



GOLDEN

SPECIALTY CONSULTING, LTD.

Air Quality Test Report

Compliance test for CO, H₂S, and SO₂

Lyondell-Citgo Refining, LP
Tail Gas Unit 435
Thermal Oxidizer Exhaust Stack

TNRCC Account: HG-0048-L
435 Tail Gas Unit (EPN TGU-ICN)
TNRCC Flexible Permit No. 2167

Prepared for: Mr. Roel Muñoz
Lyondell-Citgo Refining LP
12000 Lawndale
Houston, Texas, 77017
(713) 321-4094

Prepared by: Golden Specialty Consulting, Ltd.
281-476-9898

Date Tested: March 25-26, 2005
Date Prepared: May 16, 2005

Air Quality Test Report

Compliance test for CO, H₂S, and SO₂

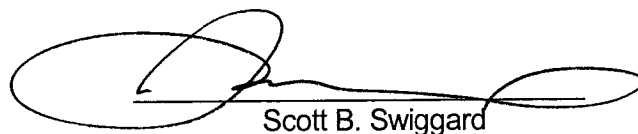
**Lyondell-Citgo Refining LP
Tail Gas Unit 435
Thermal Oxidizer Exhaust Stack**

**TNRCC Account: HG-0048-L
435 Tail Gas Unit (EPN TGU-ICN)
TNRCC Flexible Permit No. 2167**

Prepared for: Mr. Roel Muñoz
Lyondell-Citgo Refining LP
12000 Lawndale
Houston, Texas, 77017
(713) 321-4094

Prepared by: Golden Specialty Consulting, Inc.
281-476-9898

Date Tested: March 25-26, 2005
Date Prepared: May 16, 2005



Scott B. Swiggard

Table of Contents

Executive Summary.....	1
Table 1-1 TGU 435 Test Results with TO at 1450 degrees.....	2
Table 1-2 TGU 435 Test Results with TO at 1440 degrees.....	2
Table 1-3 TGU 435 Test Results with TO at 1500 degrees.....	3
Table 1-4 TGU 435 Test Results with TO at 1475 degrees.....	3
Introduction.....	4
Purpose of Test	4
Problems Encountered.....	4
Performance Test Procedures.....	5
Instrumental Analyzer Procedure.....	5
Sampling System.....	5
Analyzer Calibration.....	5
Analyzer Error	6
System Bias Check	6
Analyzer Drift.....	6
EPA Reference Methods	7
Method 1: Sample and Velocity Traverses for Stationary Sources	7
Method 2: Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)	7
Method 3A: Oxygen and Carbon Dioxide Analysis (Instrumental Analysis).....	7
Method 4: Determination of Moisture Content	7
Method 6C: Sulfur Dioxide Analysis (Instrumental Analyzer Procedure).....	8
Method 10: Carbon Monoxide Analysis (Instrumental Analysis).....	8
Method 15: Determination of Hydrogen Sulfide, Carbonyl Sulfide and Carbon Disulfide Emissions from	
Figure 1-1. Reference Method Analyzer System.....	10
Figure 1-2. Sampling System Schematic for GC/FPD	11
Figure 1-3. Method 4 Moisture Sampling Train.....	12
Source Information	13
Figure 1-4. Diagram of Testing Location	13
Sample Calculations.....	14
Calculations.....	14
Test Results	18
Table 1-5 TGU 435 Test Summary with TO at 1450 degrees.....	19
Table 1-6 TGU 435 Test Summary with TO at 1440 degrees.....	20
Table 1-7 TGU 435 Test Summary with TO at 1500 degrees.....	21
Table 1-8 TGU 435 Test Summary with TO at 1475 degrees.....	22
Appendix A - Testing Equipment Used	A
Table 1-9. Testing Equipment Used in the TGU 435 Compliance	A
Appendix B - Personnel.....	B
Appendix C - Calibration Data.....	C
Appendix D – Calculated Data	D
Appendix E - Calibration Standard Certifications	E
Appendix F - Field Data.....	F
Appendix G - Reference Method Data Listing.....	G
Appendix H – CEMS And Process Data Listing.....	H
Appendix I – Method 15 Data.....	I
Appendix J – Sample Line Loss Check.....	J

EXECUTIVE SUMMARY

On March 25-26, 2005 Golden Specialty Consulting, Inc. (GOLDEN) was contracted by Lyondell-Citgo Refining LP (LCR) to perform air testing at their facility located in Houston, Texas. GOLDEN was contracted to perform compliance testing of the thermal oxidizer (TO) exhaust stack on the 435 tail gas unit (TGU 435). The measured pollutants included carbon monoxide (CO), hydrogen sulfide (H₂S) and sulfur dioxide (SO₂). The test was conducted in accordance with all appropriate U.S. EPA Methodologies as well as all applicable Texas Commission on Environmental Quality (TCEQ) mandates.

The purpose of this test program was to provide data demonstrating continued compliance with the applicable regulations 40 CFR Part 60, Subpart J over various operational parameters to support modifications to TCEQ Permit No. 2167.

Changes in LCR's operating philosophy provide the motivational forces behind this test program. The previously permitted technique of determining emission compliance based on the operating temperatures of the thermal oxidizers resulted in excessive consumption of natural gas. The reasoning behind the temperature set point was as long as the operating temperature of the oxidizers did not fall below 1,500 degrees F, carbon monoxide (CO) emissions would stay below 100 ppmv. This approach was verified by permit compliance testing and did not require the installation of CEMS. The change in the operation philosophy of LCR to look at energy conservation measures has facilitated the installation of CO CEMs to be able to allow the natural gas addition to be controlled by CO emissions instead of temperature. Under this operating philosophy, compliance with the CO limit is drastically improved by direct measurement of the regulated pollutant over that of using a surrogate and natural gas addition is optimized.

On March 25-26 Compliance testing was performed on TGU 435 Exhaust Stack at each of four operating conditions to demonstrate SO₂, H₂S and CO emission compliance at various operating temperatures. Compliance testing at each operating condition consisted of three one hour runs for SO₂, CO and H₂S emissions. The compliance results for each condition are presented on the following pages in Tables 1-1 through 1-4.

Run Number	1	2	3	Average	Compliance Limit
Test Date	3/25/2005	3/25/2005	3/25/2005		
Run Start Time	10:35	12:00	13:20		
Run Finish Time	11:35	13:00	13:18		
Net Traversing Points	12	12	12		
Net Run Time, minutes	60	60	60	60	
Dry Gas Meter Volume Sampled, cubic feet	43.5	41.8	37.6	41.0	
Moisture Content of Stack Gas, %	14.7	14.6	15.5	14.9	
Carbon Dioxide, %	5.2	5.2	5.3	5.2	
Oxygen, %	2.67	2.53	2.38	2.53	
Dry Stack Volumetric Flow Rate, dry scfm	25,752	25,776	26,906	26,145	
SO ₂ Sulfur Dioxide Concentration, ppm	100.5	111.98	155.15	122.53	235 ppm
SO ₂ Sulfur Dioxide Emission Rate, lb/hr	25.78	28.77	41.61	32.05	
H ₂ S Hydrogen Sulfide Concentration, ppm	< .10	< .10	< .10	< .10	
H ₂ S Hydrogen Sulfide Emission Rate, lb/hr	< .01	< .01	< .01	< .01	0.06 lb/hr
CO Carbon Monoxide Concentration, ppm	70.4	67.3	62.4	66.7	100 ppm
CO Carbon Monoxide Emission Rate, lb/hr	7.90	7.56	7.32	7.59	

Table 1-1 TGU 435 Test Results with TO at 1450 degrees.

Run Number	1	2	3	Average	Compliance Limit
Test Date	3/25/2005	3/25/2005	3/25/2005		
Run Start Time	16:20	17:35	18:48		
Run Finish Time	17:20	18:35	19:48		
Net Traversing Points	12	12	12		
Net Run Time, minutes	60	60	60	60	
Dry Gas Meter Volume Sampled, cubic feet	23.2	42.2	38.5	34.6	
Moisture Content of Stack Gas, %	14.6	14.7	14.9	14.7	
Carbon Dioxide, %	5.2	5.1	5.1	5.1	
Oxygen, %	2.41	2.40	2.38	2.40	
Dry Stack Volumetric Flow Rate, dry scfm	26,245	26,143	26,373	26,253	
SO ₂ Sulfur Dioxide Concentration, ppm	109.4	107.74	108.56	108.58	235 ppm
SO ₂ Sulfur Dioxide Emission Rate, lb/hr	28.63	28.07	28.54	28.41	
H ₂ S Hydrogen Sulfide Concentration, ppm	< .10	< .10	< .10	< .10	
H ₂ S Hydrogen Sulfide Emission Rate, lb/hr	< .01	< .01	< .01	< .01	0.06 lb/hr
CO Carbon Monoxide Concentration, ppm	83.3	65.7	70.9	73.3	100 ppm
CO Carbon Monoxide Emission Rate, lb/hr	9.53	7.49	8.16	8.39	

Table 1-2 TGU 435 Test Results with TO at 1440 degrees.

Run Number	1	2	3	Average	Compliance Limit
Test Date	3/26/2005	3/26/2005	3/26/2005		
Run Start Time	8:00	9:15	10:32		
Run Finish Time	9:00	10:15	11:32		
Net Traversing Points	12	12	12		
Net Run Time, minutes	60	60	60	60	
Dry Gas Meter Volume Sampled, cubic feet	40.7	40.2	41.7	40.9	
Moisture Content of Stack Gas, %	13.5	14.6	15.1	14.4	
Carbon Dioxide, %	5.2	5.1	5.2	5.2	
Oxygen, %	2.47	2.47	2.44	2.46	
Dry Stack Volumetric Flow Rate, dry scfm	22,226	21,705	27,321	23,751	
SO ₂ Sulfur Dioxide Concentration, ppm	100.0	98.73	99.28	99.33	235 ppm
SO ₂ Sulfur Dioxide Emission Rate, lb/hr	22.15	21.36	27.04	23.52	
H ₂ S Hydrogen Sulfide Concentration, ppm	< .10	< .10	< .10	< .10	
H ₂ S Hydrogen Sulfide Emission Rate, lb/hr	< .01	< .01	< .02	< .01	0.06 lb/hr
CO Carbon Monoxide Concentration, ppm	7.9	6.1	6.5	6.8	100 ppm
CO Carbon Monoxide Emission Rate, lb/hr	0.76	0.57	0.77	0.70	

Table 1-3 TGU 435 Test Results with TO at 1500 degrees.

Run Number	1	2	3	Average	Compliance Limit
Test Date	3/26/2005	3/26/2005	3/26/2005		
Run Start Time	12:08	13:20	14:33		
Run Finish Time	13:08	14:20	15:33		
Net Traversing Points	12	12	12		
Net Run Time, minutes	60	60	60	60	
Dry Gas Meter Volume Sampled, cubic feet	44.1	43.4	44.3	43.9	
Moisture Content of Stack Gas, %	12.5	14.6	12.3	13.1	
Carbon Dioxide, %	5.1	5.1	5.0	5.1	
Oxygen, %	2.42	2.44	2.46	2.44	
Dry Stack Volumetric Flow Rate, dry scfm	27,430	26,181	27,966	27,192	
SO ₂ Sulfur Dioxide Concentration, ppm	160.3	110.01	103.09	124.48	235 ppm
SO ₂ Sulfur Dioxide Emission Rate, lb/hr	43.83	28.71	28.74	33.76	
H ₂ S Hydrogen Sulfide Concentration, ppm	< .10	< .10	< .10	< .10	
H ₂ S Hydrogen Sulfide Emission Rate, lb/hr	< .01	< .01	< .01	< .01	0.06 lb/hr
CO Carbon Monoxide Concentration, ppm	19.9	19.4	14.1	17.8	100 ppm
CO Carbon Monoxide Emission Rate, lb/hr	2.38	2.22	1.71	2.10	

Table 1-4 TGU 435 Test Results with TO at 1475 degrees.

INTRODUCTION

Purpose of Test

The purpose of the tests conducted on TGU 435 was to show the unit was in compliance for CO, H₂S and SO₂ emissions in accordance with the appropriate regulations. The test program for the Thermal Oxidizer consisted of measuring CO, CO₂, O₂, SO₂, flow and moisture with Reference Methods (RMs) 1, 2, 3A, 4, 6C, 10, and 15 in accordance with 40 CFR 60 Appendix A. The RMs are discussed in detail in the Performance Test Procedures section of this report. Mr. Greg Burch managed this test program and testing was performed by Messrs. Gus Vargas, George Finlay and Dr. Sam Wang of Golden. Mr. Matt Brewer of LCR coordinated this project with operations.

During the compliance test, the flue gas stream was analyzed for the targeted pollutant and diluent gas concentrations. Testing for CO, CO₂, O₂ and SO₂ consisted of drawing a representative sample of the exhaust gas stream into a conditioning system for removal of moisture. The sample was then allowed to pass into a set of reference method (RM) analyzers, where the concentrations of the targeted pollutant and diluent gas concentrations were determined. These instantaneous concentrations were compiled in a database on a minute-average basis.

Sampling for H₂S was performed by extracting a sample of stack gas through a heated sample system directly to the gas chromatograph where H₂S was speciated from other stack gas components.

Golden Specialty Consulting utilized two separate sampling systems for the performance of the RM 3A and 10 portion this test program. Utilization of two sampling systems provides a higher confidence in the reference method data by demonstrating redundancy between the two independent sampling systems. The first sampling system (System One) was utilized for RM measurements of CO, CO₂, O₂ and SO₂. The second system (System Two) was utilized to obtain a higher confidence level of analysis.

Problems Encountered

Following testing of the first two conditions on March 22, 2005 problems were encountered obtaining repeatable calibrations on the GC at the 0.1 – 1 ppm range selected for analysis. Troubleshooting of this problem revealed a small piece of particulate matter stuck in a fitting on the inlet of the GC sample loop. Even though the low level calibrations were well below published method sensitivity (0.5 ppm), the decision was made to repeat testing at the test conditions which had already been performed (1475 and 1500 degrees TO operating temperature). This testing was repeated on March 26, 2005.

PERFORMANCE TEST PROCEDURES

Instrumental Analyzer Procedure

Stack gas concentrations of CO, CO₂, O₂ and SO₂ were measured with reference method (RM) analyzers. These tests were performed in accordance with the applicable test methods, as outlined in Title 40, Part 60, Appendix A of the Code of Federal Regulations. All instrumentation field data collected during the testing and photocopies of the actual one-minute averaged data are provided in this report.

Sampling System

A gas sample was continuously extracted from the source with a stainless steel probe and channeled through a heated sample line to a gas sample conditioner. The entire sample extraction and delivery system was maintained at a temperature above 225°F to the point the sample enters the sample conditioner. The sample conditioner was employed to decrease the dew point of the combustion gases to a repeatable, stable, low dew point. Moisture was removed from the sample conditioner by peristaltic pump and continuously drained. The conditioned gas then traveled through a network of ¼-inch Teflon® tubing to a manifold in the mobile laboratory. From the manifold, the sample was directed to a set of fluid rotameters, where the flow of the sample gas into the analyzers was maintained at approximately 1 liter per minute.

Analyzer Calibration

The calibration of the instruments was performed using certified gas standards composed of a known concentration of the given component in zero-grade nitrogen. A copy of the certification standards for each of the certified calibration standards used during the testing is included in Appendix E. All of the values obtained during the calibration process, including analyzer calibration, system bias analysis, and drift values, can be found in Appendix C of this report. The analyzer calibration procedures are identical, regardless of the constituent being evaluated by each analyzer. The range used for each analyzer was determined based on the expected concentration levels of the flue gas stream.

The first step in the analyzer calibration was to set the zero point on the analyzer using zero-grade nitrogen. The nitrogen is introduced directly to the back of each analyzer, and the zero potentiometer on the analyzer is adjusted until the proper output from the analyzer is realized. Next, a high-range calibration gas is introduced to each analyzer, with a concentration within the appropriate range of the instrument. The span potentiometer on each analyzer is then adjusted until the output from the analyzer corresponds to the value of the calibration standard. Finally, a mid-range calibration standard, with a concentration approximately one-half of the high-range calibration standards, is used to determine the linearity of the analyzer within the given range. For certain constituents, more than one mid-range value is required. The specific requirements for each constituent are discussed later in this section.

Analyzer Error

The difference between the gas concentration exhibited by the gas analyzer and the known concentration of the calibration gas when the calibration gas is introduced directly to the analyzer is referred to as the analyzer error. The maximum allowable variance for the zero, mid-range, and high-range calibration gases is $\pm 2\%$ of the span. The calibration values and corresponding percent errors associated with this project can be found in Appendix C of this report and are determined by the following equation.

$$E_{analyzer} = \left(\frac{|SpanValue - AnalyzerValue|}{SpanValue} \right) \times 100\%$$

System Bias Check

Following the analyzer calibration procedure, a second test is required to determine the amount of bias, if any, the sampling system has on the known concentrations maintained in the calibration standards. This is important in determining if the system is scrubbing any of the targeted stack gases and if the sampling system has any leaks that could be caused by loose fittings and/or worn tubing. In this procedure, the same calibration standards that were used to perform the analyzer error test are introduced to the sampling system via a separate network of 1/4-inch Teflon® tubing. The calibration gases are allowed to flow through the sampling system to the end of the sample probe, which is plugged to prevent dilution of the calibration standards. The gas is then drawn back through the system by the conditioning pumps, and is once again introduced to the analyzers. The output from the analyzers is recorded, without adjusting the zero- and span potentiometers. The bias created by the sampling system is then determined by the following equation.

$$E_{system} = \left(\frac{|SystemValue - AnalyzerValue|}{SpanValue} \right) \times 100\%$$

The maximum allowable system bias for any one analyzer is $\pm 5\%$ of the corresponding span value. The values determined for this portion of the calibration procedure can be found in Appendix C of this report.

Analyzer Drift

Immediately following each test run, a third test is performed on the system to determine the amount of drift experienced during the test run. In this test, a calibration standard is introduced to the sampling system as in the system bias check. The corresponding value displayed on the analyzer must agree with the initial value for that standard before the test began. The amount of allowable drift is dependent on the constituent being tested for. If the drift value is greater than the allowable value, the test run is considered invalid, and the analyzers must be re-calibrated before continuing the test. The drift for each constituent is determined using the equation below.

$$Drift = \left(\frac{InitialValue - FinalValue}{SpanValue} \right) \times 100\%$$

The maximum allowable calibration drift for any one analyzer is $\pm 3\%$ of the span over the period of each run. The values determined for this portion of the calibration procedure can be found in Appendix C of this report.

EPA Reference Methods

This section provides a detailed description of the individual EPA Reference Methods employed in this test (40 CFR Part 60, Appendix A). A schematic of the sampling system used to perform the test programs on TGU 435 can be found in Figure 1-1. Specifics for each analyzer utilized in these test programs are presented in Appendix A.

Method 1: Sample and Velocity Traverses for Stationary Sources

The location of the traverse points used to determine the velocity of the stack gas within circular stack sources is based on the relation of the stack diameter to the upstream and downstream distances from disturbances. The minimum number of traverse points and the locations on each diameter area was determined from Figure 1-2 and Table 1-2 of Method 1, Appendix A, CFR 60 as presented in Appendix D of this report.

Method 2: Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)

The average stack gas velocity of the source was determined from the measurement of the velocity head with a Type "S" Pitot tube. Based on verification of the face opening alignments, external tubing diameter, and base-to-opening plane distances, a base line coefficient value of 0.84 was assigned to the Pitot tube.

Method 3A: Oxygen and Carbon Dioxide Analysis (Instrumental Analysis)

This method was employed to determine the concentrations of oxygen and carbon dioxide in the flue gas stream with the use of analytical instruments. A sample was continuously extracted from the stack and introduced to a California Analytical analyzer(s) for determination of concentration. The minimum detection limit for this instrument is one-hundredth of one percent (0.01%). An analog-to-digital converter connected a computer to the analyzer to collect the resulting values, and the data was recorded in one-minute averages. Zero-grade Nitrogen and EPA Protocol-1 calibration standards were used to calibrate the analytical instrument. The general guidelines for the calibration of RM analyzer are described above, with the specifics pertaining to the calibration of a O₂ and CO₂ analyzer being set forth in EPA Method 3A (40 CFR Part 60, Appendix A).

Method 4: Determination of Moisture Content

The moisture content of the stack gas was determined in accordance with US EPA Reference Method 4 as shown in Figure 1-3. Stack gas was extracted at a constant rate

Method 4: Determination of Moisture Content

The moisture content of the stack gas was determined in accordance with US EPA Reference Method 4 as shown in Figure 1-3. Stack gas was extracted at a constant rate through a glass condenser train consisting of four impingers in series connected with leak free glass U-tube connections. The extracted sample temperature of the stack gas was reduced and maintained at a temperature below 68°F by use of an ice bath surrounding the glass impingers. The gas sample was extracted through the impinger train using a rotary vane vacuum pump, and the amount of gas sampled was measured with a calibrated dry gas meter. The pump flow was adjusted to maintain flow rate through the dry gas meter in order to obtain at least 21.0 dry, standard cubic feet (dscf) of sample gas during the test run. At the end of each run, the pump was turned off and the final readings were recorded. The amount of moisture in the gas stream was determined by measuring the volume of condensed moisture in impingers one through three and weighing the silica gel impinger to calculate percent moisture in the stack flue gas stream.

Method 6C: Sulfur Dioxide Analysis (Instrumental Analyzer Procedure)

This method was employed to determine the concentration of sulfur dioxide (SO₂) present in the exhaust gas stream. A gas sample was continuously extracted from the stack, and a portion of the sample was introduced to an Advanced Pollution Instrumentation (API) Model 100AH Fluorescent SO₂ analyzer. The minimum detection limit of this analyzer is 0.1 ppm. An analog-to-digital converter connected a computer to the analyzer to collect the resulting values, and the data was recorded in one-minute averages. Zero-grade nitrogen and EPA Protocol-1 calibration standards were used to calibrate the analytical instrument. The general guidelines for the calibration of a RM analyzer are described above, with the specifics pertaining to the calibration of a SO₂ analyzer being set forth in EPA Method 6C (40 CFR Part 60, Appendix A).

Method 10: Carbon Monoxide Analysis (Instrumental Analysis)

This method is employed to determine the concentration of Carbon Monoxide (CO) present in the exhaust gas stream. A gas sample is continuously extracted from the stack, and a portion of the sample is introduced to the RM analyzer for analysis. The instrument is connected to a DAS computer via an analog-to-digital converter for recording the resulting values; this data is recorded in one-minute averages. Zero-grade Nitrogen and EPA Protocol-1 calibration standards are used to calibrate the analytical instrument. The general guidelines for the calibration of a RM analyzer are described above, with the specifics pertaining to the calibration of a CO analyzer being set forth in EPA Method 10 (40 CFR 60, Appendix A).

Method 15: Determination of Hydrogen Sulfide, Carbonyl Sulfide and Carbon Disulfide Emissions from Stationary Sources

A GC/FPD was employed to measure H₂S concentrations on a real time basis. The gas sample was continuously extracted from the stream and routed through a heated sample line to the instrument. During the sample injection, a solenoid valve is switched and the content of the sample loop is introduced onto a column for H₂S separation. When

combusted in a hydrogen-rich flame, sulfur compounds emit light energy characteristic to all sulfur species. The intensity of light is detected by a flame photometric detector (FPD) and the analog signal is then converted to a digital signal and recorded continuously through a data acquisition system (DAS) as a peak on a chromatogram. The response is proportional to the concentration or the amount of sulfur in the gas stream. EZ Chrom software is used to measure the area under the peak and calculates the concentration by comparison to a calibration curve. The calibration curves are generated with NIST-traceable standards. If sample was extracted directly from the source, sample extraction and analysis were conducted on a cycle of about five minutes. The detection limit was approximately 0.1 ppm.

Sampling System

As presented in Figure 1-2, a gas sample was continuously extracted from the source with a stainless steel probe and channeled through a heated 3/8-inch O.D. Teflon® sample line. Digital temperature controller was used to maintained temperature at 250 °F.

GC Calibration

The calibration of the GC/FPD was performed using certified gas standards composed of a known concentration of the given component in zero-grade nitrogen. A copy of the certification standards for each of the certified calibration standards used during the testing is included in Appendix D. The range used for each analyzer was determined based on the expected concentration levels of the flue gas stream.

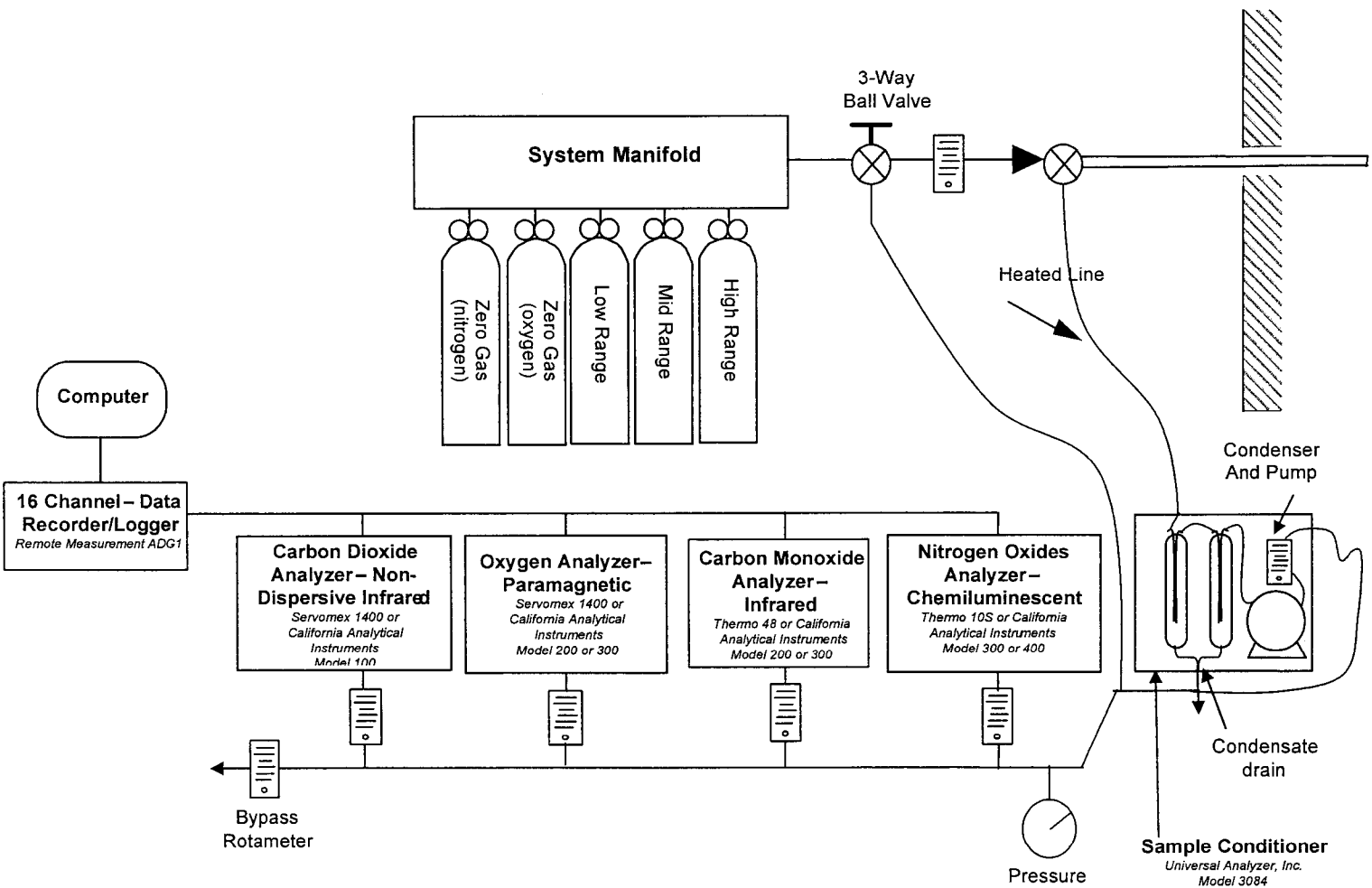


Figure 1-1. Reference Method Analyzer System

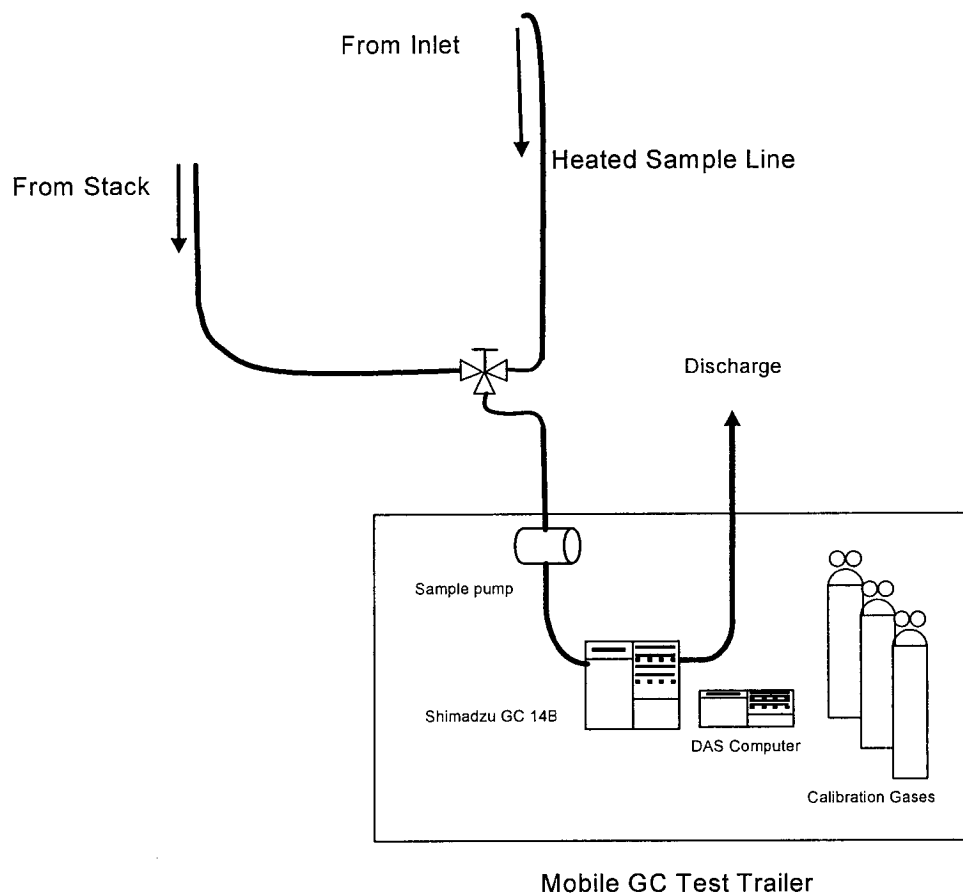


Figure 1-2. Sampling System Schematic for GC/FPD

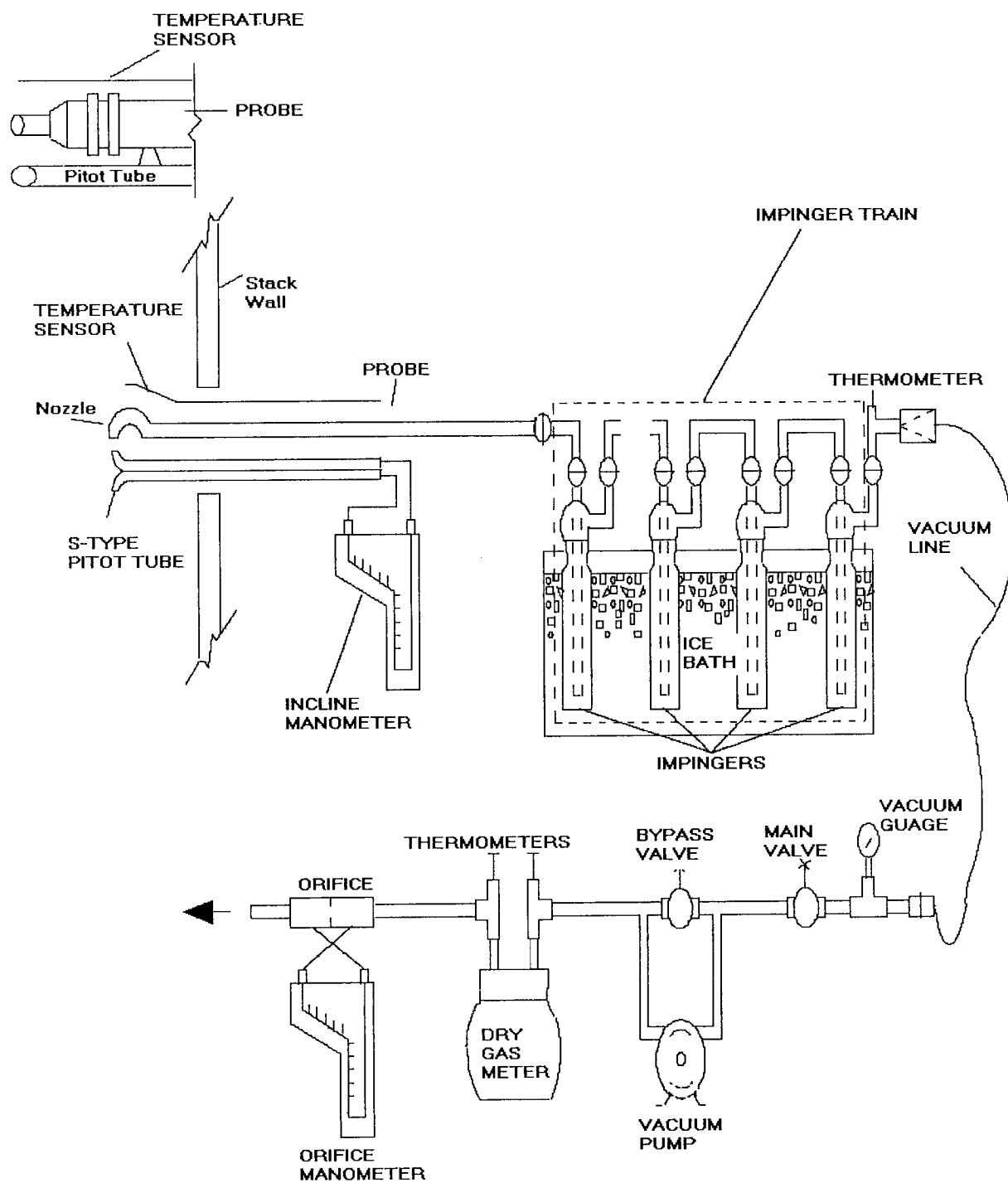


Figure 1-3. Method 4 Moisture Sampling Train

SOURCE INFORMATION

The testing location on TGU 435 exhaust stack consisted of two (2) four inch diameter ports, located approximately ninety-three feet above ground level. The sample port on the 78-inch diameter stack is located approximately 150 feet (23.1 diameters) downstream and 81 feet (12.5 diameters) upstream from the nearest disturbances. This meets the requirements established in the Code of Federal Regulations for sample locations.

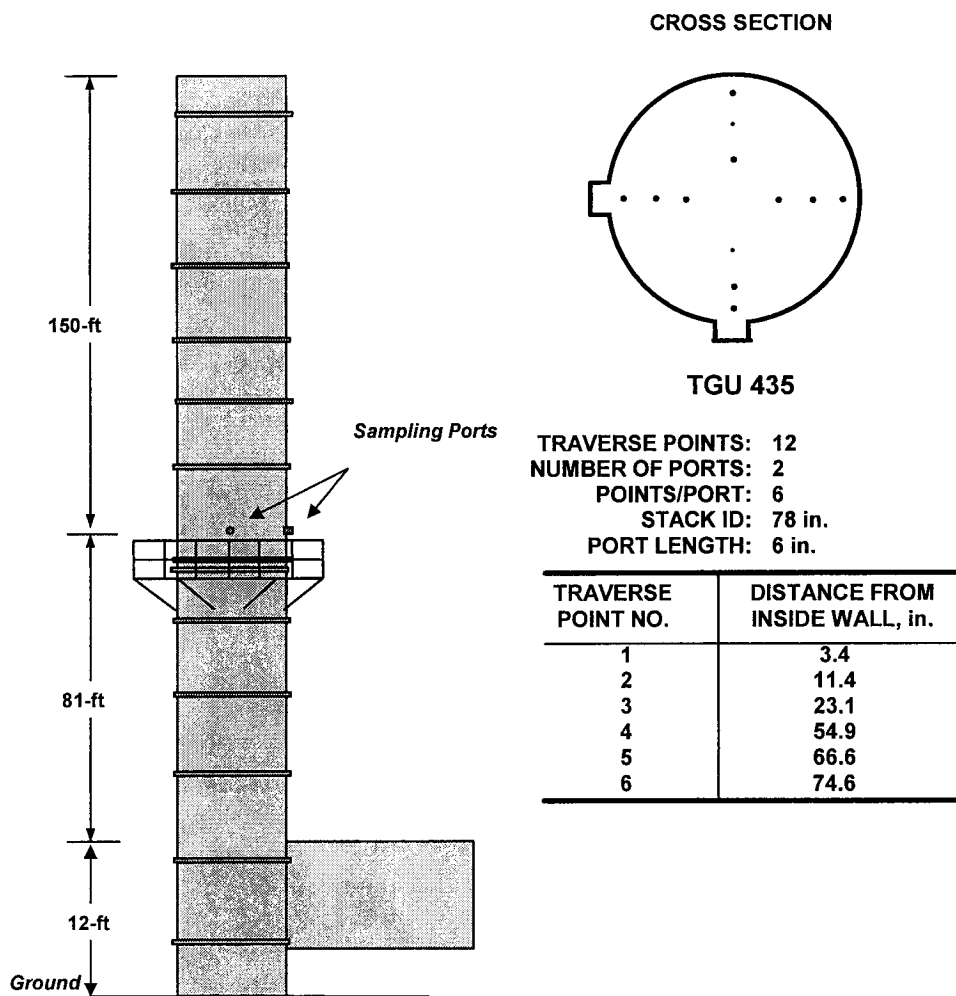


Figure 1-4. Diagram of Testing Location

SAMPLE CALCULATIONS

The following calculations were used in the emission test program for TGU 435 Stack emissions from March 25, 2005. The values below represent the actual emission data from condition 1450 degrees, run 1.

Calculations

Stack Gas Flow Rate

Absolute Stack Gas Pressure (P_s)

$$P_s = P_{bar} + \frac{P_{static}}{13.6}$$

Where: P_{bar} = Barometric pressure
 P_{static} = Static pressure of stack gas (in.)

$$\underline{P_s = 29.65 \text{ in. Hg}}$$

Gas Volume Sampled at Standard Conditions (V_{mstd})

$$V_{mstd} = \left(\frac{528}{29.92} \right) x V_m x Y \left[\frac{P_{bar} + \left(\frac{\Delta H}{13.6} \right)}{T_m} \right]$$

Where: V_m = Actual gas volume sampled
 Y = Gas meter correction factor
 P_{bar} = Measured Barometric Pressure
 ΔH = Differential Pressure across meter orifice
 T_m = Meter temperature at standard conditions

$$\underline{V_{mstd} = 40.784 \text{ ft}^3}$$

Water Vapor Collected at Standard Conditions (V_{wstd})

$$V_{wstd} = 0.04707 x V_{lc}$$

Where: V_{lc} = Liquid volume collected in impingers
 (imp 1-3 mL + imp 4 mg)

$$\underline{V_{wstd}} = 7.02 \text{ ft}^3$$

Stack Gas Moisture Content at Saturation (MF)

$$MF = \frac{\left(10^{\left[8.361 - \left(\frac{1893.5}{T - 27.65} \right) \right]} - 0.5 \right)}{P}$$

Where: T = Stack gas temperature ($^{\circ}\text{K}$)
 P = Stack gas Pressure (mm/Hg)

$$\underline{MF} = 100 \%$$

Measured Stack Gas Moisture Content (B_{ws})

$$B_{ws} = \left(\frac{V_{wstd}}{V_{wstd} + V_{mstd}} \right)$$

$$\underline{B_{ws}} = 14.7 \%$$

Dry Molecular Weight of Stack Gas (M_d)

$$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(100 - \%CO_2 - \%O_2)$$

$$\underline{M_d} = 28.94 \text{ lb/lb-Mole}$$

Wet Molecular Weight of Stack Gas

$$M_s = M_d(1 - B_{ws}) + 18B_{ws}$$

$$\underline{M_s} = 27.33 \text{ lb/lb-Mole}$$

Stack Gas Velocity

$$V_s = (85.49)(C_p)(\text{avg} \sqrt{\Delta P}) \sqrt{\frac{T_s}{(P_s)(M_s)}}$$

Where: C_p = Pitot Coefficient (0.84)
 T_s = Stack Temperature ($^{\circ}\text{R}$)
 P_s = Absolute Stack gas Pressure
 M_s = Molecular weight of Stack gas (wet basis)

$$\underline{V_s} = 28.2 \text{ fps}$$

Volumetric Flow Rate (Actual cubic feet per, wet basis)

$$Q_{stdw} = \left(\frac{528}{29.92} \right) (Q_s) \left(\frac{P_s}{T_s} \right)$$

Where: Q_s = Volumetric flow rate (acfm)
 P_s = Absolute Stack gas Pressure
 T_s = Stack Temperature ($^{\circ}\text{R}$)

$$\underline{Q_{stdw}} = 56,072 \text{ acfm}$$

Volumetric Flow Rate (Standard Conditions, dry basis)

$$Q_{std} = \left(\frac{528}{29.92} \right) x (Q_s) x \left(\frac{P_s}{T_s} \right) x (1 - B_{ws})$$

Where: Q_s = Volumetric flow rate (acfm)
 P_s = Absolute Stack gas Pressure
 T_s = Stack Temperature ($^{\circ}\text{R}$)
 B_{ws} = Stack moisture content

$$\underline{Q_{std}} = 25,752 \text{ dscfm}$$

Calibration Correction

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

Where:

C_{gas} = Effluent gas concentration – ppm, dry basis (ppm, db)

\bar{C} = Average gas concentration of gas analyzer – dry basis (ppm, db)

C_o = Average of initial and final system calibration bias check responses for zero gas (ppm, db)

C_m = Average of initial and final system calibration bias check responses for the upscale calibration gas (ppm, db)

C_{ma} = actual concentration of the upscale calibration gas (ppm, db)

Pollutant Concentration Conversion From ppm to lb/dscf

$$C_{lb / dscf} = C_{ppmvd} \left(\frac{MW}{385.26 \times 10^6} \right)$$

Where: MW = Molecular Weight of Pollutant (64 for SO_2)

385.26×10^6 = Conversion from grams/mole to lb/ft^3

$$\underline{SO_2 lb/dscf} = 16.69 \times 10^6 \text{ lb/dscf}$$

TEST RESULTS

A complete summary of the compliance testing performed on TGU 435 are listed on the following pages. Appendices presenting lists of equipment used on this project, resumes of key personnel, all data collected in the field, calculated data, and calibration data are included in the Appendix section of this report.

Plant	LCR	Address	HOUSTON TEXAS		
Location	TGU 435	Personnel	GB SW		
Run Number		1	2	3	Average
Date	Test Date	3/25/2005	3/25/2005	3/25/2005	
Start	Run Start Time	10:35	12:00	13:20	
	Run Finish Time	11:35	13:00	13:18	
	Net Traversing Points	12	12	12	
Θ	Net Run Time, minutes	60	60	60	60
Y	Dry Gas Meter Calibration Factor	0.999	0.999	0.999	0.999
P _{Br}	Barometric Pressure, inches of Mercury	29.77	29.77	29.77	29.77
ΔH	Average orifice meter Differential, inches H ₂ O	1.70	1.70	1.70	1.70
V _m	Dry Gas Meter Volume Sampled actual, acf	43.532	41.788	37.620	40.980
t _m	Average Dry Gas Meter Temperature, °F	102.54	100.13	103.29	101.99
V _{mstd}	Dry Gas Meter Volume Sampled standard, dscf	40.784	39.319	35.198	38.43
V _{lc}	Total Moisture Liquid collected, ml	149.1	142.7	137.2	143.0
V _{wstd}	Volume of Water Vapor, standard cubic feet	7.02	6.72	6.46	6.73
% H ₂ O	Moisture Content of Stack Gas, %	14.7	14.6	15.5	14.9
% H ₂ O _{sat}	Moisture Saturation at Stack Gas Temperature, %	100.0	100.0	100.0	100.0
M _{fd}	Dry Mole Fraction	0.853	0.854	0.845	0.851
%CO ₂	Carbon Dioxide, %	5.21	5.24	5.25	5.235
%O ₂	Oxygen, %	2.67	2.53	2.38	2.529
% CO+ N ₂	Carbon Monoxide & Nitrogen, %	92.1	92.2	92.4	92.2
F _o	Fuel Factor	3.50	3.50	3.52	3.51
M _d	Dry Molecular Weight, lb/lb-Mole	28.94	28.94	28.94	28.94
M _s	Wet Molecular weight, lb/lb-Mole	27.33	27.34	27.24	27.31
P _g	Flue Gas Static Pressure, inches of H ₂ O	-1.6	-1.60	-1.60	-1.60
P _s	Absolute Flue Gas Pressure, inches of Mercury	29.65	29.65	29.65	29.65
t _s	Average Stack Gas Temperature, °F	512.1	512.6	497.0	507.22
ΔP _{avg}	Average Velocity Head, inches of H ₂ O	0.128	0.128	0.141	0.133
V _s	Average Stack Gas Velocity, feet/second	28.2	28.2	29.4	28.6
A _s	Stack Area, square feet	33.183	33.183	33.183	33.183
Q _{sd}	Dry Volumetric Flow Rate, dry scfm	25,752	25,776	26,906	26,145
Q _{sw}	Wet Volumetric Flow Rate, wet scfm	30,184	30,180	31,843	30,735
Q _{aw}	Actual Wet Volumetric Flue Gas Flow Rate, acfm	56,072	56,093	58,585	56,917
SO ₂ ppm	Sulfur Dioxide Concentration, ppm	100.5	112.0	155.2	122.5
SO ₂ ppm@o%O ₂	Sulfur Dioxide Concentration, ppm@0%O ₂	115.2	127.4	175.1	139.2
SO ₂ lb/dscf	Sulfur Dioxide Concentration, lb/dscf x 10E -6	16.69	18.60	25.77	20.35
SO ₂ lb/hr	Sulfur Dioxied Emission Rate, lb/hr	25.78	28.77	41.61	32.05
H ₂ S ppm	Hydrogen Sulfide Concentration, ppm	< .10	< .10	< .10	< .10
H ₂ S lb/dscf	Hydrogen Sulfide Concentration, lb/dscf x 10E-6	0.0089	0.0089	0.0089	0.0089
H ₂ S lb/hr	Hydrogen Sulfide Emission Rate, lb/hr	0.014	0.014	0.014	0.014
CO ppm	Carbon Monoxide Concentration, ppm	70.4	67.3	62.4	66.7
CO lb/dscf	Carbon Monoxide Concentration, lb/dscf x 10E-6	5.12	4.89	4.53	4.85
CO lb/hr	Carbon Monoxide Emission Rate, lb/hr	7.90	7.56	7.32	7.59

Table 1-5 TGU 435 Test Summary with TO at 1450 degrees.

Plant		Address			
LCR		HOUSTON TEXAS			
Location		Personnel			
TGU 435		GB SW			
Run Number		1	2	3	Average
Date	Test Date	3/25/2005	3/25/2005	3/25/2005	
Start	Run Start Time	16:20	17:35	18:48	
	Run Finish Time	17:20	18:35	19:48	
	Net Traversing Points	12	12	12	
⊖	Net Run Time, minutes	60	60	60	60
Y	Dry Gas Meter Calibration Factor	0.999	0.999	0.999	0.999
P _{Br}	Barometric Pressure, inches of Mercury	29.7	29.70	29.70	29.70
ΔH	Average orifice meter Differential, inches H ₂ O	2.00	1.70	1.70	1.80
V _m	Dry Gas Meter Volume Sampled actual, acf	23.225	42.150	38.470	34.615
t _m	Average Dry Gas Meter Temperature, °F	101.58	98.79	95.67	98.68
V _{mstd}	Dry Gas Meter Volume Sampled standard, dscf	21.761	39.661	36.402	32.61
V _{lc}	Total Moisture Liquid collected, ml	79.3	144.8	135.5	119.9
V _{wstd}	Volume of Water Vapor, standard cubic feet	3.73	6.82	6.38	5.64
% H ₂ O	Moisture Content of Stack Gas, %	14.6	14.7	14.9	14.7
% H ₂ O _{sat}	Moisture Saturation at Stack Gas Temperature, %	100.0	100.0	100.0	100.0
M _{fd}	Dry Mole Fraction	0.854	0.853	0.851	0.853
%CO ₂	Carbon Dioxide, %	5.22	5.10	5.13	5.150
%O ₂	Oxygen, %	2.41	2.40	2.38	2.396
% CO+ N ₂	Carbon Monoxide & Nitrogen, %	92.4	92.5	92.5	92.5
F _o	Fuel Factor	3.54	3.63	3.61	3.59
M _d	Dry Molecular Weight, lb/lb-Mole	28.93	28.91	28.92	28.92
M _s	Wet Molecular weight, lb/lb-Mole	27.33	27.31	27.29	27.31
P _g	Flue Gas Static Pressure, inches of H ₂ O	-1.6	-1.60	-1.60	-1.60
P _s	Absolute Flue Gas Pressure, inches of Mercury	29.58	29.58	29.58	29.58
t _s	Average Stack Gas Temperature, °F	498.6	499.8	495.0	497.78
ΔP _{avg}	Average Velocity Head, inches of H ₂ O	0.132	0.131	0.133	0.132
v _s	Average Stack Gas Velocity, feet/second	28.4	28.3	28.5	28.4
A _s	Stack Area, square feet	33.183	33.183	33.183	33.183
Q _{sd}	Dry Volumetric Flow Rate, dry scfm	26,245	26,143	26,373	26,253
Q _{sw}	Wet Volumetric Flow Rate, wet scfm	30,747	30,635	30,994	30,792
Q _{aw}	Actual Wet Volumetric Flue Gas Flow Rate, acfm	56,458	56,321	56,738	56,506
SO ₂ ppm	Sulfur Dioxide Concentration, ppmd	109.4	107.7	108.6	108.6
SO ₂ ppm@0%O ₂	Sulfur Dioxide Concentration, ppmd@0%O ₂	123.7	121.7	122.5	122.6
SO ₂ lb/dscf	Sulfur Dioxide Concentration, lb/dscf x 10E -6	18.18	17.90	18.03	18.04
SO ₂ lb/hr	Sulfur Dioxied Emission Rate, lb/hr	28.63	28.07	28.54	28.41
H ₂ S ppm	Hydrogen Sulfide Concentration, ppmd	< .10	< .10	< .10	< .10
H ₂ S lb/dscf	Hydrogen Sulfide Concentration, lb/dscf x 10E-6	0.0089	0.0089	0.0089	0.0089
H ₂ S lb/hr	Hydrogen Sulfide Emission Rate, lb/hr	0.014	0.014	0.014	0.014
CO ppm	Carbon Monoxide Concentration, ppmd	83.3	65.7	70.9	73.3
CO lb/dscf	Carbon Monoxide Concentration, lb/dscf x 10E-6	6.06	4.77	5.15	5.33
CO lb/hr	Carbon Monoxide Emission Rate, lb/hr	9.53	7.49	8.16	8.39

Table 1-6 TGU 435 Test Summary with TO at 1440 degrees.

Plant	LCR	Address	HOUSTON TEXAS		
Location	TGU 435	Personnel	GB SW		
Run Number		1	2	3	Average
Date	Test Date	3/26/2005	3/26/2005	3/26/2005	
Start	Run Start Time	8:00	9:15	10:32	
	Run Finish Time	9:00	10:15	11:32	
	Net Traversing Points	12	12	12	
Θ	Net Run Time, minutes	60	60	60	60
Y	Dry Gas Meter Calibration Factor	0.999	0.999	0.999	0.999
P_{Br}	Barometric Pressure, inches of Mercury	29.7	29.70	29.70	29.70
ΔH	Average orifice meter Differential, inches H ₂ O	1.70	1.70	1.70	1.70
V_m	Dry Gas Meter Volume Sampled actual, acf	40.675	40.205	41.735	40.872
t_m	Average Dry Gas Meter Temperature, °F	81.92	86.33	88.38	85.54
V_{mstd}	Dry Gas Meter Volume Sampled standard, dscf	39.465	38.694	40.017	39.39
V_{lc}	Total Moisture Liquid collected, ml	130.7	141	150.8	140.8
V_{wstd}	Volume of Water Vapor, standard cubic feet	6.15	6.64	7.10	6.63
% H ₂ O	Moisture Content of Stack Gas, %	13.5	14.6	15.1	14.4
% H ₂ O _{sat}	Moisture Saturation at Stack Gas Temperature, %	100.0	100.0	100.0	100.0
M_{fd}	Dry Mole Fraction	0.865	0.854	0.849	0.856
%CO ₂	Carbon Dioxide, %	5.21	5.13	5.23	5.194
%O ₂	Oxygen, %	2.48	2.47	2.44	2.466
% CO+ N ₂	Carbon Monoxide & Nitrogen, %	92.3	92.4	92.3	92.3
F _o	Fuel Factor	3.53	3.59	3.53	3.55
M_d	Dry Molecular Weight, lb/lb-Mole	28.93	28.92	28.94	28.93
M_s	Wet Molecular weight, lb/lb-Mole	27.46	27.32	27.29	27.36
P_g	Flue Gas Static Pressure, inches of H ₂ O	-1.6	-1.60	-1.60	-1.60
P_s	Absolute Flue Gas Pressure, inches of Mercury	29.58	29.58	29.58	29.58
t_s	Average Stack Gas Temperature, °F	503.8	505.0	501.0	503.25
ΔP_{avg}	Average Velocity Head, inches of H ₂ O	0.093	0.091	0.146	0.110
v_s	Average Stack Gas Velocity, feet/second	23.8	23.6	29.9	25.8
A_s	Stack Area, square feet	33.183	33.183	33.183	33.183
Q_{sd}	Dry Volumetric Flow Rate, dry scfm	22,226	21,705	27,321	23,751
Q_{sw}	Wet Volumetric Flow Rate, wet scfm	25,691	25,428	32,167	27,762
Q_{aw}	Actual Wet Volumetric Flue Gas Flow Rate, acfm	47,428	47,004	59,461	51,298
SO ₂ ppm	Sulfur Dioxide Concentration, ppmvd	100.0	98.7	99.3	99.3
SO ₂ ppm@0%O ₂	Sulfur Dioxide Concentration, ppmvd@0%O ₂	113.5	112.0	112.4	112.6
SO ₂ lb/dscf	Sulfur Dioxide Concentration, lb/dscf x 10E -6	16.61	16.40	16.49	16.50
SO ₂ lb/hr	Sulfur Dioxide Emission Rate, lb/hr	22.15	21.36	27.04	23.52
H ₂ S ppm	Hydrogen Sulfide Concentration, ppmvd	< .10	< .10	< .10	< .10
H ₂ S lb/dscf	Hydrogen Sulfide Concentration, lb/dscf x 10E-6	0.0089	0.0089	0.0089	0.0089
H ₂ S lb/hr	Hydrogen Sulfide Emission Rate, lb/hr	0.014	0.014	0.017	0.015
CO ppm	Carbon Monoxide Concentration, ppmvd	7.9	6.1	6.5	6.8
CO lb/dscf	Carbon Monoxide Concentration, lb/dscf x 10E-6	0.57	0.44	0.47	0.49
CO lb/hr	Carbon Monoxide Emission Rate, lb/hr	0.76	0.57	0.77	0.70

Table 1-7 TGU 435 Test Summary with TO at 1500 degrees.

Plant	LCR	Address	HOUSTON TEXAS			
Location	TGU 435	Personnel	GB SW			
Run Number		1	2	3	Average	
Date	Test Date	3/26/2005	3/26/2005	3/26/2005		
Start	Run Start Time	12:08	13:20	14:33		
	Run Finish Time	13:08	14:20	15:33		
	Net Traversing Points	12	12	12		
Θ	Net Run Time, minutes	21	21	21	21	
Y	Dry Gas Meter Calibration Factor	0.999	0.999	0.999	0.999	
P _{Br}	Barometric Pressure, inches of Mercury	29.7	29.70	29.70	29.70	
ΔH	Average orifice meter Differential, inches H ₂ O	1.70	1.70	1.70	1.70	
V _m	Dry Gas Meter Volume Sampled actual, acf	44.115	43.395	44.295	43.935	
t _m	Average Dry Gas Meter Temperature, °F	91.38	92.83	88.63	90.94	
V _{mstd}	Dry Gas Meter Volume Sampled standard, dscf	42.069	41.273	42.452	41.93	
V _{lc}	Total Moisture Liquid collected, ml	128.2	150	126.2	134.8	
V _{wstd}	Volume of Water Vapor, standard cubic feet	6.03	7.06	5.94	6.35	
% H ₂ O	Moisture Content of Stack Gas, %	12.5	14.6	12.3	13.1	
% H ₂ O _{sat}	Moisture Saturation at Stack Gas Temperature, %	100.0	100.0	100.0	100.0	
M _{fd}	Dry Mole Fraction	0.875	0.854	0.877	0.869	
% CO ₂	Carbon Dioxide, %	5.10	5.08	5.02	5.067	
% O ₂	Oxygen, %	2.42	2.44	2.46	2.439	
% CO + N ₂	Carbon Monoxide & Nitrogen, %	92.5	92.5	92.5	92.5	
F _o	Fuel Factor	3.62	3.64	3.67	3.64	
M _d	Dry Molecular Weight, lb/lb-Mole	28.91	28.91	28.90	28.91	
M _s	Wet Molecular weight, lb/lb-Mole	27.54	27.32	27.56	27.47	
P _g	Flue Gas Static Pressure, inches of H ₂ O	-1.6	-1.60	-1.60	-1.60	
P _s	Absolute Flue Gas Pressure, inches of Mercury	29.58	29.58	29.58	29.58	
t _s	Average Stack Gas Temperature, °F	505.1	505.2	500.0	503.42	
ΔP _{avg}	Average Velocity Head, inches of H ₂ O	0.139	0.133	0.143	0.138	
v _s	Average Stack Gas Velocity, feet/second	29.1	28.5	29.5	29.0	
A _s	Stack Area, square feet	33.183	33.183	33.183	33.183	
Q _{std}	Dry Volumetric Flow Rate, dry scfm	27,430	26,181	27,966	27,192	
Q _{sw}	Wet Volumetric Flow Rate, wet scfm	31,364	30,660	31,879	31,301	
Q _{aw}	Actual Wet Volumetric Flue Gas Flow Rate, acfm	57,982	56,685	58,714	57,794	
SO ₂ ppm	Sulfur Dioxide Concentration, ppm	160.3	110.0	103.1	124.5	
SO ₂ ppm@0%O ₂	Sulfur Dioxide Concentration, ppm@0%O ₂	181.3	124.5	116.9	140.9	
SO ₂ lb/dscf	Sulfur Dioxide Concentration, lb/dscf x 10E-6	26.63	18.27	17.13	20.68	
SO ₂ lb/hr	Sulfur Dioxide Emission Rate, lb/hr	43.83	28.71	28.74	33.76	
H ₂ S ppm	Hydrogen Sulfide Concentration, ppm	< .10	< .10	< .10	< .10	
H ₂ S lb/dscf	Hydrogen Sulfide Concentration, lb/dscf x 10E-6	0.0089	0.0089	0.0089	0.0089	
H ₂ S lb/hr	Hydrogen Sulfide Emission Rate, lb/hr	0.015	0.014	0.015	0.014	
CO ppm	Carbon Monoxide Concentration, ppm	19.9	19.4	14.1	17.8	
CO lb/dscf	Carbon Monoxide Concentration, lb/dscf x 10E-6	1.44	1.41	1.02	1.29	
CO lb/hr	Carbon Monoxide Emission Rate, lb/hr	2.38	2.22	1.71	2.10	

Table 1-8 TGU 435 Test Summary with TO at 1475 degrees.

APPENDIX A – TESTING EQUIPMENT USED

Testing Equipment

Provided in the table below is a list of all testing equipment used in the compliance testing of TGU 435.

Golden Specialty Consulting Trailer #5			
Constituent	Make/ Model	Operating Range	Serial Number
CO #1	CA Model 300	0-200 ppm	1K09008
O₂#1	CA Model 300	0-25 %	1K09008
CO₂ #1	CA Model 300	0-25%	1K09008
SO₂	API Model 100AH	0-200 ppm	111
CO#2	CA Model 200	0-200 ppm	1L12019
O₂ #2	CA Model 200	0-25%	1L12019
Golden Specialty Consulting Trailer #7			
H₂S	Shimadzu GC-14B	0- 1 ppm	C10734117085
Stack Equipment			
Velocity	Apex	0 – 10" H ₂ O	GST 102A
Moisture	Millenium	∞	2030
Temperature	Apex	0 – 2,000° F	GST 102TC

Table 1-9. Testing Equipment Used in the TGU 435 Compliance

APPENDIX B – PERSONNEL

Scott B. Swiggard

President

Professional Experience Summary

- Broad background in environmental compliance and regulatory issues. Has directed projects associated with air permitting, groundwater contamination, air toxins emissions control, hazardous materials control and reporting, wastewater process control (metals removal), energy conservation, industrial ventilation, noise control, bioremediation, and storm water control.
- Extensive background in emission testing, with over 1,300 tests personally conducted and/or supervised.
- Responsible for the continued development of testing capabilities and their research and development.
- Provides project management for testing at assigned client's facilities. Provides field support to the project managers on testing protocols and methods.
- Responsible for verification and validation on test data as part of a Quality Assurance/ Quality Control Program.

Work Experience

GOLDEN SPECIALTY CONSULTING, LTD. (January 1997 - Present)

Position: President

RAMCON Environmental Corporation (March 1995 - January 1997)

Position: Gulf Coast Division Manager

Ark Latex Environmental Consultants, Inc. (April 1992 - February 1995)

Position: Environmental Engineer

Alloy Piping Products, Inc. (September 1990 - April 1992)

Position: Industrial Engineer

United States Air Force (June 1980 - September 1990)

Position: Quality Assurance Inspector/ Evaluator

Professional Affiliations

Source Evaluation Society (SES) and Air and Waste Management Association (AWMA)

Education

Bachelor of Science in Industrial Engineering, Southern Illinois University, 1991

Associate degree in Aviation Maintenance Technology, Community College of the Air Force, 1990

Graduate of the United States Air Force Air University in Management/Supervision, 1989

Licensed airframe and power plant mechanic

FTIR 80 hour training course conducted by Dr. Robert Spellicy, IMACC, Round Rock, Texas

Source Sampling and CEMS Workshop, Walter Smith & Associates, 2003 and 2004

Karen L. Swiggard

Vice President/Quality Assurance Officer

Professional Work Summary

- Broad background in Safety, environmental compliance and regulatory issues. Has managed projects associated with Hazard Communication, Blood borne pathogens, Tuberculosis Infection Control, Respiratory Protection, Personal Protective Equipment, Life Safety Code, Fire Safety, Electrical Safety, Back Injury Protection, Workplace Violence, Employee Injury and Illness Reporting, Emergency Response, Hazardous Drugs, Ventilation and Indoor Air Quality, and Joint Commission on Accreditation of Healthcare Organizations (JCAHO).
- Extensive background in employee Training in areas of: Hazard Communication, Blood borne pathogens, Tuberculosis Infection Control, Respiratory Protection, Personal Protective Equipment, Fire Safety, Electrical Safety, Back Injury Prevention, Emergency Response, and Computer Ergonomics.
- Developed and presented intensive training courses for Health and Safety professionals at all NASA centers including: Occupational Ergonomics and Blood borne Pathogens.
- While working for Texas Water Commission (now Texas Natural Resource Conservation Commission, TNRCC). She was responsible for the enforcement of RCRA program in Texas including the inspection and evaluation of RCRA programs at various chemical plants and other facilities handling hazardous waste. Was a key member for emergency response for chemical spills and accidents.
- Managed environment of care accreditation process of Kelsey-Seybold, Houston Texas, for JCAHO in which it was awarded.

Work Experience

GOLDEN SPECIALTY CONSULTING, LTD. (February 1999 - Present)

Position: Vice President

Kelsey-Seybold Clinic (June 1995 – February 1999)

Position: Manager of Environmental Health and Safety

NASA-Johnson Space Center (April 1986 - June 1995)

Position: Health & Safety Training Specialist/Industrial Hygienist

Texas Water Commission (February 1984 – April 1986)

Position: Environmental Quality Specialist

Professional Affiliations

Source Evaluation Society (SES)

Air and Waste Management Association (AWMA)

American Industrial Hygiene Association (AIHA)

Education

Bachelor of Science in Environmental Science, University of Houston, 1984

Source Sampling and CEMS Workshop, Walter Smith & Associates, 2002

Greg D. Burch

Manager, Emissions Testing

Professional Experience Summary

- Responsible for designing, planning and managing sampling programs, daily assignments of field testing crews, sample analysis, data reduction, QA/QC reviews, and reporting activities.
- Broad background in environmental compliance and regulatory issues. Mr. Burch has extensive experience designing and managing test programs to meet federal, state and local compliance demonstration requirements.
- Participated in or supervised over 1,500 tests across twenty-three states and Puerto Rico, including 10 Hazardous Waste Incinerator Trial Burns, 2 EPA Superfund Cleanup Sites, and compliance testing performed as an agent for the South Coast Air Quality Management District (SCAQMD).
- Sampling experience includes flow stream characterization and monitoring of a number of types of flow streams for engineering purposes; emissions sampling for regulatory compliance demonstration; emissions sampling for systems audit requirements of continuous emission monitoring systems (CEMS) and predictive emissions monitoring systems (PEMS).
- Assist clients in troubleshooting and repairing existing emissions monitoring systems, or designing and implementing new systems.

Work Experience

GOLDEN SPECIALTY CONSULTING, LTD. (April 2000 - Present)

Position: Manager, Emissions Testing

ARI Environmental, Inc. (May 1996 – April 2000)

Position: Project Manager

RMT – Jones and Neuse, Inc. (May 1994 – May 1996)

Position: Program Director

Tracer Technology Division of Team, Inc. (May 1989 - May 1994)

Position: Staff Engineer

United States Navy (March 1983 - March 1989)

Position: Avionics Repair Technician Second Class / Work Center Supervisor

Professional Education

Kingwood College, Kingwood, TX, Currently Enrolled, 40 hrs – 4.0 GPA

Southwest Missouri State Electronics Vocational Technical School

Aviation Fundamentals Class A School – United States Navy

Basic Electronics and Electricity – United States Navy

Avionics Repair Class A School – United States Navy

Advanced First Term Avionics – United States Navy

Versatile Avionics Shop Test (VAST) Operator – United States Navy

Miniature Component Repair School – United States Navy

Micro-level Circuit Board/Solder Repair, Level F Certified – United States Navy

Versatile Avionics Shop Test – Program Set Analyst School – United States Navy

Quality Assurance Collateral Duty Inspector Certified – United States Navy

40 Hour Hazwoper Training 29 CFR 1910.120

Fundamentals of Instructor Training – American Red Cross

Visible Emissions Certified (EPA Method 9)

Source Sampling and CEMS Workshop, Walter Smith & Associates, 2003 and 2004

SkillPath® Seminars, Project Management Workshop, 2003

LaShandra Latin

Technical Writer

Professional Experience Summary

- Experience with EPA testing regulations, including 40 CFR, Part 60 and Part 75.
- CEM instrumentation projects include continuous analysis for carbon monoxide (CO), total oxides of nitrogen (NO_x), oxygen (O₂) and carbon dioxide (CO₂).
- Knowledgeable in all required regulations and methodologies for the testing and analysis of stack gas velocity and moisture content analysis.
- Knowledgeable in the testing requirements and procedures for the testing and analysis of Predictive Emissions monitoring systems (PEMS) and Continuous Emission monitoring systems (CEMS).
- Responsible for coordinating, authoring, and reviewing reports for clients.

Work Experience

GOLDEN SPECIALTY CONSULTING, LTD. (August 2004 – Present)
Position: Technical Writer

NORTH FOREST I.S.D- OAK VILLAGE MIDDLE SCHOOL (January 2001-May 2003)
Position: Math Teacher

PHILLIPS PETROLEUM COMPANY, (May 2000- August 2000)
Position: Mechanical Engineering Intern

Education

Bachelor of Science in Mechanical Engineering, Prairie View A&M University, 2000
AutoCAD 2002 Certification, North Harris Community College, 2003
Solid Works 2002 Certification, North Harris Community College, 2003
Source Sampling and CEMS Workshop, Walter Smith & Associates, 2004

Dr. Shyh-Yau “Sam” Wang

Project Supervisor

Professional Experience Summary

- Experience with EPA testing regulations, including 40 CFR, Part 60 and Part 75.
- Specialized experience in air quality analysis and development of pollution controlling systems for particulate, SO_x, NO_x, CO, VOCs, and hydrocarbons.
- Expertise in designing remedial technologies of bioremediation, immobilization, soil washing, ion exchange, and carbon adsorption, as well as in air stripping for metals, petroleum hydrocarbons, VOCs, and NAPLs waste.
- Experience with Phase I and II investigation, risk assessment and site closure compliance of CERCLA and RCRA.
- Familiar with computer programs to model pollutant transport in water, air, soil and groundwater. Dr. Wang developed an analytical model to calculate the contaminant concentration change of a remedial process unit by considering mechanisms of absorption, dissolution, and degradation.
- Experience with EPA, AWWA, and ASTM methods for design water collection, rapid mixing, flocculation, filtration, carbon adsorption, and activated sludge units for domestic wastewater, petroleum produced water and industrial wastewater. Dr. Wang is also familiar with drinking water byproducts formation mechanisms and control processes.
- Proficient in FTIR analysis.

Work Experience

GOLDEN SPECIALTY CONSULTING, LTD. (July 2003- Present)
Position: Project Supervisor

CITY OF HOUSTON, HOUSTON, TX (2002-2003)
Position: Hydraulic/Environmental Engineer

UNIVERSITY OF HOUSTON (1990-2002)
Position: Research Associate (1998-2002)
Position: Research Assistant (1990-1998)

INDUSTRIAL TECHNOLOGY RESEARCH INSTITUTE, TAWAIN (1989-1990)
Position: Engineer

CHINESE CORPS OF ENGINEERS (1987-1989)
Position: Second Lieutenant

Education

Ph.D. in Environmental Engineering, University of Houston, 1998
Master of Science in Environmental Engineering, University of Houston, 1993
Bachelor of Science in Environmental Engineering, National Chung-Hsing University, Taiwan, 1987
Computer Skills in Windows, MS DOS, MAC OS, HTML, BASIC, FORTRAN, AutoCAD, Corel, Adobe
Texas E.I.T. Certificate
Source Sampling and CEMS Workshop, Walter Smith & Associates, 2003 and 2004

Gus Vargas

Environmental Tech I

Professional Experience Summary

- Proficient with instrumentation methods: carbon monoxide (CO), total oxides of nitrogen (NO_x), oxygen (O₂), and carbon dioxide (CO₂), total hydrocarbons (THC), ammonia (NH₃), and sulfur dioxide (SO₂).
- Knowledgeable in source compliance testing and emission sampling methodologies for stack gas velocity, moisture, and a variety of isokinetic (wet chemistry/particulate) testing.
- Experience in performing maintenance and calibrations on a variety of air testing equipment.
- Experience with EPA testing regulations, including 40 CFR, Part 60 and Part 75.
- Knowledgeable in testing requirements and procedures for the testing and analysis of Predictive Emissions monitoring systems (PEMS) in accordance with Title 30 of the Texas Administrative Code, Chapter 117.
- Knowledgeable in OSHA, ISO 9001 regulations.
- Computer skills include: Windows 9x, Windows 2000, Excel, Word

Work Experience

GOLDEN SPECIALTY CONSULTING, LTD. (October 2004-present)
Position: Environmental Consultant Tech I

CLEAN AIR ENGINEERING (January 2004-October 2004)
Position: Field Technician/Equipment Technician

AIRTECH ENVIRONMENTAL SERVICES, INC. (August 2001-November 2003)
Position: Field Technician/Equipment Technician

Education

Law Degree Program, Universidad Autonoma de Nuevo Leon, Monterrey, Mexico
HM 232 Hazardous Materials security training
Basic Plus Training (ARSC)
Basic Plus Training (H.A.C.S.C.)
Man-Lift Training (3/1/05)

George Finley Jr.

Chemist

Professional Experience Summary

- Experience with EPA testing regulations, including 40 CFR, Part 60 and Part 75 as well as TCEQ Sampling Procedures.
- Proficient with instrumentation methods: carbon monoxide (CO), total oxides of nitrogen (NO_x), oxygen (O₂), and carbon dioxide (CO₂), total hydrocarbons (THC), and sulfur dioxide (SO₂).
- Knowledgeable in source compliance testing and emission sampling methodologies for stack gas velocity, moisture, and a variety of isokinetic (wet chemistry/particulate) testing.
- Knowledgeable in the testing requirements and procedures for the testing and analysis of Predictive Emissions monitoring systems (PEMS) and Continuous Emission Monitoring Systems (CEMS).
- Experience in supervision and coordination of air emissions, performance, and process evaluation test projects for major domestic and international petrochemical and industrial clients.
- Experience in assisting clients in emission performance and interpreting applicable state, federal and international regulations.
- Experience with conducting and coordinating laboratory analysis and in writing compliance test reports.
- Experience in performing maintenance and calibrations on a variety of air testing equipment.

