reasonably accessible for leak-checking during plant operation. Non-accessible valves, as defined by 30 TAC Chapter 115, shall be identified in a list to be made available upon request.
- E. New and reworked piping connections shall be welded or flanged. Screwed

SPECIAL CONDITIONS

Flexible Permit Numbers 9708 and PSD-TX-861M2

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connections are permissible only on piping smaller than two-inch diameter. No later than the next scheduled quarterly monitoring after initial installation or replacement, all new or reworked connections shall be gas-tested or hydraulically-tested at no less than normal operating pressure and adjustments made as necessary to obtain leak-free performance. Connectors shall be inspected by visual, audible, and/or olfactory means at least weekly by operating personnel walk-through.

Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve. Except during sampling, the second valve shall be closed.

- F. Accessible valves shall be monitored by leak-checking for fugitive emissions at least quarterly using an approved gas analyzer. Sealless/leakless valves (including, but not limited to, welded bonnet bellows and diaphragm valves) and relief valves equipped with a rupture disc upstream or venting to a control device are not required to be monitored. For valves equipped with rupture discs, a pressure-sensing device shall be installed between the relief valve and rupture disc to monitor disc integrity. All leaking discs shall be replaced at the earliest opportunity but no later than the next process shutdown.

An approved gas analyzer shall conform to requirements listed in 40 CFR § 60.485(a)-(b).

Replaced components shall be re-monitored within 15 days of being placed back into VOC service.

- G. Except as may be provided for in the special conditions of this permit, all pump and compressor seals shall be monitored with an approved gas analyzer at least quarterly or be equipped with a shaft sealing system that prevents or detects emissions of VOC from the seal. Seal systems designed and operated to prevent emissions or seals equipped with an automatic seal failure detection and alarm system need not be monitored. These seal systems may include (but are not limited to) dual pump seals with barrier fluid at higher pressure than process pressure, seals degassing to vent control systems kept in good working order, or seals equipped with an automatic seal failure detection and alarm system. Submerged pumps or sealless pumps (including, but not limited to, diaphragm, canned, or magnetic-driven pumps) may be used to satisfy the requirements of this condition and need not be monitored.
- H. Damaged or leaking valves or connectors found to be emitting VOC in excess of 500 parts per million by volume (ppmv) or found by visual inspection to be leaking (e.g., dripping process fluids) shall be tagged and replaced or repaired. Damaged

SPECIAL CONDITIONS

Flexible Permit Numbers 9708 and PSD-TX-861M2

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or leaking pump and compressor seals found to be emitting VOC in excess of 2,000 ppmv or found by visual inspection to be leaking (e.g., dripping process fluids) shall be tagged and replaced or repaired.

- I. Every reasonable effort shall be made to repair a leaking component, as specified in this paragraph, within 15 days after the leak is found. If the repair of a component would require a unit shutdown, the repair may be delayed until the next scheduled shutdown. All leaking components which cannot be repaired until a scheduled shutdown shall be identified for such repair by tagging. At the discretion of the TCEQ Executive Director or designated representative, early unit shutdown or other appropriate action may be required based on the number and severity of tagged leaks awaiting shutdown.
 - J. The results of the required fugitive instrument monitoring and maintenance program shall be made available to the TCEQ Executive Director or designated representative upon request. Records shall indicate appropriate dates, test methods, instrument readings, repair results, justification for delay of repairs, and corrective actions taken for all components. Records of physical inspections are not required unless a leak is detected.
 - K. Alternative monitoring frequency schedules of 30 TAC §§ 115.352-115.359 or National Emission Standards for Organic Hazardous Air Pollutants, 40 CFR Part 63, Subpart H, may be used in lieu of Items F through G of this condition.
 - L. Compliance with the requirements of this condition does not assure compliance with requirements of 30 TAC Chapter 115, an applicable NSPS, or an applicable National Emission Standards for Hazardous Air Pollutants (NESHAPS) and does not constitute approval of alternative standards for these regulations.
14. The permit holder shall submit a list of equipment to the TCEQ Regional Office in Amarillo which will be subject to a 10,000 ppmv leak definition, rather than the definitions in Special Condition No. 12H, until repaired or replaced according to the schedule submitted as part of the flexible permit application. This list shall be submitted within 30 days of permit issuance.

SRUs

15. The No. 1 SRU Incinerator Vent (EPN V-5), the No. 2 SRU Incinerator Vent (EPN V-16), and the No. 3 SRU Incinerator Vent (EPN V-28) shall be operated with not less than 1 percent oxygen (O₂) in the incinerator stack and not less than 1200°F incinerator firebox temperature. The temperature requirement for the No. 1 SRU Incinerator Vent (EPN V-5) shall become effective April 11, 2005. The incinerator

SPECIAL CONDITIONS

Flexible Permit Numbers 9708 and PSD-TX-861M2

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firebox exit temperature and incinerator stack O₂ level shall be continuously monitored and recorded.

