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January 24, 2011

Mr. "Shawn" Chanh Tieu
BP West Coast Products, LLC
2350 East 223rd Street
Carson, California 90810

Sub: Source test report for emissions testing of Tail Gas Unit Incinerator No.2 for CO, PM, and VOC at BP West Coast Products LLC, located in Carson, California (Facility ID: 131003).

Dear Mr. Tieu:

Please find enclosed three copies of the subject source test report. Additionally, a copy of this report has been sent to you electronically. Testing was conducted on December 16, 2010.

If you have any questions or comments regarding the enclosed package, please contact Mr. Charles Figueroa or myself at 714-889-4000.

Sincerely,

Surya Adhikari
Project Manager

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SOURCE TEST REPORT

Emissions Testing of Tail Gas Unit Incinerator No. 2 for CO, PM, and VOC

Facility ID: 131003
Device ID: C910

Prepared for:

BP West Coast Products, LLC
2350 East 223rd Street
Carson, California 90810

Test Date(s): December 16, 2010

Report Date: January 21, 2011

Project: 9036

Prepared by:

Almega Environmental & Technical Services
5251 McFadden Avenue
Huntington Beach, CA 92649

Prepared by & Title:_____
Surya Adhikari, Project Manager

Reviewed by & Title:_____
Charles Figueroa, Sr. Project Manager

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1.0 EXECUTIVE SUMMARY

Key project information is provided in the summary below. Test results are summarized in Table 1-1.

Customer	BP West Coast Products, LLC. 2350 East 223rd Street Carson, California 90810 Contact: Mr. "Shawn" Chanh Tieu, tel. (310) 847-5644
Equipment Location	Same
Facility ID	131003
Equipment	Tail Gas Unit Incinerator No.2 (TGU-2)
Device ID Number	C910
Test Objective	Measure emissions of carbon monoxide (CO), particulate matter (PM) and volatile organic compounds (VOCs) to satisfy conditions D328.1 of the applicable SCAQMD permit and SCAQMD Rules 404 and 409 respectively.
Test Requested by	Mr. "Shawn" Chanh Tieu of BP West Coast Products, LLC.
Test Date(s)	December 16, 2010
Testing Firm	Almega Environmental & Technical Services 5251 McFadden Avenue Huntington Beach, CA 92649 Contact: Mr. Surya Adhikari, tel (714) 889-4000
Test Personnel	Tom Tran, Dorian Johnson and Bryan Harrison of Almega Environmental & Technical Services
Regulatory Agency	South Coast Air Quality Management District (SCAQMD) 21865 East Copley Drive Diamond Bar, CA 91765-4182 Contact: Mr. Mike Cecconi, tel: (909) 396-2244

TABLE 1-1. SUMMARY OF RESULTS

Facility: BP West Coast Products, LLC
City: Carson, CA
Source: No. 2 TGU
Location: Stack

TEST DATA	Units	Test Results	Allowed Limit
Test Date	m/d/y	12/16/10	
Test Time	hh:mm	10:15-12:26	
Process Data[1]			
Firing rate, Rated	MMBtu/hr	44.5	
Sampling Data[2]			
Stack Temperature	°F	1,268	
Moisture	%	8.82	
Gas Velocity	ft/sec	31.4	
Stack Flow Rate	acfm	106,918	
Stack Flow Rate	dscfm	29,306	
SCAQMD Method 100.1 - CEMS			
Stack Diluent Gases			
Oxygen, O2, as measured	%	8.40	
Carbon Dioxide, as measured	%	4.71	
Carbon Monoxide, CO			
Concentration, as measured	ppmv	481	**2000 (Rule 407)**
Concentration @ 3% O2	ppmv	689	
Emission Rate	lbs/hr	62.4	
SCAQMD Method 5.2 - Particulate Matter			
Total PM			
Total Catch	mg	69.8	
Concentration	gr/dscf	0.0121	**0.053 (Rule 404)**
Concentration @ 12% CO2	gr/dscf @12%	0.0309	**0.1 (Rule 409)**
Emission Rate	lbs/hr	3.05	
SCAQMD Method 25.3 - Total Hydrocarbons			
TGNMO, as Methane [3]			
Reported per AB2588 guidelines			
Condensable			
Concentration[4]	ppmv	0.54	
Mass Emission Rate	lbs/hr	0.036	
Volatile			
Concentration[4]	ppmv	0.84	
Mass Emission Rate	lbs/hr	0.056	
Total			
Concentration,	ppmv	1.38	
Mass Emission Rate	lbs/hr	0.092	
TGNMO as Measured [5]			
Concentration,	ppmv	1.24	
Mass Emission Rate	lbs/hr	0.082	

Notes:
(1) Process data was provided by the facility. Unit was operating on refinery fuel gas.
(2) Performed during isokinetic sampling (e.g.SCAQMD Method 5.2).
(3) Used SCAQMD Method 25.3's default MW to Carbon ratio (as hexane) for mass emission rate calculations.
(4) Fraction used "One-half value of the reporting limit" for the ND results as specified in AB2588 guidelines.
(5) Some of the measured values were lower than the reporting limit.