Work Experience

GOLDEN SPECIALTY CONSULTING, LTD. (October 2004 - Present)

Position: Chemist

REAGENS USA (October 2005 – October 2003)

Position: Lab Supervisor/ LAN Administrator

VARIAN INC. (September 2000 – March 2002)

Position: GC Technical Representative/ Product Specialist

HUNTSMAN CHEMICAL/ NOVA CHEMICAL CORPORATION (July 1994 - August 1999)

Position: Chemist

HALLIBURTON/ NUS/ PACE (July 1989 – July 1994)

Position: GC-GC/MS Chemist, Inorganic Lab Supervisor, Inorganic Chemist

Education

B.A. in Chemistry, University of Houston

APPENDIX C – CALIBRATION DATA

Calibration Gas & Analyzer Configuration Data		CO ₂	SO ₂	CO	O ₂
Mfg. And Model No.:	CA300	API 100AH	CA300	CA300	
Serial Number:	1K09008	111	1K09008	1K09008	
	20	200	200	25	
Calibration span:	20	200	108	11	
Zero Gas	Cyl #: AAL7981	AAL7981	AAL7981	AAL7981	AAL7981
	value: 0.00	0.0	0.0	0.0	0.00
Low Calibration Gas	Cyl #:		ALM057489		
	value:		30.1		
Mid Calibration Gas	Cyl #: ALM057489	ALM049276	ALM000935	ALM001211	
	value: 7.01	98.87	58.1	4.96	
High Calibration Gas	Cyl #: ALM060663	ALM045194	ALM00641	ALM07660	
	value: 17.9	181	90.2	9.08	
Bias Gas Used	mid	HIGH	low	mid	
Calibration Error					
Zero Reading		0.26	1.10	1.00	0.00
low reading				31.80	
Mid Reading		6.89	96.70	60.50	4.98
High Reading		17.81	180.80	92.30	9.10
Run 1		CO ₂	SO ₂	CO	O ₂
Pretest Bias	Zero Reading	0.15	0.10	1.00	-0.03
	Mid Reading	6.81	178.00	31.80	4.96
	Zero Bias	0.6	0.5	0.0	0.3
	Span Bias	0.4	1.4	0.0	0.2
Post Test Bias	Zero Reading	0.15	0.10	3.80	-0.01
	Mid Reading	6.86	178.10	33.80	4.96
	Zero Bias	0.6	0.5	-2.6	0.1
	Span Bias	0.1	1.4	-1.8	0.2
	Zero Drift	0.0	0.0	2.6	0.2
	Span Drift	0.3	0.0	1.8	0.0
Calculated Data					
Ave. Zero Bias (C ₀)=	0.150	0.100	2.400	-0.020	
Ave upscale Bias(C _m)=	6.835	178.050	32.800	4.960	
actual upscale Concentration (C _{ma})=	7.01	181.00	30.10	4.96	
Measured Concentration (C) =					
Run 1	5.119	98.859	73.481	2.663	
Corrected Concentration (C _{gas}) =					
C _{gas} = (C-C ₀) x (C _{ma} /(C _m -C ₀))					
Run 1	5.210	100.45	70.38	2.672	
Run 2		CO ₂	SO ₂	CO	Oxygen
Pretest Bias	Zero Reading	0.15	0.10	3.80	-0.01
	Mid Reading	6.86	178.10	33.80	4.96
	Zero Bias	0.6	0.5	-2.6	0.1
	Span Bias	0.1	1.4	-1.8	0.2
Post Test Bias	Zero Reading	0.40	0.10	5.60	-0.01
	Mid Reading	6.76	178.30	34.20	4.96
	Zero Bias	-0.7	0.5	-4.2	0.1
	Span Bias	0.6	1.3	-2.2	0.2
	Zero Drift	1.3	0.0	1.7	0.0
	Span Drift	-0.5	0.1	0.4	0.0
Calculated Data					
Ave. Zero Bias (C ₀)=	0.275	0.100	4.700	-0.010	
Ave upscale Bias(C _m)=	6.810	178.200	34.000	4.960	
actual upscale Concentration (C _{ma})=	7.01	181.00	30.10	4.96	
Measured Concentration (C) =					
Run 2	5.161	110.283	70.189	2.528	
Corrected Concentration (C _{gas}) =					
C _{gas} = (C-C ₀) x (C _{ma} /(C _m -C ₀))					
Run 2	5.242	111.98	67.28	2.532	
Run 3		CO ₂	SO ₂	CO	Oxygen
Pretest Bias	Zero Reading	0.40	0.10	5.60	-0.01
	Mid Reading	6.76	178.30	34.20	4.96
	Zero Bias	-0.7	0.5	-4.2	0.1
	Span Bias	0.6	1.3	-2.2	0.2
Post Test Bias	Zero Reading	0.17	0.70	4.00	0.02
	Mid Reading	6.62	178.60	33.00	4.97
	Zero Bias	0.5	0.2	-2.8	-0.2
	Span Bias	1.4	1.1	-1.1	0.1
	Zero Drift	-1.2	0.3	-1.5	0.3
	Span Drift	-0.7	0.1	-1.1	0.1
Calculated Data					
Ave. Zero Bias (C ₀)=	0.285	0.400	4.800	0.005	
Ave upscale Bias(C _m)=	6.690	178.450	33.600	4.965	
actual upscale Concentration (C _{ma})=	7.01	181.00	30.10	4.96	
Measured Concentration (C) =					
Run 3	5.086	153.022	64.462	2.388	
Corrected Concentration (C _{gas}) =					
C _{gas} = (C-C ₀) x (C _{ma} /(C _m -C ₀))					
Run 3	5.254	155.15	62.35	2.383	

Calibration Gas & Analyzer Configuration Data		CO ₂	SO ₂	CO	O ₂
Mfg. And Model No.:	CA300	API 100AH	CA300	CA300	
Serial Number:	1K09008	111	1K09008	1K09008	
Calibration span:	20	200	200	108	11
Zero Gas	Cyl #: AAL7981	AAL7981	AAL7981	AAL7981	AAL7981
	value: 0.00	0.0	0.0	0.0	0.00
Low Calibration Gas	Cyl #: ALM057489	ALM057489	ALM057489	ALM057489	
	value: 30.1	30.1	30.1	30.1	
Mid Calibration Gas	Cyl #: ALM000935	ALM000935	ALM000935	ALM000935	ALM001211
	value: 58.1	58.1	58.1	58.1	4.96
High Calibration Gas	Cyl #: ALM00663	ALM00663	ALM00663	ALM00663	ALM007660
	value: 17.9	17.9	17.9	17.9	9.08
Bias Gas Used	mid	HIGH	low	mid	
Calibration Error					
Zero Reading		0.26	1.10	1.00	0.00
low reading				31.80	
Mid Reading		6.89	96.70	60.50	4.98
High Reading		17.81	180.80	92.30	9.10
Run 1		CO ₂	SO ₂	CO	O ₂
Pretest Bias	Zero Reading	0.17	0.70	4.00	-0.01
	Mid Reading	6.62	178.60	33.00	4.96
	Zero Bias	0.5	0.2	-2.8	0.1
	Span Bias	1.4	1.1	-1.1	0.2
Post Test Bias	Zero Reading	0.05	1.00	4.80	-0.01
	Mid Reading	6.75	176.30	34.80	4.96
	Zero Bias	1.1	0.1	-3.5	0.1
	Span Bias	0.7	2.3	-2.8	0.2
	Zero Drift	-0.6	0.2	0.7	0.0
	Span Drift	0.6	-1.1	1.7	0.0
Calculated Data					
Ave. Zero Bias (C ₀)=		0.110	0.850	4.400	-0.010
Ave upscale Bias(C _m)=		6.685	177.450	33.900	4.960
actual upscale Concentration (C _{ma})=		7.01	181.00	30.10	4.96
Measured Concentration (C) =					
Run 1		5.006	107.633	86.053	2.401
Corrected Concentration (C _{gas}) =					
C _{gas} = (C-C ₀) x (C _{ma} /(C _m -C ₀))		5.220	109.44	83.31	2.406
Run 2		CO ₂	SO ₂	CO	Oxygen
Pretest Bias	Zero Reading	0.05	1.00	4.80	-0.01
	Mid Reading	6.75	176.30	34.80	4.96
	Zero Bias	1.1	0.1	-3.5	0.1
	Span Bias	0.7	2.3	-2.8	0.2
Post Test Bias	Zero Reading	0.00	1.20	1.00	0.00
	Mid Reading	6.68	178.00	30.80	4.95
	Zero Bias	1.3	0.0	0.0	0.0
	Span Bias	1.1	1.4	0.9	0.3
	Zero Drift	-0.3	0.1	-3.5	0.1
	Span Drift	-0.4	0.8	-3.7	-0.1
Calculated Data					
Ave. Zero Bias (C ₀)=		0.025	1.100	2.900	-0.005
Ave upscale Bias(C _m)=		6.715	177.150	32.800	4.955
actual upscale Concentration (C _{ma})=		7.01	181.00	30.10	4.96
Measured Concentration (C) =					
Run 2		4.893	105.892	68.124	2.392
Corrected Concentration (C _{gas}) =					
C _{gas} = (C-C ₀) x (C _{ma} /(C _m -C ₀))		5.101	107.74	65.66	2.397
Run 3		CO ₂	SO ₂	CO	Oxygen
Pretest Bias	Zero Reading	0.00	1.20	1.00	0.00
	Mid Reading	6.68	178.00	30.80	4.95
	Zero Bias	1.3	0.0	0.0	0.0
	Span Bias	1.1	1.4	0.9	0.3
Post Test Bias	Zero Reading	0.04	1.80	0.00	-0.01
	Mid Reading	6.73	179.40	29.80	4.95
	Zero Bias	1.1	-0.4	0.9	0.1
	Span Bias	0.8	0.7	1.8	0.3
	Zero Drift	0.2	0.3	-0.9	-0.1
	Span Drift	0.3	0.7	-0.9	0.0
Calculated Data					
Ave. Zero Bias (C ₀)=		0.020	1.500	0.500	-0.005
Ave upscale Bias(C _m)=		6.705	178.700	30.300	4.950
actual upscale Concentration (C _{ma})=		7.01	181.00	30.10	4.96
Measured Concentration (C) =					
Run 3		4.911	107.785	70.717	2.377
Corrected Concentration (C _{gas}) =					
C _{gas} = (C-C ₀) x (C _{ma} /(C _m -C ₀))		5.129	108.56	70.92	2.384

Calibration Gas & Analyzer Configuration Data		CO ₂	SO ₂	CO	O ₂
Mfg. And Model No.:	CA300	API 100AH	CA300	CA300	
Serial Number:	1K09008	111	1K09008	1K09008	1K09008
Calibration span:	20	200	200	108	25
	20	200	108	11	
Zero Gas	Cyl #: AAL7981	AAL7981	AAL7981	AAL7981	AAL7981
	value: 0.00	0.0	0.0	0.0	0.00
Low Calibration Gas	Cyl #: ALM057489	ALM057489	ALM057489	ALM057489	
	value: 30.1	30.1	30.1	30.1	
Mid Calibration Gas	Cyl #: ALM000935	ALM000935	ALM000935	ALM000935	ALM001211
	value: 58.1	58.1	58.1	58.1	4.96
High Calibration Gas	Cyl #: ALM00641	ALM00641	ALM00641	ALM00641	ALM07660
	value: 90.2	90.2	90.2	90.2	9.08
Bias Gas Used	mid	HIGH	low	mid	
Calibration Error					
Zero Reading		0.26	1.10	1.00	0.00
low reading				31.80	
Mid Reading		6.89	96.70	60.50	4.98
High Reading		17.81	180.80	92.30	9.10
Run 1		CO ₂	SO ₂	CO	O ₂
Pretest Bias	Zero Reading	-0.01	0.00	-2.00	-0.03
	Mid Reading	6.74	178.30	28.80	4.95
	Zero Bias	1.4	0.6	2.8	0.3
	Span Bias	0.7	1.3	2.8	0.3
Post Test Bias	Zero Reading	0.20	1.50	1.00	-0.01
	Mid Reading	6.89	179.00	30.80	4.95
	Zero Bias	0.3	-0.2	0.0	0.1
	Span Bias	0.0	0.9	0.9	0.3
	Zero Drift	1.1	0.8	2.8	0.2
	Span Drift	0.7	0.3	1.8	0.0
Calculated Data					
Ave. Zero Bias (C ₀)=		0.095	0.750	-0.500	-0.020
Ave upscale Bias(C _m)=		6.815	178.650	29.800	4.950
actual upscale Concentration (C _{ma})=		7.01	181.00	30.10	4.96
Measured Concentration (C) =					
Run 1		5.094	99.034	7.418	2.468
Corrected Concentration (C _{gas}) =					
C _{gas} = (C-C ₀) x (C _{ma} /(C _m -C ₀))		5.214	100.00	7.87	2.483
Run 2		CO ₂	SO ₂	CO	Oxygen
Pretest Bias	Zero Reading	0.20	1.50	1.00	-0.01
	Mid Reading	6.89	179.00	30.80	4.95
	Zero Bias	0.3	-0.2	0.0	0.1
	Span Bias	0.0	0.9	0.9	0.3
Post Test Bias	Zero Reading	0.15	0.80	2.00	-0.01
	Mid Reading	6.82	178.10	31.50	4.94
	Zero Bias	0.6	0.2	-0.9	0.1
	Span Bias	0.3	1.4	0.3	0.4
	Zero Drift	-0.3	-0.4	0.9	0.0
	Span Drift	-0.3	-0.5	0.6	-0.1
Calculated Data					
Ave. Zero Bias (C ₀)=		0.175	1.150	1.500	-0.010
Ave upscale Bias(C _m)=		6.855	178.550	31.150	4.945
actual upscale Concentration (C _{ma})=		7.01	181.00	30.10	4.96
Measured Concentration (C) =					
Run 2		5.067	97.915	7.472	2.458
Corrected Concentration (C _{gas}) =					
C _{gas} = (C-C ₀) x (C _{ma} /(C _m -C ₀))		5.133	98.73	6.06	2.471
Run 3		CO ₂	SO ₂	CO	Oxygen
Pretest Bias	Zero Reading	0.15	0.80	2.00	-0.01
	Mid Reading	6.82	178.10	31.50	4.94
	Zero Bias	0.6	0.2	-0.9	0.1
	Span Bias	0.3	1.4	0.3	0.4
Post Test Bias	Zero Reading	0.02	0.60	1.00	-0.01
	Mid Reading	6.75	176.20	30.80	4.94
	Zero Bias	1.2	0.3	0.0	0.1
	Span Bias	0.7	2.3	0.9	0.4
	Zero Drift	-0.7	-0.1	-0.9	0.0
	Span Drift	-0.4	-1.0	-0.6	0.0
Calculated Data					
Ave. Zero Bias (C ₀)=		0.085	0.700	1.500	-0.010
Ave upscale Bias(C _m)=		6.785	177.150	31.150	4.940
actual upscale Concentration (C _{ma})=		7.01	181.00	30.10	4.96
Measured Concentration (C) =					
Run 3		5.087	97.483	7.875	2.429
Corrected Concentration (C _{gas}) =					
C _{gas} = (C-C ₀) x (C _{ma} /(C _m -C ₀))		5.234	99.28	6.47	2.443

Calibration Gas & Analyzer Configuration Data		CO ₂	SO ₂	CO	O ₂
Mfg. And Model No.:	CA300	API 100AH	CA300	CA300	
Serial Number:	1K09008	111	1K09008	1K09008	
	20	200	200	25	
Calibration span:	20	200	108	11	
Zero Gas	Cyl #: AAL7981	AAL7981	AAL7981	AAL7981	AAL7981
	value: 0.00	0.0	0.0	0.0	0.00
Low Calibration Gas	Cyl #: ALM057489		ALM057489	ALM057489	
	value: 30.1		30.1	30.1	
Mid Calibration Gas	Cyl #: ALM057489	ALM049276	ALM000935	ALM048462	
	value: 7.01	98.87	58.1	5.03	
High Calibration Gas	Cyl #: ALM060663	ALM045194	ALM006641	ALM07660	
	value: 17.9	181	90.2	9.08	
Bias Gas Used	mid	high	low	mid	
Calibration Error					
	Zero Reading	0.08	0.30	1.00	-0.03
	low reading			28.80	
	Mid Reading	7.22	97.40	57.30	5.01
	High Reading	18.10	181.80	90.00	9.07
RA Run 1		CO ₂	SO ₂	CO	O ₂
Pretest Bias	Zero Reading	0.02	0.60	1.00	-0.01
	Mid Reading	6.75	176.20	30.80	4.94
	Zero Bias	0.3	-0.2	0.0	-0.2
	Span Bias	2.4	2.8	-1.8	0.6
Post Test Bias	Zero Reading	0.07	0.60	1.20	-0.04
	Mid Reading	6.76	176.30	31.80	4.94
	Zero Bias	0.1	-0.2	-0.2	0.1
	Span Bias	2.3	2.8	-2.8	0.6
	Zero Drift	0.3	0.0	0.2	-0.3
	Span Drift	0.0	0.1	0.9	0.0
Calculated Data					
	Ave. Zero Bias (C ₀)=	0.045	0.600	1.100	-0.025
	Ave upscale Bias(C _m)=	6.755	176.250	31.300	4.940
	actual upscale Concentration (C _{ma})=	7.01	181.00	30.10	5.03
	Measured Concentration (C) =				
	Run 1	4.928	156.190	21.045	2.360
	Corrected Concentration (C _{gas}) =				
	C _{gas} = (C-C ₀) x (C _{ma} /(C _m -C ₀))				
	Run 1	5.101	160.33	19.88	2.416
RA Run 2		CO ₂	SO ₂	CO	Oxygen
Pretest Bias	Zero Reading	0.07	0.60	1.20	-0.04
	Mid Reading	6.76	176.30	31.80	4.94
	Zero Bias	0.1	-0.2	-0.2	0.1
	Span Bias	2.3	2.8	-2.8	0.6
Post Test Bias	Zero Reading	0.06	1.80	1.00	-0.01
	Mid Reading	6.68	177.90	30.50	4.93
	Zero Bias	0.1	-0.8	0.0	-0.2
	Span Bias	2.7	2.0	-1.6	0.7
	Zero Drift	-0.1	0.6	-0.2	0.3
	Span Drift	-0.4	0.8	-1.2	-0.1
Calculated Data					
	Ave. Zero Bias (C ₀)=	0.065	1.200	1.100	-0.025
	Ave upscale Bias(C _m)=	6.720	177.100	31.150	4.935
	actual upscale Concentration (C _{ma})=	7.01	181.00	30.10	5.03
	Measured Concentration (C) =				
	RA Run 2	4.887	108.108	20.511	2.378
	Corrected Concentration (C _{gas}) =				
	C _{gas} = (C-C ₀) x (C _{ma} /(C _m -C ₀))				
	Run 2	5.079	110.01	19.44	2.437
RA Run 3		CO ₂	SO ₂	CO	Oxygen
Pretest Bias	Zero Reading	0.06	1.80	1.00	-0.01
	Mid Reading	6.68	177.90	30.50	4.93
	Zero Bias	0.1	-0.8	0.0	-0.2
	Span Bias	2.7	2.0	-1.6	0.7
Post Test Bias	Zero Reading	0.06	0.00	1.00	0.00
	Mid Reading	6.69	179.10	31.80	4.94
	Zero Bias	0.1	0.2	0.0	-0.3
	Span Bias	2.7	1.4	-2.8	0.6
	Zero Drift	0.0	-0.9	0.0	0.1
	Span Drift	0.1	0.6	1.2	0.1
Calculated Data					
	Ave. Zero Bias (C ₀)=	0.060	0.900	1.000	-0.005
	Ave upscale Bias(C _m)=	6.685	178.500	31.150	4.935
	actual upscale Concentration (C _{ma})=	7.01	181.00	30.10	5.03
	Measured Concentration (C) =				
	Run 3	4.805	102.058	15.077	2.414
	Corrected Concentration (C _{gas}) =				
	C _{gas} = (C-C ₀) x (C _{ma} /(C _m -C ₀))				
	Run 3	5.021	103.09	14.05	2.463

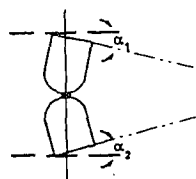
Thermocouple Calibration

Thermocouple ID:	GST102A
Reference ID:	176816
Calibration Date:	12/21/2004
Personnel:	AW/GV

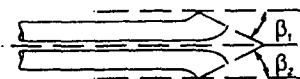
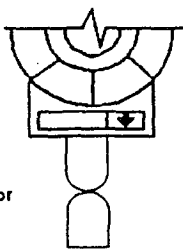
Range		Thermocouple		NIST Certified Reference		Percent Deviation	Pass / Fail
		(°F)	(°R)	(°F)	(°R)		
Mid (Hot Water)	Run 1	198.0	658.0	197	657.0	0.15	Pass
Mid (Hot Water)	Run 2	198.0	658.0	197	657.0	0.15	Pass
Mid (Hot Water)	Run 3	198.0	658.0	197	657.0	0.15	Pass

Deviation Tolerance $\leq 1.5\%$

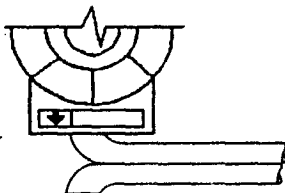
CALIBRATION DATA SHEET 2 **Type S Pitot Tube Inspection**



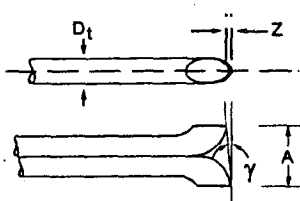
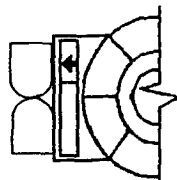
Degree indicating level position for determining α_1 and α_2 .



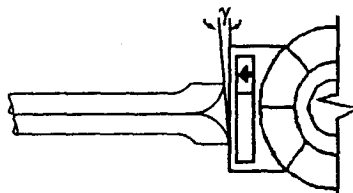
Degree indicating level position for determining β_1 and β_2 .



Degree indicating level position for determining Θ .



Degree indicating level position for determining γ then calculate Z.



Level and Perpendicular?	✓
Obstruction?	N
Damaged?	N
α_1 $(-10^\circ \leq \alpha_1 \leq +10^\circ)$	✓
α_2 $(-10^\circ \leq \alpha_2 \leq +10^\circ)$	✓
β_1 $(-5^\circ \leq \beta_1 \leq +5^\circ)$	✓
β_2 $(-5^\circ \leq \beta_2 \leq +5^\circ)$	✓
γ	Ø
Θ	Ø
$z = A \tan \gamma$ $(\leq 0.125")$	✓
$w = A \tan \Theta$ $(\leq 0.03125")$	✓
D_t $(3/16" \leq D_t \leq 3/8")$	✓
A	0.726
$A/2D_t$ $(1.05 \leq P_A/D_t \leq 1.5)$	✓

QA/QC Check

Completeness ✓

Legibility ✓

Accuracy ✓

Specifications ✓

Reasonableness ✓

Certification

I certify that the Type S pitot tube/probe ID# GST102A meets or exceeds all specifications, criteria and/or applicable design features and is hereby assigned a pitot tube calibration factor C_p of 0.84.

Certified by: _____

Personnel (Signature/Date)

Team Leader (Signature/Date)

APEX INSTRUMENTS
EPA Method 5
522 Series Meter Box Calibration
Pre-Test Orifice Method
English Meter Box Units, English K' Factor

Meter #: 306
Serial #: 2030

Date: 10/20/04
Barometric Pressure: 30.06 (in. Hg)
Theoretical Critical Vacu: 14.18 (in. Hg)

!!!!!!!
IMPORTANT For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.
IMPORTANT The Critical Orifice Coefficient, K', must be entered in English units, (ft)³*(deg R)^{0.5}/((in.Hg)*(min)).
!!!!!!!

----- DRY GAS METER READINGS -----

ΔH (in H ₂ O)	Time (min)	Volume Initial (ft ³)	Volume Final (ft ³)	Volume Total (ft ³)
0.63	15.00	196.452	203.208	6.756
1.22	15.00	203.208	212.358	9.150
1.95	15.00	212.358	224.058	11.700
3.55	15.00	224.058	240.204	16.146
5.45	20.00	240.204	266.695	26.491

Initial Temps.		Final Temps.		Orifice Serial #	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	-- Ambient Temperature --		
Inlet ("F)	Outlet ("F)	Inlet ("F)	Outlet ("F)				Initial ("F)	Final ("F)	Average ("F)
82.0	82.0	83.0	82.0	48	0.3445	19.8	82.0	83.0	82.5
83.0	82.0	84.0	83.0	53	0.4604	18.2	83.0	83.0	83.0
84.0	83.0	87.0	86.0	63	0.5960	16.8	83.0	85.0	84.0
87.0	86.0	91.0	85.0	73	0.8163	14.6	85.0	86.0	85.5
91.0	85.0	93.0	87.0	81	1.0073	12.2	86.0	88.0	87.0

----- CRITICAL ORIFICE READINGS -----

					-- Average Temperatures --											
					DGM		DGM		Ambient							
					Outlet		Overall		Temp							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)		("R)		("R)							
					("R)											

***** RESULTS *****

--- DRY GAS METER ---

VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME NOMINAL
Vm(std) (dscf)	Vm(std) (liters)	Vcr(std) (dscf)	Vcr(std) (liters)	Vcr (dscf)
6.617	187.4	6.669	188.9	6.823
8.962	253.8	8.909	252.3	9.123
11.438	323.9	11.406	323.0	11.702
15.781	446.9	15.740	445.8	16.192
25.928	734.3	25.893	733.3	26.711

-- DRY GAS METER --

CALIBRATION FACTOR		
Y	Value	Variation
(number)	(number)	(number)
1.008	0.009	Pass / Fail
0.994	-0.005	Pass
0.997	-0.002	Pass
0.997	-0.002	Pass
0.999	0.000	Pass

----- ORIFICE -----

CALIBRATION FACTOR		
ΔH@	Value	Variation
(in H ₂ O)	(mm H ₂ O)	(in H ₂ O)
1.755	44.57	-0.055
1.902	48.32	0.093
1.848	46.94	0.039
1.764	44.79	-0.046
1.777	45.13	-0.032

Average Y -----> 0.999

Average ΔH@ -----> 1.809 45.95

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +/-0.02.

For Orifice Calibration Factor ΔH@, the orifice differential pressure in inches of H₂O that equates to 0.75 cfm of air at 68 F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +/-0.2. SIGNED: _____

Date: 10-20-04

APEX INSTRUMENTS
EPA Method 5
522 Series Meter Box Calibration
Pre-Test Orifice Method
English Meter Box Units, English K' Factor

YD 1.002

Model #:
Serial #:

Date: ----- 4/5/05
Barometric Pressure: --- 30.18 (in. Hg)
Theoretical Critical Vacu 14.24 (in. Hg)

!!!!!!!
IMPORTANT For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.
IMPORTANT The Critical Orifice Coefficient, K', must be entered in English units, (ft)³*(deg R)^{0.5}/((in.Hg)*(min)).
!!!!!!!

Deta H=1.771

----- DRY GAS METER READINGS -----

ΔH (in H ₂ O)	Time (min)	Volume Initial (ft ³)	Volume Final (ft ³)	Volume Total (ft ³)
0.64	15.00	872.465	879.285	6.820
1.10	15.00	880.030	890.805	10.775
1.90	15.00	891.530	903.140	11.610
3.50	15.00	903.670	919.650	15.980
5.40	15.00	920.420	939.990	19.570

Initial Temps.		Final Temps.		Orifice Serial #	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	-- Ambient Temperature --	
Inlet ("F)	Outlet ("F)	Inlet ("F)	Outlet ("F)				Initial ("F)	Final ("F)
77.0	75.0	77.0	75.0	46	0.3421	19.9	75.0	75.0
80.0	77.0	80.0	77.0	55	0.4563	15.0	77.0	75.0
84.0	78.0	84.0	78.0	63	0.5916	17.0	78.0	75.0
89.0	81.0	89.0	81.0	73	0.8109	14.0	80.0	80.0
92.0	82.0	92.0	82.0	81	0.8987	11.0	81.0	81.0

----- CRITICAL ORIFICE READINGS -----

-- Average Temperatures --		
DGM Outlet ("R)	DGM Overall ("R)	Ambient Temp ("R)
535.0	536.0	535.5
537.0	538.5	537.5
538.0	541.0	538.5
541.0	545.0	540.5
542.0	547.0	541.0

***** RESULTS *****

--- DRY GAS METER ---

VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME NOMINAL
Vm(std) (dscf)	Vm(std) (liters)	Vcr(std) (dscf)	Vcr(std) (liters)	Vcr (dscf)
6.784	192.1	6.692	189.5	6.732
10.681	302.5	10.739	304.1	10.842
11.478	325.1	11.541	326.8	11.674
15.743	445.8	15.788	447.1	16.029
19.297	546.5	19.457	551.0	19.772

----- ORIFICE -----

-- DRY GAS METER --

CALIBRATION FACTOR		
Y	Value	Variation
	(number)	(number)
	0.986	-0.015
	1.005	0.004
	1.006	0.004
	1.003	0.001
	1.008	0.007

----- ORIFICE -----

CALIBRATION FACTOR		
ΔH@	Value	Variation
(in H ₂ O)	(mm H ₂ O)	(in H ₂ O)
	1.800	0.033
	1.724	-0.043
	1.787	0.020
	1.749	-0.018
	1.774	0.007

Average Y -----> 1.002

Average ΔH@ -----> 1.767 44.88

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is ±0.02.

For Orifice Calibration Factor ΔH@, the orifice differential pressure in inches of H₂O that equates to 0.75 cfm of air at 68 F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is ±0.2. SIGNED: _____

Date: 4/6/05

APPENDIX D – CALCULATED DATA

Compliance Summary Table
1450 degrees

Plant		Address			
LCR		HOUSTON TEXAS			
Location		Personnel			
435 TGU		GB SW			
Run Number		1	2	3	Average
Date	Test Date	3/25/2005	3/25/2005	3/25/2005	
Start	Run Start Time	10:35	12:00	13:20	
	Run Finish Time	11:35	13:00	13:18	
	Net Traversing Points	12	12	12	
Θ	Net Run Time, minutes	60	60	60	60
Y	Dry Gas Meter Calibration Factor	0.999	0.999	0.999	0.999
P _{Br}	Barometric Pressure, inches of Mercury	29.77	29.77	29.77	29.77
ΔH	Average orifice meter Differential, inches H ₂ O	1.70	1.70	1.70	1.70
V _m	Dry Gas Meter Volume Sampled actual, acf	43.532	41.788	37.620	40.980
t _m	Average Dry Gas Meter Temperature, °F	102.54	100.13	103.29	101.99
V _{mstd}	Dry Gas Meter Volume Sampled standard, dscf	40.784	39.319	35.198	38.43
V _{lc}	Total Moisture Liquid collected, ml	149.1	142.7	137.2	143.0
V _{wstd}	Volume of Water Vapor, standard cubic feet	7.02	6.72	6.46	6.73
% H ₂ O	Moisture Content of Stack Gas, %	14.7	14.6	15.5	14.9
% H ₂ O _{sat}	Moisture Saturation at Stack Gas Temperature, %	100.0	100.0	100.0	100.0
M _{fd}	Dry Mole Fraction	0.853	0.854	0.845	0.851
%CO ₂	Carbon Dioxide, %	5.21	5.24	5.25	5.235
%O ₂	Oxygen, %	2.67	2.53	2.38	2.529
% CO+ N ₂	Carbon Monoxide & Nitrogen, %	92.1	92.2	92.4	92.2
F _o	Fuel Factor	3.50	3.50	3.52	3.51
M _d	Dry Molecular Weight, lb/lb-Mole	28.94	28.94	28.94	28.94
M _s	Wet Molecular weight, lb/lb-Mole	27.33	27.34	27.24	27.31
P _g	Flue Gas Static Pressure, inches of H ₂ O	-1.6	-1.60	-1.60	-1.60
P _s	Absolute Flue Gas Pressure, inches of Mercury	29.65	29.65	29.65	29.65
t _s	Average Stack Gas Temperature, °F	512.1	512.6	497.0	507.22
ΔP _{avg}	Average Velocity Head, inches of H ₂ O	0.128	0.128	0.141	0.133
v _s	Average Stack Gas Velocity, feet/second	28.2	28.2	29.4	28.6
A _s	Stack Area, square feet	33.183	33.183	33.183	33.183
Q _{sd}	Dry Volumetric Flow Rate, dry scfm	25,752	25,776	26,906	26,145
Q _{sw}	Wet Volumetric Flow Rate, wet scfm	30,184	30,180	31,843	30,735
Q _{aw}	Actual Wet Volumetric Flue Gas Flow Rate, acfm	56,072	56,093	58,585	56,917
SO ₂ ppm	Sulfur Dioxide Concentration, ppmd	100.5	112.0	155.2	122.5
SO ₂ ppm@o%O ₂	Sulfur Dioxide Concentration, ppmd@0%O ₂	115.2	127.4	175.1	139.2
SO ₂ lb/dscf	Sulfur Dioxide Concentration, lb/dscf x 10E -6	16.69	18.60	25.77	20.35
SO ₂ lb/hr	Sulfur Dioxide Emission Rate, lb/hr	25.78	28.77	41.61	32.05
H ₂ S ppm	Hydrogen Sulfide Concentration, ppmd	< .10	< .10	< .10	< .10
H ₂ S lb/dscf	Hydrogen Sulfide Concentration, lb/dscf x 10E-6	0.0089	0.0089	0.0089	0.0089
H ₂ S lb/hr	Hydrogen Sulfide Emission Rate, lb/hr	0.014	0.014	0.014	0.014
CO ppm	Carbon Monoxide Concentration, ppmd	70.4	67.3	62.4	66.7
CO lb/dscf	Carbon Monoxide Concentration, lb/dscf x 10E-6	5.12	4.89	4.53	4.85
CO lb/hr	Carbon Monoxide Emission Rate, lb/hr	7.90	7.56	7.32	7.59

Compliance Summary Table
1440 degrees

Plant	LCR	Address	HOUSTON TEXAS		
Location	435 TGU	Personnel	GB SW		

Run Number		1	2	3	Average
Date	Test Date	3/25/2005	3/25/2005	3/25/2005	
Start	Run Start Time	16:20	17:35	18:48	
	Run Finish Time	17:20	18:35	19:48	
	Net Traversing Points	12	12	12	
Θ	Net Run Time, minutes	60	60	60	60
Y	Dry Gas Meter Calibration Factor	0.999	0.999	0.999	0.999
P _{Br}	Barometric Pressure, inches of Mercury	29.7	29.70	29.70	29.70
ΔH	Average orifice meter Differential, inches H ₂ O	2.00	1.70	1.70	1.80
V _m	Dry Gas Meter Volume Sampled actual, acf	23.225	42.150	38.470	34.615
t _m	Average Dry Gas Meter Temperature, °F	101.58	98.79	95.67	98.68
V _{mstd}	Dry Gas Meter Volume Sampled standard, dscf	21.761	39.661	36.402	32.61
V _{lc}	Total Moisture Liquid collected, ml	79.3	144.8	135.5	119.9
V _{wstd}	Volume of Water Vapor, standard cubic feet	3.73	6.82	6.38	5.64
% H ₂ O	Moisture Content of Stack Gas, %	14.6	14.7	14.9	14.7
% H ₂ O _{sat}	Moisture Saturation at Stack Gas Temperature, %	100.0	100.0	100.0	100.0
M _{fd}	Dry Mole Fraction	0.854	0.853	0.851	0.853
%CO ₂	Carbon Dioxide, %	5.22	5.10	5.13	5.150
%O ₂	Oxygen, %	2.41	2.40	2.38	2.396
% CO+ N ₂	Carbon Monoxide & Nitrogen, %	92.4	92.5	92.5	92.5
F _o	Fuel Factor	3.54	3.63	3.61	3.59
M _d	Dry Molecular Weight, lb/lb-Mole	28.93	28.91	28.92	28.92
M _s	Wet Molecular weight, lb/lb-Mole	27.33	27.31	27.29	27.31
P _g	Flue Gas Static Pressure, inches of H ₂ O	-1.6	-1.60	-1.60	-1.60
P _s	Absolute Flue Gas Pressure, inches of Mercury	29.58	29.58	29.58	29.58
t _s	Average Stack Gas Temperature, °F	498.6	499.8	495.0	497.78
ΔP _{avg}	Average Velocity Head, inches of H ₂ O	0.132	0.131	0.133	0.132
v _s	Average Stack Gas Velocity, feet/second	28.4	28.3	28.5	28.4
A _s	Stack Area, square feet	33.183	33.183	33.183	33.183
Q _{sd}	Dry Volumetric Flow Rate, dry scfm	26,245	26,143	26,373	26,253
Q _{sw}	Wet Volumetric Flow Rate, wet scfm	30,747	30,635	30,994	30,792
Q _{aw}	Actual Wet Volumetric Flue Gas Flow Rate, acfm	56,458	56,321	56,738	56,506
SO ₂ ppm	Sulfur Dioxide Concentration, ppmd	109.4	107.7	108.6	108.6
SO ₂ ppm@0%O ₂	Sulfur Dioxide Concentration, ppmd@0%O ₂	123.7	121.7	122.5	122.6
SO ₂ lb/dscf	Sulfur Dioxide Concentration, lb/dscf x 10E -6	18.18	17.90	18.03	18.04
SO ₂ lb/hr	Sulfur Dioxide Emission Rate, lb/hr	28.63	28.07	28.54	28.41
H ₂ S ppm	Hydrogen Sulfide Concentration, ppmd	< .10	< .10	< .10	< .10
H ₂ S lb/dscf	Hydrogen Sulfide Concentration, lb/dscf x 10E-6	0.0089	0.0089	0.0089	0.0089
H ₂ S lb/hr	Hydrogen Sulfide Emission Rate, lb/hr	0.014	0.014	0.014	0.014
CO ppm	Carbon Monoxide Concentration, ppmd	83.3	65.7	70.9	73.3
CO lb/dscf	Carbon Monoxide Concentration, lb/dscf x 10E-6	6.06	4.77	5.15	5.33
CO lb/hr	Carbon Monoxide Emission Rate, lb/hr	9.53	7.49	8.16	8.39

Compliance Summary Table
1500 degrees

Plant	LCR	Address	HOUSTON TEXAS			
Location	435 TGU	Personnel	GB SW			
Run Number		1	2	3	Average	
Date	Test Date	3/26/2005	3/26/2005	3/26/2005		
Start	Run Start Time	8:00	9:15	10:32		
	Run Finish Time	9:00	10:15	11:32		
	Net Traversing Points	12	12	12		
⊙	Net Run Time, minutes	60	60	60	60	
Y	Dry Gas Meter Calibration Factor	0.999	0.999	0.999	0.999	
P _{Br}	Barometric Pressure, inches of Mercury	29.7	29.70	29.70	29.70	
ΔH	Average orifice meter Differential, inches H ₂ O	1.70	1.70	1.70	1.70	
V _m	Dry Gas Meter Volume Sampled actual, acf	40.675	40.205	41.735	40.872	
t _m	Average Dry Gas Meter Temperature, °F	81.92	86.33	88.38	85.54	
V _{mstd}	Dry Gas Meter Volume Sampled standard, dscf	39.465	38.694	40.017	39.39	
V _{lc}	Total Moisture Liquid collected, ml	130.7	141	150.8	140.8	
V _{wstd}	Volume of Water Vapor, standard cubic feet	6.15	6.64	7.10	6.63	
% H ₂ O	Moisture Content of Stack Gas, %	13.5	14.6	15.1	14.4	
% H ₂ O _{sat}	Moisture Saturation at Stack Gas Temperature, %	100.0	100.0	100.0	100.0	
M _{fd}	Dry Mole Fraction	0.865	0.854	0.849	0.856	
%CO ₂	Carbon Dioxide, %	5.21	5.13	5.23	5.194	
%O ₂	Oxygen, %	2.48	2.47	2.44	2.466	
% CO+ N ₂	Carbon Monoxide & Nitrogen, %	92.3	92.4	92.3	92.3	
F _o	Fuel Factor	3.53	3.59	3.53	3.55	
M _d	Dry Molecular Weight, lb/lb-Mole	28.93	28.92	28.94	28.93	
M _s	Wet Molecular weight, lb/lb-Mole	27.46	27.32	27.29	27.36	
P _g	Flue Gas Static Pressure, inches of H ₂ O	-1.6	-1.60	-1.60	-1.60	
P _s	Absolute Flue Gas Pressure, inches of Mercury	29.58	29.58	29.58	29.58	
t _s	Average Stack Gas Temperature, °F	503.8	505.0	501.0	503.25	
ΔP _{avg}	Average Velocity Head, inches of H ₂ O	0.093	0.091	0.146	0.110	
v _s	Average Stack Gas Velocity, feet/second	23.8	23.6	29.9	25.8	
A _s	Stack Area, square feet	33.183	33.183	33.183	33.183	
Q _{sd}	Dry Volumetric Flow Rate, dry scfm	22,226	21,705	27,321	23,751	
Q _{sw}	Wet Volumetric Flow Rate, wet scfm	25,691	25,428	32,167	27,762	
Q _{aw}	Actual Wet Volumetric Flue Gas Flow Rate, acfm	47,428	47,004	59,461	51,298	
SO ₂ ppm	Sulfur Dioxide Concentration, ppm	100.0	98.7	99.3	99.3	
SO ₂ ppm@o%O ₂	Sulfur Dioxide Concentration, ppm@0%O ₂	113.5	112.0	112.4	112.6	
SO ₂ lb/dscf	Sulfur Dioxide Concentration, lb/dscf x 10E -6	16.61	16.40	16.49	16.50	
SO ₂ lb/hr	Sulfur Dioxide Emission Rate, lb/hr	22.15	21.36	27.04	23.52	
H ₂ S ppm	Hydrogen Sulfide Concentration, ppm	< .10	< .10	< .10	< .10	
H ₂ S lb/dscf	Hydrogen Sulfide Concentration, lb/dscf x 10E-6	0.0089	0.0089	0.0089	0.0089	
H ₂ S lb/hr	Hydrogen Sulfide Emission Rate, lb/hr	0.014	0.014	0.017	0.015	
CO ppm	Carbon Monoxide Concentration, ppm	7.9	6.1	6.5	6.8	
CO lb/dscf	Carbon Monoxide Concentration, lb/dscf x 10E-6	0.57	0.44	0.47	0.49	
CO lb/hr	Carbon Monoxide Emission Rate, lb/hr	0.76	0.57	0.77	0.70	

Compliance Summary Table
1475 degrees

Plant		Address	
LCR		HOUSTON TEXAS	
Location		Personnel	
435 TGU		GB SW	

Run Number		1	2	3	Average
Date	Test Date	3/26/2005	3/26/2005	3/26/2005	
Start	Run Start Time	12:08	13:20	14:33	
	Run Finish Time	13:08	14:20	15:33	
	Net Traversing Points	12	12	12	
Θ	Net Run Time, minutes	21	21	21	21
Y	Dry Gas Meter Calibration Factor	0.999	0.999	0.999	0.999
P _{Br}	Barometric Pressure, inches of Mercury	29.7	29.70	29.70	29.70
ΔH	Average orifice meter Differential, inches H ₂ O	1.70	1.70	1.70	1.70
V _m	Dry Gas Meter Volume Sampled actual, acf	44.115	43.395	44.295	43.935
t _m	Average Dry Gas Meter Temperature, °F	91.38	92.83	88.63	90.94
V _{mstd}	Dry Gas Meter Volume Sampled standard, dscf	42.069	41.273	42.452	41.93
V _{lc}	Total Moisture Liquid collected, ml	128.2	150	126.2	134.8
V _{wstd}	Volume of Water Vapor, standard cubic feet	6.03	7.06	5.94	6.35
% H ₂ O	Moisture Content of Stack Gas, %	12.5	14.6	12.3	13.1
% H ₂ O _{sat}	Moisture Saturation at Stack Gas Temperature, %	100.0	100.0	100.0	100.0
M _{fd}	Dry Mole Fraction	0.875	0.854	0.877	0.869
% CO ₂	Carbon Dioxide, %	5.10	5.08	5.02	5.067
% O ₂	Oxygen, %	2.42	2.44	2.46	2.439
% CO+ N ₂	Carbon Monoxide & Nitrogen, %	92.5	92.5	92.5	92.5
F _o	Fuel Factor	3.62	3.64	3.67	3.64
M _d	Dry Molecular Weight, lb/lb-Mole	28.91	28.91	28.90	28.91
M _s	Wet Molecular weight, lb/lb-Mole	27.54	27.32	27.56	27.47
P _g	Flue Gas Static Pressure, inches of H ₂ O	-1.6	-1.60	-1.60	-1.60
P _s	Absolute Flue Gas Pressure, inches of Mercury	29.58	29.58	29.58	29.58
t _s	Average Stack Gas Temperature, °F	505.1	505.2	500.0	503.42
ΔP _{avg}	Average Velocity Head, inches of H ₂ O	0.139	0.133	0.143	0.138
v _s	Average Stack Gas Velocity, feet/second	29.1	28.5	29.5	29.0
A _s	Stack Area, square feet	33.183	33.183	33.183	33.183
Q _{sd}	Dry Volumetric Flow Rate, dry scfm	27,430	26,181	27,966	27,192
Q _{sw}	Wet Volumetric Flow Rate, wet scfm	31,364	30,660	31,879	31,301
Q _{aw}	Actual Wet Volumetric Flue Gas Flow Rate, acfm	57,982	56,685	58,714	57,794
SO ₂ ppm	Sulfur Dioxide Concentration, ppmd	160.3	110.0	103.1	124.5
SO ₂ ppm@0%O ₂	Sulfur Dioxide Concentration, ppmd@0%O ₂	181.3	124.5	116.9	140.9
SO ₂ lb/dscf	Sulfur Dioxide Concentration, lb/dscf x 10E -6	26.63	18.27	17.13	20.68
SO ₂ lb/hr	Sulfur Dioxied Emission Rate, lb/hr	43.83	28.71	28.74	33.76
H ₂ S ppm	Hydrogen Sulfide Concentration, ppmd	< .10	< .10	< .10	< .10
H ₂ S lb/dscf	Hydrogen Sulfide Concentration, lb/dscf x 10E-6	0.0089	0.0089	0.0089	0.0089
H ₂ S lb/hr	Hydrogen Sulfide Emission Rate, lb/hr	0.015	0.014	0.015	0.014
CO ppm	Carbon Monoxide Concentration, ppmd	19.9	19.4	14.1	17.8
CO lb/dscf	Carbon Monoxide Concentration, lb/dscf x 10E-6	1.44	1.41	1.02	1.29
CO lb/hr	Carbon Monoxide Emission Rate, lb/hr	2.38	2.22	1.71	2.10

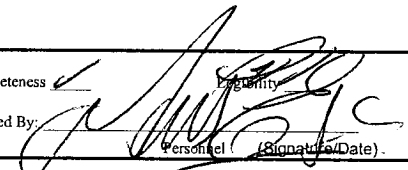
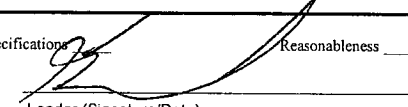
Method 1 & 2 Data Sheet

Plant	LCR	Time	7:00	Date	03/22/05	Job #	
Address	Houston Texas	C _p	0.840	Wetbulb temp		Ms	28.00 %CO ₂
Location	435	P _{Br} in "Hg	29.98	% moisture	8.6	Ms	27.14 %O ₂
Personnel	GB SW	P static in H ₂ O	-1.34				Fo

Distance from Far Wall to Outside of Port, inches	84.000			Stack Yaw & Velocity Data				
Width (if Rectangular)		Points	% Duct Depth	Distance from Outside of Port	Yaw Angle Degrees	ΔP Inch H ₂ O	Temp °F	Velocity Feet/sec
Nipple Length and/or Wall Thickness, inches	6	A1	4.4%	9.4				
Diameter, inches	78.0	A2	14.6%	17.4				
Equivanlent Diameter (only when rectangular)		A3	29.6%	29.1				
Area in square feet	33.18	A4	70.4%	60.9				
Straight Distance before sampling location, inches	972.0	A5	85.4%	72.6				
Number of Diameters Before Location*	12.5	A6	95.6%	80.6				
Straight Distance after sampling location, inches	1800.0	B1	4.4%	9.4				
Number of Diameters After Location*	23.1	B2	14.6%	17.4				
Enter "P" for Particulates or "V" for velocity	V	B3	29.6%	29.1				
Minimum Number of Total Points	12	B4	70.4%	60.9				
Number of Total Points Chosen	12	B5	85.4%	72.6				
Number of Ports	2	B6	95.6%	80.6				
Number of Points per Port	6							
		Average						

Draw sampling location, plan & top view.

dscfm

Completeness	Accuracy	QA/QC Check	Specifications	Reasonableness
Checked By: 	Personnel (Signature/Date):	Leader (Signature/Date): 		

TGU 435
at 1450 F

Plant LCR		Run No. 1		Date 3/25/2005		Job # 							
Address Houston Texas		Equipment ID		Cal Date		Constants							
Location 435		Reag. Box M5		Samp. box N/A		A_s foot ² 33.2							
Personnel GB SW		Umbical 100ft		Meter box 10/20/04		Y 0.999							
% Moisture 14.7 Meas		Stack TC GSC1021		TC Readout 10/20/04		ΔH_{th} 1.809							
P_{Br} in "Hg 29.77		Meter box 2030		Pilot 3/22/04		C_p 0.840							
P static in H ₂ O -1.60		Orsat Pump N/A		Nozzle N/A		D_N in inches N/A							
K factor N/A		Est. Moisture 0.0		gm H ₂ O 149.1		M_{3A} 5.2 %CO ₂							
Filter # N/A		$B_{wmeasured}$ 14.7		$B_{wsaturated}$ 100.0		$Fo=$ 3.49847 %O ₂							
Filter Wt. N/A						M_s 27.33 M_d 28.94							
Traverse Point No.	Elapsed Time In Minutes	Clock Time	DGM Reading	Velocity	Stack Temp.	DGM Temp.	Orifice Pressure ΔH in H ₂ O	Probe Temp.	Box Temp.	Filter Outlet	Imping. Temp.	Pump Vac.	Notes
	Begin End	24 hr	ft ³	ΔP	°F	°F	Desired Actual	°F	°F	°F	°F	Hg	
A1	0.0 5.0	10:35	10.110	0.12	511	97.0	1.70				51	2.0	
A2	5.0 10.0	10:40	13.470	0.13	513	99.0	1.70				51	2.0	
A3	10.0 15.0	10:45	16.920	0.14	514	100.5	1.70				53	2.0	
A4	15.0 20.0	10:50	20.550	0.13	513	102.0	1.70				54	2.0	
A5	20.0 25.0	10:55	24.030	0.12	511	103.5	1.70				56	2.0	
A6	25.0 30.0	11:00	27.890	0.13	511	104.5	1.70				57	2.0	
B1	30.0 35.0	11:05	31.320	0.12	510	105.0	1.70				58	2.0	
B2	35.0 40.0	11:10	34.920	0.13	513	104.5	1.70				60	2.0	
B3	40.0 45.0	11:15	38.460	0.14	511	104.0	1.70				61	2.0	
B4	45.0 50.0	11:20	41.730	0.12	512	103.5	1.70				62	2.0	
B5	50.0 55.0	11:25	46.240	0.13	513	103.5	1.70				62	2.0	
B6	55.0 60.0	11:30	50.020	0.13	513	103.5	1.70				62	2.0	
			53.642										
Final		11:30	53.642										
Sum or avg	60.0		43.532	0.128	512.1	102.5	1.70						
Flow		Impingers		Particulates									
ft/sec	28.2	Contents	Vol. (mL)	Post weight	Pre weight	gain							
scfm	30183.8	1	Water	100	229	100.0	129						
dscfm	25752.3	2	Water	100	110	100	10						
acfm	56071.9	3	Empty	0	0	0.0	0						
mmBTU/hr		4	SG	250	275.7	265.6	10.1						
		mg	lb/hr	gr/scf	lb/mmBTU								
Probe Rinse													
Imp 1													
Imp 2													
Total													

Completeness ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked By: *[Signature]* Personnel (Signature/Date)

QA/QC Check

Team Leader (Signature/Date) *[Signature]*

TGU 435
at 1450 F

Page

TGU 435
at 1450 F

Plant	LCR	Run No. 3		Date	3/25/2005	Job #	
Address	Houston Texas	Equipment ID		Constants		Checks	
Location	435	Cal				Pre	Mid
Personnel	GB SW	Reag. Box	M5	Samp. box	N/A	Post	
% Moisture	15.5	Umbical	100ft	Meter box	10/20/04	Y	
P _{Br} in "Hg	29.77	Stack TC	GSC102T	TC Readout	10/20/04	ΔH _{2a}	
P _{static} in H ₂ O	-1.60	Meter box	2030	Pilot	03/22/04	C _p	
K factor	N/A	Orsat Pump	N/A	Nozzle	N/A	D _N in inches	
Filter #	N/A	Est. Moisture	0.0	gm H ₂ O	137.2	M3A	5.3
Filter Wt.	N/A			B _{wmeasured}	15.5		2.4
				B _{wsaturated}	100.0	Fo=	3.52446
						Ms	27.24
							M _d
							28.94

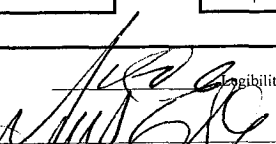
Traverse Point No.	Elapsed Time In Minutes		Clock Time	DGM Reading ft ³	Velocity ΔP	Stack Temp. °F	DGM Temp. °F	Orifice Pressure ΔH in H ₂ O		Probe Temp. °F	Box Temp. °F	Filter Outlet °F	Imping. Temp. °F	Pump Vac. Hg	Notes
	Begin	End						Desired	Actual						
A1	0.0	5.0	13:20	99.190	0.17	497	100.0		1.70						
A2	5.0	10.0	13:25		0.14	503	101.5		1.70						
A3	10.0	15.0	13:30		0.14	504	103.0		1.70						
A4	15.0	20.0	13:35		0.15	504	103.0		1.70						
A5	20.0	25.0	13:40		0.13	505	103.5		1.70						
A6	25.0	30.0	13:45		0.14	503	104.0		1.70						
B1	30.0	35.0	13:50		0.16	504	104.0		1.70						
B2	35.0	40.0	13:55		0.15	503	104.0		1.70						
B3	40.0	45.0	14:00		0.14	501	104.0		1.70						
B4	45.0	50.0	14:05		0.13	504	104.0		1.70						
B5	50.0	55.0	14:10		0.13	503	104.0		1.70						
B6	55.0	60.0	14:15		0.12	502	104.5		1.70						
				136.810											
Final				14:15	136.810										
Sum or avg				60.0	37.620	0.141	502.8	103.3	1.70	Max 0					

Flow	
ft/sec	29.4
scfm	31842.5
dscfm	26906.0
acfm	58585.4
mmBTU/hr	

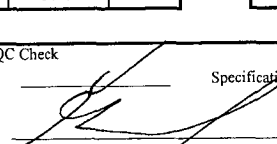
Impingers					
	Contents	Vol. (mL)	Post weight	Pre weight	gain
1	Water	100	219	100.0	119
2	Water	100	110	100	10
3	Empty	0	0	0.0	0
4	SG	250	318.5	310.3	8.2

Particulates				
	mgms	lb/hr	gr/scf	lb/mmBTU
Probe Rinse				
Filter				
Impinger Catch				
Total				

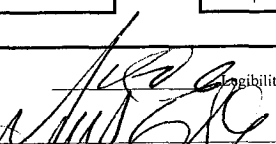
Completeness



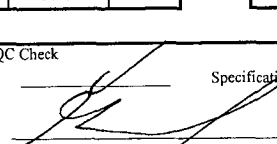
QA/QC Check



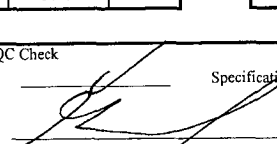
Checked By:



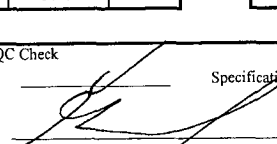
Personnel (Signature/Date)



Team Leader (Signature/Date)



Reasonableness



at 1440° F

Team Leader (Signature/Date)

at 1440° F

Completeness Legibility Accuracy Specifications Reasonableness
 Checked By:
 Personnel (Signature/Date) Team Leader (Signature/Date)

TGU 435
at 1440° F

Plant		LCR		Run No. 3		Date 3/25/2005		Job #																					
Address		Houston Texas		Equipment ID		Cal		Constants		Checks		Pre		Mid		Post													
Location		435		Reag. Box M5		Samp. box N/A		A ₂ foot ² 33.2		Vacuum 12						7													
Personnel		GB SW GV		Umbical 100R		Meter box 10/20/04		Y 0.999		Init DGM																			
% Moisture 14.9		Meas		Stack TC GSC102T		TC Readout 10/20/04		ΔH ₂ 1.809		Final DGM																			
P _{Br} in "Hg 29.70				Meter box 2030		Pitot 03/22/04		C _p 0.840		Leak rate 0						0													
P _{static} in H ₂ O -1.60				Orsat Pump N/A		Nozzle N/A		D _N in inches N/A		Pitot Good						Good													
K factor N/A				Est. Moisture 0.0		gm H ₂ O 135.5		M3A 5.1 %CO ₂		Nozzle N/A		X				N/A													
Filter # N/A				B _{wmeasured} 14.9				2.4 %O ₂		Stack TC N/A		X				N/A													
Filter Wt. N/A				B _{wsaturated} 100.0				Fo= 3.61034		Ms 27.29						M _d 28.92													
Traverse Point No.		Elapsed Time In Minutes		Clock Time		DGM Reading		Velocity		Stack Temp.		DGM Temp.		Orifice Pressure ΔH in H ₂ O		Probe Temp.		Box Temp.		Filter Outlet		Imping. Temp.		Pump Vac.		Notes			
		Begin End		24 hr		ft ³		ΔP		°F		°F		Desired Actual		°F		°F		°F		°F		Hg					
A1		0.0 5.0		18:48		202.330		0.15		495		94.0				1.70										3.0			
A2		5.0 10.0		18:53				0.14		496		94.5				1.70										3.0			
A3		10.0 15.0		18:58				0.14		495		95.5				1.70										3.0			
A4		15.0 20.0		19:03				0.13		497		96.0				1.70										3.0			
A5		20.0 25.0		19:08				0.13		497		96.0				1.70										3.0			
A6		25.0 30.0		19:13				0.12		495		96.0				1.70										3.0			
B1		30.0 35.0		19:18				0.13		492		96.0				1.70										3.0			
B2		35.0 40.0		19:23				0.13		494		96.0				1.70										3.0			
B3		40.0 45.0		19:28				0.13		496		96.0				1.70										3.0			
B4		45.0 50.0		19:33				0.14		497		96.0				1.70										3.0			
B5		50.0 55.0		19:38				0.13		497		96.0				1.70										3.0			
B6		55.0 60.0		19:43				0.13		497		96.0				1.70										3.0			
						240.800																							
Final				19:43		240.800																							
Sum or avg		60.0				38.470		0.133		495.7		95.7				1.70										Max 3			
Flow		ft/sec 28.5																											
scfm 30993.6																													
dscfm 26372.9																													
acfm 56738.0																													
mmBTU/hr																													

at 1500° F

Completeness 1 Accuracy 1 Specifications 1 Reasonableness 1
 Checked By: [Signature] Team Leader (Signature/Date)
 Personnel (Signature/Date)

at 1500° F

Page

at 1500° F

Plant	LCR	Run No.	3	Date	3/26/2005	Job #								
Address	Houston Texas	Equipment ID	Cal	Constants	Checks	Pre	Mid	Post						
Location	435	Reag. Box	M5	Samp. box	N/A	A _s foot ²	33.2	Vacuum	10	12				
Personnel	GB SW GV	Umbical	100ft	Meter box	10/20/04	Y	0.999	Init DGM						
% Moisture	15.1	Meas	Stack TC	GSC102A	TC Readout	10/20/04	ΔH _a	1.809	Final DGM					
P _{Br} in "Hg	29.70		Meter box	2030	Pilot	03/22/04	C _p	0.840	Leak rate	0	0			
P _{static} in H ₂ O	-1.60		Orsat Pump	N/A	Nozzle	N/A	D _N in inches	N/A	Pitot	N/A	N/A			
K factor	N/A		Est. Moisture	0.0	gm H ₂ O	150.8	M3A	5.2	%CO ₂	Nozzle	Good	X	Good	
Filter #	N/A				B _{measured}	15.1		2.4	%O ₂	Stack TC	Good	X	Good	
Filter Wt.	N/A				B _{asaturated}	100.0	Fo=	3.52636		Ms	27.29		M _d	28.94

[illegible]

Final	11:27	363.545				
Sum or avg	60.0	41.735	0.146	505.0	88.4	1.70

Flow	
ft/sec	29.9
scfm	32167.0
dscfm	27320.9
acfm	59461.2
mmBTU/hr	

Impingers					
	Contents	Vol. (mL)	Post weight	Pre weight	gain
1	Water	100	230	100.0	130
2	Water	100	110	100	10
3	Empty	0	0	0.0	0
4	SG	250	318.6	307.8	10.8

Particulates				
	mgms	lb/hr	gr/scf	lb/mmBTU
Probe Rinse				
Filter				
Impinger Catch				
Total				

Completeness _____ QA/QC Check _____
 Legibility _____ Accuracy _____ Specifications _____ Reasonableness _____
 Checked By: _____
 Personnel (Signature/Date) Team Leader (Signature/Date)

TGU 435
at 1475° F

[illegible]

TGU 435
at 1475° F

Page

at 1475° F

Page

APPENDIX E – CALIBRATION STANDARD CERTIFICATIONS



Scott Specialty Gases

9810 BAY AREA BLVD,PASADENA,TX 77507

RATA CLASS

Dual-Analyzed Calibration Standard

Phone: 281-474-5800

Fax: 281-474-5857

CERTIFICATE OF ACCURACY: Interference Free TM EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
9810 BAY AREA BLVD
PASADENA,TX 77507

P.O. No.: SBS081602
Project No.: 04-22688-003

Customer

GOLDEN SPECIALTY CONSULTING, INC
PO BOX 1898
DEER PARK TX 77536

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: ALM000641 Certification Date: 19Jun2003 Exp. Date: 18Jun2006
Cylinder Pressure***: 2015 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ANALYTICAL ACCURACY**	TRACEABILITY
CARBON MONOXIDE	90.2 PPM	+/- 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.

Product certified as +/- 1% analytical accuracy is directly traceable to NIST or NMI standards.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM	01Mar2006	ALM031333	246.7 PPM	CO/N2

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR System/8220/AAB9400260	13Jun2003	FTIR

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis

Second Triad Analysis

Calibration Curve

CARBON MONOXIDE

Date: 12Jun2003	Response Unit:PPM	
Z1 = -0.95940	R1 = 246.6319	T1 = 90.21328
R2 = 246.5404	Z2 = -0.96410	T2 = 90.35855
Z3 = -0.99560	T3 = 90.42263	R3 = 246.9275
Avg. Concentration: 90.33 PPM		

Date: 19Jun2003	Response Unit: PPM	
Z1 = -0.26110	R1 = 246.9023	T1 = 90.13510
R2 = 247.0919	Z2 = -0.28970	T2 = 90.23407
Z3 = -0.33720	T3 = 90.03347	R3 = 246.1057
Avg. Concentration: 90.13 PPM		

Concentration = A + Bx + Cx2 + Dx3 + Ex4	
r = 0.999990	
Constants:	A = 0.000000
B = 1.000000	C = 0.000000
D = 0.000000	E = 0.000000

APPROVED BY:

James Woods

RATA CLASS**Scott Specialty Gases**

9810 BAY AREA BLVD, PASADENA, TX 77507

Phone: 281-474-5800

Fax: 281-474-5857

Dual-Analyzed Calibration Standard**CERTIFICATE OF ACCURACY: EPA Protocol Gas****Assay Laboratory**SCOTT SPECIALTY GASES
6141 EASTON ROAD, BLDG 1
PLUMSTEADVILLE, PA 18949-0310P.O. No.: SBS081602
Project No.: 04-26789-004**Customer**

GOLDEN SPECIALTY CONSULTING, LTD

PO BOX 1898
DEER PARK TX 77536**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: ALM000935**Certification Date:** 08Jun2004**Exp. Date:** 08Jun2007**Cylinder Pressure***:** 2000 PSIG**COMPONENT****CERTIFIED CONCENTRATION (Moles)****ANALYTICAL****ACCURACY******TRACEABILITY**

CARBON DIOXIDE

7.02 %

+/- 1%

Direct NIST and NMI

CARBON MONOXIDE

58.1 PPM

+/- 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.

Product certified as +/- 1% analytical accuracy is directly traceable to NIST or NMI standards.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 2000	01Jun2005	K026511	5.006 %	CARBON DIOXIDE
NTRM 1679	01Jan2007	ALM031184	101.7 PPM	CARBON MONOXIDE

INSTRUMENTATION**INSTRUMENT/MODEL/SERIAL#****DATE LAST CALIBRATED****ANALYTICAL PRINCIPLE**

MTI/M200/170927

07Jun2004

GC-TCO

SIEMENS/6E/KN-240

17May2004

NDIR

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis**Second Triad Analysis****Calibration Curve****CARBON DIOXIDE**

Date: 03Jun2004 Response Unit: AREA

Z1 = 0.00000 R1 = 229747.0 T1 = 322211.0

R2 = 229710.0 Z2 = 0.00000 T2 = 322205.0

Z3 = 0.00000 T3 = 322168.0 R3 = 229704.0

Avg. Concentration: 7.020 %

Concentration = A + Bx + Cx² + Dx³ + Ex⁴

r = 0.999998 2000

Constants: A = 2.1841E-05

B = 9.2408E-03 C =

D = E =

CARBON MONOXIDE

Date: 01Jun2004 Response Unit: VOLTS

Z1 = 0.00490 R1 = 0.49570 T1 = 0.28320

R2 = 0.49600 Z2 = 0.00520 T2 = 0.28280

Z3 = 0.00490 T3 = 0.28320 R3 = 0.49600

Avg. Concentration: 58.10 PPM

Date: 08Jun2004 Response Unit: VOLTS

Z1 = 0.00520 R1 = 0.49530 T1 = 0.28320

R2 = 0.49660 Z2 = 0.00430 T2 = 0.28360

Z3 = 0.00480 T3 = 0.28320 R3 = 0.49590

Avg. Concentration: 58.20 PPM

Concentration = A + Bx + Cx² + Dx³ + Ex⁴

r = 0.99997736 2636

Constants: A = 0.858075

B = 203.726835 C =

D = E =

APPROVED BY:

PAT POLONI

SUPERVISOR:

RAY PENDLETON



Scott Specialty Gases

9810 BAY AREA BLVD, PASADENA, TX 77507

RATA CLASS

Dual-Analyzed Calibration Standard

Phone: 281-474-5800

Fax: 281-474-5857

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
6141 EASTON ROAD, BLDG 1
PLUMSTEADVILLE, PA 18949-0310

P.O. No.: SBS081602
Project No.: 04-31628-001

Customer

GOLDEN SPECIALTY CONSULTING, LTD
GORDON GOSSETT
931 SEACO COURT
DEER PARK TX 77536

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: ALM057489
Cylinder Pressure***: 2000 PSIG

Certification Date: 17Jan2005

Exp. Date: 17Jan2008

COMPONENT

CERTIFIED CONCENTRATION (Moles)

ANALYTICAL

ACCURACY**

TRACEABILITY

CARBON DIOXIDE	7.01 %	+/- 1 %	Direct NIST and NMI
CARBON MONOXIDE	30.1 PPM	+/- 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.

Product certified as +/- 1% analytical accuracy is directly traceable to NIST or NMI standards.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 2000	01Jun2005	K026511	5.006 %	CARBON DIOXIDE
NTRM 1678	01Jun2006	ALM066465	49.16 PPM	CARBON MONOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#

DATE LAST CALIBRATED

ANALYTICAL PRINCIPLE

MTI/M200/170927	10Jan2005	GC-TCD
SIEMENS/6E/KN-240	04Jan2005	NDIR

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis

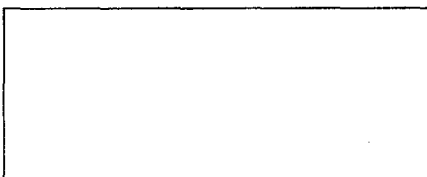
Second Triad Analysis

Calibration Curve

CARBON DIOXIDE

Date: 12Jan2005 Response Unit: AREA

Z1 = 0.00000	R1 = 228926.0	T1 = 320089.0
R2 = 228936.0	Z2 = 0.00000	T2 = 320064.0
Z3 = 0.00000	T3 = 319971.0	R3 = 228703.0
Avg. Concentration: 7.010 %		



Concentration = A + Bx + Cx2 + Dx3 + Ex4

r = 0.999997 2000

Constants: A = 1.7342E-02

B = 2.1771E-05 C =

D = E =

CARBON MONOXIDE

Date: 07Jan2005 Response Unit: VOLTS

Z1 = 0.01430	R1 = 4.72450	T1 = 2.87180
R2 = 4.72010	Z2 = 0.01300	T2 = 2.87080
Z3 = 0.01420	T3 = 2.86730	R3 = 4.72640
Avg. Concentration: 30.10 PPM		

Date: 17Jan2005 Response Unit: VOLTS

Z1 = 0.00760	R1 = 4.85330	T1 = 2.95880
R2 = 4.85310	Z2 = 0.00290	T2 = 2.95790
Z3 = 0.00560	T3 = 2.95560	R3 = 4.84870
Avg. Concentration: 30.20 PPM		

Concentration = A + Bx + Cx2 + Dx3 + Ex4

r = 0.999979116 1678

Constants: A = .115274

B = 10.150546 C =

D = E =

APPROVED BY:

SUPERVISOR:

PAT FULFORD

PAT FULFORD



Scott Specialty Gases

9810 BAY AREA BLVD, PASADENA, TX 77507

RATA CLASS

Dual-Analyzed Calibration Standard

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.: SBS081602
Project No.: 04-30594-007

Customer

GOLDEN SPECIALTY CONSULTING, INC

GREG BURCH
PO BOX 1898
DEER PARK TX 77536

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: **ALM060663**
Cylinder Pressure***: 1800 PSIG

Certification Date: 13Dec2004

Exp. Date: 13Dec2007

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY**	TRACEABILITY
CARBON DIOXIDE	17.9 %	+/- 1%	Direct NIST and NMI
CARBON MONOXIDE	515 PPM	+/- 1%	Direct NIST and NMI
OXYGEN	19.9 %	+/- 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.

Product certified as +/- 1% analytical accuracy is directly traceable to NIST or NMI standards.

REFERENCE STANDARD

TYPE/CRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1675	04Jul2008	K000782	13.93 %	CARBON DIOXIDE
NTRM 2638	01Jun2006	ALM066506	4954. PPM	CARBON MONOXIDE
NTRM 2657	30Jun2007	AAI067887	1.995 %	OXYGEN

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#

MTI-A/M200/171109
MTI-A/M200/171109
MTI-A/M200/171109

DATE LAST CALIBRATED

07Dec2004
08Dec2004
01Dec2004

ANALYTICAL PRINCIPLE

GAS CHROMATOGRAPHY
GAS CHROMATOGRAPHY
GAS CHROMATOGRAPHY

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis

CARBON DIOXIDE

Date: 13Dec2004 Response Unit: AREA
Z1 = 7166.000 R1 = 49560.00 T1 = 63768.00
R2 = 49563.00 Z2 = 7163.000 T2 = 63822.00
Z3 = 7196.000 T3 = 63694.00 R3 = 49567.00
Avg. Concentration: 17.92 %

Second Triad Analysis

Date: 20Dec2004 Response Unit: AREA
Z1 = 7204.000 R1 = 49575.00 T1 = 63794.00
R2 = 49502.00 Z2 = 7163.000 T2 = 63780.00
Z3 = 7206.000 T3 = 63808.00 R3 = 49636.00
Avg. Concentration: 17.93 %

Calibration Curve

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.99999598 1675
Constants: A = 0.000282369
B = -0.02728827 C =
D = F =

CARBON MONOXIDE

Date: 13Dec2004 Response Unit: AREA
Z1 = 18791.00 R1 = 197005.0 T1 = 19876.00
R2 = 196683.0 Z2 = 18775.00 T2 = 19878.00
Z3 = 18678.00 T3 = 19739.00 R3 = 196450.0
Avg. Concentration: 513.5 PPM

Date: 20Dec2004 Response Unit: AREA
Z1 = 18625.00 R1 = 196777.0 T1 = 19766.00
R2 = 196517.0 Z2 = 18524.00 T2 = 19683.00
Z3 = 18427.00 T3 = 19817.00 R3 = 196068.0
Avg. Concentration: 517.2 PPM

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.99999838 2048
Constants: A = 0.025009747
B = 10.90503064 C =
D = E =

OXYGEN

Date: 13Dec2004 Response Unit: AREA
Z1 = 7364.000 R1 = 76897.00 T1 = 73079.00
R2 = 76816.00 Z2 = 7404.000 T2 = 73103.00
Z3 = 7388.000 T3 = 73079.00 R3 = 76866.00
Avg. Concentration: 19.89 %

Date: 20Dec2004 Response Unit: AREA
Z1 = 7398.000 R1 = 76949.00 T1 = 73150.00
R2 = 76970.00 Z2 = 7450.000 T2 = 73176.00
Z3 = 7504.000 T3 = 73194.00 R3 = 76945.00
Avg. Concentration: 19.89 %

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999997104 2659
Constants: A = 0.000273558
B = -0.028539115 C =
D = E =

APPROVED BY:

JULIE CAO

SUPERVISOR:

SUSAN BRANDON

RATA CLASS



Scott Specialty Gases

9810 BAY AREA BLVD, PASADENA, TX 77507

Dual-Analyzed Calibration Standard

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.: SBS081602
Project No.: 04-26478-004

Customer

GOLDEN SPECIALTY CONSULTING, LTD

PO BOX 1898
DEER PARK TX 77536

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: ALM007660

Certification Date: 02Jun2004

Exp. Date: 02Jun2007

Cylinder Pressure***: 2000 PSIG

COMPONENT

OXYGEN
NITROGEN

CERTIFIED CONCENTRATION (Moles)

9.08 %
BALANCE

ANALYTICAL

ACCURACY**

+/- 1%

TRACEABILITY

Direct NIST and NMI

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

Product certified as +/- 1% analytical accuracy is directly traceable to NIST or NMI standards.

REFERENCE STANDARD

TYPE/SRM NO.

NTRM 2658

EXPIRATION DATE

02Oct2006

CYLINDER NUMBER

ALM065073

CONCENTRATION

9.930 %

COMPONENT

OXYGEN

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#

MTI-A/M200/171109

DATE LAST CALIBRATED

01Jun2004

ANALYTICAL PRINCIPLE

GAS CHROMATOGRAPHY

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis

Second Triad Analysis

Calibration Curve

OXYGEN

Date: 02Jun2004 Response Unit: AREA
Z1 = 75.00000 R1 = 36372.00 T1 = 33253.00
R2 = 36280.00 Z2 = 108.0000 T2 = 33185.00
Z3 = 96.00000 T3 = 33124.00 R3 = 36229.00
Avg. Concentration: 9.080 %

Concentration = A + Bx + Cx² + Dx³ + Ex⁴
r = 0.999991648
Constants: A = -0.029019805
B = 0.000273532 C =
D = E =

APPROVED BY:

DAVID KELLY

SUPERVISOR:

RAY PENDLETON

RATA CLASS**Scott Specialty Gases**

9810 BAY AREA BLVD, PASADENA, TX 77507

Phone: 281-474-5800

Fax: 281-474-5857

Dual-Analyzed Calibration Standard**CERTIFICATE OF ACCURACY: EPA Protocol Gas****Assay Laboratory**SCOTT SPECIALTY GASES
9810 BAY AREA BLVD
PASADENA, TX 77507P.O. No.: SBS081602
Project No.: 04-33171-002**Customer**GOLDEN SPECIALTY CONSULTING, LTD
GORDPN GOSSETT
931 SEACO COURT
DEER PARK TX 77536**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: ALM001211

Certification Date: 10Feb2005

Exp. Date: 10Feb2008

Cylinder Pressure***: 2000 PSIG

COMPONENT**CERTIFIED CONCENTRATION (Moles)****ANALYTICAL****ACCURACY******TRACEABILITY**

OXYGEN

4.96 %

+/- 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.

Product certified as +/- 1% analytical accuracy is directly traceable to NIST or NMI standards.

REFERENCE STANDARD**TYPE/SRM NO.****EXPIRATION DATE****CYLINDER NUMBER****CONCENTRATION****COMPONENT**

NTRM 2350

01Feb2008

XA5215

23.51 %

OXYGEN

INSTRUMENTATION**INSTRUMENT/MODEL/SERIAL.#****DATE LAST CALIBRATED****ANALYTICAL PRINCIPLE**

MTI-A/M200/171109

28Jan2005

GAS CHROMATOGRAPHY

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis

Second Triad Analysis

Calibration Curve

OXYGEN

Date: 10Feb2005

Response Unit: AREA

Z1 = 7392.000 R1 = 86260.00 T1 = 18229.00

R2 = 86101.00 Z2 = 7337.000 T2 = 18247.00

Z3 = 7331.000 T3 = 18222.00 R3 = 86094.00

Avg. Concentration: 4.962 %

Concentration = A + Bx + Cx2 + Dx3 + Ex4

r = 0.9999990

Constants: A = -0.0132787

B = 0.000272977 C =

D = E =

APPROVED BY:

DAVID KELLY

SUPERVISOR:

RAY PENDLETON



Scott Specialty Gases

9810 BAY AREA BLVD, PASADENA, TX 77507

RATA CLASS

Dual-Analyzed Calibration Standard

Phone: 281-474-5800

Fax: 281-474-5857

CERTIFICATE OF ACCURACY: Interference Free TM Multi-Component EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
9810 BAY AREA BLVD
PASADENA, TX 77507

P.O. No.: SBS081602
Project No.: 04-17813-003

Customer

GOLDEN SPECIALTY CONSULTING, INC

PO BOX 1898
DEER PARK TX 77536

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: ALM045194

Certification Date: 29Jul2003

Exp. Date: 28Jul2005

Cylinder Pressure***: 1913 PSIG

COMPONENT

SULFUR DIOXIDE *
NITROGEN

CERTIFIED CONCENTRATION (Moles)

181 PPM
BALANCE

ANALYTICAL

ACCURACY**

+/- 1%

TRACEABILITY

Direct NIST and NMI

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

Product certified as +/- 1% analytical accuracy is directly traceable to NIST or NMI standards.

* This Protocol has been certified using corrected NIST SO2 standard values, per EPA guidance dated 7/24/96 and will not correlate with uncorrected Protocols.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM	01May2004	ALM017132	254.4 PPM	SO2/N2

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#

FTIR System/8220/AAB9400260

DATE LAST CALIBRATED

28Jul2003

ANALYTICAL PRINCIPLE

FTIR

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis

Second Triad Analysis

Calibration Curve

SULFUR DIOXIDE *

Date: 20Jul2003	Response Unit: PPM		
Z1 = -1.14620	R1 = 254.4118	T1 = 182.0358	
R2 = 254.5756	Z2 = -1.19170	T2 = 181.7935	
Z3 = -1.23640	T3 = 181.6475	R3 = 254.2125	
Avg. Concentration: 181.8 PPM			

Date: 29Jul2003	Response Unit: PPM		
Z1 = 1.81210	R1 = 254.0948	T1 = 181.3677	
R2 = 254.6413	Z2 = 1.73860	T2 = 181.7642	
Z3 = 2.65470	T3 = 181.8743	R3 = 254.4638	
Avg. Concentration: 181.7 PPM			

Concentration = A + Bx + Cx ² + Dx ³ + Ex ⁴	
r = 0.999990	
Constants:	A = 0.000000
B = 1.000000	C = 0.000000
D = 0.000000	E = 0.000000

APPROVED BY:

GARY WRIGHT


Scott Specialty Gases
RATA CLASS
Dual-Analyzed Calibration Standard

1290 COMBERMERE STREET, TROY, MI 48063

Phone: 248-589-2950

Fax: 248-589-2134

CERTIFICATE OF ACCURACY: Interference Free TM EPA Protocol Gas
Assay Laboratory

 SCOTT SPECIALTY GASES
 1290 COMBERMERE STREET
 TROY, MI 48083

P.O. No.: 53021-71-65000

Project No.: 05-14433-042

Customer

 CLEAN AIR ENGINEERING
 DON ALLEN
 500 W. WOOD STREET
 PALATINE IL 60067

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: ALM049276

Certification Date: 03Feb2004

Exp. Date: 02Feb2006

Cylinder Pressure***: 1977 PSIG

COMPONENT

 SULFUR DIOXIDE *
 NITROGEN

CERTIFIED CONCENTRATION (Moles)

 98.87 PPM
 BALANCE

ANALYTICAL
ACCURACY**
 +/- 1%

TRACEABILITY

Direct NIST and NMI

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

Product certified as +/- 1% analytical accuracy is directly traceable to NIST or NMI standards.