16. The No. 1 SRU Incinerator (EPN V-5) after installation of the tail gas unit pursuant to the Emission Reductions Conditions section of these conditions, the No. 2 SRU Incinerator (EPN V-16), and the No. 3 SRU Incinerator (EPN V-28), shall achieve a reduced sulfur compound exit concentration of no more than 5 ppmv (corrected to 3 percent excess O₂). Prior to installation of the tail gas unit, the No. 1 SRU Incinerator (EPN V-5) shall achieve a reduced sulfur compound exit concentration of no more than 280 parts per million by volume, dry (corrected to 3 percent excess O₂). If stack testing indicates that a higher temperature or O₂ concentration is necessary to obtain the reduced sulfur compound exit concentrations specified for an SRU Incinerator, then the temperature and O₂ maintained during the stack test will become the new minimum operating limits for that SRU Incinerator. The O₂ and temperature requirements do not apply when performing stack testing on the incinerators in accordance with the Initial Determination of Compliance section of these conditions.
17. The minimum sulfur recovery efficiency for the No. 2 and No. 3 Sulfur Plants shall be 99.8 percent. The minimum sulfur recover efficiency of the No. 1 Sulfur Plant shall also be 99.8 percent after the scheduled installation of the tail gas treating unit. The sulfur recovery efficiency shall be determined by calculation as follows:

$$\text{Efficiency} = \frac{(\text{S recovered}) * (100)}{(\text{S acid gas})}$$

where: Efficiency = sulfur recovery efficiency, percent

S recovered = S produced, Long tons per day (LTPD)
S acid gas = (S recovered plus S stack), LTPD
S stack = sulfur in the incinerator stack, LTPD

The average sulfur emission reduction efficiency (sulfur recovery efficiency) shall be demonstrated for each calendar day by a mass balance calculation using data obtained from the incinerator stack SO₂ monitor, sulfur production records, and other process data. The daily sulfur recovery efficiency shall be calculated on a monthly basis.

18. The total sulfur recovered from SRU Trains (SRU No. 1, SRU No. 2, and SRU No. 3) shall not exceed 235 LTPD.
19. All acid gas streams from the amine regeneration units, desalter stripper overhead,

SPECIAL CONDITIONS

Flexible Permit Numbers 9708 and PSD-TX-861M2

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and sour water stripper overheads, containing H₂S shall be routed to the SRUs, acid plants, or recycled under normal operating conditions. It is not permissible under any conditions to vent acid gases directly to the atmosphere.

20. Sour gas emissions from the sulfur pits, sulfur storage, and sulfur loading operations shall be collected by a vapor collection system and routed either back to the SRU thermal reactor or to the SRU tail gas incinerator (TGI).

COOLING TOWERS

21. The VOC associated with cooling tower water shall be monitored monthly with an approved air stripping system or equivalent (e.g., El Paso Method). The cooling tower systems shall be maintained so as to minimize VOC emissions. The results of the monitoring and maintenance efforts shall be recorded, and such records shall be maintained for a period of two years. The monitoring records shall be made available to the TCEQ Executive Director upon request.

The permittee shall analyze the monitoring data from the cooling tower systems and within one year of flexible permit issuance shall submit an alteration request or amendment application, as appropriate, to reflect the determined leak detection levels.

If a leak equivalent to more than the leak detection levels determined above is detected, the owner or operator shall repair the leak as soon as practical after the holder of this permit receives results of monitoring tests indicating a leak. If repair is technically infeasible without a shutdown, the leak will be repaired at the next scheduled shutdown.

PIPING, VALVES, PUMPS, AND COMPRESSORS IN H₂S, SO₂, or NH₃ SERVICE

22. Piping, Valves, Pumps, and Compressors in H₂S, SO₂, or ammonia (NH₃) service are subject to the following requirements:
 - A. Audio, olfactory, and visual checks for H₂S, SO₂, and NH₃ leaks within the No. 1, No. 2, and No. 3 Sulfur Plants, Amine Regenerators, Sour Water Strippers, and process streams that have greater than 2 percent H₂S by weight shall be made once per shift.
 - B. Immediately, but no later than one hour upon detection of a leak, plant personnel shall take one of the following actions:
 - (1) Isolate the leak,

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Flexible Permit Numbers 9708 and PSD-TX-861M2

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- (2) Commence repair or replacement of the leaking component, or
 - (3) Use a leak collection or containment system to prevent the leak until repair or replacement can be made if immediate repair is not possible.
- C. This program will be in place 60 days from the issuance of this flexible permit.
- D. Date and time of each inspection shall be noted in the operator's log or equivalent. Records shall be maintained at the plant site of all repairs and replacements made due to leaks. These records shall be made available to representatives of the TCEQ upon request.

FLUIDIZED CATALYTIC CRACKING UNIT (FCCU)

23. The following applies to the FCCU regeneration vent/vent gas stack (EPN V-20):

- A. The maximum allowable concentration of the following pollutants in the FCCU vent gas stack (EPN V-20) shall not exceed the following on a one-hour average basis:

CO	500 ppmv (dry basis)
SO ₂	300 ppmv
nitrogen oxides (NO _x)	200 ppmv
VOC	10 ppmv
NH ₃	100 ppmv

- B. The non-sulfate, front half particulate matter (PM) emissions from the FCCU Vent Gas Stack (EPN V-20) shall not exceed one pound per 1,000_pounds of coke burn-off.
- C. Unless the holder of the permit submits, within four years of permit issuance, FCCU Vent Gas Stack (EPN V-20) total PM stack testing results and an accompanying proposal demonstrating the need for a higher annual cap contribution basis considering the emissions performance of the existing electrostatic precipitator, then the revised annual flexible permit cap contribution in tons per year (TPY) shall be based from that point forward on the following default emission factor:

$$F_{PM} = 1.0 \text{ lb/1,000-lb coke burn}$$

where: F_{PM} = total PM emission factor (lb/1,000-lb coke burn)