2.0 INTRODUCTION

Almega Environmental & Technical Services (Almega) has been contracted by BP West Coast Products, LLC to conduct stationary source emissions testing of the Tail Gas Unit Incinerator No.2 (TGU-2) at its facility located in Carson, California. The purpose of the test was to measure emissions from the exhaust of this unit for carbon monoxide (CO), particulate matter (PM), and volatile organic compounds (VOCs) to satisfy conditions of the applicable SCAQMD permit requirements.

The CO testing was conducted to satisfy the requirements of SCAQMD Rule 407 as detailed in Condition D328.1. Particulate testing was conducted to demonstrate compliance for SCAQMD Rules 404 and 409. Testing for VOC was conducted for internal reporting purposes.

Table 2-1 lists the test matrix employed during the test.

TABLE 2-1. TEST MATRIX

PARAMETER	LOCATION	TEST METHOD	# OF TEST RUNS	TEST TIME
Stack Traverse Points	Exhaust	SCAQMD Methods 1.1	As Required	--
Stack Gas Flow Rate	Exhaust	SCAQMD Method 2.1	1	120 min.
Molecular Weight and Excess Air	Exhaust	SCAQMD Method 3.1	1	120 min.
Moisture	Exhaust	SCAQMD Method 4.1	1	120 min.
CO, O_2, & CO_2	Exhaust	SCAQMD Method 100.1	1	120 min.
Particulate Matter (PM)	Exhaust	SCAQMD Method 5.2	1	120 min.
VOC as TGNMO	Exhaust	SCAQMD Method 25.3	1 (Dup)	60 min.

Almega performed source testing while the process was operated at its normal operating conditions. Sampling was performed at the exhaust stack. Testing was conducted as specified in the reference methods.

2.1 Document Outline

This report is organized as follows. Section 1.0 is a summary of the project and test results. Section 2.0 describes the project, its objectives and approach. Section 3.0 discusses test results. Section 4.0 describes the equipment tested and applicable sampling locations. Section 5.0 describes the sampling and analytical procedures used to conduct the testing. And Section 6.0 describes Quality Assurance and Quality Control activities performed. The Appendices contain test results, calculated data, raw field data, facility process and test data, calibration records, certification documents, and laboratory data package.

3.0 TEST RESULTS AND DISCUSSION

The testing was conducted after the arrival of Almega's test personnel and set-up of test equipment. The source was operated by plant personnel during testing activities. The testing was conducted at normal operating conditions for the process. No unusual operating conditions were noted during the test periods.

3.1 Test Discussion

Test results are summarized in Table 1-1. Detailed test results are discussed below.

- The measured CO concentration was 481 ppmv, which is less than the limit of 2000 ppmv imposed by Rule 407. The corresponding CO mass emission rate was 62.4 lbs/hr.

- The CO compliance testing was integrated with the NOx, O_2, and Flow RATA testing conducted at the same time.

- The measured particulate matter (PM) concentration was 0.0121 grains/dscf, and 0.0309 grains/dscf corrected to 12% CO2. These concentrations are less than the limit of 0.0530 and 0.1 grains/dscf imposed by Rule 404 and 409 respectively. The corresponding PM mass emission rate was 3.05 lbs/hr.

- The reported VOC concentration, TGNMO as methane, was 1.38 ppmv. The corresponding VOC emission rate, calculated as hexane, was 0.092 lbs/hr. Test results for VOC were reported in accordance with the guidelines for source test reporting under California's AB2588, Air Toxics Hot Spots Regulations, which reports the analysis results below the limit of detection (i.e. none detected or ND), substituting with one half of the detection limit.

- The VOC concentration below the reporting limit was also reported for qualitative purposes. The measured VOC concentration, TGNMO as methane, was reported as 1.24 ppmv, which included the analysis values observed below the reporting limit. This corresponding VOC emission rate, calculated as hexane, was 0.082 lbs/hr.