* This Protocol has been certified using corrected NIST SO2 standard values, per EPA guidance dated 7/24/96 and will not correlate with uncorrected Protocols.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1694	01Sep2007	ALM054875	98.10 PPM	SO2/N2

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#

FTIR System/8220/AA89400262

DATE LAST CALIBRATED

05Jan2004

ANALYTICAL PRINCIPLE

Scott Enhanced FTIR

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis

Second Triad Analysis

Calibration Curve

SULFUR DIOXIDE *

Date: 27Jan2004	Response Unit: PPM		
Z1 = 0.12690	R1 = 98.23603	T1 = 98.84523	
R2 = 98.00211	Z2 = 0.16040	T2 = 98.46709	
Z3 = 0.40050	T3 = 98.54400	R3 = 98.06184	
Avg. Concentration:		98.62	PPM

Date: 03Feb2004	Response Unit: PPM		
Z1 = 0.04680	R1 = 98.10912	T1 = 99.52400	
R2 = 98.06901	Z2 = 0.86230	T2 = 98.94500	
Z3 = 0.50410	T3 = 98.87500	R3 = 98.12183	
Avg. Concentration:		99.11	PPM

Concentration = A + Bx + Cx ² + Dx ³ + Ex ⁴	
r = 0.999990	
Constants:	A = 0.000000
B = 1.000000	C = 0.000000
D = 0.000000	E = 0.000000

APPROVED BY

Scott King

APPENDIX F – FIELD DATA

REFERENCE METHOD
Analyzer Calibration Error

Project ID: Plant: Source: Description:	05EQCV278	Test Date: <i>3-25-05</i>	Analyst: <i>GB</i>
	Equistar- Channelview		
	Unit: 13 DIESEL ENGINES		
	Est. Dates 2/28/2005 to 3/11/2005		
		Trailer Unit: <i>5</i>	Analyzer System: <i>Boh</i>
		Assigned Data: <i>Comp - 1450°</i>	

Component	Cylinder Number	Range	Analyzer Response		Actual Conc.	Cylinder Exp. Date
			System 1	System 2		
Oxides of Nitrogen		High	/	/	/	/
		Mid	/	/	/	/
		Zero	/	/	/	/
Nitrogen Dioxide		n/a	/	/	/	/
Carbon Monoxide	<i>ALM 000 411</i>	High	<i>72.0</i>	<i>95.6</i>	<i>90.2</i>	<i>6-18-06</i>
	<i>ALM 000 935</i>	Mid	<i>60.5</i>	<i>58.8</i>	<i>58.1</i>	<i>6-8-07</i>
	<i>ALM 057 409</i>	Low	<i>31.8</i>	<i>30.2</i>	<i>30.1</i>	<i>1-17-08</i>
	<i>AA 7981</i>	Zero	<i>1.0</i>	<i>0.6</i>	<i>0.0</i>	<i>NA</i>
Oxygen	<i>ALM 002660</i>	High	<i>9.10</i>	<i>9.10</i>	<i>9.08</i>	<i>6-2-07</i>
	<i>ALM 001211</i>	Mid	<i>4.88</i>	<i>4.87</i>	<i>4.86</i>	<i>2-10-08</i>
	<i>AA 7981</i>	Zero	<i>0.00</i>	<i>0.02</i>	<i>0.0</i>	<i>NA</i>
Total Hydrocarbons		High	/	/	/	/
		Mid	/	/	/	/
		Low	/	/	/	/
		Zero	/	/	/	/
Sulfur Dioxide	<i>ALM 045194</i>	High	<i>180.8</i>	/	<i>181.0</i>	<i>7-28-05</i>
	<i>ALM 049276</i>	Mid	<i>98.7</i>	/	<i>98.37</i>	<i>2-2-06</i>
	<i>AA 7981</i>	Zero	<i>1.1</i>	/	<i>0.0</i>	<i>NA</i>
Carbon Dioxide	<i>ALM 040663</i>	High	<i>17.91</i>	/	<i>17.9</i>	<i>12-10-07</i>
	<i>ALM 057 409</i>	Mid	<i>9.06 6.89</i>	/	<i>7.01</i>	<i>1-17-08</i>
	<i>AA 7981</i>	Zero	<i>0.26</i>	/	<i>0.0</i>	<i>NA</i>

ANALYZER INFORMATION

Analyzer Type	SYSTEM #1			SYSTEM #2		
	Model	Serial #	Range	Model	Serial #	Range
NO _x						
CO	<i>300</i>	<i>1K09008</i>	<i>200</i>	<i>200</i>	<i>1K12019</i>	<i>200</i>
O ₂	<i>300</i>	<i>1K09008</i>	<i>25</i>	<i>200</i>	<i>1K12019</i>	<i>25</i>
CO ₂	<i>300</i>	<i>1K09008</i>	<i>25</i>			
SO ₂	<i>100AH</i>	<i>111</i>	<i>200</i>			
VOC						

REFERENCE METHOD
Analyzer System Bias

Project ID: 05EOCY278 Plant: Equistar Channelview Source: Unit: 13 DIESEL ENGINES Description: 117.534 for Minor Sources Est. Dates 2/28/2005 to 3/11/2005				Test Date(s): 3-25-05		Analyst:	
				Trailer Unit: T5		Analyzer System: Both	
				Assigned Data:			

RUN NO:	Calibration Gas / Conc.	Pre-Test Calibration ZERO SPAN		Post Test Calibration ZERO SPAN		Bias <5% (Check)	Drift <3% Of Span
Date:	NO _x CO 301	1.2	296				
	CO 20.1	2.0	20.5				
	Start Time: O ₂ 4.96	-0.01	4.94				
	CO ₂ 20.1	-0.21	6.60				
	End Time: THC 0.03	0.03	4.27				
	SO ₂ 181.0	0.2	180.0				
Date: 3-25-05	NO _x CO-2	0.6	32.2	6.6	34.6		
	CO	1.0	31.8	3.8	33.8		
	Start Time: O ₂	-0.03	4.96	-0.01	4.96		
	CO ₂	0.15	6.81	0.15	6.86		
	End Time: THC 0.02	0.02	4.92	0.02	4.97		
	SO ₂	0.1	178.0	0.1	178.1		
Date: 3-25-05	NO _x CO-2	6.6	34.6	5.6	34.2		
	CO	3.8	33.8	3.0	33.5		
	Start Time: O ₂	-0.01	4.96	-0.01	4.96		
	CO ₂	0.15	6.86	0.15	6.76		
	End Time: THC 0.02	0.02	4.97	0.02	4.97		
	SO ₂	0.1	178.1	0.1	178.3		
Date: 3-25-05	NO _x CO-2	5.6	34.2	6.4	35.2		
	CO	3.0	33.5	4.0	32.0		
	Start Time: O ₂	-0.01	4.96	-0.01	4.96		
	CO ₂	0.15	6.76	0.15	6.62		
	End Time: THC 0.02	0.02	4.97	0.02	4.97		
	SO ₂	0.1	178.3	0.2	178.6		
Date:	NO _x						
	CO						
	Start Time: O ₂						
	CO ₂						
	End Time: THC						
	SO ₂						

Comments: **1456°**

FIELD DATA SHEET 4
Moisture Content (Reference)

Client/Plant Name LCR Job # _____City/State Houston Tx Date 3-25-05Test Location/Run # 1 coal 3 Personnel GODry Gas Meter Cal Factor, Y = ²⁰³⁰.999 Pre Leak 0.00 @ 10"
1035 - 1135 Post Leak 200 @ 10"

Trav. Pt.	Samplg Time (min)	Stk Temp (°F)	ΔH (in. H ₂ O)	Vol. Rdg, V _m (cf)	ΔV (cf)	% Dev (≤10%)	DGM Temp., t _m		Imp. Temp. °F
							In, °F	Out, °F	
	1035		1.7	10.110			97	97	51
	5		1.7	13.47			100	98	51
	10		1.7	16.92			102	99	53
	15		1.7	20.55			104	100	54
	20		1.7	24.03			106	101	56
	25		1.7	27.89			107	102	57
	30		1.7	31.32			108	102	58
	35		1.7	34.92			108	101	60
	40		1.7	38.46			108	100	61
	45		1.7	41.70			108	99	62
	50		1.7	46.24			108	99	62
	55		1.7	50.02			108	99	62
	60			Avg: 12					

Analytical Data

	Impinger Volume (mL)	Silica gel weight (g)
Final	V _f <u>229 110</u>	W _f <u>275.7</u>
Initial	V _i <u>100 100 0</u>	W _i <u>265.6</u>
Difference		

$$V_{wc(std)} = 0.04707 (V_f - V_i)$$

$$V_{wsg(std)} = 0.04715 (W_f - W_i)$$

$$V_{m(std)} = 17.64 Y \frac{V_m P_m}{(t_m + 460)}$$

$$B_{ws} = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

QA/QC Check
Completeness _____

Legitimacy _____

Accuracy _____

Specifications _____

Reasonableness _____

Checked by _____

Personnel (Signature/Date)

Team Leader (Signature/Date)

FIELD DATA SHEET 4
Moisture Content (Reference)

Client/Plant Name CCR Job # _____City/State Florida Date 3-25-05Test Location/Run # Core 2 Run 2 935 Personnel GDDry Gas Meter Cal Factor, Y = .997
12:00 - 13:00

pre 0.00 @ 12:00
 post 0.00 @ 13:00

VAL. 2

Trav. Pt.	Samplg Time (min)	Stk Temp (°F)	ΔH (in. H ₂ O)	Vol. Rdg, V _m (cf)	ΔV (cf)	% Dev (≤10%)	DGM Temp., t _m		Imp. Temp. °F
							In, °F	Out, °F	
1	1200	-	1.7	53.827			96	96	57
2	5		1.7				98	97	58
3	10						99	98	59
4	15			64.23			102	98	59
5	20						104	96	59
6	25	0		071.64			104	96	59
7	30			074.82			104	97	60
8	35			078.23			104	97	60
9	40			081.72			106	97	60
10	45			085.85			106	98	61
11	50			089.19			106	99	61
12	55			092.19			106	99	62
	60		1.7	Avg:			107	99	62

095.615
 Analytical Data

	Impinger Volume (mL)		Silica gel weight (g)
Final	V _f	213 122	W _f 265.1
Initial	V _i	100 100 -	W _i 257.4
Difference			

$$V_{wc(std)} = 0.04707 (V_f - V_i)$$

$$V_{wsg(std)} = 0.04715 (W_f - W_i)$$

$$V_{m(std)} = 17.64 Y \frac{V_m P_m}{(t_m + 460)}$$

$$B_{ws} = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

QA/QC Check
Completeness 1Legibility 1Accuracy 1Specifications 1Reasonableness 1Checked by: GD

Personnel (Signature/Date)

Team Leader (Signature/Date)

FIELD DATA SHEET 4
Moisture Content (Reference)

Client/Plant Name LCR Job # _____City/State Houston, TX Date 3/25/05Test Location/Run # 3 Personnel SW, GV, GB, GFDry Gas Meter Cal Factor, Y = 0.999
1370 - 1470095.725VAC 2

Trav. Pt.	Samplg Time (min)	Stk Temp (°F)	ΔH (in. H ₂ O)	Vol. Rdg, V _m (cf)	ΔV (cf)	% Dev (≤10%)	DGM Temp., t _m		Imp. Temp. °F
							In, °F	Out, °F	
1	5	112	1.70	099.19			102	98	58
2	10			102.61			105	98	59
3	15			106.05			107	99	60
4	20			109.47			107	99	60
5	25			113.86			108	99	60
6	30			116.32			108	100	60
7	35			120.01			108	100	61
8	40			123.15			108	100	61
9	45			126.57			108	100	61
10	50			130.15			108	100	62
11	55			133.39			108	100	62
12	60			136.810			108	101	62
			1.70	Avg:					

Leak Check .001 @ 15 psiv pass Analytical Data

	Impinger Volume (mL)	Silica gel weight (g)
Final	V _f <u>110.279</u>	W _f <u>318.5</u>
Initial	V _i <u>100.100</u>	W _i <u>310.3</u>
Difference		

$$V_{wc(std)} = 0.04707 (V_f - V_i)$$

$$V_{wsg(std)} = 0.04715 (W_f - W_i)$$

$$V_{m(std)} = 17.64 Y \frac{V_m P_m}{(t_m + 460)}$$

$$B_{ws} = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

QA/QC Check
Completeness

Legibility

Accuracy

Specifications

Reasonableness

Checked by:

Personnel (Signature/Date)

Team Leader (Signature/Date)

Test Location/Run # 1 & 2 Personnel 6D

Level/Zero Checks: Mark Pt. #'s with an asterisk (*)

Pitot Tube ID #	GST 102A	
Pitot Tube Coefficient (C_p)	.84	
Δp Gauge Sensitivity	.001	
Barometric Pressure (P_b) (in. Hg)	29.86	
Test Location Elevation Difference from Bar., (positive if higher) (B) (ft)	90'	
Corr $P_b = P_b - 0.001 B$ (in. Hg)	29.77	
(✓) _____ Piezometer ✓ Type S		
Static Pressure (P_a) -1.6 (in. H_2O)		
Post-test Leak Check:	Side	A ✓ B ✓
Pressure Tap Δp 3 (in. H_2O)		
Stable for 15 seconds? (Yes, no)	Y	Y
Pitot Tube Condition: ' Damaged? Post-test Intercomponent Spacing:		

Velocity Traverses					
Start Time:			Finish Time:		
Pt. #	Δp in. H ₂ O	Temp. °F	Pt. #	Δp in. H ₂ O	Temp. °F
1	.12	511	6	.12	510
2	.13	512	2	.13	512
3	.14	514	3	.13	513
4	.13	513	4	.13	513
5	.12	511	5	.12	513
6	.13	511	6	.13	513
1	.12	510	1	.12	512
2	.13	513	2	.13	513
3	.14	511	3	.13	513
4	.12	512	4	.14	513
5	.13	513	5	.12	513
6	.13	513	6	.13	513
Average:					

229 110

Personnel (Signature/Date)

Team Leader (Signature/Date)

FIELD DATA SHEET 2

Velocity Head, Temperature, and Stack Pressure Measurements

Client/Plant Name LCR Job # _____City/State HOUSTON, TX Date 3/25/05Test Location/Run # 16435 3 Personnel PN, AB, SW**Note:** Ensure that pitot tube is aligned parallel to the stack or duct axis.

Pitot Tube ID #	<u>AST102A</u>	
Pitot Tube Coefficient (C_p)	<u>.84</u>	
Δp Gauge Sensitivity		
Barometric Pressure (P_b) (in. Hg)	<u>29.86</u>	
Test Location Elevation Difference from Bar., (positive if higher) (B) (ft)	<u>90'</u>	
Corr $P_b = P_b - 0.001 B$ (in. Hg)	<u>29.77</u>	
(<input checked="" type="checkbox"/>) Piezometer (<input checked="" type="checkbox"/> Type S)		
Static Pressure (P_s) <u>-1.6</u> (in. H ₂ O)		
Post-test Leak Check: Side	<input checked="" type="checkbox"/> A	<input checked="" type="checkbox"/> B
Pressure Tap Δp <u>3</u> (in. H ₂ O)		
Stable for 15 seconds? (Y N)	<u>Y</u>	<u>Y</u>
Pitot Tube Condition: Damaged? Post-test Intercomponent Spacing:		

Level/Zero Checks: Mark Pt. #'s with an asterisk (*)

Start Time:			Finish Time:		
Pt. #	Δp in. H ₂ O	Temp. °F	Pt. #	Δp in. H ₂ O	Temp. °F
<u>1-1</u>	<u>.17</u>	<u>497</u>			
<u>2</u>	<u>.14</u>	<u>503</u>			
<u>3</u>	<u>.14</u>	<u>504</u>			
<u>4</u>	<u>.15</u>	<u>504</u>			
<u>5</u>	<u>.13</u>	<u>505</u>			
<u>6</u>	<u>.14</u>	<u>503</u>			
<u>2-1</u>	<u>.16</u>	<u>504</u>			
<u>2</u>	<u>.15</u>	<u>503</u>			
<u>3</u>	<u>.14</u>	<u>501</u>			
<u>4</u>	<u>.13</u>	<u>504</u>			
<u>5</u>	<u>.13</u>	<u>503</u>			
<u>6</u>	<u>.12</u>	<u>502</u>			
Average:					

QA/QC Check

Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒Checked by: [Signature] 3/25/05

Personnel (Signature/Date)

Team Leader (Signature/Date)

**GOLDEN****SPECIALTY CONSULTING, LTD.****REFERENCE METHOD
Analyzer System Bias**

Project ID: 05EQCV278 Plant: Equistar- Channelview Source: Unit: 13 DIESEL ENGINES Description: 117.534 for Minor Sources Est. Dates 2/28/2005 to 3/11/2005				Test Date(s): 3-25-04 Trailer Unit: 5 Assigned Data: Cond 4 compliance		Analyst: GD Analyzer System: Doth	
--	--	--	--	---	--	--	--

RUN NO:	Calibration Gas / Conc.	Pre-Test Calibration ZERO	SPAN	Post Test Calibration ZERO	SPAN	Bias <5% (Check)	Drift <3% Of Span
1							
Date: 3-25-04	NOx CO 0.00	6.4	35.2	7.5	32.8		
	CO	4.0	33.0	7.8	34.8		
Start Time: 1620	O ₂	-0.01	4.96	-0.01	4.96		
	CO ₂	0.17446	6.62	0.05	6.75		
End Time: 1720	THC 0.2 D/L	0.02	4.97	0.02	4.96		
	SO ₂	0.7	178.6	1.0	176.3		
2							
Date: 3-25-04	NOx CO 0.00	7.5	33.8	7.6	32.8		
	CO	4.8	34.8	1.0	30.8		
Start Time: 1735	O ₂	-0.01	4.86	0.00	4.95		
	CO ₂	0.05	6.75	0.00	6.63		
End Time: 1835	THC 0.2 D/L	0.02	4.86	0.01	4.96		
	SO ₂	1.0	176.3	1.2	178.0		
3							
Date: 3-25-04	NOx CO 0.00	3.846	32.8	3.846	32.0		
	CO	1.0	30.0	0.0	29.8		
Start Time: 1848	O ₂	-0.01	4.95	-0.01	4.95		
	CO ₂	0.04	6.68	0.04	6.73		
End Time: 1948	THC 0.2 D/L	0.02	4.96	0.02	4.97		
	SO ₂	1.2	178.0	1.0	179.4		
4							
Date:	NO _x						
	CO						
Start Time:	O ₂						
	CO ₂						
End Time:	THC						
	SO ₂						
5							
Date:	NO _x						
	CO						
Start Time:	O ₂						
	CO ₂						
End Time:	THC						
	SO ₂						

Comments:	1440° Inc Temp
-----------	-----------------------

FIELD DATA SHEET 4
Moisture Content (Reference)

Client/Plant Name LCR Job # _____
 City/State HOUSTON, TX Date 3/25/05
 Test Location/Run # 1 1440 Personnel GV, GB, SW, GF
 Dry Gas Meter Cal Factor, Y = .999
136.840 2 1AC 3

Trav. Pt.	Samplg Time (min)	Stk Temp (°F)	ΔH (in. H ₂ O)	Vol. Rdg, V _m (cf)	ΔV (cf)	% Dev (≤10%)	DGM Temp., t _m		Imp. Temp. °F
							In, °F	Out, °F	
1	5	ND	2.0	140.63			101	96	57
2	10			144.83			104	97	58
3	15			149.03			104	97	59
4	20			152.30			107	97	60
5	25			156.19			108	98	60
6	30			160.065			108	98	61
7	35								
8	40								
9	45								
10	50								
11	55								
12	60	NA	20						
				Avg: 23.228					

1224 Check out @ 15
Final out @ 12

Analytical Data

	Impinger Volume (mL)	Silica gel weight (g)
Final	V _f I1 100ml, I2 110ml 30	W _f 266.5
Initial	V _i 100 - 100 - 0	W _i 257.2
Difference		

$$V_{wc(std)} = 0.04707 (V_f - V_i)$$

$$V_{wsg(std)} = 0.04715 (W_f - W_i)$$

$$V_{m(std)} = 17.64 Y \frac{V_m P_m}{(t_m + 460)}$$

$$B_{ws} = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

QA/QC Check

Completeness ✓ Legibility ✓ Accuracy ✓ Specifications ✓ Reasonableness ✓
 Checked by: [Signature] 3/28/05
 Personnel (Signature/Date)
 Team Leader (Signature/Date)

FIELD DATA SHEET 4
Moisture Content (Reference)

Client/Plant Name LCR Job # _____City/State HOUSTON, TX Date 3/25/05Test Location/Run # 2 1440 Personnel GB, SW, GF, GVDry Gas Meter Cal Factor, Y = .991160.130VAC 3

Trav. Pt.	Sample Time (min)	Stk Temp (°F)	ΔH (in. H ₂ O)	Vol. Rdg, V _m (cf)	ΔV (cf)	% Dev (≤10%)	DGM Temp., t _m		Imp. Temp. °F
							In, °F	Out, °F	
1	5	NA	1.70	143.69			102	97	59
2	10			167.39			103	97	60
3	15			170.74			103	97	59
4	20			174.26			103	96	60
5	25			177.79			103	96	60
6	30			181.30			103	96	61
7	35			184.81			103	96	60
8	40			188.32			101	95	61
9	45			191.82			101	95	61
10	50			195.31			100	94	62
11	55			198.79			101	94	62
12	60		1.70	202.28			101	94	63
				Avg: <u>142.15</u>					

100% Check .002 @ 13
 Final .000 @ 60

Analytical Data

	Impinger Volume (mL)	Silica gel weight (g)
Final	<u>V_f 110.130</u>	<u>W_f 367.5</u>
Initial	<u>V_i 100.00</u>	<u>W_i 357.7</u>
Difference		

$$V_{wc(std)} = 0.04707 (V_f - V_i)$$

$$V_{wsg(std)} = 0.04715 (W_f - W_i)$$

$$V_{m(std)} = 17.64 Y \frac{V_m P_m}{(t_m + 460)}$$

$$B_{ws} = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

QA/QC Check

Completeness ✓Legibility ✓Accuracy ✓Specifications ✓Reasonableness ✓Checked by: [Signature] 3/25/05

Personnel (Signature/Date)

Team Leader (Signature/Date)

FIELD DATA SHEET 4
Moisture Content (Reference)

Client/Plant Name LCR Job # _____City/State HOUSTON, TX Date 3/25/05Test Location/Run # 3 1440 Personnel GB, HF, SW, HVDry Gas Meter Cal Factor, Y = 999 200.330 VAE 3

Trav. Pt.	Sample Time (min)	Stk Temp (°F)	ΔH (in. H ₂ O)	Vol. Rdg, V _m (cf)	ΔV (cf)	% Dev (≤10%)	DGM Temp., t _m		Imp. Temp. °F
							In, °F	Out, °F	
1	5	NA	1.70	204.68			96	92	58
2	10			208.79			97	92	59
3	15			211.99			99	92	59
4	20			214.56			100	92	60
5	25			217.21			100	92	59
6	30			221.64			100	92	60
7	35			224.84			100	92	60
8	40			228.43			106	92	59
9	45			231.31			100	92	60
10	50			234.44			100	92	61
11	55			237.61			100	92	61
12	60			240.800			100	92	61
		NA	1.70	Avg: (38.47)					

Leak Check - 001 @ 12
 Final - 001 @ 7

Analytical Data

	Impinger Volume (mL)	Silica gel weight (g)
Final	V _f 11019 12/1013 0	W _f 354.0
Initial	V _i 100 100 -	W _i 347.5
Difference		

$$V_{wc(std)} = 0.04707 (V_f - V_i)$$

$$V_{wsg(std)} = 0.04715 (W_f - W_i)$$

$$V_{m(std)} = 17.64 Y \frac{V_m P_m}{(t_m + 460)}$$

$$B_{ws} = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

QA/QC Check

Completeness Legibility Accuracy Specifications Reasonableness

Checked by: 3/25/05
 Personnel (Signature/Date)
 Team Leader (Signature/Date)

FIELD DATA SHEET 2

Velocity Head, Temperature, and Stack Pressure Measurements

Client/Plant Name LCR Job # _____

City/State HOUSTON, TX Date 3/25/05

Test Location/Run # 1 1440 Personnel GB, SW, GF, GV

Note: Ensure that pitot tube is aligned parallel to the stack or duct axis.

Pitot Tube ID #	AST102A		
Pitot Tube Coefficient (C_p)	.84		
Δp Gauge Sensitivity			
Barometric Pressure (P_b) (in. Hg)	29.79		
Test Location Elevation Difference from Bar., (positive if higher) (B) (ft)	90		
Corr $P_b = P_b - 0.001 B$ (in. Hg)	29.70		
<input checked="" type="checkbox"/> Piezometer <input checked="" type="checkbox"/> Type S			
Static Pressure (P_s) (in. H_2O)	-1.6		
Post-test Leak Check:	Side	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Pressure Tap Δp (in. H_2O)	3.0	3.0	
Stable for 15 seconds?	(Yes) <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Pitot Tube Condition: Damaged? <input type="checkbox"/> Post-test Intercomponent Spacing:			

Level/Zero Checks: Mark Pt. #'s with an asterisk (*)

Velocity Traverses					
Start Time:			Finish Time:		
Pt. #	Δp in. H ₂ O	Temp. °F	Pt. #	Δp in. H ₂ O	Temp. °F
1-1	.14	501			
2	.13	500			
3	.13	500			
4	.12	500			
5	.12	498			
6	.13	496			
2-1	.15	487			
2	.14	499			
3	.14	500			
4	.13	500			
5	.13	501			
6	.12	501			
Average:					

QA/QC Check

Completeness Legibility Accuracy Specifications Reasonableness

Checked by: Personnel (Signature/Date) Team Leader (Signature/Date)

FIELD DATA SHEET 2

Velocity Head, Temperature, and Stack Pressure Measurements

Client/Plant Name LCR Job # _____City/State HOUSTON, TX Date 3/25/05Test Location/Run # 2 1440 Personnel GB, SW, GF**Note:** Ensure that pitot tube is aligned parallel to the stack or duct axis.

Pitot Tube ID #	GST107A	
Pitot Tube Coefficient (C_p)	.84	
Δp Gauge Sensitivity		
Barometric Pressure (P_b) (in. Hg)	29.79	
Test Location Elevation Difference from Bar., (positive if higher) (B) (ft)	90'	
Corr $P_b = P_b - 0.001 B$ (in. Hg)	29.70	
(<input checked="" type="checkbox"/>) Piezometer (<input checked="" type="checkbox"/> Type S)		
Static Pressure (P_s) (in. H ₂ O)	-1.6	
Post-test Leak Check: Side	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Pressure Tap Δp (in. H ₂ O)	3.0	3.0
Stable for 15 seconds? (yes/no)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Pitot Tube Condition: Damaged?		
Post-test Intercomponent Spacing:		

Level/Zero Checks: Mark Pt. #'s with an asterisk (*)

Velocity Traverses					
Start Time:			Finish Time:		
Pt. #	Δp in. H ₂ O	Temp. °F	Pt. #	Δp in. H ₂ O	Temp. °F
1-1	.13	498			
2	.14	499			
3	.13	500			
4	.13	501			
5	.14	500			
6	.13	498			
2-1	.14	500			
2	.14	501			
3	.12	500			
4	.13	500			
5	.12	500			
6	.12	500			
Average:					

QA/QC Check

Completeness _____ Legibility _____ Accuracy _____ Specifications _____ Reasonableness _____

Checked by: [Signature] 3/25/05 Personnel (Signature/Date) Team Leader (Signature/Date)

FIELD DATA SHEET 2

Velocity Head, Temperature, and Stack Pressure Measurements

Client/Plant Name LCR Job # _____

City/State Houston, tx Date 3/25/05

Test Location/Run # 3 1440 Personnel GB, AF, SW, GV

Note: Ensure that pitot tube is aligned parallel to the stack or duct axis.

Pitot Tube ID #	AST 102A		
Pitot Tube Coefficient (C_p)	.84		
Δp Gauge Sensitivity			
Barometric Pressure (P_b) (in. Hg)	29.79		
Test Location Elevation Difference from Bar., (positive if higher) (B) (ft)			
Corr $P_b = P_b - 0.001 B$ (in. Hg)			
<input checked="" type="checkbox"/> _____ Piezometer <input checked="" type="checkbox"/> _____ Type S			
Static Pressure (P_a) (in. H_2O)	-1.6		
Post-test Leak Check:	Side	<input checked="" type="checkbox"/> A	<input checked="" type="checkbox"/> B
Pressure Tap Δp (in. H_2O)	3.0	3.0	
Stable for 15 seconds?	(yes no)	<input checked="" type="checkbox"/> Y	<input checked="" type="checkbox"/> N
Pitot Tube Condition: Damaged? Post-test Intercomponent Spacing:			

Level/Zero Checks: Mark Pt. #'s with an asterisk (*)

Velocity Traverses					
Start Time:			Finish Time:		
Pt. #	Δp in. H ₂ O	Temp. °F	Pt. #	Δp in. H ₂ O	Temp. °F
1-1	.15	495			
2	.14	496			
3	.14	495			
4	.13	497			
5	.13	497			
6	.12	495			
2-1	.13	492			
2	.13	494			
3	.13	496			
4	.14	497			
5	.13	497			
6	.13	497			
Average:					

QA/QC Check

Completeness / Legibility / Accuracy / Specifications / Reasonableness /

Checked by: [Signature] 3/21/15 [Signature]
 Personnel (Signature/Date) Team Leader (Signature/Date)

REFERENCE METHOD

Analyzer System Bias

Project ID: 05LC141 ✓ Plant: Lyondell Citgo Refining, LP Houston Source: TGU 435 Description: CEMS Compliance, (CO, SO, H2S) Methods 1-4, Method 15				Test Date(s): 3-26-05		Analyst: 60	
				Trailer Unit: 5		Analyzer System: 1	
				Assigned Data: Comp.			

RUN NO:	Calibration Gas / Conc.	Pre-Test Calibration ZERO	SPAN	Post Test Calibration ZERO	SPAN	Bias <5% (Check)	Drift <3% Of Span
1							
Date:	NO _x CO ₂ H ₂	1.0	29.4	1.2	29.4		
3-26-05	CO	-2.0	29.8	1.0	30.8		
Start Time:	O ₂	-0.03	4.95	-0.01	4.95		
7:55 AM	CO ₂	-0.01	6.79	0.20	6.89		
End Time:	THC O ₂ H ₂	0.01	4.96	0.20	4.96		
8:00	SO ₂	0.0	178.3	1.5	179.0		
2							
Date:	NO _x CO ₂ H ₂	1.2	29.4	2.0	30.4		
3-26-05	CO	1.0	30.3	2.0	31.5		
Start Time:	O ₂	-0.01	4.95	-0.01	4.94		
9:15	CO ₂	2.0	6.39	0.15	6.82		
End Time:	THC O ₂ H ₂	0.03	4.96	0.02	4.96		
10:15	SO ₂	1.5	179.0	0.8	178.1		
3							
Date:	NO _x CO ₂ H ₂	2.0	30.4	1.6	29.8		
3-26-05	CO	2.0	31.5	1.0	30.8		
Start Time:	O ₂	-0.01	4.94	-0.01	4.94		
10:32	CO ₂	0.15	6.82	0.02	4.84 6.95		
End Time:	THC O ₂ H ₂	0.02	4.96	0.01	4.96		
11:32	SO ₂	0.8	178.1	0.6	176.2		
4							
Date:	NO _x						
	CO						
Start Time:	O ₂						
	CO ₂						
End Time:	THC						
	SO ₂						
5							
Date:	NO _x						
	CO						
Start Time:	O ₂						
	CO ₂						
End Time:	THC						
	SO ₂						

Comments: 1500°							
------------------------	--	--	--	--	--	--	--

FIELD DATA SHEET 4
Moisture Content (Reference)

Client/Plant Name LCR Job # _____City/State Houston TX Date 3/26/05Test Location/Run # 1 1500 Personnel GB, GV, SWDry Gas Meter Cal Factor, Y = 295240.750VAC 2

Trav. Pt.	Samplg Time (min)	Stk Temp (°F)	ΔH (in. H ₂ O)	Vol. Rdg, V _m (cf)	ΔV (cf)	% Dev (≤10%)	DGM Temp., t _m		Imp. Temp. °F
							In, °F	Out, °F	
1	5	NA	1.70	244.23			78	75	57
2	10			247.73			80	76	58
3	15			251.09			81	76	59
4	20			254.83			84	77	60
5	25			257.92			85	77	60
6	30			261.28			86	78	60
7	35			264.65			87	79	60
8	40			268.01			88	80	60
9	45			271.37			89	80	61
10	50			274.61			89	81	61
11	55			278.65			89	81	61
12	60	NA	1.70	281.425			89	81	61
				Avg: 240.675					

Analytical Data

	Impinger Volume (mL)	Silica gel weight (g)
Final	V _i 11.010 I2 11.0 I3 0	W _i 326.8
Initial	V _i 100 100 -	W _i 316.1
Difference		

100% check 000 @ 13.
 final 000 @ 6
 $V_{wc(std)} = 0.04707 (V_i - V_f)$

$$V_{wsg(std)} = 0.04715 (W_i - W_f)$$

$$V_{m(std)} = 17.64 Y \frac{V_m P_m}{(t_m + 460)}$$

$$B_{ws} = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

QA/QC CheckCompleteness Legibility Accuracy Specifications Reasonableness Checked by:

Personnel (Signature/Date)

Team Leader (Signature/Date)

FIELD DATA SHEET 4
Moisture Content (Reference)

Client/Plant Name LCR Job # _____

City/State HOUSTON, TX Date 3/26/05

Test Location/Run # 2 1500 Personnel GB, SW, HV

Dry Gas Meter Cal Factor, Y = .929

281.515 VAC. 3

Trav. Pt.	Samplg Time (min)	Stk Temp (°F)	ΔH (in. H ₂ O)	Vol. Rdg, V _m (cf)	ΔV (cf)	% Dev (≤10%)	DGM Temp., t _m		Imp. Temp. °F
							In, °F	Out, °F	
1	5	NA	1.70	284.75			87	82	59
2	10			288.76			89	83	60
3	15			291.48			89	83	60
4	20			294.84			89	83	60
5	25			298.21			89	83	60
6	30			301.57			90	83	60
7	35			304.93			90	83	60
8	40			308.86			90	83	60
9	45			311.65			90	83	60
10	50			315.01			90	83	60
11	55			318.36			91	84	60
12	60			321.720			91	84	61
			1.70	Avg: <u>(40205)</u>					

Analytical Data

	Impinger Volume (mL)	Silica gel weight (g)
Final	V _f <u>110</u>	W _f <u>326.8</u> <u>318.8</u>
Initial	V _i <u>100</u> <u>100</u>	W _i <u>316.1</u> <u>307.8</u>
Difference		

Leak Check .001 @ 15
 Final .001 @ 8
 $V_{wc(std)} = 0.04707 (V_f - V_i)$

$$V_{wsg(std)} = 0.04715 (W_f - W_i)$$

$$V_{m(std)} = 17.64 Y \frac{V_m P_m}{(t_m + 460)}$$

$$B_{ws} = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

QA/QC Check
 Completeness

Legibility

Accuracy

Specifications

Reasonableness

Checked by:

Personnel (Signature/Date)

Team Leader (Signature/Date)

FIELD DATA SHEET 4
Moisture Content (Reference)

Client/Plant Name LCR Job # _____

City/State HOUSTON TX Date 3/26/05

Test Location/Run # 3 1500 Personnel AB, GV, SW

Dry Gas Meter Cal Factor, Y = .929

START 1032 - 1132 221.810

VAL. 3

Trav. Pt.	Samplg Time (min)	Stk Temp (°F)	ΔH (in. H ₂ O)	Vol. Rdg, V _m (cf)	ΔV (cf)	% Dev (≤10%?)	DGM Temp., t _m		Imp. Temp. °F
							In, °F	Out, °F	
1	5	NA	1.70	325.34			89	84	60
2	10			329.42			92	85	60
3	15			332.33			92	85	60
4	20			336.03			92	85	60
5	25			339.97			92	85	60
6	30			343.42			92	85	60
7	35			346.24			92	85	60
8	40			349.55			92	85	60
9	45			353.33			92	85	60
10	50			356.63			92	85	60
11	55			360.33			92	85	61
12	60		1.70	363.545			92	86	61
				Avg:					

41.735

Rek Check .001 @ 16

Anal .001 @ 11

Analytical Data

	Impinger Volume (mL)	Silica gel weight (g)
Final	<u>V_f 110</u>	<u>W_f 318.6</u>
Initial	<u>V_i</u>	<u>W_i 307.8</u>
Difference		

$$V_{wc(std)} = 0.04707 (V_f - V_i)$$

$$V_{wsg(std)} = 0.04715 (W_f - W_i)$$

$$V_{m(std)} = 17.64 Y \frac{V_m P_m}{(t_m + 460)}$$

$$B_{ws} = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

QA/QC Check

Completeness ✓ Legibility ✓ Accuracy ✓ Specifications ✓ Reasonableness ✓

Checked by: [Signature] 3/26/05
 Personnel (Signature/Date)
 Team Leader (Signature/Date)

FIELD DATA SHEET 2

Velocity Head, Temperature, and Stack Pressure Measurements

Client/Plant Name LCR Job # _____

City/State Houston, TX Date 3/26/05

Test Location/Run # 1 1500 Personnel GB, GV, Jw

Note: Ensure that pitot tube is aligned parallel to the stack or duct axis.

Level/Zero Checks: Mark Pt. #'s with an asterisk (*)

Pitot Tube ID #	AST102A	
Pitot Tube Coefficient (C_p)	.84	
Δp Gauge Sensitivity		
Barometric Pressure (P_b) (in. Hg)	29.79	
Test Location Elevation Difference from Bar., (positive if higher) (B) (ft)	90'	
Corr $P_b = P_b - 0.001 B$ (in. Hg)	29.70	
<input checked="" type="checkbox"/> _____ Piezometer <input checked="" type="checkbox"/> _____ Type S		
Static Pressure (P_q) -1.0 (in. H_2O)		
Post-test Leak Check:	Side	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Pressure Tap Δp 3 (in. H_2O)		
Stable for 15 seconds?	Yes No	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Pitot Tube Condition: Damaged? Post-test Intercomponent Spacing:		

[illegible]

QA/QC Check

Completeness ✓ Legibility ✓ Accuracy ✓ Specifications ✓ Reasonableness ✓

Checked by: [Signature] 3/2/15
Personnel (Signature/Date)

Team Leader (Signature/Date)

Test Location/Run # 3 1500 Personnel AB, GV, JW

Pitot Tube ID #	AST102A		
Pitot Tube Coefficient (C_p)	.84		
Δp Gauge Sensitivity			
Barometric Pressure (P_b) (in. Hg)	29.79		
Test Location Elevation Difference from Bar., (positive if higher) (B) (ft)	90'		
Corr $P_b = P_b - 0.001 B$ (in. Hg)	29.70		
(<input checked="" type="checkbox"/>) _____ Piezometer	<input checked="" type="checkbox"/> Type S		
Static Pressure (P_a) -1.6 (in. H_2O)			
Post-test Leak Check:	Side	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Pressure Tap Δp 3 (in. H_2O)			
Stable for 15 seconds? (yes no)	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Pitot Tube Condition: Damaged? Post-test Intercomponent Spacing:			

Velocity Traverses					
Start Time:			Finish Time:		
Pt. #	Δp in. H ₂ O	Temp. °F	Pt. #	Δp in. H ₂ O	Temp. °F
1-1	.16	501			
2	.16	504			
3	.15	505			
4	.14	505			
5	.13	506			
6	.13	508			
2-1	.16	505			
2	.15	506			
3	.16	506			
4	.14	505			
5	.14	505			
6	.13	505			
		505			
Average:					

Checked by: [Signature] 3/26/05
Personnel (Signature/Date)

Team Leader (Signature/Date)

REFERENCE METHOD

Analyzer System Bias

Project ID: 05LC141 Plant: Lyondell Citgo Refining, LP Houston Source: TGU 435 Description: CEMS Compliance, (CO, SO, H2S) Methods 1-4, Method 15				Test Date(s): 3-26-05		Analyst:	
				Trailer Unit: TJ		Analyzer System:	
				Assigned Data: 2nd condition - 1475°C			

RUN NO:	Calibration Gas / Conc.	Pre-Test Calibration		Post Test Calibration		Bias <5% (Check)	Drift <3% Of Span
		ZERO	SPAN	ZERO	SPAN		
1	NO _x CO B/c	1.6	29.8	2.8	31.6		
Date:	CO	1.0	30.8	1.2	31.8		
Start Time:	O ₂	-0.01	4.94	-0.01	4.94		
End Time:	CO ₂	0.02	6.75	0.07	6.76		
	THC O ₂ B/c	0.01	4.96	0.02	4.96		
	SO ₂	0.6	176.2	0.6	176.3		
2	NO _x CO-2	2.8	31.6	1.6	29.8		
Date:	CO	1.2	31.8	1.0	30.5		
Start Time:	O ₂	-0.01	4.94	-0.01	4.93		
End Time:	CO ₂	0.07	6.76	-0.01 0.06	6.68		
	THC O ₂ - 2	0.02	4.96	0.02	4.96		
	SO ₂	0.6	176.3	1.8	177.9		
3	NO _x CO-2	1.6	29.8		0.8	29.0	
Date:	CO	1.0	30.1		1.0	31.8	
Start Time:	O ₂	-0.01	4.93		0.00	4.94	
End Time:	CO ₂	0.06	6.68		0.02	6.64	
	THC O ₂ - 2	0.02	4.96		0.01	4.94	
	SO ₂	1.8	177.9		0.6	179.1	
	NO _x						
Date:	CO						
Start Time:	O ₂						
End Time:	CO ₂						
	THC						
	SO ₂						
	NO _x						
Date:	CO						
Start Time:	O ₂						
End Time:	CO ₂						
	THC						
	SO ₂						

Comments:

Test Location/Run # 1 1475 Personnel GB, SW, GV

Pitot Tube ID #	487102A		
Pitot Tube Coefficient (C_p)	.84		
Δp Gauge Sensitivity			
Barometric Pressure (P_b) (in. Hg)	29.79		
Test Location Elevation Difference from Bar., (positive if higher) (B) (ft)	90'		
Corr $P_b = P_b - 0.001 B$ (in. Hg)	29.70		
(✓) _____ Piezometer _____ ✓ Type S			
Static Pressure (P_a) -1.6 (in. H_2O)			
Post-test Leak Check: Side	X	X	
Pressure Tap Δp 3 (in. H_2O)			
Stable for 15 seconds? (yes/no)	X	X	
Pitot Tube Condition: Damaged?			
Post-test Intercomponent Spacing:			

Level/Zero Checks: Mark Pt. #'s with an asterisk (*)					
Velocity Traverses			Velocity Traverses		
Start Time:			Finish Time:		
Pt. #	Δp in. H ₂ O	Temp. °F	Pt. #	Δp in. H ₂ O	Temp. °F
1-1	.15	500	1-1	.16	506
2	.14	502	2	.16	505
3	.14	505	3	.14	505
4	.13	505	4	.13	506
5	.13	505	5	.14	507
6	.12	507	6	.13	506
2-1	.16	506	2-2	.14	504
2	.16	505	2	.14	505
3	.15	506	3	.13	503
4	.14	507	4	.13	504
5	.12	507	5	.10	505
6	.13	506	6	.10	506
Average:					

Checked by: [Signature] 3/26/05 [Signature]
Personnel (Signature/Date) Team Leader (Signature/Date)

FIELD DATA SHEET 2

Velocity Head, Temperature, and Stack Pressure Measurements

Client/Plant Name Jer Job #

City/State HOUSTON, TX Date 3/26/05

Test Location/Run # 3 1478 Personnel GB, GV, SW

Note: Ensure that pitot tube is aligned parallel to the stack or duct axis.

Pitot Tube ID #	A87102A		
Pitot Tube Coefficient (C_p)	.84		
Δp Gauge Sensitivity			
Barometric Pressure (P_b) (in. Hg)	29.79		
Test Location Elevation Difference from Bar., (positive if higher) (B) (ft)	90'		
Corr $P_b = P_b - 0.001 B$ (in. Hg)	29.70		
(<input checked="" type="checkbox"/>) _____ Piezometer (<input checked="" type="checkbox"/>) Type S			
Static Pressure (P_s) - 1.6 (in. H_2O)			
Post-test Leak Check:	Side	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Pressure Tap Δp 3 (in. H_2O)			
Stable for 15 seconds? (yes no)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Pitot Tube Condition: ' Damaged? Post-test Intercomponent Spacing:			

Level/Zero Checks: Mark Pt. #'s with an asterisk (*)

[illegible]**QA/QC Check**

Completeness ✓ Legibility ✓ Accuracy ✓ Specifications ✓ Reasonableness ✓

Checked by:

Personnel (Signature/Date)

Team Leader (Signature/Date)

FIELD DATA SHEET 4
Moisture Content (Reference)

Client/Plant Name LCR Job # _____

City/State HOUSTON, TX Date 3/26/05

Test Location/Run # 1 1475 Personnel AB, EV, SW

Dry Gas Meter Cal Factor, Y = 0.989

1208 - 1308 363.65

VAL 2

Trav. Pt.	Samplg Time (min)	Stk Temp (°F)	ΔH (in. H ₂ O)	Vol. Rdg, V _m (cf)	ΔV (cf)	% Dev (≤10%)	DGM Temp., t _m		Imp. Temp. °F
							In, °F	Out, °F	
1	5	ND	1.70	367.24			92	88	60
2	10			371.07			92	86	60
3	15			375.35			94	87	60
4	20			378.43			94	87	60
5	25			382.10			94	87	60
6	30			386.44			95	87	61
7	35			389.46			95	87	61
8	40			393.11			96	88	62
9	45		397.25	400.44			97	89	62
10	50			404.09			97	89	62
11	55			408.09			97	89	62
12	60			407.74			97	89	63
			1.70	Avg: 44.115					

Leak Check: 000 to 16
 Final: 001 @ 8

Analytical Data

	Impinger Volume (mL)	Silica gel weight (g)
Final	V _f = 210 ± 10	W _f = 353.6
Initial	V _i	W _i = 347.4
Difference		

$$V_{wc(std)} = 0.04707 (V_f - V_i)$$

$$V_{wsg(std)} = 0.04715 (W_f - W_i)$$

$$V_{m(std)} = 17.64 Y \frac{V_m P_m}{(t_m + 460)}$$

$$B_{ws} = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

QA/QC Check

Completeness ☒ Legibility ☒ Accuracy ☒ Specifications ☒ Reasonableness ☒

Checked by: [Signature] 3/26/05
 Personnel (Signature/Date)
 Team Leader (Signature/Date)

FIELD DATA SHEET 4
Moisture Content (Reference)

Client/Plant Name LCR Job # _____City/State Houston, TX Date 3/26/05Test Location/Run # 2 1475 Personnel GB, GV, SW

Dry Gas Meter Cal Factor, Y = _____

1000 - 1300407.840VAR 2

Trav. Pt.	Samplg Time (min)	Stk Temp (°F)	ΔH (in. H ₂ O)	Vol. Rdg, V _m (cf)	ΔV (cf)	% Dev (≤10%)	DGM Temp., t _m		Imp. Temp. °F
							In, °F	Out, °F	
1	5	NA	1.70	411.52			94	89	58
2	10			415.16			95	89	59
3	15			418.79			95	89	61
4	20			422.42			95	89	61
5	25			426.03			96	89	61
6	30			429.63			96	89	61
7	35			433.25			96	90	61
8	40			436.84			96	90	61
9	45						96	91	61
10	50						97	91	62
11	55						97	91	62
12	60			451.235			97	91	63
				Avg: 43.395					

Leak Check .001 @ 15
Final Gas @ 7

Analytical Data

	Impinger Volume (mL)	Silica gel weight (g)
Final	V _f I ₁ 230 I ₂ 110 I ₃ 0	W _f 336.4
Initial	V _i	W _i 336.6
Difference		

$$V_{wc(std)} = 0.04707 (V_f - V_i)$$

$$V_{wsg(std)} = 0.04715 (W_f - W_i)$$

$$V_{m(std)} = 17.64 Y \frac{V_m P_m}{(t_m + 460)}$$

$$B_{ws} = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

QA/QC Check

Completeness ✓ Legibility ✓ Accuracy ✓ Specifications ✓ Reasonableness ✓

Checked by: _____

Personnel (Signature/Date)

Team Leader (Signature/Date)

FIELD DATA SHEET 4
Moisture Content (Reference)

Client/Plant Name LCR Job # _____City/State Houston, TX Date 3/26/05Test Location/Run # 3 1475 Personnel GV, GB, SWDry Gas Meter Cal Factor, Y = 0.999 451.245 VAL 2

Trav. Pt.	Samplg Time (min)	Stk Temp (°F)	ΔH (in. H ₂ O)	Vol. Rdg, V _m (cf)	ΔV (cf)	% Dev (≤10%?)	DGM Temp., t _m		Imp. Temp. °F
							In, °F	Out, °F	
1	5	NA	1.70	455.00			91	89	60
2	10			458.78			91	88	60
3	15			462.45			91	88	61
4	20			466.31			91	88	61
5	25			469.84			90	87	62
6	30			473.54			90	86	62
7	35			477.24			90	86	63
8	40			480.89			90	86	63
9	45			484.57			90	86	63
10	50			488.27			90	85	63
11	55			491.88			90	86	64
12	60			495.54			91	86	64
			1.70	Avg: <u>451.245</u>					

Leak check .001 @ 10
Final .001 @ 10

Analytical Data

	Impinger Volume (mL)	Silica gel weight (g)
Final	V _f <u>I₁ 120 I₂ 110 I₃ 0</u>	W _f <u>336.4</u>
Initial	V _i	W _i <u>336.4</u>
Difference		

$$V_{wc(std)} = 0.04707 (V_f - V_i)$$

$$V_{wsg(std)} = 0.04715 (W_f - W_i)$$

$$V_{m(std)} = 17.64 Y \frac{V_m P_m}{(t_m + 460)}$$

$$B_{ws} = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

QA/QC Check

Completeness Legibility Accuracy Specifications Reasonableness Checked by:

Personnel (Signature/Date)

Team Leader (Signature/Date)

APPENDIX G – REFERENCE METHOD DATA LISTING

Date	Time	NO _x _1	CO_1	CO ₂	O ₂ _1	SO ₂	NO _x _2	CO_2	O ₂ _2	ADC-1 Temp	Calibration Status
		Compliance / RATA System					Backup System				
		ppm	%	%	%	%	ppm	%	degF	degF	
03/25/05	6:30:00	14.96	61.53	5.72	1.98	91.88	9.25	39.5	9.46	80.73	
03/25/05	6:31:00	15.20	52.12	5.77	1.95	90.77	9.41	31.3	9.46	80.75	
03/25/05	6:32:01	15.34	41.51	5.79	1.97	91.49	9.48	26.0	9.47	80.76	
03/25/05	6:33:00	15.44	31.40	5.76	1.96	91.96	9.55	19.7	9.46	80.76	
03/25/05	6:34:00	15.54	29.69	5.71	1.89	92.08	9.60	18.4	9.41	80.76	
03/25/05	6:35:00	15.49	33.63	5.68	1.96	92.02	9.59	21.4	9.45	80.76	
03/25/05	6:36:00	15.55	22.80	5.76	1.87	92.10	9.62	14.0	9.40	80.75	
03/25/05	6:37:00	15.58	29.52	5.72	1.92	93.15	9.62	18.6	9.43	80.76	
03/25/05	6:38:00	15.56	28.42	5.67	1.92	94.57	9.63	17.9	9.43	80.75	
03/25/05	6:39:00	15.49	36.35	5.66	1.87	94.28	9.58	22.8	9.40	80.76	
03/25/05	6:40:00	15.68	33.78	5.66	1.99	93.56	9.72	21.7	9.44	80.76	
03/25/05	6:41:00	15.87	29.27	5.74	1.90	92.96	9.80	18.1	9.41	80.75	
03/25/05	6:42:00	15.77	25.34	5.73	1.93	93.47	9.76	16.1	9.43	80.76	
03/25/05	6:43:01	15.71	31.75	5.71	1.93	94.06	9.72	20.3	9.43	80.75	
03/25/05	6:44:00	15.79	30.94	5.72	1.89	97.11	9.79	19.2	9.38	80.76	
03/25/05	6:45:00	15.79	34.28	5.66	2.00	103.15	9.78	22.4	9.44	80.76	
03/25/05	6:46:01	15.84	42.05	5.66	2.01	116.94	9.81	26.6	9.45	80.75	
03/25/05	6:47:01	15.90	26.51	5.73	1.93	120.99	9.85	16.7	9.40	80.76	
03/25/05	6:48:00	15.96	30.43	5.70	1.99	121.37	9.93	18.9	9.41	80.75	
03/25/05	6:49:00	15.88	23.76	5.73	1.93	123.36	9.86	15.3	9.37	80.76	
03/25/05	6:50:00	15.79	32.89	5.66	2.02	125.36	9.81	20.9	9.43	80.76	
03/25/05	6:51:00	15.88	30.77	5.69	1.96	127.23	9.88	19.3	9.38	80.76	
03/25/05	6:52:00	15.84	29.18	5.66	1.96	129.86	9.83	18.7	9.40	80.76	
03/25/05	6:53:00	15.78	33.71	5.65	1.98	133.55	9.79	21.5	9.41	80.76	
03/25/05	6:54:00	10.30	22.12	3.88	2.38	115.26	6.76	33.3	7.14	80.76	
03/25/05	6:55:00	-0.48	3.08	0.29	0.00	6.39	-0.02	3.7	0.04	80.78	Calibrating Both Systems
03/25/05	6:56:00	-0.53	1.51	0.27	0.00	1.48	-0.07	2.0	0.02	80.80	Calibrating Both Systems
03/25/05	6:57:01	-0.54	0.97	0.24	-0.01	0.56	-0.08	0.8	0.02	80.85	Calibrating Both Systems
03/25/05	6:58:00	-0.53	1.09	0.23	4.04	0.24	-0.08	1.1	3.79	80.98	Calibrating Both Systems
03/25/05	6:59:00	-0.55	0.82	0.17	9.08	0.03	-0.08	0.7	9.09	81.13	Calibrating Both Systems
03/25/05	7:00:00	-0.55	0.82	0.15	7.76	-0.29	-0.08	0.7	7.91	81.17	Calibrating Both Systems
03/25/05	7:01:00	0.63	1.24	0.44	4.73	-0.09	0.41	1.4	5.26	81.17	Calibrating Both Systems
03/25/05	7:02:00	-0.38	422.06	15.98	18.97	11.16	8.69	22.9	9.18	81.17	Calibrating RATA System
03/25/05	7:03:00	-0.55	453.68	14.11	12.98	0.11	5.87	80.6	7.42	81.18	Calibrating RATA System
03/25/05	7:04:01	-0.56	61.66	7.01	0.00	-0.38	-0.05	58.8	0.02	81.19	Calibrating Both Systems
03/25/05	7:05:00	-0.55	77.86	2.56	0.02	-0.49	-0.08	80.5	0.05	81.20	Calibrating Both Systems
03/25/05	7:06:00	-0.52	92.57	0.21	0.01	-0.63	-0.06	95.5	0.06	81.18	Calibrating Both Systems
03/25/05	7:07:00	-0.54	41.81	6.65	-0.02	-0.18	-0.10	36.1	0.01	81.18	Calibrating Both Systems
03/25/05	7:08:00	1.35	10.64	1.37	0.04	54.67	8.76	24.9	8.62	81.20	Calibrating RATA System
03/25/05	7:09:00	-0.41	1.19	0.16	-0.01	92.10	9.84	17.7	9.37	81.19	Calibrating RATA System
03/25/05	7:10:01	0.22	1.27	0.14	0.01	116.75	9.78	14.4	9.41	81.18	Calibrating RATA System
03/25/05	7:11:01	-0.50	1.02	0.11	-0.01	175.87	9.79	13.3	9.37	81.14	Calibrating RATA System
03/25/05	7:12:00	-0.53	0.97	0.07	-0.01	178.47	9.67	13.8	9.32	81.06	Calibrating RATA System
03/25/05	7:13:01	-0.46	7.75	2.28	-0.01	152.74	9.63	16.4	9.42	81.07	Calibrating RATA System
03/25/05	7:14:00	-0.25	25.37	4.70	-0.01	23.41	9.58	17.1	9.36	80.99	Calibrating RATA System
03/25/05	7:15:01	-0.43	1.03	0.02	-0.02	94.48	9.54	22.1	9.44	81.02	Calibrating RATA System
03/25/05	7:16:01	-0.35	1.14	0.02	0.00	90.15	9.40	27.6	9.38	80.92	Calibrating RATA System
03/25/05	7:17:01	-0.56	1.08	-0.08	-0.02	6.34	9.49	21.9	9.46	80.93	Calibrating RATA System
03/25/05	7:18:00	-0.57	1.05	-0.14	-0.02	1.46	9.38	22.2	9.42	80.97	Calibrating RATA System
03/25/05	7:19:00	-0.57	1.03	-0.20	-0.02	0.43	9.38	22.3	9.26	80.98	Calibrating RATA System
03/25/05	7:20:00	-0.58	1.10	-0.25	-0.02	0.09	0.21	3.8	0.14	81.00	Calibrating Both Systems
03/25/05	7:21:00	-0.57	0.99	-0.31	-0.02	-0.19	-0.13	1.2	0.02	80.98	Calibrating Both Systems
03/25/05	7:22:00	-0.56	1.13	-0.35	4.36	-0.19	-0.13	1.2	4.23	80.95	Calibrating Both Systems
03/25/05	7:23:01	-0.58	1.04	-0.41	4.96	-0.53	-0.13	1.3	4.97	80.95	Calibrating Both Systems
03/25/05	7:24:00	-0.39	1.76	0.17	4.37	0.43	-0.04	2.4	4.67	80.94	Calibrating Both Systems
03/25/05	7:25:00	-0.57	29.43	6.56	-0.03	0.39	-0.08	29.6	0.01	80.93	Calibrating Both Systems

Date	Time	NO _x _1	CO_1	CO ₂	O ₂ _1	SO ₂	NO _x _2	CO_2	O ₂ _2	ADC-1 Temp	Calibration Status
Compliance / RATA System						Backup System					
		ppm	%	%	%	%	ppm	%	degF	degF	
03/25/05	7:26:00	-0.30	30.07	5.72	0.00	5.60	1.65	28.1	1.89	80.82	Calibrating Both Systems
03/25/05	7:27:00	-0.54	1.83	-0.43	-0.01	165.55	9.25	23.2	9.46	80.85	Calibrating RATA System
03/25/05	7:28:01	-0.55	0.85	-0.49	-0.02	179.36	9.29	20.3	9.43	80.85	Calibrating RATA System
03/25/05	7:29:00	9.07	23.13	2.81	1.28	179.80	9.31	27.6	9.44	80.81	
03/25/05	7:30:00	15.10	54.22	5.07	2.05	169.45	9.36	34.1	9.45	80.84	
03/25/05	7:31:00	15.37	38.04	5.08	2.11	168.05	9.51	23.4	9.47	80.82	
03/25/05	7:32:00	15.33	33.56	5.11	1.99	165.49	9.48	19.8	9.42	80.80	
03/25/05	7:33:01	15.31	36.73	5.11	2.06	167.67	9.46	22.7	9.48	80.78	
03/25/05	7:34:00	15.26	34.99	5.13	2.00	166.89	14.56	30.4	3.21	80.78	
03/25/05	7:35:00	15.29	34.91	5.15	2.04	166.40	15.63	34.8	2.08	80.76	
03/25/05	7:36:00	15.31	40.03	5.15	2.04	167.45	15.65	38.3	2.08	80.76	
03/25/05	7:37:00	15.32	26.04	5.20	1.99	168.83	15.65	24.0	2.03	80.76	
03/25/05	7:38:00	15.44	27.76	5.21	2.01	170.52	15.78	26.5	2.05	80.76	
03/25/05	7:39:00	15.28	29.99	5.19	1.96	175.09	15.63	29.2	2.02	80.76	
03/25/05	7:40:00	15.24	29.59	5.20	1.96	172.04	15.59	28.0	2.00	80.76	
03/25/05	7:41:00	15.24	26.86	5.19	1.97	169.57	15.61	25.9	2.02	80.76	
03/25/05	7:42:00	15.04	38.36	5.23	1.93	169.02	15.40	38.3	1.97	80.76	
03/25/05	7:43:01	15.19	45.01	5.22	2.08	168.35	15.57	45.5	2.12	80.76	
03/25/05	7:44:01	15.08	36.58	5.27	1.92	169.26	15.44	33.9	1.96	80.76	
03/25/05	7:45:00	15.27	36.14	5.24	2.06	167.78	15.63	36.0	2.10	80.76	
03/25/05	7:46:00	15.09	36.61	5.29	1.96	168.20	15.43	35.3	2.01	80.76	
03/25/05	7:47:00	15.20	41.53	5.27	2.05	168.69	15.57	42.4	2.09	80.76	
03/25/05	7:48:00	15.08	43.43	5.28	2.00	168.44	15.45	41.6	2.04	80.76	
03/25/05	7:49:00	15.24	32.25	5.31	2.02	168.27	15.61	32.2	2.06	80.75	
03/25/05	7:50:00	15.18	46.48	5.30	1.99	168.43	15.55	45.2	2.05	80.74	
03/25/05	7:51:01	15.27	36.24	5.30	2.05	171.81	15.64	36.6	2.09	80.74	
03/25/05	7:52:00	15.20	39.15	5.33	1.98	172.12	15.55	37.0	2.04	80.74	
03/25/05	7:53:00	15.31	34.69	5.34	2.02	175.46	15.67	33.7	2.06	80.70	
03/25/05	7:54:00	15.41	30.58	5.36	1.98	172.64	15.77	28.5	2.03	80.71	
03/25/05	7:55:00	15.36	23.93	5.37	1.97	174.38	15.71	22.6	2.00	80.63	
03/25/05	7:56:00	15.26	33.36	5.34	2.00	174.45	15.61	32.6	2.05	80.69	
03/25/05	7:57:00	15.16	29.13	5.38	1.93	174.16	15.49	27.3	1.97	80.64	
03/25/05	7:58:00	15.14	31.48	5.36	1.99	172.66	15.49	31.4	2.04	80.63	
03/25/05	7:59:01	15.18	39.48	5.37	2.02	172.08	15.53	38.2	2.05	80.59	
03/25/05	8:00:00	15.24	38.01	5.41	1.98	171.27	15.59	37.5	2.02	80.60	
03/25/05	8:01:01	15.36	38.32	5.42	2.04	171.36	15.70	37.7	2.10	80.56	
03/25/05	8:02:00	15.27	33.04	5.47	1.94	171.33	15.63	31.8	1.99	80.55	
03/25/05	8:03:00	15.27	45.29	5.43	2.04	168.81	15.61	45.8	2.08	80.52	
03/25/05	8:04:01	15.43	38.65	5.49	2.00	168.94	15.73	36.6	2.04	80.53	
03/25/05	8:05:00	15.44	32.49	5.50	1.98	169.81	15.78	31.1	2.02	80.59	
03/25/05	8:06:00	15.43	35.22	5.47	2.05	170.40	15.79	35.0	2.09	80.60	
03/25/05	8:07:00	15.18	96.54	5.39	2.03	179.47	15.53	103.6	2.08	80.58	
03/25/05	8:08:01	15.37	95.97	5.44	1.96	185.64	15.71	93.2	2.01	80.63	
03/25/05	8:09:00	15.52	66.56	5.42	2.01	185.77	15.87	66.7	2.06	80.68	
03/25/05	8:10:00	15.47	51.32	5.44	1.90	180.46	15.81	49.2	1.95	80.66	
03/25/05	8:11:00	15.30	55.11	5.43	1.94	179.25	15.65	56.2	1.99	80.69	
03/25/05	8:12:00	15.11	56.15	5.45	1.85	175.24	15.44	55.4	1.90	80.67	
03/25/05	8:13:01	14.85	63.22	5.44	1.85	167.08	15.19	65.6	1.89	80.72	
03/25/05	8:14:00	14.69	91.50	5.40	1.92	158.34	15.04	94.2	1.97	80.71	
03/25/05	8:15:00	14.80	85.78	5.41	1.96	153.26	15.15	88.3	2.00	80.76	
03/25/05	8:16:00	14.73	118.04	5.42	1.98	148.49	15.09	119.7	2.02	80.76	
03/25/05	8:17:00	14.96	98.87	5.41	2.06	143.78	15.30	100.9	2.09	80.75	
03/25/05	8:18:00	15.03	122.41	5.38	2.23	140.29	15.36	133.2	2.24	80.75	
03/25/05	8:19:00	15.30	190.44	5.27	2.62	133.12	15.68	190.2	2.67	80.75	
03/25/05	8:20:00	15.50	100.80	5.39	2.30	132.10	15.84	95.2	2.35	80.76	
03/25/05	8:21:00	15.22	50.03	5.53	1.85	133.81	15.55	47.9	1.90	80.76	

Date	Time	NO _{x_1}	CO ₁	CO ₂	O _{2_1}	SO ₂	NO _{x_2}	CO ₂	O _{2_2}	ADC-1 Temp	Calibration Status
Compliance / RATA System						Backup System					
		ppm	%	%	%	%	ppm	%	degF	degF	
03/25/05	8:22:00	15.02	43.15	5.58	1.69	136.38	15.31	42.6	1.75	80.76	
03/25/05	8:23:00	14.79	49.25	5.58	1.68	137.63	15.11	49.0	1.73	80.76	
03/25/05	8:24:00	14.56	56.55	5.54	1.69	138.18	14.89	57.1	1.74	80.76	
03/25/05	8:25:00	14.51	46.28	5.59	1.62	136.57	14.82	44.4	1.66	80.76	
03/25/05	8:26:01	14.58	56.69	5.52	1.73	135.12	14.90	57.8	1.79	80.76	
03/25/05	8:27:00	14.31	92.50	5.47	1.75	132.71	14.65	96.2	1.79	80.75	
03/25/05	8:28:00	14.31	76.51	5.53	1.66	132.71	14.62	75.5	1.71	80.75	
03/25/05	8:29:00	14.36	83.96	5.48	1.74	131.93	14.67	85.1	1.80	80.74	
03/25/05	8:30:00	14.36	80.53	5.49	1.71	130.16	14.66	81.6	1.76	80.75	
03/25/05	8:31:00	14.37	66.55	5.50	1.72	129.52	14.67	65.5	1.76	80.73	
03/25/05	8:32:01	14.39	59.98	5.50	1.66	127.59	14.69	60.7	1.71	80.71	
03/25/05	8:33:00	14.13	82.71	5.47	1.70	127.44	14.43	83.5	1.75	80.72	
03/25/05	8:34:00	14.25	75.07	5.48	1.70	125.28	14.55	75.0	1.74	80.71	
03/25/05	8:35:01	14.24	82.96	5.45	1.79	123.31	14.53	84.8	1.83	80.73	
03/25/05	8:36:00	14.17	91.25	5.45	1.72	123.71	14.46	93.0	1.78	80.70	
03/25/05	8:37:00	14.56	101.10	5.45	1.77	128.90	14.83	104.9	1.81	80.71	
03/25/05	8:38:00	15.03	119.39	5.44	1.87	134.25	15.33	122.2	1.92	80.74	
03/25/05	8:39:01	15.21	89.34	5.44	1.80	133.68	15.51	88.4	1.86	80.70	
03/25/05	8:40:00	14.96	95.56	5.44	1.81	126.82	15.26	97.4	1.85	80.73	
03/25/05	8:41:00	14.84	88.23	5.45	1.80	124.27	15.14	90.1	1.84	80.75	
03/25/05	8:42:01	14.82	91.07	5.44	1.84	123.06	15.11	92.5	1.89	80.75	
03/25/05	8:43:00	14.55	68.51	5.47	1.71	121.97	14.84	66.3	1.76	80.74	
03/25/05	8:44:00	14.48	68.69	5.46	1.75	121.44	14.78	69.0	1.80	80.75	
03/25/05	8:45:00	14.40	63.74	5.44	1.76	120.29	14.68	62.6	1.81	80.76	
03/25/05	8:46:00	14.26	49.03	5.43	1.69	120.30	14.55	50.4	1.74	80.76	
03/25/05	8:47:00	14.04	93.02	5.40	1.76	119.16	14.34	96.8	1.81	80.76	
03/25/05	8:48:00	14.10	110.10	5.41	1.81	118.62	14.39	113.2	1.86	80.76	
03/25/05	8:49:00	14.20	98.71	5.44	1.83	118.82	14.49	98.5	1.88	80.75	
03/25/05	8:50:00	14.19	74.13	5.45	1.77	118.07	14.48	72.9	1.81	80.76	
03/25/05	8:51:00	14.33	60.38	5.44	1.77	119.35	14.61	59.6	1.82	80.76	
03/25/05	8:52:01	14.15	63.75	5.47	1.71	119.22	14.43	63.4	1.76	80.76	
03/25/05	8:53:00	14.12	47.38	5.43	1.72	119.30	14.39	47.2	1.76	80.76	
03/25/05	8:54:01	13.98	70.82	5.37	1.82	118.93	14.25	72.7	1.86	80.76	
03/25/05	8:55:00	13.92	75.39	5.37	1.79	117.02	14.20	75.1	1.84	80.76	
03/25/05	8:56:00	13.92	91.70	5.37	1.83	116.45	14.18	93.9	1.88	80.76	
03/25/05	8:57:00	13.86	87.31	5.39	1.81	115.98	14.11	86.5	1.85	80.76	
03/25/05	8:58:00	13.78	99.88	5.40	1.79	116.14	14.03	102.6	1.83	80.76	
03/25/05	8:59:01	13.86	82.66	5.42	1.74	114.99	14.11	81.2	1.79	80.76	
03/25/05	9:00:00	13.84	92.05	5.38	1.79	114.23	14.10	94.0	1.83	80.76	
03/25/05	9:01:01	13.80	89.29	5.39	1.76	114.82	14.06	89.8	1.81	80.76	
03/25/05	9:02:00	13.79	89.07	5.40	1.78	116.00	14.07	90.0	1.82	80.78	
03/25/05	9:03:00	13.72	94.82	5.39	1.76	115.80	13.99	94.9	1.82	80.81	
03/25/05	9:04:00	13.73	79.80	5.41	1.70	115.04	13.99	80.8	1.74	80.81	
03/25/05	9:05:00	13.76	95.79	5.41	1.74	114.84	14.02	96.4	1.79	80.94	
03/25/05	9:06:00	13.77	74.46	5.42	1.71	114.73	14.03	74.1	1.76	81.05	
03/25/05	9:07:01	13.70	88.68	5.39	1.77	113.84	13.96	91.2	1.81	81.13	
03/25/05	9:08:00	13.76	97.43	5.40	1.79	112.69	14.02	96.8	1.82	81.20	
03/25/05	9:09:00	13.76	91.15	5.42	1.75	112.55	14.03	93.8	1.78	81.20	
03/25/05	9:10:00	13.72	84.49	5.42	1.72	113.14	13.96	83.8	1.77	81.21	
03/25/05	9:11:00	13.83	87.34	5.43	1.76	113.45	14.10	88.3	1.80	81.21	
03/25/05	9:12:00	13.93	73.93	5.41	1.76	113.63	14.19	71.8	1.80	81.21	
03/25/05	9:13:00	13.92	50.90	5.41	1.70	114.20	14.17	50.1	1.75	81.21	
03/25/05	9:14:00	13.76	67.31	5.37	1.75	114.26	14.02	68.7	1.79	81.21	
03/25/05	9:15:00	13.65	107.17	5.35	1.81	114.07	13.91	112.0	1.86	81.21	
03/25/05	9:16:00	13.65	114.25	5.37	1.80	113.21	13.92	116.1	1.84	81.21	
03/25/05	9:17:00	13.74	106.82	5.38	1.82	112.71	14.00	110.7	1.86	81.21	

Date	Time	NO _x _1	CO_1	CO ₂	O ₂ _1	SO ₂	NO _x _2	CO_2	O ₂ _2	ADC-1 Temp	Calibration Status
		Compliance / RATA System					Backup System				
		ppm	%	%	%	%	ppm	%	degF	degF	
03/25/05	9:18:00	13.74	87.54	5.40	1.71	113.65	13.99	84.8	1.77	81.21	
03/25/05	9:19:00	13.74	86.94	5.36	1.79	114.34	13.98	89.4	1.84	81.21	
03/25/05	9:20:01	13.63	79.18	5.37	1.73	113.94	13.89	78.9	1.78	81.21	
03/25/05	9:21:00	13.57	71.77	5.38	1.71	113.33	13.82	71.5	1.75	81.21	
03/25/05	9:22:00	13.46	58.88	5.38	1.67	114.14	13.71	58.2	1.71	81.23	
03/25/05	9:23:00	13.38	64.55	5.36	1.66	114.31	13.62	65.2	1.72	81.23	
03/25/05	9:24:01	13.27	80.53	5.33	1.68	112.81	13.53	82.9	1.73	81.28	
03/25/05	9:25:00	13.20	90.56	5.34	1.70	112.68	13.47	92.4	1.75	81.33	
03/25/05	9:26:00	13.22	100.74	5.34	1.74	111.91	13.49	102.3	1.78	81.40	
03/25/05	9:27:00	13.21	105.01	5.36	1.74	111.34	13.48	106.4	1.79	81.46	
03/25/05	9:28:01	13.37	86.41	5.38	1.75	111.28	13.63	86.2	1.79	81.55	
03/25/05	9:29:00	13.23	76.20	5.39	1.66	111.71	13.51	76.4	1.71	81.61	
03/25/05	9:30:00	13.19	81.98	5.36	1.68	112.34	13.44	84.2	1.72	81.65	
03/25/05	9:31:00	13.15	97.45	5.34	1.72	111.06	13.42	102.5	1.76	81.66	
03/25/05	9:32:00	13.06	101.09	5.37	1.67	111.33	13.34	101.5	1.71	81.66	
03/25/05	9:33:00	13.07	96.17	5.38	1.69	111.39	13.34	97.2	1.72	81.66	
03/25/05	9:34:01	13.52	140.17	5.27	2.02	110.12	13.79	147.7	2.05	81.66	
03/25/05	9:35:00	13.39	115.71	5.35	1.82	109.46	13.68	115.5	1.86	81.66	
03/25/05	9:36:00	13.21	101.06	5.40	1.69	110.38	13.49	102.3	1.73	81.66	
03/25/05	9:37:00	13.08	82.78	5.47	1.62	111.06	13.36	82.3	1.67	81.66	
03/25/05	9:38:01	12.96	55.29	5.45	1.56	111.99	13.24	55.0	1.59	81.66	
03/25/05	9:39:00	12.57	72.60	5.41	1.53	110.04	12.86	74.5	1.56	81.66	
03/25/05	9:40:00	12.48	108.60	5.39	1.57	109.42	12.77	115.2	1.60	81.68	
03/25/05	9:41:00	12.53	117.73	5.43	1.56	109.20	12.80	118.2	1.59	81.68	
03/25/05	9:42:00	12.54	110.32	5.44	1.56	108.49	12.83	113.4	1.60	81.71	
03/25/05	9:43:00	12.59	110.45	5.44	1.61	107.65	12.87	116.2	1.65	81.69	
03/25/05	9:44:00	12.55	126.30	5.47	1.57	107.39	12.85	128.8	1.61	81.67	
03/25/05	9:45:00	12.72	137.21	5.45	1.66	106.84	13.00	140.4	1.69	81.71	
03/25/05	9:46:00	12.76	118.43	5.46	1.63	106.36	13.06	121.1	1.67	81.71	
03/25/05	9:47:00	12.76	126.55	5.47	1.63	106.68	13.06	131.0	1.67	81.68	
03/25/05	9:48:00	13.06	98.60	5.52	1.64	106.86	13.34	97.8	1.68	81.68	
03/25/05	9:49:00	12.96	84.20	5.53	1.56	107.03	13.26	84.9	1.59	81.71	
03/25/05	9:50:00	12.95	80.28	5.50	1.60	107.69	13.24	81.4	1.63	81.70	
03/25/05	9:51:00	12.83	94.79	5.44	1.59	107.22	13.13	98.5	1.63	81.74	
03/25/05	9:52:00	12.88	130.70	5.42	1.64	106.71	13.17	136.9	1.68	81.73	
03/25/05	9:53:00	13.22	193.63	5.39	1.90	106.89	13.51	206.6	1.91	81.79	
03/25/05	9:54:01	13.76	174.18	5.40	2.01	104.64	14.03	169.7	2.04	81.90	
03/25/05	9:55:00	14.14	110.19	5.47	1.98	105.39	14.39	110.1	2.01	82.01	
03/25/05	9:56:00	14.33	61.16	5.47	1.98	104.82	14.57	60.1	2.02	82.10	
03/25/05	9:57:00	14.27	61.00	5.46	1.96	105.11	14.52	61.4	1.99	82.11	
03/25/05	9:58:00	14.22	65.81	5.43	1.97	105.03	14.49	66.2	2.01	82.11	
03/25/05	9:59:00	14.17	68.49	5.44	1.94	106.41	14.42	69.5	1.99	82.11	
03/25/05	10:00:00	14.15	73.87	5.44	1.96	105.27	14.40	74.5	1.99	82.11	
03/25/05	10:01:00	14.25	70.91	5.46	1.98	105.20	14.50	71.6	2.01	82.11	
03/25/05	10:02:00	14.47	59.57	5.44	2.01	104.95	14.69	57.7	2.04	82.13	
03/25/05	10:03:00	14.50	47.58	5.44	1.95	104.05	14.75	47.1	1.98	82.16	
03/25/05	10:04:01	14.37	58.05	5.40	1.98	103.81	14.60	58.7	2.01	82.32	
03/25/05	10:05:00	14.37	67.47	5.41	2.08	104.07	14.63	70.2	2.09	82.41	
03/25/05	10:06:00	14.69	126.23	5.26	2.70	103.46	14.94	129.2	2.73	82.48	
03/25/05	10:07:00	15.06	66.68	5.31	2.56	100.99	15.31	64.6	2.58	82.51	
03/25/05	10:08:00	15.16	51.96	5.32	2.54	101.33	15.42	52.3	2.57	82.53	
03/25/05	10:09:00	15.04	55.90	5.31	2.57	99.90	15.30	56.3	2.60	82.55	
03/25/05	10:10:01	14.97	64.12	5.29	2.61	99.03	15.23	66.0	2.63	82.54	
03/25/05	10:11:00	15.00	69.85	5.31	2.57	99.06	15.26	68.4	2.61	82.55	
03/25/05	10:12:00	14.98	87.23	5.30	2.64	98.59	15.25	89.6	2.67	82.55	
03/25/05	10:13:00	15.18	81.58	5.30	2.73	99.16	15.45	85.3	2.74	82.56	

Date	Time	NO _x _1	CO_1	CO ₂	O ₂ _1	SO ₂	NO _x _2	CO_2	O ₂ _2	ADC-1 Temp	Calibration Status
Compliance / RATA System						Backup System					
		ppm	%	%	%	%	ppm	%	degF	degF	
03/25/05	10:14:00	15.33	71.11	5.33	2.72	97.38	15.59	69.5	2.75	82.56	
03/25/05	10:15:00	15.28	54.83	5.33	2.68	98.25	15.54	54.4	2.71	82.56	
03/25/05	10:16:01	15.29	57.21	5.29	2.75	98.22	15.54	58.7	2.78	82.56	
03/25/05	10:17:00	15.28	57.66	5.32	2.61	99.20	15.54	57.4	2.64	82.56	
03/25/05	10:18:00	14.08	58.72	5.01	2.70	99.31	14.69	60.4	2.89	82.56	
03/25/05	10:19:00	-0.39	8.45	0.31	0.02	30.95	0.13	9.2	0.13	82.56	Calibrating Both Systems
03/25/05	10:20:00	-0.50	3.55	0.26	-0.01	2.04	0.00	3.8	0.02	82.57	Calibrating Both Systems
03/25/05	10:21:00	-0.53	3.40	0.23	-0.01	0.93	-0.04	4.0	0.02	82.58	Calibrating Both Systems
03/25/05	10:22:01	-0.54	3.49	0.20	-0.01	0.35	-0.05	3.9	0.02	82.62	Calibrating Both Systems
03/25/05	10:23:00	-0.55	2.07	0.16	-0.01	0.10	-0.05	4.1	0.01	82.69	Calibrating Both Systems
03/25/05	10:24:00	-0.56	1.49	0.13	-0.01	-0.06	-0.07	3.8	0.01	82.75	Calibrating Both Systems
03/25/05	10:25:00	-0.56	1.51	0.10	-0.01	-0.19	-0.07	3.7	0.02	82.80	Calibrating Both Systems
03/25/05	10:26:00	-0.56	1.38	0.06	-0.01	-0.32	-0.08	3.9	0.01	82.91	Calibrating Both Systems
03/25/05	10:27:00	-0.54	1.65	0.04	2.77	-0.31	-0.07	4.0	2.61	82.96	Calibrating Both Systems
03/25/05	10:28:00	-0.55	1.99	0.34	4.53	-0.42	-0.07	4.6	4.72	82.98	Calibrating Both Systems
03/25/05	10:29:00	-0.56	29.62	6.71	-0.02	-0.38	-0.08	32.2	0.02	83.01	Calibrating Both Systems
03/25/05	10:30:00	-0.22	30.97	6.11	0.00	0.84	2.41	35.9	0.44	83.00	Calibrating Both Systems
03/25/05	10:31:00	-0.42	3.05	0.01	-0.01	146.47	15.80	61.6	2.70	83.02	Calibrating RATA System
03/25/05	10:32:00	-0.52	1.45	-0.06	-0.02	177.29	15.65	59.9	2.67	83.01	Calibrating RATA System
03/25/05	10:33:00	14.38	52.90	4.60	2.52	127.70	15.55	67.5	2.67	83.01	
03/25/05	10:34:01	15.42	63.73	4.99	2.63	103.03	15.70	66.0	2.66	83.01	
03/25/05	10:35:01	15.36	66.07	4.98	2.63	99.54	15.63	69.3	2.66	83.01	
03/25/05	10:36:01	15.34	71.58	4.96	2.68	97.82	15.63	75.7	2.71	83.01	
03/25/05	10:37:01	15.20	86.57	4.96	2.70	97.46	15.48	90.1	2.73	83.02	
03/25/05	10:38:00	15.30	91.17	4.97	2.69	97.53	15.58	96.1	2.71	83.01	
03/25/05	10:39:00	15.21	92.48	4.99	2.69	98.64	15.49	95.7	2.72	83.03	
03/25/05	10:40:00	15.27	80.76	4.97	2.77	98.91	15.56	84.4	2.80	83.04	
03/25/05	10:41:00	15.52	68.16	5.01	2.75	98.39	15.77	68.8	2.77	83.04	
03/25/05	10:42:00	15.50	57.82	5.02	2.71	99.08	15.77	61.3	2.74	83.10	
03/25/05	10:43:00	15.36	58.30	5.01	2.70	98.80	15.62	60.5	2.73	83.14	
03/25/05	10:44:00	15.49	65.50	5.01	2.71	97.81	15.78	69.1	2.74	83.24	
03/25/05	10:45:00	15.38	73.84	5.03	2.67	97.78	15.65	77.7	2.69	83.32	
03/25/05	10:46:00	15.22	76.61	5.04	2.74	98.49	15.48	80.2	2.76	83.42	
03/25/05	10:47:00	15.31	75.98	5.05	2.73	98.27	15.56	78.3	2.75	83.44	
03/25/05	10:48:00	15.34	68.42	5.07	2.72	99.15	15.59	71.5	2.75	83.46	
03/25/05	10:49:00	15.39	73.11	5.05	2.75	99.14	15.66	76.0	2.78	83.46	
03/25/05	10:50:00	15.38	74.50	5.07	2.68	99.13	15.61	77.8	2.70	83.46	
03/25/05	10:51:00	15.41	82.74	5.08	2.74	99.02	15.65	87.5	2.76	83.66	
03/25/05	10:52:00	15.60	74.89	5.10	2.75	98.85	15.82	76.0	2.77	83.81	
03/25/05	10:53:00	15.46	53.99	5.12	2.70	98.74	15.70	55.6	2.72	83.86	
03/25/05	10:54:00	15.49	42.78	5.15	2.61	99.56	15.73	44.2	2.64	83.91	
03/25/05	10:55:00	15.43	48.01	5.11	2.61	99.87	15.67	51.8	2.63	83.92	
03/25/05	10:56:00	15.15	66.69	5.09	2.64	99.55	15.39	70.3	2.66	83.95	
03/25/05	10:57:00	15.31	67.15	5.09	2.65	99.92	15.56	69.3	2.68	84.15	
03/25/05	10:58:00	15.36	70.03	5.12	2.64	101.17	15.61	72.5	2.66	84.25	
03/25/05	10:59:00	15.30	58.96	5.13	2.63	100.30	15.56	61.4	2.65	84.32	
03/25/05	11:00:00	15.27	74.13	5.10	2.71	100.54	15.52	79.9	2.73	84.36	
03/25/05	11:01:00	15.14	80.35	5.09	2.70	100.90	15.39	83.7	2.73	84.36	
03/25/05	11:02:00	15.21	81.70	5.13	2.71	101.27	15.48	85.9	2.73	84.38	
03/25/05	11:03:00	15.23	89.36	5.12	2.76	100.90	15.50	92.7	2.79	84.42	
03/25/05	11:04:00	15.30	74.85	5.12	2.73	99.93	15.56	78.1	2.75	84.44	
03/25/05	11:05:01	15.28	81.39	5.11	2.77	100.19	15.53	84.6	2.80	84.56	
03/25/05	11:06:00	15.25	74.84	5.10	2.74	100.45	15.51	77.6	2.76	84.62	
03/25/05	11:07:00	15.47	73.11	5.13	2.72	100.61	15.72	77.6	2.75	84.63	
03/25/05	11:08:00	15.39	69.89	5.13	2.72	100.52	15.68	71.7	2.74	84.64	
03/25/05	11:09:00	15.34	66.65	5.12	2.70	100.88	15.60	70.1	2.72	84.65	

