

# TEST REPORT

## COMPLIANCE EMISSION TEST PROGRAM

SRU NO. 1 INCINERATOR: EPN V-5

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)***

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ARI Project No. H545-12

ARI Proposal No. 21008

Valero Purchase Order No. 4501477921

Test Dates: August 6 and 8, 2008



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## REPORT CERTIFICATION

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### CERTIFICATION OF REPORT

I certify under penalty of law that this test report and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the test information submitted. Based on my inquiry of the person or persons who performed sampling and analysis relating to the performance test, the information submitted in this test report is, to the best of my knowledge and belief, true, accurate, and complete.

A handwritten signature in black ink, appearing to read 'Daniel E. Fitzgerald', is written over a horizontal line.

Daniel E. Fitzgerald  
Division Manager, Source Testing  
ARI Environmental, Inc.



## 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. 1 Incinerator Exhaust at the Valero McKee Refinery located in Sunray, Texas. This source is designated as Emission Point Number (EPN) V-5 in Valero's Flexible Permit No. 9708/PSD-TX-861M2.

Three (3) test runs were conducted to determine the concentrations and mass emission rates of particulate matter (PM), nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO) and total reduced sulfur (TRS). Testing was conducted on August 6 and 8, 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, Mr. Adam Hensley 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. 1 INCINERATOR EXHAUST TEST RESULTS SUMMARY  
 (AUGUST 6, 2008)**

Test Run :	1	2	3	Average	Allowable
<b><u>Nitrogen Oxides (NO<sub>x</sub>)</u></b>					
Concentration, ppmv db	18.1	19.1	18.1	18.4	
Emission rate, lb/hr	0.275	0.284	0.267	0.275	
<b><u>Carbon Monoxide (CO)</u></b>					
Concentration, ppmv db	7.81	6.20	7.47	7.16	
Emission rate, lb/hr	0.072	0.056	0.067	0.065	
<b><u>Total Reduced Sulfur (TRS) as SO<sub>2</sub></u></b>					
Concentration, ppmv db @ 3% O <sub>2</sub>	<0.85	<0.85	<0.85	<0.85	5.0
Emission rate, lb/hr	<0.0179	<0.0177	<0.0174	<0.0177	

**TABLE 1-2. SRU NO. 1 INCINERATOR EXHAUST TEST RESULTS SUMMARY  
 (AUGUST 8, 2008)**

Test Run :	M5-1	M5-2	M5-3	Average	Allowable
<b><u>Total Particulate Matter (PM)</u></b>					
Concentration, gr/dscf	0.0068	0.0088	0.0083	0.0080	
Emission rate, lb/hr	0.120	0.157	0.146	0.141	



## SECTION TWO

## Testing and Analytical Procedures

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### 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

Three (3) 60-minute test runs were conducted for PM determination. Three (3) 180-minute test runs were conducted for NO<sub>x</sub>, 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 49.75-inch diameter stack are located approximately 456 inches (9.2 duct diameters) upstream and approximately 216 inches (4.3 duct diameters) downstream from the nearest flow disturbances. For volumetric flow rate determinations during the NO<sub>x</sub>, CO and TRS sample runs, eight (8) sampling points were used for each sample port for a total of 16 sampling points. For isokinetic testing of PM, twelve (12) sampling points were used for each sample port for a total of 24 sampling points. See Figure 2-1.

An initial cyclonic flow check was conducted on August 6, 2008 and the average yaw angle was measured as <2°.

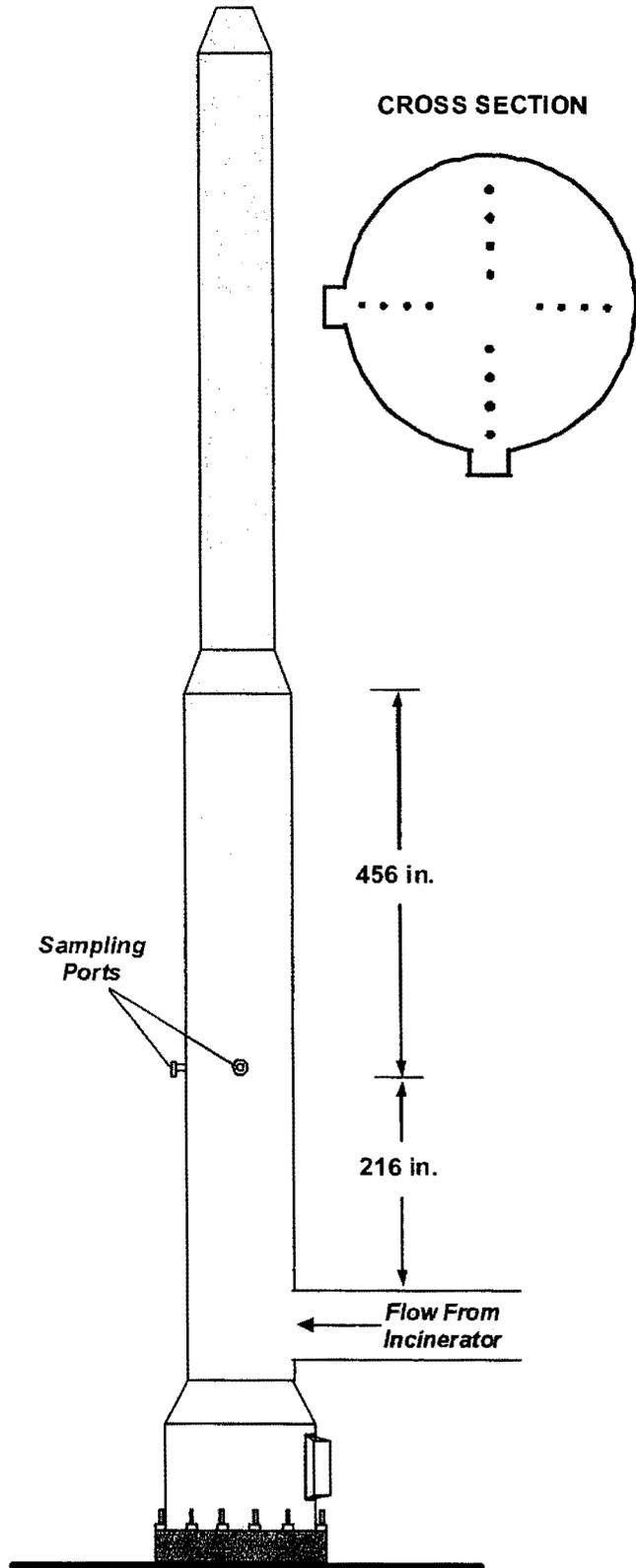
The sampling point locations used for the reference method sampling were determined following the procedures detailed in USEPA Method 7E. An initial stratification check was performed in one sample port using 3 points located at 16.7%, 50.0% and 83.3% of the stack diameter. The 3-point average of each 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.

# SECTION TWO

# Testing and Analytical Procedures



### VELOCITY DETERMINATION

TRAVERSE POINTS: 16  
 NUMBER OF PORTS: 2  
 POINTS/PORT: 8  
 STACK ID: 49.75 in.

TRAVERSE POINT NO.	DISTANCE FROM INSIDE WALL, in.
1	1.6
2	5.2
3	9.7
4	16.1
5	33.7
6	40.1
7	44.5
8	48.2

### PM DETERMINATION

TRAVERSE POINTS: 24  
 NUMBER OF PORTS: 2  
 POINTS/PORT: 12  
 STACK ID: 49.75 in.

TRAVERSE POINT NO.	DISTANCE FROM INSIDE WALL, in.
1	1.0
2	3.3
3	5.9
4	8.8
5	12.4
6	17.7
7	32.0
8	37.3
9	40.9
10	43.9
11	46.4
12	48.7

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



## SECTION TWO

## Testing and Analytical Procedures

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### 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 (O<sub>2</sub>) and carbon dioxide (CO<sub>2</sub>) were measured in association with the procedures described in Subsection 2.7.

### 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 60 minutes.

#### 2.6.1 Sampling Apparatus

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

Probe - 5/8-in. O.D. seamless titanium tube - 72-in. total length

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 USPEA Method 5 was placed in the holder.

Draft Gauge - Inclined manometer with a readability of 0.01 in. H<sub>2</sub>O in the 0- to 1-in. range and 0.1-in. H<sub>2</sub>O 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



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## Testing and Analytical Procedures

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### 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.

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 ft<sup>3</sup>/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:

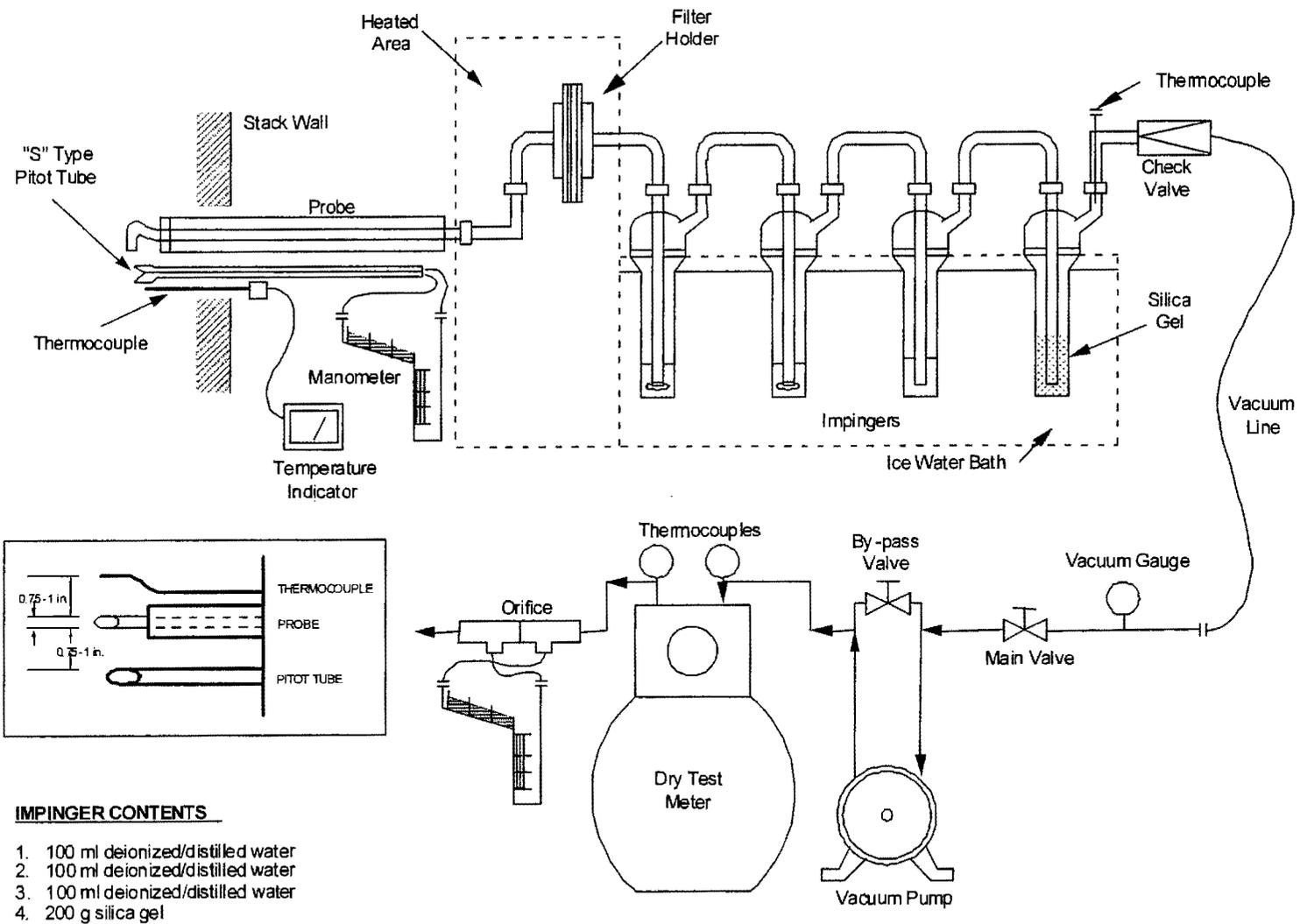
Container 1 - The filter holder was sealed.

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.



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



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### 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.

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.

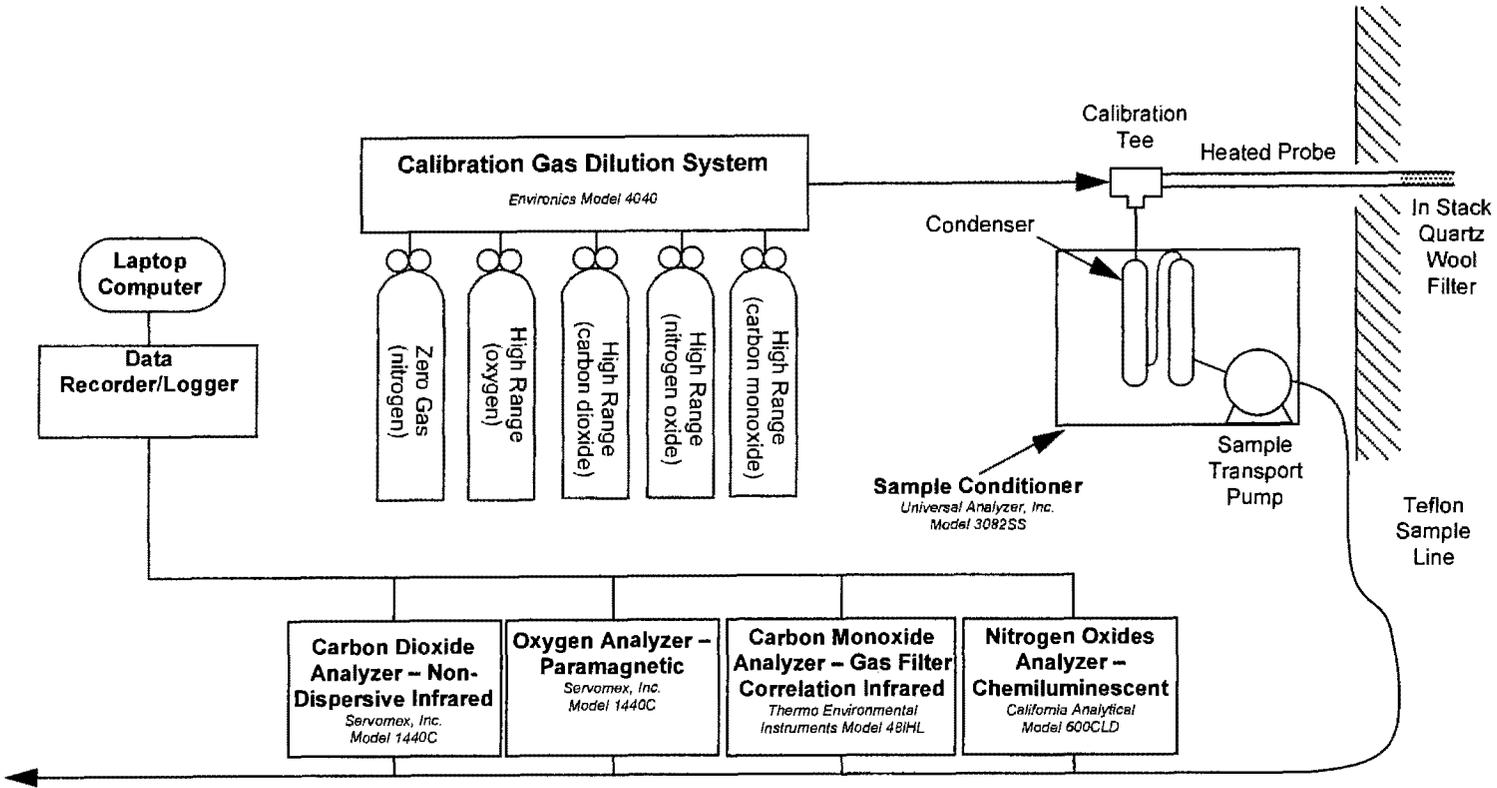
The methylene chloride solution was placed in a tared beaker. The beaker was placed in a fume hood and allowed to evaporate. The beaker was then desiccated and re-weighed. The gain in mass represents the organic PM collected in the sampling train back half.

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 - CO<sub>2</sub>, O<sub>2</sub>, NO<sub>x</sub> AND CO

ARI's sampling system consisted of a heated probe with in-stack filter followed by a calibration tee assembly 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 O<sub>2</sub>, CO<sub>2</sub>, NO<sub>x</sub>, and CO analyzers. See Figure 2-3.

Continuous O<sub>2</sub> sampling was conducted following USEPA Method 3A. O<sub>2</sub> 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 O<sub>2</sub> balance nitrogen standards of zero, 4.50% and 9.00% at an analyzer span of 9.00%.



**FIGURE 2-3. ARI REFERENCE METHOD CO<sub>2</sub>, O<sub>2</sub>, NO<sub>x</sub> AND CO SAMPLING SYSTEM**



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Continuous CO<sub>2</sub> sampling was conducted following USEPA Method 3A. CO<sub>2</sub> 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 CO<sub>2</sub> balance nitrogen standards of zero, 9.00% and 18.00% at an analyzer span of 18.00%.

Continuous NO<sub>x</sub> sampling was conducted following USEPA Method 7E procedures. NO<sub>x</sub> 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<sub>x</sub> 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 NO<sub>2</sub> to NO conversion rate is greater than 90%. The NO<sub>x</sub> converter check was found to have a conversion rate of 91.01% on August 6, 2008. The calibration gas used was 49.9 ppm NO<sub>2</sub> in N<sub>2</sub>.

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, 90.0 ppm and 180.0 ppm at an analyzer span of 180.0 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)



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## Testing and Analytical Procedures

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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 SO<sub>2</sub> from the sample stream.

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 SO<sub>2</sub> 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 the No. 3901 Environics dilution system, ARI's Servomex, Inc. Model 1440C paramagnetic O<sub>2</sub> 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.

For the No. 3712 Environics dilution system, ARI's Servomex, Inc. Model 1440C paramagnetic O<sub>2</sub> gas analyzer was calibrated following USEPA Method 3A procedures. After the calibration procedure was complete, diluted standards of 6.00% and 17.00% 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.



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## **Testing and Analytical Procedures**

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The difference between the instrument average and the predicted concentration was within +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 +2%.



## SECTION THREE

## Results

The test results are presented in Tables 3-1 and 3-2.

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.

### **DISCUSSION**

The original test protocol stated that the PM testing would be conducted during the NO<sub>x</sub>, CO and TRS sampling. However during the initial sampling equipment set-up, it was discovered that the exhaust gas of the incinerator was at high temperatures (>1350°F) and exceeded the capabilities of the onsite PM sampling probes. Therefore, the NO<sub>x</sub>, CO and TRS 180-minute sample runs were conducted on August 6, 2008 and quartz probe liners were overnighted by courier for the next day. Upon receipt of four (4) 84-inch quartz probes on August 7, 2008, ARI attempted to conduct the PM sample runs. However, problems were incurred with probe liner breakage. The breakage appeared to be occurring at the point where part of the quartz liners were in the stack and the remaining section was out of the stack. It appeared that the breakage was occurring at the extreme temperature difference of stack gas to ambient air that the probes were exposed to. After three of the four liners failed, it was decided that, with approval of the TCEQ, a seamless titanium metal liner be used to extract the sample gases to the PM filter and impinger train.

Mr. Dan McCrummen of the TCEQ Lubbock Regional Office was contacted regarding acceptance to changing the original test protocol. Specifically, a variance to the original protocol that would allow using a seamless titanium liner and a 60-minute test time instead of 120 minutes was requested. Mr. McCrummen verbally agreed to the request by phone on the morning of August 8, 2008. PM testing commenced shortly after the verbal approval and was completed that afternoon.



# SECTION THREE

# Results

**TABLE 3-1. SRU NO. 1 INCINERATOR EXHAUST NO<sub>x</sub>, CO AND TRS TEST RESULTS (8/6/08)**

COMPANY	: Valero McKee Refinery			
LOCATION	: Sunray, Texas			
SOURCE	: No. 1 SRU Incinerator			
OPERATORS	: Dan Fitzgerald, T. Davis, A. Hensley, S. Yuchs			
TEST RUN	: 1	: 2	: 3	
TEST DATE	: 8/6/2008	: 8/6/2008	: 8/6/2008	
TEST TIME	: 10:49 - 13:49	: 14:13 - 17:13	: 17:40 - 20:40	: <u>Average</u>
<b><u>Process Data</u></b>				
Sulfur Production Rate, LTPD	21.46	21.46	21.46	21.46
Sulfur Dioxide (SO <sub>2</sub> ), ppmv db	6.2	5.0	6.6	5.9
Incinerator Temperature, °F	1,380	1,381	1,382	1,381
<b><u>Stack Gas Parameters</u></b>				
Temperature, av. °F	1,304.1	1,366.1	1,364.5	1,344.9
Velocity, av. ft/sec	11.96	12.50	12.20	12.22
Volume flow, acfm	9,685	10,124	9,883	9,898
Volume flow, scfh	152,294	153,272	149,756	151,774
Volume flow, dscfh	126,993	125,040	123,116	125,050
Moisture, av. % vol	16.61	18.42	17.79	17.61
CO <sub>2</sub> , av. % vol, db	10.04	9.92	10.05	10.00
O <sub>2</sub> , av. % vol, db	3.82	3.81	3.46	3.70
<b><u>Nitrogen Oxides (NO<sub>x</sub> as NO<sub>2</sub>)</u></b>				
Concentration				
ppmv db	18.1	19.1	18.1	18.4
lb/dscf x 10 <sup>-6</sup>	2.166	2.275	2.165	2.202
Emission rate				
lb/hr	0.275	0.284	0.267	0.275
<b><u>Carbon Monoxide</u></b>				
Concentration				
ppmv db	7.81	6.20	7.47	7.16
lb/dscf x 10 <sup>-6</sup>	0.5678	0.4508	0.5430	0.5205
Emission rate				
lb/hr	0.072	0.056	0.067	0.065
<b><u>Carbonyl Sulfide</u></b>				
Concentration				
ppmv db	< 0.03	< 0.03	< 0.03	< 0.03
lb/dscf x 10 <sup>-6</sup>	< 0.0047	< 0.0047	< 0.0047	< 0.0047
Emission rate				
lb/hr	< 0.0006	< 0.0006	< 0.0006	< 0.0006
<b><u>Carbon Disulfide</u></b>				
Concentration				
ppmv db	< 0.03	< 0.03	< 0.03	< 0.03
lb/dscf x 10 <sup>-6</sup>	< 0.0059	< 0.0059	< 0.0059	< 0.0059
Emission rate				
lb/hr	< 0.0008	< 0.0007	< 0.0007	< 0.0007



**SECTION THREE**

**Results**

**TABLE 3-1 (CONTINUED). SRU NO. 1 INCINERATOR EXHAUST NO<sub>x</sub>, CO AND TRS TEST RESULTS (8/6/08)**

TEST RUN	:	1	2	3	
TEST DATE	:	8/6/2008	8/6/2008	8/6/2008	
TEST TIME	:	<u>10:49 - 13:49</u>	<u>14:13 - 17:13</u>	<u>17:40 - 20:40</u>	<u>Average</u>
<b><u>Hydrogen Sulfide</u></b>					
Concentration					
ppmv db		< 0.76	< 0.76	< 0.76	< 0.76
lb/dscf x 10 <sup>-6</sup>		< 0.0672	< 0.0672	< 0.0672	< 0.0672
Emission rate					
lb/hr		< 0.0085	< 0.0084	< 0.0083	< 0.0084
<b><u>TRS as SO<sub>2</sub></u></b>					
Concentration					
ppmv db		< 0.85	< 0.85	< 0.85	< 0.85
lb/dscf x 10 <sup>-6</sup>		< 0.1412	< 0.1412	< 0.1412	< 0.1412
Emission rate					
lb/hr		< 0.0179	< 0.0177	< 0.0174	< 0.0177



# SECTION THREE

# Results

**TABLE 3-2. SRU NO. 1 INCINERATOR EXHAUST PM TEST RESULTS (8/8/08)**

COMPANY	: Valero Refining - Texas			
LOCATION	: Sunray, Texas			
SOURCE	: SRU No. 1 Incinerator Exhaust			
OPERATORS	: D. Fitzgerald, T. Davis, A. Hensley, S. Yuchs			
TEST RUN	: M5-1	M5-2	M5-3	
TEST DATE	: 8/8/2008	8/8/2008	8/8/2008	
TEST TIME	: <u>11:33 - 12:43</u>	<u>13:19 - 14:25</u>	<u>15:05 - 16:13</u>	<u>Average</u>
<b>Process Data</b>				
Sulfur Production Rate, LTPD	23.82	23.82	23.82	23.82
Sulfur Dioxide (SO <sub>2</sub> ), ppmv db	5.1	4.9	4.4	4.8
Incinerator Temperature, °F	1,383	1,383	1,381	1,382
<b>Stack Gas Parameters</b>				
Temperature, av. °F	1,366.2	1,365.6	1,365.3	1,365.7
Velocity, av. ft/sec	12.257	12.243	12.136	12.212
Volume flow, acfm	9,928	9,916	9,830	9,891
Volume flow, scfm	2,511	2,503	2,476	2,496
Volume flow, dscfm	2,059	2,077	2,065	2,067
Volume flow, dscfh	123,569	124,621	123,871	124,020
Moisture, av. % vol	17.97	17.01	16.61	17.19
CO <sub>2</sub> , av. % vol, db	10.32	10.42	10.64	10.46
O <sub>2</sub> , av. % vol, db	3.77	3.58	3.56	3.64
<b>Particulate Matter (PM)</b>				
<b>Filterable PM collected, mg</b>				
Concentration	12.56	4.00	7.05	7.87
gr/dscf	0.00415	0.00128	0.00228	0.00257
lb/dscf x 10 <sup>-6</sup>	0.5936	0.1829	0.3261	0.3675
Emission rate				
lb/hr	0.073	0.023	0.040	0.045
ton/yr	0.321	0.100	0.177	0.199
<b>Condensable Inorganic PM collected, mg</b>				
Concentration	7.40	23.00	18.35	16.25
gr/dscf	0.00245	0.00736	0.00594	0.00525
lb/dscf x 10 <sup>-6</sup>	0.3497	1.0518	0.8489	0.7501
Emission rate				
lb/hr	0.043	0.131	0.105	0.093
ton/yr	0.189	0.574	0.460	0.408
<b>Condensable Organic PM collected, mg</b>				
Concentration	0.65	0.50	0.15	0.43
gr/dscf	0.00021	0.00016	0.00005	0.00014
lb/dscf x 10 <sup>-6</sup>	0.0307	0.0229	0.0069	0.0202
Emission rate				
lb/hr	0.004	0.003	0.001	0.003
ton/yr	0.017	0.012	0.004	0.011



**SECTION THREE**

**Results**

**TABLE 3-2 (CONTINUED). SRU NO. 1 INCINERATOR EXHAUST PM TEST RESULTS  
 (8/8/08)**

TEST RUN	:	M5-1	M5-2	M5-3	
TEST DATE	:	8/8/2008	8/8/2008	8/8/2008	
TEST TIME	:	11:33 - 12:43	13:19 - 14:25	15:05 - 16:13	<u>Average</u>
<b>Total PM collected, mg</b>		20.61	27.50	25.55	24.55
Concentration					
gr/dscf		0.00682	0.00880	0.00827	0.00796
lb/dscf x 10 <sup>-6</sup>		0.9740	1.2576	1.1820	1.1378
Emission rate					
lb/hr		0.120	0.157	0.146	0.141
ton/yr		0.527	0.686	0.641	0.618



Valero McKee Refinery: Sunray, TX  
SRU No. 1 Incinerator: EPN V-5  
Test Dates: 8/6 & 8/8/08

## **APPENDIX A**

## **Calculation Summaries**

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MONITOR DATA SUMMARY

COMPANY : Valero McKee Refinery  
 SOURCE : No. 1 SRU Incinerator  
 REPETITION : 1  
 TEST DATE : 8/6/2008  
 START TIME : 10:49  
 END TIME : 13:49

**GAS ANALYZER** **CO**

SPAN: 180.0 ppm  
 AVERAGE CAL. BIAS (C<sub>m</sub>): 89.90  
 AVERAGE ZERO BIAS (C<sub>o</sub>): 0.20  
 CALIBRATION GAS: EPA Protocol CO  
 CALIBRATION PPM (C<sub>ma</sub>): 90.0  
 PPM CORRECTED (C<sub>gas</sub>): 7.8

**GAS ANALYZER** **NO<sub>x</sub>**

SPAN: 90.0 ppm  
 AVERAGE CAL. BIAS (C<sub>m</sub>): 44.60  
 AVERAGE ZERO BIAS (C<sub>o</sub>): 0.35  
 CALIBRATION GAS: EPA Protocol NO<sub>x</sub>  
 CALIBRATION PPM (C<sub>ma</sub>): 45.0  
 PPM CORRECTED (C<sub>gas</sub>): 18.1

**GAS ANALYZER** **O<sub>2</sub>**

SPAN: 9.00 %  
 AVERAGE CAL. BIAS (C<sub>m</sub>): 4.505  
 AVERAGE ZERO BIAS (C<sub>o</sub>): -0.050  
 CALIBRATION GAS: EPA Protocol O<sub>2</sub>  
 CALIBRATION PPM (C<sub>ma</sub>): 4.50  
 PPM CORRECTED (C<sub>gas</sub>): 3.82

**GAS ANALYZER** **CO<sub>2</sub>**

SPAN: 18.00 %  
 AVERAGE CAL. BIAS (C<sub>m</sub>): 9.240  
 AVERAGE ZERO BIAS (C<sub>o</sub>): 0.175  
 CALIBRATION GAS: EPA Protocol CO<sub>2</sub>  
 CALIBRATION % (C<sub>ma</sub>): 9.00  
 % CORRECTED (C<sub>gas</sub>): 10.04

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

CLOCK TIME	ELAPSED TIME	Uncorrected			
		O <sub>2</sub> % vol db	CO <sub>2</sub> % vol db	NO <sub>x</sub> ppmv db	CO ppmv db
10:49	0	---	---	---	---
10:50	1	3.70	10.15	18.8	6.3
10:51	2	3.77	10.05	18.9	6.9
10:52	3	3.73	10.10	18.8	6.5
10:53	4	3.74	10.09	18.6	6.9
10:54	5	3.76	10.07	18.4	7.1
10:55	6	3.71	10.09	18.4	5.9
10:56	7	3.74	10.11	18.3	6.3
10:57	8	3.81	10.09	18.2	9.3
10:58	9	3.82	10.05	17.9	10.3
10:59	10	3.76	10.12	17.8	11.3
11:00	11	3.82	10.06	18.0	12.6
11:01	12	3.77	10.12	18.3	7.9
11:02	13	3.70	10.14	18.3	6.3
11:03	14	3.70	10.16	18.5	5.8
11:04	15	3.70	10.14	18.5	5.8
11:05	16	3.67	10.19	18.4	5.4
11:06	17	3.69	10.14	18.4	5.9
11:07	18	3.72	10.12	18.3	6.5
11:08	19	3.74	10.15	18.2	6.8
11:09	20	3.75	10.13	18.2	7.6
11:10	21	3.75	10.10	18.2	6.5
11:11	22	3.78	10.05	18.0	9.1
11:12	23	3.72	10.11	18.0	9.1
11:13	24	3.70	10.14	18.1	8.6
11:14	25	3.75	10.13	17.9	8.2
11:15	26	3.73	10.13	18.1	8.5
11:16	27	3.72	10.15	18.1	9.1
11:17	28	3.73	10.11	18.2	8.7
11:18	29	3.78	10.10	18.1	9.5
11:19	30	3.75	10.13	18.1	8.1
11:20	31	3.66	10.18	18.2	7.1
11:21	32	3.68	10.21	18.0	7.4
11:22	33	4.12	9.92	17.4	8.4
11:23	34	4.32	9.87	17.5	8.1
11:24	35	4.01	10.01	18.3	8.9
11:25	36	3.75	10.12	18.3	10.4
11:26	37	3.79	10.13	17.8	10.1
11:27	38	3.87	10.09	17.9	10.2
11:28	39	3.70	10.17	17.7	7.0
11:29	40	3.60	10.26	18.0	5.2
11:30	41	3.56	10.30	18.0	4.4
11:31	42	3.62	10.21	18.2	5.8
11:32	43	3.57	10.28	18.0	4.3
11:33	44	3.58	10.23	18.0	3.9
11:34	45	3.64	10.21	17.9	4.3
11:35	46	3.69	10.22	17.9	4.6
11:36	47	3.70	10.18	17.9	4.3
11:37	48	3.74	10.19	17.7	4.1
11:38	49	3.65	10.24	17.8	4.3
11:39	50	3.62	10.19	17.4	4.8
11:40	51	3.77	10.15	16.3	4.7
11:41	52	5.09	9.48	16.1	11.3
11:42	53	3.88	10.19	17.2	5.0
11:43	54	3.61	10.26	17.4	4.3
11:44	55	4.71	9.68	15.8	4.2
11:45	56	3.93	10.13	17.0	4.9
11:46	57	3.91	10.14	16.8	5.2
11:47	58	4.03	10.08	17.1	4.9
11:48	59	3.83	10.20	17.1	3.7
11:49	60	3.92	10.18	17.3	3.5
11:50	61	3.70	10.27	17.3	3.4
11:51	62	3.50	10.44	17.1	3.2
11:52	63	3.44	10.49	17.2	2.9
11:53	64	3.44	10.45	17.2	3.1
11:54	65	3.37	10.48	17.4	2.9
11:55	66	3.43	10.45	17.6	3.2
11:56	67	3.55	10.36	17.7	4.0
11:57	68	3.63	10.35	17.6	5.1
11:58	69	3.68	10.30	17.8	6.0
11:59	70	3.74	10.27	17.8	6.4
12:00	71	3.79	10.28	17.8	6.7
12:01	72	3.81	10.28	17.8	7.2
12:02	73	3.76	10.30	18.2	6.3
12:03	74	3.80	10.25	17.8	7.1
12:04	75	3.92	10.19	17.2	15.8
12:05	76	4.02	10.15	17.1	20.7
12:06	77	3.77	10.28	18.5	7.4
12:07	78	3.45	10.45	18.5	2.1
12:08	79	3.50	10.42	18.0	3.1
12:09	80	3.72	10.32	17.8	6.1
12:10	81	3.71	10.36	17.8	7.3
12:11	82	3.70	10.35	17.6	7.2
12:12	83	3.71	10.36	17.2	8.1
12:13	84	3.78	10.34	17.7	9.2
12:14	85	3.77	10.38	17.7	9.5
12:15	86	3.74	10.38	17.8	9.1
12:16	87	3.72	10.41	17.8	7.6
12:17	88	3.77	10.38	17.8	9.1
12:18	89	3.77	10.41	17.7	8.6
12:19	90	3.78	10.39	17.7	8.0

1 continued

12:20	81	3.83	10.39	17.7	10.1
12:21	92	3.78	10.38	17.8	8.8
12:22	93	3.75	10.36	18.4	7.4
12:23	94	3.73	10.39	18.0	6.4
12:24	95	3.83	10.33	17.6	7.5
12:25	96	3.79	10.39	17.3	7.9
12:26	97	3.80	10.32	17.8	7.7
12:27	98	3.81	10.32	18.1	6.9
12:28	99	3.71	10.40	18.1	5.8
12:29	100	3.71	10.36	18.3	6.0
12:30	101	3.79	10.41	18.2	6.6
12:31	102	3.77	10.54	18.2	6.6
12:32	103	3.77	10.59	18.4	6.7
12:33	104	3.76	10.63	18.3	6.3
12:34	105	3.77	10.48	18.1	7.0
12:35	106	3.79	10.45	18.6	8.2
12:36	107	3.77	10.52	18.6	7.7
12:37	108	3.75	10.49	18.6	7.4
12:38	109	3.65	10.50	18.5	4.3
12:39	110	3.57	10.51	18.4	3.3
12:40	111	3.83	10.31	18.1	7.4
12:41	112	3.97	10.25	18.1	15.2
12:42	113	4.13	10.19	18.2	28.8
12:43	114	4.20	10.18	18.2	38.4
12:44	115	4.18	10.22	18.4	40.2
12:45	116	4.04	10.31	19.0	20.9
12:46	117	3.86	10.43	19.0	12.7
12:47	118	3.88	10.38	19.3	11.2
12:48	119	3.85	10.37	19.6	10.5
12:49	120	3.88	10.38	19.2	10.6
12:50	121	3.88	10.37	19.5	10.8
12:51	122	3.89	10.37	19.4	10.6
12:52	123	3.92	10.31	19.4	10.8
12:53	124	3.91	10.31	19.4	9.2
12:54	125	3.90	10.30	19.6	8.2
12:55	126	3.93	10.25	19.5	7.8
12:56	127	3.95	10.24	19.4	8.4
12:57	128	3.82	10.33	19.7	6.2
12:58	129	3.83	10.31	19.5	6.5
12:59	130	3.89	10.25	19.3	6.9
13:00	131	3.85	10.30	19.4	5.7
13:01	132	3.82	10.34	19.3	5.0
13:02	133	3.78	10.37	19.0	5.0
13:03	134	3.82	10.36	18.9	5.3
13:04	135	3.88	10.30	19.3	5.7
13:05	136	3.80	10.37	19.8	4.6
13:06	137	3.81	10.35	19.3	4.7
13:07	138	3.86	10.33	19.1	5.5
13:08	139	3.94	10.33	19.1	6.5
13:09	140	3.94	10.33	19.3	6.7
13:10	141	3.90	10.37	19.8	6.8
13:11	142	3.82	10.37	19.2	6.3
13:12	143	3.93	10.35	19.2	8.3
13:13	144	3.94	10.33	19.1	9.9
13:14	145	3.90	10.39	19.2	9.7
13:15	146	3.92	10.37	19.2	9.2
13:16	147	4.03	10.30	19.2	9.7
13:17	148	4.01	10.36	19.6	9.4
13:18	149	3.96	10.42	19.6	9.3
13:19	150	3.98	10.41	19.3	10.6
13:20	151	4.01	10.38	19.1	10.6
13:21	152	4.00	10.38	18.9	11.3
13:22	153	3.98	10.39	18.4	16.1
13:23	154	4.09	10.31	17.5	23.0
13:24	155	4.04	10.36	17.5	15.7
13:25	156	3.94	10.43	17.7	11.2
13:26	157	3.94	10.41	17.8	9.2
13:27	158	3.86	10.47	17.8	7.6
13:28	159	3.84	10.46	17.7	7.1
13:29	160	3.77	10.51	17.8	6.0
13:30	161	3.80	10.47	18.2	4.6
13:31	162	3.78	10.50	18.4	3.8
13:32	163	3.77	10.50	18.3	3.1
13:33	164	3.74	10.49	18.0	3.2
13:34	165	3.79	10.45	17.9	4.9
13:35	166	3.84	10.44	17.9	5.4
13:36	167	3.92	10.43	18.1	6.1
13:37	168	3.86	10.47	17.7	6.9
13:38	169	3.92	10.43	17.9	8.5
13:39	170	3.94	10.39	17.6	7.8
13:40	171	3.95	10.44	17.6	7.3
13:41	172	3.94	10.42	17.8	7.6
13:42	173	3.87	10.49	18.0	7.7
13:43	174	3.91	10.45	17.9	8.5
13:44	175	3.94	10.42	18.0	8.6
13:45	176	3.94	10.42	18.1	8.1
13:46	177	3.94	10.41	18.0	7.2
13:47	178	3.96	10.39	17.7	7.9
13:48	179	3.89	10.39	17.7	9.6
13:48	180	3.92	10.41	17.9	9.0
Uncorrected Average =		3.818	10.291	18.19	7.99

**ARI ENVIRONMENTAL, INC.  
MOISTURE CALCULATION SUMMARY**

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**TEST DATE:** 8/6/2008  
**RUN NUMBER:** 1

<b>γ FACTOR:</b>	1.025	<b>STACK DIAM:</b>	49.8 inches
<b>BAROMETRIC:</b>	26.25 in. Hg	<b>METER VOLUME:</b>	74.701 ft <sup>3</sup>
<b>STATIC PRES:</b>	-0.69 in.H <sub>2</sub> O	<b>METER TEMP:</b>	109.4 °F
<b>STACK TEMP:</b>	1304.1 °F	<b>LIQUID COLL:</b>	264.4 milliliters
<b>SQ.RT ΔP:</b>	0.1070 in.H <sub>2</sub> O	<b>CO<sub>2</sub>:</b>	10.04 % by volume
<b>ΔH:</b>	1.00 in.H <sub>2</sub> O	<b>O<sub>2</sub>:</b>	3.82 % by volume

**ENGLISH UNITS  
(29.92 in.Hg & 68 °F)**

<p><b>VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS</b></p> $V_{mstd} = \left( \frac{528}{29.92} \right) \times V_m \times \gamma \left[ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 62.467 \text{ dscf}$ <p style="text-align: center;"><math>\gamma = 1.025</math></p>
<p><b>VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS</b></p> $V_{wstd} = 0.04707 \times V_{lc} = 12.445 \text{ scf}$ <p style="text-align: center;"><math>V_{lc} = 264.4 \text{ mL}</math></p>
<p><b>FRACTIONAL MOISTURE CONTENT OF STACK GAS AS MEASURED</b></p> $B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} = 0.1661$
<p><b>FRACTIONAL MOISTURE CONTENT OF STACK GAS @ SATURATION</b></p> $MF = \frac{\left( 10^{\left[ 8.361 - \left( \frac{1893.5}{T - 27.65} \right) \right] \right) - 0.5}{P} = 1.0000$ <p style="text-align: center;"> <math>T = 979.7 \text{ °K}</math>  <math>P = 665.5 \text{ mmHg}</math> </p>
<p><b>FRACTIONAL MOISTURE CONTENT USED IN CALCULATIONS</b></p> <p style="text-align: right;"><math>B_{ws} = 0.1661</math></p>

**ARI ENVIRONMENTAL, INC.  
FLOW RATE CALCULATION SUMMARY**

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**RUN NUMBER:** 1

**SOURCE:** No. 1 SRU Incinerator  
**TEST DATE:** 8/6/2008

<b>BAROMETRIC:</b>	26.25 in. Hg	<b>STACK DIAM:</b>	49.8 inches
<b>STATIC PRES:</b>	-0.69 in.H <sub>2</sub> O	<b>CO<sub>2</sub>:</b>	10.04 % by volume
<b>STACK TEMP:</b>	1304.1 °F	<b>O<sub>2</sub>:</b>	3.82 % by volume
<b>SQ.RT ΔP:</b>	0.107 in.H <sub>2</sub> O		

<b>DRY MOLECULAR WEIGHT OF STACK GAS</b>			
$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO)$	=	29.76	lb/lb-mole
<b>MOLECULAR WEIGHT OF STACK GAS, wet basis</b>			
$M_s = M_d(1 - B_{ws}) + 18B_{ws}$	=	27.81	lb/lb-mole
<b>PITOT TUBE COEFFICIENT</b>			
$C_p$ (from calibration curve or geometric specifications)	=	0.84	
<b>AVERAGE VELOCITY HEAD OF STACK GAS, in. H<sub>2</sub>O</b>			
$\sqrt{\Delta P} = \frac{1}{n} \sum_{i=1}^n \sqrt{\Delta p_i}$	=	0.1070	in. H <sub>2</sub> O
<b>AVERAGE ABSOLUTE STACK GAS TEMPERATURE</b>			
$T_s = 1304.1 \text{ °F} + 460$	=	1,764.1	°R
<b>ABSOLUTE STACK GAS PRESSURE</b>			
$P_s = P_{bar} + \frac{P_{static}}{13.6}$	=	26.20	in.Hg
<b>STACK GAS VELOCITY</b>			
$V_s = (85.49)(C_p)(\text{avg } \sqrt{\Delta P}) \sqrt{\frac{T_s}{(P_s)(M_s)}}$	=	11.957	ft/sec
<b>STACK GAS VOLUMETRIC FLOW RATE, actual</b>			
$Q_s = 60 \times V_s \times A_s$	=	9,684.9	acfm
Stack Area =		13.499	ft <sup>2</sup>
<b>STACK GAS VOLUMETRIC FLOW RATE, standard conditions, wet basis</b>			
$Q_{stdw} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)$	=	2,538.2 152,294	scfm, wb scfh, wb
<b>STACK GAS VOLUMETRIC FLOW RATE, standard conditions, dry basis</b>			
$Q_{std} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)(1 - B_{ws})$	=	2,116.6 126,993	dscfm dscfh

**NO<sub>x</sub> CALIBRATION CORRECTION DATA SHEET  
USEPA METHOD 7E**

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**MONITOR ID:** CAI Model 600 CLD  
**RUN NO:** 1  
**TEST DATE:** 8/6/2008

**INPUT**

---

NO<sub>x</sub> AVERAGE CHART READING (C): 18.19 ppmv  
 AVG PRE/POST ZERO DRIFT READING (C<sub>o</sub>): 0.35 ppmv  
 CAL GAS CONCENTRATION (C<sub>ma</sub>): 45.0 ppmv  
 AVG CAL PRE/POST TEST READING (C<sub>m</sub>): 44.60 ppmv  
 STACK GAS VOLUMETRIC FLOW RATE (Q<sub>std</sub>): 126,993.3 dscfh

**CALCULATIONS**

---

STACK NO<sub>x</sub> AVERAGE CHART READING = 18.19 ppmv

**STACK NO<sub>x</sub> CONC. CORRECTED FOR ZERO AND CALIBRATION DRIFT:**

---

$$\text{NO}_x \text{ CONC, ppmv (corrected)} = C_{\text{gas,ppm}} = (\bar{C} - C_o) \frac{C_{ma}}{C_m - C_o} = 18.1 \text{ ppmv db}$$

NO<sub>x</sub> CONC.(lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left( \frac{46 \text{ lb/lb-mole}}{385.26 \times 10^6 \text{ ft}^3 / \text{lb-mole}} \right) = 2.166 \times 10^{-6} \text{ lbs/dscf}$$

**NO<sub>x</sub> EMISSION RATE:**

---

STACK GAS VOLUMETRIC FLOW RATE = 126,993 dscfh

STACK NO<sub>x</sub> EMISSION RATE =

$$\text{SO}_{2\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = 0.275 \text{ lbs/hr}$$

$$= 1.205 \text{ ton/yr}$$

**CO CALIBRATION CORRECTION DATA SHEET  
USEPA METHOD 10**

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**MONITOR ID:** Thermo Environmental Model 48i-CHL  
**RUN NO:** 1  
**TEST DATE:** 8/6/2008

**INPUT**

---

CO AVERAGE CHART READING (C): 7.99 ppmv  
 AVG PRE/POST ZERO DRIFT READING (C<sub>o</sub>): 0.20 ppmv  
 CAL GAS CONCENTRATION (C<sub>ma</sub>): 90.0 ppmv  
 AVG CAL PRE/POST TEST READING (C<sub>m</sub>): 89.90 ppmv  
 STACK GAS VOLUMETRIC FLOW RATE (Q<sub>std</sub>): 126,993 dscfh

**CALCULATIONS**

---

STACK CO AVERAGE CHART READING = 8.0 ppmv

**STACK CO CONC. CORRECTED FOR ZERO AND CALIBRATION DRIFT:**

---

$$\text{CO CONC, ppmv (corrected)} = C_{\text{gas,ppm}} = (\bar{C} - C_o) \frac{C_{ma}}{C_m - C_o} = 7.8 \text{ ppmv db}$$

CO CONC.(lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left( \frac{28\text{lb/lb-mole}}{385.26 \times 10^6 \text{ft}^3/\text{lb-mole}} \right) = 0.568 \times 10^{-6} \text{ lbs/dscf}$$

**CO EMISSION RATE:**

---

STACK GAS VOLUMETRIC FLOW RATE = 126,993 dscfh

STACK CO EMISSION RATE =

$$\begin{aligned} \text{CO}_{\text{pmr}} &= (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = 0.072 \text{ lbs/hr} \\ &= 0.316 \text{ ton/yr} \end{aligned}$$

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

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**MONITOR ID:** SRI-9300B: GC-FPD  
**RUN NO:** 1  
**TEST DATE:** 8/6/2008

**INPUT**

---

CS<sub>2</sub> CONCENTRATION (C): <0.03 ppmv  
 STACK GAS VOLUMETRIC FLOW RATE (Q<sub>std</sub>): 126,993 dscfh

**CALCULATIONS**

---

STACK CS<sub>2</sub> AVERAGE CHART READING = < 0.03 ppmv

**CS<sub>2</sub> CONCENTRATION (lbs/dscf) =**

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left( \frac{76.1 \text{ lb / lb - mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb - mole}} \right) = < 0.0059 \times 10^{-6} \text{ lbs/dscf}$$

**CS<sub>2</sub> EMISSION RATE:**

---

STACK GAS VOLUMETRIC FLOW RATE = 126,993 dscfh

STACK CS<sub>2</sub> EMISSION RATE =

$$CS_{2\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = < 0.0008 \text{ lbs/hr} \\ = < 0.0033 \text{ ton/yr}$$

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

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**MONITOR ID:** SRI-9300B: GC-FPD  
**RUN NO:** 1  
**TEST DATE:** 8/6/2008

**INPUT**

---

COS CONCENTRATION (C): < 0.03 ppmv  
 STACK GAS VOLUMETRIC FLOW RATE (Q<sub>std</sub>): 126,993 dscfh

**CALCULATIONS**

---

STACK COS AVERAGE CHART READING = < 0.03 ppmv

**COS CONCENTRATION (lbs/dscf) =**

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left( \frac{60.07 \text{ lb / lb - mole}}{385.26 \times 10^{-6} \text{ ft}^3 / \text{lb - mole}} \right) = < 0.0047 \times 10^{-6} \text{ lbs/dscf}$$

**COS EMISSION RATE:**

---

STACK GAS VOLUMETRIC FLOW RATE = 126,993 dscfh

STACK COS EMISSION RATE =

$$\text{COS}_{\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = < 0.0006 \text{ lbs/hr} = < 0.0026 \text{ ton/yr}$$

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

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**MONITOR ID:** SRI-9300B: GC-FPD  
**RUN NO:** 1  
**TEST DATE:** 8/6/2008

**INPUT**

---

H<sub>2</sub>S CONCENTRATION (C): < 0.76 ppmv  
 STACK GAS VOLUMETRIC FLOW RATE (Q<sub>std</sub>): 126,993 dscfh

**CALCULATIONS**

---

STACK H<sub>2</sub>S AVERAGE CHART READING = < 0.76 ppmv

**H<sub>2</sub>S CONCENTRATION (lbs/dscf) =**

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

**H<sub>2</sub>S EMISSION RATE:**

---

STACK GAS VOLUMETRIC FLOW RATE = 126,993 dscfh

STACK H<sub>2</sub>S EMISSION RATE =

$$H_2S_{\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = < 0.0085 \text{ lbs/hr}$$

$$= < 0.0374 \text{ ton/yr}$$

**TRS as SO<sub>2</sub> EMISSION RATE CALCULATION SHEET  
USEPA METHOD 15**

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**MONITOR ID:** SRI-9300B: GC-FPD  
**RUN NO:** 1  
**TEST DATE:** 8/6/2008

**INPUT**

---

COS CONCENTRATION (C): < 0.03 ppmv  
 CS<sub>2</sub> CONCENTRATION (C): < 0.03 ppmv  
 H<sub>2</sub>S CONCENTRATION (C): < 0.76 ppmv  
 STACK GAS VOLUMETRIC FLOW RATE (Q<sub>std</sub>): 126,993 dscfh  
 STACK OXYGEN CONTENT (%O<sub>2</sub>): 3.82 % by vol db

**CALCULATIONS**

---

AVERAGE STACK TRS as SO<sub>2</sub> = < 0.85 ppmv

TRS CONCENTRATION CORRECTED TO 3% OXYGEN (ppmv db @ 3%O<sub>2</sub>) =

$$C_{\text{gas,ppm@3\%O}_2} = (C_{\text{gas,ppm}}) \left( \frac{17.9}{20.9 - \%O_2} \right) = < 0.89 \text{ ppmv @ 3\% O}_2$$

TRS as SO<sub>2</sub> CONCENTRATION (lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left( \frac{64\text{lb / lb - mole}}{385.26 \times 10^{-6} \text{ft}^3 / \text{lb - mole}} \right) = < 0.1412 \times 10^{-6} \text{ lbs/dscf}$$

**TRS as SO<sub>2</sub> EMISSION RATE:**

---

STACK GAS VOLUMETRIC FLOW RATE = 126,993 dscfh

STACK TRS as SO<sub>2</sub> EMISSION RATE =

$$\text{TRS}_{\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = < 0.0179 \text{ lbs/hr}$$

$$= < 0.0785 \text{ ton/yr}$$

MONITOR DATA SUMMARY

COMPANY : Valero McKee Refinery  
 SOURCE : No. 1 SRU Incinerator  
 REPETITION : 2  
 TEST DATE : 8/6/2008  
 START TIME : 14:13  
 END TIME : 17:13

GAS ANALYZER CO

SPAN: 180.0 ppm  
 AVERAGE CAL. BIAS (C<sub>m</sub>): 89.85  
 AVERAGE ZERO BIAS (C<sub>o</sub>): -0.05  
 CALIBRATION GAS: EPA Protocol CO  
 CALIBRATION PPM (C<sub>ma</sub>): 90.0  
 PPM CORRECTED (C<sub>gas</sub>): 6.2

GAS ANALYZER NO<sub>x</sub>

SPAN: 90.0 ppm  
 AVERAGE CAL. BIAS (C<sub>m</sub>): 44.15  
 AVERAGE ZERO BIAS (C<sub>o</sub>): 0.50  
 CALIBRATION GAS: EPA Protocol NO<sub>x</sub>  
 CALIBRATION PPM (C<sub>ma</sub>): 45.0  
 PPM CORRECTED (C<sub>gas</sub>): 19.1

GAS ANALYZER O<sub>2</sub>

SPAN: 9.00 %  
 AVERAGE CAL. BIAS (C<sub>m</sub>): 4.485  
 AVERAGE ZERO BIAS (C<sub>o</sub>): -0.055  
 CALIBRATION GAS: EPA Protocol O<sub>2</sub>  
 CALIBRATION PPM (C<sub>ma</sub>): 4.50  
 PPM CORRECTED (C<sub>gas</sub>): 3.81

GAS ANALYZER CO<sub>2</sub>

SPAN: 18.00 %  
 AVERAGE CAL. BIAS (C<sub>m</sub>): 9.235  
 AVERAGE ZERO BIAS (C<sub>o</sub>): 0.190  
 CALIBRATION GAS: EPA Protocol CO<sub>2</sub>  
 CALIBRATION % (C<sub>ma</sub>): 9.00  
 % CORRECTED (C<sub>gas</sub>): 9.92

Example Calculation =

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

designates port change

CLOCK TIME	ELAPSED TIME	Uncorrected			
		O <sub>2</sub> % vol db	CO <sub>2</sub> % vol db	NO <sub>x</sub> ppmv db	CO ppmv db
14:13	0				
14:14	1	4.06	10.14	17.8	9.6
14:15	2	3.99	10.15	17.8	8.0
14:16	3	3.89	10.20	18.1	6.5
14:17	4	3.90	10.21	17.5	6.9
14:18	5	3.88	10.19	17.9	6.2
14:19	6	3.91	10.19	17.6	6.9
14:20	7	3.93	10.19	17.8	8.3
14:21	8	3.89	10.19	18.3	6.9
14:22	9	3.86	10.23	18.4	6.1
14:23	10	3.90	10.18	18.5	6.3
14:24	11	3.88	10.16	18.6	6.3
14:25	12	3.85	10.23	18.7	5.6
14:26	13	3.84	10.21	18.4	6.2
14:27	14	3.82	10.21	18.4	5.9
14:28	15	3.78	10.24	19.1	4.9
14:29	16	3.64	10.36	19.3	4.2
14:30	17	3.75	10.24	19.0	4.7
14:31	18	3.73	10.26	18.7	4.1
14:32	19	3.75	10.24	18.8	4.5
14:33	20	3.80	10.17	19.1	4.8
14:34	21	3.69	10.24	19.6	3.7
14:35	22	3.65	10.30	19.4	3.7
14:36	23	3.79	10.23	19.4	4.4
14:37	24	3.76	10.22	19.5	4.7
14:38	25	3.83	10.18	19.2	6.4
14:39	26	3.89	10.18	19.2	7.9
14:40	27	3.85	10.23	19.2	7.0
14:41	28	3.82	10.20	19.2	6.7
14:42	29	3.88	10.13	19.0	6.7
14:43	30	3.88	10.13	19.3	6.4
14:44	31	3.87	10.16	19.4	6.3
14:45	32	3.70	10.25	20.4	2.9
14:46	33	3.47	10.36	19.9	1.5
14:47	34	3.64	10.28	19.6	2.3
14:48	35	3.72	10.24	19.5	3.2
14:49	36	3.80	10.17	19.4	3.6
14:50	37	3.82	10.13	19.6	3.5
14:51	38	3.76	10.16	19.5	3.1
14:52	39	3.82	10.12	19.2	4.1
14:53	40	3.84	10.13	19.5	4.2
14:54	41	3.83	10.12	19.3	4.7
14:55	42	3.86	10.09	18.6	5.3
14:56	43	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
14:57	44	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
14:58	45	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
14:59	46	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
15:00	47	3.71	10.12	18.5	3.6
15:01	48	3.78	10.13	18.6	4.6
15:02	49	3.76	10.23	18.5	5.6
15:03	50	3.84	10.16	18.4	6.4
15:04	51	3.93	10.00	18.3	5.0
15:05	52	5.29	9.27	18.0	3.5
15:06	53	4.44	9.83	19.6	3.7
15:07	54	3.71	10.22	18.9	4.8
15:08	55	3.75	10.21	19.6	4.7
15:09	56	3.77	10.11	19.8	4.1
15:10	57	3.85	10.05	20.8	5.0
15:11	58	3.84	10.08	21.3	5.2
15:12	59	3.80	10.19	19.5	6.8
15:13	60	3.77	10.21	20.3	6.1
15:14	61	3.77	10.14	20.0	4.7
15:15	62	3.71	10.08	19.6	3.3
15:16	63	3.67	10.16	19.8	3.1
15:17	64	3.77	10.15	20.2	4.1
15:18	65	3.76	10.19	19.8	3.8
15:19	66	3.78	10.13	19.7	3.5
15:20	67	3.80	10.08	19.8	3.1
15:21	68	3.76	10.11	19.7	3.5
15:22	69	3.83	10.13	19.7	5.1
15:23	70	3.87	10.14	19.7	6.0
15:24	71	3.79	10.13	20.1	4.7
15:25	72	3.79	10.09	20.1	4.3
15:26	73	3.84	10.03	20.1	5.6
15:27	74	3.90	10.06	20.4	7.7
15:28	75	3.94	10.08	20.5	8.3
15:29	76	3.86	10.12	20.4	8.1
15:30	77	3.87	10.08	20.4	7.7
15:31	78	3.80	10.09	20.4	8.6
15:32	79	3.85	10.08	20.3	10.4
15:33	80	3.88	10.11	20.2	11.2
15:34	81	3.91	10.08	20.1	11.1
15:35	82	3.89	10.07	20.2	10.3
15:36	83	3.90	9.99	20.4	8.7
15:37	84	3.79	10.10	20.4	7.4
15:38	85	3.77	10.13	20.5	6.7
15:39	86	3.76	10.17	20.1	6.5
15:40	87	3.80	10.11	20.1	6.2
15:41	88	3.72	10.07	20.0	5.0
15:42	89	3.71	10.11	20.2	4.8
15:43	90	3.72	10.17	20.2	
15:44	91	3.76	10.18	20.2	

15:45	92	3.70	10.17	20.2	6.1
15:46	93	3.68	10.18	19.8	5.2
15:47	94	3.58	10.22	19.7	4.1
15:48	95	3.74	10.16	19.6	3.0
15:49	96	3.77	10.12	19.4	3.4
15:50	97	3.66	10.19	19.4	4.2
15:51	98	3.62	10.21	19.3	4.6
15:52	99	3.64	10.21	19.4	4.5
15:53	100	3.66	10.22	19.5	4.4
15:54	101	3.65	10.18	19.7	4.6
15:55	102	3.71	10.12	19.5	5.6
15:56	103	3.79	10.10	19.4	8.1
15:57	104	3.79	10.10	19.4	8.4
15:58	105	3.75	10.15	19.7	7.8
15:59	106	3.71	10.15	19.9	7.7
16:00	107	3.66	10.22	20.0	6.8
16:01	108	3.64	10.22	20.2	6.8
16:02	109	5.09	9.33	17.9	5.9
16:03	110	4.31	9.90	20.2	5.8
16:04	111	3.65	10.21	20.1	6.1
16:05	112	3.67	10.21	20.0	6.2
16:06	113	3.66	10.22	20.3	5.9
16:07	114	3.52	10.28	20.8	5.3
16:08	115	3.72	10.14	20.2	6.7
16:09	116	4.44	9.70	16.8	5.7
16:10	117	6.33	8.78	19.3	5.6
16:11	118	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
16:12	119	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
16:13	120	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
16:14	121	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
16:15	122	3.50	10.30	17.5	7.1
16:16	123	3.57	10.25	17.3	8.2
16:17	124	3.63	10.23	17.9	7.4
16:18	125	3.58	10.26	18.1	6.2
16:19	126	3.52	10.30	18.2	5.7
16:20	127	3.34	10.39	18.4	4.2
16:21	128	3.45	10.34	18.1	4.5
16:22	129	3.47	10.34	18.2	4.7
16:23	130	3.44	10.32	18.6	4.0
16:24	131	3.43	10.28	18.7	4.3
16:25	132	3.48	10.28	18.0	5.9
16:26	133	3.65	10.16	17.8	8.4
16:27	134	3.70	10.13	17.7	8.9
16:28	135	3.73	10.08	18.0	8.5
16:29	136	3.88	10.13	17.7	8.6
16:30	137	3.67	10.14	18.1	7.8
16:31	138	3.65	10.13	18.4	6.6
16:32	139	3.66	10.12	18.0	6.4
16:33	140	3.70	10.11	18.1	6.8
16:34	141	3.67	10.16	17.9	6.7
16:35	142	3.74	10.12	18.2	8.1
16:36	143	3.66	10.17	17.9	7.8
16:37	144	3.74	10.13	17.7	10.8
16:38	145	3.75	10.16	17.5	11.0
16:39	146	3.85	10.14	17.4	15.4
16:40	147	3.88	10.11	17.8	15.0
16:41	148	3.78	10.17	18.0	10.7
16:42	149	3.77	10.15	17.9	10.0
16:43	150	3.73	10.16	17.8	9.0
16:44	151	3.76	10.15	18.1	8.4
16:45	152	3.71	10.23	18.4	7.1
16:46	153	3.70	10.26	18.1	7.2
16:47	154	3.72	10.21	17.9	8.0
16:48	155	3.68	10.24	18.1	6.8
16:49	156	3.67	10.24	18.0	6.3
16:50	157	3.70	10.22	17.9	6.1
16:51	158	3.66	10.25	18.2	5.6
16:52	159	3.67	10.27	18.4	4.9
16:53	160	3.72	10.20	18.6	5.3
16:54	161	3.64	10.27	18.9	4.1
16:55	162	3.64	10.25	18.6	4.3
16:56	163	3.63	10.27	18.5	3.7
16:57	164	3.55	10.34	18.7	2.8
16:58	165	3.59	10.34	18.5	2.7
16:59	166	3.61	10.32	18.5	3.1
17:00	167	3.60	10.32	18.3	3.3
17:01	168	3.65	10.32	18.4	3.4
17:02	169	3.65	10.27	18.3	3.2
17:03	170	3.65	10.25	18.1	3.7
17:04	171	3.75	10.21	18.0	4.6
17:05	172	3.66	10.25	18.3	4.3
17:06	173	3.88	10.12	17.2	16.8
17:07	174	4.12	9.99	17.4	24.8
17:08	175	4.00	10.05	17.5	17.3
17:09	176	3.81	10.18	18.2	6.8
17:10	177	3.68	10.18	18.9	3.0
17:11	178	3.65	10.26	18.8	2.7
17:12	179	3.63	10.29	18.4	3.3
17:13	180	3.69	10.23	17.5	6.2
Uncorrected Average =		3.785	10.158	18.98	6.15

designates port change

**ARI ENVIRONMENTAL, INC.  
MOISTURE CALCULATION SUMMARY**

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**TEST DATE:** 8/6/2008  
**RUN NUMBER:** 2

<b>γ FACTOR:</b>	1.025	<b>STACK DIAM:</b>	49.8 inches
<b>BAROMETRIC:</b>	26.16 in. Hg	<b>METER VOLUME:</b>	83.518 ft <sup>3</sup>
<b>STATIC PRES:</b>	-0.69 in.H <sub>2</sub> O	<b>METER TEMP:</b>	118.0 °F
<b>STACK TEMP:</b>	1366.1 °F	<b>LIQUID COLL:</b>	328.9 milliliters
<b>SQ.RT ΔP:</b>	0.1093 in.H <sub>2</sub> O	<b>CO<sub>2</sub>:</b>	9.92 % by volume
<b>ΔH:</b>	1.00 in.H <sub>2</sub> O	<b>O<sub>2</sub>:</b>	3.81 % by volume

**ENGLISH UNITS  
(29.92 in.Hg & 68 °F)**

<p><b>VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS</b></p> $V_{mstd} = \left( \frac{528}{29.92} \right) \times V_m \times \gamma \left[ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 68.565 \text{ dscf}$ <p style="text-align: center;"><math>\gamma = 1.025</math></p>
<p><b>VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS</b></p> $V_{wstd} = 0.04707 \times V_{lc} = 15.481 \text{ scf}$ <p style="text-align: center;"><math>V_{lc} = 328.9 \text{ mL}</math></p>
<p><b>FRACTIONAL MOISTURE CONTENT OF STACK GAS AS MEASURED</b></p> $B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} = 0.1842$
<p><b>FRACTIONAL MOISTURE CONTENT OF STACK GAS @ SATURATION</b></p> $MF = \frac{\left( 10^{\left[ 8.361 - \left( \frac{1893.5}{T - 27.65} \right) \right]} \right)^{-0.5}}{P} = 1.0000$ <p style="text-align: center;"> <math>T = 1014.2 \text{ °K}</math>  <math>P = 663.2 \text{ mmHg}</math> </p>
<p><b>FRACTIONAL MOISTURE CONTENT USED IN CALCULATIONS</b></p> <p style="text-align: right;"><math>B_{ws} = 0.1842</math></p>

**ARI ENVIRONMENTAL, INC.**  
**FLOW RATE CALCULATION SUMMARY**

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**RUN NUMBER:** 2

**SOURCE:** No. 1 SRU Incinerator  
**TEST DATE:** 8/6/2008

<b>BAROMETRIC:</b>	26.16 in. Hg	<b>STACK DIAM:</b>	49.8 inches
<b>STATIC PRES:</b>	-0.69 in.H <sub>2</sub> O	<b>CO<sub>2</sub>:</b>	9.92 % by volume
<b>STACK TEMP:</b>	1366.1 °F	<b>O<sub>2</sub>:</b>	3.81 % by volume
<b>SQ.RT ΔP:</b>	0.1093 in.H <sub>2</sub> O		

<b>DRY MOLECULAR WEIGHT OF STACK GAS</b>			
$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO)$	=	29.74	lb/lb-mole
<b>MOLECULAR WEIGHT OF STACK GAS, wet basis</b>			
$M_s = M_d(1 - B_{ws}) + 18B_{ws}$	=	27.58	lb/lb-mole
<b>PITOT TUBE COEFFICIENT</b>			
$C_p$ (from calibration curve or geometric specifications)	=	0.84	
<b>AVERAGE VELOCITY HEAD OF STACK GAS, in. H<sub>2</sub>O</b>			
$\sqrt{\Delta P} = \frac{1}{n} \sum_{i=1}^n \sqrt{\Delta p_i}$	=	0.1093	in. H <sub>2</sub> O
<b>AVERAGE ABSOLUTE STACK GAS TEMPERATURE</b>			
$T_s = 1366.1 \text{ °F} + 460$	=	1,826.1	°R
<b>ABSOLUTE STACK GAS PRESSURE</b>			
$P_s = P_{bar} + \frac{P_{static}}{13.6}$	=	26.11	in.Hg
<b>STACK GAS VELOCITY</b>			
$V_s = (85.49)(C_p)(\text{avg } \sqrt{\Delta P}) \sqrt{\frac{T_s}{(P_s)(M_s)}}$	=	12.500	ft/sec
<b>STACK GAS VOLUMETRIC FLOW RATE, actual</b>			
$Q_s = 60 \times V_s \times A_s$	=	10,124	acfm
Stack Area =		13.499 ft <sup>2</sup>	
<b>STACK GAS VOLUMETRIC FLOW RATE, standard conditions, wet basis</b>			
$Q_{stdw} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)$	=	2,554.5	scfm, wb
		153,272	scfh, wb
<b>STACK GAS VOLUMETRIC FLOW RATE, standard conditions, dry basis</b>			
$Q_{std} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)(1 - B_{ws})$	=	2,084.0	dscfm
		125,040	dscfh

**NO<sub>x</sub> CALIBRATION CORRECTION DATA SHEET  
USEPA METHOD 7E**

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**MONITOR ID:** CAI Model 600 CLD  
**RUN NO:** 2  
**TEST DATE:** 8/6/2008

**INPUT**

---

NO<sub>x</sub> AVERAGE CHART READING (C): 18.98 ppmv  
 AVG PRE/POST ZERO DRIFT READING (C<sub>o</sub>): 0.50 ppmv  
 CAL GAS CONCENTRATION (C<sub>ma</sub>): 45.0 ppmv  
 AVG CAL PRE/POST TEST READING (C<sub>m</sub>): 44.15 ppmv  
 STACK GAS VOLUMETRIC FLOW RATE (Q<sub>std</sub>): 125,040 dscfh

**CALCULATIONS**

---

STACK NO<sub>x</sub> AVERAGE CHART READING = 18.98 ppmv

**STACK NO<sub>x</sub> CONC. CORRECTED FOR ZERO AND CALIBRATION DRIFT:**

---

$$\text{NO}_x \text{ CONC, ppmv (corrected)} = C_{\text{gas,ppm}} = (\bar{C} - C_o) \frac{C_{ma}}{C_m - C_o} = 19.1 \text{ ppmv db}$$

NO<sub>x</sub> CONC.(lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left( \frac{46 \text{ lb/lb-mole}}{385.26 \times 10^6 \text{ ft}^3 / \text{lb-mole}} \right) = 2.275 \times 10^{-6} \text{ lbs/dscf}$$

**NO<sub>x</sub> EMISSION RATE:**

---

STACK GAS VOLUMETRIC FLOW RATE = 125,040 dscfh

STACK NO<sub>x</sub> EMISSION RATE =

$$\text{SO}_{2\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = 0.284 \text{ lbs/hr} \\ = 1.246 \text{ ton/yr}$$

**CO CALIBRATION CORRECTION DATA SHEET  
USEPA METHOD 10**

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**MONITOR ID:** Thermo Environmental Model 48i-CHL  
**RUN NO:** 2  
**TEST DATE:** 8/6/2008

**INPUT**

---

CO AVERAGE CHART READING (C): 6.15 ppmv  
 AVG PRE/POST ZERO DRIFT READING (C<sub>o</sub>): -0.05 ppmv  
 CAL GAS CONCENTRATION (C<sub>ma</sub>): 90.0 ppmv  
 AVG CAL PRE/POST TEST READING (C<sub>m</sub>): 89.85 ppmv  
 STACK GAS VOLUMETRIC FLOW RATE (Q<sub>std</sub>): 125,040 dscfh

**CALCULATIONS**

---

STACK CO AVERAGE CHART READING = 6.15 ppmv

**STACK CO CONC. CORRECTED FOR ZERO AND CALIBRATION DRIFT:**

---

$$\text{CO CONC, ppmv (corrected)} = C_{\text{gas,ppm}} = (\bar{C} - C_o) \frac{C_{\text{ma}}}{C_m - C_o} = 6.2 \text{ ppmv db}$$

CO CONC.(lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left( \frac{28 \text{ lb / lb - mole}}{385.26 \times 10^6 \text{ ft}^3 / \text{lb - mole}} \right) = 0.451 \times 10^{-6} \text{ lbs/dscf}$$

**CO EMISSION RATE:**

---

STACK GAS VOLUMETRIC FLOW RATE = 125,040 dscfh

STACK CO EMISSION RATE =

$$CO_{\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = 0.056 \text{ lbs/hr} = 0.247 \text{ ton/yr}$$

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

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**MONITOR ID:** SRI-9300B: GC-FPD  
**RUN NO:** 2  
**TEST DATE:** 8/6/2008

**INPUT**

---

CS<sub>2</sub> CONCENTRATION (C): <0.03 ppmv  
 STACK GAS VOLUMETRIC FLOW RATE (Q<sub>std</sub>): 125,040 dscfh

**CALCULATIONS**

---

STACK CS<sub>2</sub> AVERAGE CHART READING = < 0.03 ppmv

CS<sub>2</sub> CONCENTRATION (lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left( \frac{76.1 \text{ lb / lb - mole}}{385.26 \times 10^{-6} \text{ ft}^3 / \text{lb - mole}} \right) = < 0.0059 \times 10^{-6} \text{ lbs/dscf}$$

**CS<sub>2</sub> EMISSION RATE:**

---

STACK GAS VOLUMETRIC FLOW RATE = 125,040 dscfh

STACK CS<sub>2</sub> EMISSION RATE =

$$CS_{2\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = < 0.0007 \text{ lbs/hr} \\ = < 0.0032 \text{ ton/yr}$$

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

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**MONITOR ID:** SRI-9300B: GC-FPD  
**RUN NO:** 2  
**TEST DATE:** 8/6/2008

**INPUT**

---

COS CONCENTRATION (C): < 0.03 ppmv  
 STACK GAS VOLUMETRIC FLOW RATE (Q<sub>std</sub>): 125,040 dscfh

**CALCULATIONS**

---

STACK COS AVERAGE CHART READING = < 0.03 ppmv

**COS CONCENTRATION (lbs/dscf) =**

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left( \frac{60.07 \text{ lb / lb - mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb - mole}} \right) = < 0.0047 \times 10^{-6} \text{ lbs/dscf}$$

**COS EMISSION RATE:**

---

STACK GAS VOLUMETRIC FLOW RATE = 125,040 dscfh

STACK COS EMISSION RATE =

$$\text{COS}_{\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = < 0.0006 \text{ lbs/hr}$$

$$= < 0.0026 \text{ ton/yr}$$

# HYDROGEN SULFIDE CALIBRATION CORRECTION DATA SHEET USEPA METHOD 15

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**MONITOR ID:** SRI-9300B: GC-FPD  
**RUN NO:** 2  
**TEST DATE:** 8/6/2008

## INPUT

---

H<sub>2</sub>S CONCENTRATION (C): < 0.76 ppmv  
 STACK GAS VOLUMETRIC FLOW RATE (Q<sub>std</sub>): 125,040 dscfh

## CALCULATIONS

---

STACK H<sub>2</sub>S AVERAGE CHART READING = < 0.76 ppmv

H<sub>2</sub>S CONCENTRATION (lbs/dscf) =

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

## H<sub>2</sub>S EMISSION RATE:

---

STACK GAS VOLUMETRIC FLOW RATE = 125,040 dscfh

STACK H<sub>2</sub>S EMISSION RATE =

$$H_2S_{\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = < 0.0084 \text{ lbs/hr} = < 0.0368 \text{ ton/yr}$$

**TRS as SO<sub>2</sub> EMISSION RATE CALCULATION SHEET  
USEPA METHOD 15**

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**MONITOR ID:** SRI-9300B: GC-FPD  
**RUN NO:** 2  
**TEST DATE:** 8/6/2008

**INPUT**

---

COS CONCENTRATION (C): < 0.03 ppmv  
 CS<sub>2</sub> CONCENTRATION (C): < 0.03 ppmv  
 H<sub>2</sub>S CONCENTRATION (C): < 0.76 ppmv  
 STACK GAS VOLUMETRIC FLOW RATE (Q<sub>std</sub>): 125,040 dscfh  
 STACK OXYGEN CONTENT (%O<sub>2</sub>): 3.81 % by vol db

**CALCULATIONS**

---

AVERAGE STACK TRS as SO<sub>2</sub> = < 0.85 ppmv

TRS CONCENTRATION CORRECTED TO 3% OXYGEN (ppmv db @ 3%O<sub>2</sub>) =

$$C_{\text{gas,ppm@3\%O}_2} = (C_{\text{gas,ppm}}) \left( \frac{17.9}{20.9 - \%O_2} \right) = < 0.89 \text{ ppmv @ 3\% O}_2$$

TRS as SO<sub>2</sub> CONCENTRATION (lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left( \frac{64\text{lb/lb-mole}}{385.26 \times 10^{-6} \text{ft}^3/\text{lb-mole}} \right) = < 0.1412 \times 10^{-6} \text{ lbs/dscf}$$

**TRS as SO<sub>2</sub> EMISSION RATE:**

---

STACK GAS VOLUMETRIC FLOW RATE = 125,040 dscfh

STACK TRS as SO<sub>2</sub> EMISSION RATE =

$$\text{TRS}_{\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = < 0.0177 \text{ lbs/hr}$$

$$= < 0.0773 \text{ ton/yr}$$

MONITOR DATA SUMMARY

COMPANY : Valero McKee Refinery  
 SOURCE : No. 1 SRU Incinerator  
 REPETITION : 3  
 TEST DATE : 8/6/2008  
 START TIME : 17:40  
 END TIME : 20:40

**GAS ANALYZER** **CO**

SPAN: 180.0 ppm  
 AVERAGE CAL. BIAS (C<sub>m</sub>): 89.30  
 AVERAGE ZERO BIAS (C<sub>o</sub>): -0.50  
 CALIBRATION GAS: EPA Protocol CO  
 CALIBRATION PPM (C<sub>ma</sub>): 90.0  
 PPM CORRECTED (C<sub>pa</sub>): 7.5

**GAS ANALYZER** **NO<sub>x</sub>**

SPAN: 90.0 ppm  
 AVERAGE CAL. BIAS (C<sub>m</sub>): 43.55  
 AVERAGE ZERO BIAS (C<sub>o</sub>): 0.35  
 CALIBRATION GAS: EPA Protocol NO<sub>x</sub>  
 CALIBRATION PPM (C<sub>ma</sub>): 45.0  
 PPM CORRECTED (C<sub>pa</sub>): 18.1

**GAS ANALYZER** **O<sub>2</sub>**

SPAN: 9.00 %  
 AVERAGE CAL. BIAS (C<sub>m</sub>): 4.520  
 AVERAGE ZERO BIAS (C<sub>o</sub>): -0.060  
 CALIBRATION GAS: EPA Protocol O<sub>2</sub>  
 CALIBRATION PPM (C<sub>ma</sub>): 4.50  
 PPM CORRECTED (C<sub>pa</sub>): 3.46

**GAS ANALYZER** **CO<sub>2</sub>**

SPAN: 18.00 %  
 AVERAGE CAL. BIAS (C<sub>m</sub>): 9.225  
 AVERAGE ZERO BIAS (C<sub>o</sub>): 0.175  
 CALIBRATION GAS: EPA Protocol CO<sub>2</sub>  
 CALIBRATION % (C<sub>ma</sub>): 9.00  
 % CORRECTED (C<sub>pa</sub>): 10.05

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

☞ designates port change

CLOCK TIME	ELAPSED TIME	Uncorrected			
		O <sub>2</sub> % vol db	CO <sub>2</sub> % vol db	NO <sub>x</sub> ppmv db	CO ppmv db
17:40	0	-----	-----	-----	-----
17:41	1	3.24	10.58	17.4	1.1
17:42	2	3.66	10.31	17.3	7.5
17:43	3	3.93	10.12	17.0	27.6
17:44	4	4.10	10.05	17.2	51.6
17:45	5	3.91	10.18	18.4	31.1
17:46	6	3.62	10.31	18.4	11.0
17:47	7	3.55	10.34	18.4	7.7
17:48	8	3.42	10.40	18.7	5.4
17:49	9	3.44	10.39	18.0	6.4
17:50	10	3.35	10.46	18.2	5.7
17:51	11	3.34	10.46	18.4	5.4
17:52	12	3.46	10.38	18.9	5.4
17:53	13	3.42	10.36	18.2	5.2
17:54	14	3.48	10.37	18.0	5.9
17:55	15	3.39	10.43	18.1	5.2
17:56	16	3.47	10.39	17.8	6.7
17:57	17	3.46	10.44	18.0	5.9
17:58	18	3.41	10.46	17.9	5.8
17:59	19	3.52	10.40	17.7	6.9
18:00	20	3.49	10.41	17.9	6.2
18:01	21	3.50	10.39	17.7	5.5
18:02	22	3.44	10.39	18.3	4.4
18:03	23	3.30	10.46	18.7	3.4
18:04	24	3.41	10.40	18.6	5.0
18:05	25	3.51	10.31	18.5	6.3
18:06	26	3.44	10.32	18.7	5.5
18:07	27	3.47	10.30	18.6	7.2
18:08	28	3.61	10.24	18.5	10.5
18:09	29	3.59	10.27	18.2	9.9
18:10	30	3.51	10.31	18.1	8.3
18:11	31	3.49	10.33	18.1	8.2
18:12	32	3.39	10.42	18.2	7.4
18:13	33	3.33	10.50	18.8	4.9
18:14	34	3.20	10.51	18.8	2.3
18:15	35	3.10	10.56	18.3	2.0
18:16	36	3.27	10.39	18.1	3.2
18:17	37	3.15	10.43	19.0	2.6
18:18	38	3.15	10.35	18.9	2.7
18:19	39	3.39	10.25	18.4	5.7
18:20	40	3.45	10.17	17.6	7.5
18:21	41	3.51	10.18	17.0	16.5
18:22	42	3.69	10.04	17.9	19.1
18:23	43	3.34	10.30	17.9	6.1
18:24	44	3.39	10.27	17.6	7.2
18:25	45	3.37	10.31	17.7	7.6
18:26	46	3.37	10.33	17.5	6.8
18:27	47	3.38	10.31	17.6	6.9
18:28	48	3.30	10.35	18.0	4.9
18:29	49	3.23	10.37	17.7	4.1
18:30	50	3.21	10.42	18.0	4.3
18:31	51	3.12	10.49	18.5	3.0
18:32	52	3.16	10.43	18.5	3.0
18:33	53	3.07	10.46	18.7	2.4
18:34	54	3.05	10.48	19.2	2.1
18:35	55	3.04	10.51	18.7	2.7
18:36	56	3.29	10.39	17.8	5.7
18:37	57	3.19	10.44	17.7	5.4
18:38	58	3.19	10.44	18.3	5.3
18:39	59	3.32	10.41	17.6	7.2
18:40	60	3.32	10.40	17.5	8.0
18:41	61	3.30	10.42	18.1	6.6
18:42	62	3.25	10.40	18.3	5.7
18:43	63	3.32	10.36	17.5	7.6
18:44	64	3.37	10.34	17.3	8.4
18:45	65	3.36	10.37	17.4	7.8
18:46	66	3.31	10.40	17.6	7.6
18:47	67	3.41	10.33	17.4	8.3
18:48	68	3.34	10.39	17.9	6.5
18:49	69	3.29	10.41	18.1	5.4
18:50	70	3.24	10.42	18.0	4.3
18:51	71	3.15	10.47	17.7	4.0
18:52	72	3.24	10.45	17.6	5.0
18:53	73	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
18:54	74	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
18:55	75	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
18:56	76	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
18:57	77	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
18:58	78	3.31	10.40	17.9	4.1
18:59	79	3.17	10.48	18.4	3.0
19:00	80	3.26	10.48	18.5	3.6
19:01	81	3.19	10.48	18.9	2.8
19:02	82	3.12	10.50	18.8	2.4
19:03	83	3.27	10.42	18.3	3.6
19:04	84	3.37	10.36	18.4	4.4
19:05	85	3.36	10.37	18.5	4.3
19:06	86	3.26	10.44	19.2	3.2
19:07	87	3.15	10.51	19.0	2.8
19:08	88	3.28	10.41	18.6	4.2

3 continued

19:09	89	3.37	10.36	18.5	4.8
19:10	90	3.39	10.38	18.7	5.5
19:11	91	3.38	10.32	19.4	4.2
19:12	92	3.45	10.23	18.7	4.5
19:13	93	3.55	10.13	18.5	5.8
19:14	94	3.64	10.10	18.5	7.9
19:15	95	3.56	10.15	19.0	5.5
19:16	96	3.41	10.25	19.0	3.4
19:17	97	3.42	10.21	19.0	2.8
19:18	98	3.44	10.17	19.1	2.4
19:19	99	3.31	10.22	19.6	1.6
19:20	100	3.26	10.27	19.6	1.1
19:21	101	3.32	10.25	18.9	1.3
19:22	102	3.19	10.33	18.7	1.5
19:23	103	3.27	10.32	18.4	2.1
19:24	104	3.28	10.37	18.1	3.0
19:25	105	3.42	10.32	18.1	4.3
19:26	106	3.38	10.39	18.3	3.8
19:27	107	3.29	10.46	17.9	3.5
19:28	108	3.28	10.47	17.7	4.2
19:29	109	3.33	10.44	17.8	4.6
19:30	110	3.37	10.40	18.0	4.1
19:31	111	3.32	10.45	18.2	4.1
19:32	112	3.40	10.35	17.9	4.9
19:33	113	3.41	10.35	18.2	4.7
19:34	114	3.45	10.26	18.3	5.0
19:35	115	3.57	10.18	17.9	7.7
19:36	116	3.72	10.05	17.9	10.1
19:37	117	3.67	10.06	18.2	8.8
19:38	118	3.67	10.06	18.8	6.6
19:39	119	3.55	10.17	18.3	4.2
19:40	120	3.47	10.18	18.4	3.3
19:41	121	3.46	10.17	18.6	2.7
19:42	122	3.43	10.21	18.5	2.2
19:43	123	3.36	10.22	18.9	1.9
19:44	124	3.42	10.19	18.6	1.7
19:45	125	3.52	10.15	17.8	4.6
19:46	126	3.82	9.99	17.5	11.5
19:47	127	3.81	9.99	17.5	11.0
19:48	128	3.96	9.93	17.5	7.4
19:49	129	3.87	9.99	17.9	5.0
19:50	130	3.57	10.13	18.4	3.2
19:51	131	3.38	10.23	18.2	2.3
19:52	132	3.44	10.21	18.1	3.3
19:53	133	3.50	10.16	17.7	5.1
19:54	134	3.45	10.21	17.4	5.0
19:55	135	3.40	10.32	17.3	5.4
19:56	136	3.50	10.27	16.9	6.9
19:57	137	3.47	10.30	16.8	6.0
19:58	138	3.45	10.28	16.6	5.7
19:59	139	3.61	10.19	16.1	12.8
20:00	140	3.78	10.12	16.0	24.4
20:01	141	3.80	10.13	16.2	25.3
20:02	142	3.68	10.21	16.6	15.0
20:03	143	3.58	10.26	16.7	9.8
20:04	144	3.52	10.26	16.8	8.0
20:05	145	3.52	10.22	16.9	6.9
20:06	146	3.51	10.25	17.1	6.1
20:07	147	3.51	10.22	16.9	7.4
20:08	148	3.54	10.18	16.9	7.1
20:09	149	3.60	10.10	16.9	7.1
20:10	150	3.67	10.07	16.8	7.8
20:11	151	3.74	10.00	16.8	7.9
20:12	152	3.73	10.01	16.9	7.6
20:13	153	3.71	10.03	17.0	7.6
20:14	154	3.72	10.07	16.8	8.6
20:15	155	3.69	10.10	16.8	8.0
20:16	156	3.71	10.04	16.8	8.1
20:17	157	3.63	10.14	16.7	6.3
20:18	158	3.64	10.13	16.7	6.4
20:19	159	3.66	10.08	16.6	5.7
20:20	160	3.73	10.02	16.4	6.9
20:21	161	3.78	10.03	16.2	10.1
20:22	162	3.77	10.07	16.0	12.7
20:23	163	3.75	10.14	16.1	12.8
20:24	164	3.74	10.08	16.1	11.9
20:25	165	3.72	10.10	16.1	9.8
20:26	166	3.68	10.16	16.2	9.1
20:27	167	3.67	10.15	16.6	9.9
20:28	168	3.54	10.22	17.2	6.0
20:29	169	3.44	10.29	18.7	5.3
20:30	170	3.58	10.18	16.2	8.4
20:31	171	3.53	10.20	16.3	7.7
20:32	172	3.52	10.17	16.3	7.0
20:33	173	3.55	10.18	16.2	7.6
20:34	174	3.66	10.11	16.0	10.4
20:35	175	3.68	10.11	15.9	12.1
20:36	176	3.75	10.06	15.9	14.0
20:37	177	3.73	10.06	16.2	11.5
20:38	178	3.65	10.11	16.1	10.0
20:39	179	3.81	10.00	15.9	14.1
20:40	180	3.80	10.05	15.9	13.9
Uncorrected Average =		3.464	10.277	17.76	6.96

**ARI ENVIRONMENTAL, INC.  
MOISTURE CALCULATION SUMMARY**

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**TEST DATE:** 8/6/2008  
**RUN NUMBER:** 3

<b>γ FACTOR:</b>	1.025	<b>STACK DIAM:</b>	49.8 inches
<b>BAROMETRIC:</b>	26.16 in. Hg	<b>METER VOLUME:</b>	75.919 ft <sup>3</sup>
<b>STATIC PRES:</b>	-0.69 in.H <sub>2</sub> O	<b>METER TEMP:</b>	109.3 °F
<b>STACK TEMP:</b>	1364.5 °F	<b>LIQUID COLL:</b>	290.9 milliliters
<b>SQ.RT ΔP:</b>	0.1069 in.H <sub>2</sub> O	<b>CO<sub>2</sub>:</b>	10.05 % by volume
<b>ΔH:</b>	1.00 in.H <sub>2</sub> O	<b>O<sub>2</sub>:</b>	3.46 % by volume

**ENGLISH UNITS  
(29.92 in.Hg & °F)**

<p><b>VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS</b></p> $V_{mstd} = \left( \frac{528}{29.92} \right) \times V_m \times \gamma \left[ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 63.279 \text{ dscf}$ <p style="text-align: center;"><math>\gamma = 1.025</math></p>
<p><b>VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS</b></p> $V_{wstd} = 0.04707 \times V_{lc} = 13.693 \text{ scf}$ <p style="text-align: center;"><math>V_{lc} = 290.9 \text{ mL}</math></p>
<p><b>FRACTIONAL MOISTURE CONTENT OF STACK GAS AS MEASURED</b></p> $B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} = 0.1779$
<p><b>FRACTIONAL MOISTURE CONTENT OF STACK GAS @ SATURATION</b></p> $MF = \frac{\left( 10^{\left[ 8.361 - \left( \frac{1893.5}{T - 27.65} \right) \right]} \right)^{-0.5}}{P} = 1.0000$ <p style="text-align: center;"> <math>T = 1013.3 \text{ °K}</math>  <math>P = 663.2 \text{ mmHg}</math> </p>
<p><b>FRACTIONAL MOISTURE CONTENT USED IN CALCULATIONS</b></p> <p style="text-align: right;"><math>B_{ws} = 0.1779</math></p>

**ARI ENVIRONMENTAL, INC.  
FLOW RATE CALCULATION SUMMARY**

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**RUN NUMBER:** 3

**SOURCE:** No. 1 SRU Incinerator  
**TEST DATE:** 8/6/2008

<b>BAROMETRIC:</b>	26.16 in. Hg	<b>STACK DIAM:</b>	49.8 inches
<b>STATIC PRES:</b>	-0.69 in.H <sub>2</sub> O	<b>CO<sub>2</sub>:</b>	10.05 % by volume
<b>STACK TEMP:</b>	1364.5 °F	<b>O<sub>2</sub>:</b>	3.46 % by volume
<b>SQ.RT ΔP:</b>	0.1069 in.H <sub>2</sub> O		

<b>DRY MOLECULAR WEIGHT OF STACK GAS</b>			
$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO)$	=	29.75	lb/lb-mole
<b>MOLECULAR WEIGHT OF STACK GAS, wet basis</b>			
$M_s = M_d(1 - B_{ws}) + 18B_{ws}$	=	27.66	lb/lb-mole
<b>PITOT TUBE COEFFICIENT</b>			
$C_p$ (from calibration curve or geometric specifications)	=	0.84	
<b>AVERAGE VELOCITY HEAD OF STACK GAS, in. H<sub>2</sub>O</b>			
$\overline{\sqrt{\Delta P}} = \frac{1}{n} \sum_{i=1}^n \sqrt{\Delta p}$	=	0.1069	in. H <sub>2</sub> O
<b>AVERAGE ABSOLUTE STACK GAS TEMPERATURE</b>			
$T_s = 1364.5 \text{ °F} + 460$	=	1,824.5	°R
<b>ABSOLUTE STACK GAS PRESSURE</b>			
$P_s = P_{bar} + \frac{P_{static}}{13.6}$	=	26.11	in.Hg
<b>STACK GAS VELOCITY</b>			
$V_s = (85.49)(C_p)(\text{avg}\sqrt{\Delta P})\sqrt{\frac{T_s}{(P_s)(M_s)}}$	=	12.202	ft/sec
<b>STACK GAS VOLUMETRIC FLOW RATE, actual</b>			
$Q_s = 60 \times V_s \times A_s$	=	9,883	acfm
Stack Area =		13.499 ft <sup>2</sup>	
<b>STACK GAS VOLUMETRIC FLOW RATE, standard conditions, wet basis</b>			
$Q_{stdw} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)$	=	2,495.9 149,756	scfm, wb scfh, wb
<b>STACK GAS VOLUMETRIC FLOW RATE, standard conditions, dry basis</b>			
$Q_{std} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)(1 - B_{ws})$	=	2,051.9 123,116	dscfm dscfh

**NO<sub>x</sub> CALIBRATION CORRECTION DATA SHEET  
USEPA METHOD 7E**

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**MONITOR ID:** CAI Model 600 CLD  
**RUN NO:** 3  
**TEST DATE:** 8/6/2008

**INPUT**

---

NO<sub>x</sub> AVERAGE CHART READING (C): 17.76 ppmv  
 AVG PRE/POST ZERO DRIFT READING (C<sub>o</sub>): 0.4 ppmv  
 CAL GAS CONCENTRATION (C<sub>ma</sub>): 45.0 ppmv  
 AVG CAL PRE/POST TEST READING (C<sub>m</sub>): 43.6 ppmv  
 STACK GAS VOLUMETRIC FLOW RATE (Q<sub>std</sub>): 123,116 dscfh

**CALCULATIONS**

---

STACK NO<sub>x</sub> AVERAGE CHART READING = 17.76 ppmv

**STACK NO<sub>x</sub> CONC. CORRECTED FOR ZERO AND CALIBRATION DRIFT:**

---

$$\text{NO}_x \text{ CONC, ppmv (corrected)} = C_{\text{gas,ppm}} = (\bar{C} - C_o) \frac{C_{ma}}{C_m - C_o} = 18.1 \text{ ppmv db}$$

NO<sub>x</sub> CONC.(lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left( \frac{46 \text{ lb/lb-mole}}{385.26 \times 10^6 \text{ ft}^3 / \text{lb-mole}} \right) = 2.165 \times 10^{-6} \text{ lbs/dscf}$$

**NO<sub>x</sub> EMISSION RATE:**

---

STACK GAS VOLUMETRIC FLOW RATE = 123,116 dscfh

STACK NO<sub>x</sub> EMISSION RATE =

$$\text{SO}_{2\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = 0.267 \text{ lbs/hr} \\ = 1.167 \text{ ton/yr}$$

**CO CALIBRATION CORRECTION DATA SHEET  
USEPA METHOD 10**

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**MONITOR ID:** Thermo Environmental Model 48i-CHL  
**RUN NO:** 3  
**TEST DATE:** 8/6/2008

**INPUT**

---

CO AVERAGE CHART READING (C): 6.96 ppmv  
 AVG PRE/POST ZERO DRIFT READING (C<sub>o</sub>): -0.50 ppmv  
 CAL GAS CONCENTRATION (C<sub>ma</sub>): 90.0 ppmv  
 AVG CAL PRE/POST TEST READING (C<sub>m</sub>): 89.30 ppmv  
 STACK GAS VOLUMETRIC FLOW RATE (Q<sub>std</sub>): 123,116 dscfh

**CALCULATIONS**

---

STACK CO AVERAGE CHART READING = 6.96 ppmv

**STACK CO CONC. CORRECTED FOR ZERO AND CALIBRATION DRIFT:**

---

$$\text{CO CONC, ppmv} = C_{\text{gas,ppm}} = (\bar{C} - C_o) \frac{C_{ma}}{C_m - C_o} = 7.5 \text{ ppmv db}$$

(corrected)

CO CONC.(lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left( \frac{28 \text{ lb / lb - mole}}{385.26 \times 10^6 \text{ ft}^3 / \text{lb - mole}} \right) = 0.543 \times 10^{-6} \text{ lbs/dscf}$$

**CO EMISSION RATE:**

---

STACK GAS VOLUMETRIC FLOW RATE = 123,116 dscfh

STACK CO EMISSION RATE =

$$CO_{\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = 0.067 \text{ lbs/hr}$$

$$= 0.293 \text{ ton/yr}$$

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

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**MONITOR ID:** SRI-9300B: GC-FPD  
**RUN NO:** 3  
**TEST DATE:** 8/6/2008

**INPUT**

---

CS<sub>2</sub> CONCENTRATION (C): <0.03 ppmv  
 STACK GAS VOLUMETRIC FLOW RATE (Q<sub>std</sub>): 123,116 dscfh

**CALCULATIONS**

---

STACK CS<sub>2</sub> AVERAGE CHART READING = < 0.03 ppmv

**CS<sub>2</sub> CONCENTRATION (lbs/dscf) =**

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left( \frac{76.1 \text{ lb / lb - mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb - mole}} \right) = < 0.0059 \times 10^{-6} \text{ lbs/dscf}$$

**CS<sub>2</sub> EMISSION RATE:**

---

STACK GAS VOLUMETRIC FLOW RATE = 123,116 dscfh

STACK CS<sub>2</sub> EMISSION RATE =

$$CS_{2\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = < 0.0007 \text{ lbs/hr}$$

$$= < 0.0032 \text{ ton/yr}$$

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

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**MONITOR ID:** SRI-9300B: GC-FPD  
**RUN NO:** 3  
**TEST DATE:** 8/6/2008

**INPUT**

---

COS CONCENTRATION (C): < 0.03 ppmv  
 STACK GAS VOLUMETRIC FLOW RATE (Q<sub>std</sub>): 123,116 dscfh

**CALCULATIONS**

---

STACK COS AVERAGE CHART READING = < 0.03 ppmv

**COS CONCENTRATION (lbs/dscf) =**

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left( \frac{60.07 \text{ lb / lb - mole}}{385.26 \times 10^{-6} \text{ ft}^3 \text{ / lb - mole}} \right) = < 0.0047 \times 10^{-6} \text{ lbs/dscf}$$

**COS EMISSION RATE:**

---

STACK GAS VOLUMETRIC FLOW RATE = 123,116 dscfh

STACK COS EMISSION RATE =

$$\text{COS}_{\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = < 0.0006 \text{ lbs/hr}$$

$$= < 0.0025 \text{ ton/yr}$$

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

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**MONITOR ID:** SRI-9300B: GC-FPD  
**RUN NO:** 3  
**TEST DATE:** 8/6/2008

**INPUT**

---

H<sub>2</sub>S CONCENTRATION (C): < 0.76 ppmv  
 STACK GAS VOLUMETRIC FLOW RATE (Q<sub>std</sub>): 123,116 dscfh

**CALCULATIONS**

---

STACK H<sub>2</sub>S AVERAGE CHART READING = < 0.76 ppmv

**H<sub>2</sub>S CONCENTRATION (lbs/dscf) =**

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

**H<sub>2</sub>S EMISSION RATE:**

---

STACK GAS VOLUMETRIC FLOW RATE = 123,116 dscfh

STACK H<sub>2</sub>S EMISSION RATE =

$$H_2S_{\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = < 0.0083 \text{ lbs/hr}$$

$$= < 0.0363 \text{ ton/yr}$$

**TRS as SO<sub>2</sub> EMISSION RATE CALCULATION SHEET  
USEPA METHOD 15**

**COMPANY:** Valero McKee Refinery  
**LOCATION:** Sunray, Texas  
**SOURCE:** No. 1 SRU Incinerator  
**MONITOR ID:** SRI-9300B: GC-FPD  
**RUN NO:** 3  
**TEST DATE:** 8/6/2008

**INPUT**

---

COS CONCENTRATION (C): < 0.03 ppmv  
 CS<sub>2</sub> CONCENTRATION (C): < 0.03 ppmv  
 H<sub>2</sub>S CONCENTRATION (C): < 0.76 ppmv  
 STACK GAS VOLUMETRIC FLOW RATE (Q<sub>std</sub>): 123,116 dscfh  
 STACK OXYGEN CONTENT (%O<sub>2</sub>): 3.46 % by vol db

**CALCULATIONS**

---

AVERAGE STACK TRS as SO<sub>2</sub> = < 0.85 ppmv

TRS CONCENTRATION CORRECTED TO 3% OXYGEN (ppmv db @ 3%O<sub>2</sub>) =

$$C_{\text{gas,ppm@3\%O}_2} = (C_{\text{gas,ppm}}) \left( \frac{17.9}{20.9 - \%O_2} \right) = < 0.87 \text{ ppmv @ 3\% O}_2$$

TRS as SO<sub>2</sub> CONCENTRATION (lbs/dscf) =

$$C_{\text{gas,lb/dscf}} = (C_{\text{gas,ppm}}) \left( \frac{64\text{lb/lb - mole}}{385.26 \times 10^{-6} \text{ft}^3 / \text{lb - mole}} \right) = < 0.1412 \times 10^{-6} \text{ lbs/dscf}$$

**TRS as SO<sub>2</sub> EMISSION RATE:**

---

STACK GAS VOLUMETRIC FLOW RATE = 123,116 dscfh

STACK TRS as SO<sub>2</sub> EMISSION RATE =

$$\text{TRS}_{\text{pmr}} = (C_{\text{gas,lb/dscf}})(Q_{\text{std}}) = < 0.0174 \text{ lbs/hr}$$

$$= < 0.0761 \text{ ton/yr}$$

MONITOR DATA SUMMARY

**COMPANY :** Valero Refining - Texas  
**SOURCE :** SRU No. 1 Incinerator Exhaust  
**REPETITION :** M5-1  
**TEST DATE :** 8/8/2008  
**START TIME :** 11:33  
**END TIME :** 12:43

CLOCK TIME	ELAPSED TIME	Uncorrected	
		O <sub>2</sub> % vol db	CO <sub>2</sub> % vol db
11:33	0	---	---
11:34	1	3.89	10.36
11:35	2	3.93	10.43
11:36	3	3.91	10.44
11:37	4	3.74	10.40
11:38	5	3.77	10.47
11:39	6	3.91	10.45
11:40	7	3.81	10.46
11:41	8	3.88	10.38
11:42	9	3.88	10.48
11:43	10	3.91	10.46
11:44	11	3.80	10.44
11:45	12	3.78	10.48
11:46	13	3.86	10.49
11:47	14	3.86	10.44
11:48	15	4.25	10.12
11:49	16	4.25	10.21
11:50	17	4.34	10.23
11:51	18	3.92	10.42
11:52	19	3.82	10.40
11:53	20	3.76	10.51
11:54	21	3.96	10.48
11:55	22	3.91	10.44
11:56	23	3.94	10.38
11:57	24	3.78	10.58
11:58	25	3.73	10.62
11:59	26	3.77	10.48
12:00	27	3.69	10.54
12:01	28	3.71	10.56
12:02	29	3.78	10.46
12:03/12:13	30	3.71	10.39
12:14	31	3.69	10.53
12:15	32	3.52	10.67
12:16	33	3.75	10.55
12:17	34	3.81	10.55
12:18	35	3.80	10.50
12:19	36	3.86	10.46
12:20	37	3.62	10.67
12:21	38	3.70	10.64
12:22	39	3.68	10.52
12:23	40	3.76	10.49
12:24	41	3.88	10.48
12:25	42	3.90	10.45
12:26	43	3.86	10.38
12:27	44	3.65	10.55
12:28	45	3.74	10.54
12:29	46	3.70	10.52
12:30	47	3.71	10.44
12:31	48	3.72	10.53
12:32	49	3.82	10.53
12:33	50	3.86	10.38
12:34	51	3.67	10.47
12:35	52	3.64	10.58
12:36	53	3.79	10.56
12:37	54	3.71	10.51
12:38	55	3.65	10.51
12:39	56	3.64	10.59
12:40	57	3.72	10.56
12:41	58	3.77	10.39
12:42	59	3.68	10.51
12:43	60	3.76	10.51
Uncorrected Average =		3.805	10.476

GAS ANALYZER

O<sub>2</sub>

**SPAN:** 9.00 %  
**AVERAGE CAL. BIAS (C<sub>m</sub>):** 4.555  
**AVERAGE ZERO BIAS (C<sub>o</sub>):** -0.060  
  
**CALIBRATION GAS:** EPA Protocol O<sub>2</sub>  
**CALIBRATION PPM (C<sub>ma</sub>):** 4.50  
**PPM CORRECTED (C<sub>gas</sub>):** 3.77