- The run 1A sample leaked (verified by CEMS data) and therefore not used for reporting purposes.

3.1.1 Others

- All measured concentrations were corrected for bias zero and bias calibration drifts according to SCAQMD Method 100.1 (See Appendix C1).

- All instruments performed properly during testing and their performance specifications were within the allowable limits specified in Method 100.1 (See Appendix C1).

- Reference Method CEMS probe was traversed across the stack for the representative sampling (See Strip Chart and DAS).

- Cyclonic flow check was performed prior to the sampling. No cyclonic flow was found (See Appendix D2).

Testing was performed as specified in the reference methods. No modifications to proposed sampling and analysis procedures other than those noted above were required.

3.2 Test Chronology

Testing for CO, O_2, CO_2, PM, VOC, and other performance testing were conducted during the periods listed below:

Parameter-Measurement	Test Date
CO, PM, and VOC	December 16, 2010 (10:15-12:26)

4.0 EQUIPMENT AND PROCESS DESCRIPTION

BP West Coast Products, LLC is a petroleum refining company that refines oil and produces oil products. The process and equipment tested are described below.

4.1 Process Description

The hydrogen sulfide (H2S) and ammonia (NH3) from the DEA strippers and sour water strippers are burned in the Claus Plant muffle furnaces and further reacted in downstream catalyst beds to form sulfur, sulfur dioxide (SO2), and water. Sulfur dioxide that is not converted to sulfur in the Claus Plant is sent to the Tail Gas Unit (TGU) and is converted to hydrogen sulfide in the presence of a catalyst. The hydrogen sulfide is then absorbed using MDEA and sent back to the Claus Plant. Some unrecirculated hydrogen sulfide remains in the tail gas is sent to the incinerators.

The incinerators are used to oxidize the excess hydrogen sulfide in process gases from the gas absorber tower, the tail gas bypass from four Claus Sulfur Plants and the sulfur pit vent gases, to sulfur dioxide in the stack outlet gas.

The thermal oxidizer, No.2 is fired on refinery gas with rated heat input of 44.5 MMBtu/hr.

4.2 Operating Conditions During Test

The process was operated normally during the test period. The unit operates 24 hours a day. Supporting information for process conditions during the testing are found in Appendix F.