Date	Time	NO _x _1	CO_1	CO ₂	O ₂ _1	SO ₂	NO _x _2	CO_2	O ₂ _2	ADC-1 Temp	Calibration Status
		Compliance / RATA System					Backup System				
		ppm	%	%	%	%	ppm	%	degF	degF	
03/25/05	11:10:00	15.27	67.14	5.12	2.71	100.74	15.54	71.5	2.73	84.65	
03/25/05	11:11:00	15.23	74.23	5.18	2.68	99.23	15.47	75.1	2.70	84.66	
03/25/05	11:12:00	15.15	46.49	5.19	2.58	105.73	15.43	49.0	2.60	84.62	
03/25/05	11:13:00	14.92	60.27	5.16	2.55	99.59	15.16	64.6	2.58	84.62	
03/25/05	11:14:00	14.73	85.30	5.15	2.59	100.02	15.00	91.5	2.62	84.55	
03/25/05	11:15:00	14.85	97.47	5.16	2.59	99.86	15.10	103.0	2.61	84.52	
03/25/05	11:16:00	14.83	101.71	5.17	2.66	97.32	15.12	106.0	2.69	84.43	
03/25/05	11:17:00	14.87	81.73	5.19	2.61	96.22	15.15	84.6	2.63	84.39	
03/25/05	11:18:00	14.93	83.19	5.17	2.66	97.47	15.20	87.8	2.69	84.40	
03/25/05	11:19:01	15.04	83.55	5.16	2.61	98.03	15.31	87.0	2.64	84.37	
03/25/05	11:20:00	14.97	84.55	5.19	2.60	98.18	15.24	88.7	2.63	84.36	
03/25/05	11:21:00	14.96	84.05	5.18	2.67	97.72	15.21	89.4	2.70	84.36	
03/25/05	11:22:00	15.03	77.99	5.20	2.62	97.82	15.29	80.0	2.65	84.36	
03/25/05	11:23:00	15.14	61.95	5.24	2.55	98.01	15.39	63.8	2.57	84.36	
03/25/05	11:24:00	15.18	62.65	5.20	2.65	97.95	15.44	65.7	2.67	84.36	
03/25/05	11:25:00	15.06	53.36	5.19	2.54	98.35	15.32	55.7	2.56	84.35	
03/25/05	11:26:00	15.01	56.43	5.19	2.54	98.14	15.27	59.5	2.56	84.36	
03/25/05	11:27:01	14.92	66.01	5.16	2.52	98.60	15.19	70.4	2.54	84.36	
03/25/05	11:28:00	14.85	82.84	5.14	2.57	97.89	15.12	88.9	2.59	84.36	
03/25/05	11:29:00	14.89	112.27	5.15	2.68	96.48	15.14	118.3	2.70	84.36	
03/25/05	11:30:00	15.32	80.03	5.21	2.60	96.46	15.59	80.6	2.63	84.36	
03/25/05	11:31:00	15.35	68.52	5.22	2.60	96.88	15.63	72.1	2.63	84.36	
03/25/05	11:32:00	15.18	60.17	5.23	2.60	96.21	15.44	63.0	2.63	84.38	
03/25/05	11:33:00	15.18	73.21	5.20	2.64	96.01	15.46	77.7	2.66	84.37	
03/25/05	11:34:00	15.15	82.32	5.21	2.63	96.24	15.41	86.0	2.65	84.38	
03/25/05	11:35:00	15.13	75.11	5.23	2.60	96.84	15.40	77.8	2.62	84.38	
03/25/05	11:36:00	15.21	62.59	5.21	2.61	96.89	15.45	64.5	2.64	84.37	
03/25/05	11:37:00	14.58	73.47	5.11	2.53	96.99	15.05	77.0	2.60	84.40	
03/25/05	11:38:01	-0.32	11.48	0.26	0.04	33.64	0.26	12.2	0.15	84.45	Calibrating Both Systems
03/25/05	11:39:01	-0.48	3.82	0.18	-0.01	2.32	0.00	6.2	0.02	84.51	Calibrating Both Systems
03/25/05	11:40:01	-0.51	3.85	0.15	-0.01	0.97	-0.01	6.4	0.02	84.53	Calibrating Both Systems
03/25/05	11:41:00	-0.51	3.91	0.12	4.60	0.55	-0.02	6.6	4.43	84.57	Calibrating Both Systems
03/25/05	11:42:01	0.01	11.91	2.27	3.21	2.52	0.45	15.7	3.41	84.64	Calibrating Both Systems
03/25/05	11:43:00	-0.53	33.67	6.86	-0.03	0.59	-0.07	34.6	0.00	84.59	Calibrating Both Systems
03/25/05	11:44:00	-0.11	17.98	2.35	0.04	76.08	0.08	16.7	0.02	84.71	Calibrating Both Systems
03/25/05	11:45:00	0.08	5.91	0.26	0.09	172.96	-0.01	6.0	0.02	84.71	Calibrating Both Systems
03/25/05	11:46:01	0.08	5.94	0.23	0.09	176.44	-0.02	6.0	0.02	84.74	Calibrating Both Systems
03/25/05	11:47:00	2.03	7.16	0.72	0.44	176.81	1.34	8.4	0.26	84.76	Calibrating Both Systems
03/25/05	11:48:00	14.82	73.22	4.95	2.58	107.91	15.18	79.5	2.61	84.77	
03/25/05	11:49:00	14.95	91.27	4.97	2.64	98.29	15.27	96.7	2.67	84.78	
03/25/05	11:50:00	15.10	92.41	5.02	2.62	95.41	15.42	95.0	2.65	84.72	
03/25/05	11:51:00	15.31	70.15	5.03	2.64	94.76	15.63	72.0	2.67	84.77	
03/25/05	11:52:00	15.31	50.55	5.04	2.61	96.08	15.62	53.3	2.63	84.77	
03/25/05	11:53:00	15.30	48.16	5.07	2.53	96.80	14.55	46.7	3.85	84.76	
03/25/05	11:54:00	15.15	46.29	5.06	2.53	98.40	13.68	43.9	4.69	84.78	
03/25/05	11:55:01	14.83	63.60	5.06	2.49	99.01	13.48	60.7	4.57	84.80	
03/25/05	11:56:00	14.86	67.79	5.05	2.55	99.08	13.60	64.8	4.47	84.80	
03/25/05	11:57:00	15.00	75.18	5.05	2.57	98.60	13.60	69.8	4.65	84.80	
03/25/05	11:58:00	14.89	73.36	5.08	2.51	98.10	13.47	68.4	4.63	84.79	
03/25/05	11:59:00	15.10	65.17	5.09	2.56	98.62	13.79	61.7	4.52	84.80	
03/25/05	12:00:01	15.03	59.44	5.08	2.53	98.24	13.67	56.0	4.59	84.80	
03/25/05	12:01:00	15.01	61.73	5.07	2.50	101.63	13.66	58.7	4.57	84.81	
03/25/05	12:02:00	14.91	75.14	5.08	2.53	98.26	13.66	71.4	4.46	84.81	
03/25/05	12:03:00	14.96	58.06	5.10	2.50	99.65	13.59	54.7	4.59	84.80	
03/25/05	12:04:01	15.01	67.55	5.08	2.56	99.05	13.52	63.7	4.77	84.81	
03/25/05	12:05:00	14.90	69.08	5.08	2.54	99.07	13.35	64.1	4.80	84.81	

Date	Time	NO _x _1	CO_1	CO ₂	O ₂ _1	SO ₂	NO _x _2	CO_2	O ₂ _2	ADC-1 Temp	Calibration Status
Compliance / RATA System						Backup System					
		ppm	%	%	%	%	ppm	%	degF	degF	
03/25/05	12:06:00	14.85	70.84	5.10	2.54	99.07	13.36	66.7	4.77	84.81	
03/25/05	12:07:00	14.98	65.10	5.14	2.51	99.03	13.48	60.6	4.73	84.81	
03/25/05	12:08:00	15.14	48.39	5.16	2.49	99.61	13.68	44.5	4.65	84.81	
03/25/05	12:09:00	15.05	45.46	5.15	2.48	99.88	13.61	44.0	4.62	84.80	
03/25/05	12:10:00	14.68	57.28	5.12	2.45	99.42	13.27	54.2	4.62	84.81	
03/25/05	12:11:00	14.63	69.76	5.11	2.46	99.29	13.27	67.0	4.54	84.80	
03/25/05	12:12:00	14.65	96.40	5.10	2.55	99.10	13.38	91.2	4.51	84.81	
03/25/05	12:13:00	14.66	87.60	5.12	2.55	98.75	13.32	81.0	4.57	84.81	
03/25/05	12:14:00	14.86	73.13	5.12	2.53	99.11	13.57	69.2	4.48	84.80	
03/25/05	12:15:00	14.84	74.62	5.12	2.55	98.73	13.44	70.7	4.62	84.81	
03/25/05	12:16:00	14.86	83.82	5.12	2.57	99.45	13.48	77.8	4.61	84.79	
03/25/05	12:17:00	14.99	68.95	5.16	2.52	100.15	13.32	64.0	4.90	84.78	
03/25/05	12:18:00	15.01	69.82	5.14	2.53	99.60	13.45	65.7	4.76	84.77	
03/25/05	12:19:00	14.91	88.21	5.15	2.57	99.26	13.38	82.4	4.80	84.80	
03/25/05	12:20:00	14.86	76.20	5.18	2.52	99.62	13.82	72.3	4.16	84.80	
03/25/05	12:21:00	14.87	84.01	5.16	2.59	99.26	13.64	80.3	4.46	84.81	
03/25/05	12:22:00	14.91	92.79	5.14	2.62	100.39	13.51	87.1	4.68	84.81	
03/25/05	12:23:00	14.94	81.98	5.17	2.57	101.30	13.57	76.4	4.63	84.82	
03/25/05	12:24:00	15.01	83.02	5.15	2.62	101.98	13.53	76.4	4.77	84.82	
03/25/05	12:25:00	15.11	65.00	5.17	2.59	102.68	13.68	61.0	4.67	84.83	
03/25/05	12:26:00	15.11	67.91	5.16	2.60	101.42	13.78	63.5	4.57	84.87	
03/25/05	12:27:01	15.05	48.27	5.19	2.47	100.65	13.61	45.5	4.60	84.90	
03/25/05	12:28:00	15.02	62.55	5.16	2.56	100.67	13.72	60.7	4.50	84.98	
03/25/05	12:29:00	14.99	64.69	5.19	2.46	100.67	13.64	61.1	4.50	85.05	
03/25/05	12:30:00	14.91	68.04	5.16	2.54	102.59	13.66	65.1	4.47	85.10	
03/25/05	12:31:01	14.87	65.77	5.17	2.54	102.62	13.70	63.3	4.37	85.13	
03/25/05	12:32:01	15.02	73.36	5.17	2.55	101.41	13.69	69.1	4.53	85.16	
03/25/05	12:33:00	15.12	63.57	5.16	2.54	99.88	13.99	62.0	4.27	85.18	
03/25/05	12:34:00	14.94	75.49	5.15	2.60	98.08	13.73	72.0	4.45	85.16	
03/25/05	12:35:00	15.04	71.73	5.20	2.54	99.10	13.75	67.6	4.49	85.16	
03/25/05	12:36:00	14.96	70.78	5.17	2.60	100.41	13.70	68.0	4.52	85.24	
03/25/05	12:37:00	14.93	84.36	5.16	2.59	99.45	13.64	79.6	4.55	85.25	
03/25/05	12:38:00	15.05	77.55	5.19	2.58	100.31	13.62	73.6	4.69	85.25	
03/25/05	12:39:00	15.23	78.06	5.19	2.64	99.85	13.76	71.9	4.77	85.26	
03/25/05	12:40:00	15.32	61.72	5.21	2.58	101.97	13.66	56.9	4.94	85.26	
03/25/05	12:41:00	15.19	52.70	5.20	2.51	101.76	13.48	47.9	4.95	85.26	
03/25/05	12:42:00	15.01	44.86	5.20	2.46	104.53	13.64	43.1	4.51	85.26	
03/25/05	12:43:01	14.87	59.10	5.17	2.49	122.72	13.35	56.1	4.74	85.27	
03/25/05	12:44:00	14.90	69.32	5.18	2.51	126.99	13.38	64.6	4.74	85.26	
03/25/05	12:45:00	14.93	62.82	5.22	2.48	124.24	13.50	58.7	4.59	85.31	
03/25/05	12:46:00	15.04	58.81	5.22	2.52	125.17	13.35	54.4	4.94	85.38	
03/25/05	12:47:01	14.94	55.68	5.22	2.45	127.56	13.29	51.0	4.88	85.41	
03/25/05	12:48:00	14.87	56.62	5.21	2.44	129.28	13.27	53.6	4.80	85.45	
03/25/05	12:49:00	14.91	65.93	5.19	2.45	131.45	13.23	61.3	4.91	85.41	
03/25/05	12:50:00	14.84	71.12	5.17	2.44	133.71	13.26	66.6	4.77	85.38	
03/25/05	12:51:00	14.80	89.90	5.15	2.52	134.01	13.45	85.9	4.58	85.36	
03/25/05	12:52:00	14.88	99.97	5.17	2.53	134.83	13.29	91.3	4.85	85.29	
03/25/05	12:53:01	15.07	81.28	5.18	2.50	137.52	13.58	75.6	4.70	85.29	
03/25/05	12:54:00	15.01	78.01	5.17	2.57	138.20	13.37	71.8	4.94	85.30	
03/25/05	12:55:00	15.16	72.01	5.20	2.49	138.62	13.73	67.1	4.59	85.28	
03/25/05	12:56:01	15.04	77.14	5.19	2.50	139.54	13.81	73.5	4.40	85.28	
03/25/05	12:57:00	15.13	73.11	5.19	2.51	139.59	13.84	69.2	4.45	85.28	
03/25/05	12:58:01	15.13	67.36	5.20	2.48	141.08	13.85	63.3	4.42	85.29	
03/25/05	12:59:01	15.07	60.63	5.20	2.48	141.69	13.84	57.5	4.37	85.29	
03/25/05	13:00:00	15.04	67.21	5.19	2.49	142.08	13.81	64.4	4.36	85.29	
03/25/05	13:01:01	14.97	66.58	5.20	2.45	143.57	13.59	63.4	4.53	85.31	

Date	Time	NO _x _1	CO_1	CO ₂	O ₂ _1	SO ₂	NO _x _2	CO_2	O ₂ _2	ADC-1 Temp	Calibration Status
Compliance / RATA System						Backup System					
		ppm	%	%	%	%	ppm	%	degF	degF	
03/25/05	13:02:01	14.27	65.50	5.07	2.41	144.45	13.17	60.9	4.64	85.39	
03/25/05	13:03:00	-0.36	9.93	0.18	0.03	40.40	0.23	9.9	0.15	85.49	Calibrating Both Systems
03/25/05	13:04:00	-0.49	3.35	0.12	-0.01	3.02	0.00	5.8	0.02	85.55	Calibrating Both Systems
03/25/05	13:05:00	-0.50	3.16	0.09	-0.01	1.26	-0.01	5.7	0.02	85.57	Calibrating Both Systems
03/25/05	13:06:00	-0.52	3.19	0.06	1.85	0.82	-0.02	5.8	1.68	85.61	Calibrating Both Systems
03/25/05	13:07:00	-0.52	3.34	0.02	4.96	0.44	-0.02	5.8	4.97	85.65	Calibrating Both Systems
03/25/05	13:08:00	-0.46	19.67	4.45	1.48	0.55	0.02	23.5	1.69	85.65	Calibrating Both Systems
03/25/05	13:09:00	-0.53	33.17	6.76	-0.03	0.19	-0.07	34.3	0.00	85.67	Calibrating Both Systems
03/25/05	13:10:00	-0.26	10.51	0.81	0.02	113.77	0.09	10.4	0.02	85.70	Calibrating Both Systems
03/25/05	13:11:00	-0.25	3.93	0.07	0.03	175.89	-0.01	5.7	0.02	85.70	Calibrating Both Systems
03/25/05	13:12:00	6.53	20.86	2.14	1.17	172.01	6.11	26.2	1.05	85.71	
03/25/05	13:13:00	15.06	61.03	4.97	2.46	148.02	15.32	63.8	2.49	85.66	
03/25/05	13:14:00	15.08	56.97	4.99	2.45	148.24	15.33	59.2	2.47	85.70	
03/25/05	13:15:01	15.25	45.21	5.00	2.46	148.53	15.49	47.0	2.48	85.69	
03/25/05	13:16:00	15.19	49.37	4.98	2.47	152.54	15.43	51.9	2.50	85.70	
03/25/05	13:17:00	15.14	48.16	4.99	2.47	157.47	15.38	51.3	2.49	85.66	
03/25/05	13:18:00	15.18	43.88	5.01	2.42	158.36	15.41	45.8	2.44	85.68	
03/25/05	13:19:00	15.16	38.71	5.01	2.41	157.00	15.39	41.3	2.43	85.66	
03/25/05	13:20:00	15.07	51.21	4.99	2.42	158.01	15.32	54.1	2.44	85.67	
03/25/05	13:21:00	15.06	55.50	5.00	2.45	156.64	15.35	58.0	2.47	85.70	
03/25/05	13:22:01	15.14	43.98	5.02	2.41	158.02	15.41	45.7	2.44	85.70	
03/25/05	13:23:00	15.09	43.26	5.01	2.39	159.09	15.35	45.8	2.41	85.71	
03/25/05	13:24:00	15.01	47.56	5.02	2.37	159.83	15.26	50.4	2.39	85.71	
03/25/05	13:25:00	14.93	55.76	5.02	2.43	160.42	15.19	60.0	2.45	85.73	
03/25/05	13:26:00	14.79	57.77	5.02	2.42	160.78	15.03	60.1	2.45	85.73	
03/25/05	13:27:00	15.00	53.01	5.03	2.39	159.60	15.25	55.1	2.41	85.84	
03/25/05	13:28:00	15.01	45.57	5.03	2.40	161.24	15.25	48.2	2.42	85.87	
03/25/05	13:29:00	14.90	48.70	5.03	2.36	162.93	15.14	51.9	2.38	85.83	
03/25/05	13:30:00	14.83	57.93	5.01	2.37	163.19	15.07	61.4	2.39	85.91	
03/25/05	13:31:00	14.90	64.29	5.01	2.38	164.64	15.14	67.4	2.40	85.91	
03/25/05	13:32:00	14.84	84.20	5.01	2.43	164.33	15.09	89.5	2.45	85.86	
03/25/05	13:33:00	14.84	82.15	5.04	2.44	166.22	15.09	85.1	2.46	85.97	
03/25/05	13:34:00	15.05	57.17	5.06	2.39	165.33	15.29	58.9	2.41	85.94	
03/25/05	13:35:00	15.01	49.48	5.05	2.39	163.06	15.27	52.0	2.40	85.93	
03/25/05	13:36:00	14.90	59.98	5.05	2.39	163.40	15.17	63.7	2.42	86.02	
03/25/05	13:37:01	14.66	71.04	5.06	2.37	162.28	14.92	75.8	2.40	85.98	
03/25/05	13:38:01	14.84	73.51	5.06	2.42	164.24	15.09	77.2	2.44	85.99	
03/25/05	13:39:00	14.73	61.15	5.07	2.37	164.03	14.99	62.9	2.39	86.03	
03/25/05	13:40:00	14.72	68.74	5.06	2.39	163.54	14.97	72.8	2.41	86.05	
03/25/05	13:41:00	14.69	72.96	5.07	2.39	162.13	14.93	75.3	2.42	86.08	
03/25/05	13:42:00	14.64	68.06	5.08	2.35	162.82	14.89	72.1	2.37	86.08	
03/25/05	13:43:00	14.62	81.57	5.07	2.43	162.10	14.87	87.3	2.45	86.08	
03/25/05	13:44:01	14.73	88.62	5.07	2.46	162.11	14.97	92.0	2.49	86.09	
03/25/05	13:45:01	14.80	75.86	5.10	2.41	164.37	15.03	78.7	2.42	86.13	
03/25/05	13:46:00	14.93	68.35	5.08	2.46	163.55	15.18	71.1	2.48	86.12	
03/25/05	13:47:00	14.86	63.19	5.10	2.42	162.83	15.09	65.5	2.44	86.10	
03/25/05	13:48:00	15.00	56.28	5.10	2.44	162.07	15.24	58.5	2.46	86.14	
03/25/05	13:49:00	14.70	54.35	5.09	2.36	162.95	14.95	58.6	2.38	86.14	
03/25/05	13:50:00	14.67	66.45	5.08	2.41	162.59	14.91	69.0	2.43	86.16	
03/25/05	13:51:01	14.67	58.52	5.09	2.39	161.17	14.90	62.0	2.41	86.15	
03/25/05	13:52:01	14.55	72.36	5.08	2.38	160.99	14.78	76.9	2.40	86.16	
03/25/05	13:53:00	14.46	77.59	5.08	2.42	161.20	14.71	82.6	2.44	86.15	
03/25/05	13:54:00	14.58	85.03	5.09	2.42	160.52	14.82	87.5	2.45	86.12	
03/25/05	13:55:00	14.66	63.02	5.13	2.35	160.55	14.91	64.8	2.38	86.16	
03/25/05	13:56:00	14.61	73.25	5.11	2.39	161.78	14.85	79.0	2.42	86.15	
03/25/05	13:57:00	14.64	64.82	5.12	2.33	161.75	14.88	66.7	2.35	86.16	

Date	Time	NO _x _1	CO_1	CO ₂	O ₂ _1	SO ₂	NO _x _2	CO_2	O ₂ _2	ADC-1 Temp	Calibration Status
		Compliance / RATA System					Backup System				
		ppm	%	%	%	%	ppm	%	degF	degF	
03/25/05	13:58:00	14.75	72.16	5.11	2.40	160.52	14.99	75.4	2.42	86.16	
03/25/05	13:59:00	14.74	70.69	5.11	2.40	160.14	14.97	74.4	2.42	86.16	
03/25/05	14:00:00	14.76	70.21	5.13	2.40	150.65	15.01	73.9	2.42	86.16	
03/25/05	14:01:00	14.77	61.57	5.14	2.38	144.22	15.00	62.9	2.40	86.16	
03/25/05	14:02:00	14.69	65.75	5.12	2.44	144.55	14.93	69.5	2.46	86.17	
03/25/05	14:03:00	14.68	58.98	5.12	2.35	144.01	14.91	61.2	2.37	86.17	
03/25/05	14:04:00	14.70	63.78	5.11	2.39	141.94	14.94	67.8	2.41	86.19	
03/25/05	14:05:00	14.72	63.51	5.13	2.39	139.82	14.94	65.0	2.41	86.24	
03/25/05	14:06:00	14.72	47.66	5.14	2.32	138.52	14.97	51.2	2.34	86.33	
03/25/05	14:07:00	14.72	59.72	5.11	2.33	137.83	14.98	63.3	2.36	86.37	
03/25/05	14:08:00	14.62	60.88	5.11	2.33	136.47	14.87	63.8	2.35	86.46	
03/25/05	14:09:00	14.54	70.87	5.10	2.35	135.98	14.79	75.5	2.37	86.48	
03/25/05	14:10:00	14.66	70.20	5.12	2.35	134.96	14.90	72.5	2.37	86.46	
03/25/05	14:11:00	14.55	80.82	5.12	2.38	134.42	14.79	85.8	2.40	86.46	
03/25/05	14:12:00	14.61	70.63	5.14	2.34	134.18	14.85	72.7	2.37	86.46	
03/25/05	14:13:00	14.66	66.03	5.14	2.35	133.36	14.90	68.5	2.37	86.50	
03/25/05	14:14:00	14.79	61.61	5.13	2.37	132.65	15.04	64.5	2.39	86.53	
03/25/05	14:15:00	14.68	65.31	5.12	2.37	130.82	14.92	68.8	2.39	86.59	
03/25/05	14:16:01	14.72	65.61	5.14	2.34	129.33	14.94	68.5	2.36	86.61	
03/25/05	14:17:00	14.70	69.71	5.14	2.40	129.39	14.92	73.3	2.42	86.61	
03/25/05	14:18:00	14.73	72.33	5.16	2.39	127.73	14.97	74.6	2.41	86.61	
03/25/05	14:19:01	14.84	54.08	5.14	2.37	129.61	15.07	56.8	2.39	86.61	
03/25/05	14:20:01	14.86	54.57	5.15	2.32	131.97	15.11	57.3	2.34	86.61	
03/25/05	14:21:00	14.63	60.71	5.13	2.34	127.46	14.89	64.5	2.36	86.61	
03/25/05	14:22:00	14.60	59.41	5.13	2.31	125.76	14.84	62.6	2.34	86.61	
03/25/05	14:23:00	0.93	17.27	0.64	0.28	52.11	1.73	18.2	0.42	86.61	Calibrating Both Systems
03/25/05	14:24:00	-0.47	3.97	0.08	-0.01	3.14	0.00	6.7	0.02	86.61	Calibrating Both Systems
03/25/05	14:25:00	-0.48	3.88	0.05	-0.01	1.24	-0.01	6.5	0.02	86.61	Calibrating Both Systems
03/25/05	14:26:00	-0.49	3.92	0.02	-0.01	0.75	-0.03	6.5	0.02	86.63	Calibrating Both Systems
03/25/05	14:27:00	-0.49	4.02	-0.01	2.02	0.50	-0.06	6.5	1.87	86.69	Calibrating Both Systems
03/25/05	14:28:00	-0.49	3.97	-0.07	4.95	0.27	-0.11	6.5	4.96	86.86	Calibrating Both Systems
03/25/05	14:29:00	-0.49	10.50	2.07	3.15	0.08	-0.09	14.5	3.36	86.99	Calibrating Both Systems
03/25/05	14:30:00	-0.41	27.14	4.40	-0.01	23.74	0.03	26.7	0.02	87.02	Calibrating Both Systems
03/25/05	14:31:00	-0.49	3.83	-0.18	-0.01	168.48	-0.09	6.3	0.02	87.04	Calibrating Both Systems
03/25/05	14:32:00	0.07	6.69	0.55	0.08	176.08	0.35	9.6	0.09	87.06	Calibrating Both Systems
03/25/05	14:33:00	-0.49	33.01	6.60	-0.04	22.61	-0.06	34.5	0.00	87.05	Calibrating Both Systems
03/25/05	14:34:00	12.31	41.13	5.28	1.99	74.67	11.96	43.2	1.91	87.05	
03/25/05	14:35:00	14.94	45.47	4.93	2.35	120.46	15.15	48.6	2.38	87.03	
03/25/05	14:36:00	14.84	51.98	4.92	2.33	121.56	15.05	55.4	2.35	87.05	
03/25/05	14:37:00	14.89	58.13	4.92	2.34	119.97	15.12	60.0	2.37	87.02	
03/25/05	14:38:00	14.84	51.44	4.95	2.30	119.91	15.07	53.2	2.32	87.04	
03/25/05	14:39:00	14.88	49.62	4.93	2.35	119.71	15.12	53.1	2.37	87.04	
03/25/05	14:40:00	14.57	60.24	4.92	2.32	119.40	14.82	62.6	2.34	87.05	
03/25/05	14:41:00	14.55	58.45	4.94	2.25	121.87	14.80	61.8	2.27	87.06	
03/25/05	14:42:00	14.48	61.84	4.93	2.28	121.43	14.73	64.9	2.29	87.06	
03/25/05	14:43:00	14.45	79.29	4.92	2.35	120.60	14.69	82.5	2.37	87.07	
03/25/05	14:44:00	14.48	75.13	4.94	2.31	119.38	14.76	79.0	2.33	87.06	
03/25/05	14:45:00	14.61	73.59	4.93	2.39	117.28	14.95	77.3	2.41	87.06	
03/25/05	14:46:00	14.51	81.99	4.94	2.33	116.99	14.83	84.9	2.35	87.06	
03/25/05	14:47:00	14.48	81.33	4.95	2.32	118.32	14.79	85.8	2.34	87.06	
03/25/05	14:48:00	14.64	88.20	4.94	2.39	120.19	14.93	92.8	2.41	87.06	
03/25/05	14:49:00	14.74	68.19	4.97	2.35	129.02	15.02	69.0	2.37	87.06	
03/25/05	14:50:00	14.65	55.64	4.97	2.34	136.78	14.93	59.8	2.36	87.06	
03/25/05	14:51:00	14.41	70.39	4.95	2.26	141.29	14.69	72.7	2.28	87.06	
03/25/05	14:52:00	14.33	79.75	4.95	2.31	144.09	14.61	85.9	2.32	87.06	
03/25/05	14:53:00	14.39	79.05	4.98	2.21	146.56	14.66	81.0	2.24	87.07	

Date	Time	NO _{x_1}	CO ₁	CO ₂	O _{2_1}	SO ₂	NO _{x_2}	CO ₂	O _{2_2}	ADC-1 Temp	Calibration Status
Compliance / RATA System						Backup System					
		ppm	%	%	%	%	ppm	%	degF	degF	
03/25/05	14:54:01	14.33	85.39	4.96	2.31	150.06	14.60	91.5	2.32	87.06	
03/25/05	14:55:00	14.28	103.96	4.97	2.28	152.97	14.55	108.1	2.30	87.06	
03/25/05	14:56:01	14.40	103.83	4.98	2.31	154.48	14.66	108.9	2.33	87.09	
03/25/05	14:57:00	14.43	84.21	5.00	2.28	155.93	14.70	86.7	2.31	87.20	
03/25/05	14:58:00	14.48	84.72	4.98	2.30	159.60	14.74	89.2	2.32	87.26	
03/25/05	14:59:00	14.55	82.52	4.98	2.30	160.69	14.82	85.4	2.33	87.37	
03/25/05	15:00:01	14.49	78.06	4.98	2.27	162.80	14.75	82.0	2.30	87.39	
03/25/05	15:01:00	14.50	81.75	4.98	2.30	165.19	14.76	86.3	2.31	87.49	
03/25/05	15:02:01	14.40	97.14	4.98	2.28	165.53	14.67	100.7	2.31	87.51	
03/25/05	15:03:00	14.38	81.71	5.00	2.22	167.76	14.65	85.6	2.23	87.51	
03/25/05	15:04:00	14.24	109.63	4.96	2.30	166.90	14.52	117.8	2.32	87.51	
03/25/05	15:05:01	14.16	101.76	4.99	2.17	166.67	14.42	104.8	2.19	87.51	
03/25/05	15:06:00	14.19	110.64	4.97	2.25	166.78	14.46	116.7	2.27	87.51	
03/25/05	15:07:00	14.25	91.45	4.99	2.18	167.42	14.51	93.6	2.20	87.51	
03/25/05	15:08:01	14.28	96.82	4.98	2.25	165.05	14.54	102.6	2.27	87.52	
03/25/05	15:09:00	14.16	118.74	4.98	2.26	164.27	14.42	126.6	2.28	87.54	
03/25/05	15:10:00	14.24	107.86	5.00	2.23	164.37	14.49	111.8	2.25	87.63	
03/25/05	15:11:00	14.25	109.76	4.99	2.27	164.32	14.51	115.9	2.29	87.73	
03/25/05	15:12:00	14.23	114.14	5.01	2.27	162.44	14.51	119.5	2.29	87.81	
03/25/05	15:13:01	14.19	125.06	5.00	2.27	161.52	14.45	131.0	2.29	87.81	
03/25/05	15:14:00	14.26	120.04	5.01	2.29	160.95	14.51	125.2	2.31	87.84	
03/25/05	15:15:00	14.19	121.25	5.02	2.26	160.87	14.45	129.3	2.28	87.90	
03/25/05	15:16:00	14.30	153.79	4.98	2.38	161.04	14.55	163.2	2.39	87.93	
03/25/05	15:17:00	14.33	154.23	5.01	2.34	161.50	14.58	160.0	2.36	87.94	
03/25/05	15:18:00	14.47	124.47	5.02	2.37	158.79	14.71	128.3	2.39	87.94	
03/25/05	15:19:00	14.63	92.46	5.03	2.32	156.72	14.87	94.6	2.34	87.96	
03/25/05	15:20:00	14.45	77.23	5.05	2.25	159.79	14.71	79.5	2.28	87.96	
03/25/05	15:21:00	14.49	65.94	5.05	2.20	161.59	14.75	67.8	2.22	87.96	
03/25/05	15:22:00	14.14	94.53	5.02	2.20	163.25	14.41	102.6	2.22	87.96	
03/25/05	15:23:00	13.96	140.79	5.01	2.26	163.86	14.22	149.4	2.28	87.96	
03/25/05	15:24:00	13.95	131.23	5.04	2.21	163.60	14.20	140.6	2.22	87.96	
03/25/05	15:25:00	13.96	189.69	5.02	2.34	162.22	14.22	202.3	2.36	87.97	
03/25/05	15:26:00	14.10	178.47	5.07	2.31	163.94	14.37	180.5	2.33	87.96	
03/25/05	15:27:00	14.35	138.24	5.07	2.36	163.77	14.61	142.5	2.38	87.97	
03/25/05	15:28:00	14.44	86.12	5.11	2.26	163.95	14.70	87.8	2.29	88.00	
03/25/05	15:29:00	14.22	92.39	5.10	2.21	162.37	14.50	98.2	2.22	88.11	
03/25/05	15:30:00	14.02	94.11	5.09	2.18	152.83	14.28	97.7	2.20	88.13	
03/25/05	15:31:00	13.96	100.06	5.08	2.19	148.64	14.21	105.3	2.21	88.25	
03/25/05	15:32:00	13.82	128.47	5.07	2.21	146.02	14.09	137.3	2.23	88.32	
03/25/05	15:33:01	13.93	117.79	5.08	2.22	143.40	14.19	122.1	2.24	88.38	
03/25/05	15:34:00	14.13	125.20	5.09	2.32	139.96	14.38	131.6	2.34	88.41	
03/25/05	15:35:00	14.33	124.64	5.09	2.34	135.52	14.58	132.3	2.36	88.41	
03/25/05	15:36:00	14.34	118.51	5.11	2.34	135.27	14.59	123.0	2.35	88.40	
03/25/05	15:37:01	14.53	96.84	5.10	2.36	131.75	14.77	101.2	2.38	88.41	
03/25/05	15:38:01	14.37	98.96	5.10	2.30	130.66	14.63	102.6	2.32	88.41	
03/25/05	15:39:00	14.24	111.13	5.08	2.33	129.41	14.52	120.2	2.34	88.41	
03/25/05	15:40:00	14.40	119.59	5.07	2.39	129.22	14.67	122.7	2.40	88.41	
03/25/05	15:41:00	14.45	100.65	5.10	2.33	128.11	14.72	104.4	2.35	88.41	
03/25/05	15:42:01	14.24	92.70	5.11	2.30	126.92	14.51	98.2	2.32	88.41	
03/25/05	15:43:01	14.25	112.96	5.09	2.36	125.82	14.51	118.7	2.38	88.41	
03/25/05	15:44:00	14.38	96.09	5.11	2.31	126.09	14.62	98.9	2.33	88.50	
03/25/05	15:45:00	14.27	103.43	5.09	2.36	124.94	14.53	110.8	2.37	88.59	
03/25/05	15:46:00	14.18	129.09	5.07	2.40	124.36	14.43	136.1	2.42	88.65	
03/25/05	15:47:01	14.29	129.43	5.09	2.41	122.17	14.55	135.7	2.43	88.62	
03/25/05	15:48:01	14.34	103.90	5.10	2.41	121.73	14.59	106.9	2.43	88.64	
03/25/05	15:49:00	14.49	78.52	5.11	2.34	122.34	14.75	80.9	2.36	88.69	

Date	Time	NO _x _1	CO_1	CO ₂	O ₂ _1	SO ₂	NO _x _2	CO_2	O ₂ _2	ADC-1 Temp	Calibration Status
Compliance / RATA System						Backup System					
		ppm	%	%	%	%	ppm	%	degF	degF	
03/25/05	15:50:00	14.44	89.03	5.10	2.37	121.19	14.70	93.6	2.38	88.76	
03/25/05	15:51:01	14.46	108.75	5.08	2.47	119.50	14.73	116.3	2.48	88.75	
03/25/05	15:52:00	14.57	100.07	5.09	2.41	119.72	14.81	102.0	2.42	88.79	
03/25/05	15:53:00	14.84	74.39	5.10	2.41	118.83	15.06	75.3	2.43	88.82	
03/25/05	15:54:00	15.08	59.99	5.08	2.44	119.02	15.30	63.4	2.45	88.84	
03/25/05	15:55:00	14.93	68.84	5.08	2.42	117.95	15.15	71.8	2.44	88.85	
03/25/05	15:56:00	14.95	61.84	5.09	2.39	116.96	15.18	63.9	2.41	88.86	
03/25/05	15:57:00	15.14	62.89	5.08	2.42	116.95	15.35	65.9	2.44	88.86	
03/25/05	15:58:00	15.06	60.03	5.08	2.38	116.69	15.29	62.7	2.40	88.86	
03/25/05	15:59:00	15.02	61.28	5.08	2.38	116.20	15.27	63.9	2.39	88.86	
03/25/05	16:00:00	15.06	56.13	5.07	2.37	116.48	15.34	59.4	2.39	88.86	
03/25/05	16:01:00	14.88	62.49	5.06	2.39	114.71	15.18	65.2	2.41	88.86	
03/25/05	16:02:00	14.90	66.24	5.04	2.39	114.02	15.20	68.7	2.41	88.86	
03/25/05	16:03:00	14.81	64.76	5.04	2.37	114.42	15.12	68.2	2.39	88.86	
03/25/05	16:04:00	14.80	70.92	5.01	2.44	113.55	15.11	75.3	2.46	88.86	
03/25/05	16:05:00	14.74	87.60	5.03	2.39	112.77	15.03	91.9	2.41	88.86	
03/25/05	16:06:00	15.06	93.87	5.02	2.49	113.28	15.35	99.2	2.51	88.86	
03/25/05	16:07:00	15.14	82.66	5.04	2.47	113.20	15.43	84.8	2.49	88.86	
03/25/05	16:08:00	15.23	76.92	5.05	2.47	112.25	15.55	80.0	2.49	88.86	
03/25/05	16:09:01	15.24	67.95	5.06	2.47	111.66	15.55	70.1	2.49	88.87	
03/25/05	16:10:00	15.28	62.97	5.05	2.46	111.24	15.60	66.0	2.48	88.87	
03/25/05	16:11:00	15.25	63.76	5.04	2.45	111.31	15.56	67.0	2.46	88.90	
03/25/05	16:12:00	14.94	68.51	5.04	2.41	110.55	15.23	71.5	2.43	88.90	
03/25/05	16:13:00	15.19	61.81	5.04	2.39	109.42	15.50	63.9	2.41	88.90	
03/25/05	16:14:00	15.09	58.00	5.02	2.40	110.49	15.42	60.8	2.41	88.93	
03/25/05	16:15:00	15.08	69.74	5.00	2.42	110.63	15.40	74.3	2.44	88.89	
03/25/05	16:16:00	15.04	80.24	5.00	2.43	110.04	15.37	83.1	2.45	88.90	
03/25/05	16:17:00	15.21	60.64	5.02	2.39	110.12	15.52	62.0	2.41	88.87	
03/25/05	16:18:00	15.18	54.58	5.00	2.41	109.95	15.51	57.6	2.43	88.88	
03/25/05	16:19:00	15.14	59.15	4.99	2.37	109.89	15.47	62.4	2.39	88.88	
03/25/05	16:20:00	15.09	63.24	5.00	2.35	111.72	15.42	66.5	2.37	88.89	
03/25/05	16:21:00	15.01	71.02	4.98	2.39	112.08	15.33	75.1	2.40	89.00	
03/25/05	16:22:00	15.11	70.37	4.98	2.37	111.29	15.43	72.4	2.39	89.08	
03/25/05	16:23:00	14.99	71.85	4.99	2.37	110.80	15.34	75.5	2.39	89.13	
03/25/05	16:24:00	14.83	81.05	4.99	2.36	111.11	15.16	85.7	2.38	89.15	
03/25/05	16:25:00	14.82	84.10	4.96	2.38	111.84	15.14	87.2	2.39	89.20	
03/25/05	16:26:00	14.80	95.67	4.95	2.40	111.74	15.12	102.0	2.41	89.14	
03/25/05	16:27:00	15.03	91.35	4.97	2.45	110.42	15.35	94.5	2.47	89.15	
03/25/05	16:28:00	14.99	73.73	4.97	2.38	110.22	15.31	77.0	2.40	89.13	
03/25/05	16:29:00	14.92	78.62	4.96	2.38	111.00	15.25	83.0	2.40	89.13	
03/25/05	16:30:00	14.80	98.36	4.95	2.41	111.96	15.12	103.4	2.43	89.12	
03/25/05	16:31:00	14.79	105.60	4.97	2.38	112.23	15.11	109.9	2.40	89.11	
03/25/05	16:32:00	14.89	94.64	4.98	2.42	111.39	15.22	99.6	2.43	89.09	
03/25/05	16:33:00	14.87	102.69	4.98	2.44	110.10	15.19	108.6	2.46	89.14	
03/25/05	16:34:00	14.90	105.32	4.99	2.44	108.87	15.23	109.1	2.46	89.14	
03/25/05	16:35:00	14.91	101.78	5.00	2.45	107.99	15.23	106.4	2.47	89.17	
03/25/05	16:36:00	15.01	93.07	5.00	2.47	107.56	15.34	97.1	2.48	89.18	
03/25/05	16:37:00	14.94	89.68	5.00	2.44	108.30	15.25	94.6	2.46	89.23	
03/25/05	16:38:00	15.09	98.05	4.99	2.46	108.43	15.39	102.4	2.48	89.22	
03/25/05	16:39:00	15.10	79.73	5.01	2.41	107.98	15.43	82.8	2.42	89.24	
03/25/05	16:40:00	15.12	81.48	4.99	2.48	108.52	15.43	84.7	2.50	89.28	
03/25/05	16:41:00	15.06	69.16	5.02	2.37	109.10	15.38	72.3	2.39	89.26	
03/25/05	16:42:00	14.99	69.52	5.00	2.37	109.27	15.31	73.0	2.39	89.26	
03/25/05	16:43:00	14.86	81.72	4.98	2.41	108.15	15.18	85.9	2.43	89.27	
03/25/05	16:44:00	14.89	83.07	4.99	2.36	108.15	15.20	86.0	2.37	89.23	
03/25/05	16:45:00	14.97	79.17	5.00	2.38	108.43	15.28	82.3	2.39	89.20	

Date	Time	NO _{x-1}	CO ₁	CO ₂	O ₂₋₁	SO ₂	NO _{x-2}	CO ₂	O ₂₋₂	ADC-1 Temp	Calibration Status
Compliance / RATA System						Backup System					
		ppm	%	%	%	%	ppm	%	degF	degF	
03/25/05	16:46:01	14.96	83.54	4.99	2.39	107.64	15.27	87.0	2.40	89.13	
03/25/05	16:47:00	14.82	97.88	5.00	2.42	107.43	15.14	103.5	2.43	89.12	
03/25/05	16:48:00	14.96	102.67	5.01	2.47	107.23	15.26	107.2	2.49	89.12	
03/25/05	16:49:00	15.11	79.10	5.03	2.41	106.48	15.42	81.3	2.43	89.17	
03/25/05	16:50:00	15.00	72.50	5.03	2.37	107.19	15.31	76.6	2.39	89.26	
03/25/05	16:51:01	14.90	84.46	5.00	2.41	107.16	15.23	88.4	2.43	89.25	
03/25/05	16:52:00	14.82	90.62	5.01	2.40	106.70	15.13	94.5	2.42	89.26	
03/25/05	16:53:00	14.87	79.41	5.02	2.36	107.18	15.18	82.6	2.38	89.27	
03/25/05	16:54:00	14.73	83.64	5.01	2.38	107.03	15.05	88.1	2.40	89.26	
03/25/05	16:55:00	14.76	94.04	5.00	2.41	107.21	15.09	99.5	2.42	89.22	
03/25/05	16:56:00	14.73	89.25	5.01	2.36	106.86	15.03	92.6	2.38	89.23	
03/25/05	16:57:00	14.98	84.04	5.01	2.39	106.74	15.27	87.2	2.41	89.20	
03/25/05	16:58:00	14.94	79.77	5.02	2.40	106.31	15.22	84.0	2.42	89.15	
03/25/05	16:59:00	15.05	84.66	5.02	2.42	105.97	15.28	87.6	2.44	89.15	
03/25/05	17:00:00	15.01	72.14	5.04	2.33	105.67	15.24	74.7	2.34	89.15	
03/25/05	17:01:00	15.02	79.71	5.01	2.41	105.05	15.26	85.0	2.43	89.17	
03/25/05	17:02:00	15.00	74.64	5.02	2.31	105.58	15.21	76.4	2.33	89.15	
03/25/05	17:03:00	14.86	85.91	5.01	2.34	104.74	15.10	90.5	2.36	89.16	
03/25/05	17:04:00	14.81	89.84	5.01	2.37	105.31	15.05	96.1	2.39	89.17	
03/25/05	17:05:00	14.90	96.32	5.02	2.36	105.51	15.13	99.5	2.38	89.26	
03/25/05	17:06:01	14.89	97.31	5.01	2.40	106.47	15.14	103.2	2.41	89.23	
03/25/05	17:07:00	14.94	114.76	4.99	2.49	105.90	15.18	120.3	2.51	89.26	
03/25/05	17:08:01	15.20	96.53	5.03	2.44	106.26	15.41	100.2	2.46	89.25	
03/25/05	17:09:00	15.21	95.54	5.04	2.45	105.22	15.46	100.3	2.47	89.25	
03/25/05	17:10:00	15.24	79.81	5.05	2.44	105.70	15.48	82.1	2.46	89.23	
03/25/05	17:11:00	15.34	71.17	5.06	2.41	106.30	15.57	73.2	2.43	89.20	
03/25/05	17:12:00	15.28	60.16	5.06	2.35	106.62	15.50	63.4	2.37	89.26	
03/25/05	17:13:00	15.15	67.15	5.04	2.37	106.11	15.37	69.8	2.39	89.28	
03/25/05	17:14:00	15.09	77.20	5.03	2.36	105.26	15.34	81.5	2.38	89.25	
03/25/05	17:15:00	15.07	84.57	5.04	2.35	105.38	15.32	88.5	2.37	89.23	
03/25/05	17:16:00	15.19	90.10	5.03	2.38	105.02	15.45	94.3	2.40	89.27	
03/25/05	17:17:00	15.23	92.06	5.02	2.42	104.16	15.53	98.0	2.43	89.22	
03/25/05	17:18:00	15.24	93.81	5.03	2.42	104.33	15.51	98.1	2.44	89.23	
03/25/05	17:19:00	15.37	99.47	5.03	2.47	104.82	15.63	104.0	2.49	89.17	
03/25/05	17:20:00	15.58	88.63	5.05	2.43	104.45	15.85	91.9	2.46	89.13	
03/25/05	17:21:00	15.53	87.26	5.05	2.47	104.47	15.79	92.1	2.48	89.02	
03/25/05	17:22:00	6.46	55.59	2.54	1.28	70.48	7.25	57.4	1.46	89.01	
03/25/05	17:23:00	-0.40	5.24	0.10	0.00	4.38	0.04	7.8	0.02	88.94	Calibrating Both Systems
03/25/05	17:24:00	-0.47	5.09	0.07	-0.01	1.34	0.00	7.8	0.02	89.02	Calibrating Both Systems
03/25/05	17:25:00	-0.39	13.91	2.70	0.00	1.14	0.07	17.8	0.03	89.01	Calibrating Both Systems
03/25/05	17:26:00	-0.31	34.71	6.74	0.00	0.72	0.02	35.8	0.01	88.96	Calibrating Both Systems
03/25/05	17:27:00	-0.43	11.15	0.65	4.63	1.26	0.12	11.7	4.48	89.08	Calibrating Both Systems
03/25/05	17:28:00	-0.49	4.91	0.01	4.95	0.20	-0.03	7.5	4.96	89.09	Calibrating Both Systems
03/25/05	17:29:00	-0.50	4.89	-0.04	4.95	-0.08	-0.10	7.5	4.96	89.10	Calibrating Both Systems
03/25/05	17:30:01	-0.48	4.88	-0.10	4.94	-0.17	-0.10	7.4	4.96	89.11	Calibrating Both Systems
03/25/05	17:31:00	-0.22	5.16	-0.11	0.61	103.67	13.49	100.5	2.75	89.12	Calibrating RATA System
03/25/05	17:32:00	-0.49	3.87	-0.23	-0.01	175.63	15.50	114.0	2.50	89.10	Calibrating RATA System
03/25/05	17:33:00	1.55	3.28	0.25	0.33	178.93	15.80	98.9	2.54	89.05	Calibrating RATA System
03/25/05	17:34:00	15.72	53.71	4.80	2.46	120.66	16.00	60.5	2.49	88.90	
03/25/05	17:35:00	15.80	66.09	4.79	2.46	108.56	16.02	70.3	2.49	88.91	
03/25/05	17:36:00	15.63	55.00	4.80	2.38	104.96	15.85	58.9	2.40	88.90	
03/25/05	17:37:00	15.53	61.44	4.78	2.42	104.15	15.75	66.7	2.44	88.87	
03/25/05	17:38:00	15.60	62.48	4.81	2.42	104.81	15.84	65.9	2.45	88.91	
03/25/05	17:39:00	15.53	45.33	4.83	2.33	105.39	15.79	49.6	2.36	88.88	
03/25/05	17:40:00	15.46	57.72	4.81	2.35	106.37	15.75	62.5	2.37	88.87	
03/25/05	17:41:00	15.28	60.18	4.81	2.31	106.50	15.66	64.3	2.33	88.86	

Date	Time	NO _x _1	CO_1	CO ₂	O ₂ _1	SO ₂	NO _x _2	CO_2	O ₂ _2	ADC-1 Temp	Calibration Status
Compliance / RATA System						Backup System					
		ppm	%	%	%	%	ppm	%	degF	degF	
03/25/05	17:42:01	15.42	72.00	4.82	2.36	106.57	15.75	77.5	2.38	88.86	
03/25/05	17:43:00	15.44	83.96	4.82	2.39	107.37	15.76	89.4	2.41	88.86	
03/25/05	17:44:00	15.47	79.52	4.84	2.38	106.85	15.78	84.2	2.40	88.86	
03/25/05	17:45:00	15.50	76.18	4.86	2.37	106.40	15.78	81.4	2.38	88.86	
03/25/05	17:46:00	15.49	84.82	4.83	2.41	106.09	15.77	89.8	2.43	88.86	
03/25/05	17:47:01	15.49	81.57	4.86	2.38	106.49	15.78	87.0	2.39	88.86	
03/25/05	17:48:00	15.65	83.30	4.85	2.44	104.94	15.93	87.7	2.46	88.86	
03/25/05	17:49:01	15.79	78.01	4.86	2.41	105.44	16.05	82.8	2.43	88.86	
03/25/05	17:50:00	15.72	59.02	4.89	2.34	106.00	16.00	62.5	2.36	88.86	
03/25/05	17:51:00	15.62	70.04	4.86	2.43	105.87	15.91	75.0	2.44	88.86	
03/25/05	17:52:00	15.65	78.92	4.86	2.39	105.56	15.91	83.7	2.41	88.85	
03/25/05	17:53:00	15.84	60.20	4.87	2.39	106.24	16.12	64.4	2.41	88.82	
03/25/05	17:54:00	15.89	61.97	4.87	2.38	106.15	16.15	65.9	2.40	88.78	
03/25/05	17:55:00	15.92	57.32	4.89	2.37	105.68	16.20	60.9	2.39	88.69	
03/25/05	17:56:00	15.87	51.41	4.90	2.32	106.63	16.13	55.2	2.34	88.59	
03/25/05	17:57:01	15.73	52.28	4.89	2.32	106.53	16.00	56.1	2.33	88.57	
03/25/05	17:58:00	15.68	67.94	4.88	2.35	106.84	15.96	73.1	2.37	88.53	
03/25/05	17:59:00	15.72	71.84	4.90	2.36	106.01	16.00	75.6	2.38	88.50	
03/25/05	18:00:00	15.93	55.47	4.91	2.36	105.54	16.22	59.3	2.38	88.44	
03/25/05	18:01:01	15.72	64.34	4.89	2.39	106.08	16.00	70.7	2.40	88.44	
03/25/05	18:02:00	15.58	87.97	4.88	2.43	106.39	15.86	94.4	2.45	88.42	
03/25/05	18:03:00	15.84	79.34	4.91	2.38	106.63	16.13	81.8	2.40	88.41	
03/25/05	18:04:00	15.87	75.80	4.89	2.48	106.65	16.13	81.5	2.50	88.41	
03/25/05	18:05:00	15.94	65.48	4.92	2.39	106.63	16.22	68.3	2.40	88.41	
03/25/05	18:06:00	16.07	65.32	4.90	2.47	106.58	16.34	69.4	2.49	88.41	
03/25/05	18:07:00	16.03	53.57	4.94	2.38	107.15	16.31	57.2	2.40	88.41	
03/25/05	18:08:00	15.99	58.50	4.93	2.41	107.05	16.26	62.4	2.43	88.41	
03/25/05	18:09:00	15.92	58.36	4.93	2.38	107.08	16.19	62.4	2.40	88.41	
03/25/05	18:10:00	15.90	56.60	4.93	2.38	106.99	16.17	61.2	2.40	88.41	
03/25/05	18:11:00	15.90	54.29	4.92	2.37	107.98	16.18	58.2	2.38	88.41	
03/25/05	18:12:00	16.00	60.41	4.91	2.39	107.64	16.26	65.1	2.41	88.41	
03/25/05	18:13:00	15.96	62.67	4.91	2.38	107.12	16.25	67.4	2.39	88.41	
03/25/05	18:14:01	15.89	67.76	4.91	2.35	106.60	16.19	71.9	2.37	88.40	
03/25/05	18:15:00	15.90	76.69	4.89	2.44	107.19	16.19	82.2	2.46	88.37	
03/25/05	18:16:00	16.04	75.81	4.91	2.40	107.02	16.33	79.9	2.42	88.31	
03/25/05	18:17:00	16.17	68.73	4.91	2.40	106.38	16.47	72.7	2.41	88.22	
03/25/05	18:18:00	16.02	78.78	4.90	2.41	106.07	16.32	84.3	2.43	88.19	
03/25/05	18:19:00	16.13	83.67	4.92	2.41	105.78	16.42	88.5	2.43	88.05	
03/25/05	18:20:01	16.11	68.30	4.93	2.42	105.26	16.40	73.2	2.44	88.02	
03/25/05	18:21:00	16.06	77.32	4.92	2.42	105.43	16.35	81.9	2.44	88.01	
03/25/05	18:22:00	16.12	61.40	4.95	2.35	106.57	16.40	65.3	2.37	87.98	
03/25/05	18:23:00	16.06	71.57	4.90	2.44	106.62	16.33	76.9	2.45	87.97	
03/25/05	18:24:00	15.95	80.16	4.92	2.35	107.69	16.23	85.1	2.37	87.96	
03/25/05	18:25:00	16.25	72.77	4.93	2.39	106.28	16.52	77.3	2.40	87.96	
03/25/05	18:26:00	16.18	87.66	4.92	2.45	104.94	16.44	93.4	2.47	87.96	
03/25/05	18:27:00	16.31	76.69	4.94	2.43	104.93	16.55	80.8	2.45	87.96	
03/25/05	18:28:00	16.27	64.98	4.96	2.40	103.26	16.52	68.9	2.41	87.96	
03/25/05	18:29:01	16.36	70.64	4.94	2.44	103.09	16.60	74.6	2.46	87.96	
03/25/05	18:30:00	16.18	62.76	4.96	2.37	104.73	16.43	67.8	2.39	87.96	
03/25/05	18:31:00	16.26	69.40	4.93	2.44	104.32	16.52	74.1	2.46	87.96	
03/25/05	18:32:00	16.22	73.13	4.94	2.39	104.93	16.47	78.3	2.41	87.96	
03/25/05	18:33:00	16.15	64.82	4.96	2.38	102.99	16.41	68.2	2.39	87.96	
03/25/05	18:34:00	16.20	63.95	4.95	2.45	102.13	16.47	68.7	2.47	87.96	
03/25/05	18:35:00	16.11	59.88	4.96	2.38	101.94	16.36	62.3	2.40	87.96	
03/25/05	18:36:01	16.27	56.31	4.96	2.36	101.55	16.52	60.9	2.37	87.96	
03/25/05	18:37:00	14.28	52.07	4.50	2.13	101.78	14.98	56.4	2.47	87.96	

Date	Time	NO _x _1	CO_1	CO ₂	O ₂ _1	SO ₂	NO _x _2	CO_2	O ₂ _2	ADC-1 Temp	Calibration Status
		Compliance / RATA System					Backup System				
		ppm	%	%	%	%	ppm	%	degF	degF	
03/25/05	18:38:00	-0.38	3.39	0.06	0.00	24.99	0.12	5.6	0.04	87.96	Calibrating Both Systems
03/25/05	18:39:00	-0.47	0.88	0.03	-0.01	2.19	0.00	4.8	0.02	87.96	Calibrating Both Systems
03/25/05	18:40:00	-0.48	0.82	0.00	1.84	1.01	-0.03	4.5	1.70	87.97	Calibrating Both Systems
03/25/05	18:41:00	-0.49	0.64	-0.06	4.94	0.49	-0.08	4.3	4.96	87.99	Calibrating Both Systems
03/25/05	18:42:00	-0.33	22.83	5.49	0.68	1.01	0.11	27.2	0.89	87.97	Calibrating Both Systems
03/25/05	18:43:00	-0.49	30.66	6.67	-0.03	0.25	-0.06	32.7	0.00	87.92	Calibrating Both Systems
03/25/05	18:44:00	-0.39	23.43	4.26	-0.02	23.46	6.56	42.3	1.00	87.92	Calibrating RATA System
03/25/05	18:45:00	-0.49	0.26	-0.10	-0.01	168.10	16.41	52.0	2.44	87.90	Calibrating RATA System
03/25/05	18:46:00	2.41	2.94	0.64	0.44	177.05	16.27	55.6	2.40	87.87	Calibrating RATA System
03/25/05	18:47:00	15.77	48.52	4.82	2.37	114.30	16.07	53.8	2.40	87.91	
03/25/05	18:48:01	15.80	55.90	4.81	2.40	104.22	16.05	60.3	2.42	87.78	
03/25/05	18:49:00	15.91	55.95	4.81	2.38	101.55	16.10	60.1	2.41	87.74	
03/25/05	18:50:00	15.96	55.75	4.81	2.34	101.97	16.21	59.6	2.37	87.62	
03/25/05	18:51:00	15.80	59.31	4.82	2.41	101.22	16.11	64.8	2.43	87.55	
03/25/05	18:52:00	15.90	54.12	4.84	2.35	101.50	16.15	57.5	2.38	87.52	
03/25/05	18:53:00	15.95	48.35	4.83	2.36	102.42	16.18	52.1	2.38	87.51	
03/25/05	18:54:01	15.80	53.19	4.82	2.36	102.26	16.07	58.1	2.39	87.51	
03/25/05	18:55:00	15.63	54.40	4.84	2.33	102.47	15.89	58.4	2.35	87.51	
03/25/05	18:56:01	15.48	66.75	4.81	2.36	103.13	15.76	72.5	2.38	87.51	
03/25/05	18:57:00	15.48	91.28	4.80	2.40	103.70	15.76	99.0	2.42	87.51	
03/25/05	18:58:00	15.56	105.31	4.82	2.44	103.27	15.83	112.4	2.46	87.51	
03/25/05	18:59:00	15.67	97.79	4.85	2.48	103.95	15.94	102.8	2.49	87.50	
03/25/05	19:00:00	15.78	66.84	4.90	2.40	103.60	16.07	70.3	2.42	87.45	
03/25/05	19:01:00	15.91	53.90	4.88	2.43	102.83	16.15	57.4	2.45	87.42	
03/25/05	19:02:00	15.63	58.62	4.88	2.34	102.50	15.90	63.7	2.37	87.25	
03/25/05	19:03:00	15.53	64.32	4.87	2.35	103.35	15.79	68.7	2.37	87.23	
03/25/05	19:04:00	15.60	66.46	4.87	2.39	102.67	15.85	71.3	2.41	87.15	
03/25/05	19:05:00	15.39	67.92	4.89	2.33	103.47	15.64	71.9	2.35	87.10	
03/25/05	19:06:00	15.40	66.76	4.87	2.38	103.95	15.66	71.6	2.39	87.08	
03/25/05	19:07:00	15.41	67.00	4.87	2.39	103.41	15.68	70.9	2.41	87.07	
03/25/05	19:08:00	15.46	66.52	4.86	2.39	103.34	15.72	71.9	2.41	87.10	
03/25/05	19:09:01	15.43	65.62	4.90	2.32	104.22	15.68	69.1	2.34	87.08	
03/25/05	19:10:00	15.49	52.25	4.90	2.33	103.93	15.74	55.6	2.35	87.07	
03/25/05	19:11:00	15.55	53.50	4.87	2.39	102.20	15.81	59.3	2.41	87.06	
03/25/05	19:12:00	15.31	84.20	4.88	2.37	102.56	15.55	90.4	2.38	87.06	
03/25/05	19:13:00	15.64	84.78	4.89	2.43	102.88	15.90	90.3	2.45	87.06	
03/25/05	19:14:01	15.52	91.83	4.91	2.44	101.73	15.78	98.2	2.46	87.06	
03/25/05	19:15:00	15.69	75.51	4.92	2.43	101.97	15.96	78.8	2.45	87.06	
03/25/05	19:16:00	15.60	75.78	4.93	2.43	101.47	15.86	80.6	2.45	87.06	
03/25/05	19:17:00	15.66	66.12	4.93	2.40	101.56	15.92	70.0	2.43	87.06	
03/25/05	19:18:00	15.55	59.24	4.93	2.36	102.97	15.81	63.3	2.38	87.06	
03/25/05	19:19:00	15.52	61.66	4.92	2.37	104.98	15.78	67.1	2.39	87.06	
03/25/05	19:20:00	15.48	68.19	4.92	2.37	106.53	15.73	72.0	2.39	87.06	
03/25/05	19:21:00	15.34	64.39	4.93	2.33	108.55	15.58	68.2	2.35	87.06	
03/25/05	19:22:00	15.40	68.83	4.93	2.39	108.68	15.63	74.2	2.41	87.05	
03/25/05	19:23:00	15.32	72.75	4.93	2.40	108.93	15.57	76.6	2.42	87.02	
03/25/05	19:24:00	15.42	57.83	4.95	2.35	109.56	15.67	61.3	2.37	86.88	
03/25/05	19:25:00	15.36	61.12	4.93	2.37	110.28	15.60	65.7	2.38	86.69	
03/25/05	19:26:00	15.25	73.99	4.93	2.34	112.47	15.51	78.8	2.36	86.61	
03/25/05	19:27:00	15.31	70.10	4.94	2.32	114.40	15.54	73.3	2.34	86.63	
03/25/05	19:28:00	15.47	69.65	4.92	2.39	115.13	15.71	74.4	2.40	86.62	
03/25/05	19:29:00	15.24	77.57	4.93	2.33	114.55	15.47	82.5	2.35	86.61	
03/25/05	19:30:00	15.37	76.09	4.91	2.37	113.92	15.59	81.5	2.39	86.61	
03/25/05	19:31:00	15.28	83.42	4.92	2.36	113.84	15.53	87.5	2.39	86.61	
03/25/05	19:32:00	15.26	64.33	4.95	2.33	115.15	15.51	68.4	2.35	86.61	
03/25/05	19:33:00	15.29	72.81	4.93	2.35	113.77	15.52	78.0	2.37	86.61	

Date	Time	NO _x _1	CO_1	CO ₂	O ₂ _1	SO ₂	NO _x _2	CO_2	O ₂ _2	ADC-1 Temp	Calibration Status
Compliance / RATA System						Backup System					
		ppm	%	%	%	%	ppm	%	degF	degF	
03/25/05	19:34:00	15.11	86.41	4.96	2.32	115.03	15.34	93.0	2.34	86.61	
03/25/05	19:35:00	15.13	95.68	4.93	2.41	114.38	15.36	102.4	2.42	86.60	
03/25/05	19:36:00	15.22	98.80	4.96	2.40	114.40	15.47	104.6	2.42	86.59	
03/25/05	19:37:00	15.17	110.96	4.97	2.44	114.21	15.42	118.9	2.46	86.55	
03/25/05	19:38:00	15.37	101.63	4.98	2.45	114.86	15.61	106.1	2.47	86.43	
03/25/05	19:39:00	15.54	62.66	5.01	2.39	115.14	15.78	64.6	2.41	86.35	
03/25/05	19:40:00	15.47	68.04	4.97	2.45	115.22	15.71	73.2	2.46	86.22	
03/25/05	19:41:00	15.48	62.21	5.00	2.35	114.18	15.71	64.9	2.37	86.18	
03/25/05	19:42:00	15.37	62.07	4.99	2.34	114.74	15.60	66.3	2.36	86.16	
03/25/05	19:43:00	15.32	67.83	4.97	2.38	113.18	15.55	72.5	2.39	86.16	
03/25/05	19:44:00	15.22	75.36	4.98	2.35	113.00	15.48	79.9	2.38	86.16	
03/25/05	19:45:00	15.16	71.54	5.00	2.33	114.35	15.40	76.1	2.35	86.15	
03/25/05	19:46:00	15.31	78.95	4.97	2.41	113.74	15.55	84.7	2.43	86.16	
03/25/05	19:47:00	15.33	69.55	5.00	2.34	113.66	15.59	72.5	2.36	86.16	
03/25/05	19:48:00	15.41	59.26	5.01	2.33	114.26	15.68	63.8	2.35	86.16	
03/25/05	19:49:00	15.39	67.55	4.99	2.36	114.40	15.53	70.6	2.39	86.14	
03/25/05	19:50:00	3.58	26.39	1.43	0.65	66.26	4.19	28.5	0.78	86.16	
03/25/05	19:51:01	-0.46	0.22	0.06	-0.01	3.74	0.01	4.0	0.02	86.16	Calibrating Both Systems
03/25/05	19:52:00	-0.48	0.07	0.04	2.34	1.20	0.00	3.9	2.19	86.16	Calibrating Both Systems
03/25/05	19:53:00	-0.50	8.96	2.73	2.75	0.64	-0.01	14.0	2.95	86.16	Calibrating Both Systems
03/25/05	19:54:01	-0.41	21.46	4.05	-0.01	34.87	6.57	47.1	1.03	86.16	Calibrating RATA System
03/25/05	19:55:00	-0.49	-0.05	-0.03	-0.01	170.04	15.60	70.9	2.40	86.11	Calibrating RATA System
03/25/05	19:56:01	-0.49	0.08	-0.09	-0.01	177.66	15.60	79.1	2.41	86.07	Calibrating RATA System
03/25/05	19:57:00	6.23	23.95	1.89	1.02	168.61	15.57	85.3	2.35	85.91	
03/25/05	19:58:00	15.52	70.48	4.86	2.38	120.28	15.80	74.8	2.40	85.83	
03/25/05	19:59:00	15.47	73.51	4.84	2.41	114.46	15.67	77.1	2.43	85.74	
03/25/05	20:00:00	15.37	78.33	4.84	2.41	111.50	15.60	83.5	2.43	85.74	
03/25/05	20:01:00	15.40	70.74	4.87	2.37	111.94	15.61	74.1	2.40	85.71	
03/25/05	20:02:00	15.45	67.03	4.88	2.38	112.23	15.67	72.5	2.40	85.71	
03/26/05	7:31:00	16.43	1.27	5.21	2.46	111.85	16.62	3.6	2.48	80.73	
03/26/05	7:32:00	16.50	1.89	5.17	2.49	111.75	16.69	4.2	2.51	80.75	
03/26/05	7:33:00	0.83	-3.74	0.65	0.76	37.93	1.39	11.4	0.80	80.75	Calibrating Both Systems
03/26/05	7:34:00	-0.49	-5.68	0.15	-0.01	2.03	-0.03	0.9	0.02	80.76	Calibrating Both Systems
03/26/05	7:35:00	-0.03	-5.55	0.25	0.07	1.20	-0.06	0.9	0.02	80.76	Calibrating Both Systems
03/26/05	7:36:00	4.67	-1.79	1.52	0.78	23.01	2.09	2.1	0.36	80.93	Calibrating CO Compliance System
03/26/05	7:37:00	11.37	0.41	3.48	1.78	63.88	9.95	3.2	1.56	81.12	
03/26/05	7:38:00	16.23	2.51	5.04	2.51	107.15	16.09	4.7	2.49	81.21	
03/26/05	7:39:01	13.97	6.82	4.39	2.15	105.01	14.12	8.9	2.17	81.21	
03/26/05	7:40:00	-0.46	-4.42	0.05	-0.01	12.36	0.03	0.9	0.02	81.22	Calibrating Both Systems
03/26/05	7:41:00	-0.49	-4.90	0.03	-0.02	1.04	-0.05	1.2	0.02	81.32	Calibrating Both Systems
03/26/05	7:42:00	-0.51	-3.02	0.00	-0.02	0.22	-0.09	1.0	0.02	81.63	Calibrating Both Systems
03/26/05	7:43:00	-0.43	-2.10	0.00	1.66	-0.03	-0.03	1.0	1.48	81.68	Calibrating Both Systems
03/26/05	7:44:00	-0.55	-1.98	-0.10	4.94	-0.14	-0.14	0.9	4.95	81.80	Calibrating Both Systems
03/26/05	7:45:00	-0.53	6.70	2.48	2.75	-0.52	-0.11	10.8	2.95	81.91	Calibrating Both Systems
03/26/05	7:46:01	-0.55	29.01	6.71	-0.03	-0.64	-0.08	29.2	0.00	81.99	Calibrating Both Systems
03/26/05	7:47:00	-0.55	28.87	6.73	-0.03	-0.73	-0.08	29.2	0.00	82.08	Calibrating Both Systems
03/26/05	7:48:00	-0.29	26.85	5.51	0.00	4.66	3.68	25.3	0.63	82.12	Calibrating RATA System
03/26/05	7:49:00	-0.48	-1.14	-0.07	-0.02	156.64	16.22	5.8	2.53	82.26	Calibrating RATA System
03/26/05	7:50:00	-0.49	-1.74	-0.13	-0.02	177.27	16.46	5.0	2.56	82.30	Calibrating RATA System
03/26/05	7:51:00	12.01	3.68	3.43	1.87	146.98	16.66	7.2	2.56	82.31	
03/26/05	7:52:00	16.27	3.84	4.90	2.45	110.93	16.44	4.0	2.47	82.42	
03/26/05	7:53:00	16.22	7.55	4.86	2.61	105.12	16.38	7.9	2.63	82.51	
03/26/05	7:54:00	16.28	8.02	4.90	2.50	103.79	16.42	7.7	2.52	82.55	
03/26/05	7:55:00	16.25	6.83	4.87	2.62	103.63	16.43	7.4	2.64	82.55	
03/26/05	7:56:00	16.27	7.64	4.90	2.51	103.46	16.48	7.2	2.53	82.56	
03/26/05	7:57:00	16.26	6.27	4.91	2.59	103.57	16.45	6.5	2.61	82.57	

Date	Time	NO _x _1	CO_1	CO ₂	O ₂ _1	SO ₂	NO _x _2	CO_2	O ₂ _2	ADC-1 Temp	Calibration Status
Compliance / RATA System						Backup System					
		ppm	%	%	%	%	ppm	%	degF	degF	
03/26/05	7:58:01	16.32	7.47	4.90	2.53	103.29	16.48	7.7	2.55	82.63	
03/26/05	7:59:00	16.36	6.00	4.92	2.51	103.39	16.54	6.6	2.53	82.82	
03/26/05	8:00:00	16.40	7.49	4.91	2.58	103.22	16.59	7.4	2.60	82.94	
03/26/05	8:01:00	16.43	5.87	4.95	2.50	103.44	16.62	5.9	2.52	82.99	
03/26/05	8:02:00	16.39	6.42	4.96	2.55	102.92	16.58	6.6	2.56	83.00	
03/26/05	8:03:00	16.53	6.05	4.97	2.54	102.87	16.72	5.9	2.56	83.01	
03/26/05	8:04:00	16.42	4.84	4.96	2.52	102.38	16.60	4.7	2.54	83.01	
03/26/05	8:05:00	16.32	3.75	4.97	2.52	102.14	16.50	3.9	2.53	83.01	
03/26/05	8:06:00	16.33	4.41	4.99	2.43	107.48	16.53	4.2	2.45	83.01	
03/26/05	8:07:00	16.25	4.04	4.97	2.44	102.76	16.46	4.1	2.45	83.01	
03/26/05	8:08:00	16.23	5.10	4.96	2.43	102.36	16.43	4.7	2.45	83.01	
03/26/05	8:09:00	16.08	4.45	4.98	2.40	102.27	16.27	4.4	2.41	83.01	
03/26/05	8:10:00	16.12	7.81	4.96	2.49	101.52	16.33	7.6	2.51	83.02	
03/26/05	8:11:00	16.08	8.61	4.99	2.46	101.30	16.26	8.2	2.48	83.02	
03/26/05	8:12:00	16.24	11.05	4.99	2.55	101.70	16.44	10.9	2.57	83.14	
03/26/05	8:13:00	16.35	8.82	5.03	2.51	101.12	16.56	8.6	2.53	83.30	
03/26/05	8:14:00	16.46	7.75	5.02	2.55	100.63	16.64	7.6	2.56	83.37	
03/26/05	8:15:00	16.40	8.20	5.02	2.56	100.45	16.61	7.8	2.57	83.45	
03/26/05	8:16:00	16.35	6.10	5.06	2.50	101.02	16.55	5.5	2.52	83.45	
03/26/05	8:17:00	16.48	4.54	5.05	2.43	101.39	16.67	4.4	2.45	83.46	
03/26/05	8:18:00	16.13	4.61	5.03	2.41	101.42	16.35	4.3	2.42	83.46	
03/26/05	8:19:00	16.14	7.50	5.02	2.47	100.90	16.34	7.3	2.48	83.46	
03/26/05	8:20:00	16.02	8.30	5.04	2.47	100.18	16.22	8.2	2.49	83.46	
03/26/05	8:21:01	16.16	6.54	5.06	2.44	100.02	16.36	6.1	2.46	83.50	
03/26/05	8:22:00	16.25	8.61	5.06	2.52	99.34	16.46	8.5	2.54	83.57	
03/26/05	8:23:00	16.25	6.32	5.09	2.46	99.22	16.45	5.6	2.48	83.69	
03/26/05	8:24:00	16.11	6.94	5.06	2.45	99.75	16.32	6.7	2.47	83.85	
03/26/05	8:25:00	16.23	8.59	5.09	2.47	99.99	16.42	7.9	2.49	83.87	
03/26/05	8:26:00	16.21	6.09	5.10	2.42	99.75	16.41	5.7	2.43	83.90	
03/26/05	8:27:00	16.34	8.92	5.08	2.48	99.06	16.53	8.6	2.49	83.91	
03/26/05	8:28:01	16.28	9.76	5.09	2.50	98.85	16.47	9.2	2.51	83.91	
03/26/05	8:29:00	16.17	7.59	5.12	2.45	98.30	16.36	6.7	2.47	83.91	
03/26/05	8:30:00	15.99	8.12	5.11	2.50	97.72	16.21	7.5	2.52	83.91	
03/26/05	8:31:00	16.05	8.19	5.11	2.47	97.10	16.26	7.4	2.49	83.92	
03/26/05	8:32:00	15.77	7.89	5.10	2.46	97.01	16.00	7.2	2.47	83.94	
03/26/05	8:33:00	15.80	9.98	5.12	2.50	96.86	16.01	9.2	2.52	84.03	
03/26/05	8:34:00	15.82	6.53	5.15	2.43	97.10	16.02	5.3	2.45	84.13	
03/26/05	8:35:00	15.88	6.95	5.13	2.47	97.45	16.09	6.1	2.49	84.24	
03/26/05	8:36:00	15.89	7.91	5.14	2.45	97.18	16.11	7.3	2.47	84.29	
03/26/05	8:37:00	15.92	6.88	5.14	2.44	97.42	16.14	6.2	2.46	84.33	
03/26/05	8:38:00	15.81	7.09	5.13	2.45	97.70	16.03	6.1	2.47	84.35	
03/26/05	8:39:00	16.05	5.93	5.16	2.39	97.33	16.25	5.1	2.41	84.36	
03/26/05	8:40:00	15.85	7.10	5.14	2.44	97.77	16.07	6.1	2.45	84.36	
03/26/05	8:41:00	15.76	6.84	5.15	2.41	97.45	15.97	6.0	2.42	84.36	
03/26/05	8:42:00	15.92	8.91	5.15	2.44	97.74	16.13	7.9	2.45	84.36	
03/26/05	8:43:00	15.75	8.92	5.14	2.47	97.07	15.97	8.2	2.49	84.36	
03/26/05	8:44:00	15.92	9.60	5.14	2.49	96.88	16.14	8.7	2.50	84.36	
03/26/05	8:45:00	15.76	12.95	5.14	2.55	97.04	15.96	12.2	2.56	84.36	
03/26/05	8:46:00	15.89	11.07	5.18	2.52	96.70	16.09	9.7	2.54	84.39	
03/26/05	8:47:00	15.89	7.99	5.18	2.52	96.68	16.11	6.9	2.54	84.43	
03/26/05	8:48:00	16.09	7.44	5.19	2.48	96.82	16.31	6.2	2.50	84.53	
03/26/05	8:49:00	15.87	4.76	5.20	2.39	97.13	16.11	3.6	2.41	84.63	
03/26/05	8:50:00	15.88	6.46	5.17	2.45	96.98	16.10	5.4	2.46	84.65	
03/26/05	8:51:00	15.88	6.87	5.18	2.43	96.92	16.11	5.6	2.45	84.73	
03/26/05	8:52:00	15.80	6.00	5.19	2.38	97.38	16.04	4.7	2.39	84.75	
03/26/05	8:53:00	15.78	7.07	5.17	2.42	96.78	16.00	6.0	2.44	84.80	