GAS ANALYZER

CO<sub>2</sub>

**SPAN:** 18.00 %  
**AVERAGE CAL. BIAS (C<sub>m</sub>):** 9.140  
**AVERAGE ZERO BIAS (C<sub>o</sub>):** 0.065  
  
**CALIBRATION GAS:** EPA Protocol CO<sub>2</sub>  
**CALIBRATION % (C<sub>ma</sub>):** 9.00  
**% CORRECTED (C<sub>gas</sub>):** 10.32

Example Calculation =

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

**ARI ENVIRONMENTAL, INC.**  
**MOISTURE CALCULATION SUMMARY**

**COMPANY:** Valero Refining - Texas  
**LOCATION:** Sunray, Texas  
**SOURCE:** SRU No. 1 Incinerator Exhaust  
**TEST DATE:** 8/8/2008  
**RUN NUMBER:** M5-1

<b>γ FACTOR:</b>	1.025	<b>STACK DIAM:</b>	49.75 inches
<b>BAROMETRIC:</b>	26.22 in. Hg	<b>METER VOLUME:</b>	54.618 ft <sup>3</sup>
<b>STATIC PRES:</b>	-0.69 in.H <sub>2</sub> O	<b>METER TEMP:</b>	98.8 °F
<b>STACK TEMP:</b>	1366.2 °F	<b>LIQUID COLL:</b>	217.1 milliliters
<b>SQ.RT ΔP:</b>	0.1075 in.H <sub>2</sub> O	<b>CO<sub>2</sub>:</b>	10.32 % by volume
<b>ΔH:</b>	2.33 in.H <sub>2</sub> O	<b>O<sub>2</sub>:</b>	3.77 % by volume

**ENGLISH UNITS**  
**(29.92 in.Hg & 68 °F)**

<p><b>VOLUME OF SAMPLE</b> <b>@ STANDARD CONDITIONS, DRY BASIS</b></p> $V_{mstd} = \left( \frac{528}{29.92} \right) \times V_m \times \gamma \left[ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 46.659 \text{ dscf}$ <p style="text-align: center;"><math>\gamma = 1.025</math></p>
<p><b>VOLUME OF WATER IN SAMPLE</b> <b>@ STANDARD CONDITIONS</b></p> $V_{wstd} = 0.04707 \times V_{lc} = 10.219 \text{ scf}$ <p style="text-align: center;"><math>V_{lc} = 217.1 \text{ mL}</math></p>
<p><b>FRACTIONAL MOISTURE CONTENT OF STACK GAS AS MEASURED</b></p> $B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} = 0.1797$
<p><b>FRACTIONAL MOISTURE CONTENT OF STACK GAS @ SATURATION</b></p> $MF = \frac{\left( 10^{\left[ 8.361 - \left( \frac{1893.5}{T - 27.65} \right) \right]} \right)^{-0.5}}{P} = 1.000$ <p style="text-align: center;"><math>T = 1014.2 \text{ °K}</math> <math>P = 664.7 \text{ mmHg}</math></p>
<p><b>FRACTIONAL MOISTURE CONTENT USED IN CALCULATIONS</b></p> <p style="text-align: right;"><math>B_{ws} = 0.1797</math></p>

**ARI ENVIRONMENTAL, INC.  
FLOW RATE CALCULATION SUMMARY**

**COMPANY:** Valero Refining - Texas  
**LOCATION:** Sunray, Texas  
**RUN NUMBER:** M5-1

**SOURCE:** SRU No. 1 Incinerator Exhaust  
**TEST DATE:** 8/8/2008

<b>BAROMETRIC:</b>	26.22 in. Hg	<b>STACK DIAM:</b>	49.75 inches
<b>STATIC PRES:</b>	-0.69 in.H <sub>2</sub> O	<b>CO<sub>2</sub>:</b>	10.32 % by volume
<b>STACK TEMP:</b>	1366.2 °F	<b>O<sub>2</sub>:</b>	3.77 % by volume
<b>SQ.RT ΔP:</b>	0.1075 in.H <sub>2</sub> O		

<b>DRY MOLECULAR WEIGHT OF STACK GAS</b>			
$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO)$	=	29.80	lb/lb-mole
<b>MOLECULAR WEIGHT OF STACK GAS, wet basis</b>			
$M_s = M_d(1 - B_{ws}) + 18B_{ws}$	=	27.68	lb/lb-mole
<b>PITOT TUBE COEFFICIENT</b>			
$C_p$ (from calibration curve or geometric specifications)	=	0.84	
<b>AVERAGE VELOCITY HEAD OF STACK GAS, in. H<sub>2</sub>O</b>			
$\sqrt{\Delta P} = \frac{1}{n} \sum_{i=1}^n \sqrt{\Delta p_i}$	=	0.1075	in. H <sub>2</sub> O
<b>AVERAGE ABSOLUTE STACK GAS TEMPERATURE</b>			
$T_s = 1366.2 \text{ °F} + 460$	=	1,826.2	°R
<b>ABSOLUTE STACK GAS PRESSURE</b>			
$P_s = P_{bar} + \frac{P_{static}}{13.6}$	=	26.17	in.Hg
<b>STACK GAS VELOCITY</b>			
$V_s = (85.49)(C_p)(avg \sqrt{\Delta P}) \sqrt{\frac{T_s}{(P_s)(M_s)}}$	=	12.257	ft/sec
<b>STACK GAS VOLUMETRIC FLOW RATE, actual</b>			
$Q_s = 60 \times V_s \times A_s$	=	9,927.7	acfm
Stack Area =		13.499	ft <sup>2</sup>
<b>STACK GAS VOLUMETRIC FLOW RATE, standard conditions, wet basis</b>			
$Q_{stdw} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)$	=	2,510.5	scfm, wb
		150,632	scfh, wb
<b>STACK GAS VOLUMETRIC FLOW RATE, standard conditions, dry basis</b>			
$Q_{std} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)(1 - B_{ws})$	=	2,059.5	dscfm
		123,569	dscfh

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

**COMPANY:** Valero Refining - Texas  
**LOCATION:** Sunray, Texas  
**SOURCE:** SRU No. 1 Incinerator Exhaust  
**TEST DATE:** 8/8/08  
**RUN NUMBER:** M5-1

**INPUT**

<b>V<sub>m</sub>:</b>	54.618	<b>ft<sup>3</sup></b>	<b>Q<sub>s</sub>:</b>	2,059	<b>dscfm</b>
<b>γ FACTOR:</b>	1.025		<b>T<sub>s</sub>:</b>	1366.2	<b>°F</b>
<b>P<sub>bar</sub>:</b>	26.22	<b>in.Hg</b>	<b>Runtime:</b>	60.0	<b>minutes</b>
<b>ΔH:</b>	2.33	<b>in.H<sub>2</sub>O</b>	<b>V<sub>s</sub>:</b>	12.257	<b>ft/sec</b>
<b>T<sub>m</sub>:</b>	98.8	<b>°F</b>	<b>P<sub>s</sub>:</b>	26.17	<b>in.Hg</b>
<b>V<sub>lc</sub>:</b>	217.1	<b>mL</b>	<b>Noz. diam:</b>	0.984	<b>inches</b>
<b>M<sub>n</sub> front:</b>	12.56	<b>mg</b>			

**ENGLISH UNITS**  
**(29.92 in.Hg & 68 °F)**

<b>VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS</b>					
$V_{mstd} = \left( \frac{528}{29.92} \right) \times V_m \times \gamma \left[ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 46.659 \text{ dscf}$					
$\gamma = 1.025$					
<b>VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS</b>					
$V_{wstd} = 0.04707 \times V_{lc} = 10.219 \text{ scf}$					
<b>FRACTIONAL MOISTURE CONTENT OF STACK GAS</b>					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100 = 17.97 \%$					
<b>PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS</b>					
$C_s = (0.01543) \left( \frac{M_n}{V_{mstd}} \right) \text{ Total} = 0.00415 \text{ gr/dscf}$					
$C'_s = (2.205 \times 10^{-6}) \left( \frac{M_n}{V_{mstd}} \right) \text{ C}'_s \text{ Total} = 0.5936 \times 10^{-6} \text{ lbs/dscf}$					
<b>EMISSION RATE</b>					
$pmr = \left( \frac{C_s}{7000} \right) (Q_{std})(60) \text{ Total} = 0.0733 \text{ lbs/hr}$ $0.3211 \text{ ton/yr}$					
<b>ISOKINETIC SAMPLING RATE</b>					
$\%ISO = \frac{(100)(T_s) \left[ (0.002669 \times V_{lc}) + \left( \frac{V_m}{T_m} \right) (\gamma) \left( P_{bar} + \left( \frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)} = 96.53 \%$					
$A_n = 0.005281 \text{ ft}^2 \quad \text{Runtime} = 60 \text{ minutes}$					

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

**COMPANY:** Valero Refining - Texas  
**LOCATION:** Sunray, Texas  
**SOURCE:** SRU No. 1 Incinerator Exhaust  
**TEST DATE:** 8/8/08  
**RUN NUMBER:** M5-1

**INPUT**

<b>V<sub>m</sub>:</b>	54.618	ft <sup>3</sup>	<b>Q<sub>s</sub>:</b>	2,059	dscfm
<b>γ FACTOR:</b>	1.025		<b>T<sub>s</sub>:</b>	1366.2	°F
<b>P<sub>bar</sub>:</b>	26.22	in.Hg	<b>Runtime:</b>	60.0	minutes
<b>ΔH:</b>	2.33	in.H <sub>2</sub> O	<b>V<sub>s</sub>:</b>	12.257	ft/sec
<b>T<sub>m</sub>:</b>	98.8	°F	<b>P<sub>s</sub>:</b>	26.17	in.Hg
<b>V<sub>lc</sub>:</b>	217.1	mL	<b>Noz. diam:</b>	0.984	inches
<b>M<sub>n</sub> back inorg:</b>	7.40	mg			

**ENGLISH UNITS**  
(29.92 in.Hg & 68 °F)

<b>VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS</b>					
$V_{mstd} = \left( \frac{528}{29.92} \right) \times V_m \times \gamma \left[ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 46.659 \text{ dscf}$					
$\gamma = 1.025$					
<b>VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS</b>					
$V_{wstd} = 0.04707 \times V_{lc} = 10.219 \text{ scf}$					
<b>FRACTIONAL MOISTURE CONTENT OF STACK GAS</b>					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100 = 17.97 \%$					
<b>PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS</b>					
$C_s = (0.01543) \left( \frac{M_n}{V_{mstd}} \right) \text{ Total} = 0.00245 \text{ gr/dscf}$					
$C'_s = (2.205 \times 10^{-6}) \left( \frac{M_n}{V_{mstd}} \right) \text{ C}'_s \text{ Total} = 0.34971 \times 10^{-6} \text{ lbs/dscf}$					
<b>EMISSION RATE</b>					
$pmr = \left( \frac{C_s}{7000} \right) (Q_{std})(60) \text{ Total} = 0.0432 \text{ lbs/hr}$ $0.1892 \text{ ton/yr}$					
<b>ISOKINETIC SAMPLING RATE</b>					
$\%ISO = \frac{(100)(T_s) \left[ (0.002669 \times V_{lc}) + \left( \frac{V_m}{T_m} \right) (\gamma) \left( P_{bar} + \left( \frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)} = 96.53 \%$					
$A_n = 0.005281 \text{ ft}^2 \quad \text{Runtime} = 60 \text{ minutes}$					

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

**COMPANY:** Valero Refining - Texas  
**LOCATION:** Sunray, Texas  
**SOURCE:** SRU No. 1 Incinerator Exhaust  
**TEST DATE:** 8/8/08  
**RUN NUMBER:** M5-1

**INPUT**

<b>V<sub>m</sub>:</b>	54.618	<b>ft<sup>3</sup></b>	<b>Q<sub>s</sub>:</b>	2,059	<b>dscfm</b>
<b>γ FACTOR:</b>	1.025		<b>T<sub>s</sub>:</b>	1366.2	<b>°F</b>
<b>P<sub>bar</sub>:</b>	26.22	<b>in.Hg</b>	<b>Runtime:</b>	60.0	<b>minutes</b>
<b>ΔH:</b>	2.33	<b>in.H<sub>2</sub>O</b>	<b>V<sub>s</sub>:</b>	12.257	<b>ft/sec</b>
<b>T<sub>m</sub>:</b>	98.8	<b>°F</b>	<b>P<sub>s</sub>:</b>	26.17	<b>in.Hg</b>
<b>V<sub>lc</sub>:</b>	217.1	<b>mL</b>	<b>Noz. diam:</b>	0.984	<b>inches</b>
<b>M<sub>n</sub> back org:</b>	0.65	<b>mg</b>			

**ENGLISH UNITS**  
**(29.92 in.Hg & 68 °F)**

<b>VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS</b>					
$V_{mstd} = \left( \frac{528}{29.92} \right) \times V_m \times \gamma \left[ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 46.659 \text{ dscf}$					
$\gamma = 1.025$					
<b>VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS</b>					
$V_{wstd} = 0.04707 \times V_{lc} = 10.219 \text{ scf}$					
<b>FRACTIONAL MOISTURE CONTENT OF STACK GAS</b>					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100 = 17.97 \%$					
<b>PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS</b>					
$C_s = (0.01543) \left( \frac{M_n}{V_{mstd}} \right) \text{ Total} = 0.00021 \text{ gr/dscf}$					
$C'_s = (2.205 \times 10^{-6}) \left( \frac{M_n}{V_{mstd}} \right) \text{ C}'_s \text{ Total} = 0.03072 \times 10^{-6} \text{ lbs/dscf}$					
<b>EMISSION RATE</b>					
$pmr = \left( \frac{C_s}{7000} \right) (Q_{std}) (60) \text{ Total} = 0.0038 \text{ lbs/hr}$ $0.0166 \text{ ton/yr}$					
<b>ISOKINETIC SAMPLING RATE</b>					
$\%ISO = \frac{(100)(T_s) \left[ (0.002669 \times V_{lc}) + \left( \frac{V_m}{T_m} \right) (\gamma) \left( P_{bar} + \left( \frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)} = 96.53 \%$					
$A_n = 0.005281 \text{ ft}^2 \quad \text{Runtime} = 60 \text{ minutes}$					

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

**COMPANY:** Valero Refining - Texas  
**LOCATION:** Sunray, Texas  
**SOURCE:** SRU No. 1 Incinerator Exhaust  
**TEST DATE:** 8/8/08  
**RUN NUMBER:** M5-1

**INPUT**

<b>V<sub>m</sub>:</b>	54.618	ft <sup>3</sup>	<b>Q<sub>s</sub>:</b>	2,059	dscfm
<b>γ FACTOR:</b>	1.025		<b>T<sub>s</sub>:</b>	1366.2	°F
<b>P<sub>bar</sub>:</b>	26.22	in.Hg	<b>Runtime:</b>	60.0	minutes
<b>ΔH:</b>	2.33	in.H <sub>2</sub> O	<b>V<sub>s</sub>:</b>	12.257	ft/sec
<b>T<sub>m</sub>:</b>	98.8	°F	<b>P<sub>s</sub>:</b>	26.17	in.Hg
<b>V<sub>lc</sub>:</b>	217.1	mL	<b>Noz. diam:</b>	0.984	inches
<b>M<sub>n</sub> total:</b>	20.61	mg			

**ENGLISH UNITS**  
**(29.92 in.Hg & 68 °F)**

<b>VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS</b>					
$V_{mstd} = \left( \frac{528}{29.92} \right) \times V_m \times \gamma \left[ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 46.659 \text{ dscf}$					
γ = 1.025					
<b>VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS</b>					
$V_{wstd} = 0.04707 \times V_{lc} = 10.219 \text{ scf}$					
<b>FRACTIONAL MOISTURE CONTENT OF STACK GAS</b>					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100 = 17.97 \%$					
<b>PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS</b>					
$C_s = (0.01543) \left( \frac{M_n}{V_{mstd}} \right) \text{ Total} = 0.00682 \text{ gr/dscf}$					
$C'_s = (2.205 \times 10^{-6}) \left( \frac{M_n}{V_{mstd}} \right) \text{ C}'_s \text{ Total} = 0.9740 \times 10^{-6} \text{ lbs/dscf}$					
<b>EMISSION RATE</b>					
$pmr = \left( \frac{C_s}{7000} \right) (Q_{std})(60) \text{ Total} = 0.1203 \text{ lbs/hr}$ $0.5270 \text{ ton/yr}$					
<b>ISOKINETIC SAMPLING RATE</b>					
$\%ISO = \frac{(100)(T_s) \left[ (0.002669 \times V_{lc}) + \left( \frac{V_m}{T_m} \right) (\gamma) \left( P_{bar} + \left( \frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)} = 96.53 \%$					
<b>A<sub>n</sub> = 0.005281 ft<sup>2</sup>      Runtime = 60 minutes</b>					

MONITOR DATA SUMMARY

COMPANY : Valero Refining - Texas  
 SOURCE : SRU No. 1 Incinerator Exhaust  
 REPETITION : M5-2  
 TEST DATE : 8/8/2008  
 START TIME : 13:19  
 END TIME : 14:25

CLOCK TIME	ELAPSED TIME	Uncorrected	
		O <sub>2</sub> % vol db	CO <sub>2</sub> % vol db
13:19	0	-----	-----
13:20	1	3.65	10.48
13:21	2	3.66	10.51
13:22	3	3.49	10.54
13:23	4	3.63	10.35
13:24	5	3.71	10.39
13:25	6	3.72	10.49
13:26	7	3.76	10.41
13:27	8	3.60	10.42
13:28	9	3.52	10.54
13:29	10	3.79	10.44
13:30	11	3.66	10.43
13:31	12	3.59	10.45
13:32	13	3.59	10.56
13:33	14	3.71	10.44
13:34	15	3.78	10.31
13:35	16	3.63	10.46
13:36	17	3.35	10.68
13:37	18	3.73	10.47
13:38	19	3.67	10.44
13:39	20	3.62	10.47
13:40	21	3.66	10.51
13:41	22	3.62	10.53
13:42	23	3.69	10.44
13:43	24	3.72	10.36
13:44	25	3.67	10.49
13:45	26	3.68	10.52
13:46	27	3.42	10.56
13:47	28	3.48	10.50
13:48	29	3.65	10.50
13:49/13:55	30	3.66	10.58
13:56	31	4.26	10.12
13:57	32	3.60	10.51
13:58	33	3.40	10.70
13:59	34	3.34	10.72
14:00	35	3.41	10.56
14:01	36	3.45	10.58
14:02	37	3.44	10.67
14:03	38	3.59	10.69
14:04	39	3.49	10.57
14:05	40	3.56	10.49
14:06	41	3.62	10.59
14:07	42	3.67	10.59
14:08	43	3.70	10.50
14:09	44	3.61	10.50
14:10	45	3.51	10.66
14:11	46	3.40	10.73
14:12	47	3.61	10.51
14:13	48	3.56	10.58
14:14	49	3.71	10.61
14:15	50	3.61	10.64
14:16	51	3.69	10.48
14:17	52	3.58	10.61
14:18	53	3.65	10.65
14:19	54	3.63	10.62
14:20	55	3.58	10.54
14:21	56	3.51	10.73
14:22	57	3.47	10.91
14:23	58	3.49	10.83
14:24	59	3.41	10.83
14:25	60	3.37	10.86
<b>Uncorrected Average =</b>		<b>3.600</b>	<b>10.548</b>

GAS ANALYZER

O<sub>2</sub>

SPAN: 9.00 %  
 AVERAGE CAL. BIAS (C<sub>m</sub>): 4.540  
 AVERAGE ZERO BIAS (C<sub>o</sub>): -0.065  
 CALIBRATION GAS: EPA Protocol O<sub>2</sub>  
 CALIBRATION PPM (C<sub>ma</sub>): 4.50  
 PPM CORRECTED (C<sub>gas</sub>): 3.58

GAS ANALYZER

CO<sub>2</sub>

SPAN: 18.00 %  
 AVERAGE CAL. BIAS (C<sub>m</sub>): 9.120  
 AVERAGE ZERO BIAS (C<sub>o</sub>): 0.055  
 CALIBRATION GAS: EPA Protocol CO<sub>2</sub>  
 CALIBRATION % (C<sub>ma</sub>): 9.00  
 % CORRECTED (C<sub>gas</sub>): 10.42

Example Calculation =

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

**ARI ENVIRONMENTAL, INC.  
MOISTURE CALCULATION SUMMARY**

**COMPANY:** Valero Refining - Texas  
**LOCATION:** Sunray, Texas  
**SOURCE:** SRU No. 1 Incinerator Exhaust  
**TEST DATE:** 8/8/2008  
**RUN NUMBER:** M5-2

<b>γ FACTOR:</b>	1.025	<b>STACK DIAM:</b>	49.75 inches
<b>BAROMETRIC:</b>	26.16 in. Hg	<b>METER VOLUME:</b>	56.960 ft <sup>3</sup>
<b>STATIC PRES:</b>	-0.70 in.H <sub>2</sub> O	<b>METER TEMP:</b>	102.8 °F
<b>STACK TEMP:</b>	1365.6 °F	<b>LIQUID COLL:</b>	209.9 milliliters
<b>SQ.RT ΔP:</b>	0.1075 in.H <sub>2</sub> O	<b>CO<sub>2</sub>:</b>	10.42 % by volume
<b>ΔH:</b>	2.43 in.H <sub>2</sub> O	<b>O<sub>2</sub>:</b>	3.58 % by volume

**ENGLISH UNITS  
(29.92 in.Hg & 68 °F)**

<b>VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS</b>	
$V_{mstd} = \left( \frac{528}{29.92} \right) \times V_m \times \gamma \left[ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$	= 48.218 dscf
$\gamma = 1.025$	
<b>VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS</b>	
$V_{wstd} = 0.04707 \times V_{lc}$	= 9.880 scf
$V_{lc} = 209.9 \text{ mL}$	
<b>FRACTIONAL MOISTURE CONTENT OF STACK GAS AS MEASURED</b>	
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}}$	= 0.1701
<b>FRACTIONAL MOISTURE CONTENT OF STACK GAS @ SATURATION</b>	
$MF = \frac{\left( 10^{\left[ 8.361 - \left( \frac{1893.5}{T - 27.65} \right) \right]} \right)^{-0.5}}{P}$	= 1.000
$T = 1013.9 \text{ °K}$	
$P = 663.2 \text{ mmHg}$	
<b>FRACTIONAL MOISTURE CONTENT USED IN CALCULATIONS</b>	
$B_{ws} =$	0.1701

**ARI ENVIRONMENTAL, INC.**  
**FLOW RATE CALCULATION SUMMARY**

**COMPANY:** Valero Refining - Texas  
**LOCATION:** Sunray, Texas  
**RUN NUMBER:** M5-2

**SOURCE:** SRU No. 1 Incinerator Exhaust  
**TEST DATE:** 8/8/2008

<b>BAROMETRIC:</b>	26.16 in. Hg	<b>STACK DIAM:</b>	49.75 inches
<b>STATIC PRES:</b>	-0.7 in.H <sub>2</sub> O	<b>CO<sub>2</sub>:</b>	10.42 % by volume
<b>STACK TEMP:</b>	1365.6 °F	<b>O<sub>2</sub>:</b>	3.58 % by volume
<b>SQ.RT ΔP:</b>	0.1075 in.H <sub>2</sub> O		

<b>DRY MOLECULAR WEIGHT OF STACK GAS</b>			
$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO)$	=	29.81	lb/lb-mole
<b>MOLECULAR WEIGHT OF STACK GAS, wet basis</b>			
$M_s = M_d(1 - B_{ws}) + 18B_{ws}$	=	27.80	lb/lb-mole
<b>PITOT TUBE COEFFICIENT</b>			
$C_p$ (from calibration curve or geometric specifications)	=	0.84	
<b>AVERAGE VELOCITY HEAD OF STACK GAS, in. H<sub>2</sub>O</b>			
$\sqrt{\Delta P} = \frac{1}{n} \sum_{i=1}^n \sqrt{\Delta p_i}$	=	0.1075	in. H <sub>2</sub> O
<b>AVERAGE ABSOLUTE STACK GAS TEMPERATURE</b>			
$T_s = 1365.6 \text{ °F} + 460$	=	1,825.6	°R
<b>ABSOLUTE STACK GAS PRESSURE</b>			
$P_s = P_{bar} + \frac{P_{static}}{13.6}$	=	26.11	in.Hg
<b>STACK GAS VELOCITY</b>			
$V_s = (85.49)(C_p)(\text{avg}\sqrt{\Delta P}) \sqrt{\frac{T_s}{(P_s)(M_s)}}$	=	12.243	ft/sec
<b>STACK GAS VOLUMETRIC FLOW RATE, actual</b>			
$Q_s = 60 \times V_s \times A_s$	=	9,916.1	acfm
Stack Area =		13.499 ft <sup>2</sup>	
<b>STACK GAS VOLUMETRIC FLOW RATE, standard conditions, wet basis</b>			
$Q_{stdw} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)$	=	2,502.6 150,156	scfm, wb scfh, wb
<b>STACK GAS VOLUMETRIC FLOW RATE, standard conditions, dry basis</b>			
$Q_{std} = \left(\frac{528}{29.92}\right)(Q_s)\left(\frac{P_s}{T_s}\right)(1 - B_{ws})$	=	2,077.0 124,621	dscfm dscfh

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

**COMPANY:** Valero Refining - Texas  
**LOCATION:** Sunray, Texas  
**SOURCE:** SRU No. 1 Incinerator Exhaust  
**TEST DATE:** 8/8/08  
**RUN NUMBER:** M5-2

**INPUT**

<b>V<sub>m</sub>:</b>	56.96	ft <sup>3</sup>	<b>Q<sub>s</sub>:</b>	2,077	dscfm
<b>γ FACTOR:</b>	1.025		<b>T<sub>s</sub>:</b>	1365.6	°F
<b>P<sub>bar</sub>:</b>	26.16	in.Hg	<b>Runtime:</b>	60.0	minutes
<b>ΔH:</b>	2.43	in.H <sub>2</sub> O	<b>V<sub>s</sub>:</b>	12.243	ft/sec
<b>T<sub>m</sub>:</b>	102.8	°F	<b>P<sub>s</sub>:</b>	26.11	in.Hg
<b>V<sub>lc</sub>:</b>	209.9	mL	<b>Noz. diam:</b>	0.984	inches
<b>M<sub>n</sub> front:</b>	4.00	mg			

**ENGLISH UNITS**  
(29.92 in.Hg & 68 °F)

<b>VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS</b>					
$V_{mstd} = \left( \frac{528}{29.92} \right) \times V_m \times \gamma \left[ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 48.218 \text{ dscf}$					
$\gamma = 1.025$					
<b>VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS</b>					
$V_{wstd} = 0.04707 \times V_{lc} = 9.880 \text{ scf}$					
<b>FRACTIONAL MOISTURE CONTENT OF STACK GAS</b>					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100 = 17.01 \%$					
<b>PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS</b>					
$C_s = (0.01543) \left( \frac{M_n}{V_{mstd}} \right) \quad \text{Total} = 0.00128 \text{ gr/dscf}$					
$C'_s = (2.205 \times 10^{-6}) \left( \frac{M_n}{V_{mstd}} \right) \quad C'_s \text{ Total} = 0.1829 \times 10^{-9} \text{ lbs/dscf}$					
<b>EMISSION RATE</b>					
$pmr = \left( \frac{C_s}{7000} \right) (Q_{std})(60) \quad \text{Total} = \begin{matrix} 0.0228 \text{ lbs/hr} \\ 0.0998 \text{ ton/yr} \end{matrix}$					
<b>ISOKINETIC SAMPLING RATE</b>					
$\%ISO = \frac{(100)(T_s) \left[ (0.002669 \times V_{lc}) + \left( \frac{V_m}{T_m} \right) (\gamma) \left( P_{bar} + \left( \frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)} = 98.91 \%$					
$A_n = 0.005281 \text{ ft}^2 \quad \text{Runtime} = 60 \text{ minutes}$					

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

**COMPANY:** Valero Refining - Texas  
**LOCATION:** Sunray, Texas  
**SOURCE:** SRU No. 1 Incinerator Exhaust  
**TEST DATE:** 8/8/08  
**RUN NUMBER:** M5-2

**INPUT**

<b>V<sub>m</sub>:</b>	56.96	ft <sup>3</sup>	<b>Q<sub>s</sub>:</b>	2,077	dscfm
<b>γ FACTOR:</b>	1.025		<b>T<sub>s</sub>:</b>	1365.6	°F
<b>P<sub>bar</sub>:</b>	26.16	in.Hg	<b>Runtime:</b>	60.0	minutes
<b>ΔH:</b>	2.43	in.H <sub>2</sub> O	<b>V<sub>s</sub>:</b>	12.243	ft/sec
<b>T<sub>m</sub>:</b>	102.8	°F	<b>P<sub>s</sub>:</b>	26.11	in.Hg
<b>V<sub>ic</sub>:</b>	209.9	mL	<b>Noz. diam:</b>	0.984	inches
<b>M<sub>n</sub> back inorg:</b>	23.00	mg			

**ENGLISH UNITS**  
(29.92 in.Hg & 68 °F)

<b>VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS</b>					
$V_{mstd} = \left( \frac{528}{29.92} \right) \times V_m \times \gamma \left[ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right]$		=	48.218	dscf	
γ = 1.025					
<b>VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS</b>					
$V_{wstd} = 0.04707 \times V_{ic}$		=	9.880	scf	
<b>FRACTIONAL MOISTURE CONTENT OF STACK GAS</b>					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100$		=	17.01	%	
<b>PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS</b>					
$C_s = (0.01543) \left( \frac{M_n}{V_{mstd}} \right)$		Total	=	0.00736	gr/dscf
$C'_s = (2.205 \times 10^{-6}) \left( \frac{M_n}{V_{mstd}} \right)$		C' <sub>s</sub> Total	=	1.05179	x 10 <sup>-6</sup> lbs/dscf
<b>EMISSION RATE</b>					
$pmr = \left( \frac{C_s}{7000} \right) (Q_{std})(60)$		Total	=	0.1310	lbs/hr
				0.5739	ton/yr
<b>ISOKINETIC SAMPLING RATE</b>					
$\%ISO = \frac{(100)(T_s) \left[ (0.002669 \times V_{ic}) + \left( \frac{V_m}{T_m} \right) (\gamma) \left( P_{bar} + \left( \frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)}$		=		98.91	% I
A <sub>n</sub> = 0.005281 ft <sup>2</sup>		Runtime =	60	minutes	

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

**COMPANY:** Valero Refining - Texas  
**LOCATION:** Sunray, Texas  
**SOURCE:** SRU No. 1 Incinerator Exhaust  
**TEST DATE:** 8/8/08  
**RUN NUMBER:** M5-2

**INPUT**

<b>V<sub>m</sub>:</b>	56.96	<b>ft<sup>3</sup></b>	<b>Q<sub>s</sub>:</b>	2,077	<b>dscfm</b>
<b>γ FACTOR:</b>	1.025		<b>T<sub>s</sub>:</b>	1365.6	<b>°F</b>
<b>P<sub>bar</sub>:</b>	26.16	<b>in.Hg</b>	<b>Runtime:</b>	60.0	<b>minutes</b>
<b>ΔH:</b>	2.43	<b>in.H<sub>2</sub>O</b>	<b>V<sub>s</sub>:</b>	12.243	<b>ft/sec</b>
<b>T<sub>m</sub>:</b>	102.8	<b>°F</b>	<b>P<sub>s</sub>:</b>	26.11	<b>in.Hg</b>
<b>V<sub>lc</sub>:</b>	209.9	<b>mL</b>	<b>Noz. diam:</b>	0.984	<b>inches</b>
<b>M<sub>n</sub> back org:</b>	0.50	<b>mg</b>			

**ENGLISH UNITS**  
(29.92 in.Hg & 68 °F)

<b>VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS</b>					
$V_{mstd} = \left( \frac{528}{29.92} \right) \times V_m \times \gamma \left[ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 48.218 \text{ dscf}$					
$\gamma = 1.025$					
<b>VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS</b>					
$V_{wstd} = 0.04707 \times V_{lc} = 9.880 \text{ scf}$					
<b>FRACTIONAL MOISTURE CONTENT OF STACK GAS</b>					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100 = 17.01 \%$					
<b>PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS</b>					
$C_s = (0.01543) \left( \frac{M_n}{V_{mstd}} \right) \quad \text{Total} = 0.00016 \text{ gr/dscf}$					
$C'_s = (2.205 \times 10^{-6}) \left( \frac{M_n}{V_{mstd}} \right) \quad C'_s \text{ Total} = 0.02287 \times 10^{-6} \text{ lbs/dscf}$					
<b>EMISSION RATE</b>					
$pmr = \left( \frac{C_s}{7000} \right) (Q_{std})(60) \quad \text{Total} = \begin{matrix} 0.0028 \text{ lbs/hr} \\ 0.0125 \text{ ton/yr} \end{matrix}$					
<b>ISOKINETIC SAMPLING RATE</b>					
$\%ISO = \frac{(100)(T_s) \left[ (0.002669 \times V_{lc}) + \left( \frac{V_m}{T_m} \right) (\gamma) \left( P_{bar} + \left( \frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)} = 98.91 \%$					
$A_n = 0.005281 \text{ ft}^2 \quad \text{Runtime} = 60 \text{ minutes}$					

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

**COMPANY:** Valero Refining - Texas  
**LOCATION:** Sunray, Texas  
**SOURCE:** SRU No. 1 Incinerator Exhaust  
**TEST DATE:** 8/8/08  
**RUN NUMBER:** M5-2

**INPUT**

<b>V<sub>m</sub>:</b>	56.96	ft <sup>3</sup>	<b>Q<sub>s</sub>:</b>	2,077	dscfm
<b>γ FACTOR:</b>	1.025		<b>T<sub>s</sub>:</b>	1365.6	°F
<b>P<sub>bar</sub>:</b>	26.16	in.Hg	<b>Runtime:</b>	60.0	minutes
<b>ΔH:</b>	2.43	in.H <sub>2</sub> O	<b>V<sub>s</sub>:</b>	12.243	ft/sec
<b>T<sub>m</sub>:</b>	102.8	°F	<b>P<sub>s</sub>:</b>	26.11	in.Hg
<b>V<sub>lc</sub>:</b>	209.9	mL	<b>Noz. diam:</b>	0.984	inches
<b>M<sub>n</sub> total:</b>	27.50	mg			

**ENGLISH UNITS**  
**(29.92 in.Hg & 68 °F)**

<b>VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS</b>					
$V_{mstd} = \left( \frac{528}{29.92} \right) \times V_m \times \gamma \left[ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 48.218 \text{ dscf}$					
$\gamma = 1.025$					
<b>VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS</b>					
$V_{wstd} = 0.04707 \times V_{lc} = 9.880 \text{ scf}$					
<b>FRACTIONAL MOISTURE CONTENT OF STACK GAS</b>					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100 = 17.01 \%$					
<b>PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS</b>					
$C_s = (0.01543) \left( \frac{M_n}{V_{mstd}} \right) \text{ Total} = 0.00880 \text{ gr/dscf}$					
$C'_s = (2.205 \times 10^{-6}) \left( \frac{M_n}{V_{mstd}} \right) \text{ C}'_s \text{ Total} = 1.2576 \times 10^{-6} \text{ lbs/dscf}$					
<b>EMISSION RATE</b>					
$pmr = \left( \frac{C_s}{7000} \right) (Q_{std})(60) \text{ Total} = 0.1567 \text{ lbs/hr}$ $0.6862 \text{ ton/yr}$					
<b>ISOKINETIC SAMPLING RATE</b>					
$\%ISO = \frac{(100)(T_s) \left[ (0.002669 \times V_{lc}) + \left( \frac{V_m}{T_m} \right) (\gamma) \left( P_{bar} + \left( \frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)} = 98.91 \%$					
$A_n = 0.005281 \text{ ft}^2 \quad \text{Runtime} = 60 \text{ minutes}$					

MONITOR DATA SUMMARY

COMPANY : Valero Refining - Texas  
 SOURCE : SRU No. 1 Incinerator Exhaust  
 REPETITION : M5-3  
 TEST DATE : 8/8/2008  
 START TIME : 15:05  
 END TIME : 16:13

CLOCK TIME	ELAPSED TIME	Uncorrected	
		O <sub>2</sub> % vol db	CO <sub>2</sub> % vol db
15:05	0	---	---
15:06	1	3.95	10.41
15:07	2	3.82	10.50
15:08	3	3.88	10.58
15:09	4	3.86	10.48
15:10	5	3.81	10.54
15:11	6	3.78	10.59
15:12	7	3.81	10.56
15:13	8	3.75	10.57
15:14	9	3.85	10.53
15:15	10	3.85	10.56
15:16	11	3.87	10.53
15:17	12	3.62	10.69
15:18	13	3.50	10.72
15:19	14	3.86	10.49
15:20	15	3.58	10.72
15:21	16	3.43	10.76
15:22	17	3.43	10.82
15:23	18	3.58	10.72
15:24	19	3.54	10.72
15:25	20	3.66	10.68
15:26	21	3.52	10.75
15:27	22	3.67	10.64
15:28	23	3.58	10.75
15:29	24	3.54	10.71
15:30	25	3.43	10.80
15:31	26	3.52	10.78
15:32	27	3.59	10.74
15:33	28	3.62	10.74
15:34	29	3.62	10.79
15:35/15:43	30	3.71	10.70
15:44	31	3.48	10.95
15:45	32	3.44	10.93
15:46	33	3.44	10.97
15:47	34	3.45	10.93
15:48	35	3.65	10.80
15:49	36	3.70	10.81
15:50	37	3.80	10.85
15:51	38	3.42	10.96
15:52	39	3.44	10.88
15:53	40	3.43	10.91
15:54	41	3.42	10.90
15:55	42	3.46	10.87
15:56	43	3.42	10.83
15:57	44	3.41	10.82
15:58	45	3.32	10.88
15:59	46	3.55	10.73
16:00	47	3.45	10.84
16:01	48	3.52	10.77
16:02	49	3.60	10.73
16:03	50	3.59	10.69
16:04	51	3.55	10.74
16:05	52	3.55	10.71
16:06	53	3.53	10.73
16:07	54	3.47	10.74
16:08	55	3.56	10.72
16:09	56	3.54	10.77
16:10	57	3.48	10.83
16:11	58	3.47	10.87
16:12	59	3.35	11.00
16:13	60	3.21	11.10
Uncorrected Average =		3.575	10.747

GAS ANALYZER

O<sub>2</sub>

SPAN: 9.00 %  
 AVERAGE CAL. BIAS (C<sub>m</sub>): 4.535  
 AVERAGE ZERO BIAS (C<sub>o</sub>): -0.060  
 CALIBRATION GAS: EPA Protocol O<sub>2</sub>  
 CALIBRATION PPM (C<sub>ma</sub>): 4.50  
 PPM CORRECTED (C<sub>gas</sub>): 3.56

GAS ANALYZER

CO<sub>2</sub>

SPAN: 18.00 %  
 AVERAGE CAL. BIAS (C<sub>m</sub>): 9.095  
 AVERAGE ZERO BIAS (C<sub>o</sub>): 0.050  
 CALIBRATION GAS: EPA Protocol CO<sub>2</sub>  
 CALIBRATION % (C<sub>ma</sub>): 9.00  
 % CORRECTED (C<sub>gas</sub>): 10.64

Example Calculation =

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

**ARI ENVIRONMENTAL, INC.  
MOISTURE CALCULATION SUMMARY**

**COMPANY:** Valero Refining - Texas  
**LOCATION:** Sunray, Texas  
**SOURCE:** SRU No. 1 Incinerator Exhaust  
**TEST DATE:** 8/8/2008  
**RUN NUMBER:** M5-3

<b>γ FACTOR:</b>	1.025	<b>STACK DIAM:</b>	49.75 inches
<b>BAROMETRIC:</b>	26.10 in. Hg	<b>METER VOLUME:</b>	57.125 ft <sup>3</sup>
<b>STATIC PRES:</b>	-0.67 in.H <sub>2</sub> O	<b>METER TEMP:</b>	109.4 °F
<b>STACK TEMP:</b>	1365.3 °F	<b>LIQUID COLL:</b>	201.7 milliliters
<b>SQ.RT ΔP:</b>	0.1066 in.H <sub>2</sub> O	<b>CO<sub>2</sub>:</b>	10.64 % by volume
<b>ΔH:</b>	2.25 in.H <sub>2</sub> O	<b>O<sub>2</sub>:</b>	3.56 % by volume

**ENGLISH UNITS  
(29.92 in.Hg & °F)**

<p><b>VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS</b></p> $V_{mstd} = \left( \frac{528}{29.92} \right) \times V_m \times \gamma \left[ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 47.664 \text{ dscf}$ <p style="text-align: center;"><math>\gamma = 1.025</math></p>
<p><b>VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS</b></p> $V_{wstd} = 0.04707 \times V_{lc} = 9.494 \text{ scf}$ <p style="text-align: center;"><math>V_{lc} = 201.7 \text{ mL}</math></p>
<p><b>FRACTIONAL MOISTURE CONTENT OF STACK GAS AS MEASURED</b></p> $B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} = 0.1661$
<p><b>FRACTIONAL MOISTURE CONTENT OF STACK GAS @ SATURATION</b></p> $MF = \frac{\left( 10^{\left[ 8.361 - \left( \frac{1893.5}{T - 27.65} \right) \right]} \right)^{-0.5}}{P} = 1.000$ <p style="text-align: center;"> <math>T = 1013.7 \text{ °K}</math>  <math>P = 661.7 \text{ mmHg}</math> </p>
<p><b>FRACTIONAL MOISTURE CONTENT USED IN CALCULATIONS</b></p> <p style="text-align: right;"><math>B_{ws} = 0.1661</math></p>

**ARI ENVIRONMENTAL, INC.  
FLOW RATE CALCULATION SUMMARY**

**COMPANY:** Valero Refining - Texas  
**LOCATION:** Sunray, Texas  
**RUN NUMBER:** M5-3

**SOURCE:** SRU No. 1 Incinerator Exhaust  
**TEST DATE:** 8/8/2008

<b>BAROMETRIC:</b> 26.1 in. Hg	<b>STACK DIAM:</b> 49.75 inches
<b>STATIC PRES:</b> -0.67 in.H <sub>2</sub> O	<b>CO<sub>2</sub>:</b> 10.64 % by volume
<b>STACK TEMP:</b> 1365.3 °F	<b>O<sub>2</sub>:</b> 3.56 % by volume
<b>SQ.RT ΔP:</b> 0.1066 in.H <sub>2</sub> O	

<b>DRY MOLECULAR WEIGHT OF STACK GAS</b>			
$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO)$	=	29.84	lb/lb-mole
<b>MOLECULAR WEIGHT OF STACK GAS, wet basis</b>			
$M_s = M_d(1 - B_{ws}) + 18B_{ws}$	=	27.88	lb/lb-mole
<b>PITOT TUBE COEFFICIENT</b>			
$C_p$ (from calibration curve or geometric specifications)	=	0.84	
<b>AVERAGE VELOCITY HEAD OF STACK GAS, in. H<sub>2</sub>O</b>			
$\sqrt{\Delta P} = \frac{1}{n} \sum_{i=1}^n \sqrt{\Delta p_i}$	=	0.1066	in. H <sub>2</sub> O
<b>AVERAGE ABSOLUTE STACK GAS TEMPERATURE</b>			
$T_s = 1365.3 \text{ °F} + 460$	=	1,825.3	°R
<b>ABSOLUTE STACK GAS PRESSURE</b>			
$P_s = P_{bar} + \frac{P_{static}}{13.6}$	=	26.05	in.Hg
<b>STACK GAS VELOCITY</b>			
$V_s = (85.49)(C_p)(\text{avg } \sqrt{\Delta P}) \sqrt{\frac{T_s}{(P_s)(M_s)}}$	=	12.136	ft/sec
<b>STACK GAS VOLUMETRIC FLOW RATE, actual</b>			
$Q_s = 60 \times V_s \times A_s$	=	9,829.9	acfm
Stack Area =		13.499 ft <sup>2</sup>	
<b>STACK GAS VOLUMETRIC FLOW RATE, standard conditions, wet basis</b>			
$Q_{stdw} = \left(\frac{528}{29.92}\right) (Q_s) \left(\frac{P_s}{T_s}\right)$	=	2,475.7 148,545	scfm, wb scfh, wb
<b>STACK GAS VOLUMETRIC FLOW RATE, standard conditions, dry basis</b>			
$Q_{std} = \left(\frac{528}{29.92}\right) (Q_s) \left(\frac{P_s}{T_s}\right) (1 - B_{ws})$	=	2,064.5 123,871	dscfm dscfh

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

**COMPANY:** Valero Refining - Texas  
**LOCATION:** Sunray, Texas  
**SOURCE:** SRU No. 1 Incinerator Exhaust  
**TEST DATE:** 8/8/08  
**RUN NUMBER:** M5-3

**INPUT**

<b>V<sub>m</sub>:</b>	57.125	ft <sup>3</sup>	<b>Q<sub>s</sub>:</b>	2,065	dscfm
<b>γ FACTOR:</b>	1.025		<b>T<sub>s</sub>:</b>	1365.3	°F
<b>P<sub>bar</sub>:</b>	26.10	in.Hg	<b>Runtime:</b>	60.0	minutes
<b>ΔH:</b>	2.25	in.H <sub>2</sub> O	<b>V<sub>s</sub>:</b>	12.136	ft/sec
<b>T<sub>m</sub>:</b>	109.4	°F	<b>P<sub>s</sub>:</b>	26.05	in.Hg
<b>V<sub>ic</sub>:</b>	201.7	mL	<b>Noz. diam:</b>	0.984	inches
<b>M<sub>n</sub> front:</b>	7.05	mg			

**ENGLISH UNITS**  
**(29.92 in.Hg & 68 °F)**

<b>VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS</b>					
$V_{mstd} = \left( \frac{528}{29.92} \right) \times V_m \times \gamma \left[ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 47.664 \text{ dscf}$					
$\gamma = 1.025$					
<b>VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS</b>					
$V_{wstd} = 0.04707 \times V_{ic} = 9.494 \text{ scf}$					
<b>FRACTIONAL MOISTURE CONTENT OF STACK GAS</b>					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100 = 16.61 \%$					
<b>PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS</b>					
$C_s = (0.01543) \left( \frac{M_n}{V_{mstd}} \right) \quad \text{Total} = 0.00228 \text{ gr/dscf}$					
$C'_s = (2.205 \times 10^{-6}) \left( \frac{M_n}{V_{mstd}} \right) \quad C'_s \text{ Total} = 0.3261 \times 10^{-6} \text{ lbs/dscf}$					
<b>EMISSION RATE</b>					
$pmr = \left( \frac{C_s}{7000} \right) (Q_{std})(60) \quad \text{Total} = \begin{matrix} 0.0404 \text{ lbs/hr} \\ 0.1769 \text{ ton/yr} \end{matrix}$					
<b>ISOKINETIC SAMPLING RATE</b>					
$\%ISO = \frac{(100)(T_s) \left[ (0.002669 \times V_{ic}) + \left( \frac{V_m}{T_m} \right) (\gamma) \left( P_{bar} + \left( \frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)} = 98.37 \%$					
$A_n = 0.005281 \text{ ft}^2 \quad \text{Runtime} = 60 \text{ minutes}$					

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

**COMPANY:** Valero Refining - Texas  
**LOCATION:** Sunray, Texas  
**SOURCE:** SRU No. 1 Incinerator Exhaust  
**TEST DATE:** 8/8/08  
**RUN NUMBER:** M5-3

**INPUT**

<b>V<sub>m</sub>:</b>	57.125	ft <sup>3</sup>	<b>Q<sub>s</sub>:</b>	2,065	dscfm
<b>γ FACTOR:</b>	1.025		<b>T<sub>s</sub>:</b>	1365.3	°F
<b>P<sub>bar</sub>:</b>	26.10	in.Hg	<b>Runtime:</b>	60.0	minutes
<b>ΔH:</b>	2.25	in.H <sub>2</sub> O	<b>V<sub>s</sub>:</b>	12.136	ft/sec
<b>T<sub>m</sub>:</b>	109.4	°F	<b>P<sub>s</sub>:</b>	26.05	in.Hg
<b>V<sub>ic</sub>:</b>	201.7	mL	<b>Noz. diam:</b>	0.984	inches
<b>M<sub>n</sub> back inorg:</b>	18.35	mg			

**ENGLISH UNITS**  
**(29.92 in.Hg & 68 °F)**

<b>VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS</b>					
$V_{mstd} = \left( \frac{528}{29.92} \right) \times V_m \times \gamma \left[ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 47.664 \text{ dscf}$					
γ = 1.025					
<b>VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS</b>					
$V_{wstd} = 0.04707 \times V_{ic} = 9.494 \text{ scf}$					
<b>FRACTIONAL MOISTURE CONTENT OF STACK GAS</b>					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100 = 16.61 \%$					
<b>PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS</b>					
$C_s = (0.01543) \left( \frac{M_n}{V_{mstd}} \right) \quad \text{Total} = 0.00594 \text{ gr/dscf}$					
$C'_s = (2.205 \times 10^{-6}) \left( \frac{M_n}{V_{mstd}} \right) \quad C'_s \text{ Total} = 0.84890 \times 10^{-6} \text{ lbs/dscf}$					
<b>EMISSION RATE</b>					
$pmr = \left( \frac{C_s}{7000} \right) (Q_{std})(60) \quad \text{Total} = \begin{matrix} 0.1051 \text{ lbs/hr} \\ 0.4604 \text{ ton/yr} \end{matrix}$					
<b>ISOKINETIC SAMPLING RATE</b>					
$\%ISO = \frac{(100)(T_s) \left[ (0.002669 \times V_{ic}) + \left( \frac{V_m}{T_m} \right) (\gamma) \left( P_{bar} + \left( \frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)} = 98.37 \%$					
<b>A<sub>n</sub> = 0.005281 ft<sup>2</sup>      Runtime = 60 minutes</b>					

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

**COMPANY:** Valero Refining - Texas  
**LOCATION:** Sunray, Texas  
**SOURCE:** SRU No. 1 Incinerator Exhaust  
**TEST DATE:** 8/8/08  
**RUN NUMBER:** M5-3

**INPUT**

<b>V<sub>m</sub>:</b>	57.125	ft <sup>3</sup>	<b>Q<sub>s</sub>:</b>	2,065	dscfm
<b>γ FACTOR:</b>	1.025		<b>T<sub>s</sub>:</b>	1365.3	°F
<b>P<sub>bar</sub>:</b>	26.10	in.Hg	<b>Runtime:</b>	60.0	minutes
<b>ΔH:</b>	2.25	in.H <sub>2</sub> O	<b>V<sub>s</sub>:</b>	12.136	ft/sec
<b>T<sub>m</sub>:</b>	109.4	°F	<b>P<sub>s</sub>:</b>	26.05	in.Hg
<b>V<sub>ic</sub>:</b>	201.7	mL	<b>Noz. diam:</b>	0.984	inches
<b>M<sub>n</sub> back org:</b>	0.15	mg			

**ENGLISH UNITS**  
(29.92 in.Hg & 68 °F)

<b>VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS</b>					
$V_{mstd} = \left( \frac{528}{29.92} \right) \times V_m \times \gamma \left[ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 47.664 \text{ dscf}$					
$\gamma = 1.025$					
<b>VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS</b>					
$V_{wstd} = 0.04707 \times V_{ic} = 9.494 \text{ scf}$					
<b>FRACTIONAL MOISTURE CONTENT OF STACK GAS</b>					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100 = 16.61 \%$					
<b>PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS</b>					
$C_s = (0.01543) \left( \frac{M_n}{V_{mstd}} \right) \text{ Total} = 0.00005 \text{ gr/dscf}$					
$C'_s = (2.205 \times 10^{-6}) \left( \frac{M_n}{V_{mstd}} \right) \text{ C}'_s \text{ Total} = 0.00694 \times 10^6 \text{ lbs/dscf}$					
<b>EMISSION RATE</b>					
$pmr = \left( \frac{C_s}{7000} \right) (Q_{std})(60) \text{ Total} = 0.0009 \text{ lbs/hr}$ $0.0038 \text{ ton/yr}$					
<b>ISOKINETIC SAMPLING RATE</b>					
$\%ISO = \frac{(100)(T_s) \left[ (0.002669 \times V_{ic}) + \left( \frac{V_m}{T_m} \right) (\gamma) \left( P_{bar} + \left( \frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)} = 98.37 \%$					
$A_n = 0.005281 \text{ ft}^2 \quad \text{Runtime} = 60 \text{ minutes}$					

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

**COMPANY:** Valero Refining - Texas  
**LOCATION:** Sunray, Texas  
**SOURCE:** SRU No. 1 Incinerator Exhaust  
**TEST DATE:** 8/8/08  
**RUN NUMBER:** M5-3

**INPUT**

<b>V<sub>m</sub>:</b>	57.125	ft <sup>3</sup>	<b>Q<sub>s</sub>:</b>	2,065	dscfm
<b>γ FACTOR:</b>	1.025		<b>T<sub>s</sub>:</b>	1365.3	°F
<b>P<sub>bar</sub>:</b>	26.10	in.Hg	<b>Runtime:</b>	60.0	minutes
<b>ΔH:</b>	2.25	in.H <sub>2</sub> O	<b>V<sub>s</sub>:</b>	12.136	ft/sec
<b>T<sub>m</sub>:</b>	109.4	°F	<b>P<sub>s</sub>:</b>	26.05	in.Hg
<b>V<sub>lc</sub>:</b>	201.7	mL	<b>Noz. diam:</b>	0.984	inches
<b>M<sub>n</sub> total:</b>	25.55	mg			

**ENGLISH UNITS**  
**(29.92 in.Hg & 68 °F)**

<b>VOLUME OF SAMPLE @ STANDARD CONDITIONS, DRY BASIS</b>					
$V_{mstd} = \left( \frac{528}{29.92} \right) \times V_m \times \gamma \left[ \frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m} \right] = 47.664 \text{ dscf}$					
$\gamma = 1.025$					
<b>VOLUME OF WATER IN SAMPLE @ STANDARD CONDITIONS</b>					
$V_{wstd} = 0.04707 \times V_{lc} = 9.494 \text{ scf}$					
<b>FRACTIONAL MOISTURE CONTENT OF STACK GAS</b>					
$B_{ws} = \frac{V_{wstd}}{V_{wstd} + V_{mstd}} \times 100 = 16.61 \%$					
<b>PARTICULATE CONCENTRATION IN STACK GAS ON A DRY BASIS</b>					
$C_s = (0.01543) \left( \frac{M_n}{V_{mstd}} \right) \text{ Total} = 0.00827 \text{ gr/dscf}$					
$C'_s = (2.205 \times 10^{-6}) \left( \frac{M_n}{V_{mstd}} \right) \text{ C}'_s \text{ Total} = 1.1820 \times 10^{-6} \text{ lbs/dscf}$					
<b>EMISSION RATE</b>					
$pmr = \left( \frac{C_s}{7000} \right) (Q_{std})(60) \text{ Total} = 0.1464 \text{ lbs/hr}$ $0.6411 \text{ ton/yr}$					
<b>ISOKINETIC SAMPLING RATE</b>					
$\%ISO = \frac{(100)(T_s) \left[ (0.002669 \times V_{lc}) + \left( \frac{V_m}{T_m} \right) (\gamma) \left( P_{bar} + \left( \frac{\Delta H}{13.6} \right) \right) \right]}{(60)(\theta)(V_s)(P_s)(A_n)} = 98.37 \%$					
$A_n = 0.005281 \text{ ft}^2 \quad \text{Runtime} = 60 \text{ minutes}$					



Valero McKee Refinery: Sunray, TX  
SRU No. 1 Incinerator: EPN V-5  
Test Dates: 8/6 & 8/8/08

## **APPENDIX B**

## **Field Data**

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# TRAVERSE POINT LOCATION FOR CIRCULAR AND RECTANGULAR DUCTS

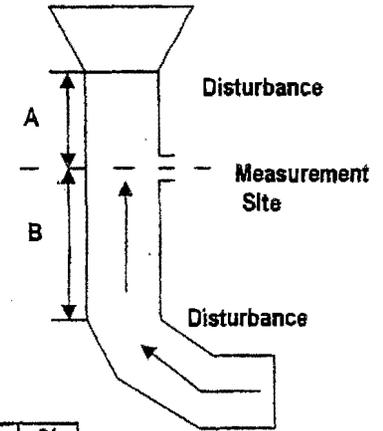
PLANT Valspar N/KEE TX  
 DATE 08.05.08  
 SAMPLING LOCATION SRU #1  
 INSIDE OF FAR WALL TO  
 OUTSIDE OF PORT (DISTANCE C) 62.0"  
 INSIDE OF NEAR WALL TO  
 OUTSIDE OF PORT (DISTANCE D) 12.25"  
 STACK ID 49.75"  
 NEAREST UPSTREAM DISTURBANCE (A) 38-ft (9.2)  
 NEAREST DOWNSTREAM DISTURBANCE (B) 18-ft (4.3 dd)

CALCULATOR T. DAVIS

Location of Traverse Points in Rectangular Stacks

	2	3	4	5	6	7	8	9	10	11	12
1	26.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2	75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.8	12.5
3		83.3	62.5	50.0	41.7	36.7	31.3	27.8	25.0	22.9	20.8
4			87.5	70.0	60.3	50.0	43.8	38.9	35.0	31.8	29.2
5				90.0	76.0	64.3	56.3	50.0	45.0	40.9	37.5
6					91.7	78.8	68.8	61.1	55.0	50.0	45.8
7						92.6	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	87.6
12											95.8

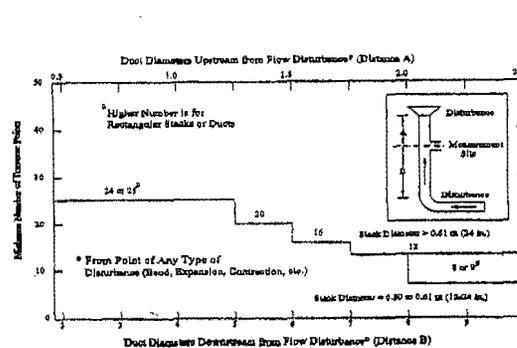
Rectangular Duct Equivalent Diameter Determination  $\frac{2 \times L \times W}{L + W}$



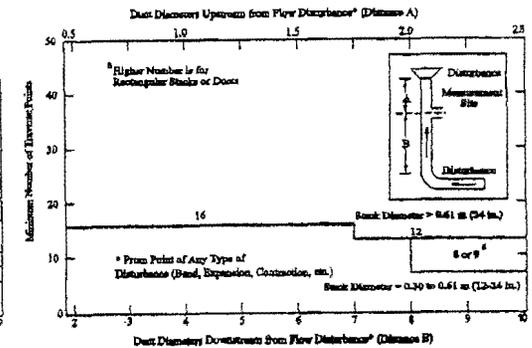
TRAVERSE POINT NUMBER	FRACTION OF STACK I.D.	STACK I.D.	PRODUCT OF COLUMNS 1 AND 2 (TO NEAREST 1/8 INCH)	DISTANCE D (PORT DEPTH)	TRAVERSE POINT LOCATION FROM OUTSIDE OF PORT (SUM OF COLUMNS 3 AND 4)
1	03.2	49.75"	01.59	12.25"	13.84
2	10.5		05.22		17.47
3	19.4		09.65		21.90
4	32.3		16.06		28.31
5	67.7		23.68		45.93
6	80.6		40.09		52.34
7	89.5		44.52		56.77
8	96.8		48.15		60.40
9					
10					
11					
12	16.7	49.75"	08.30	12.25"	20.55
13	50.0		24.87		37.12
14	83.3		41.44		53.69
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					

LOCATION OF TRAVERSE POINTS ON CIRCULAR STACKS

	4	6	8	10	12	14	16	18	20	22	24							
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1							
2	25.0	14.6	10.5	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2							
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5							
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9							
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5							
6		98.6	80.6	65.8	35.6	28.9	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	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



Minimum number of traverse points for particular traverse.



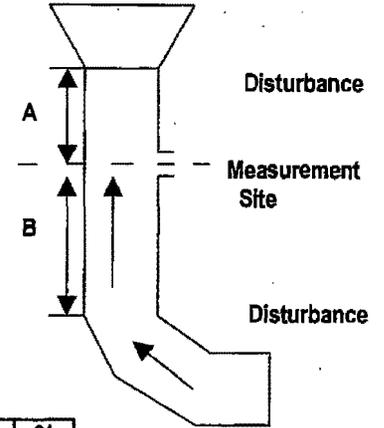
Minimum number of traverse points for velocity (isoparticles) traverses.

TRAVERSE POINT LOCATION FOR CIRCULAR AND RECTANGULAR DUCTS

PLANT VALERO MCKEE REFINERY  
 DATE 8-6-08  
 SAMPLING LOCATION SRU No. 1 TGT EXHAUST  
 INSIDE OF FAR WALL TO  
 OUTSIDE OF PORT (DISTANCE C) 62.00  
 INSIDE OF NEAR WALL TO  
 OUTSIDE OF PORT (DISTANCE D) 12.25  
 STACK ID 49.75  
 NEAREST UPSTREAM FROM DISTURBANCE (A) 38. FT (9.20)  
 NEAREST DOWNSTREAM FROM DISTURBANCE (B) 18. FT (4.30)  
 CALCULATOR D. VITALETTA

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	4.6	4.2
2	75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
3		83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4			87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
5				90.0	76.0	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							83.8	83.3	75.0	68.2	62.5
9								94.4	85.0	77.3	70.8
10									95.0	85.4	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	.021	49.75	1.04	12.25	13.3
2	.067		3.33		15.6
3	.118		5.87		18.1
4	.177		8.81		21.1
5	.250		12.44		24.7
6	.356		19.71		30.0
7	.644		32.04		44.3
8	.750		37.31		49.6
9	.823		40.94		53.2
10	.882		43.88		56.1
11	.933	✓	46.42	✓	58.7
12	.979	✓	48.71		61.0
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					

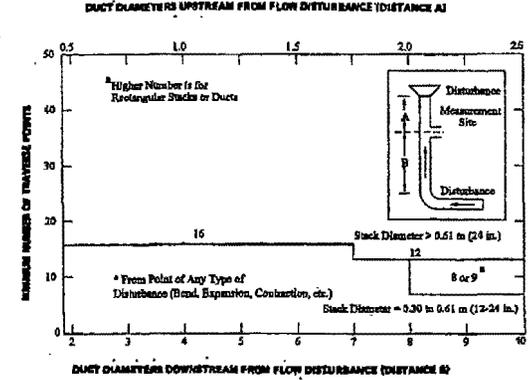
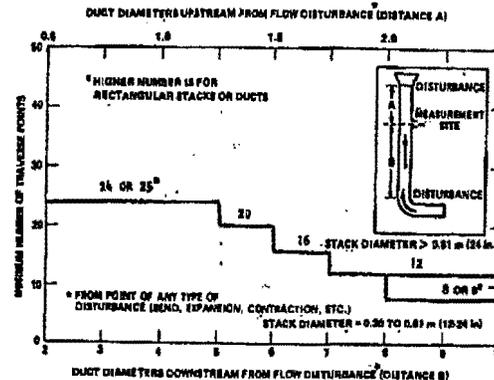


Figure 1-2. Minimum number of traverse points for velocity (nonparticulate) traverses.



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

Company:	<u>VALERO/MCKEE REFINERY</u>	<u>Analyzer Info</u>
Location:	<u>SUNRAY, TX</u>	Monitor type: <u>SERVOMEX 1440</u>
Dilution System ID:	<u>3901</u>	Monitor range: <u>15%</u>
Dilution Flow Rate:	<u>5.0 LPM</u>	Monitor Serial No.: <u>X1440D1/4143</u>
Verification date:	<u>8-5-08</u>	

**Initial Calibration Data**

<u>Calibration Concentration</u>	<u>Calibration results</u>	<u>Time</u>
Zero: <u>0.00</u>	Zero: <u>-0.03</u>	Zero: <u>1523</u>
Low: _____	Low: _____	Low: _____
Mid: <u>7.50</u>	Mid: <u>7.66</u>	Mid: <u>1529</u>
High: <u>15.00</u>	High: <u>15.09</u>	High: <u>1526</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>754</u>	High level concentration: <u>22.20%</u>
Mid level tank serial #: <u>ALM025227</u>	High level tank serial #: <u>ALM02042</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>3.77</u>	<u>1532</u>	Trial No. 1: <u>11.36</u>	<u>1535</u>
Trial No. 2: <u>3.77</u>	<u>1542</u>	Trial No. 2: <u>11.37</u>	<u>1545</u>
Trial No. 3: <u>3.77</u>	<u>1552</u>	Trial No. 3: <u>11.37</u>	<u>1555</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>7.49</u>	<u>1539</u>
Trial No. 2: <u>7.49</u>	<u>1548</u>
Trial No. 3: <u>7.49</u>	<u>1557</u>

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

Company: <u>VALERO MCKEE REFINERY</u>	<u>Analyzer Info</u>
Location: <u>SUNRAY, TX</u>	Monitor type: <u>SERVO-MEX 1440 D2</u>
Dilution System ID: <u>3712</u>	Monitor range: <u>22.20%</u>
Dilution Flow Rate: <u>4.0 LPM</u>	Monitor Serial No.: <u>X1440 D1/4143</u>
Verification date: <u>8-5-08</u>	

**Initial Calibration Data**

<u>Calibration Concentration</u>	<u>Calibration results</u>	<u>Time</u>
Zero: <u>0.00</u>	Zero: <u>-0.04</u>	Zero: <u>1905</u>
Low: _____	Low: _____	Low: _____
Mid: <u>11.10</u>	Mid: <u>11.14</u>	Mid: <u>1911</u>
High: <u>22.20</u>	High: <u>22.60</u>	High: <u>1909</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>22.20%</u>
Mid level tank serial #: <u>ALM025227</u>	High level tank serial #: <u>ALM012242</u>
	Target concentration No. 1: <u>6.00</u>
	Target concentration No. 2: <u>17.00</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>5.82</u>	<u>1914</u>	Trial No. 1: <u>17.05</u>	<u>1916</u>
Trial No. 2: <u>5.89</u>	<u>1922</u>	Trial No. 2: <u>17.06</u>	<u>1924</u>
Trial No. 3: <u>5.90</u>	<u>1929</u>	Trial No. 3: <u>17.07</u>	<u>1932</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>7.64</u>	<u>1919</u>
Trial No. 2: <u>7.65</u>	<u>1927</u>
Trial No. 3: <u>7.64</u>	<u>1937</u>

CEMS CALIBRATION DATA



Plant	Valero McKee Refinery
Location	Sunray, Texas
Source	SRU No. 1 Incinerator
Date	8/6/2008
Run Number	1
Start Time	1049
Stop Time	1349

Kevin Jeanes
Dan Fitzgerald
Dan Fitzgerald

Analyzer Span Values (% or ppm)	
CO	180.0 ppm
CO <sub>2</sub>	18.00 %
O <sub>2</sub>	9.00 %
THC	ppm
NO <sub>x</sub>	90.0 ppm
SO <sub>2</sub>	ppm

HEATED LINE TEMP = 250°F

	CALIBRATION ERROR - 0604 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
	Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Time	Pretest: 0705 hrs 1351 hrs		System Response	Time	Drift (% of Span)	
					System Response	Time				
CO Zero	0.0	ALM037881	-0.1	0650	0.3	0710	0.1	1356		Co=
CO Low		CO/N <sub>2</sub>	91.2							
CO Mid	90.0	EB0001619	45.2	0657	90.0	0714	89.8	1400		Cm=
CO High	180.0	2,000 ppm	180.2	0655						
CO <sub>2</sub> Zero	0.00	ALM037881	0.13	0607	0.15	0705	0.20	1351		Co=
CO <sub>2</sub> Low		CO <sub>2</sub> /N <sub>2</sub>								
CO <sub>2</sub> Mid	9.00	AAL11983	9.33	0614	9.23	0710	9.25	1356		Cm=
CO <sub>2</sub> High	18.00	23.06%	17.81	0611						
O <sub>2</sub> Zero	0.00	ALM037881	-0.07	0632	-0.05	0720	-0.05	1406		Co=
O <sub>2</sub> Low		O <sub>2</sub> /N <sub>2</sub>								
O <sub>2</sub> Mid	4.50	ALM012042	4.60	0607	4.56	0705	4.45	1351		Cm=
O <sub>2</sub> High	9.00	22.20%	9.04	0604						
NO <sub>x</sub> Zero	0.0	ALM037881	0.4	0607	0.1	0705	0.6	1351		Co=
NO <sub>x</sub> Low		NO <sub>x</sub> /N <sub>2</sub>								
NO <sub>x</sub> Mid	45.0	EB0004890	45.2	0632	44.9	0720	44.3	1406		Cm=
NO <sub>x</sub> High	90.0	1,996 ppm	89.7	0631						

O<sub>2</sub> RESPONSE TIME UP = 90 SECONDS  
 DOWN = 90 SECONDS  
 CO<sub>2</sub> RESPONSE TIME UP = 75 SECONDS  
 DOWN = 90 SECONDS  
 NO<sub>x</sub> RESPONSE TIME UP = 60 SECONDS  
 DOWN = 45 SECONDS  
 CO RESPONSE TIME UP = 90 SECONDS  
 DOWN = 105 SECONDS

NO<sub>x</sub> CONVERTER CHECK @ 0640

45.4 ppm NO<sub>x</sub>  
 44.9 ppm NO<sub>2</sub>/AIR - cyl # AAL6878  
 91.0% EFFICIENCY

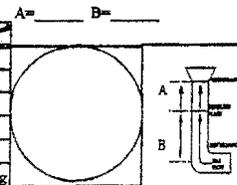


# FIELD DATA

PLANT VALERO AMBIENT TEMPERATURE 103°  
 DATE 05-06-08 BAROMETRIC PRESSURE 26.25  
 LOCATION MEKEE TX ASSUMED MOISTURE, % NA  
 OPERATOR T. DAVIS PROBE LENGTH, in. 60"  
 STACK NO. SRV#1 NOZZLE DIAMETER, in. NA  
 RUN NO. 1 STACK DIAMETER, in. 49.75"  
 SAMPLE BOX NO. APEX MINUTES PER POINT NA  
 METER BOX NO. 201005 NUMBER OF POINTS 16  
 START TIME 11:14 NUMBER OF PORTS 2

PROBE HEATER SETTING NA  
 HEATER BOX SETTING NA  
 METER H<sub>2</sub>O 1.68  
 C<sub>p</sub> FACTOR 0.54  
 Y<sub>s</sub> FACTOR 1.025  
 PITOT/THERM# 026

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



CLOCK TIME	TRAVERSE POINT NUMBER	SAMPLING TIME (t) min.	STATIC PRESSURE (in. H <sub>2</sub> O)	STACK TEMP (T <sub>s</sub> ) °F	VELOCITY HEAD		PRESSURE DIFFERENTIAL ACROSS ORIFICE METER (ΔH) in. H <sub>2</sub> O		GAS SAMPLE VOLUME (V <sub>m</sub> ) ft <sup>3</sup>	GAS SAMPLE TEMP. AT DRY GAS METER		SAMPLE BOX TEMP. °F	COND. EXIT TEMP. °F	SORBENT MODULE TEMP. °F	LAST IMPINGER OULET TEMP. °F	PUMP VACUUM in. Hg
					(ΔP <sub>s</sub> )	(V ΔP <sub>s</sub> )	ACTUAL	DESIRED		INLET (T <sub>in</sub> ) °F	OUTLET (T <sub>out</sub> ) °F					
11:19		0					1.0	1.68	883.700	103	92	NA	NA	NA	54	3
11:24		5	SEE				1.0		886.0	103	92				52	3
11:29		10					1.0		889.9	104	92				50	3
11:34		15					1.0		892.6	107	92				51	3
11:39		20		VELOCITY			1.0		895.8	109	94				53	3
11:44		25					1.0		899.2	113	95				56	3
11:49		30					1.0		902.2	116	96				55	3
11:54		35					1.0		905.1	117	97				53	3
11:59		40					1.0		909.0	118	97	↓	↓	↓	53	3
12:04		45					1.0	↓	912.0	120	98				54	3
12:09		50					1.0		915.2	124	98				57	3
12:14		55					1.0		918.3	125	99				60	3
12:19		60					1.0		921.6	127	101				62	3
12:24		65					1.0		924.8	127	102				62	3
12:29		70					1.0		927.8	127	102				62	3
12:34		75					1.0		931.1	127	102				63	3
12:39		80					1.0		934.3	129	103				63	3
12:44		85					1.0		937.4	128	104				61	3
12:49		90					1.0		940.5	126	104				60	3
12:54		95					1.0		943.7	126	104				59	3
12:59		100					1.0		946.6	124	104				59	3
13:04		105					1.0		949.6	123	104				57	3
13:09		110					1.0		952.0	123	104				57	3
13:14		115					1.0		955.1	123	104				58	3
13:19		120							958.401							
AVERAGE		120					1.0	1.68	947.701	109.4					57.1	3

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

ORSAT DATA	TIME	CO <sub>2</sub>	O <sub>2</sub>
TRIAL 1			
TRIAL 2			
TRIAL 3			
Average			

LEAK CHECK	
SYSTEM PRE: <u>1/2 - 0.000 OK</u>	CFM@15" H <sub>2</sub> O
POST: <u>1/2 -</u>	CFM@15" H <sub>2</sub> O
PITOT PRE: <u>1/2 - 0.000 OK</u>	@ > 3" H <sub>2</sub> O
POST: <u>1/2 -</u>	@ > 3" H <sub>2</sub> O

**IMPINGER RECOVERY DATA SHEET**

B-8



Company: Valero  
 Location: Sunnyvale, TX  
 Source: SRU #1  
 Run No.: ~~MS/202~~ MS/202 Run 1  
M4

Date Set-up: ~~8-5-08~~ 8-5-08  
 Test Date: 8-6-08  
 Date Recovered: 8-6-08  
 USEPA Method: 4  
 Corresponding Filter No: 32588 537.3mg  
 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 <sub>2</sub> O	669.7g	868.9g	199.2g	N/A ↓ ✓
2	H <sub>2</sub> O	693.8g	730.5g	36.7g	
3	H <sub>2</sub> O	709.0	716.7	7.7g	
4	SG	801.7g	822.5g	20.8g	
5			TOTAL =	264.4	
6					





**CEMS CALIBRATION DATA**



Plant	Valero McKee Refinery
Location	Sunray, Texas
Source	SRU No. 1 Incinerator
Date	8/6/2008
Run Number	2
Start Time	1410 1413
Stop Time	1710 1713

Kevin Jeanes
Dan Fitzgerald
Dan Fitzgerald

Analyzer Span Values (% or ppm)	
CO	180.0 ppm
CO <sub>2</sub>	18.00 %
O <sub>2</sub>	9.00 %
THC	ppm
NO <sub>x</sub>	90.0 ppm
SO <sub>2</sub>	ppm

*HEATED LINE TEMPE 250°F*

	CALIBRATION ERROR - 0604 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
	Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Time	Pretest: 1351 hrs 1717 hrs		System Response	Time	Drift (% of Span)	
					System Response	Time				
CO Zero	0.0	ALM037881	-0.1	0650	0.1	1356	-0.2	1722		Co=
CO Low		CO/N <sub>2</sub>								
CO Mid	90.0	EB0001619	91.2	0657	89.8	1400	89.9	1729		Cm=
CO High	180.0	2,000 ppm	180.2	0655						
CO <sub>2</sub> Zero	0.00	ALM037881	0.13	0607	0.20	1351	0.18	1717		Co=
CO <sub>2</sub> Low		CO <sub>2</sub> /N <sub>2</sub>								
CO <sub>2</sub> Mid	9.00	AAL11983	9.33	0614	9.25	1356	9.22	1722		Cm=
CO <sub>2</sub> High	18.00	23.06%	17.81	0611						
O <sub>2</sub> Zero	0.00	ALM037881	-0.07	0632	-0.05	1406	-0.06	1736		Co=
O <sub>2</sub> Low		O <sub>2</sub> /N <sub>2</sub>								
O <sub>2</sub> Mid	4.50	ALM012042	4.60	0607	4.45	1351	4.52	1717		Cm=
O <sub>2</sub> High	9.00	22.20%	9.04	0604						
NO <sub>x</sub> Zero	0.0	ALM037881	0.4	0607	0.6	1351	0.4	1717		Co=
NO <sub>x</sub> Low		NO <sub>x</sub> /N <sub>2</sub>								
NO <sub>x</sub> Mid	45.0	EB0004890	45.2	0632	44.3	1406	44.0	1736		Cm=
NO <sub>x</sub> High	90.0	1,996 ppm	89.7	0631						

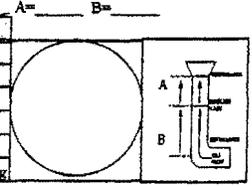
*1455-1459 : MOVE SAMPLE PROBE FROM EAST PORT TO SOUTH PORT  
 1610-1615 : MOVE PROBE FROM SOUTH PORT TO EAST PORT*



# FIELD DATA

PLANT VALERO AMBIENT TEMPERATURE 105° PROBE HEATER SETTING NA  
 DATE 08-06-08 BAROMETRIC PRESSURE 29.25 20.16 HEATER BOX SETTING NA  
 LOCATION MCKEE TX ASSUMED MOISTURE, % NA METER H<sub>2</sub>O 1.68  
 OPERATOR T. DAVIS PROBE LENGTH, in. 60" C<sub>p</sub> FACTOR 0.84  
 STACK NO. SRU #1 NOZZLE DIAMETER, in. NA Y<sub>2</sub> FACTOR 1.025  
 RUN NO. 2 STACK DIAMETER, in. 49.75" PITOT/THERM # P26  
 SAMPLE BOX NO. APEX MINUTES PER POINT NA  
 METER BOX NO. 301005 NUMBER OF POINTS 16  
 START TIME 1443 NUMBER OF PORTS 2

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



CLOCK TIME	TRAVERSE POINT NUMBER	SAMPLING TIME (±) min.	STATIC PRESSURE (in. H <sub>2</sub> O)	STACK TEMP (T <sub>g</sub> ) °F	VELOCITY HEAD		PRESSURE DIFFERENTIAL ACROSS ORIFICE METER (ΔH) in. H <sub>2</sub> O		GAS SAMPLE VOLUME (V <sub>m</sub> ) ft <sup>3</sup>	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 <sub>s</sub> )	(√ΔP <sub>s</sub> )	ACTUAL	DESIRED		INLET (T <sub>m1</sub> ) °F	OUTLET (T <sub>m2</sub> ) °F					
					1443		0									
1448		5					1.0		962.7	126	101				60	3
1453		10	SEE				1.0		966.2	126	101				59	3
1458		15					1.0		969.7	126	102				59	3
1503		20					1.0		973.1	128	102				61	3
1508		25			VELOCITY		1.0		976.6	128	104				62	3
1513		30					1.0		979.3	130	105				64	3
1518		35					1.0		983.5	131	106				58	3
1523		40			SHEET		1.0		987.1	131	107	↓	↓	↓	56	3
1528		45					1.0		990.6	131	107				56	3
1533		50					1.0		994.1	133	107				56	3
1538		55					1.0		997.4	133	108				56	3
1543		60					1.0		1001.1	133	108				56	3
1548		65					1.0		1004.6	133	108				56	3
1553		70					1.0		1008.2	133	108				57	3
1558		75					1.0		1011.6	132	108				57	3
1603		80					1.0		1014.3	131	108				57	3
1608		85					1.0		1018.5	131	107				58	3
1613		90					1.0		1021.9	131	107				60	3
1618		95					1.0		1025.3	131	107				62	3
1623		100					1.0		1028.9	131	107				62	3
1628		105					1.0		1032.4	130	107				63	3
1633		110					1.0		1035.9	130	107				63	3
1638		115					1.0		1039.3	130	107				65	3
1643									1042.75							
AVERAGE	—	120	—	—	—	—	1.0	1.68	1083.518	AVG 128	118.0	—	—	—	59.3	3

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

ORSAT DATA	TIME	CO <sub>2</sub>	O <sub>2</sub>
TRIAL 2			
TRIAL 3			
Average			

**LEAK CHECK**  
 SYSTEM PRE:  $\frac{1}{2}$  0.000 01 CFM @ 15" Hg  
 POST:  $\frac{1}{2}$  0.000 01 CFM @ 15" Hg  
 PITOT PRE:  $\frac{1}{2}$  0.000 01 @ > 3" H<sub>2</sub>O  
 POST:  $\frac{1}{2}$  0.000 01 @ > 3" H<sub>2</sub>O

**IMPINGER RECOVERY DATA SHEET**



Company:  
Location:  
Source:  
Run No.:

Valero  
Sunny TX  
SRU #1  
9/15/2002 Run 2  
m4 Run 2

Date Set-up:  
Test Date:  
Date Recovered:  
USEPA Method:  
Corresponding Filter No:  
Filter Container No:

8-6-08  
8-6-08  
8-6-08  
NA 4  
NA  
NA

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	H <sub>2</sub> O	720.0g	<del>868.9792</del> 815.9g	259.2g	NA
2	H <sub>2</sub> O	693.9g	815.9g	122.0g	↓ ✓
3	H <sub>2</sub> O	711.6g	646.4g	-65.2g	
4	SG	801.8g	814.7g	12.9g	
5			TOTAL =	328.9	
6					





# CEMS CALIBRATION DATA



Plant	Valero McKee Refinery
Location	Sunray, Texas
Source	SRU No. 1 Incinerator
Date	8/6/2008
Run Number	3
Start Time	1740
Stop Time	2040

Kevin Jeanes
Dan Fitzgerald
Dan Fitzgerald

Analyzer Span Values (% or ppm)	
CO	180.0 ppm
CO <sub>2</sub>	18.00 %
O <sub>2</sub>	9.00 %
THC	ppm
NO <sub>x</sub>	90.0 ppm
SO <sub>2</sub>	ppm

*HEATED LINE TEMP = 250°F*

	CALIBRATION ERROR - <i>0604</i> hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
	Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Time	Pretest: <i>1717</i> hrs		<i>2044</i> hrs		Drift (% of Span)	
					System Response	Time	System Response	Time		
CO Zero	<i>0.0</i>	ALM037881	<i>-0.1</i>	<i>0650</i>	<i>-0.2</i>	<i>1722</i>	<i>-0.8</i>	<i>2051</i>		Co=
CO Low		CO/N <sub>2</sub>								
CO Mid	<i>90.0</i>	EB0001619	<i>91.2</i>	<i>0657</i>	<i>89.9</i>	<i>1729</i>	<i>88.7</i>	<i>2054</i>		Cm=
CO High	<i>180.0</i>	2,000 ppm	<i>180.2</i>	<i>0655</i>						
CO <sub>2</sub> Zero	<i>0.00</i>	ALM037881	<i>0.13</i>	<i>0607</i>	<i>0.18</i>	<i>1717</i>	<i>0.17</i>	<i>2044</i>		Co=
CO <sub>2</sub> Low		CO <sub>2</sub> /N <sub>2</sub>								
CO <sub>2</sub> Mid	<i>9.00</i>	AAL11983	<i>9.33</i>	<i>0614</i>	<i>9.22</i>	<i>1722</i>	<i>9.23</i>	<i>2051</i>		Cm=
CO <sub>2</sub> High	<i>18.00</i>	23.06%	<i>17.81</i>	<i>0611</i>						
O <sub>2</sub> Zero	<i>0.00</i>	ALM037881	<i>-0.07</i>	<i>0632</i>	<i>-0.06</i>	<i>1736</i>	<i>-0.06</i>	<i>2101</i>		Co=
O <sub>2</sub> Low		O <sub>2</sub> /N <sub>2</sub>								
O <sub>2</sub> Mid	<i>4.50</i>	ALM012042	<i>4.60</i>	<i>0607</i>	<i>4.52</i>	<i>1717</i>	<i>4.52</i>	<i>2044</i>		Cm=
O <sub>2</sub> High	<i>9.00</i>	22.20%	<i>9.04</i>	<i>0604</i>						
NO <sub>x</sub> Zero	<i>0.0</i>	ALM037881	<i>0.4</i>	<i>0607</i>	<i>0.4</i>	<i>1717</i>	<i>0.3</i>	<i>2044</i>		Co=
NO <sub>x</sub> Low		NO <sub>x</sub> /N <sub>2</sub>								
NO <sub>x</sub> Mid	<i>45.0</i>	EB0004890	<i>45.2</i>	<i>0632</i>	<i>44.0</i>	<i>1736</i>	<i>43.1</i>	<i>2101</i>		Cm=
NO <sub>x</sub> High	<i>90.0</i>	1,996 ppm	<i>89.7</i>	<i>0631</i>						

*1852-1857: MOVE PROBE FROM EAST TO SOUTH PORTS*

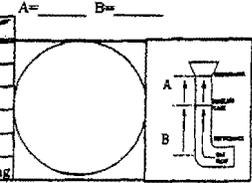


# FIELD DATA

PLANT VALERO AMBIENT TEMPERATURE 94°  
 DATE 08-06-09 BAROMETRIC PRESSURE 26.25 26.16  
 LOCATION MCKEE TX ASSUMED MOISTURE, % NA  
 OPERATOR T. DAVIS PROBE LENGTH, in. 60"  
 STACK NO. SRU #1 NOZZLE DIAMETER, in. NA  
 RUN NO. 3 STACK DIAMETER, in. 49.75"  
 SAMPLE BOX NO. APex MINUTES PER POINT NA  
 METER BOX NO. 801005 NUMBER OF POINTS 16  
 START TIME 1910 NUMBER OF PORTS 2

PROBE HEATER SETTING NA  
 HEATER BOX SETTING NA  
 METER H<sub>0</sub> 1.68  
 C<sub>p</sub> FACTOR 0.84  
 Y<sub>s</sub> FACTOR 1.025  
 PITOT/THERM # P26

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



CLOCK TIME	TRAVERSE POINT NUMBER	SAMPLING TIME (min)	STATIC PRESSURE (in. H <sub>2</sub> O)	STACK TEMP (T <sub>g</sub> ) F	VELOCITY HEAD		PRESSURE DIFFERENTIAL ACROSS ORIFICE METER (ΔH) in. H <sub>2</sub> O		GAS SAMPLE VOLUME (V <sub>m</sub> ) ft <sup>3</sup>	GAS SAMPLE TEMP AT DRY GAS METER		SAMPLE BOX TEMP. F	COND. EXPT. TEMP. F	SORBENT MODULE TEMP. F	LAST IMPINGER INLET TEMP. F	PUMP VACUUM in. Hg
					(ΔP <sub>s</sub> )	(√ΔP <sub>s</sub> )	ACTUAL	DESIRED		INLET (T <sub>in</sub> ) F	OUTLET (T <sub>out</sub> ) F					
1810		0					1.0	1.68	1044.800	98	96	NA	NA	NA	51	3
1815		5					1.0		1048.0	112	96				50	3
1820		10	552				1.0		1051.0	115	96				50	3
1825		15					1.0		1054.3	119	97				52	3
1830		20					1.0		1057.2	120	97				56	3
1835		25					1.0		1060.4	119	98				56	3
1840		30			Velocity		1.0		1063.5	119	98				57	3
1845		35					1.0		1066.7	122	98				57	3
1850		40					1.0		1069.8	122	98				57	3
1855		45					1.0		1073.1	122	99				57	3
1900		50			SHEET		1.0		1076.2	122	99				55	3
1905		55					1.0		1079.4	122	99				53	3
1910		60					1.0		1082.6	122	99				50	3
1915		65					1.0		1085.8	122	99				49	3
1920		70					1.0		1088.9	122	99				49	3
1925		75					1.0		1092.1	122	99				50	3
1930		80					1.0		1095.4	123	99				50	3
1935		85					1.0		1098.3	123	99				50	3
1940		90					1.0		1101.5	123	99				51	3
1945		95					1.0		1104.6	122	99				51	3
1950		100					1.0		1107.7	123	99				51	3
1955		105					1.0		1110.9	124	99				51	3
2000		110					1.0		1114.5	124	99				52	3
2005		115					1.0		1117.5	124	99				52	3
2010									1120.719							
AVERAGE		120	—	—	—	—	1.0	1.68	75.919	AVG 109.3	—	—	—	—	52.3	3

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

ORSAT DATA	TIME	CO <sub>2</sub>	O <sub>2</sub>
TRIAL 1			
TRIAL 2			
TRIAL 3			
Average			

LEAK CHECK	
SYSTEM PRE:	1/2 0.000 CFM @ 15" H <sub>2</sub> O
POST:	1/2 0.000 CFM @ 15" H <sub>2</sub> O
PITOT PRE:	1/2 0.000 CFM @ > 3" H <sub>2</sub> O
POST:	1/2 0.000 CFM @ > 3" H <sub>2</sub> O

**IMPINGER RECOVERY DATA SHEET**

B-18



Company: Valero  
 Location: Surrey TX  
 Source: SRU #1  
 Run No.: m 4-3

Date Set-up: 8-6-08  
 Test Date: 8-6-08  
 Date Recovered: 8-6-08  
 USEPA Method: 4  
 Corresponding Filter No: N/A  
 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>H<sub>2</sub>O</u>	<u>672.4g</u>	<u>923.1g</u>	<u>250.7</u>	_____
2	<u>H<sub>2</sub>O</u>	<u>703.0g</u>	<u>729.2g</u>	<u>26.2</u>	_____
3	<u>H<sub>2</sub>O</u>	<u>727.9g</u>	<u>729.8g</u>	<u>1.9</u>	_____
4	<u>SB</u>	<u>797.6g</u>	<u>809.7g</u>	<u>12.1</u>	_____
5	_____	_____	<u>TOTAL =</u>	<u>290.9</u>	_____
6	_____	_____	_____	_____	_____





# CEMS CALIBRATION DATA



Plant	Valero McKee Refinery
Location	Sunray, Texas
Source	SRU No. 1 Incinerator
Date	8/8/2008
Run Number	M5-1
Start Time	1130 1133
Stop Time	1243

Kevin Jeanes
Dan Fitzgerald
Dan Fitzgerald

Analyzer Span Values (% or ppm)	
CO	ppm
CO <sub>2</sub>	18.00 %
O <sub>2</sub>	9.00 %
THC	ppm
NO <sub>x</sub>	ppm
SO <sub>2</sub>	ppm

*HEATED LINE TEMP = 250°F*  
*CHANGE OF PORTS: 1203 - 1213*

	CALIBRATION ERROR - 1001 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
	Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Time	Pretest: 1019 hrs		1251 hrs		Drift (% of Span)	
					System Response	Time	System Response	Time		
CO <sub>2</sub> Zero	0.0	ALM037881	0.02	1004	0.06	1019	0.07	1251		Co=
CO <sub>2</sub> Low		CO <sub>2</sub> /N <sub>2</sub>								
CO <sub>2</sub> Mid	9.00	AAL11983	9.26	1015	9.14	1023	9.14	1257		Cm=
CO <sub>2</sub> High	18.00	23.06%	17.75	1012						
O <sub>2</sub> Zero	0.0	ALM037881	-0.09	1015	-0.05	1023	-0.07	1257		Co=
O <sub>2</sub> Low		O <sub>2</sub> /N <sub>2</sub>								
O <sub>2</sub> Mid	9.50	ALM012042	4.60	1004	4.57	1019	4.54	1251		Cm=
O <sub>2</sub> High	9.00	22.20%	9.04	1001						

*O<sub>2</sub> RESPONSE TIME - Up = 90 SECONDS*  
*DOWN = 105 SECONDS*

*CO<sub>2</sub> RESPONSE TIME - Up = 90 SECONDS*  
*DOWN = 90 SECONDS*



# FIELD DATA

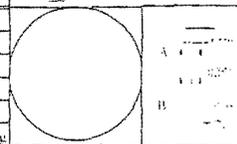
PLANT **VALERO**  
 DATE **08.08.08**  
 LOCATION **MCKEE TX**  
 OPERATOR **T. DAVIS**  
 STACK NO **SU#1**  
 RUN NO **MS-1**  
 SAMPLE BOX NO **APEX**  
 METER BOX NO **801005**  
 START TIME **1133**

AMBIENT TEMPERATURE **87°**  
 BAROMETRIC PRESSURE **26.22**  
 ASSUMED MOISTURE, % **18**  
 PROBE LENGTH, in **72-in.**  
 NOZZLE DIAMETER, in **0.984**  
 STACK DIAMETER, in **49.75"**  
 MINUTES PER POINT **2.5**  
 NUMBER OF POINTS **24**  
 NUMBER OF PORTS **2**

PROBE HEATER SETTING **250°**  
 HEATER BOX SETTING **250°**  
 METER H<sub>2</sub> **1.68**  
 C<sub>1</sub> FACTOR **0.84**  
 Y<sub>1</sub> FACTOR **1.025**  
 PITOT/THERM # **227**

WEIGHT OF PARTICULATE, mg	
Filter No.	
Sample	
Final wt	
Tare wt	
Wt. gain	
TOT: _____	

A= \_\_\_\_\_ B= \_\_\_\_\_



CLOCK TIME	TRAVERSE POINT NUMBER	SAMPLING TIME (t) min.	STATIC PRESSURE (in. H <sub>2</sub> O)	STACK TEMP (T <sub>s</sub> ) °F	VELOCITY HEAD		PRESSURE DIFFERENTIAL ACROSS ORIFICE METER (ΔH) in. H <sub>2</sub> O		GAS SAMPLE VOLUME (V <sub>m</sub> ) ft <sup>3</sup>	GAS SAMPLE TEMP AT DRY GAS METER		SAMPLE BOX TEMP. °F	PROBE COND. EXIT TEMP °F	SORBENT MODULE TEMP. °F	LAST IMPINGER OUTLET TEMP. °F	PUMP VACUUM in. Hg
					(ΔP <sub>s</sub> )	(√ ΔP <sub>s</sub> )	ACTUAL	DESIRED		INLET (T <sub>m<sub>in</sub></sub> ) °F	OUTLET (T <sub>m<sub>out</sub></sub> ) °F					
1133	E -1	0	0.69	1351	0.010		2.0	2.0	241.600	77	77	249	NA	NA	57	3
	-2	2.5		1366	0.010		2.0	2.0	243.6	99	80	250			57	3
1138	-3	5.0		1367	0.010		2.0	2.0	245.7	106	81	251			57	3
	-4	7.5		1367	0.010		2.0	2.0	248.1	106	82	248			57	3
1143	-5	10.0		1367	0.015		3.0	3.0	250.2	108	82	252			57	3
	-6	12.5		1373	0.015		3.0	3.0	253.0	111	83	249			57	3
1145	-7	15.0		1373	0.015		3.0	3.0	255.6	111	86	250			58	7
	-8	17.5		1370	0.015		3.0	3.0	258.3	111	86	250			59	7
1213	-9	20.0		1365	0.010		2.0	2.0	260.0	114	86	250			59	5
	-10	22.5		1365	0.010		2.0	2.0	262.2	114	86	251			60	5
1213	-11	25.0		1360	0.010		2.0	2.0	264.7	113	87	250			60	5
	-12	27.5		1357	0.010		2.0	2.0	266.4	113	87	247			61	5
1233	113 S -1	30.0		1368	0.010		2.1	2.1	268.5	101	89	248			61	5
	-2	32.5		1368	0.010		2.1	2.1	270.6	112	91	250			62	5
	-3	35.0		1370	0.010		2.1	2.1	273.2	112	91	251			63	5
	-4	37.5		1372	0.010		2.1	2.1	275.3	115	90	249			64	8
	-5	40.0		1377	0.015		3.1	3.1	277.5	117	90	252			64	8
	-6	42.5		1377	0.015		3.1	3.1	279.9	117	90	250			64	8
	-7	45.0		1374	0.015		3.1	3.1	281.5	117	90	249			64	8
	-8	47.5		1369	0.015		3.1	3.1	284.5	114	91	250			65	8
	-9	50.0		1365	0.010		2.1	2.1	287.1	114	91	247			62	5
	-10	52.5		1360	0.010		2.1	2.1	289.3	115	92	252			62	5
	-11	55.0		1357	0.010		2.1	2.1	291.6	117	92	250			62	5
	-12	57.5		1350	0.010		2.1	2.1	294.0	118	92	251			63	5
AVERAGE		60.0		1366.2	0.1075		2.33		296.218	113.7	91.8					

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

ORSAT DATA	TIME	CO <sub>2</sub>	O <sub>2</sub>
TRIAL 1			
TRIAL 2			
TRIAL 3			
Average			

LEAK CHECK	
SYSTEM PRE:	✓ 0.000 OK @ 15" Hg
POST:	✓ 0.000 OK @ 15" Hg
PITOT PRE:	✓ 0.000 OK @ > 3" H <sub>2</sub> O
POST:	✓ 0.0 OK @ > 3" H <sub>2</sub> O

**IMPINGER RECOVERY DATA SHEET**



Company: Valero Mckee  
 Location: Surray, TX  
 Source: SRU #1 Exhaust  
 Run No.: m 5/202 Run 2

Date Set-up: 8-7-08  
 Test Date: ~~8-7-08~~ 8-8-08  
 Date Recovered: 8-8-8  
 USEPA Method: 5/202  
 Corresponding Filter No: 31044  
 Filter Container No: 31044

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	H <sub>2</sub> O	693.2g	820.3g	127.1g	<del>FR3</del>
2	H <sub>2</sub> O	715.9g	771.5g	55.6g	<del>FR</del>
3	H <sub>2</sub> O	707.7g	721.3g	13.6g	
4	SG	793.1g	813.9g	20.8g	
5				217.1g	
6					

24853

$V_{mi} = 800.487$   
 $V_{mf} = 849.272$

# CEMS CALIBRATION DATA



Plant	Valero McKee Refinery
Location	Sunray, Texas
Source	SRU No. 1 Incinerator
Date	8/8/2008
Run Number	115-2
Start Time	1319
Stop Time	1425

Kevin Jeanes
Dan Fitzgerald
Dan Fitzgerald

Analyzer Span Values (% or ppm)		
CO		ppm
CO <sub>2</sub>	18.00	%
O <sub>2</sub>	9.00	%
THC		ppm
NO <sub>x</sub>		ppm
SO <sub>2</sub>		ppm

*HEATED LINE TEMP = 250°F  
CHANGE OF PORTS: 1349-1355*

	CALIBRATION ERROR - 1001 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
	Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Time	Pretest: 1251 hrs		1444 hrs		Drift (% of Span)	
					System Response	Time	System Response	Time		
CO <sub>2</sub> Zero	0.00	ALM037881	0.02	1004	0.07	1251	0.04	1444		Co=
CO <sub>2</sub> Low		CO <sub>2</sub> /N <sub>2</sub>								
CO <sub>2</sub> Mid	9.00	AAL11983	9.26	1015	9.14	1257	9.10	1451		Cm=
CO <sub>2</sub> High	18.00	23.06%	17.75	1012						
O <sub>2</sub> Zero	0.0	ALM037881	-0.09	1015	-0.07	1257	-0.06	1451		Co=
O <sub>2</sub> Low		O <sub>2</sub> /N <sub>2</sub>								
O <sub>2</sub> Mid	4.50	ALM012042	4.60	1004	4.54	1251	4.54	1444		Cm=
O <sub>2</sub> High	9.00	22.20%	9.04	1001						

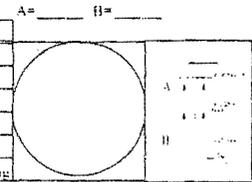


# FIELD DATA

PLANT VAISCO AMBIENT TEMPERATURE 93°  
 DATE 08-08-08 BAROMETRIC PRESSURE 26.16  
 LOCATION MCKEE TX ASSUMED MOISTURE, % 18  
 OPERATOR T. DAVIS PROBE LENGTH, in 72-1/4  
 STACK NO SRO #1 NOZZLE DIAMETER, in 0.984  
 RUN NO MS-2 STACK DIAMETER, in 49.75"  
 SAMPLE BOX NO APEX MINUTES PER POINT 2.5  
 METER BOX NO 801005 NUMBER OF POINTS 24  
 START TIME 1319 NUMBER OF PORTS 2

PROBE HEATER SETTING  
 HEATER BOX SETTING 250°  
 METER H<sub>2</sub>O FACTOR 1.68  
 C<sub>2</sub> FACTOR 0.84  
 Y<sub>2</sub> FACTOR 1.023  
 PITOT/THERM # 227

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



CLOCK TIME	TRAVERSE POINT NUMBER	SAMPLING TIME (S) min.	STATIC PRESSURE (in. H <sub>2</sub> O)	STACK TEMP # (T <sub>s</sub> ) °F	VELOCITY HEAD		PRESSURE DIFFERENTIAL ACROSS ORIFICE METER (ΔH) in. H <sub>2</sub> O		GAS SAMPLE VOLUME (V <sub>m</sub> ) ft <sup>3</sup>	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 <sub>s</sub>	√ΔP <sub>s</sub>	ACTUAL	DESIRED		INLET (T <sub>m1</sub> ) °F	OUTLET (T <sub>m2</sub> ) °F					
1319	S -1	0	-0.70	1367	0.010		2.1	2.1	297.100	93	90	250	NA	NA	60	5
	-2	2.5		1367	0.010		2.1	2.1	299.2	100	90	150			58	5
1324	-3	5.0		1369	0.010		2.1	2.1	301.3	106	92	251			58	5
	-4	7.5		1370	0.010		2.1	2.1	303.5	110	92	247			57	5
1329	-5	10.0		1374	0.015		3.1	3.1	305.6	112	92	249			57	9
	-6	12.5		1377	0.015		3.1	3.1	308.4	111	93	249			67	9
1334	-7	15.0		1377	0.015		3.1	3.1	310.7	110	97	250			57	9
	-8	17.5		1370	0.015		3.1	3.1	313.6	108	97	252	↓	↓	57	9
1339	-9	20.0		1366	0.010		2.1	2.1	316.1	108	97	251			57	6
	-10	22.5		1361	0.010		2.1	2.1	318.5	109	94	250			58	6
1344	-11	25.0		1357	0.010		2.1	2.1	320.8	113	94	250			58	6
	-12	27.5		1340	0.010		2.1	2.1	323.1	113	94	249			58	6
<del>1349</del> 1355	Z -1	30.0		1359	0.010		2.1	2.1	325.4	103	95	250			58	6
	-2	32.5		1362	0.010		2.1	2.1	327.6	112	94	247			59	6
1400	-3	35.0		1366	0.010		2.1	2.1	329.7	116	96	253			59	6
	-4	37.5		1368	0.010		2.1	2.1	332.0	116	96	250			60	6
1405	-5	40.0		1373	0.015		3.2	3.2	334.1	118	96	250			60	11
	-6	42.5		1377	0.015		3.1	3.1	339.4	118	96	251			60	11
1410	-7	45.0		1377	0.015		3.1	3.1	342.2	117	96	252			60	11
	-8	47.5		1374	0.015		3.1	3.1	344.8	115	96	249			61	11
1415	-9	50.0		1365	0.010		2.1	2.1	344.8	112	96	250			62	7
	-10	52.5		1359	0.010		2.1	2.1	349.2	113	96	251			62	7
1420	-11	55.0		1352	0.010		2.1	2.1	349.5	115	96	251			63	7
	-12	57.5		1348	0.010		2.1	2.1	352.0	114	96	251			63	7
1425																
AVERAGE		60		1365.6			0.1075	2.43	354.060	102.8						

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

ORSAT DATA	TIME	CO <sub>2</sub>	O <sub>2</sub>
TRIAL 1			
TRIAL 2			
TRIAL 3			
Average			

LEAK CHECK	
SYSTEM PRE:	4-0.111 O/C FM @ 15" Hg
POST:	4-0.000 O/C FM @ 15" Hg
PITOT PRE:	4-0.010 O/C @ > 3" H <sub>2</sub> O
POST:	4-0.000 O/C @ > 3" H <sub>2</sub> O

**IMPINGER RECOVERY DATA SHEET**

B-26



Company:	<u>Valero McKee</u>	Date Set-up:	<u>8-8-8</u>
Location:	<u>Sunray, TX</u>	Test Date:	<u>8-8-8</u>
Source:	<u>SRU# 7 Exhaust</u>	Date Recovered:	<u>9-8-8</u>
Run No.:	<u>M5/202-2</u>	USEPA Method:	<u>51202</u>
		Corresponding Filter No:	<u><del>325</del> 32519</u>
		Filter Container No:	<u>32519</u>

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	H <sub>2</sub> O	674.0g	796.9g	122.9g	
2	H <sub>2</sub> O	699.8g	756.5g	56.7g	
3	H <sub>2</sub> O	703.9g	719.9g	16.0g	
4	SG	812.2g	826.5g	14.3g	
5				209.9g	
6					

$$V_{mi} = 850.107$$

$$V_{mf} = 897.768$$

# CEMS CALIBRATION DATA



Plant	Valero McKee Refinery
Location	Sunray, Texas
Source	SRU No. 1 Incinerator
Date	8/8/2008
Run Number	MS-3
Start Time	1505
Stop Time	1613

Kevin Jeanes
Dan Fitzgerald
Dan Fitzgerald

Analyzer Span Values (% or ppm)	
CO	ppm
CO <sub>2</sub>	18.00 %
O <sub>2</sub>	9.00 %
THC	ppm
NO <sub>x</sub>	ppm
SO <sub>2</sub>	ppm