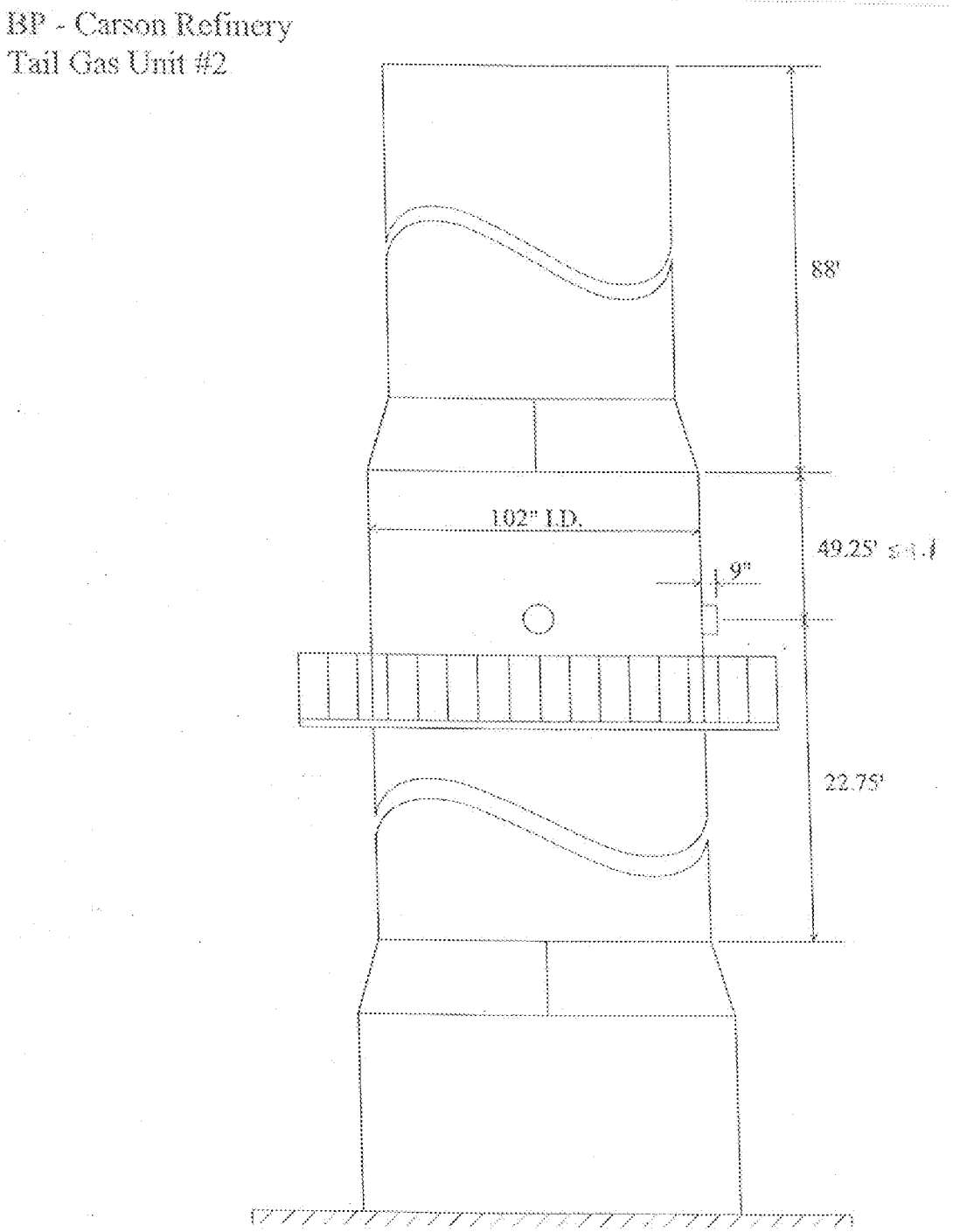
4.3 Sampling Locations

The reference method sampling locations are located on the exhaust stack. A schematic of the stack with sampling locations are shown in Figure 4-1. The reference method sampling locations meet the following specifications:

Sampling Location Configuration for Reference Method CEMS Probe:	
Upstream	273 in. (2.68 duct diameter)
Downstream	591 in. (5.79 duct diameter)
Port Length	9 in. (measured from outside of wall)
Port Inside Diameter	4.0 in
Number of Sampling Ports	4 (located at 90° intervals)
Stack Diameter	102 in. (Internal diameter)

The sampling location complies with the requirements of SCAQMD Method 1.1.

Figure 4-1. Stack Schematic



5.0 SAMPLING AND ANALYTICAL PROCEDURES

Test measurements were performed according to sampling and analysis procedures promulgated by the South Coast Air Quality Management District (SCAQMD), California Air Resources Board (CARB), or US Environmental Protection Agency (EPA). The sampling and analysis procedures used for this test program are summarized below. Any modifications or deviations not addressed herein are discussed in Section 3 of this report.

5.1 SCAQMD Methods 1.1-4 .1– Determination of Stack Gas Volumetric Flow Rate, Molecular Weight, and Moisture Content
5.1.1 SCAQMD Method 1.1 – Sampling Traverse Points
5.1.2 SCAQMD Method 2.1 – Stack Gas Flow Rate
5.1.3 SCAQMD Method 3.1 – Stack Gas Molecular Weight
5.1.4 SCAQMD Method 4.1 – Stack Gas Moisture Content
5.2 SCAQMD Method 100.1 – Continuous Monitoring of Gaseous Emissions, CEMS
5.3 SCAQMD Method 5.2 – Particulate Matter
5.4 SCAQMD Method 25.3 – VOC, as TGNMO (Low-level)

5.1 SCAQMD Methods 1.1-4.1 – Determination of Stack Gas Volumetric Flow Rate, Molecular Weight, and Moisture Content

The fuel gas flow characteristics (i.e. flow rate, molecular weight, and moisture content) were determined according to SCAQMD Methods 1.1 through 4.1. The testing was conducted as follows:

5.1.1 SAMPLING AND VELOCITY TRAVERSE POINTS

The number and location of traverse points were determined according to SCAQMD Method 1 based on the physical dimensions of the sampling location and process parameters. In principle, the stack cross-section is divided into equal areas, each of which was represented by a "traverse point". Generally, the number of traverse points diminished as the flow profile at the sampling location became uniform. In most cases, the maximum number of sampling points is 24 for particulate testing and 16 for velocity traverses. Fewer traverse points were permitted as described in the method.