Date	Time	NO _x _1	CO_1	CO ₂	O ₂ _1	SO ₂	NO _x _2	CO_2	O ₂ _2	ADC-1 Temp	Calibration Status
Compliance / RATA System						Backup System					
		ppm	%	%	%	%	ppm	%	degF	degF	
03/26/05	8:54:00	15.94	8.68	5.17	2.44	96.40	16.16	7.5	2.46	84.80	
03/26/05	8:55:00	15.88	8.86	5.19	2.45	96.45	16.11	7.7	2.47	84.81	
03/26/05	8:56:00	15.81	8.02	5.20	2.45	96.41	16.03	6.7	2.46	84.81	
03/26/05	8:57:01	16.07	8.45	5.20	2.47	96.49	16.29	7.3	2.48	84.81	
03/26/05	8:58:00	15.78	7.21	5.20	2.44	96.21	16.02	5.8	2.46	84.81	
03/26/05	8:59:00	15.70	7.53	5.19	2.44	96.84	15.90	6.2	2.46	84.81	
03/26/05	9:00:00	15.81	11.29	5.20	2.49	96.53	16.03	10.0	2.51	84.81	
03/26/05	9:01:00	15.96	11.17	5.19	2.58	95.78	16.17	9.9	2.59	84.81	
03/26/05	9:02:00	16.14	9.78	5.21	2.51	95.06	16.34	8.2	2.53	84.81	
03/26/05	9:03:00	9.75	6.42	3.40	1.69	91.19	10.46	9.8	1.85	84.82	
03/26/05	9:04:00	-0.47	0.97	0.22	0.00	8.14	0.00	1.0	0.02	84.82	Calibrating Both Systems
03/26/05	9:05:00	-0.49	1.07	0.20	0.03	1.27	-0.03	1.1	0.02	84.82	Calibrating Both Systems
03/26/05	9:06:00	-0.50	0.99	0.17	4.86	0.43	-0.06	1.0	4.75	84.83	Calibrating Both Systems
03/26/05	9:07:01	-0.52	24.28	6.12	0.35	0.06	-0.06	25.0	0.54	84.85	Calibrating Both Systems
03/26/05	9:08:00	-0.44	27.93	5.36	-0.02	6.80	4.22	24.3	0.65	84.89	Calibrating RATA System
03/26/05	9:09:00	-0.49	1.32	0.14	-0.01	159.18	16.23	4.2	2.50	85.00	Calibrating RATA System
03/26/05	9:10:00	-0.49	0.94	0.11	-0.01	176.20	16.35	6.9	2.52	85.08	Calibrating RATA System
03/26/05	9:11:00	0.38	1.01	0.24	0.14	178.79	16.34	7.4	2.50	85.12	Calibrating RATA System
03/26/05	9:12:00	16.07	5.82	5.01	2.50	117.22	16.33	4.9	2.52	85.10	
03/26/05	9:13:00	16.27	7.40	5.02	2.57	100.55	16.47	5.8	2.59	85.14	
03/26/05	9:14:00	16.36	6.33	5.04	2.46	98.89	16.54	4.7	2.48	85.11	
03/26/05	9:15:00	16.26	5.74	5.03	2.46	97.87	16.43	3.9	2.48	85.14	
03/26/05	9:16:00	16.16	7.87	5.00	2.50	98.70	16.33	6.3	2.52	85.19	
03/26/05	9:17:00	16.28	6.22	5.04	2.41	99.71	16.47	4.4	2.43	85.19	
03/26/05	9:18:00	16.36	6.16	5.05	2.41	99.32	16.53	4.4	2.43	85.20	
03/26/05	9:19:00	16.23	5.91	5.03	2.42	99.35	16.42	3.9	2.44	85.21	
03/26/05	9:20:01	16.05	4.67	5.03	2.40	99.13	16.24	2.9	2.41	85.22	
03/26/05	9:21:00	16.14	7.33	4.99	2.46	99.65	16.32	6.1	2.47	85.23	
03/26/05	9:22:00	16.07	9.56	5.03	2.42	99.26	16.27	7.6	2.44	85.24	
03/26/05	9:23:00	15.84	7.75	5.00	2.48	98.73	16.04	6.3	2.49	85.24	
03/26/05	9:24:00	16.08	9.61	5.00	2.52	97.85	16.27	7.5	2.54	85.22	
03/26/05	9:25:00	15.98	9.10	5.01	2.52	97.94	16.18	7.5	2.54	85.22	
03/26/05	9:26:00	16.15	10.42	5.02	2.54	98.01	16.33	8.9	2.56	85.25	
03/26/05	9:27:00	16.26	8.42	5.04	2.58	97.91	16.45	6.8	2.60	85.21	
03/26/05	9:28:00	16.28	6.34	5.06	2.57	98.42	16.46	4.5	2.59	85.23	
03/26/05	9:29:00	16.27	5.05	5.06	2.50	98.08	16.46	3.5	2.52	85.24	
03/26/05	9:30:00	16.21	5.42	5.07	2.47	98.26	16.40	3.9	2.49	85.24	
03/26/05	9:31:00	16.33	5.54	5.07	2.45	98.91	16.51	4.0	2.47	85.25	
03/26/05	9:32:00	16.18	4.78	5.06	2.42	98.34	16.38	3.1	2.44	85.25	
03/26/05	9:33:00	16.17	5.90	5.04	2.45	98.86	16.36	4.3	2.46	85.25	
03/26/05	9:34:00	16.24	7.27	5.04	2.46	99.00	16.44	5.9	2.47	85.26	
03/26/05	9:35:00	16.04	6.85	5.05	2.47	98.74	16.22	5.5	2.48	85.25	
03/26/05	9:36:00	16.17	7.29	5.06	2.46	98.10	16.37	5.7	2.47	85.26	
03/26/05	9:37:00	16.12	7.26	5.04	2.49	98.48	16.33	5.7	2.50	85.26	
03/26/05	9:38:01	16.25	9.23	5.07	2.46	98.58	16.45	7.9	2.48	85.26	
03/26/05	9:39:00	16.31	9.28	5.07	2.48	98.43	16.52	7.9	2.49	85.26	
03/26/05	9:40:00	16.38	8.32	5.07	2.47	97.97	16.58	6.6	2.49	85.26	
03/26/05	9:41:01	16.30	6.57	5.08	2.48	98.30	16.51	4.9	2.50	85.26	
03/26/05	9:42:00	16.20	6.72	5.07	2.48	98.38	16.41	5.6	2.50	85.26	
03/26/05	9:43:00	16.28	6.04	5.09	2.41	98.35	16.49	4.6	2.43	85.26	
03/26/05	9:44:01	16.25	6.75	5.05	2.46	99.36	16.45	5.5	2.47	85.26	
03/26/05	9:45:00	16.07	7.04	5.06	2.42	98.14	16.29	5.6	2.44	85.26	
03/26/05	9:46:00	16.32	8.00	5.06	2.44	99.12	16.53	6.9	2.45	85.26	
03/26/05	9:47:00	16.21	9.08	5.06	2.50	98.01	16.42	8.0	2.51	85.26	
03/26/05	9:48:00	16.15	7.47	5.07	2.42	97.67	16.36	6.1	2.44	85.26	
03/26/05	9:49:00	16.27	6.96	5.05	2.45	98.37	16.48	5.8	2.47	85.26	

Date	Time	NO _x _1	CO_1	CO ₂	O ₂ _1	SO ₂	NO _x _2	CO_2	O ₂ _2	ADC-1 Temp	Calibration Status
Compliance / RATA System						Backup System					
		ppm	%	%	%	%	ppm	%	degF	degF	
03/26/05	9:50:00	16.14	7.04	5.05	2.48	97.86	16.35	5.8	2.49	85.26	
03/26/05	9:51:00	16.15	6.63	5.06	2.43	98.36	16.36	5.5	2.45	85.26	
03/26/05	9:52:01	16.12	7.76	5.04	2.49	98.01	16.33	6.6	2.51	85.25	
03/26/05	9:53:00	16.08	7.56	5.05	2.45	97.11	16.29	6.3	2.47	85.26	
03/26/05	9:54:00	16.07	7.95	5.07	2.46	97.64	16.27	6.6	2.47	85.25	
03/26/05	9:55:01	16.21	8.13	5.07	2.46	97.49	16.43	6.9	2.48	85.25	
03/26/05	9:56:00	16.10	7.09	5.06	2.46	98.32	16.31	5.7	2.47	85.25	
03/26/05	9:57:00	16.18	7.56	5.06	2.46	97.91	16.39	6.3	2.48	85.24	
03/26/05	9:58:00	16.10	7.72	5.08	2.43	98.19	16.31	6.3	2.45	85.25	
03/26/05	9:59:00	16.13	7.55	5.09	2.42	97.99	16.35	6.0	2.44	85.26	
03/26/05	10:00:01	16.00	8.13	5.07	2.43	97.47	16.22	6.8	2.45	85.26	
03/26/05	10:01:00	15.84	8.18	5.10	2.44	97.43	16.06	6.9	2.46	85.26	
03/26/05	10:02:00	16.00	8.08	5.09	2.42	97.47	16.22	6.7	2.44	85.26	
03/26/05	10:03:00	16.15	7.96	5.09	2.42	96.97	16.36	6.6	2.44	85.26	
03/26/05	10:04:00	15.87	8.16	5.08	2.45	96.81	16.09	6.9	2.47	85.26	
03/26/05	10:05:00	16.09	9.53	5.09	2.46	96.58	16.30	8.5	2.47	85.26	
03/26/05	10:06:00	16.12	9.23	5.12	2.45	96.26	16.34	7.6	2.46	85.26	
03/26/05	10:07:00	16.13	7.82	5.10	2.50	95.81	16.37	6.3	2.52	85.26	
03/26/05	10:08:00	15.88	7.15	5.13	2.44	96.10	16.10	5.9	2.46	85.26	
03/26/05	10:09:00	15.95	8.46	5.13	2.44	96.44	16.17	7.1	2.46	85.26	
03/26/05	10:10:00	16.04	8.23	5.12	2.47	96.10	16.26	7.2	2.49	85.26	
03/26/05	10:11:01	15.94	7.62	5.15	2.42	96.31	16.17	5.9	2.43	85.26	
03/26/05	10:12:00	15.83	7.15	5.12	2.47	96.43	16.05	5.6	2.48	85.28	
03/26/05	10:13:01	16.00	7.85	5.12	2.43	95.69	16.21	6.4	2.45	85.27	
03/26/05	10:14:00	15.84	6.32	5.14	2.39	96.32	16.08	4.9	2.41	85.30	
03/26/05	10:15:00	15.80	7.32	5.11	2.46	96.38	16.02	6.1	2.47	85.28	
03/26/05	10:16:00	15.72	8.87	5.10	2.50	96.25	15.96	7.6	2.51	85.35	
03/26/05	10:17:00	15.89	8.07	5.15	2.46	95.53	16.12	6.4	2.48	85.39	
03/26/05	10:18:00	15.99	7.91	5.15	2.38	95.90	16.35	6.6	2.42	85.49	
03/26/05	10:19:01	-0.20	2.45	0.36	0.13	39.50	0.55	6.3	0.26	85.56	Calibrating Both Systems
03/26/05	10:20:00	-0.49	1.84	0.19	0.00	2.24	-0.03	2.1	0.02	85.59	Calibrating Both Systems
03/26/05	10:21:01	-0.49	1.83	0.17	0.00	0.79	-0.06	2.0	0.02	85.63	Calibrating Both Systems
03/26/05	10:22:00	-0.49	1.91	0.14	3.43	0.19	-0.05	2.0	3.26	85.64	Calibrating Both Systems
03/26/05	10:23:01	-0.51	1.74	0.10	4.95	-0.06	-0.06	2.0	4.96	85.65	Calibrating Both Systems
03/26/05	10:24:00	-0.49	23.89	5.82	0.52	-0.27	-0.07	25.1	0.70	85.68	Calibrating Both Systems
03/26/05	10:25:01	-0.53	31.59	6.82	-0.03	-0.51	-0.08	30.2	0.00	85.69	Calibrating Both Systems
03/26/05	10:26:00	-0.44	11.89	1.59	-0.01	89.68	12.86	12.0	1.96	85.70	Calibrating RATA System
03/26/05	10:27:00	-0.48	1.61	0.07	-0.01	173.49	16.30	5.3	2.41	85.69	Calibrating RATA System
03/26/05	10:28:00	3.28	2.33	1.04	0.60	175.03	16.10	7.0	2.48	85.69	
03/26/05	10:29:00	15.91	10.44	4.94	2.49	107.01	16.16	9.4	2.52	85.69	
03/26/05	10:30:00	16.07	8.66	4.98	2.45	99.60	16.27	7.1	2.47	85.71	
03/26/05	10:31:00	16.07	6.89	4.97	2.50	97.36	16.30	5.5	2.52	85.71	
03/26/05	10:32:00	15.98	5.34	4.98	2.42	97.91	16.19	3.9	2.44	85.70	
03/26/05	10:33:01	15.91	7.34	4.96	2.45	97.97	16.13	6.2	2.47	85.71	
03/26/05	10:34:00	15.90	6.71	4.98	2.38	97.79	16.11	5.3	2.41	85.71	
03/26/05	10:35:00	16.02	6.95	5.00	2.40	98.16	16.23	5.7	2.41	85.71	
03/26/05	10:36:00	16.01	7.96	4.99	2.43	97.90	16.22	6.6	2.45	85.71	
03/26/05	10:37:00	15.81	5.40	5.01	2.36	97.81	16.04	3.7	2.37	85.71	
03/26/05	10:38:00	15.69	8.02	4.98	2.44	98.24	15.90	6.8	2.45	85.71	
03/26/05	10:39:00	15.73	8.93	5.01	2.43	98.03	15.97	7.0	2.44	85.71	
03/26/05	10:40:00	15.96	9.09	5.02	2.48	97.62	16.18	7.4	2.50	85.71	
03/26/05	10:41:01	15.79	8.12	5.03	2.45	96.71	15.99	6.6	2.47	85.71	
03/26/05	10:42:00	15.82	6.26	5.05	2.34	97.30	16.05	4.5	2.36	85.71	
03/26/05	10:43:00	15.75	7.65	5.01	2.45	97.32	15.96	6.4	2.46	85.71	
03/26/05	10:44:00	15.68	9.56	5.03	2.45	96.87	15.90	7.9	2.47	85.71	
03/26/05	10:45:01	15.91	10.28	5.05	2.47	97.48	16.11	9.2	2.49	85.71	

Date	Time	NO _x _1	CO_1	CO ₂	O ₂ _1	SO ₂	NO _x _2	CO_2	O ₂ _2	ADC-1 Temp	Calibration Status
Compliance / RATA System						Backup System					
		ppm	%	%	%	%	ppm	%	degF	degF	
03/26/05	10:46:00	15.94	9.26	5.06	2.48	96.84	16.17	7.4	2.50	85.71	
03/26/05	10:47:00	16.02	6.25	5.09	2.40	97.62	16.23	4.7	2.42	85.71	
03/26/05	10:48:00	15.84	6.23	5.06	2.43	98.27	16.08	4.8	2.45	85.71	
03/26/05	10:49:00	15.68	6.11	5.06	2.36	98.10	15.92	4.7	2.38	85.71	
03/26/05	10:50:00	15.66	7.47	5.06	2.40	98.10	15.88	6.1	2.42	85.71	
03/26/05	10:51:00	15.80	8.69	5.04	2.46	98.30	16.03	7.7	2.47	85.71	
03/26/05	10:52:00	15.77	10.09	5.05	2.46	97.53	16.02	8.6	2.48	85.71	
03/26/05	10:53:00	15.97	8.69	5.08	2.43	97.79	16.19	7.5	2.45	85.71	
03/26/05	10:54:00	15.85	9.85	5.05	2.53	97.43	16.09	8.3	2.55	85.71	
03/26/05	10:55:00	15.88	8.55	5.08	2.50	97.38	16.11	7.3	2.52	85.70	
03/26/05	10:56:01	15.93	7.85	5.12	2.46	96.93	16.14	6.4	2.48	85.71	
03/26/05	10:57:00	16.05	7.76	5.12	2.41	97.11	16.28	6.2	2.43	85.71	
03/26/05	10:58:00	15.95	5.92	5.11	2.38	97.72	16.16	4.5	2.40	85.71	
03/26/05	10:59:00	15.84	7.70	5.09	2.45	97.63	16.07	6.6	2.47	85.71	
03/26/05	11:00:01	15.75	7.54	5.09	2.43	96.97	15.96	6.2	2.44	85.71	
03/26/05	11:01:00	15.76	7.60	5.12	2.37	97.04	15.98	6.3	2.39	85.71	
03/26/05	11:02:00	15.77	7.43	5.11	2.40	97.64	15.99	6.2	2.41	85.71	
03/26/05	11:03:00	15.79	8.01	5.11	2.39	96.86	16.01	7.0	2.40	85.71	
03/26/05	11:04:00	15.84	8.34	5.13	2.41	96.86	16.06	7.4	2.43	85.71	
03/26/05	11:05:00	15.76	8.80	5.10	2.46	96.26	15.99	7.9	2.48	85.71	
03/26/05	11:06:00	15.93	9.10	5.14	2.42	95.91	16.13	8.1	2.44	85.72	
03/26/05	11:07:00	15.76	7.41	5.14	2.40	95.68	16.00	6.2	2.42	85.74	
03/26/05	11:08:00	15.82	7.51	5.12	2.40	95.61	16.05	6.8	2.42	85.73	
03/26/05	11:09:00	15.93	10.19	5.11	2.46	95.40	16.17	9.7	2.47	85.72	
03/26/05	11:10:00	15.97	9.25	5.14	2.40	95.58	16.20	7.7	2.42	85.72	
03/26/05	11:11:00	15.93	7.00	5.14	2.39	95.35	16.16	6.0	2.40	85.72	
03/26/05	11:12:00	15.78	8.21	5.11	2.44	94.98	16.00	7.2	2.45	85.71	
03/26/05	11:13:00	15.84	8.73	5.12	2.45	94.56	16.08	7.8	2.47	85.71	
03/26/05	11:14:00	15.89	9.57	5.14	2.40	95.01	16.12	8.5	2.42	85.71	
03/26/05	11:15:01	15.69	7.16	5.14	2.39	95.17	15.91	6.1	2.41	85.72	
03/26/05	11:16:00	15.88	8.37	5.14	2.45	94.36	16.10	7.6	2.46	85.75	
03/26/05	11:17:00	15.85	7.49	5.14	2.41	94.40	16.07	6.5	2.43	85.77	
03/26/05	11:18:00	15.97	7.72	5.14	2.37	95.26	16.18	6.8	2.38	85.75	
03/26/05	11:19:00	15.77	7.14	5.10	2.45	94.48	16.02	6.0	2.47	85.73	
03/26/05	11:20:00	15.75	7.51	5.11	2.44	94.11	15.98	6.5	2.46	85.73	
03/26/05	11:21:00	15.92	9.17	5.11	2.41	94.59	16.17	7.8	2.43	85.73	
03/26/05	11:22:00	16.04	8.30	5.12	2.42	94.11	16.27	7.2	2.43	85.71	
03/26/05	11:23:00	16.00	8.19	5.11	2.47	94.27	16.25	7.0	2.48	85.71	
03/26/05	11:24:00	15.99	7.34	5.14	2.48	94.37	16.22	6.0	2.49	85.71	
03/26/05	11:25:00	16.22	9.80	5.12	2.49	95.37	16.44	8.8	2.51	85.71	
03/26/05	11:26:00	16.10	7.69	5.15	2.43	95.71	16.30	6.4	2.44	85.71	
03/26/05	11:27:00	16.09	8.88	5.12	2.55	95.85	16.32	7.6	2.57	85.71	
03/26/05	11:28:00	16.34	7.22	5.15	2.41	96.30	16.56	5.6	2.43	85.71	
03/26/05	11:29:00	16.12	4.65	5.14	2.38	98.38	16.35	3.2	2.39	85.71	
03/26/05	11:30:00	15.90	5.57	5.10	2.44	116.99	16.13	4.3	2.45	85.71	
03/26/05	11:31:00	15.85	6.10	5.11	2.40	114.73	16.08	5.0	2.41	85.71	
03/26/05	11:32:00	15.87	6.84	5.11	2.41	114.88	16.10	5.5	2.43	85.71	
03/26/05	11:33:00	16.01	5.72	5.12	2.38	118.53	16.23	4.7	2.39	85.71	
03/26/05	11:34:00	4.06	3.45	1.65	0.74	74.05	4.88	6.7	0.89	85.71	
03/26/05	11:35:00	-0.48	1.32	0.16	0.00	4.01	-0.01	1.7	0.02	85.71	Calibrating Both Systems
03/26/05	11:36:01	-0.48	0.96	0.13	0.00	0.99	-0.05	1.5	0.02	85.72	Calibrating Both Systems
03/26/05	11:37:00	-0.18	1.17	0.20	1.05	0.54	-0.02	1.7	0.87	85.71	Calibrating Both Systems
03/26/05	11:38:00	-0.49	1.04	0.07	4.94	1.66	-0.04	1.5	4.95	85.69	Calibrating Both Systems
03/26/05	11:39:00	-0.44	10.23	2.85	2.69	0.09	0.02	12.3	2.86	85.64	Calibrating Both Systems
03/26/05	11:40:00	-0.47	28.39	5.46	-0.02	5.88	3.52	26.0	0.58	85.71	Calibrating RATA System
03/26/05	11:41:00	-0.49	1.21	0.03	-0.01	159.09	16.06	9.2	2.57	85.71	Calibrating RATA System

Date	Time	NO _x 1	CO ₂ 1	CO ₂	O ₂ 1	SO ₂	NO _x 2	CO ₂ 2	O ₂ 2	ADC-1 Temp	Calibration Status
Compliance / RATA System						Backup System					
		ppm	%	%	%	%	ppm	%	degF	degF	
03/26/05	11:42:00	-0.34	1.01	0.00	0.04	176.26	16.16	8.4	2.52	85.69	Calibrating RATA System
03/26/05	11:43:00	15.85	7.72	4.77	2.45	151.84	16.33	7.3	2.49	85.70	
03/26/05	11:44:00	16.00	5.99	4.92	2.45	141.35	16.23	4.7	2.47	85.70	
03/26/05	11:45:00	16.13	7.77	4.89	2.52	141.06	16.36	6.7	2.54	85.71	
03/26/05	11:46:00	16.03	6.46	4.92	2.44	141.15	16.27	5.1	2.46	85.71	
03/26/05	11:47:00	16.02	6.46	4.92	2.47	142.15	16.26	5.3	2.49	85.71	
03/26/05	11:48:00	15.57	12.45	4.88	2.43	143.28	15.82	11.4	2.45	85.70	
03/26/05	11:49:00	15.31	15.55	4.82	2.49	148.47	15.56	15.0	2.50	85.71	
03/26/05	11:50:00	15.22	13.06	4.86	2.34	150.36	15.47	11.9	2.35	85.70	
03/26/05	11:51:01	15.31	16.43	4.83	2.45	150.91	15.56	15.4	2.46	85.71	
03/26/05	11:52:00	15.14	16.09	4.84	2.43	151.55	15.38	14.9	2.45	85.71	
03/26/05	11:53:01	15.24	14.89	4.86	2.41	153.20	15.47	13.9	2.42	85.71	
03/26/05	11:54:00	15.17	14.40	4.86	2.42	154.59	15.43	13.2	2.43	85.71	
03/26/05	11:55:00	15.15	17.36	4.86	2.39	155.93	15.39	16.2	2.41	85.71	
03/26/05	11:56:01	15.06	16.82	4.88	2.34	156.95	15.32	15.2	2.36	85.71	
03/26/05	11:57:00	15.13	15.07	4.86	2.41	156.96	15.37	14.4	2.43	85.71	
03/26/05	11:58:00	15.18	18.69	4.86	2.39	156.12	15.43	17.6	2.40	85.71	
03/26/05	11:59:00	15.19	22.68	4.87	2.39	158.46	15.45	22.3	2.40	85.71	
03/26/05	12:00:00	15.21	21.18	4.88	2.43	157.36	15.47	19.8	2.44	85.71	
03/26/05	12:01:00	15.25	17.13	4.89	2.40	158.25	15.51	15.6	2.42	85.70	
03/26/05	12:02:00	15.27	14.17	4.87	2.41	159.50	15.52	13.4	2.43	85.69	
03/26/05	12:03:00	15.04	13.14	4.86	2.33	160.05	15.30	12.2	2.34	85.71	
03/26/05	12:04:00	14.94	18.04	4.84	2.40	161.61	15.20	17.2	2.42	85.70	
03/26/05	12:05:00	14.94	19.57	4.87	2.37	163.30	15.21	18.6	2.39	85.71	
03/26/05	12:06:00	15.19	22.16	4.88	2.46	162.01	15.44	21.4	2.48	85.71	
03/26/05	12:07:01	15.10	18.20	4.90	2.44	162.47	15.35	16.9	2.47	85.71	
03/26/05	12:08:00	15.16	15.21	4.91	2.38	164.41	15.42	14.5	2.40	85.71	
03/26/05	12:09:00	15.13	17.48	4.90	2.42	164.51	15.38	16.8	2.43	85.71	
03/26/05	12:10:00	15.12	14.71	4.91	2.36	164.21	15.38	13.4	2.38	85.71	
03/26/05	12:11:00	14.97	14.16	4.89	2.31	166.24	15.20	13.4	2.33	85.71	
03/26/05	12:12:00	14.85	17.11	4.87	2.32	165.99	15.11	16.7	2.34	85.71	
03/26/05	12:13:00	14.80	21.36	4.87	2.34	167.16	15.04	21.1	2.35	85.71	
03/26/05	12:14:00	14.94	20.44	4.86	2.35	166.37	15.17	19.5	2.37	85.71	
03/26/05	12:15:01	14.73	24.76	4.85	2.38	166.34	15.00	24.6	2.40	85.71	
03/26/05	12:16:01	14.74	25.50	4.87	2.38	167.72	14.98	25.7	2.40	85.71	
03/26/05	12:17:00	14.80	25.79	4.88	2.40	167.43	15.04	25.3	2.41	85.71	
03/26/05	12:18:00	14.97	25.57	4.89	2.43	167.52	15.21	25.5	2.45	85.71	
03/26/05	12:19:00	15.03	19.06	4.92	2.35	167.97	15.28	17.8	2.37	85.71	
03/26/05	12:20:00	14.92	18.45	4.92	2.34	168.59	15.16	18.0	2.36	85.71	
03/26/05	12:21:00	14.84	22.42	4.87	2.40	168.63	15.11	21.8	2.42	85.70	
03/26/05	12:22:01	14.89	17.16	4.91	2.26	169.77	15.14	15.7	2.28	85.71	
03/26/05	12:23:00	14.80	13.96	4.88	2.30	170.99	15.06	13.6	2.31	85.70	
03/26/05	12:24:01	14.67	23.52	4.87	2.31	169.74	14.92	23.4	2.33	85.70	
03/26/05	12:25:01	14.72	26.84	4.89	2.33	168.59	14.99	26.8	2.35	85.71	
03/26/05	12:26:00	14.69	25.16	4.89	2.34	167.87	14.97	24.5	2.36	85.71	
03/26/05	12:27:00	14.78	20.15	4.91	2.32	168.77	15.04	19.0	2.34	85.69	
03/26/05	12:28:00	14.91	22.07	4.90	2.35	168.85	15.17	21.8	2.37	85.71	
03/26/05	12:29:00	14.81	25.72	4.90	2.36	169.84	15.08	25.2	2.38	85.64	
03/26/05	12:30:00	14.75	30.02	4.91	2.38	170.50	15.01	30.3	2.39	85.65	
03/26/05	12:31:00	14.79	34.13	4.94	2.42	170.03	15.06	33.6	2.43	85.71	
03/26/05	12:32:00	14.98	27.88	4.94	2.47	167.83	15.23	27.6	2.49	85.71	
03/26/05	12:33:00	15.03	21.61	4.97	2.35	168.60	15.29	20.0	2.37	85.71	
03/26/05	12:34:00	15.04	22.20	4.95	2.41	168.27	15.29	21.8	2.43	85.71	
03/26/05	12:35:01	15.10	12.77	4.97	2.29	167.08	15.35	11.9	2.30	85.71	
03/26/05	12:36:01	15.13	17.35	4.93	2.33	167.75	15.39	16.8	2.35	85.71	
03/26/05	12:37:00	15.18	17.68	4.92	2.31	168.79	15.45	17.6	2.33	85.71	

Date	Time	NO _x _1	CO_1	CO ₂	O ₂ _1	SO ₂	NO _x _2	CO_2	O ₂ _2	ADC-1 Temp	Calibration Status
Compliance / RATA System						Backup System					
		ppm	%	%	%	%	ppm	%	degF	degF	
03/26/05	12:38:00	14.89	19.32	4.93	2.31	168.74	15.15	18.7	2.32	85.71	
03/26/05	12:39:00	15.04	19.42	4.92	2.36	168.17	15.30	19.1	2.37	85.71	
03/26/05	12:40:00	14.93	21.27	4.92	2.33	168.52	15.19	20.8	2.35	85.71	
03/26/05	12:41:00	15.09	25.98	4.93	2.36	169.51	15.34	26.0	2.37	85.71	
03/26/05	12:42:00	15.03	24.41	4.94	2.40	168.74	15.29	23.9	2.42	85.71	
03/26/05	12:43:00	15.11	20.03	4.95	2.39	160.94	15.38	19.4	2.40	85.71	
03/26/05	12:44:00	15.19	21.51	4.93	2.39	157.13	15.43	21.0	2.41	85.71	
03/26/05	12:45:00	15.23	18.56	4.96	2.35	155.18	15.51	17.7	2.36	85.71	
03/26/05	12:46:00	15.28	19.60	4.93	2.44	153.06	15.53	19.2	2.45	85.71	
03/26/05	12:47:00	15.30	16.81	4.94	2.39	150.84	15.56	15.7	2.40	85.71	
03/26/05	12:48:00	15.28	13.31	4.96	2.33	149.93	15.53	12.6	2.35	85.71	
03/26/05	12:49:00	15.08	13.54	4.95	2.27	148.81	15.35	12.9	2.29	85.71	
03/26/05	12:50:00	15.11	16.68	4.93	2.33	147.25	15.37	16.3	2.35	85.71	
03/26/05	12:51:00	15.04	19.98	4.94	2.32	146.53	15.31	19.4	2.34	85.71	
03/26/05	12:52:00	15.08	18.19	4.97	2.26	143.93	15.34	18.1	2.28	85.71	
03/26/05	12:53:00	14.92	20.96	4.96	2.35	140.88	15.19	20.1	2.36	85.71	
03/26/05	12:54:00	15.10	23.95	4.94	2.37	139.32	15.35	23.7	2.39	85.71	
03/26/05	12:55:01	15.08	29.65	4.95	2.42	138.13	15.36	30.1	2.44	85.71	
03/26/05	12:56:00	15.20	36.55	4.95	2.52	136.59	15.49	37.2	2.54	85.71	
03/26/05	12:57:01	15.43	30.16	4.99	2.46	136.21	15.72	28.9	2.48	85.71	
03/26/05	12:58:00	15.63	17.59	5.00	2.44	135.84	15.90	16.4	2.45	85.72	
03/26/05	12:59:00	15.51	13.89	4.98	2.40	134.93	15.79	12.9	2.41	85.74	
03/26/05	13:00:00	15.35	13.66	4.98	2.33	135.29	15.65	12.9	2.35	85.80	
03/26/05	13:01:00	15.43	14.74	4.97	2.31	133.69	15.71	14.3	2.33	85.92	
03/26/05	13:02:00	15.29	16.24	4.96	2.33	132.76	15.57	15.6	2.34	85.94	
03/26/05	13:03:00	15.20	15.44	4.96	2.30	132.33	15.47	14.7	2.32	85.99	
03/26/05	13:04:00	15.13	17.45	4.94	2.34	131.25	15.42	16.8	2.35	86.09	
03/26/05	13:05:01	15.17	21.02	4.95	2.34	130.17	15.46	20.3	2.36	86.15	
03/26/05	13:06:00	15.09	20.85	4.95	2.34	128.93	15.37	20.3	2.36	86.15	
03/26/05	13:07:00	15.13	30.30	4.96	2.41	128.35	15.40	30.4	2.43	86.16	
03/26/05	13:08:00	15.19	26.64	4.98	2.43	127.54	15.48	26.0	2.44	86.16	
03/26/05	13:09:00	15.50	25.81	4.99	2.46	127.15	15.79	25.4	2.47	86.16	
03/26/05	13:10:00	11.08	18.97	3.77	1.86	121.57	11.79	21.3	2.01	86.17	
03/26/05	13:11:00	-0.45	2.39	0.15	0.00	11.99	0.03	3.3	0.02	86.16	Calibrating Both Systems
03/26/05	13:12:00	-0.49	2.29	0.12	0.00	1.81	-0.02	3.2	0.02	86.16	Calibrating Both Systems
03/26/05	13:13:00	-0.50	2.10	0.08	1.55	0.76	-0.04	3.1	1.41	86.16	Calibrating Both Systems
03/26/05	13:14:00	-0.45	2.21	0.29	4.61	0.29	0.00	3.4	4.76	86.16	Calibrating Both Systems
03/26/05	13:15:00	-0.52	29.19	6.70	-0.02	0.26	-0.07	30.9	0.03	86.17	Calibrating Both Systems
03/26/05	13:16:00	-0.47	26.64	4.70	-0.02	18.52	-0.01	24.1	0.01	86.17	Calibrating Both Systems
03/26/05	13:17:00	-0.49	1.99	0.03	-0.01	164.98	-0.05	2.8	0.02	86.16	Calibrating Both Systems
03/26/05	13:18:00	6.84	8.16	2.16	1.11	163.71	6.67	9.9	1.05	86.16	
03/26/05	13:19:00	15.35	22.96	4.81	2.41	125.00	15.61	22.7	2.43	86.16	
03/26/05	13:20:01	15.32	21.20	4.80	2.35	119.97	15.61	20.3	2.38	86.16	
03/26/05	13:21:00	15.21	18.93	4.80	2.32	118.71	15.51	18.4	2.34	86.16	
03/26/05	13:22:00	15.18	24.86	4.78	2.41	117.72	15.47	24.4	2.43	86.16	
03/26/05	13:23:00	15.24	23.24	4.78	2.40	117.49	15.56	22.4	2.42	86.16	
03/26/05	13:24:00	15.22	18.99	4.79	2.36	117.58	15.56	18.4	2.38	86.16	
03/26/05	13:25:00	15.35	25.48	4.79	2.42	117.31	15.62	25.4	2.44	86.16	
03/26/05	13:26:00	15.28	23.30	4.82	2.39	115.74	15.53	22.6	2.42	86.16	
03/26/05	13:27:01	15.24	20.99	4.82	2.42	115.23	15.50	20.2	2.44	86.17	
03/26/05	13:28:01	15.44	20.57	4.84	2.39	114.69	15.70	19.8	2.41	86.18	
03/26/05	13:29:00	15.25	18.51	4.86	2.36	114.59	15.51	17.5	2.38	86.18	
03/26/05	13:30:00	15.29	20.66	4.86	2.36	113.41	15.54	19.9	2.38	86.18	
03/26/05	13:31:00	15.20	18.56	4.88	2.36	112.44	15.45	17.9	2.37	86.18	
03/26/05	13:32:00	15.19	16.56	4.86	2.40	111.98	15.44	15.2	2.42	86.20	
03/26/05	13:33:00	15.13	14.21	4.89	2.29	111.86	15.39	12.9	2.30	86.22	

Date	Time	NO _x _1	CO_1	CO ₂	O ₂ _1	SO ₂	NO _x _2	CO_2	O ₂ _2	ADC-1 Temp	Calibration Status
Compliance / RATA System						Backup System					
		ppm	%	%	%	%	ppm	%	degF	degF	
03/26/05	13:34:00	15.16	15.81	4.87	2.29	111.44	15.41	15.0	2.31	86.24	
03/26/05	13:35:00	15.02	16.95	4.86	2.29	111.02	15.26	16.2	2.30	86.25	
03/26/05	13:36:00	14.93	24.79	4.83	2.38	110.48	15.19	25.3	2.40	86.30	
03/26/05	13:37:00	14.96	27.78	4.84	2.37	110.17	15.21	27.4	2.39	86.27	
03/26/05	13:38:00	15.15	28.42	4.83	2.46	109.61	15.41	28.3	2.47	86.21	
03/26/05	13:39:00	15.34	27.96	4.85	2.46	108.88	15.60	27.1	2.48	86.18	
03/26/05	13:40:01	15.32	20.31	4.89	2.40	108.79	15.60	19.4	2.42	86.17	
03/26/05	13:41:00	15.35	18.61	4.88	2.40	108.85	15.60	17.8	2.42	86.18	
03/26/05	13:42:00	15.50	19.12	4.89	2.40	108.38	15.74	18.3	2.42	86.17	
03/26/05	13:43:00	15.52	14.90	4.90	2.34	108.59	15.77	14.2	2.36	86.17	
03/26/05	13:44:00	15.28	16.00	4.89	2.32	108.90	15.54	15.1	2.34	86.16	
03/26/05	13:45:00	15.09	17.53	4.90	2.30	109.83	15.34	17.0	2.31	86.16	
03/26/05	13:46:00	15.08	19.20	4.89	2.30	108.66	15.33	19.0	2.32	86.16	
03/26/05	13:47:00	15.04	24.34	4.88	2.33	107.68	15.29	24.0	2.35	86.16	
03/26/05	13:48:00	15.02	28.54	4.90	2.37	107.31	15.27	28.9	2.39	86.17	
03/26/05	13:49:00	15.16	31.71	4.89	2.42	106.80	15.40	31.6	2.43	86.17	
03/26/05	13:50:01	15.24	27.80	4.91	2.38	107.66	15.50	27.6	2.40	86.18	
03/26/05	13:51:01	15.18	29.55	4.91	2.45	107.39	15.43	29.6	2.46	86.18	
03/26/05	13:52:01	15.30	30.76	4.93	2.46	106.30	15.55	30.5	2.48	86.19	
03/26/05	13:53:01	15.49	24.72	4.96	2.42	106.35	15.76	23.7	2.44	86.21	
03/26/05	13:54:01	15.53	14.35	4.97	2.34	106.30	15.81	13.4	2.36	86.25	
03/26/05	13:55:00	15.48	15.93	4.93	2.36	106.27	15.72	15.7	2.37	86.24	
03/26/05	13:56:00	15.23	14.95	4.94	2.27	107.19	15.47	14.4	2.28	86.31	
03/26/05	13:57:00	15.17	20.34	4.91	2.35	107.70	15.41	20.1	2.37	86.36	
03/26/05	13:58:00	15.14	19.91	4.90	2.36	106.66	15.37	19.3	2.38	86.36	
03/26/05	13:59:00	15.17	18.62	4.92	2.30	105.94	15.40	18.3	2.32	86.45	
03/26/05	14:00:00	15.14	20.10	4.89	2.37	105.45	15.37	20.1	2.39	86.51	
03/26/05	14:01:00	15.18	25.89	4.90	2.39	105.14	15.42	25.9	2.41	86.55	
03/26/05	14:02:00	15.12	25.04	4.91	2.42	104.33	15.36	25.0	2.43	86.55	
03/26/05	14:03:00	15.29	28.21	4.91	2.48	103.72	15.53	28.2	2.50	86.54	
03/26/05	14:04:00	15.37	22.84	4.95	2.41	103.79	15.60	21.8	2.43	86.54	
03/26/05	14:05:00	15.41	18.10	4.95	2.37	104.20	15.66	17.3	2.39	86.53	
03/26/05	14:06:00	15.38	17.35	4.93	2.41	104.66	15.61	17.2	2.43	86.52	
03/26/05	14:07:00	15.34	19.41	4.94	2.37	102.97	15.58	18.8	2.39	86.48	
03/26/05	14:08:00	15.42	19.12	4.93	2.39	103.85	15.66	19.3	2.41	86.46	
03/26/05	14:09:00	15.36	22.58	4.91	2.45	104.02	15.59	21.8	2.47	86.43	
03/26/05	14:10:00	15.44	18.53	4.93	2.44	103.80	15.65	17.8	2.45	86.48	
03/26/05	14:11:00	15.30	14.82	4.91	2.37	103.44	15.52	13.9	2.39	86.53	
03/26/05	14:12:00	15.26	17.30	4.91	2.39	104.52	15.49	17.1	2.41	86.54	
03/26/05	14:13:00	15.31	16.73	4.90	2.39	103.27	15.52	16.0	2.40	86.56	
03/26/05	14:14:00	15.27	17.66	4.89	2.40	101.95	15.50	16.8	2.42	86.49	
03/26/05	14:15:00	15.16	17.30	4.89	2.41	101.48	15.43	16.7	2.42	86.51	
03/26/05	14:16:00	15.11	17.76	4.89	2.41	101.83	15.43	17.2	2.42	86.54	
03/26/05	14:17:00	15.27	15.92	4.90	2.39	102.68	15.62	14.8	2.41	86.54	
03/26/05	14:18:00	15.36	13.35	4.91	2.37	102.82	15.71	12.6	2.38	86.53	
03/26/05	14:19:01	15.08	14.28	4.91	2.34	103.21	15.43	13.8	2.36	86.51	
03/26/05	14:20:00	15.11	14.58	4.91	2.33	103.51	15.48	13.8	2.34	86.50	
03/26/05	14:21:00	14.89	15.90	4.89	2.34	102.99	15.06	15.1	2.37	86.56	
03/26/05	14:22:00	2.66	7.48	1.16	0.54	52.76	3.28	8.2	0.63	86.57	Calibrating RATA System
03/26/05	14:23:00	-0.55	1.10	0.07	0.00	2.83	-0.01	1.7	0.02	86.59	Calibrating Both Systems
03/26/05	14:24:00	-0.56	1.12	0.04	3.02	0.89	-0.02	1.8	2.89	86.60	Calibrating Both Systems
03/26/05	14:25:00	-0.57	1.06	0.01	4.94	0.17	-0.07	1.7	4.95	86.60	Calibrating Both Systems
03/26/05	14:26:00	-0.44	15.55	4.04	1.74	0.34	0.05	17.8	1.91	86.58	Calibrating Both Systems
03/26/05	14:27:00	-0.40	30.86	6.68	0.01	-0.02	-0.06	29.8	0.01	86.60	Calibrating Both Systems
03/26/05	14:28:00	-0.12	9.44	0.97	0.04	105.28	14.01	20.2	2.32	86.58	Calibrating RATA System
03/26/05	14:29:01	-0.57	0.90	-0.10	-0.01	175.03	15.45	15.8	2.41	86.63	Calibrating RATA System

Date	Time	NO _{x_1}	CO ₁	CO ₂	O _{2_1}	SO ₂	NO _{x_2}	CO ₂	O _{2_2}	ADC-1 Temp	Calibration Status
Compliance / RATA System						Backup System					
		ppm	%	%	%	%	ppm	%	degF	degF	
03/26/05	14:30:00	3.95	2.71	1.13	0.72	173.52	15.43	12.2	2.42	86.60	
03/26/05	14:31:01	15.24	13.82	4.74	2.41	109.78	15.56	12.5	2.44	86.60	
03/26/05	14:32:00	15.25	12.72	4.74	2.36	103.94	15.56	11.4	2.38	86.61	
03/26/05	14:33:00	15.49	13.64	4.73	2.32	102.23	15.75	12.4	2.34	86.61	
03/26/05	14:34:00	15.41	11.79	4.73	2.32	101.90	15.64	10.4	2.34	86.60	
03/26/05	14:35:00	15.39	14.32	4.70	2.37	98.60	15.65	13.0	2.39	86.61	
03/26/05	14:36:00	15.40	16.48	4.70	2.34	98.97	15.67	15.0	2.36	86.61	
03/26/05	14:37:00	15.54	18.06	4.73	2.38	99.44	15.85	16.7	2.40	86.60	
03/26/05	14:38:00	15.78	20.69	4.73	2.44	97.28	16.09	19.0	2.46	86.61	
03/26/05	14:39:01	16.00	16.96	4.76	2.37	97.98	16.24	15.4	2.39	86.61	
03/26/05	14:40:00	16.02	18.12	4.77	2.45	98.26	16.25	16.6	2.47	86.61	
03/26/05	14:41:00	16.35	17.89	4.77	2.45	98.72	16.60	16.7	2.47	86.61	
03/26/05	14:42:00	16.38	13.09	4.83	2.41	97.50	16.67	11.1	2.42	86.61	
03/26/05	14:43:01	16.40	12.67	4.80	2.42	98.03	16.69	11.7	2.44	86.61	
03/26/05	14:44:00	16.56	15.74	4.78	2.38	98.30	16.86	14.0	2.41	86.60	
03/26/05	14:45:00	16.45	13.06	4.78	2.44	99.47	16.76	11.8	2.45	86.60	
03/26/05	14:46:00	16.57	13.30	4.79	2.36	99.87	16.90	11.7	2.39	86.57	
03/26/05	14:47:01	16.61	14.78	4.76	2.42	99.03	16.94	14.0	2.43	86.56	
03/26/05	14:48:00	16.58	15.46	4.78	2.39	98.09	16.96	13.7	2.41	86.54	
03/26/05	14:49:00	16.67	13.01	4.77	2.40	98.26	17.02	12.0	2.41	86.54	
03/26/05	14:50:00	16.66	19.05	4.76	2.47	98.55	16.98	17.8	2.49	86.54	
03/26/05	14:51:00	16.65	15.47	4.80	2.43	99.91	16.98	14.2	2.44	86.49	
03/26/05	14:52:00	16.70	16.63	4.79	2.51	99.66	17.02	15.2	2.53	86.51	
03/26/05	14:53:00	16.75	15.00	4.82	2.43	99.30	17.08	13.4	2.44	86.53	
03/26/05	14:54:00	16.86	13.08	4.82	2.48	98.63	17.20	11.1	2.50	86.51	
03/26/05	14:55:01	16.86	10.02	4.83	2.39	98.07	17.19	8.4	2.41	86.55	
03/26/05	14:56:00	16.73	10.61	4.80	2.44	99.81	17.06	9.3	2.45	86.56	
03/26/05	14:57:00	16.93	13.77	4.82	2.37	99.32	17.26	11.9	2.39	86.56	
03/26/05	14:58:00	16.59	11.00	4.82	2.42	99.08	16.93	9.5	2.43	86.57	
03/26/05	14:59:00	16.60	14.68	4.80	2.44	99.19	16.95	13.0	2.45	86.59	
03/26/05	15:00:00	16.52	11.74	4.82	2.40	101.17	16.87	10.2	2.42	86.60	
03/26/05	15:01:00	16.55	12.48	4.80	2.45	100.01	16.90	10.8	2.47	86.60	
03/26/05	15:02:00	16.58	13.48	4.82	2.39	99.94	16.91	12.0	2.41	86.61	
03/26/05	15:03:00	16.47	12.52	4.83	2.38	102.18	16.80	11.2	2.39	86.61	
03/26/05	15:04:00	16.51	13.30	4.82	2.42	101.36	16.84	11.5	2.44	86.61	
03/26/05	15:05:00	16.58	12.87	4.83	2.38	101.45	16.90	11.2	2.39	86.61	
03/26/05	15:06:00	16.55	13.70	4.83	2.39	102.06	16.90	12.2	2.40	86.60	
03/26/05	15:07:00	16.73	18.19	4.80	2.46	102.62	17.07	17.1	2.48	86.59	
03/26/05	15:08:00	16.82	18.05	4.83	2.41	104.21	17.13	16.5	2.43	86.55	
03/26/05	15:09:00	16.73	13.86	4.83	2.37	104.96	17.08	12.3	2.39	86.49	
03/26/05	15:10:01	16.83	14.18	4.80	2.40	103.87	17.16	12.6	2.42	86.40	
03/26/05	15:11:01	16.78	15.45	4.81	2.39	104.18	17.13	14.0	2.41	86.39	
03/26/05	15:12:01	16.87	16.10	4.80	2.39	103.97	17.20	14.5	2.40	86.27	
03/26/05	15:13:01	16.71	16.27	4.82	2.41	104.76	17.04	15.2	2.43	86.27	
03/26/05	15:14:00	16.58	22.12	4.79	2.49	104.33	16.92	21.1	2.50	86.25	
03/26/05	15:15:00	16.58	20.28	4.83	2.42	104.72	16.93	18.6	2.43	86.25	
03/26/05	15:16:00	16.56	18.41	4.83	2.49	104.78	16.92	17.0	2.50	86.21	
03/26/05	15:17:00	16.69	14.79	4.84	2.45	106.35	17.05	13.0	2.47	86.20	
03/26/05	15:18:00	16.56	11.45	4.85	2.43	105.48	16.90	10.2	2.45	86.17	
03/26/05	15:19:00	16.45	12.33	4.85	2.37	106.50	16.79	10.5	2.38	86.16	
03/26/05	15:20:00	16.47	14.24	4.81	2.43	105.81	16.80	13.1	2.45	86.16	
03/26/05	15:21:00	16.52	14.30	4.83	2.37	105.64	16.85	13.0	2.39	86.16	
03/26/05	15:22:00	16.54	13.54	4.83	2.36	106.74	16.88	12.0	2.38	86.16	
03/26/05	15:23:00	16.57	13.76	4.81	2.37	107.26	16.91	12.4	2.38	86.16	
03/26/05	15:24:00	16.38	15.52	4.80	2.40	105.92	16.71	14.8	2.41	86.16	
03/26/05	15:25:00	16.37	19.21	4.82	2.41	105.75	16.72	17.8	2.43	86.16	

Date	Time	NO _x _1	CO_1	CO ₂	O ₂ _1	SO ₂	NO _x _2	CO_2	O ₂ _2	ADC-1 Temp	Calibration Status
Compliance / RATA System						Backup System					
		ppm	%	%	%	%	ppm	%	degF	degF	
03/26/05	15:26:00	16.17	17.90	4.82	2.41	106.00	16.49	16.6	2.42	86.16	
03/26/05	15:27:00	16.23	21.19	4.80	2.49	105.02	16.56	20.0	2.51	86.16	
03/26/05	15:28:00	16.53	20.63	4.82	2.49	104.69	16.87	18.9	2.51	86.16	
03/26/05	15:29:00	16.60	17.77	4.85	2.45	106.46	16.92	16.0	2.47	86.16	
03/26/05	15:30:00	16.70	14.67	4.86	2.47	105.58	17.03	13.1	2.49	86.16	
03/26/05	15:31:00	16.67	11.81	4.86	2.43	105.71	16.99	10.1	2.45	86.16	
03/26/05	15:32:00	16.72	11.51	4.85	2.37	106.27	17.03	10.5	2.38	86.16	
03/26/05	15:33:00	16.67	12.29	4.87	2.36	106.52	17.01	10.7	2.38	86.16	
03/26/05	15:34:00	16.52	11.99	4.86	2.36	105.18	16.88	10.2	2.38	86.16	
03/26/05	15:35:01	2.28	4.43	0.95	0.42	50.85	3.10	6.1	0.55	86.16	Calibrating RATA System
03/26/05	15:36:00	-0.54	1.19	0.06	-0.01	2.66	0.00	1.1	0.02	86.17	Calibrating Both Systems
03/26/05	15:37:00	-0.55	1.30	0.03	-0.01	0.75	-0.04	1.0	0.02	86.16	Calibrating Both Systems
03/26/05	15:38:00	-0.56	1.22	0.01	4.19	0.18	-0.06	1.0	4.06	86.20	Calibrating Both Systems
03/26/05	15:39:00	-0.57	18.69	4.71	1.26	-0.15	-0.08	19.8	1.41	86.20	Calibrating Both Systems
03/26/05	15:40:00	-0.58	31.09	6.69	-0.03	-0.38	-0.08	29.3	0.00	86.18	Calibrating Both Systems
03/26/05	15:41:01	-0.53	10.24	1.11	-0.01	102.00	14.58	19.2	2.14	86.23	Calibrating RATA System
03/26/05	15:42:00	-0.56	1.15	-0.08	-0.01	174.56	17.20	16.9	2.46	86.31	Calibrating RATA System
03/26/05	15:43:00	-0.57	1.07	-0.13	-0.01	178.00	17.13	16.5	2.47	86.32	Calibrating RATA System
03/26/05	15:44:01	4.87	3.77	1.26	0.73	172.12	17.00	17.5	2.41	86.25	
03/26/05	15:45:00	5.91	25.09	3.70	1.96	59.71	5.59	25.8	1.89	86.17	
03/26/05	15:46:00	17.02	12.74	4.66	2.43	105.74	17.02	11.1	2.41	86.16	

APPENDIX H – CEMS AND PROCESS DATA LISTING

APPENDIX I – METHOD 15 DATA

Summary of H₂S Calibration for LCR TO435

3/24/2005						
H ₂ S concentration (ppmv)	Run	Area	Average	Upper	Lower	Drift (%)
0.1	1	64786	60825	63866	57784	
	2	60538				
	3	57151				
0.5	1	426249	424299	445514	403084	
	2	405643				
	3	441005				
1.0	1	1079995	1029738	1081225	978251	
	2	984839				
	3	1024379				

3/25/2005						
H ₂ S concentration (ppmv)	Run	Area	Average	Upper	Lower	Drift (%)
0.1	1	67011	64552	67780	61325	6.13
	2	63745				
	3	62901				
0.5	1	487214	473220	496881	449559	11.53
	2	466688				
	3	465759				
1.0	1	1025647	993626	1043307	943944	3.51
	2	987849				
	3	967381				
				Average Drift (%)		7.05

3/26/2005						
H ₂ S concentration (ppmv)	Run	Area	Average	Upper	Lower	Drift (%)
0.1	1	59187	58517	61443	55591	3.79
	2	59184				
	3	57180				
0.5	1	431375	414415	435136	393694	2.33
	2	395560				
	3	416310				
1.0	1	1066318	1058170	1111079	1005262	2.76
	2	1068027				
	3	1040165				
				Average Drift (%)		2.96

Calibration Report

Method: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-24-05.met
 Print Time: 4/1/2005 9:17:02 AM
 User: System
 Instrument: GC-14B (Offline)

Hydrogen Sulfide (FPD)

Average RF: 1.28658e-006 RF StDev: 4.08786e-007 RF %RSD: 31.7732

Scaling: None LSQ Weighting: None Force Through Zero: On

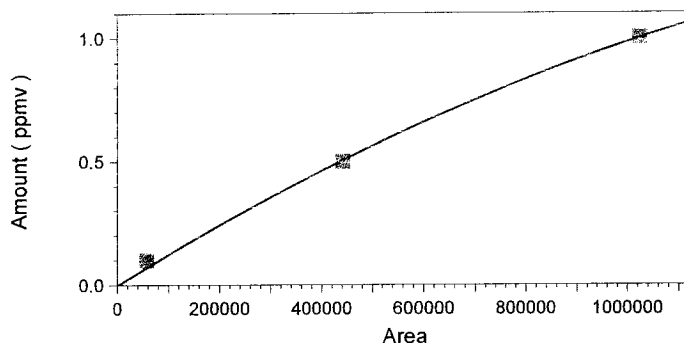
Replicate Mode: Replace

Fit Type: Quadratic

$y = -2.95166e-013x^2 + 1.27756e-006x + 0.000000$

Goodness of fit (r^2): 0.997988

Peak: Hydrogen Sulfide -- ESTD -- FPD



	Level 1	Level 2	Level 3
Amount	0.1	0.5	1
Area	57151	441005	1024379
RF	1.749750660 53087e-006	1.13377399349 214e-006	9.762011911606 93e-007
Last Area			
Residual	0.0279502	-0.00600547	0.00102605
Rep StDev	3825.58	17761.5	47755.4
Rep %RSD	6.28949	4.18607	4.63748
Rep 1 Area	64786	426249	1079995
Rep 1 User	System	System	System
Rep 1 Data File	C:\CLASS-VP\Data\LCR-H2S\Data\LCR 435 3-25-05\Calibration\Std 0.1 ppm-3-24-2005 5 6-51-03 PM.dat	C:\CLASS-VP\Data\LCR-H2S\Data\LCR 435 3-25-05\Calibration\Std 0.5 ppm-3-24-2005 7-47-29 PM.dat	C:\CLASS-VP\Data\LCR-H2S\Data\LCR 435 3-25-05\Calibration\Std 1.0 ppm-3-24-2005 8-22-08 PM.dat
Rep 1 Sample ID	Std	Std	Std
Rep 1 Calib. Time	4/1/2005 8:19:57 AM	4/1/2005 8:28:07 AM	4/1/2005 8:28:56 AM

Calibration Report

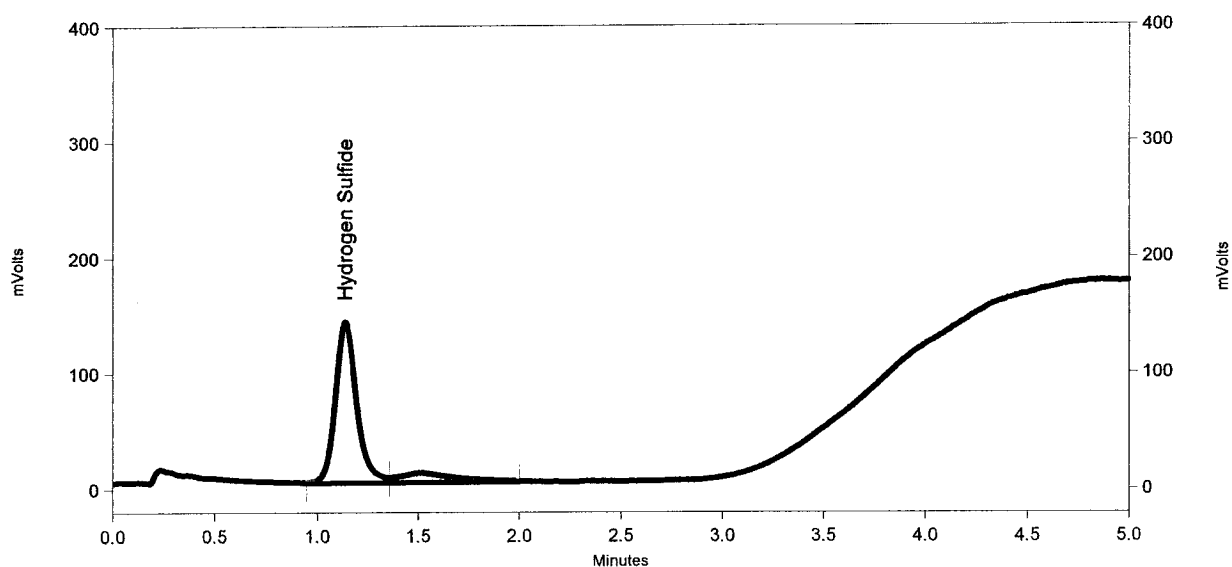
Method: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-24-05.met
 Print Time: 4/1/2005 9:17:02 AM
 User: System
 Instrument: GC-14B (Offline)

Rep 2 Area	60538	405643	984942
Rep 2 User	System	System	System
Rep 2 Data File	C:\CLASS-VP\Data\LCR-H2S\Data\LCR 435 3-25-05\Calibration\Std 0.1 ppm-3-24-2005 5 5-40-20 PM.dat	C:\CLASS-VP\Data\LCR-H2S\Data\LCR 435 3-25-05\Calibration\Std 0.5 ppm-3-24-2005 7-56-26 PM.dat	C:\CLASS-VP\Data\LCR-H2S\Data\LCR 435 3-25-05\Calibration\Std 1.0 ppm-3-24-2005 8-30-24 PM.dat
Rep 2 Sample ID	Std	Std	Std
Rep 2 Calib. Time	4/1/2005 8:20:51 AM	4/1/2005 8:28:28 AM	4/1/2005 8:29:09 AM
Rep 3 Area	57151	441005	1024379
Rep 3 User	System	System	System
Rep 3 Data File	C:\CLASS-VP\Data\LCR-H2S\Data\LCR 435 3-25-05\Calibration\Std 0.1 ppm-3-24-2005 5 6-31-11 PM.dat	C:\CLASS-VP\Data\LCR-H2S\Data\LCR 435 3-25-05\Calibration\Std 0.5 ppm-3-24-2005 8-13-38 PM.dat	C:\CLASS-VP\Data\LCR-H2S\Data\LCR 435 3-25-05\Calibration\Std 1.0 ppm-3-24-2005 8-38-34 PM.dat
Rep 3 Sample ID	Std	Std	Std
Rep 3 Calib. Time	4/1/2005 8:27:15 AM	4/1/2005 8:28:41 AM	4/1/2005 8:29:22 AM

Lyondell - Houston, TX

Sample ID: Std
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2_2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\calibration-3-24-05\std
1.0 ppm-3-24-2005 8-38-34 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/24/2005 8:39:06 PM



FPD Results

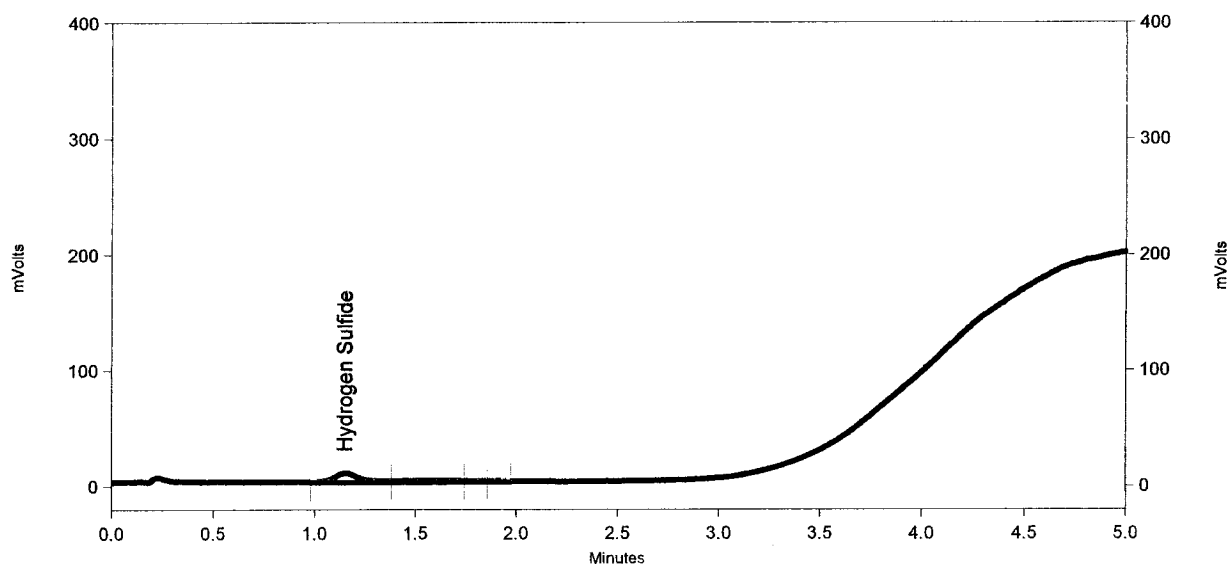
Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.138	1024379	1.000 CAL

Totals		1024379	1.000 CAL
--------	--	---------	-----------

Lyondell - Houston, TX

Sample ID: Std
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2 2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\calibration-3-24-05\std
0.1 ppm-3-24-2005 5-40-20 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/24/2005 5:44:06 PM



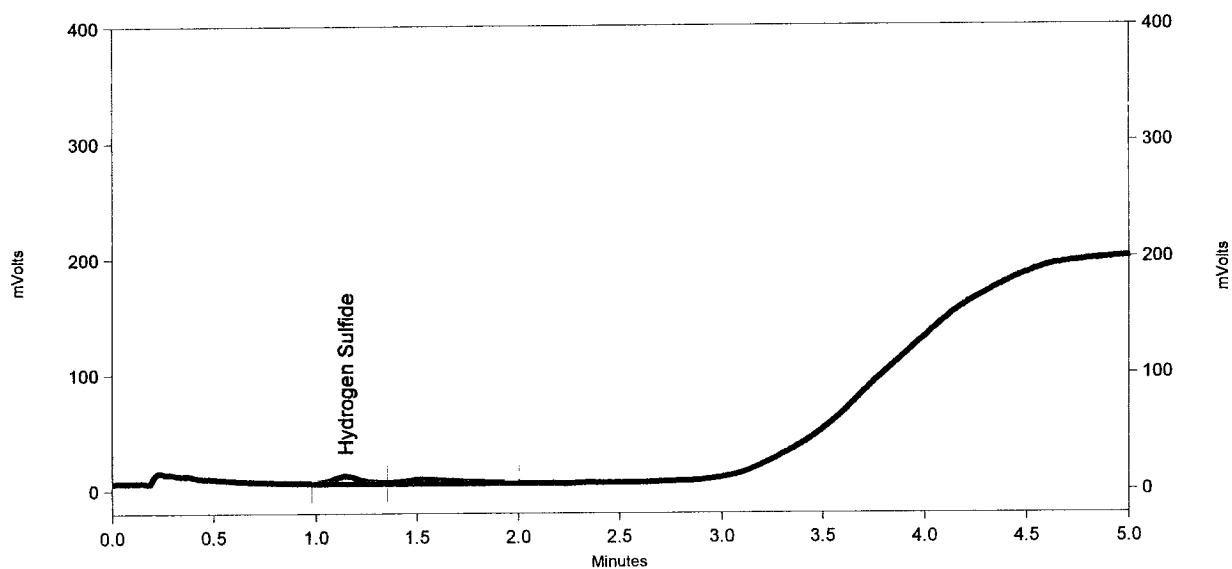
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.150	60538	0.100 CAL
Totals		60538	0.100 CAL

Lyondell - Houston, TX

Sample ID: Std
 Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2 2.met
 Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\calibration-3-24-05\std
 0.1 ppm-3-24-2005 6-31-11 pm.dat
 Product: Shimadzu Client/Server
 Software: Version 7.2 SP1 Rev B

Run Time: 3/24/2005 6:31:43 PM



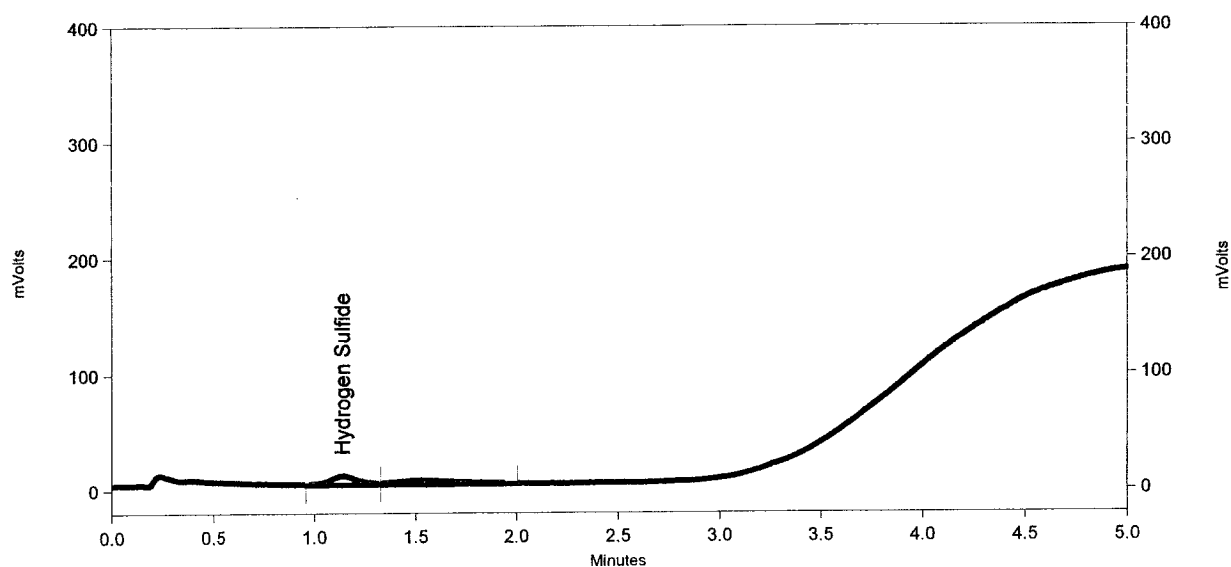
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.148	57151	0.100 CAL
Totals		57151	0.100 CAL

Lyondell - Houston, TX

Sample ID: Std
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2 2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\calibration-3-24-05\std
0.1 ppm-3-24-2005 6-51-03 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/24/2005 6:51:35 PM



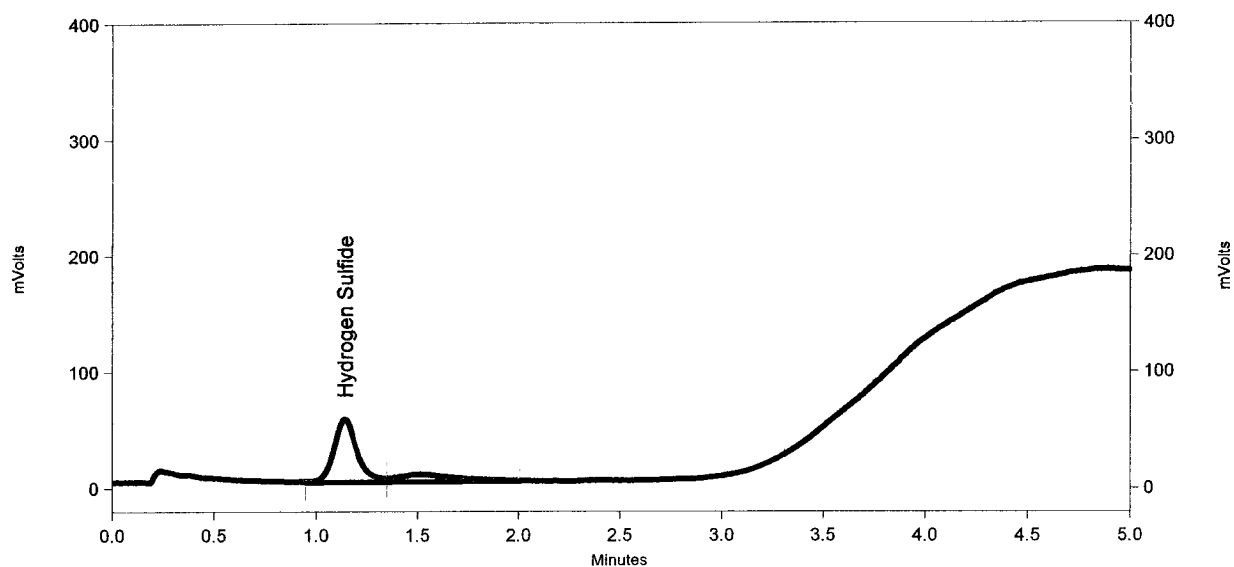
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.138	64786	0.100 CAL
Totals		64786	0.100 CAL

Lyondell - Houston, TX

Sample ID: Std
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2 2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\calibration-3-24-05\std
0.5 ppm-3-24-2005 7-47-29 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/24/2005 7:48:01 PM



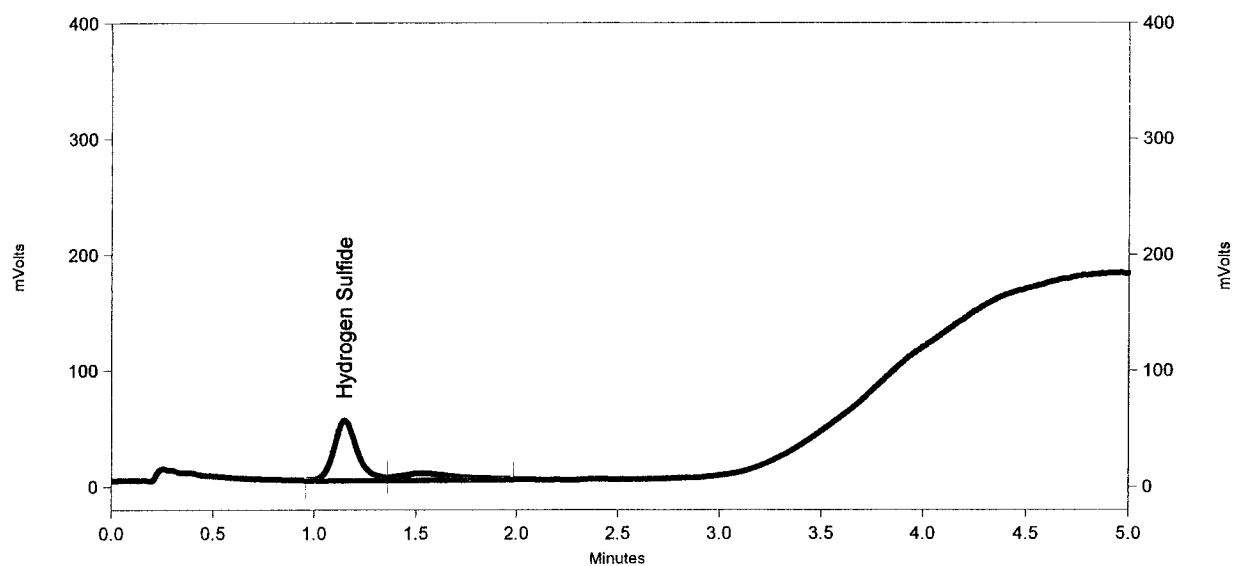
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.142	426249	0.500 CAL
Totals		426249	0.500 CAL

Lyondell - Houston, TX

Sample ID: Std
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2 2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\calibration-3-24-05\std
0.5 ppm-3-24-2005 7-56-26 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/24/2005 7:56:52 PM



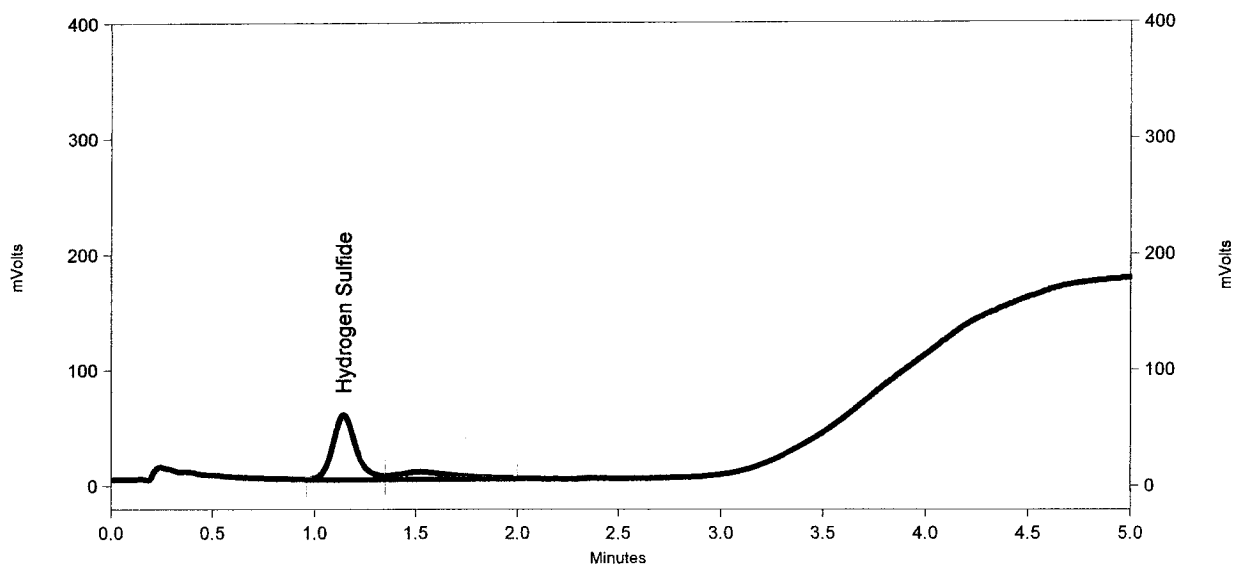
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.147	405643	0.500 CAL
Totals		405643	0.500 CAL

Lyondell - Houston, TX

Sample ID: Std
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2_2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\calibration-3-24-05\std
0.5 ppm-3-24-2005 8-13-38 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/24/2005 8:14:10 PM



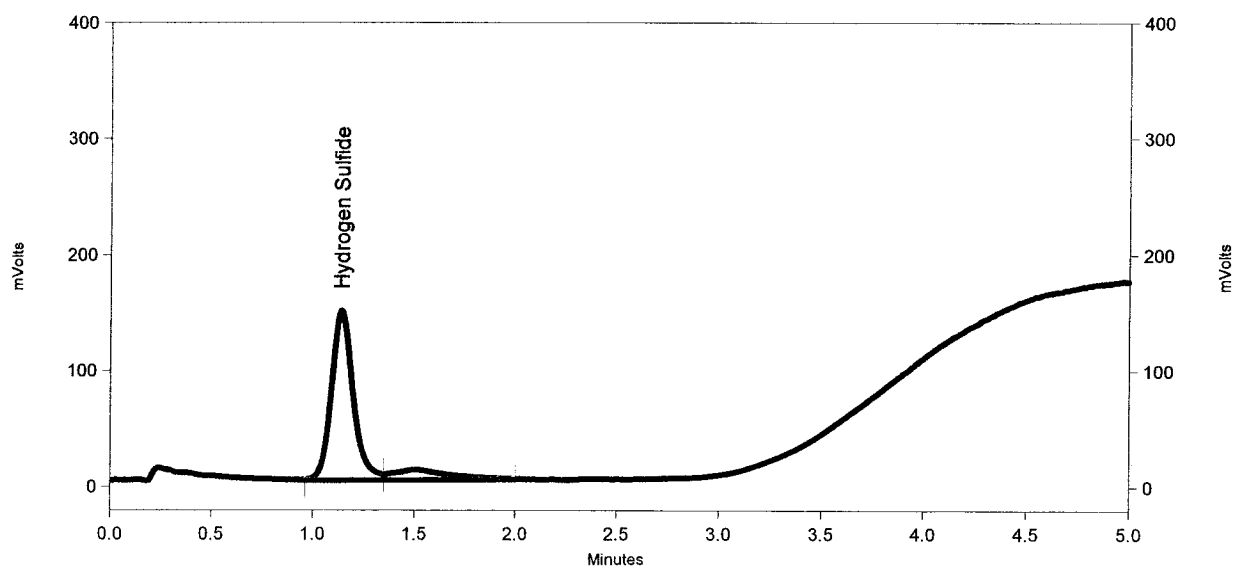
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.143	441005	0.500 CAL
Totals		441005	0.500 CAL

Lyondell - Houston, TX

Sample ID: Std
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2 2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\calibration-3-24-05\std
1.0 ppm-3-24-2005 8-22-08 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/24/2005 8:22:40 PM



FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.140	1079995	1.000 CAL
Totals		1079995	1.000 CAL

Calibration Report

Method: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
 Print Time: 4/1/2005 9:14:53 AM
 User: System
 Instrument: GC-14B (Offline)

Hydrogen Sulfide (FPD)

Average RF: 1.23230e-006 RF StDev: 3.10246e-007 RF %RSD: 25.1761

Scaling: None LSQ Weighting: None Force Through Zero: On

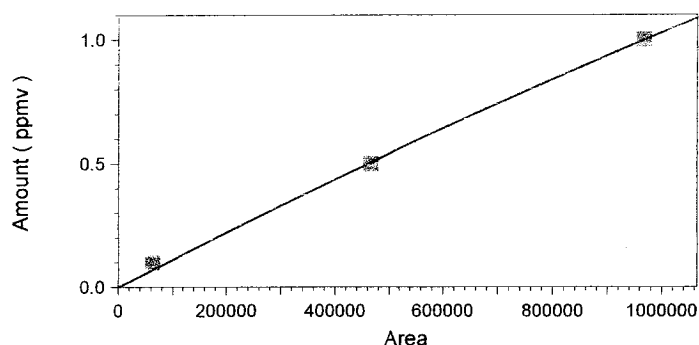
Replicate Mode: Replace

Fit Type: Quadratic

$y = -1.12546e-013x^2 + 1.14093e-006x + 0.000000$

Goodness of fit (r^2): 0.997852

Peak: Hydrogen Sulfide -- ESTD -- FPD



	Level 1	Level 2	Level 3
Amount	0.1	0.5	1
Area	62901	465759	967504
RF	1.589799844 19962e-006	1.07351656113 999e-006	1.033587458036 35e-006
Last Area			
Residual	0.0286797	-0.00698307	0.00149709
Rep StDev	2170.68	12127.8	29500
Rep %RSD	3.36267	2.56282	2.96881
Rep 1 Area	67011	487214	1025638
Rep 1 User	System	System	System
Rep 1 Data File	C:\CLASS-VP\Data\LCR-H2S\Data\LCR 435 3-25-05\Drift Check\STD 0.1 ppm 3-25-2005 9-45-38 PM.dat	C:\CLASS-VP\Data\LCR-H2S\Data\LCR 435 3-25-05\Drift Check\STD 0.5 ppm 3-25-2005 10-27-39 PM.dat	C:\CLASS-VP\Data\LCR-H2S\Data\LCR 435 3-25-05\Drift Check\STD 1.0 ppm 3-25-2005 9-04-37 PM.dat
Rep 1 Sample ID	STD	STD	STD

Calibration Report

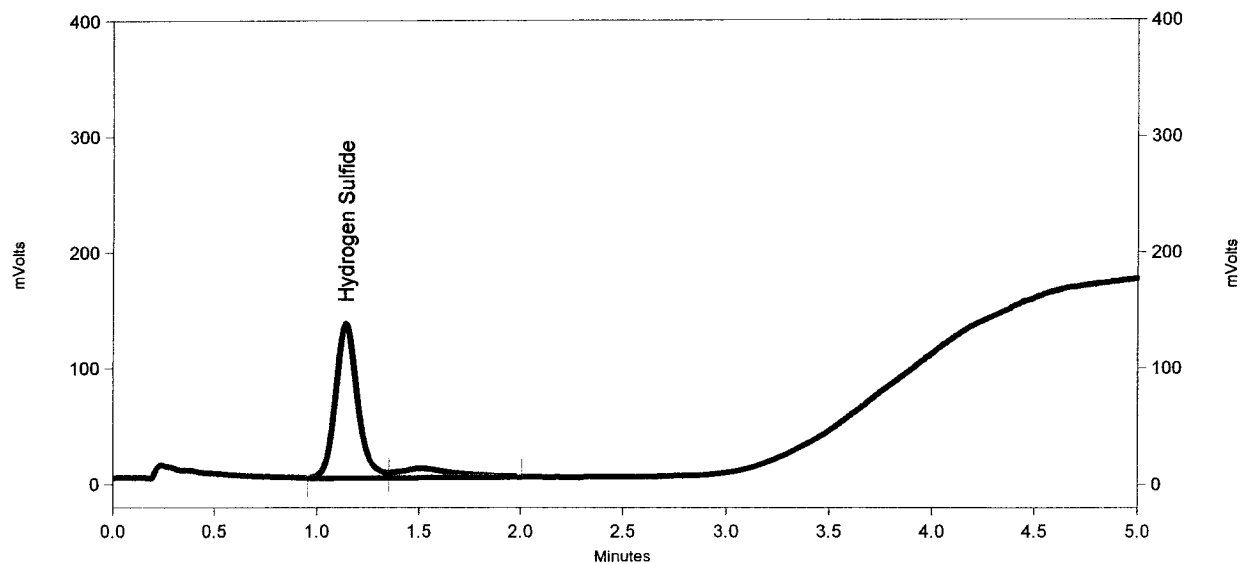
Method: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
 Print Time: 4/1/2005 9:14:53 AM
 User: System
 Instrument: GC-14B (Offline)