HEATED LINE TEMP = 250°F  
CHANGE OF PORTS: 1535-1543

CALIBRATION ERROR - 1001 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Time	Pretest: 1444 hrs		1618 hrs		Drift (% of Span)	
				System Response	Time	System Response	Time		
CO <sub>2</sub> Zero	0.00	ALM037881	0.02	1004	0.04	1444	0.06	1618	Co=
CO <sub>2</sub> Low		CO <sub>2</sub> /N <sub>2</sub>							
CO <sub>2</sub> Mid	9.00	AAL11983	9.26	1015	9.10	1451	9.09	1624	Cm=
CO <sub>2</sub> High	18.00	23.06%	17.75	1012					
O <sub>2</sub> Zero	0.0	ALM037881	-0.09	1015	-0.06	1451	-0.06	1624	Co=
O <sub>2</sub> Low		O <sub>2</sub> /N <sub>2</sub>							
O <sub>2</sub> Mid	4.50	ALM012042	4.60	1004	4.54	1444	4.53	1618	Cm=
O <sub>2</sub> High	9.00	22.20%	9.04	1001					



# FIELD DATA

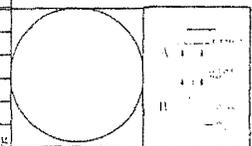
PLANT VA1200  
 DATE 08-08-08  
 LOCATION MCJEE TX  
 OPERATOR T. DAVIS  
 STACK NO SR4 #1  
 RUN NO  
 SAMPLE BOX NO APEX  
 METER BOX NO 801003  
 START TIME 1505

AMBIENT TEMPERATURE 96°  
 BAROMETRIC PRESSURE 26.22-26.10  
 ASSUMED MOISTURE, % 18  
 PROBE LENGTH, in 72-IN  
 NOZZLE DIAMETER, in 0.984  
 STACK DIAMETER, in 49.75  
 MINUTES PER POINT 2.5  
 NUMBER OF POINTS 24  
 NUMBER OF PORTS 2

PROBE HEATER SETTING  
 HEATER BOX SETTING 250°  
 METER H<sub>2</sub>O 1.68  
 C<sub>2</sub> FACTOR 0.84  
 Y<sub>2</sub> FACTOR 1.025  
 PITOT/THERM # 227

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

A= B=



CLOCK TIME	TRAVERSE POINT NUMBER	SAMPLING TIME (t) min	STATIC PRESSURE (in. H <sub>2</sub> O)	STACK TEMP (T <sub>s</sub> ) °F	VELOCITY HEAD		PRESSURE DIFFERENTIAL ACROSS ORIFICE METER (ΔH) in. H <sub>2</sub> O		GAS SAMPLE VOLUME (V <sub>m</sub> ) ft <sup>3</sup>	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 <sub>s</sub> )	(√ ΔP <sub>s</sub> )	ACTUAL	DESIRED		INLET (T <sub>inlet</sub> ) °F	OUTLET (T <sub>outlet</sub> ) °F					
1505	E -1	0	0.67	1350	0.010		2.0	2.0	357.200	100	95	249	NA	NA	61	4
	-2	2.5		1357	0.010		2.0	2.0	359.4	100	95	250			59	4
1510	-3	5.0		1359	0.010		2.0	2.0	359.6	105	95	252			57	4
	-4	7.5		1363	0.010		2.0	2.0	361.8	111	95	252			56	4
1515	-5	10.0		1370	0.010		2.0	2.0	365.6	115	96	249			57	4
	-6	12.5		1377	0.015		3.0	3.0	367.7	117	97	250			57	6
1520	-7	15.0		1377	0.015		3.0	3.0	369.9	119	99	250			59	6
	-8	17.5		1374	0.015		3.0	3.0	372.4	121	99	250			60	6
1525	-9	20.0		1370	0.010		2.0	2.0	375.2	121	100	249			60	4
	-10	22.5		1365	0.010		2.0	2.0	377.3	121	100	250			60	4
1530	-11	25.0		1351	0.010		2.0	2.0	379.7	123	99	253			61	4
<del>1543</del>	-12	27.5		1348	0.010		2.0	2.0	381.4	123	99	251			62	4
1543	-1	30.0		1361	0.010		2.0	2.0	384.2	113	103	250			60	4
	-2	32.5		1365	0.010		2.0	2.0	386.4	120	100	250			62	4
1548	-3	35.0		1367	0.010		2.0	2.0	388.6	126	105	249			63	4
	-4	37.5		1371	0.010		2.0	2.0	391.0	126	101	247			62	4
1553	-5	40.0		1379	0.015		3.1	3.1	393.0	126	100	251			60	7
	-6	42.5		1381	0.015		3.1	3.1	395.5	126	100	251			60	7
1558	-7	45.0		1372	0.015		3.1	3.1	398.0	125	100	250			60	7
	-8	47.5		1370	0.015		3.1	3.1	400.7	125	100	249			59	7
1603	-9	50.0		1368	0.010		2.0	2.0	403.5	127	101	250			59	4
	-10	52.5		1363	0.010		2.1	2.1	405.7	127	101	253			59	4
1608	-11	55.0		1359	0.010		2.1	2.1	407.9	126	101	249			60	4
	-12	57.5		1350	0.010		2.1	2.1	410.0	126	101	250			60	4
1613																
AVERAGE		60 MIN		1365.7	0.0106	2.25			412.325		109.4					

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

ORSAT DATA	TIME	CO <sub>2</sub>	O <sub>2</sub>
TRIAL 1			
TRIAL 2			
TRIAL 3			
Average			

LEAK CHECK	
SYSTEM PRE:	1/0.000 O <sub>2</sub> @ 15" H <sub>2</sub> O
POST:	1/0.000 O <sub>2</sub> @ 15" H <sub>2</sub> O
PITOT PRE:	1/0.000 O <sub>2</sub> @ 3" H <sub>2</sub> O
POST:	1/0.000 O <sub>2</sub> @ 3" H <sub>2</sub> O

**IMPINGER RECOVERY DATA SHEET**



Company:	<u>Valew McKee</u>	Date Set-up:	<u>8-8-08</u>
Location:	<u>Sunray TX</u>	Test Date:	<u>8-8-08</u>
Source:	<u>SRU #1 Exhaust</u>	Date Recovered:	<u>8-8-08</u>
Run No.:	<u>M5/202-3</u>	USEPA Method:	<u>51202</u>
		Corresponding Filter No:	<u>33526</u>
		Filter Container No:	<u>33526</u>

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	H <sub>2</sub> O	695.0g	840.1g	145.1g	} 24857
2	H <sub>2</sub> O	671.0g	702.0g	31.0g	
3	H <sub>2</sub> O	675.6g	677.8g	2.2g	
4	SB	792.1g	815.5g	23.4g	
5			TOTAL =	201.7g	
6					

4:36pm  $V_{mi} = 897.700$   
 $V_{mf} = 947.272$



Valero McKee Refinery: Sunray, TX  
SRU No. 1 Incinerator: EPN V-5  
Test Dates: 8/6 & 8/8/08

## **APPENDIX C**

## **Laboratory Data**

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## ANALYTICAL SUMMARY

**CLIENT:** Valero  
**LOCATION:** McKee, TX  
**SOURCE:** SRU #1 Exhaust  
**SAMPLE DATE:** 8/8/2008  
**ANALYSIS:** Particulates  
**METHOD:** EPA Method 5/202

Run #		Mass (g)	Tare	WT 1	WT 2	Particulate (mg)	Blank Corrected Particulate (mg)	Total M5 Particulate (mg)
M5-1	FILTER	-	539.7	541.8	541.7	2.05		12.56
M5-2	FILTER	-	536.3	535.9	535.9	-0.40		4.00
M5-3	FILTER	-	545.8	548.5	548.4	2.65		7.05
Blank	FILTER	-	540.8	541.2	541.4	0.50		
M5-1	PW	168.7	120430.3	120441.1	120441.0	10.75	10.51	
M5-2	PW	174.3	120942.1	120946.6	120946.9	4.65	4.40	
M5-3	PW	189.9	120525.4	120527.2	120527.4	1.90	1.63	
Blank	PW	138.3	121100.7	121100.9	121100.9	0.20		
M5-1	Organic	225	119815.0	119815.7	119815.9	0.80	0.65	
M5-2	Organic	225	116739.3	116740.0	116739.9	0.65	0.50	
M5-3	Organic	225	121754.2	121754.5	121754.5	0.30	0.15	
Blank	Organic	225	119188.5	119188.6	119188.7	0.15		
M5-1	Inorganic	200	118470.9	118478.7	118478.7	7.80	7.40	
M5-2	Inorganic	200	115989.7	116013.2	116013.0	23.40	23.00	
M5-3	Inorganic	200	115181.3	115200.0	115200.1	18.75	18.35	
Blank	Inorganic	200	123618.4	123618.8	123618.8	0.40		

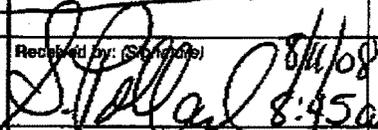
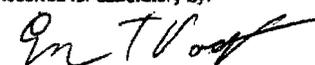
Analyst: E. Vogt  
 Date done: 8/20/08

5517

CHAIN OF CUSTODY RECORD

08/12/2008 08:45 FAX 713 946 8813 ARI ENVIRONMENTAL INC → WAUCONDA 002

C-2

PROJ. NO.		PROJECT NAME			NO. OF CONTAINERS	REMARKS									
SAMPLERS: (Signature)															
LAB NO.	SAMPLE NO.	DATE	TIME	SAMPLE LOCATION											
T. Davis; A. Hensky					Method 5 Method 202										
31044		8-8		MS-1 Filter						1	✓				
26933				MS-1 Probe Rinse						1	✓				
24853				MS-1 Impinger Contents						1	✓				
24854				MS-1 Meltz Imp. Rinse						1	✓				
32519				MS-2 Filter							✓				
26987				MS-2 Probe Rinse							✓				
24855				MS-2 Impinger Conts							✓				
24856				MS-2 Meltz Imp Rinse							✓				
33526				MS-3 Filter							✓				
26986				MS-3 Probe Rinse							✓				
24857		8-8		MS-3 Imp Contents							✓				
24858				MS-3 Meltz Imp Rinse							✓				
33525				MS-Blank Filter							✓				
24859				MS-Blank Probe Rinse							✓				
24860				MS-Blank HPLC Water		✓									
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Date / Time		Received by: (Signature)							
24861		MS-5 Blank		Meltz Rinse											
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Date / Time		Received by: (Signature)							
						8/11/08		8:45am							
Relinquished by: (Signature)		Date / Time		Received for Laboratory by:		Date / Time									
						8/12/08		13:30							
REMARKS:															



951 Old Rand Road, Unit 108  
 Wauconda, IL 60084  
 Telephone (847) 487-1580  
 Fax (847) 487-1587

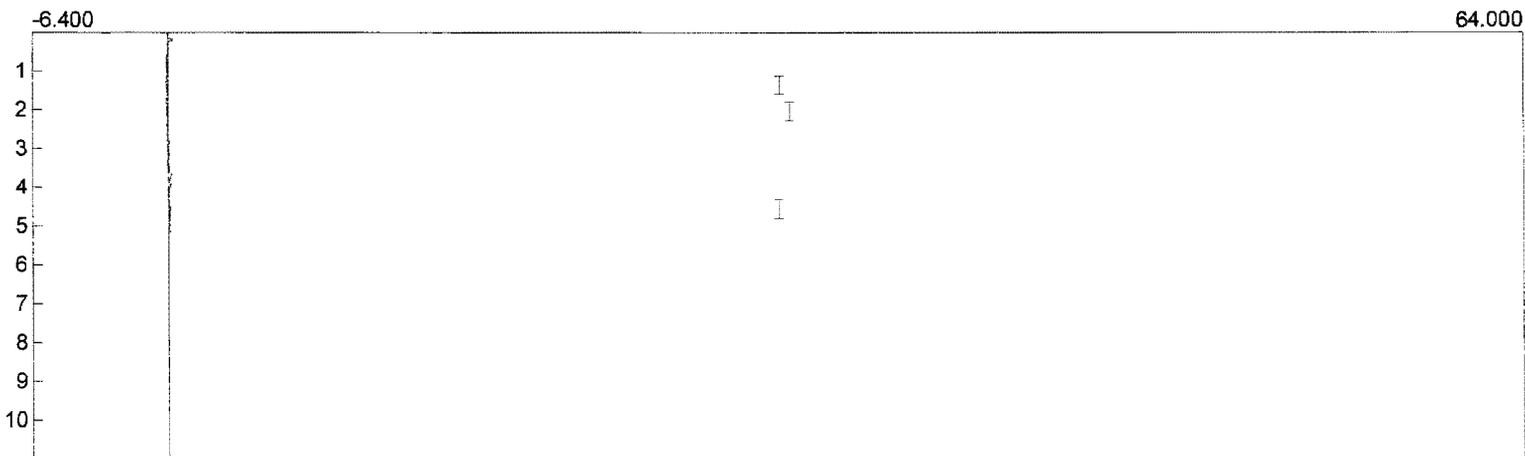
**SUMMARY OF TOTAL REDUCED SULFUR COMPOUNDS**



**Company:** Diamond Shamrock Refining Company, L.P. (A Valero Company)  
**Location:** Sunray, Texas  
**Source:** SRU No.1 Incinerator  
**Date:** 8/6/2008  
**Run No.:** 1

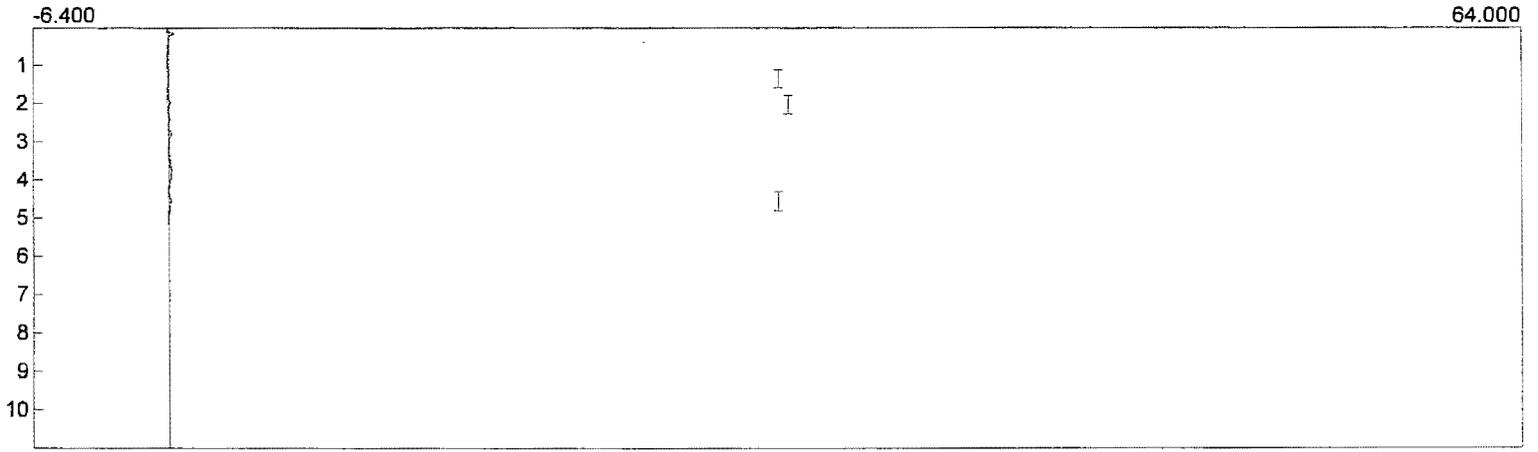
File Name	Date	Time	<u>COS</u>		<u>H2S</u>		<u>CS2</u>		<u>TRS</u>	Injection
			Area (mV)	Conc (ppm v db)	Area (mV)	Conc (ppm v db)	Area (mV)	Conc (ppm v db)	Conc (ppm v db)	
8-6valsru1runs02.CHR	8/6/2008	10:49:10	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	1-1
8-6valsru1runs03.CHR	8/6/2008	10:59:10	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	1-2
8-6valsru1runs04.CHR	8/6/2008	11:09:10	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	1-3
8-6valsru1runs05.CHR	8/6/2008	11:19:10	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	1-4
8-6valsru1runs06.CHR	8/6/2008	11:29:10	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	1-5
8-6valsru1runs07.CHR	8/6/2008	11:39:10	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	1-6
8-6valsru1runs08.CHR	8/6/2008	11:49:10	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	1-7
8-6valsru1runs09.CHR	8/6/2008	11:59:10	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	1-8
8-6valsru1runs10.CHR	8/6/2008	12:09:10	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	1-9
8-6valsru1runs11.CHR	8/6/2008	12:19:10	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	1-10
8-6valsru1runs12.CHR	8/6/2008	12:29:10	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	1-11
8-6valsru1runs13.CHR	8/6/2008	12:39:10	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	1-12
8-6valsru1runs14.CHR	8/6/2008	12:49:10	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	1-13
8-6valsru1runs15.CHR	8/6/2008	12:59:10	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	1-14
8-6valsru1runs16.CHR	8/6/2008	13:09:10	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	1-15
8-6valsru1runs17.CHR	8/6/2008	13:19:10	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	1-16
8-6valsru1runs18.CHR	8/6/2008	13:29:10	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	1-17
8-6valsru1runs19.CHR	8/6/2008	13:39:10	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	1-18
8-6valsru1runs20.CHR	8/6/2008	13:49:10	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	1-19
<b>Average Values</b>				<b>0.03</b>		<b>&lt;0.76</b>		<b>&lt;0.03</b>	<b>&lt;0.83</b>	

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 10:49:10  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs02.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



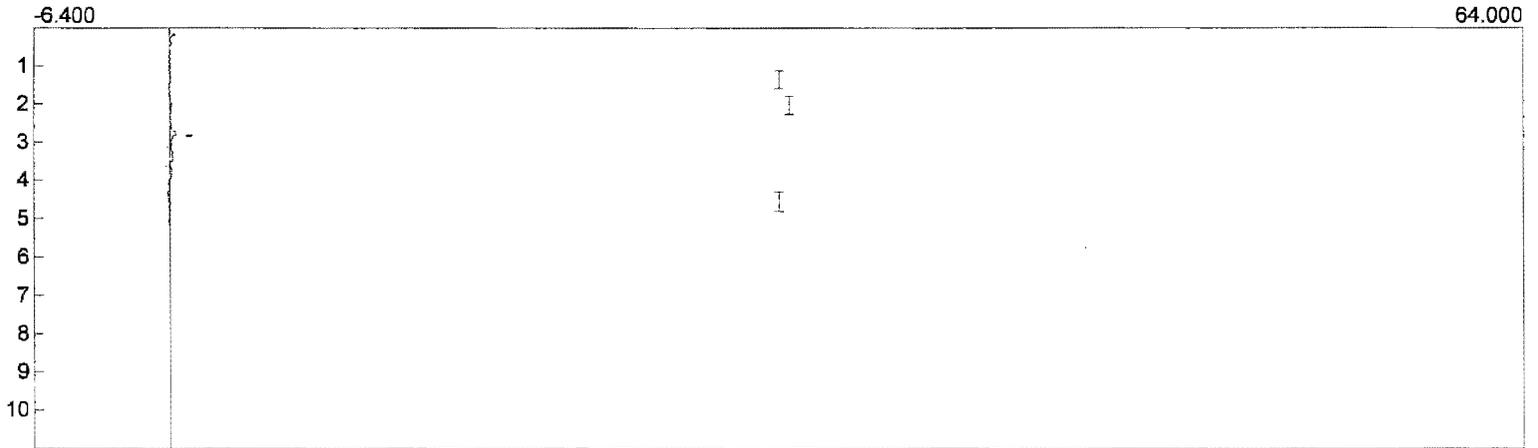
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 10:59:10  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs03.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



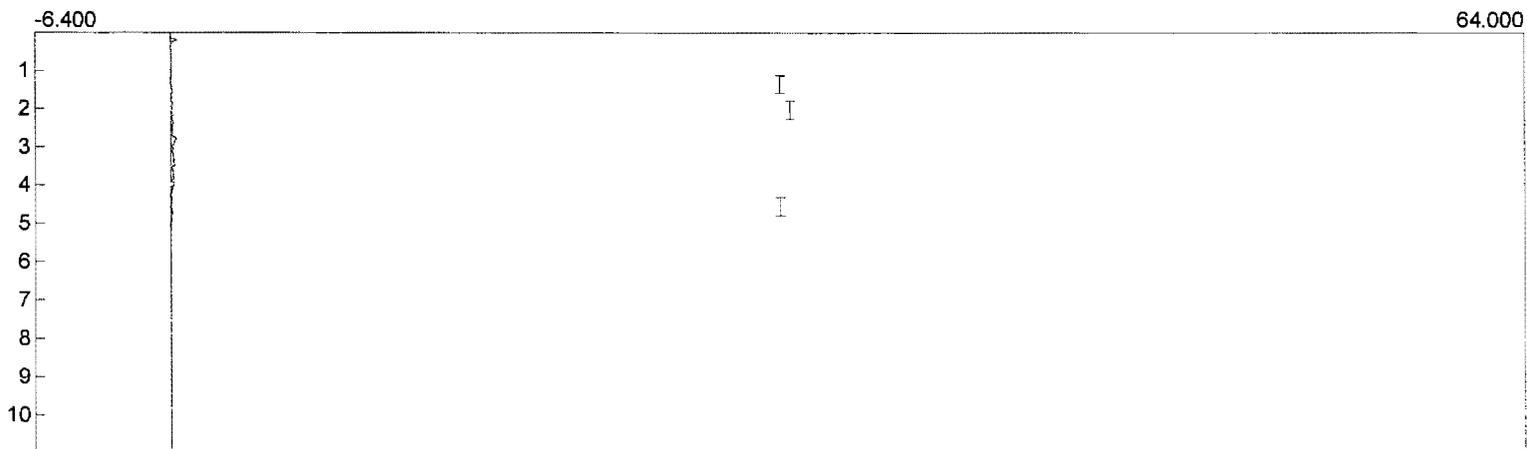
Component	Area
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Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 11:09:10  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs04.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



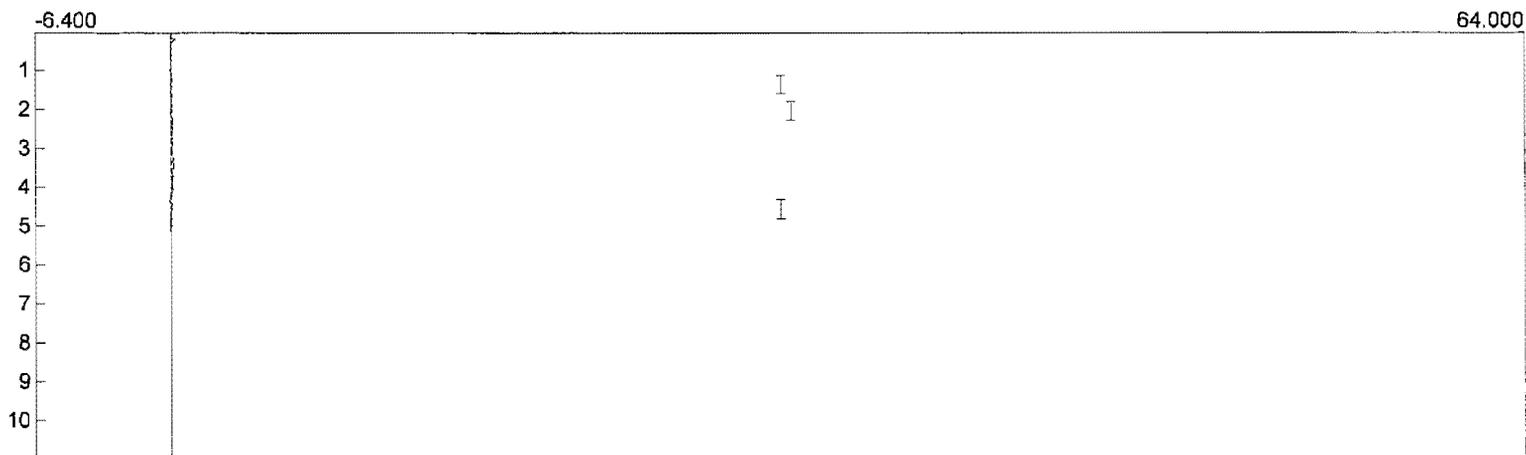
Component	Area
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Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 11:19:10  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs05.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



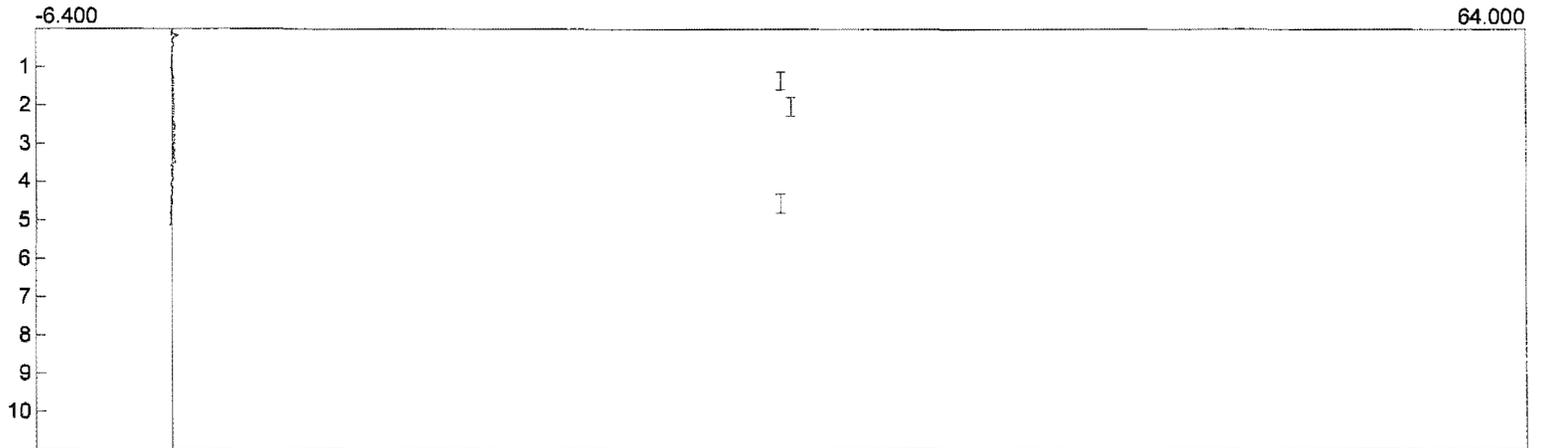
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 11:29:10  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs06.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 11:39:10  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs07.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Analysis date: 08/06/2008 11:49:10

Method: USEPA M-15

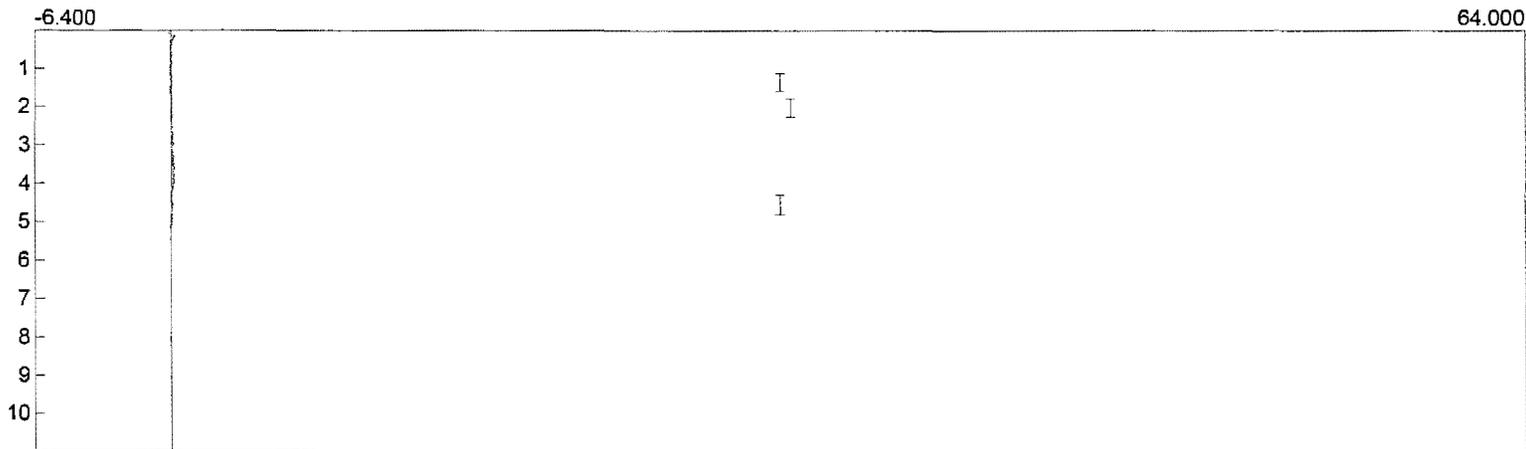
Description: FPD

Column: RT-Sulfur

Data file: 8-6valsru1runs08.CHR ()

Sample: SRU #1 Runs

Operator: SY

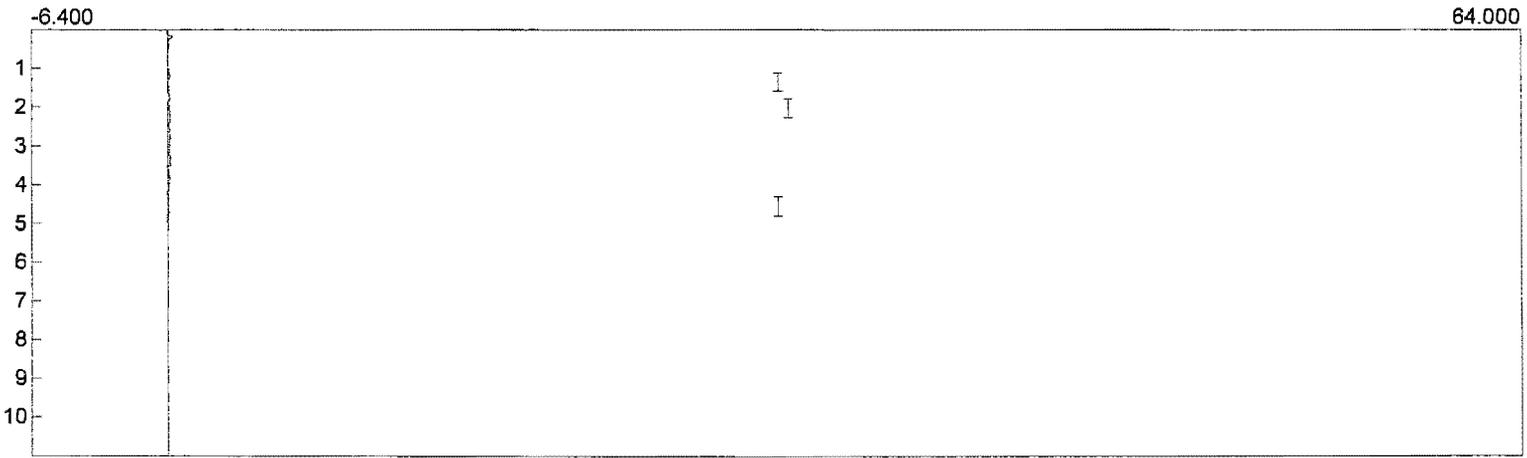


Component

Area

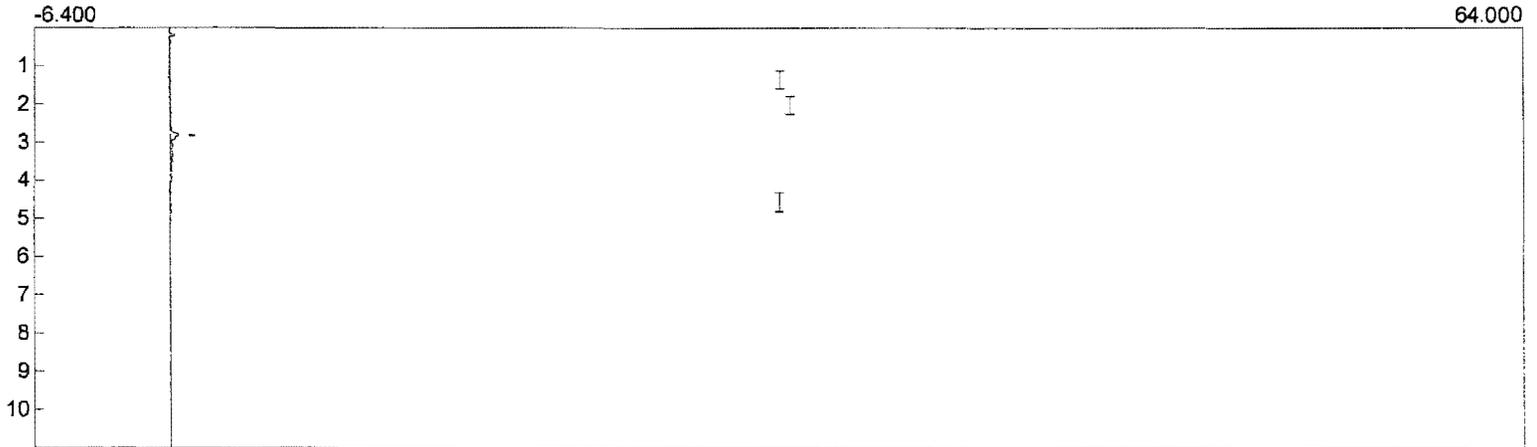
0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 11:59:10  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs09.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



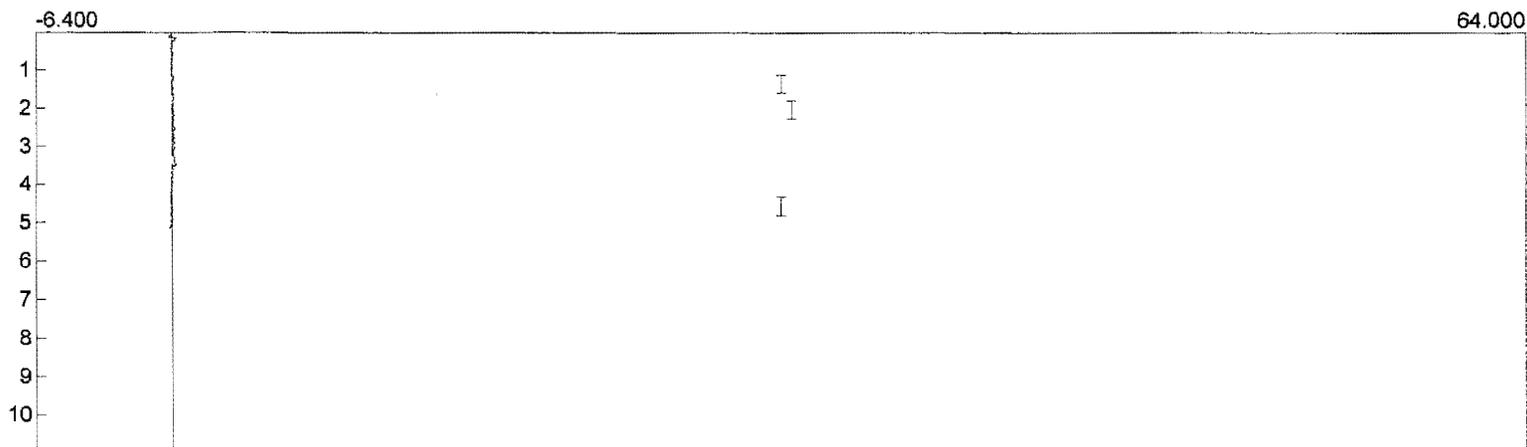
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 12:09:10  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs10.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



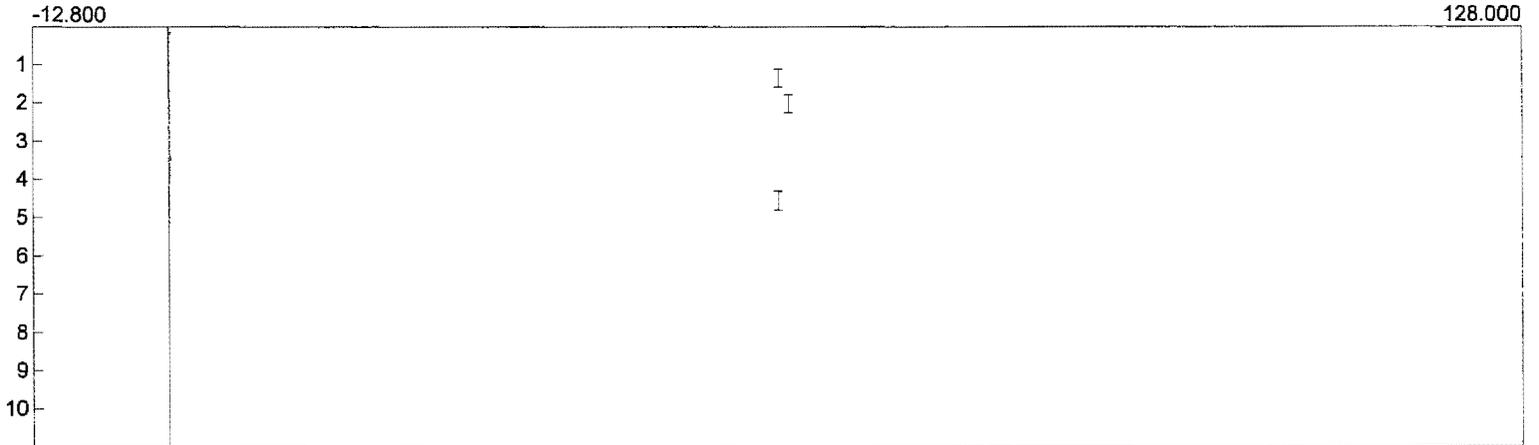
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 12:19:10  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs11.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



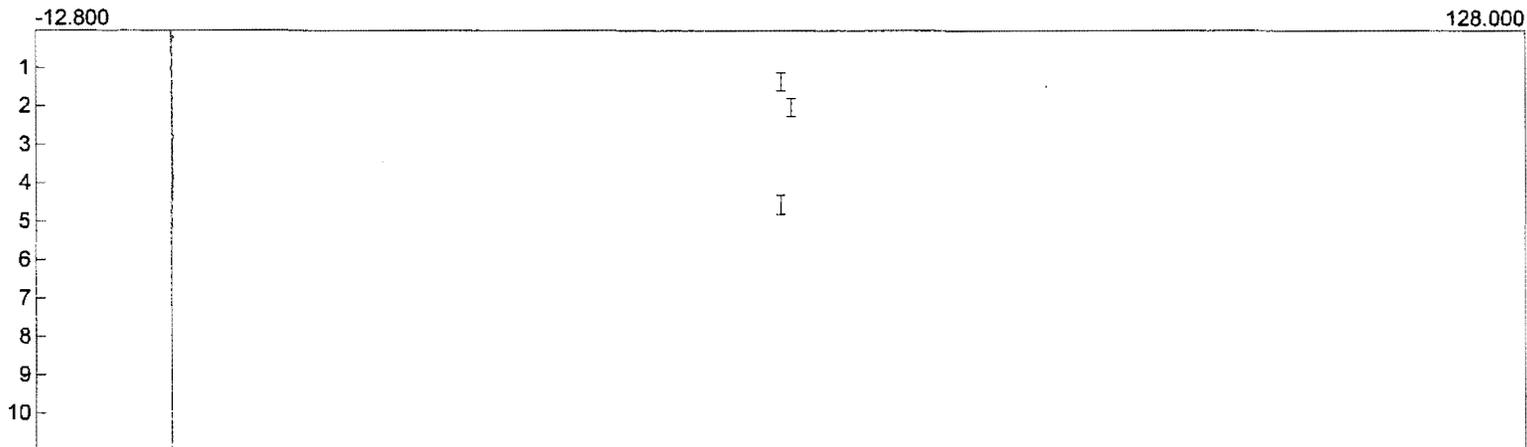
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 12:29:10  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs12.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



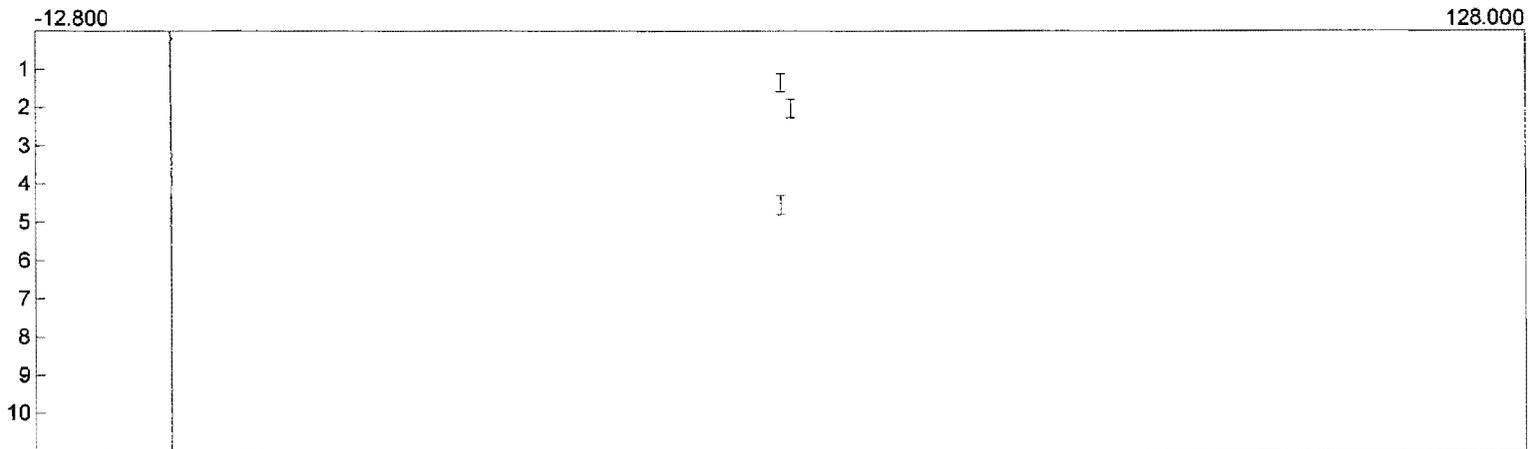
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 12:39:10  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs13.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



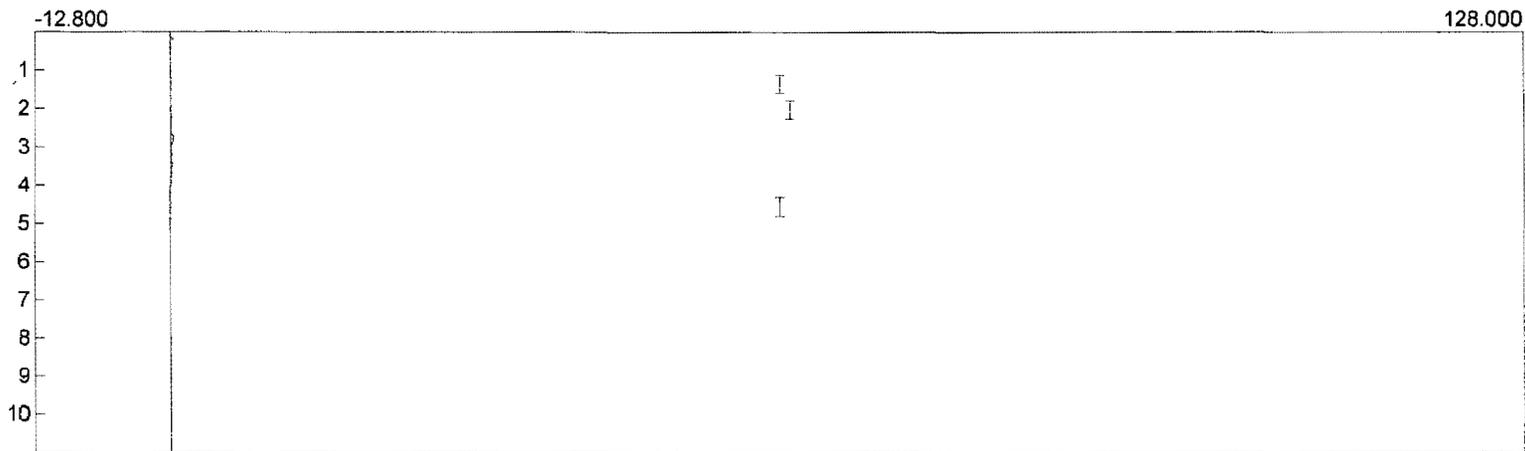
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 12:49:10  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs14.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



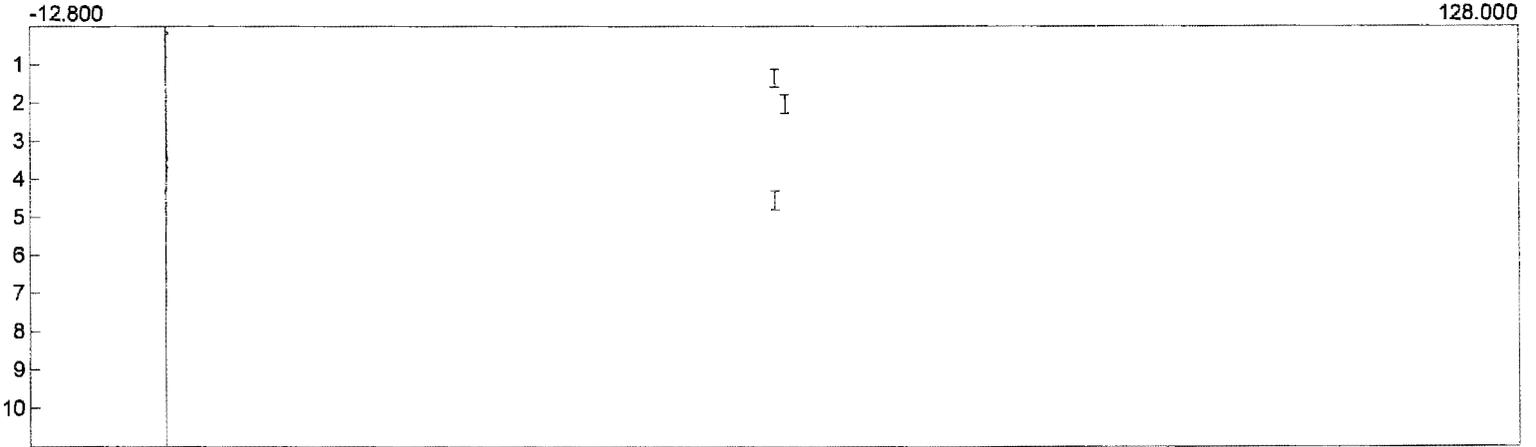
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 12:59:10  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs15.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



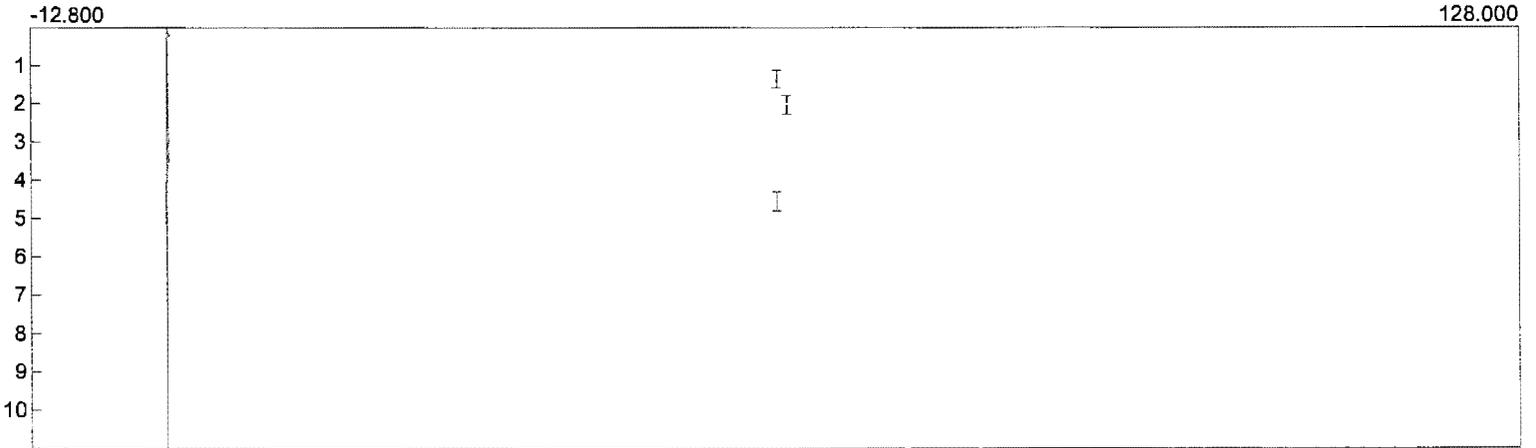
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 13:09:10  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs16.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



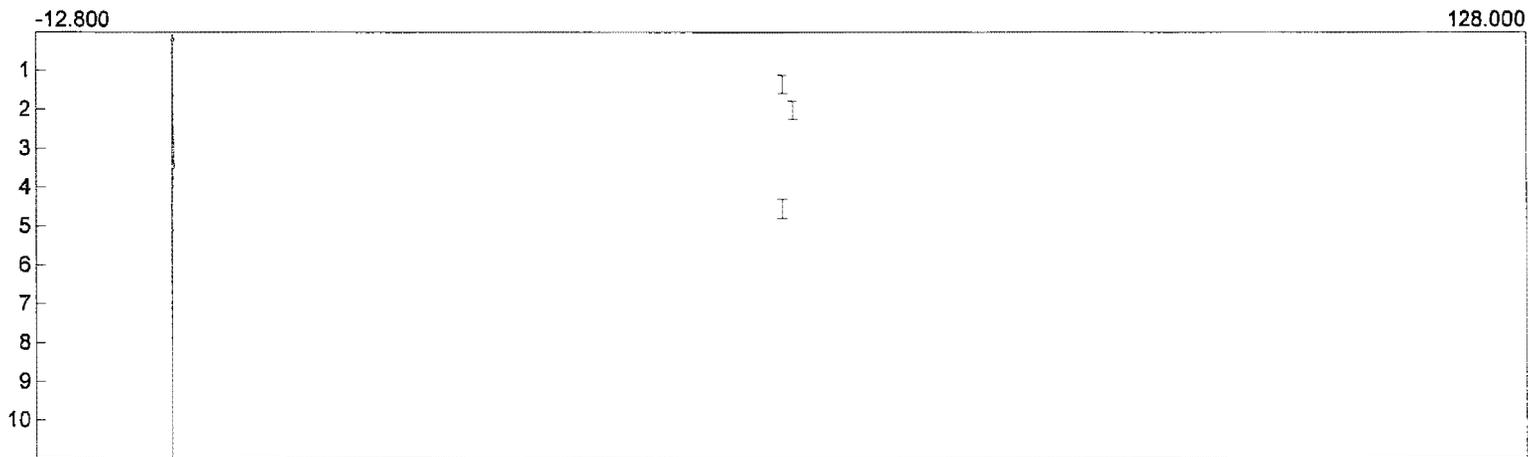
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 13:19:10  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs17.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



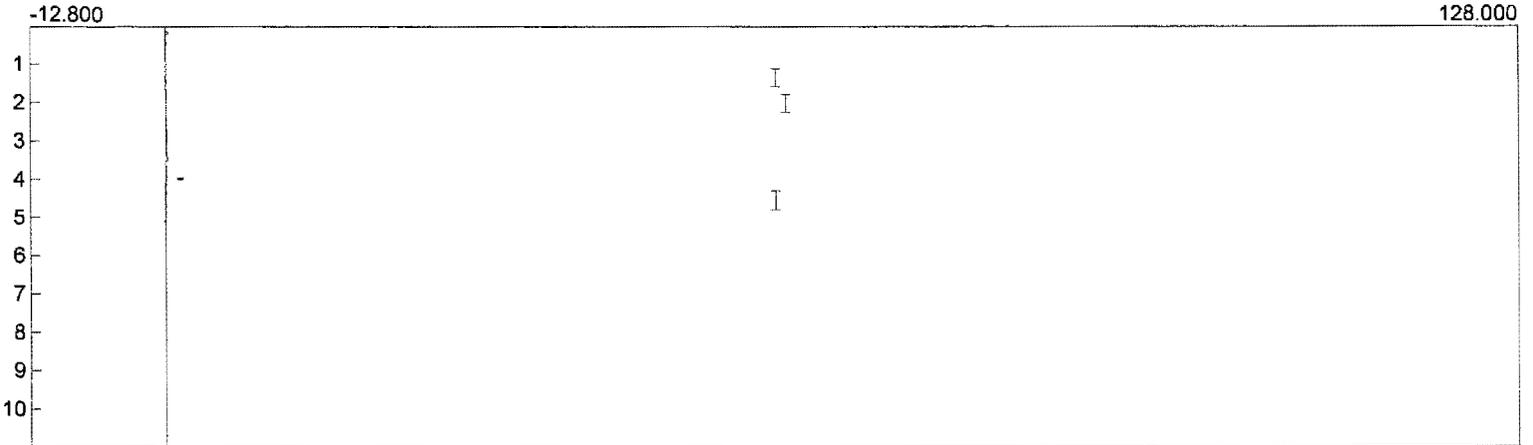
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 13:29:10  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs18.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



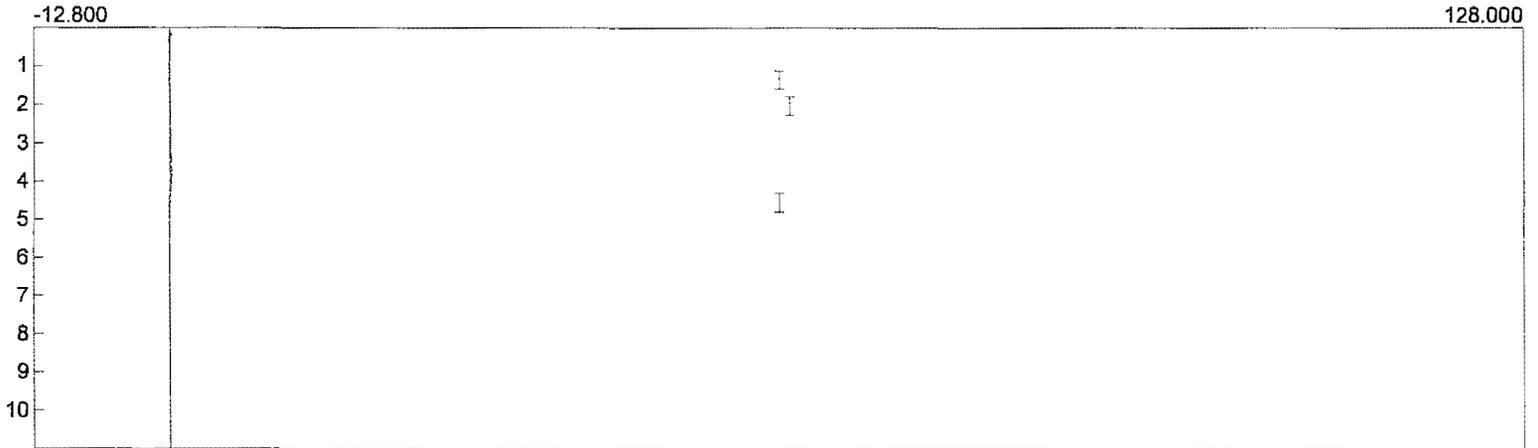
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 13:39:10  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs19.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 13:49:10  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs20.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



Component	Area
	0.0000

**SUMMARY OF TOTAL REDUCED SULFUR COMPOUNDS**

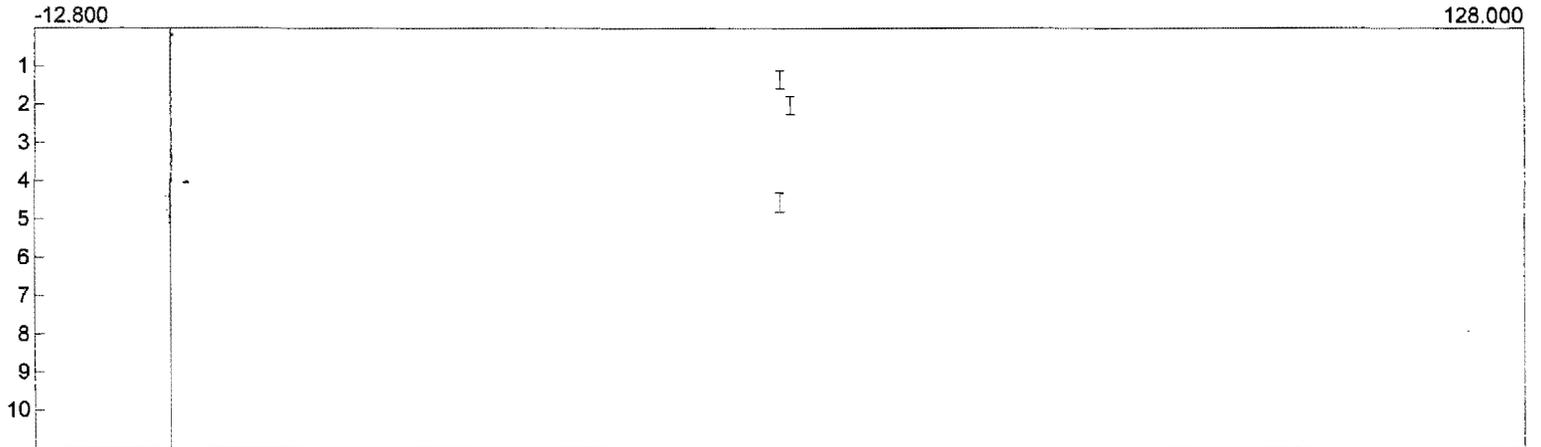


**Company:** Diamond Shamrock Refining Company, L.P. (A Valero Company)  
**Location:** Sunray, Texas  
**Source:** SRU No.1 Incinerator  
**Date:** 8/6/2008  
**Run No.:** 2

File Name	Date	Time	COS		H2S		CS2		TRS	Injection
			Area (mV)	Conc (ppm v db)	Area (mV)	Conc (ppm v db)	Area (mV)	Conc (ppm v db)	Conc (ppm v db)	
8-6valsru1runs21.CHR	8/6/2008	14:13:11	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	2-1
8-6valsru1runs23.CHR	8/6/2008	14:33:11	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	2-3*
8-6valsru1runs24.CHR	8/6/2008	14:43:11	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	2-4
8-6valsru1runs25.CHR	8/6/2008	14:53:11	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	2-5
8-6valsru1runs26.CHR	8/6/2008	15:03:11	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	2-6
8-6valsru1runs27.CHR	8/6/2008	15:13:11	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	2-7
8-6valsru1runs28.CHR	8/6/2008	15:23:11	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	2-8
8-6valsru1runs29.CHR	8/6/2008	15:33:11	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	2-9
8-6valsru1runs30.CHR	8/6/2008	15:43:11	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	2-10
8-6valsru1runs31.CHR	8/6/2008	15:53:11	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	2-11
8-6valsru1runs32.CHR	8/6/2008	16:03:11	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	2-12
8-6valsru1runs33.CHR	8/6/2008	16:13:11	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	2-13
8-6valsru1runs34.CHR	8/6/2008	16:23:11	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	2-14
8-6valsru1runs35.CHR	8/6/2008	16:33:11	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	2-15
8-6valsru1runs36.CHR	8/6/2008	16:43:11	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	2-16
8-6valsru1runs37.CHR	8/6/2008	16:53:11	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	2-17
8-6valsru1runs38.CHR	8/6/2008	17:03:11	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	2-18
8-6valsru1runs39.CHR	8/6/2008	17:13:11	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	2-19
<b>Average Values</b>				<b>&lt;0.03</b>		<b>&lt;0.76</b>		<b>&lt;0.03</b>	<b>&lt;0.83</b>	

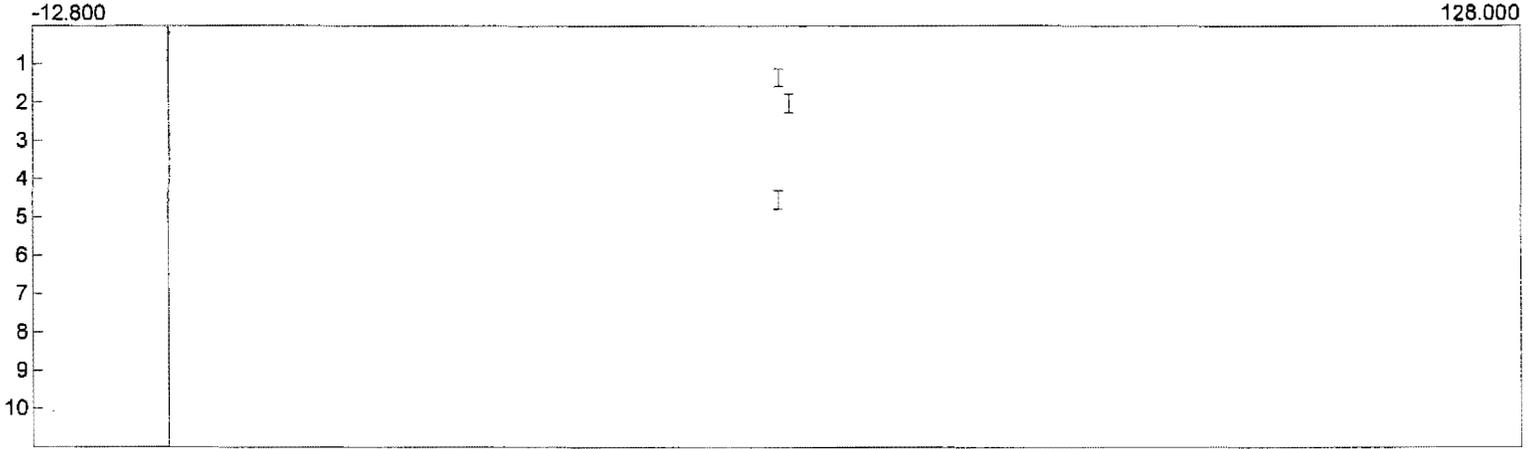
\* Injection 2-2 discarded due to double injection

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 14:13:11  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs21.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 14:33:11  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs23.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Analysis date: 08/06/2008 14:43:11

Method: USEPA M-15

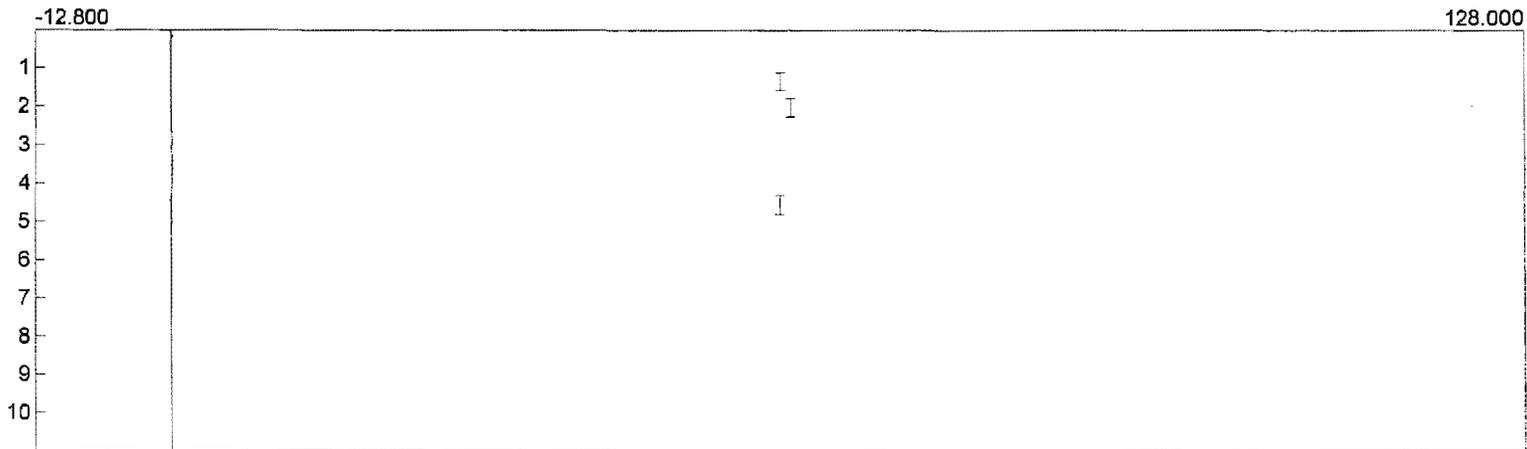
Description: FPD

Column: RT-Sulfur

Data file: 8-6valsru1runs24.CHR ()

Sample: SRU #1 Runs

Operator: SY



Component

Area

0.0000

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Analysis date: 08/06/2008 14:53:11

Method: USEPA M-15

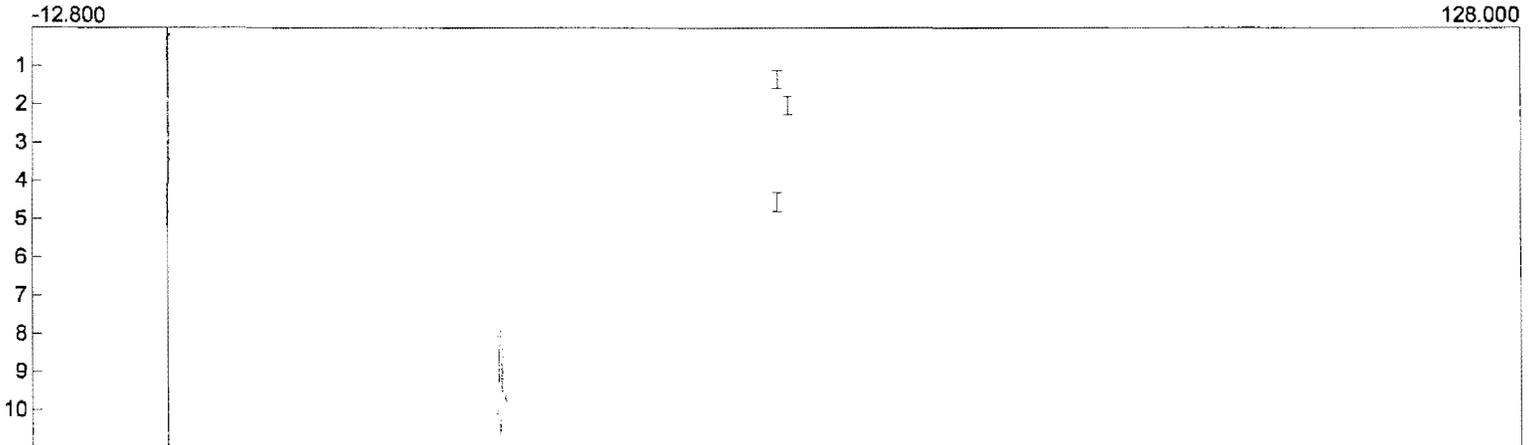
Description: FPD

Column: RT-Sulfur

Data file: 8-6valsru1runs25.CHR ()

Sample: SRU #1 Runs

Operator: SY



Component

Area

0.0000

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Analysis date: 08/06/2008 15:03:11

Method: USEPA M-15

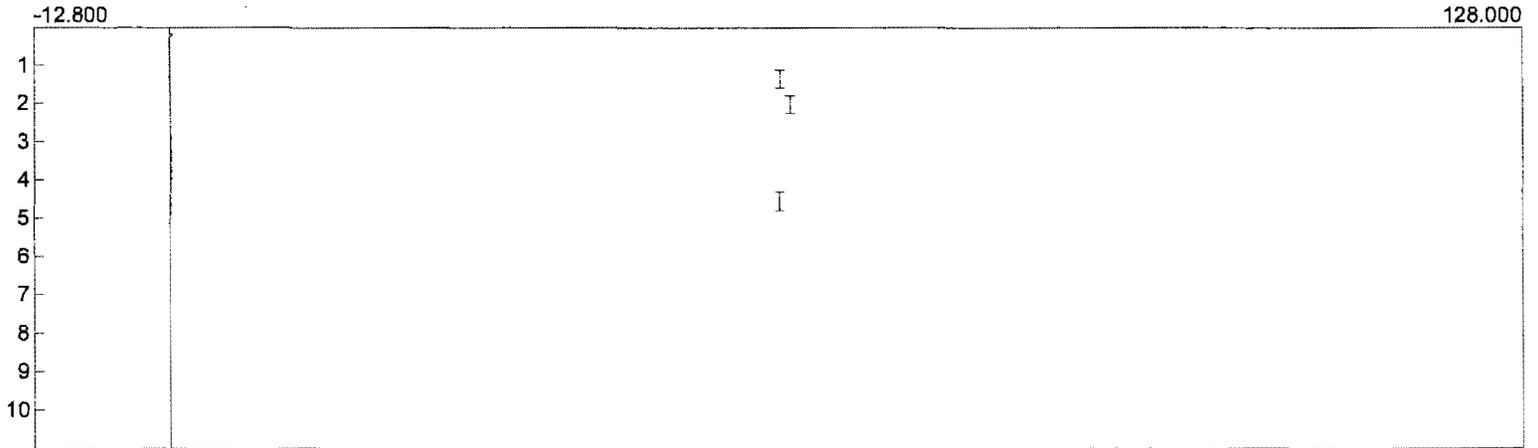
Description: FPD

Column: RT-Sulfur

Data file: 8-6valsru1runs26.CHR ()

Sample: SRU #1 Runs

Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Analysis date: 08/06/2008 15:13:11

Method: USEPA M-15

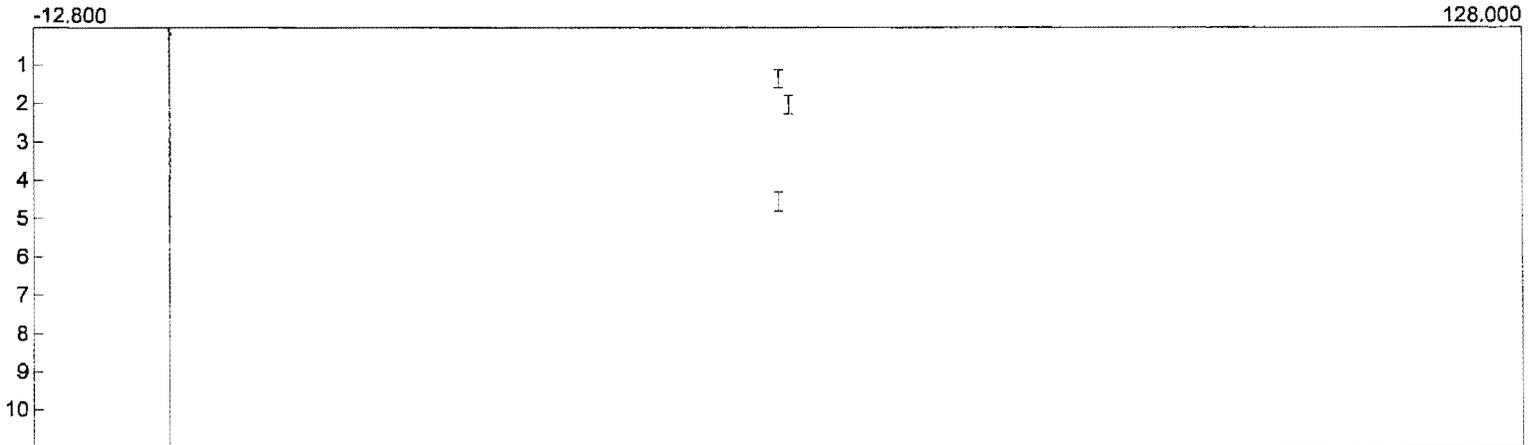
Description: FPD

Column: RT-Sulfur

Data file: 8-6valsru1runs27.CHR ()

Sample: SRU #1 Runs

Operator: SY

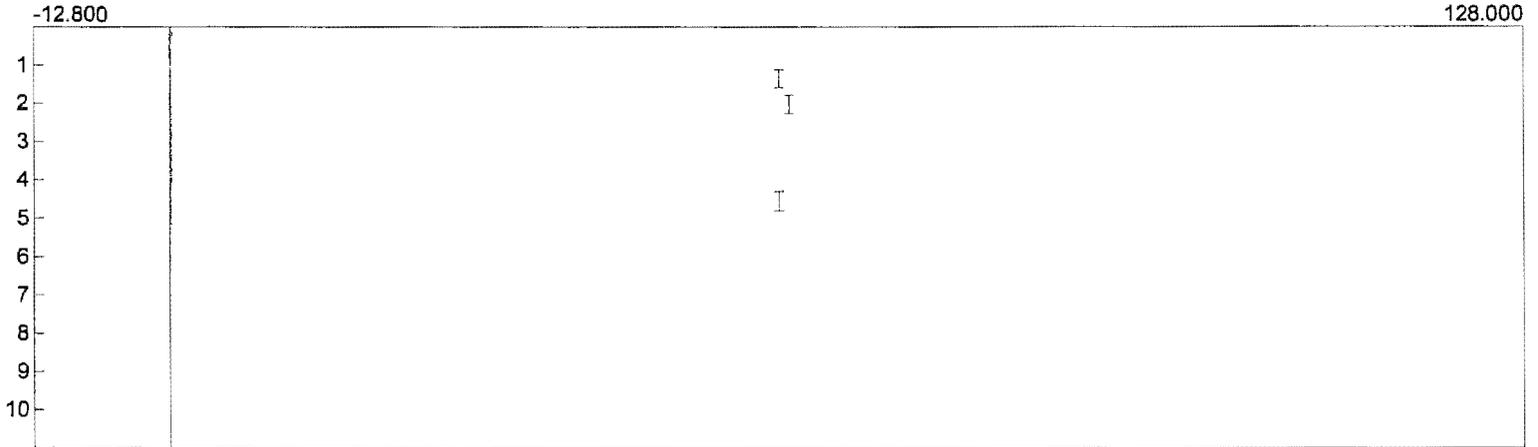


Component

Area

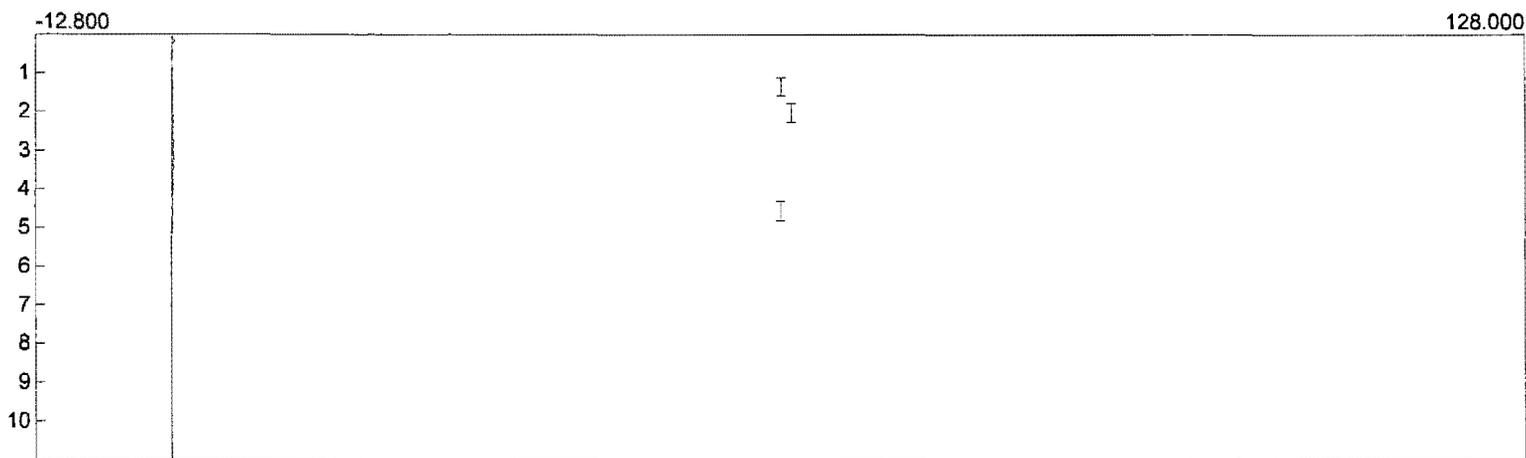
0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 15:23:11  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs28.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



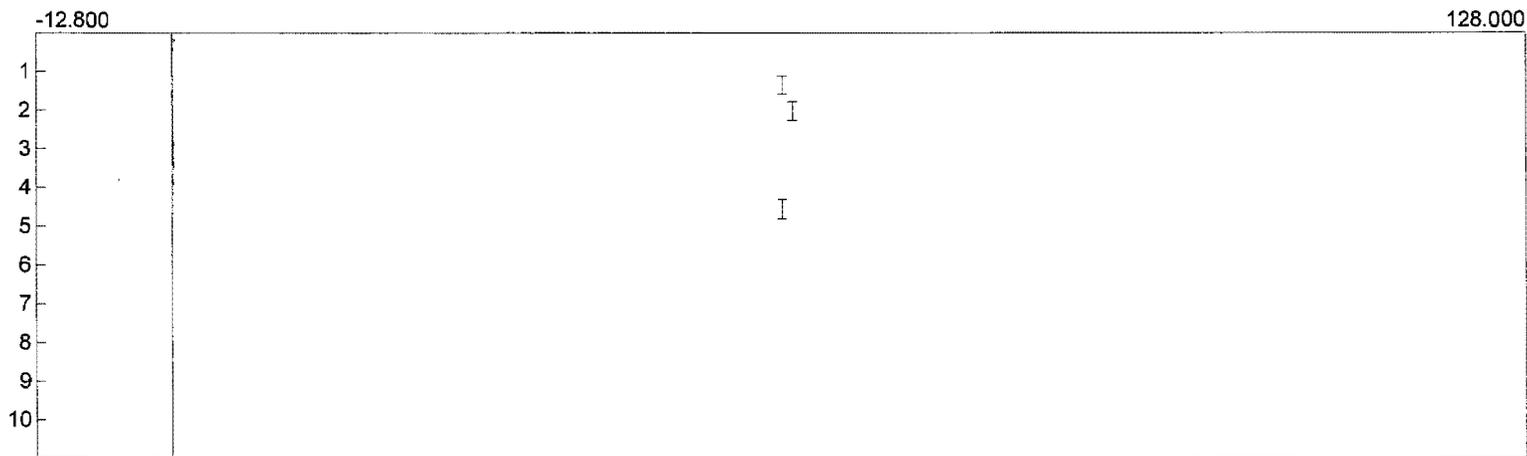
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 15:33:11  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs29.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



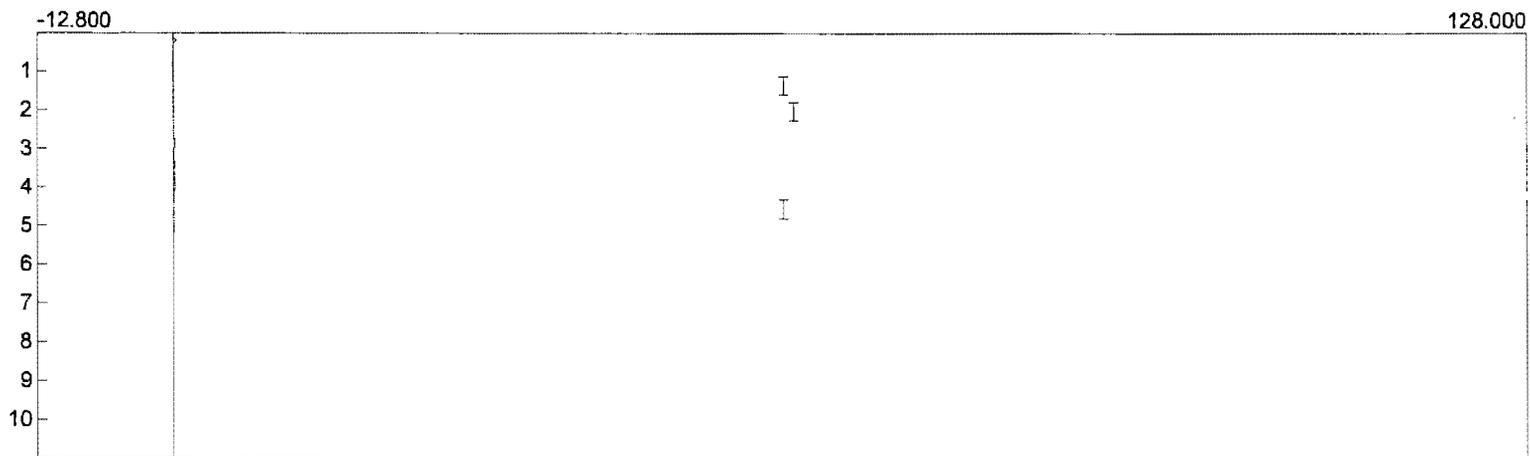
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 15:43:11  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs30.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



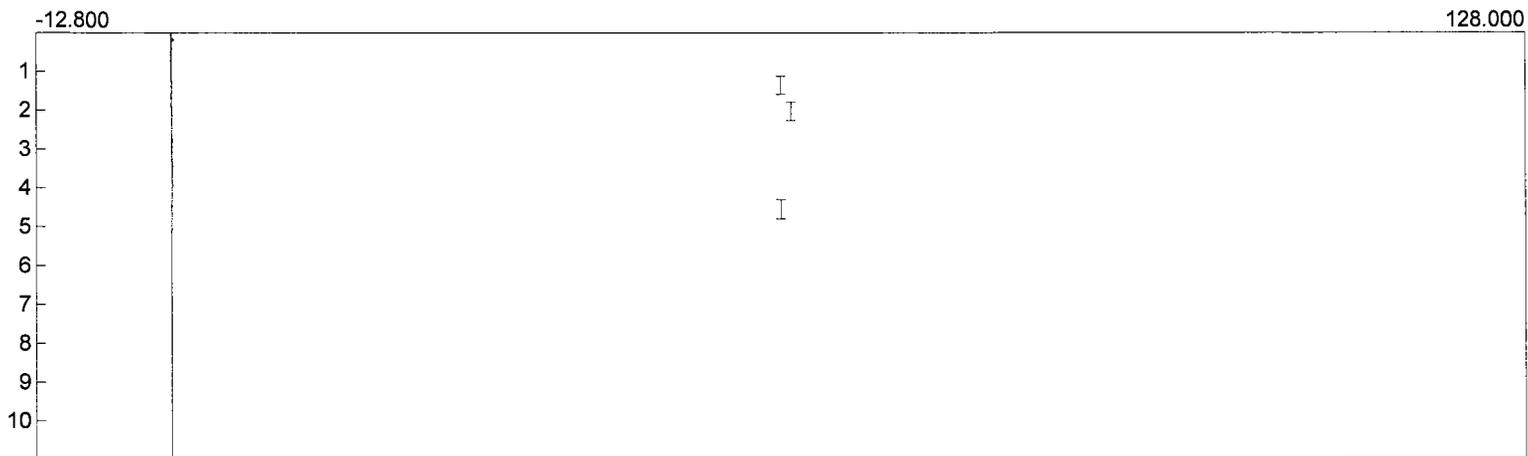
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 15:53:11  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs31.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



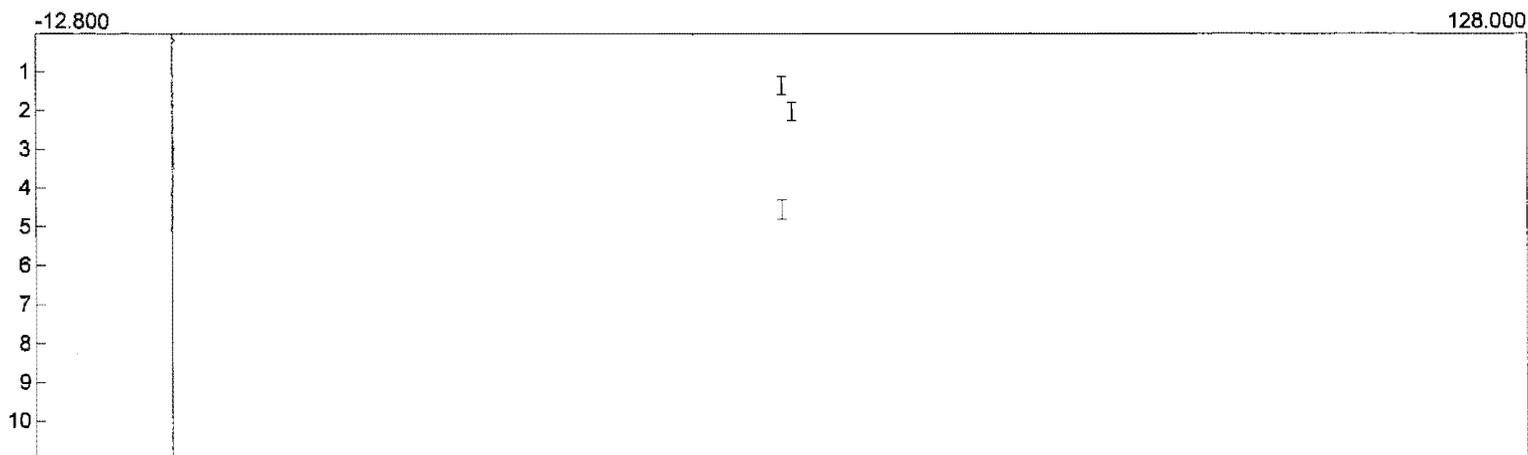
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 16:03:11  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs32.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



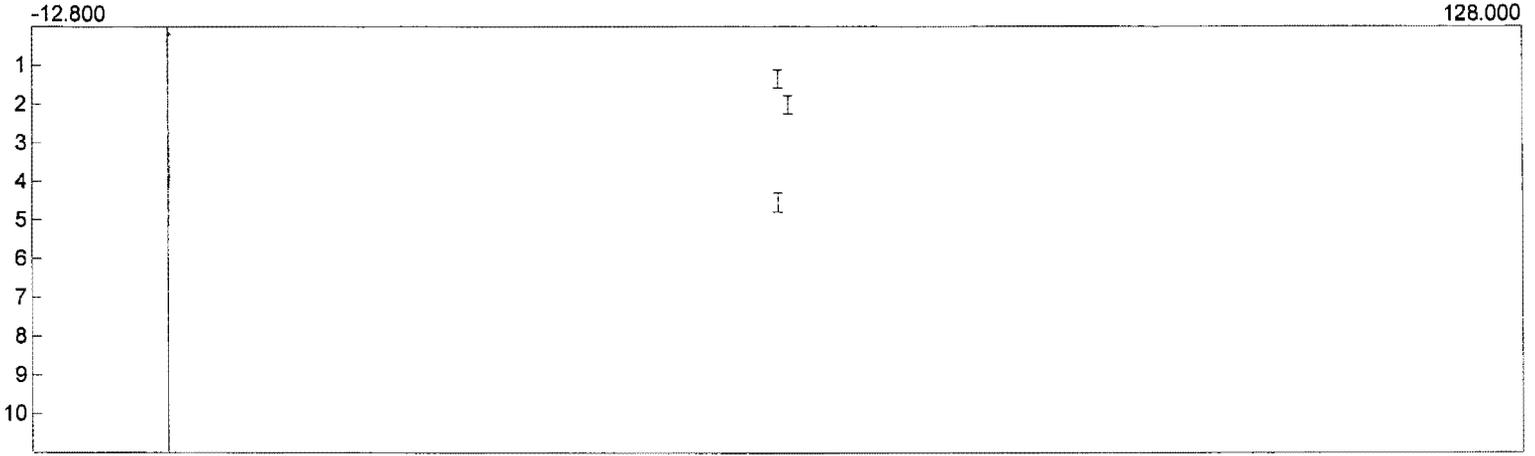
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 16:13:11  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs33.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



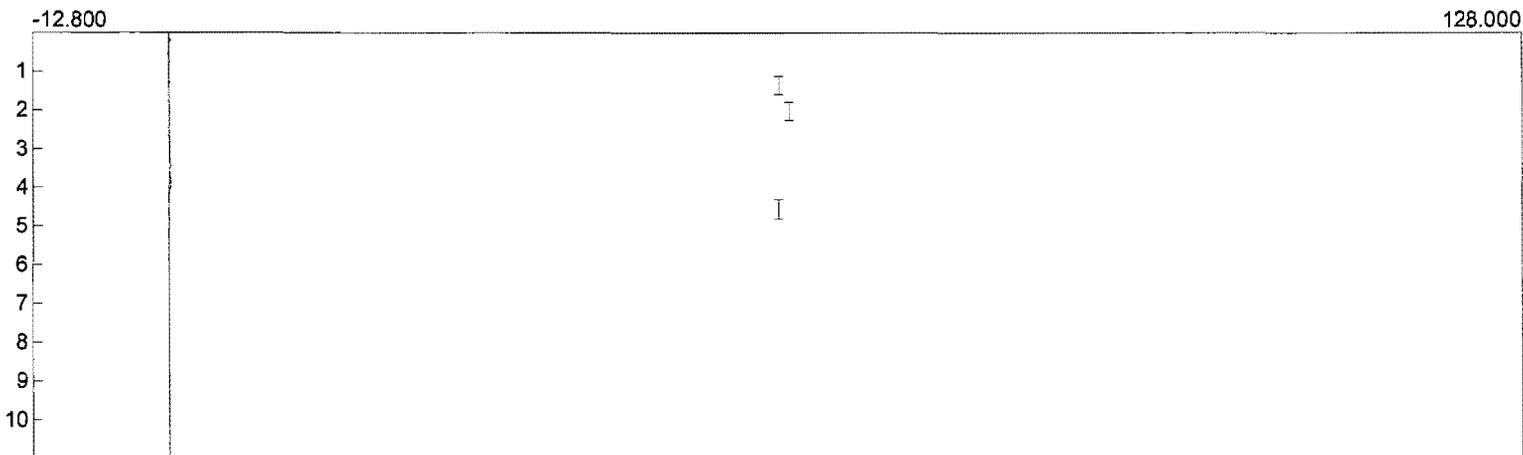
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 16:23:11  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs34.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



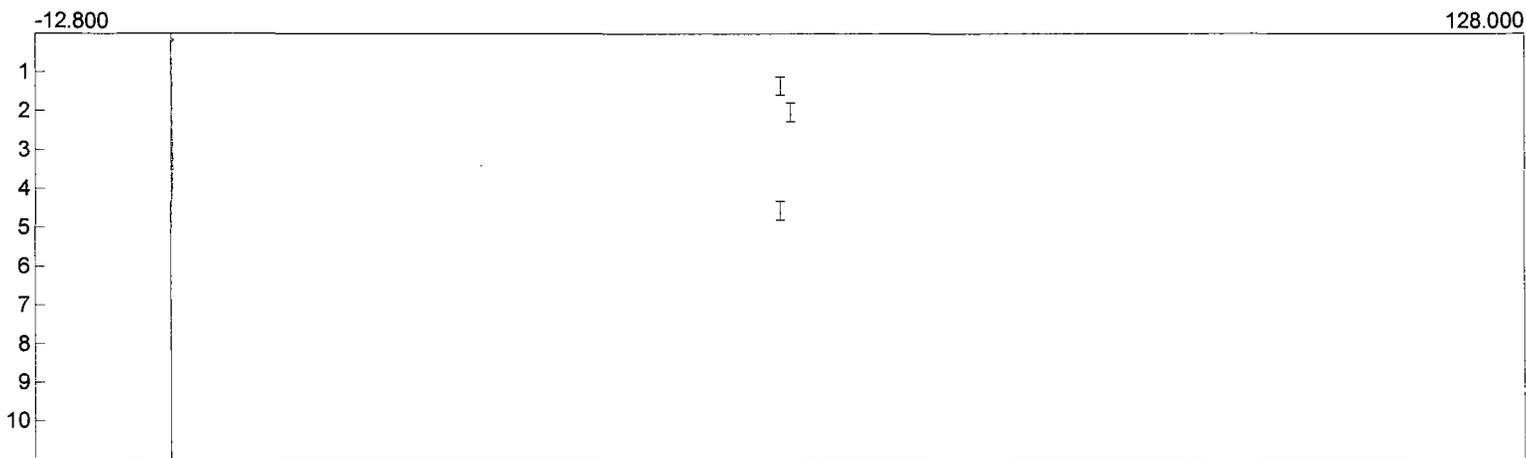
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 16:33:11  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs35.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 16:43:11  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs36.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Analysis date: 08/06/2008 16:53:11

Method: USEPA M-15

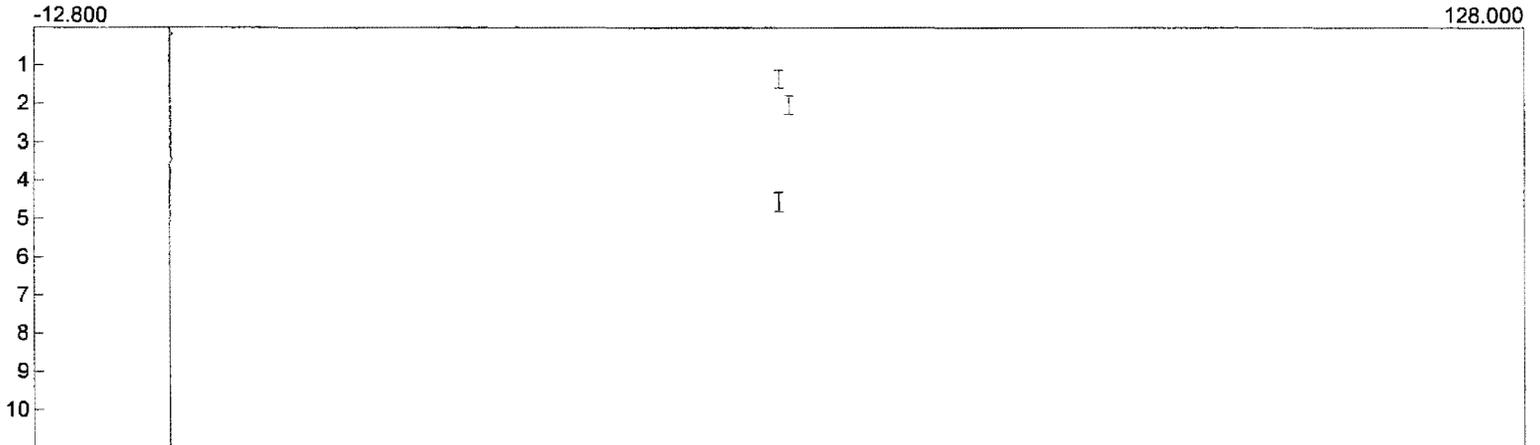
Description: FPD

Column: RT-Sulfur

Data file: 8-6valsru1runs37.CHR ()

Sample: SRU #1 Runs

Operator: SY

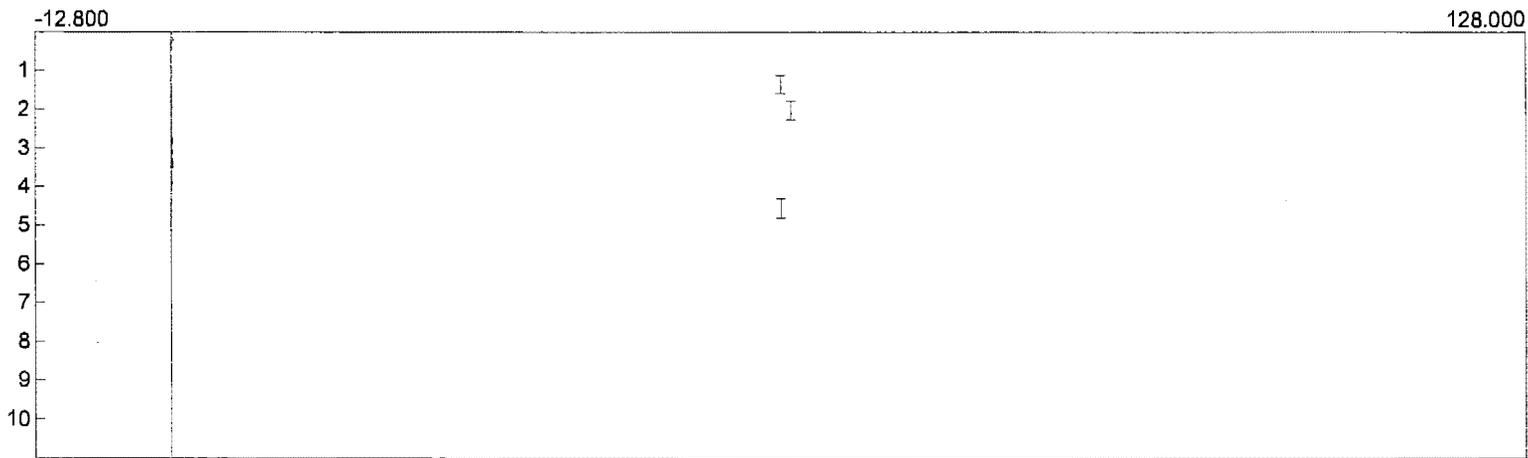


Component

Area

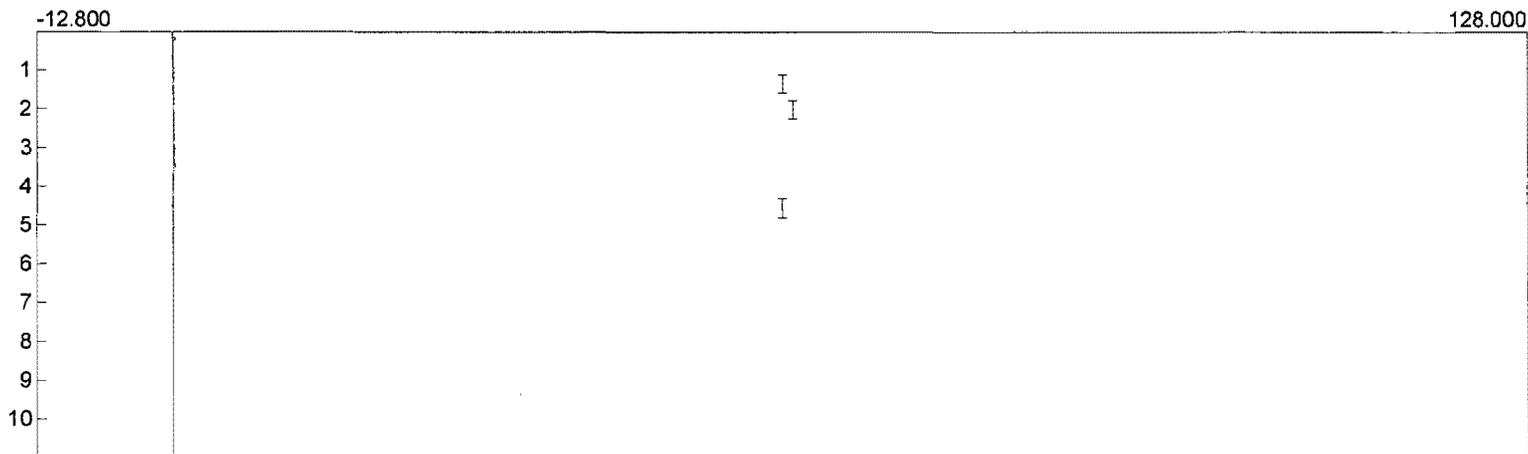
0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 17:03:11  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsu1runs38.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 17:13:11  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs39.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



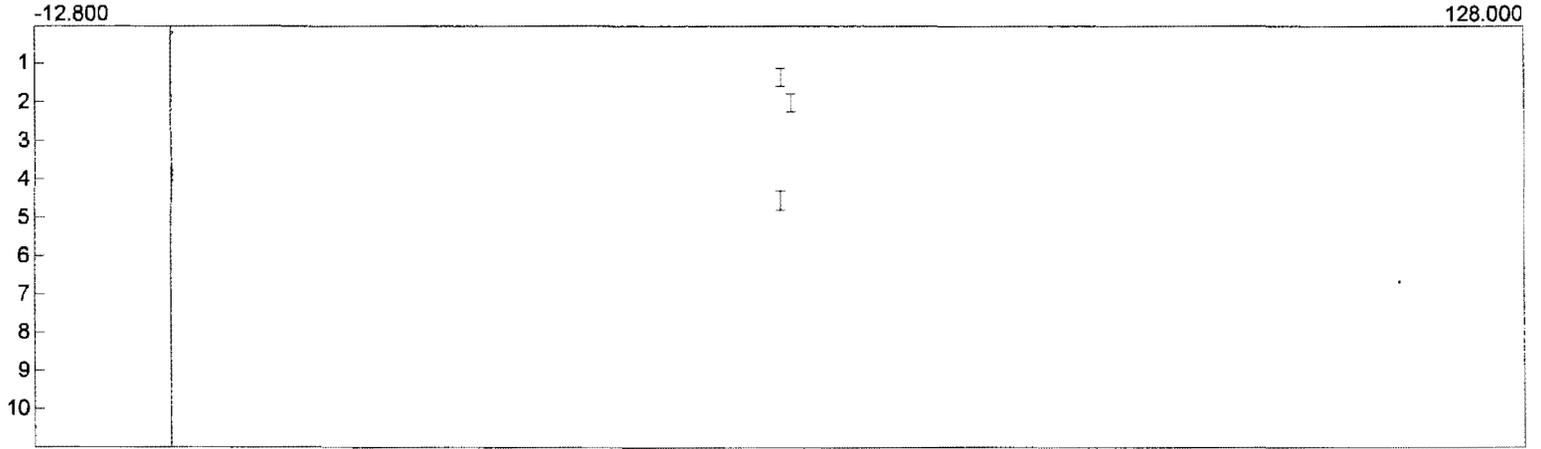
Component	Area
	0.0000

SUMMARY OF TOTAL REDUCED SULFUR COMPOUNDS

**Company:** Diamond Shamrock Refining Company, L.P. (A Valero Company)  
**Location:** Sunray, Texas  
**Source:** SRU No.1 Incinerator  
**Date:** 8/6/2008  
**Run No.:** 3

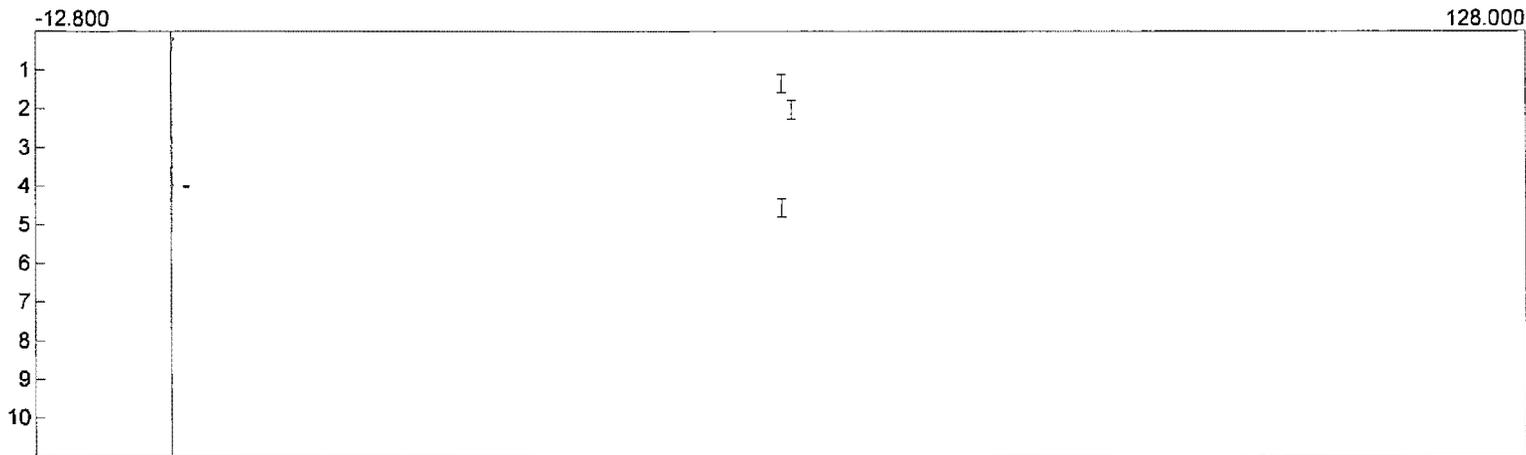
File Name	Date	Time	<u>COS</u>		<u>H2S</u>		<u>CS2</u>		<u>TRS</u>	Injection
			Area (mV)	Conc (ppm v db)	Area (mV)	Conc (ppm v db)	Area (mV)	Conc (ppm v db)	Conc (ppm v db)	
8-6valsru1runs40.CHR	8/6/2008	17:40:05	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	3-1
8-6valsru1runs41.CHR	8/6/2008	17:50:05	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	3-2
8-6valsru1runs42.CHR	8/6/2008	18:00:05	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	3-3
8-6valsru1runs43.CHR	8/6/2008	18:10:05	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	3-4
8-6valsru1runs44.CHR	8/6/2008	18:20:05	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	3-5
8-6valsru1runs45.CHR	8/6/2008	18:30:05	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	3-6
8-6valsru1runs46.CHR	8/6/2008	18:40:05	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	3-7
8-6valsru1runs47.CHR	8/6/2008	18:50:05	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	3-8
8-6valsru1runs48.CHR	8/6/2008	19:00:05	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	3-9
8-6valsru1runs49.CHR	8/6/2008	19:10:05	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	3-10
8-6valsru1runs50.CHR	8/6/2008	19:20:05	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	3-11
8-6valsru1runs51.CHR	8/6/2008	19:30:05	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	3-12
8-6valsru1runs52.CHR	8/6/2008	19:40:05	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	3-13
8-6valsru1runs53.CHR	8/6/2008	19:50:05	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	3-14
8-6valsru1runs54.CHR	8/6/2008	20:00:05	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	3-15
8-6valsru1runs55.CHR	8/6/2008	20:10:05	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	3-16
8-6valsru1runs56.CHR	8/6/2008	20:20:05	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	3-17
8-6valsru1runs57.CHR	8/6/2008	20:30:05	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	3-18
8-6valsru1runs58.CHR	8/6/2008	20:40:05	<3.00	<0.03	<0.10	<0.76	<8.00	<0.03	<0.83	3-19
<b>Average Values</b>				<b>&lt;0.03</b>		<b>&lt;0.76</b>		<b>&lt;0.03</b>	<b>&lt;0.83</b>	