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If the holder of the permit does submit such a proposal for a higher annual cap contribution basis, then the proposal shall be subject to review and approval by the TCEQ Executive Director. Once the basis has been established, either by default or by completion of the TCEQ Executive Director's review of the alternative proposal, the annual flexible permit cap contribution shall be calculated as follows using the appropriate total PM emission factor (lb/1,000 lb-coke burn):

$$C_{PM} = \text{PM cap contribution (TPY)} = \frac{1.09 * 8,760 \text{ hr/year} * 45,000 \text{ lb coke/hr} * F_{PM}}{2,000 \text{ lb/ton}}$$

24. The opacity of emissions from the FCCU stack shall not exceed 15 percent averaged over a six-minute period, as determined by an opacity monitoring device or a trained observer, except during soot blowing, aggregating up to six minutes in any 60 consecutive minutes and no more than six hours in any ten-day period as provided for in 30 TAC § 111.111(a)(1)(E).

INITIAL DETERMINATION OF COMPLIANCE

25. Sampling ports and platform(s) shall conform to the specifications set forth in the attachment entitled "Chapter 2, Stack Sampling Facilities." Alternate sampling facility designs may be submitted for approval by the TCEQ Regional Director or the Director of the TCEQ Compliance Support Division in Austin.
26. The holder of this permit shall perform stack sampling and other testing as required to establish the actual pattern and quantities of air contaminants being emitted into the atmosphere from the following sources:
- Heaters and boilers with firing rates greater than 40 MMBtu/hr and less than 100 MMBtu/hr (EPNs H-11, H-9, H-42, H-43, H-2, H-26, H-40, H-48, H-45, H-36, B-3, B-4, B-5, B-6, and B-7),
 - FCCU Regenerator (EPN V-20),
 - Scot TGIs (EPNs V-5, V-16, and V-28),
 - Sulfuric Acid Plant Vent (EPN V-6),
 - No. 1 and 2 Reformer Regeneration Vents (EPNs V-18 and V-21), and
 - Truck and Railcar Vapor Combustor (EPN FL-7).

The holder of this permit is responsible for providing sampling and testing facilities and

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conducting the sampling and testing operations at his expense.

- A. The appropriate TCEQ Regional Office in the region where the source is located shall be contacted as soon as testing is scheduled, but not less than 45 days prior to sampling to schedule a pretest meeting. The notice shall include:

- (1) Date for pretest meeting.
- (2) Date sampling will occur.
- (3) Name of firm conducting sampling.
- (4) Type of sampling equipment to be used.
- (5) Method or procedure to be used in sampling.

The purpose of the pretest meeting is to review the necessary sampling and testing procedures, to provide the proper data forms for recording pertinent data, and to review the format procedures for submitting the test reports. A written proposed description of any deviation from sampling procedures specified in permit conditions or the TCEQ or the EPA sampling procedures shall be made available to the TCEQ prior to the pretest meeting. The TCEQ Regional Director or the TCEQ Compliance Support Division in Austin shall approve or disapprove of any deviation from specified sampling procedures. Requests to waive testing for any pollutant specified in B of this condition shall be submitted to the TCEQ Office of Permitting, Remediation, and Registration, Air Permits Division in Austin.

Test waivers and alternate or equivalent procedure proposals for NSPS testing which must have the EPA approval shall be submitted to the TCEQ Compliance Support Division in Austin.

- B. Air contaminants to be tested for include (but are not limited to) the following for the various units:

- (1) Heaters and boilers - NO_x and carbon monoxide (CO).
- (2) FCCU regenerator - CO, PM (both front and back-half of the sampling train), and sulfuric acid mist.
- (3) SRU/Scot TGIs - NO_x, CO, PM (both front and back-half of the sampling train), and total reduced sulfur.
- (4) Reformer regeneration vents - hydrogen chloride and chlorine..
- (5) Vapor combustors - VOC, NO_x, and CO.
- (6) Sulfuric Acid Plant - sulfuric acid mist.

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- C. Sampling of air contaminants not monitored by continuous emission monitoring system (CEMS) under the Continuing Determination of Compliance section of these conditions shall occur as follows:

- (1) Each emission point subject to testing pursuant to this special condition shall be sampled at least every five years. For emission points that have not been sampled in the five years prior to flexible permit issuance, the first required test shall occur within two years after issuance of the permit.
- (2) In addition, each emission point shall be sampled within 60 days of achieving maximum operation, not to exceed 180 days after initial operation, if a physical change has been made, such as the installation of new burners in a heater or boiler, or if an operational change has been made allowing emissions to increase more than 10 percent greater than determined by the last stack sample.
- (3) As may be required by the Executive Director of the TCEQ.

Requests for additional time to perform sampling shall be submitted to the TCEQ Regional Office. Additional time to comply with the applicable requirements of 40 CFR Part 60 and 40 CFR Part 61 requires the EPA approval, and requests shall be submitted to the TCEQ Compliance Support Division in Austin.