Rep 1 Calib. Time	4/1/2005 9:13:01 AM	4/1/2005 9:13:37 AM	4/1/2005 9:14:19 AM
Rep 2 Area	63745	466688	987849
Rep 2 User	System	System	System
Rep 2 Data File	C:\CLASS-V P\Data\LCR- H2S\Data\LC R 435 3-25-05\Drift Check\STD 0.1 ppm 3-25-2005 9-50-53 PM.dat	C:\CLASS-VP\ Data\LCR-H2S\ Data\LCR 435 3-25-05\Drift Check\STD 0.5 ppm 3-25-2005 10-32-17 PM.dat	C:\CLASS-VP\ Data\LCR-H2S\ Data\LCR 435 3-25-05\Drift Check\STD 1.0 ppm 3-25-2005 9-13-39 PM.dat
Rep 2 Sample ID	STD	STD	STD
Rep 2 Calib. Time	4/1/2005 9:13:12 AM	4/1/2005 9:13:51 AM	4/1/2005 9:14:31 AM
Rep 3 Area	62901	465759	967504
Rep 3 User	System	System	System
Rep 3 Data File	C:\CLASS-V P\Data\LCR- H2S\Data\LC R 435 3-25-05\Drift Check\STD 0.1 ppm 3-25-2005 9-55-39 PM.dat	C:\CLASS-VP\ Data\LCR-H2S\ Data\LCR 435 3-25-05\Drift Check\STD 0.5 ppm 3-25-2005 10-37-08 PM.dat	C:\CLASS-VP\ Data\LCR-H2S\ Data\LCR 435 3-25-05\Drift Check\STD 1.0 ppm 3-25-2005 9-22-36 PM.dat
Rep 3 Sample ID	STD	STD	STD
Rep 3 Calib. Time	4/1/2005 9:13:24 AM	4/1/2005 9:14:01 AM	4/1/2005 9:14:44 AM

Lyondell - Houston, TX

Sample ID: Std
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2_2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\calibration-3-24-05\std
1.0 ppm-3-24-2005 8-30-24 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/24/2005 8:30:56 PM



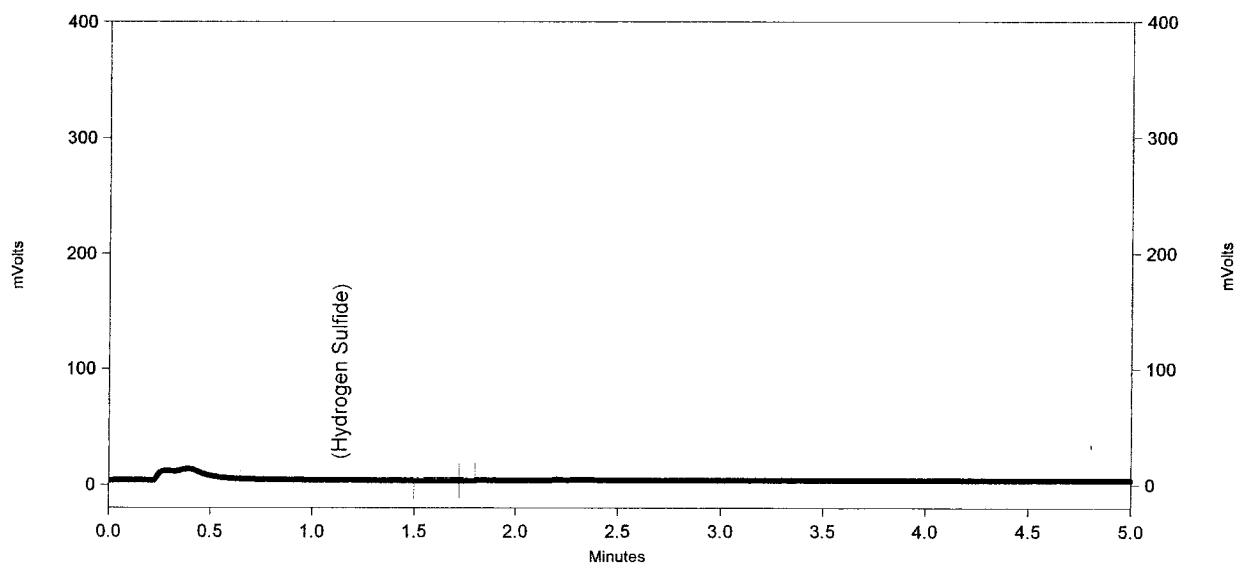
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.140	984942	1.000 CAL
Totals		984942	1.000 CAL

Lyondell - Houston, TX

Sample ID: Blank
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2 2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\drift check-3-25-05\blank
3-25-2005 7-44-08 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 7:48:57 PM



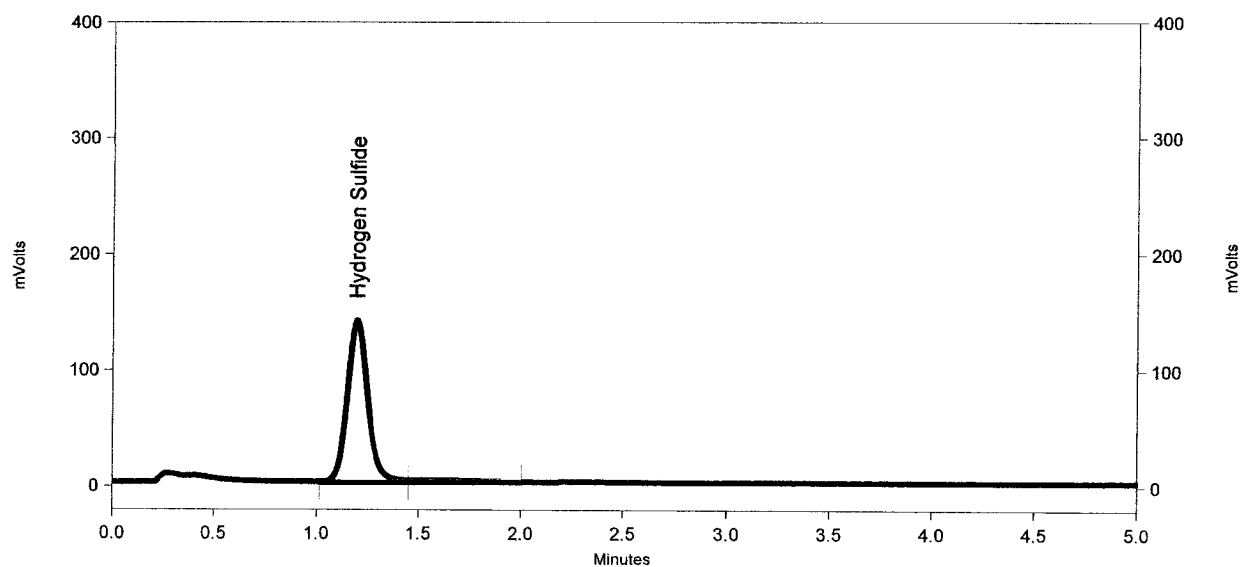
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide			0.000 BDL
Totals			

Lyondell - Houston, TX

Sample ID: STD
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2_2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\drift check-3-25-05\std
1.0 ppm 3-25-2005 9-22-36 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 9:23:04 PM



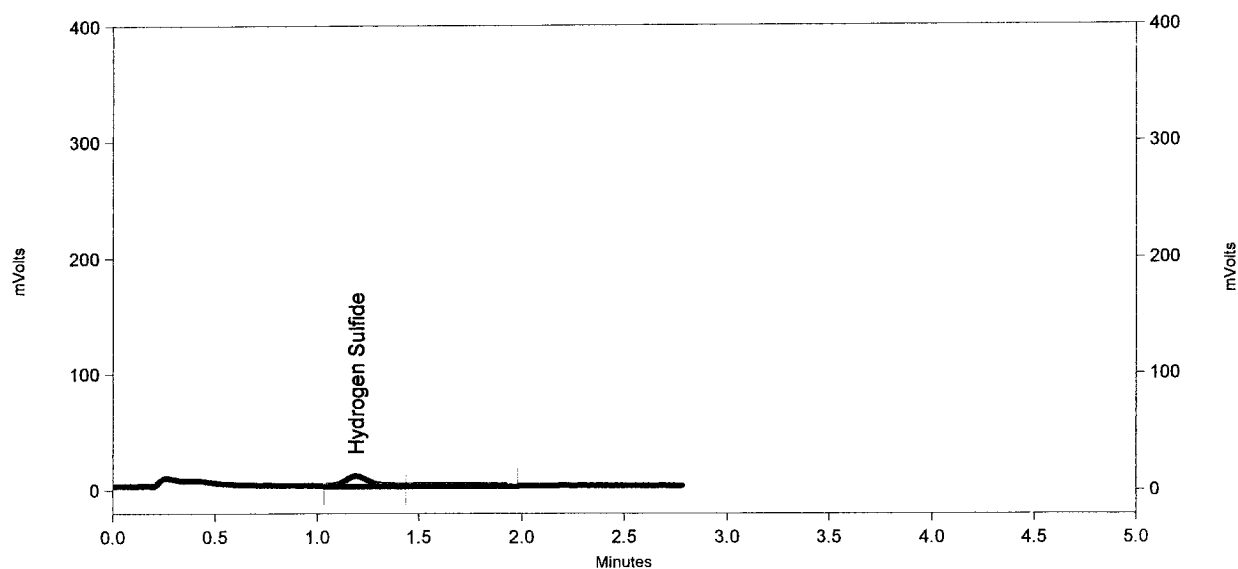
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.193	967504	1.000 CAL
Totals		967504	1.000 CAL

Lyondell - Houston, TX

Sample ID: STD
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2 2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\drift check-3-25-05\std
0.1 ppm 3-25-2005 9-45-38 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 9:46:05 PM



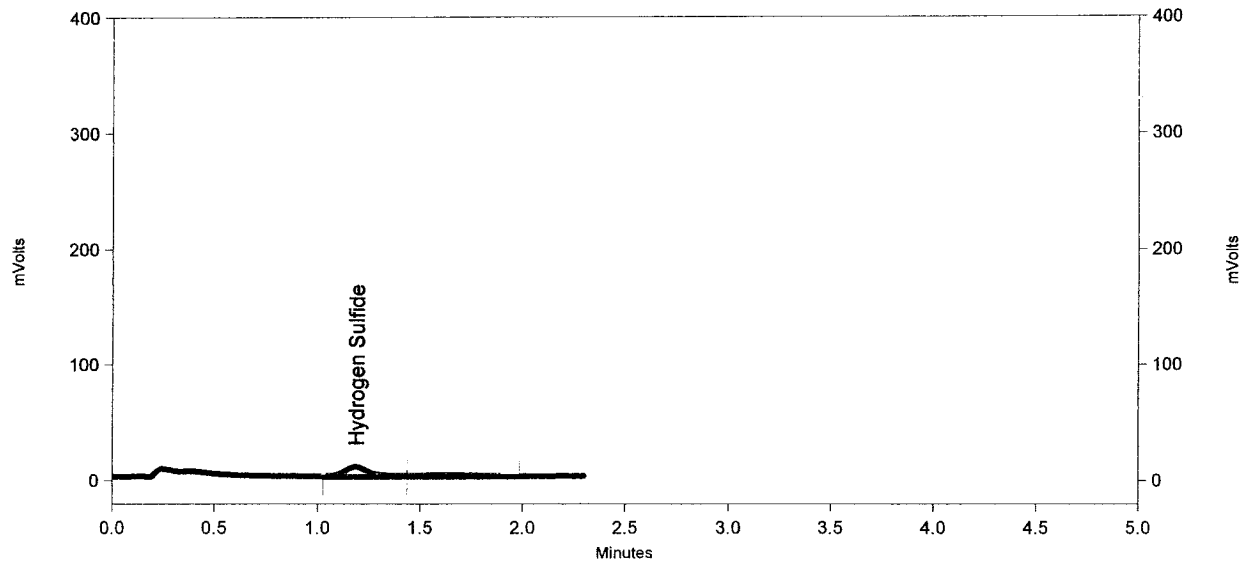
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.192	67011	0.100 CAL
Totals		67011	0.100 CAL

Lyondell - Houston, TX

Sample ID: STD
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2 2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\drift check-3-25-05\std
0.1 ppm 3-25-2005 9-50-53 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 9:51:41 PM



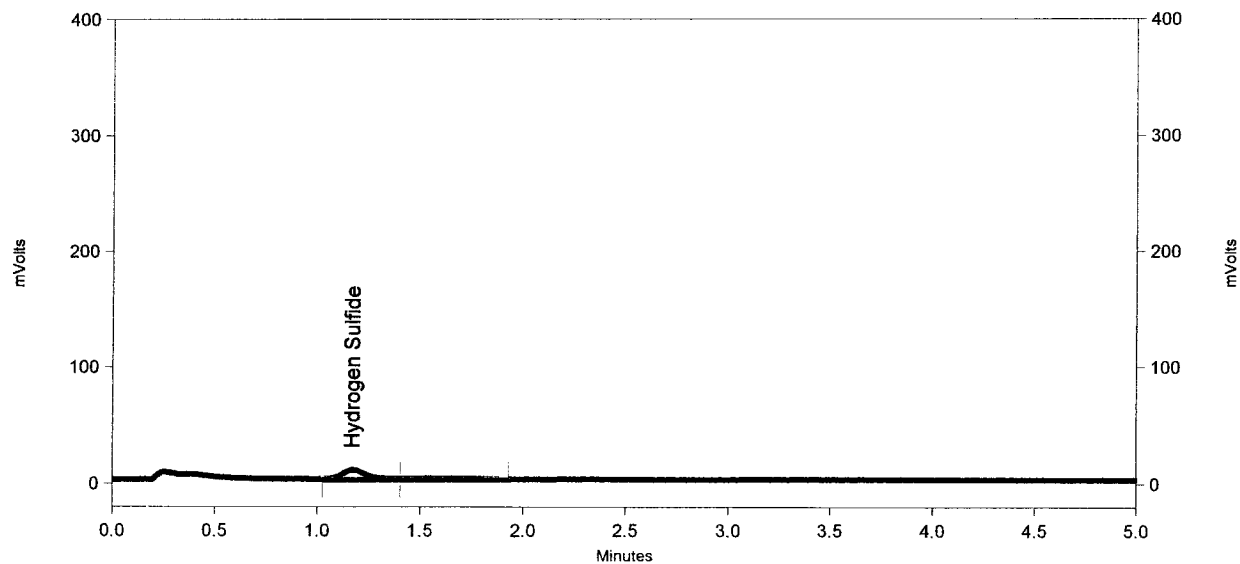
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.188	63745	0.100 CAL
Totals		63745	0.100 CAL

Lyondell - Houston, TX

Sample ID: STD
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2_2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\drift check-3-25-05\std
0.1 ppm 3-25-2005 9-55-39 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 9:56:11 PM



FPD Results
Name

Retention Time

Area ESTD concentration
(ppmv)

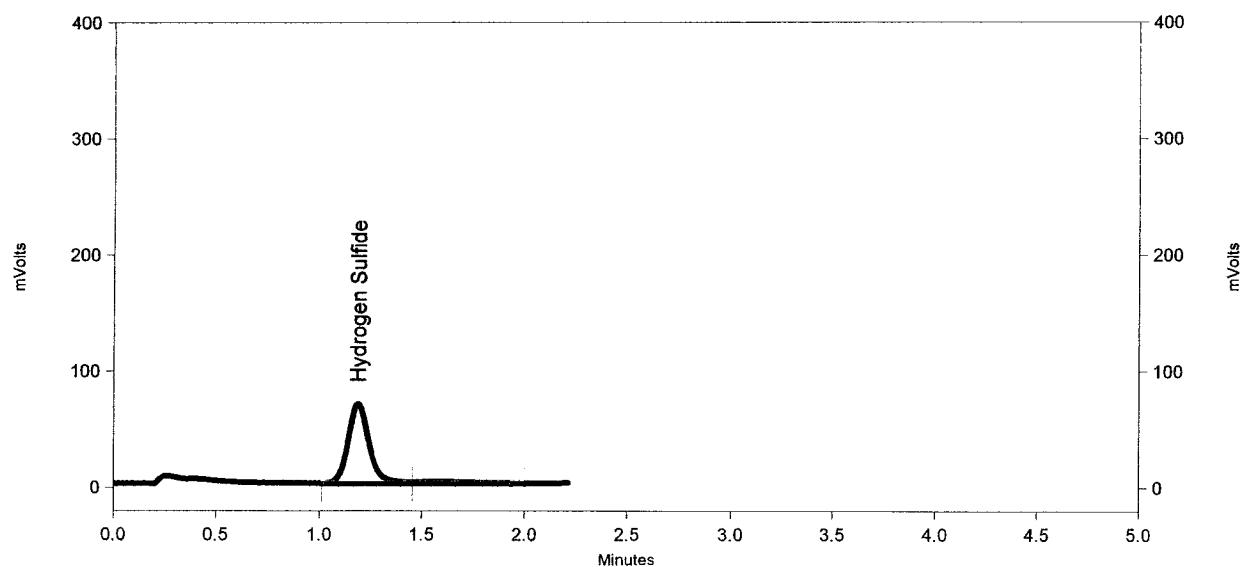
Hydrogen Sulfide	1.168	62901	0.100 CAL
------------------	-------	-------	-----------

Totals		62901	0.100 CAL
--------	--	-------	-----------

Lyondell - Houston, TX

Sample ID: STD
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2 2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\drift check-3-25-05\std
0.5 ppm 3-25-2005 10-27-39 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 10:28:06 PM



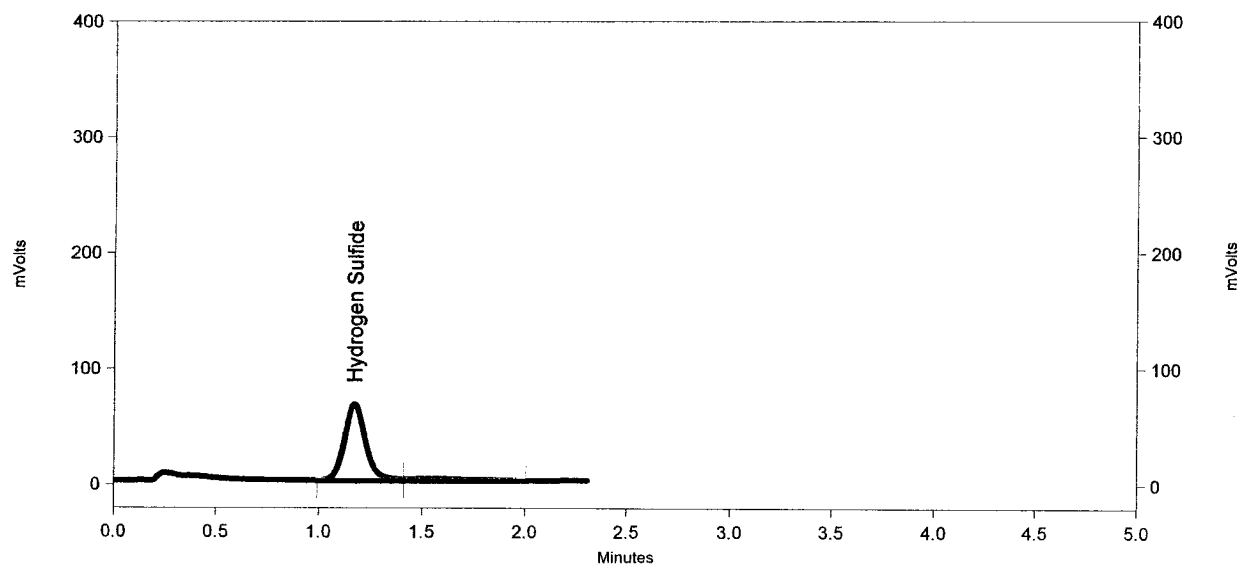
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.187	487214	0.500 CAL
Totals		487214	0.500 CAL

Lyondell - Houston, TX

Sample ID: STD
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2_2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\drift check-3-25-05\std
0.5 ppm 3-25-2005 10-32-17 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 10:32:50 PM



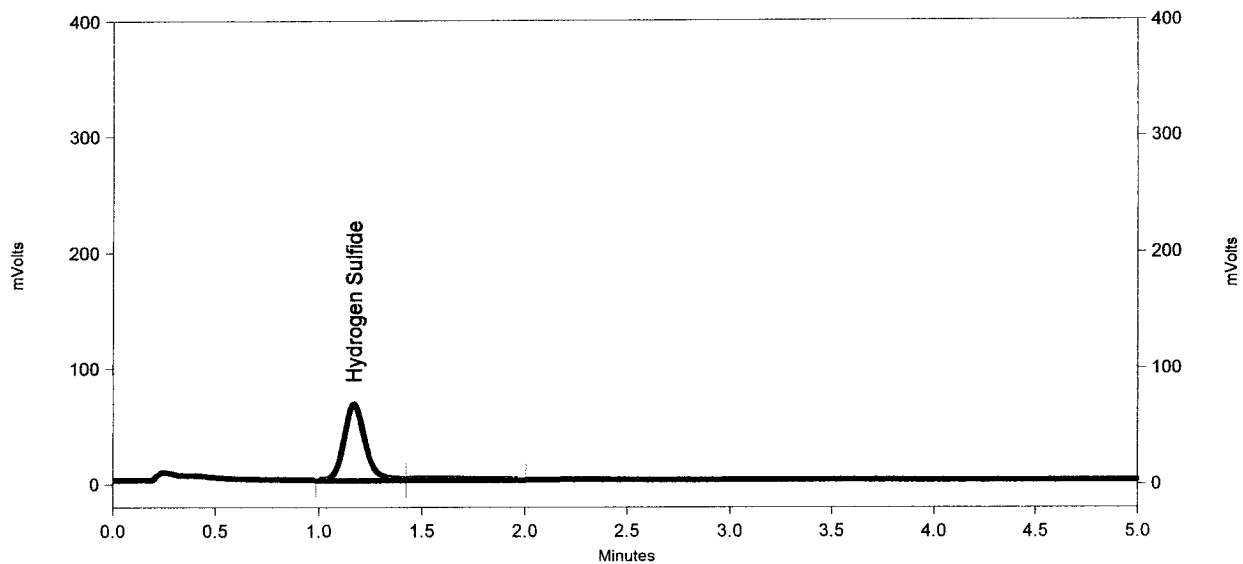
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.170	466688	0.500 CAL
Totals		466688	0.500 CAL

Lyondell - Houston, TX

Sample ID: STD
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2 2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\drift check-3-25-05\std
0.5 ppm 3-25-2005 10-37-08 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 10:37:40 PM



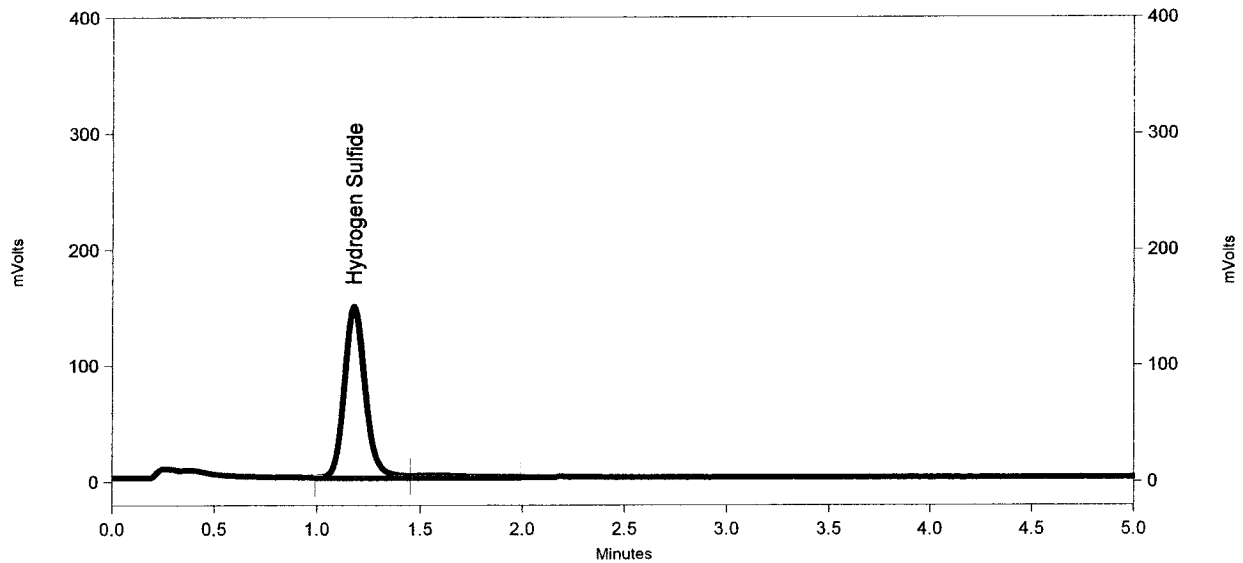
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.170	465759	0.500 CAL
Totals		465759	0.500 CAL

Lyondell - Houston, TX

Sample ID: STD
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2 2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\drift check-3-25-05\std
1.0 ppm 3-25-2005 9-04-37 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 9:05:10 PM



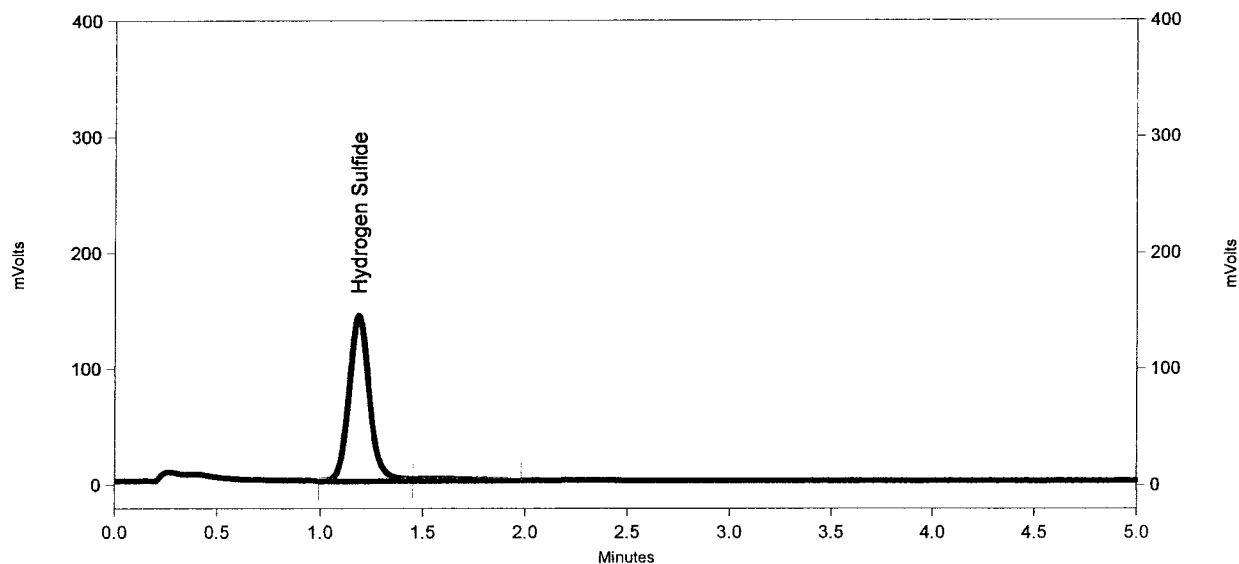
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.178	1025638	1.000 CAL
Totals		1025638	1.000 CAL

Lyondell - Houston, TX

Sample ID: STD
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2 2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\drift check-3-25-05\std
1.0 ppm 3-25-2005 9-13-39 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 9:14:06 PM



FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.183	987849	1.000 CAL
Totals		987849	1.000 CAL

Calibration Report

Method: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-26-05.met
 Print Time: 4/1/2005 9:07:19 AM
 User: System
 Instrument: GC-14B (Offline)

Hydrogen Sulfide (FPD)

Average RF: 1.30376e-006 RF StDev: 4.03665e-007 RF %RSD: 30.9616

Scaling: None LSQ Weighting: None Force Through Zero: On

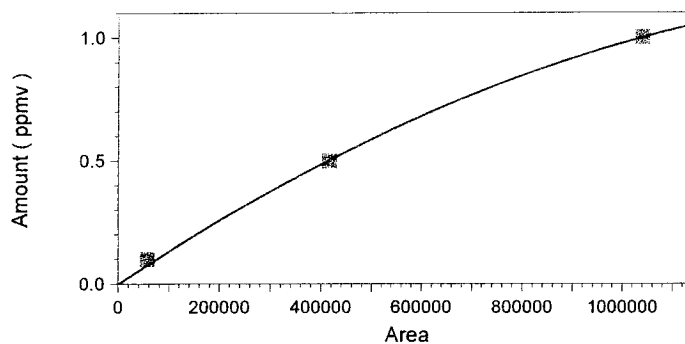
Replicate Mode: Replace

Fit Type: Quadratic

$y = -4.03860e-013x^2 + 1.38079e-006x + 0.000000$

Goodness of fit (r^2): 0.998711

Peak: Hydrogen Sulfide -- ESTD -- FPD



	Level 1	Level 2	Level 3
Amount	0.1	0.5	1
Area	57180	416310	1040165
RF	1.748863238 89472e-006	1.20102808003 651e-006	9.613859339624 e-007
Last Area			
Residual	0.0223671	-0.00484061	0.000707814
Rep StDev	1157.88	17982.5	15616.2
Rep %RSD	1.9787	4.33926	1.47577
Rep 1 Area	59187	431375	1066318
Rep 1 User	System	System	System
Rep 1 Data File	C:\CLASS-V P\Data\LCR- H2S\Data\LC R 435 3-25-05\Drift Check-3-26-0 5\0.1 ppm STD 3-26-2005 5-01-01 PM.dat	C:\CLASS-VP\ Data\LCR-H2S\ Data\LCR 435 3-25-05\Drift Check-3-26-05\ 0.5 ppm STD 3-26-2005 4-39-52 PM.dat	C:\CLASS-VP\ Data\LCR-H2S\ Data\LCR 435 3-25-05\Drift Check-3-26-05\1 .0 ppm STD 3-26-2005 4-10-45 PM.dat

Calibration Report

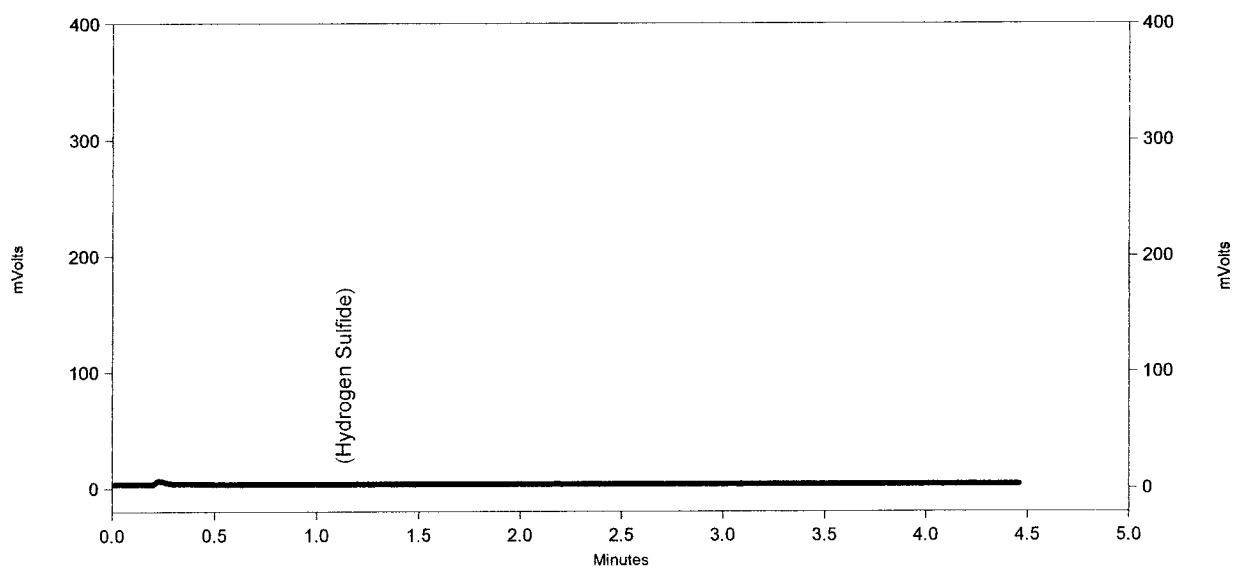
Method: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-26-05.met
 Print Time: 4/1/2005 9:07:19 AM
 User: System
 Instrument: GC-14B (Offline)

Rep 1 Sample ID	0.1 ppm STD	0.5 ppm STD	1.0 ppm STD
Rep 1 Calib. Time	4/1/2005 9:05:01 AM	4/1/2005 9:05:41 AM	4/1/2005 9:06:28 AM
Rep 2 Area	59184	395560	1068027
Rep 2 User	System	System	System
Rep 2 Data File	C:\CLASS-VP\Data\LCR-H2S\Data\LCR 435 3-25-05\Drift Check-3-26-05\0.1 ppm STD 3-26-2005 5-33-46 PM.dat	C:\CLASS-VP\Data\LCR-H2S\Data\LCR 435 3-25-05\Drift Check-3-26-05\0.5 ppm STD 3-26-2005 4-44-29 PM.dat	C:\CLASS-VP\Data\LCR-H2S\Data\LCR 435 3-25-05\Drift Check-3-26-05\1.0 ppm STD 3-26-2005 4-20-11 PM.dat
Rep 2 Sample ID	0.1 ppm STD	0.5 ppm STD	1.0 ppm STD
Rep 2 Calib. Time	4/1/2005 9:05:14 AM	4/1/2005 9:05:54 AM	4/1/2005 9:06:42 AM
Rep 3 Area	57180	416310	1040165
Rep 3 User	System	System	System
Rep 3 Data File	C:\CLASS-VP\Data\LCR-H2S\Data\LCR 435 3-25-05\Drift Check-3-26-05\0.1 ppm STD 3-26-2005 5-40-18 PM.dat	C:\CLASS-VP\Data\LCR-H2S\Data\LCR 435 3-25-05\Drift Check-3-26-05\0.5 ppm STD 3-26-2005 4-51-01 PM.dat	C:\CLASS-VP\Data\LCR-H2S\Data\LCR 435 3-25-05\Drift Check-3-26-05\1.0 ppm STD 3-26-2005 4-27-52 PM.dat
Rep 3 Sample ID	0.1 ppm STD	0.5 ppm STD	1.0 ppm STD
Rep 3 Calib. Time	4/1/2005 9:05:27 AM	4/1/2005 9:06:16 AM	4/1/2005 9:06:56 AM

Lyondell - Houston, TX

Sample ID: Blank
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2 2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\drift check-3-26-05\blank
3-26-2005 3-28-37 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 3:31:32 PM



FPD Results

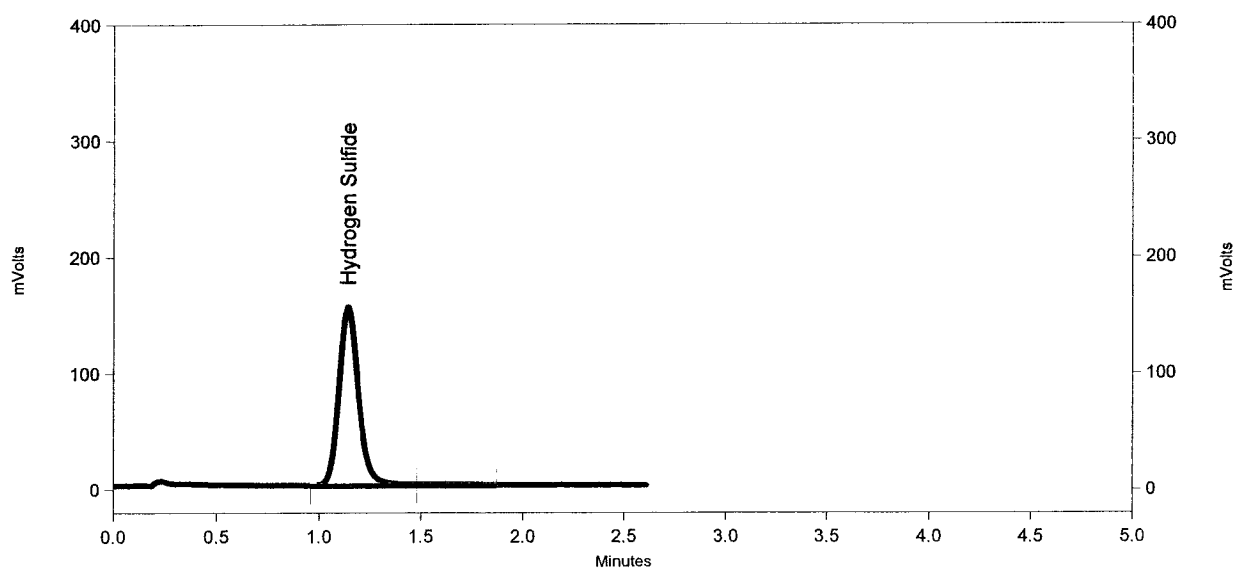
Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide			0.000 BDL

Totals			
--------	--	--	--

Lyondell - Houston, TX

Sample ID: 1.0 ppm STD
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2_2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\drift check-3-26-05\1.0
ppm std 3-26-2005 4-27-52 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 4:28:25 PM



FPD Results
Name

Retention Time

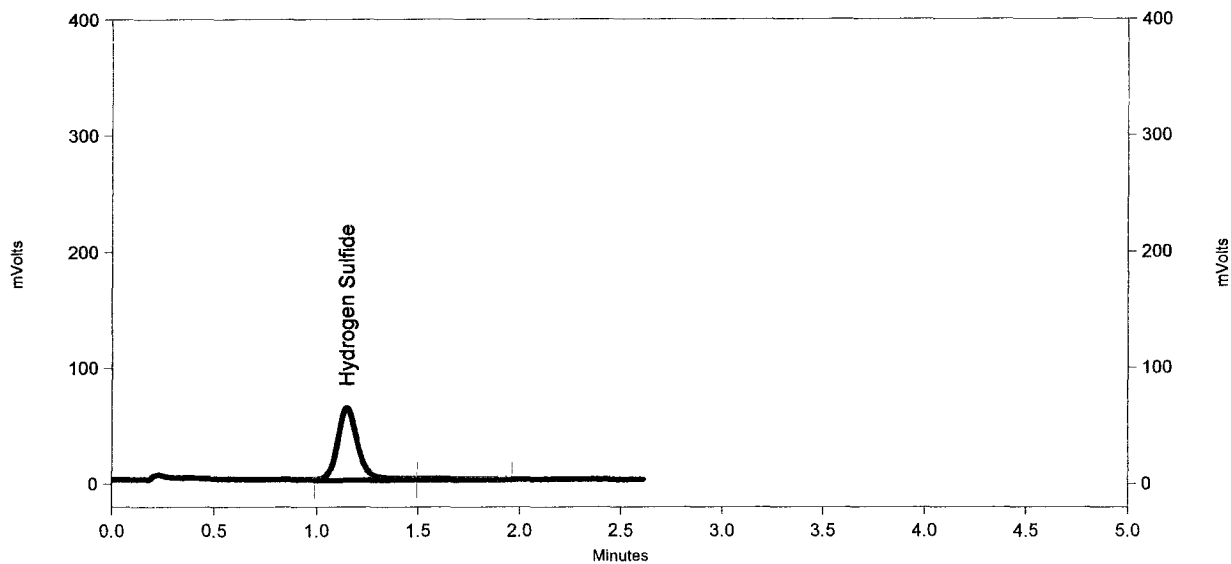
Area ESTD concentration
(ppmv)

Hydrogen Sulfide	1.142	1040165	1.000 CAL
Totals		1040165	1.000 CAL

Lyondell - Houston, TX

Sample ID: 0.5 ppm STD
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2 2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\drift check-3-26-05\0.5
ppm std 3-26-2005 4-39-52 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 4:40:56 PM



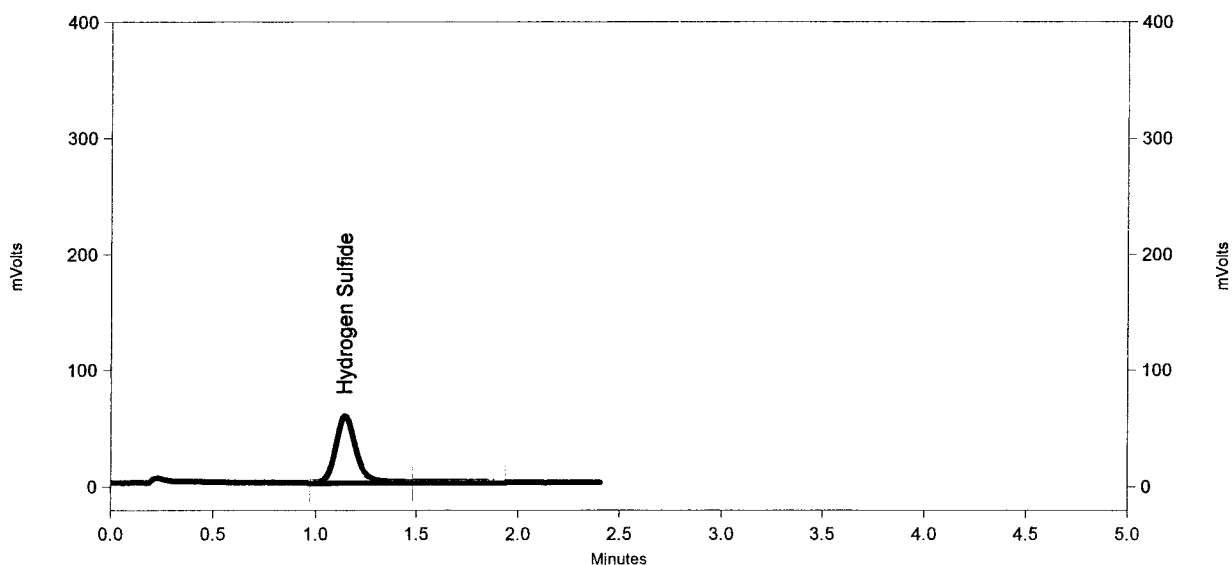
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.147	431375	0.500 CAL
Totals		431375	0.500 CAL

Lyondell - Houston, TX

Sample ID: 0.5 ppm STD
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2 2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\drift check-3-26-05\0.5
ppm std 3-26-2005 4-44-29 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 4:45:02 PM



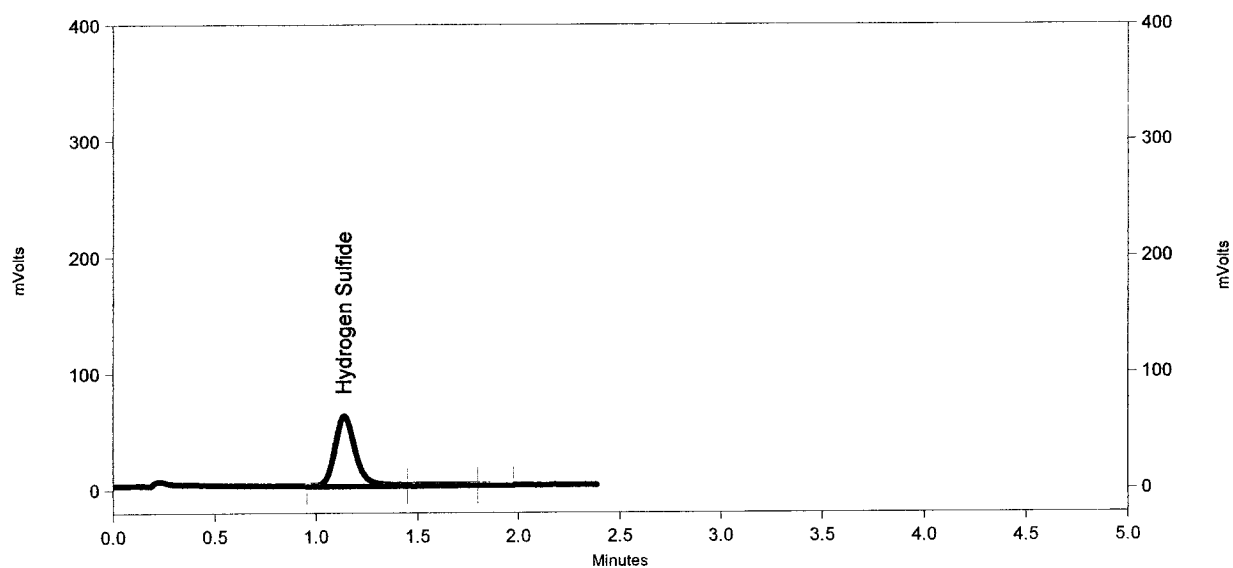
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.142	395560	0.500 CAL
Totals		395560	0.500 CAL

Lyondell - Houston, TX

Sample ID: 0.5 ppm STD
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2 2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\drift check-3-26-05\0.5
ppm std 3-26-2005 4-51-01 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 4:51:33 PM



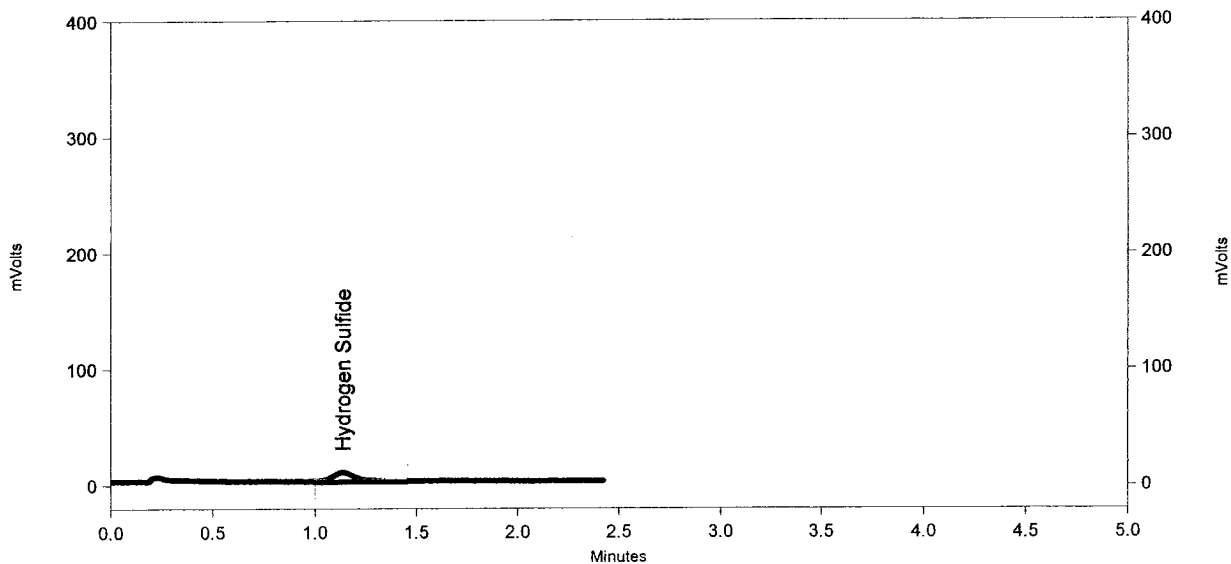
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.137	416310	0.500 CAL
Totals		416310	0.500 CAL

Lyondell - Houston, TX

Sample ID: 0.1 ppm STD
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2_2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\drift check-3-26-05\0.1
ppm std 3-26-2005 5-01-01 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 5:01:34 PM



FPD Results
Name

Retention Time

Area ESTD concentration
(ppmv)

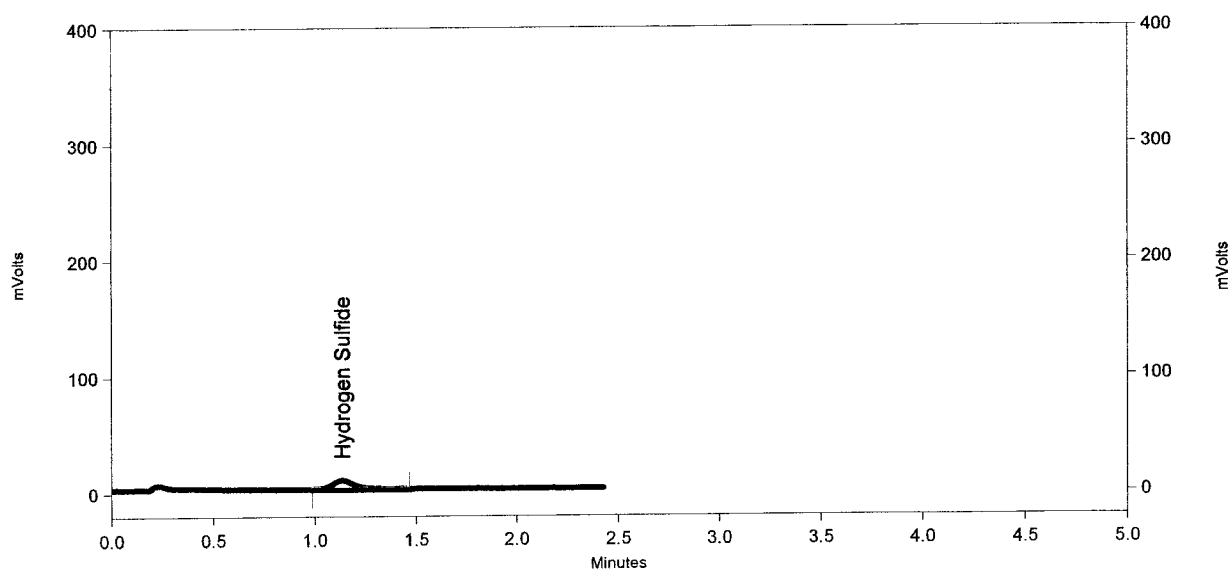
Hydrogen Sulfide	1.138	59187	0.100 CAL
------------------	-------	-------	-----------

Totals		59187	0.100 CAL
--------	--	-------	-----------

Lyondell - Houston, TX

Sample ID: 0.1 ppm STD
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2 2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\drift check-3-26-05\0.1
ppm std 3-26-2005 5-33-46 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 5:34:19 PM



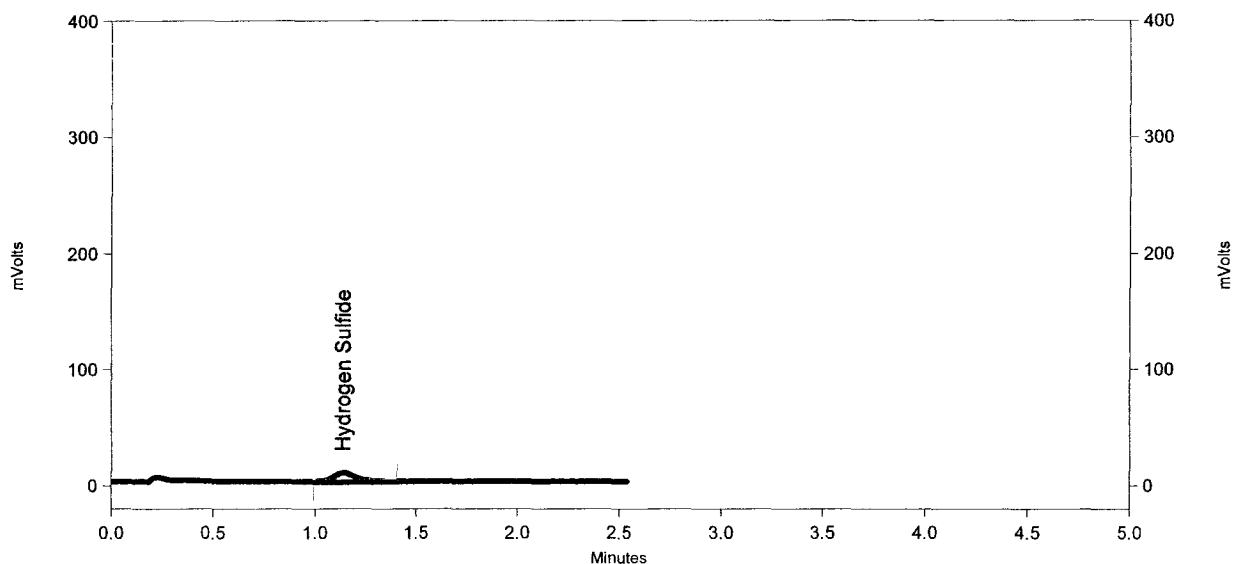
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.137	59184	0.100 CAL
Totals		59184	0.100 CAL

Lyondell - Houston, TX

Sample ID: 0.1 ppm STD
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2_2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\drift check-3-26-05\0.1
ppm std 3-26-2005 5-40-18 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 5:40:50 PM



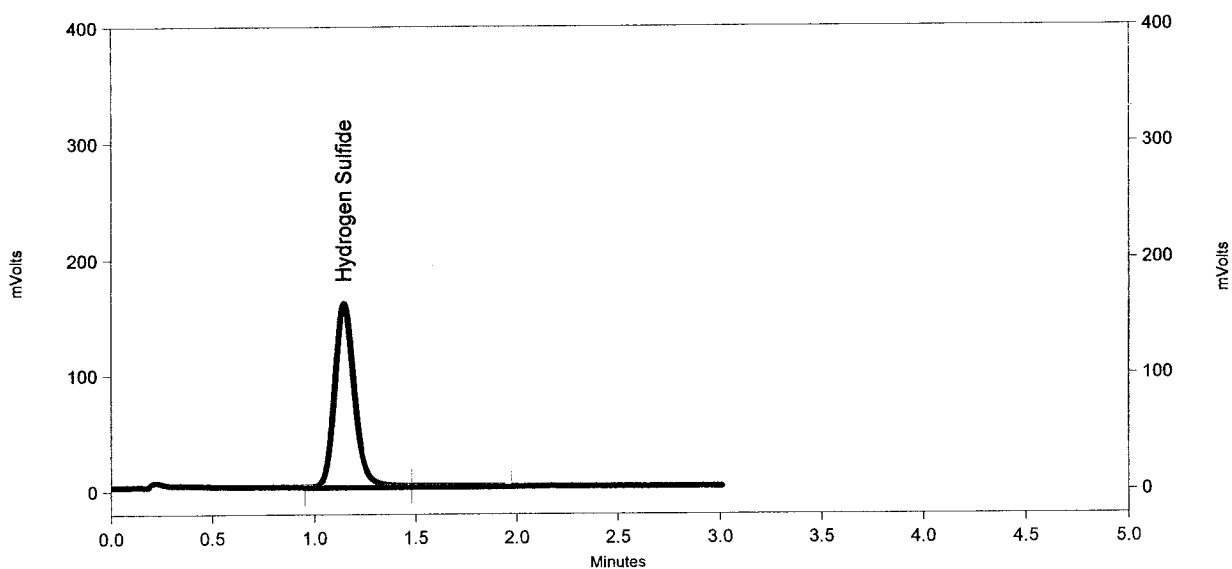
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.135	57180	0.100 CAL
Totals		57180	0.100 CAL

Lyondell - Houston, TX

Sample ID: 1.0 ppm STD
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2 2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\drift check-3-26-05\1.0
ppm std 3-26-2005 4-10-45 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 4:12:04 PM



FPD Results
Name

Retention Time

Area ESTD concentration
(ppmv)

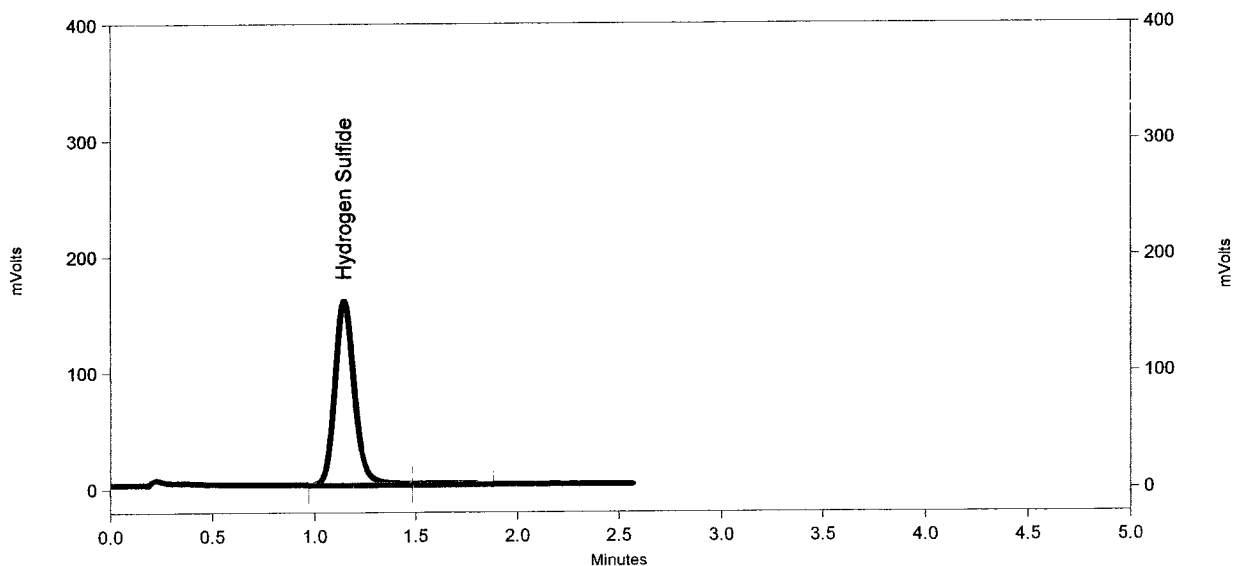
Hydrogen Sulfide	1.143	1066318	1.000 CAL
------------------	-------	---------	-----------

Totals		1066318	1.000 CAL
--------	--	---------	-----------

Lyondell - Houston, TX

Sample ID: 1.0 ppm STD
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2s and SO2_2.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\drift check-3-26-05\1.0
ppm std 3-26-2005 4-20-11 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 4:21:13 PM



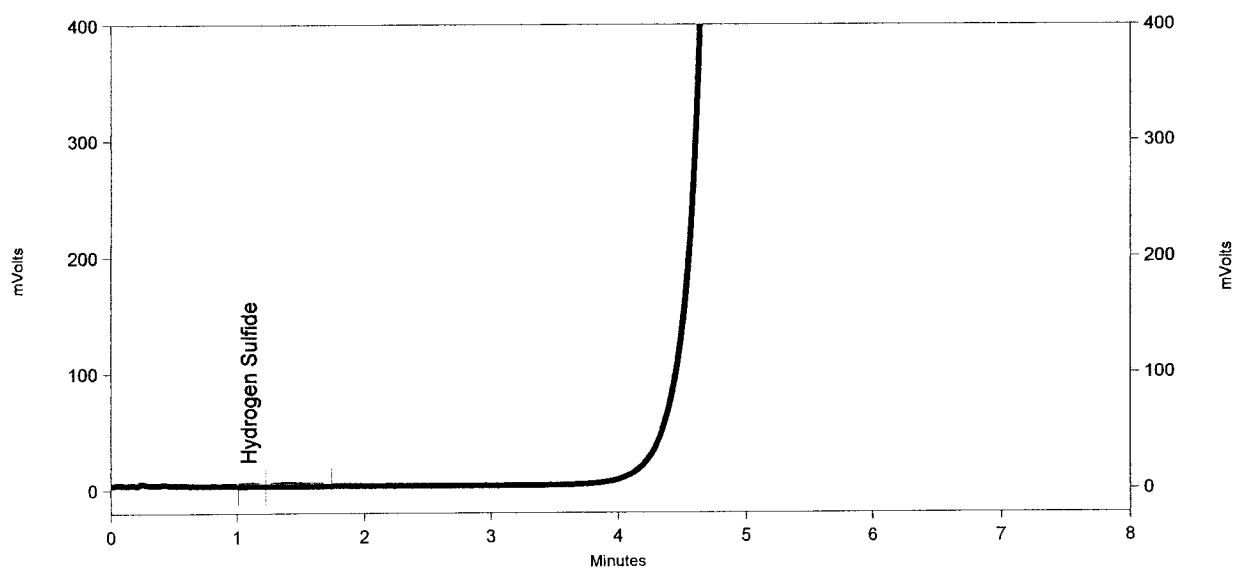
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.143	1068027	1.000 CAL
Totals		1068027	1.000 CAL

Lyondell - Houston, TX

Sample ID: LCR 435 TO 071
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
3-02-39 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 3:04:29 PM



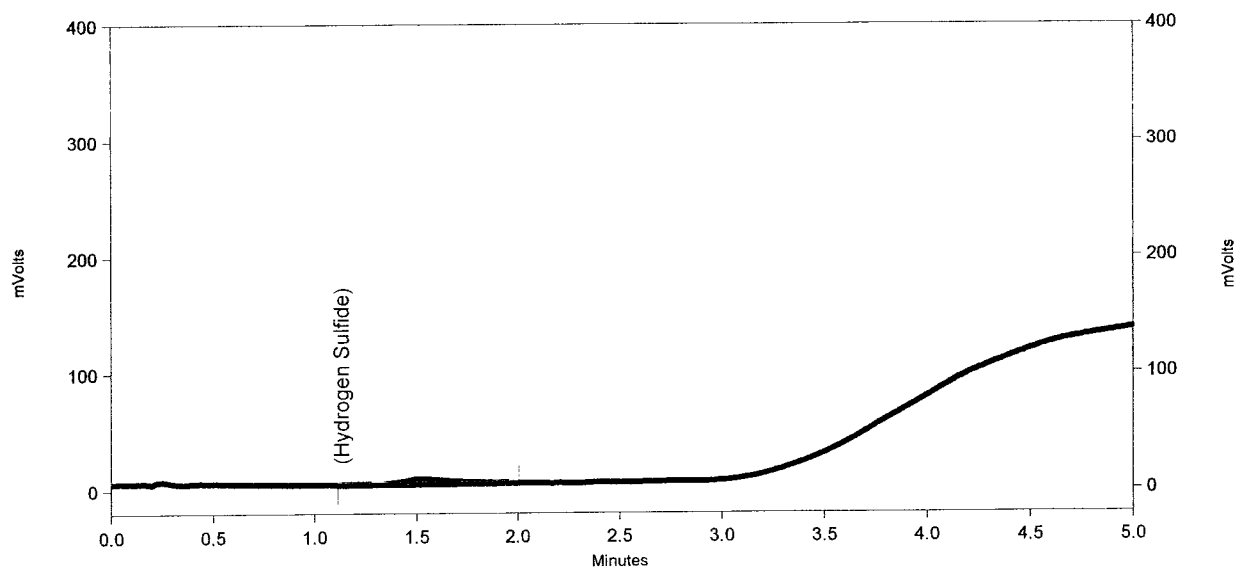
FPD Results			
Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.093	4684	0.005 LC
Totals		4684	0.005 LC

LCR TO 435 Condition: 1450 °F

Lyondell - Houston, TX

Sample ID: LCR 435 TO 001
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
9-34-26 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 9:36:33 AM



FPD Results
Name

Retention Time

Area ESTD concentration
(ppmv)

Hydrogen Sulfide

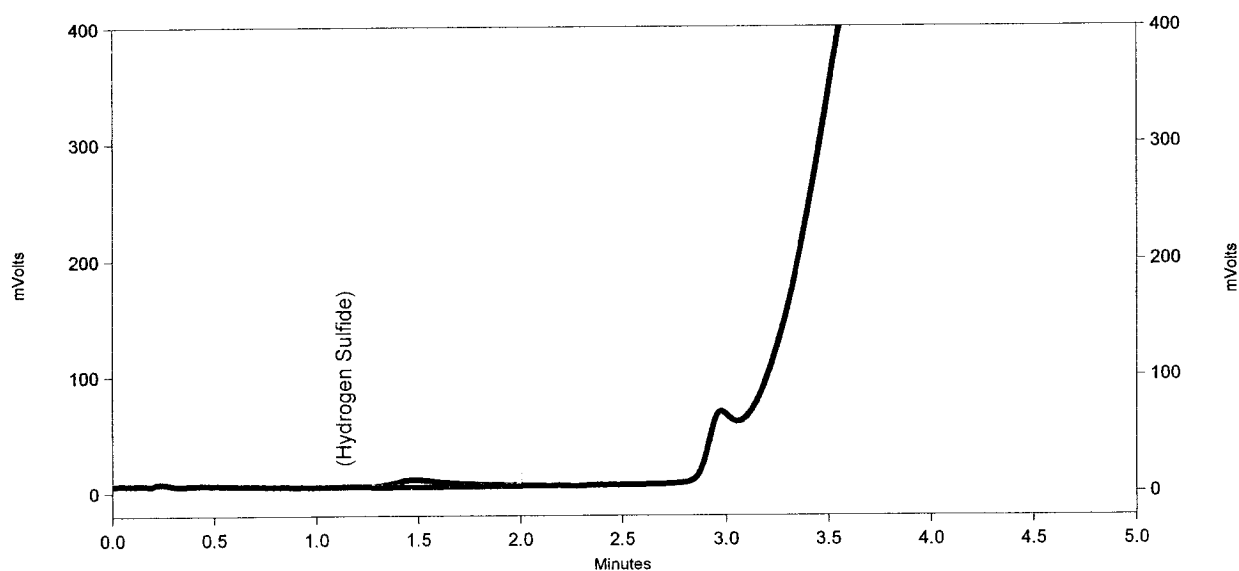
0.000 BDL

Totals			
--------	--	--	--

Lyondell - Houston, TX

Sample ID: LCR 435 TO 002
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
9-41-37 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 9:44:15 AM



FPD Results
Name

Retention Time

Area ESTD concentration
(ppmv)

Hydrogen Sulfide

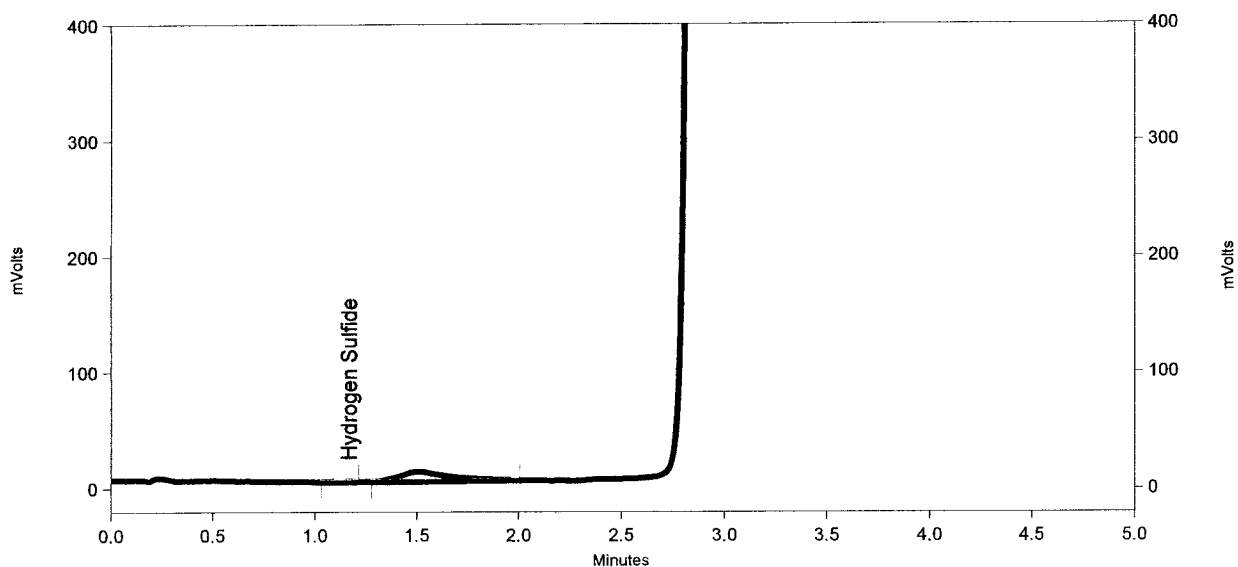
0.000 BDL

Totals			
--------	--	--	--

Lyondell - Houston, TX

Sample ID: LCR 435 TO 003
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
9-49-19 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 9:52:12 AM



FPD Results
Name

Retention Time

Area ESTD concentration
(ppmv)

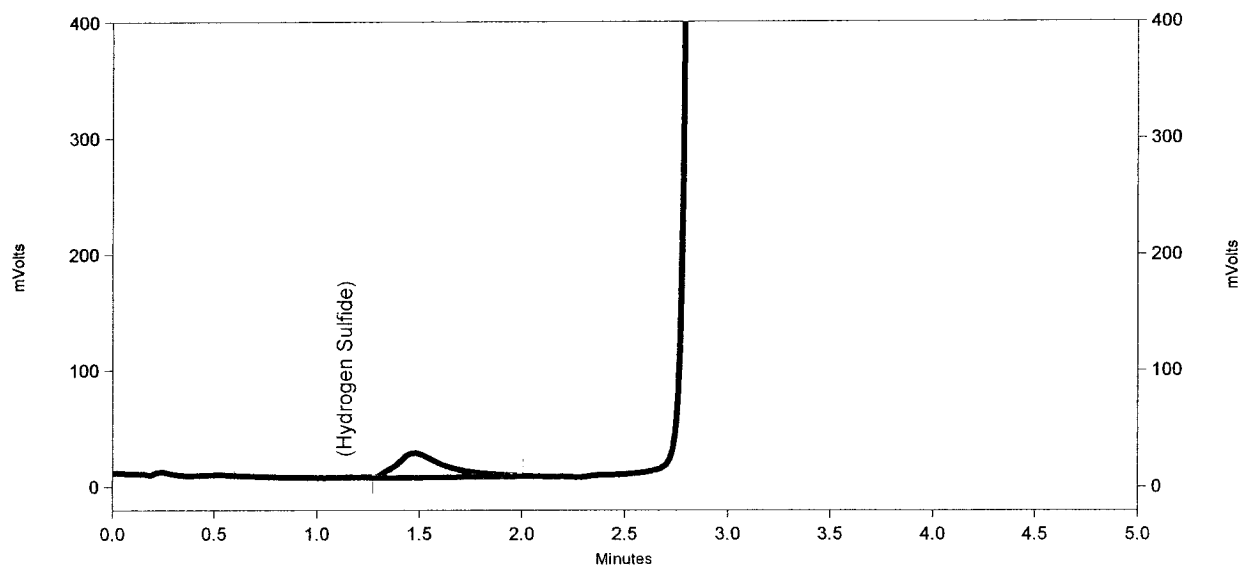
Hydrogen Sulfide	1.165	1321	0.002 LC
------------------	-------	------	----------

Totals		1321	0.002 LC
--------	--	------	----------

Lyondell - Houston, TX

Sample ID: LCR 435 TO 004
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
9-57-17 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 9:59:55 AM



FPD Results

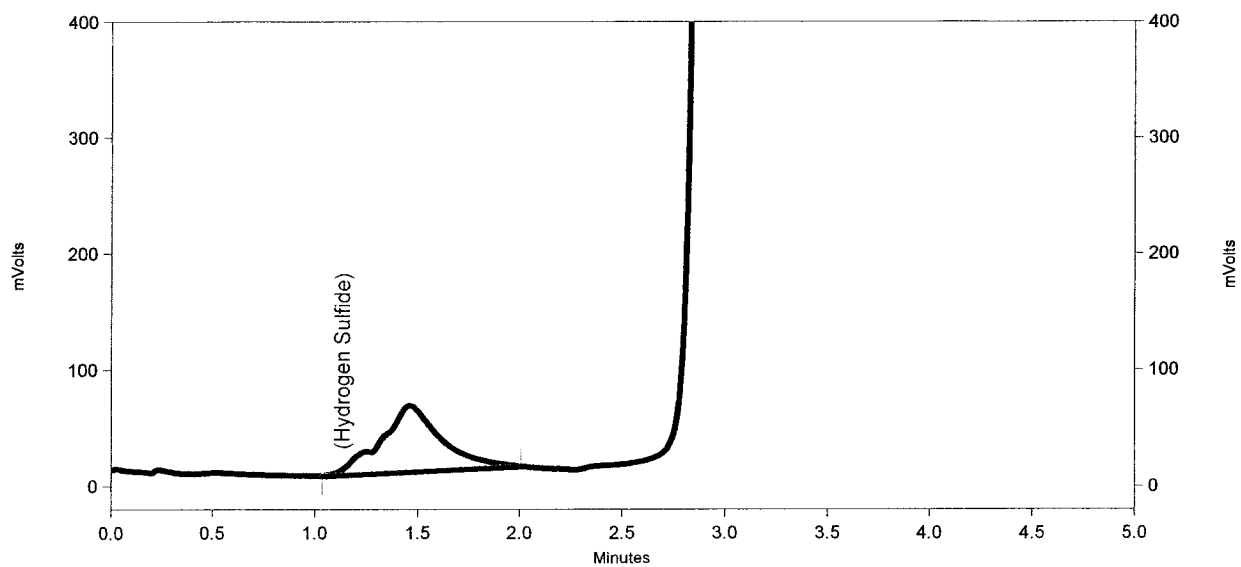
Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide			0.000 BDL

Totals			
--------	--	--	--

Lyondell - Houston, TX

Sample ID: LCR 435 TO 005
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
10-04-58 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 10:07:35 AM



FPD Results

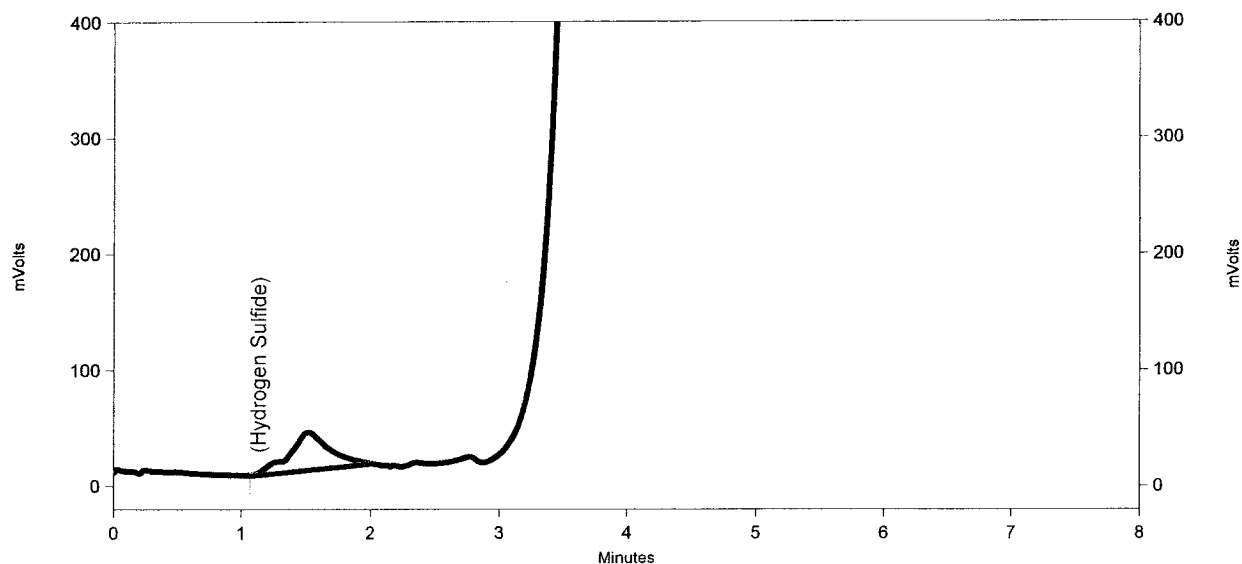
Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide			0.000 BDL

Totals			
--------	--	--	--

Lyondell - Houston, TX

Sample ID: LCR 435 TO 006
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
10-12-39 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 10:17:27 AM



FPD Results

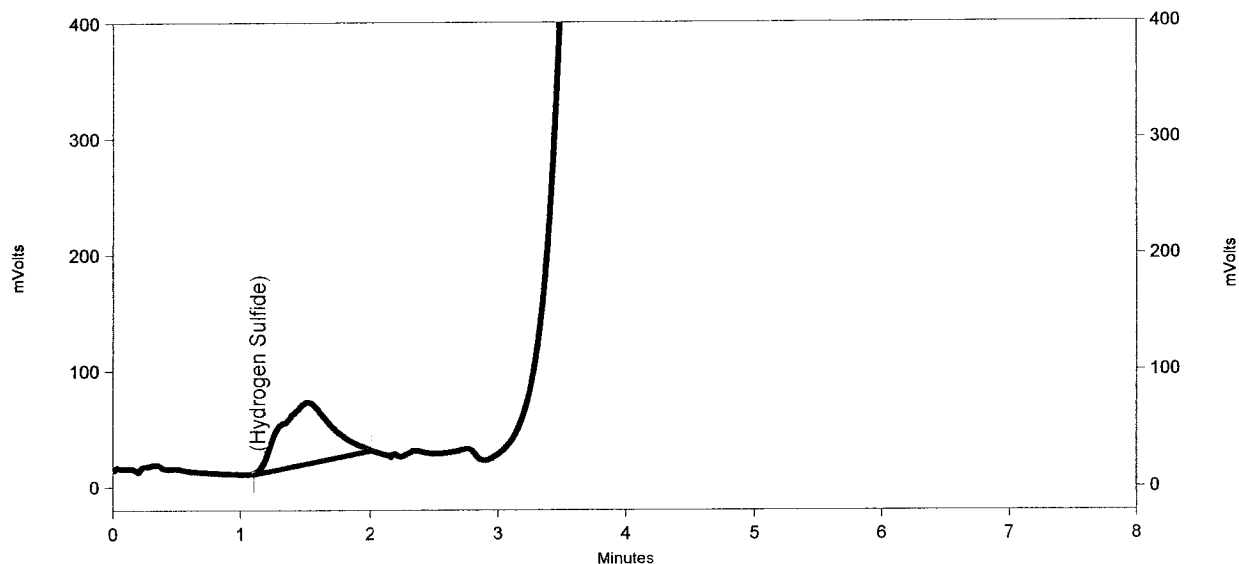
Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide			0.000 BDL

Totals			
--------	--	--	--

Lyondell - Houston, TX

Sample ID: LCR 435 TO 007
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
10-25-31 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 10:30:21 AM



FPD Results

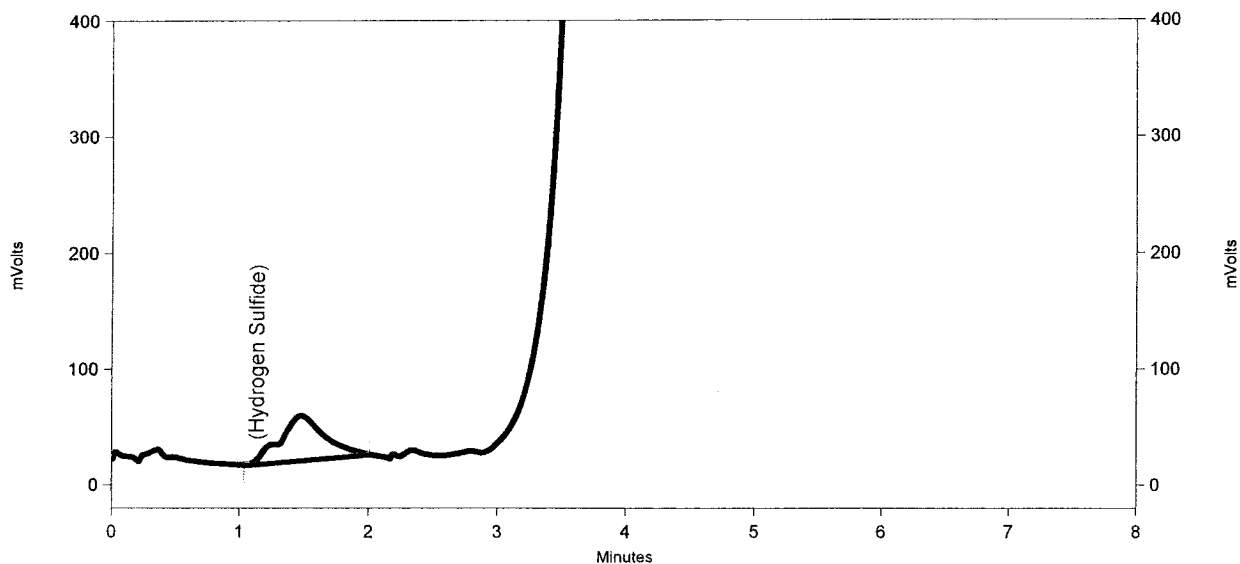
Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide			0.000 BDL

Totals			
--------	--	--	--

Lyondell - Houston, TX

Sample ID: LCR 435 TO 008
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
10-38-25 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 10:44:12 AM



FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
------	----------------	------	---------------------------