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 17:40:05  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs40.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



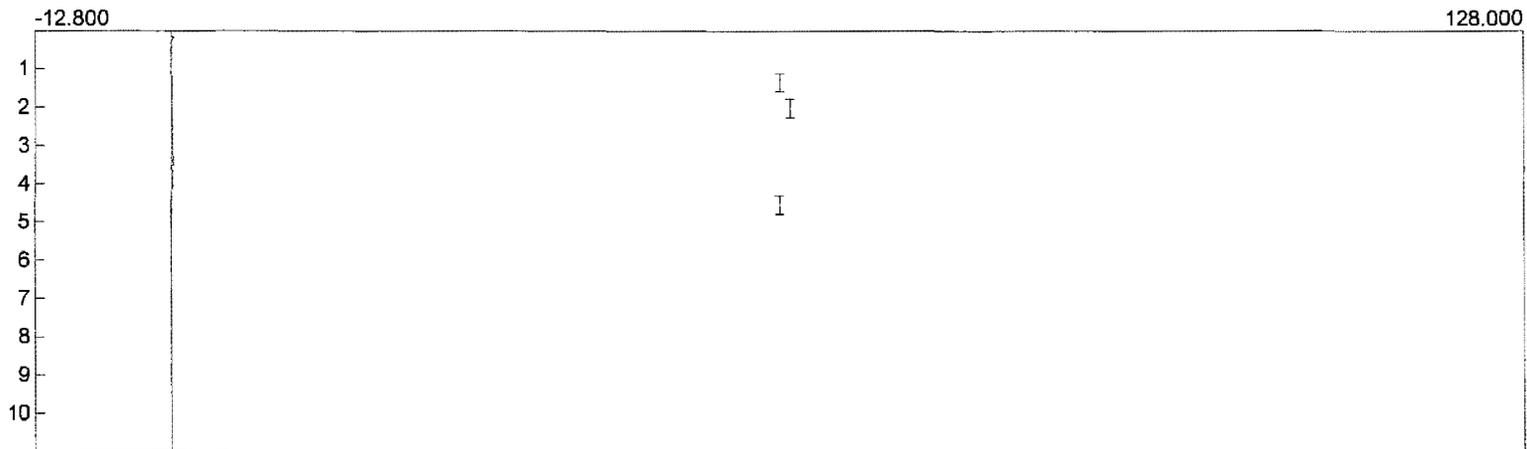
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 17:50:05  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs41.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



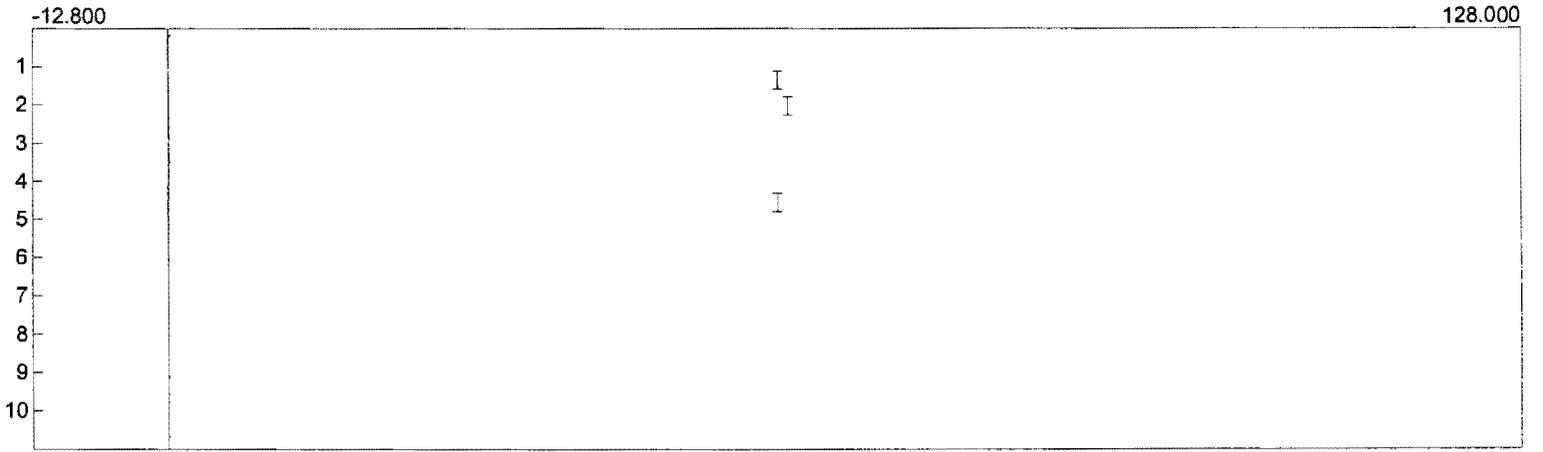
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 18:00:05  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs42.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



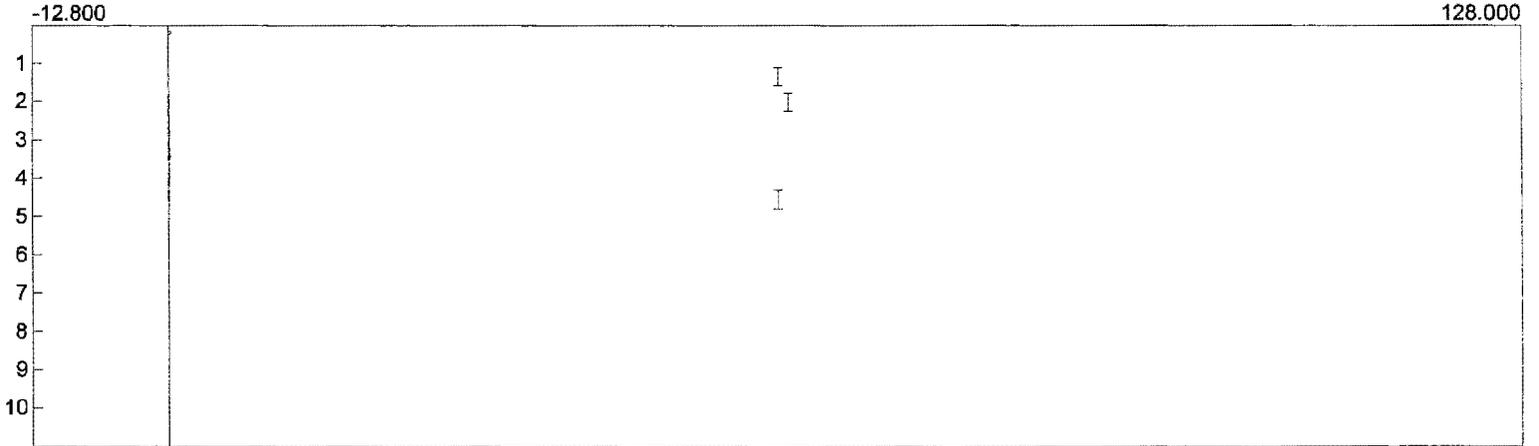
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 18:10:05  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs43.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



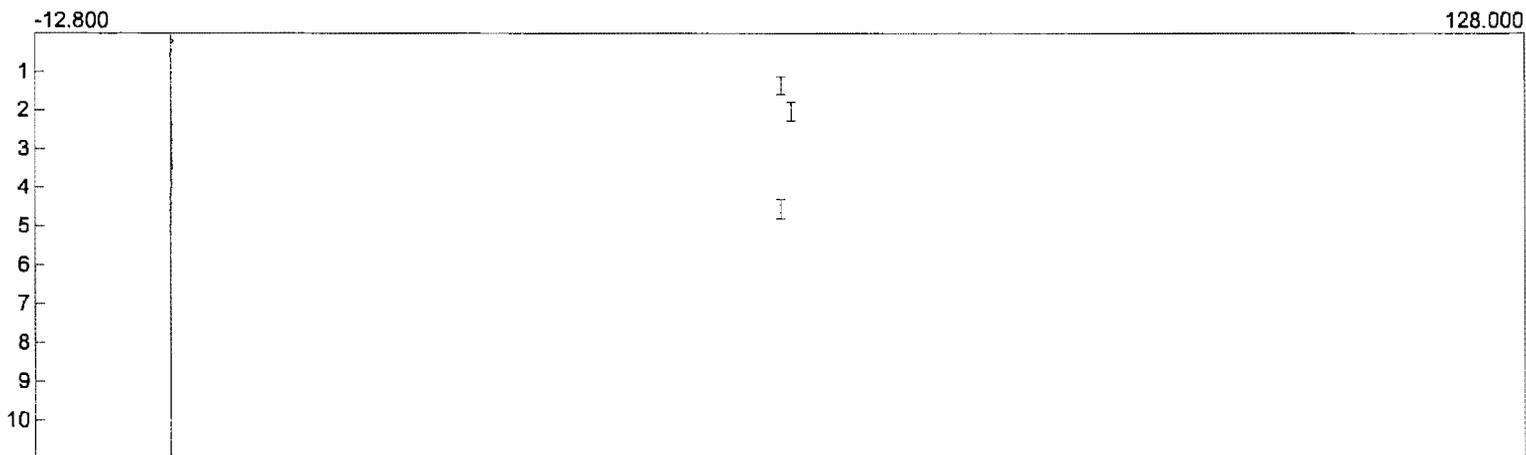
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 18:20:05  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs44.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



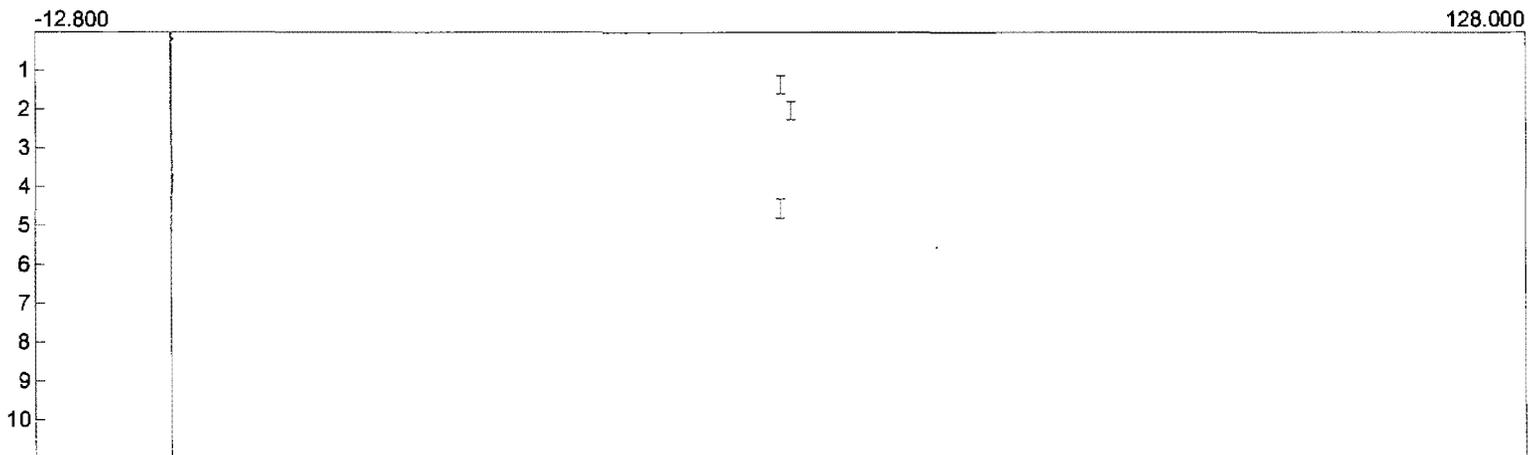
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 18:30:05  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs45.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



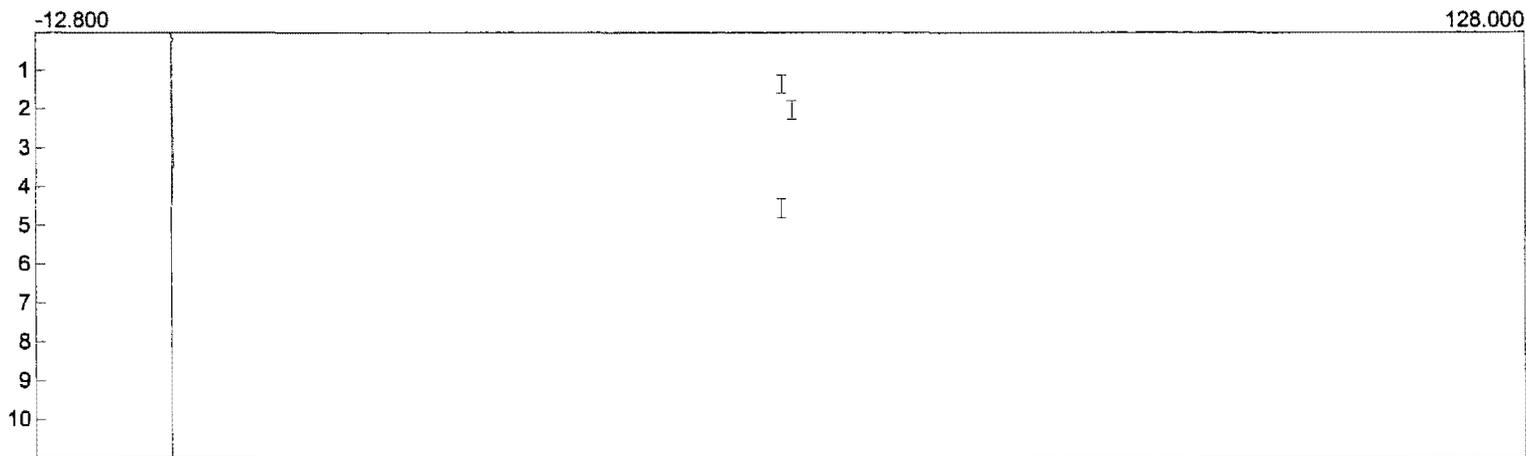
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 18:40:05  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs46.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



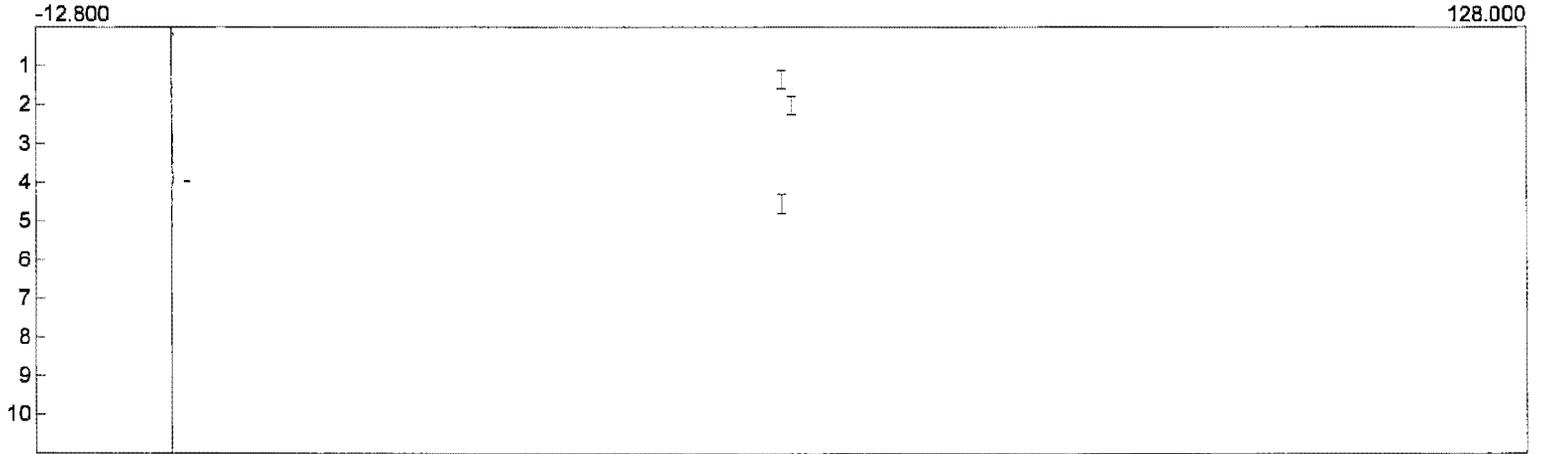
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 18:50:05  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs47.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



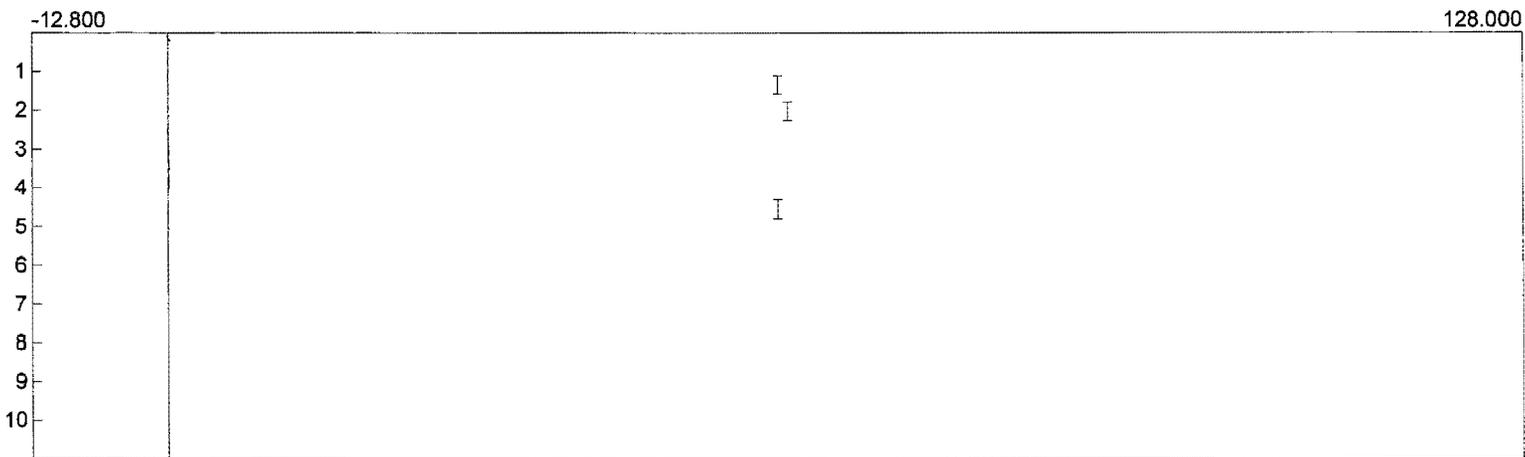
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 19:00:05  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs48.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



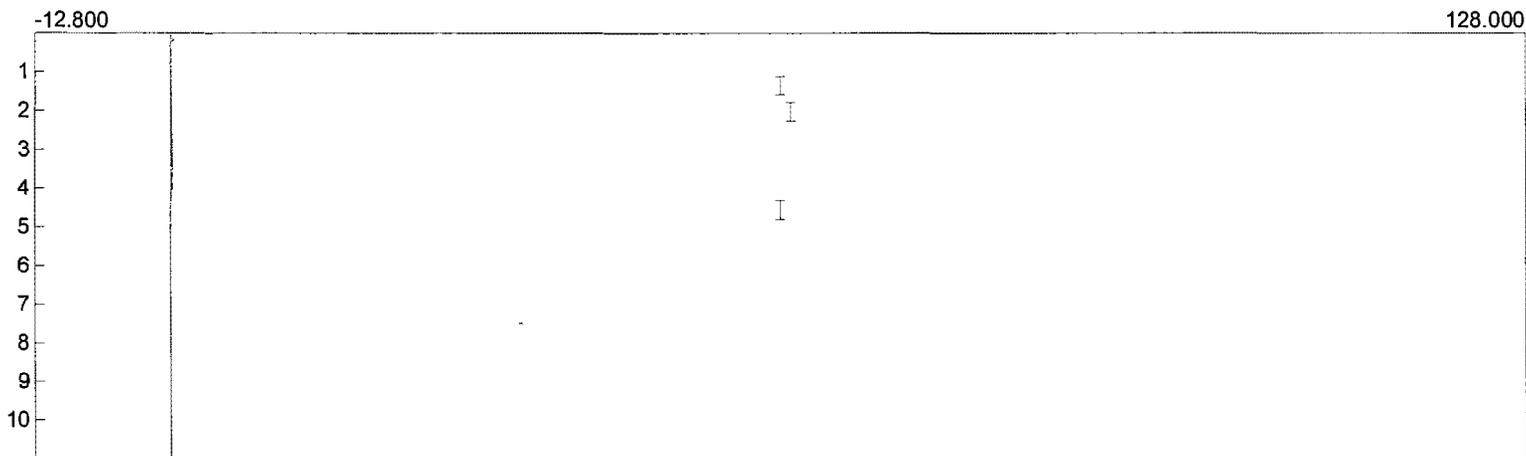
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 19:10:05  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs49.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



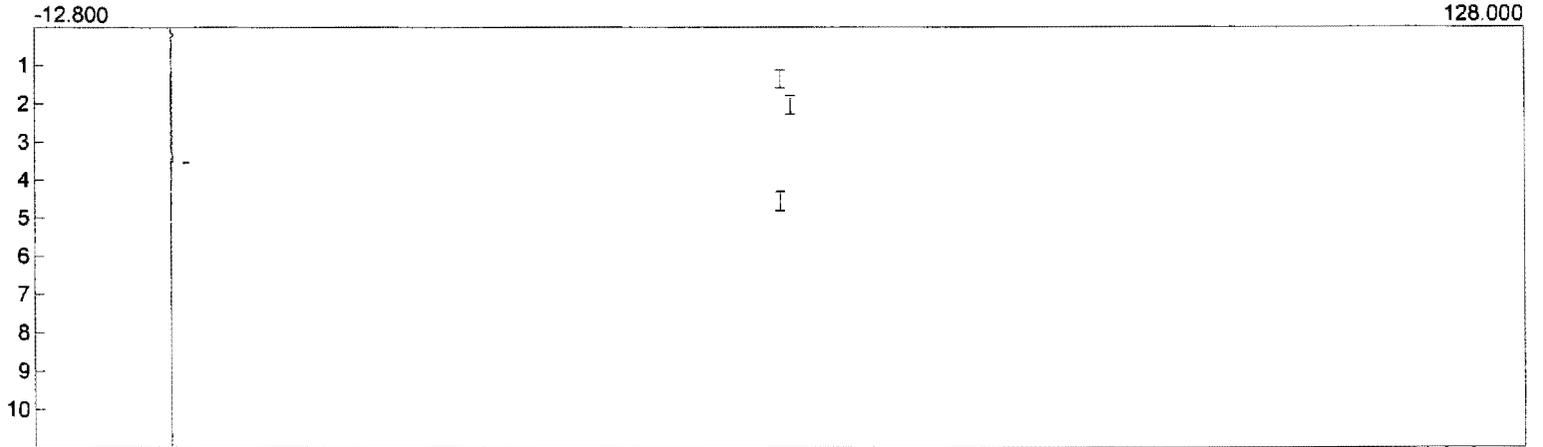
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 19:20:05  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs50.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



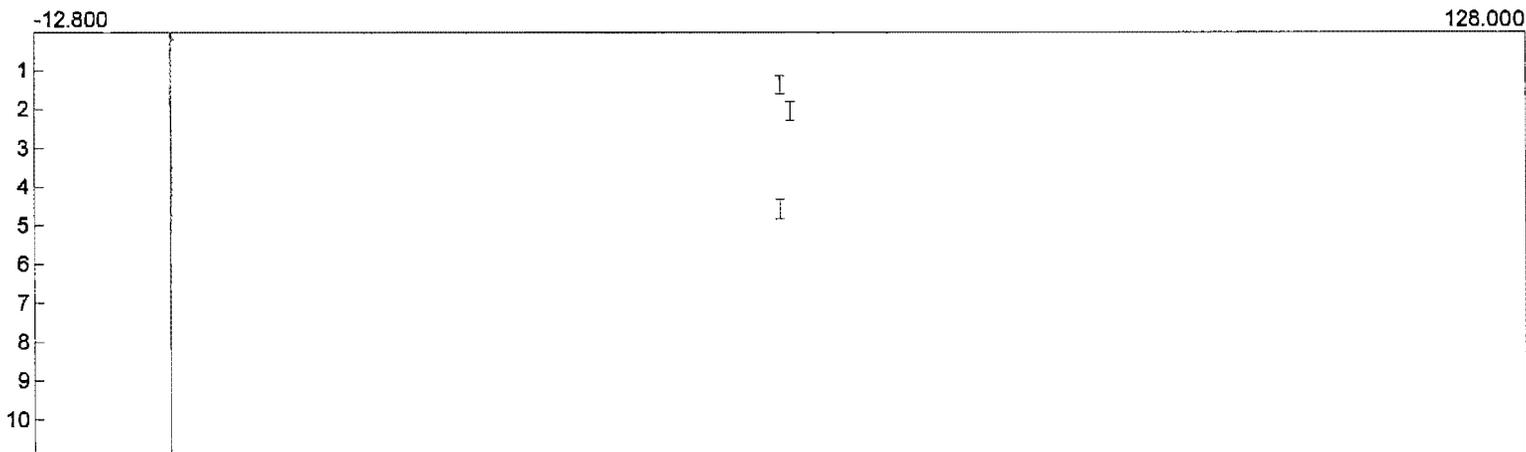
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 19:30:05  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs51.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 19:40:05  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs52.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Analysis date: 08/06/2008 19:50:05

Method: USEPA M-15

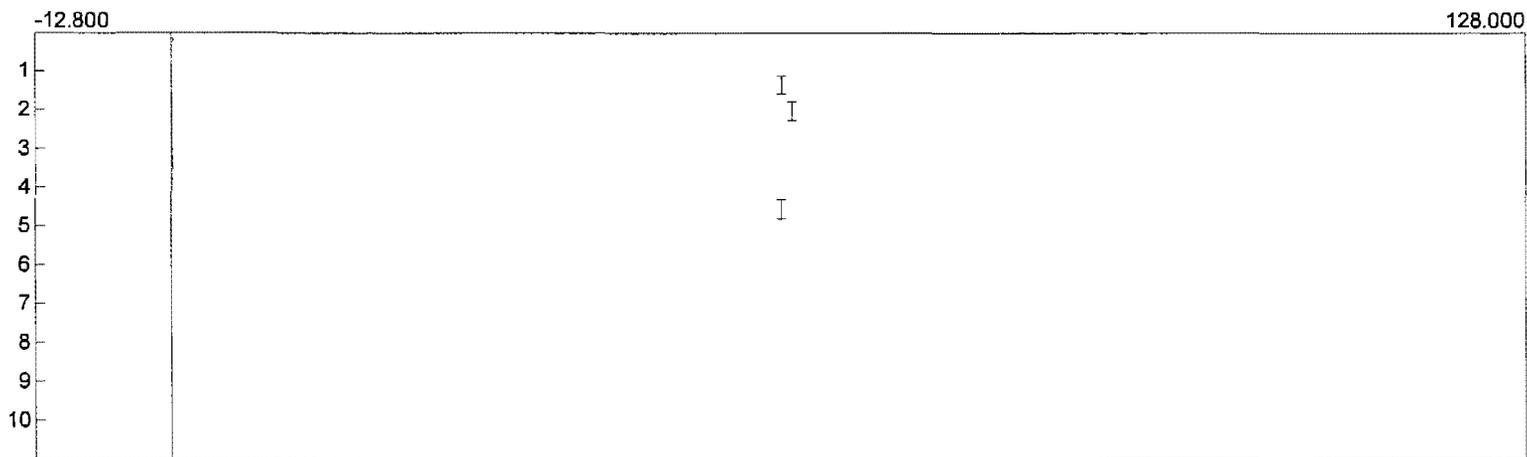
Description: FPD

Column: RT-Sulfur

Data file: 8-6valsru1runs53.CHR ()

Sample: SRU #1 Runs

Operator: SY



Component

Area

0.0000

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Analysis date: 08/06/2008 20:00:05

Method: USEPA M-15

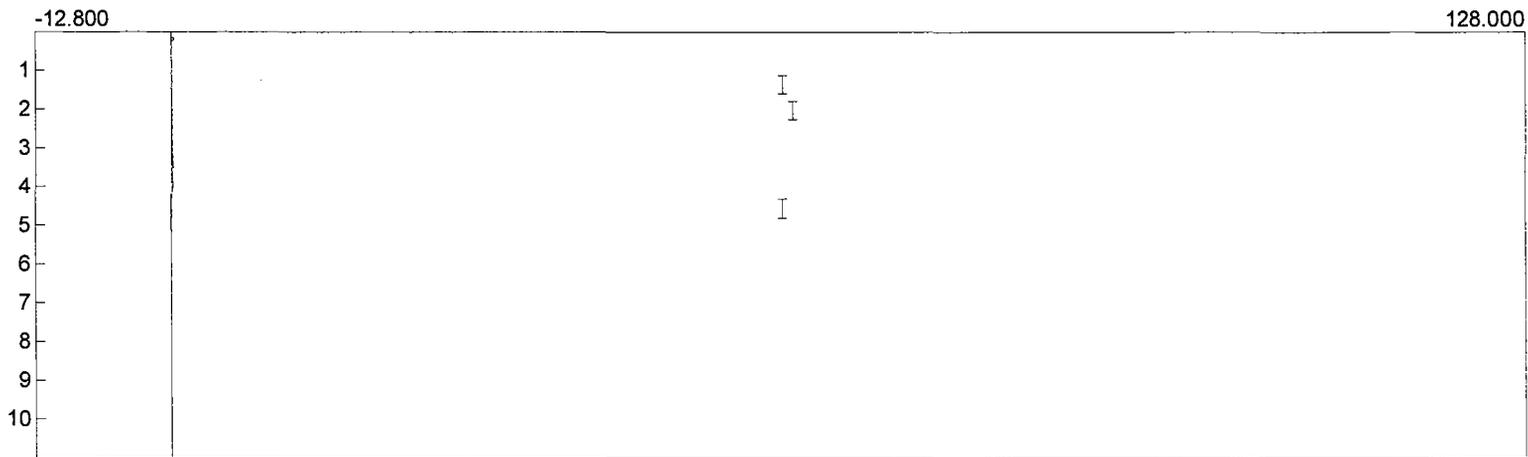
Description: FPD

Column: RT-Sulfur

Data file: 8-6valsru1runs54.CHR ()

Sample: SRU #1 Runs

Operator: SY

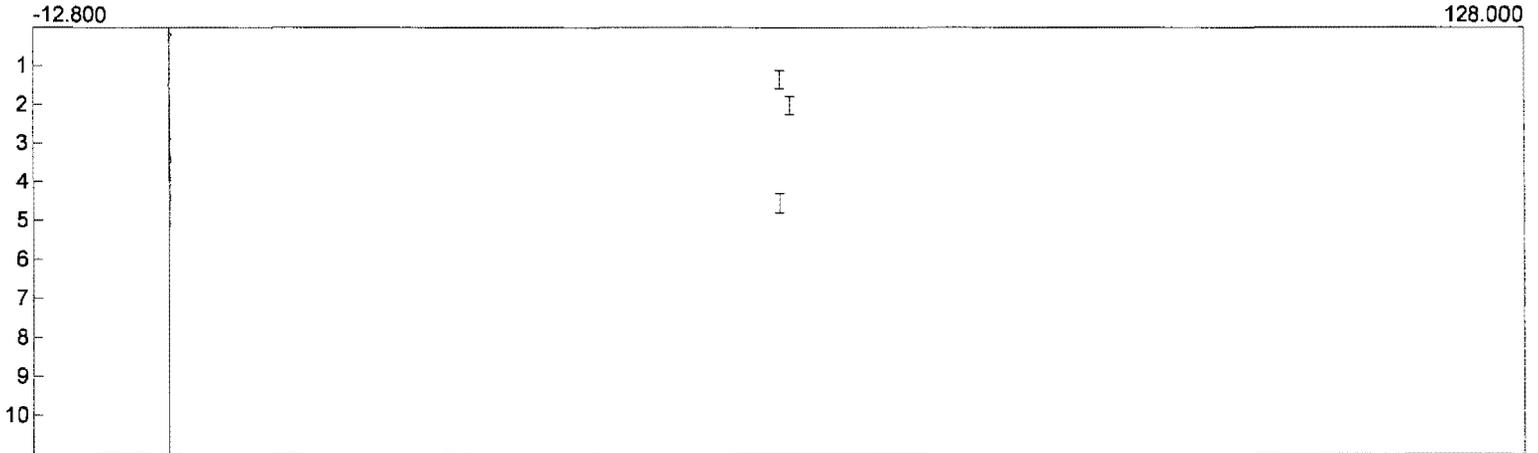


Component

Area

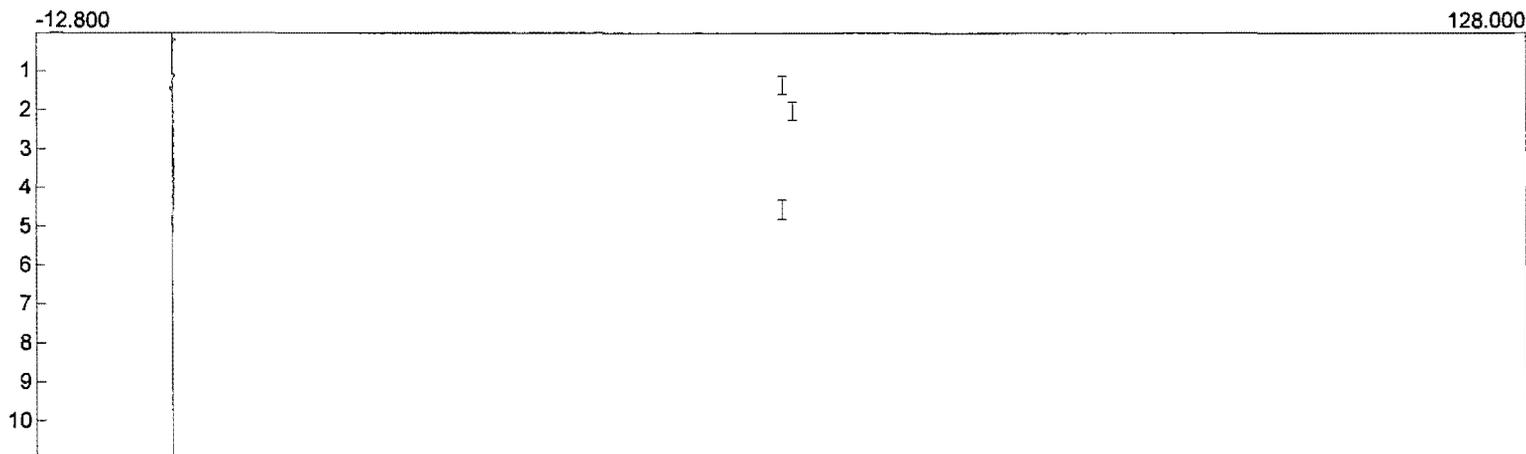
0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 20:10:05  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs55.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



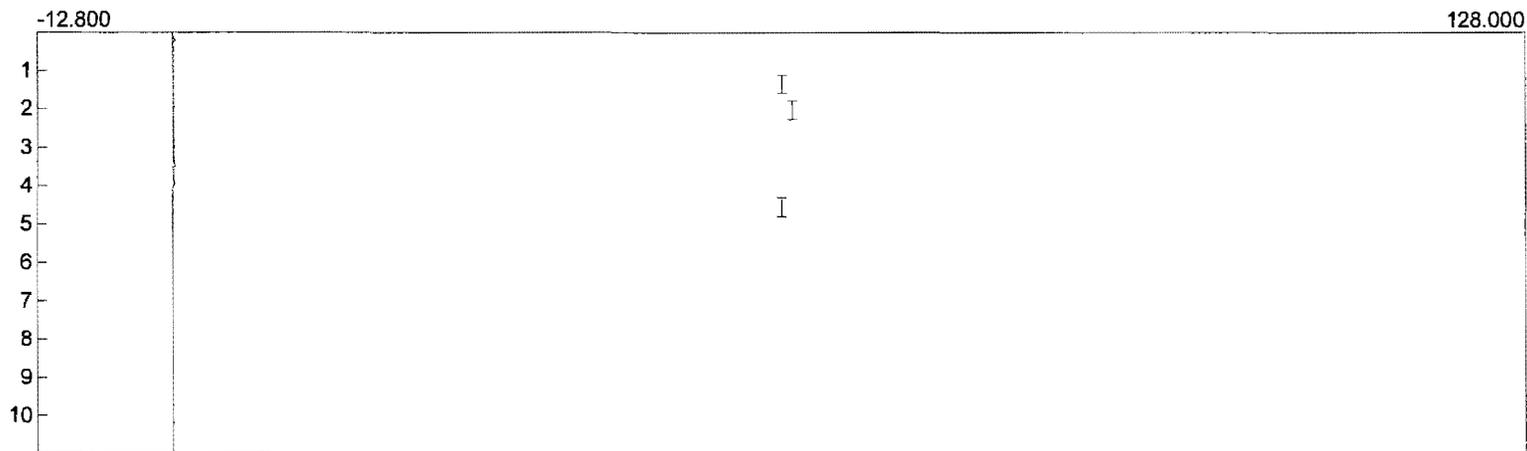
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 20:20:05  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs56.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



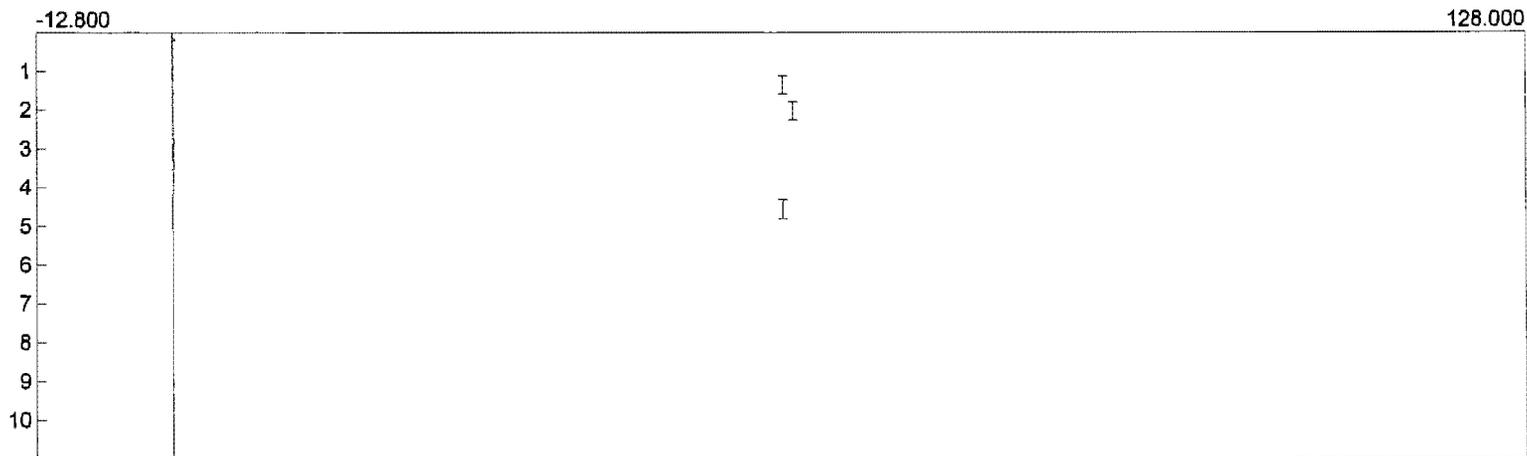
Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 20:30:05  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs57.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Analysis date: 08/06/2008 20:40:05  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valsru1runs58.CHR ()  
Sample: SRU #1 Runs  
Operator: SY



Component	Area
	0.0000



## TRS STANDARDS PRETEST DATA

**Client:** Diamond Shamrock Refining Company, L.P. (A Valero Company)  
**Location:** Sunray, Texas  
**Source:** SRU No.1 Incinerator  
**Date sampled:** 8/6/2008  
**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	5.3	1,179.3	34.3
3	10.6	3,315.8	57.6
4	21.2	13,827.1	117.6

Hydrogen Sulfide Standards			
Standard No	Concentration	Area	Sq Rt Area Counts
1	0.0	0.0	0.0
2	5.0	98.8	9.9
3	10.0	315.8	17.8
4	20.0	1,880.6	43.4

Carbon Disulfide Standards			
Standard No	Concentration	Area	Sq Rt Area Counts
1	0.0	0.0	0.0
2	5.4	1,862.3	43.2
3	10.8	4,963.4	70.5
4	21.5	20,228.0	142.2



## 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.1 Incinerator  
**Date sampled:** 8/6/2008  
**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

<b>Standard #</b>	<b>Standard Peak Area (mv)</b>	<b>Square Root Peak Area (mv)</b>	<b>Standard Concentration (ppm)</b>	
1	0.0	0.0	0.0	$\Sigma xy:$ 1094.702
2	98.8	9.9	5.0	$\Sigma x:$ 71.1
3	315.8	17.8	10.0	$\Sigma y:$ 35
4	1,880.6	43.4	20.0	$\Sigma x^2:$ 2295
				$\Sigma(x)^2:$ 5051
				<b>N:</b> 4
				<b>m:</b> 0.458035
				<b>b:</b> 0.61148



## 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.1 Incinerator  
**Date sampled:** 8/6/2008  
**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	$\Sigma xy:$ 3277.662
2	1,179.3	34.3	5.3	$\Sigma x:$ 209.5
3	3,315.8	57.6	10.6	$\Sigma y:$ 37.01412
4	13,827.1	117.6	21.2	$\Sigma x^2:$ 18322
				$\Sigma(x)^2:$ 43895
				<b>N:</b> 4
				<b>m:</b> 0.182209
				<b>b:</b> -0.29023



## 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.1 Incinerator  
**Date sampled:** 8/6/2008  
**Run Number:** 1-3  
**Compound Analyzed:** Carbon Disulfide  
**Method:** USEPA Method 15  
**Instrument:** SRI-9300B  
**Detector:** GC-FPD  
**Units of Detection:** ppm

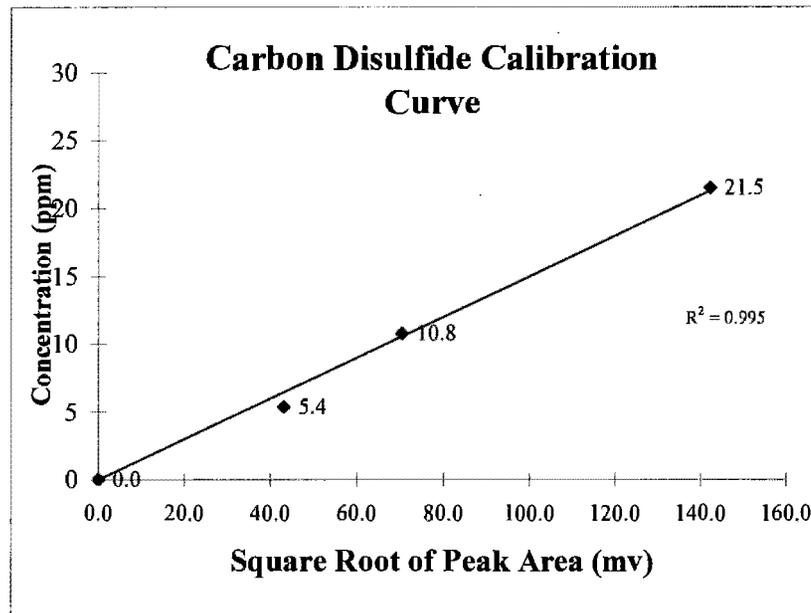
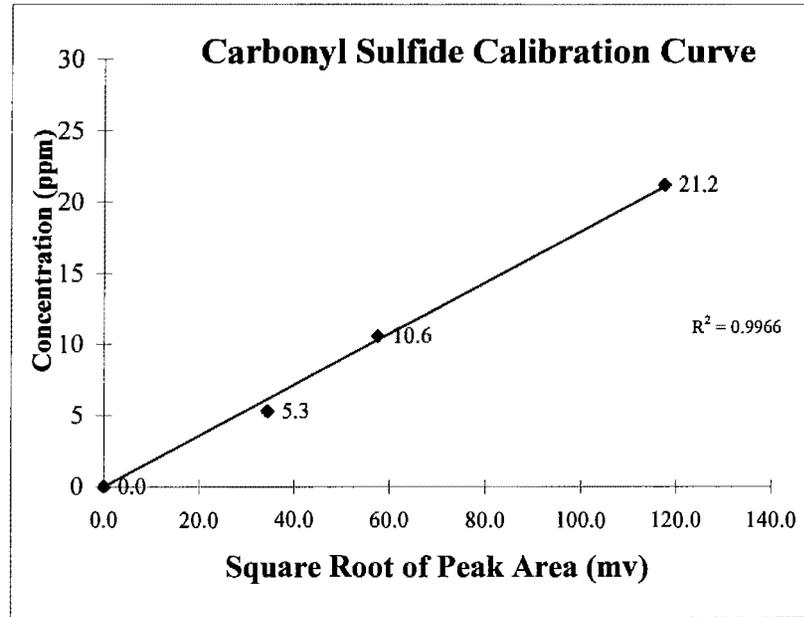
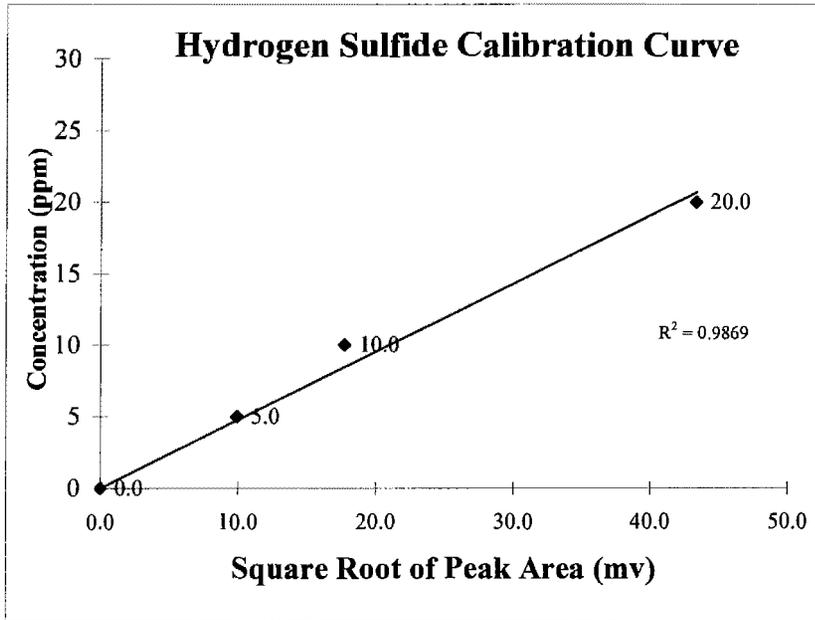
#### Calibration Standards

#### Statistical Analysis Summary

Standard #	Standard Peak Area (mv)	Square Root Peak Area (mv)	Standard Concentration (ppm)	
1	0.0	0.0	0.0	$\Sigma xy$ : 4052.299
2	1,862.3	43.2	5.4	$\Sigma x$ : 255.8
3	4,963.4	70.5	10.8	$\Sigma y$ : 37.67282
4	20,228.0	142.2	21.5	$\Sigma x^2$ : 27054
				$\Sigma(x)^2$ : 65450
				N: 4
				m: 0.153659
				b: -0.40953

**Calibration Curves**

August 6, 2008



Client: Diamond Shamrock Refining Company, L.P. (A Valero Company)  
 Location: Sunray, Texas  
 Source: SRU No.1 Incinerator  
 Date: 8/6/2008



Description	File Name	H <sub>2</sub> S Area (mv)	Square Root H <sub>2</sub> S Area	COS Area (mv)	Square Root COS Area	CS <sub>2</sub> Area (mv)	Square Root CS <sub>2</sub> Area
<b>5</b>	8	99.13	9.96	1175.91	34.29	1850.11	43.01
	9	93.47	9.67	1179.16	34.34	1790.41	42.31
	10	103.66	10.18	1182.81	34.39	1946.52	44.12
<b>Average</b>		<b>98.75</b>	<b>9.94</b>	<b>1179.29</b>	<b>34.34</b>	<b>1862.35</b>	<b>43.15</b>
<b>10</b>	5	317.65	17.82	3332.04	57.72	4928.58	70.20
	6	312.50	17.68	3303.59	57.48	4974.48	70.53
	7	317.19	17.81	3311.68	57.55	4987.15	70.62
<b>Average</b>		<b>315.78</b>	<b>17.77</b>	<b>3315.77</b>	<b>57.58</b>	<b>4963.40</b>	<b>70.45</b>
<b>20</b>	2	1924.91	43.87	14076.01	118.64	20323.31	142.56
	3	1883.92	43.40	13553.16	116.42	20375.19	142.74
	4	1832.91	42.81	13852.24	117.70	19985.64	141.37
<b>Average</b>		<b>1880.58</b>	<b>43.36</b>	<b>13827.14</b>	<b>117.59</b>	<b>20228.05</b>	<b>142.22</b>
<b>0 ppm</b>							
	11	0.00	0.00	0.00	0.00	0.00	0.00
	12	0.00	0.00	0.00	0.00	0.00	0.00
	13	0.00	0.00	0.00	0.00	0.00	0.00
<b>Average</b>		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Collected: 08/06/08

Method: USEPA M-15

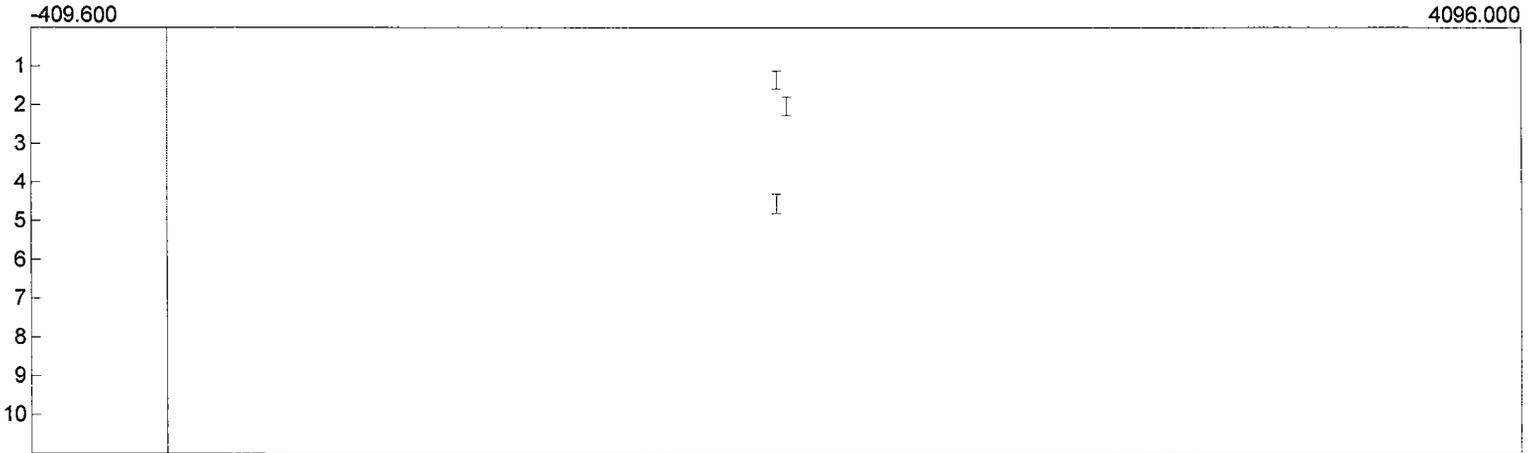
Description: FPD

Column: RT-Sulfur

Data file: 8-6valprecal11.chr ()

Sample: 0 ppm precal

Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Collected: 08/06/08

Method: USEPA M-15

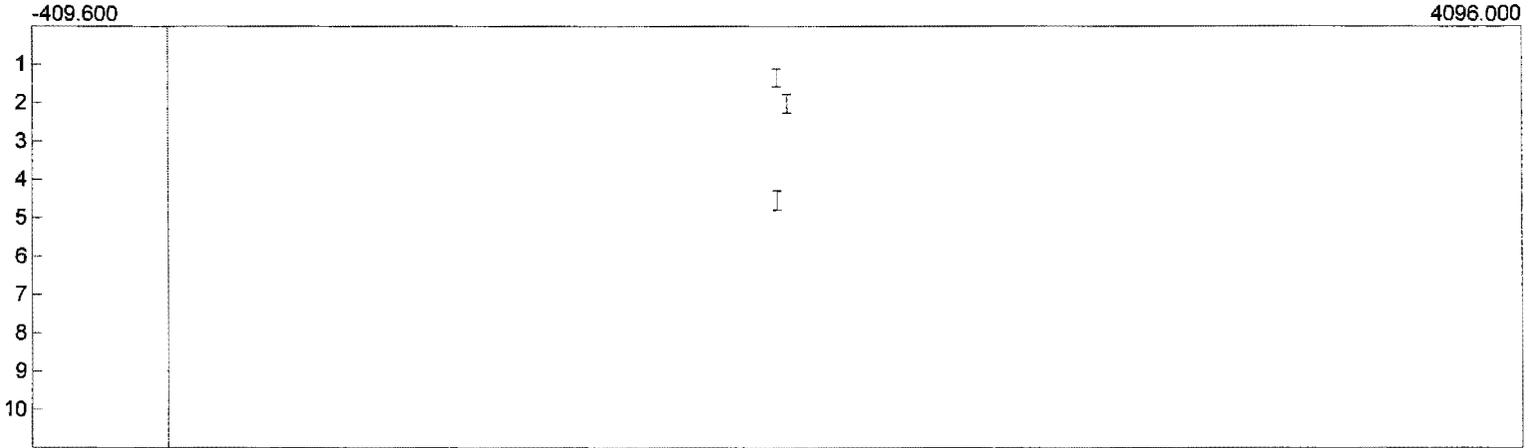
Description: FPD

Column: RT-Sulfur

Data file: 8-6valprecal12.CHR ()

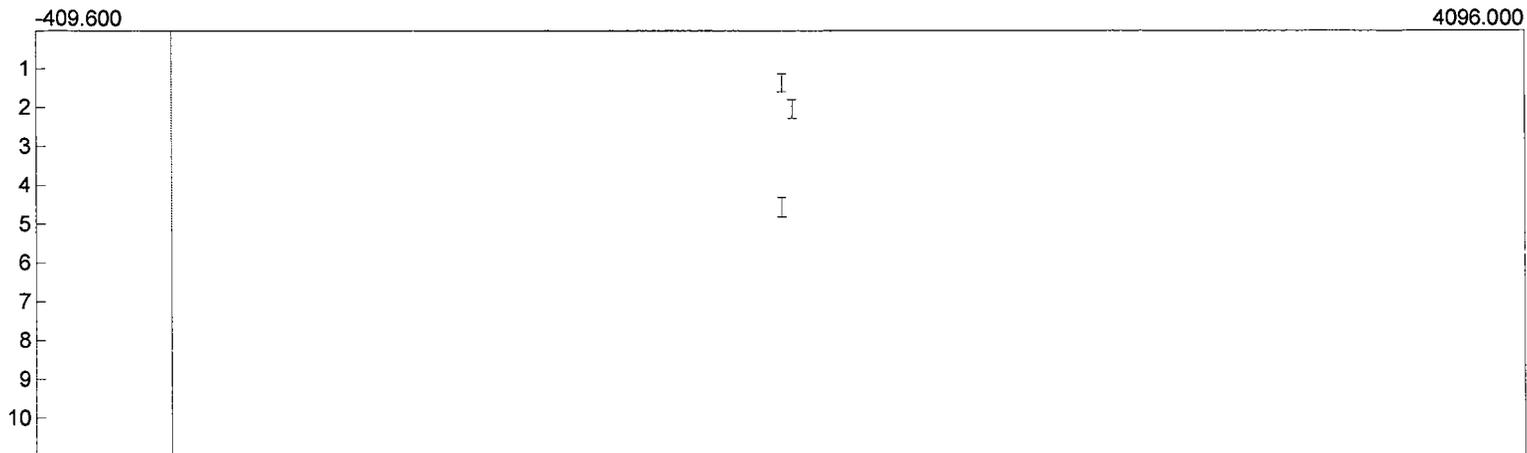
Sample: 0 ppm precal

Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Collected: 08/06/08  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valprecal13.CHR ()  
Sample: 0 ppm precal  
Operator: SY



Component	Area
	0.0000

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Collected: 08/06/08

Method: USEPA M-15

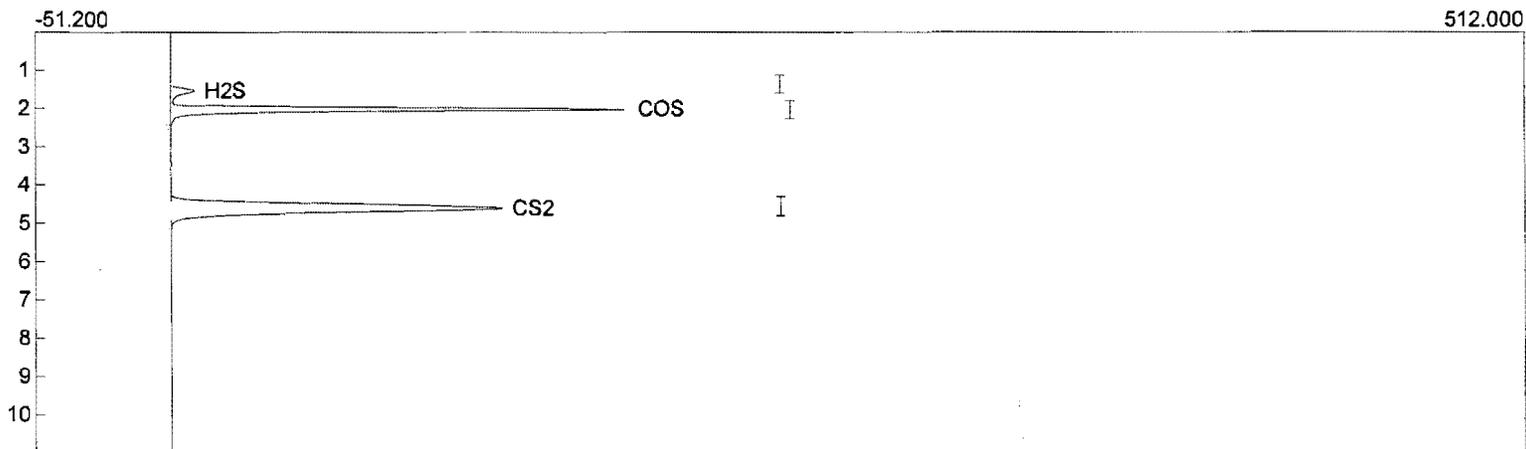
Description: FPD

Column: RT-Sulfur

Data file: 8-6valprecal08.chr ()

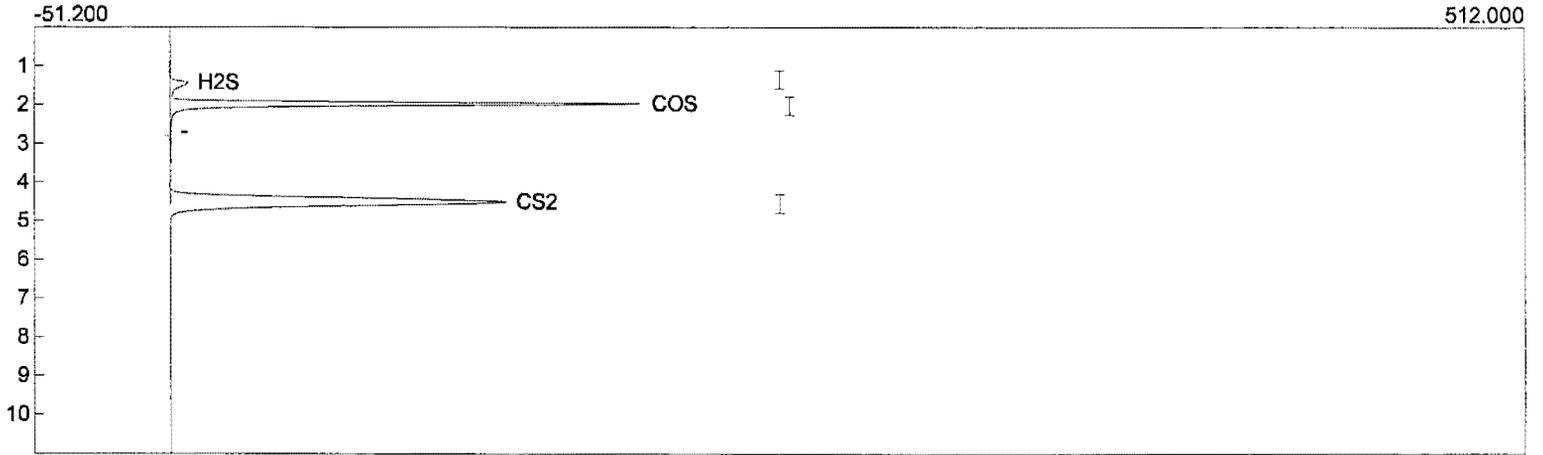
Sample: 5 ppm precal

Operator: SY



Component	Area
H2S	99.1340
COS	1175.9130
CS2	1850.1060
	3125.1530

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Collected: 08/06/08  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valprecal09.CHR ()  
Sample: 5 ppm precal  
Operator: SY



Component	Area
H2S	93.4715
COS	1179.1640
CS2	1790.4090
	3063.0445

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Collected: 08/06/08

Method: USEPA M-15

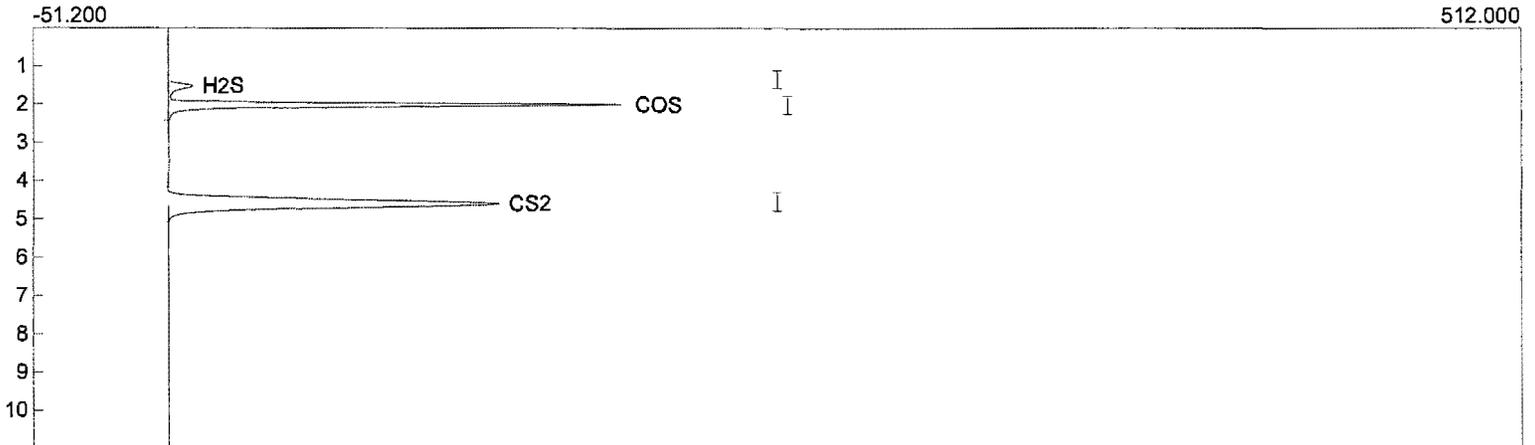
Description: FPD

Column: RT-Sulfur

Data file: 8-6valprecal10.CHR ()

Sample: 5 ppm precal

Operator: SY



Component	Area
H2S	103.6560
COS	1182.8135
CS2	1846.5240
	3132.9935

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Collected: 8/6/8

Method: USEPA M-15

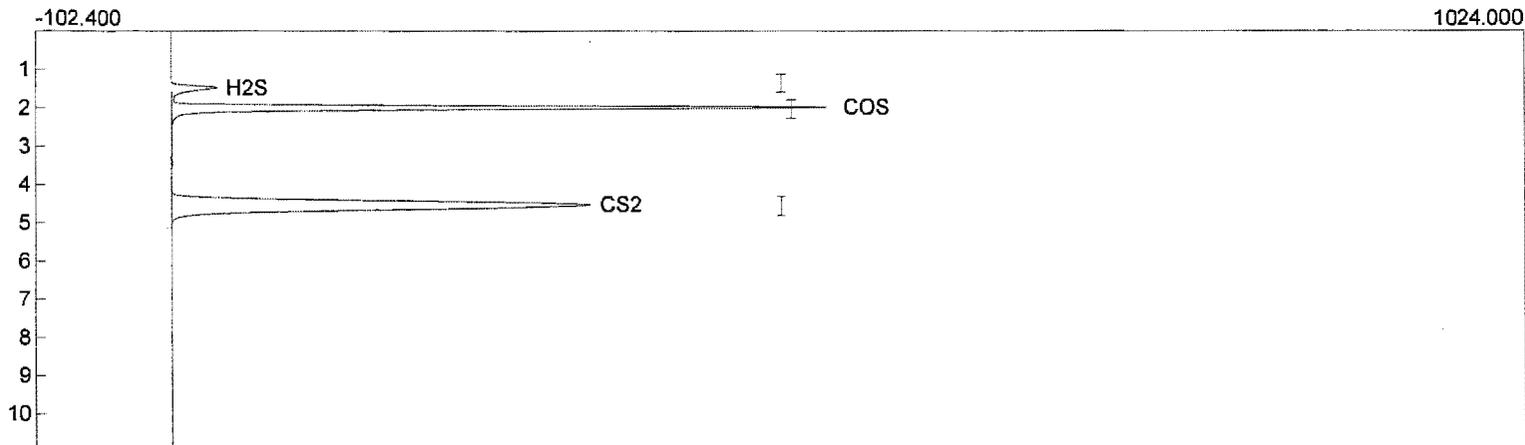
Description: FPD

Column: RT-Sulfur

Data file: 8-6valprecal05.CHR ()

Sample: 10 ppm precal

Operator: SY



Component	Area
H2S	317.6450
COS	3332.0440
CS2	4928.5770
	8578.2660

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Collected: 08/06/08

Method: USEPA M-15

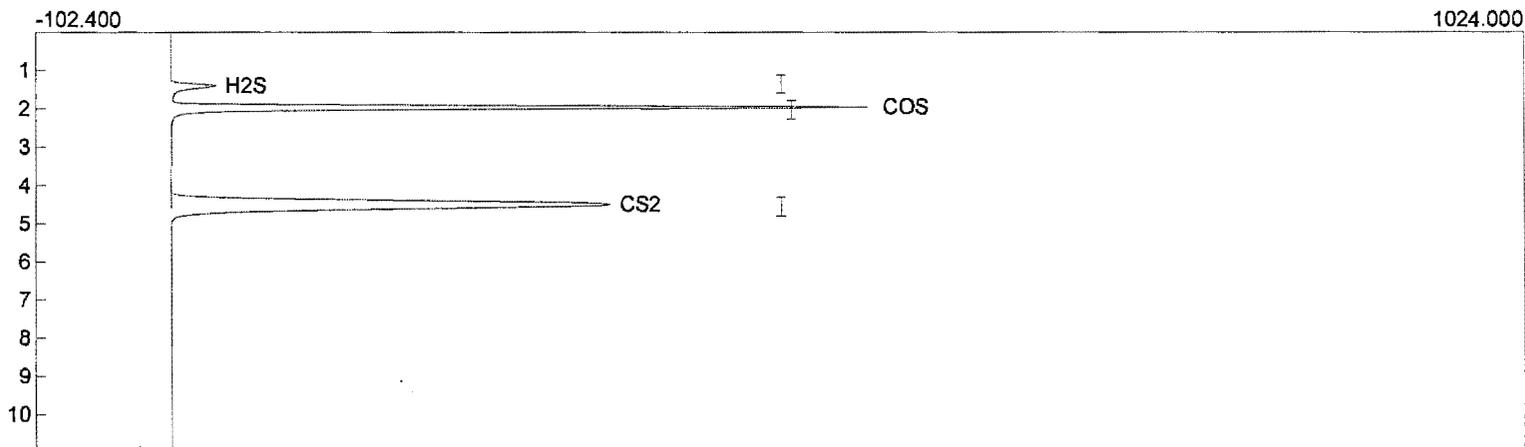
Description: FPD

Column: RT-Sulfur

Data file: 8-6valprecal06.CHR ()

Sample: 10 ppm precal

Operator: SY



Component	Area
H2S	312.4950
COS	3303.5940
CS2	4974.4820
	8590.5710

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Collected: 08/06/08

Method: USEPA M-15

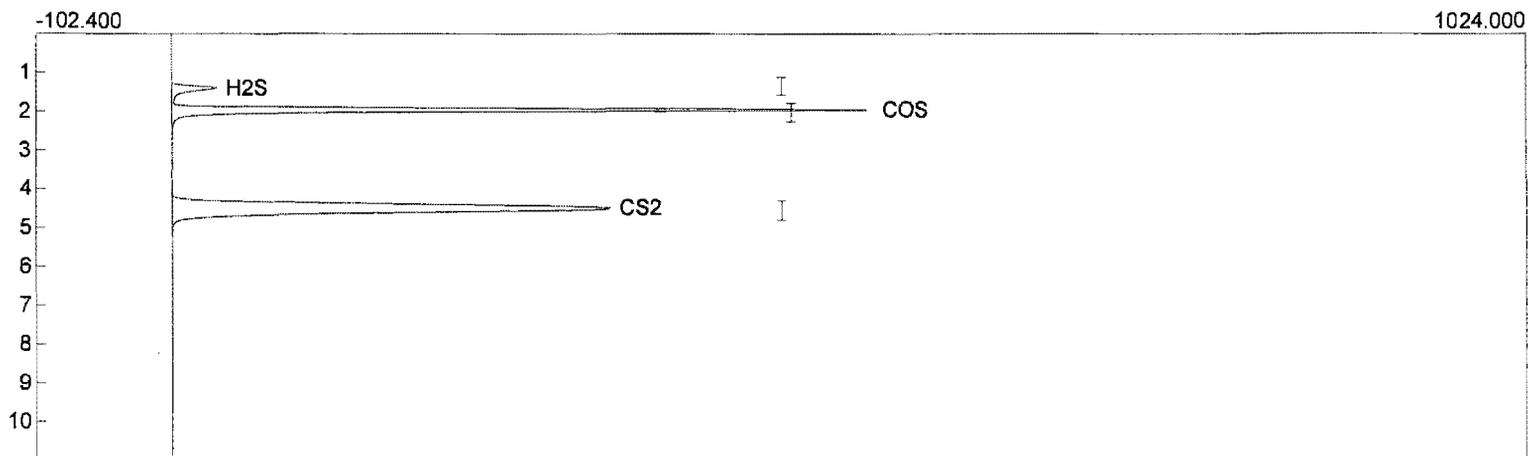
Description: FPD

Column: RT-Sulfur

Data file: 8-6valprecal07.CHR ()

Sample: 10 ppm precal

Operator: SY



Component	Area
H2S	317.1900
COS	3311.6800
CS2	4987.1450
	8616.0150

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Collected: 8/6/8

Method: USEPA M-15

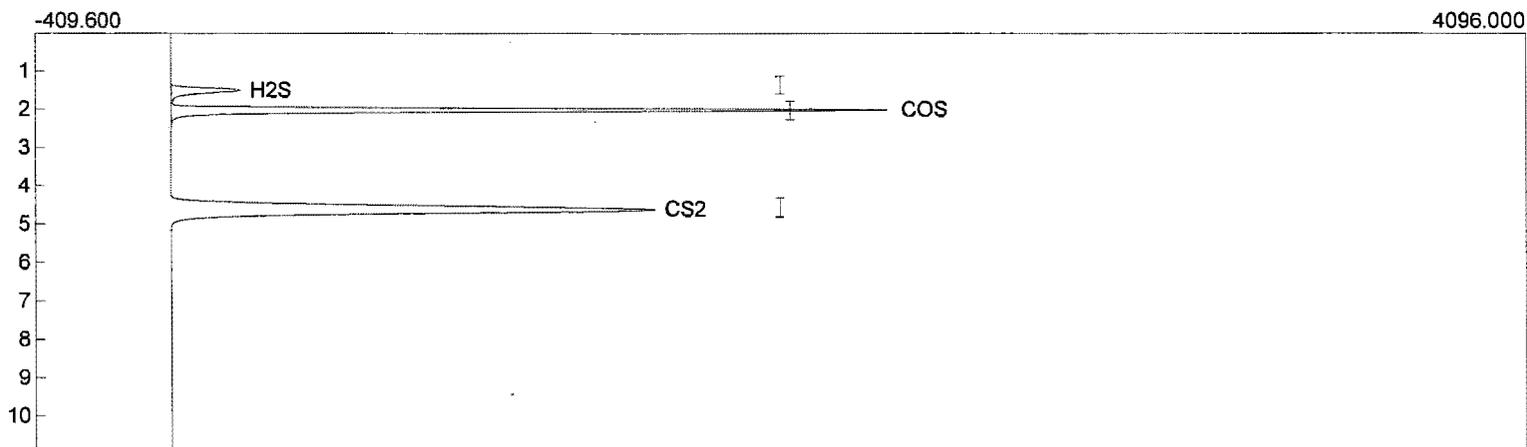
Description: FPD

Column: RT-Sulfur

Data file: 8-6valprecal02.CHR ()

Sample: 20 ppm precal

Operator: SY



Component	Area
H2S	1924.9050
COS	14076.0120
CS2	20323.3140
	36324.2310

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Collected: 8/6/8

Method: USEPA M-15

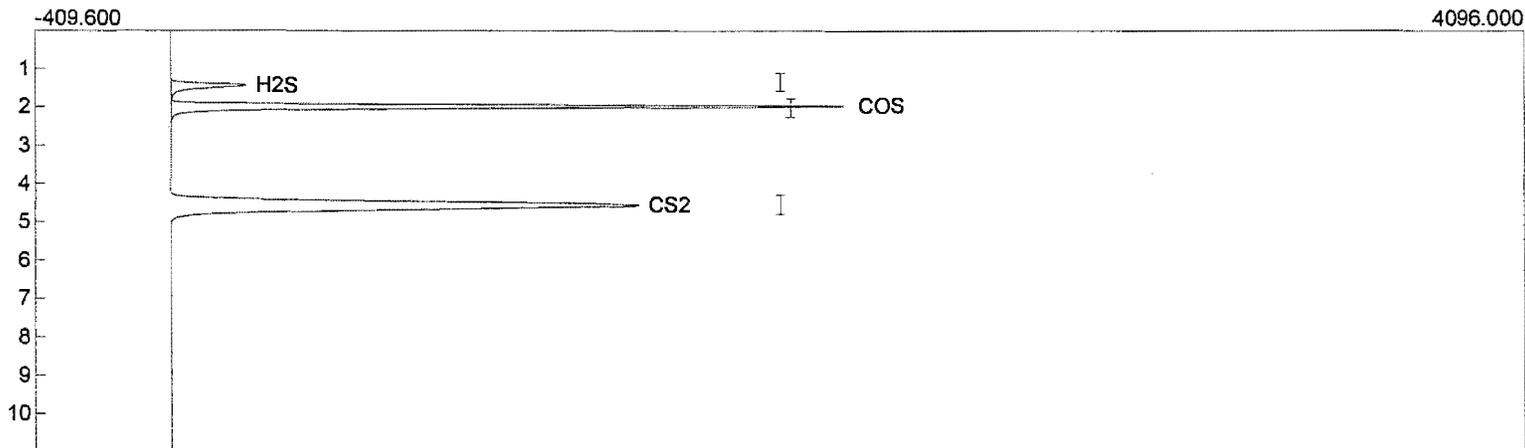
Description: FPD

Column: RT-Sulfur

Data file: 8-6valprecal03.CHR ( )

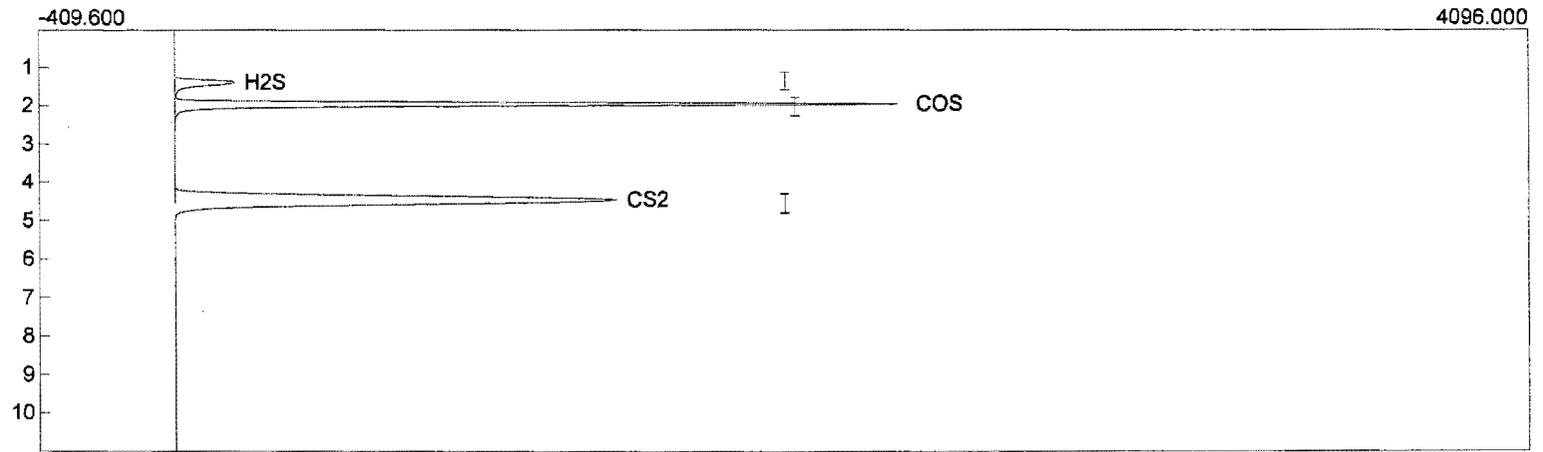
Sample: 20 ppm precal

Operator: SY



Component	Area
H2S	1883.9180
COS	13553.1620
CS2	20375.1900
	35812.2700

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Collected: 8/6/8  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valprecal04.CHR ()  
Sample: 20 ppm precal  
Operator: SY



Component	Area
H2S	1832.9100
COS	13852.2400
CS2	19985.6360
	35670.7860



Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Collected: 08/06/08

Method: USEPA M-15

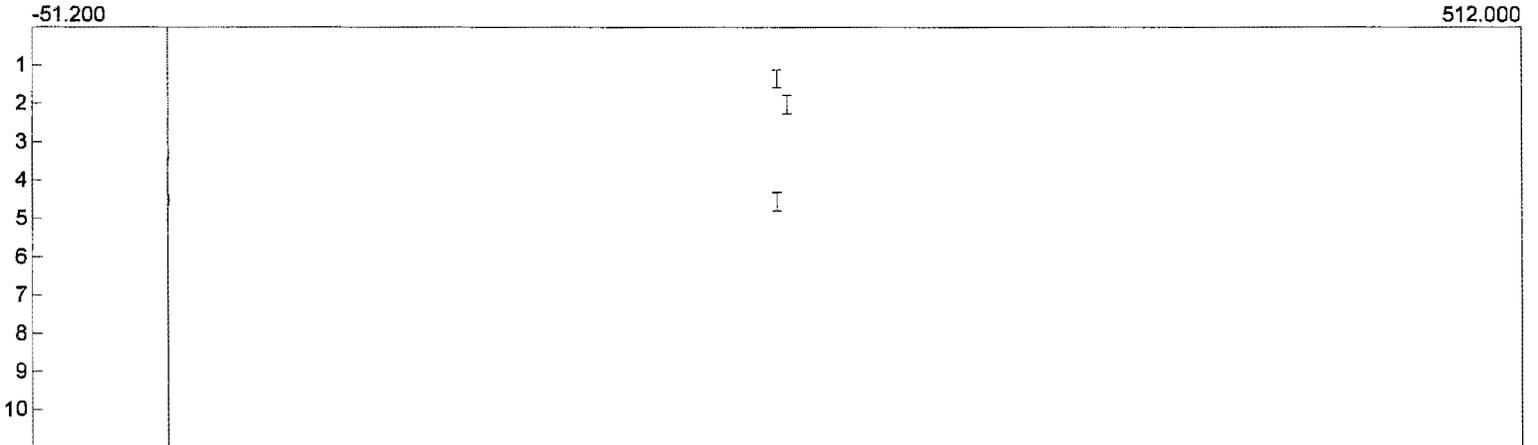
Description: FPD

Column: RT-Sulfur

Data file: 8-6valpost01.CHR ()

Sample: 0 ppm post

Operator: SY



Component

Area

0.0000

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Collected: 08/06/08

Method: USEPA M-15

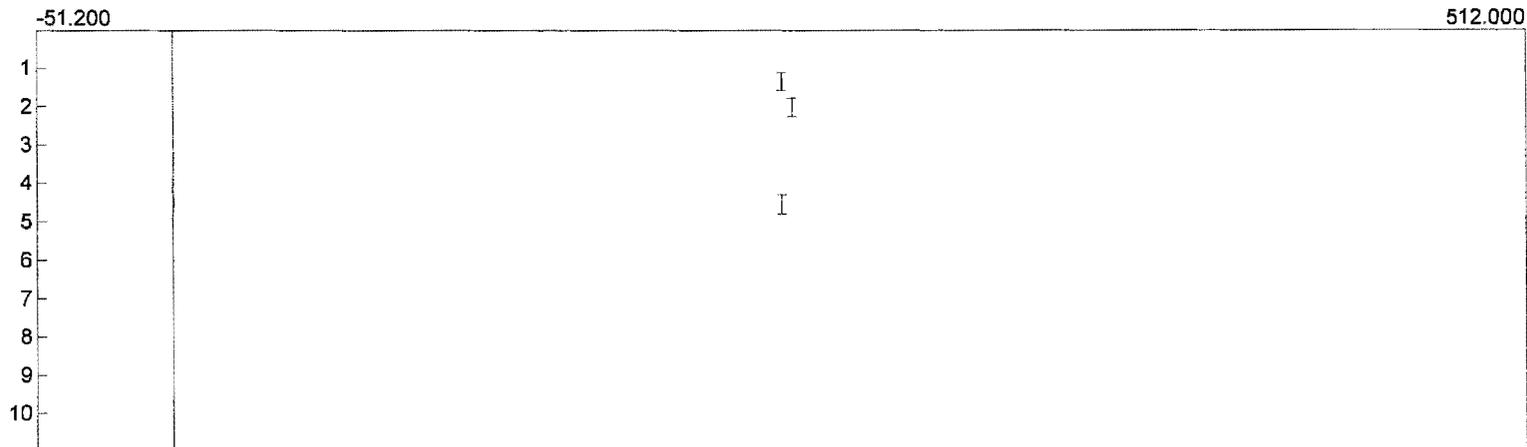
Description: FPD

Column: RT-Sulfur

Data file: 8-6valpost02.CHR ()

Sample: 0 ppm post

Operator: SY



Component

Area

0.0000

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Collected: 08/06/08

Method: USEPA M-15

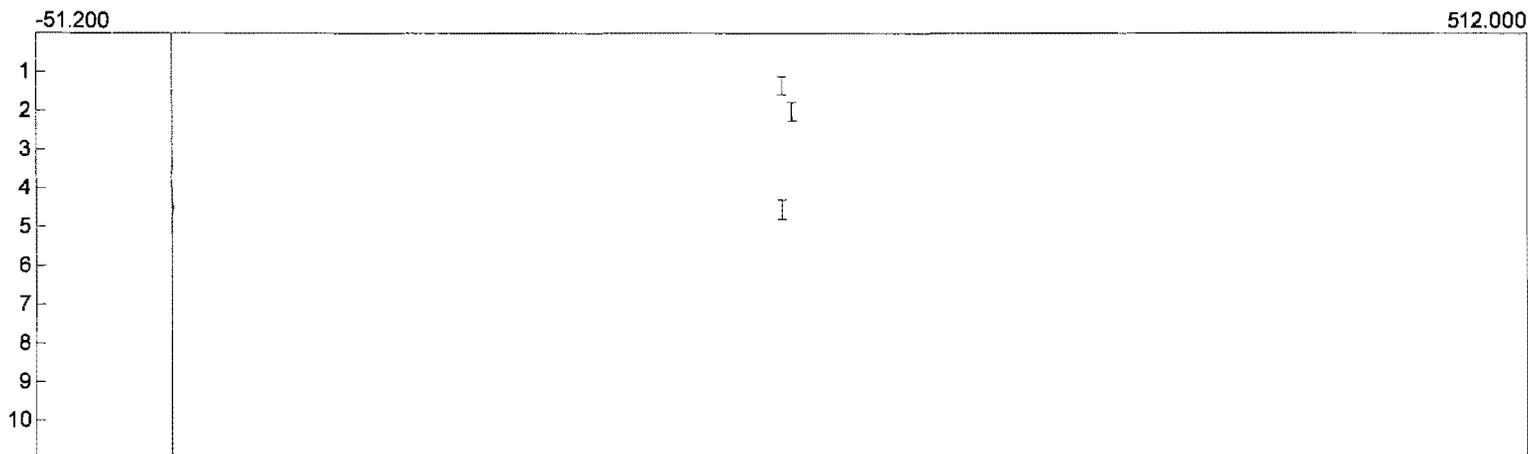
Description: FPD

Column: RT-Sulfur

Data file: 8-6valpost03.CHR ()

Sample: 0 ppm post

Operator: SY



Component

Area

0.0000

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Collected: 08/06/08

Method: USEPA M-15

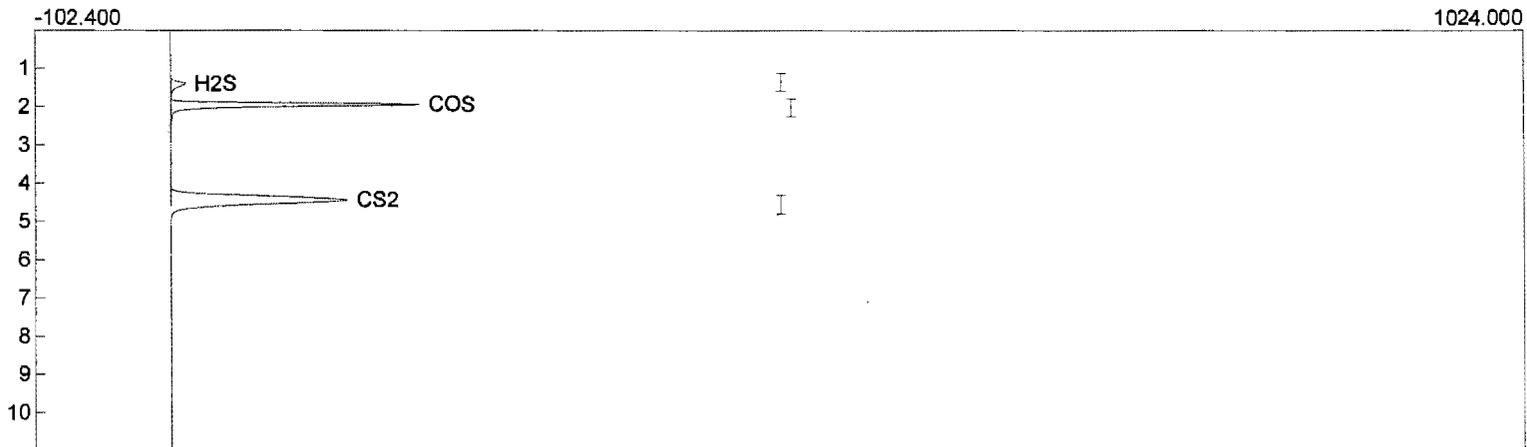
Description: FPD

Column: RT-Sulfur

Data file: 8-6valpost11.CHR ()

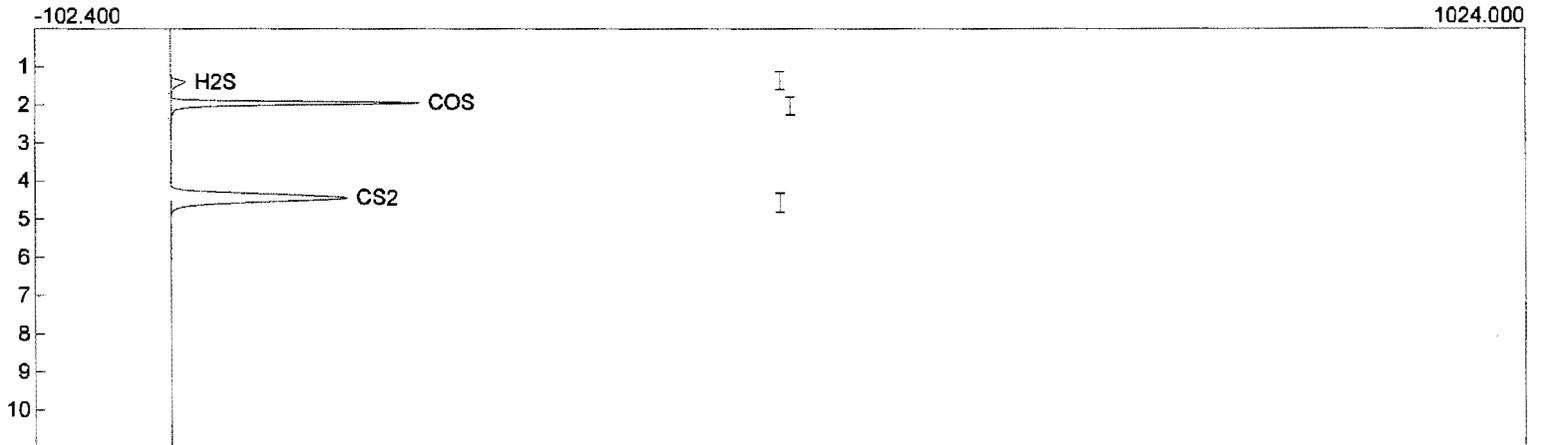
Sample: 5 ppm post

Operator: SY



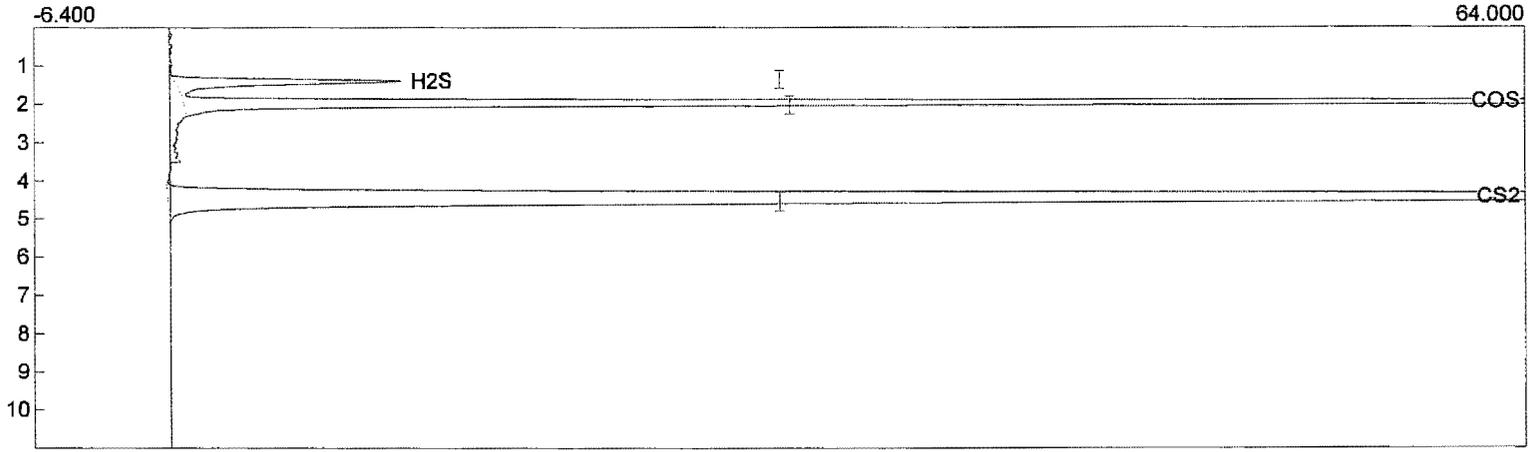
Component	Area
H2S	103.1180
COS	1210.5940
CS2	1930.6180
	3244.3300

Lab name: ARI Environmental, Inc.  
Client: Valero  
Client ID: SRU 1  
Collected: 08/06/08  
Method: USEPA M-15  
Description: FPD  
Column: RT-Sulfur  
Data file: 8-6valpost12.CHR ()  
Sample: 5 ppm post  
Operator: SY



Component	Area
H2S	96.9195
COS	1205.7435
CS2	1916.1850
	3218.8480

Lab name: ARI Environmental, Inc.  
 Client: Valero  
 Client ID: SRU 1  
 Collected: 08/06/08  
 Method: USEPA M-15  
 Description: FPD  
 Column: RT-Sulfur  
 Data file: 8-6valpost13.CHR ()  
 Sample: 5 ppm post  
 Operator: SY



Component	Area
H2S	103.6670
COS	1205.4630
CS2	1931.1680
	3240.2980

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Collected: 08/06/08

Method: USEPA M-15

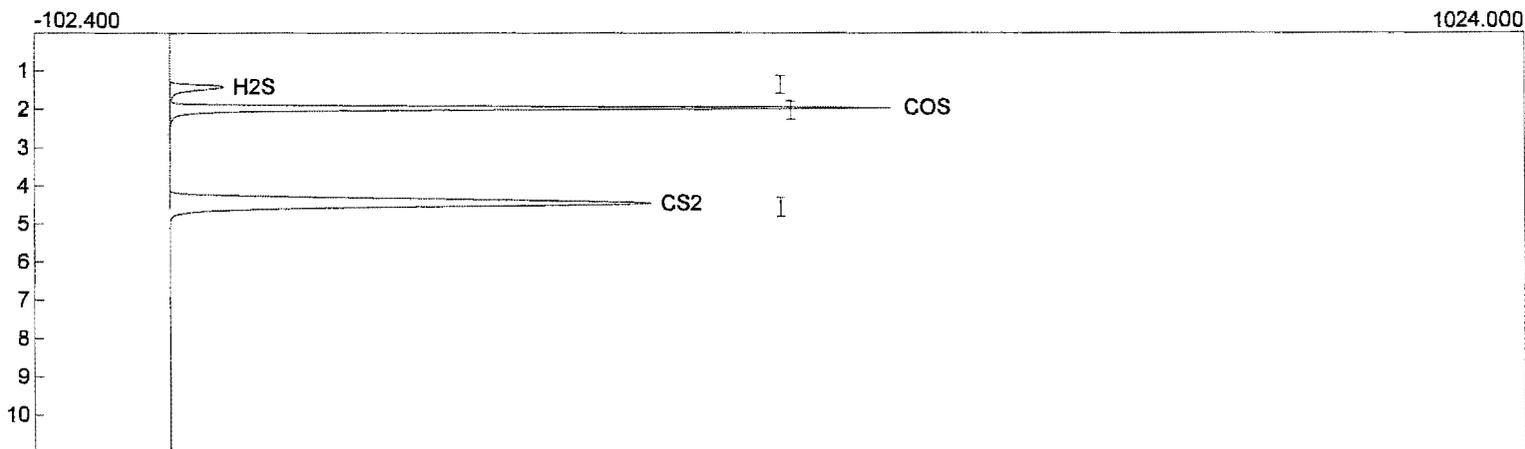
Description: FPD

Column: RT-Sulfur

Data file: 8-6valpost08.CHR ()

Sample: 10 ppm post

Operator: SY



Component	Area
H2S	370.7600
COS	3395.6740
CS2	5138.0750
	8904.5090

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Collected: 08/06/08

Method: USEPA M-15

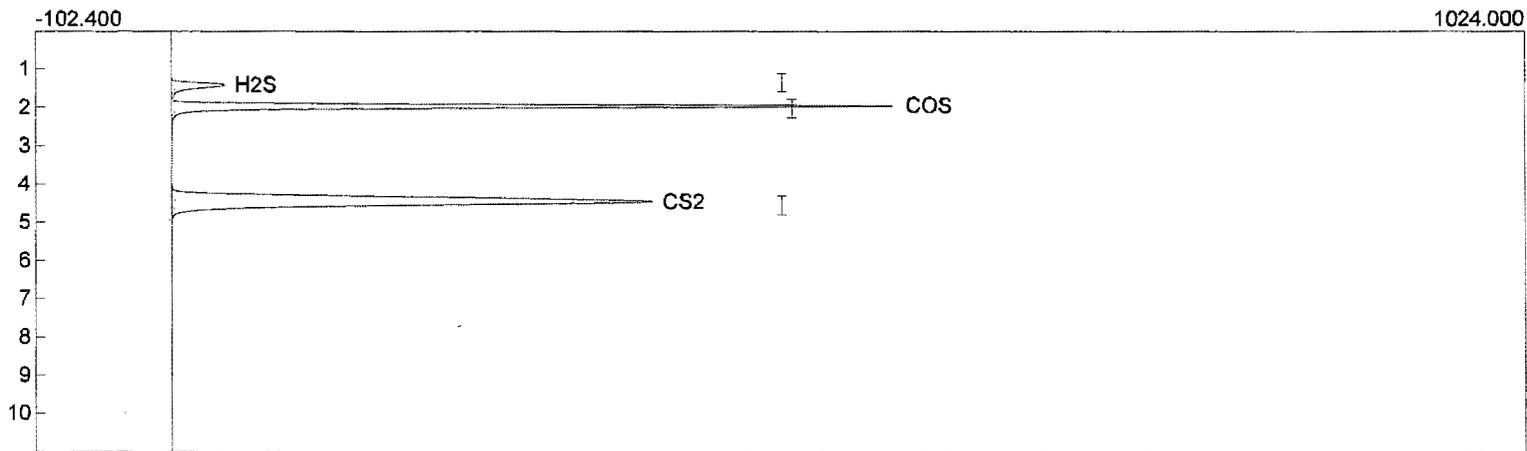
Description: FPD

Column: RT-Sulfur

Data file: 8-6valpost09.CHR ()

Sample: 10 ppm post

Operator: SY



Component	Area
H2S	346.2705
COS	3352.3130
CS2	5046.7090
	8745.2925

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Collected: 08/06/08

Method: USEPA M-15

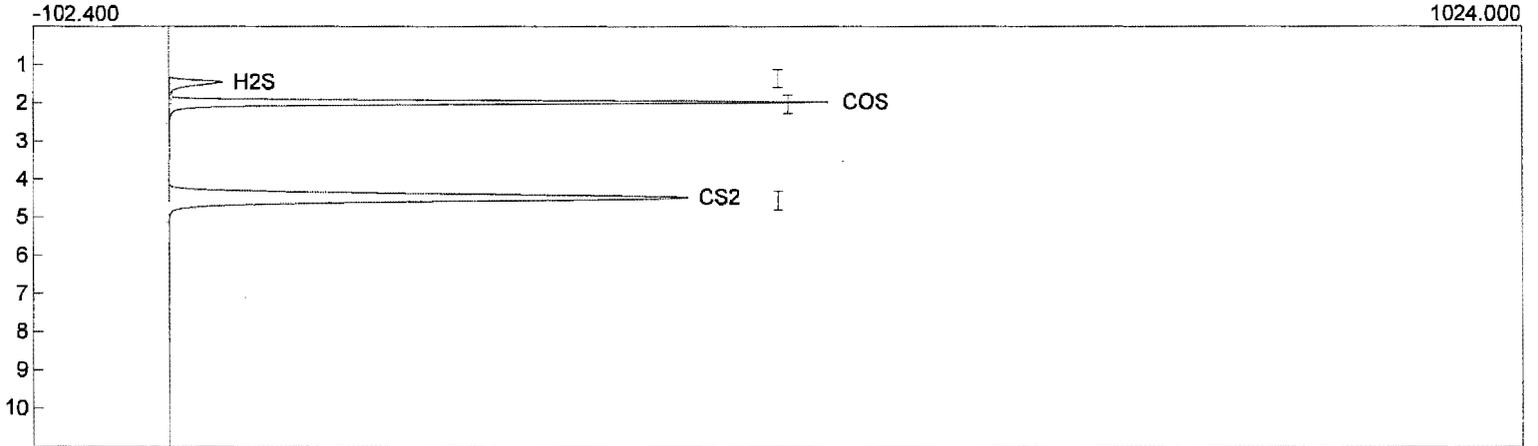
Description: FPD

Column: RT-Sulfur

Data file: 8-6valpost10.CHR ()

Sample: 10 ppm post

Operator: SY



Component	Area
H2S	368.2820
COS	3326.6570
CS2	5437.1980
	9132.1370

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Collected: 08/06/08

Method: USEPA M-15

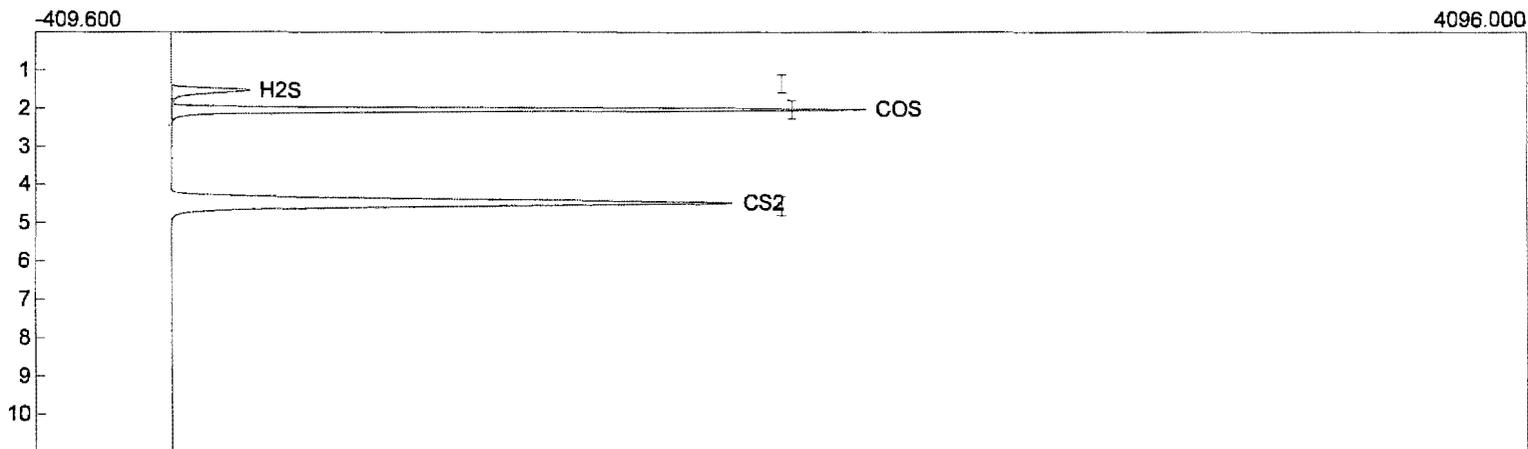
Description: FPD

Column: RT-Sulfur

Data file: 8-6valpost04.CHR ()

Sample: 20 ppm post

Operator: SY



Component	Area
H2S	2033.6460
COS	13917.3090
CS2	22050.4150
	38001.3700

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Collected: 08/06/08

Method: USEPA M-15

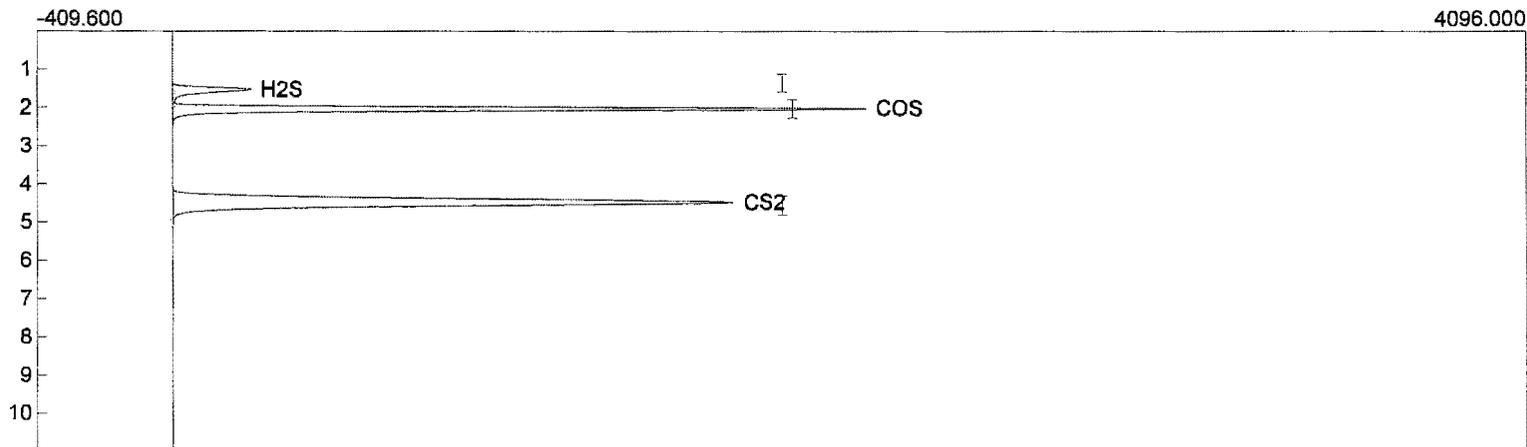
Description: FPD

Column: RT-Sulfur

Data file: 8-6valpost05.CHR ()

Sample: 20 ppm post

Operator: SY



Component	Area
H2S	2032.5410
COS	13891.1960
CS2	21970.1490
	37893.8860

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Collected: 08/06/08

Method: USEPA M-15

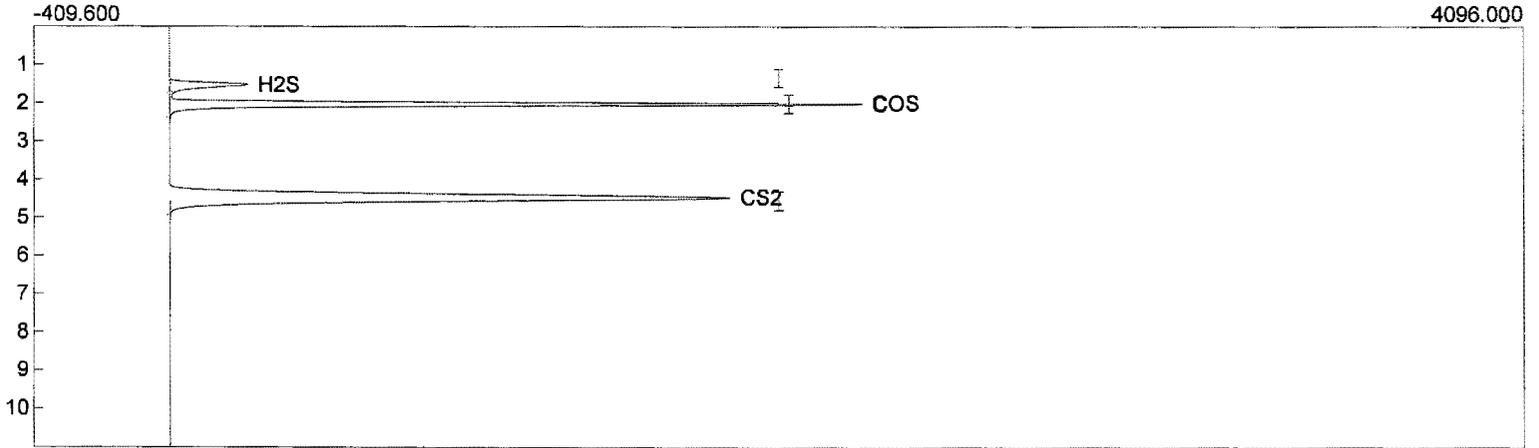
Description: FPD

Column: RT-Sulfur

Data file: 8-6valpost06.CHR ()

Sample: 20 ppm post

Operator: SY



Component	Area
H2S	2064.8150
COS	13894.2125
CS2	22033.3260
	37992.3535



## TRS REVERSE LINE LOSS DATA\*

**Client:** Diamond Shamrock Refining Company, L.P. (A Valero Company)  
**Location:** Sunray, Texas  
**Source:** SRU No.1 Incinerator  
**Date sampled:** 8/6/2008  
**Run Number:** 1-3  
**Compound Analyzed:** TRS  
**Method:** USEPA Method 15  
**Instrument:** SRI-9300B  
**Detector:** GC-FPD  
**Units of Detection:** ppm

<b>Trial #1 Compound</b>	<b>Injected Concentration</b>	<b>Area Counts</b>	<b>Measured Concentration</b>	<b>% Loss (-) or % Gain (+)</b>
Carbonyl Sulfide	21.2	13,058.9	20.53	-3.2
Hydrogen Sulfide	20.0	1,997.7	21.08	5.4
Carbon Disulfide	21.5	18,430.7	20.45	-4.9

\* 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 5.4% for Hydrogen Sulfide.