- D. Each emission point subject to stack emission testing shall be tested when the facility (or facilities) directly associated with the emission point is operating at maximum emissions potential. For many types of facilities, this maximum emissions potential will occur at the maximum production, throughput, or firing rate associated with that facility. Primary operating parameters that enable determination of maximum emissions potential shall be monitored and recorded during the stack test. These parameters are to be determined at the pretest meeting. If the plant is unable to operate at maximum emissions potential during testing, then future operations may be limited based on the rates established during testing. Additional stack testing may be required when operating rates with higher emissions potential are achieved.
- E. Copies of the final sampling report shall be forwarded to the TCEQ within 45 days after sampling is completed. Sampling reports shall comply with the attached provisions of Chapter 14 of the TCEQ Sampling Procedures Manual. The reports shall be distributed as follows:

One copy to the appropriate TCEQ Regional Office.

One copy to the TCEQ Compliance Support Division in Austin.

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CONTINUOUS DETERMINATION OF COMPLIANCE

27. The holder of this permit shall install and maintain a continuous H₂S monitoring system in a representative location in the fuel gas system common to the affected combustion sources within this permit in accordance with the fuel sulfur monitoring requirements of 40 CFR § 60.105.
28. The holder of this permit shall install, calibrate, and maintain a continuous opacity monitoring system (COMS) to measure and record the opacity from the FCCU Regenerator (EPN V-20) and shall install, calibrate, and maintain CEMS to measure and record CO, NO_x, and O₂ from the heaters and boilers with firing rates greater than 100 MMBtu/hr; SO₂ and O₂ from the SRU/Scot TGI (EPNs V-5, V-16, and V-28); SO₂ from the Acid Plant Stack (EPN V-29); and NO_x, O₂, and SO₂ from the FCCU Regenerator (EPN V-20). For the Acid Plant Stack, the CEMS shall be installed no later than December 31, 2005. Any other monitoring systems not in operation when this permit is issued shall be operational as follows:
 - A. Each COMS/CEMS shall be operational within 60 days of achieving maximum operation, not to exceed 180 days after initial operation, after physical changes have been made pursuant to the Emission Reductions section of these conditions, and
 - B. All COMS/CEMS shall be operational not later than four years of permit issuance.

The COMS/CEMS monitoring systems shall meet the following requirements:

- A. Each COMS/CEMS shall meet the design and performance specifications, pass the field tests, and meet the installation requirements and the data analysis and reporting requirements specified in the applicable Performance Specification Nos. 1 through 7, 40 CFR Part 60, Appendix B. If there are no applicable performance specifications in 40 CFR Part 60, Appendix B, contact the TCEQ Compliance Support Division for requirements to be met.
- B. Each system shall be zeroed and spanned daily and corrective action taken when the 24-hour span drift exceeds two times the amounts specified in 40 CFR Part 60, Appendix B or as specified by the TCEQ if not specified in Appendix B. Zero and span is not required on weekends and plant holidays if instrument technicians are not normally scheduled on those days, unless the monitor is required by a subpart of NSPS or NESHAPS, in which case zero and span shall be done daily without exception.

Each monitor shall be quality-assured at least quarterly in accordance with 40

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CFR Part 60, Appendix F, Procedure 1, Section 5.1.2. _ Cylinder Gas Audit conducted in all four calendar quarters may be used in lieu of relative accuracy test audits (RATA) for non-NSPS sources and for NSPS sources not subject to 40 CFR Part 60, Appendix F.

- C. The COMS monitoring data shall be reduced to six-minute average opacity at least once weekly, using a minimum of six equally-spaced data points for each minute. The CEMS monitoring data shall be reduced to hourly average concentrations at least once weekly, using a minimum of four equally-spaced data points from each one-hour period. The individual average concentrations from each CEMS shall be reduced to units of the permit allowable emission rate in pounds per hour (lb/hr) and cumulative TPY on a 12-month rolling average within 30 days of the end of each calendar quarter.
- D. All monitoring data and quality-assurance data shall be maintained by the source for a period of two years and shall be made available to the TCEQ Executive Director or his designated representative upon request. The data from the COMS or CEMS may, at the discretion of the TCEQ, be used to determine compliance with the conditions of this permit.
- E. All cylinder gas audit exceedances of ± 15 percent accuracy and COMS or CEMS downtime shall be reported in Semiannual Excess Emission Reports. Supplemental stack concentration measurements may be required at the discretion of the appropriate TCEQ Regional Director.
- F. For NSPS sources subject to Appendix F, the appropriate TCEQ Regional Office shall be notified at least 30 days prior to each annual RATA in order to provide them the opportunity to observe the testing.

EMISSION REDUCTIONS

- 29. This permit is conditioned on the completion of all emission reduction projects represented in the permit application, which shall be implemented not later than according to the following schedule:
 - A. Improved Fugitive Control (28VHP and AVO) - within 180 days of flexible permit issuance (with the exception of equipment exempted by Special Condition No. 14).
 - B. Installation of Low-NO_x Burners in Heaters/Boilers - upon completion of construction for new units, during modifications to increase firing rates for existing units, and not later than within six years of permit issuance.

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- C. The VOC Monitoring of Cooling Tower Influent - within six months of permit issuance.
- D. Installation of new Sulfuric Acid Plant and/or control of existing Acid Plant - not later than December 31, 2005.
- E. Installation of emission controls on compressor engines - not later than March 1, 2008.
- F. Installation of a tail gas treating unit on SRU No. 1 - not later than April 11, 2005 (compliance deadline for 40 CFR Part 63, Subpart UUU).
- G. Installation of a Scrubber on the Regeneration Vent for the No. 2 Reformer or determination that a scrubber is not required for compliance with applicable regulations - by the first catalyst regeneration following April 11, 2005 (compliance deadline for 40 CFR Part 63, Subpart UUU).