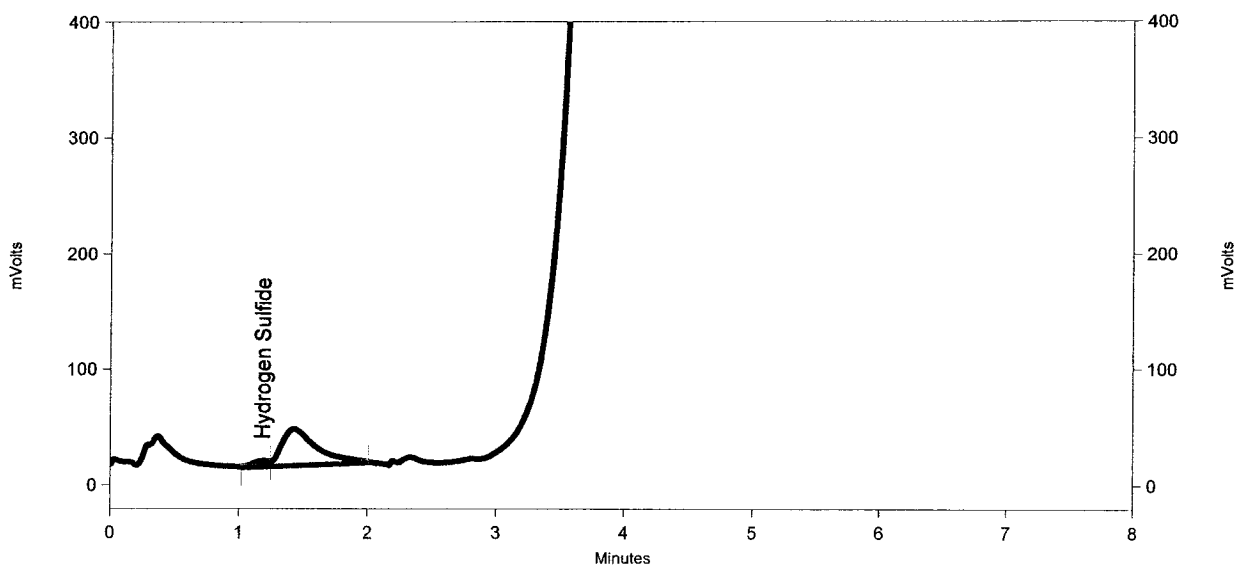
Hydrogen Sulfide			0.000 BDL
------------------	--	--	-----------

Totals			
--------	--	--	--

Lyondell - Houston, TX

Sample ID: LCR 435 TO 009
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
10-52-17 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 10:58:25 AM



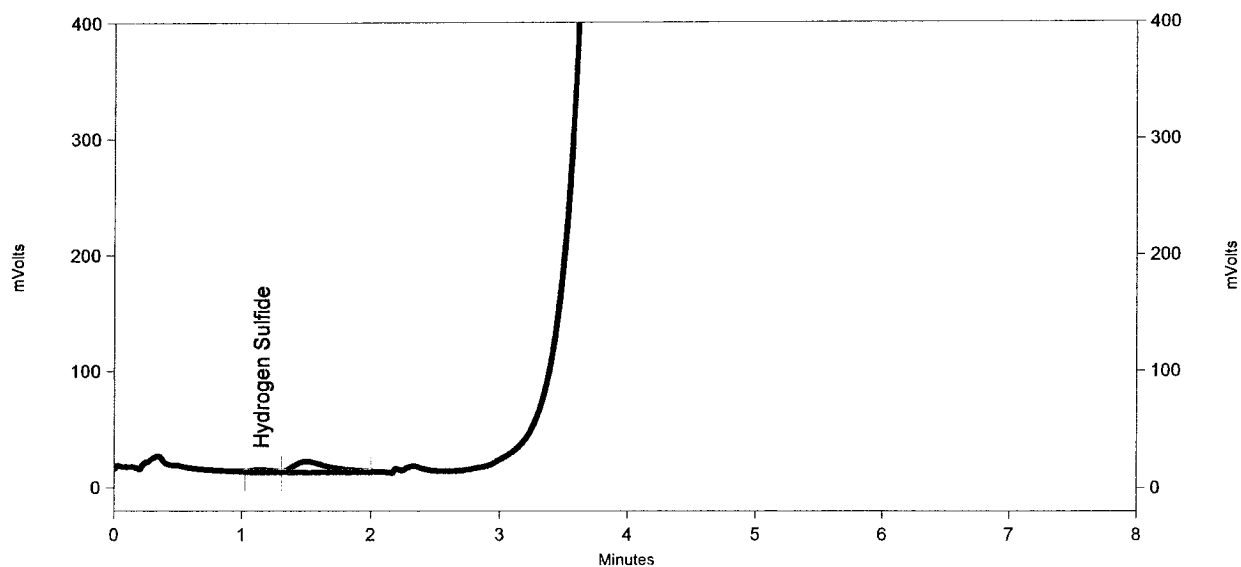
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.180	38294	0.044 LC
Totals		38294	0.044 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 010
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
11-06-28 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 11:12:36 AM



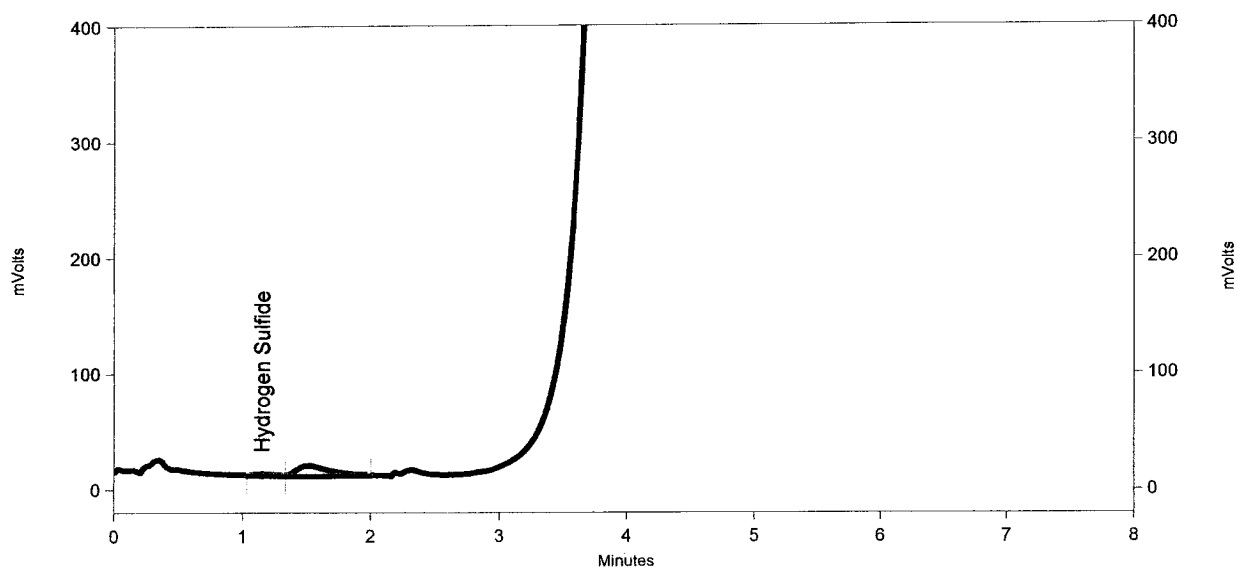
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.148	14355	0.016 LC
Totals		14355	0.016 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 011
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
11-20-42 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 11:26:34 AM



FPD Results
Name

Retention Time

Area ESTD concentration
(ppmv)

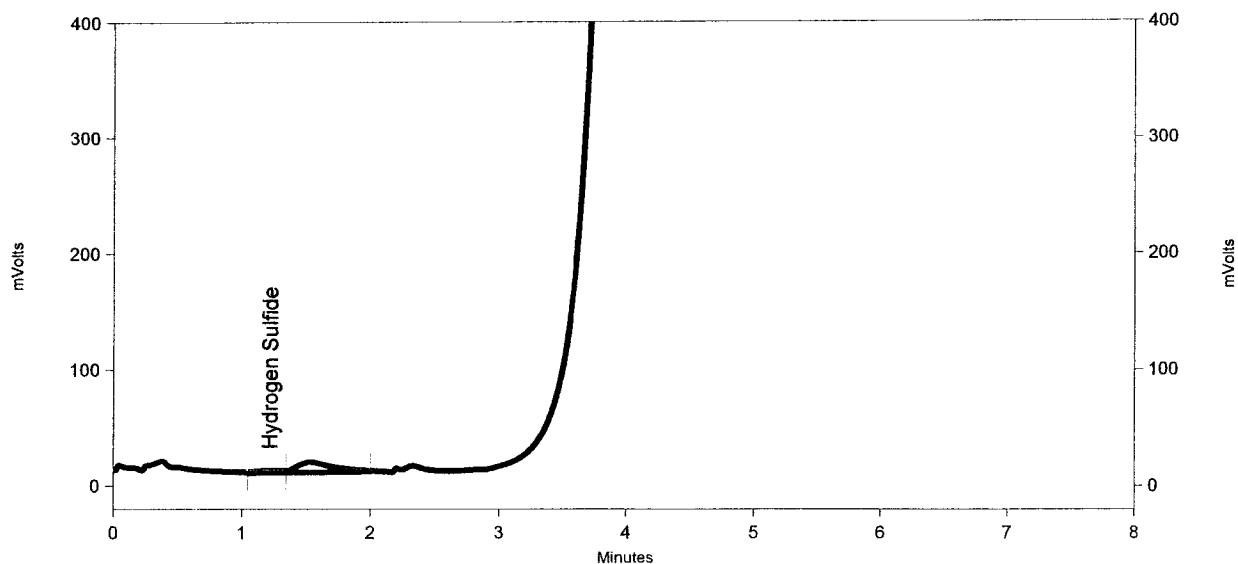
Hydrogen Sulfide	1.152	10553	0.012 LC
------------------	-------	-------	----------

Totals		10553	0.012 LC
--------	--	-------	----------

Lyondell - Houston, TX

Sample ID: LCR 435 TO 012
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
11-34-40 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 11:40:27 AM



FPD Results
Name

Retention Time

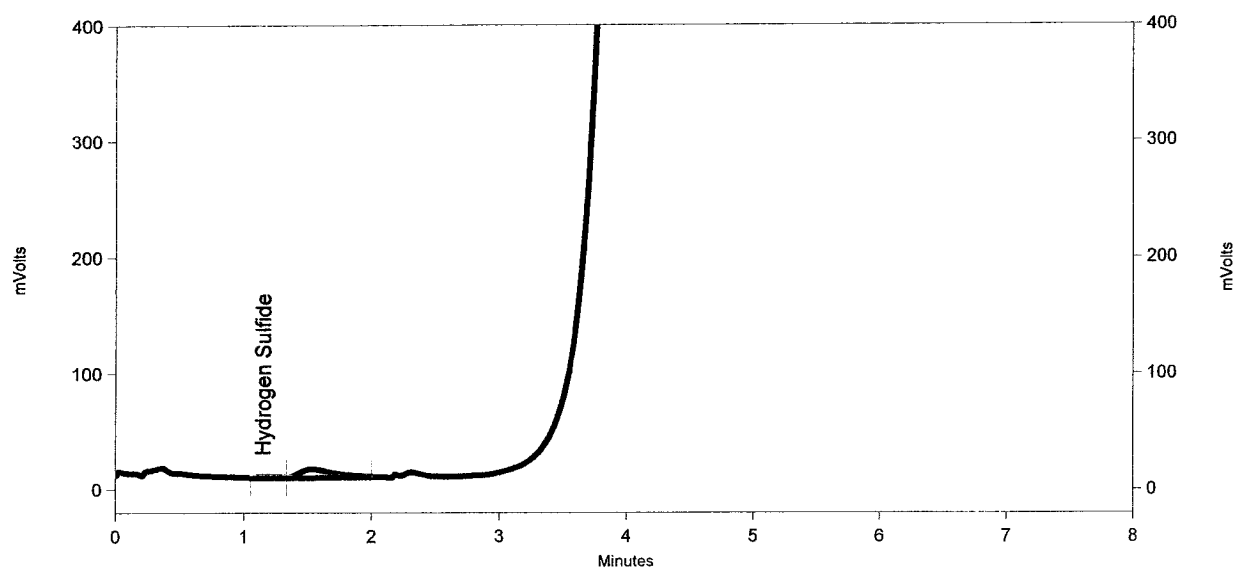
Area ESTD concentration
(ppmv)

Hydrogen Sulfide	1.215	16376	0.019 LC
Totals		16376	0.019 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 013
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
11-48-32 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 11:54:24 AM



FPD Results
Name

Retention Time

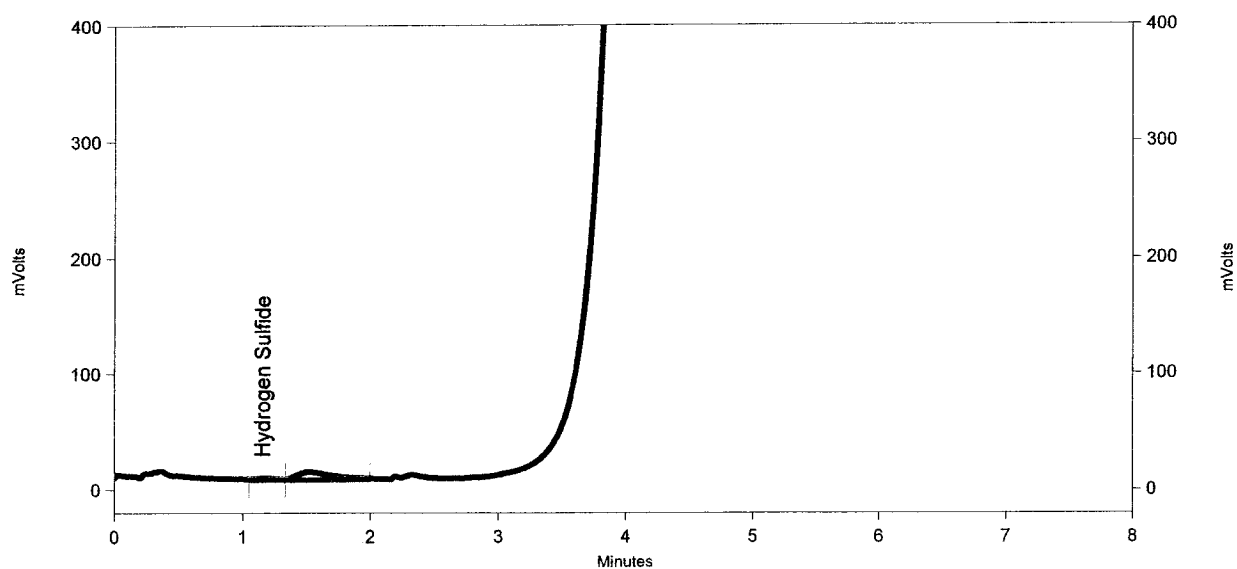
Area ESTD concentration
(ppmv)

Hydrogen Sulfide	1.152	6249	0.007 LC
Totals		6249	0.007 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 014
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
12-02-28 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 12:08:36 PM



FPD Results
Name

Retention Time

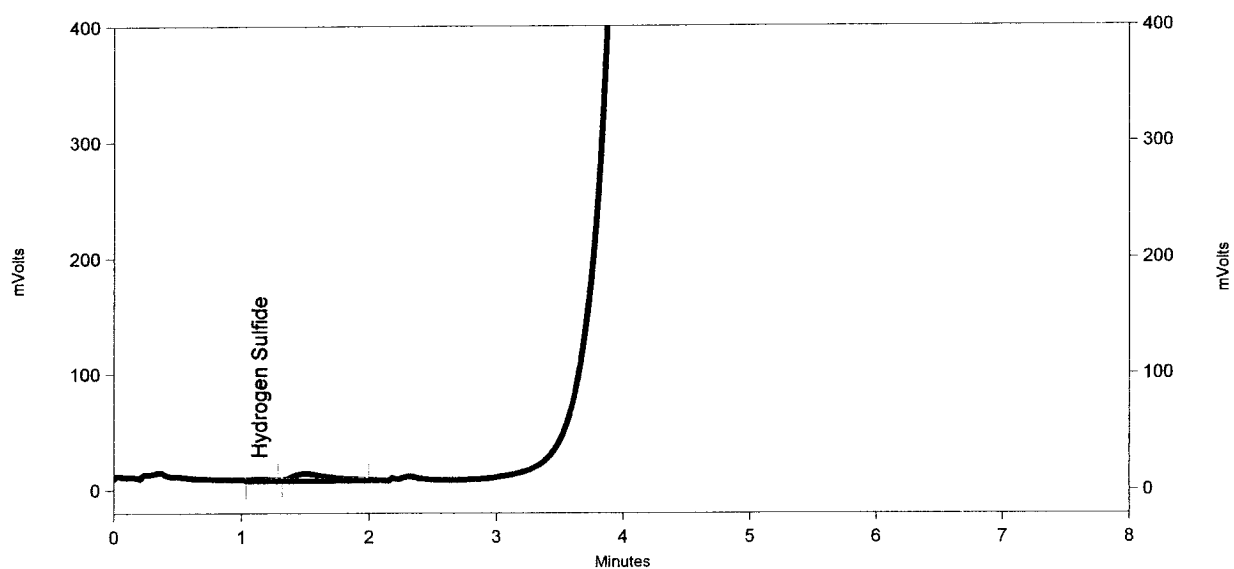
Area ESTD concentration
(ppmv)

Hydrogen Sulfide	1.155	7542	0.009 LC
Totals		7542	0.009 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 015
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
12-16-40 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 12:22:48 PM



FPD Results
Name

Retention Time

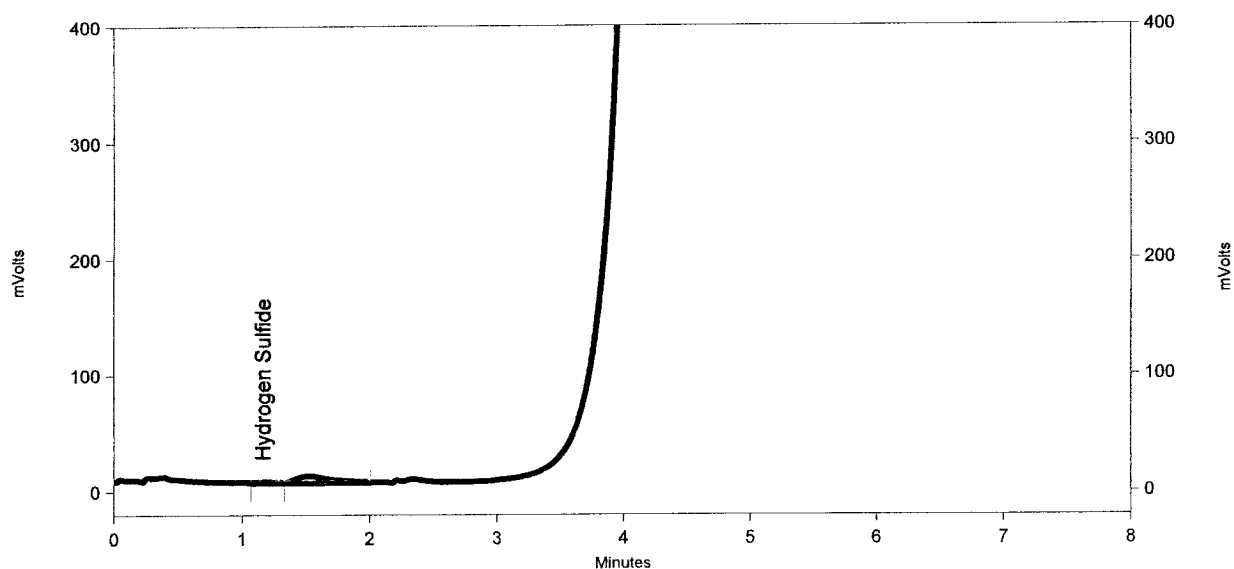
Area ESTD concentration
(ppmv)

Hydrogen Sulfide	1.138	6256	0.007 LC
Totals		6256	0.007 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 016
 Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
 Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
 12-30-52 pm.dat
 Product: Shimadzu Client/Server
 Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 12:36:58 PM



FPD Results
Name

Retention Time

Area ESTD concentration
(ppmv)

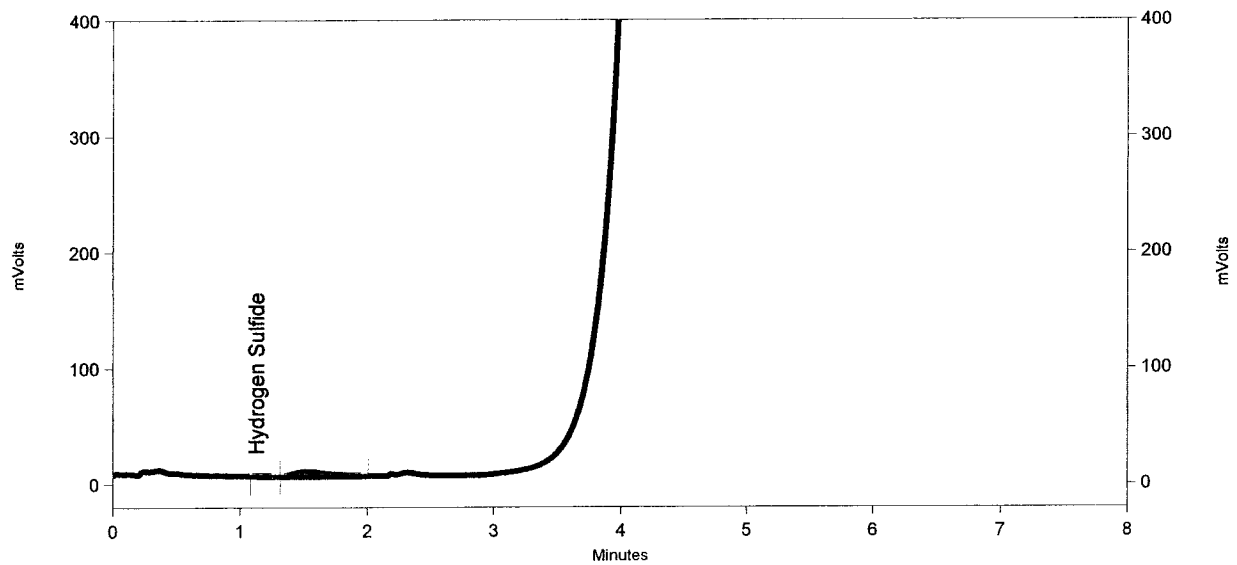
Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.162	4652	0.005 LC

Totals		4652	0.005 LC
--------	--	------	----------

Lyondell - Houston, TX

Sample ID: LCR 435 TO 017
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
12-45-01 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 12:51:25 PM



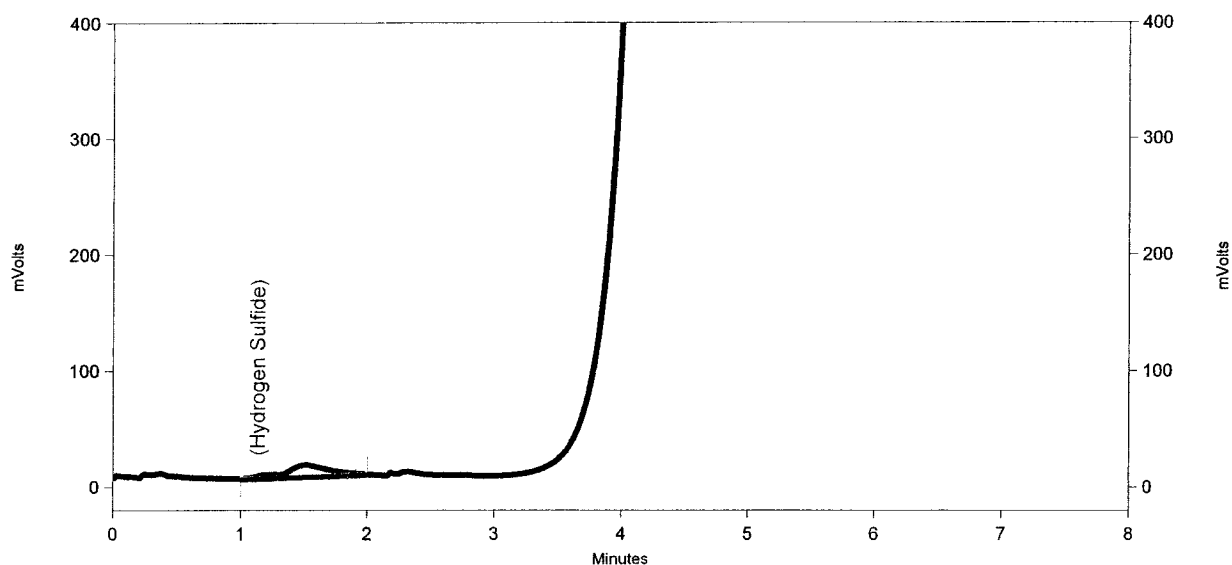
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.130	3760	0.004 LC
Totals		3760	0.004 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 018
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
12-59-30 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 1:05:38 PM



FPD Results

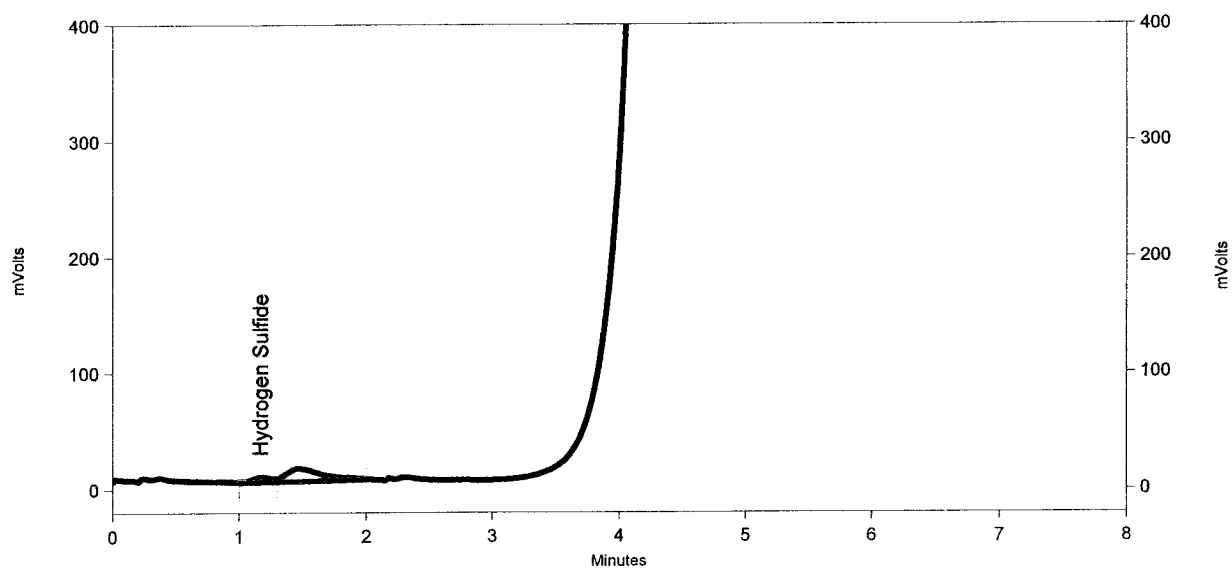
Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide			0.000 BDL

Totals			
--------	--	--	--

Lyondell - Houston, TX

Sample ID: LCR 435 TO 019
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
1-13-42 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 1:19:50 PM



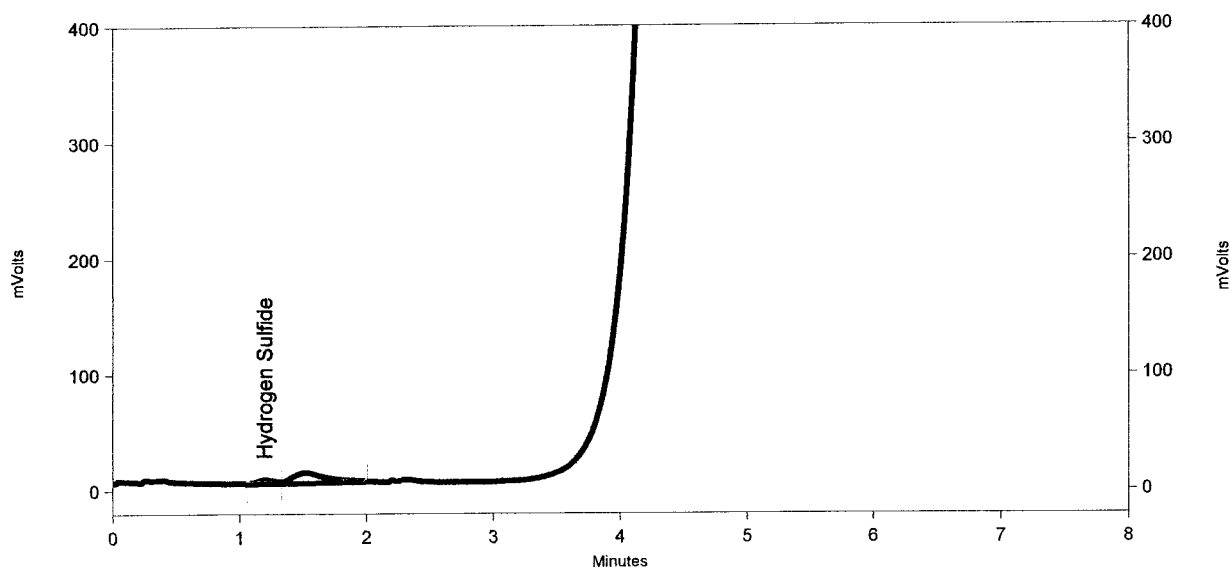
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.170	38548	0.044 LC
Totals		38548	0.044 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 020
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
1-27-55 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 1:33:47 PM



FPD Results
Name

Retention Time

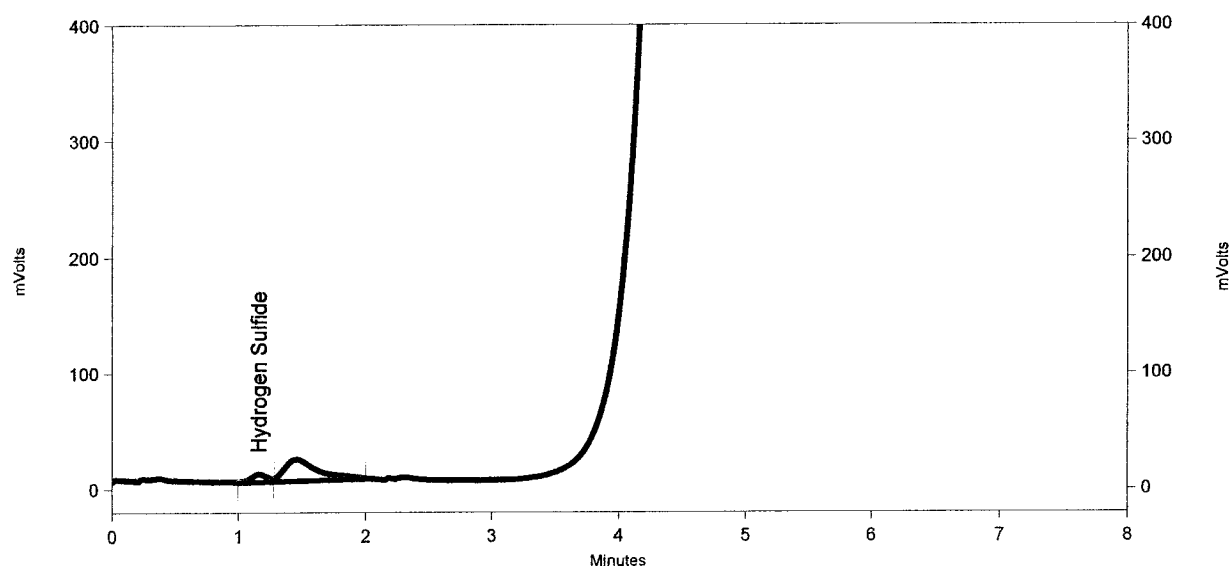
Area ESTD concentration
(ppmv)

Hydrogen Sulfide	1.198	26392	0.030 LC
Totals		26392	0.030 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 021
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
1-41-52 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 1:48:16 PM



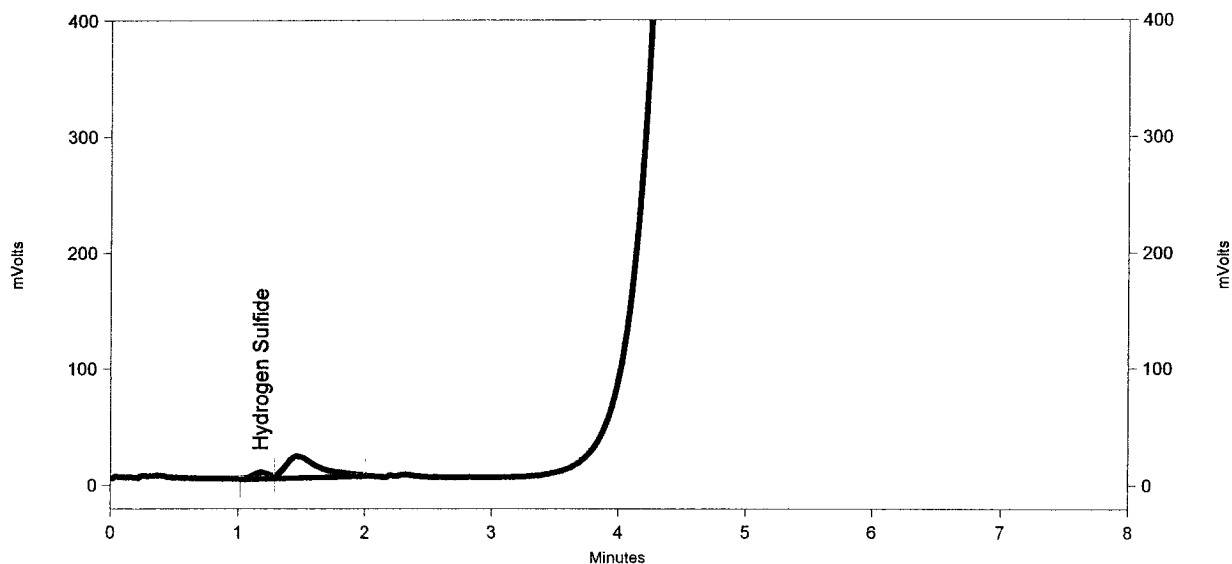
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.160	52982	0.060 LC
Totals		52982	0.060 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 022
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
1-56-19 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 2:02:43 PM



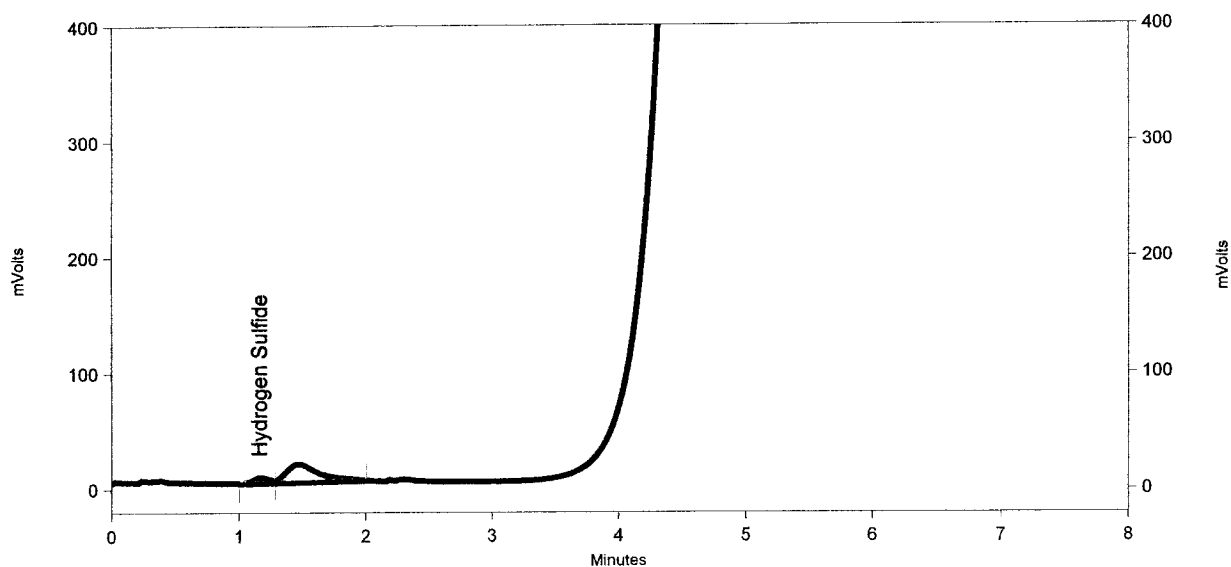
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.175	42957	0.049 LC
Totals		42957	0.049 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 023
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
2-10-48 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 2:17:13 PM



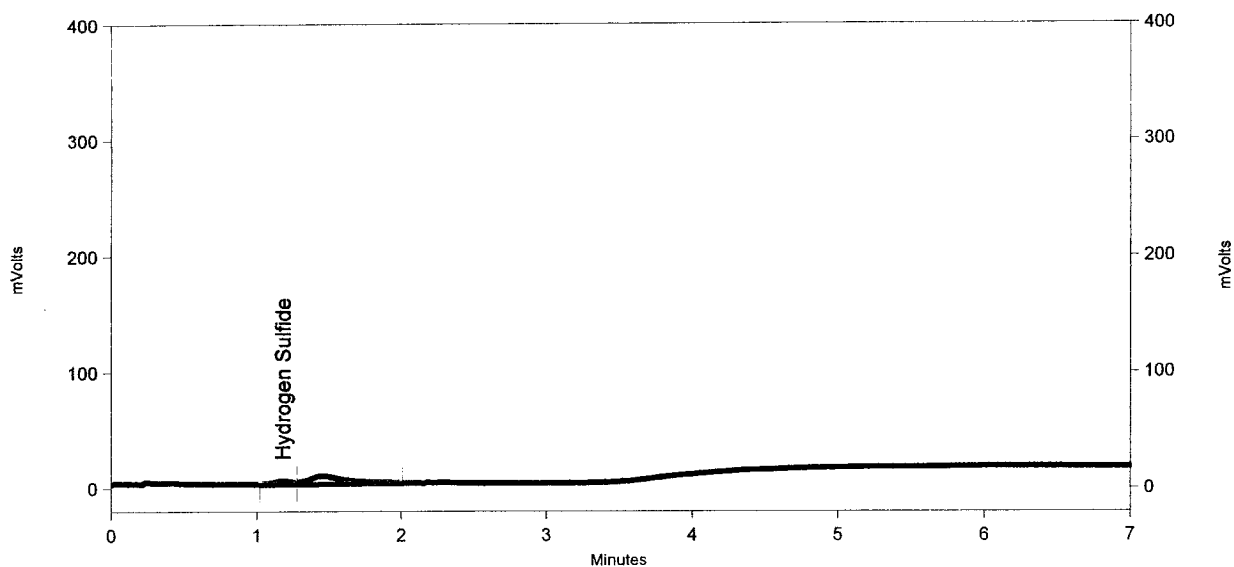
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.158	40221	0.046 LC
Totals		40221	0.046 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 024
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
4-08-47 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 4:09:18 PM



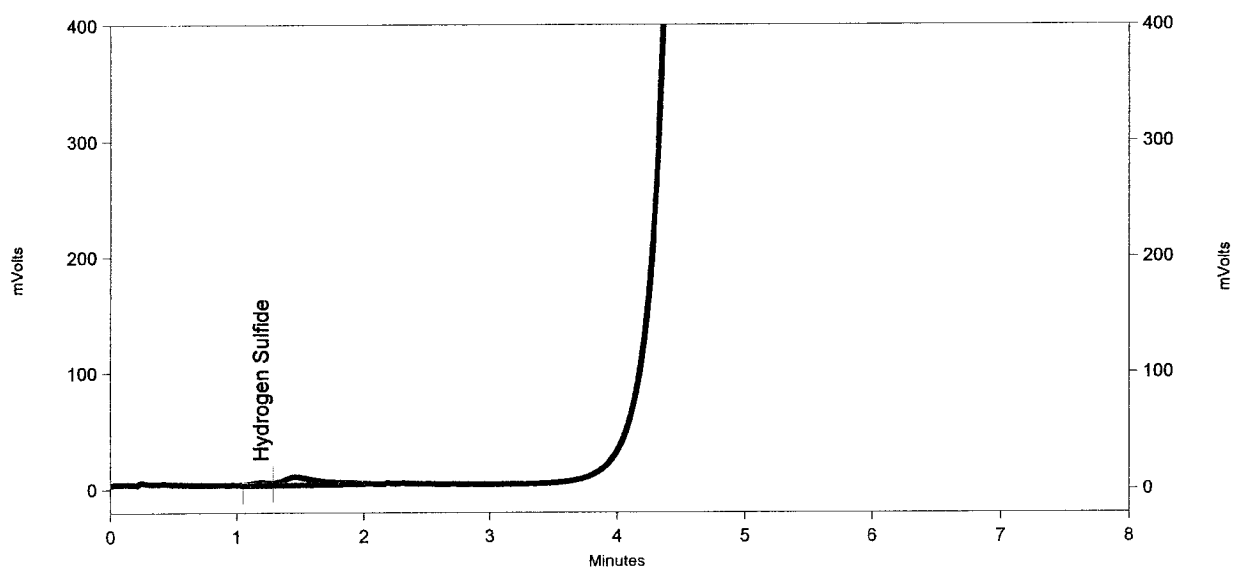
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.182	21443	0.024 LC
Totals		21443	0.024 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 025
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
4-16-22 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 4:20:55 PM



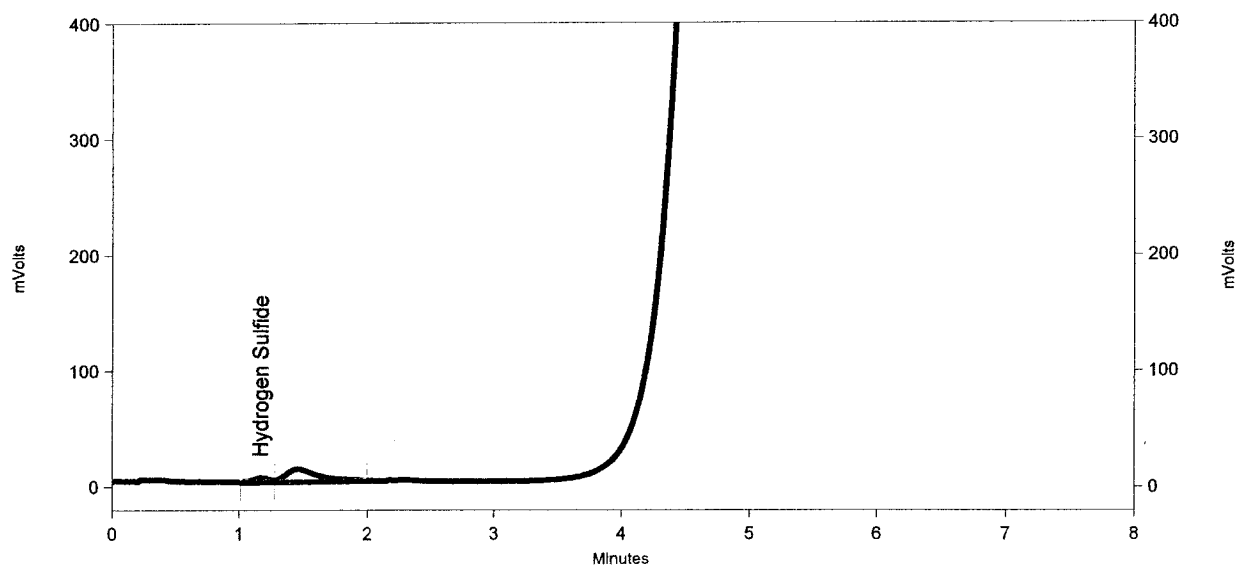
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.190	16798	0.019 LC
Totals		16798	0.019 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 026
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
4-29-00 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 4:35:24 PM



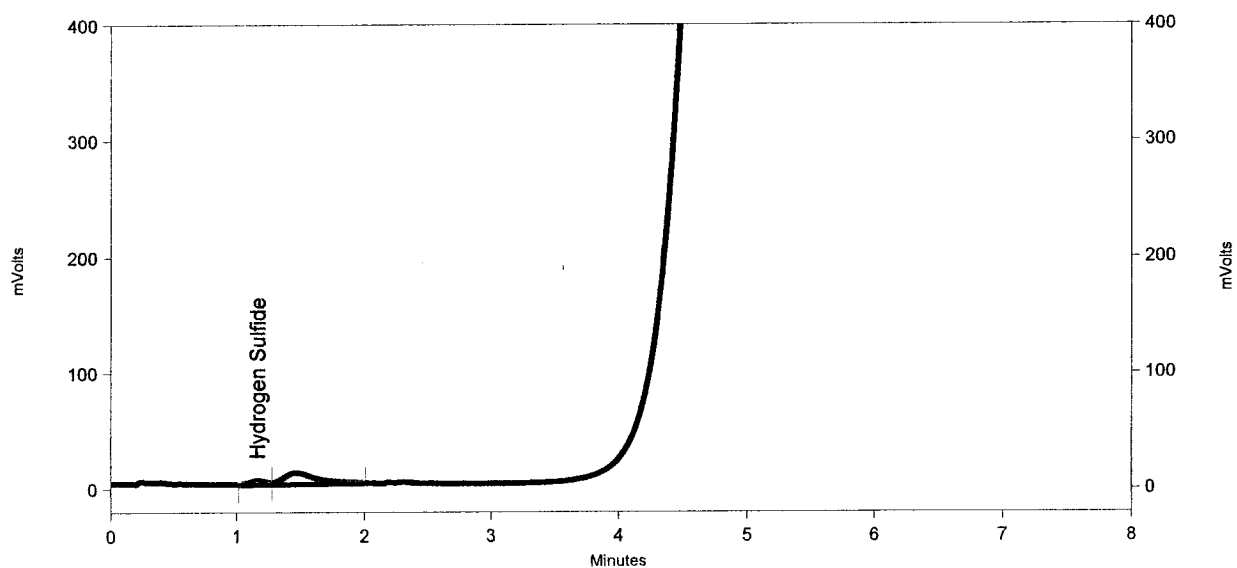
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.167	28538	0.032 LC
Totals		28538	0.032 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 027
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
4-43-27 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 4:49:51 PM



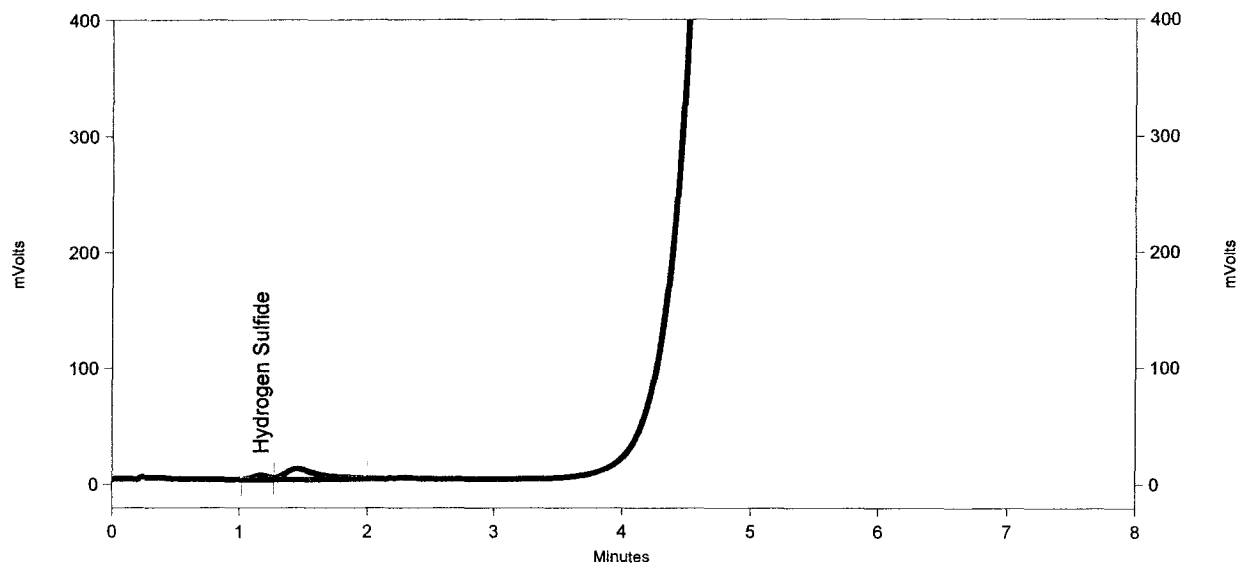
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.165	25958	0.030 LC
Totals		25958	0.030 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 028
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
4-57-56 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 5:04:04 PM



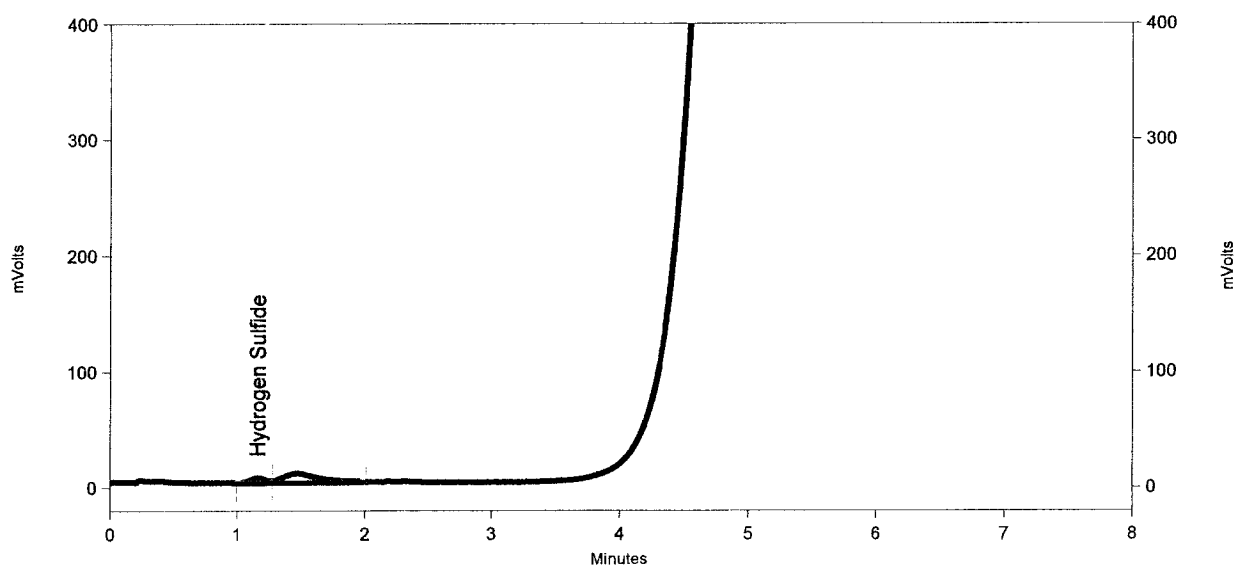
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.167	27904	0.032 LC
Totals		27904	0.032 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 029
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
5-12-09 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 5:18:16 PM



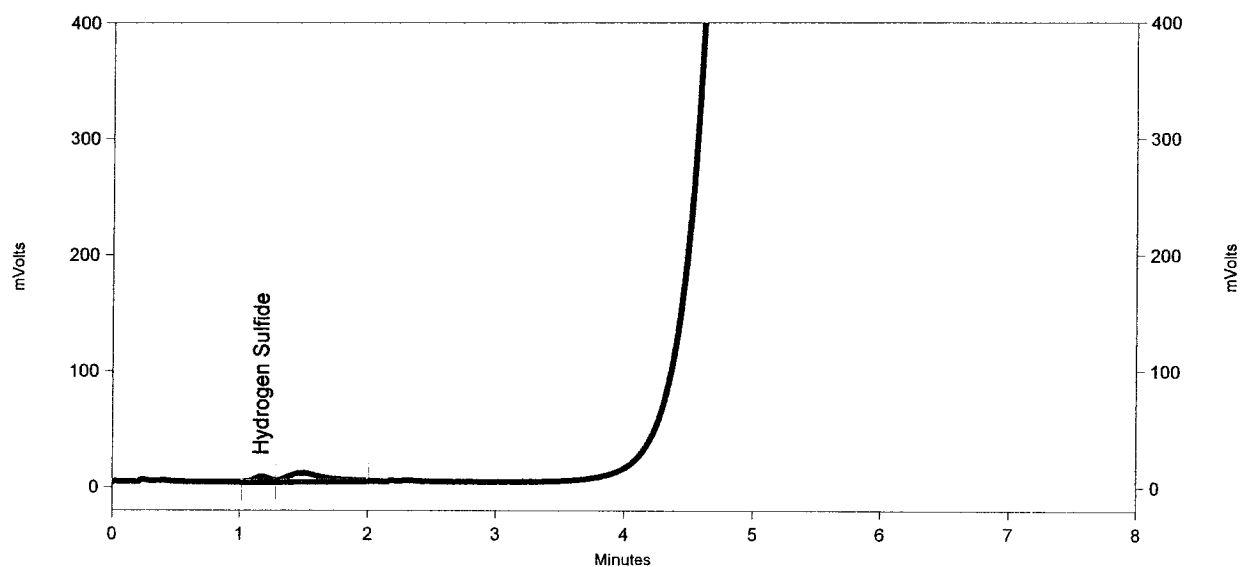
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.167	33883	0.039 LC
Totals		33883	0.039 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 030
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
5-26-20 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 5:33:00 PM



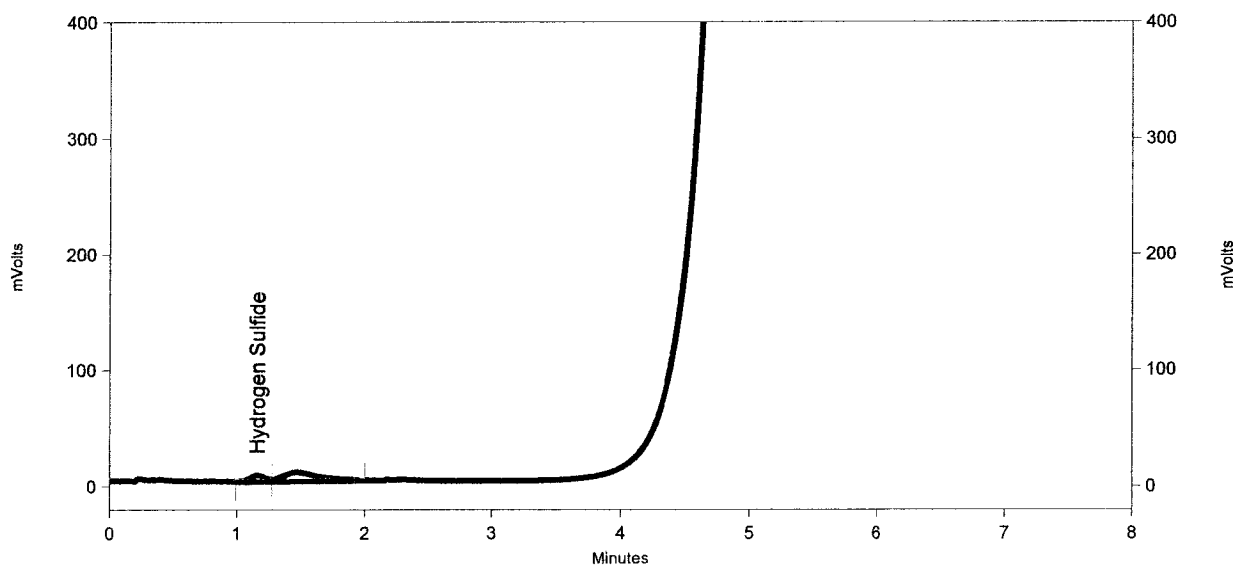
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.165	36719	0.042 LC
Totals		36719	0.042 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 031
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
5-41-05 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 5:48:00 PM



FPD Results

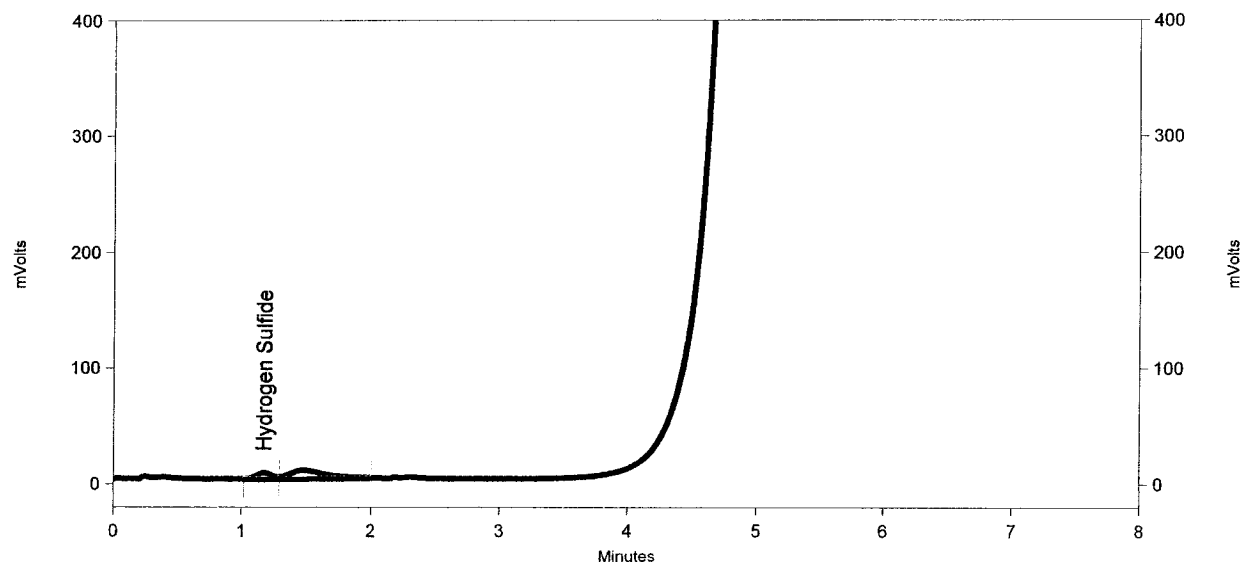
Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.165	41903	0.048 LC

Totals		41903	0.048 LC
--------	--	-------	----------

Lyondell - Houston, TX

Sample ID: LCR 435 TO 032
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
5-56-04 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 6:02:59 PM



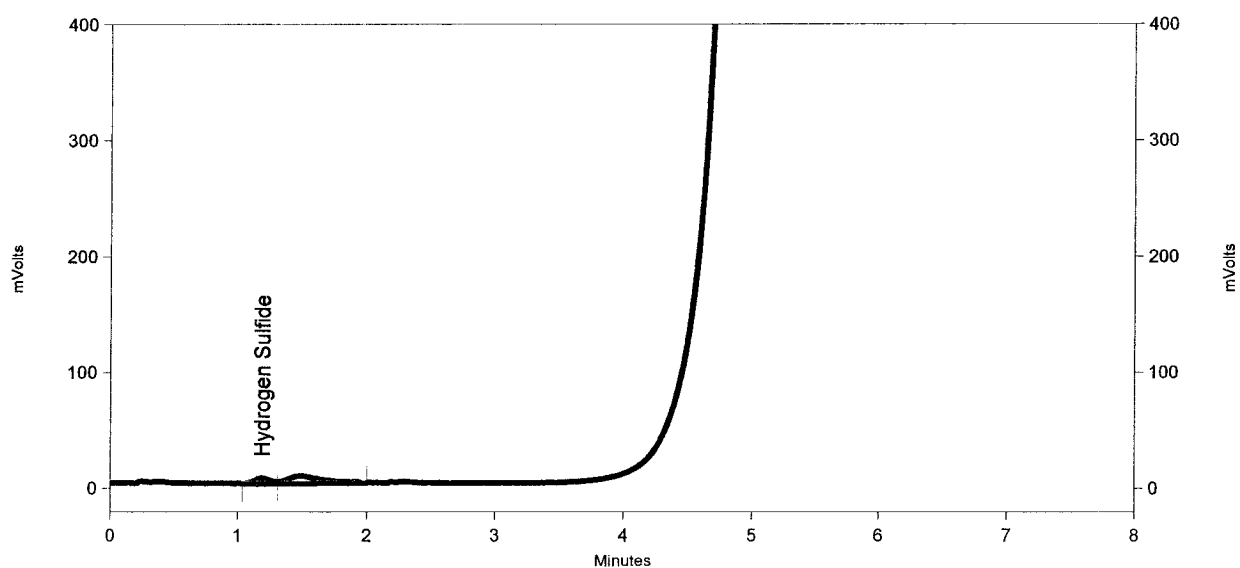
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.173	42345	0.048 LC
Totals		42345	0.048 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 033
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
6-11-02 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 6:18:13 PM



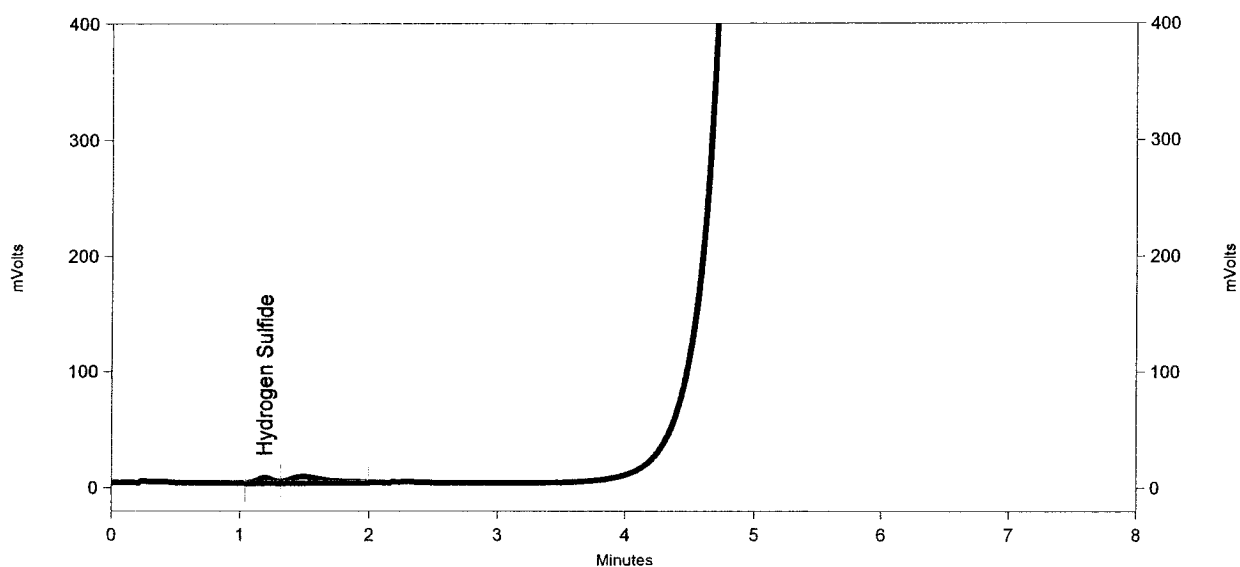
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.188	34567	0.039 LC
Totals		34567	0.039 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 034
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
6-26-17 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 6:33:12 PM



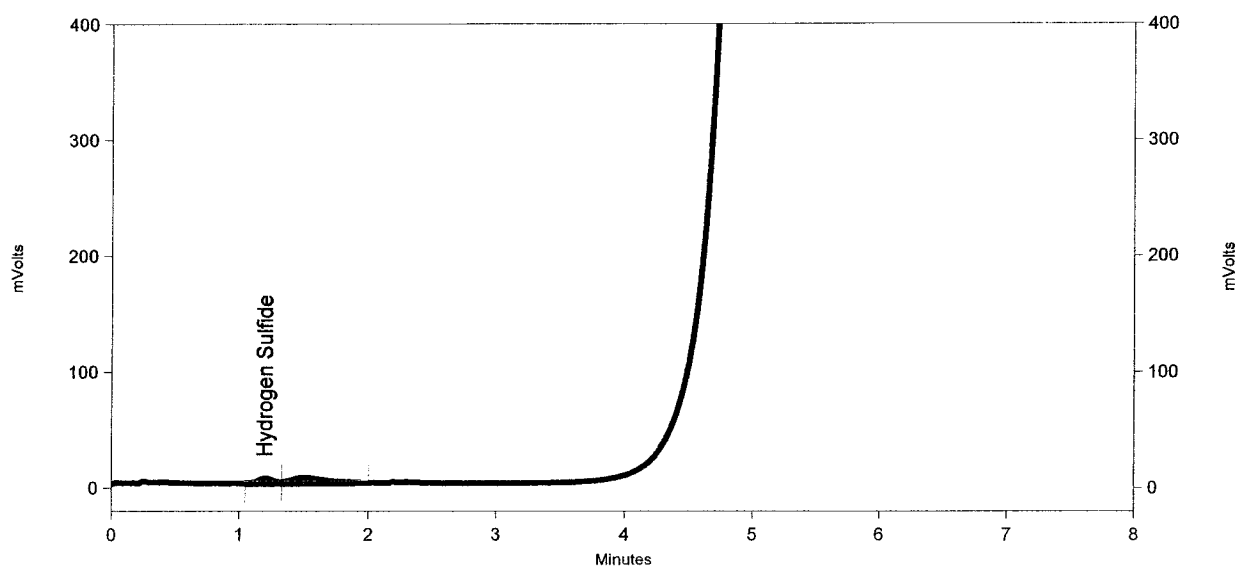
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.192	35445	0.040 LC
Totals		35445	0.040 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 035
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
6-41-16 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 6:48:26 PM



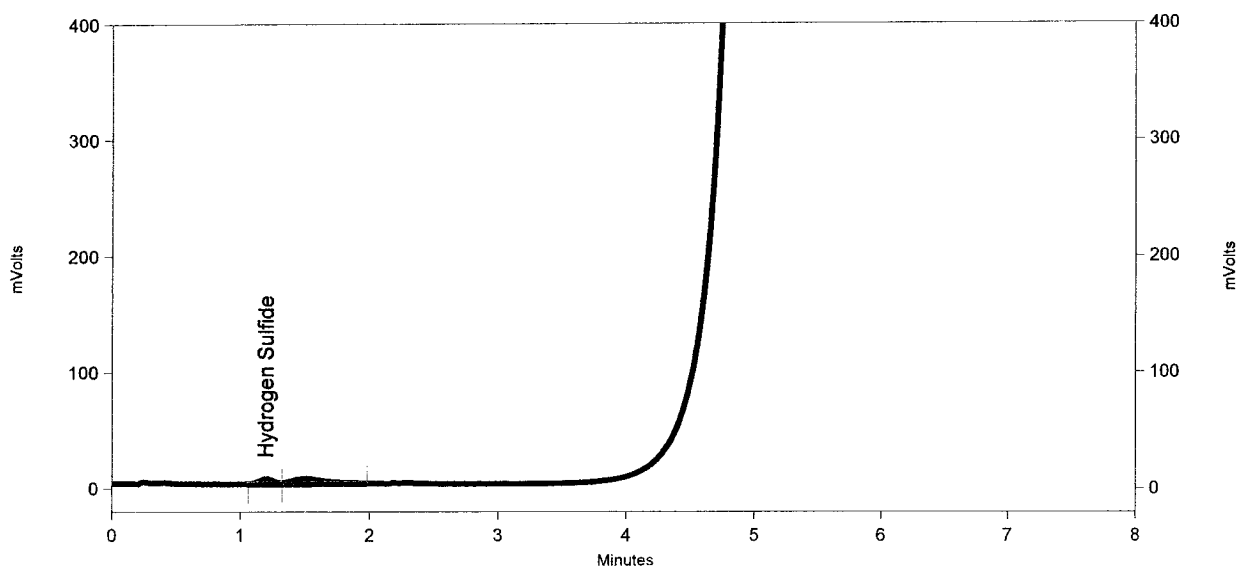
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.198	35829	0.041 LC
Totals		35829	0.041 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 036
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
6-56-29 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 7:03:25 PM



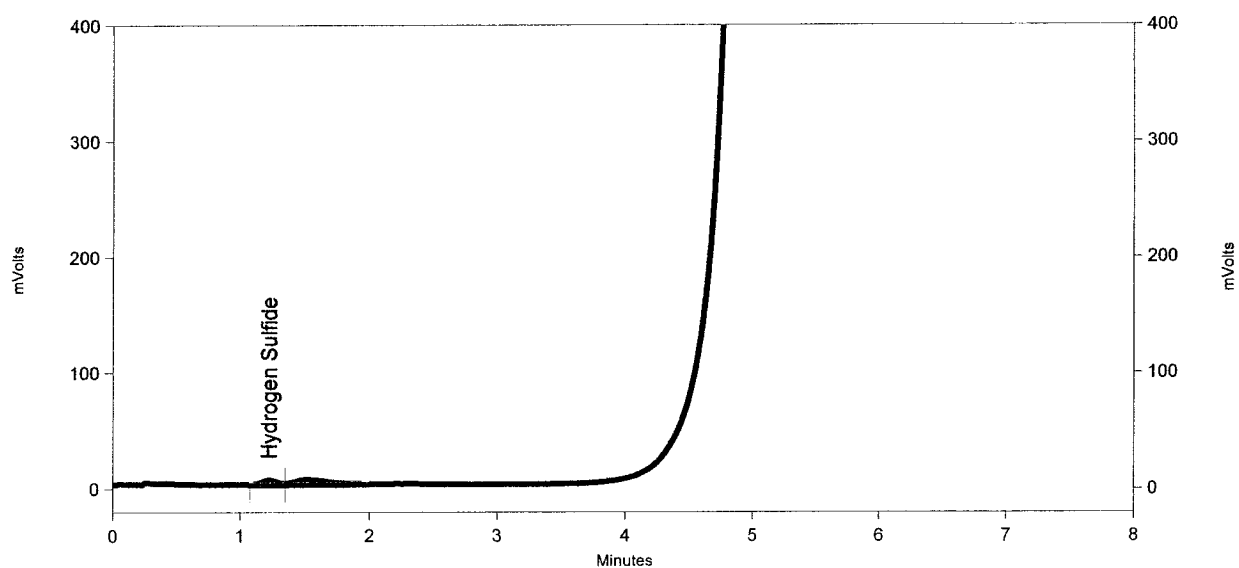
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.195	34183	0.039 LC
Totals		34183	0.039 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 037
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
7-11-28 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 7:18:38 PM



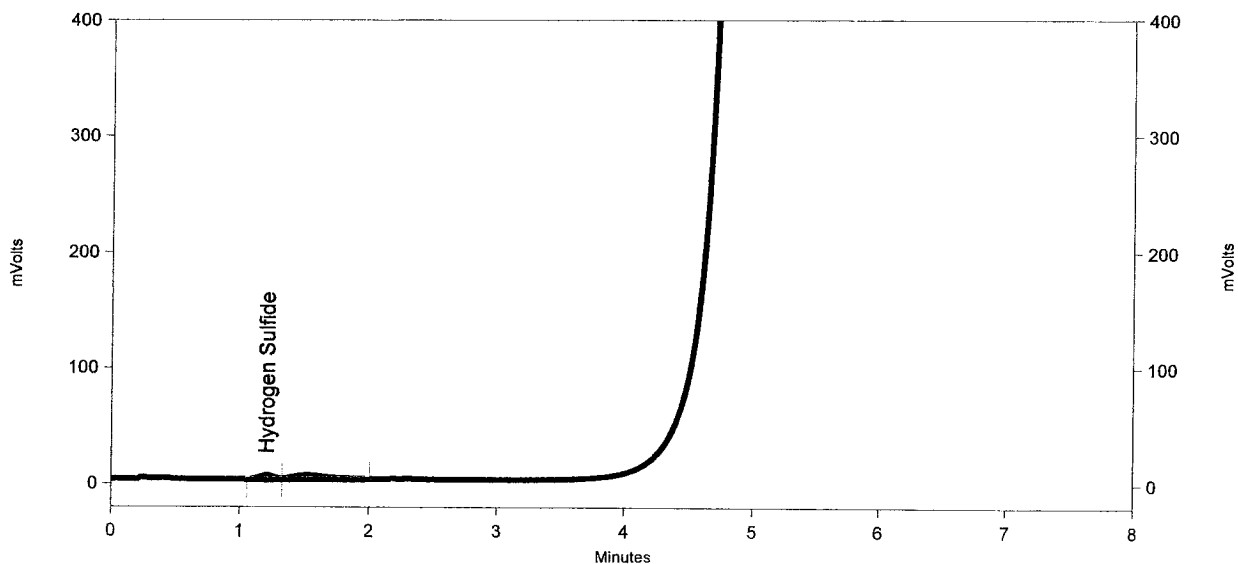
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.225	30847	0.035 LC
Totals		30847	0.035 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 038
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-25-2005
7-26-42 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/25/2005 7:33:53 PM



FPD Results

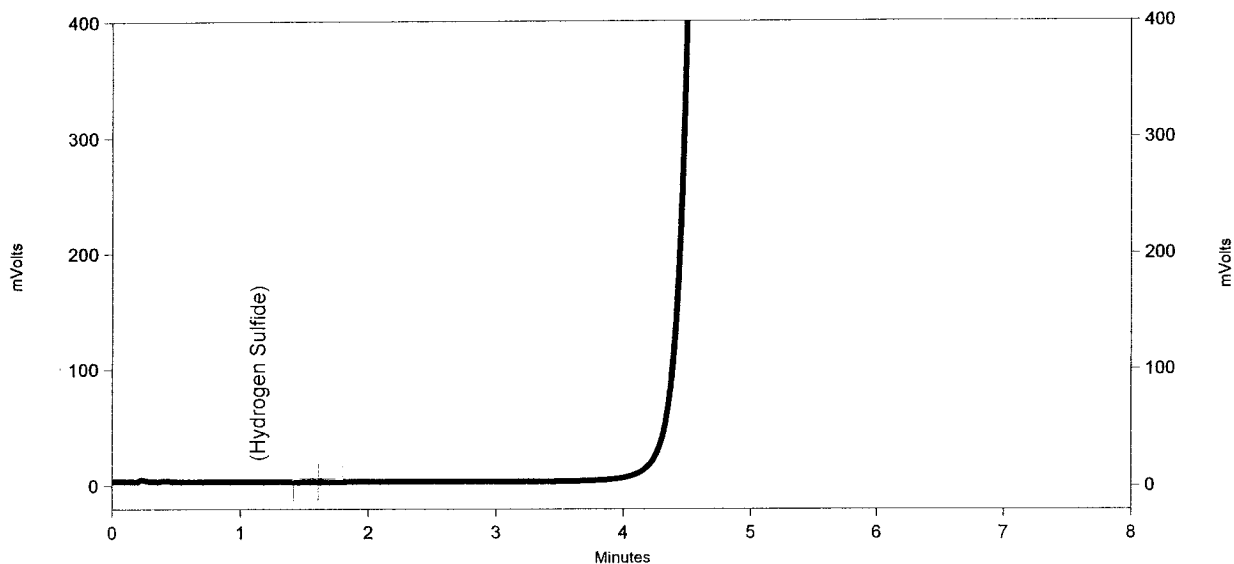
Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.205	28875	0.033 LC
Totals		28875	0.033 LC

LCR TO 435 Condition: 1500 °F

Lyondell - Houston, TX

Sample ID: LCR 435 TO 039
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
7-49-50 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 7:51:41 AM



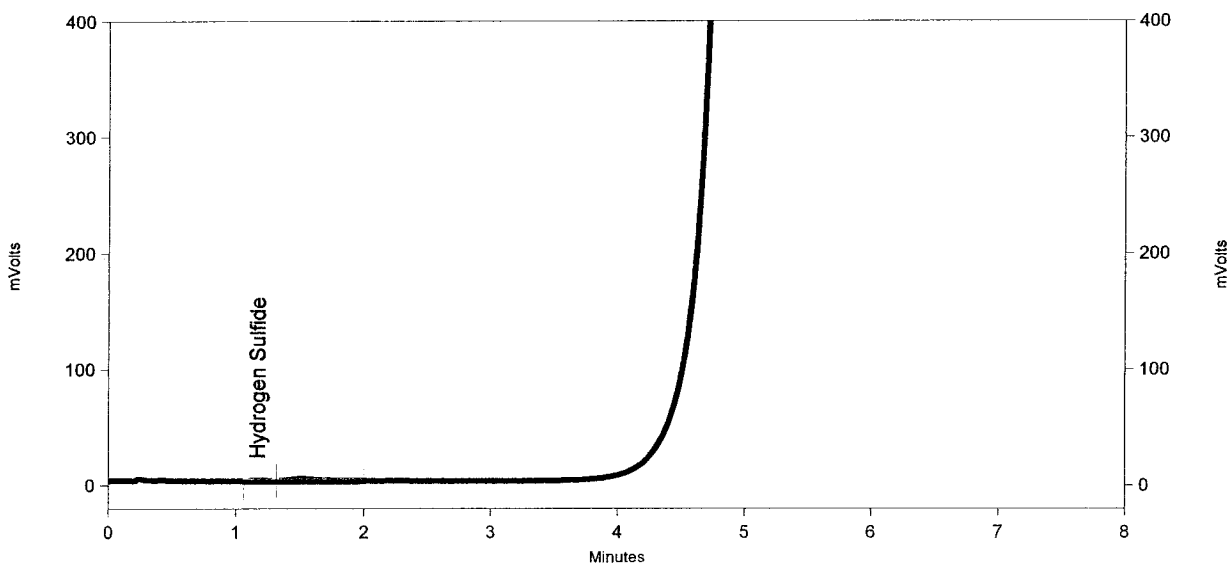
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide			0.000 BDL
Totals			

Lyondell - Houston, TX

Sample ID: LCR 435 TO 040
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
7-59-46 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 8:05:53 AM



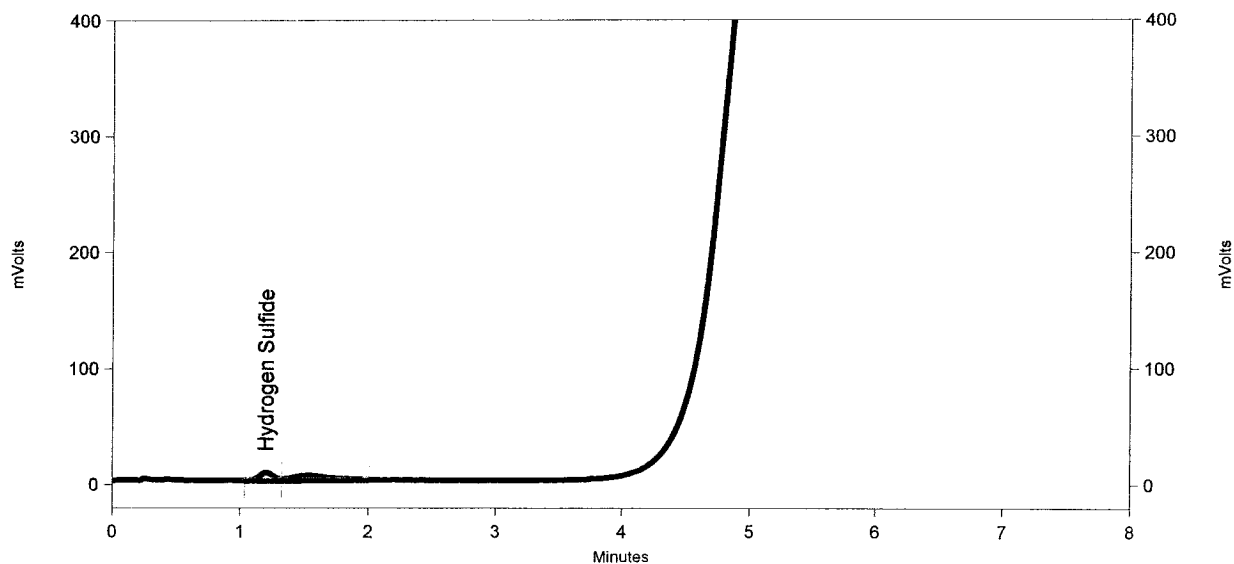
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.168	7323	0.008 LC
Totals		7323	0.008 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 041
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
8-13-57 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 8:20:06 AM