Lab name: ARI Environmental, Inc.

Client: Valero

Client ID: SRU 1

Collected: 08/06/08

Method: USEPA M-15

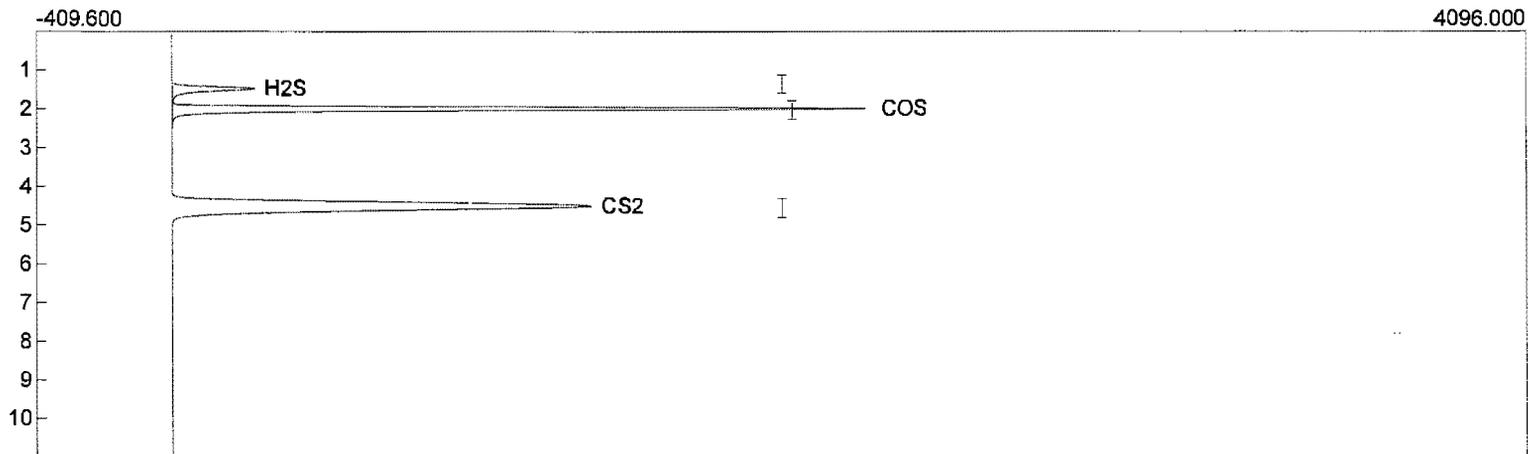
Description: FPD

Column: RT-Sulfur

Data file: 8-6valloss01.CHR ()

Sample: line loss

Operator: SY



Component	Area
H2S	1997.7190
COS	13058.8800
CS2	18430.6500
	33487.2490



Valero McKee Refinery: Sunray, TX  
SRU No. 1 Incinerator: EPN V-5  
Test Dates: 8/6 & 8/8/08

## APPENDIX D

## ARI Reference Method Monitoring Data

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**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 5:59:00	21.19	0.19	0.0	-1.0	
8/6/08 5:59:15	21.20	0.19	0.0	-1.0	
8/6/08 5:59:30	21.19	0.19	0.0	-1.4	
8/6/08 5:59:45	21.19	0.19	0.0	-1.0	
8/6/08 6:00:00	21.19	0.19	3.2	-1.0	
8/6/08 6:00:15	21.19	0.19	16.9	0.8	
8/6/08 6:00:30	19.83	0.19	1.5	2.6	
8/6/08 6:00:45	12.47	0.17	0.9	1.0	
8/6/08 6:01:00	9.47	0.14	0.7	-1.0	
8/6/08 6:01:15	9.08	0.14	0.6	-1.6	
8/6/08 6:01:30	8.94	0.14	0.5	-1.6	
8/6/08 6:01:45	9.02	0.14	0.4	-1.6	
8/6/08 6:02:00	9.18	0.14	0.4	-1.6	
8/6/08 6:02:15	9.25	0.14	0.3	-1.6	
8/6/08 6:02:30	9.28	0.14	0.3	-1.6	
8/6/08 6:02:45	9.29	0.14	0.3	-1.6	
8/6/08 6:03:00	9.08	0.14	0.3	-1.5	
8/6/08 6:03:15	9.03	0.14	0.3	-1.5	
8/6/08 6:03:30	9.04	0.14	0.2	-1.6	
8/6/08 6:03:45	9.04	0.14	0.2	-1.6	Calibration Error
8/6/08 6:04:00	9.04	0.13	0.2	-1.6	9.04 9.00% O <sub>2</sub>
8/6/08 6:04:15	9.04	0.13	0.2	-1.6	
8/6/08 6:04:30	9.05	0.13	0.2	-1.5	
8/6/08 6:04:45	9.05	0.13	0.2	-1.0	
8/6/08 6:05:00	8.89	0.13	0.2	-1.3	
8/6/08 6:05:15	6.54	0.13	0.2	-1.6	
8/6/08 6:05:30	4.84	0.13	0.2	-1.6	
8/6/08 6:05:45	4.62	0.13	0.2	-1.6	
8/6/08 6:06:00	4.61	0.13	0.2	-1.2	
8/6/08 6:06:15	4.60	0.13	0.1	-1.1	
8/6/08 6:06:30	4.60	0.13	0.1	-1.6	
8/6/08 6:06:45	4.60	0.13	0.1	-1.6	
8/6/08 6:07:00	4.60	0.13	0.2	-1.6	
8/6/08 6:07:15	4.60	0.13	0.1	-1.0	
8/6/08 6:07:30	4.60	0.13	0.1	-1.0	Calibration Error
8/6/08 6:07:45	4.60	0.13	0.1	-1.1	4.60 4.50% O <sub>2</sub>
8/6/08 6:08:00	4.60	0.13	0.1	-1.6	0.13 Zero CO <sub>2</sub>
8/6/08 6:08:15	4.60	0.13	0.1	-1.6	0.4 Zero NO <sub>x</sub>
8/6/08 6:08:30	4.60	0.13	1.1	-1.3	
8/6/08 6:08:45	7.14	0.69	0.3	-2.5	
8/6/08 6:09:00	8.82	7.33	0.2	-3.3	
8/6/08 6:09:15	3.80	12.39	0.1	-3.9	
8/6/08 6:09:30	0.59	13.78	0.1	-3.9	
8/6/08 6:09:45	0.00	15.43	0.1	-3.9	
8/6/08 6:10:00	-0.07	16.96	0.1	-3.9	
8/6/08 6:10:15	-0.08	17.54	0.1	-3.9	
8/6/08 6:10:30	-0.09	17.71	0.1	-3.9	
8/6/08 6:10:45	-0.09	17.77	0.1	-3.9	
8/6/08 6:11:00	-0.09	17.80	0.1	-4.0	Calibration Error
8/6/08 6:11:15	-0.10	17.80	0.1	-3.9	
8/6/08 6:11:30	-0.10	17.80	0.1	-3.9	17.81 18.00% CO <sub>2</sub>
8/6/08 6:11:45	-0.10	17.81	0.1	-3.9	
8/6/08 6:12:00	-0.10	17.82	0.1	-3.9	
8/6/08 6:12:15	-0.10	17.69	0.1	-3.9	
8/6/08 6:12:30	-0.09	14.15	0.0	-3.6	
8/6/08 6:12:45	-0.09	10.48	0.0	-3.2	
8/6/08 6:13:00	-0.08	9.46	0.1	-2.7	
8/6/08 6:13:15	-0.08	9.36	0.1	-2.7	
8/6/08 6:13:30	-0.08	9.35	0.1	-3.0	
8/6/08 6:13:45	-0.08	9.34	0.1	-3.3	
8/6/08 6:14:00	-0.09	9.34	0.1	-3.3	Calibration Error
8/6/08 6:14:15	-0.09	9.33	0.1	-2.7	
8/6/08 6:14:30	-0.09	9.33	0.1	-2.7	9.33 9.00% CO <sub>2</sub>
8/6/08 6:14:45	-0.09	9.33	0.1	-2.7	
8/6/08 6:15:00	-0.09	9.33	0.1	-2.8	
8/6/08 6:15:15	-0.08	9.30	0.1	-3.2	
8/6/08 6:15:30	1.49	8.27	0.9	41.7	
8/6/08 6:15:45	11.18	3.71	0.1	756.7	
8/6/08 6:16:00	8.18	1.69	0.1	1356.6	
8/6/08 6:16:15	1.57	0.51	0.1	1629.6	
8/6/08 6:16:30	0.11	0.21	0.1	1614.5	
8/6/08 6:16:45	-0.03	0.17	0.1	1598.8	
8/6/08 6:17:00	-0.06	0.17	0.1	1596.4	
8/6/08 6:17:15	-0.06	0.16	0.1	1596.4	
8/6/08 6:17:30	-0.06	0.16	0.1	1596.4	
8/6/08 6:17:45	-0.07	0.16	0.1	1596.7	
8/6/08 6:18:00	-0.06	0.16	0.0	1593.6	
8/6/08 6:18:15	-0.07	0.16	0.1	1592.6	
8/6/08 6:18:30	-0.07	0.16	0.0	1577.9	
8/6/08 6:18:45	-0.07	0.15	0.1	1257.4	
8/6/08 6:19:00	-0.07	0.15	0.0	972.3	
8/6/08 6:19:15	-0.07	0.15	0.1	808.7	
8/6/08 6:19:30	-0.07	0.15	0.0	795.0	
8/6/08 6:19:45	-0.07	0.15	0.0	793.1	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 6:20:00	-0.07	0.15	0.1	793.8	
8/6/08 6:20:15	-0.07	0.15	0.0	794.8	
8/6/08 6:20:30	-0.07	0.15	0.0	795.0	
8/6/08 6:20:45	-0.07	0.15	0.0	795.1	
8/6/08 6:21:00	-0.07	0.15	0.0	793.8	
8/6/08 6:21:15	-0.07	0.15	0.0	793.1	
8/6/08 6:21:30	-0.07	0.15	0.0	793.8	
8/6/08 6:21:45	-0.07	0.15	0.0	794.1	
8/6/08 6:22:00	-0.06	0.15	5.6	778.0	
8/6/08 6:22:15	0.72	0.16	25.7	490.8	
8/6/08 6:22:30	5.63	0.19	42.0	229.8	
8/6/08 6:22:45	2.74	0.20	79.3	41.8	
8/6/08 6:23:00	0.37	0.17	90.5	10.1	
8/6/08 6:23:15	0.02	0.15	87.6	1.1	
8/6/08 6:23:30	-0.05	0.15	92.5	0.2	
8/6/08 6:23:45	-0.06	0.15	96.1	-0.4	
8/6/08 6:24:00	-0.06	0.15	94.5	-0.4	
8/6/08 6:24:15	-0.07	0.14	93.8	-0.4	
8/6/08 6:24:30	-0.07	0.14	93.3	-0.4	
8/6/08 6:24:45	-0.07	0.14	93.0	-0.4	
8/6/08 6:25:00	-0.07	0.14	92.8	-0.4	
8/6/08 6:25:15	-0.07	0.14	92.6	-1.0	
8/6/08 6:25:30	-0.07	0.14	92.5	-1.0	
8/6/08 6:25:45	-0.07	0.14	92.4	-1.0	
8/6/08 6:26:00	-0.07	0.14	92.2	-1.0	
8/6/08 6:26:15	-0.07	0.14	92.1	-0.5	
8/6/08 6:26:30	-0.07	0.14	91.9	-1.0	
8/6/08 6:26:45	-0.07	0.14	91.7	-1.0	
8/6/08 6:27:00	-0.07	0.14	91.6	-1.0	
8/6/08 6:27:15	-0.07	0.14	91.4	-1.0	
8/6/08 6:27:30	-0.07	0.14	91.3	-1.0	
8/6/08 6:27:45	-0.07	0.14	91.1	-1.0	
8/6/08 6:28:00	-0.07	0.14	91.0	-1.0	
8/6/08 6:28:15	-0.07	0.14	90.9	-1.0	
8/6/08 6:28:30	-0.07	0.14	90.7	-1.0	
8/6/08 6:28:45	-0.07	0.14	90.6	-1.0	
8/6/08 6:29:00	-0.07	0.14	90.5	-1.0	
8/6/08 6:29:15	-0.07	0.14	90.4	-1.0	
8/6/08 6:29:30	-0.07	0.14	90.3	-1.0	
8/6/08 6:29:45	-0.07	0.14	90.2	-1.0	
8/6/08 6:30:00	-0.07	0.14	90.1	-1.0	
8/6/08 6:30:15	-0.07	0.14	90.1	-1.0	
8/6/08 6:30:30	-0.07	0.14	89.9	-1.0	
8/6/08 6:30:45	-0.07	0.14	89.8	-1.0	Calibration Error
8/6/08 6:31:00	-0.07	0.14	89.7	-1.0	
8/6/08 6:31:15	-0.07	0.14	89.7	-1.0	
8/6/08 6:31:30	-0.07	0.14	89.7	-1.0	89.7 90.0 ppm NO <sub>x</sub>
8/6/08 6:31:45	-0.07	0.14	89.6	-1.0	
8/6/08 6:32:00	-0.07	0.14	88.2	-1.0	
8/6/08 6:32:15	-0.07	0.14	46.4	-1.0	
8/6/08 6:32:30	-0.07	0.14	45.2	-1.0	Calibration Error
8/6/08 6:32:45	-0.08	0.14	45.2	-1.0	-0.07 Zero O <sub>2</sub>
8/6/08 6:33:00	-0.07	0.14	45.2	-1.0	
8/6/08 6:33:15	-0.07	0.14	45.2	-1.0	45.2 45.0 ppm NO <sub>x</sub>
8/6/08 6:33:30	-0.07	0.14	45.2	-1.0	
8/6/08 6:33:45	-0.07	0.14	31.3	-1.0	
8/6/08 6:34:00	2.30	0.15	38.1	-1.0	
8/6/08 6:34:15	13.07	0.15	42.1	-1.0	
8/6/08 6:34:30	19.13	0.14	43.1	-1.0	
8/6/08 6:34:45	20.16	0.14	43.6	-1.0	
8/6/08 6:35:00	20.27	0.14	43.9	-1.0	
8/6/08 6:35:15	20.29	0.13	44.1	-1.0	
8/6/08 6:35:30	20.29	0.13	44.3	-1.0	
8/6/08 6:35:45	20.30	0.13	44.4	-1.0	
8/6/08 6:36:00	20.30	0.13	44.5	-1.0	
8/6/08 6:36:15	20.30	0.13	44.6	-1.0	
8/6/08 6:36:30	20.30	0.13	44.7	-1.3	
8/6/08 6:36:45	20.31	0.13	44.8	-1.4	
8/6/08 6:37:00	20.31	0.13	44.9	-1.0	
8/6/08 6:37:15	20.31	0.13	45.0	-1.0	
8/6/08 6:37:30	20.32	0.13	45.0	-1.0	
8/6/08 6:37:45	20.32	0.13	45.1	-1.0	
8/6/08 6:38:00	20.32	0.13	45.1	-1.3	
8/6/08 6:38:15	20.32	0.13	45.2	-1.0	
8/6/08 6:38:30	20.32	0.13	45.2	-1.0	
8/6/08 6:38:45	20.32	0.13	45.2	-1.0	
8/6/08 6:39:00	20.33	0.13	45.3	-1.0	
8/6/08 6:39:15	20.33	0.13	45.3	-1.0	
8/6/08 6:39:30	20.33	0.13	45.3	-1.0	
8/6/08 6:39:45	20.33	0.13	45.3	-1.0	
8/6/08 6:40:00	20.33	0.13	45.4	-1.0	NO <sub>x</sub> Converter Check
8/6/08 6:40:15	20.33	0.14	45.4	-1.0	45.4 49.9 ppm NO <sub>x</sub> /Air
8/6/08 6:40:30	20.33	0.14	45.4	-1.0	cyt# AAL6878
8/6/08 6:40:45	20.33	0.14	45.4	-1.0	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 6:41:00	20.33	0.14	45.5	-1.0	91.01 % Conversion
8/6/08 6:41:15	20.33	0.14	44.5	-1.0	
8/6/08 6:41:30	20.34	0.14	11.1	1.4	
8/6/08 6:41:45	20.02	0.15	3.7	34.5	
8/6/08 6:42:00	19.40	0.21	1.4	64.8	
8/6/08 6:42:15	16.54	0.23	16.4	42.5	
8/6/08 6:42:30	9.21	1.58	20.6	14.9	
8/6/08 6:42:45	5.56	6.46	20.9	5.4	
8/6/08 6:43:00	4.13	9.23	20.3	4.6	
8/6/08 6:43:15	3.82	9.83	21.1	2.7	
8/6/08 6:43:30	3.78	9.91	20.8	0.8	
8/6/08 6:43:45	3.64	9.99	21.5	-0.4	
8/6/08 6:44:00	3.68	9.96	21.6	-0.7	
8/6/08 6:44:15	3.60	10.03	21.6	-1.0	
8/6/08 6:44:30	3.42	10.11	21.4	-1.0	
8/6/08 6:44:45	3.47	10.09	20.7	-0.9	
8/6/08 6:45:00	3.52	10.08	21.4	-0.4	
8/6/08 6:45:15	3.64	10.02	21.1	-0.4	
8/6/08 6:45:30	3.60	10.04	21.1	-0.4	
8/6/08 6:45:45	3.59	10.04	20.8	-0.3	
8/6/08 6:46:00	3.57	10.01	21.3	0.2	
8/6/08 6:46:15	3.88	9.67	18.9	-0.7	
8/6/08 6:46:30	9.97	5.58	8.9	-28.1	
8/6/08 6:46:45	17.20	1.90	4.8	-39.3	
8/6/08 6:47:00	19.77	0.67	1.2	-1.8	
8/6/08 6:47:15	20.01	0.54	1.0	-1.8	
8/6/08 6:47:30	20.17	0.45	26.2	-1.8	
8/6/08 6:47:45	20.25	0.39	15.8	1.7	
8/6/08 6:48:00	15.44	2.45	1.9	1.8	
8/6/08 6:48:15	4.25	7.21	1.3	-1.1	
8/6/08 6:48:30	0.55	8.93	1.0	-3.1	
8/6/08 6:48:45	0.00	9.14	0.9	-3.6	
8/6/08 6:49:00	-0.06	9.10	0.8	-3.7	
8/6/08 6:49:15	-0.07	9.06	0.7	-3.7	
8/6/08 6:49:30	-0.07	9.06	0.6	-3.6	
8/6/08 6:49:45	-0.07	9.10	0.6	-0.9	Calibration Error
8/6/08 6:50:00	-0.07	9.18	0.5	0.0	
8/6/08 6:50:15	-0.08	9.24	0.5	-0.2	
8/6/08 6:50:30	-0.08	9.27	0.4	-0.2	
8/6/08 6:50:45	-0.08	9.29	0.4	0.0	-0.1 Zero CO
8/6/08 6:51:00	-0.08	9.29	0.4	0.1	
8/6/08 6:51:15	-0.05	9.18	20.5	5.3	
8/6/08 6:51:30	3.43	5.67	1.1	46.0	
8/6/08 6:51:45	5.38	1.53	0.6	118.9	
8/6/08 6:52:00	1.21	0.37	0.4	165.1	
8/6/08 6:52:15	0.08	0.19	0.3	175.1	
8/6/08 6:52:30	-0.04	0.17	0.3	177.1	
8/6/08 6:52:45	-0.06	0.16	0.2	177.5	
8/6/08 6:53:00	-0.06	0.16	0.2	177.3	
8/6/08 6:53:15	-0.06	0.16	0.2	177.3	
8/6/08 6:53:30	-0.06	0.15	0.2	177.6	
8/6/08 6:53:45	-0.06	0.15	0.2	178.0	
8/6/08 6:54:00	-0.06	0.15	0.2	178.2	
8/6/08 6:54:15	-0.07	0.15	0.2	178.0	
8/6/08 6:54:30	-0.07	0.15	0.2	177.6	
8/6/08 6:54:45	-0.07	0.15	0.2	179.0	
8/6/08 6:55:00	-0.07	0.15	0.2	180.2	Calibration Error
8/6/08 6:55:15	-0.07	0.15	0.1	180.3	
8/6/08 6:55:30	-0.07	0.15	0.1	180.5	
8/6/08 6:55:45	-0.07	0.15	0.1	180.1	
8/6/08 6:56:00	-0.07	0.15	0.1	180.0	180.2 180.0 ppm CO
8/6/08 6:56:15	-0.07	0.15	0.1	158.4	
8/6/08 6:56:30	-0.07	0.15	0.1	118.9	
8/6/08 6:56:45	-0.07	0.15	0.1	97.1	
8/6/08 6:57:00	-0.07	0.15	0.1	91.6	
8/6/08 6:57:15	-0.07	0.15	0.1	90.9	
8/6/08 6:57:30	-0.07	0.15	0.1	90.9	Calibration Error
8/6/08 6:57:45	-0.07	0.14	0.1	91.1	
8/6/08 6:58:00	-0.07	0.14	0.1	91.2	
8/6/08 6:58:15	-0.07	0.14	0.1	91.3	
8/6/08 6:58:30	-0.07	0.14	0.1	91.3	91.2 90.0 ppm CO
8/6/08 6:58:45	-0.07	0.14	0.1	89.2	
8/6/08 6:59:00	-0.04	0.14	9.0	73.6	
8/6/08 6:59:15	4.52	0.55	14.8	47.9	
8/6/08 6:59:30	9.22	4.32	2.2	47.6	
8/6/08 6:59:45	6.63	5.02	0.6	39.4	
8/6/08 7:00:00	7.36	1.75	0.5	17.7	
8/6/08 7:00:15	8.70	0.38	0.4	6.1	
8/6/08 7:00:30	8.92	0.21	0.3	3.4	
8/6/08 7:00:45	8.94	0.18	0.3	3.1	
8/6/08 7:01:00	8.95	0.17	0.3	3.0	
8/6/08 7:01:15	8.97	0.16	0.3	2.9	
8/6/08 7:01:30	8.98	0.16	0.3	2.7	
8/6/08 7:01:45	8.99	0.16	0.2	2.5	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 7:02:00	8.99	0.15	0.2	2.5	
8/6/08 7:02:15	8.99	0.15	0.2	2.6	
8/6/08 7:02:30	8.99	0.15	0.2	2.6	
8/6/08 7:02:45	8.98	0.15	0.2	2.6	
8/6/08 7:03:00	8.98	0.15	0.2	2.4	
8/6/08 7:03:15	8.93	0.15	0.2	2.3	
8/6/08 7:03:30	7.05	0.15	0.2	2.4	
8/6/08 7:03:45	4.93	0.15	0.2	2.5	
8/6/08 7:04:00	4.61	0.15	0.2	2.5	
8/6/08 7:04:15	4.58	0.15	0.2	2.5	
8/6/08 7:04:30	4.58	0.15	0.2	2.4	
8/6/08 7:04:45	4.57	0.15	0.2	2.3	
8/6/08 7:05:00	4.57	0.15	0.1	2.4	
8/6/08 7:05:15	4.57	0.15	0.1	2.4	
8/6/08 7:05:30	4.57	0.15	0.1	2.5	System Bias
8/6/08 7:05:45	4.56	0.15	0.2	2.4	4.56 4.50% O <sub>2</sub>
8/6/08 7:06:00	4.56	0.15	0.1	2.2	0.15 Zero CO <sub>2</sub>
8/6/08 7:06:15	4.56	0.15	0.1	2.2	0.1 Zero NO <sub>x</sub>
8/6/08 7:06:30	4.56	0.15	0.1	2.3	
8/6/08 7:06:45	4.56	0.15	6.3	2.4	
8/6/08 7:07:00	4.55	0.30	18.5	3.4	
8/6/08 7:07:15	4.30	3.88	1.3	5.3	
8/6/08 7:07:30	4.00	6.19	0.2	4.3	
8/6/08 7:07:45	2.27	7.36	0.2	1.8	
8/6/08 7:08:00	0.45	8.80	0.1	0.6	
8/6/08 7:08:15	0.03	9.11	0.1	0.6	
8/6/08 7:08:30	-0.03	9.14	0.1	0.6	
8/6/08 7:08:45	-0.04	9.12	0.1	0.4	
8/6/08 7:09:00	-0.05	9.12	0.1	0.3	
8/6/08 7:09:15	-0.05	9.13	0.1	0.3	
8/6/08 7:09:30	-0.06	9.16	0.1	0.3	
8/6/08 7:09:45	-0.06	9.19	0.1	0.4	
8/6/08 7:10:00	-0.06	9.21	0.1	0.5	System Bias
8/6/08 7:10:15	-0.06	9.22	0.1	0.4	
8/6/08 7:10:30	-0.06	9.23	0.1	0.2	9.23 9.00% CO <sub>2</sub>
8/6/08 7:10:45	-0.06	9.23	0.1	0.3	
8/6/08 7:11:00	-0.08	9.23	0.1	0.3	0.3 Zero CO
8/6/08 7:11:15	-0.06	9.24	1.4	0.5	
8/6/08 7:11:30	-0.07	9.24	13.1	1.5	
8/6/08 7:11:45	0.27	9.34	0.8	9.8	
8/6/08 7:12:00	1.22	7.56	0.2	33.1	
8/6/08 7:12:15	0.52	3.13	0.2	63.0	
8/6/08 7:12:30	0.04	0.70	0.2	82.8	
8/6/08 7:12:45	-0.04	0.28	0.1	88.2	
8/6/08 7:13:00	-0.04	0.22	0.1	89.2	
8/6/08 7:13:15	-0.04	0.20	0.1	89.3	
8/6/08 7:13:30	-0.05	0.19	0.1	89.6	
8/6/08 7:13:45	-0.05	0.18	0.1	89.8	System Bias
8/6/08 7:14:00	-0.05	0.18	0.1	90.0	
8/6/08 7:14:15	-0.05	0.17	0.1	90.1	
8/6/08 7:14:30	-0.05	0.17	0.1	90.1	
8/6/08 7:14:45	-0.05	0.17	0.1	89.9	90.0 90.0 ppm CO
8/6/08 7:15:00	-0.05	0.17	0.1	89.9	
8/6/08 7:15:15	-0.05	0.17	13.6	84.5	
8/6/08 7:15:30	0.10	1.06	5.1	63.4	
8/6/08 7:15:45	1.21	4.32	0.2	42.9	
8/6/08 7:16:00	0.95	2.77	4.5	34.9	
8/6/08 7:16:15	0.14	0.60	25.3	30.9	
8/6/08 7:16:30	-0.03	0.25	30.5	18.2	
8/6/08 7:16:45	-0.04	0.20	32.8	7.6	
8/6/08 7:17:00	-0.04	0.17	34.8	3.9	
8/6/08 7:17:15	-0.05	0.16	35.0	3.2	
8/6/08 7:17:30	-0.05	0.16	34.9	2.8	
8/6/08 7:17:45	-0.05	0.16	35.0	2.5	
8/6/08 7:18:00	-0.05	0.16	35.3	2.5	
8/6/08 7:18:15	-0.05	0.15	36.0	2.6	
8/6/08 7:18:30	-0.05	0.15	43.5	2.6	
8/6/08 7:18:45	-0.05	0.15	46.4	2.6	
8/6/08 7:19:00	-0.05	0.15	45.7	2.4	
8/6/08 7:19:15	-0.05	0.15	45.4	2.2	
8/6/08 7:19:30	-0.05	0.15	45.2	2.2	
8/6/08 7:19:45	-0.05	0.15	45.1	2.3	System Bias
8/6/08 7:20:00	-0.05	0.15	45.0	2.4	-0.05 Zero O <sub>2</sub>
8/6/08 7:20:15	-0.05	0.14	45.0	2.4	
8/6/08 7:20:30	-0.05	0.14	44.9	2.2	44.9 45.0 ppm NO <sub>x</sub>
8/6/08 7:20:45	-0.05	0.14	44.8	2.1	
8/6/08 7:21:00	-0.05	0.15	43.4	2.2	
8/6/08 7:21:15	-0.05	0.15	26.3	2.5	
8/6/08 7:21:30	0.56	2.73	23.9	2.8	
8/6/08 7:21:45	2.38	7.19	23.6	3.2	
8/6/08 7:22:00	3.48	9.36	23.5	3.2	
8/6/08 7:22:15	3.79	9.80	23.5	3.3	
8/6/08 7:22:30	3.83	9.85	23.6	3.5	
8/6/08 7:22:45	3.85	9.86	23.1	3.8	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 7:23:00	3.84	9.86	23.6	4.2	
8/6/08 7:23:15	3.88	9.83	23.2	4.1	
8/6/08 7:23:30	3.84	9.88	23.2	3.9	
8/6/08 7:23:45	3.79	9.91	23.4	3.9	
8/6/08 7:24:00	3.84	9.90	23.2	4.0	
8/6/08 7:24:15	3.81	9.88	23.4	4.4	
8/6/08 7:24:30	3.87	9.84	23.4	4.8	
8/6/08 7:24:45	3.89	9.85	23.5	4.7	
8/6/08 7:25:00	3.89	9.85	23.6	4.5	
8/6/08 7:25:15	3.88	9.87	23.5	4.4	
8/6/08 7:25:30	3.84	9.88	23.4	4.4	
8/6/08 7:25:45	3.86	9.87	23.2	4.4	
8/6/08 7:26:00	3.80	9.91	22.9	4.6	
8/6/08 7:26:15	3.80	9.91	22.6	4.7	
8/6/08 7:26:30	3.83	9.89	22.5	4.7	
8/6/08 7:26:45	3.86	9.87	23.2	4.9	
8/6/08 7:27:00	3.88	9.86	23.4	4.9	
8/6/08 7:27:15	3.83	9.90	23.0	5.0	
8/6/08 7:27:30	3.79	9.91	23.2	5.2	
8/6/08 7:27:45	3.84	9.89	22.9	5.4	
8/6/08 7:28:00	3.87	9.87	23.2	5.3	
8/6/08 7:28:15	3.90	9.87	22.8	5.3	
8/6/08 7:28:30	3.81	9.91	23.1	5.3	
8/6/08 7:28:45	3.83	9.90	23.3	5.4	
8/6/08 7:29:00	3.81	9.91	23.0	5.2	
8/6/08 7:29:15	3.75	9.93	23.1	5.0	
8/6/08 7:29:30	3.77	9.91	23.1	5.0	
8/6/08 7:29:45	3.78	9.90	22.6	5.3	
8/6/08 7:30:00	3.80	9.88	23.0	5.8	
8/6/08 7:30:15	3.89	9.82	22.9	6.0	
8/6/08 7:30:30	3.86	9.85	23.0	5.9	
8/6/08 7:30:45	3.80	9.88	22.9	6.0	
8/6/08 7:31:00	3.79	9.88	23.0	6.1	
8/6/08 7:31:15	3.87	9.84	22.7	6.0	
8/6/08 7:31:30	3.79	9.89	22.3	6.2	
8/6/08 7:31:45	3.82	9.87	22.3	6.7	
8/6/08 7:32:00	3.90	9.84	22.7	7.0	
8/6/08 7:32:15	3.92	9.85	22.8	6.8	
8/6/08 7:32:30	3.84	9.90	22.8	6.3	
8/6/08 7:32:45	3.77	9.92	22.7	6.2	
8/6/08 7:33:00	3.77	9.89	22.7	6.4	
8/6/08 7:33:15	3.79	9.88	22.9	6.8	
8/6/08 7:33:30	3.85	9.88	22.8	6.7	
8/6/08 7:33:45	3.82	9.90	22.7	6.2	
8/6/08 7:34:00	3.75	9.93	22.3	6.2	
8/6/08 7:34:15	3.76	9.91	22.4	7.1	
8/6/08 7:34:30	3.89	9.83	22.4	7.5	
8/6/08 7:34:45	3.88	9.85	22.4	7.1	
8/6/08 7:35:00	3.79	9.89	22.6	7.0	
8/6/08 7:35:15	3.78	9.89	22.7	6.8	
8/6/08 7:35:30	3.77	9.91	22.6	6.9	
8/6/08 7:35:45	3.78	9.89	22.5	7.5	
8/6/08 7:36:00	3.87	9.87	22.6	7.5	
8/6/08 7:36:15	3.83	9.89	22.6	7.6	
8/6/08 7:36:30	3.83	9.89	22.5	8.0	
8/6/08 7:36:45	3.86	9.88	22.7	7.6	
8/6/08 7:37:00	3.88	9.87	22.7	7.0	
8/6/08 7:37:15	3.82	9.91	22.7	7.1	
8/6/08 7:37:30	3.82	9.90	22.6	7.7	
8/6/08 7:37:45	3.87	9.88	22.7	8.0	
8/6/08 7:38:00	3.88	9.87	22.7	8.0	
8/6/08 7:38:15	3.85	9.89	22.6	8.0	
8/6/08 7:38:30	3.88	9.88	22.6	8.2	
8/6/08 7:38:45	3.91	9.87	22.6	8.3	
8/6/08 7:39:00	3.88	9.87	22.6	8.2	
8/6/08 7:39:15	3.88	9.86	22.7	8.1	
8/6/08 7:39:30	3.90	9.85	22.5	8.0	
8/6/08 7:39:45	3.86	9.86	22.9	7.7	
8/6/08 7:40:00	3.90	9.84	22.7	7.5	
8/6/08 7:40:15	3.85	9.87	22.5	7.1	
8/6/08 7:40:30	3.78	9.91	22.6	7.2	
8/6/08 7:40:45	3.81	9.89	22.7	7.6	
8/6/08 7:41:00	3.84	9.88	22.6	7.9	
8/6/08 7:41:15	3.86	9.87	22.4	8.0	
8/6/08 7:41:30	3.88	9.85	22.7	8.1	
8/6/08 7:41:45	3.92	9.84	22.7	7.8	
8/6/08 7:42:00	3.85	9.88	22.7	7.4	
8/6/08 7:42:15	3.80	9.91	22.6	7.3	
8/6/08 7:42:30	3.80	9.92	22.6	7.2	
8/6/08 7:42:45	3.82	9.92	22.5	7.1	
8/6/08 7:43:00	3.80	9.93	22.3	7.3	
8/6/08 7:43:15	3.81	9.92	22.3	7.6	
8/6/08 7:43:30	3.82	9.91	22.3	7.8	
8/6/08 7:43:45	3.86	9.88	22.3	8.1	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 7:44:00	3.86	9.89	22.3	8.1	
8/6/08 7:44:15	3.85	9.89	22.1	8.1	
8/6/08 7:44:30	3.86	9.89	22.0	8.3	
8/6/08 7:44:45	3.88	9.89	22.1	8.5	
8/6/08 7:45:00	3.90	9.88	22.1	8.5	
8/6/08 7:45:15	3.89	9.89	22.4	8.4	
8/6/08 7:45:30	3.87	9.90	22.1	8.1	
8/6/08 7:45:45	3.89	9.90	22.2	8.0	
8/6/08 7:46:00	3.87	9.92	22.2	8.0	
8/6/08 7:46:15	3.84	9.92	21.9	8.1	
8/6/08 7:46:30	3.86	9.91	21.8	8.0	
8/6/08 7:46:45	4.01	9.83	21.9	8.1	
8/6/08 7:47:00	4.13	9.77	21.8	7.9	
8/6/08 7:47:15	4.15	9.76	21.8	7.6	
8/6/08 7:47:30	4.14	9.75	21.8	7.7	
8/6/08 7:47:45	4.10	9.74	21.9	7.6	
8/6/08 7:48:00	4.08	9.76	22.2	7.0	
8/6/08 7:48:15	4.05	9.81	22.1	6.4	
8/6/08 7:48:30	4.02	9.83	22.2	6.0	
8/6/08 7:48:45	4.03	9.80	22.5	5.9	
8/6/08 7:49:00	3.95	9.84	22.4	6.0	
8/6/08 7:49:15	3.80	9.92	22.6	6.0	
8/6/08 7:49:30	3.73	9.94	22.6	6.0	
8/6/08 7:49:45	3.69	9.98	22.5	5.9	
8/6/08 7:50:00	3.67	10.00	22.5	6.0	
8/6/08 7:50:15	3.77	9.96	22.6	5.9	
8/6/08 7:50:30	3.76	9.96	22.6	6.0	
8/6/08 7:50:45	3.74	9.95	22.6	6.1	
8/6/08 7:51:00	3.72	9.94	22.6	6.3	
8/6/08 7:51:15	3.74	9.93	22.6	6.5	
8/6/08 7:51:30	3.76	9.94	22.4	6.7	
8/6/08 7:51:45	3.78	9.93	22.6	6.5	
8/6/08 7:52:00	3.80	9.93	22.5	6.5	
8/6/08 7:52:15	3.76	9.95	22.6	6.5	
8/6/08 7:52:30	3.77	9.94	22.3	6.7	
8/6/08 7:52:45	3.79	9.93	22.3	6.9	
8/6/08 7:53:00	3.85	9.89	22.6	6.7	
8/6/08 7:53:15	3.87	9.90	22.6	6.4	
8/6/08 7:53:30	3.78	9.94	22.6	6.5	
8/6/08 7:53:45	3.80	9.93	22.6	6.9	
8/6/08 7:54:00	3.83	9.93	22.6	6.9	
8/6/08 7:54:15	3.80	9.95	22.6	6.7	
8/6/08 7:54:30	3.77	9.97	22.5	6.6	
8/6/08 7:54:45	3.77	9.94	22.6	6.5	
8/6/08 7:55:00	3.80	9.92	22.6	6.7	
8/6/08 7:55:15	3.80	9.91	22.6	6.8	
8/6/08 7:55:30	3.81	9.91	22.7	6.8	
8/6/08 7:55:45	3.81	9.90	22.5	6.5	
8/6/08 7:56:00	3.77	9.92	22.1	6.3	
8/6/08 7:56:15	3.75	9.91	22.2	6.5	
8/6/08 7:56:30	3.86	9.85	22.3	7.1	
8/6/08 7:56:45	3.90	9.84	22.0	7.1	
8/6/08 7:57:00	3.88	9.87	22.0	7.4	
8/6/08 7:57:15	3.88	9.86	22.2	7.7	
8/6/08 7:57:30	3.94	9.84	22.1	7.7	
8/6/08 7:57:45	3.96	9.84	22.3	7.3	
8/6/08 7:58:00	3.88	9.90	22.4	6.9	
8/6/08 7:58:15	3.84	9.92	22.7	6.7	
8/6/08 7:58:30	3.80	9.93	22.7	6.5	
8/6/08 7:58:45	3.76	9.94	22.6	6.4	
8/6/08 7:59:00	3.76	9.93	22.6	6.1	
8/6/08 7:59:15	3.75	9.93	22.6	6.2	
8/6/08 7:59:30	3.79	9.90	22.6	6.3	
8/6/08 7:59:45	3.78	9.91	22.5	6.4	
8/6/08 8:00:00	3.79	9.90	22.5	6.5	
8/6/08 8:00:15	3.78	9.90	22.5	6.6	
8/6/08 8:00:30	3.81	9.88	22.5	6.2	
8/6/08 8:00:45	3.78	9.90	22.4	6.3	
8/6/08 8:01:00	3.79	9.88	22.5	6.4	
8/6/08 8:01:15	3.84	9.88	22.4	6.2	
8/6/08 8:01:30	3.76	9.92	22.5	6.0	
8/6/08 8:01:45	3.76	9.92	22.4	6.1	
8/6/08 8:02:00	3.80	9.92	22.3	5.9	
8/6/08 8:02:15	3.79	9.93	22.4	5.9	
8/6/08 8:02:30	3.81	9.91	22.4	5.9	
8/6/08 8:02:45	3.80	9.92	22.5	5.8	
8/6/08 8:03:00	3.75	9.95	22.5	5.8	
8/6/08 8:03:15	3.74	9.92	22.5	5.9	
8/6/08 8:03:30	3.74	9.92	22.5	5.8	
8/6/08 8:03:45	3.76	9.93	22.4	5.8	
8/6/08 8:04:00	3.77	9.93	22.4	5.7	
8/6/08 8:04:15	3.77	9.92	22.3	5.9	
8/6/08 8:04:30	3.82	9.88	22.2	6.0	
8/6/08 8:04:45	3.84	9.88	21.9	6.0	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 8:05:00	3.88	9.85	22.2	6.2	
8/6/08 8:05:15	3.90	9.86	22.5	6.1	
8/6/08 8:05:30	3.84	9.93	22.4	5.9	
8/6/08 8:05:45	3.77	9.96	21.7	6.0	
8/6/08 8:06:00	3.76	9.96	22.2	6.2	
8/6/08 8:06:15	3.83	9.91	22.1	6.0	
8/6/08 8:06:30	3.80	9.92	21.9	6.2	
8/6/08 8:06:45	3.83	9.89	21.9	6.4	
8/6/08 8:07:00	3.88	9.88	22.0	6.5	
8/6/08 8:07:15	3.86	9.89	22.1	6.3	
8/6/08 8:07:30	3.83	9.92	22.1	5.9	
8/6/08 8:07:45	3.79	9.94	22.2	5.6	
8/6/08 8:08:00	3.76	9.95	21.8	5.5	
8/6/08 8:08:15	3.75	9.95	22.2	5.5	
8/6/08 8:08:30	3.76	9.96	22.3	5.7	
8/6/08 8:08:45	3.76	9.97	22.0	5.7	
8/6/08 8:09:00	3.76	9.97	21.8	5.6	
8/6/08 8:09:15	3.79	9.95	21.8	5.5	
8/6/08 8:09:30	3.80	9.95	21.9	5.6	
8/6/08 8:09:45	3.79	9.95	22.0	5.7	
8/6/08 8:10:00	3.81	9.94	22.0	5.6	
8/6/08 8:10:15	3.76	9.95	22.3	5.5	
8/6/08 8:10:30	3.74	9.96	21.7	5.2	
8/6/08 8:10:45	3.75	9.95	21.9	5.4	
8/6/08 8:11:00	3.85	9.89	22.0	5.6	
8/6/08 8:11:15	3.82	9.91	21.8	5.6	
8/6/08 8:11:30	3.78	9.93	21.4	5.7	
8/6/08 8:11:45	3.82	9.91	22.0	5.9	
8/6/08 8:12:00	3.86	9.90	22.1	5.6	
8/6/08 8:12:15	3.82	9.93	22.0	5.2	
8/6/08 8:12:30	3.72	9.97	21.5	5.3	
8/6/08 8:12:45	3.73	9.94	21.7	5.8	
8/6/08 8:13:00	3.88	9.87	22.0	5.9	
8/6/08 8:13:15	3.89	9.89	21.9	5.7	
8/6/08 8:13:30	3.82	9.93	21.6	5.2	
8/6/08 8:13:45	3.76	9.95	21.3	5.2	
8/6/08 8:14:00	3.83	9.90	21.8	5.8	
8/6/08 8:14:15	3.90	9.86	21.7	5.9	
8/6/08 8:14:30	3.85	9.88	21.7	5.7	
8/6/08 8:14:45	3.80	9.90	21.6	5.6	
8/6/08 8:15:00	3.83	9.88	21.7	5.2	
8/6/08 8:15:15	3.79	9.90	21.6	5.1	
8/6/08 8:15:30	3.75	9.92	21.7	5.1	
8/6/08 8:15:45	3.78	9.90	21.9	5.1	
8/6/08 8:16:00	3.73	9.93	21.9	4.9	
8/6/08 8:16:15	3.70	9.94	21.8	4.8	
8/6/08 8:16:30	3.72	9.92	21.8	4.5	
8/6/08 8:16:45	3.74	9.91	21.8	4.5	
8/6/08 8:17:00	3.71	9.93	21.5	4.8	
8/6/08 8:17:15	3.72	9.94	21.7	5.2	
8/6/08 8:17:30	3.80	9.90	21.4	5.4	
8/6/08 8:17:45	3.86	9.88	21.3	5.3	
8/6/08 8:18:00	3.83	9.90	21.1	5.1	
8/6/08 8:18:15	3.81	9.90	21.4	5.4	
8/6/08 8:18:30	3.83	9.89	21.6	5.7	
8/6/08 8:18:45	3.85	9.88	21.5	5.7	
8/6/08 8:19:00	3.85	9.88	21.6	5.9	
8/6/08 8:19:15	3.84	9.89	21.5	5.7	
8/6/08 8:19:30	3.80	9.91	21.4	5.5	
8/6/08 8:19:45	3.83	9.90	21.6	5.3	
8/6/08 8:20:00	3.79	9.93	21.6	5.3	
8/6/08 8:20:15	3.76	9.93	21.7	5.4	
8/6/08 8:20:30	3.78	9.90	21.5	5.6	
8/6/08 8:20:45	3.81	9.84	21.5	5.5	
8/6/08 8:21:00	3.85	9.81	21.5	5.3	
8/6/08 8:21:15	3.83	9.84	21.5	5.4	
8/6/08 8:21:30	3.81	9.86	21.5	5.4	
8/6/08 8:21:45	3.79	9.89	21.4	5.2	
8/6/08 8:22:00	3.77	9.89	21.3	5.2	
8/6/08 8:22:15	3.84	9.85	21.4	5.3	
8/6/08 8:22:30	3.89	9.84	21.4	5.5	
8/6/08 8:22:45	3.87	9.86	21.4	5.4	
8/6/08 8:23:00	3.82	9.90	21.4	5.6	
8/6/08 8:23:15	3.81	9.91	21.4	5.5	
8/6/08 8:23:30	3.79	9.93	21.3	5.1	
8/6/08 8:23:45	3.75	9.95	21.2	5.0	
8/6/08 8:24:00	3.78	9.93	21.3	5.4	
8/6/08 8:24:15	3.79	9.90	21.2	5.5	
8/6/08 8:24:30	3.79	9.88	21.2	5.5	
8/6/08 8:24:45	3.80	9.88	21.1	5.6	
8/6/08 8:25:00	3.83	9.89	21.2	5.7	
8/6/08 8:25:15	3.85	9.90	21.2	5.6	
8/6/08 8:25:30	3.83	9.90	20.9	5.5	
8/6/08 8:25:45	3.80	9.90	21.1	5.5	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 8:26:00	3.87	9.85	21.1	6.1	
8/6/08 8:26:15	3.90	9.83	20.8	6.7	
8/6/08 8:26:30	3.93	9.80	21.1	7.1	
8/6/08 8:26:45	4.00	9.77	21.0	6.9	
8/6/08 8:27:00	3.93	9.82	20.9	6.7	
8/6/08 8:27:15	3.89	9.84	21.1	7.0	
8/6/08 8:27:30	3.95	9.81	20.9	7.2	
8/6/08 8:27:45	3.96	9.82	20.9	7.1	
8/6/08 8:28:00	3.94	9.83	20.8	7.0	
8/6/08 8:28:15	3.94	9.84	20.4	7.5	
8/6/08 8:28:30	3.96	9.83	20.8	8.0	
8/6/08 8:28:45	3.99	9.82	21.1	8.1	
8/6/08 8:29:00	3.95	9.85	20.8	7.9	
8/6/08 8:29:15	3.90	9.87	21.1	7.8	
8/6/08 8:29:30	3.91	9.86	21.1	7.8	
8/6/08 8:29:45	3.90	9.89	21.3	7.8	
8/6/08 8:30:00	3.83	9.93	20.9	7.6	
8/6/08 8:30:15	3.83	9.93	21.1	7.5	
8/6/08 8:30:30	3.86	9.90	20.9	7.5	
8/6/08 8:30:45	3.90	9.87	20.8	7.6	
8/6/08 8:31:00	3.96	9.82	20.9	7.7	
8/6/08 8:31:15	3.97	9.81	20.9	7.6	
8/6/08 8:31:30	3.89	9.86	20.7	7.4	
8/6/08 8:31:45	3.83	9.91	21.0	7.2	
8/6/08 8:32:00	3.82	9.92	20.9	8.8	
8/6/08 8:32:15	3.83	9.91	20.8	6.3	
8/6/08 8:32:30	3.81	9.89	20.6	6.2	
8/6/08 8:32:45	3.83	9.87	20.7	6.5	
8/6/08 8:33:00	3.84	9.86	20.8	7.2	
8/6/08 8:33:15	3.87	9.85	20.7	7.3	
8/6/08 8:33:30	3.87	9.87	20.8	7.2	
8/6/08 8:33:45	3.83	9.89	20.7	6.9	
8/6/08 8:34:00	3.86	9.89	20.6	6.8	
8/6/08 8:34:15	3.86	9.90	20.6	6.6	
8/6/08 8:34:30	3.81	9.93	20.7	6.8	
8/6/08 8:34:45	3.79	9.95	20.6	7.1	
8/6/08 8:35:00	3.84	9.93	20.7	7.0	
8/6/08 8:35:15	3.86	9.93	20.6	6.8	
8/6/08 8:35:30	3.80	9.94	20.4	6.9	
8/6/08 8:35:45	3.83	9.91	20.5	6.8	
8/6/08 8:36:00	3.81	9.93	20.5	6.2	
8/6/08 8:36:15	3.76	9.96	20.5	6.0	
8/6/08 8:36:30	3.74	9.97	20.5	6.0	
8/6/08 8:36:45	3.77	9.95	20.4	5.9	
8/6/08 8:37:00	3.79	9.94	20.6	6.0	
8/6/08 8:37:15	3.81	9.92	20.5	6.4	
8/6/08 8:37:30	3.88	9.88	20.4	6.8	
8/6/08 8:37:45	3.89	9.88	20.4	7.1	
8/6/08 8:38:00	3.89	9.87	20.1	7.6	
8/6/08 8:38:15	3.93	9.85	20.0	7.9	
8/6/08 8:38:30	3.94	9.85	20.4	8.2	
8/6/08 8:38:45	3.94	9.84	20.3	8.0	
8/6/08 8:39:00	3.94	9.84	20.3	8.0	
8/6/08 8:39:15	3.95	9.83	20.5	8.2	
8/6/08 8:39:30	3.97	9.82	20.3	8.2	
8/6/08 8:39:45	3.93	9.85	20.2	8.1	
8/6/08 8:40:00	3.92	9.86	20.2	7.8	
8/6/08 8:40:15	3.92	9.88	20.2	7.6	
8/6/08 8:40:30	3.90	9.89	19.9	7.4	
8/6/08 8:40:45	3.91	9.90	19.8	7.2	
8/6/08 8:41:00	3.91	9.90	20.1	6.9	
8/6/08 8:41:15	3.90	9.91	20.3	6.6	
8/6/08 8:41:30	3.90	9.90	20.2	6.6	
8/6/08 8:41:45	3.91	9.88	20.2	6.7	
8/6/08 8:42:00	3.90	9.89	20.4	6.5	
8/6/08 8:42:15	3.88	9.90	20.3	6.1	
8/6/08 8:42:30	3.87	9.90	20.1	5.6	
8/6/08 8:42:45	3.86	9.90	20.2	5.6	
8/6/08 8:43:00	3.80	9.93	20.0	5.3	
8/6/08 8:43:15	3.76	9.94	20.3	5.2	
8/6/08 8:43:30	3.77	9.93	20.0	5.4	
8/6/08 8:43:45	3.79	9.92	19.8	5.3	
8/6/08 8:44:00	3.77	9.93	20.2	5.0	
8/6/08 8:44:15	3.79	9.92	20.3	5.0	
8/6/08 8:44:30	3.77	9.93	20.2	5.1	
8/6/08 8:44:45	3.78	9.93	20.3	5.0	
8/6/08 8:45:00	3.78	9.94	20.2	5.1	
8/6/08 8:45:15	3.77	9.92	20.2	5.0	
8/6/08 8:45:30	3.75	9.93	20.2	4.8	
8/6/08 8:45:45	3.75	9.96	20.2	4.9	
8/6/08 8:46:00	3.78	9.95	20.2	5.1	
8/6/08 8:46:15	3.80	9.95	20.1	5.1	
8/6/08 8:46:30	3.82	9.93	19.9	4.9	
8/6/08 8:46:45	3.81	9.91	20.1	4.6	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 8:47:00	3.77	9.91	20.1	4.8	
8/6/08 8:47:15	3.78	9.90	20.2	5.0	
8/6/08 8:47:30	3.79	9.93	20.2	5.0	
8/6/08 8:47:45	3.78	9.95	19.9	4.9	
8/6/08 8:48:00	3.82	9.93	20.1	4.5	
8/6/08 8:48:15	3.81	9.91	20.3	4.3	
8/6/08 8:48:30	3.78	9.90	20.2	4.4	
8/6/08 8:48:45	3.75	9.92	20.2	4.6	
8/6/08 8:49:00	3.74	9.93	20.2	4.9	
8/6/08 8:49:15	3.75	9.96	20.2	4.9	
8/6/08 8:49:30	3.75	9.98	20.1	4.6	
8/6/08 8:49:45	3.74	9.98	20.2	4.3	
8/6/08 8:50:00	3.74	9.97	20.1	4.5	
8/6/08 8:50:15	3.74	9.97	20.1	4.7	
8/6/08 8:50:30	3.73	9.99	20.0	4.8	
8/6/08 8:50:45	3.74	10.00	20.1	4.9	
8/6/08 8:51:00	3.74	10.00	20.2	4.7	
8/6/08 8:51:15	3.74	10.00	20.1	4.5	
8/6/08 8:51:30	3.74	9.98	19.9	5.0	
8/6/08 8:51:45	3.75	9.95	20.0	5.2	
8/6/08 8:52:00	3.73	9.98	19.9	5.3	
8/6/08 8:52:15	3.71	10.02	19.8	5.2	
8/6/08 8:52:30	3.71	10.04	19.8	4.9	
8/6/08 8:52:45	3.70	10.03	20.0	4.6	
8/6/08 8:53:00	3.72	9.99	20.0	4.8	
8/6/08 8:53:15	3.74	9.96	20.0	5.1	
8/6/08 8:53:30	3.75	9.95	20.1	5.4	
8/6/08 8:53:45	3.76	9.95	19.9	5.5	
8/6/08 8:54:00	3.79	9.94	19.7	5.5	
8/6/08 8:54:15	3.83	9.96	19.5	5.4	
8/6/08 8:54:30	3.80	10.00	19.5	5.3	
8/6/08 8:54:45	3.75	10.01	19.3	5.3	
8/6/08 8:55:00	3.73	10.00	19.4	5.5	
8/6/08 8:55:15	3.73	9.98	19.3	5.7	
8/6/08 8:55:30	3.75	9.97	19.5	5.6	
8/6/08 8:55:45	3.76	9.96	19.6	5.4	
8/6/08 8:56:00	3.75	9.97	19.6	5.3	
8/6/08 8:56:15	3.74	9.98	19.6	5.3	
8/6/08 8:56:30	3.72	10.00	19.6	5.4	
8/6/08 8:56:45	3.72	10.00	19.4	5.4	
8/6/08 8:57:00	3.73	9.99	19.4	5.4	
8/6/08 8:57:15	3.75	9.98	19.6	5.6	
8/6/08 8:57:30	3.77	9.98	19.6	5.5	
8/6/08 8:57:45	3.76	9.98	19.6	5.4	
8/6/08 8:58:00	3.73	10.00	19.4	5.5	
8/6/08 8:58:15	3.71	10.01	19.4	5.4	
8/6/08 8:58:30	3.71	10.02	19.5	5.4	
8/6/08 8:58:45	3.73	10.02	19.5	5.4	
8/6/08 8:59:00	3.74	10.04	19.7	5.4	
8/6/08 8:59:15	3.75	10.02	19.5	5.2	
8/6/08 8:59:30	3.72	10.01	19.4	5.5	
8/6/08 8:59:45	3.72	9.99	19.4	5.7	
8/6/08 9:00:00	3.76	9.97	19.4	5.5	
8/6/08 9:00:15	3.74	9.98	19.5	5.4	
8/6/08 9:00:30	3.73	9.98	19.3	5.9	
8/6/08 9:00:45	3.74	9.97	19.4	6.4	
8/6/08 9:01:00	3.76	9.97	19.3	6.4	
8/6/08 9:01:15	3.77	9.97	19.3	6.2	
8/6/08 9:01:30	3.76	9.98	19.4	6.0	
8/6/08 9:01:45	3.73	10.01	19.3	5.9	
8/6/08 9:02:00	3.72	10.01	19.4	6.1	
8/6/08 9:02:15	3.74	10.01	19.5	6.2	
8/6/08 9:02:30	3.74	10.00	19.4	6.2	
8/6/08 9:02:45	3.74	10.00	19.5	5.8	
8/6/08 9:03:00	3.74	10.00	19.7	5.8	
8/6/08 9:03:15	3.73	10.00	19.5	5.9	
8/6/08 9:03:30	3.69	10.02	19.4	6.1	
8/6/08 9:03:45	3.70	10.01	19.4	6.2	
8/6/08 9:04:00	3.71	10.01	19.5	5.8	
8/6/08 9:04:15	3.72	10.01	19.5	5.6	
8/6/08 9:04:30	3.70	10.02	19.4	5.8	
8/6/08 9:04:45	3.70	10.03	19.4	6.1	
8/6/08 9:05:00	3.73	10.03	19.5	6.5	
8/6/08 9:05:15	3.74	10.02	19.6	6.6	
8/6/08 9:05:30	3.76	10.01	19.6	6.2	
8/6/08 9:05:45	3.74	10.04	19.4	5.8	
8/6/08 9:06:00	3.68	10.08	19.5	5.9	
8/6/08 9:06:15	3.69	10.07	19.7	6.4	
8/6/08 9:06:30	3.74	10.03	19.6	7.1	
8/6/08 9:06:45	3.82	9.98	19.5	7.3	
8/6/08 9:07:00	3.80	9.96	19.5	7.1	
8/6/08 9:07:15	3.79	9.95	19.4	7.0	
8/6/08 9:07:30	3.78	9.96	19.5	6.9	
8/6/08 9:07:45	3.76	9.99	19.4	6.8	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 9:08:00	3.77	10.01	19.3	6.8	
8/6/08 9:08:15	3.77	10.00	18.8	6.7	
8/6/08 9:08:30	3.73	10.01	19.3	6.4	
8/6/08 9:08:45	3.72	10.00	19.5	6.4	
8/6/08 9:09:00	3.74	9.99	19.4	6.7	
8/6/08 9:09:15	3.76	9.99	19.3	6.9	
8/6/08 9:09:30	3.77	9.99	19.3	7.2	
8/6/08 9:09:45	3.79	9.99	19.2	7.2	
8/6/08 9:10:00	3.79	9.98	19.3	7.4	
8/6/08 9:10:15	3.81	9.97	19.2	7.5	
8/6/08 9:10:30	3.81	9.97	19.3	7.5	
8/6/08 9:10:45	3.80	9.98	19.2	7.4	
8/6/08 9:11:00	3.79	9.98	19.2	7.4	
8/6/08 9:11:15	3.80	9.97	19.2	7.5	
8/6/08 9:11:30	3.82	9.97	19.3	7.6	
8/6/08 9:11:45	3.81	9.99	19.4	7.4	
8/6/08 9:12:00	3.78	10.01	19.4	7.6	
8/6/08 9:12:15	3.78	10.00	19.3	7.6	
8/6/08 9:12:30	3.77	10.01	19.4	7.8	
8/6/08 9:12:45	3.76	10.02	19.4	7.6	
8/6/08 9:13:00	3.77	10.02	19.4	8.3	
8/6/08 9:13:15	3.80	10.01	19.5	9.2	
8/6/08 9:13:30	3.86	9.98	19.4	10.0	
8/6/08 9:13:45	3.87	9.97	19.5	10.0	
8/6/08 9:14:00	3.87	9.97	19.5	9.6	
8/6/08 9:14:15	3.87	9.97	19.6	9.2	
8/6/08 9:14:30	3.88	9.97	19.6	9.0	
8/6/08 9:14:45	3.89	9.96	19.6	9.0	
8/6/08 9:15:00	3.89	9.96	19.4	8.9	
8/6/08 9:15:15	3.86	9.96	19.4	8.8	
8/6/08 9:15:30	3.83	9.98	19.3	9.0	
8/6/08 9:15:45	3.84	9.99	19.2	9.2	
8/6/08 9:16:00	3.89	9.99	19.3	8.8	
8/6/08 9:16:15	3.87	10.00	19.3	8.5	
8/6/08 9:16:30	3.83	10.01	19.2	8.3	
8/6/08 9:16:45	3.80	10.00	19.2	8.2	
8/6/08 9:17:00	3.75	10.01	19.2	8.2	
8/6/08 9:17:15	3.76	10.02	19.2	8.1	
8/6/08 9:17:30	3.79	10.03	19.1	7.8	
8/6/08 9:17:45	3.78	10.05	19.3	7.3	
8/6/08 9:18:00	3.74	10.04	19.1	7.0	
8/6/08 9:18:15	3.74	10.01	18.7	7.4	
8/6/08 9:18:30	3.75	9.98	18.9	8.1	
8/6/08 9:18:45	3.80	9.96	19.1	8.1	
8/6/08 9:19:00	3.81	9.97	19.1	8.0	
8/6/08 9:19:15	3.82	10.00	19.0	8.1	
8/6/08 9:19:30	3.81	10.01	19.2	7.8	
8/6/08 9:19:45	3.79	9.99	19.3	7.6	
8/6/08 9:20:00	3.76	9.98	19.5	6.7	
8/6/08 9:20:15	3.76	9.98	19.5	5.8	
8/6/08 9:20:30	3.69	10.02	19.5	4.8	
8/6/08 9:20:45	3.62	10.06	19.5	4.7	
8/6/08 9:21:00	3.63	10.05	19.1	4.8	
8/6/08 9:21:15	3.65	10.05	19.1	4.9	
8/6/08 9:21:30	3.65	10.06	19.3	4.7	
8/6/08 9:21:45	3.63	10.07	19.0	4.7	
8/6/08 9:22:00	3.64	10.08	19.4	5.2	
8/6/08 9:22:15	3.69	10.05	19.3	5.3	
8/6/08 9:22:30	3.73	10.04	19.3	5.5	
8/6/08 9:22:45	3.72	10.04	19.3	5.5	
8/6/08 9:23:00	3.73	10.03	19.1	5.6	
8/6/08 9:23:15	3.77	10.01	19.3	5.5	
8/6/08 9:23:30	3.74	10.03	19.3	5.0	
8/6/08 9:23:45	3.69	10.05	18.8	4.9	
8/6/08 9:24:00	3.68	10.05	18.6	5.5	
8/6/08 9:24:15	3.69	10.05	18.6	5.8	
8/6/08 9:24:30	3.68	10.05	18.8	5.4	
8/6/08 9:24:45	3.68	10.05	19.4	4.9	
8/6/08 9:25:00	3.65	10.07	19.3	4.3	
8/6/08 9:25:15	3.63	10.09	19.3	4.1	
8/6/08 9:25:30	3.62	10.09	19.3	4.5	
8/6/08 9:25:45	3.64	10.07	19.3	4.6	
8/6/08 9:26:00	3.68	10.07	19.3	4.3	
8/6/08 9:26:15	3.69	10.07	19.2	4.6	
8/6/08 9:26:30	3.70	10.06	19.0	5.1	
8/6/08 9:26:45	3.69	10.07	19.1	5.2	
8/6/08 9:27:00	3.70	10.06	19.4	5.4	
8/6/08 9:27:15	3.74	10.03	19.4	5.4	
8/6/08 9:27:30	3.79	10.02	19.3	5.0	
8/6/08 9:27:45	3.76	10.04	19.2	4.9	
8/6/08 9:28:00	3.74	10.05	19.2	5.0	
8/6/08 9:28:15	3.73	10.06	19.0	5.0	
8/6/08 9:28:30	3.70	10.08	18.9	4.7	
8/6/08 9:28:45	3.65	10.11	18.7	4.5	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 9:29:00	3.62	10.13	18.7	4.2	
8/6/08 9:29:15	3.60	10.13	18.8	4.2	
8/6/08 9:29:30	3.61	10.12	18.7	4.4	
8/6/08 9:29:45	3.63	10.11	18.8	4.5	
8/6/08 9:30:00	3.65	10.08	18.9	4.4	
8/6/08 9:30:15	3.65	10.06	18.8	4.1	
8/6/08 9:30:30	3.63	10.07	18.7	4.2	
8/6/08 9:30:45	3.62	10.10	18.8	4.5	
8/6/08 9:31:00	3.65	10.10	18.6	4.7	
8/6/08 9:31:15	3.67	10.09	18.6	4.9	
8/6/08 9:31:30	3.71	10.07	18.6	5.2	
8/6/08 9:31:45	3.71	10.07	18.7	5.3	
8/6/08 9:32:00	3.71	10.04	18.7	5.2	
8/6/08 9:32:15	3.70	10.03	18.6	5.1	
8/6/08 9:32:30	3.67	10.06	18.3	5.6	
8/6/08 9:32:45	3.69	10.08	18.5	6.0	
8/6/08 9:33:00	3.68	10.10	18.8	5.6	
8/6/08 9:33:15	3.66	10.10	18.7	5.1	
8/6/08 9:33:30	3.66	10.07	18.9	5.1	
8/6/08 9:33:45	3.67	10.04	18.5	5.3	
8/6/08 9:34:00	3.69	10.02	19.0	5.6	
8/6/08 9:34:15	3.70	10.02	19.0	5.5	
8/6/08 9:34:30	3.67	10.05	18.9	5.1	
8/6/08 9:34:45	3.66	10.07	18.6	5.2	
8/6/08 9:35:00	3.67	10.06	18.4	6.2	
8/6/08 9:35:15	3.71	10.04	18.5	6.7	
8/6/08 9:35:30	3.70	10.05	18.7	6.6	
8/6/08 9:35:45	3.70	10.05	18.9	6.2	
8/6/08 9:36:00	3.67	10.07	18.9	5.6	
8/6/08 9:36:15	3.65	10.10	18.7	5.5	
8/6/08 9:36:30	3.67	10.10	18.4	6.2	
8/6/08 9:36:45	3.69	10.09	18.6	6.9	
8/6/08 9:37:00	3.71	10.08	18.7	7.6	
8/6/08 9:37:15	3.75	10.05	18.8	7.5	
8/6/08 9:37:30	3.76	10.05	18.8	6.8	
8/6/08 9:37:45	3.73	10.07	18.8	6.4	
8/6/08 9:38:00	3.72	10.08	18.8	6.6	
8/6/08 9:38:15	3.73	10.07	18.8	7.2	
8/6/08 9:38:30	3.74	10.07	18.7	7.5	
8/6/08 9:38:45	3.72	10.09	18.8	7.4	
8/6/08 9:39:00	3.72	10.08	18.7	7.3	
8/6/08 9:39:15	3.75	10.08	18.9	7.7	
8/6/08 9:39:30	3.78	10.06	18.8	8.3	
8/6/08 9:39:45	3.81	10.02	18.8	8.6	
8/6/08 9:40:00	3.82	9.99	18.6	8.4	
8/6/08 9:40:15	3.80	10.01	18.7	8.4	
8/6/08 9:40:30	3.79	10.03	18.8	8.4	
8/6/08 9:40:45	3.79	10.05	18.8	8.3	
8/6/08 9:41:00	3.75	10.08	18.8	7.8	
8/6/08 9:41:15	3.72	10.09	18.7	7.3	
8/6/08 9:41:30	3.71	10.10	18.7	7.3	
8/6/08 9:41:45	3.70	10.09	18.7	7.7	
8/6/08 9:42:00	3.74	10.05	18.7	7.9	
8/6/08 9:42:15	3.76	10.02	18.7	7.9	
8/6/08 9:42:30	3.75	10.02	18.8	8.2	
8/6/08 9:42:45	3.75	10.04	18.8	8.3	
8/6/08 9:43:00	3.74	10.07	18.8	8.0	
8/6/08 9:43:15	3.75	10.05	18.7	7.7	
8/6/08 9:43:30	3.77	10.01	18.8	8.0	
8/6/08 9:43:45	3.79	9.98	18.7	8.4	
8/6/08 9:44:00	3.78	9.97	18.7	8.7	
8/6/08 9:44:15	3.78	9.97	18.8	9.2	
8/6/08 9:44:30	3.81	9.97	18.6	9.2	
8/6/08 9:44:45	3.79	10.02	18.6	8.6	
8/6/08 9:45:00	3.76	10.04	18.4	8.4	
8/6/08 9:45:15	3.73	10.05	18.7	8.8	
8/6/08 9:45:30	3.73	10.04	18.7	8.5	
8/6/08 9:45:45	3.75	10.04	18.7	8.3	
8/6/08 9:46:00	3.77	10.03	18.6	8.7	
8/6/08 9:46:15	3.80	10.02	18.6	9.1	
8/6/08 9:46:30	3.80	10.01	18.6	9.6	
8/6/08 9:46:45	3.81	9.99	18.7	9.5	
8/6/08 9:47:00	3.79	10.01	18.5	8.7	
8/6/08 9:47:15	3.73	10.05	18.5	8.1	
8/6/08 9:47:30	3.73	10.06	18.6	7.3	
8/6/08 9:47:45	3.69	10.09	18.6	7.1	
8/6/08 9:48:00	3.69	10.07	18.5	8.0	
8/6/08 9:48:15	3.75	10.01	18.5	9.0	
8/6/08 9:48:30	3.80	9.97	18.6	9.3	
8/6/08 9:48:45	3.82	9.98	18.7	9.1	
8/6/08 9:49:00	3.80	9.99	18.8	8.6	
8/6/08 9:49:15	3.79	10.01	18.6	8.2	
8/6/08 9:49:30	3.77	10.04	18.5	8.2	
8/6/08 9:49:45	3.74	10.05	18.4	8.5	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 9:50:00	3.75	10.04	18.3	8.7	
8/6/08 9:50:15	3.76	10.03	18.6	8.4	
8/6/08 9:50:30	3.77	10.03	18.7	8.2	
8/6/08 9:50:45	3.75	10.04	18.6	7.9	
8/6/08 9:51:00	3.72	10.06	18.7	7.8	
8/6/08 9:51:15	3.73	10.06	18.6	7.9	
8/6/08 9:51:30	3.72	10.07	18.5	7.9	
8/6/08 9:51:45	3.71	10.06	18.5	7.7	
8/6/08 9:52:00	3.74	10.02	18.5	7.9	
8/6/08 9:52:15	3.74	10.02	18.4	7.9	
8/6/08 9:52:30	3.72	10.04	18.5	7.9	
8/6/08 9:52:45	3.72	10.06	18.4	7.9	
8/6/08 9:53:00	3.72	10.07	18.4	7.5	
8/6/08 9:53:15	3.73	10.07	18.4	7.0	
8/6/08 9:53:30	3.73	10.07	18.3	7.0	
8/6/08 9:53:45	3.71	10.08	18.4	7.1	
8/6/08 9:54:00	3.71	10.07	18.4	7.4	
8/6/08 9:54:15	3.72	10.05	18.5	7.6	
8/6/08 9:54:30	3.73	10.04	18.5	7.5	
8/6/08 9:54:45	3.75	10.03	18.5	7.7	
8/6/08 9:55:00	3.79	10.01	18.6	7.7	
8/6/08 9:55:15	3.77	10.03	18.7	7.5	
8/6/08 9:55:30	3.74	10.05	18.8	7.7	
8/6/08 9:55:45	3.75	10.06	18.7	7.7	
8/6/08 9:56:00	3.72	10.08	18.6	7.3	
8/6/08 9:56:15	3.71	10.09	18.5	7.1	
8/6/08 9:56:30	3.68	10.11	18.4	7.4	
8/6/08 9:56:45	3.68	10.11	18.5	7.9	
8/6/08 9:57:00	3.71	10.11	18.6	7.8	
8/6/08 9:57:15	3.69	10.13	18.5	7.6	
8/6/08 9:57:30	3.69	10.12	18.0	7.6	
8/6/08 9:57:45	3.71	10.11	17.9	8.1	
8/6/08 9:58:00	3.75	10.09	18.2	8.8	
8/6/08 9:58:15	3.76	10.08	18.3	9.3	
8/6/08 9:58:30	3.74	10.09	18.2	9.2	
8/6/08 9:58:45	3.71	10.10	18.3	8.7	
8/6/08 9:59:00	3.66	10.11	18.1	8.5	
8/6/08 9:59:15	3.67	10.11	17.7	8.4	
8/6/08 9:59:30	3.70	10.10	18.0	7.9	
8/6/08 9:59:45	3.71	10.08	18.1	7.7	
8/6/08 10:00:00	3.71	10.07	18.2	7.6	
8/6/08 10:00:15	3.70	10.08	18.2	7.1	
8/6/08 10:00:30	3.63	10.12	18.4	6.7	
8/6/08 10:00:45	3.59	10.16	18.1	6.9	
8/6/08 10:01:00	3.60	10.15	18.0	7.1	
8/6/08 10:01:15	3.62	10.15	18.0	7.0	
8/6/08 10:01:30	3.63	10.13	18.1	6.4	
8/6/08 10:01:45	3.64	10.10	18.3	6.3	
8/6/08 10:02:00	3.64	10.09	18.2	6.4	
8/6/08 10:02:15	3.61	10.11	18.1	6.3	
8/6/08 10:02:30	3.61	10.13	18.3	6.4	
8/6/08 10:02:45	3.62	10.16	18.2	6.6	
8/6/08 10:03:00	3.61	10.18	18.1	6.3	
8/6/08 10:03:15	3.61	10.17	18.0	6.7	
8/6/08 10:03:30	3.64	10.11	18.1	7.8	
8/6/08 10:03:45	3.68	10.07	17.9	8.4	
8/6/08 10:04:00	3.70	10.06	18.1	9.0	
8/6/08 10:04:15	3.72	10.04	18.1	9.4	
8/6/08 10:04:30	3.71	10.05	18.2	9.3	
8/6/08 10:04:45	3.68	10.05	18.2	9.1	
8/6/08 10:05:00	3.68	10.06	17.9	8.8	
8/6/08 10:05:15	3.68	10.06	18.0	8.6	
8/6/08 10:05:30	3.72	10.06	18.1	8.5	
8/6/08 10:05:45	3.74	10.05	18.1	8.4	
8/6/08 10:06:00	3.75	10.03	18.3	9.0	
8/6/08 10:06:15	3.77	10.02	18.4	9.7	
8/6/08 10:06:30	3.76	10.04	18.5	9.7	
8/6/08 10:06:45	3.71	10.08	18.7	9.1	
8/6/08 10:07:00	3.67	10.10	18.3	9.2	
8/6/08 10:07:15	3.70	10.10	18.3	9.2	
8/6/08 10:07:30	3.74	10.10	18.4	9.1	
8/6/08 10:07:45	3.76	10.08	18.3	9.4	
8/6/08 10:08:00	3.76	10.08	18.5	9.9	
8/6/08 10:08:15	3.76	10.08	18.6	9.8	
8/6/08 10:08:30	3.74	10.10	18.7	9.2	
8/6/08 10:08:45	3.68	10.12	18.7	8.8	
8/6/08 10:09:00	3.69	10.11	18.7	9.2	
8/6/08 10:09:15	3.72	10.07	18.5	9.6	
8/6/08 10:09:30	3.74	10.03	18.5	9.6	
8/6/08 10:09:45	3.75	10.02	18.4	9.2	
8/6/08 10:10:00	3.74	10.04	18.6	7.8	
8/6/08 10:10:15	3.70	10.08	33.8	6.2	
8/6/08 10:10:30	3.84	9.90	21.0	19.9	
8/6/08 10:10:45	4.09	6.21	2.0	18.9	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 10:11:00	6.64	1.94	1.3	8.5	
8/6/08 10:11:15	8.53	0.43	1.0	3.3	
8/6/08 10:11:30	8.81	0.26	0.9	2.3	
8/6/08 10:11:45	8.80	0.23	0.8	2.0	
8/6/08 10:12:00	8.84	0.21	0.7	2.0	
8/6/08 10:12:15	8.89	0.21	0.6	2.1	
8/6/08 10:12:30	8.92	0.20	0.6	2.1	
8/6/08 10:12:45	8.93	0.19	0.5	2.3	
8/6/08 10:13:00	8.94	0.19	0.5	2.1	
8/6/08 10:13:15	8.94	0.19	0.4	1.9	
8/6/08 10:13:30	8.94	0.18	1.3	2.0	
8/6/08 10:13:45	8.95	0.18	16.1	2.0	
8/6/08 10:14:00	8.29	2.16	18.5	2.3	
8/6/08 10:14:15	5.68	7.04	18.5	3.2	
8/6/08 10:14:30	4.05	9.52	18.6	3.5	
8/6/08 10:14:45	3.70	9.99	18.4	3.8	
8/6/08 10:15:00	3.66	10.05	18.6	4.3	
8/6/08 10:15:15	3.65	10.07	18.7	4.3	Begin Response Time Check
8/6/08 10:15:30	3.63	10.09	18.8	4.0	
8/6/08 10:15:45	3.58	10.14	15.9	3.8	
8/6/08 10:16:00	3.53	10.16	3.6	3.5	NO <sub>x</sub> Response Time - Down = 45 seconds
8/6/08 10:16:15	4.42	7.63	0.5	2.7	
8/6/08 10:16:30	7.06	2.77	0.4	2.2	
8/6/08 10:16:45	8.66	0.53	0.3	2.1	O <sub>2</sub> Response Time - Up = 90 seconds
8/6/08 10:17:00	8.91	0.24	0.3	2.1	CO <sub>2</sub> Response Time - Down = 90 seconds
8/6/08 10:17:15	8.93	0.20	0.3	2.1	
8/6/08 10:17:30	8.94	0.19	0.8	1.9	
8/6/08 10:17:45	8.95	0.18	10.6	1.9	
8/6/08 10:18:00	8.47	1.64	1.6	2.0	
8/6/08 10:18:15	6.29	7.41	0.3	0.6	
8/6/08 10:18:30	3.24	14.10	0.3	-0.3	
8/6/08 10:18:45	0.84	16.63	0.2	-0.4	
8/6/08 10:19:00	0.04	16.44	0.2	-0.8	
8/6/08 10:19:15	-0.04	16.63	0.2	-0.8	
8/6/08 10:19:30	-0.06	17.16	0.2	-0.8	
8/6/08 10:19:45	-0.07	17.49	0.2	-0.7	
8/6/08 10:20:00	-0.07	17.61	0.2	-0.6	
8/6/08 10:20:15	-0.08	17.64	0.2	-0.7	
8/6/08 10:20:30	-0.08	17.66	0.2	-0.9	
8/6/08 10:20:45	-0.08	17.67	0.1	-0.9	
8/6/08 10:21:00	-0.08	17.68	0.1	-0.7	
8/6/08 10:21:15	-0.09	17.69	0.1	-0.6	
8/6/08 10:21:30	-0.09	17.70	8.9	-0.4	
8/6/08 10:21:45	-0.05	17.52	17.8	1.9	
8/6/08 10:22:00	1.21	14.30	18.0	5.7	
8/6/08 10:22:15	3.05	10.98	18.5	7.1	
8/6/08 10:22:30	3.58	10.29	18.7	6.6	
8/6/08 10:22:45	3.61	10.22	18.5	6.5	
8/6/08 10:23:00	3.64	10.18	18.6	6.8	
8/6/08 10:23:15	3.67	10.16	18.8	6.4	
8/6/08 10:23:30	3.66	10.15	18.4	6.0	
8/6/08 10:23:45	3.63	10.14	18.4	6.2	
8/6/08 10:24:00	3.65	10.13	18.3	6.6	Begin Response Time Check
8/6/08 10:24:15	3.65	10.14	18.3	6.6	
8/6/08 10:24:30	3.63	10.15	15.0	6.2	
8/6/08 10:24:45	3.62	10.18	3.1	5.0	
8/6/08 10:25:00	2.78	12.91	0.4	2.2	
8/6/08 10:25:15	0.99	18.06	0.2	0.2	CO <sub>2</sub> Response Time - Up = 75 seconds
8/6/08 10:25:30	0.12	18.72	0.2	-0.5	O <sub>2</sub> Response Time - Down = 90 seconds
8/6/08 10:25:45	-0.07	17.87	0.2	-0.6	
8/6/08 10:26:00	-0.09	17.72	0.2	-0.7	
8/6/08 10:26:15	-0.09	17.72	0.1	-0.8	
8/6/08 10:26:30	-0.09	17.72	0.1	-0.7	
8/6/08 10:26:45	-0.09	17.72	0.1	-0.7	
8/6/08 10:27:00	-0.10	17.73	0.1	-0.7	
8/6/08 10:27:15	-0.10	17.72	7.9	-0.5	
8/6/08 10:27:30	-0.07	17.57	23.5	4.1	
8/6/08 10:27:45	0.69	13.60	1.0	48.5	
8/6/08 10:28:00	0.60	6.73	0.5	118.1	
8/6/08 10:28:15	0.16	2.13	0.4	161.3	
8/6/08 10:28:30	0.01	0.50	0.3	174.6	
8/6/08 10:28:45	-0.03	0.32	0.2	176.8	
8/6/08 10:29:00	-0.05	0.28	0.2	177.0	
8/6/08 10:29:15	-0.05	0.26	0.2	177.1	
8/6/08 10:29:30	-0.05	0.25	0.2	177.4	
8/6/08 10:29:45	-0.05	0.24	0.2	177.8	Begin Response Time Check
8/6/08 10:30:00	-0.05	0.23	0.2	178.0	
8/6/08 10:30:15	-0.05	0.22	3.1	178.2	
8/6/08 10:30:30	-0.05	0.27	18.3	148.5	
8/6/08 10:30:45	0.79	3.46	18.6	74.2	
8/6/08 10:31:00	2.55	7.81	18.6	27.1	
8/6/08 10:31:15	3.47	9.73	18.6	11.1	
8/6/08 10:31:30	3.65	10.06	18.8	7.8	CO Response Time - Down = 105 seconds
8/6/08 10:31:45	3.65	10.08	18.5	7.3	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 10:32:00	3.66	10.06	18.4	7.2	
8/6/08 10:32:15	3.70	10.04	18.4	7.2	Begin Response Time Check
8/6/08 10:32:30	3.69	10.06	18.4	7.2	
8/6/08 10:32:45	3.69	10.08	14.6	7.1	
8/6/08 10:33:00	3.71	10.05	1.2	41.4	
8/6/08 10:33:15	2.83	7.08	0.2	116.6	
8/6/08 10:33:30	1.00	2.66	0.2	162.6	
8/6/08 10:33:45	0.11	0.54	0.2	176.2	CO Response Time - Up = 90 seconds
8/6/08 10:34:00	-0.03	0.26	0.1	178.0	
8/6/08 10:34:15	-0.04	0.22	0.1	178.4	
8/6/08 10:34:30	-0.05	0.21	1.0	178.4	
8/6/08 10:34:45	-0.05	0.20	7.4	160.5	
8/6/08 10:35:00	0.33	1.75	0.2	113.5	
8/6/08 10:35:15	0.88	2.65	0.2	57.1	
8/6/08 10:35:30	0.23	0.79	8.8	38.0	
8/6/08 10:35:45	-0.02	0.27	20.5	28.8	
8/6/08 10:36:00	-0.05	0.23	22.7	13.4	
8/6/08 10:36:15	-0.04	0.20	23.9	5.0	
8/6/08 10:36:30	-0.04	0.18	24.3	3.1	
8/6/08 10:36:45	-0.04	0.18	24.7	2.9	
8/6/08 10:37:00	-0.04	0.17	24.8	2.8	
8/6/08 10:37:15	-0.04	0.17	24.6	2.7	
8/6/08 10:37:30	-0.04	0.17	24.4	2.5	
8/6/08 10:37:45	-0.04	0.17	29.7	2.3	
8/6/08 10:38:00	-0.04	0.16	45.5	2.3	
8/6/08 10:38:15	-0.05	0.16	46.2	2.3	
8/6/08 10:38:30	-0.05	0.16	45.4	2.4	
8/6/08 10:38:45	-0.05	0.16	44.9	2.4	
8/6/08 10:39:00	-0.05	0.16	44.5	2.2	
8/6/08 10:39:15	-0.05	0.16	39.6	2.1	
8/6/08 10:39:30	-0.04	0.27	36.7	2.6	
8/6/08 10:39:45	0.82	3.32	82.8	3.4	
8/6/08 10:40:00	1.37	3.74	85.5	3.5	
8/6/08 10:40:15	0.39	1.11	85.5	2.9	
8/6/08 10:40:30	-0.01	0.27	85.3	2.3	
8/6/08 10:40:45	-0.05	0.18	85.0	2.0	
8/6/08 10:41:00	-0.05	0.17	84.8	2.0	
8/6/08 10:41:15	-0.05	0.16	84.5	2.1	
8/6/08 10:41:30	-0.05	0.16	84.4	2.2	
8/6/08 10:41:45	-0.05	0.16	84.3	2.2	
8/6/08 10:42:00	-0.05	0.16	84.3	2.1	
8/6/08 10:42:15	-0.05	0.16	84.3	1.8	
8/6/08 10:42:30	-0.05	0.16	84.2	1.9	
8/6/08 10:42:45	-0.05	0.16	84.2	2.0	
8/6/08 10:43:00	-0.05	0.16	82.7	2.1	
8/6/08 10:43:15	-0.05	0.16	32.2	2.5	
8/6/08 10:43:30	0.39	2.11	19.5	4.6	
8/6/08 10:43:45	2.16	6.83	19.3	6.4	Begin Response Time Check
8/6/08 10:44:00	3.34	9.40	19.1	6.9	
8/6/08 10:44:15	3.65	9.99	33.5	6.7	
8/6/08 10:44:30	3.67	10.03	78.3	5.7	
8/6/08 10:44:45	2.81	7.07	83.3	3.9	NO <sub>x</sub> Response Time - Up = 60 seconds
8/6/08 10:45:00	1.00	2.63	84.0	2.6	
8/6/08 10:45:15	0.11	0.52	84.1	2.0	
8/6/08 10:45:30	-0.03	0.22	84.2	1.9	
8/6/08 10:45:45	-0.05	0.19	44.0	2.0	
8/6/08 10:46:00	0.16	1.24	19.4	3.1	
8/6/08 10:46:15	1.78	5.92	19.1	5.1	
8/6/08 10:46:30	3.19	9.04	19.3	6.5	
8/6/08 10:46:45	3.66	9.94	19.0	6.7	
8/6/08 10:47:00	3.70	10.06	18.9	6.7	
8/6/08 10:47:15	3.71	10.07	18.9	6.6	
8/6/08 10:47:30	3.73	10.07	19.1	6.2	
8/6/08 10:47:45	3.69	10.09	18.9	6.1	
8/6/08 10:48:00	3.67	10.10	19.0	6.5	
8/6/08 10:48:15	3.74	10.07	18.9	6.7	
8/6/08 10:48:30	3.76	10.06	18.9	6.6	
8/6/08 10:48:45	3.74	10.09	18.8	6.5	Begin Run No. 1
8/6/08 10:49:00	3.70	10.14	18.7	6.6	Point #2
8/6/08 10:49:15	3.70	10.15	18.9	6.6	
8/6/08 10:49:30	3.71	10.15	18.8	6.1	Average Concentrations for Point #2
8/6/08 10:49:45	3.70	10.15	18.9	5.9	3.80 O <sub>2</sub>
8/6/08 10:50:00	3.73	10.11	18.7	6.4	10.12 CO <sub>2</sub>
8/6/08 10:50:15	3.77	10.05	19.0	6.9	17.9 NO <sub>x</sub>
8/6/08 10:50:30	3.79	10.02	18.9	7.1	6.9 CO
8/6/08 10:50:45	3.78	10.03	18.9	7.0	
8/6/08 10:51:00	3.74	10.07	19.0	6.8	
8/6/08 10:51:15	3.73	10.09	19.0	6.3	
8/6/08 10:51:30	3.72	10.11	18.7	6.3	
8/6/08 10:51:45	3.71	10.11	18.6	6.5	
8/6/08 10:52:00	3.72	10.10	18.6	6.7	
8/6/08 10:52:15	3.73	10.10	18.5	7.0	
8/6/08 10:52:30	3.73	10.09	18.8	6.9	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 10:52:45	3.77	10.07	18.4	6.8	
8/6/08 10:53:00	3.78	10.07	18.4	7.1	
8/6/08 10:53:15	3.77	10.08	18.4	7.5	
8/6/08 10:53:30	3.76	10.07	18.4	7.1	
8/6/08 10:53:45	3.72	10.07	18.3	6.7	
8/6/08 10:54:00	3.72	10.08	18.4	6.3	
8/6/08 10:54:15	3.72	10.08	18.4	5.9	
8/6/08 10:54:30	3.70	10.09	18.5	5.7	
8/6/08 10:54:45	3.70	10.09	18.4	5.6	
8/6/08 10:55:00	3.72	10.09	18.3	5.6	
8/6/08 10:55:15	3.74	10.10	18.4	5.9	
8/6/08 10:55:30	3.75	10.12	18.2	6.3	
8/6/08 10:55:45	3.77	10.12	18.3	7.3	
8/6/08 10:56:00	3.81	10.11	18.2	7.9	
8/6/08 10:56:15	3.81	10.11	18.2	8.7	
8/6/08 10:56:30	3.79	10.09	18.1	9.9	
8/6/08 10:56:45	3.83	10.04	18.1	10.6	
8/6/08 10:57:00	3.85	10.02	18.0	9.9	
8/6/08 10:57:15	3.80	10.05	17.8	10.1	
8/6/08 10:57:30	3.80	10.06	17.9	10.8	
8/6/08 10:57:45	3.83	10.07	17.9	10.4	
8/8/08 10:58:00	3.78	10.12	17.9	10.1	
8/6/08 10:58:15	3.75	10.14	17.8	10.8	
8/6/08 10:58:30	3.75	10.12	17.8	11.6	
8/6/08 10:58:45	3.76	10.09	17.8	12.6	
8/6/08 10:59:00	3.81	10.06	17.8	13.2	
8/6/08 10:59:15	3.83	10.05	18.0	13.1	
8/6/08 10:59:30	3.83	10.06	18.0	12.6	
8/6/08 10:59:45	3.82	10.07	18.1	11.6	
8/6/08 11:00:00	3.83	10.07	18.1	10.6	
8/6/08 11:00:15	3.82	10.10	18.3	8.8	
8/6/08 11:00:30	3.75	10.15	18.3	6.7	
8/6/08 11:00:45	3.70	10.17	18.3	5.9	
8/6/08 11:01:00	3.68	10.16	18.3	5.9	
8/6/08 11:01:15	3.69	10.14	18.2	6.1	
8/6/08 11:01:30	3.71	10.12	18.2	6.6	
8/6/08 11:01:45	3.71	10.12	18.5	6.6	
8/6/08 11:02:00	3.72	10.14	18.5	6.4	
8/6/08 11:02:15	3.70	10.17	18.5	6.0	
8/6/08 11:02:30	3.68	10.17	18.5	5.7	
8/6/08 11:02:45	3.69	10.15	18.4	5.2	
8/6/08 11:03:00	3.69	10.14	18.4	5.4	
8/6/08 11:03:15	3.70	10.13	18.7	5.9	
8/6/08 11:03:30	3.73	10.13	18.4	6.1	
8/6/08 11:03:45	3.69	10.16	18.5	6.0	
8/6/08 11:04:00	3.68	10.19	18.5	5.7	
8/6/08 11:04:15	3.67	10.21	18.4	5.3	
8/6/08 11:04:30	3.67	10.20	18.3	5.2	
8/6/08 11:04:45	3.68	10.17	18.4	5.4	
8/6/08 11:05:00	3.69	10.14	18.4	5.7	
8/6/08 11:05:15	3.70	10.13	18.4	6.0	
8/6/08 11:05:30	3.70	10.14	18.4	6.0	
8/6/08 11:05:45	3.69	10.14	18.3	5.9	
8/6/08 11:06:00	3.70	10.14	18.2	6.3	
8/6/08 11:06:15	3.72	10.12	18.3	6.6	
8/6/08 11:06:30	3.73	10.11	18.3	6.6	
8/6/08 11:06:45	3.74	10.12	18.4	6.7	
8/6/08 11:07:00	3.73	10.15	18.4	6.4	
8/6/08 11:07:15	3.72	10.17	18.3	6.5	
8/6/08 11:07:30	3.73	10.15	18.1	7.1	
8/6/08 11:07:45	3.76	10.13	18.2	7.3	
8/6/08 11:08:00	3.77	10.12	18.2	7.2	
8/6/08 11:08:15	3.75	10.13	18.2	7.4	
8/8/08 11:08:30	3.73	10.14	18.3	7.9	
8/6/08 11:08:45	3.73	10.12	18.2	8.0	
8/6/08 11:09:00	3.73	10.11	18.2	8.3	
8/6/08 11:09:15	3.74	10.11	18.2	8.4	
8/6/08 11:09:30	3.75	10.09	18.3	8.7	
8/6/08 11:09:45	3.78	10.08	18.3	8.8	
8/6/08 11:10:00	3.77	10.06	18.2	9.2	
8/6/08 11:10:15	3.78	10.03	18.1	9.1	
8/6/08 11:10:30	3.78	10.03	17.9	9.0	
8/6/08 11:10:45	3.77	10.07	18.0	9.1	
8/6/08 11:11:00	3.75	10.09	17.9	9.2	
8/6/08 11:11:15	3.71	10.11	18.0	9.4	
8/6/08 11:11:30	3.73	10.11	18.0	9.1	
8/6/08 11:11:45	3.70	10.13	17.9	8.9	
8/6/08 11:12:00	3.69	10.14	18.0	8.6	
8/6/08 11:12:15	3.69	10.15	18.0	8.4	
8/6/08 11:12:30	3.69	10.14	18.0	8.7	
8/6/08 11:12:45	3.72	10.13	18.1	8.7	
8/6/08 11:13:00	3.74	10.14	18.0	8.3	
8/6/08 11:13:15	3.75	10.13	17.9	8.0	
8/6/08 11:13:30	3.75	10.12	17.9	8.1	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 11:13:45	3.74	10.13	17.9	8.5	
8/6/08 11:14:00	3.73	10.13	18.1	8.7	
8/6/08 11:14:15	3.75	10.12	18.1	8.5	
8/6/08 11:14:30	3.73	10.13	18.1	8.1	
8/6/08 11:14:45	3.70	10.13	18.1	8.7	
8/6/08 11:15:00	3.71	10.13	18.4	9.1	
8/6/08 11:15:15	3.74	10.14	18.0	9.1	
8/6/08 11:15:30	3.72	10.16	18.0	9.1	
8/6/08 11:15:45	3.72	10.16	17.9	9.1	
8/6/08 11:16:00	3.72	10.14	18.0	8.6	
8/6/08 11:16:15	3.71	10.11	18.2	8.6	
8/6/08 11:16:30	3.73	10.09	18.3	8.9	
8/6/08 11:16:45	3.75	10.10	18.3	8.8	
8/6/08 11:17:00	3.74	10.11	18.0	9.1	
8/6/08 11:17:15	3.76	10.10	18.1	9.7	
8/6/08 11:17:30	3.80	10.09	18.1	9.8	
8/6/08 11:17:45	3.81	10.10	18.1	9.5	
8/6/08 11:18:00	3.80	10.11	18.1	8.7	
8/6/08 11:18:15	3.75	10.13	18.0	8.2	
8/6/08 11:18:30	3.74	10.13	18.2	7.9	
8/6/08 11:18:45	3.73	10.14	18.2	7.7	
8/6/08 11:19:00	3.68	10.16	18.2	7.3	
8/6/08 11:19:15	3.66	10.17	18.3	7.0	
8/6/08 11:19:30	3.65	10.18	18.3	6.9	
8/6/08 11:19:45	3.66	10.20	18.1	7.1	
8/6/08 11:20:00	3.67	10.21	18.2	7.2	
8/6/08 11:20:15	3.67	10.23	18.2	7.6	
8/6/08 11:20:30	3.67	10.23	17.9	7.5	
8/6/08 11:20:45	3.71	10.16	17.7	7.5	
8/6/08 11:21:00	3.91	10.02	17.6	7.9	
8/6/08 11:21:15	4.00	9.98	17.1	8.6	
8/6/08 11:21:30	4.14	9.89	17.5	8.8	
8/6/08 11:21:45	4.41	9.78	17.4	8.5	
8/6/08 11:22:00	4.31	9.85	17.2	8.2	
8/6/08 11:22:15	4.32	9.84	17.5	8.2	
8/6/08 11:22:30	4.38	9.86	17.4	8.0	
8/6/08 11:22:45	4.25	9.92	17.9	7.9	
8/6/08 11:23:00	4.25	9.91	18.2	8.2	
8/6/08 11:23:15	4.02	10.02	18.2	8.4	
8/6/08 11:23:30	3.91	10.04	18.5	8.8	
8/6/08 11:23:45	3.86	10.06	18.3	10.1	
8/6/08 11:24:00	3.80	10.09	18.3	10.3	
8/6/08 11:24:15	3.76	10.12	18.4	10.4	
8/6/08 11:24:30	3.73	10.13	18.5	10.7	
8/6/08 11:24:45	3.72	10.13	18.1	10.1	
8/6/08 11:25:00	3.72	10.14	18.1	9.7	
8/6/08 11:25:15	3.74	10.15	17.7	9.9	
8/6/08 11:25:30	3.77	10.16	17.7	10.3	
8/6/08 11:25:45	3.94	10.06	17.8	10.3	
8/6/08 11:26:00	4.06	10.02	17.9	10.0	
8/6/08 11:26:15	3.90	10.08	17.9	9.8	
8/6/08 11:26:30	3.78	10.12	18.0	10.8	
8/6/08 11:26:45	3.75	10.12	17.8	10.0	
8/6/08 11:27:00	3.74	10.14	17.8	8.2	
8/6/08 11:27:15	3.68	10.17	17.8	7.3	
8/6/08 11:27:30	3.70	10.17	17.6	6.5	
8/6/08 11:27:45	3.68	10.20	17.7	6.1	
8/6/08 11:28:00	3.64	10.23	17.9	5.7	
8/6/08 11:28:15	3.58	10.26	18.0	5.3	
8/6/08 11:28:30	3.57	10.27	18.1	4.9	
8/6/08 11:28:45	3.59	10.29	18.1	4.7	
8/6/08 11:29:00	3.56	10.33	18.1	4.3	
8/6/08 11:29:15	3.54	10.31	18.0	4.1	
8/6/08 11:29:30	3.56	10.29	17.9	4.5	
8/6/08 11:29:45	3.59	10.26	17.9	4.9	
8/6/08 11:30:00	3.63	10.22	17.9	6.2	
8/6/08 11:30:15	3.64	10.19	18.4	6.7	
8/6/08 11:30:30	3.64	10.18	18.5	5.5	
8/6/08 11:30:45	3.56	10.25	18.1	4.8	
8/6/08 11:31:00	3.51	10.29	18.0	4.6	
8/6/08 11:31:15	3.57	10.28	17.9	4.3	
8/6/08 11:31:30	3.60	10.27	18.0	4.2	
8/6/08 11:31:45	3.60	10.27	18.1	4.0	
8/6/08 11:32:00	3.61	10.23	18.1	3.5	
8/6/08 11:32:15	3.61	10.21	18.1	3.7	
8/6/08 11:32:30	3.55	10.24	18.1	4.1	
8/6/08 11:32:45	3.55	10.24	17.9	4.2	
8/6/08 11:33:00	3.55	10.24	17.9	4.3	
8/6/08 11:33:15	3.63	10.21	17.9	4.2	
8/6/08 11:33:30	3.69	10.19	17.9	4.3	
8/6/08 11:33:45	3.71	10.20	17.9	4.5	
8/6/08 11:34:00	3.70	10.23	18.0	4.7	
8/6/08 11:34:15	3.70	10.23	18.0	4.8	
8/6/08 11:34:30	3.70	10.22	18.0	4.6	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 11:34:45	3.69	10.21	17.8	4.4	
8/6/08 11:35:00	3.68	10.19	17.8	4.3	
8/6/08 11:35:15	3.71	10.17	17.9	4.4	
8/6/08 11:35:30	3.72	10.17	18.0	4.2	
8/6/08 11:35:45	3.68	10.19	18.0	4.2	
8/6/08 11:36:00	3.61	10.25	17.8	4.0	
8/6/08 11:36:15	3.61	10.26	17.2	3.8	
8/6/08 11:36:30	3.75	10.18	17.8	4.1	
8/6/08 11:36:45	4.02	10.05	17.9	4.3	
8/6/08 11:37:00	3.87	10.16	18.0	4.3	
8/6/08 11:37:15	3.61	10.27	17.9	4.4	
8/6/08 11:37:30	3.56	10.27	17.9	4.3	
8/6/08 11:37:45	3.55	10.25	17.6	4.4	
8/6/08 11:38:00	3.58	10.22	17.6	4.9	
8/6/08 11:38:15	3.64	10.18	17.6	5.0	
8/6/08 11:38:30	3.64	10.19	17.2	4.7	
8/6/08 11:38:45	3.65	10.19	17.2	4.5	
8/6/08 11:39:00	3.65	10.21	17.3	4.1	
8/6/08 11:39:15	3.63	10.24	16.6	4.1	
8/6/08 11:39:30	3.66	10.22	16.0	4.6	
8/6/08 11:39:45	4.12	9.94	15.4	5.8	
8/6/08 11:40:00	4.66	9.68	15.4	9.9	
8/6/08 11:40:15	5.16	9.39	15.3	12.2	
8/6/08 11:40:30	5.35	9.38	16.5	13.0	
8/6/08 11:40:45	5.18	9.48	17.1	10.2	
8/6/08 11:41:00	4.48	9.93	17.1	6.1	
8/6/08 11:41:15	3.78	10.24	17.1	5.0	
8/6/08 11:41:30	3.65	10.30	17.3	4.6	
8/6/08 11:41:45	3.62	10.29	17.2	4.4	
8/6/08 11:42:00	3.59	10.27	17.4	4.4	
8/6/08 11:42:15	3.63	10.21	17.4	4.5	
8/6/08 11:42:30	3.64	10.23	17.4	4.2	
8/6/08 11:42:45	3.57	10.31	17.4	4.1	
8/6/08 11:43:00	3.53	10.34	13.6	4.1	
8/6/08 11:43:15	3.61	10.26	15.7	4.1	
8/6/08 11:43:30	5.83	8.83	17.0	4.3	
8/6/08 11:43:45	5.88	9.29	17.0	4.3	
8/6/08 11:44:00	4.20	10.05	17.1	4.7	
8/6/08 11:44:15	3.83	10.19	16.8	5.1	
8/6/08 11:44:30	3.76	10.18	16.9	5.0	
8/6/08 11:44:45	3.92	10.11	17.0	4.9	
8/6/08 11:45:00	3.90	10.15	17.0	5.2	
8/6/08 11:45:15	3.83	10.19	16.8	5.2	
8/6/08 11:45:30	3.93	10.13	16.8	5.2	
8/6/08 11:45:45	3.99	10.09	16.7	5.1	
8/6/08 11:46:00	4.08	10.04	16.7	5.1	
8/6/08 11:46:15	4.06	10.05	17.1	5.0	
8/6/08 11:46:30	4.07	10.06	17.1	4.8	
8/6/08 11:46:45	3.93	10.15	17.4	4.4	
8/6/08 11:47:00	3.83	10.19	17.2	3.9	
8/6/08 11:47:15	3.81	10.20	17.1	3.5	
8/6/08 11:47:30	3.81	10.22	16.9	3.6	
8/6/08 11:47:45	3.87	10.19	17.3	3.7	
8/6/08 11:48:00	3.97	10.16	17.2	3.8	
8/6/08 11:48:15	3.91	10.21	17.3	3.7	
8/6/08 11:48:30	3.88	10.20	17.3	3.4	
8/6/08 11:48:45	3.93	10.17	17.5	3.0	
8/6/08 11:49:00	3.81	10.24	17.2	3.2	Point #1
8/6/08 11:49:15	3.69	10.27	17.4	3.3	
8/6/08 11:49:30	3.70	10.26	17.4	3.5	
8/6/08 11:49:45	3.62	10.31	17.2	3.6	Average Concentrations for Point #1
8/6/08 11:50:00	3.53	10.39	17.1	3.2	3.76 O <sub>2</sub>
8/6/08 11:50:15	3.46	10.44	17.1	3.2	10.37 CO <sub>2</sub>
8/6/08 11:50:30	3.48	10.46	17.3	3.2	18.0 NO <sub>x</sub>
8/6/08 11:50:45	3.54	10.45	17.1	3.1	8.0 CO
8/6/08 11:51:00	3.52	10.50	17.1	3.0	
8/6/08 11:51:15	3.40	10.53	17.1	2.9	
8/6/08 11:51:30	3.40	10.49	17.1	2.9	
8/6/08 11:51:45	3.44	10.46	17.4	2.9	
8/6/08 11:52:00	3.46	10.45	17.2	3.0	
8/6/08 11:52:15	3.44	10.47	17.1	3.2	
8/6/08 11:52:30	3.44	10.46	17.3	3.3	
8/6/08 11:52:45	3.43	10.45	17.2	3.0	
8/6/08 11:53:00	3.38	10.47	17.3	2.7	
8/6/08 11:53:15	3.36	10.47	17.4	2.8	
8/6/08 11:53:30	3.38	10.47	17.5	3.0	
8/6/08 11:53:45	3.38	10.49	17.5	3.0	
8/6/08 11:54:00	3.39	10.49	17.6	3.1	
8/6/08 11:54:15	3.41	10.47	17.6	3.0	
8/6/08 11:54:30	3.44	10.43	17.7	3.1	
8/6/08 11:54:45	3.48	10.40	17.6	3.5	
8/6/08 11:55:00	3.51	10.37	17.5	3.8	
8/6/08 11:55:15	3.55	10.35	17.7	4.1	
8/6/08 11:55:30	3.56	10.36	17.9	4.1	