The holder of this permit shall maintain records of these emission reduction projects and provide access and/or copies upon request to the TCEQ Executive Director, his representatives, or any local air pollution control program having jurisdiction.

MAINTENANCE EMISSIONS

- 30. This permit authorizes maintenance emissions as listed and detailed in the confidential permit application, revised Table M-3, dated September 21, 2004.

EMISSION CAP COMPLIANCE RECORDKEEPING

- 31. Recordkeeping programs for those facilities authorized and covered by this flexible permit shall be established and maintained such that the ability to demonstrate compliance with all authorized emission caps (short-term lb/hr and annual TPY) is ensured. Records of all compliance testing, CEM results, and process parameters (including short-term production rates, firing rates, etc.) necessary to demonstrate compliance with the ER caps shall be maintained on-site for a period of two years. This recordkeeping shall commence within six months of the issuance of this permit.

Emission calculations for verifying compliance with the emission caps shall be performed at least once every calendar quarter to demonstrate compliance with the annual rolling average ER. Demonstration of compliance shall be based on the methodologies presented in the flexible permit application or as presented below. The holder of this permit shall maintain all records necessary to demonstrate compliance

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with the short-term (lb/hr) and annual (TPY) emissions caps consistent with this methodology and provide such demonstration of compliance to the TCEQ Regional Office upon request.

These and all records required by any conditions of this permit shall be made available to representatives of the TCEQ upon request.

The emissions shall be determined by using the following techniques. When a technique is not specified below for a specific facility type, the holder of this permit shall use the technique that was used in the permit application.

Tanks - As specified in the special conditions of this permit, short-term emission rates shall be based on the maximum expected filling rate (fixed-roof) and the higher of the filling rate or withdrawal rate (IFR and EFR).

Loading - AP-42 Chapter 5.2-4 (Fifth Edition) L_L Equation - The collection efficiency shall be as documented in the permit application. Emissions from control devices shall be determined using the emission factor (in mg/l) determined through testing pursuant to the special conditions of this permit. The manufacturer's guaranteed emission factor may be used if the most recent stack testing has verified that factor.

Fugitives - Component counts, emission factors, and reduction credits specified in the permit application for the 28M, 28VHP, and AVO maintenance program.

Boilers/Heaters - CEM information if such a device is installed. The most recent stack test results if a CEM is not installed. If no stack sampling is required, use the proper emission factor for the specific unit from the permit application and the measured daily Btu value and daily average flow rate of the fuel gas.

SRU/FCCU - CEM information. Use the most recent stack test for those compounds which are not subject to CEM requirements. If no stack sampling is required, use the proper emission factor for the specific unit from the permit application. The permittee shall record once-per-day the average coke burn-off rate and hours of operation of the FCCU catalyst regenerator.

Compliance with the annual emission caps and individual emission limitations of this flexible permit shall be based on a 12-month rolling average of emissions (emissions shall be calculated for individual calendar months and summed for consecutive 12-month periods for comparison to the caps).

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EMISSION SOURCES - EMISSIONS CAPS

Flexible Permit Numbers 9708 and PSD-TX-861M2

This table lists the maximum allowable emission rates and all sources of air contaminants on the applicant's property covered by this permit. The emission rates shown are those derived from information submitted as part of the application for permit and are the maximum rates allowed for these facilities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

(See Attachment I for Source Name and Emission Point Number Index)

<u>Emission Source Category</u>	<u>Year</u>	<u>Emission Rates*</u>	
		<u>lb/hr</u>	<u>TPY**</u>
<u>VOC CAPS:</u>			
Combustion Units, Tanks, Process Vents, Loading, Flares, Fugitives, Wastewater, Cooling Towers, Engines, Relief Valves, Maintenance	Initial	2,202.9	1,283.9
	Final	2,333.9	1,741.0
<u>NO_x CAPS:</u>			
Combustion Units, Flares, Process Vents, Loading, Engines, Maintenance	Initial	961.0	3,536.6
	Final	574.8	2,001.4
<u>CO CAPS:</u>			
Combustion Units, Flares, Process Vents, Loading, Engines, Maintenance	Initial	1,413.0	3,129.3
	Final	1,607.1	3,841.9
<u>SO₂ CAPS:</u>			
Combustion Units, Flares, Process Vents, Loading, Engines, Maintenance	Initial	1,648.4	4,732.5
	Final	1,243.1	2,919.7
<u>PM CAPS:</u>			
Combustion Units, Flares, Process Vents, Engines, Maintenance	Initial	365.9	1,567.6
	Final	156.7	644.2
<u>BENZENE CAPS:</u>			
Tanks, Cooling Towers, Loading, Fugitives	Initial	1.3	4.9

<u>Emission Source Category</u>	<u>Year</u>	<u>Emission Rates*</u>	
		<u>lb/hr</u>	<u>TPY**</u>
	Final	2.4	6.6

H₂S CAPS:

Flares, Process Vents, Fugitives, Maintenance	Initial	10.4	19.6
	Final	7.6	7.1

SULFURIC ACID CAPS:

Process Vents	Initial	10.6	46.6
	Final	12.4	54.1

CHLORINE CAPS:

Process Vents	Initial	4.3	0.4
	Final	0.4	0.5

HCl CAPS:

Process Vents, Maintenance	Initial	20.4	4.0
	Final	7.1	4.3

NH₃ CAPS:

Process Vents, Fugitives, Maintenance	Initial	800.3	164.6
	Final	800.4	164.8

MAINTENANCE EMISSIONS CAPS: (5)

	<u>Year</u>	<u>lb/hr</u>	<u>TPY**</u>
VOC	(5)	1102.6	3.21
NO _x	(5)	54.8	0.09
CO	(5)	383.6	0.66
SO ₂	(5)	504.8	1.22

MAINTENANCE EMISSIONS CAPS: (5)

	<u>Year</u>	<u>lb/hr</u>	<u>TPY**</u>
H ₂ S	(5)	6.3	0.01
HCl	(5)	4.0	0.002
NH ₃	(5)	700	0.95

- (1) Emission point identification - either specific equipment designation or emission point number from a plot plan.
- (2) Specific point source names. For fugitive sources, use an area name or fugitive source name.
- (3) VOC - volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1.
 - NO_x - total oxides of nitrogen
 - SO₂ - sulfur dioxide
 - PM - particulate matter
 - CO - carbon monoxide
 - NH₃ - ammonia
 - H₂S - hydrogen sulfide
 - HCl - hydrogen chloride
 - Cl₂ - chlorine
- (4) Fugitive emissions are an estimate only and should not be considered as a maximum allowable emission rate.
- (5) Emissions from maintenance activities authorized by this permit shall not exceed these rolling 12-month caps. These emissions are also included, where noted, in the preceding individual contaminant category caps. The maintenance emissions are the same from year to year - no difference between initial and final.

* Emission rates are based on operating 8,760 hrs/year.

** Compliance with annual emission limits is based on a rolling 12-month period.

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ATTACHMENT I

SOURCE CATEGORIES, EMISSION POINT NUMBERS AND SOURCE NAMES

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This table lists the maximum allowable emission rates and all sources of air contaminants on the applicant's property covered by this permit. The emission rates shown are those derived from information submitted as part of the application for permit and are the maximum rates allowed for these facilities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

<u>Source Category</u>	<u>Emission Point No. (1)</u>	<u>Source Name (2)</u>
COMBUSTION SOURCES:		
	B-10	No. 18 Boiler
	B-11	No. 19 Boiler
	B-12	600# Boiler
	B-19	New 300# Steam Boiler No. 1
	B-20	New 300# Steam Boiler No. 2
	B-21	New 300# Steam Boiler No. 3
	B-3	No. 10 Boiler
	B-4	No. 11 Boiler
	B-5	No. 12 Boiler
	B-6	No. 13 Boiler
	B-7	No. 14 Boiler
	B-8	No. 15 Boiler
	B-9	No. 16 Boiler
	H-1	No. 1 Crude Charge Heater
	H-11	No. 2 Crude Charge-Anderson
	H-13	GO Fractionator Heater
	H-14	Unifiner Charge Heater
	H-15	No. 1 Nap. Hydrotreater DeS ₂ Reboiler
	H-17	No. 3 Hydrotreater Charge Heater
	H-18	No. 1 Reformer Charge Heater (Charge, 3, 4 Inter-Heaters)
	H-2	No. 1 Vacuum Heater
	H-21	No. 1 H ₂ Primary Reformer Heater
	H-22	No. 2 H ₂ Primary Reformer Heater
	H-24	TAME Unit NRU Regeneration Heater

COMBUSTION SOURCES:

H-26	No. 2 Vacuum Heater
H-27	PP Mol. Sieve Regeneration Heater
H-28	Active Butane Oxygenate Heater
H-29	Asphalt Circulation Heater (Tks. 5501, 5502, 5503)
H-30	Asphalt Tank Heaters 5501, 5502, 5503 (6 stacks)
H-31B	Asphalt Tank Heaters 27, 28 (2 stacks)
H-32	Asphalt Tank Heaters 20M5, 20M6 (6 stacks)
H-32C	Asphalt Tank Heaters 20M7
H-33	Asphalt Tank Htrs. 34, 121, 141, 551, 552 (7 stacks)
H-34	No. 1 Reformer Stabilizer Reboiler
H-35	Asphalt Tank Heater 300M2 (4 stacks)
H-36	No. 2 Naphtha Hydrotreater DeS ₂ Reboiler
H-37	No. 4 Hydrotreater Stripper Reboiler Heater
H-38	No. 2 Reformer Charge Heater (Charg, 3, 4 Inter-Heaters)
H-39	No. 2 Reformer Stabilizer Reboiler
H-4	Asphalt Tank Heater for 5503
H-40	No. 1 PDA Asphalt Heater (Asphalt-South)
H-41	No. 2 Crude Charge-Born
H-42	HCU Recycle Heater
H-43	HCU DeC ₄ Reboiler Heater
H-45	No. 1 Naphtha Hydrotreater Charge Heater
H-46	No. 1 Reformer No. 1 Interheater
H-47	Asphalt Blowstill Heater
H-48	Turbine Fuel HDSU Heater
H-5	No. 2 PDA Asphalt Heater (Asphalt-North)
H-51	Asphalt Tank Heater 300M3 (4 stacks)
H-52	Trash Incinerator
H-55	No. 1 Hydrogen Plant Startup Heater
H-56	No. 2 Hydrogen Plant Startup Heater
H-6	DAGO Heater
H-64	No. 4 Hydrotreater Charge Heater
H-65	No. 4 Hydrotreater Splitter Reboiler Heater
H-70	No. 2 Crude Charge Heater
H-71	No. 3 Vacuum Heater
H-72	PDA Asphalt Heater