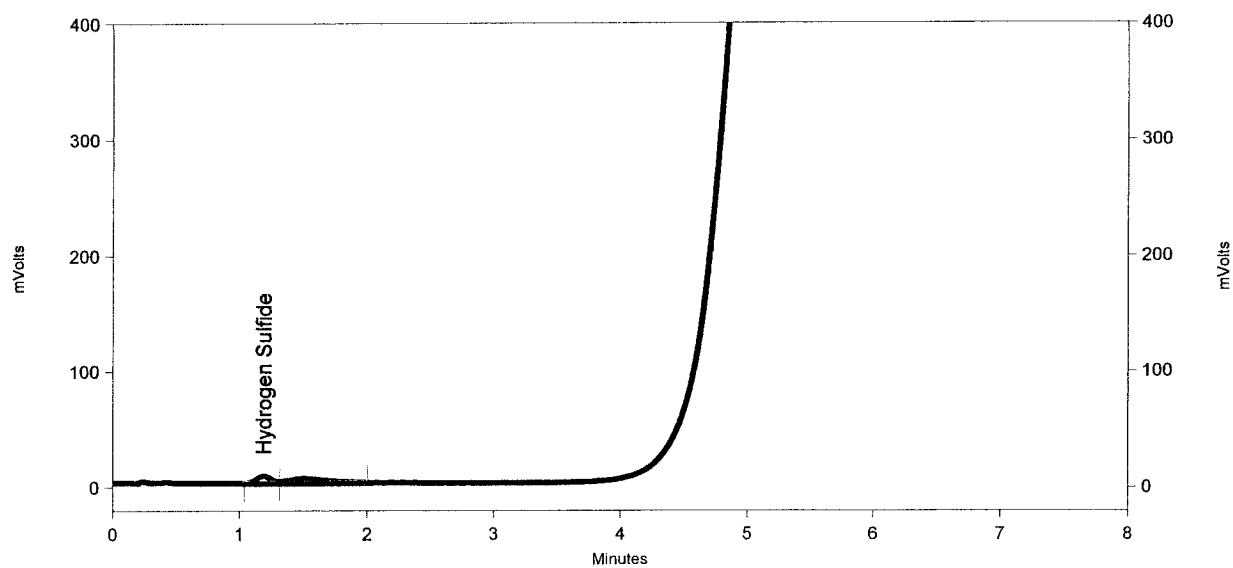
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.198	50501	0.057 LC
Totals		50501	0.057 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 042
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
8-28-10 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 8:34:34 AM



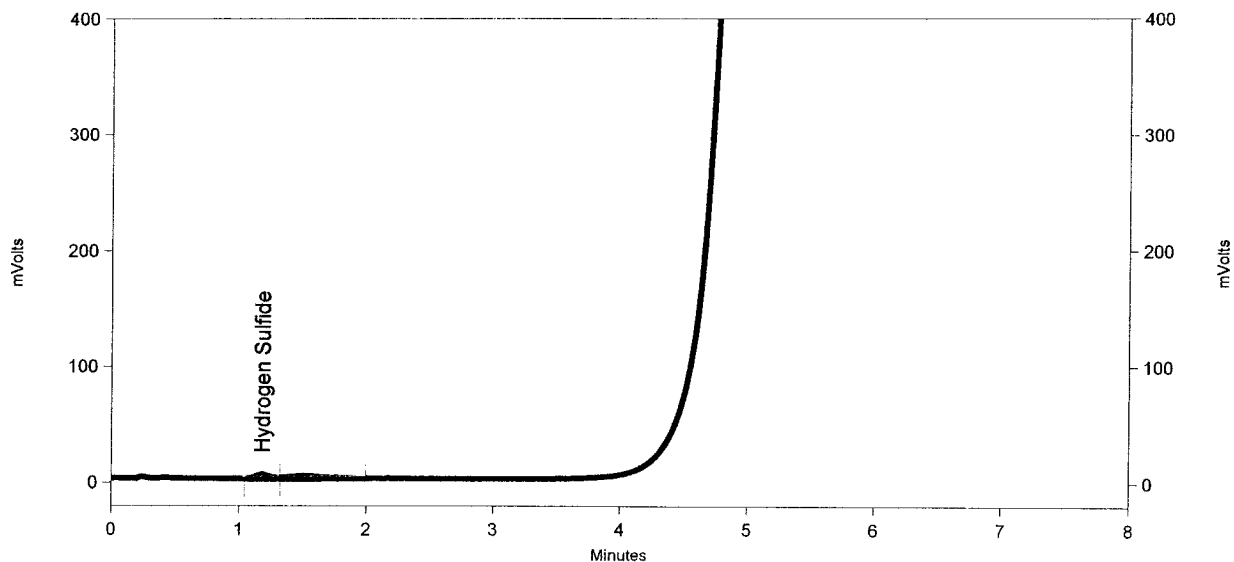
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.192	48645	0.055 LC
Totals		48645	0.055 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 043
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
8-42-38 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 8:49:01 AM



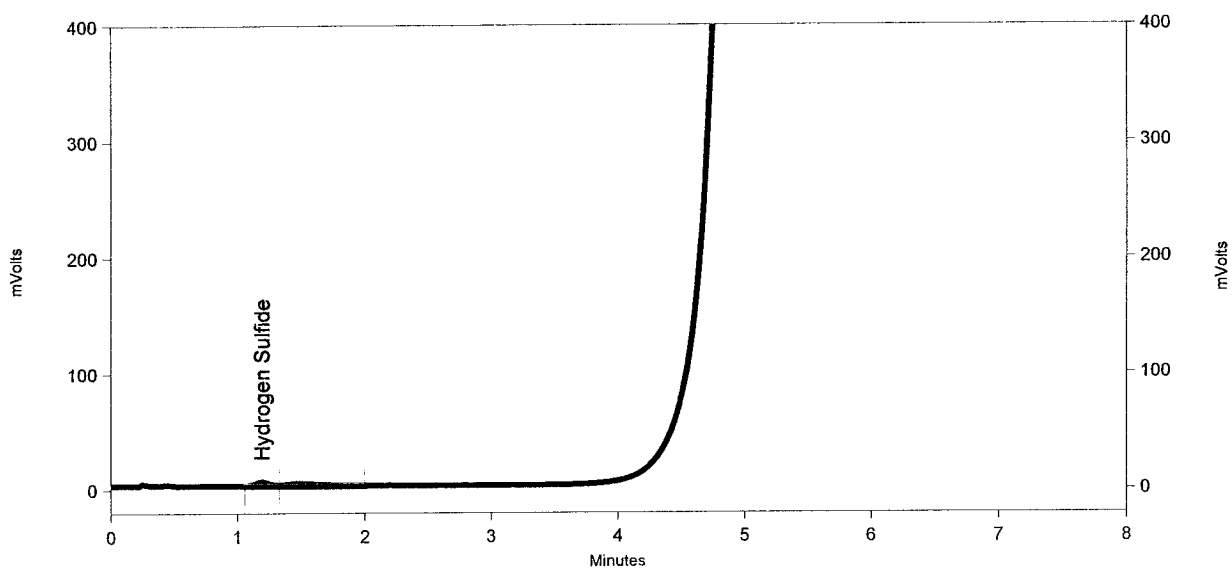
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.182	26409	0.030 LC
Totals		26409	0.030 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 044
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
8-57-06 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 9:02:55 AM



FPD Results

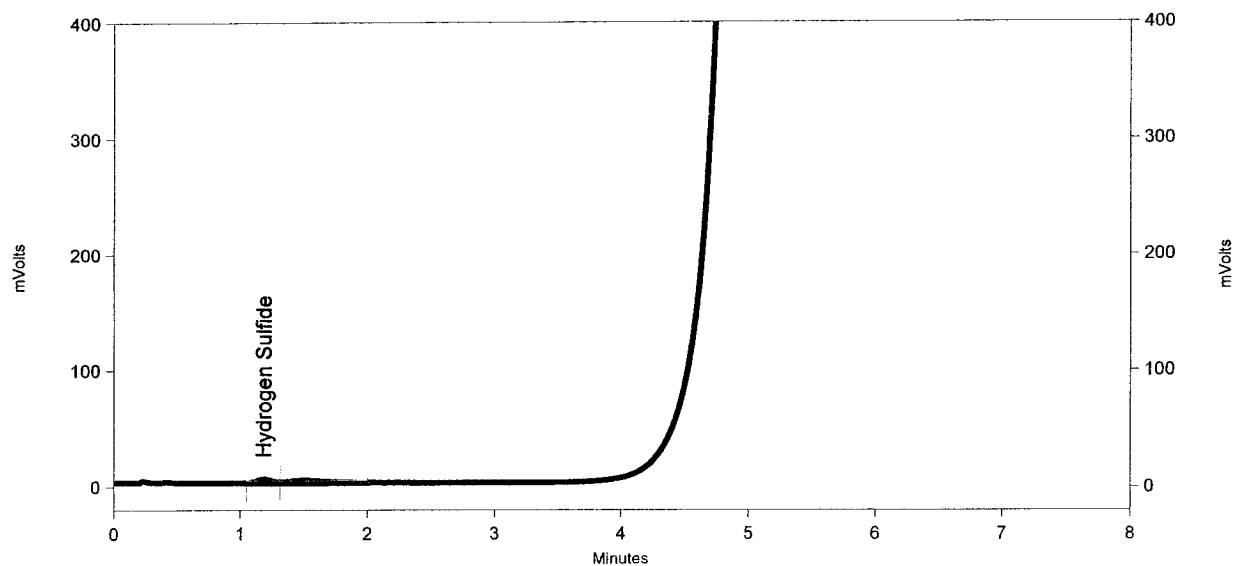
Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.195	26403	0.030 LC

Totals		26403	0.030 LC
--------	--	-------	----------

Lyondell - Houston, TX

Sample ID: LCR 435 TO 045
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
9-10-59 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 9:17:07 AM



FPD Results
Name

Retention Time

Area ESTD concentration
(ppmv)

Hydrogen Sulfide

1.185

26695

0.030 LC

Totals

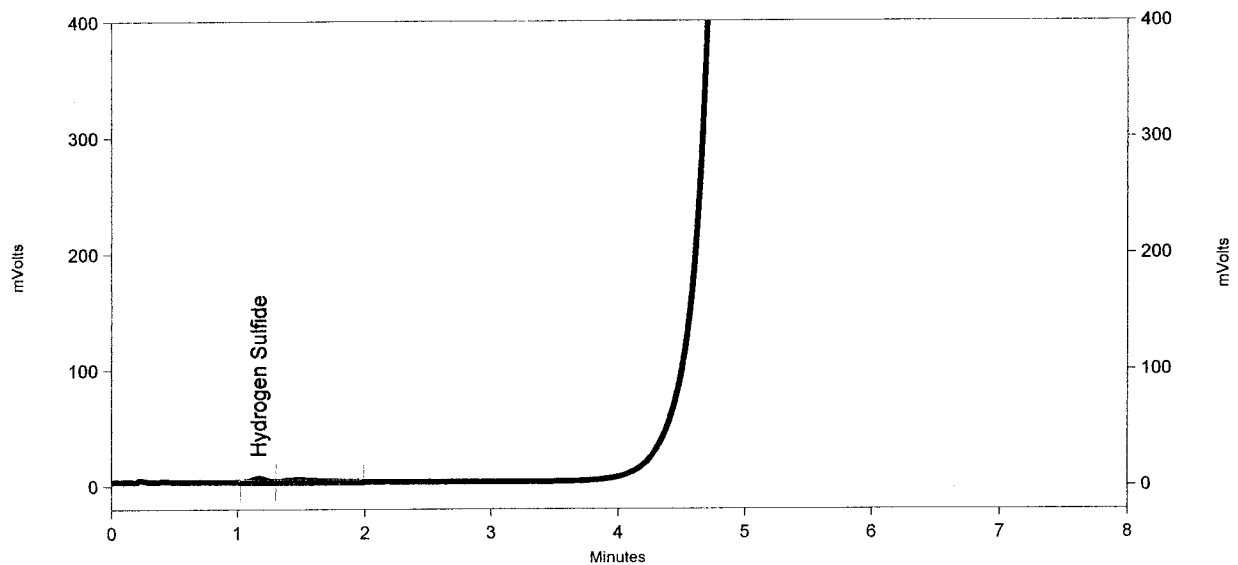
26695

0.030 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 046
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
9-25-11 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 9:31:05 AM



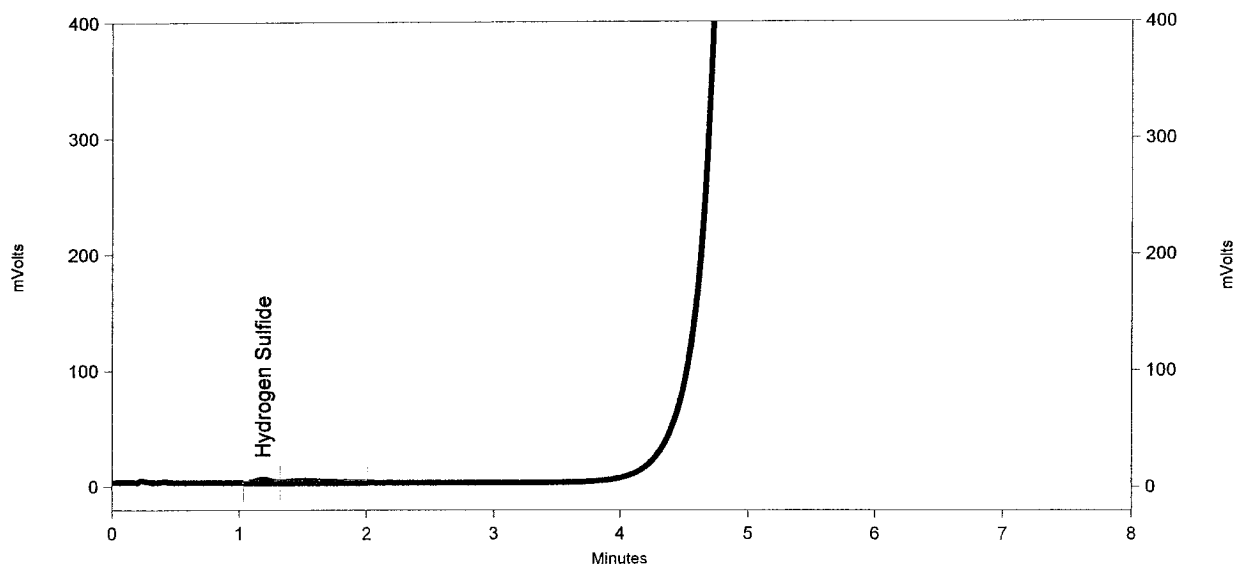
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.167	26921	0.031 LC
Totals		26921	0.031 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 047
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
9-39-10 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 9:45:17 AM



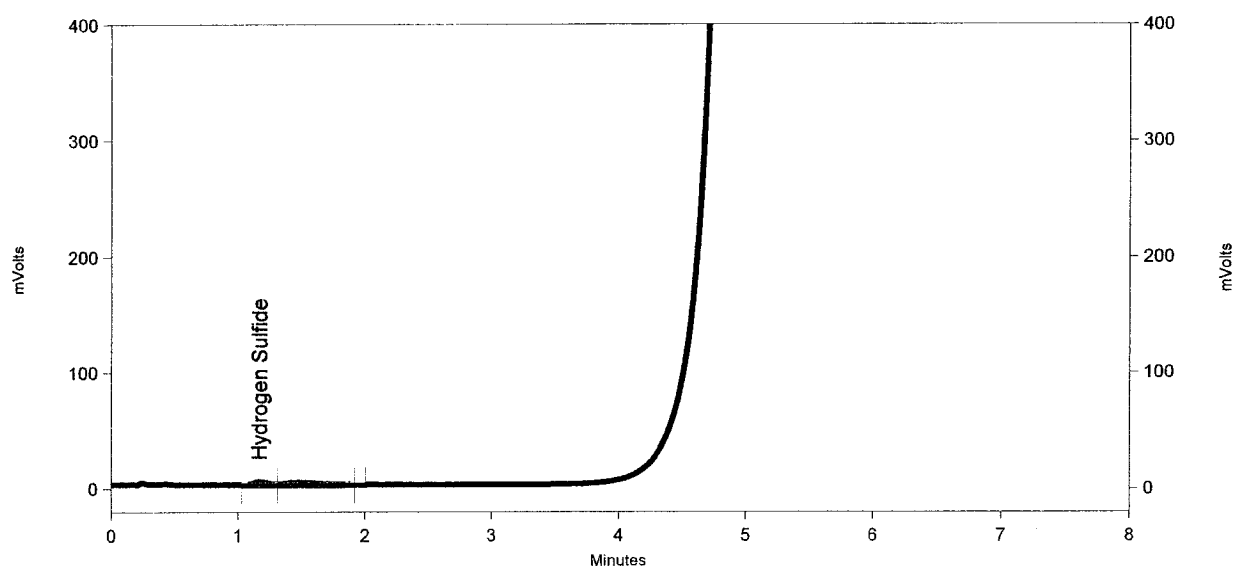
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.183	25755	0.029 LC
Totals		25755	0.029 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 048
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
9-53-21 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 9:59:13 AM



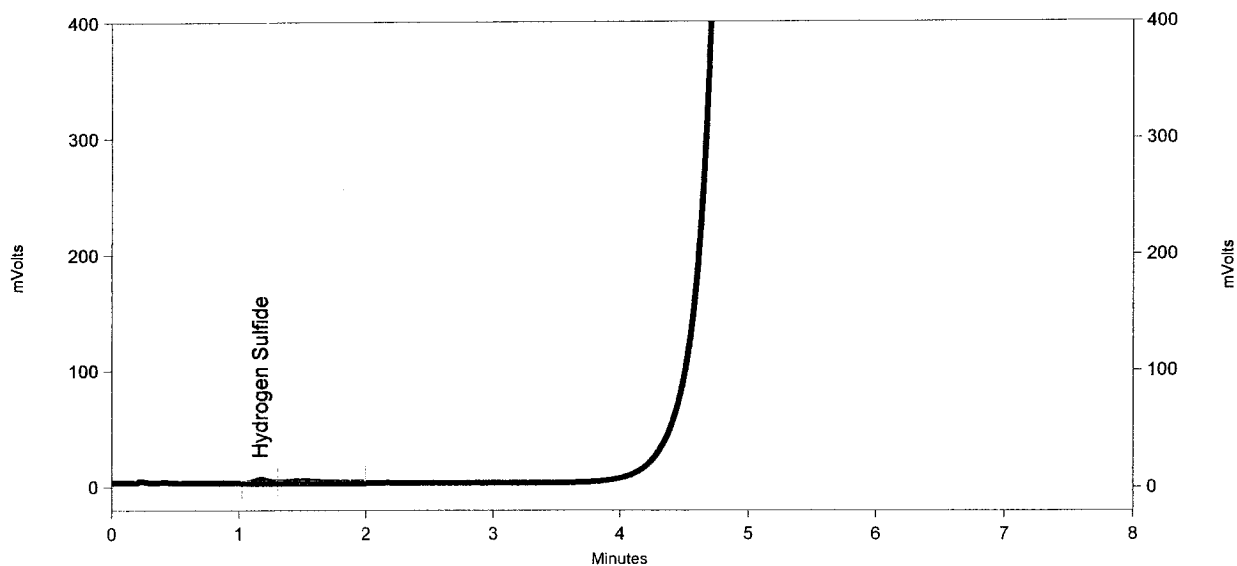
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.168	22399	0.025 LC
Totals		22399	0.025 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 049
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
10-07-17 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 10:13:06 AM



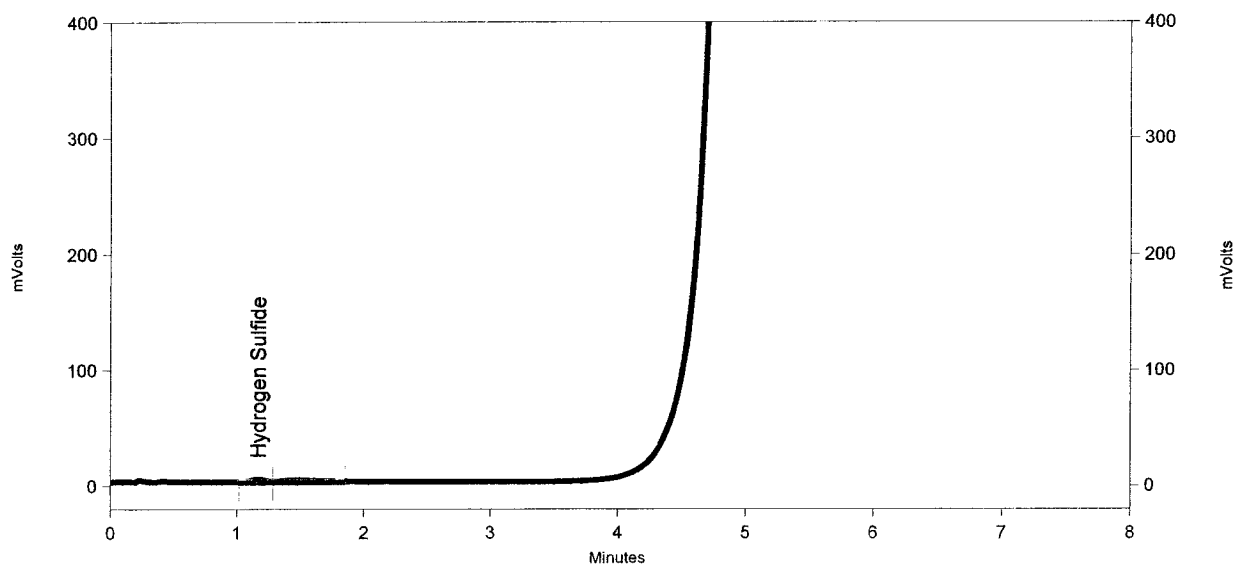
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.163	24109	0.027 LC
Totals		24109	0.027 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 050
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
10-21-11 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 10:27:03 AM



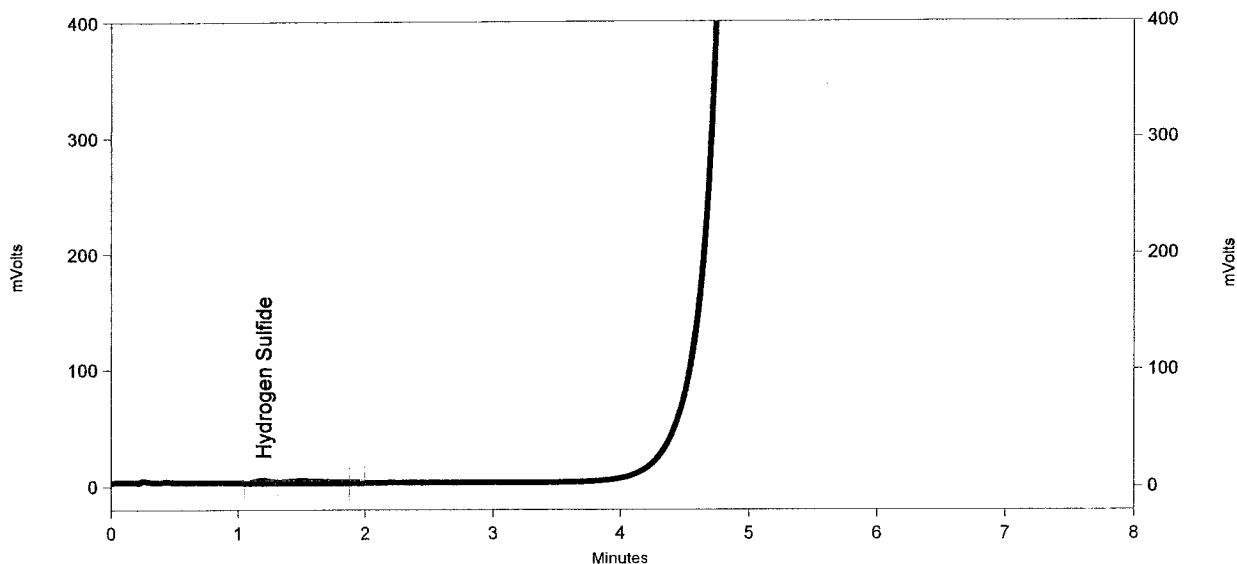
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.170	17407	0.020 LC
Totals		17407	0.020 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 051
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
10-35-09 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 10:41:48 AM



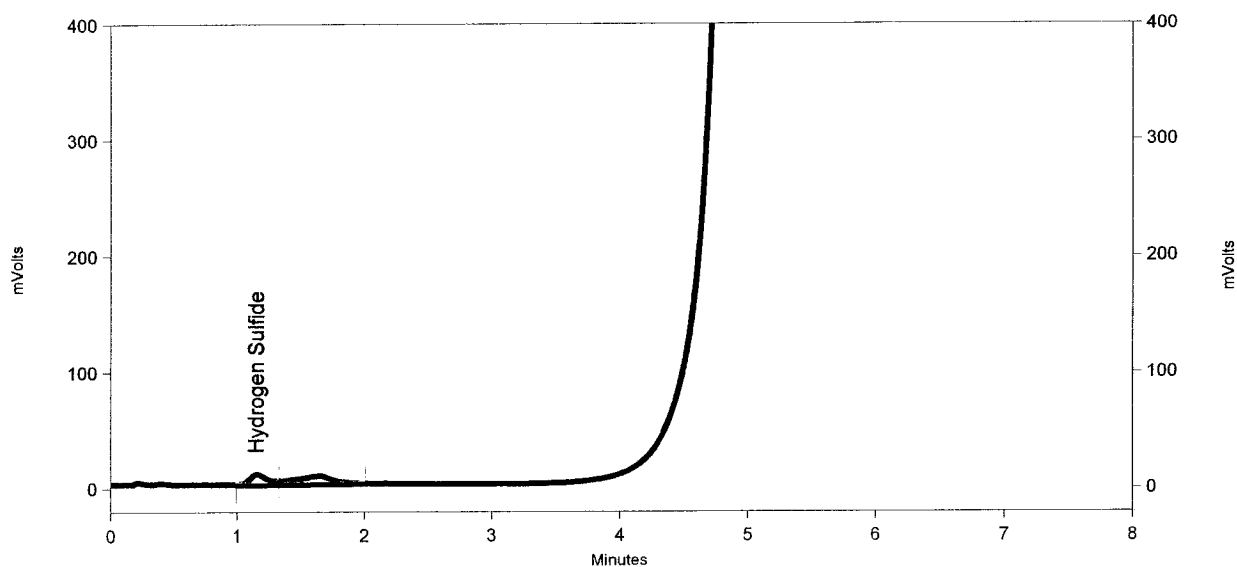
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.202	16467	0.019 LC
Totals		16467	0.019 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 052
 Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
 Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
 10-49-52 am.dat
 Product: Shimadzu Client/Server
 Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 10:56:31 AM



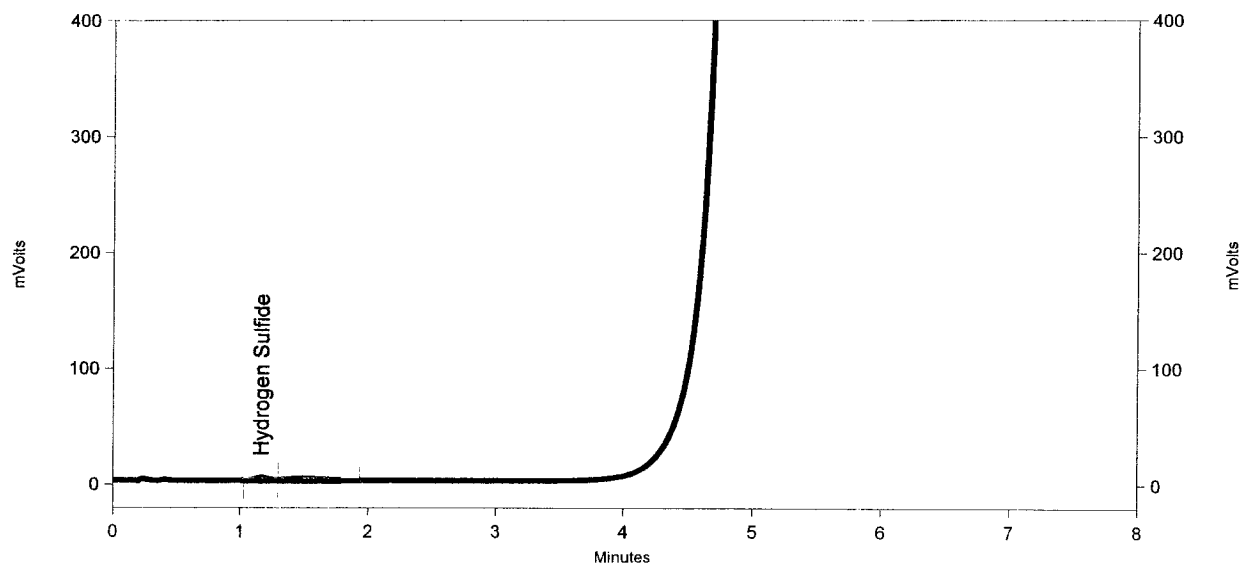
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.150	82848	0.094 LC
Totals		82848	0.094 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 053
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
11-04-35 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 11:11:31 AM



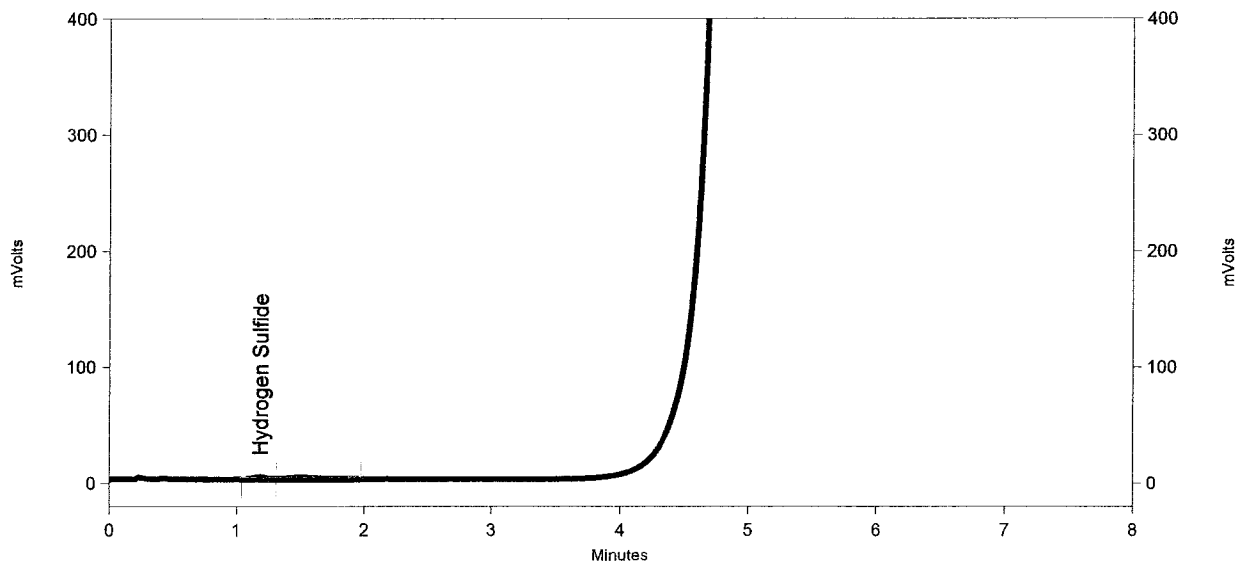
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.165	20386	0.023 LC
Totals		20386	0.023 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 054
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
11-19-37 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 11:24:10 AM



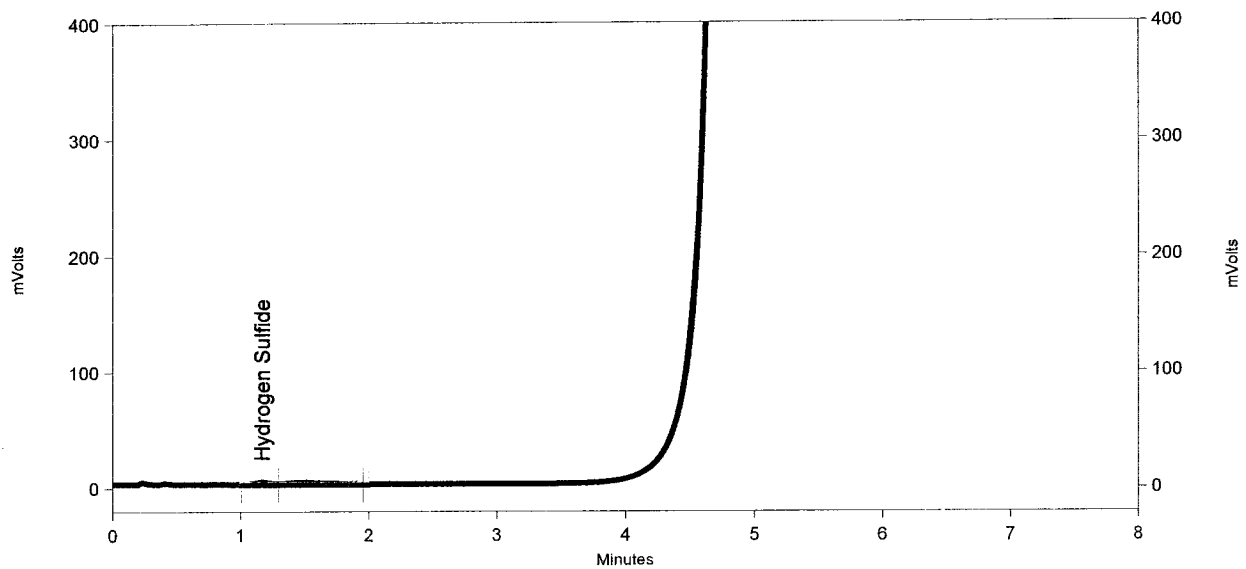
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.188	16686	0.019 LC
Totals		16686	0.019 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 055
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
11-32-16 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 11:35:57 AM



FPD Results

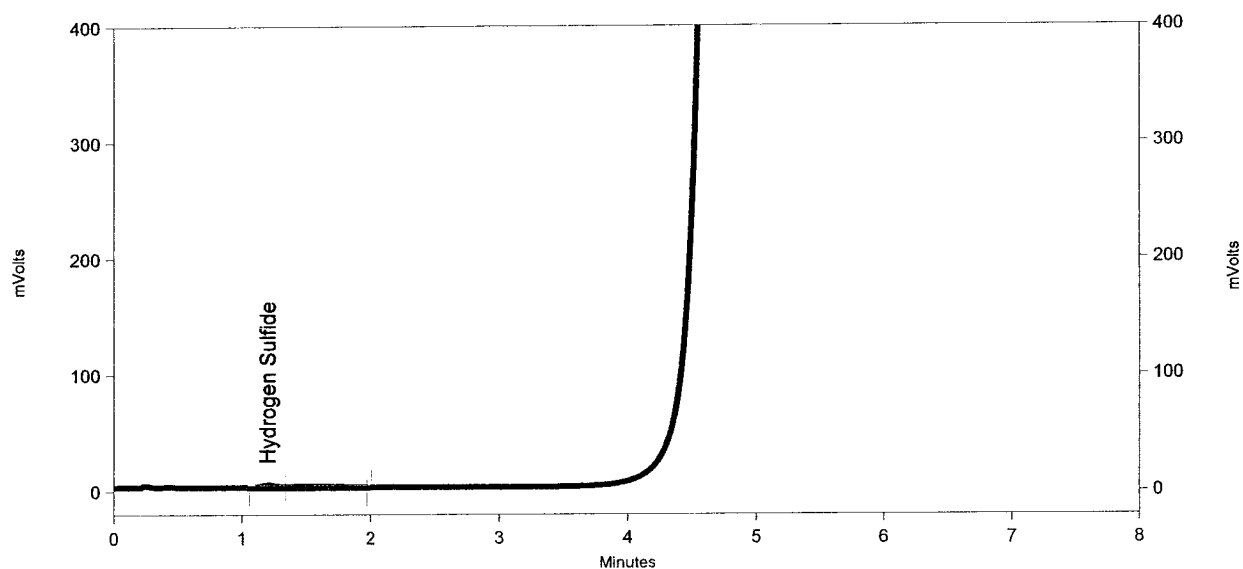
Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.168	15310	0.017 LC
Totals		15310	0.017 LC

LCR TO 435 Condition: 1475 °F

Lyondell - Houston, TX

Sample ID: LCR 435 TO 056
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
12-00-46 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 12:01:13 PM



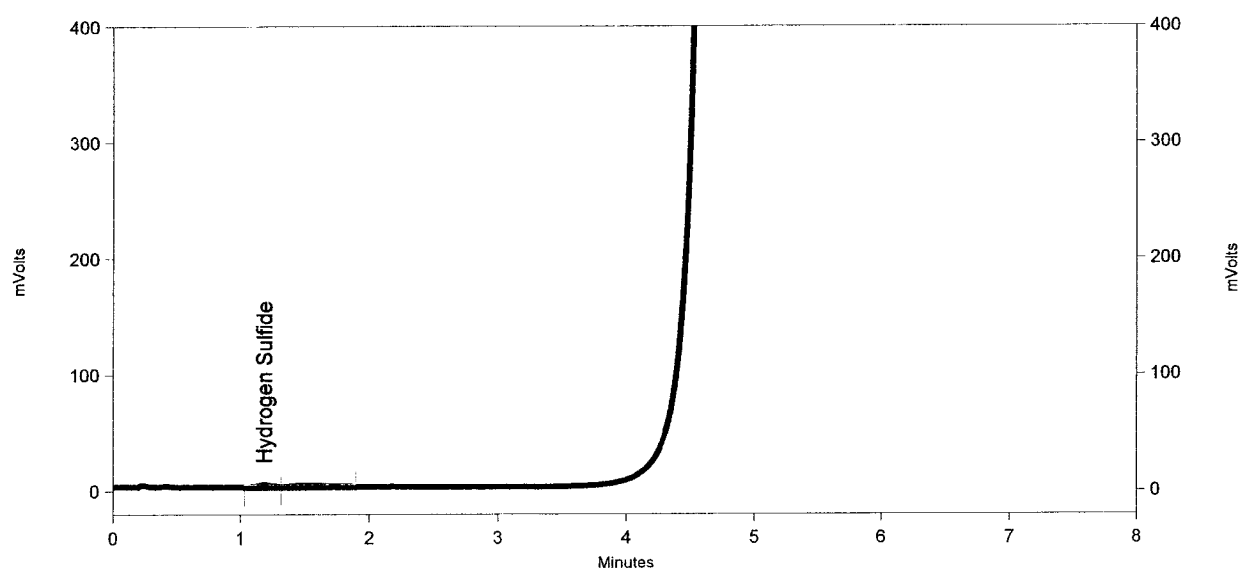
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.200	18177	0.021 LC
Totals		18177	0.021 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 057
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
12-09-17 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 12:15:08 PM



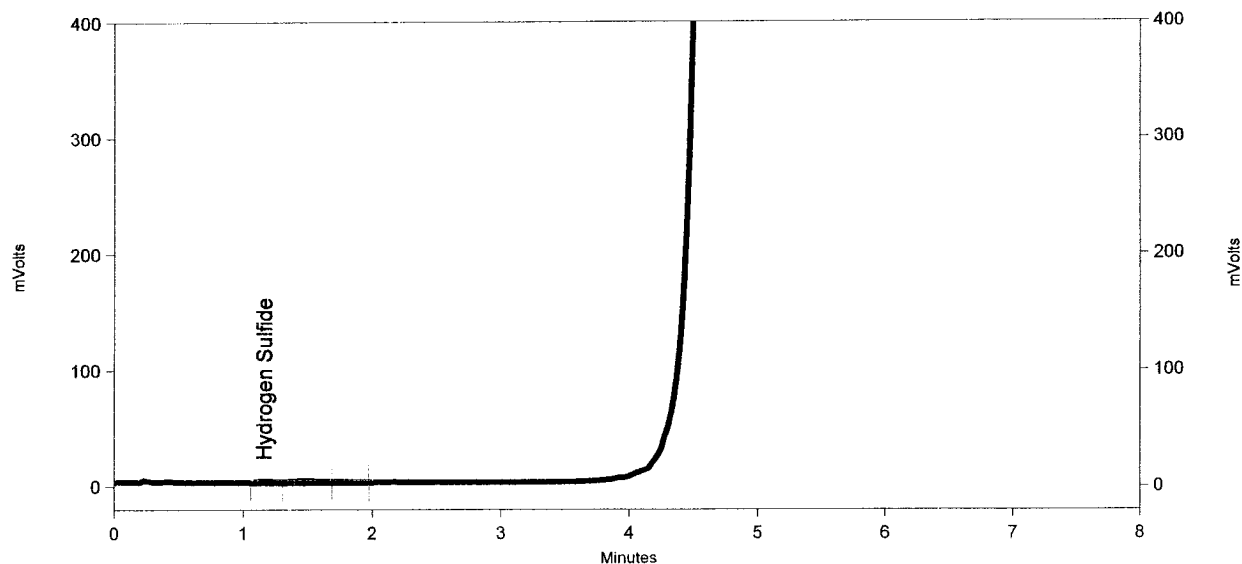
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.183	16478	0.019 LC
Totals		16478	0.019 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 058
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
12-23-12 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 12:26:38 PM



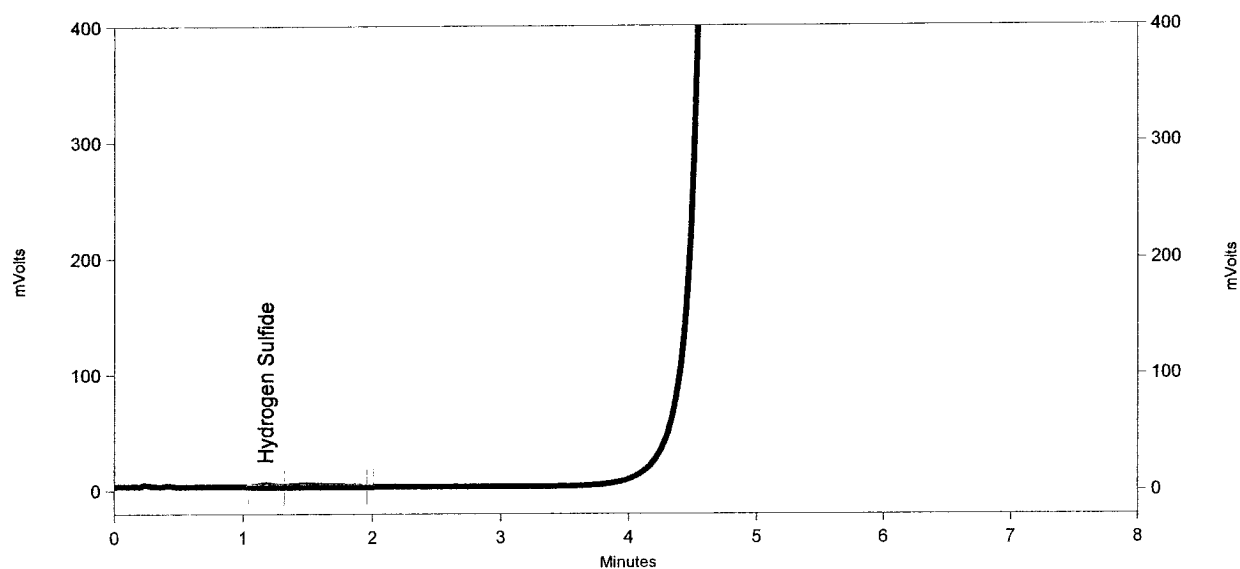
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.158	10268	0.012 LC
Totals		10268	0.012 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 059
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
12-34-43 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 12:40:05 PM



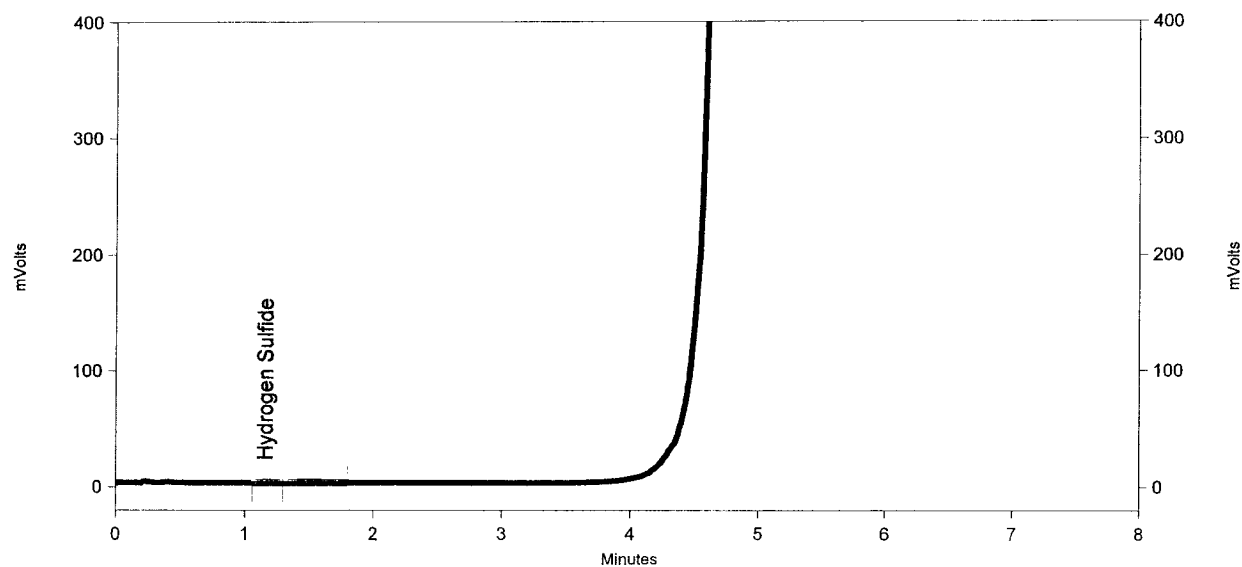
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.172	13645	0.016 LC
Totals		13645	0.016 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 060
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
12-48-09 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 12:51:35 PM



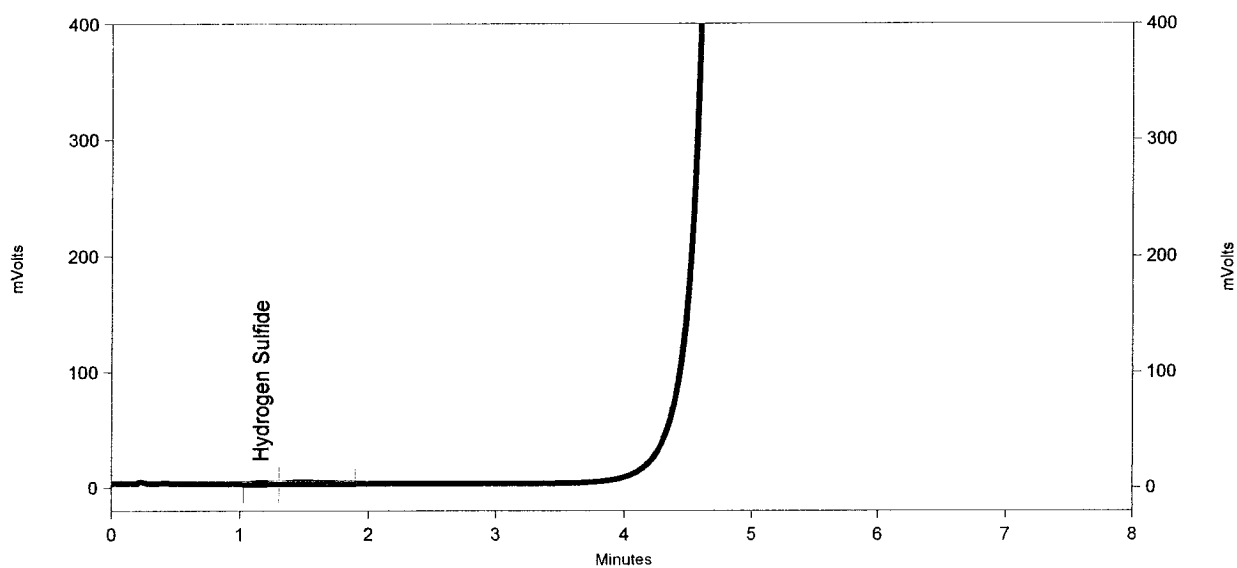
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.157	7148	0.008 LC
Totals		7148	0.008 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 061
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
12-59-55 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 1:03:36 PM



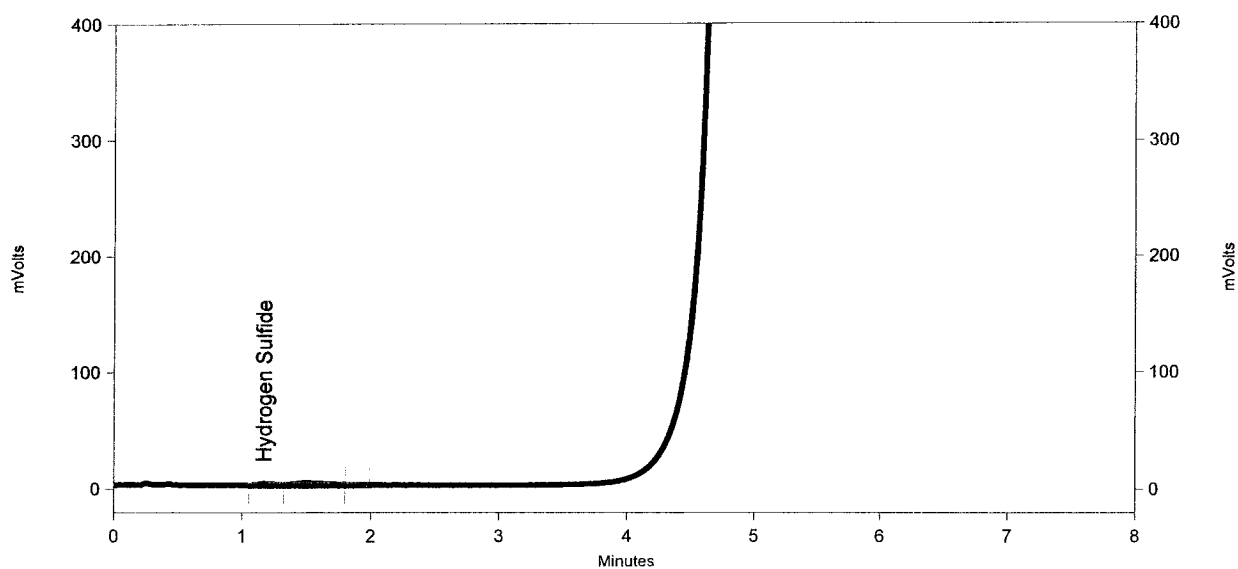
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.165	8950	0.010 LC
Totals		8950	0.010 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 062
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435_3-25-05\lcr 435 to 3-26-2005
1-11-41 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 1:16:46 PM



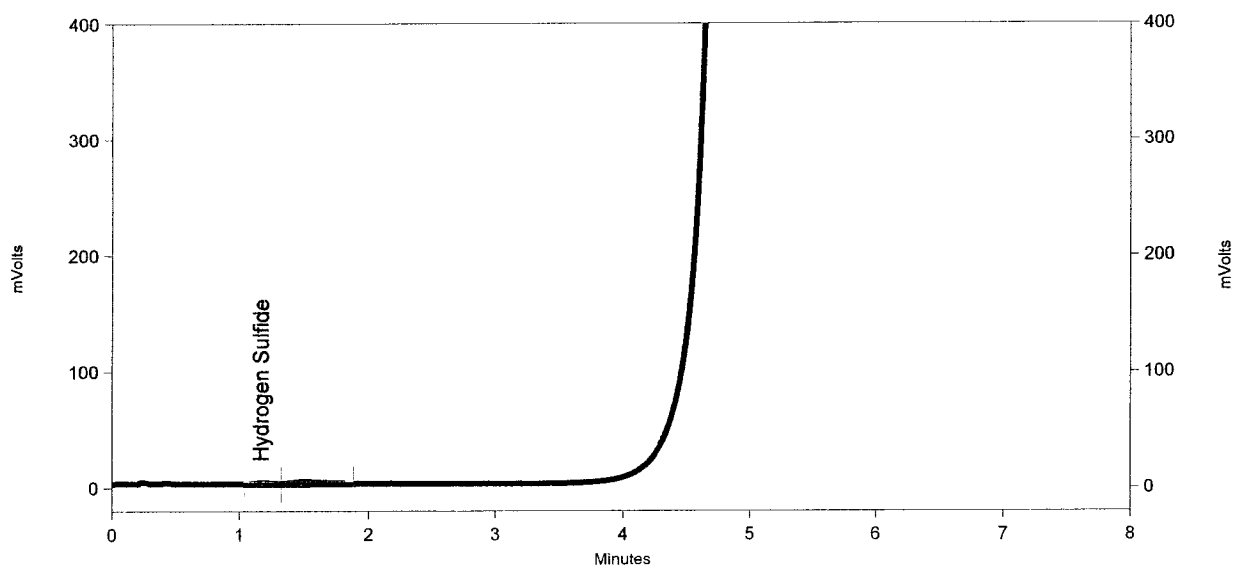
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.167	10354	0.012 LC
Totals		10354	0.012 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 063
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
1-24-51 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 1:29:19 PM

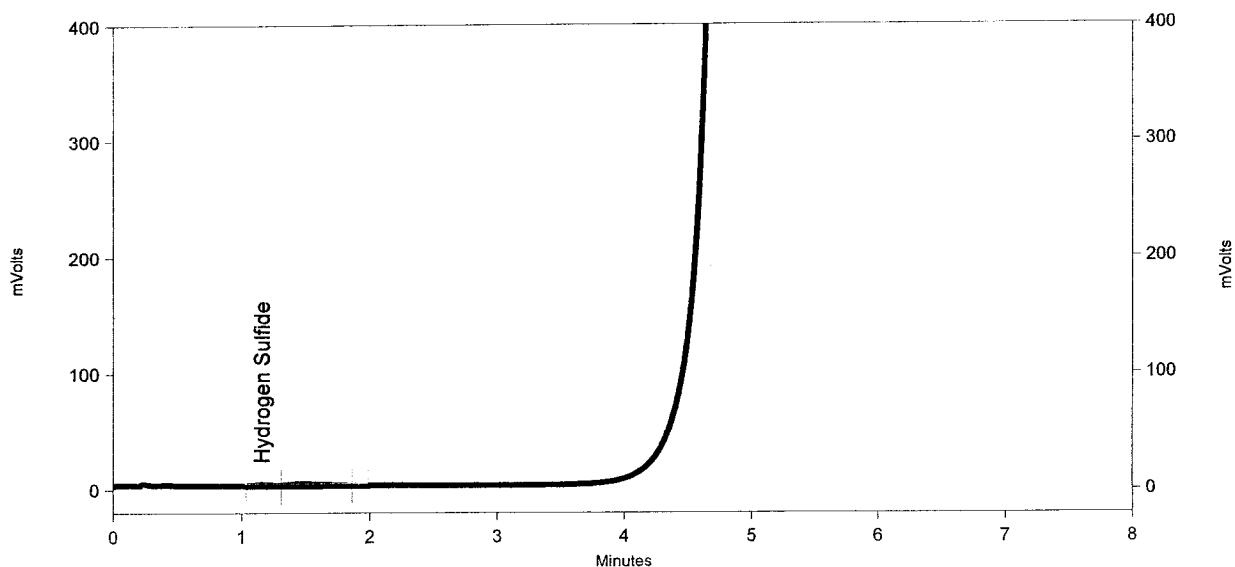


FPD Results			
Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.165	9224	0.011 LC
Totals		9224	0.011 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 064
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
1-37-23 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 1:40:17 PM



FPD Results
Name

Retention Time

Area ESTD concentration
(ppmv)

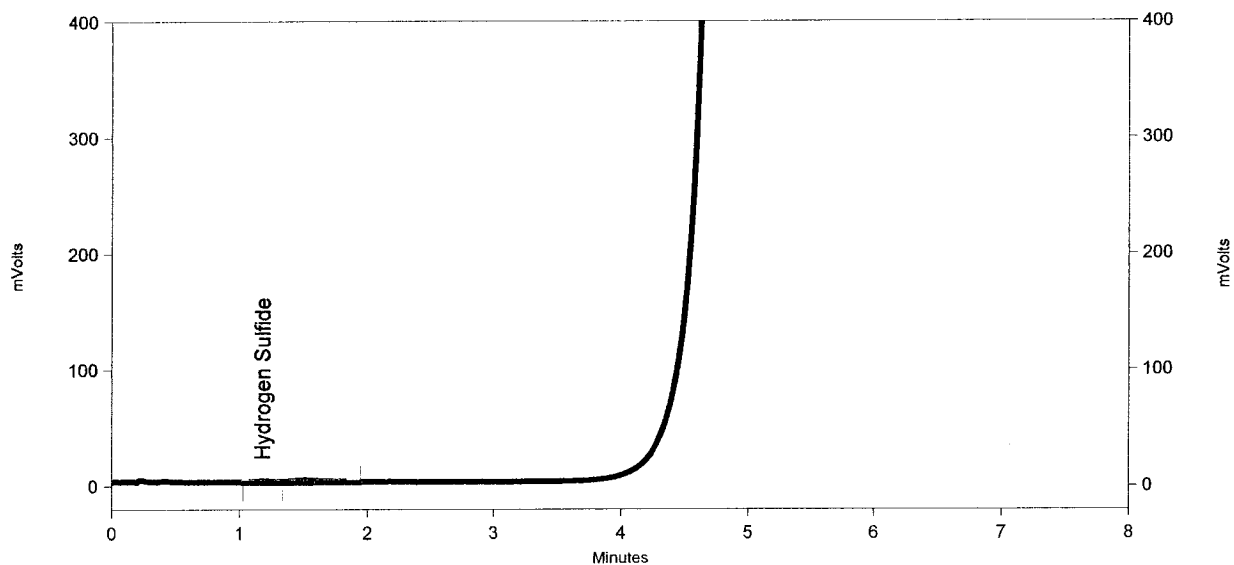
Hydrogen Sulfide	1.157	8299	0.009 LC
------------------	-------	------	----------

Totals		8299	0.009 LC
--------	--	------	----------

Lyondell - Houston, TX

Sample ID: LCR 435 TO 065
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
1-48-21 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 1:52:04 PM



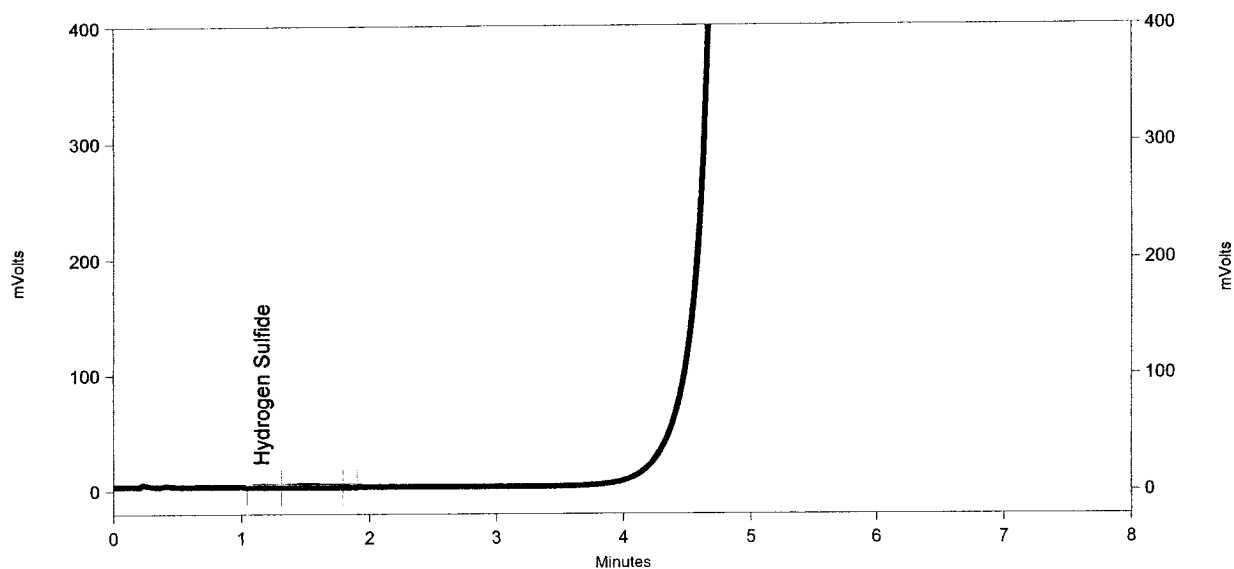
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.178	8210	0.009 LC
Totals		8210	0.009 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 066
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
2-00-08 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 2:06:32 PM



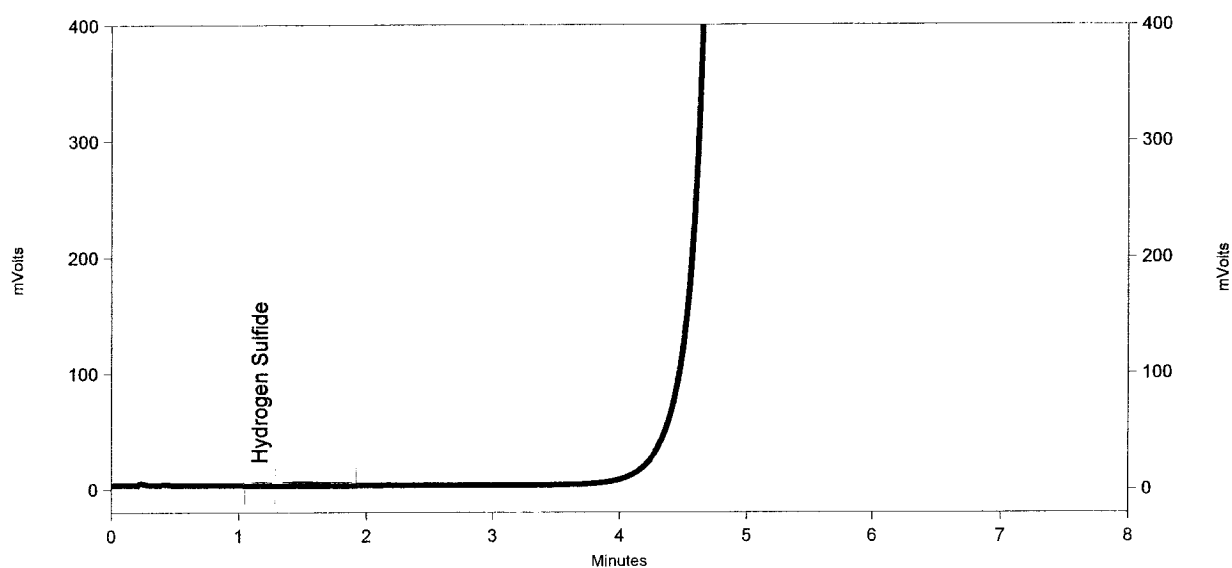
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.157	6399	0.007 LC
Totals		6399	0.007 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 067
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
2-14-37 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 2:18:54 PM



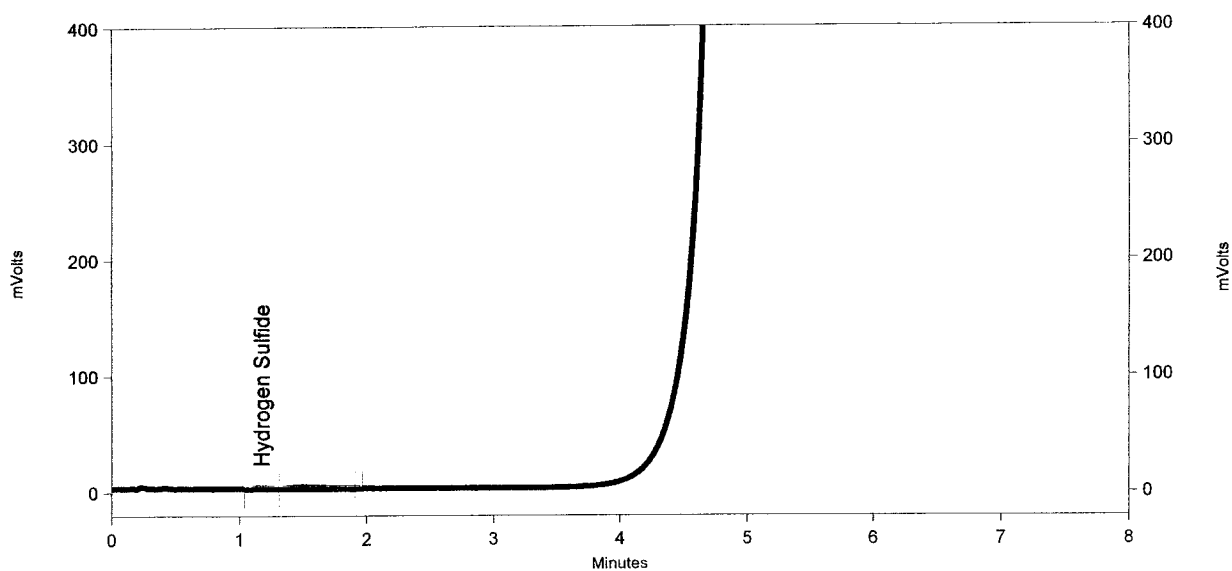
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.162	5151	0.006 LC
Totals		5151	0.006 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 068
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
2-26-58 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 2:31:00 PM



FPD Results
Name

Retention Time

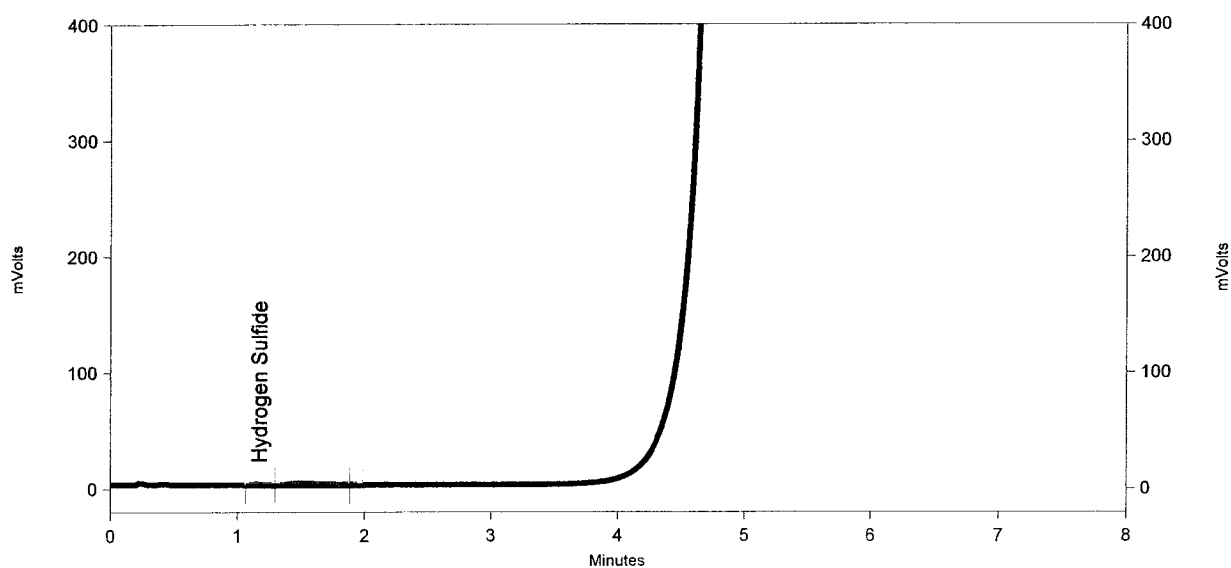
Area ESTD concentration
(ppmv)

Hydrogen Sulfide	1.175	5950	0.007 LC
Totals		5950	0.007 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 069
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
2-39-05 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 2:43:20 PM



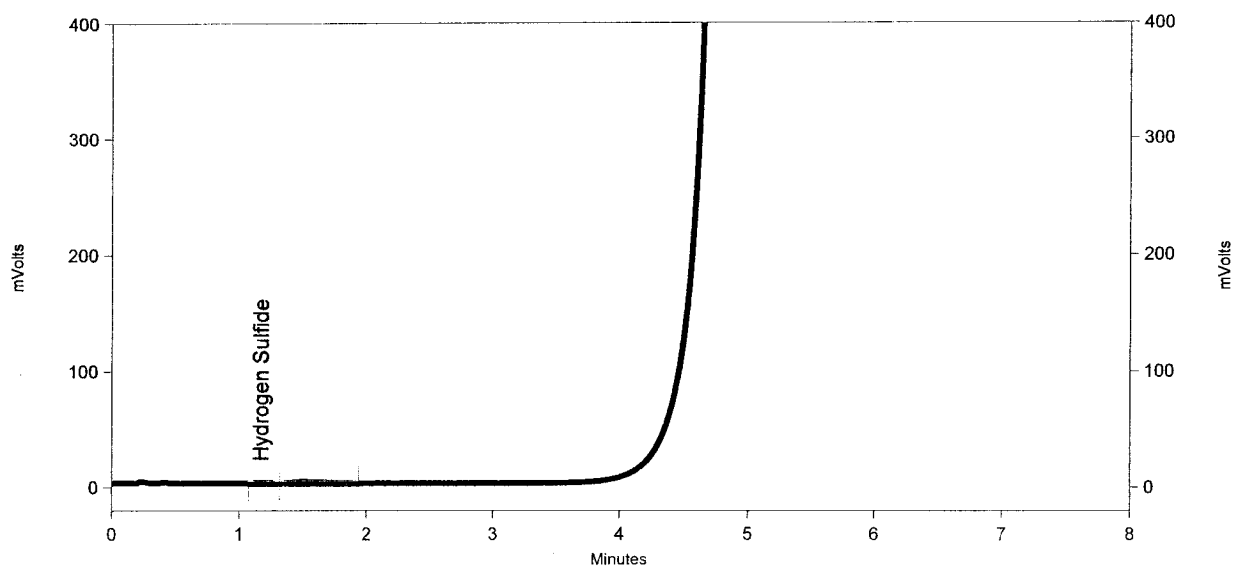
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.175	4953	0.006 LC
Totals		4953	0.006 LC

Lyondell - Houston, TX

Sample ID: LCR 435 TO 070
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\lcr 435 to 3-26-2005
2-51-24 pm.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/26/2005 2:54:35 PM



FPD Results

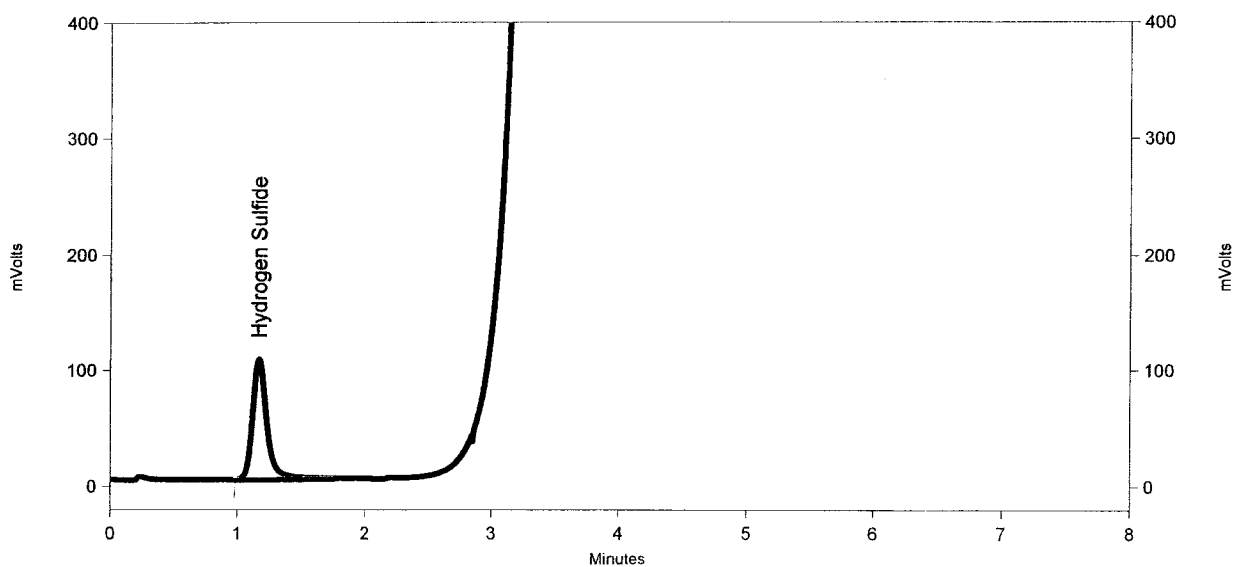
Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.168	4927	0.006 LC
Totals		4927	0.006 LC

APPENDIX J – SAMPLE LINE LOSS CHECK

Lyondell - Houston, TX

Sample ID: Line Recovery Check
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\line recovery check\line
recovery check 3-28-2005 10-56-55 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/28/2005 10:57:27 AM



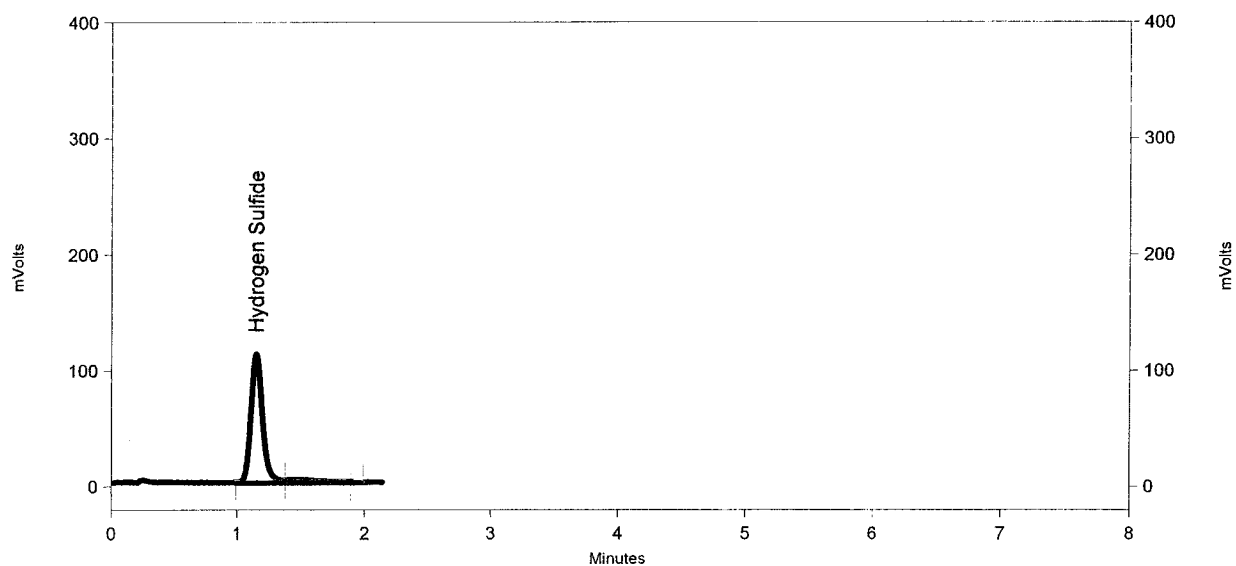
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.167	801399	0.842
Totals		801399	0.842

Lyondell - Houston, TX

Sample ID: Line Recovery Check
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\line recovery check\line
recovery check 3-28-2005 10-20-00 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/28/2005 10:20:28 AM



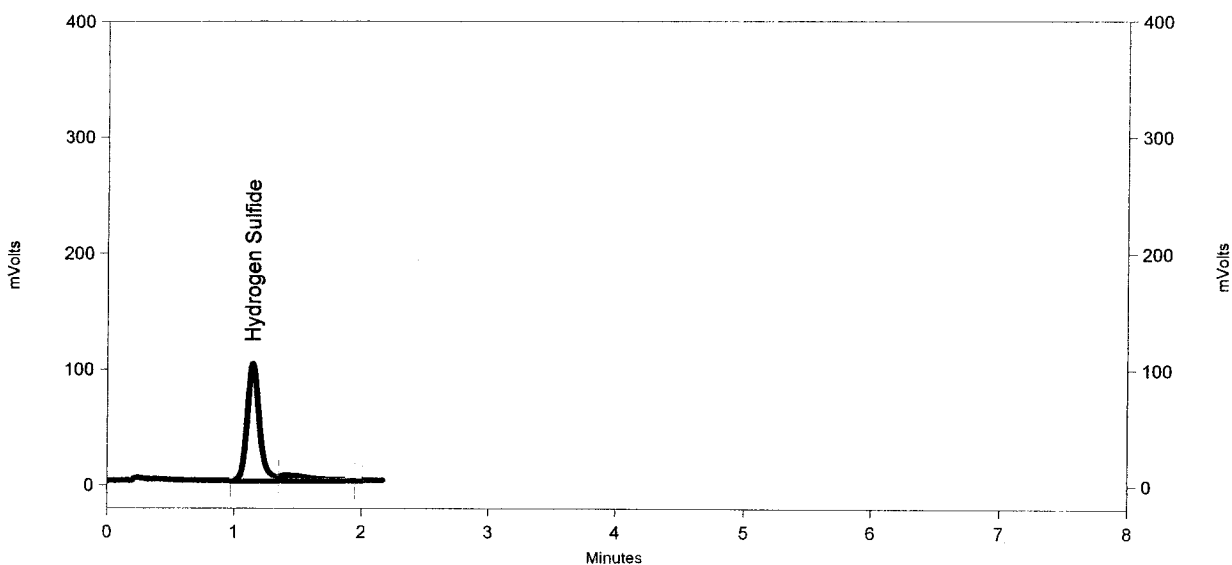
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.150	708091	0.751
Totals		708091	0.751

Lyondell - Houston, TX

Sample ID: Line Recovery Check
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S 3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\line recovery check\line
recovery check 3-28-2005 10-30-13 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/28/2005 10:30:45 AM



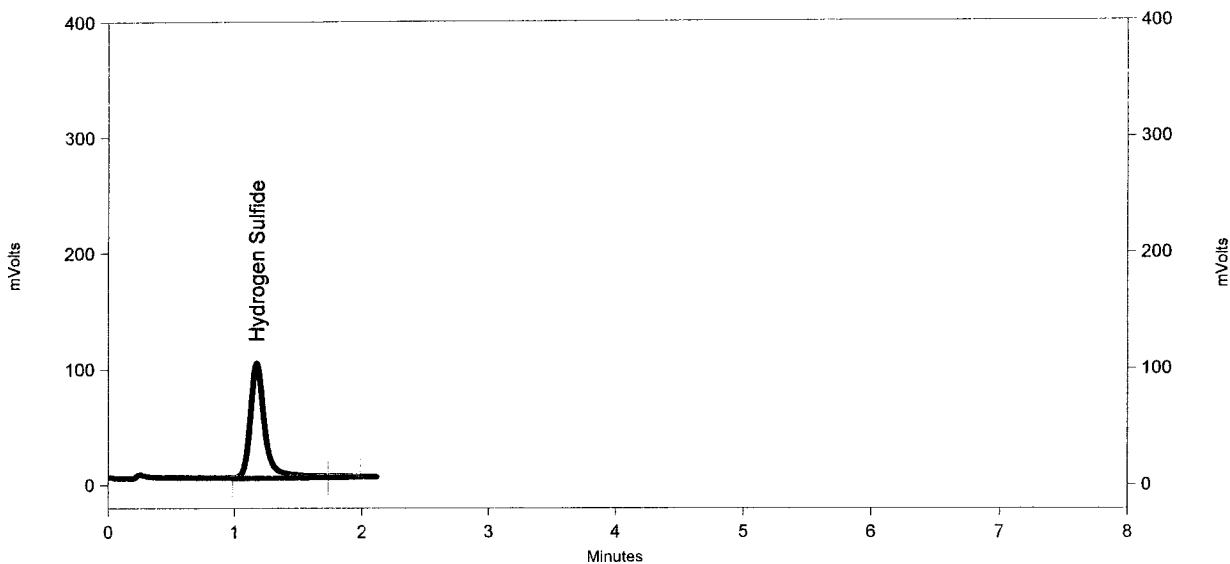
FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.140	669009	0.713
Totals		669009	0.713

Lyondell - Houston, TX

Sample ID: Line Recovery Check
Method Name: C:\CLASS-VP\Data\LCR-H2S\Low ppm H2S_3-25-05.met
Data: c:\class-vp\data\lcr-h2s\data\lcr 435 3-25-05\line recovery check\line
recovery check 3-28-2005 10-54-08 am.dat
Product: Shimadzu Client/Server
Software: Version 7.2 SP1 Rev B

Run Time: 3/28/2005 10:54:35 AM



FPD Results

Name	Retention Time	Area	ESTD concentration (ppmv)
Hydrogen Sulfide	1.173	781592	0.823
Totals		781592	0.823