Valero McKee Refinery - Sunray, Texas  
 No. 1 SRU Incinerator Exhaust: EPN V-5  
 ARI Reference Method Monitoring Data

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 11:55:45	3.57	10.36	17.8	4.1	
8/6/08 11:56:00	3.59	10.37	17.5	4.2	
8/6/08 11:56:15	3.59	10.39	17.5	4.7	
8/6/08 11:56:30	3.64	10.35	17.8	5.4	
8/6/08 11:56:45	3.69	10.30	17.4	5.8	
8/6/08 11:57:00	3.68	10.29	17.9	6.2	
8/6/08 11:57:15	3.71	10.29	17.7	5.8	
8/6/08 11:57:30	3.68	10.32	17.6	5.8	
8/6/08 11:57:45	3.67	10.30	17.8	6.1	
8/6/08 11:58:00	3.72	10.26	18.0	6.5	
8/6/08 11:58:15	3.75	10.27	17.8	6.4	
8/6/08 11:58:30	3.74	10.29	17.7	6.3	
8/6/08 11:58:45	3.75	10.27	17.7	6.5	
8/6/08 11:59:00	3.76	10.27	17.8	6.5	
8/6/08 11:59:15	3.78	10.29	17.9	6.6	
8/6/08 11:59:30	3.81	10.30	17.6	6.7	
8/6/08 11:59:45	3.82	10.29	18.0	6.9	
8/6/08 12:00:00	3.82	10.26	17.9	7.2	
8/6/08 12:00:15	3.82	10.26	17.9	7.4	
8/6/08 12:00:30	3.81	10.29	17.7	7.2	
8/6/08 12:00:45	3.79	10.31	17.8	6.9	
8/6/08 12:01:00	3.78	10.30	18.3	6.7	
8/6/08 12:01:15	3.78	10.28	18.7	6.4	
8/6/08 12:01:30	3.76	10.29	18.0	6.1	
8/6/08 12:01:45	3.72	10.32	17.9	6.2	
8/6/08 12:02:00	3.74	10.30	18.0	6.8	
8/6/08 12:02:15	3.81	10.26	17.8	7.1	
8/6/08 12:02:30	3.83	10.24	17.7	7.2	
8/6/08 12:02:45	3.81	10.23	17.6	7.2	
8/6/08 12:03:00	3.79	10.22	17.3	11.1	
8/6/08 12:03:15	3.88	10.18	17.4	15.0	
8/6/08 12:03:30	4.00	10.17	17.0	17.7	
8/6/08 12:03:45	4.01	10.19	17.0	19.4	
8/6/08 12:04:00	4.02	10.17	16.8	21.4	
8/6/08 12:04:15	4.03	10.14	16.9	21.7	
8/6/08 12:04:30	4.02	10.13	17.1	21.0	
8/6/08 12:04:45	4.01	10.14	17.6	18.8	
8/6/08 12:05:00	3.98	10.16	18.4	14.0	
8/6/08 12:05:15	3.90	10.21	18.6	8.9	
8/6/08 12:05:30	3.67	10.34	18.5	3.9	
8/6/08 12:05:45	3.54	10.40	18.3	2.7	
8/6/08 12:06:00	3.49	10.43	18.7	2.3	
8/6/08 12:06:15	3.48	10.44	18.3	2.1	
8/6/08 12:06:30	3.42	10.47	18.5	2.0	
8/6/08 12:06:45	3.40	10.47	18.5	1.9	
8/6/08 12:07:00	3.41	10.46	18.0	2.1	
8/6/08 12:07:15	3.47	10.44	17.9	2.7	
8/6/08 12:07:30	3.54	10.42	17.8	3.7	
8/6/08 12:07:45	3.61	10.38	18.1	4.0	
8/6/08 12:08:00	3.65	10.33	17.9	4.7	
8/6/08 12:08:15	3.70	10.32	17.8	5.8	
8/6/08 12:08:30	3.75	10.31	17.7	6.9	
8/6/08 12:08:45	3.77	10.32	17.7	7.0	
8/6/08 12:09:00	3.73	10.35	17.8	7.0	
8/6/08 12:09:15	3.68	10.38	17.7	7.2	
8/6/08 12:09:30	3.69	10.38	17.9	7.7	
8/6/08 12:09:45	3.75	10.35	17.9	7.4	
8/6/08 12:10:00	3.73	10.36	17.7	6.6	
8/6/08 12:10:15	3.68	10.37	17.6	6.9	
8/6/08 12:10:30	3.68	10.35	17.7	7.6	
8/6/08 12:10:45	3.71	10.33	17.5	7.6	
8/6/08 12:11:00	3.70	10.37	17.1	7.5	
8/6/08 12:11:15	3.69	10.40	17.2	7.9	
8/6/08 12:11:30	3.72	10.37	17.2	8.3	
8/6/08 12:11:45	3.75	10.32	17.4	8.5	
8/6/08 12:12:00	3.76	10.32	17.4	8.9	
8/6/08 12:12:15	3.78	10.32	18.0	9.2	
8/6/08 12:12:30	3.81	10.33	17.8	9.2	
8/6/08 12:12:45	3.79	10.38	17.5	9.4	
8/6/08 12:13:00	3.77	10.41	17.6	9.5	
8/6/08 12:13:15	3.78	10.40	18.0	9.4	
8/6/08 12:13:30	3.77	10.37	17.6	9.5	
8/6/08 12:13:45	3.74	10.34	17.6	9.5	
8/6/08 12:14:00	3.73	10.35	17.8	9.3	
8/6/08 12:14:15	3.74	10.37	17.7	9.5	
8/6/08 12:14:30	3.74	10.39	17.8	9.1	
8/6/08 12:14:45	3.73	10.41	17.8	8.5	
8/6/08 12:15:00	3.72	10.42	17.7	7.9	
8/6/08 12:15:15	3.73	10.41	17.8	7.5	
8/6/08 12:15:30	3.71	10.41	17.7	7.4	
8/6/08 12:15:45	3.71	10.40	18.0	7.8	
8/6/08 12:16:00	3.75	10.36	18.2	8.7	
8/6/08 12:16:15	3.80	10.33	17.9	9.2	
8/6/08 12:16:30	3.78	10.39	17.5	9.3	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 12:16:45	3.75	10.44	17.6	9.3	
8/6/08 12:17:00	3.78	10.42	17.6	8.9	
8/6/08 12:17:15	3.77	10.40	17.8	8.7	
8/6/08 12:17:30	3.76	10.41	17.7	8.6	
8/6/08 12:17:45	3.76	10.43	17.6	8.4	
8/6/08 12:18:00	3.77	10.41	17.8	8.3	
8/6/08 12:18:15	3.81	10.37	17.8	8.0	
8/6/08 12:18:30	3.78	10.38	17.8	7.7	
8/6/08 12:18:45	3.76	10.39	17.4	8.2	
8/6/08 12:19:00	3.79	10.38	17.5	9.8	
8/6/08 12:19:15	3.83	10.38	17.5	10.6	
8/6/08 12:19:30	3.85	10.39	17.8	10.3	
8/6/08 12:19:45	3.85	10.40	18.0	9.8	
8/6/08 12:20:00	3.81	10.40	17.8	9.2	
8/6/08 12:20:15	3.78	10.39	17.9	8.7	
8/6/08 12:20:30	3.75	10.39	17.6	8.5	
8/6/08 12:20:45	3.76	10.37	17.8	8.7	
8/6/08 12:21:00	3.81	10.32	18.2	8.7	
8/6/08 12:21:15	3.82	10.31	18.9	7.9	
8/6/08 12:21:30	3.75	10.37	18.4	6.6	
8/6/08 12:21:45	3.64	10.44	18.1	6.4	
8/6/08 12:22:00	3.65	10.43	18.2	6.4	
8/6/08 12:22:15	3.71	10.40	18.2	6.4	
8/6/08 12:22:30	3.75	10.38	17.9	6.4	
8/6/08 12:22:45	3.79	10.36	18.0	6.7	
8/6/08 12:23:00	3.83	10.34	17.8	6.9	
8/6/08 12:23:15	3.82	10.33	17.5	7.1	
8/6/08 12:23:30	3.83	10.32	17.6	8.1	
8/6/08 12:23:45	3.85	10.32	17.7	8.0	
8/6/08 12:24:00	3.82	10.37	17.5	7.4	
8/6/08 12:24:15	3.77	10.41	17.3	7.4	
8/6/08 12:24:30	3.77	10.40	17.2	8.4	
8/6/08 12:24:45	3.82	10.36	17.2	8.6	
8/6/08 12:25:00	3.82	10.33	17.5	8.0	
8/6/08 12:25:15	3.79	10.30	17.7	7.6	
8/6/08 12:25:30	3.79	10.31	17.9	7.7	
8/6/08 12:25:45	3.80	10.32	18.0	7.5	
8/6/08 12:26:00	3.81	10.33	17.9	7.2	
8/6/08 12:26:15	3.82	10.32	18.1	7.1	
8/6/08 12:26:30	3.83	10.32	18.2	6.8	
8/6/08 12:26:45	3.80	10.34	18.1	6.3	
8/6/08 12:27:00	3.75	10.38	18.1	5.8	
8/6/08 12:27:15	3.70	10.41	18.2	5.6	
8/6/08 12:27:30	3.68	10.41	18.1	5.9	
8/6/08 12:27:45	3.69	10.39	18.0	6.0	
8/6/08 12:28:00	3.71	10.37	18.3	5.6	
8/6/08 12:28:15	3.70	10.38	18.4	5.4	
8/6/08 12:28:30	3.68	10.37	18.4	6.0	
8/6/08 12:28:45	3.74	10.33	18.3	6.9	
8/6/08 12:29:00	3.81	10.31	18.1	7.2	
8/6/08 12:29:15	3.80	10.38	18.2	6.7	
8/6/08 12:29:30	3.77	10.46	18.2	6.2	
8/6/08 12:29:45	3.76	10.51	18.2	6.3	
8/6/08 12:30:00	3.78	10.52	18.2	6.3	
8/6/08 12:30:15	3.78	10.54	18.4	6.2	
8/6/08 12:30:30	3.75	10.56	17.9	6.7	
8/6/08 12:30:45	3.75	10.54	18.1	7.1	
8/6/08 12:31:00	3.80	10.53	18.2	7.0	
8/6/08 12:31:15	3.79	10.55	18.4	6.9	
8/6/08 12:31:30	3.76	10.60	18.5	6.4	
8/6/08 12:31:45	3.74	10.66	18.3	6.4	
8/6/08 12:32:00	3.74	10.68	18.3	6.5	
8/6/08 12:32:15	3.76	10.66	18.3	6.3	
8/6/08 12:32:30	3.77	10.62	18.3	6.2	
8/6/08 12:32:45	3.77	10.56	18.2	6.4	
8/6/08 12:33:00	3.78	10.50	18.0	6.7	
8/6/08 12:33:15	3.77	10.48	18.1	6.8	
8/6/08 12:33:30	3.75	10.47	18.1	7.0	
8/6/08 12:33:45	3.76	10.47	18.3	7.4	
8/6/08 12:34:00	3.79	10.45	18.6	7.9	
8/6/08 12:34:15	3.79	10.44	18.6	8.1	
8/6/08 12:34:30	3.78	10.44	18.8	8.5	
8/6/08 12:34:45	3.79	10.45	18.4	8.6	
8/6/08 12:35:00	3.81	10.48	18.4	8.0	
8/6/08 12:35:15	3.78	10.52	18.5	7.4	
8/6/08 12:35:30	3.75	10.55	18.7	7.5	
8/6/08 12:35:45	3.72	10.53	18.8	8.1	
8/6/08 12:36:00	3.75	10.49	18.8	8.6	
8/6/08 12:36:15	3.77	10.48	18.8	8.1	
8/6/08 12:36:30	3.75	10.50	18.4	6.8	
8/6/08 12:36:45	3.71	10.50	18.3	6.1	
8/6/08 12:37:00	3.70	10.46	18.4	5.4	
8/6/08 12:37:15	3.68	10.46	18.5	4.7	
8/6/08 12:37:30	3.64	10.50	18.5	3.8	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 12:37:45	3.57	10.55	18.6	3.1	
8/6/08 12:38:00	3.52	10.58	18.4	2.6	
8/6/08 12:38:15	3.63	10.55	18.5	2.9	
8/6/08 12:38:30	3.59	10.48	18.4	3.4	
8/6/08 12:38:45	3.66	10.43	18.2	4.1	
8/6/08 12:39:00	3.72	10.39	18.1	5.4	
8/6/08 12:39:15	3.81	10.32	18.1	6.3	
8/6/08 12:39:30	3.88	10.27	18.2	8.1	
8/6/08 12:39:45	3.92	10.25	18.2	9.6	
8/6/08 12:40:00	3.92	10.27	18.3	11.5	
8/6/08 12:40:15	3.95	10.27	18.2	13.3	
8/6/08 12:40:30	3.98	10.25	18.1	16.3	
8/6/08 12:40:45	4.03	10.23	18.0	19.6	
8/6/08 12:41:00	4.07	10.21	18.2	24.4	
8/6/08 12:41:15	4.12	10.20	18.2	27.3	
8/6/08 12:41:30	4.16	10.18	18.2	30.9	
8/6/08 12:41:45	4.19	10.17	18.2	32.7	
8/6/08 12:42:00	4.18	10.18	18.1	34.9	
8/6/08 12:42:15	4.18	10.18	18.2	37.3	
8/6/08 12:42:30	4.21	10.17	18.2	40.1	
8/6/08 12:42:45	4.21	10.20	18.3	41.5	
8/6/08 12:43:00	4.20	10.21	18.3	43.6	
8/6/08 12:43:15	4.18	10.21	18.2	43.3	
8/6/08 12:43:30	4.18	10.23	18.4	39.4	
8/6/08 12:43:45	4.17	10.25	18.7	34.5	
8/6/08 12:44:00	4.13	10.26	19.0	26.5	
8/6/08 12:44:15	4.05	10.30	18.9	22.5	
8/6/08 12:44:30	4.02	10.32	19.0	18.5	
8/6/08 12:44:45	3.97	10.35	19.1	16.2	
8/6/08 12:45:00	3.90	10.40	19.0	13.6	
8/6/08 12:45:15	3.84	10.44	18.9	12.9	
8/6/08 12:45:30	3.84	10.43	19.0	12.2	
8/6/08 12:45:45	3.86	10.43	18.9	12.1	
8/6/08 12:46:00	3.86	10.40	19.1	12.1	
8/6/08 12:46:15	3.90	10.38	19.3	11.5	
8/6/08 12:46:30	3.89	10.37	19.4	10.7	
8/6/08 12:46:45	3.87	10.36	19.2	10.6	
8/6/08 12:47:00	3.87	10.35	19.4	11.1	
8/6/08 12:47:15	3.88	10.35	20.1	11.1	
8/6/08 12:47:30	3.86	10.36	19.4	10.0	
8/6/08 12:47:45	3.78	10.41	19.3	9.7	
8/6/08 12:48:00	3.82	10.41	19.1	10.2	
8/6/08 12:48:15	3.88	10.39	19.2	10.5	
8/6/08 12:48:30	3.91	10.37	19.1	10.6	
8/6/08 12:48:45	3.90	10.34	19.3	10.9	
8/6/08 12:49:00	3.91	10.32	19.5	11.1	Point #3
8/6/08 12:49:15	3.91	10.34	19.6	11.1	
8/6/08 12:49:30	3.87	10.39	19.5	10.6	Average Concentrations for Point #3
8/6/08 12:49:45	3.84	10.42	19.5	10.5	3.90 O <sub>2</sub>
8/6/08 12:50:00	3.85	10.40	19.4	10.6	10.38 CO <sub>2</sub>
8/6/08 12:50:15	3.88	10.38	19.4	10.6	18.7 NO <sub>x</sub>
8/6/08 12:50:30	3.90	10.36	19.4	10.3	8.0 CO
8/6/08 12:50:45	3.91	10.34	19.2	10.7	
8/6/08 12:51:00	3.90	10.31	19.3	11.5	
8/6/08 12:51:15	3.92	10.30	19.2	11.5	
8/6/08 12:51:30	3.93	10.31	19.5	10.5	
8/6/08 12:51:45	3.92	10.33	19.4	9.7	
8/6/08 12:52:00	3.92	10.33	19.2	9.0	
8/6/08 12:52:15	3.91	10.32	19.4	9.1	
8/6/08 12:52:30	3.91	10.29	19.5	9.3	
8/6/08 12:52:45	3.91	10.28	19.3	9.2	
8/6/08 12:53:00	3.89	10.30	19.6	8.5	
8/6/08 12:53:15	3.89	10.31	19.8	8.2	
8/6/08 12:53:30	3.90	10.30	19.5	8.0	
8/6/08 12:53:45	3.90	10.29	19.6	8.1	
8/6/08 12:54:00	3.93	10.26	19.7	8.1	
8/6/08 12:54:15	3.93	10.25	19.5	7.8	
8/6/08 12:54:30	3.92	10.24	19.5	7.6	
8/6/08 12:54:45	3.93	10.23	19.3	7.7	
8/6/08 12:55:00	3.93	10.23	19.1	8.1	
8/6/08 12:55:15	3.93	10.24	19.3	8.6	
8/6/08 12:55:30	3.95	10.24	19.2	8.8	
8/6/08 12:55:45	3.98	10.25	19.9	8.1	
8/6/08 12:56:00	3.95	10.27	19.8	6.8	
8/6/08 12:56:15	3.85	10.32	19.7	6.2	
8/6/08 12:56:30	3.76	10.36	19.8	5.9	
8/6/08 12:56:45	3.74	10.37	19.5	6.0	
8/6/08 12:57:00	3.76	10.37	19.5	6.3	
8/6/08 12:57:15	3.81	10.34	19.6	6.5	
8/6/08 12:57:30	3.86	10.28	19.3	6.5	
8/6/08 12:57:45	3.88	10.24	19.5	6.6	
8/6/08 12:58:00	3.86	10.25	19.4	7.1	
8/6/08 12:58:15	3.88	10.26	19.3	7.4	
8/6/08 12:58:30	3.92	10.25	19.3	7.0	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 12:58:45	3.91	10.26	19.3	6.3	
8/6/08 12:59:00	3.86	10.29	19.3	5.8	
8/6/08 12:59:15	3.84	10.30	19.4	5.7	
8/6/08 12:59:30	3.85	10.30	19.5	5.7	
8/6/08 12:59:45	3.86	10.30	19.4	5.7	
8/6/08 13:00:00	3.85	10.31	19.5	5.2	
8/6/08 13:00:15	3.82	10.33	19.2	4.9	
8/6/08 13:00:30	3.79	10.35	19.2	4.9	
8/6/08 13:00:45	3.81	10.35	19.1	5.0	
8/6/08 13:01:00	3.79	10.36	19.2	5.0	
8/6/08 13:01:15	3.77	10.38	18.9	5.0	
8/6/08 13:01:30	3.77	10.38	19.0	5.1	
8/6/08 13:01:45	3.80	10.37	18.9	5.1	
8/6/08 13:02:00	3.79	10.38	19.0	5.3	
8/6/08 13:02:15	3.83	10.36	18.9	5.4	
8/6/08 13:02:30	3.84	10.35	18.9	5.2	
8/6/08 13:02:45	3.84	10.34	18.8	5.3	
8/6/08 13:03:00	3.87	10.32	18.9	5.5	
8/6/08 13:03:15	3.87	10.30	19.1	5.7	
8/6/08 13:03:30	3.88	10.29	19.4	5.8	
8/6/08 13:03:45	3.92	10.30	19.8	5.7	
8/6/08 13:04:00	3.91	10.34	20.0	5.1	
8/6/08 13:04:15	3.81	10.39	20.0	4.6	
8/6/08 13:04:30	3.76	10.38	19.8	4.5	
8/6/08 13:04:45	3.74	10.37	19.3	4.4	
8/6/08 13:05:00	3.77	10.36	19.2	4.5	
8/6/08 13:05:15	3.80	10.37	19.3	4.8	
8/6/08 13:05:30	3.83	10.34	19.2	4.8	
8/6/08 13:05:45	3.84	10.32	19.3	4.7	
8/6/08 13:06:00	3.84	10.31	19.3	4.9	
8/6/08 13:06:15	3.86	10.32	19.2	5.2	
8/6/08 13:06:30	3.87	10.35	18.9	5.7	
8/6/08 13:06:45	3.89	10.36	19.0	6.0	
8/6/08 13:07:00	3.93	10.33	19.0	6.1	
8/6/08 13:07:15	3.95	10.32	18.7	6.4	
8/6/08 13:07:30	3.94	10.33	19.0	6.8	
8/6/08 13:07:45	3.94	10.32	19.6	6.8	
8/6/08 13:08:00	3.94	10.31	19.5	6.7	
8/6/08 13:08:15	3.93	10.32	19.4	6.5	
8/6/08 13:08:30	3.95	10.33	19.3	6.6	
8/6/08 13:08:45	3.96	10.34	19.2	6.8	
8/6/08 13:09:00	3.94	10.35	19.5	7.4	
8/6/08 13:09:15	3.93	10.36	19.4	7.3	
8/6/08 13:09:30	3.90	10.38	20.2	6.7	
8/6/08 13:09:45	3.85	10.40	20.0	5.9	
8/6/08 13:10:00	3.76	10.43	19.6	5.4	
8/6/08 13:10:15	3.77	10.40	19.1	5.7	
8/6/08 13:10:30	3.83	10.34	19.2	6.6	
8/6/08 13:10:45	3.91	10.31	19.1	7.5	
8/6/08 13:11:00	3.94	10.32	19.1	8.0	
8/6/08 13:11:15	3.94	10.35	19.0	8.0	
8/6/08 13:11:30	3.92	10.37	19.1	8.3	
8/6/08 13:11:45	3.93	10.36	19.5	8.8	
8/6/08 13:12:00	3.95	10.34	19.7	9.4	
8/6/08 13:12:15	3.96	10.33	19.1	9.5	
8/6/08 13:12:30	3.91	10.33	18.7	10.0	
8/6/08 13:12:45	3.93	10.31	19.1	10.7	
8/6/08 13:13:00	3.98	10.31	19.4	10.5	
8/6/08 13:13:15	3.95	10.37	19.1	9.8	
8/6/08 13:13:30	3.86	10.44	19.3	9.4	
8/6/08 13:13:45	3.83	10.44	19.0	9.0	
8/6/08 13:14:00	3.83	10.42	19.0	8.7	
8/6/08 13:14:15	3.89	10.39	19.3	9.2	
8/6/08 13:14:30	3.98	10.35	19.2	9.4	
8/6/08 13:14:45	3.99	10.34	19.1	9.5	
8/6/08 13:15:00	4.02	10.30	19.5	9.6	
8/6/08 13:15:15	4.04	10.28	19.0	9.5	
8/6/08 13:15:30	4.01	10.32	19.1	9.9	
8/6/08 13:15:45	4.06	10.31	19.2	9.8	
8/6/08 13:16:00	4.04	10.33	19.3	9.4	
8/6/08 13:16:15	4.00	10.36	19.3	9.4	
8/6/08 13:16:30	3.99	10.38	19.7	9.6	
8/6/08 13:16:45	4.01	10.38	20.0	9.2	
8/6/08 13:17:00	3.98	10.41	19.6	8.6	
8/6/08 13:17:15	3.93	10.44	19.8	9.3	
8/6/08 13:17:30	3.98	10.42	19.8	9.7	
8/6/08 13:17:45	3.95	10.43	19.1	9.7	
8/6/08 13:18:00	3.90	10.44	19.2	10.3	
8/6/08 13:18:15	3.98	10.41	19.3	10.9	
8/6/08 13:18:30	4.02	10.41	19.4	10.9	
8/6/08 13:18:45	4.01	10.40	19.2	10.2	
8/6/08 13:19:00	3.99	10.39	18.9	10.0	
8/6/08 13:19:15	4.00	10.37	19.1	10.5	
8/6/08 13:19:30	4.01	10.37	19.3	11.2	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 13:19:45	4.03	10.37	19.2	10.8	
8/6/08 13:20:00	4.02	10.38	19.3	10.6	
8/6/08 13:20:15	4.01	10.37	18.9	10.6	
8/6/08 13:20:30	3.99	10.39	18.7	11.3	
8/6/08 13:20:45	3.98	10.39	18.9	12.4	
8/6/08 13:21:00	3.97	10.40	18.8	14.1	
8/6/08 13:21:15	3.96	10.40	18.8	15.2	
8/6/08 13:21:30	3.99	10.39	18.3	16.3	
8/6/08 13:21:45	4.03	10.38	17.9	18.7	
8/6/08 13:22:00	4.08	10.34	17.7	22.0	
8/6/08 13:22:15	4.10	10.30	17.5	23.6	
8/6/08 13:22:30	4.10	10.29	17.4	23.9	
8/6/08 13:22:45	4.10	10.32	17.4	22.3	
8/6/08 13:23:00	4.07	10.35	17.3	19.4	
8/6/08 13:23:15	4.06	10.35	17.6	16.8	
8/6/08 13:23:30	4.04	10.36	17.8	13.8	
8/6/08 13:23:45	3.98	10.40	17.5	12.7	
8/6/08 13:24:00	3.96	10.41	17.5	12.1	
8/6/08 13:24:15	3.95	10.42	17.6	11.5	
8/6/08 13:24:30	3.93	10.45	17.8	10.8	
8/6/08 13:24:45	3.95	10.45	17.9	10.3	
8/6/08 13:25:00	3.95	10.44	17.8	9.9	
8/6/08 13:25:15	3.85	10.41	17.9	9.5	
8/6/08 13:25:30	3.95	10.38	17.8	9.0	
8/6/08 13:25:45	3.92	10.39	17.8	8.5	
8/6/08 13:26:00	3.90	10.41	17.9	7.9	
8/6/08 13:26:15	3.87	10.46	17.9	7.6	
8/6/08 13:26:30	3.85	10.50	17.8	7.4	
8/6/08 13:26:45	3.83	10.49	17.8	7.4	
8/6/08 13:27:00	3.84	10.46	17.8	7.0	
8/6/08 13:27:15	3.84	10.46	17.6	6.8	
8/6/08 13:27:30	3.83	10.46	17.4	7.1	
8/6/08 13:27:45	3.85	10.46	17.8	7.6	
8/6/08 13:28:00	3.84	10.48	17.9	7.5	
8/6/08 13:28:15	3.78	10.52	17.8	6.2	
8/6/08 13:28:30	3.73	10.53	17.7	5.2	
8/6/08 13:28:45	3.75	10.50	17.9	5.0	
8/6/08 13:29:00	3.80	10.47	18.1	5.0	
8/6/08 13:29:15	3.81	10.47	18.1	4.8	
8/6/08 13:29:30	3.79	10.48	18.3	4.4	
8/6/08 13:29:45	3.80	10.49	18.4	4.2	
8/6/08 13:30:00	3.81	10.49	18.3	4.1	
8/6/08 13:30:15	3.78	10.51	18.4	3.8	
8/6/08 13:30:30	3.77	10.51	18.3	3.7	
8/6/08 13:30:45	3.76	10.51	18.6	3.6	
8/6/08 13:31:00	3.81	10.48	18.2	3.3	
8/6/08 13:31:15	3.78	10.50	18.2	3.1	
8/6/08 13:31:30	3.75	10.51	18.3	3.1	
8/6/08 13:31:45	3.75	10.51	18.3	3.1	
8/6/08 13:32:00	3.76	10.49	18.4	3.1	
8/6/08 13:32:15	3.75	10.49	18.5	2.9	
8/6/08 13:32:30	3.73	10.49	17.8	3.1	
8/6/08 13:32:45	3.72	10.49	17.5	3.8	
8/6/08 13:33:00	3.76	10.47	17.7	4.3	
8/6/08 13:33:15	3.78	10.46	17.5	4.7	
8/6/08 13:33:30	3.78	10.45	18.0	5.2	
8/6/08 13:33:45	3.85	10.42	18.6	5.3	
8/6/08 13:34:00	3.89	10.42	18.1	5.0	
8/6/08 13:34:15	3.81	10.45	17.9	5.1	
8/6/08 13:34:30	3.81	10.45	18.1	5.5	
8/6/08 13:34:45	3.86	10.44	17.6	5.8	
8/6/08 13:35:00	3.87	10.43	18.0	6.0	
8/6/08 13:35:15	3.93	10.41	18.2	6.1	
8/6/08 13:35:30	3.94	10.44	18.2	6.1	
8/6/08 13:35:45	3.93	10.45	18.1	6.0	
8/6/08 13:36:00	3.88	10.46	18.2	6.1	
8/6/08 13:36:15	3.84	10.48	17.4	6.3	
8/6/08 13:36:30	3.83	10.49	17.4	7.0	
8/6/08 13:36:45	3.88	10.45	17.7	8.1	
8/6/08 13:37:00	3.93	10.44	17.9	8.7	
8/6/08 13:37:15	3.90	10.45	17.8	8.6	
8/6/08 13:37:30	3.93	10.42	18.1	8.4	
8/6/08 13:37:45	3.93	10.41	18.0	8.3	
8/6/08 13:38:00	3.95	10.40	17.6	8.0	
8/6/08 13:38:15	3.91	10.41	17.3	7.8	
8/6/08 13:38:30	3.92	10.39	17.7	7.9	
8/6/08 13:38:45	3.96	10.38	17.7	7.6	
8/6/08 13:39:00	3.94	10.41	17.8	7.4	
8/6/08 13:39:15	3.93	10.44	17.6	7.6	
8/6/08 13:39:30	3.94	10.45	17.8	7.4	
8/6/08 13:39:45	3.97	10.44	17.2	6.9	
8/6/08 13:40:00	3.93	10.43	17.1	7.2	
8/6/08 13:40:15	4.00	10.38	17.7	7.7	
8/6/08 13:40:30	3.97	10.41	17.9	7.8	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 13:40:45	3.87	10.46	18.5	7.7	
8/6/08 13:41:00	3.83	10.48	18.0	7.4	
8/6/08 13:41:15	3.83	10.50	18.0	7.3	
8/6/08 13:41:30	3.90	10.49	17.9	7.7	
8/6/08 13:41:45	3.92	10.48	18.0	8.2	
8/6/08 13:42:00	3.90	10.47	18.2	8.2	
8/6/08 13:42:15	3.90	10.45	17.8	8.2	
8/6/08 13:42:30	3.91	10.43	17.8	8.7	
8/6/08 13:42:45	3.94	10.44	17.9	8.7	
8/6/08 13:43:00	3.93	10.45	18.0	8.6	
8/6/08 13:43:15	3.93	10.42	18.1	8.6	
8/6/08 13:43:30	3.94	10.40	18.0	8.5	
8/6/08 13:43:45	3.94	10.40	18.0	8.7	
8/6/08 13:44:00	3.94	10.43	17.9	8.6	
8/6/08 13:44:15	3.94	10.44	18.4	8.3	
8/6/08 13:44:30	3.95	10.42	18.1	7.9	
8/6/08 13:44:45	3.94	10.40	18.0	7.8	
8/6/08 13:45:00	3.95	10.38	18.1	7.5	
8/6/08 13:45:15	3.96	10.39	18.1	7.1	Stratification Check
8/6/08 13:45:30	3.93	10.42	18.1	7.0	3-point average
8/6/08 13:45:45	3.92	10.43	17.7	7.0	
8/6/08 13:46:00	3.94	10.40	17.7	7.2	3.82 O <sub>2</sub>
8/6/08 13:46:15	3.96	10.39	17.8	7.5	10.29 CO <sub>2</sub>
8/6/08 13:46:30	3.96	10.39	17.8	8.0	18.2 NO <sub>x</sub>
8/6/08 13:46:45	3.96	10.38	17.5	8.9	8.0 CO
8/6/08 13:47:00	3.98	10.38	17.7	10.0	
8/6/08 13:47:15	4.03	10.37	17.8	9.8	2.2 O <sub>2</sub> % difference
8/6/08 13:47:30	4.00	10.40	17.7	9.4	-1.7 CO <sub>2</sub> % difference
8/6/08 13:47:45	3.94	10.43	17.7	9.2	2.6 NO <sub>x</sub> % difference
8/6/08 13:48:00	3.94	10.43	17.5	9.2	-1.1 CO ppm difference
8/6/08 13:48:15	3.96	10.39	17.9	9.3	
8/6/08 13:48:30	3.93	10.40	18.1	8.8	
8/6/08 13:48:45	3.85	10.44	18.0	8.6	
8/6/08 13:49:00	3.85	10.45	18.1	8.8	End Run No. 1
8/6/08 13:49:15	3.85	10.48	40.6	14.0	
8/6/08 13:49:30	3.87	9.70	21.7	25.0	
8/6/08 13:49:45	3.12	4.99	4.2	21.4	
8/6/08 13:50:00	2.19	1.53	1.7	9.7	
8/6/08 13:50:15	3.67	0.42	1.3	3.5	
8/6/08 13:50:30	4.34	0.26	1.0	2.4	
8/6/08 13:50:45	4.46	0.23	0.9	2.1	
8/6/08 13:51:00	4.47	0.22	0.9	1.9	System Bias
8/6/08 13:51:15	4.47	0.21	0.7	2.0	4.45 4.50% O <sub>2</sub>
8/6/08 13:51:30	4.45	0.20	0.6	2.0	0.20 Zero CO <sub>2</sub>
8/6/08 13:51:45	4.45	0.20	0.6	2.1	0.6 Zero NO <sub>x</sub>
8/6/08 13:52:00	4.46	0.19	0.4	2.1	
8/6/08 13:52:15	4.80	0.19	3.0	1.9	
8/6/08 13:52:30	9.80	0.39	0.7	1.2	
8/6/08 13:52:45	7.27	4.06	0.5	0.6	
8/6/08 13:53:00	1.65	7.87	0.4	0.3	
8/6/08 13:53:15	0.16	8.78	0.4	0.3	
8/6/08 13:53:30	-0.02	8.73	0.4	0.2	
8/6/08 13:53:45	-0.04	8.60	0.4	0.1	
8/6/08 13:54:00	-0.05	8.56	0.4	0.1	
8/6/08 13:54:15	-0.05	8.62	0.3	0.2	
8/6/08 13:54:30	-0.05	8.76	0.3	0.2	
8/6/08 13:54:45	-0.06	8.95	0.3	0.2	
8/6/08 13:55:00	-0.06	9.09	0.3	0.0	
8/6/08 13:55:15	-0.06	9.16	0.3	0.0	
8/6/08 13:55:30	-0.06	9.20	0.3	0.1	
8/6/08 13:55:45	-0.07	9.22	0.3	0.1	
8/6/08 13:56:00	-0.07	9.23	0.2	0.2	System Bias
8/6/08 13:56:15	-0.07	9.24	0.2	0.2	
8/6/08 13:56:30	-0.07	9.25	0.2	0.1	9.25 9.00% CO <sub>2</sub>
8/6/08 13:56:45	-0.07	9.25	0.2	0.0	
8/6/08 13:57:00	-0.07	9.25	0.2	0.0	0.1 Zero CO
8/6/08 13:57:15	-0.07	9.25	1.6	0.2	
8/6/08 13:57:30	1.04	8.50	26.1	1.8	
8/6/08 13:57:45	6.07	4.89	1.4	16.5	
8/6/08 13:58:00	2.63	2.02	0.5	51.9	
8/6/08 13:58:15	0.31	0.55	0.4	79.0	
8/6/08 13:58:30	0.00	0.29	0.4	86.3	
8/6/08 13:58:45	-0.02	0.24	0.3	87.9	
8/6/08 13:59:00	-0.02	0.22	0.3	88.4	
8/6/08 13:59:15	-0.03	0.21	0.2	88.9	
8/6/08 13:59:30	-0.04	0.21	0.2	89.0	
8/6/08 13:59:45	-0.05	0.20	0.2	89.3	
8/6/08 14:00:00	-0.05	0.20	0.2	89.6	System Bias
8/6/08 14:00:15	-0.05	0.19	0.2	89.8	
8/6/08 14:00:30	-0.05	0.19	0.2	89.9	
8/6/08 14:00:45	-0.05	0.19	0.2	89.9	
8/6/08 14:01:00	-0.05	0.18	0.2	89.6	89.8 90.0 ppm CO
8/6/08 14:01:15	-0.05	0.18	0.1	89.7	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 14:01:30	-0.05	0.18	0.2	83.3	
8/6/08 14:01:45	1.42	0.18	0.2	62.7	
8/6/08 14:02:00	5.42	0.19	0.5	41.2	
8/6/08 14:02:15	1.79	0.18	12.0	34.3	
8/6/08 14:02:30	0.15	0.20	22.2	25.2	
8/6/08 14:02:45	-0.02	0.22	23.8	11.4	
8/6/08 14:03:00	-0.03	0.19	24.5	4.8	
8/6/08 14:03:15	-0.04	0.17	25.6	3.1	
8/6/08 14:03:30	-0.04	0.17	27.5	2.7	
8/6/08 14:03:45	-0.04	0.17	28.0	2.4	
8/6/08 14:04:00	-0.04	0.16	27.7	2.4	
8/6/08 14:04:15	-0.04	0.16	27.4	2.4	
8/6/08 14:04:30	-0.04	0.16	38.0	2.4	
8/6/08 14:04:45	-0.04	0.16	47.9	2.4	
8/6/08 14:05:00	-0.05	0.16	46.8	2.2	
8/6/08 14:05:15	-0.05	0.16	45.9	2.0	
8/6/08 14:05:30	-0.05	0.16	45.4	2.1	
8/6/08 14:05:45	-0.05	0.16	45.1	2.1	
8/6/08 14:06:00	-0.05	0.15	44.8	2.2	System Bias
8/6/08 14:06:15	-0.05	0.15	44.6	2.1	-0.05 Zero O <sub>2</sub>
8/6/08 14:06:30	-0.05	0.15	44.4	2.0	
8/6/08 14:06:45	-0.05	0.15	44.3	1.9	44.3 45.0 ppm NO <sub>x</sub>
8/6/08 14:07:00	-0.05	0.15	44.1	2.0	
8/6/08 14:07:15	-0.05	0.15	42.4	2.1	
8/6/08 14:07:30	-0.05	0.15	8.1	2.1	
8/6/08 14:07:45	2.22	0.16	0.7	2.0	
8/6/08 14:08:00	12.82	0.19	0.5	1.7	
8/6/08 14:08:15	19.14	0.20	0.4	1.6	
8/6/08 14:08:30	20.32	0.20	0.3	1.7	
8/6/08 14:08:45	20.44	0.20	0.3	1.7	
8/6/08 14:09:00	20.47	0.20	0.3	1.8	
8/6/08 14:09:15	20.48	0.20	0.2	1.8	
8/6/08 14:09:30	20.49	0.20	0.2	1.6	
8/6/08 14:09:45	20.49	0.20	0.2	1.6	
8/6/08 14:10:00	20.50	0.20	0.2	1.7	
8/6/08 14:10:15	20.51	0.20	0.2	1.7	
8/6/08 14:10:30	20.51	0.20	0.2	1.8	
8/6/08 14:10:45	20.51	0.20	0.1	1.8	
8/6/08 14:11:00	20.52	0.20	5.8	1.8	
8/6/08 14:11:15	20.42	0.36	15.9	3.5	
8/6/08 14:11:30	15.58	4.24	16.0	6.7	
8/6/08 14:11:45	7.39	8.72	16.6	8.7	
8/6/08 14:12:00	4.48	9.97	16.3	9.2	
8/6/08 14:12:15	4.11	10.10	16.8	9.4	
8/6/08 14:12:30	4.09	10.11	16.9	9.0	
8/6/08 14:12:45	4.06	10.15	17.2	8.9	Begin Run No. 2
8/6/08 14:13:00	4.04	10.17	17.4	9.5	Point #2
8/6/08 14:13:15	4.06	10.14	17.8	10.2	
8/6/08 14:13:30	4.08	10.12	17.8	9.9	Average Concentrations for Point #2
8/6/08 14:13:45	4.07	10.12	18.1	9.0	3.85 O <sub>2</sub>
8/6/08 14:14:00	4.04	10.14	17.7	8.3	10.17 CO <sub>2</sub>
8/6/08 14:14:15	3.98	10.16	17.7	8.2	19.0 NO <sub>x</sub>
8/6/08 14:14:30	3.98	10.15	17.8	8.0	5.2 CO
8/6/08 14:14:45	3.96	10.16	18.1	7.7	
8/6/08 14:15:00	3.93	10.17	18.2	7.4	
8/6/08 14:15:15	3.93	10.17	18.4	6.7	
8/6/08 14:15:30	3.88	10.21	17.8	6.0	
8/6/08 14:15:45	3.81	10.25	18.0	6.0	
8/6/08 14:16:00	3.86	10.23	17.6	6.2	
8/6/08 14:16:15	3.87	10.23	17.3	6.6	
8/6/08 14:16:30	3.91	10.20	17.2	7.4	
8/6/08 14:16:45	3.95	10.17	17.7	7.6	
8/6/08 14:17:00	3.97	10.14	17.8	6.8	
8/6/08 14:17:15	3.87	10.19	18.0	6.1	
8/6/08 14:17:30	3.84	10.21	18.0	6.0	
8/6/08 14:17:45	3.83	10.23	17.8	6.0	
8/6/08 14:18:00	3.85	10.21	17.8	6.2	
8/6/08 14:18:15	3.91	10.18	17.8	6.8	
8/6/08 14:18:30	3.94	10.17	17.5	7.2	
8/6/08 14:18:45	3.93	10.19	17.4	7.7	
8/6/08 14:19:00	3.92	10.20	17.5	8.2	
8/6/08 14:19:15	3.92	10.20	17.8	8.5	
8/6/08 14:19:30	3.95	10.18	18.0	8.3	
8/6/08 14:19:45	3.95	10.16	17.9	8.0	
8/6/08 14:20:00	3.93	10.16	18.1	7.6	
8/6/08 14:20:15	3.91	10.17	18.6	7.1	
8/6/08 14:20:30	3.87	10.20	18.4	6.6	
8/6/08 14:20:45	3.83	10.22	18.3	6.2	
8/6/08 14:21:00	3.84	10.21	18.2	5.9	
8/6/08 14:21:15	3.86	10.22	18.7	5.9	
8/6/08 14:21:30	3.87	10.23	18.5	6.1	
8/6/08 14:21:45	3.86	10.25	18.3	6.4	
8/6/08 14:22:00	3.87	10.24	18.4	6.6	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 14:22:15	3.90	10.20	18.5	6.4	
8/6/08 14:22:30	3.90	10.15	18.5	6.2	
8/6/08 14:22:45	3.91	10.12	18.8	6.0	
8/6/08 14:23:00	3.87	10.15	18.6	5.9	
8/6/08 14:23:15	3.83	10.18	18.4	6.1	
8/6/08 14:23:30	3.88	10.16	18.7	6.6	
8/6/08 14:23:45	3.93	10.14	18.6	6.6	
8/6/08 14:24:00	3.91	10.18	18.6	6.1	
8/6/08 14:24:15	3.87	10.22	18.8	5.5	
8/6/08 14:24:30	3.82	10.25	18.7	5.2	
8/6/08 14:24:45	3.79	10.27	18.7	5.6	
8/6/08 14:25:00	3.83	10.23	18.3	6.3	
8/6/08 14:25:15	3.86	10.20	18.6	6.7	
8/6/08 14:25:30	3.88	10.19	18.4	6.1	
8/6/08 14:25:45	3.82	10.23	18.4	5.6	
8/6/08 14:26:00	3.76	10.24	18.3	5.7	
8/6/08 14:26:15	3.83	10.20	18.3	6.1	
8/6/08 14:26:30	3.86	10.19	18.4	6.1	
8/6/08 14:26:45	3.83	10.21	18.5	5.6	
8/6/08 14:27:00	3.82	10.22	18.7	5.6	
8/6/08 14:27:15	3.82	10.22	19.0	5.4	
8/6/08 14:27:30	3.81	10.23	19.5	4.7	
8/6/08 14:27:45	3.69	10.30	19.3	4.0	
8/6/08 14:28:00	3.61	10.36	19.3	3.8	
8/6/08 14:28:15	3.62	10.37	19.3	3.9	
8/6/08 14:28:30	3.66	10.37	19.1	4.4	
8/6/08 14:28:45	3.69	10.34	19.4	4.7	
8/6/08 14:29:00	3.74	10.27	19.2	4.8	
8/6/08 14:29:15	3.74	10.24	19.0	4.7	
8/6/08 14:29:30	3.76	10.22	18.9	4.7	
8/6/08 14:29:45	3.77	10.22	18.9	4.5	
8/6/08 14:30:00	3.76	10.24	19.0	4.1	
8/6/08 14:30:15	3.74	10.25	18.6	3.9	
8/6/08 14:30:30	3.70	10.29	18.6	4.2	
8/6/08 14:30:45	3.73	10.27	18.6	4.3	
8/6/08 14:31:00	3.74	10.26	18.7	4.0	
8/6/08 14:31:15	3.71	10.27	18.7	4.2	
8/6/08 14:31:30	3.74	10.23	18.8	4.8	
8/6/08 14:31:45	3.79	10.20	18.8	5.0	
8/6/08 14:32:00	3.79	10.20	18.8	5.0	
8/6/08 14:32:15	3.79	10.19	19.1	5.1	
8/6/08 14:32:30	3.81	10.15	19.3	4.8	
8/6/08 14:32:45	3.81	10.15	19.1	4.2	
8/6/08 14:33:00	3.72	10.19	19.2	4.0	
8/6/08 14:33:15	3.71	10.22	19.5	3.9	
8/6/08 14:33:30	3.66	10.26	19.7	3.6	
8/6/08 14:33:45	3.66	10.28	19.8	3.2	
8/6/08 14:34:00	3.65	10.30	19.4	3.0	
8/6/08 14:34:15	3.63	10.31	19.7	3.3	
8/6/08 14:34:30	3.64	10.30	19.2	3.9	
8/6/08 14:34:45	3.69	10.27	19.4	4.5	
8/6/08 14:35:00	3.81	10.22	19.6	4.6	
8/6/08 14:35:15	3.85	10.23	19.4	4.2	
8/6/08 14:35:30	3.76	10.26	19.1	4.2	
8/6/08 14:35:45	3.75	10.22	19.6	4.4	
8/6/08 14:36:00	3.79	10.19	19.6	4.5	
8/6/08 14:36:15	3.74	10.22	19.7	4.7	
8/6/08 14:36:30	3.74	10.24	19.5	4.7	
8/6/08 14:36:45	3.76	10.23	19.4	5.0	
8/6/08 14:37:00	3.82	10.18	19.3	5.6	
8/6/08 14:37:15	3.82	10.18	19.3	6.0	
8/6/08 14:37:30	3.82	10.18	19.0	6.7	
8/6/08 14:37:45	3.86	10.17	19.0	7.4	
8/6/08 14:38:00	3.91	10.15	19.4	7.8	
8/6/08 14:38:15	3.91	10.16	19.3	7.9	
8/6/08 14:38:30	3.88	10.19	19.1	7.9	
8/6/08 14:38:45	3.87	10.22	19.0	8.0	
8/6/08 14:39:00	3.89	10.22	19.1	7.9	
8/6/08 14:39:15	3.90	10.23	19.1	7.3	
8/6/08 14:39:30	3.84	10.24	19.4	6.4	
8/6/08 14:39:45	3.79	10.23	19.1	6.1	
8/6/08 14:40:00	3.80	10.21	19.0	6.5	
8/6/08 14:40:15	3.83	10.20	19.5	6.7	
8/6/08 14:40:30	3.83	10.20	19.1	6.8	
8/6/08 14:40:45	3.82	10.19	19.2	6.7	
8/6/08 14:41:00	3.83	10.16	19.0	6.5	
8/6/08 14:41:15	3.87	10.13	18.9	6.7	
8/6/08 14:41:30	3.90	10.12	19.0	6.8	
8/6/08 14:41:45	3.93	10.09	19.0	6.9	
8/6/08 14:42:00	3.94	10.09	19.1	7.0	
8/6/08 14:42:15	3.91	10.11	19.4	6.9	
8/6/08 14:42:30	3.86	10.14	19.3	6.1	
8/6/08 14:42:45	3.84	10.16	19.4	5.8	
8/6/08 14:43:00	3.84	10.16	19.1	6.1	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 14:43:15	3.87	10.16	19.2	6.6	
8/6/08 14:43:30	3.90	10.16	19.6	6.6	
8/6/08 14:43:45	3.89	10.16	19.5	6.0	
8/6/08 14:44:00	3.81	10.19	20.1	4.6	
8/6/08 14:44:15	3.78	10.21	20.3	3.1	
8/6/08 14:44:30	3.64	10.28	20.3	2.2	
8/6/08 14:44:45	3.55	10.31	20.8	1.8	
8/6/08 14:45:00	3.50	10.34	20.4	1.6	
8/6/08 14:45:15	3.43	10.38	20.1	1.4	
8/6/08 14:45:30	3.42	10.38	19.7	1.4	
8/6/08 14:45:45	3.51	10.33	19.6	1.7	
8/6/08 14:46:00	3.61	10.29	19.7	2.0	
8/6/08 14:46:15	3.67	10.28	19.8	2.2	
8/6/08 14:46:30	3.65	10.28	19.6	2.4	
8/6/08 14:46:45	3.65	10.26	19.5	2.7	
8/6/08 14:47:00	3.68	10.22	19.4	2.9	
8/6/08 14:47:15	3.71	10.23	19.6	3.1	
8/6/08 14:47:30	3.73	10.25	19.4	3.4	
8/6/08 14:47:45	3.74	10.25	19.6	3.6	
8/6/08 14:48:00	3.79	10.20	19.4	3.6	
8/6/08 14:48:15	3.79	10.18	19.5	3.6	
8/6/08 14:48:30	3.81	10.16	19.4	3.5	
8/6/08 14:48:45	3.81	10.15	19.4	3.6	
8/6/08 14:49:00	3.82	10.12	19.6	3.7	
8/6/08 14:49:15	3.83	10.12	19.5	3.6	
8/6/08 14:49:30	3.82	10.13	19.6	3.6	
8/6/08 14:49:45	3.81	10.14	19.6	3.3	
8/6/08 14:50:00	3.77	10.17	19.7	3.2	
8/6/08 14:50:15	3.76	10.17	19.6	3.0	
8/6/08 14:50:30	3.75	10.15	19.5	3.0	
8/6/08 14:50:45	3.74	10.15	19.4	3.2	
8/6/08 14:51:00	3.76	10.13	19.4	3.7	
8/6/08 14:51:15	3.82	10.11	19.3	4.0	
8/6/08 14:51:30	3.85	10.11	19.0	4.2	
8/6/08 14:51:45	3.86	10.13	19.2	4.3	
8/6/08 14:52:00	3.84	10.15	19.2	4.4	
8/6/08 14:52:15	3.85	10.14	19.8	4.3	
8/6/08 14:52:30	3.86	10.11	19.4	4.0	
8/6/08 14:52:45	3.81	10.13	19.4	3.9	
8/6/08 14:53:00	3.80	10.14	19.4	4.1	
8/6/08 14:53:15	3.80	10.13	19.3	4.5	
8/6/08 14:53:30	3.84	10.11	19.4	5.0	
8/6/08 14:53:45	3.87	10.11	19.1	5.2	
8/6/08 14:54:00	3.88	10.13	19.0	4.7	
8/6/08 14:54:15	3.87	10.10	18.5	4.7	
8/6/08 14:54:30	3.84	10.07	18.3	5.4	
8/6/08 14:54:45	3.84	10.05	18.6	6.2	
8/6/08 14:55:00	3.84	10.06	19.1	6.1	Move probe from east port to south port
8/6/08 14:55:15	3.81	10.11	12.7	6.2	
8/6/08 14:55:30	3.91	9.94	0.6	7.8	
8/6/08 14:55:45	9.88	5.76	0.1	6.1	
8/6/08 14:56:00	17.94	1.41	4.4	3.9	
8/6/08 14:56:15	20.14	0.40	15.9	7.1	
8/6/08 14:56:30	18.65	1.84	16.7	12.6	
8/6/08 14:56:45	10.94	6.77	15.8	15.4	
8/6/08 14:57:00	6.15	8.99	15.7	15.9	
8/6/08 14:57:15	5.71	9.13	15.8	15.6	
8/6/08 14:57:30	5.82	9.10	15.9	13.9	
8/6/08 14:57:45	5.96	8.99	16.1	11.6	
8/6/08 14:58:00	6.05	8.95	19.1	9.5	
8/6/08 14:58:15	6.13	8.88	20.2	6.9	
8/6/08 14:58:30	4.97	9.63	19.5	4.4	
8/6/08 14:58:45	3.91	10.09	19.0	3.2	Resume Sampling
8/6/08 14:59:00	3.69	10.15	18.8	3.2	
8/6/08 14:59:15	3.64	10.16	18.4	3.3	
8/6/08 14:59:30	3.71	10.11	18.4	3.7	
8/6/08 14:59:45	3.78	10.08	18.6	4.1	
8/6/08 15:00:00	3.80	10.10	18.5	4.1	
8/6/08 15:00:15	3.75	10.14	18.6	4.3	
8/6/08 15:00:30	3.78	10.14	18.6	4.9	
8/6/08 15:00:45	3.79	10.16	18.7	5.2	
8/6/08 15:01:00	3.78	10.19	18.5	5.3	
8/6/08 15:01:15	3.77	10.22	18.5	5.4	
8/6/08 15:01:30	3.74	10.25	18.5	5.7	
8/6/08 15:01:45	3.75	10.25	18.5	6.2	
8/6/08 15:02:00	3.78	10.22	18.3	6.7	
8/6/08 15:02:15	3.85	10.14	18.6	6.6	
8/6/08 15:02:30	3.94	10.09	18.7	6.2	
8/6/08 15:02:45	3.81	10.17	18.2	6.0	
8/6/08 15:03:00	3.82	10.15	19.2	5.6	
8/6/08 15:03:15	4.16	9.98	19.1	5.0	
8/6/08 15:03:30	3.93	10.11	17.8	4.8	
8/6/08 15:03:45	3.80	10.11	17.1	4.5	
8/6/08 15:04:00	4.76	9.47	17.7	4.2	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 15:04:15	5.57	9.12	18.0	3.7	
8/6/08 15:04:30	5.51	9.18	18.2	3.2	
8/6/08 15:04:45	5.33	9.31	18.3	2.9	
8/6/08 15:05:00	5.15	9.39	19.8	3.2	
8/6/08 15:05:15	4.89	9.64	19.7	3.6	
8/6/08 15:05:30	3.99	10.10	19.7	3.9	
8/6/08 15:05:45	3.72	10.20	19.3	4.2	
8/6/08 15:06:00	3.69	10.22	19.1	4.5	
8/6/08 15:06:15	3.69	10.22	18.8	4.7	
8/6/08 15:06:30	3.71	10.21	18.8	5.0	
8/6/08 15:06:45	3.74	10.21	18.7	5.2	
8/6/08 15:07:00	3.76	10.22	19.0	5.3	
8/6/08 15:07:15	3.76	10.21	19.5	5.2	
8/6/08 15:07:30	3.75	10.20	20.0	4.4	
8/6/08 15:07:45	3.72	10.19	19.7	3.7	
8/6/08 15:08:00	3.72	10.17	19.6	3.7	
8/6/08 15:08:15	3.75	10.13	19.8	3.9	
8/6/08 15:08:30	3.78	10.09	19.8	4.2	
8/6/08 15:08:45	3.82	10.05	19.8	4.5	
8/6/08 15:09:00	3.85	10.05	19.7	4.5	
8/6/08 15:09:15	3.85	10.06	19.5	4.6	
8/6/08 15:09:30	3.84	10.05	19.7	5.2	
8/6/08 15:09:45	3.84	10.03	24.3	5.6	
8/6/08 15:10:00	3.85	10.04	23.6	5.3	
8/6/08 15:10:15	3.86	10.06	21.4	4.9	
8/6/08 15:10:30	3.84	10.09	20.4	5.0	
8/6/08 15:10:45	3.82	10.12	19.9	5.4	
8/6/08 15:11:00	3.83	10.14	19.4	6.3	
8/6/08 15:11:15	3.82	10.16	19.2	6.9	
8/6/08 15:11:30	3.79	10.21	19.4	6.9	
8/6/08 15:11:45	3.74	10.24	19.9	6.9	
8/6/08 15:12:00	3.75	10.24	20.3	6.5	
8/6/08 15:12:15	3.75	10.21	20.6	6.0	
8/6/08 15:12:30	3.77	10.20	20.1	6.0	
8/6/08 15:12:45	3.83	10.18	20.0	5.7	
8/6/08 15:13:00	3.83	10.17	19.6	5.0	Point #1
8/6/08 15:13:15	3.74	10.18	20.4	4.7	
8/6/08 15:13:30	3.71	10.15	20.5	4.7	Average Concentrations for Point #1
8/6/08 15:13:45	3.78	10.07	19.5	4.3	3.84 O <sub>2</sub>
8/6/08 15:14:00	3.80	10.04	19.4	3.7	10.09 CO <sub>2</sub>
8/6/08 15:14:15	3.73	10.07	19.7	3.2	19.9 NO <sub>x</sub>
8/6/08 15:14:30	3.67	10.10	19.6	3.1	6.0 CO
8/6/08 15:14:45	3.66	10.10	19.8	3.2	
8/6/08 15:15:00	3.67	10.10	19.8	3.2	
8/6/08 15:15:15	3.67	10.14	20.1	3.0	
8/6/08 15:15:30	3.66	10.19	19.9	3.0	
8/6/08 15:15:45	3.68	10.21	19.5	3.3	
8/6/08 15:16:00	3.72	10.18	19.5	3.7	
8/6/08 15:16:15	3.78	10.14	19.7	4.2	
8/6/08 15:16:30	3.81	10.13	20.1	4.4	
8/6/08 15:16:45	3.79	10.17	21.3	4.2	
8/6/08 15:17:00	3.77	10.20	19.9	3.9	
8/6/08 15:17:15	3.74	10.21	19.8	3.8	
8/6/08 15:17:30	3.76	10.19	19.9	3.7	
8/6/08 15:17:45	3.76	10.18	19.5	3.7	
8/6/08 15:18:00	3.77	10.16	19.8	3.6	
8/6/08 15:18:15	3.78	10.15	19.8	3.4	
8/6/08 15:18:30	3.79	10.12	19.7	3.4	
8/6/08 15:18:45	3.80	10.10	19.5	3.3	
8/6/08 15:19:00	3.81	10.10	19.8	3.2	
8/6/08 15:19:15	3.79	10.09	19.7	3.2	
8/6/08 15:19:30	3.81	10.07	19.9	3.1	
8/6/08 15:19:45	3.80	10.06	19.8	3.0	
8/6/08 15:20:00	3.78	10.08	19.7	3.1	
8/6/08 15:20:15	3.77	10.10	19.7	3.3	
8/6/08 15:20:30	3.75	10.13	19.7	3.6	
8/6/08 15:20:45	3.76	10.13	19.5	4.2	
8/6/08 15:21:00	3.81	10.12	19.6	4.4	
8/6/08 15:21:15	3.84	10.13	19.7	4.9	
8/6/08 15:21:30	3.84	10.13	19.6	5.3	
8/6/08 15:21:45	3.82	10.14	19.9	5.6	
8/6/08 15:22:00	3.85	10.14	19.6	5.9	
8/6/08 15:22:15	3.88	10.14	19.7	6.3	
8/6/08 15:22:30	3.89	10.14	19.6	6.2	
8/6/08 15:22:45	3.86	10.14	19.9	5.5	
8/6/08 15:23:00	3.85	10.12	20.0	5.2	
8/6/08 15:23:15	3.80	10.14	20.0	4.8	
8/6/08 15:23:30	3.77	10.14	20.1	4.6	
8/6/08 15:23:45	3.76	10.13	20.3	4.3	
8/6/08 15:24:00	3.77	10.13	20.2	4.3	
8/6/08 15:24:15	3.79	10.10	20.2	4.1	
8/6/08 15:24:30	3.81	10.08	20.0	4.2	
8/6/08 15:24:45	3.81	10.05	19.9	4.7	
8/6/08 15:25:00	3.81	10.04	19.8	5.0	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 15:25:15	3.83	10.02	19.8	5.3	
8/6/08 15:25:30	3.85	10.02	20.1	5.7	
8/6/08 15:25:45	3.85	10.03	20.6	6.4	
8/6/08 15:26:00	3.90	10.03	20.3	7.0	
8/6/08 15:26:15	3.89	10.06	20.2	7.8	
8/6/08 15:26:30	3.89	10.08	20.7	8.0	
8/6/08 15:26:45	3.92	10.09	20.4	8.2	
8/6/08 15:27:00	3.91	10.10	20.4	8.3	
8/6/08 15:27:15	3.94	10.09	20.3	8.4	
8/6/08 15:27:30	3.96	10.06	20.6	8.3	
8/6/08 15:27:45	3.94	10.08	20.6	8.1	
8/6/08 15:28:00	3.88	10.12	20.6	8.1	
8/6/08 15:28:15	3.83	10.14	20.6	8.5	
8/6/08 15:28:30	3.84	10.11	20.5	8.5	
8/6/08 15:28:45	3.88	10.10	20.1	7.5	
8/6/08 15:29:00	3.87	10.10	20.3	7.1	
8/6/08 15:29:15	3.87	10.08	20.4	7.4	
8/6/08 15:29:30	3.84	10.08	20.7	7.9	
8/6/08 15:29:45	3.88	10.05	20.4	8.3	
8/6/08 15:30:00	3.86	10.06	20.7	8.4	
8/6/08 15:30:15	3.80	10.09	20.5	8.2	
8/6/08 15:30:30	3.75	10.11	20.3	8.4	
8/6/08 15:30:45	3.79	10.10	20.3	9.3	
8/6/08 15:31:00	3.83	10.09	20.6	9.9	
8/6/08 15:31:15	3.86	10.09	20.4	10.6	
8/6/08 15:31:30	3.86	10.08	20.2	10.6	
8/6/08 15:31:45	3.84	10.07	20.2	10.7	
8/6/08 15:32:00	3.85	10.08	20.2	11.0	
8/6/08 15:32:15	3.88	10.10	20.3	11.3	
8/6/08 15:32:30	3.89	10.12	20.3	11.3	
8/6/08 15:32:45	3.90	10.12	20.1	11.0	
8/6/08 15:33:00	3.90	10.11	20.0	11.0	
8/6/08 15:33:15	3.91	10.08	20.1	11.3	
8/6/08 15:33:30	3.91	10.07	20.0	11.1	
8/6/08 15:33:45	3.90	10.07	20.2	10.9	
8/6/08 15:34:00	3.89	10.06	20.0	11.1	
8/6/08 15:34:15	3.88	10.08	20.3	10.8	
8/6/08 15:34:30	3.87	10.08	20.3	10.0	
8/6/08 15:34:45	3.91	10.05	20.3	9.3	
8/6/08 15:35:00	3.92	10.01	20.4	9.1	
8/6/08 15:35:15	3.92	9.98	20.3	8.8	
8/6/08 15:35:30	3.89	9.98	20.3	8.7	
8/6/08 15:35:45	3.87	9.99	20.4	8.3	
8/6/08 15:36:00	3.84	10.03	20.4	7.7	
8/6/08 15:36:15	3.76	10.11	20.4	7.2	
8/6/08 15:36:30	3.76	10.14	20.4	7.3	
8/6/08 15:36:45	3.78	10.14	20.5	7.2	
8/6/08 15:37:00	3.78	10.13	20.5	7.1	
8/6/08 15:37:15	3.75	10.13	20.5	6.8	
8/6/08 15:37:30	3.77	10.12	20.4	6.5	
8/6/08 15:37:45	3.78	10.14	20.5	6.5	
8/6/08 15:38:00	3.78	10.16	20.3	6.5	
8/6/08 15:38:15	3.77	10.17	20.1	6.3	
8/6/08 15:38:30	3.75	10.19	20.1	6.5	
8/6/08 15:38:45	3.76	10.18	20.0	6.6	
8/6/08 15:39:00	3.78	10.15	19.9	6.6	
8/6/08 15:39:15	3.81	10.12	20.1	6.5	
8/6/08 15:39:30	3.82	10.10	20.2	6.2	
8/6/08 15:39:45	3.78	10.07	20.2	5.6	
8/6/08 15:40:00	3.75	10.06	20.1	5.4	
8/6/08 15:40:15	3.71	10.08	19.9	5.1	
8/6/08 15:40:30	3.70	10.08	19.8	4.8	
8/6/08 15:40:45	3.71	10.08	20.1	4.6	
8/6/08 15:41:00	3.73	10.08	20.0	4.5	
8/6/08 15:41:15	3.72	10.10	20.1	4.6	
8/6/08 15:41:30	3.70	10.12	20.3	5.0	
8/6/08 15:41:45	3.71	10.13	20.2	5.3	
8/6/08 15:42:00	3.73	10.14	20.2	5.3	
8/6/08 15:42:15	3.73	10.16	20.2	5.5	
8/6/08 15:42:30	3.72	10.17	20.1	5.7	
8/6/08 15:42:45	3.71	10.19	20.1	6.5	
8/6/08 15:43:00	3.74	10.20	20.1	6.9	
8/6/08 15:43:15	3.77	10.19	20.2	6.9	
8/6/08 15:43:30	3.78	10.17	20.3	6.6	
8/6/08 15:43:45	3.74	10.16	20.1	6.4	
8/6/08 15:44:00	3.70	10.16	20.3	6.4	
8/6/08 15:44:15	3.70	10.16	20.2	6.5	
8/6/08 15:44:30	3.71	10.16	20.2	6.1	
8/6/08 15:44:45	3.70	10.17	20.0	5.5	
8/6/08 15:45:00	3.68	10.18	19.8	5.5	
8/6/08 15:45:15	3.69	10.18	19.7	5.5	
8/6/08 15:45:30	3.70	10.17	19.7	5.3	
8/6/08 15:45:45	3.67	10.19	20.0	4.7	
8/6/08 15:46:00	3.59	10.23	20.0	4.0	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 15:46:15	3.52	10.27	19.9	4.0	
8/6/08 15:46:30	3.53	10.24	19.6	4.3	
8/6/08 15:46:45	3.70	10.14	19.3	4.1	
8/6/08 15:47:00	3.78	10.12	19.5	3.7	
8/6/08 15:47:15	3.76	10.14	19.9	3.1	
8/6/08 15:47:30	3.72	10.18	19.6	2.5	
8/6/08 15:47:45	3.67	10.18	19.6	2.5	
8/6/08 15:48:00	3.76	10.11	19.5	2.8	
8/6/08 15:48:15	3.78	10.10	19.4	3.1	
8/6/08 15:48:30	3.77	10.13	19.1	3.6	
8/6/08 15:48:45	3.78	10.12	19.4	4.1	
8/6/08 15:49:00	3.82	10.11	19.6	4.1	
8/6/08 15:49:15	3.69	10.18	19.6	4.1	
8/6/08 15:49:30	3.59	10.23	19.4	4.1	
8/6/08 15:49:45	3.56	10.24	19.2	4.5	
8/6/08 15:50:00	3.61	10.22	19.3	4.6	
8/6/08 15:50:15	3.62	10.21	19.3	4.6	
8/6/08 15:50:30	3.61	10.21	19.3	4.5	
8/6/08 15:50:45	3.63	10.20	19.2	4.5	
8/6/08 15:51:00	3.64	10.20	19.2	4.5	
8/6/08 15:51:15	3.62	10.22	19.3	4.6	
8/6/08 15:51:30	3.63	10.22	19.5	4.6	
8/6/08 15:51:45	3.66	10.22	19.7	4.4	
8/6/08 15:52:00	3.67	10.22	19.6	4.3	
8/6/08 15:52:15	3.67	10.23	19.4	4.4	
8/6/08 15:52:30	3.65	10.23	19.4	4.4	
8/6/08 15:52:45	3.66	10.22	19.7	4.6	
8/6/08 15:53:00	3.65	10.20	19.9	4.6	
8/6/08 15:53:15	3.64	10.19	19.8	4.4	
8/6/08 15:53:30	3.63	10.17	19.6	4.5	
8/6/08 15:53:45	3.67	10.14	19.6	4.7	
8/6/08 15:54:00	3.70	10.12	19.6	4.9	
8/6/08 15:54:15	3.72	10.11	19.7	5.4	
8/6/08 15:54:30	3.72	10.11	19.6	5.8	
8/6/08 15:54:45	3.72	10.12	19.4	6.2	
8/6/08 15:55:00	3.71	10.13	19.1	7.0	
8/6/08 15:55:15	3.78	10.10	19.4	8.2	
8/6/08 15:55:30	3.84	10.08	19.4	8.7	
8/6/08 15:55:45	3.81	10.09	19.7	8.7	
8/6/08 15:56:00	3.78	10.08	19.6	8.4	
8/6/08 15:56:15	3.78	10.09	19.3	8.3	
8/6/08 15:56:30	3.80	10.11	19.3	8.4	
8/6/08 15:56:45	3.79	10.14	19.4	8.5	
8/6/08 15:57:00	3.78	10.16	19.5	8.4	
8/6/08 15:57:15	3.77	10.15	19.7	8.0	
8/6/08 15:57:30	3.76	10.14	19.8	7.5	
8/6/08 15:57:45	3.70	10.16	19.9	7.3	
8/6/08 15:58:00	3.68	10.16	19.8	7.4	
8/6/08 15:58:15	3.70	10.16	20.0	7.7	
8/6/08 15:58:30	3.73	10.15	19.8	7.9	
8/6/08 15:58:45	3.74	10.15	19.9	7.9	
8/6/08 15:59:00	3.74	10.16	19.8	7.2	
8/6/08 15:59:15	3.67	10.20	19.8	6.5	
8/6/08 15:59:30	3.60	10.26	20.0	6.6	
8/6/08 15:59:45	3.61	10.27	20.2	7.0	
8/6/08 16:00:00	3.65	10.25	20.5	7.1	
8/6/08 16:00:15	3.64	10.24	20.2	6.5	
8/6/08 16:00:30	3.62	10.22	20.3	6.5	
8/6/08 16:00:45	3.65	10.17	19.7	7.0	
8/6/08 16:01:00	3.67	10.16	17.1	7.0	
8/6/08 16:01:15	4.11	9.83	15.8	6.2	
8/6/08 16:01:30	5.70	8.91	18.4	5.5	
8/6/08 16:01:45	6.88	8.43	20.3	4.9	
8/6/08 16:02:00	5.71	9.27	20.4	4.9	
8/6/08 16:02:15	4.16	9.99	20.3	5.6	
8/6/08 16:02:30	3.70	10.15	20.1	6.0	
8/6/08 16:02:45	3.65	10.17	20.0	5.8	
8/6/08 16:03:00	3.62	10.20	20.0	5.9	
8/6/08 16:03:15	3.63	10.21	20.1	6.0	
8/6/08 16:03:30	3.66	10.21	20.2	6.2	
8/6/08 16:03:45	3.67	10.21	20.0	6.3	
8/6/08 16:04:00	3.66	10.21	19.8	6.3	
8/6/08 16:04:15	3.66	10.21	19.9	6.3	
8/6/08 16:04:30	3.68	10.21	20.1	6.1	
8/6/08 16:04:45	3.68	10.22	20.1	6.0	
8/6/08 16:05:00	3.67	10.23	20.1	6.0	
8/6/08 16:05:15	3.66	10.23	20.0	6.1	
8/6/08 16:05:30	3.65	10.22	20.6	6.1	
8/6/08 16:05:45	3.65	10.21	20.6	5.5	
8/6/08 16:06:00	3.57	10.26	20.7	4.8	
8/6/08 16:06:15	3.50	10.30	20.8	4.6	
8/6/08 16:06:30	3.49	10.29	20.6	5.0	
8/6/08 16:06:45	3.52	10.27	20.4	6.9	
8/6/08 16:07:00	3.55	10.24	20.4	7.6	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 16:07:15	3.77	10.11	20.0	6.9	
8/6/08 16:07:30	3.81	10.11	20.3	6.4	
8/6/08 16:07:45	3.76	10.10	20.2	6.0	
8/6/08 16:08:00	3.82	10.09	19.1	5.9	
8/6/08 16:08:15	3.71	10.15	16.7	6.1	
8/6/08 16:08:30	4.27	9.74	15.8	5.8	
8/6/08 16:08:45	5.96	8.84	15.4	4.9	
8/6/08 16:09:00	7.01	8.28	17.3	4.4	
8/6/08 16:09:15	7.48	8.10	19.9	5.0	
8/6/08 16:09:30	6.40	8.89	20.1	6.0	
8/6/08 16:09:45	4.44	9.87	20.0	7.0	
8/6/08 16:10:00	3.80	10.12	19.8	7.0	Move probe from south port to east port
8/6/08 16:10:15	3.66	10.18	19.6	6.9	
8/6/08 16:10:30	3.64	10.19	15.8	7.1	
8/6/08 16:10:45	3.71	10.11	2.9	9.8	
8/6/08 16:11:00	7.81	7.04	0.9	22.7	
8/6/08 16:11:15	16.61	2.09	8.7	27.0	
8/6/08 16:11:30	19.76	0.72	19.4	25.3	
8/6/08 16:11:45	14.78	4.66	18.8	18.3	
8/6/08 16:12:00	6.83	8.85	18.1	12.3	
8/6/08 16:12:15	4.05	10.04	17.5	9.1	
8/6/08 16:12:30	3.66	10.20	17.3	9.8	
8/6/08 16:12:45	3.67	10.20	17.3	10.6	
8/6/08 16:13:00	3.68	10.20	17.0	10.4	Point #3
8/6/08 16:13:15	3.66	10.22	17.1	9.8	
8/6/08 16:13:30	3.65	10.22	17.4	9.9	Average Concentrations for Point #3
8/6/08 16:13:45	3.65	10.21	17.7	9.0	3.67 O <sub>2</sub>
8/6/08 16:14:00	3.59	10.25	17.7	7.5	10.22 CO <sub>2</sub>
8/6/08 16:14:15	3.48	10.31	17.5	6.5	18.1 NO <sub>x</sub>
8/6/08 16:14:30	3.45	10.33	17.4	6.8	7.1 CO
8/6/08 16:14:45	3.50	10.31	17.5	7.7	
8/6/08 16:15:00	3.55	10.27	17.3	8.0	
8/6/08 16:15:15	3.56	10.25	17.4	8.2	
8/6/08 16:15:30	3.58	10.24	17.2	8.4	
8/6/08 16:15:45	3.59	10.26	17.6	8.4	
8/6/08 16:16:00	3.61	10.26	17.7	7.7	
8/6/08 16:16:15	3.63	10.24	17.9	7.3	
8/6/08 16:16:30	3.64	10.21	17.9	7.3	
8/6/08 16:16:45	3.64	10.19	18.0	7.3	
8/6/08 16:17:00	3.84	10.19	18.0	7.2	
8/6/08 16:17:15	3.62	10.23	18.2	6.5	
8/6/08 16:17:30	3.56	10.30	18.1	5.7	
8/6/08 16:17:45	3.48	10.34	18.0	5.4	
8/6/08 16:18:00	3.50	10.30	17.9	5.8	
8/6/08 16:18:15	3.51	10.28	17.9	6.1	
8/6/08 16:18:30	3.54	10.28	18.3	6.0	
8/6/08 16:18:45	3.53	10.31	18.6	5.0	
8/6/08 16:19:00	3.41	10.38	18.7	4.2	
8/6/08 16:19:15	3.32	10.41	18.7	3.9	
8/6/08 16:19:30	3.30	10.41	18.0	4.0	
8/6/08 16:19:45	3.34	10.37	18.2	4.5	
8/6/08 16:20:00	3.43	10.33	18.0	4.6	
8/6/08 16:20:15	3.44	10.34	18.1	4.5	
8/6/08 16:20:30	3.47	10.34	18.0	4.2	
8/6/08 16:20:45	3.46	10.34	18.1	4.5	
8/6/08 16:21:00	3.45	10.33	17.8	4.8	
8/6/08 16:21:15	3.46	10.34	18.0	5.0	
8/6/08 16:21:30	3.48	10.34	18.2	4.9	
8/6/08 16:21:45	3.49	10.34	18.7	4.3	
8/6/08 16:22:00	3.48	10.33	18.5	4.1	
8/6/08 16:22:15	3.45	10.32	18.9	4.2	
8/6/08 16:22:30	3.44	10.29	18.6	3.9	
8/6/08 16:22:45	3.38	10.32	18.4	3.7	
8/6/08 16:23:00	3.36	10.34	18.1	3.9	
8/6/08 16:23:15	3.43	10.29	18.6	4.3	
8/6/08 16:23:30	3.47	10.25	18.9	4.4	
8/6/08 16:23:45	3.47	10.24	19.0	4.4	
8/6/08 16:24:00	3.43	10.30	18.5	4.3	
8/6/08 16:24:15	3.38	10.35	18.0	5.4	
8/6/08 16:24:30	3.48	10.29	17.9	6.6	
8/6/08 16:24:45	3.63	10.20	17.7	7.3	
8/6/08 16:25:00	3.68	10.16	17.7	7.4	
8/6/08 16:25:15	3.67	10.15	17.6	8.1	
8/6/08 16:25:30	3.60	10.17	17.5	8.8	
8/6/08 16:25:45	3.64	10.16	17.5	9.4	
8/6/08 16:26:00	3.67	10.16	17.3	9.3	
8/6/08 16:26:15	3.70	10.14	17.6	9.1	
8/6/08 16:26:30	3.71	10.12	17.8	8.9	
8/6/08 16:26:45	3.72	10.11	17.9	8.4	
8/6/08 16:27:00	3.72	10.10	18.0	8.3	
8/6/08 16:27:15	3.74	10.07	18.1	8.8	
8/6/08 16:27:30	3.75	10.05	18.0	8.7	
8/6/08 16:27:45	3.71	10.10	18.0	8.1	
8/6/08 16:28:00	3.68	10.13	17.8	8.2	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 16:28:15	3.67	10.14	17.8	8.7	
8/6/08 16:28:30	3.68	10.12	17.5	8.8	
8/6/08 16:28:45	3.68	10.12	17.6	8.8	
8/6/08 16:29:00	3.69	10.11	18.0	8.8	
8/6/08 16:29:15	3.69	10.13	18.0	8.0	
8/6/08 16:29:30	3.65	10.16	18.1	7.5	
8/6/08 16:29:45	3.65	10.15	18.3	7.0	
8/6/08 16:30:00	3.65	10.15	18.3	6.8	
8/6/08 16:30:15	3.64	10.13	18.5	6.8	
8/6/08 16:30:30	3.67	10.11	18.2	6.4	
8/6/08 16:30:45	3.65	10.11	18.4	6.2	
8/6/08 16:31:00	3.64	10.13	18.4	6.1	
8/6/08 16:31:15	3.62	10.16	18.0	6.3	
8/6/08 16:31:30	3.66	10.11	17.9	6.4	
8/6/08 16:31:45	3.71	10.09	17.6	6.7	
8/6/08 16:32:00	3.72	10.09	17.9	6.8	
8/6/08 16:32:15	3.71	10.11	18.0	7.0	
8/6/08 16:32:30	3.67	10.12	18.2	7.0	
8/6/08 16:32:45	3.68	10.10	18.2	6.6	
8/6/08 16:33:00	3.66	10.14	18.2	6.1	
8/6/08 16:33:15	3.64	10.19	17.8	6.3	
8/6/08 16:33:30	3.66	10.17	17.8	6.8	
8/6/08 16:33:45	3.71	10.13	17.8	7.6	
8/6/08 16:34:00	3.74	10.11	17.9	8.1	
8/6/08 16:34:15	3.74	10.12	18.3	8.4	
8/6/08 16:34:30	3.75	10.12	18.4	8.2	
8/6/08 16:34:45	3.73	10.14	18.2	7.8	
8/6/08 16:35:00	3.70	10.16	17.9	7.4	
8/6/08 16:35:15	3.66	10.17	18.0	7.4	
8/6/08 16:35:30	3.65	10.18	17.9	7.7	
8/6/08 16:35:45	3.64	10.18	17.8	8.7	
8/6/08 16:36:00	3.68	10.16	18.0	9.5	
8/6/08 16:36:15	3.71	10.14	17.7	10.4	
8/6/08 16:36:30	3.75	10.13	17.5	11.1	
8/6/08 16:36:45	3.82	10.10	17.8	12.2	
8/6/08 16:37:00	3.87	10.09	17.8	11.3	
8/6/08 16:37:15	3.77	10.15	17.5	9.6	
8/6/08 16:37:30	3.67	10.20	17.2	10.1	
8/6/08 16:37:45	3.67	10.19	17.3	12.8	
8/6/08 16:38:00	3.77	10.17	17.5	14.5	
8/6/08 16:38:15	3.85	10.16	17.2	15.4	
8/6/08 16:38:30	3.89	10.14	17.4	15.8	
8/6/08 16:38:45	3.90	10.12	17.6	16.1	
8/6/08 16:39:00	3.89	10.11	17.7	15.9	
8/6/08 16:39:15	3.89	10.11	17.7	15.5	
8/6/08 16:39:30	3.89	10.11	17.8	15.0	
8/6/08 16:39:45	3.86	10.13	17.9	13.7	
8/6/08 16:40:00	3.82	10.15	18.1	12.8	
8/6/08 16:40:15	3.79	10.16	18.1	11.2	
8/6/08 16:40:30	3.77	10.18	18.0	9.9	
8/6/08 16:40:45	3.74	10.19	17.9	9.0	
8/6/08 16:41:00	3.74	10.17	17.9	9.3	
8/6/08 16:41:15	3.76	10.15	17.9	10.0	
8/6/08 16:41:30	3.77	10.14	18.0	10.4	
8/6/08 16:41:45	3.79	10.14	17.8	10.2	
8/6/08 16:42:00	3.77	10.15	17.8	9.5	
8/6/08 16:42:15	3.73	10.17	17.8	8.6	
8/6/08 16:42:30	3.69	10.17	17.7	8.6	
8/6/08 16:42:45	3.73	10.14	17.8	9.0	
8/6/08 16:43:00	3.76	10.13	18.0	9.2	
8/6/08 16:43:15	3.79	10.14	18.1	8.8	
8/6/08 16:43:30	3.76	10.17	18.2	8.2	
8/6/08 16:43:45	3.74	10.18	18.3	7.5	
8/6/08 16:44:00	3.74	10.19	18.4	7.0	
8/6/08 16:44:15	3.70	10.24	18.4	6.9	
8/6/08 16:44:30	3.69	10.25	18.4	7.1	
8/6/08 16:44:45	3.69	10.25	18.4	7.2	
8/6/08 16:45:00	3.68	10.27	18.3	7.0	
8/6/08 16:45:15	3.69	10.27	18.1	6.9	
8/6/08 16:45:30	3.70	10.26	18.1	7.1	
8/6/08 16:45:45	3.71	10.23	18.1	7.7	
8/6/08 16:46:00	3.74	10.20	18.1	8.0	
8/6/08 16:46:15	3.73	10.20	17.7	8.0	
8/6/08 16:46:30	3.72	10.21	17.9	7.9	
8/6/08 16:46:45	3.70	10.21	17.9	8.0	
8/6/08 16:47:00	3.70	10.21	18.0	7.6	
8/6/08 16:47:15	3.68	10.23	18.1	6.9	
8/6/08 16:47:30	3.67	10.25	18.1	6.6	
8/6/08 16:47:45	3.67	10.25	18.2	6.2	
8/6/08 16:48:00	3.67	10.24	18.2	6.0	
8/6/08 16:48:15	3.66	10.25	17.9	6.1	
8/6/08 16:48:30	3.66	10.24	18.1	6.6	
8/6/08 16:48:45	3.69	10.22	17.9	6.8	
8/6/08 16:49:00	3.70	10.21	18.0	6.5	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 16:49:15	3.71	10.21	17.8	6.0	
8/6/08 16:49:30	3.70	10.22	17.7	5.9	
8/6/08 16:49:45	3.87	10.23	18.0	6.0	
8/6/08 16:50:00	3.65	10.25	17.9	5.8	
8/6/08 16:50:15	3.65	10.25	18.0	5.8	
8/6/08 16:50:30	3.68	10.26	18.4	5.7	
8/6/08 16:50:45	3.69	10.27	18.4	5.0	
8/6/08 16:51:00	3.66	10.27	18.4	4.8	
8/6/08 16:51:15	3.66	10.27	18.4	4.8	
8/6/08 16:51:30	3.87	10.28	18.4	4.8	
8/6/08 16:51:45	3.68	10.26	18.2	5.0	
8/6/08 16:52:00	3.71	10.22	18.4	5.2	
8/6/08 16:52:15	3.73	10.19	18.6	5.4	
8/6/08 16:52:30	3.72	10.19	18.6	5.6	
8/6/08 16:52:45	3.72	10.20	18.8	5.2	
8/6/08 16:53:00	3.71	10.24	18.8	4.5	
8/6/08 16:53:15	3.61	10.30	18.9	4.1	
8/6/08 16:53:30	3.60	10.29	18.9	4.0	
8/6/08 16:53:45	3.62	10.25	19.0	3.7	
8/6/08 16:54:00	3.62	10.23	18.8	3.8	
8/6/08 16:54:15	3.62	10.24	18.8	4.4	
8/6/08 16:54:30	3.66	10.26	18.5	4.6	
8/6/08 16:54:45	3.66	10.26	18.4	4.4	
8/6/08 16:55:00	3.65	10.25	18.3	4.0	
8/6/08 16:55:15	3.65	10.26	18.3	3.8	
8/6/08 16:55:30	3.63	10.28	18.5	3.8	
8/6/08 16:55:45	3.60	10.30	18.8	3.4	
8/6/08 16:56:00	3.58	10.31	19.0	3.2	
8/6/08 16:56:15	3.55	10.34	18.6	2.8	
8/6/08 16:56:30	3.52	10.36	18.5	2.5	
8/6/08 16:56:45	3.55	10.35	18.7	2.6	
8/6/08 16:57:00	3.58	10.34	18.6	2.6	
8/6/08 16:57:15	3.59	10.34	18.6	2.6	
8/6/08 16:57:30	3.60	10.34	18.5	2.7	
8/6/08 16:57:45	3.60	10.33	18.4	2.8	
8/6/08 16:58:00	3.62	10.31	18.3	2.8	
8/6/08 16:58:15	3.61	10.31	18.6	3.0	
8/6/08 16:58:30	3.61	10.32	18.7	3.2	
8/6/08 16:58:45	3.60	10.33	18.6	3.1	
8/6/08 16:59:00	3.58	10.35	18.5	3.1	
8/6/08 16:59:15	3.56	10.35	18.3	3.1	
8/6/08 16:59:30	3.61	10.30	18.2	3.2	
8/6/08 16:59:45	3.66	10.27	18.2	3.6	
8/6/08 17:00:00	3.68	10.30	18.4	3.7	
8/6/08 17:00:15	3.67	10.31	18.5	3.5	
8/6/08 17:00:30	3.65	10.33	18.5	3.3	
8/6/08 17:00:45	3.61	10.33	18.4	3.1	
8/6/08 17:01:00	3.63	10.31	18.1	3.2	
8/6/08 17:01:15	3.67	10.27	18.3	3.3	
8/6/08 17:01:30	3.68	10.25	18.3	3.3	
8/6/08 17:01:45	3.64	10.27	18.3	3.1	
8/6/08 17:02:00	3.61	10.28	18.1	3.3	
8/6/08 17:02:15	3.63	10.27	18.2	3.5	
8/6/08 17:02:30	3.67	10.24	18.0	3.7	
8/6/08 17:02:45	3.70	10.23	18.1	4.3	
8/6/08 17:03:00	3.73	10.22	18.0	4.6	
8/6/08 17:03:15	3.75	10.21	18.0	4.7	
8/6/08 17:03:30	3.76	10.20	18.1	4.6	
8/6/08 17:03:45	3.75	10.21	18.1	4.5	
8/6/08 17:04:00	3.69	10.25	18.3	4.4	
8/6/08 17:04:15	3.66	10.26	18.4	4.2	
8/6/08 17:04:30	3.68	10.26	18.3	4.1	
8/6/08 17:04:45	3.64	10.25	18.1	4.6	
8/6/08 17:05:00	3.70	10.21	17.2	6.8	
8/6/08 17:05:15	3.76	10.18	17.1	15.3	
8/6/08 17:05:30	3.98	10.07	17.4	21.0	
8/6/08 17:05:45	4.10	10.03	17.2	24.0	
8/6/08 17:06:00	4.11	10.01	17.4	25.0	
8/6/08 17:06:15	4.14	9.99	17.6	26.1	
8/6/08 17:06:30	4.14	9.98	17.3	25.4	
8/6/08 17:06:45	4.11	9.99	17.4	22.8	
8/6/08 17:07:00	4.09	10.00	17.5	21.5	
8/6/08 17:07:15	4.06	10.02	17.4	18.7	
8/6/08 17:07:30	3.97	10.07	17.5	16.4	
8/6/08 17:07:45	3.88	10.13	17.5	12.5	
8/6/08 17:08:00	3.86	10.17	17.6	10.3	
8/6/08 17:08:15	3.86	10.16	18.1	7.6	
8/6/08 17:08:30	3.82	10.18	18.5	5.5	
8/6/08 17:08:45	3.70	10.21	18.7	3.8	
8/6/08 17:09:00	3.67	10.19	18.8	3.3	
8/6/08 17:09:15	3.68	10.18	18.8	3.1	Stratification Check
8/6/08 17:09:30	3.70	10.16	19.1	2.9	3-point average
8/6/08 17:09:45	3.69	10.19	18.8	2.5	
8/6/08 17:10:00	3.65	10.24	18.8	2.6	3.79 O <sub>2</sub>

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 17:10:15	3.64	10.27	18.7	2.7	10.16 CO <sub>2</sub>
8/6/08 17:10:30	3.65	10.27	18.9	2.7	19.0 NO <sub>x</sub>
8/6/08 17:10:45	3.65	10.27	18.8	2.8	6.1 CO
8/6/08 17:11:00	3.63	10.29	18.6	3.0	
8/6/08 17:11:15	3.62	10.29	18.5	3.1	-3.1 O <sub>2</sub> % difference
8/6/08 17:11:30	3.64	10.29	18.3	3.3	0.1 CO <sub>2</sub> % difference
8/6/08 17:11:45	3.64	10.30	18.2	4.0	-4.8 NO <sub>x</sub> % difference
8/6/08 17:12:00	3.66	10.28	17.6	4.6	1.0 CO ppm difference
8/6/08 17:12:15	3.69	10.24	17.1	6.4	
8/6/08 17:12:30	3.71	10.20	17.7	7.0	
8/6/08 17:12:45	3.71	10.21	17.5	6.8	
8/6/08 17:13:00	3.72	10.21	21.6	6.8	End Run No. 2
8/6/08 17:13:15	3.77	10.17	24.2	22.7	
8/6/08 17:13:30	3.74	7.44	17.5	28.1	
8/6/08 17:13:45	2.37	2.97	2.1	15.2	
8/6/08 17:14:00	2.86	0.72	1.4	5.7	
8/6/08 17:14:15	4.10	0.30	1.1	2.2	
8/6/08 17:14:30	4.41	0.23	0.9	1.9	
8/6/08 17:14:45	4.46	0.22	0.8	1.9	
8/6/08 17:15:00	4.46	0.21	0.7	1.9	
8/6/08 17:15:15	4.44	0.20	0.6	2.0	
8/6/08 17:15:30	4.43	0.20	0.6	1.9	
8/6/08 17:15:45	4.44	0.19	0.5	1.7	
8/6/08 17:16:00	4.46	0.19	0.5	1.7	
8/6/08 17:16:15	4.48	0.19	0.5	1.8	
8/6/08 17:16:30	4.50	0.18	0.4	1.9	
8/6/08 17:16:45	4.51	0.18	0.4	1.9	System Bias
8/6/08 17:17:00	4.52	0.18	0.4	1.7	4.52 4.50% O <sub>2</sub>
8/6/08 17:17:15	4.52	0.18	0.4	1.6	0.18 Zero CO <sub>2</sub>
8/6/08 17:17:30	4.52	0.18	0.3	1.7	0.4 Zero NO <sub>x</sub>
8/6/08 17:17:45	4.52	0.18	0.4	1.8	
8/6/08 17:18:00	4.56	0.18	2.1	1.9	
8/6/08 17:18:15	7.76	0.25	0.6	1.4	
8/6/08 17:18:30	7.95	3.12	0.3	0.3	
8/6/08 17:18:45	2.22	7.37	0.3	-0.1	
8/6/08 17:19:00	0.26	8.69	0.3	0.0	
8/6/08 17:19:15	-0.01	8.70	0.3	0.0	
8/6/08 17:19:30	-0.04	8.56	0.2	0.1	
8/6/08 17:19:45	-0.05	8.50	0.2	0.1	
8/6/08 17:20:00	-0.05	8.53	0.2	-0.1	
8/6/08 17:20:15	-0.05	8.67	0.2	-0.2	
8/6/08 17:20:30	-0.06	8.88	0.2	-0.1	
8/6/08 17:20:45	-0.06	9.04	0.2	0.0	
8/6/08 17:21:00	-0.06	9.12	0.2	0.0	
8/6/08 17:21:15	-0.07	9.17	0.2	-0.1	
8/6/08 17:21:30	-0.07	9.19	0.2	-0.2	
8/6/08 17:21:45	-0.07	9.20	0.2	-0.2	
8/6/08 17:22:00	-0.07	9.21	0.2	-0.1	
8/6/08 17:22:15	-0.07	9.22	0.2	0.0	System Bias
8/6/08 17:22:30	-0.07	9.22	0.1	0.0	
8/6/08 17:22:45	-0.07	9.22	0.2	-0.2	9.22 9.00% CO <sub>2</sub>
8/6/08 17:23:00	-0.07	9.22	0.1	-0.3	
8/6/08 17:23:15	-0.07	9.23	0.1	-0.2	-0.2 Zero CO
8/6/08 17:23:30	-0.07	9.23	0.1	-0.1	
8/6/08 17:23:45	-0.07	9.23	0.2	-0.1	
8/6/08 17:24:00	-0.04	9.19	6.3	0.2	
8/6/08 17:24:15	4.41	6.67	21.8	1.6	
8/6/08 17:24:30	8.68	3.41	1.0	21.3	
8/6/08 17:24:45	2.42	1.43	0.5	58.1	
8/6/08 17:25:00	0.23	0.44	0.4	81.4	
8/6/08 17:25:15	0.00	0.26	0.3	87.0	
8/6/08 17:25:30	-0.02	0.23	0.3	87.7	
8/6/08 17:25:45	-0.02	0.21	0.2	88.0	
8/6/08 17:26:00	-0.03	0.21	0.2	88.6	
8/6/08 17:26:15	-0.04	0.20	0.2	89.1	
8/6/08 17:26:30	-0.05	0.20	0.2	89.4	
8/6/08 17:26:45	-0.05	0.19	0.1	89.6	
8/6/08 17:27:00	-0.05	0.19	0.1	89.6	
8/6/08 17:27:15	-0.05	0.19	0.1	89.4	
8/6/08 17:27:30	-0.05	0.18	0.1	89.4	
8/6/08 17:27:45	-0.05	0.18	0.1	89.6	
8/6/08 17:28:00	-0.05	0.18	0.1	89.7	
8/6/08 17:28:15	-0.05	0.18	0.1	89.9	
8/6/08 17:28:30	-0.05	0.18	0.1	89.6	
8/6/08 17:28:45	-0.05	0.18	0.1	89.5	System Bias
8/6/08 17:29:00	-0.05	0.18	0.1	89.7	
8/6/08 17:29:15	-0.05	0.17	0.1	89.8	
8/6/08 17:29:30	-0.05	0.17	0.1	90.0	
8/6/08 17:29:45	-0.05	0.17	0.1	90.0	89.9 90.0 ppm CO
8/6/08 17:30:00	-0.06	0.17	7.5	88.2	
8/6/08 17:30:15	0.08	0.85	1.1	69.8	
8/6/08 17:30:30	0.95	3.10	0.2	44.5	
8/6/08 17:30:45	0.55	1.51	7.0	35.1	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 17:31:00	0.03	0.35	22.4	29.9	
8/6/08 17:31:15	-0.04	0.23	25.2	15.6	
8/6/08 17:31:30	-0.04	0.19	26.1	5.5	
8/6/08 17:31:45	-0.04	0.17	26.6	2.9	
8/6/08 17:32:00	-0.04	0.17	28.1	2.5	
8/6/08 17:32:15	-0.04	0.16	28.4	2.4	
8/6/08 17:32:30	-0.04	0.16	28.2	2.4	
8/6/08 17:32:45	-0.04	0.16	27.7	2.3	
8/6/08 17:33:00	-0.04	0.16	33.1	2.0	
8/6/08 17:33:15	-0.04	0.16	47.5	1.9	
8/6/08 17:33:30	-0.05	0.16	47.5	2.0	
8/6/08 17:33:45	-0.05	0.16	46.4	2.0	
8/6/08 17:34:00	-0.05	0.15	45.7	2.0	
8/6/08 17:34:15	-0.05	0.15	45.3	2.0	
8/6/08 17:34:30	-0.05	0.15	45.0	1.8	
8/6/08 17:34:45	-0.06	0.15	44.7	1.8	
8/6/08 17:35:00	-0.05	0.15	44.5	1.9	
8/6/08 17:35:15	-0.05	0.15	44.4	1.9	
8/6/08 17:35:30	-0.06	0.15	44.3	1.9	
8/6/08 17:35:45	-0.05	0.15	44.2	2.0	System Bias
8/6/08 17:36:00	-0.05	0.15	44.1	1.7	-0.06 Zero O <sub>2</sub>
8/6/08 17:36:15	-0.06	0.15	44.0	1.7	
8/6/08 17:36:30	-0.05	0.15	44.0	1.8	44.0 45.0 ppm NO <sub>x</sub>
8/6/08 17:36:45	-0.06	0.15	43.9	1.8	
8/6/08 17:37:00	-0.06	0.15	43.3	1.9	
8/6/08 17:37:15	-0.06	0.16	23.9	1.8	
8/6/08 17:37:30	0.38	2.29	18.4	2.2	
8/6/08 17:37:45	2.02	7.20	18.3	3.3	
8/6/08 17:38:00	3.11	9.85	18.6	3.8	
8/6/08 17:38:15	3.41	10.49	18.6	3.5	
8/6/08 17:38:30	3.38	10.80	18.3	3.0	
8/6/08 17:38:45	3.34	10.64	18.4	2.4	
8/6/08 17:39:00	3.33	10.67	18.2	1.8	
8/6/08 17:39:15	3.29	10.69	18.1	1.4	
8/6/08 17:39:30	3.23	10.72	18.4	1.1	
8/6/08 17:39:45	3.19	10.71	18.4	0.7	Begin Run No. 3
8/6/08 17:40:00	3.11	10.70	17.6	0.4	Point #2
8/6/08 17:40:15	3.10	10.64	17.5	0.5	
8/6/08 17:40:30	3.31	10.52	17.3	1.1	Average Concentrations for Point #2
8/6/08 17:40:45	3.44	10.45	17.1	2.4	3.40 O <sub>2</sub>
8/6/08 17:41:00	3.54	10.39	17.2	4.2	10.36 CO <sub>2</sub>
8/6/08 17:41:15	3.67	10.32	17.4	6.0	18.1 NO <sub>x</sub>
8/6/08 17:41:30	3.68	10.30	17.4	8.2	7.6 CO
8/6/08 17:41:45	3.73	10.25	17.4	11.7	
8/6/08 17:42:00	3.83	10.18	17.2	16.3	
8/6/08 17:42:15	3.89	10.15	17.2	22.7	
8/6/08 17:42:30	3.95	10.11	16.8	30.7	
8/6/08 17:42:45	4.04	10.05	16.9	40.6	
8/6/08 17:43:00	4.11	10.00	16.9	48.9	
8/6/08 17:43:15	4.13	10.02	17.0	53.2	
8/6/08 17:43:30	4.10	10.07	17.4	53.5	
8/6/08 17:43:45	4.05	10.12	17.6	50.9	
8/6/08 17:44:00	4.03	10.14	18.2	45.2	
8/6/08 17:44:15	4.00	10.15	18.2	35.4	
8/6/08 17:44:30	3.87	10.19	18.6	25.3	
8/6/08 17:44:45	3.75	10.24	18.5	18.5	
8/6/08 17:45:00	3.68	10.26	18.7	14.7	
8/6/08 17:45:15	3.67	10.28	18.7	11.1	
8/6/08 17:45:30	3.57	10.34	18.3	9.2	
8/6/08 17:45:45	3.54	10.35	18.0	8.9	
8/6/08 17:46:00	3.57	10.34	17.9	8.5	
8/6/08 17:46:15	3.55	10.34	18.1	8.2	
8/6/08 17:46:30	3.56	10.33	18.8	7.7	
8/6/08 17:46:45	3.53	10.34	18.9	6.4	
8/6/08 17:47:00	3.44	10.38	18.9	5.6	
8/6/08 17:47:15	3.40	10.40	18.9	5.7	
8/6/08 17:47:30	3.43	10.39	18.7	5.5	
8/6/08 17:47:45	3.42	10.42	18.5	5.0	
8/6/08 17:48:00	3.39	10.43	18.0	5.4	
8/6/08 17:48:15	3.39	10.42	18.0	6.7	
8/6/08 17:48:30	3.49	10.35	18.1	7.1	
8/6/08 17:48:45	3.47	10.37	17.8	6.5	
8/6/08 17:49:00	3.36	10.45	18.1	6.3	
8/6/08 17:49:15	3.40	10.45	18.2	6.0	
8/6/08 17:49:30	3.35	10.47	18.2	5.2	
8/6/08 17:49:45	3.30	10.48	18.3	5.2	
8/6/08 17:50:00	3.31	10.47	18.2	5.2	
8/6/08 17:50:15	3.31	10.48	18.4	5.3	
8/6/08 17:50:30	3.35	10.46	18.4	5.2	
8/6/08 17:50:45	3.37	10.44	18.6	5.7	
8/6/08 17:51:00	3.43	10.40	18.7	5.8	
8/6/08 17:51:15	3.48	10.38	18.6	5.6	
8/6/08 17:51:30	3.48	10.37	19.2	5.4	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 17:51:45	3.46	10.37	19.0	4.8	
8/6/08 17:52:00	3.40	10.39	18.9	4.5	
8/6/08 17:52:15	3.41	10.38	18.2	4.7	
8/6/08 17:52:30	3.42	10.36	17.9	5.4	
8/6/08 17:52:45	3.45	10.33	17.7	6.3	
8/6/08 17:53:00	3.47	10.33	17.8	6.5	
8/6/08 17:53:15	3.49	10.36	17.9	6.1	
8/6/08 17:53:30	3.49	10.38	18.2	5.6	
8/6/08 17:53:45	3.47	10.40	18.2	5.2	
8/6/08 17:54:00	3.41	10.43	18.2	5.0	
8/6/08 17:54:15	3.37	10.45	18.1	5.0	
8/6/08 17:54:30	3.38	10.43	18.1	5.2	
8/6/08 17:54:45	3.39	10.42	18.2	5.4	
8/6/08 17:55:00	3.40	10.42	17.9	5.8	
8/6/08 17:55:15	3.45	10.39	17.8	6.4	
8/6/08 17:55:30	3.51	10.37	17.7	6.8	
8/6/08 17:55:45	3.50	10.37	17.8	7.6	
8/6/08 17:56:00	3.54	10.36	18.1	7.6	
8/6/08 17:56:15	3.53	10.39	18.1	6.2	
8/6/08 17:56:30	3.42	10.49	18.0	5.0	
8/6/08 17:56:45	3.34	10.51	17.9	4.7	
8/6/08 17:57:00	3.34	10.50	17.9	4.8	
8/6/08 17:57:15	3.36	10.48	17.9	5.6	
8/6/08 17:57:30	3.45	10.44	18.0	6.3	
8/6/08 17:57:45	3.50	10.43	17.9	6.5	
8/6/08 17:58:00	3.51	10.42	17.7	6.7	
8/6/08 17:58:15	3.52	10.41	17.8	7.3	
8/6/08 17:58:30	3.54	10.38	17.7	7.0	
8/6/08 17:58:45	3.49	10.40	17.6	6.5	
8/6/08 17:59:00	3.45	10.42	17.8	6.5	
8/6/08 17:59:15	3.48	10.42	18.0	6.3	
8/6/08 17:59:30	3.50	10.42	18.1	6.3	
8/6/08 17:59:45	3.52	10.40	17.7	5.9	
8/6/08 18:00:00	3.52	10.40	17.6	5.6	
8/6/08 18:00:15	3.52	10.39	17.5	5.5	
8/6/08 18:00:30	3.50	10.39	17.9	5.7	
8/6/08 18:00:45	3.47	10.38	18.0	5.4	
8/6/08 18:01:00	3.45	10.38	18.1	4.8	
8/6/08 18:01:15	3.44	10.38	18.1	4.7	
8/6/08 18:01:30	3.45	10.38	18.4	4.3	
8/6/08 18:01:45	3.41	10.41	18.7	3.5	
8/6/08 18:02:00	3.29	10.48	18.9	3.1	
8/6/08 18:02:15	3.26	10.49	18.7	3.0	
8/6/08 18:02:30	3.29	10.47	18.6	3.5	
8/6/08 18:02:45	3.37	10.42	18.6	4.1	
8/6/08 18:03:00	3.37	10.42	18.4	4.9	
8/6/08 18:03:15	3.42	10.40	18.9	5.1	
8/6/08 18:03:30	3.43	10.39	18.7	4.9	
8/6/08 18:03:45	3.41	10.38	18.6	5.1	
8/6/08 18:04:00	3.48	10.33	18.2	5.8	
8/6/08 18:04:15	3.53	10.31	18.5	6.8	
8/6/08 18:04:30	3.56	10.29	18.5	6.5	
8/6/08 18:04:45	3.48	10.33	18.7	6.0	
8/6/08 18:05:00	3.45	10.33	18.7	5.7	
8/6/08 18:05:15	3.47	10.31	18.7	5.5	
8/6/08 18:05:30	3.43	10.32	18.7	5.3	
8/6/08 18:05:45	3.41	10.33	18.7	5.5	
8/6/08 18:06:00	3.40	10.34	18.7	6.3	
8/6/08 18:06:15	3.44	10.30	18.7	7.1	
8/6/08 18:06:30	3.52	10.27	18.6	7.4	
8/6/08 18:06:45	3.51	10.29	18.5	7.9	
8/6/08 18:07:00	3.52	10.28	18.6	9.2	
8/6/08 18:07:15	3.61	10.24	18.6	10.4	
8/6/08 18:07:30	3.65	10.23	18.4	11.2	
8/6/08 18:07:45	3.65	10.24	18.6	11.3	
8/6/08 18:08:00	3.61	10.26	18.3	11.1	
8/6/08 18:08:15	3.57	10.28	18.4	10.9	
8/6/08 18:08:30	3.61	10.25	18.1	9.3	
8/6/08 18:08:45	3.57	10.28	18.0	8.3	
8/6/08 18:09:00	3.54	10.29	17.9	8.3	
8/6/08 18:09:15	3.53	10.30	18.0	8.5	
8/6/08 18:09:30	3.50	10.32	18.2	8.4	
8/6/08 18:09:45	3.49	10.33	18.3	7.8	
8/6/08 18:10:00	3.46	10.35	18.0	8.0	
8/6/08 18:10:15	3.47	10.33	17.8	8.5	
8/6/08 18:10:30	3.53	10.30	18.3	8.9	
8/6/08 18:10:45	3.52	10.32	18.3	7.5	
8/6/08 18:11:00	3.37	10.41	18.2	6.6	
8/6/08 18:11:15	3.34	10.42	18.2	7.0	
8/6/08 18:11:30	3.40	10.41	18.2	7.7	
8/6/08 18:11:45	3.43	10.42	18.0	8.4	
8/6/08 18:12:00	3.45	10.43	18.4	8.2	
8/6/08 18:12:15	3.41	10.47	18.5	5.7	
8/6/08 18:12:30	3.25	10.56	18.9	3.3	