COMBUSTION SOURCES:

H-73	HCU Fractionator Charge Heater
H-74	HCU Recycle Gas Heater
H-75	HCU DeC ₄ Reboiler Heater
H-76	Diesel Hydrotreater Charge Heater
H-77	No. 1 Reformer Charge Heater
H-78	No. 1 Reformer Interheaters
H-79	No. 1 Ref. Stabilizer Reboiler
H-8	No. 3 Crude Heater-PetroChem (North)
H-80	FCC Gas HDS Charge Heater
H-81	C ₄ Isom Heater
H-82	Coker Heater
H-83	Polymer Modified Asphalt Heater
H-84	No. 2 Reformer No. 1 Interheater
H-85	No. 2 Ref. Stab. Reboiler
H-86	No. 2 Naptha Hydrotreater Charge Heater
H-87	SRU No. 3 Hot Oil Heater
H-9	No. 3 Crude Heater-PetroChem (South)

STORAGE TANKS

S-001	Tank 120M1
S-002	Tank 133
S-003	Tank 134
S-004	Tank 139
S-005	Tank 150M1
S-006	Tank 157
S-007	Tank 168
S-008	Tank 1001
S-009	Tank 1003
S-010	Tank 1501
S-011	Tank 1502
S-012	Tank 3001
S-013	Tank 3002
S-014	Tank 6701
S-015	Tank 6702
S-016	Tank 31
S-017	Tank 138

STORAGE TANKS

S-018	Tank 161
S-019	Tank 163
S-020	Tank 167
S-021	Tank 101
S-022	Tank 120M2
S-023	Tank 120M3
S-024	Tank 126
S-025	Tank 151
S-026	Tank 165
S-027	Tank 166
S-028	Tank 2
S-031	Tank 100M2
S-032	Tank 140
S-033	Tank 145
S-034	Tank 146
S-035	Tank 147
S-037	Tank 21
S-038	Tank 22
S-039	Tank 130
S-040	Tank 148
S-042	Tank 162
S-043	Tank 164
S-044	Tank 144
S-045	Tank 127
S-046	Tank 142
S-048	Tank 154
S-049	Tank 155
S-052	Tank 128
S-053	Tank 222
S-055	Tank 1
S-056	Tank 137
S-057	Tank 441
S-058	Tank 442
S-059	Tank 23
S-060	Tank 24

STORAGE TANKS

S-063	Tank 27
S-064	Tank 28
S-065	Tank 29
S-066	Tank 30
S-067	Tank 32
S-068	Tank 33
S-069	Tank 34
S-070	Tank 121
S-071	Tank 141
S-072	Tank 551
S-073	Tank 552
S-074	Tank 5501
S-075	Tank 5502
S-076	Tank 5503
S-086	Tank 143
S-090	Tank 4
S-095	Tank 100
S-137	Tank 20M5
S-138	Tank 20M6
S-139	Tank 125
S-140	Tank 181
S-141	Tank 182
S-142	Tank 232
S-143	Tank 5505
S-144	Tank 5504
S-150	Tank 300M1
S-168	N Lube Tank (T-9)
S-173	3rd from S Lube Tank (T-3)
S-174	2nd from S Lube Tank (T-2)
S-175	S. Lube Tank (T-1)
S-176	Tank 200M1
S-177	Tank 300M2
S-179	Latex Tank 1
S-180	Latex Tank 2
S-183	Tank 120M4

STORAGE TANKS

S-184	Tank 940T1
S-186	Tank 80M1
S-187	Tank 150M2
S-192	Tank 20M7
S-194	Tank 300M3
S-195	Tank T101
S-196	Tank T102
S-197	Tank T109
S-198	DGF Effluent (Tank T111)
S-199	WW Holding (Tank T115)
S-200	Tank 5506
S-202	Tank 100M3
S-203	Tank 150M3
S-204	Tank 150M4
S-209	Tank 200M2
S-210	Tank 200M3
S-211	Tank 150M5
S-212	Tank 150M6
S-213	Tank 100M4
S-214	Tank 100M5
S-215	Tank 100M6
S-216	Tank 100M7
S-217	Tank 100M8
S-218	Tank 100M9
S-219	Tank 100M10
S-220	Tank 50M1
S-221	Tank 50M2
S-222	Tank 25M1
S-223	Tank 25M2
S-224	Tank 940T2
S-225	PMA Wetting Tank

PIPING COMPONENT FUGITIVES

F-1CRUDE	No. 1 Crude/Vacuum Unit Fugitives
F-1NH3	No. 1 H ₂ /NH ₃ Plant Fugitives
F-1REF_HT	No. 1 Naphtha HDS/Reformer Fugitives