Valero McKee Refinery - Sunray, Texas  
 No. 1 SRU Incinerator Exhaust: EPN V-5  
 ARI Reference Method Monitoring Data

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 18:12:45	3.19	10.54	19.2	2.4	
8/6/08 18:13:00	3.21	10.50	18.9	2.4	
8/6/08 18:13:15	3.21	10.50	18.8	2.5	
8/6/08 18:13:30	3.21	10.51	18.7	2.3	
8/6/08 18:13:45	3.17	10.53	18.7	2.0	
8/6/08 18:14:00	3.09	10.57	18.6	1.6	
8/6/08 18:14:15	3.04	10.60	18.3	1.7	
8/6/08 18:14:30	3.09	10.58	18.3	2.2	
8/6/08 18:14:45	3.19	10.50	18.2	2.7	
8/6/08 18:15:00	3.26	10.44	18.0	2.9	
8/6/08 18:15:15	3.25	10.41	17.8	3.2	
8/6/08 18:15:30	3.26	10.37	18.3	3.6	
8/6/08 18:15:45	3.31	10.33	18.2	3.2	
8/6/08 18:16:00	3.21	10.42	18.6	3.0	
8/6/08 18:16:15	3.16	10.43	19.0	2.8	
8/6/08 18:16:30	3.17	10.43	19.2	2.4	
8/6/08 18:16:45	3.07	10.43	19.0	2.1	
8/6/08 18:17:00	3.09	10.38	19.0	2.0	
8/6/08 18:17:15	3.14	10.34	19.2	2.4	
8/6/08 18:17:30	3.17	10.33	18.9	2.8	
8/6/08 18:17:45	3.19	10.35	18.5	3.5	
8/6/08 18:18:00	3.27	10.34	18.5	4.8	
8/6/08 18:18:15	3.36	10.27	18.4	5.5	
8/6/08 18:18:30	3.44	10.21	18.4	5.8	
8/6/08 18:18:45	3.47	10.18	18.1	6.5	
8/6/08 18:19:00	3.46	10.17	18.2	7.1	
8/6/08 18:19:15	3.50	10.14	17.5	7.3	
8/6/08 18:19:30	3.44	10.16	17.4	7.6	
8/6/08 18:19:45	3.41	10.19	17.3	8.1	
8/6/08 18:20:00	3.39	10.25	17.2	9.6	
8/6/08 18:20:15	3.46	10.23	17.0	13.1	
8/6/08 18:20:30	3.53	10.17	16.7	19.0	
8/6/08 18:20:45	3.65	10.07	16.8	24.4	
8/6/08 18:21:00	3.77	9.98	17.1	26.4	
8/6/08 18:21:15	3.78	9.98	17.9	23.5	
8/6/08 18:21:30	3.69	10.05	18.3	16.5	
8/6/08 18:21:45	3.53	10.15	18.3	10.0	
8/6/08 18:22:00	3.40	10.21	18.2	7.0	
8/6/08 18:22:15	3.36	10.26	17.9	5.9	
8/6/08 18:22:30	3.31	10.34	17.8	5.5	
8/6/08 18:22:45	3.28	10.38	17.6	5.9	
8/6/08 18:23:00	3.34	10.31	17.7	6.7	
8/6/08 18:23:15	3.41	10.26	17.8	7.3	
8/6/08 18:23:30	3.43	10.25	17.6	7.4	
8/6/08 18:23:45	3.40	10.27	17.4	7.6	
8/6/08 18:24:00	3.37	10.30	17.7	7.9	
8/6/08 18:24:15	3.39	10.32	17.7	7.7	
8/6/08 18:24:30	3.38	10.31	17.7	7.5	
8/6/08 18:24:45	3.36	10.31	17.7	7.5	
8/6/08 18:25:00	3.36	10.34	17.6	7.3	
8/6/08 18:25:15	3.36	10.36	17.6	6.9	
8/6/08 18:25:30	3.37	10.32	17.5	6.6	
8/6/08 18:25:45	3.39	10.29	17.4	6.5	
8/6/08 18:26:00	3.39	10.29	17.5	7.0	
8/6/08 18:26:15	3.39	10.30	17.5	7.2	
8/6/08 18:26:30	3.37	10.31	17.6	6.9	
8/6/08 18:26:45	3.36	10.34	17.8	6.4	
8/6/08 18:27:00	3.33	10.35	17.9	5.7	
8/6/08 18:27:15	3.32	10.35	18.0	5.1	
8/6/08 18:27:30	3.31	10.35	17.9	4.6	
8/6/08 18:27:45	3.25	10.36	18.1	4.3	
8/6/08 18:28:00	3.27	10.33	18.0	4.0	
8/6/08 18:28:15	3.22	10.36	17.6	3.9	
8/6/08 18:28:30	3.19	10.40	17.7	4.1	
8/6/08 18:28:45	3.24	10.38	17.6	4.4	
8/6/08 18:29:00	3.25	10.39	17.8	4.5	
8/6/08 18:29:15	3.21	10.41	17.8	4.3	
8/6/08 18:29:30	3.20	10.43	18.1	4.3	
8/6/08 18:29:45	3.19	10.45	18.4	3.9	
8/6/08 18:30:00	3.19	10.47	18.7	3.2	
8/6/08 18:30:15	3.14	10.49	18.7	2.9	
8/6/08 18:30:30	3.09	10.50	18.3	2.9	
8/6/08 18:30:45	3.07	10.50	18.4	3.1	
8/6/08 18:31:00	3.15	10.45	18.1	3.6	
8/6/08 18:31:15	3.22	10.40	18.5	3.5	
8/6/08 18:31:30	3.19	10.41	18.8	2.6	
8/6/08 18:31:45	3.08	10.45	18.6	2.3	
8/6/08 18:32:00	3.03	10.46	18.5	2.3	
8/6/08 18:32:15	3.06	10.45	18.7	2.6	
8/6/08 18:32:30	3.12	10.44	18.9	2.5	
8/6/08 18:32:45	3.09	10.49	18.5	2.2	
8/6/08 18:33:00	3.05	10.49	19.0	2.2	
8/6/08 18:33:15	3.11	10.44	19.2	2.1	
8/6/08 18:33:30	3.06	10.47	19.2	1.9	

Valero McKee Refinery - Sunray, Texas  
 No. 1 SRU Incinerator Exhaust: EPN V-5  
 ARI Reference Method Monitoring Data

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 18:33:45	2.98	10.53	19.2	2.0	
8/6/08 18:34:00	2.98	10.53	19.1	2.2	
8/6/08 18:34:15	3.03	10.52	18.9	2.2	
8/6/08 18:34:30	3.02	10.52	18.6	2.8	
8/6/08 18:34:45	3.11	10.47	18.3	3.8	
8/6/08 18:35:00	3.23	10.41	18.3	4.8	
8/6/08 18:35:15	3.32	10.38	17.6	5.4	
8/6/08 18:35:30	3.31	10.38	17.5	6.3	
8/6/08 18:35:45	3.32	10.38	17.9	6.1	
8/6/08 18:36:00	3.27	10.42	17.9	5.0	
8/6/08 18:36:15	3.14	10.47	17.7	5.0	
8/6/08 18:36:30	3.15	10.45	17.6	5.8	
8/6/08 18:36:45	3.21	10.41	17.7	5.9	
8/6/08 18:37:00	3.21	10.42	18.1	5.7	
8/6/08 18:37:15	3.18	10.44	18.4	5.1	
8/6/08 18:37:30	3.17	10.46	18.2	5.0	
8/6/08 18:37:45	3.20	10.44	18.4	5.5	
8/6/08 18:38:00	3.27	10.42	18.0	6.0	
8/6/08 18:38:15	3.29	10.41	17.5	7.0	
8/6/08 18:38:30	3.35	10.39	17.5	7.9	
8/6/08 18:38:45	3.36	10.39	17.6	7.8	
8/6/08 18:39:00	3.33	10.40	17.4	7.3	
8/6/08 18:39:15	3.29	10.42	17.3	7.7	
8/6/08 18:39:30	3.29	10.40	17.4	8.3	
8/6/08 18:39:45	3.36	10.36	17.7	8.6	
8/6/08 18:40:00	3.37	10.37	17.7	8.5	Point #1
8/6/08 18:40:15	3.35	10.40	18.0	7.2	
8/6/08 18:40:30	3.29	10.45	18.4	5.7	Average Concentrations for Point #1
8/6/08 18:40:45	3.18	10.48	18.4	5.1	3.36 O <sub>2</sub>
8/6/08 18:41:00	3.19	10.46	18.5	5.4	10.33 CO <sub>2</sub>
8/6/08 18:41:15	3.25	10.40	18.2	5.7	18.3 NO <sub>x</sub>
8/6/08 18:41:30	3.26	10.37	18.1	5.8	4.7 CO
8/6/08 18:41:45	3.29	10.36	18.3	6.0	
8/6/08 18:42:00	3.31	10.36	17.7	6.4	
8/6/08 18:42:15	3.28	10.38	17.5	7.3	
8/6/08 18:42:30	3.32	10.35	17.3	8.2	
8/6/08 18:42:45	3.36	10.34	17.3	8.4	
8/6/08 18:43:00	3.36	10.34	17.2	8.4	
8/6/08 18:43:15	3.37	10.34	17.3	8.4	
8/6/08 18:43:30	3.38	10.34	17.4	8.4	
8/6/08 18:43:45	3.37	10.35	17.4	8.4	
8/6/08 18:44:00	3.36	10.36	17.4	8.3	
8/6/08 18:44:15	3.37	10.36	17.4	8.1	
8/6/08 18:44:30	3.38	10.37	17.4	7.7	
8/6/08 18:44:45	3.34	10.40	17.5	7.2	
8/6/08 18:45:00	3.31	10.41	17.5	6.9	
8/6/08 18:45:15	3.28	10.41	17.7	7.3	
8/6/08 18:45:30	3.30	10.40	17.7	7.9	
8/6/08 18:45:45	3.34	10.37	17.6	8.2	
8/6/08 18:46:00	3.38	10.35	17.4	8.3	
8/6/08 18:46:15	3.42	10.32	17.4	8.3	
8/6/08 18:46:30	3.44	10.31	17.3	8.3	
8/6/08 18:46:45	3.40	10.33	17.3	8.2	
8/6/08 18:47:00	3.38	10.35	17.6	7.9	
8/6/08 18:47:15	3.36	10.39	17.8	7.0	
8/6/08 18:47:30	3.33	10.42	18.1	5.8	
8/6/08 18:47:45	3.31	10.40	17.9	5.2	
8/6/08 18:48:00	3.30	10.39	18.2	5.2	
8/6/08 18:48:15	3.29	10.41	18.2	5.5	
8/6/08 18:48:30	3.26	10.43	18.0	5.6	
8/6/08 18:48:45	3.29	10.42	18.2	5.4	
8/6/08 18:49:00	3.28	10.43	18.1	4.7	
8/6/08 18:49:15	3.23	10.43	18.0	4.3	
8/6/08 18:49:30	3.24	10.40	17.8	4.3	
8/6/08 18:49:45	3.19	10.42	18.1	4.0	
8/6/08 18:50:00	3.14	10.46	17.9	3.7	
8/6/08 18:50:15	3.11	10.49	17.5	3.8	
8/6/08 18:50:30	3.14	10.49	17.8	4.1	
8/6/08 18:50:45	3.23	10.44	17.5	4.3	
8/6/08 18:51:00	3.21	10.45	17.8	4.7	
8/6/08 18:51:15	3.24	10.44	17.5	5.0	
8/6/08 18:51:30	3.25	10.45	17.5	5.1	
8/6/08 18:51:45	3.27	10.45	17.6	5.2	
8/6/08 18:52:00	3.30	10.45	17.5	4.8	
8/6/08 18:52:15	3.27	10.47	17.6	4.7	
8/6/08 18:52:30	3.28	10.44	17.8	4.7	
8/6/08 18:52:45	3.28	10.44	7.9	4.5	
8/6/08 18:53:00	3.73	9.95	0.4	4.7	
8/6/08 18:53:15	11.12	5.03	2.7	3.7	
8/6/08 18:53:30	18.47	1.15	15.7	5.6	
8/6/08 18:53:45	18.60	1.95	15.3	6.0	
8/6/08 18:54:00	10.80	6.79	15.0	4.3	
8/6/08 18:54:15	6.27	8.88	16.6	3.3	
8/6/08 18:54:30	5.60	9.18	17.5	3.2	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 18:54:45	4.66	9.80	17.6	3.5	
8/6/08 18:55:00	3.60	10.28	17.8	3.4	
8/6/08 18:55:15	3.35	10.39	17.8	3.2	
8/6/08 18:55:30	3.29	10.43	18.1	3.2	
8/6/08 18:55:45	3.29	10.42	18.1	3.1	
8/6/08 18:56:00	3.26	10.43	17.6	3.2	
8/6/08 18:56:15	3.24	10.43	17.3	3.4	
8/6/08 18:56:30	3.28	10.42	17.6	3.7	
8/6/08 18:56:45	3.30	10.40	17.8	4.1	
8/6/08 18:57:00	3.31	10.40	17.6	4.3	
8/6/08 18:57:15	3.31	10.40	17.6	4.4	
8/6/08 18:57:30	3.32	10.39	18.4	4.3	
8/6/08 18:57:45	3.31	10.40	18.1	3.4	
8/6/08 18:58:00	3.17	10.46	18.3	2.9	
8/6/08 18:58:15	3.18	10.45	18.7	2.9	
8/6/08 18:58:30	3.17	10.49	18.3	2.8	
8/6/08 18:58:45	3.14	10.53	18.3	3.2	
8/6/08 18:59:00	3.20	10.50	18.2	3.7	
8/6/08 18:59:15	3.28	10.48	18.3	3.6	
8/6/08 18:59:30	3.29	10.48	18.8	3.6	
8/6/08 18:59:45	3.28	10.47	18.5	3.4	
8/6/08 19:00:00	3.24	10.48	19.1	3.1	
8/6/08 19:00:15	3.19	10.49	18.8	2.8	
8/6/08 19:00:30	3.14	10.51	18.9	2.9	
8/6/08 19:00:45	3.21	10.47	18.9	2.4	
8/6/08 19:01:00	3.17	10.49	19.0	2.2	
8/6/08 19:01:15	3.13	10.49	18.9	2.3	
8/6/08 19:01:30	3.11	10.51	18.6	2.2	
8/6/08 19:01:45	3.08	10.52	18.5	2.7	
8/6/08 19:02:00	3.17	10.47	18.4	3.2	
8/6/08 19:02:15	3.28	10.42	18.4	3.4	
8/6/08 19:02:30	3.30	10.40	18.2	3.7	
8/6/08 19:02:45	3.34	10.37	18.2	4.0	
8/6/08 19:03:00	3.36	10.36	18.3	4.2	
8/6/08 19:03:15	3.38	10.35	18.3	4.4	
8/6/08 19:03:30	3.36	10.37	18.6	4.7	
8/6/08 19:03:45	3.36	10.36	18.4	4.3	
8/6/08 19:04:00	3.37	10.36	18.5	4.1	
8/6/08 19:04:15	3.37	10.36	18.5	4.3	
8/6/08 19:04:30	3.36	10.37	18.5	4.3	
8/6/08 19:04:45	3.33	10.38	18.7	4.3	
8/6/08 19:05:00	3.34	10.38	18.7	4.0	
8/6/08 19:05:15	3.32	10.40	19.8	3.2	
8/6/08 19:05:30	3.24	10.45	19.4	2.8	
8/6/08 19:05:45	3.13	10.52	19.0	2.7	
8/6/08 19:06:00	3.12	10.53	19.1	2.8	
8/6/08 19:06:15	3.16	10.52	19.0	2.9	
8/6/08 19:06:30	3.15	10.52	18.9	2.7	
8/6/08 19:06:45	3.16	10.49	18.9	2.8	
8/6/08 19:07:00	3.21	10.44	18.3	3.3	
8/6/08 19:07:15	3.24	10.43	18.5	4.3	
8/6/08 19:07:30	3.31	10.39	18.9	4.8	
8/6/08 19:07:45	3.36	10.38	18.8	4.3	
8/6/08 19:08:00	3.32	10.40	18.5	4.3	
8/6/08 19:08:15	3.35	10.36	18.6	4.7	
8/6/08 19:08:30	3.43	10.33	18.4	4.8	
8/6/08 19:08:45	3.38	10.36	18.4	5.4	
8/6/08 19:09:00	3.39	10.36	18.5	6.0	
8/6/08 19:09:15	3.40	10.38	18.7	5.7	
8/6/08 19:09:30	3.37	10.40	18.7	5.2	
8/6/08 19:09:45	3.40	10.37	18.8	5.0	
8/6/08 19:10:00	3.47	10.30	19.2	4.8	
8/6/08 19:10:15	3.42	10.30	19.6	4.2	
8/6/08 19:10:30	3.33	10.33	19.4	3.8	
8/6/08 19:10:45	3.31	10.34	19.4	4.0	
8/6/08 19:11:00	3.37	10.31	19.2	4.1	
8/6/08 19:11:15	3.44	10.26	18.8	4.1	
8/6/08 19:11:30	3.49	10.19	18.5	4.4	
8/6/08 19:11:45	3.52	10.15	18.4	5.4	
8/6/08 19:12:00	3.52	10.15	18.4	5.9	
8/6/08 19:12:15	3.54	10.13	18.5	6.1	
8/6/08 19:12:30	3.57	10.11	18.6	5.8	
8/6/08 19:12:45	3.58	10.13	18.3	5.5	
8/6/08 19:13:00	3.52	10.17	18.5	6.6	
8/6/08 19:13:15	3.62	10.11	18.5	8.1	
8/6/08 19:13:30	3.69	10.07	18.4	8.6	
8/6/08 19:13:45	3.71	10.05	18.7	8.1	
8/6/08 19:14:00	3.67	10.09	18.5	6.8	
8/6/08 19:14:15	3.54	10.15	19.0	5.7	
8/6/08 19:14:30	3.54	10.15	19.2	5.2	
8/6/08 19:14:45	3.49	10.21	19.2	4.2	
8/6/08 19:15:00	3.44	10.25	19.1	3.7	
8/6/08 19:15:15	3.40	10.28	18.9	3.2	
8/6/08 19:15:30	3.38	10.26	18.9	3.2	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 19:15:45	3.43	10.22	19.0	3.3	
8/6/08 19:16:00	3.47	10.17	19.1	3.3	
8/6/08 19:16:15	3.44	10.20	18.9	2.8	
8/6/08 19:16:30	3.38	10.24	19.0	2.5	
8/6/08 19:16:45	3.39	10.22	18.9	2.4	
8/6/08 19:17:00	3.40	10.19	19.0	2.4	
8/6/08 19:17:15	3.44	10.16	19.1	2.4	
8/6/08 19:17:30	3.45	10.15	19.1	2.5	
8/6/08 19:17:45	3.44	10.18	19.1	2.3	
8/6/08 19:18:00	3.41	10.21	19.1	1.9	
8/6/08 19:18:15	3.34	10.21	19.3	1.7	
8/6/08 19:18:30	3.25	10.22	19.9	1.5	
8/6/08 19:18:45	3.25	10.23	19.8	1.1	
8/6/08 19:19:00	3.24	10.25	19.9	1.1	
8/6/08 19:19:15	3.27	10.26	19.7	1.1	
8/6/08 19:19:30	3.27	10.29	19.4	1.1	
8/6/08 19:19:45	3.27	10.30	19.4	1.1	
8/6/08 19:20:00	3.24	10.30	18.9	1.2	
8/6/08 19:20:15	3.33	10.24	18.9	1.4	
8/6/08 19:20:30	3.39	10.21	19.1	1.5	
8/6/08 19:20:45	3.33	10.25	18.8	1.3	
8/6/08 19:21:00	3.21	10.31	18.9	1.4	
8/6/08 19:21:15	3.20	10.32	18.8	1.5	
8/6/08 19:21:30	3.18	10.34	18.5	1.5	
8/6/08 19:21:45	3.17	10.35	18.6	1.5	
8/6/08 19:22:00	3.25	10.32	18.3	1.8	
8/6/08 19:22:15	3.27	10.31	18.3	2.0	
8/6/08 19:22:30	3.30	10.31	18.4	2.2	
8/6/08 19:22:45	3.26	10.35	18.5	2.2	
8/6/08 19:23:00	3.23	10.39	18.3	2.2	
8/6/08 19:23:15	3.23	10.40	18.1	2.4	
8/6/08 19:23:30	3.29	10.36	17.9	3.2	
8/6/08 19:23:45	3.38	10.31	18.0	4.2	
8/6/08 19:24:00	3.43	10.30	17.9	4.4	
8/6/08 19:24:15	3.41	10.33	18.0	4.5	
8/6/08 19:24:30	3.40	10.33	18.2	4.4	
8/6/08 19:24:45	3.42	10.33	18.2	4.1	
8/6/08 19:25:00	3.41	10.34	18.3	4.0	
8/6/08 19:25:15	3.39	10.38	18.2	3.9	
8/6/08 19:25:30	3.37	10.41	18.3	3.7	
8/6/08 19:25:45	3.34	10.44	18.2	3.5	
8/6/08 19:26:00	3.31	10.47	18.0	3.4	
8/6/08 19:26:15	3.27	10.49	17.9	3.3	
8/6/08 19:26:30	3.29	10.44	17.9	3.5	
8/6/08 19:26:45	3.30	10.43	17.7	3.8	
8/6/08 19:27:00	3.29	10.46	18.0	4.2	
8/6/08 19:27:15	3.30	10.47	17.8	4.1	
8/6/08 19:27:30	3.26	10.49	17.5	4.1	
8/6/08 19:27:45	3.26	10.46	17.6	4.6	
8/6/08 19:28:00	3.34	10.42	17.7	4.9	
8/6/08 19:28:15	3.35	10.43	17.8	4.4	
8/6/08 19:28:30	3.31	10.45	17.6	4.3	
8/6/08 19:28:45	3.31	10.44	17.8	4.8	
8/6/08 19:29:00	3.38	10.40	17.8	4.7	
8/6/08 19:29:15	3.39	10.39	18.1	4.0	
8/6/08 19:29:30	3.37	10.40	18.1	3.9	
8/6/08 19:29:45	3.33	10.42	18.0	3.9	
8/6/08 19:30:00	3.29	10.46	18.3	4.1	
8/6/08 19:30:15	3.31	10.46	18.2	4.3	
8/6/08 19:30:30	3.33	10.44	18.0	4.2	
8/6/08 19:30:45	3.34	10.42	18.2	3.9	
8/6/08 19:31:00	3.35	10.39	18.0	4.2	
8/6/08 19:31:15	3.40	10.35	17.8	4.7	
8/6/08 19:31:30	3.42	10.34	17.7	5.0	
8/6/08 19:31:45	3.42	10.34	17.9	5.6	
8/6/08 19:32:00	3.43	10.34	18.1	5.6	
8/6/08 19:32:15	3.45	10.35	18.2	4.7	
8/6/08 19:32:30	3.41	10.35	18.4	4.3	
8/6/08 19:32:45	3.36	10.35	18.2	4.3	
8/6/08 19:33:00	3.36	10.31	18.3	4.9	
8/6/08 19:33:15	3.46	10.24	18.6	5.4	
8/6/08 19:33:30	3.50	10.23	18.1	5.0	
8/6/08 19:33:45	3.48	10.25	18.0	4.8	
8/6/08 19:34:00	3.49	10.26	17.7	5.4	
8/6/08 19:34:15	3.50	10.23	18.1	7.3	
8/6/08 19:34:30	3.64	10.14	17.9	8.5	
8/6/08 19:34:45	3.66	10.11	17.9	9.7	
8/6/08 19:35:00	3.71	10.07	17.7	9.6	
8/6/08 19:35:15	3.68	10.07	17.9	10.1	
8/6/08 19:35:30	3.71	10.04	17.9	10.6	
8/6/08 19:35:45	3.78	10.03	18.2	10.2	
8/6/08 19:36:00	3.72	10.06	18.0	9.5	
8/6/08 19:36:15	3.64	10.08	18.1	9.1	
8/6/08 19:36:30	3.64	10.06	18.3	8.7	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 19:36:45	3.68	10.05	18.3	7.9	
8/6/08 19:37:00	3.66	10.09	18.7	7.4	
8/6/08 19:37:15	3.66	10.06	18.7	6.8	
8/6/08 19:37:30	3.68	10.05	18.8	6.5	
8/6/08 19:37:45	3.67	10.06	18.2	5.8	
8/6/08 19:38:00	3.60	10.13	18.1	4.8	
8/6/08 19:38:15	3.52	10.18	18.4	4.2	
8/6/08 19:38:30	3.53	10.18	18.4	4.0	
8/6/08 19:38:45	3.53	10.18	18.3	3.8	
8/6/08 19:39:00	3.48	10.16	18.6	3.9	
8/6/08 19:39:15	3.52	10.15	18.4	3.3	
8/6/08 19:39:30	3.43	10.21	18.3	3.0	
8/6/08 19:39:45	3.45	10.19	18.4	3.1	
8/6/08 19:40:00	3.51	10.15	18.6	3.1	Point #3
8/6/08 19:40:15	3.49	10.15	18.9	2.6	
8/6/08 19:40:30	3.43	10.17	18.4	2.5	Average Concentrations for Point #3
8/6/08 19:40:45	3.40	10.19	18.5	2.6	3.62 O <sub>2</sub>
8/6/08 19:41:00	3.44	10.20	18.4	2.3	10.14 CO <sub>2</sub>
8/6/08 19:41:15	3.42	10.23	18.4	2.2	16.9 NO <sub>x</sub>
8/6/08 19:41:30	3.44	10.21	18.6	2.2	8.4 CO
8/6/08 19:41:45	3.43	10.20	18.7	2.2	
8/6/08 19:42:00	3.39	10.22	18.5	2.1	
8/6/08 19:42:15	3.31	10.25	18.5	2.0	
8/6/08 19:42:30	3.34	10.22	19.1	1.9	
8/6/08 19:42:45	3.39	10.18	19.3	1.7	
8/6/08 19:43:00	3.41	10.17	19.0	1.6	
8/6/08 19:43:15	3.37	10.20	18.8	1.6	
8/6/08 19:43:30	3.42	10.20	18.5	1.8	
8/6/08 19:43:45	3.47	10.19	18.2	2.0	
8/6/08 19:44:00	3.48	10.19	18.2	2.1	
8/6/08 19:44:15	3.46	10.19	18.0	2.6	
8/6/08 19:44:30	3.50	10.16	17.5	4.9	
8/6/08 19:44:45	3.64	10.07	17.4	8.9	
8/6/08 19:45:00	3.80	10.01	17.3	10.4	
8/6/08 19:45:15	3.81	10.00	17.6	11.6	
8/6/08 19:45:30	3.83	9.99	17.7	11.9	
8/6/08 19:45:45	3.85	9.97	17.5	12.1	
8/6/08 19:46:00	3.84	9.97	17.5	12.3	
8/6/08 19:46:15	3.82	9.98	17.7	11.8	
8/6/08 19:46:30	3.78	10.01	17.4	10.7	
8/6/08 19:46:45	3.81	10.01	17.4	9.4	
8/6/08 19:47:00	3.93	9.97	17.6	8.7	
8/6/08 19:47:15	3.99	9.94	17.5	7.3	
8/6/08 19:47:30	3.97	9.91	17.5	6.9	
8/6/08 19:47:45	3.95	9.91	17.5	6.7	
8/6/08 19:48:00	3.92	9.94	17.6	6.2	
8/6/08 19:48:15	3.90	9.97	17.7	5.3	
8/6/08 19:48:30	3.85	10.01	17.9	4.7	
8/6/08 19:48:45	3.81	10.03	18.3	3.7	
8/6/08 19:49:00	3.73	10.08	18.3	3.3	
8/6/08 19:49:15	3.57	10.15	18.1	3.2	
8/6/08 19:49:30	3.49	10.16	18.5	3.3	
8/6/08 19:49:45	3.49	10.15	18.6	3.0	
8/6/08 19:50:00	3.44	10.18	18.4	2.4	
8/6/08 19:50:15	3.35	10.24	18.3	2.1	
8/6/08 19:50:30	3.33	10.27	18.2	2.2	
8/6/08 19:50:45	3.38	10.25	18.0	2.3	
8/6/08 19:51:00	3.40	10.25	18.2	2.6	
8/6/08 19:51:15	3.44	10.21	18.2	2.9	
8/6/08 19:51:30	3.45	10.20	18.0	3.3	
8/6/08 19:51:45	3.46	10.19	17.9	4.5	
8/6/08 19:52:00	3.52	10.15	17.8	5.0	
8/6/08 19:52:15	3.52	10.15	17.9	5.1	
8/6/08 19:52:30	3.50	10.17	17.8	5.0	
8/6/08 19:52:45	3.47	10.17	17.4	5.2	
8/6/08 19:53:00	3.46	10.18	17.3	5.5	
8/6/08 19:53:15	3.50	10.17	17.6	5.2	
8/6/08 19:53:30	3.46	10.22	17.5	4.8	
8/6/08 19:53:45	3.37	10.29	17.3	4.7	
8/6/08 19:54:00	3.36	10.31	17.5	5.0	
8/6/08 19:54:15	3.39	10.31	17.3	5.2	
8/6/08 19:54:30	3.41	10.33	17.1	5.3	
8/6/08 19:54:45	3.44	10.32	17.2	6.2	
8/6/08 19:55:00	3.49	10.28	17.2	6.7	
8/6/08 19:55:15	3.50	10.24	16.8	7.0	
8/6/08 19:55:30	3.50	10.27	16.7	6.9	
8/6/08 19:55:45	3.51	10.29	17.0	6.9	
8/6/08 19:56:00	3.51	10.29	16.7	6.6	
8/6/08 19:56:15	3.49	10.29	16.8	6.0	
8/6/08 19:56:30	3.46	10.30	16.7	5.7	
8/6/08 19:56:45	3.41	10.33	17.0	5.6	
8/6/08 19:57:00	3.41	10.33	16.8	5.4	
8/6/08 19:57:15	3.44	10.31	16.7	5.5	
8/6/08 19:57:30	3.47	10.25	16.5	5.6	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 19:57:45	3.49	10.21	16.6	6.1	
8/6/08 19:58:00	3.52	10.22	16.3	6.4	
8/6/08 19:58:15	3.53	10.23	16.0	10.7	
8/6/08 19:58:30	3.64	10.18	16.0	15.1	
8/6/08 19:58:45	3.74	10.14	16.1	19.0	
8/6/08 19:59:00	3.75	10.13	15.8	21.3	
8/6/08 19:59:15	3.78	10.11	16.1	23.8	
8/6/08 19:59:30	3.80	10.11	16.0	24.9	
8/6/08 19:59:45	3.80	10.12	15.9	27.6	
8/6/08 20:00:00	3.82	10.12	16.1	28.2	
8/6/08 20:00:15	3.82	10.13	16.1	26.7	
8/6/08 20:00:30	3.79	10.14	16.3	25.4	
8/6/08 20:00:45	3.78	10.15	16.3	20.9	
8/6/08 20:01:00	3.72	10.17	16.5	17.8	
8/6/08 20:01:15	3.67	10.20	16.7	15.7	
8/6/08 20:01:30	3.67	10.22	16.6	14.1	
8/6/08 20:01:45	3.64	10.25	16.6	12.2	
8/6/08 20:02:00	3.62	10.25	16.7	11.3	
8/6/08 20:02:15	3.59	10.26	16.8	10.1	
8/6/08 20:02:30	3.57	10.27	16.8	9.3	
8/6/08 20:02:45	3.54	10.28	16.7	8.4	
8/6/08 20:03:00	3.52	10.28	16.9	8.3	
8/6/08 20:03:15	3.53	10.26	16.9	8.1	
8/6/08 20:03:30	3.53	10.26	16.6	7.8	
8/6/08 20:03:45	3.50	10.26	17.0	7.7	
8/6/08 20:04:00	3.54	10.21	16.9	7.3	
8/6/08 20:04:15	3.53	10.21	16.9	7.0	
8/6/08 20:04:30	3.50	10.21	16.8	6.8	
8/6/08 20:04:45	3.50	10.23	16.9	6.6	
8/6/08 20:05:00	3.51	10.24	16.8	6.5	
8/6/08 20:05:15	3.52	10.24	17.2	6.2	
8/6/08 20:05:30	3.53	10.24	17.2	5.9	
8/6/08 20:05:45	3.48	10.28	17.1	6.0	
8/6/08 20:06:00	3.44	10.28	16.9	6.6	
8/6/08 20:06:15	3.51	10.22	16.9	7.0	
8/6/08 20:06:30	3.55	10.19	16.7	7.4	
8/6/08 20:06:45	3.56	10.17	17.2	8.4	
8/6/08 20:07:00	3.63	10.14	17.2	7.7	
8/6/08 20:07:15	3.52	10.20	16.6	6.5	
8/6/08 20:07:30	3.45	10.22	17.0	7.1	
8/6/08 20:07:45	3.54	10.16	17.0	7.1	
8/6/08 20:08:00	3.57	10.15	16.9	6.5	
8/6/08 20:08:15	3.57	10.12	16.8	6.8	
8/6/08 20:08:30	3.62	10.08	17.0	7.3	
8/6/08 20:08:45	3.65	10.07	16.8	7.6	
8/6/08 20:09:00	3.63	10.09	16.9	7.8	
8/6/08 20:09:15	3.66	10.08	16.8	8.0	
8/6/08 20:09:30	3.68	10.08	16.8	7.9	
8/6/08 20:09:45	3.70	10.05	16.8	7.4	
8/6/08 20:10:00	3.71	10.03	16.8	7.3	
8/6/08 20:10:15	3.73	10.01	16.9	7.8	
8/6/08 20:10:30	3.75	9.99	16.7	8.1	
8/6/08 20:10:45	3.75	9.98	16.8	8.5	
8/6/08 20:11:00	3.74	9.98	16.6	8.0	
8/6/08 20:11:15	3.72	10.01	16.9	7.5	
8/6/08 20:11:30	3.73	10.02	17.1	7.5	
8/6/08 20:11:45	3.74	10.02	16.9	7.2	
8/6/08 20:12:00	3.70	10.03	17.1	7.1	
8/6/08 20:12:15	3.72	10.02	16.9	7.3	
8/6/08 20:12:30	3.71	10.03	17.1	7.6	
8/6/08 20:12:45	3.71	10.04	16.8	8.3	
8/6/08 20:13:00	3.72	10.06	16.8	8.5	
8/6/08 20:13:15	3.73	10.07	16.7	8.6	
8/6/08 20:13:30	3.72	10.08	16.7	8.9	
8/6/08 20:13:45	3.72	10.09	17.0	8.6	
8/6/08 20:14:00	3.71	10.12	16.8	7.7	
8/6/08 20:14:15	3.64	10.15	16.8	7.5	
8/6/08 20:14:30	3.69	10.10	16.7	7.9	
8/6/08 20:14:45	3.72	10.04	16.8	8.7	
8/6/08 20:15:00	3.73	10.01	16.6	9.2	
8/6/08 20:15:15	3.72	10.03	16.9	8.9	
8/6/08 20:15:30	3.71	10.05	16.9	7.8	
8/6/08 20:15:45	3.68	10.08	16.7	6.6	
8/6/08 20:16:00	3.81	10.13	16.6	6.3	
8/6/08 20:16:15	3.62	10.15	16.7	6.2	
8/6/08 20:16:30	3.65	10.15	16.7	6.1	
8/6/08 20:16:45	3.63	10.15	16.8	6.4	
8/6/08 20:17:00	3.63	10.14	16.5	6.3	
8/6/08 20:17:15	3.62	10.15	16.7	6.6	
8/6/08 20:17:30	3.65	10.11	16.8	6.7	
8/6/08 20:17:45	3.66	10.10	16.8	6.1	
8/6/08 20:18:00	3.63	10.11	16.7	5.8	
8/6/08 20:18:15	3.64	10.09	16.6	5.7	
8/6/08 20:18:30	3.68	10.07	16.6	5.4	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 20:18:45	3.69	10.05	16.6	5.8	
8/6/08 20:19:00	3.73	10.01	16.6	6.0	
8/6/08 20:19:15	3.73	10.02	16.5	6.6	
8/6/08 20:19:30	3.73	10.02	16.5	7.2	
8/6/08 20:19:45	3.73	10.04	16.2	7.9	
8/6/08 20:20:00	3.73	10.07	16.2	8.5	
8/6/08 20:20:15	3.78	10.04	16.1	9.5	
8/6/08 20:20:30	3.80	10.01	16.2	10.5	
8/6/08 20:20:45	3.80	10.00	16.1	11.7	
8/6/08 20:21:00	3.78	10.02	16.0	12.5	
8/6/08 20:21:15	3.78	10.04	16.0	12.8	
8/6/08 20:21:30	3.76	10.08	16.0	12.7	
8/6/08 20:21:45	3.75	10.12	16.1	13.0	
8/6/08 20:22:00	3.76	10.17	16.1	12.7	
8/6/08 20:22:15	3.75	10.16	16.1	12.5	
8/6/08 20:22:30	3.75	10.13	16.0	12.8	
8/6/08 20:22:45	3.74	10.12	16.1	13.2	
8/6/08 20:23:00	3.72	10.11	16.0	12.9	
8/6/08 20:23:15	3.73	10.08	16.2	12.3	
8/6/08 20:23:30	3.75	10.07	16.1	11.7	
8/6/08 20:23:45	3.75	10.07	16.2	10.9	
8/6/08 20:24:00	3.74	10.08	16.2	10.3	
8/6/08 20:24:15	3.72	10.09	16.1	9.9	
8/6/08 20:24:30	3.70	10.11	16.0	9.5	
8/6/08 20:24:45	3.70	10.14	16.1	9.6	
8/6/08 20:25:00	3.71	10.15	16.2	9.5	
8/6/08 20:25:15	3.68	10.17	16.2	9.1	
8/6/08 20:25:30	3.68	10.16	16.3	8.7	
8/6/08 20:25:45	3.65	10.17	16.1	9.1	
8/6/08 20:26:00	3.63	10.18	16.5	10.1	
8/6/08 20:26:15	3.68	10.14	16.6	10.5	
8/6/08 20:26:30	3.69	10.14	16.4	9.9	
8/6/08 20:26:45	3.67	10.14	16.9	9.1	
8/6/08 20:27:00	3.67	10.15	17.3	7.9	
8/6/08 20:27:15	3.57	10.20	17.2	6.1	
8/6/08 20:27:30	3.47	10.26	17.2	5.2	
8/6/08 20:27:45	3.44	10.27	17.1	4.7	
8/6/08 20:28:00	3.44	10.28	16.9	4.8	
8/6/08 20:28:15	3.43	10.29	16.8	5.4	
8/6/08 20:28:30	3.46	10.30	16.5	5.5	
8/6/08 20:28:45	3.43	10.31	16.4	5.5	
8/6/08 20:29:00	3.45	10.28	16.0	6.2	
8/6/08 20:29:15	3.52	10.21	16.4	9.0	
8/6/08 20:29:30	3.68	10.11	16.4	9.7	
8/6/08 20:29:45	3.66	10.13	16.2	8.8	
8/6/08 20:30:00	3.55	10.19	16.4	8.3	
8/6/08 20:30:15	3.52	10.21	15.9	7.5	
8/6/08 20:30:30	3.49	10.22	16.4	7.8	
8/6/08 20:30:45	3.56	10.17	16.5	7.1	
8/6/08 20:31:00	3.54	10.19	16.3	6.4	
8/6/08 20:31:15	3.48	10.19	16.2	6.7	
8/6/08 20:31:30	3.51	10.16	16.1	7.6	
8/6/08 20:31:45	3.55	10.14	16.6	7.5	
8/6/08 20:32:00	3.58	10.16	16.4	6.6	
8/6/08 20:32:15	3.49	10.23	16.2	6.8	
8/6/08 20:32:30	3.53	10.20	16.1	8.1	
8/6/08 20:32:45	3.62	10.13	16.2	9.0	
8/6/08 20:33:00	3.64	10.12	15.8	9.2	
8/6/08 20:33:15	3.62	10.13	16.3	10.6	
8/6/08 20:33:30	3.71	10.09	16.1	10.9	
8/6/08 20:33:45	3.67	10.12	16.0	11.0	
8/6/08 20:34:00	3.66	10.14	16.1	11.1	
8/6/08 20:34:15	3.64	10.14	16.0	11.7	
8/6/08 20:34:30	3.67	10.10	16.0	12.6	
8/6/08 20:34:45	3.75	10.06	15.7	13.1	
8/6/08 20:35:00	3.75	10.06	15.9	13.6	
8/6/08 20:35:15	3.77	10.05	15.8	14.4	
8/6/08 20:35:30	3.76	10.06	16.1	14.1	
8/6/08 20:35:45	3.73	10.08	15.8	14.0	
8/6/08 20:36:00	3.74	10.05	16.2	13.8	
8/6/08 20:36:15	3.80	10.03	16.0	11.5	Stratification Check
8/6/08 20:36:30	3.70	10.07	16.3	10.6	3-point average
8/6/08 20:36:45	3.66	10.08	16.3	10.0	
8/6/08 20:37:00	3.65	10.09	16.5	9.5	3.46 O <sub>2</sub>
8/6/08 20:37:15	3.64	10.12	16.0	9.3	10.28 CO <sub>2</sub>
8/6/08 20:37:30	3.62	10.15	16.0	10.2	17.8 NO <sub>x</sub>
8/6/08 20:37:45	3.70	10.08	16.1	11.1	6.9 CO
8/6/08 20:38:00	3.75	10.03	15.9	11.8	
8/6/08 20:38:15	3.78	9.99	15.9	13.9	4.7 O <sub>2</sub> % difference
8/6/08 20:38:30	3.84	9.97	15.9	15.2	-1.4 CO <sub>2</sub> % difference
8/6/08 20:38:45	3.87	10.00	15.8	15.6	-5.1 NO <sub>x</sub> % difference
8/6/08 20:39:00	3.86	10.02	16.3	14.6	-2.2 CO ppm difference
8/6/08 20:39:15	3.82	10.05	16.0	12.6	
8/6/08 20:39:30	3.72	10.09	15.7	13.3	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
<b>8/6/08 20:39:45</b>	<b>3.78</b>	<b>10.03</b>	<b>15.8</b>	<b>15.0</b>	
8/6/08 20:40:00	3.85	9.97	15.8	16.1	End Run No. 3
8/6/08 20:40:15	3.86	9.96	16.1	16.8	
8/6/08 20:40:30	3.88	10.00	22.9	15.4	
8/6/08 20:40:45	3.77	10.02	24.4	28.5	
8/6/08 20:41:00	3.63	6.83	15.0	25.6	
8/6/08 20:41:15	2.23	2.59	1.9	11.2	
8/6/08 20:41:30	3.04	0.61	1.3	4.2	
8/6/08 20:41:45	4.17	0.28	1.0	1.7	
8/6/08 20:42:00	4.42	0.23	0.8	1.5	
8/6/08 20:42:15	4.46	0.21	0.7	1.3	
8/6/08 20:42:30	4.45	0.20	0.6	1.1	
8/6/08 20:42:45	4.44	0.20	0.6	1.1	
8/6/08 20:43:00	4.43	0.19	0.5	1.2	
8/6/08 20:43:15	4.44	0.19	0.5	1.2	
8/6/08 20:43:30	4.46	0.18	0.4	1.3	
8/6/08 20:43:45	4.48	0.18	0.4	1.2	
8/6/08 20:44:00	4.50	0.18	0.4	1.1	
8/6/08 20:44:15	4.51	0.18	0.4	1.1	
8/6/08 20:44:30	4.52	0.18	0.3	1.1	System Bias
<b>8/6/08 20:44:45</b>	<b>4.52</b>	<b>0.18</b>	<b>0.3</b>	<b>1.2</b>	<b>4.52 4.50% O<sub>2</sub></b>
<b>8/6/08 20:45:00</b>	<b>4.52</b>	<b>0.17</b>	<b>0.3</b>	<b>1.3</b>	<b>0.17 Zero CO<sub>2</sub></b>
<b>8/6/08 20:45:15</b>	<b>4.52</b>	<b>0.17</b>	<b>0.3</b>	<b>1.2</b>	<b>0.3 Zero NO<sub>x</sub></b>
<b>8/6/08 20:45:30</b>	<b>4.52</b>	<b>0.17</b>	<b>0.3</b>	<b>1.0</b>	
8/6/08 20:45:45	4.53	0.17	10.4	1.4	
8/6/08 20:46:00	4.48	1.17	5.7	3.3	
8/6/08 20:46:15	4.19	4.72	0.5	3.3	
8/6/08 20:46:30	3.04	6.02	0.3	1.2	
8/6/08 20:46:45	0.83	8.14	0.3	-0.4	
8/6/08 20:47:00	0.07	8.78	0.3	-0.7	
8/6/08 20:47:15	-0.04	8.70	0.3	-0.8	
8/6/08 20:47:30	-0.05	8.56	0.2	-0.7	
8/6/08 20:47:45	-0.06	8.51	0.2	-0.7	
8/6/08 20:48:00	-0.06	8.55	0.2	-0.7	
8/6/08 20:48:15	-0.06	8.70	0.2	-0.6	
8/6/08 20:48:30	-0.07	8.90	0.2	-0.8	
8/6/08 20:48:45	-0.07	9.05	0.2	-1.0	
8/6/08 20:49:00	-0.07	9.13	0.2	-0.9	
8/6/08 20:49:15	-0.07	9.17	0.2	-0.8	
8/6/08 20:49:30	-0.07	9.20	0.2	-0.7	
8/6/08 20:49:45	-0.07	9.21	0.1	-0.7	
8/6/08 20:50:00	-0.07	9.21	0.1	-0.8	
8/6/08 20:50:15	-0.07	9.22	0.1	-0.9	
8/6/08 20:50:30	-0.07	9.22	0.1	-0.9	
8/6/08 20:50:45	-0.08	9.23	0.1	-0.8	
8/6/08 20:51:00	-0.08	9.23	0.1	-0.7	System Bias
<b>8/6/08 20:51:15</b>	<b>-0.08</b>	<b>9.23</b>	<b>0.2</b>	<b>-0.7</b>	
<b>8/6/08 20:51:30</b>	<b>-0.08</b>	<b>9.23</b>	<b>0.1</b>	<b>-0.8</b>	<b>9.23 9.00% CO<sub>2</sub></b>
<b>8/6/08 20:51:45</b>	<b>-0.08</b>	<b>9.23</b>	<b>0.1</b>	<b>-1.0</b>	
<b>8/6/08 20:52:00</b>	<b>-0.08</b>	<b>9.24</b>	<b>0.1</b>	<b>-0.9</b>	<b>-0.8 Zero CO</b>
8/6/08 20:52:15	-0.08	9.24	7.1	-0.1	
8/6/08 20:52:30	0.04	9.29	26.2	1.9	
8/6/08 20:52:45	0.80	7.85	1.5	18.9	
8/6/08 20:53:00	0.44	3.40	0.5	48.8	
8/6/08 20:53:15	0.05	0.80	0.3	79.4	
8/6/08 20:53:30	-0.03	0.31	0.3	85.5	
8/6/08 20:53:45	-0.03	0.24	0.2	87.0	
8/6/08 20:54:00	-0.03	0.22	0.2	87.5	
8/6/08 20:54:15	-0.04	0.21	0.2	88.4	
8/6/08 20:54:30	-0.05	0.20	0.2	88.6	System Bias
<b>8/6/08 20:54:45</b>	<b>-0.05</b>	<b>0.20</b>	<b>0.1</b>	<b>88.6</b>	
<b>8/6/08 20:55:00</b>	<b>-0.06</b>	<b>0.19</b>	<b>0.1</b>	<b>88.6</b>	
<b>8/6/08 20:55:15</b>	<b>-0.06</b>	<b>0.19</b>	<b>0.1</b>	<b>88.8</b>	
<b>8/6/08 20:55:30</b>	<b>-0.06</b>	<b>0.19</b>	<b>0.1</b>	<b>88.9</b>	<b>88.7 90.0 ppm CO</b>
8/6/08 20:55:45	-0.06	0.18	5.9	86.7	
8/6/08 20:56:00	0.00	0.55	2.1	73.9	
8/6/08 20:56:15	0.80	2.94	0.2	43.9	
8/6/08 20:56:30	0.62	1.80	4.5	35.3	
8/6/08 20:56:45	0.05	0.42	19.7	28.8	
8/6/08 20:57:00	-0.04	0.25	22.7	16.8	
8/6/08 20:57:15	-0.05	0.21	23.3	4.8	
8/6/08 20:57:30	-0.05	0.19	23.5	2.7	
8/6/08 20:57:45	-0.05	0.18	23.7	1.8	
8/6/08 20:58:00	-0.05	0.18	23.6	1.6	
8/6/08 20:58:15	-0.05	0.17	23.7	1.5	
8/6/08 20:58:30	-0.04	0.17	24.0	1.6	
8/6/08 20:58:45	-0.04	0.17	27.6	1.6	
8/6/08 20:59:00	-0.05	0.17	43.5	1.6	
8/6/08 20:59:15	-0.05	0.17	45.9	1.5	
8/6/08 20:59:30	-0.06	0.17	45.0	1.2	
8/6/08 20:59:45	-0.06	0.17	44.5	1.2	
8/6/08 21:00:00	-0.06	0.16	44.2	1.2	
8/6/08 21:00:15	-0.06	0.16	43.9	1.3	

**Valero McKee Refinery - Sunray, Texas**  
**No. 1 SRU Incinerator Exhaust: EPN V-5**  
**ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	NO <sub>x</sub> ppmv db	CO ppmv db	Comments
8/6/08 21:00:30	-0.06	0.16	43.7	1.4	
8/6/08 21:00:45	-0.06	0.16	43.6	1.2	
8/6/08 21:01:00	-0.06	0.16	43.5	1.1	
8/6/08 21:01:15	-0.06	0.16	43.4	1.1	
8/6/08 21:01:30	-0.06	0.15	43.3	1.2	System Bias
8/6/08 21:01:45	-0.06	0.15	43.2	1.2	-0.06 Zero O <sub>2</sub>
8/6/08 21:02:00	-0.06	0.15	43.2	1.2	
8/6/08 21:02:15	-0.06	0.15	43.1	1.2	43.1 45.0 ppm NO <sub>x</sub>
8/6/08 21:02:30	-0.06	0.15	43.1	1.0	
8/6/08 21:02:45	-0.06	0.15	43.0	1.1	
8/6/08 21:03:00	-0.06	0.15	28.9	1.4	
8/6/08 21:03:15	0.13	1.14	16.1	5.6	
8/6/08 21:03:30	1.72	5.87	15.9	9.8	
8/6/08 21:03:45	3.14	9.05	15.6	12.7	
8/6/08 21:04:00	3.61	9.99	15.5	13.8	
8/6/08 21:04:15	3.68	10.08	15.9	14.8	
8/6/08 21:04:30	3.75	10.07	15.9	13.6	
8/6/08 21:04:45	3.66	10.13	15.8	12.7	
8/6/08 21:05:00	3.65	10.12	15.9	13.4	
8/6/08 21:05:15	3.74	10.06	16.0	13.7	
8/6/08 21:05:30	3.73	10.05	15.8	13.4	
8/6/08 21:05:45	3.70	10.05	15.9	13.5	
8/6/08 21:06:00	3.74	10.02	16.3	13.4	
8/6/08 21:06:15	3.78	10.02	16.5	12.5	
8/6/08 21:06:30	3.81	10.02	16.3	11.6	
8/6/08 21:06:45	3.79	10.02	16.4	10.2	
8/6/08 21:07:00	3.75	10.02	16.3	9.6	
8/6/08 21:07:15	3.76	10.00	16.4	9.8	
8/6/08 21:07:30	3.77	9.97	16.1	10.3	
8/6/08 21:07:45	3.79	9.98	15.8	11.9	
8/6/08 21:08:00	3.85	9.97	15.9	13.0	
8/6/08 21:08:15	3.86	9.99	15.9	12.3	
8/6/08 21:08:30	3.79	10.03	15.7	11.5	
8/6/08 21:08:45	3.78	10.02	16.1	11.2	
8/6/08 21:09:00	3.80	10.00	15.7	10.6	
8/6/08 21:09:15	3.75	10.01	15.6	11.9	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	Comments
8/8/08 9:53:45	20.58	0.06	
8/8/08 9:54:00	20.58	0.06	
8/8/08 9:54:15	20.58	0.07	
8/8/08 9:54:30	20.56	0.08	
8/8/08 9:54:45	20.54	0.08	
8/8/08 9:55:00	20.52	0.09	
8/8/08 9:55:15	20.51	0.09	
8/8/08 9:55:30	20.50	0.09	
8/8/08 9:55:45	20.49	0.09	
8/8/08 9:56:00	20.48	0.09	
8/8/08 9:56:15	20.47	0.09	
8/8/08 9:56:30	17.34	0.11	
8/8/08 9:56:45	5.97	0.06	
8/8/08 9:57:00	0.77	0.03	
8/8/08 9:57:15	0.08	0.02	
8/8/08 9:57:30	0.00	0.02	
8/8/08 9:57:45	-0.01	0.02	
8/8/08 9:58:00	-0.02	0.02	
8/8/08 9:58:15	-0.02	0.02	
8/8/08 9:58:30	-0.02	0.03	
8/8/08 9:58:45	-0.03	0.03	
8/8/08 9:59:00	-0.02	0.03	
8/8/08 9:59:15	1.72	0.06	
8/8/08 9:59:30	6.50	0.06	
8/8/08 9:59:45	8.47	0.03	
8/8/08 10:00:00	8.56	0.03	
8/8/08 10:00:15	8.52	0.03	
8/8/08 10:00:30	8.74	0.03	
8/8/08 10:00:45	8.92	0.02	
8/8/08 10:01:00	8.99	0.02	
8/8/08 10:01:15	9.02	0.02	
8/8/08 10:01:30	9.03	0.02	Calibration Error
8/8/08 10:01:45	9.04	0.02	9.04 9.00% O <sub>2</sub>
8/8/08 10:02:00	9.04	0.02	
8/8/08 10:02:15	9.04	0.02	
8/8/08 10:02:30	9.04	0.02	
8/8/08 10:02:45	8.66	0.02	
8/8/08 10:03:00	5.99	0.02	
8/8/08 10:03:15	4.76	0.02	
8/8/08 10:03:30	4.62	0.02	
8/8/08 10:03:45	4.61	0.02	
8/8/08 10:04:00	4.60	0.02	
8/8/08 10:04:15	4.60	0.02	Calibration Error
8/8/08 10:04:30	4.60	0.02	4.60 4.50% O <sub>2</sub>
8/8/08 10:04:45	4.60	0.02	0.02 Zero CO <sub>2</sub>
8/8/08 10:05:00	4.60	0.02	
8/8/08 10:05:15	4.60	0.02	
8/8/08 10:05:30	4.66	0.02	
8/8/08 10:05:45	8.18	2.07	
8/8/08 10:06:00	6.90	9.18	
8/8/08 10:06:15	2.12	12.75	
8/8/08 10:06:30	0.19	14.69	
8/8/08 10:06:45	-0.05	16.51	
8/8/08 10:07:00	-0.08	17.29	
8/8/08 10:07:15	-0.09	17.52	
8/8/08 10:07:30	-0.09	17.59	
8/8/08 10:07:45	-0.09	17.61	
8/8/08 10:08:00	-0.09	17.63	
8/8/08 10:08:15	-0.10	17.63	
8/8/08 10:08:30	-0.10	17.64	
8/8/08 10:08:45	-0.10	17.64	
8/8/08 10:09:00	-0.10	17.65	
8/8/08 10:09:15	-0.10	17.65	
8/8/08 10:09:30	-0.10	17.66	
8/8/08 10:09:45	-0.10	17.66	
8/8/08 10:10:00	-0.10	17.66	
8/8/08 10:10:15	-0.10	17.66	
8/8/08 10:10:30	-0.11	17.67	
8/8/08 10:10:45	-0.11	17.66	
8/8/08 10:11:00	-0.11	17.67	
8/8/08 10:11:15	-0.11	17.67	
8/8/08 10:11:30	-0.11	17.67	
8/8/08 10:11:45	-0.11	17.73	
8/8/08 10:12:00	-0.11	17.75	
8/8/08 10:12:15	-0.11	17.74	Calibration Error
8/8/08 10:12:30	-0.11	17.74	
8/8/08 10:12:45	-0.11	17.75	17.75 18.00% CO <sub>2</sub>
8/8/08 10:13:00	-0.11	17.75	
8/8/08 10:13:15	-0.11	17.75	
8/8/08 10:13:30	-0.11	17.75	
8/8/08 10:13:45	-0.11	16.90	
8/8/08 10:14:00	-0.10	12.46	
8/8/08 10:14:15	-0.09	9.83	
8/8/08 10:14:30	-0.09	9.32	

**Valero McKee Refinery - Sunray, Texas  
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ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	Comments
8/8/08 10:14:45	-0.09	9.27	Calibration Error
8/8/08 10:15:00	-0.09	9.26	-0.09 Zero O <sub>2</sub>
8/8/08 10:15:15	-0.09	9.26	9.26 9.00% CO <sub>2</sub>
8/8/08 10:15:30	-0.09	9.26	
8/8/08 10:15:45	-0.09	9.26	
8/8/08 10:16:00	-0.09	9.23	
8/8/08 10:16:15	-0.07	9.22	
8/8/08 10:16:30	3.76	6.91	
8/8/08 10:16:45	15.35	1.93	
8/8/08 10:17:00	19.08	0.50	
8/8/08 10:17:15	10.47	0.62	
8/8/08 10:17:30	4.06	0.57	
8/8/08 10:17:45	4.35	0.20	
8/8/08 10:18:00	4.56	0.10	
8/8/08 10:18:15	4.58	0.08	
8/8/08 10:18:30	4.58	0.07	
8/8/08 10:18:45	4.58	0.07	System Bias
8/8/08 10:19:00	4.58	0.07	4.57 4.50% O <sub>2</sub>
8/8/08 10:19:15	4.57	0.06	0.06 Zero CO <sub>2</sub>
8/8/08 10:19:30	4.57	0.06	
8/8/08 10:19:45	4.57	0.06	
8/8/08 10:20:00	4.58	0.06	
8/8/08 10:20:15	6.70	0.07	
8/8/08 10:20:30	9.73	2.00	
8/8/08 10:20:45	3.60	6.78	
8/8/08 10:21:00	0.53	8.75	
8/8/08 10:21:15	0.03	9.04	
8/8/08 10:21:30	-0.03	9.07	
8/8/08 10:21:45	-0.04	9.08	
8/8/08 10:22:00	-0.04	9.09	
8/8/08 10:22:15	-0.04	9.10	
8/8/08 10:22:30	-0.05	9.11	
8/8/08 10:22:45	-0.05	9.12	System Bias
8/8/08 10:23:00	-0.05	9.13	-0.05 Zero O <sub>2</sub>
8/8/08 10:23:15	-0.05	9.14	9.14 9.00% CO <sub>2</sub>
8/8/08 10:23:30	-0.05	9.14	
8/8/08 10:23:45	-0.06	9.14	
8/8/08 10:24:00	-0.06	10.95	
8/8/08 10:24:15	-0.07	15.17	
8/8/08 10:24:30	-0.08	17.18	
8/8/08 10:24:45	-0.08	17.50	
8/8/08 10:25:00	-0.09	17.54	
8/8/08 10:25:15	-0.09	17.55	Begin Response Time Check
8/8/08 10:25:30	-0.09	17.56	
8/8/08 10:25:45	-0.09	17.57	
8/8/08 10:26:00	-0.05	17.47	
8/8/08 10:26:15	4.92	11.90	
8/8/08 10:26:30	14.75	4.33	
8/8/08 10:26:45	19.56	0.76	O <sub>2</sub> Response Time - Up = 90 seconds
8/8/08 10:27:00	20.39	0.24	CO <sub>2</sub> Response Time - Down - 90 seconds
8/8/08 10:27:15	20.48	0.18	
8/8/08 10:27:30	20.49	0.16	
8/8/08 10:27:45	20.50	0.14	
8/8/08 10:28:00	20.51	0.14	
8/8/08 10:28:15	20.52	0.13	
8/8/08 10:28:30	20.52	0.12	
8/8/08 10:28:45	20.53	0.12	Begin Response Time Check
8/8/08 10:29:00	20.53	0.12	
8/8/08 10:29:15	20.53	0.11	
8/8/08 10:29:30	20.49	0.26	
8/8/08 10:29:45	15.11	7.13	
8/8/08 10:30:00	6.16	15.04	
8/8/08 10:30:15	1.30	17.74	CO <sub>2</sub> Response Time - Up - 90 seconds
8/8/08 10:30:30	0.08	17.61	O <sub>2</sub> Response Time - Down = 105 seconds
8/8/08 10:30:45	-0.02	17.55	
8/8/08 10:31:00	-0.04	17.56	
8/8/08 10:31:15	-0.05	17.57	
8/8/08 10:31:30	-0.05	17.57	
8/8/08 10:31:45	-0.06	17.57	
8/8/08 10:32:00	-0.06	17.57	
8/8/08 10:32:15	-0.06	17.57	
8/8/08 10:32:30	-0.07	17.58	
8/8/08 10:32:45	-0.07	17.58	
8/8/08 10:33:00	-0.07	17.58	
8/8/08 10:33:15	-0.07	17.57	
8/8/08 10:33:30	3.52	13.21	
8/8/08 10:33:45	13.52	5.25	
8/8/08 10:34:00	19.19	1.04	
8/8/08 10:34:15	20.36	0.28	
8/8/08 10:34:30	20.47	0.19	
8/8/08 10:34:45	20.50	0.17	
8/8/08 10:35:00	20.51	0.15	
8/8/08 10:35:15	20.51	0.14	
8/8/08 10:35:30	20.52	0.13	

**Valero McKee Refinery - Sunray, Texas  
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ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	Comments
8/8/08 10:35:45	20.53	0.13	
8/8/08 10:36:00	20.53	0.12	
8/8/08 10:36:15	20.53	0.12	
8/8/08 10:36:30	20.54	0.11	
8/8/08 10:36:45	20.54	0.11	
8/8/08 10:37:00	20.54	0.11	
8/8/08 10:37:15	20.55	0.10	
8/8/08 10:37:30	20.55	0.10	
8/8/08 10:37:45	20.55	0.10	
8/8/08 10:38:00	20.55	0.10	
8/8/08 10:38:15	20.55	0.10	
8/8/08 10:38:30	20.55	0.10	
8/8/08 10:38:45	20.55	0.10	
8/8/08 10:39:00	20.55	0.09	
8/8/08 10:39:15	20.55	0.09	
8/8/08 10:39:30	20.55	0.09	
8/8/08 10:39:45	20.55	0.09	
8/8/08 10:40:00	20.56	0.09	
8/8/08 10:40:15	20.56	0.09	
8/8/08 10:40:30	20.56	0.09	
8/8/08 10:40:45	20.56	0.09	
8/8/08 10:41:00	20.56	0.09	
8/8/08 10:41:15	20.56	0.09	
8/8/08 10:41:30	20.56	0.09	
8/8/08 10:41:45	20.56	0.09	
8/8/08 10:42:00	20.56	0.09	
8/8/08 10:42:15	20.56	0.09	
8/8/08 10:42:30	20.56	0.09	
8/8/08 10:42:45	20.56	0.09	
8/8/08 10:43:00	20.57	0.09	
8/8/08 10:43:15	20.56	0.09	
8/8/08 10:43:30	20.57	0.08	
8/8/08 10:43:45	20.56	0.08	
8/8/08 10:44:00	20.56	0.08	
8/8/08 10:44:15	20.57	0.08	
8/8/08 10:44:30	20.57	0.08	
8/8/08 10:44:45	20.57	0.08	
8/8/08 10:45:00	20.57	0.08	
8/8/08 10:45:15	20.57	0.08	
8/8/08 10:45:30	20.57	0.08	
8/8/08 10:45:45	20.57	0.07	
8/8/08 10:46:00	20.57	0.07	
8/8/08 10:46:15	20.57	0.07	
8/8/08 10:46:30	20.57	0.07	
8/8/08 10:46:45	20.57	0.07	
8/8/08 10:47:00	20.57	0.07	
8/8/08 10:47:15	20.57	0.07	
8/8/08 10:47:30	20.57	0.07	
8/8/08 10:47:45	20.57	0.07	
8/8/08 10:48:00	20.57	0.07	
8/8/08 10:48:15	20.57	0.07	
8/8/08 10:48:30	20.57	0.07	
8/8/08 10:48:45	20.57	0.07	
8/8/08 10:49:00	20.57	0.07	
8/8/08 10:49:15	20.57	0.07	
8/8/08 10:49:30	20.57	0.08	
8/8/08 10:49:45	20.57	0.08	
8/8/08 10:50:00	20.57	0.08	
8/8/08 10:50:15	20.57	0.08	
8/8/08 10:50:30	20.57	0.08	
8/8/08 10:50:45	20.57	0.08	
8/8/08 10:51:00	20.57	0.08	
8/8/08 10:51:15	20.57	0.08	
8/8/08 10:51:30	20.57	0.08	
8/8/08 10:51:45	20.57	0.08	
8/8/08 10:52:00	20.57	0.08	
8/8/08 10:52:15	20.57	0.08	
8/8/08 10:52:30	20.57	0.08	
8/8/08 10:52:45	20.57	0.08	
8/8/08 10:53:00	20.57	0.08	
8/8/08 10:53:15	20.57	0.08	
8/8/08 10:53:30	20.57	0.08	
8/8/08 10:53:45	20.57	0.08	
8/8/08 10:54:00	20.57	0.08	
8/8/08 10:54:15	20.57	0.08	
8/8/08 10:54:30	20.57	0.07	
8/8/08 10:54:45	20.57	0.07	
8/8/08 10:55:00	20.57	0.07	
8/8/08 10:55:15	20.57	0.07	
8/8/08 10:55:30	20.57	0.07	
8/8/08 10:55:45	20.57	0.07	
8/8/08 10:56:00	20.57	0.07	
8/8/08 10:56:15	20.57	0.07	
8/8/08 10:56:30	20.57	0.07	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	Comments
8/8/08 10:56:45	20.57	0.07	
8/8/08 10:57:00	20.57	0.07	
8/8/08 10:57:15	20.57	0.07	
8/8/08 10:57:30	20.57	0.07	
8/8/08 10:57:45	20.57	0.07	
8/8/08 10:58:00	20.53	0.16	
8/8/08 10:58:15	16.30	3.72	
8/8/08 10:58:30	7.75	8.64	
8/8/08 10:58:45	4.35	10.18	
8/8/08 10:59:00	3.90	10.31	
8/8/08 10:59:15	3.84	10.31	
8/8/08 10:59:30	3.97	10.23	
8/8/08 10:59:45	4.08	10.19	
8/8/08 11:00:00	4.07	10.20	
8/8/08 11:00:15	4.07	10.17	
8/8/08 11:00:30	4.04	10.16	Begin Stratification Check
8/8/08 11:00:45	4.01	10.16	Point #1
8/8/08 11:01:00	3.97	10.20	3.96 O <sub>2</sub>
8/8/08 11:01:15	3.89	10.29	10.29 CO <sub>2</sub>
8/8/08 11:01:30	3.83	10.35	
8/8/08 11:01:45	3.90	10.35	
8/8/08 11:02:00	3.91	10.34	
8/8/08 11:02:15	3.95	10.29	
8/8/08 11:02:30	4.02	10.26	
8/8/08 11:02:45	4.03	10.30	
8/8/08 11:03:00	4.01	10.32	
8/8/08 11:03:15	3.93	10.32	
8/8/08 11:03:30	3.93	10.28	
8/8/08 11:03:45	4.02	10.23	
8/8/08 11:04:00	4.06	10.23	
8/8/08 11:04:15	4.00	10.25	
8/8/08 11:04:30	3.99	10.23	
8/8/08 11:04:45	3.88	10.29	
8/8/08 11:05:00	3.78	10.33	
8/8/08 11:05:15	3.76	10.35	
8/8/08 11:05:30	3.74	10.36	
8/8/08 11:05:45	3.79	10.34	
8/8/08 11:06:00	3.89	10.31	
8/8/08 11:06:15	3.97	10.29	
8/8/08 11:06:30	4.05	10.26	
8/8/08 11:06:45	4.04	10.28	
8/8/08 11:07:00	4.03	10.27	
8/8/08 11:07:15	4.06	10.24	
8/8/08 11:07:30	4.06	10.21	
8/8/08 11:07:45	4.05	10.23	
8/8/08 11:08:00	3.94	10.30	Point #2
8/8/08 11:08:15	3.83	10.36	3.98 O <sub>2</sub>
8/8/08 11:08:30	3.79	10.37	10.28 CO <sub>2</sub>
8/8/08 11:08:45	3.81	10.34	
8/8/08 11:09:00	3.85	10.33	
8/8/08 11:09:15	3.87	10.32	
8/8/08 11:09:30	3.94	10.26	
8/8/08 11:09:45	4.05	10.25	
8/8/08 11:10:00	4.08	10.27	
8/8/08 11:10:15	4.09	10.25	
8/8/08 11:10:30	4.08	10.25	
8/8/08 11:10:45	4.06	10.26	
8/8/08 11:11:00	4.07	10.25	
8/8/08 11:11:15	4.07	10.25	
8/8/08 11:11:30	4.06	10.22	
8/8/08 11:11:45	4.02	10.21	
8/8/08 11:12:00	3.92	10.23	
8/8/08 11:12:15	3.90	10.25	
8/8/08 11:12:30	3.88	10.26	
8/8/08 11:12:45	3.95	10.23	
8/8/08 11:13:00	3.96	10.25	
8/8/08 11:13:15	3.92	10.30	
8/8/08 11:13:30	3.96	10.29	
8/8/08 11:13:45	4.02	10.26	
8/8/08 11:14:00	4.04	10.30	
8/8/08 11:14:15	4.02	10.35	
8/8/08 11:14:30	3.99	10.36	
8/8/08 11:14:45	3.99	10.35	
8/8/08 11:15:00	3.93	10.37	Point #3
8/8/08 11:15:15	3.85	10.39	3.87 O <sub>2</sub>
8/8/08 11:15:30	3.80	10.40	10.37 CO <sub>2</sub>
8/8/08 11:15:45	3.89	10.31	
8/8/08 11:16:00	3.94	10.27	
8/8/08 11:16:15	3.88	10.30	
8/8/08 11:16:30	3.84	10.34	
8/8/08 11:16:45	3.77	10.38	
8/8/08 11:17:00	3.82	10.36	
8/8/08 11:17:15	3.92	10.34	
8/8/08 11:17:30	3.95	10.38	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	Comments
8/8/08 11:17:45	3.85	10.46	
8/8/08 11:18:00	3.83	10.46	
8/8/08 11:18:15	3.90	10.39	
8/8/08 11:18:30	3.96	10.37	
8/8/08 11:18:45	3.95	10.41	
8/8/08 11:19:00	3.88	10.45	3-point average
8/8/08 11:19:15	3.85	10.43	3.94 O <sub>2</sub>
8/8/08 11:19:30	3.84	10.38	10.31 CO <sub>2</sub>
8/8/08 11:19:45	3.90	10.30	
8/8/08 11:20:00	3.95	10.27	-1.54 % stratified O <sub>2</sub>
8/8/08 11:20:15	3.93	10.29	0.54 % stratified CO <sub>2</sub>
8/8/08 11:20:30	3.88	10.32	
8/8/08 11:20:45	3.81	10.36	
8/8/08 11:21:00	3.79	10.41	
8/8/08 11:21:15	3.84	10.42	
8/8/08 11:21:30	3.87	10.45	
8/8/08 11:21:45	3.89	10.43	
8/8/08 11:22:00	3.86	10.43	
8/8/08 11:22:15	3.80	10.48	
8/8/08 11:22:30	3.80	10.48	
8/8/08 11:22:45	3.87	10.42	
8/8/08 11:23:00	3.91	10.37	
8/8/08 11:23:15	3.82	10.43	
8/8/08 11:23:30	3.72	10.46	
8/8/08 11:23:45	3.64	10.47	
8/8/08 11:24:00	3.64	10.44	
8/8/08 11:24:15	3.69	10.40	
8/8/08 11:24:30	3.69	10.41	
8/8/08 11:24:45	3.66	10.45	
8/8/08 11:25:00	3.70	10.46	
8/8/08 11:25:15	3.82	10.44	
8/8/08 11:25:30	3.91	10.43	
8/8/08 11:25:45	3.97	10.42	
8/8/08 11:26:00	4.00	10.39	
8/8/08 11:26:15	3.95	10.40	
8/8/08 11:26:30	3.90	10.42	
8/8/08 11:26:45	3.91	10.44	
8/8/08 11:27:00	3.86	10.48	
8/8/08 11:27:15	3.90	10.42	
8/8/08 11:27:30	3.84	10.43	
8/8/08 11:27:45	3.78	10.39	
8/8/08 11:28:00	3.88	10.31	
8/8/08 11:28:15	3.92	10.31	
8/8/08 11:28:30	3.90	10.34	
8/8/08 11:28:45	3.85	10.37	
8/8/08 11:29:00	3.88	10.36	
8/8/08 11:29:15	3.90	10.38	
8/8/08 11:29:30	3.96	10.42	
8/8/08 11:29:45	3.89	10.40	
8/8/08 11:30:00	3.91	10.41	
8/8/08 11:30:15	3.91	10.47	
8/8/08 11:30:30	3.84	10.55	
8/8/08 11:30:45	3.79	10.55	
8/8/08 11:31:00	3.80	10.49	
8/8/08 11:31:15	3.75	10.48	
8/8/08 11:31:30	3.88	10.49	
8/8/08 11:31:45	3.72	10.44	
8/8/08 11:32:00	3.79	10.37	
8/8/08 11:32:15	3.76	10.35	
8/8/08 11:32:30	3.75	10.34	
8/8/08 11:32:45	3.74	10.38	Begin Run No. M5-1
8/8/08 11:33:00	3.79	10.36	
8/8/08 11:33:15	3.90	10.34	
8/8/08 11:33:30	3.91	10.37	
8/8/08 11:33:45	3.94	10.39	
8/8/08 11:34:00	3.93	10.41	
8/8/08 11:34:15	3.89	10.42	
8/8/08 11:34:30	3.94	10.44	
8/8/08 11:34:45	3.96	10.46	
8/8/08 11:35:00	4.01	10.43	
8/8/08 11:35:15	4.00	10.42	
8/8/08 11:35:30	3.86	10.45	
8/8/08 11:35:45	3.76	10.45	
8/8/08 11:36:00	3.76	10.40	
8/8/08 11:36:15	3.75	10.38	
8/8/08 11:36:30	3.71	10.41	
8/8/08 11:36:45	3.73	10.42	
8/8/08 11:37:00	3.75	10.45	
8/8/08 11:37:15	3.69	10.51	
8/8/08 11:37:30	3.78	10.49	
8/8/08 11:37:45	3.87	10.43	
8/8/08 11:38:00	3.92	10.40	
8/8/08 11:38:15	3.91	10.44	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	Comments
8/8/08 11:38:30	3.95	10.46	
8/8/08 11:38:45	3.87	10.51	
8/8/08 11:39:00	3.80	10.52	
8/8/08 11:39:15	3.79	10.48	
8/8/08 11:39:30	3.81	10.44	
8/8/08 11:39:45	3.85	10.41	
8/8/08 11:40:00	3.84	10.40	
8/8/08 11:40:15	3.88	10.36	
8/8/08 11:40:30	3.87	10.38	
8/8/08 11:40:45	3.91	10.37	
8/8/08 11:41:00	3.94	10.43	
8/8/08 11:41:15	3.82	10.51	
8/8/08 11:41:30	3.87	10.51	
8/8/08 11:41:45	3.91	10.48	
8/8/08 11:42:00	3.92	10.46	
8/8/08 11:42:15	3.92	10.44	
8/8/08 11:42:30	3.91	10.45	
8/8/08 11:42:45	3.88	10.47	
8/8/08 11:43:00	3.87	10.44	
8/8/08 11:43:15	3.85	10.38	
8/8/08 11:43:30	3.80	10.42	
8/8/08 11:43:45	3.68	10.51	
8/8/08 11:44:00	3.71	10.51	
8/8/08 11:44:15	3.81	10.47	
8/8/08 11:44:30	3.82	10.45	
8/8/08 11:44:45	3.79	10.47	
8/8/08 11:45:00	3.83	10.47	
8/8/08 11:45:15	3.87	10.49	
8/8/08 11:45:30	3.89	10.49	
8/8/08 11:45:45	3.84	10.52	
8/8/08 11:46:00	3.86	10.48	
8/8/08 11:46:15	3.86	10.45	
8/8/08 11:46:30	3.86	10.43	
8/8/08 11:46:45	3.84	10.42	
8/8/08 11:47:00	3.95	10.27	
8/8/08 11:47:15	4.37	10.02	
8/8/08 11:47:30	4.37	10.06	
8/8/08 11:47:45	4.32	10.12	
8/8/08 11:48:00	4.26	10.18	
8/8/08 11:48:15	4.23	10.20	
8/8/08 11:48:30	4.24	10.21	
8/8/08 11:48:45	4.26	10.25	
8/8/08 11:49:00	4.24	10.29	
8/8/08 11:49:15	4.23	10.27	
8/8/08 11:49:30	4.50	10.10	
8/8/08 11:49:45	4.40	10.27	
8/8/08 11:50:00	3.99	10.46	
8/8/08 11:50:15	3.90	10.45	
8/8/08 11:50:30	3.89	10.41	
8/8/08 11:50:45	3.91	10.35	
8/8/08 11:51:00	3.92	10.32	
8/8/08 11:51:15	3.88	10.36	
8/8/08 11:51:30	3.81	10.42	
8/8/08 11:51:45	3.69	10.49	
8/8/08 11:52:00	3.71	10.51	
8/8/08 11:52:15	3.72	10.54	
8/8/08 11:52:30	3.77	10.52	
8/8/08 11:52:45	3.85	10.49	
8/8/08 11:53:00	4.12	10.40	
8/8/08 11:53:15	4.01	10.49	
8/8/08 11:53:30	3.86	10.53	
8/8/08 11:53:45	3.85	10.49	
8/8/08 11:54:00	3.93	10.43	
8/8/08 11:54:15	3.91	10.45	
8/8/08 11:54:30	3.85	10.49	
8/8/08 11:54:45	3.94	10.39	
8/8/08 11:55:00	4.13	10.31	
8/8/08 11:55:15	3.91	10.40	
8/8/08 11:55:30	3.84	10.40	
8/8/08 11:55:45	3.87	10.40	
8/8/08 11:56:00	3.88	10.46	
8/8/08 11:56:15	3.84	10.54	
8/8/08 11:56:30	3.73	10.64	
8/8/08 11:56:45	3.67	10.69	
8/8/08 11:57:00	3.66	10.69	
8/8/08 11:57:15	3.70	10.66	
8/8/08 11:57:30	3.75	10.61	
8/8/08 11:57:45	3.82	10.53	
8/8/08 11:58:00	3.84	10.48	
8/8/08 11:58:15	3.78	10.46	
8/8/08 11:58:30	3.75	10.46	
8/8/08 11:58:45	3.70	10.51	
8/8/08 11:59:00	3.67	10.54	
8/8/08 11:59:15	3.68	10.54	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	Comments
8/8/08 11:59:30	3.70	10.54	
8/8/08 11:59:45	3.69	10.54	
8/8/08 12:00:00	3.72	10.53	
8/8/08 12:00:15	3.71	10.55	
8/8/08 12:00:30	3.71	10.58	
8/8/08 12:00:45	3.72	10.58	
8/8/08 12:01:00	3.72	10.53	
8/8/08 12:01:15	3.98	10.35	
8/8/08 12:01:30	3.76	10.48	
8/8/08 12:01:45	3.66	10.49	
8/8/08 12:02:00	3.71	10.44	
8/8/08 12:02:15	3.73	10.38	
8/8/08 12:02:30	3.70	10.37	
8/8/08 12:02:45	3.70	10.36	
8/8/08 12:03:00	3.72	10.36	Change of Ports
8/8/08 12:03:15	3.73	10.40	Move CEMS Probe from South to East Port
8/8/08 12:03:30	3.69	10.46	
8/8/08 12:03:45	3.74	10.48	
8/8/08 12:04:00	3.78	10.49	
8/8/08 12:04:15	3.78	10.48	
8/8/08 12:04:30	3.91	10.38	
8/8/08 12:04:45	4.70	9.87	
8/8/08 12:05:00	5.91	9.31	
8/8/08 12:05:15	4.86	10.02	
8/8/08 12:05:30	4.07	10.34	
8/8/08 12:05:45	3.79	10.45	
8/8/08 12:06:00	3.68	10.46	
8/8/08 12:06:15	3.75	10.42	
8/8/08 12:06:30	4.01	10.13	
8/8/08 12:06:45	10.22	5.64	
8/8/08 12:07:00	18.07	1.28	
8/8/08 12:07:15	20.00	0.54	
8/8/08 12:07:30	14.82	4.71	
8/8/08 12:07:45	6.86	9.12	
8/8/08 12:08:00	4.20	10.33	
8/8/08 12:08:15	3.87	10.50	
8/8/08 12:08:30	3.89	10.49	
8/8/08 12:08:45	3.87	10.49	
8/8/08 12:09:00	3.85	10.47	
8/8/08 12:09:15	3.90	10.43	
8/8/08 12:09:30	3.97	10.38	
8/8/08 12:09:45	3.97	10.38	
8/8/08 12:10:00	3.91	10.43	
8/8/08 12:10:15	3.84	10.48	
8/8/08 12:10:30	3.80	10.51	
8/8/08 12:10:45	3.79	10.52	
8/8/08 12:11:00	3.80	10.54	
8/8/08 12:11:15	3.71	10.61	
8/8/08 12:11:30	3.74	10.57	
8/8/08 12:11:45	3.78	10.52	
8/8/08 12:12:00	3.77	10.51	
8/8/08 12:12:15	3.74	10.54	
8/8/08 12:12:30	3.72	10.57	
8/8/08 12:12:45	3.71	10.58	Resume Sampling
8/8/08 12:13:00	3.71	10.54	
8/8/08 12:13:15	3.70	10.51	
8/8/08 12:13:30	3.69	10.51	
8/8/08 12:13:45	3.64	10.56	
8/8/08 12:14:00	3.51	10.86	
8/8/08 12:14:15	3.43	10.71	
8/8/08 12:14:30	3.49	10.69	
8/8/08 12:14:45	3.65	10.60	
8/8/08 12:15:00	3.74	10.57	
8/8/08 12:15:15	3.75	10.57	
8/8/08 12:15:30	3.75	10.54	
8/8/08 12:15:45	3.77	10.50	
8/8/08 12:16:00	3.82	10.52	
8/8/08 12:16:15	3.82	10.56	
8/8/08 12:16:30	3.79	10.57	
8/8/08 12:16:45	3.80	10.55	
8/8/08 12:17:00	3.82	10.52	
8/8/08 12:17:15	3.78	10.53	
8/8/08 12:17:30	3.80	10.49	
8/8/08 12:17:45	3.81	10.47	
8/8/08 12:18:00	3.85	10.45	
8/8/08 12:18:15	3.88	10.43	
8/8/08 12:18:30	3.87	10.44	
8/8/08 12:18:45	3.82	10.50	
8/8/08 12:19:00	3.87	10.61	
8/8/08 12:19:15	3.59	10.68	
8/8/08 12:19:30	3.57	10.72	
8/8/08 12:19:45	3.65	10.68	
8/8/08 12:20:00	3.74	10.64	
8/8/08 12:20:15	3.70	10.67	

Valero McKee Refinery - Sunray, Texas  
 No. 1 SRU Incinerator Exhaust: EPN V-5  
 ARI Reference Method Monitoring Data

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	Comments
8/8/08 12:20:30	3.67	10.65	
8/8/08 12:20:45	3.70	10.61	
8/8/08 12:21:00	3.64	10.59	
8/8/08 12:21:15	3.64	10.54	
8/8/08 12:21:30	3.71	10.48	
8/8/08 12:21:45	3.72	10.49	
8/8/08 12:22:00	3.69	10.53	
8/8/08 12:22:15	3.72	10.50	
8/8/08 12:22:30	3.78	10.46	
8/8/08 12:22:45	3.85	10.45	
8/8/08 12:23:00	3.83	10.50	
8/8/08 12:23:15	3.81	10.50	
8/8/08 12:23:30	3.85	10.46	
8/8/08 12:23:45	3.93	10.44	
8/8/08 12:24:00	3.95	10.46	
8/8/08 12:24:15	3.94	10.44	
8/8/08 12:24:30	3.88	10.46	
8/8/08 12:24:45	3.82	10.47	
8/8/08 12:25:00	3.88	10.39	
8/8/08 12:25:15	3.86	10.37	
8/8/08 12:25:30	3.85	10.36	
8/8/08 12:25:45	3.85	10.40	
8/8/08 12:26:00	3.76	10.46	
8/8/08 12:26:15	3.68	10.52	
8/8/08 12:26:30	3.58	10.60	
8/8/08 12:26:45	3.57	10.62	
8/8/08 12:27:00	3.70	10.55	
8/8/08 12:27:15	3.77	10.50	
8/8/08 12:27:30	3.77	10.53	
8/8/08 12:27:45	3.72	10.59	
8/8/08 12:28:00	3.68	10.59	
8/8/08 12:28:15	3.67	10.55	
8/8/08 12:28:30	3.72	10.48	
8/8/08 12:28:45	3.71	10.46	
8/8/08 12:29:00	3.65	10.48	
8/8/08 12:29:15	3.70	10.43	
8/8/08 12:29:30	3.77	10.40	
8/8/08 12:29:45	3.74	10.45	
8/8/08 12:30:00	3.66	10.53	
8/8/08 12:30:15	3.67	10.56	
8/8/08 12:30:30	3.75	10.53	
8/8/08 12:30:45	3.79	10.52	
8/8/08 12:31:00	3.81	10.53	
8/8/08 12:31:15	3.80	10.56	
8/8/08 12:31:30	3.80	10.55	
8/8/08 12:31:45	3.85	10.50	
8/8/08 12:32:00	3.88	10.44	
8/8/08 12:32:15	3.88	10.39	
8/8/08 12:32:30	3.86	10.35	
8/8/08 12:32:45	3.84	10.33	
8/8/08 12:33:00	3.74	10.38	
8/8/08 12:33:15	3.64	10.47	
8/8/08 12:33:30	3.65	10.51	
8/8/08 12:33:45	3.67	10.51	
8/8/08 12:34:00	3.65	10.55	
8/8/08 12:34:15	3.59	10.61	
8/8/08 12:34:30	3.62	10.60	
8/8/08 12:34:45	3.71	10.55	
8/8/08 12:35:00	3.78	10.55	
8/8/08 12:35:15	3.80	10.58	
8/8/08 12:35:30	3.80	10.59	
8/8/08 12:35:45	3.80	10.55	
8/8/08 12:36:00	3.82	10.49	
8/8/08 12:36:15	3.76	10.48	
8/8/08 12:36:30	3.65	10.51	
8/8/08 12:36:45	3.61	10.54	
8/8/08 12:37:00	3.57	10.57	
8/8/08 12:37:15	3.61	10.52	
8/8/08 12:37:30	3.72	10.45	
8/8/08 12:37:45	3.70	10.48	
8/8/08 12:38:00	3.63	10.54	
8/8/08 12:38:15	3.65	10.57	
8/8/08 12:38:30	3.64	10.60	
8/8/08 12:38:45	3.63	10.64	
8/8/08 12:39:00	3.64	10.64	
8/8/08 12:39:15	3.67	10.61	
8/8/08 12:39:30	3.74	10.54	
8/8/08 12:39:45	3.82	10.44	
8/8/08 12:40:00	3.85	10.38	
8/8/08 12:40:15	3.82	10.36	
8/8/08 12:40:30	3.75	10.37	
8/8/08 12:40:45	3.67	10.43	
8/8/08 12:41:00	3.65	10.49	
8/8/08 12:41:15	3.68	10.50	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	Comments
8/8/08 12:41:30	3.71	10.50	
8/8/08 12:41:45	3.66	10.56	
8/8/08 12:42:00	3.69	10.54	
8/8/08 12:42:15	3.75	10.50	
8/8/08 12:42:30	3.76	10.51	
8/8/08 12:42:45	3.83	10.48	
8/8/08 12:43:00	3.88	10.48	End Run No. M5-1
8/8/08 12:43:15	3.87	10.51	
8/8/08 12:43:30	3.88	10.48	
8/8/08 12:43:45	3.89	10.42	
8/8/08 12:44:00	3.88	10.36	
8/8/08 12:44:15	3.86	10.32	
8/8/08 12:44:30	3.84	10.29	
8/8/08 12:44:45	3.75	10.36	
8/8/08 12:45:00	3.52	10.51	
8/8/08 12:45:15	3.61	10.48	
8/8/08 12:45:30	3.75	10.45	
8/8/08 12:45:45	3.70	10.51	
8/8/08 12:46:00	3.68	10.52	
8/8/08 12:46:15	3.71	10.50	
8/8/08 12:46:30	3.76	10.50	
8/8/08 12:46:45	3.77	10.52	
8/8/08 12:47:00	3.78	10.53	
8/8/08 12:47:15	3.76	10.55	
8/8/08 12:47:30	3.76	10.54	
8/8/08 12:47:45	3.76	10.19	
8/8/08 12:48:00	2.52	6.18	
8/8/08 12:48:15	2.41	2.13	
8/8/08 12:48:30	3.84	0.44	
8/8/08 12:48:45	4.40	0.19	
8/8/08 12:49:00	4.48	0.15	
8/8/08 12:49:15	4.49	0.13	
8/8/08 12:49:30	4.47	0.12	
8/8/08 12:49:45	4.47	0.11	
8/8/08 12:50:00	4.47	0.10	
8/8/08 12:50:15	4.48	0.10	
8/8/08 12:50:30	4.51	0.09	
8/8/08 12:50:45	4.52	0.09	
8/8/08 12:51:00	4.53	0.08	System Bias
8/8/08 12:51:15	4.54	0.08	4.54 4.50% O <sub>2</sub>
8/8/08 12:51:30	4.54	0.08	0.07 Zero CO <sub>2</sub>
8/8/08 12:51:45	4.54	0.07	
8/8/08 12:52:00	4.54	0.07	
8/8/08 12:52:15	4.45	2.15	
8/8/08 12:52:30	4.01	4.83	
8/8/08 12:52:45	1.88	7.08	
8/8/08 12:53:00	0.32	8.62	
8/8/08 12:53:15	0.01	8.78	
8/8/08 12:53:30	-0.03	8.64	
8/8/08 12:53:45	-0.04	8.55	
8/8/08 12:54:00	-0.04	8.56	
8/8/08 12:54:15	-0.05	8.65	
8/8/08 12:54:30	-0.05	8.82	
8/8/08 12:54:45	-0.05	8.96	
8/8/08 12:55:00	-0.05	9.04	
8/8/08 12:55:15	-0.06	9.08	
8/8/08 12:55:30	-0.05	9.10	
8/8/08 12:55:45	-0.06	9.11	
8/8/08 12:56:00	-0.06	9.12	
8/8/08 12:56:15	-0.06	9.12	
8/8/08 12:56:30	-0.06	9.13	
8/8/08 12:56:45	-0.06	9.13	
8/8/08 12:57:00	-0.06	9.13	
8/8/08 12:57:15	-0.06	9.13	
8/8/08 12:57:30	-0.06	9.13	System Bias
8/8/08 12:57:45	-0.06	9.13	-0.07 Zero O <sub>2</sub>
8/8/08 12:58:00	-0.07	9.14	9.14 9.00% CO <sub>2</sub>
8/8/08 12:58:15	-0.07	9.14	
8/8/08 12:58:30	-0.07	9.14	
8/8/08 12:58:45	-0.05	9.16	
8/8/08 12:59:00	0.96	9.70	
8/8/08 12:59:15	2.86	10.34	
8/8/08 12:59:30	3.39	10.54	
8/8/08 12:59:45	3.41	10.54	
8/8/08 13:00:00	3.45	10.48	
8/8/08 13:00:15	3.50	10.43	
8/8/08 13:00:30	3.57	10.40	
8/8/08 13:00:45	3.58	10.40	
8/8/08 13:01:00	3.63	10.38	
8/8/08 13:01:15	3.73	10.33	
8/8/08 13:01:30	3.80	10.32	
8/8/08 13:01:45	3.82	10.34	
8/8/08 13:02:00	3.86	10.35	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	Comments
8/8/08 13:02:15	3.87	10.35	
8/8/08 13:02:30	3.86	10.37	
8/8/08 13:02:45	3.85	10.38	
8/8/08 13:03:00	3.87	10.33	
8/8/08 13:03:15	3.94	10.28	
8/8/08 13:03:30	3.94	10.31	
8/8/08 13:03:45	3.89	10.35	
8/8/08 13:04:00	3.88	10.35	
8/8/08 13:04:15	3.88	10.35	
8/8/08 13:04:30	3.83	10.38	
8/8/08 13:04:45	3.77	10.42	
8/8/08 13:05:00	3.78	10.42	
8/8/08 13:05:15	3.81	10.42	
8/8/08 13:05:30	3.88	10.39	
8/8/08 13:05:45	3.90	10.37	
8/8/08 13:06:00	3.84	10.40	
8/8/08 13:06:15	3.85	10.39	
8/8/08 13:06:30	3.87	10.38	
8/8/08 13:06:45	3.89	10.38	
8/8/08 13:07:00	3.88	10.38	
8/8/08 13:07:15	3.90	10.35	
8/8/08 13:07:30	3.93	10.34	
8/8/08 13:07:45	3.89	10.34	
8/8/08 13:08:00	3.88	10.33	
8/8/08 13:08:15	3.90	10.32	
8/8/08 13:08:30	3.92	10.34	
8/8/08 13:08:45	3.92	10.37	
8/8/08 13:09:00	3.93	10.39	
8/8/08 13:09:15	3.92	10.38	
8/8/08 13:09:30	3.89	10.37	
8/8/08 13:09:45	3.88	10.37	
8/8/08 13:10:00	3.89	10.35	
8/8/08 13:10:15	3.87	10.35	
8/8/08 13:10:30	3.85	10.38	
8/8/08 13:10:45	3.80	10.41	
8/8/08 13:11:00	3.72	10.44	
8/8/08 13:11:15	3.69	10.43	
8/8/08 13:11:30	3.75	10.41	
8/8/08 13:11:45	3.82	10.40	
8/8/08 13:12:00	3.87	10.39	
8/8/08 13:12:15	3.86	10.37	
8/8/08 13:12:30	3.83	10.38	
8/8/08 13:12:45	3.78	10.40	
8/8/08 13:13:00	3.79	10.38	
8/8/08 13:13:15	3.79	10.40	
8/8/08 13:13:30	3.77	10.40	
8/8/08 13:13:45	3.72	10.39	
8/8/08 13:14:00	3.74	10.34	
8/8/08 13:14:15	3.74	10.34	
8/8/08 13:14:30	3.73	10.36	
8/8/08 13:14:45	3.77	10.39	
8/8/08 13:15:00	3.75	10.44	
8/8/08 13:15:15	3.64	10.50	
8/8/08 13:15:30	3.69	10.48	
8/8/08 13:15:45	3.71	10.48	
8/8/08 13:16:00	3.70	10.48	
8/8/08 13:16:15	3.76	10.50	
8/8/08 13:16:30	3.71	10.54	
8/8/08 13:16:45	3.64	10.55	
8/8/08 13:17:00	3.62	10.53	
8/8/08 13:17:15	3.66	10.49	
8/8/08 13:17:30	3.72	10.47	
8/8/08 13:17:45	3.71	10.46	
8/8/08 13:18:00	3.69	10.44	
8/8/08 13:18:15	3.68	10.43	
8/8/08 13:18:30	3.69	10.41	
8/8/08 13:18:45	3.68	10.41	Begin Run No. M5-2
8/8/08 13:19:00	3.64	10.44	
8/8/08 13:19:15	3.83	10.47	
8/8/08 13:19:30	3.65	10.49	
8/8/08 13:19:45	3.66	10.51	
8/8/08 13:20:00	3.86	10.50	
8/8/08 13:20:15	3.68	10.48	
8/8/08 13:20:30	3.68	10.50	
8/8/08 13:20:45	3.62	10.57	
8/8/08 13:21:00	3.50	10.62	
8/8/08 13:21:15	3.44	10.60	
8/8/08 13:21:30	3.47	10.51	
8/8/08 13:21:45	3.55	10.42	
8/8/08 13:22:00	3.57	10.37	
8/8/08 13:22:15	3.59	10.35	
8/8/08 13:22:30	3.66	10.34	
8/8/08 13:22:45	3.70	10.34	

Valero McKee Refinery - Sunray, Texas  
 No. 1 SRU Incinerator Exhaust: EPN V-5  
 ARI Reference Method Monitoring Data