PIPING COMPONENT FUGITIVES

F-2ALKY	No. 2 Alky Unit Fugitives
F-2CRUDE	No. 2 Crude/Vacuum Unit Fugitives
F-2NH3	No. 2 H ₂ /NH ₃ Plant Fugitives
F-2REF_HT	No. 2 Naphtha HDS/Reformer Fugitives
F-3CRUDE	No. 3 Crude/Vacuum Unit Fugitives
F-3HT	No. 3 Hydrotreater
F-4HT	No. 4 Naphtha Hydrotreater Fugitives
F-85	Cleaning Slab
F-ALKY_PDA	Alky and PDA Unit Fugitives
F-ASPHALT	Heavy Oil Blending
F-BRINE	Brine Pond Fugitives
F-C4ISOM	C ₄ Isom Unit Fugitives
F-CASING	Cavern Well Casing Maintenance
F-CAVERN	Storage Cavern Wellhead Fugitives
F-COKE_VOC	Coker Fugitives
F-DESALT	Desalter Water Stripper
F-DHDSU	Diesel HDS Unit
F-ETNKFRM	East Tank Farm Fugitives
F-FCCU	FCCU Fugitives
F-GASBLD	Gasoline Blending Fugitives
F-GASPLT	Gas Plant Fugitives
F-GHDS	Gasoline HDS Fugitives
F-HCU	HCU Fugitives
F-HDS_GOF	GOF Fugitives
F-LPG	LPG Storage Fugitive
F-MTBE	MTBE Fugitives
F-NBULKLD	Loading Fugitives
F-NTNKFRM	North Tank Farm Fugitives
F-ORU	Oil Recovery Unit Fugitives
F-PENEX	Isomerization Unit Fugitives
F-PMA	Polymer Modified Asphalt Fugitives
F-PSA	Hydrogen Pressure Swing Absorption
F-PUMPSTA	Pump Station Fugitives
F-RAILLOAD	Railroad Loading Rack Fugitives
F-RLE	Light Ends Unit Fugitives

PIPING COMPONENT FUGITIVES

F-SBULKLD	Bulk Loading Terminal Fugitives
F-SRU1	No. 1 SRU Fugitives
F-SRU2	No. 2 SRU Fugitives
F-SRU3	No. 3 SRU Fugitives
F-SWS	Sour Water Stripper Fugitives
F-TAME	TAME Unit Fugitives
F-UNIFINER	Unifiner Unit Fugitives
F-WTNKFRM	West Tank Farm Fugitives
F-WWTP	Wastewater Treatment Fugitives

PRODUCT LOADING

L-11	Truck Loading Rack
L-13	Railcar Loading Rack
L-2	Asphalt Truck Loading Rack (Asphalts)
L-5	Railcar Rack (Diesel)
L-7	Asphalt Railcar Rack

MAINTENANCE

All Flares, All Storage Tanks (in VOC service <0.5 psia vapor pressure materials), and Piping Component Fugitive Areas (pump seal maintenance)

PROCESS VENTS

V-10	CO ₂ Plant Vent (CO ₂ release only)
V-11	MEA Still CO ₂ Plant Vent
V-13	Soda Ash Silo
V-14	Water Treater Lime Silo
V-15	Boiler House Lime Silo
V-16	SRU No. 2 Incinerator
V-17	FCC Catalyst Silo Vent
V-18	No. 1 Reformer Regeneration Vent
V-20	FCC Stack Vent
V-21	No. 2 Reformer Regeneration Vent
V-22	Asphalt Blowstill Vent
V-26	Enviroguard Silo Vent
V-28	SRU No. 3 Incinerator
V-29	Sulfuric Acid Plant Stack

EMISSION SOURCES - EMISSIONS CAPS

PROCESS VENTS

V-30	PMA Scrubber Stack
V-5	SRU No. 1 Incinerator
V-6	Acid Plant Mist Eliminator Vent
V-8	No.1 NH ₃ Plant CO ₂ Stripper Vent (regeneration)
V-9	No.2 NH ₃ Plant CO ₂ Stripper Vent (regeneration)

RELIEF VALVES

Tank 326	Relief Valve on LPG Tank
Tank 327	Relief Valve on LPG Tank
Tank 328	Relief Valve on LPG Tank
Tank 329	Relief Valve on LPG Tank
Tank 330	Relief Valve on LPG Tank

CAS SUMPS

CAS1	Oily Sump #7 CAS
CAS2	Crude Sump CAS
CAS3	Tank Farm CAS (150M2)
CAS4	Tank Farm CAS (150M1)
CAS5	P&T Crude Sump 1
CAS6	P&T Crude Sump 2
CAS7	Railcar Sump

ENGINES

E-1	No. 1 RLE Compressor Engine
E-2	No. 2 RLE Compressor Engine
E-5	PDA Propane Compressor Engine
E-7	Unifiner (Clark) Compressor Engine
E-8	Diesel H.T. #1 Compressor Engine
E-9	Diesel H.T. #2 Compressor Engine

FLARES

FL-1	No. 1 Main Refinery Flare
FL-3	FCCU Flare
FL-4	HCU Flare

EMISSION SOURCES - EMISSIONS CAPS

FLARES

FL-6	Wastewater Flare
FL-7	Loading Rack Vapor Combustor
FL-8	No. 2 Main Refinery Flare
FL-9	Brine Flare

COOLING TOWERS

F-20	No. 1 Refinery Cooling Tower
F-47	No. 2 Refinery Cooling Tower
F-93	No. 3 Refinery Cooling Tower
F-22	No. 3 NH ₃ Plant Cooling Tower
F-21	Gasoline Plant Cooling Tower

COKE HANDLING

F-COKE_PM	Coke Handling Fugitives
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- (1) Emission point identification - either specific equipment designation or emission point number from plot plan.
- (2) Specific point source name. For fugitive sources use area name or fugitive source name.

Dated October 1, 2004