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	Comments
8/8/08 13:23:00	3.71	10.36	
8/8/08 13:23:15	3.70	10.39	
8/8/08 13:23:30	3.72	10.40	
8/8/08 13:23:45	3.73	10.42	
8/8/08 13:24:00	3.63	10.54	
8/8/08 13:24:15	3.69	10.51	
8/8/08 13:24:30	3.78	10.47	
8/8/08 13:24:45	3.79	10.44	
8/8/08 13:25:00	3.77	10.43	
8/8/08 13:25:15	3.73	10.42	
8/8/08 13:25:30	3.74	10.40	
8/8/08 13:25:45	3.78	10.37	
8/8/08 13:26:00	3.70	10.41	
8/8/08 13:26:15	3.62	10.42	
8/8/08 13:26:30	3.53	10.44	
8/8/08 13:26:45	3.55	10.43	
8/8/08 13:27:00	3.50	10.50	
8/8/08 13:27:15	3.43	10.58	
8/8/08 13:27:30	3.48	10.58	
8/8/08 13:27:45	3.66	10.51	
8/8/08 13:28:00	3.82	10.41	
8/8/08 13:28:15	3.86	10.39	
8/8/08 13:28:30	3.77	10.45	
8/8/08 13:28:45	3.70	10.49	
8/8/08 13:29:00	3.67	10.48	
8/8/08 13:29:15	3.65	10.44	
8/8/08 13:29:30	3.66	10.41	
8/8/08 13:29:45	3.66	10.42	
8/8/08 13:30:00	3.64	10.42	
8/8/08 13:30:15	3.57	10.46	
8/8/08 13:30:30	3.56	10.46	
8/8/08 13:30:45	3.58	10.46	
8/8/08 13:31:00	3.58	10.52	
8/8/08 13:31:15	3.59	10.57	
8/8/08 13:31:30	3.58	10.59	
8/8/08 13:31:45	3.60	10.57	
8/8/08 13:32:00	3.65	10.53	
8/8/08 13:32:15	3.69	10.48	
8/8/08 13:32:30	3.73	10.42	
8/8/08 13:32:45	3.79	10.35	
8/8/08 13:33:00	3.81	10.30	
8/8/08 13:33:15	3.80	10.31	
8/8/08 13:33:30	3.75	10.32	
8/8/08 13:33:45	3.76	10.30	
8/8/08 13:34:00	3.76	10.34	
8/8/08 13:34:15	3.71	10.42	
8/8/08 13:34:30	3.60	10.51	
8/8/08 13:34:45	3.45	10.59	
8/8/08 13:35:00	3.34	10.65	
8/8/08 13:35:15	3.24	10.73	
8/8/08 13:35:30	3.33	10.72	
8/8/08 13:35:45	3.49	10.64	
8/8/08 13:36:00	3.61	10.55	
8/8/08 13:36:15	3.71	10.48	
8/8/08 13:36:30	3.79	10.42	
8/8/08 13:36:45	3.80	10.41	
8/8/08 13:37:00	3.68	10.46	
8/8/08 13:37:15	3.62	10.46	
8/8/08 13:37:30	3.66	10.43	
8/8/08 13:37:45	3.74	10.40	
8/8/08 13:38:00	3.71	10.42	
8/8/08 13:38:15	3.60	10.48	
8/8/08 13:38:30	3.56	10.48	
8/8/08 13:38:45	3.61	10.47	
8/8/08 13:39:00	3.60	10.50	
8/8/08 13:39:15	3.71	10.47	
8/8/08 13:39:30	3.73	10.50	
8/8/08 13:39:45	3.60	10.55	
8/8/08 13:40:00	3.57	10.54	
8/8/08 13:40:15	3.63	10.52	
8/8/08 13:40:30	3.65	10.53	
8/8/08 13:40:45	3.63	10.53	
8/8/08 13:41:00	3.71	10.48	
8/8/08 13:41:15	3.72	10.46	
8/8/08 13:41:30	3.64	10.45	
8/8/08 13:41:45	3.70	10.37	
8/8/08 13:42:00	3.72	10.35	
8/8/08 13:42:15	3.75	10.34	
8/8/08 13:42:30	3.72	10.37	
8/8/08 13:42:45	3.69	10.39	
8/8/08 13:43:00	3.67	10.43	
8/8/08 13:43:15	3.63	10.49	
8/8/08 13:43:30	3.67	10.52	
8/8/08 13:43:45	3.71	10.51	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	Comments
8/8/08 13:44:00	3.72	10.50	
8/8/08 13:44:15	3.70	10.52	
8/8/08 13:44:30	3.67	10.54	
8/8/08 13:44:45	3.64	10.53	
8/8/08 13:45:00	3.49	10.58	
8/8/08 13:45:15	3.37	10.60	
8/8/08 13:45:30	3.37	10.57	
8/8/08 13:45:45	3.44	10.49	
8/8/08 13:46:00	3.50	10.45	
8/8/08 13:46:15	3.44	10.51	
8/8/08 13:46:30	3.46	10.53	
8/8/08 13:46:45	3.54	10.50	
8/8/08 13:47:00	3.61	10.48	
8/8/08 13:47:15	3.64	10.48	
8/8/08 13:47:30	3.69	10.50	
8/8/08 13:47:45	3.69	10.55	
8/8/08 13:48:00	3.67	10.58	
8/8/08 13:48:15	3.69	10.56	
8/8/08 13:48:30	3.68	10.56	
8/8/08 13:48:45	3.58	10.64	
8/8/08 13:49:00	3.45	10.67	Change of Ports
8/8/08 13:49:15	3.35	10.67	Move CEMS Probe from East to South Port
8/8/08 13:49:30	3.37	10.63	
8/8/08 13:49:45	3.42	10.58	
8/8/08 13:50:00	3.50	10.49	
8/8/08 13:50:15	3.59	10.41	
8/8/08 13:50:30	3.62	10.41	
8/8/08 13:50:45	3.64	10.42	
8/8/08 13:51:00	3.65	10.42	
8/8/08 13:51:15	3.71	10.35	
8/8/08 13:51:30	8.17	6.86	
8/8/08 13:51:45	16.32	2.54	
8/8/08 13:52:00	13.20	5.40	
8/8/08 13:52:15	8.29	7.98	
8/8/08 13:52:30	7.63	8.24	
8/8/08 13:52:45	7.25	8.54	
8/8/08 13:53:00	7.01	8.62	
8/8/08 13:53:15	7.08	8.61	
8/8/08 13:53:30	6.42	9.04	
8/8/08 13:53:45	5.65	9.48	
8/8/08 13:54:00	5.51	9.45	
8/8/08 13:54:15	5.27	9.60	
8/8/08 13:54:30	5.24	9.50	
8/8/08 13:54:45	5.25	9.55	Resume Sampling
8/8/08 13:55:00	4.89	9.75	
8/8/08 13:55:15	4.58	9.97	
8/8/08 13:55:30	3.88	10.34	
8/8/08 13:55:45	3.67	10.43	
8/8/08 13:56:00	3.64	10.48	
8/8/08 13:56:15	3.62	10.51	
8/8/08 13:56:30	3.60	10.52	
8/8/08 13:56:45	3.56	10.55	
8/8/08 13:57:00	3.56	10.58	
8/8/08 13:57:15	3.46	10.68	
8/8/08 13:57:30	3.29	10.78	
8/8/08 13:57:45	3.28	10.77	
8/8/08 13:58:00	3.29	10.76	
8/8/08 13:58:15	3.32	10.75	
8/8/08 13:58:30	3.42	10.69	
8/8/08 13:58:45	3.32	10.69	
8/8/08 13:59:00	3.33	10.65	
8/8/08 13:59:15	3.37	10.60	
8/8/08 13:59:30	3.45	10.52	
8/8/08 13:59:45	3.50	10.48	
8/8/08 14:00:00	3.54	10.49	
8/8/08 14:00:15	3.44	10.56	
8/8/08 14:00:30	3.40	10.61	
8/8/08 14:00:45	3.42	10.63	
8/8/08 14:01:00	3.38	10.65	
8/8/08 14:01:15	3.36	10.68	
8/8/08 14:01:30	3.47	10.67	
8/8/08 14:01:45	3.54	10.69	
8/8/08 14:02:00	3.57	10.70	
8/8/08 14:02:15	3.60	10.69	
8/8/08 14:02:30	3.64	10.67	
8/8/08 14:02:45	3.55	10.69	
8/8/08 14:03:00	3.46	10.68	
8/8/08 14:03:15	3.48	10.81	
8/8/08 14:03:30	3.49	10.54	
8/8/08 14:03:45	3.53	10.46	
8/8/08 14:04:00	3.57	10.45	
8/8/08 14:04:15	3.59	10.47	
8/8/08 14:04:30	3.54	10.51	
8/8/08 14:04:45	3.53	10.55	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	Comments
8/8/08 14:05:00	3.55	10.58	
8/8/08 14:05:15	3.60	10.58	
8/8/08 14:05:30	3.64	10.59	
8/8/08 14:05:45	3.68	10.60	
8/8/08 14:06:00	3.68	10.63	
8/8/08 14:06:15	3.66	10.62	
8/8/08 14:06:30	3.65	10.59	
8/8/08 14:06:45	3.68	10.53	
8/8/08 14:07:00	3.73	10.51	
8/8/08 14:07:15	3.73	10.51	
8/8/08 14:07:30	3.68	10.49	
8/8/08 14:07:45	3.64	10.49	
8/8/08 14:08:00	3.64	10.49	
8/8/08 14:08:15	3.63	10.48	
8/8/08 14:08:30	3.63	10.48	
8/8/08 14:08:45	3.56	10.55	
8/8/08 14:09:00	3.51	10.63	
8/8/08 14:09:15	3.51	10.67	
8/8/08 14:09:30	3.50	10.67	
8/8/08 14:09:45	3.51	10.65	
8/8/08 14:10:00	3.53	10.67	
8/8/08 14:10:15	3.41	10.74	
8/8/08 14:10:30	3.32	10.78	
8/8/08 14:10:45	3.35	10.72	
8/8/08 14:11:00	3.59	10.54	
8/8/08 14:11:15	3.65	10.48	
8/8/08 14:11:30	3.62	10.49	
8/8/08 14:11:45	3.58	10.53	
8/8/08 14:12:00	3.56	10.54	
8/8/08 14:12:15	3.56	10.57	
8/8/08 14:12:30	3.55	10.60	
8/8/08 14:12:45	3.55	10.61	
8/8/08 14:13:00	3.58	10.62	
8/8/08 14:13:15	3.61	10.64	
8/8/08 14:13:30	3.86	10.53	
8/8/08 14:13:45	3.80	10.63	
8/8/08 14:14:00	3.62	10.69	
8/8/08 14:14:15	3.56	10.69	
8/8/08 14:14:30	3.59	10.61	
8/8/08 14:14:45	3.66	10.54	
8/8/08 14:15:00	3.64	10.53	
8/8/08 14:15:15	3.67	10.50	
8/8/08 14:15:30	3.67	10.46	
8/8/08 14:15:45	3.77	10.44	
8/8/08 14:16:00	3.50	10.62	
8/8/08 14:16:15	3.51	10.60	
8/8/08 14:16:30	3.65	10.59	
8/8/08 14:16:45	3.67	10.63	
8/8/08 14:17:00	3.66	10.64	
8/8/08 14:17:15	3.68	10.61	
8/8/08 14:17:30	3.68	10.64	
8/8/08 14:17:45	3.60	10.72	
8/8/08 14:18:00	3.62	10.71	
8/8/08 14:18:15	3.61	10.67	
8/8/08 14:18:30	3.63	10.59	
8/8/08 14:18:45	3.66	10.53	
8/8/08 14:19:00	3.59	10.53	
8/8/08 14:19:15	3.59	10.53	
8/8/08 14:19:30	3.58	10.54	
8/8/08 14:19:45	3.56	10.56	
8/8/08 14:20:00	3.54	10.62	
8/8/08 14:20:15	3.51	10.70	
8/8/08 14:20:30	3.51	10.76	
8/8/08 14:20:45	3.49	10.83	
8/8/08 14:21:00	3.47	10.88	
8/8/08 14:21:15	3.49	10.90	
8/8/08 14:21:30	3.49	10.93	
8/8/08 14:21:45	3.46	10.94	
8/8/08 14:22:00	3.52	10.88	
8/8/08 14:22:15	3.53	10.83	
8/8/08 14:22:30	3.49	10.80	
8/8/08 14:22:45	3.43	10.81	
8/8/08 14:23:00	3.39	10.83	
8/8/08 14:23:15	3.42	10.82	
8/8/08 14:23:30	3.42	10.83	
8/8/08 14:23:45	3.41	10.85	
8/8/08 14:24:00	3.38	10.88	
8/8/08 14:24:15	3.37	10.87	
8/8/08 14:24:30	3.39	10.83	
8/8/08 14:24:45	3.34	10.84	
8/8/08 14:25:00	3.27	10.85	End Run No. M5-2
8/8/08 14:25:15	3.29	10.84	
8/8/08 14:25:30	3.33	10.80	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	Comments
8/8/08 14:25:45	3.36	10.73	
8/8/08 14:26:00	3.37	10.67	
8/8/08 14:26:15	3.39	10.64	
8/8/08 14:26:30	3.36	10.63	
8/8/08 14:26:45	3.19	10.69	
8/8/08 14:27:00	3.11	10.68	
8/8/08 14:27:15	4.43	9.83	
8/8/08 14:27:30	4.89	9.90	
8/8/08 14:27:45	3.75	10.52	
8/8/08 14:28:00	3.46	10.65	
8/8/08 14:28:15	3.59	10.60	
8/8/08 14:28:30	3.67	10.60	
8/8/08 14:28:45	3.74	10.61	
8/8/08 14:29:00	3.60	10.63	
8/8/08 14:29:15	3.82	10.67	
8/8/08 14:29:30	3.80	10.72	
8/8/08 14:29:45	3.78	10.79	
8/8/08 14:30:00	3.79	10.82	
8/8/08 14:30:15	3.78	10.85	
8/8/08 14:30:30	3.74	10.88	
8/8/08 14:30:45	3.63	10.94	
8/8/08 14:31:00	3.57	10.92	
8/8/08 14:31:15	3.59	10.90	
8/8/08 14:31:30	3.63	10.91	
8/8/08 14:31:45	3.73	10.96	
8/8/08 14:32:00	3.71	11.07	
8/8/08 14:32:15	3.67	11.09	
8/8/08 14:32:30	3.67	10.96	
8/8/08 14:32:45	3.21	8.27	
8/8/08 14:33:00	1.89	3.59	
8/8/08 14:33:15	3.15	0.85	
8/8/08 14:33:30	4.24	0.25	
8/8/08 14:33:45	4.44	0.15	
8/8/08 14:34:00	4.48	0.13	
8/8/08 14:34:15	4.48	0.11	
8/8/08 14:34:30	4.48	0.11	
8/8/08 14:34:45	4.47	0.10	
8/8/08 14:35:00	4.49	0.10	
8/8/08 14:35:15	4.50	0.09	
8/8/08 14:35:30	4.51	0.09	
8/8/08 14:35:45	4.52	0.08	
8/8/08 14:36:00	4.53	0.08	
8/8/08 14:36:15	4.53	0.08	
8/8/08 14:36:30	4.54	0.07	
8/8/08 14:36:45	4.54	0.07	
8/8/08 14:37:00	4.54	0.07	
8/8/08 14:37:15	4.54	0.07	
8/8/08 14:37:30	4.54	0.06	
8/8/08 14:37:45	4.54	0.06	
8/8/08 14:38:00	4.54	0.06	
8/8/08 14:38:15	4.54	0.06	
8/8/08 14:38:30	4.54	0.06	
8/8/08 14:38:45	4.54	0.06	
8/8/08 14:39:00	4.54	0.05	
8/8/08 14:39:15	4.54	0.05	
8/8/08 14:39:30	4.54	0.05	
8/8/08 14:39:45	4.54	0.05	
8/8/08 14:40:00	4.54	0.05	
8/8/08 14:40:15	4.54	0.04	
8/8/08 14:40:30	4.54	0.04	
8/8/08 14:40:45	4.54	0.04	
8/8/08 14:41:00	4.54	0.04	
8/8/08 14:41:15	4.54	0.04	
8/8/08 14:41:30	4.54	0.04	
8/8/08 14:41:45	4.55	0.04	
8/8/08 14:42:00	4.55	0.04	
8/8/08 14:42:15	4.55	0.04	
8/8/08 14:42:30	4.54	0.04	
8/8/08 14:42:45	4.54	0.04	
8/8/08 14:43:00	4.55	0.04	
8/8/08 14:43:15	4.54	0.04	
8/8/08 14:43:30	4.54	0.04	
8/8/08 14:43:45	4.54	0.04	
8/8/08 14:44:00	4.54	0.04	
8/8/08 14:44:15	4.55	0.04	
8/8/08 14:44:30	4.54	0.04	System Bias
8/8/08 14:44:45	4.54	0.04	4.54 4.50% O <sub>2</sub>
8/8/08 14:45:00	4.54	0.04	0.04 Zero CO <sub>2</sub>
8/8/08 14:45:15	4.54	0.04	
8/8/08 14:45:30	4.55	0.04	
8/8/08 14:45:45	4.55	0.04	
8/8/08 14:46:00	4.54	0.11	
8/8/08 14:46:15	4.36	2.79	
8/8/08 14:46:30	3.47	5.26	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	Comments
8/8/08 14:46:45	1.18	7.85	
8/8/08 14:47:00	0.16	8.78	
8/8/08 14:47:15	-0.01	8.80	
8/8/08 14:47:30	-0.03	8.69	
8/8/08 14:47:45	-0.04	8.63	
8/8/08 14:48:00	-0.04	8.66	
8/8/08 14:48:15	-0.05	8.76	
8/8/08 14:48:30	-0.05	8.90	
8/8/08 14:48:45	-0.05	9.00	
8/8/08 14:49:00	-0.05	9.04	
8/8/08 14:49:15	-0.06	9.06	
8/8/08 14:49:30	-0.05	9.08	
8/8/08 14:49:45	-0.06	9.08	
8/8/08 14:50:00	-0.06	9.09	
8/8/08 14:50:15	-0.06	9.09	
8/8/08 14:50:30	-0.06	9.09	
8/8/08 14:50:45	-0.06	9.09	System Bias
8/8/08 14:51:00	-0.06	9.09	-0.06 Zero O <sub>2</sub>
8/8/08 14:51:15	-0.06	9.10	9.10 9.00% CO <sub>2</sub>
8/8/08 14:51:30	-0.06	9.10	
8/8/08 14:51:45	-0.06	9.10	
8/8/08 14:52:00	0.26	9.35	
8/8/08 14:52:15	2.07	10.32	
8/8/08 14:52:30	3.12	10.79	
8/8/08 14:52:45	3.32	10.85	
8/8/08 14:53:00	3.35	10.82	
8/8/08 14:53:15	3.30	10.82	
8/8/08 14:53:30	3.28	10.81	
8/8/08 14:53:45	3.30	10.80	
8/8/08 14:54:00	3.36	10.75	
8/8/08 14:54:15	3.39	10.76	
8/8/08 14:54:30	3.43	10.73	
8/8/08 14:54:45	3.51	10.68	
8/8/08 14:55:00	3.44	10.69	
8/8/08 14:55:15	3.48	10.66	
8/8/08 14:55:30	3.56	10.61	
8/8/08 14:55:45	3.60	10.60	
8/8/08 14:56:00	3.60	10.61	
8/8/08 14:56:15	3.57	10.62	
8/8/08 14:56:30	3.54	10.62	
8/8/08 14:56:45	3.54	10.61	
8/8/08 14:57:00	3.61	10.56	
8/8/08 14:57:15	3.65	10.53	
8/8/08 14:57:30	3.66	10.53	
8/8/08 14:57:45	3.64	10.53	
8/8/08 14:58:00	3.61	10.54	
8/8/08 14:58:15	3.62	10.53	
8/8/08 14:58:30	3.61	10.54	
8/8/08 14:58:45	3.63	10.54	
8/8/08 14:59:00	3.59	10.60	
8/8/08 14:59:15	3.45	10.67	
8/8/08 14:59:30	3.43	10.69	
8/8/08 14:59:45	3.41	10.68	
8/8/08 15:00:00	3.47	10.63	
8/8/08 15:00:15	3.50	10.62	
8/8/08 15:00:30	3.52	10.60	
8/8/08 15:00:45	3.57	10.56	
8/8/08 15:01:00	3.48	10.61	
8/8/08 15:01:15	3.31	10.72	
8/8/08 15:01:30	3.28	10.70	
8/8/08 15:01:45	3.39	10.62	
8/8/08 15:02:00	3.42	10.62	
8/8/08 15:02:15	3.53	10.57	
8/8/08 15:02:30	3.60	10.52	
8/8/08 15:02:45	3.61	10.53	
8/8/08 15:03:00	3.59	10.57	
8/8/08 15:03:15	3.58	10.59	
8/8/08 15:03:30	3.62	10.56	
8/8/08 15:03:45	3.65	10.53	
8/8/08 15:04:00	4.16	10.05	
8/8/08 15:04:15	6.01	9.08	
8/8/08 15:04:30	5.92	9.19	
8/8/08 15:04:45	5.65	9.53	Begin Run No. M5-3
8/8/08 15:05:00	4.33	10.26	
8/8/08 15:05:15	3.83	10.46	
8/8/08 15:05:30	3.79	10.47	
8/8/08 15:05:45	3.83	10.45	
8/8/08 15:06:00	3.80	10.47	
8/8/08 15:06:15	3.82	10.49	
8/8/08 15:06:30	3.85	10.52	
8/8/08 15:06:45	3.80	10.53	
8/8/08 15:07:00	3.74	10.53	
8/8/08 15:07:15	3.71	10.54	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	Comments
8/8/08 15:07:30	3.63	10.61	
8/8/08 15:07:45	3.62	10.64	
8/8/08 15:08:00	3.67	10.60	
8/8/08 15:08:15	3.87	10.46	
8/8/08 15:08:30	3.92	10.43	
8/8/08 15:08:45	3.97	10.40	
8/8/08 15:09:00	3.90	10.49	
8/8/08 15:09:15	3.81	10.55	
8/8/08 15:09:30	3.79	10.56	
8/8/08 15:09:45	3.75	10.57	
8/8/08 15:10:00	3.72	10.60	
8/8/08 15:10:15	3.77	10.58	
8/8/08 15:10:30	3.82	10.58	
8/8/08 15:10:45	3.81	10.59	
8/8/08 15:11:00	3.87	10.56	
8/8/08 15:11:15	3.85	10.54	
8/8/08 15:11:30	3.79	10.55	
8/8/08 15:11:45	3.72	10.58	
8/8/08 15:12:00	3.71	10.59	
8/8/08 15:12:15	3.81	10.55	
8/8/08 15:12:30	3.77	10.57	
8/8/08 15:12:45	3.73	10.58	
8/8/08 15:13:00	3.77	10.56	
8/8/08 15:13:15	3.79	10.58	
8/8/08 15:13:30	3.87	10.54	
8/8/08 15:13:45	3.98	10.46	
8/8/08 15:14:00	3.95	10.46	
8/8/08 15:14:15	3.82	10.56	
8/8/08 15:14:30	3.78	10.61	
8/8/08 15:14:45	3.84	10.59	
8/8/08 15:15:00	3.83	10.58	
8/8/08 15:15:15	3.91	10.51	
8/8/08 15:15:30	3.95	10.46	
8/8/08 15:15:45	3.80	10.56	
8/8/08 15:16:00	3.65	10.65	
8/8/08 15:16:15	3.64	10.67	
8/8/08 15:16:30	3.62	10.69	
8/8/08 15:16:45	3.66	10.73	
8/8/08 15:17:00	3.48	10.73	
8/8/08 15:17:15	3.48	10.71	
8/8/08 15:17:30	3.50	10.71	
8/8/08 15:17:45	3.53	10.72	
8/8/08 15:18:00	3.54	10.70	
8/8/08 15:18:15	3.57	10.64	
8/8/08 15:18:30	3.85	10.44	
8/8/08 15:18:45	4.49	10.19	
8/8/08 15:19:00	3.90	10.69	
8/8/08 15:19:15	3.52	10.75	
8/8/08 15:19:30	3.47	10.77	
8/8/08 15:19:45	3.44	10.78	
8/8/08 15:20:00	3.43	10.76	
8/8/08 15:20:15	3.43	10.73	
8/8/08 15:20:30	3.46	10.74	
8/8/08 15:20:45	3.40	10.81	
8/8/08 15:21:00	3.41	10.83	
8/8/08 15:21:15	3.40	10.84	
8/8/08 15:21:30	3.44	10.82	
8/8/08 15:21:45	3.49	10.78	
8/8/08 15:22:00	3.53	10.74	
8/8/08 15:22:15	3.56	10.73	
8/8/08 15:22:30	3.61	10.70	
8/8/08 15:22:45	3.63	10.70	
8/8/08 15:23:00	3.57	10.72	
8/8/08 15:23:15	3.55	10.73	
8/8/08 15:23:30	3.48	10.76	
8/8/08 15:23:45	3.56	10.69	
8/8/08 15:24:00	3.76	10.63	
8/8/08 15:24:15	3.68	10.68	
8/8/08 15:24:30	3.61	10.70	
8/8/08 15:24:45	3.60	10.70	
8/8/08 15:25:00	3.56	10.74	
8/8/08 15:25:15	3.48	10.78	
8/8/08 15:25:30	3.51	10.75	
8/8/08 15:25:45	3.52	10.74	
8/8/08 15:26:00	3.57	10.70	
8/8/08 15:26:15	3.52	10.73	
8/8/08 15:26:30	3.58	10.65	
8/8/08 15:26:45	4.02	10.47	
8/8/08 15:27:00	3.73	10.67	
8/8/08 15:27:15	3.59	10.75	
8/8/08 15:27:30	3.52	10.79	
8/8/08 15:27:45	3.50	10.78	
8/8/08 15:28:00	3.61	10.76	
8/8/08 15:28:15	3.53	10.71	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	Comments
8/8/08 15:28:30	3.57	10.67	
8/8/08 15:28:45	3.57	10.70	
8/8/08 15:29:00	3.48	10.77	
8/8/08 15:29:15	3.41	10.82	
8/8/08 15:29:30	3.39	10.82	
8/8/08 15:29:45	3.45	10.80	
8/8/08 15:30:00	3.44	10.81	
8/8/08 15:30:15	3.52	10.74	
8/8/08 15:30:30	3.64	10.75	
8/8/08 15:30:45	3.49	10.84	
8/8/08 15:31:00	3.52	10.81	
8/8/08 15:31:15	3.56	10.77	
8/8/08 15:31:30	3.61	10.70	
8/8/08 15:31:45	3.65	10.68	
8/8/08 15:32:00	3.62	10.69	
8/8/08 15:32:15	3.62	10.72	
8/8/08 15:32:30	3.61	10.77	
8/8/08 15:32:45	3.62	10.78	
8/8/08 15:33:00	3.60	10.80	
8/8/08 15:33:15	3.59	10.81	
8/8/08 15:33:30	3.63	10.79	
8/8/08 15:33:45	3.66	10.77	
8/8/08 15:34:00	3.68	10.72	
8/8/08 15:34:15	3.70	10.69	
8/8/08 15:34:30	3.72	10.70	
8/8/08 15:34:45	3.74	10.69	
8/8/08 15:35:00	3.72	10.72	Change of Ports
8/8/08 15:35:15	3.65	10.78	Move CEMS Probe from South to East Port
8/8/08 15:35:30	3.63	10.79	
8/8/08 15:35:45	3.67	10.78	
8/8/08 15:36:00	3.64	10.82	
8/8/08 15:36:15	3.64	10.80	
8/8/08 15:36:30	4.56	10.12	
8/8/08 15:36:45	5.22	9.98	
8/8/08 15:37:00	4.00	10.65	
8/8/08 15:37:15	3.51	10.89	
8/8/08 15:37:30	3.28	11.02	
8/8/08 15:37:45	3.34	10.95	
8/8/08 15:38:00	3.59	10.82	
8/8/08 15:38:15	3.65	10.79	
8/8/08 15:38:30	3.69	10.77	
8/8/08 15:38:45	7.41	7.69	
8/8/08 15:39:00	16.11	2.61	
8/8/08 15:39:15	13.83	5.36	
8/8/08 15:39:30	6.57	9.52	
8/8/08 15:39:45	4.06	10.68	
8/8/08 15:40:00	3.70	10.83	
8/8/08 15:40:15	3.66	10.82	
8/8/08 15:40:30	3.69	10.77	
8/8/08 15:40:45	3.67	10.80	
8/8/08 15:41:00	3.60	10.86	
8/8/08 15:41:15	3.55	10.89	
8/8/08 15:41:30	3.59	10.86	
8/8/08 15:41:45	3.63	10.83	
8/8/08 15:42:00	3.63	10.82	
8/8/08 15:42:15	3.59	10.84	
8/8/08 15:42:30	3.53	10.89	
8/8/08 15:42:45	3.47	10.94	Resume Sampling
8/8/08 15:43:00	3.46	10.95	
8/8/08 15:43:15	3.47	10.96	
8/8/08 15:43:30	3.50	10.95	
8/8/08 15:43:45	3.49	10.95	
8/8/08 15:44:00	3.44	10.95	
8/8/08 15:44:15	3.43	10.92	
8/8/08 15:44:30	3.45	10.90	
8/8/08 15:44:45	3.43	10.93	
8/8/08 15:45:00	3.43	10.96	
8/8/08 15:45:15	3.44	10.99	
8/8/08 15:45:30	3.45	10.97	
8/8/08 15:45:45	3.43	10.96	
8/8/08 15:46:00	3.45	10.93	
8/8/08 15:46:15	3.46	10.93	
8/8/08 15:46:30	3.45	10.93	
8/8/08 15:46:45	3.43	10.94	
8/8/08 15:47:00	3.47	10.90	
8/8/08 15:47:15	3.82	10.81	
8/8/08 15:47:30	3.72	10.76	
8/8/08 15:47:45	3.77	10.75	
8/8/08 15:48:00	3.71	10.80	
8/8/08 15:48:15	3.65	10.84	
8/8/08 15:48:30	3.69	10.82	
8/8/08 15:48:45	3.74	10.79	
8/8/08 15:49:00	3.71	10.80	
8/8/08 15:49:15	3.69	10.80	

Valero McKee Refinery - Sunray, Texas  
 No. 1 SRU Incinerator Exhaust: EPN V-5  
 ARI Reference Method Monitoring Data

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	Comments
8/8/08 15:49:30	3.55	10.88	
8/8/08 15:49:45	3.45	10.94	
8/8/08 15:50:00	3.41	10.97	
8/8/08 15:50:15	3.41	10.97	
8/8/08 15:50:30	3.43	10.96	
8/8/08 15:50:45	3.44	10.94	
8/8/08 15:51:00	3.45	10.90	
8/8/08 15:51:15	3.43	10.88	
8/8/08 15:51:30	3.44	10.86	
8/8/08 15:51:45	3.43	10.88	
8/8/08 15:52:00	3.43	10.91	
8/8/08 15:52:15	3.44	10.91	
8/8/08 15:52:30	3.42	10.90	
8/8/08 15:52:45	3.41	10.91	
8/8/08 15:53:00	3.39	10.93	
8/8/08 15:53:15	3.39	10.92	
8/8/08 15:53:30	3.42	10.90	
8/8/08 15:53:45	3.48	10.87	
8/8/08 15:54:00	3.49	10.87	
8/8/08 15:54:15	3.46	10.88	
8/8/08 15:54:30	3.45	10.87	
8/8/08 15:54:45	3.45	10.86	
8/8/08 15:55:00	3.46	10.83	
8/8/08 15:55:15	3.45	10.81	
8/8/08 15:55:30	3.39	10.83	
8/8/08 15:55:45	3.38	10.83	
8/8/08 15:56:00	3.42	10.81	
8/8/08 15:56:15	3.44	10.79	
8/8/08 15:56:30	3.41	10.82	
8/8/08 15:56:45	3.39	10.86	
8/8/08 15:57:00	3.35	10.89	
8/8/08 15:57:15	3.28	10.91	
8/8/08 15:57:30	3.26	10.89	
8/8/08 15:57:45	3.37	10.81	
8/8/08 15:58:00	3.52	10.73	
8/8/08 15:58:15	3.56	10.72	
8/8/08 15:58:30	3.55	10.73	
8/8/08 15:58:45	3.57	10.73	
8/8/08 15:59:00	3.49	10.78	
8/8/08 15:59:15	3.44	10.85	
8/8/08 15:59:30	3.43	10.86	
8/8/08 15:59:45	3.42	10.86	
8/8/08 16:00:00	3.41	10.85	
8/8/08 16:00:15	3.46	10.78	
8/8/08 16:00:30	3.58	10.73	
8/8/08 16:00:45	3.64	10.73	
8/8/08 16:01:00	3.65	10.72	
8/8/08 16:01:15	3.62	10.72	
8/8/08 16:01:30	3.57	10.74	
8/8/08 16:01:45	3.56	10.73	
8/8/08 16:02:00	3.63	10.69	
8/8/08 16:02:15	3.62	10.69	
8/8/08 16:02:30	3.54	10.70	
8/8/08 16:02:45	3.68	10.66	
8/8/08 16:03:00	3.60	10.67	
8/8/08 16:03:15	3.55	10.74	
8/8/08 16:03:30	3.51	10.79	
8/8/08 16:03:45	3.54	10.77	
8/8/08 16:04:00	3.57	10.73	
8/8/08 16:04:15	3.52	10.72	
8/8/08 16:04:30	3.55	10.70	
8/8/08 16:04:45	3.54	10.70	
8/8/08 16:05:00	3.58	10.70	
8/8/08 16:05:15	3.52	10.75	
8/8/08 16:05:30	3.50	10.75	
8/8/08 16:05:45	3.53	10.71	
8/8/08 16:06:00	3.50	10.73	
8/8/08 16:06:15	3.44	10.75	
8/8/08 16:06:30	3.46	10.75	
8/8/08 16:06:45	3.48	10.75	
8/8/08 16:07:00	3.51	10.73	
8/8/08 16:07:15	3.57	10.71	
8/8/08 16:07:30	3.57	10.72	
8/8/08 16:07:45	3.57	10.73	
8/8/08 16:08:00	3.54	10.76	
8/8/08 16:08:15	3.56	10.75	
8/8/08 16:08:30	3.56	10.77	
8/8/08 16:08:45	3.49	10.81	
8/8/08 16:09:00	3.47	10.82	
8/8/08 16:09:15	3.51	10.60	
8/8/08 16:09:30	3.50	10.83	
8/8/08 16:09:45	3.45	10.87	
8/8/08 16:10:00	3.47	10.85	
8/8/08 16:10:15	3.50	10.82	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	Comments
8/8/08 16:10:30	3.49	10.87	
8/8/08 16:10:45	3.42	10.94	
8/8/08 16:11:00	3.36	10.98	
8/8/08 16:11:15	3.34	11.01	
8/8/08 16:11:30	3.33	11.02	
8/8/08 16:11:45	3.36	10.99	
8/8/08 16:12:00	3.33	11.01	
8/8/08 16:12:15	3.25	11.08	
8/8/08 16:12:30	3.17	11.14	
8/8/08 16:12:45	3.09	11.17	
8/8/08 16:13:00	3.08	11.17	End Run No. M5-3
8/8/08 16:13:15	3.09	11.17	
8/8/08 16:13:30	3.07	11.16	
8/8/08 16:13:45	3.08	11.12	
8/8/08 16:14:00	3.12	11.06	
8/8/08 16:14:15	3.09	11.04	
8/8/08 16:14:30	2.75	9.02	
8/8/08 16:14:45	1.65	4.12	
8/8/08 16:15:00	2.84	1.07	
8/8/08 16:15:15	4.17	0.28	
8/8/08 16:15:30	4.43	0.16	
8/8/08 16:15:45	4.47	0.13	
8/8/08 16:16:00	4.48	0.12	
8/8/08 16:16:15	4.48	0.11	
8/8/08 16:16:30	4.48	0.10	
8/8/08 16:16:45	4.48	0.09	
8/8/08 16:17:00	4.50	0.08	
8/8/08 16:17:15	4.51	0.08	
8/8/08 16:17:30	4.52	0.08	
8/8/08 16:17:45	4.52	0.07	
8/8/08 16:18:00	4.53	0.07	System Bias
8/8/08 16:18:15	4.53	0.07	4.53 4.50% O <sub>2</sub>
8/8/08 16:18:30	4.53	0.06	0.06 Zero CO <sub>2</sub>
8/8/08 16:18:45	4.53	0.06	
8/8/08 16:19:00	4.53	0.08	
8/8/08 16:19:15	4.54	0.07	
8/8/08 16:19:30	4.38	2.52	
8/8/08 16:19:45	3.88	5.14	
8/8/08 16:20:00	1.80	7.35	
8/8/08 16:20:15	0.30	8.71	
8/8/08 16:20:30	0.01	8.86	
8/8/08 16:20:45	-0.03	8.77	
8/8/08 16:21:00	-0.04	8.71	
8/8/08 16:21:15	-0.04	8.70	
8/8/08 16:21:30	-0.04	8.77	
8/8/08 16:21:45	-0.05	8.89	
8/8/08 16:22:00	-0.05	8.99	
8/8/08 16:22:15	-0.05	9.03	
8/8/08 16:22:30	-0.05	9.06	
8/8/08 16:22:45	-0.05	9.07	
8/8/08 16:23:00	-0.06	9.07	
8/8/08 16:23:15	-0.05	9.08	
8/8/08 16:23:30	-0.06	9.08	
8/8/08 16:23:45	-0.06	9.08	
8/8/08 16:24:00	-0.06	9.08	System Bias
8/8/08 16:24:15	-0.06	9.09	-0.06 Zero O <sub>2</sub>
8/8/08 16:24:30	-0.06	9.09	9.09 9.00% CO <sub>2</sub>
8/8/08 16:24:45	-0.05	9.09	
8/8/08 16:25:00	-0.06	9.09	
8/8/08 16:25:15	-0.06	9.09	
8/8/08 16:25:30	0.04	9.20	
8/8/08 16:25:45	1.49	10.09	
8/8/08 16:26:00	2.98	10.67	
8/8/08 16:26:15	3.35	10.76	
8/8/08 16:26:30	3.41	10.74	
8/8/08 16:26:45	3.48	10.71	
8/8/08 16:27:00	3.52	10.70	
8/8/08 16:27:15	3.50	10.72	
8/8/08 16:27:30	3.49	10.72	
8/8/08 16:27:45	3.47	10.74	
8/8/08 16:28:00	3.46	10.76	
8/8/08 16:28:15	3.47	10.75	
8/8/08 16:28:30	3.48	10.74	
8/8/08 16:28:45	3.50	10.73	
8/8/08 16:29:00	3.52	10.74	
8/8/08 16:29:15	3.53	10.74	
8/8/08 16:29:30	3.49	10.76	
8/8/08 16:29:45	3.43	10.77	
8/8/08 16:30:00	3.47	10.76	
8/8/08 16:30:15	3.49	10.75	
8/8/08 16:30:30	3.46	10.78	
8/8/08 16:30:45	3.45	10.77	
8/8/08 16:31:00	3.47	10.76	

**Valero McKee Refinery - Sunray, Texas  
No. 1 SRU Incinerator Exhaust: EPN V-5  
ARI Reference Method Monitoring Data**

Date/Time	O <sub>2</sub> % by vol. db	CO <sub>2</sub> % by vol. db	Comments
8/8/08 16:31:15	3.47	10.74	
8/8/08 16:31:30	3.46	10.74	
8/8/08 16:31:45	3.47	10.72	
8/8/08 16:32:00	3.49	10.72	
8/8/08 16:32:15	3.46	10.74	
8/8/08 16:32:30	3.48	10.72	
8/8/08 16:32:45	3.50	10.71	
8/8/08 16:33:00	3.47	10.73	
8/8/08 16:33:15	3.43	10.75	
8/8/08 16:33:30	3.42	10.74	
8/8/08 16:33:45	3.48	10.71	
8/8/08 16:34:00	3.51	10.69	
8/8/08 16:34:15	3.48	10.71	
8/8/08 16:34:30	3.50	10.73	
8/8/08 16:34:45	3.48	10.75	
8/8/08 16:35:00	3.48	10.75	
8/8/08 16:35:15	3.47	10.76	
8/8/08 16:35:30	3.42	10.79	
8/8/08 16:35:45	3.39	10.77	
8/8/08 16:36:00	3.39	10.75	
8/8/08 16:36:15	3.36	10.79	
8/8/08 16:36:30	3.32	10.83	
8/8/08 16:36:45	3.30	10.85	
8/8/08 16:37:00	3.28	10.85	
8/8/08 16:37:15	3.32	10.81	
8/8/08 16:37:30	3.33	10.81	
8/8/08 16:37:45	3.28	10.84	
8/8/08 16:38:00	3.30	10.81	
8/8/08 16:38:15	3.41	10.73	
8/8/08 16:38:30	3.49	10.69	
8/8/08 16:38:45	3.52	10.68	
8/8/08 16:39:00	3.51	10.70	
8/8/08 16:39:15	3.49	10.71	
8/8/08 16:39:30	3.47	10.72	
8/8/08 16:39:45	3.45	10.74	
8/8/08 16:40:00	3.44	10.74	
8/8/08 16:40:15	3.48	10.71	
8/8/08 16:40:30	3.50	10.68	
8/8/08 16:40:45	3.47	10.69	
8/8/08 16:41:00	3.46	10.70	
8/8/08 16:41:15	3.46	10.71	
8/8/08 16:41:30	3.43	10.73	
8/8/08 16:41:45	3.48	10.72	
8/8/08 16:42:00	3.45	10.77	
8/8/08 16:42:15	3.44	10.77	
8/8/08 16:42:30	3.45	10.74	
8/8/08 16:42:45	3.48	10.72	
8/8/08 16:43:00	3.45	10.74	
8/8/08 16:43:15	3.45	10.73	
8/8/08 16:43:30	3.50	10.71	
8/8/08 16:43:45	3.53	10.71	
8/8/08 16:44:00	3.52	10.70	
8/8/08 16:44:15	3.53	10.67	
8/8/08 16:44:30	3.55	10.66	
8/8/08 16:44:45	3.58	10.64	
8/8/08 16:45:00	3.60	10.64	
8/8/08 16:45:15	3.58	10.66	



Valero McKee Refinery: Sunray, TX  
SRU No. 1 Incinerator: EPN V-5  
Test Dates: 8/6 & 8/8/08

## APPENDIX E

## Calibration Data

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# CEMS CALIBRATION DATA

Plant Name	Valero McKee Refinery
Sampling Location	No. 1 SRU Incinerator
Date	8/6/2008
Run Number	1
Start Time	10:49
Stop Time	13:49

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

Analyzer Span Values (% or ppm)	
CO	180.0 ppm
CO <sub>2</sub>	18.00 %
O <sub>2</sub>	9.00 %
NO <sub>x</sub>	90.0 ppm

	CALIBRATION ERROR - 8:04 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
	Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Difference (% of Span)	Pretest: 7:05		Posttest: 13:51		Drift (% of Span)	
					System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)		
CO Zero	0.0	ALM037881	-0.1	-0.1	0.3	0.2	0.1	0.1	-0.1	Co=
CO Low		Diluted from								<b>0.20</b>
CO Mid	90.0	EB0001619	91.2	0.7	90.0	-0.7	89.8	-0.8	-0.1	Cm=
CO High	180.0	2,000 ppm	180.2	0.1						<b>89.90</b>
CO <sub>2</sub> Zero	0.00	ALM037881	0.13	0.7	0.15	0.1	0.20	0.4	0.3	Co=
CO <sub>2</sub> Low		Diluted from								<b>0.175</b>
CO <sub>2</sub> Mid	9.00	AAL11983	9.33	1.8	9.23	-0.6	9.25	-0.4	0.1	Cm=
CO <sub>2</sub> High	18.00	23.06%	17.81	-1.1						<b>9.240</b>
O <sub>2</sub> Zero	0.00	ALM037881	-0.07	-0.8	-0.05	0.2	-0.05	0.2	0.0	Co=
O <sub>2</sub> Low		Diluted from								<b>-0.050</b>
O <sub>2</sub> Mid	4.50	ALM012042	4.60	1.1	4.56	-0.4	4.45	-1.7	-1.2	Cm=
O <sub>2</sub> High	9.00	22.20 %	9.04	0.4						<b>4.505</b>
NO <sub>x</sub> Zero	0.0	ALM037881	0.4	0.4	0.1	-0.3	0.6	0.2	0.6	Co=
NO <sub>x</sub> Low		Diluted from								<b>0.35</b>
NO <sub>x</sub> Mid	45.0	EB0004890	45.2	0.2	44.9	-0.3	44.3	-1.0	-0.7	Cm=
NO <sub>x</sub> High	90.0	1,996 ppm	89.7	-0.3						<b>44.60</b>

## CEMS CALIBRATION DATA

Plant Name	Valero McKee Refinery
Sampling Location	No. 1 SRU Incinerator
Date	8/6/2008
Run Number	2
Start Time	14:13
Stop Time	17:13

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

Analyzer Span Values (% or ppm)	
CO	180.0 ppm
CO <sub>2</sub>	18.00 %
O <sub>2</sub>	9.00 %
NO <sub>x</sub>	90.0 ppm

	CALIBRATION ERROR - 6:04 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
	Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Difference (% of Span)	Pretest: 13:51		Posttest: 17:17 hrs			
					System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)	Drift (% of Span)	
CO Zero	0	ALM037881	0	-0.1	0.1	0.1	-0.2	-0.1	-0.2	Co=
CO Low		Diluted from								<b>-0.05</b>
CO Mid	90	EB0001619	91	0.7	89.8	-0.8	89.9	-0.7	0.1	Cm=
CO High	180	2,000 ppm	180	0.1						<b>89.85</b>
CO <sub>2</sub> Zero	0.00	ALM037881	0.13	0.7	0.20	0.4	0.18	0.3	-0.1	Co=
CO <sub>2</sub> Low		Diluted from								<b>0.190</b>
CO <sub>2</sub> Mid	9.00	AAL11983	9.33	1.8	9.25	-0.4	9.22	-0.6	-0.2	Cm=
CO <sub>2</sub> High	18.00	23.06%	17.81	-1.1						<b>9.235</b>
O <sub>2</sub> Zero	0.00	ALM037881	-0.07	-0.8	-0.05	0.2	-0.06	0.1	-0.1	Co=
O <sub>2</sub> Low		Diluted from								<b>-0.055</b>
O <sub>2</sub> Mid	4.50	ALM012042	4.60	1.1	4.45	-1.7	4.52	-0.9	0.8	Cm=
O <sub>2</sub> High	9.00	22.2	9.04	0.4						<b>4.485</b>
NO <sub>x</sub> Zero	0.0	ALM037881	0.4	0.4	0.6	0.2	0.4	0.0	-0.2	Co=
NO <sub>x</sub> Low		Diluted from								<b>0.50</b>
NO <sub>x</sub> Mid	45.0	EB0004890	45.2	0.2	44.3	-1.0	44.0	-1.3	-0.3	Cm=
NO <sub>x</sub> High	90.0	1,996 ppm	89.7	-0.3						<b>44.15</b>

## CEMS CALIBRATION DATA

Plant Name	Valero McKee Refinery
Sampling Location	No. 1 SRU Incinerator
Date	8/6/2008
Run Number	3
Start Time	17:40
Stop Time	20:40

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

Analyzer Span Values (% or ppm)	
CO	180.0 ppm
CO <sub>2</sub>	18.00 %
O <sub>2</sub>	9.00 %
NO <sub>x</sub>	90.0 ppm

	CALIBRATION ERROR - 6:04 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
	Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Difference (% of Span)	Pretest: 17:17		Posttest: 20:44 hrs			
					System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)	Drift (% of Span)	
CO Zero	0	ALM037881	0	-0.1	-0.2	-0.1	-0.8	-0.4	-0.3	Co=
CO Low		Diluted from								<b>-0.50</b>
CO Mid	90	EB0001619	91	0.7	89.9	-0.7	88.7	-1.4	-0.7	Cm=
CO High	180	2,000 ppm	180	0.1						<b>89.30</b>
CO <sub>2</sub> Zero	0.00	ALM037881	0.13	0.7	0.18	0.3	0.17	0.2	-0.1	Co=
CO <sub>2</sub> Low		Diluted from								<b>0.175</b>
CO <sub>2</sub> Mid	9.00	AAL11983	9.33	1.8	9.22	-0.6	9.23	-0.6	0.1	Cm=
CO <sub>2</sub> High	18.00	23.06%	17.81	-1.1						<b>9.225</b>
O <sub>2</sub> Zero	0.00	ALM037881	-0.07	-0.8	-0.06	0.1	-0.06	0.1	0.0	Co=
O <sub>2</sub> Low		Diluted from								<b>-0.060</b>
O <sub>2</sub> Mid	4.50	ALM012042	4.60	1.1	4.52	-0.9	4.52	-0.9	0.0	Cm=
O <sub>2</sub> High	9.00	22.2	9.04	0.4						<b>4.520</b>
NO <sub>x</sub> Zero	0.0	ALM037881	0.4	0.4	0.4	0.0	0.3	-0.1	-0.1	Co=
NO <sub>x</sub> Low		Diluted from								<b>0.35</b>
NO <sub>x</sub> Mid	45.0	EB0004890	45.2	0.2	44.0	-1.3	43.1	-2.3	-1.0	Cm=
NO <sub>x</sub> High	90.0	1,996 ppm	89.7	-0.3						<b>43.55</b>

# CEMS CALIBRATION DATA

Plant Name	Valero Refining - Texas
Sampling Location	SRU No. 1 Incinerator Exhaust
Date	8/8/2008
Run Number	M5-1
Start Time	11:33
Stop Time	12:43

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

Analyzer Span Values (% or ppm)		
CO		ppm
CO <sub>2</sub>	18.00	%
O <sub>2</sub>	9.00	%
NO <sub>x</sub>		ppm

	CALIBRATION ERROR - 10:01 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
	Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Difference (% of Span)	Pretest: 10:19		Posttest: 12:51 hrs			
					System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)	Drift (% of Span)	
CO Zero										Co=
CO Low										
CO Mid										Cm=
CO High										
CO <sub>2</sub> Zero	0.00	0.0	0.02	0.1	0.06	0.2	0.07	0.3	0.1	Co=
CO <sub>2</sub> Low		Diluted from								<b>0.065</b>
CO <sub>2</sub> Mid	9.00	AAL11983	9.26	1.4	9.14	-0.7	9.14	-0.7	0.0	Cm=
CO <sub>2</sub> High	18.00	23.06%	17.75	-1.4						<b>9.140</b>
O <sub>2</sub> Zero	0.00	0.0	-0.09	-1.0	-0.05	0.4	-0.07	0.2	-0.2	Co=
O <sub>2</sub> Low		Diluted from								<b>-0.060</b>
O <sub>2</sub> Mid	4.50	ALM012042	4.60	1.1	4.57	-0.3	4.54	-0.7	-0.3	Cm=
O <sub>2</sub> High	9.00	22.20 %	9.04	0.4						<b>4.555</b>
NO <sub>x</sub> Zero										Co=
NO <sub>x</sub> Low										
NO <sub>x</sub> Mid										Cm=
NO <sub>x</sub> High										

## CEMS CALIBRATION DATA

Plant Name	Valero Refining - Texas
Sampling Location	SRU No. 1 Incinerator Exhaust
Date	8/8/2008
Run Number	M5-2
Start Time	13:19
Stop Time	14:25

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

Analyzer Span Values (% or ppm)	
CO	ppm
CO <sub>2</sub>	18.00 %
O <sub>2</sub>	9.00 %
NO <sub>x</sub>	ppm

	CALIBRATION ERROR - 10:01 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
	Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Difference (% of Span)	Pretest: 12:51		Posttest: 14:44 hrs			
					System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)	Drift (% of Span)	
CO Zero										Co=
CO Low										
CO Mid										Cm=
CO High										
CO <sub>2</sub> Zero	0.00	0.0	0.02	0.1	0.07	0.3	0.04	0.1	-0.2	Co=
CO <sub>2</sub> Low		Diluted from								<b>0.055</b>
CO <sub>2</sub> Mid	9.00	AAL11983	9.26	1.4	9.14	-0.7	9.10	-0.9	-0.2	Cm=
CO <sub>2</sub> High	18.00	23.06%	17.75	-1.4						<b>9.120</b>
O <sub>2</sub> Zero	0.00	0.0	-0.09	-1.0	-0.07	0.2	-0.06	0.3	0.1	Co=
O <sub>2</sub> Low		Diluted from								<b>-0.065</b>
O <sub>2</sub> Mid	4.50	ALM012042	4.60	1.1	4.54	-0.7	4.54	-0.7	0.0	Cm=
O <sub>2</sub> High	9.00	22.2	9.04	0.4						<b>4.540</b>
NO <sub>x</sub> Zero										Co=
NO <sub>x</sub> Low										
NO <sub>x</sub> Mid										Cm=
NO <sub>x</sub> High										

# CEMS CALIBRATION DATA

Plant Name	Valero Refining - Texas
Sampling Location	SRU No. 1 Incinerator Exhaust
Date	8/8/2008
Run Number	M5-3
Start Time	15:05
Stop Time	16:13

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

Analyzer Span Values (% or ppm)	
CO	ppm
CO <sub>2</sub>	18.00 %
O <sub>2</sub>	9.00 %
NO <sub>x</sub>	ppm

	CALIBRATION ERROR - 10:01 hrs				SYSTEM BIAS CHECK					Calibration Correction Factors
	Cylinder Value (% or ppm)	Cylinder Number	Analyzer Calibration Response	Difference (% of Span)	Pretest: 14:44		Posttest: 16:18		Drift (% of Span)	
					System Response	Syst. Bias (% of Span)	System Response	Syst. Bias (% of Span)		
CO Zero										Co=
CO Low										
CO Mid										Cm=
CO High										
CO <sub>2</sub> Zero	0.00	0.0	0.02	0.1	0.04	0.1	0.06	0.2	0.1	Co=
CO <sub>2</sub> Low		Diluted from								0.050
CO <sub>2</sub> Mid	9.00	AAL11983	9.26	1.4	9.10	-0.9	9.09	-0.9	-0.1	Cm=
CO <sub>2</sub> High	18.00	23.06%	17.75	-1.4						9.095
O <sub>2</sub> Zero	0.00	0.0	-0.09	-1.0	-0.06	0.3	-0.06	0.3	0.0	Co=
O <sub>2</sub> Low		Diluted from								-0.060
O <sub>2</sub> Mid	4.50	ALM012042	4.60	1.1	4.54	-0.7	4.53	-0.8	-0.1	Cm=
O <sub>2</sub> High	9.00	22.2	9.04	0.4						4.535
NO <sub>x</sub> Zero										Co=
NO <sub>x</sub> Low										
NO <sub>x</sub> Mid										Cm=
NO <sub>x</sub> High										

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

**Company:** Valero McKee Refinery  
**Location:** Sunray, Texas  
**Source:** SRU No. 1 Incinerator  
**Dilution System ID:** 3901  
**Dilution Flow Rate:** 5.0 Lpm  
**Verification date:** 8/5/2008

**Analyzer Info**

**Monitor type:** O<sub>2</sub>  
**Monitor range:** 15  
**Monitor Serial No.:** X1440D1/4143

**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: _____	Low: _____	Low: _____
Mid: <u>7.50</u>	Mid: <u>7.67</u>	Mid: <u>1.13</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>O<sub>2</sub>/N<sub>2</sub></u>
Mid level concentration: <u>7.54</u>	High level concentration: <u>22.20</u>
Mid level tank serial #: <u>ALM025227</u>	High level tank serial #: <u>ALM012042</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:	<u>3.77</u>	<u>0.00</u>	Trial No. 1:	<u>11.36</u>	<u>0.06</u>
Trial No. 2:	<u>3.77</u>	<u>0.00</u>	Trial No. 2:	<u>11.37</u>	<u>0.03</u>
Trial No. 3:	<u>3.77</u>	<u>0.00</u>	Trial No. 3:	<u>11.37</u>	<u>0.03</u>
Average:	<u>3.77</u>		Average:	<u>11.37</u>	

% Difference from target concentration: 0.53%      % Difference from target concentration: 1.04%

**Mid Level Calibration Gas Results**

<u>Instrument Response</u>	
Trial No. 1: <u>7.49</u>	Mid Level calibration gas concentration: <u>7.54</u>
Trial No. 2: <u>7.49</u>	Average analyzer response: <u>7.490</u>
Trial No. 3: <u>7.49</u>	Percent difference: <u>0.66</u> *

\* Must be less than 2 %

**Valero McKee Refinery: Sunray, Texas**  
**SRU No. 1 Incinerator Exhaust: EPN V-5**  
**USEPA Method 205 Dilution System Verification - 15 second data**  
**Enviroic No. 3901**

Date/Time	O <sub>2</sub> % by vol db	Comments
8/5/08 15:20:00	7.50	
8/5/08 15:20:15	7.50	
8/5/08 15:20:30	7.50	
8/5/08 15:20:45	8.82	
8/5/08 15:21:00	10.09	
8/5/08 15:21:15	3.69	
8/5/08 15:21:30	0.50	
8/5/08 15:21:45	0.04	
8/5/08 15:22:00	-0.01	
8/5/08 15:22:15	-0.02	
8/5/08 15:22:30	-0.02	
8/5/08 15:22:45	-0.03	
8/5/08 15:23:00	-0.03	Calibration Error
8/5/08 15:23:15	-0.03	-0.03 Zero O <sub>2</sub>
8/5/08 15:23:30	-0.03	
8/5/08 15:23:45	-0.03	
8/5/08 15:24:00	-0.03	
8/5/08 15:24:15	0.00	
8/5/08 15:24:30	4.52	
8/5/08 15:24:45	12.55	
8/5/08 15:25:00	14.76	
8/5/08 15:25:15	15.02	
8/5/08 15:25:30	15.06	
8/5/08 15:25:45	15.07	
8/5/08 15:26:00	15.08	Calibration Error
8/5/08 15:26:15	15.09	15.09 15.00% O <sub>2</sub>
8/5/08 15:26:30	15.09	
8/5/08 15:26:45	15.09	
8/5/08 15:27:00	15.09	
8/5/08 15:27:15	15.09	
8/5/08 15:27:30	15.10	
8/5/08 15:27:45	14.37	
8/5/08 15:28:00	9.96	
8/5/08 15:28:15	7.94	
8/5/08 15:28:30	7.70	
8/5/08 15:28:45	7.67	
8/5/08 15:29:00	7.67	
8/5/08 15:29:15	7.67	
8/5/08 15:29:30	7.67	Calibration Error
8/5/08 15:29:45	7.66	7.66 7.50% O <sub>2</sub>
8/5/08 15:30:00	7.66	
8/5/08 15:30:15	7.66	
8/5/08 15:30:30	7.66	
8/5/08 15:30:45	7.12	
8/5/08 15:31:00	4.96	
8/5/08 15:31:15	3.95	
8/5/08 15:31:30	3.79	
8/5/08 15:31:45	3.77	Target Concentration #1; Trial #1
8/5/08 15:32:00	3.77	3.77 3.75% O <sub>2</sub>
8/5/08 15:32:15	3.77	
8/5/08 15:32:30	3.77	
8/5/08 15:32:45	3.77	
8/5/08 15:33:00	3.77	
8/5/08 15:33:15	4.73	
8/5/08 15:33:30	9.02	
8/5/08 15:33:45	11.01	
8/5/08 15:34:00	11.31	
8/5/08 15:34:15	11.34	
8/5/08 15:34:30	11.35	
8/5/08 15:34:45	11.36	Target Concentration #2; Trial #1
8/5/08 15:35:00	11.36	11.36 11.25% O <sub>2</sub>
8/5/08 15:35:15	11.36	
8/5/08 15:35:30	11.37	
8/5/08 15:35:45	11.37	
8/5/08 15:36:00	11.22	
8/5/08 15:36:15	9.38	
8/5/08 15:36:30	7.83	
8/5/08 15:36:45	7.51	
8/5/08 15:37:00	7.48	
8/5/08 15:37:15	7.49	
8/5/08 15:37:30	7.49	
8/5/08 15:37:45	7.49	
8/5/08 15:38:00	7.49	
8/5/08 15:38:15	7.49	
8/5/08 15:38:30	7.49	
8/5/08 15:38:45	7.49	
8/5/08 15:39:00	7.49	Mid-Level Concentration; Trial #1
8/5/08 15:39:15	7.49	7.49 7.54% O <sub>2</sub>
8/5/08 15:39:30	7.49	
8/5/08 15:39:45	7.49	
8/5/08 15:40:00	7.49	
8/5/08 15:40:15	7.49	
8/5/08 15:40:30	7.50	

Valero McKee Refinery: Sunray, Texas  
 SRU No. 1 Incinerator Exhaust: EPN V-5  
 USEPA Method 205 Dilution System Verification - 15 second data  
 Enviroic No. 3901

Date/Time	O <sub>2</sub> % by vol db	Comments
8/5/08 15:40:45	7.17	
8/5/08 15:41:00	5.02	
8/5/08 15:41:15	3.96	
8/5/08 15:41:30	3.80	
8/5/08 15:41:45	3.78	Target Concentration #1; Trial #2
8/5/08 15:42:00	3.77	3.77 3.75% O <sub>2</sub>
8/5/08 15:42:15	3.77	
8/5/08 15:42:30	3.77	
8/5/08 15:42:45	3.77	
8/5/08 15:43:00	3.76	
8/5/08 15:43:15	3.79	
8/5/08 15:43:30	5.99	
8/5/08 15:43:45	10.08	
8/5/08 15:44:00	11.19	
8/5/08 15:44:15	11.32	
8/5/08 15:44:30	11.34	
8/5/08 15:44:45	11.35	
8/5/08 15:45:00	11.36	
8/5/08 15:45:15	11.36	
8/5/08 15:45:30	11.36	Target Concentration #2; Trial #2
8/5/08 15:45:45	11.37	11.37 11.25% O <sub>2</sub>
8/5/08 15:46:00	11.37	
8/5/08 15:46:15	11.37	
8/5/08 15:46:30	11.37	
8/5/08 15:46:45	11.37	
8/5/08 15:47:00	11.37	
8/5/08 15:47:15	10.58	
8/5/08 15:47:30	8.41	
8/5/08 15:47:45	7.62	
8/5/08 15:48:00	7.50	
8/5/08 15:48:15	7.49	
8/5/08 15:48:30	7.49	Mid-Level Concentration; Trial #2
8/5/08 15:48:45	7.49	7.49 7.54% O <sub>2</sub>
8/5/08 15:49:00	7.49	
8/5/08 15:49:15	7.49	
8/5/08 15:49:30	7.49	
8/5/08 15:49:45	7.49	
8/5/08 15:50:00	7.50	
8/5/08 15:50:15	6.35	
8/5/08 15:50:30	4.37	
8/5/08 15:50:45	3.85	
8/5/08 15:51:00	3.79	
8/5/08 15:51:15	3.78	
8/5/08 15:51:30	3.77	
8/5/08 15:51:45	3.77	Target Concentration #1; Trial #3
8/5/08 15:52:00	3.77	3.77 3.75% O <sub>2</sub>
8/5/08 15:52:15	3.77	
8/5/08 15:52:30	3.76	
8/5/08 15:52:45	3.77	
8/5/08 15:53:00	3.76	
8/5/08 15:53:15	4.70	
8/5/08 15:53:30	8.99	
8/5/08 15:53:45	11.00	
8/5/08 15:54:00	11.30	
8/5/08 15:54:15	11.34	
8/5/08 15:54:30	11.35	
8/5/08 15:54:45	11.35	
8/5/08 15:55:00	11.36	Target Concentration #2; Trial #3
8/5/08 15:55:15	11.36	11.37 11.25% O <sub>2</sub>
8/5/08 15:55:30	11.37	
8/5/08 15:55:45	11.37	
8/5/08 15:56:00	11.37	
8/5/08 15:56:15	11.38	
8/5/08 15:56:30	11.87	
8/5/08 15:56:45	9.89	
8/5/08 15:57:00	7.91	
8/5/08 15:57:15	7.53	
8/5/08 15:57:30	7.49	Mid-Level Concentration; Trial #3
8/5/08 15:57:45	7.49	7.49 7.54% O <sub>2</sub>
8/5/08 15:58:00	7.49	
8/5/08 15:58:15	7.49	
8/5/08 15:58:30	7.49	
8/5/08 15:58:45	7.50	
8/5/08 15:59:00	8.21	
8/5/08 15:59:15	11.54	

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

- Table is selected

Set Flow	True Flow
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

- Table is selected

Set Flow	True Flow
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

- Table is selected

Set Flow	True Flow
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. 1 Incinerator  
**Dilution System ID:** 3712  
**Dilution Flow Rate:** 5.0 Lpm  
**Verification date:** 8/5/2008

**Analyzer Info**  
**Monitor type:** O<sub>2</sub>  
**Monitor range:** 22.20  
**Monitor Serial No.:** X1440D1/4143

**Initial Calibration Data**

<u>Calibration Concentration</u>	<u>Calibration results</u>	<u>% Difference</u>
Zero: <u>0.00</u>	Zero: <u>-0.04</u>	Zero: <u>0.18</u>
Low: _____	Low: _____	Low: _____
Mid: <u>11.10</u>	Mid: <u>11.14</u>	Mid: <u>0.18</u>
High: <u>22.20</u>	High: <u>22.60</u>	High: <u>1.80</u>

**Dilution System Verification**

Mid level gas type: <u>EPA Protocol 1</u>	High level dilution gas type: <u>O<sub>2</sub>/N<sub>2</sub></u>
Mid level concentration: <u>7.54</u>	High level concentration: <u>22.20</u>
Mid level tank serial #: <u>ALM025227</u>	High level tank serial #: <u>ALM012042</u>
	Target concentration No. 1: <u>6.00</u>
	Target concentration No. 2: <u>17.00</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:	<u>5.92</u>	<u>0.28</u>	Trial No. 1:	<u>17.05</u>	<u>0.06</u>
Trial No. 2:	<u>5.89</u>	<u>0.23</u>	Trial No. 2:	<u>17.06</u>	<u>0.00</u>
Trial No. 3:	<u>5.90</u>	<u>0.06</u>	Trial No. 3:	<u>17.07</u>	<u>0.06</u>
Average:	<u>5.903</u>		Average:	<u>17.060</u>	

% Difference from target concentration: 1.61%      % Difference from target concentration: 0.35%

**Mid Level Calibration Gas Results**

	<u>Instrument Response</u>	
Trial No. 1:	<u>7.64</u>	Mid Level calibration gas concentration: <u>7.54</u>
Trial No. 2:	<u>7.65</u>	Average analyzer response: <u>7.643</u>
Trial No. 3:	<u>7.64</u>	Percent difference: <u>1.37</u> *

\* Must be less than 2 %

**Valero McKee Refinery: Sunray, Texas**  
**SRU No. 1 Incinerator Exhaust: EPN V-5**  
**USEPA Method 205 Dilution System Verification - 15 second data**  
**Enviroic No. 3712**

Date/Time	O <sub>2</sub> % by vol db	Comments
8/5/08 19:02:00	7.38	
8/5/08 19:02:15	7.39	
8/5/08 19:02:30	7.43	
8/5/08 19:02:45	7.45	
8/5/08 19:03:00	7.47	
8/5/08 19:03:15	7.49	
8/5/08 19:03:30	7.49	
8/5/08 19:03:45	7.49	
8/5/08 19:04:00	7.46	
8/5/08 19:04:15	5.20	
8/5/08 19:04:30	1.14	
8/5/08 19:04:45	0.11	
8/5/08 19:05:00	-0.02	
8/5/08 19:05:15	-0.03	
8/5/08 19:05:30	-0.03	Calibration Error
8/5/08 19:05:45	-0.04	-0.04 Zero O <sub>2</sub>
8/5/08 19:06:00	-0.04	
8/5/08 19:06:15	-0.04	
8/5/08 19:06:30	-0.04	
8/5/08 19:06:45	2.63	
8/5/08 19:07:00	14.56	
8/5/08 19:07:15	21.27	
8/5/08 19:07:30	22.47	
8/5/08 19:07:45	22.60	
8/5/08 19:08:00	22.62	
8/5/08 19:08:15	22.62	
8/5/08 19:08:30	22.63	
8/5/08 19:08:45	22.60	Calibration Error
8/5/08 19:09:00	22.60	22.60 22.20% O <sub>2</sub>
8/5/08 19:09:15	22.60	
8/5/08 19:09:30	22.61	
8/5/08 19:09:45	22.61	
8/5/08 19:10:00	22.48	
8/5/08 19:10:15	17.97	
8/5/08 19:10:30	12.43	
8/5/08 19:10:45	11.31	
8/5/08 19:11:00	11.16	
8/5/08 19:11:15	11.16	
8/5/08 19:11:30	11.15	Calibration Error
8/5/08 19:11:45	11.14	11.14 11.10% O <sub>2</sub>
8/5/08 19:12:00	11.14	
8/5/08 19:12:15	11.13	
8/5/08 19:12:30	11.13	
8/5/08 19:12:45	10.55	
8/5/08 19:13:00	7.35	
8/5/08 19:13:15	6.06	
8/5/08 19:13:30	5.93	
8/5/08 19:13:45	5.92	Target Concentration #1; Trial #1
8/5/08 19:14:00	5.92	5.92 6.00% O <sub>2</sub>
8/5/08 19:14:15	5.92	
8/5/08 19:14:30	5.92	
8/5/08 19:14:45	5.92	
8/5/08 19:15:00	5.51	
8/5/08 19:15:15	8.78	
8/5/08 19:15:30	15.37	
8/5/08 19:15:45	16.89	
8/5/08 19:16:00	17.03	
8/5/08 19:16:15	17.05	Target Concentration #2; Trial #1
8/5/08 19:16:30	17.05	17.05 17.00% O <sub>2</sub>
8/5/08 19:16:45	17.05	
8/5/08 19:17:00	17.06	
8/5/08 19:17:15	17.06	
8/5/08 19:17:30	16.84	
8/5/08 19:17:45	12.72	
8/5/08 19:18:00	8.55	
8/5/08 19:18:15	7.73	
8/5/08 19:18:30	7.65	
8/5/08 19:18:45	7.65	
8/5/08 19:19:00	7.65	
8/5/08 19:19:15	7.65	
8/5/08 19:19:30	7.65	Mid-Level Concentration; Trial #1
8/5/08 19:19:45	7.64	7.64 7.54% O <sub>2</sub>
8/5/08 19:20:00	7.64	
8/5/08 19:20:15	7.64	
8/5/08 19:20:30	7.64	
8/5/08 19:20:45	7.64	
8/5/08 19:21:00	7.61	
8/5/08 19:21:15	5.63	
8/5/08 19:21:30	5.22	
8/5/08 19:21:45	5.76	
8/5/08 19:22:00	5.86	Target Concentration #1; Trial #2
8/5/08 19:22:15	5.88	5.89 6.00% O <sub>2</sub>
8/5/08 19:22:30	5.89	

**Valero McKee Refinery: Sunray, Texas**  
**SRU No. 1 Incinerator Exhaust: EPN V-5**  
**USEPA Method 205 Dilution System Verification - 15 second data**  
**Enviroic No. 3712**

Date/Time	O <sub>2</sub> % by vol db	Comments
8/5/08 19:22:45	5.89	
8/5/08 19:23:00	5.89	
8/5/08 19:23:15	5.96	
8/5/08 19:23:30	10.10	
8/5/08 19:23:45	15.79	
8/5/08 19:24:00	16.96	
8/5/08 19:24:15	17.06	Target Concentration #2; Trial #2
8/5/08 19:24:30	17.06	17.06 17.00% O <sub>2</sub>
8/5/08 19:24:45	17.06	
8/5/08 19:25:00	17.06	
8/5/08 19:25:15	17.07	
8/5/08 19:25:30	17.03	
8/5/08 19:25:45	14.24	
8/5/08 19:26:00	9.22	
8/5/08 19:26:15	7.84	
8/5/08 19:26:30	7.66	
8/5/08 19:26:45	7.65	Mid-Level Concentration; Trial #2
8/5/08 19:27:00	7.65	7.65 7.54% O <sub>2</sub>
8/5/08 19:27:15	7.65	
8/5/08 19:27:30	7.65	
8/5/08 19:27:45	7.64	
8/5/08 19:28:00	7.55	
8/5/08 19:28:15	5.41	
8/5/08 19:28:30	5.19	
8/5/08 19:28:45	5.76	
8/5/08 19:29:00	5.86	
8/5/08 19:29:15	5.88	
8/5/08 19:29:30	5.89	Target Concentration #1; Trial #3
8/5/08 19:29:45	5.90	5.90 6.00% O <sub>2</sub>
8/5/08 19:30:00	5.90	
8/5/08 19:30:15	5.90	
8/5/08 19:30:30	5.90	
8/5/08 19:30:45	5.94	
8/5/08 19:31:00	9.86	
8/5/08 19:31:15	15.74	
8/5/08 19:31:30	16.95	
8/5/08 19:31:45	17.06	
8/5/08 19:32:00	17.06	
8/5/08 19:32:15	17.07	
8/5/08 19:32:30	17.07	Target Concentration #2; Trial #3
8/5/08 19:32:45	17.07	17.07 17.00% O <sub>2</sub>
8/5/08 19:33:00	17.07	
8/5/08 19:33:15	17.07	
8/5/08 19:33:30	17.07	
8/5/08 19:33:45	15.77	
8/5/08 19:34:00	10.35	
8/5/08 19:34:15	8.01	
8/5/08 19:34:30	7.66	
8/5/08 19:34:45	7.65	
8/5/08 19:35:00	7.65	
8/5/08 19:35:15	7.65	
8/5/08 19:35:30	7.65	
8/5/08 19:35:45	7.65	
8/5/08 19:36:00	7.65	
8/5/08 19:36:15	7.65	
8/5/08 19:36:30	7.65	
8/5/08 19:36:45	7.64	Mid-Level Concentration; Trial #3
8/5/08 19:37:00	7.64	7.64 7.54% O <sub>2</sub>
8/5/08 19:37:15	7.64	
8/5/08 19:37:30	7.64	
8/5/08 19:37:45	7.64	
8/5/08 19:38:00	7.65	
8/5/08 19:38:15	7.73	
8/5/08 19:38:30	11.80	
8/5/08 19:38:45	18.45	
8/5/08 19:39:00	20.63	

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

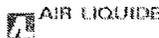
MAX Flow: 100.00 CCM  
 Cal Date: 01/19/2008 , 02:39:01  
 Reference Gas: NITROGEN  
 Description: Factory MFC #4 Calibration Table

- Table is selected

Set Flow	True Flow
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



Scott Specialty Gases



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1290 COMBERMERE STREET, TROY, MI 48083 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 48083

P.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 %

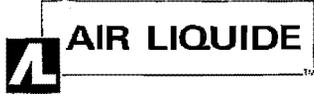
**Second Triad Analysis**

**Calibration Curve**

Concentration=A+Bx+Cx2+Dx3+Ex4  
r=9.99995E-1  
Constants: A=0.00000E+0  
B=5.39266E-1 C=5.14900E-3  
D=0.00000E+0 E=0.00000E+0

**QUALITY ASSURANCE**

APPROVED BY: Rob McCrandall  
(signature on file)



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

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ANALYTICAL ACCURACY**	TRACEABILITY
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 + Cx <sup>2</sup> + Dx <sup>3</sup> + Ex <sup>4</sup>	
r = .9999767	
Constants:	A = 0.008852882
B = 10.1649257	C =
D =	E =

APPROVED BY:

MARK SOLIZ

SUPERVISOR:

SUSAN BRANDON





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

Customer: Coastal Welding Protocol: Reference # Lot#  
Cylinder Number: EB0004890 G1 30376  
Cylinder Pressure: 1900 PSIG  
Last Analysis Date: 6/8/2007  
Expiration Date: 6/8/2009

**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.

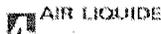
Analyst: Michael Tang Date: 6/8/2007

MICHAEL TANG

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



Scott Specialty Gases



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500 WEAVER PARK RD, LONGMONT, CO 80501 Phone: 888-253-1635 Fax: 303-772-7673

**Dual-Analyzed Calibration Standard**

**CERTIFICATE OF ACCURACY: EPA Protocol Gas**

**Assay Laboratory**  
SCOTT SPECIALTY GASES  
500 WEAVER PARK RD  
LONGMONT, CO 80501

P.O. No.: 03-053-08  
Project No.: 08-63225 -001

**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: AAL6878**  
**Cylinder Pressure\*\*\*: 1950 PSIG**

**Certification Date: 13Jun2008**

**Exp. Date: 12Dec2008**

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ANALYTICAL ACCURACY**	TRACEABILITY
NITROGEN DIOXIDE	49.9 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**

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
GMIS NO2/N2	16Apr2009	ALM035339	25.10 PPM	NITROGEN DIOXIDE

**INSTRUMENTATION**

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
NONOX/CLA-220/41526750062	02Jun2008	CHEMILUMINESCENT

**QUALITY ASSURANCE**

APPROVED BY: SAM BENNETT  
(signature on file)



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

Customer: Coastal Welding      Protocol:      Reference #      Lot#  
Cylinder Number: EB0001619      G1           25949  
Cylinder Pressure: 1900 PSIG  
Last Analysis Date: 11/14/2006  
Expiration Date: 11/14/2009

**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:

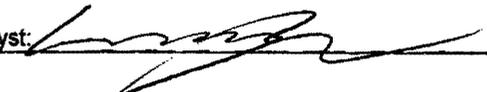
Component: Carbon Monoxide  
Reference Standard: GMIS  
Cylinder #: CC38906  
Concentration: 2483 ppm  
Exp. Date: 7/11/2007

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

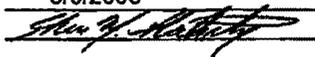
Manufactured By Specialty Gas Products, a Matheson Tri-Gas Company, Pasadena, Texas.

## Interference Response

Analyzer Type: Carbon Dioxide (CO<sub>2</sub>)  
 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 <sub>2</sub> without interferent	CO <sub>2</sub> with interferent	% Interference	Zero without interferent	Zero with interferent	% Interference	
NH <sub>3</sub>	10 ppm	11.41	11.39	-0.18	0.01	0.01	0.00	0.18
SO <sub>2</sub>	20 ppm	11.37	11.37	0.00	0.01	0.01	0.00	0.00
CH <sub>4</sub>	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 <sub>2</sub>	15 ppm	11.37	11.37	0.00	0.01	0.01	0.00	0.00
NO <sub>x</sub>	15 ppm	11.37	11.37	0.00	0.01	0.01	0.00	0.00
H <sub>2</sub>	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: 

## Interference Response

Analyzer Type: Oxygen (O<sub>2</sub>)  
 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 <sub>2</sub> without interferent	O <sub>2</sub> with interferent	% Interference	Zero without interferent	Zero with interferent	% Interference	
NH <sub>3</sub>	10 ppm	11.27	11.27	0.00	0.03	0.01	0.18	0.18
SO <sub>2</sub>	20 ppm	11.25	11.25	0.00	0.01	0.01	0.00	0.00
CH <sub>4</sub>	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 <sub>2</sub>	5%	11.23	11.26	0.27	0.00	-0.01	0.09	0.27
CO <sub>2</sub>	12.55%	11.25	11.27	0.18	0.03	-0.02	0.44	0.44
NO <sub>2</sub>	15 ppm	11.22	11.24	0.18	0.01	0.00	0.09	0.18
NO <sub>x</sub>	15 ppm	11.22	11.25	0.27	0.01	0.01	0.00	0.27
H <sub>2</sub>	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 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 <sub>3</sub>	10 ppm	100.0	100.0	0.0	0.0	0.0	0.0	0.0
SO <sub>2</sub>	20 ppm	100.0	100.0	0.0	0.0	0.3	0.3	0.3
CH <sub>4</sub>	50 ppm	100.0	100.0	0.0	0.0	0.1	0.1	0.1
CO <sub>2</sub>	5%	100.0	99.8	-0.2	0.0	0.2	0.2	0.2
CO <sub>2</sub>	12.55%	100.0	99.6	-0.4	0.0	-0.1	-0.1	0.4
NO <sub>2</sub>	15 ppm	100.0	100.0	0.0	0.0	0.2	0.2	0.2
NO <sub>x</sub>	15 ppm	100.0	100.0	0.0	0.0	0.2	0.2	0.2
H <sub>2</sub>	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: *[Signature]*



# 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 (ppm)	Analyzer Response	
		Wet	Dry
H2O	2.5%	0	0
CO2	5%	0	0
CO2	15%	0	0
CO	50	0	0
CH4	50	0	0
SO2	504	0	0
NH3	15	0	0
NO	N/A	N/A	N/A
N2O	9	0	0
NO2	N/A	N/A	N/A

# NOZZLE CALIBRATION DATA FORM

Date: 8-8-08

Calibrated By: D. FITZGERALD

Nozzle identification number	Nozzle Diameter <sup>a</sup>			$\Delta D$ , <sup>b</sup> (in.) mm	$D_{avg}$ <sup>c</sup> (in.) mm
	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>		
	(in.) mm	(in.) mm	(in.) mm		
SRU # 1	0.986	0.985	0.982	0.004	0.984

where:

<sup>a</sup>D<sub>1,2,3</sub> = nozzle internal diameter measured to the nearest 0.001 in (0.025 mm)

<sup>b</sup>ΔD = maximum difference between any two diameters must be ≤ 0.004 in. (0.10 mm)

<sup>c</sup>D<sub>avg</sub> = average of D<sub>1</sub>, D<sub>2</sub>, and D<sub>3</sub>.

**ARI Environmental, Inc.  
EPA METHOD 5  
Initial Meter Box Calibration**

Model No: Jenco 765  
Serial No. 801005

Operator: AH  
Date: 10/8/2007

Pre-Test, Orifice Method  
English Units

Barometric Pressure: 29.83 in.Hg

$\Delta H$ in. H2O	Time		DRY GAS METER VOLUME			METER TEMPERATURE		ORIFICE		VAC. in. Hg <sup>2</sup>	AMBIENT TEMPERATURE		
						INLET	OUTLET				Initial	Final	Initial
	Minutes	Seconds	Initial	Final	Total <sup>1</sup>	Initial	Final	Number	K factor	Initial	Final	Avg.	
0.52	15	45	640.900	647.500	6.600	85	85	AJ47	0.3234	21.0	81	82	81.5
0.97	11	49	647.800	654.600	6.800	85	85	AJ55	0.4400	19.0	82	84	83.0
1.70	10	15	655.000	662.600	7.600	88	86	AJ63	0.5720	19.0	84	85	84.5
3.10	13	7	663.200	676.500	13.300	89	87	AJ73	0.7781	16.0	85	87	86.0
4.60	10	10	677.400	689.900	12.500	95	88	AJ81	0.9528	14.0	87	88	87.5
						94	88						
						107	91						
						101	91						
						112	93						

METER FLOW (cubic feet)	ORIFICE FLOW (cubic feet)	METER CALIBRATION FACTOR, Yc <sup>3</sup>	DH @ <sup>4</sup>
6.371	6.529	1.0248	1.630
6.572	6.656	1.0128	1.667
7.308	7.495	1.0256	1.728
12.711	13.029	1.0250	1.703
11.899	12.349	1.0378	1.690

<b>AVG. PRETEST METER CALIBRATION FACTOR: Y<sup>5</sup> = 1.025</b>	<b><math>\Delta H@^6 = 1.68</math></b>
---	--

<sup>1</sup> Must pull at least 5 cubic feet per orifice  
<sup>2</sup> Vacuum must be 15" of Hg or greater  
<sup>3</sup> Individual Ys can not vary from +/-0.02Y of the average

<sup>4</sup> Delta H@ can not be more than +/- 0.15 of average delta H  
<sup>5</sup> Ideal Y is 1.000 and can vary no more than +/- 0.05  
<sup>6</sup> 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 #: 801005  
Pretest Y: 1.025  
Pretest ΔH@: 1.68

Operator: DWM  
Date: 8/19/2008

Post-Test, Orifice Method  
English Units

Barometric Pressure: 29.74 in.Hg

ΔH	Time		DRY GAS METER VOLUME			METER TEMPERATURE		ORIFICE		VAC. in. Hg <sup>2</sup>	AMBIENT TEMPERATURE		
						INLET	OUTLET				Initial	Final	Initial
	Initial	Final	Total <sup>1</sup>	Initial	Final	Number	K factor						
	Minutes	Seconds	Initial	Final	Total <sup>1</sup>			Final	Final				
1.70	11	27	469.400	478.200	8.800	77	76	AJ63	0.5720	16.0	78	80	79.0
						82	78						
1.70	11	46	478.600	487.600	9.000	87	79	AJ63	0.5720	17.0	80	82	81.0
						87	79						
1.70	10	45	488.100	496.326	8.226	87	81	AJ63	0.5720	17.0	87	87	87.0
						87	81						

METER FLOW (cubic feet)	ORIFICE FLOW (cubic feet)	METER CALIBRATION FACTOR, Yc <sup>3</sup>	DH @ <sup>4</sup>
8.617	8.390	0.9737	1.753
8.759	8.606	0.9825	1.749
7.977	7.819	0.9802	1.761

<b>AVG. POST-TEST METER CALIBRATION FACTOR =</b>	<b>0.979</b>	<b>1.75</b>
--	--------------	-------------

**PERCENT DIFFERENCE FROM PRETEST Y= 4.51**  
**MAXIMUM ALLOWABLE DIFFERENCE= 5.00**

<sup>1</sup> Must pull at least 5 cubic feet per orifice  
<sup>2</sup> Vacuum must be 15" of Hg or greater

<sup>3</sup> Individual Ys can not vary from +/-0.02Y of the average  
<sup>4</sup> Delta H@ can not be more than +/- 0.15 of average delta H

**ARI ENVIRONMENTAL, INC.**  
**EPA METHOD 5**  
**THERMOCOUPLE DIGITAL INDICATOR CALIBRATION DATA SHEET**

Operator: AH  
 Date: 10/8/2007

Meterbox No.: 801005  
 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	-1	0.22	-1	0.22	1	0.22	1	0.22	1	0.22
200	200	0.00	200	0.00	200	0.00	201	0.15	201	0.15
400	396	0.47	396	0.47	396	0.47	397	0.35	396	0.47
600	598	0.19	598	0.19	599	0.09	599	0.09	599	0.09
800	799	0.08	799	0.08	799	0.08	800	0.00	800	0.00
1000	998	0.14	998	0.14	999	0.07	999	0.07	998	0.14
1200	1196	0.24	1196	0.24	1197	0.18	1197	0.18	1196	0.24
1400	1393	0.38	1394	0.32	1394	0.32	1395	0.27	1395	0.27
1600	1596	0.19	1597	0.15	1597	0.15	1598	0.10	1598	0.10
1800	1795	0.22	1797	0.13	1796	0.18	1796	0.18	1796	0.18

**Actual Maximum Difference = 0.47 %**  
 Allowable Maximum Difference = 1.50 %

**ARI ENVIRONMENTAL, INC.**  
**EPA METHOD 5**  
**THERMOCOUPLE DIGITAL INDICATOR CALIBRATION DATA SHEET**

Operator: DWM  
 Date: 8/19/2008

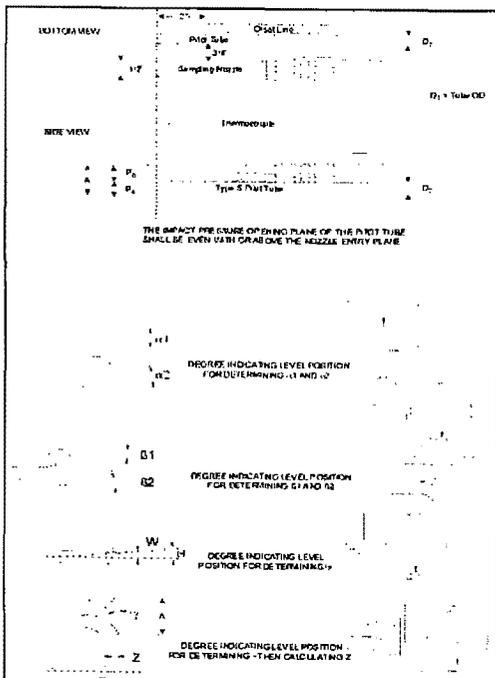
Meterbox No.: 801005  
 Calibrator No.: CL-300-21001

Calibrator Setting ° F	Digital Temperature Readout									
	PROBE		STACK		FILTER		EXIT		AUX	
	Acutal	Diff.	Acutal	Diff.	Acutal	Diff.	Acutal	Diff.	Acutal	Diff.
0	-2	0.43	-2	0.43	-2	0.43	-1	0.22	-1	0.22
200	199	0.15	199	0.15	199	0.15	200	0.00	200	0.00
400	396	0.47	396	0.47	396	0.47	396	0.47	397	0.35
600	599	0.09	599	0.09	599	0.09	599	0.09	600	0.00
800	801	0.08	801	0.08	801	0.08	801	0.08	802	0.16
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	1200	0.00
1400	1397	0.16	1397	0.16	1397	0.16	1398	0.11	1398	0.11
1600	1600	0.00	1600	0.00	1600	0.00	1600	0.00	1600	0.00
1800	1798	0.09	1798	0.09	1798	0.09	1798	0.09	1798	0.09

Actual Maximum Difference = 0.47 %  
 Allowable Maximum Difference = 1.50 %



### Type S Pitot Tube Inspection Form



#### PITOT TUBE/PROBE # P26 10/00

Parameter	Value	Allowable Range	Check
Assembly Level?	Y	Yes	OK
Ports Damaged?	N	No	OK
$\alpha 1$	2	$-10^\circ < \alpha 1 < +10^\circ$	OK
$\alpha 2$	1	$-10^\circ < \alpha 2 < +10^\circ$	OK
$\beta 1$	1.5	$-5^\circ < \beta 1 < +5^\circ$	OK
$\beta 2$	2.5	$-5^\circ < \beta 2 < +5^\circ$	OK
$\gamma$	0		
$\theta$	0		
$Z = A \tan \gamma$	0.000	$Z \leq .125''$	OK
$W = A \tan \theta$	0.000	$W \leq .031''$	OK
$D_t$	0.375	.188" to .375"	OK
$A/2D_t$	1.38	$1.05 \leq P_A/D_t \leq 1.5$	OK
$A$	1.035	$2.1D_t \leq A \leq 3D_t$	OK

**Certification**

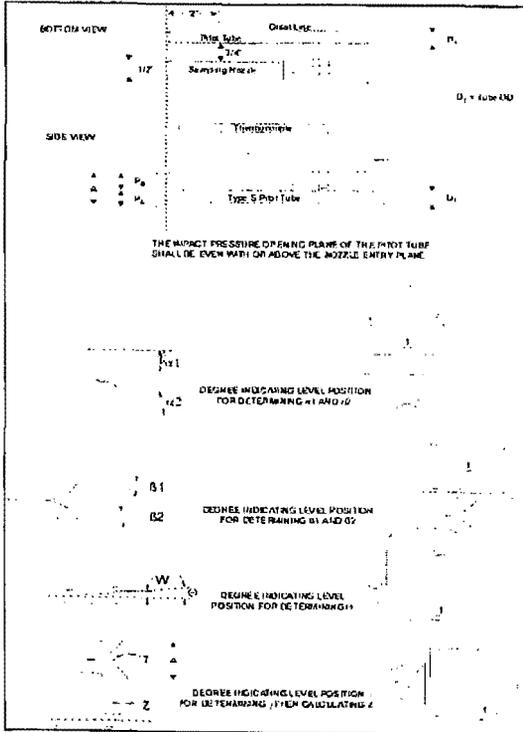
I certify that pitot tube/probe number P26 10/00 meets or exceeds all specifications, criteria and/or applicable design features and is hereby assigned a pitot tube certification factor of 0.84. See 40 CFR Pt. 60, App. A, EPA Method 2.

Certified by:

*[Handwritten Signature]* 2/25/08  
Personnel (Signature/Date)

\_\_\_\_\_  
Team Leader (Signature/Date)

## Type S Pitot Tube Inspection Form



PITOT TUBE/PROBE # P210

Parameter	Value	Allowable Range	Check
Assembly Level?	<u>Y</u>	Yes	
Ports Damaged?	<u>N</u>	No	
$\alpha 1$	<u>Z</u>	$-10^\circ < \alpha 1 < +10^\circ$	
$\alpha 2$	<u>Z</u>	$-10^\circ < \alpha 2 < +10^\circ$	
$\beta 1$	<u>I</u>	$-5^\circ < \beta 1 < +5^\circ$	
$\beta 2$	<u>I</u>	$-5^\circ < \beta 2 < +5^\circ$	
$\gamma$	<u>0</u>		
$\theta$	<u>0</u>		
$Z = A \tan \gamma$	<u>0.000</u>	$Z \leq .125"$	
$W = A \tan \theta$	<u>0.000</u>	$W \leq .031"$	
Dt	<u>0.375</u>	.188" to .375"	
A/2Dt	<u>1.33</u>	$1.05 \leq P_A/D_t \leq 1.5$	
A	<u>1.035</u>	$2.1D_t \leq A \leq 3D_t$	

### Certification

I certify that pitot tube/probe number 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:

A C Hilly 8/25/08  
Personnel (Signature/Date)

\_\_\_\_\_  
Team Leader (Signature/Date)

## Pitot Thermocouple Calibration Form

Pitot Tube No: A26  
Calibration Date: 2/1/08  
Calibrator: Ann

Ambient Temperature		
Thermocouple Reading	Reference Reading	Difference (+/- 2 °F)
63 °F	62 °F	1 °F

Ice Bath Temperature		
Thermocouple Reading	Reference Reading	Difference (+/- 2 °F)
35 °F	36 °F	-1 °F

## Pitot Thermocouple Calibration Form

Pitot Tube No: A26  
Calibration Date: 8/25/02  
Calibrator: AH

Ambient Temperature		
Thermocouple Reading	Reference Reading	Difference (+/- 2 °F)
92° F	92° F	0° F

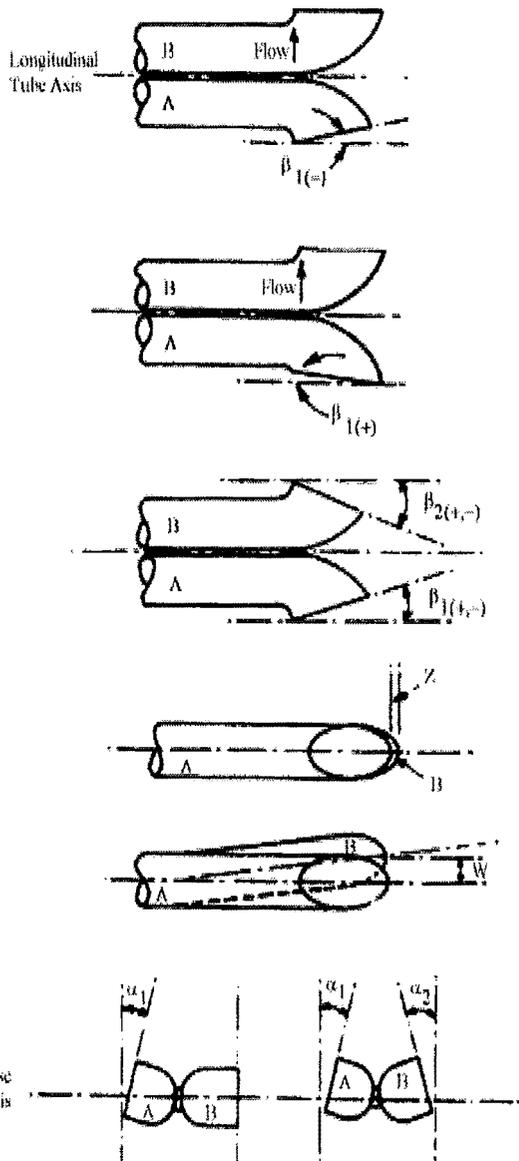
Ice Bath Temperature		
Thermocouple Reading	Reference Reading	Difference (+/- 2 °F)
47° F	48° F	-1° F

### Pitot Tube Inspection Data

Client Name: \_\_\_\_\_

Date: Pre-Sample  
12/14/2007

Date: Post-Sample  
8/25/2008



Y	level?	Y
N	obstructions?	N
N	damaged?	N
1	$-10^\circ < \alpha_1 < +10^\circ$	1
1	$-10^\circ < \alpha_2 < +10^\circ$	0
1	$-5^\circ < \beta_1 < +5^\circ$	1
0	$-5^\circ < \beta_2 < +5^\circ$	0
1	$\gamma$	1
0	$\theta$	0
0.740	A	0.74
0.370	$0.2625 < P_A < 0.375$	0.370
0.370	$0.2625 < P_B < 0.375$	0.370
0.250	$0.1875 \leq D_t \leq 0.375$	0.250
0.013	$A \tan \gamma < 0.125''$	0.013
0.00000	$A \tan \theta < 0.03125''$	0.00000
TRUE	$P_A = P_B \pm 0.063$	TRUE
PASS	PASS/FAIL	PASS

**Comments:** 5' effective length INCONNEL M5 probe, 1/4" pitot tips, K-type thermocouple, with Titanium liner.

Pitot tube/probe number 227 meets or exceeds all specifications and criteria and/or applicable design features (per 40CFR60 Appendix A; Method 2) and is hereby assigned a pitot tube calibration factor of 0.84.

Signature:  
Date:

*[Signature]*  
8-25-08 E-35

**ARI Environmental Inc.  
Thermocouple Calibration Data Form**



**Calibrator:** B. Crane  
**Thermocouple ID.** 227 Inconnel  
**Date:**                    **pretest**                    **posttest**  
                                  12/14/2007                    8/25/2008  
**Barometric:**            29.65                    29.41  
**Reference Thermometer = Mercury in glass**

	Reference Point Number	Source	Reference Thermometer Temperature	Meter Readout Temperature	
<b>Pre-Test</b>	T.C	Ice Water	36.0	35.5	0.37
		Ambient	73.0	71.5	0.25
		Hot Water	208.0	209.9	-0.28
<b>Post-Test</b>	T.C	Ice Water	34.0	35.0	-0.20
		Ambient	73.0	72.8	0.04
		Hot Water	210.0	209.5	0.07

$$a \text{ (temp. diff.)} = (\text{ref. temp} + 460) - (\text{Thermo. temp.} + 460) / (\text{ref. temp.} + 460) \times 100$$

Where  $-1.5 < a < 1.5$





Valero McKee Refinery: Sunray, TX  
SRU No. 1 Incinerator: EPN V-5  
Test Dates: 8/6 & 8/8/08

## **APPENDIX F**

## **Personnel Qualifications**

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## **Personnel Qualifications**

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### **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 12 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.

### **Adam Hensley**

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

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



Valero McKee Refinery: Sunray, TX  
SRU No. 1 Incinerator: EPN V-5  
Test Dates: 8/6 & 8/8/08

## APPENDIX G

## Process Data

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**No. 1 SRU Vent**

Date	Hour	V-5	V-5	V-5	V-5
		SRU Prod. Rate (LTPD)	SO2 (ppmvd)	CEMS O2 (ppmvd)	INCNTRCHAMBER Hour Avg TEMP
8/6/2008	10	21.46	8.2	3.9	1378.61
8/6/2008	11	21.46	6.5	3.9	1379.31
8/6/2008	12	21.46	6.1	4.2	1379.71
8/6/2008	13	21.46	5.5	4.0	1380.77
8/6/2008	14	21.46	4.7	4.0	1383.85
8/6/2008	15	21.46	4.9	4.0	1380.58
8/6/2008	16	21.46	5.3	4.3	1379.81
8/6/2008	17	21.46	5.5	3.8	1383.36
8/6/2008	18	21.46	6.4	3.7	1381.2
8/6/2008	19	21.46	6.8	3.5	1383.83
8/6/2008	20	21.46	7.0	4.2	1381.14
8/6/2008	21	21.46	8.1	3.9	1379.92
8/6/2008	22	21.46	9.1	3.9	1380.24
8/8/2008	11	23.82	4.9	4.0	1382.77
8/8/2008	12	23.82	5.3	4.2	1383.83
8/8/2008	13	23.82	5.0	3.8	1383.25
8/8/2008	14	23.82	4.7	3.6	1382.35
8/8/2008	15	23.82	4.6	3.6	1381.67
8/8/2008	16	23.82	3.4	4.0	1380.67
8/8/2008	17	23.82	2.6	3.6	1378.85

HYDROGEN SULFIDE	Acid Plant	ACID GAS	83.4	mol%	8/6/08 14:57
HYDROGEN SULFIDE	Acid Plant	ACID GAS	97.5	mol%	8/8/08 9:34

**8/6/08**

Run No. 1 (10:49 - 13:49)	21.46	6.2	4.0	1379.80
Run No. 2 (14:13 - 17:13)	21.46	5.0	4.1	1381.38
Run No. 3 (17:40 - 20:40)	21.46	6.6	3.8	1382.30

**8/6/08**

Run No. M5-1 (11:33 - 12:43)	23.82	5.1	4.1	1383.42
Run No. M5-2 (13:19 - 14:25)	23.82	4.9	3.7	1382.91
Run No. M5-3 (15:05 - 16:13)	23.82	4.4	3.7	1381.48



Valero McKee Refinery: Sunray, TX  
SRU No. 1 Incinerator: EPN V-5  
Test Dates: 8/6 & 8/8/08

## **APPENDIX H**

## **TCEQ Flexible Permit No. 9708/PSD-TX-861M2**

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## 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 feet) 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 (H<sub>2</sub>S) 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

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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 (SO<sub>2</sub>) shall not exceed 0.0376 lb/MMBtu. Compliance with the SO<sub>2</sub> emission limit shall be based on the H<sub>2</sub>S content of the fuel gas, assuming 100 percent conversion of H<sub>2</sub>S to SO<sub>2</sub>.
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

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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 (O<sub>2</sub>) 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

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Flexible Permit Numbers 9708 and PSD-TX-861M2

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firebox exit temperature and incinerator stack O<sub>2</sub> 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 O<sub>2</sub>). 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 O<sub>2</sub>). If stack testing indicates that a higher temperature or O<sub>2</sub> concentration is necessary to obtain the reduced sulfur compound exit concentrations specified for an SRU Incinerator, then the temperature and O<sub>2</sub> maintained during the stack test will become the new minimum operating limits for that SRU Incinerator. The O<sub>2</sub> 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 SO<sub>2</sub> 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

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and sour water stripper overheads, containing H<sub>2</sub>S 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 H<sub>2</sub>S, SO<sub>2</sub>, or NH<sub>3</sub> SERVICE

22. Piping, Valves, Pumps, and Compressors in H<sub>2</sub>S, SO<sub>2</sub>, or ammonia (NH<sub>3</sub>) service are subject to the following requirements:
  - A. Audio, olfactory, and visual checks for H<sub>2</sub>S, SO<sub>2</sub>, and NH<sub>3</sub> 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 H<sub>2</sub>S 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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- (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 <sub>2</sub>	300 ppmv
nitrogen oxides (NO <sub>x</sub> )	200 ppmv
VOC	10 ppmv
NH <sub>3</sub>	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:

$$F_{PM} = 1.0 \text{ lb}/1,000\text{-lb coke burn}$$

where:  $F_{PM}$  = total PM emission factor (lb/1,000-lb coke burn)

## SPECIAL CONDITIONS

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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 a 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

## SPECIAL CONDITIONS

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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<sub>x</sub> 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<sub>x</sub>, 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<sub>x</sub>, 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 H<sub>2</sub>S 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<sub>x</sub>, and O<sub>2</sub> from the heaters and boilers with firing rates greater than 100 MMBtu/hr; SO<sub>2</sub> and O<sub>2</sub> from the SRU/Scot TGIs (EPNs V-5, V-16, and V-28); SO<sub>2</sub> from the Acid Plant Stack (EPN V-29); and NO<sub>x</sub>, O<sub>2</sub>, and SO<sub>2</sub> 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  $\pm 15$  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<sub>x</sub> 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>
<b><u>VOC CAPS:</u></b>			
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
<b><u>NO<sub>x</sub> CAPS:</u></b>			
Combustion Units, Flares, Process Vents, Loading, Engines, Maintenance	Initial	961.0	3,536.6
	Final	574.8	2,001.4
<b><u>CO CAPS:</u></b>			
Combustion Units, Flares, Process Vents, Loading, Engines, Maintenance	Initial	1,413.0	3,129.3
	Final	1,607.1	3,841.9
<b><u>SO<sub>2</sub> CAPS:</u></b>			
Combustion Units, Flares, Process Vents, Loading, Engines, Maintenance	Initial	1,648.4	4,732.5
	Final	1,243.1	2,919.7
<b><u>PM CAPS:</u></b>			
Combustion Units, Flares, Process Vents, Engines, Maintenance	Initial	365.9	1,567.6
	Final	156.7	644.2
<b><u>BENZENE CAPS:</u></b>			
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
<b><u>H<sub>2</sub>S CAPS:</u></b>			
Flares, Process Vents, Fugitives, Maintenance	Initial	10.4	19.6
	Final	7.6	7.1
<b><u>SULFURIC ACID CAPS:</u></b>			
Process Vents	Initial	10.6	46.6
	Final	12.4	54.1
<b><u>CHLORINE CAPS:</u></b>			
Process Vents	Initial	4.3	0.4
	Final	0.4	0.5
<b><u>HCl CAPS:</u></b>			
Process Vents, Maintenance	Initial	20.4	4.0
	Final	7.1	4.3
<b><u>NH<sub>3</sub> CAPS:</u></b>			
Process Vents, Fugitives, Maintenance	Initial	800.3	164.6
	Final	800.4	164.8
<b>MAINTENANCE EMISSIONS CAPS: (5)</b>			
	<u>Year</u>	<u>lb/hr</u>	<u>TPY**</u>
VOC	(5)	1102.6	3.21
NO <sub>x</sub>	(5)	54.8	0.09
CO	(5)	383.6	0.66
SO <sub>2</sub>	(5)	504.8	1.22

**MAINTENANCE EMISSIONS CAPS: (5)**

	<u>Year</u>	<u>lb/hr</u>	<u>TPY**</u>
H <sub>2</sub> S	(5)	6.3	0.01
HCl	(5)	4.0	0.002
NH <sub>3</sub>	(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<sub>x</sub> - total oxides of nitrogen
    - SO<sub>2</sub> - sulfur dioxide
    - PM - particulate matter
    - CO - carbon monoxide
    - NH<sub>3</sub> - ammonia
    - H<sub>2</sub>S - hydrogen sulfide
    - HCl - hydrogen chloride
    - Cl<sub>2</sub> - 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.

Dated October 1, 2004

ATTACHMENT I

SOURCE CATEGORIES, EMISSION POINT NUMBERS  
AND SOURCE NAMES

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.

<u>Source Category</u>	<u>Emission Point No. (1)</u>	<u>Source Name (2)</u>
<b>COMBUSTION SOURCES:</b>		
	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 <sub>2</sub> 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 <sub>2</sub> Primary Reformer Heater
	H-22	No. 2 H <sub>2</sub> 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 <sub>2</sub> 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 <sub>4</sub> 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 <sub>4</sub> 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 <sub>4</sub> 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 <sub>2</sub> /NH <sub>3</sub> 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 <sub>2</sub> /NH <sub>3</sub> 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 <sub>4</sub> 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 <sub>2</sub> Plant Vent (CO <sub>2</sub> release only)
V-11	MEA Still CO <sub>2</sub> 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 <sub>3</sub> Plant CO <sub>2</sub> Stripper Vent (regeneration)
V-9	No.2 NH <sub>3</sub> Plant CO <sub>2</sub> 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 <sub>3</sub> 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