5.1.2 STACK GAS VELOCITY AND FLOW RATE

The velocity and volumetric flow rate of the stack gas was determined according to SCAQMD Method 2. In this method, the velocity head (differential pressure) and temperature are measured at the required traverse points. The stack gas differential pressure head was determined using an "S" type pitot tube and inclined manometer as differential pressure gauge. The temperature was measured using a type "K" thermocouple (TC) and digital temperature readout.

Prior to testing, the measurement system was set-up and leak-checked. Then the velocity head and temperature were recorded at predetermined traverse points. After the last traverse was completed, the system was again leak-checked. After completion of the traverse, the static pressure in the stack was determined in the centroid of the stack. The stack gas velocity was calculated using the velocity head, and stack gas temperature, pressure and molecular weight.

QA/QC for the method included field performance checks, and periodic calibrations of test equipment including the pitot tube, differential pressure gauge, TC and TC-readout. A swirl check was also performed to assess cyclonic flow.

5.1.3 STACK GAS MOLECULAR WEIGHT

The stack gas molecular weight (MW) was calculated based on the fraction of its major constituents including: oxygen (O_2), carbon dioxide, (CO_2), nitrogen (N_2), carbon monoxide (CO), and water (H_2O). The dry MW was calculated based on the partial fractions of O_2, CO_2, N_2, and CO. Specifically, the O_2 and CO_2 fractions were determined by CEMS, integrated sampling, or grab sampling, and the balance was assumed to be N_2 and CO. The wet MW was calculated based on the fractions of dry gas and water vapor. The dry and wet MW were calculated according to the following equations:

$$MW_{DRY} = 0.32 \times \%O_2 + 0.44 \times \%CO_2 + 0.28 \times (\%N_2 + \%CO)$$

$$MW_{WET} = 0.18 \times \%H_2O + MW_{DRY} \times (1 - \%H_2O/100)$$

where:
- MW_{DRY} = stack gas molecular weight, dry-basis
- MW_{WET} = stack gas molecular weight, wet-basis
- 0.32 = molecular weight fraction for O_2
- 0.44 = molecular weight fraction for CO_2
- 0.28 = molecular weight fraction for N_2 and CO
- 0.18 = molecular weight fraction for H_2O (water vapor)
- %X = fraction of X in stack gas, dry basis, where X = O_2, CO_2, N_2, CO
- $\%H_2O$ = fraction of water vapor in stack gas, wet-basis

5.1.4 SCAQMD METHOD 4.1- STACK GAS MOISTURE CONTENT

The stack gas moisture content was determined according to SCAQMD Method 4.1. In this method, water vapor is collected in a condenser while the dry stack gas volume is measured using a dry gas meter. The volume of water vapor was calculated from the amount of water condensed and the total gas volume was the sum of water vapor plus dry stack gas. The moisture content was determined as a fraction of the total wet stack gas volume. The following calculations were used.

$$B_{WS} = \frac{V_{W,Std}}{V_{M,Std} + V_{W,Std}}$$

$$V_{W,Std} = K_1 \times V_{H2O}$$

$$V_{M,Std} = T_{Std}/P_{Std} \times Y_M \times V_M \times P_M/T_M$$

where:
- B_{WS} = Fraction of water vapor in stack gas
- $V_{W,Std}$ = Volume of water vapor (scf)
- $V_{M,Std}$ = Volume of stack gas sampled (dscf)
- K_1 = Unit volume of water vapor (0.04707 scf @68°F or 0.0464 scf @60°F)
- T_{Std} = Standard Temperature (528°R or 520°R)
- P_{Std} = Standard Pressure, 29.92 in. Hg
- Y_M = Dry gas meter calibration factor
- V_M = Measured volume of stack gas sampled
- P_M = Dry gas meter pressure (in. Hg)
- T_M = Dry gas meter temperature (°R)

Moisture content was determined simultaneously with isokinetic sampling of particulate matter.

5.2 SCAQMD Method 100.1 - Continuous Monitoring of Gaseous Emissions, CEMS

In this method, gaseous components of the stack gas (e.g. NO_X, SO_2, O_2, CO) are measured continuously according to SCAQMD Method 100.1 using Almega's mobile continuous emissions monitoring system (CEMS). Figure 5-1 is a schematic of Almega's CEMS.

The CEMS extracts and conditions a representative stack gas sample and analyzed the gas using one or more analytical instruments. Typical CEMS instrumentation is described in Table 5-1. The extraction and conditioning system consists of a stainless steel heated probe, a short heated TFE sample line, a conditioning system, a TFE-diaphragm pump and a TFE transport (sample) line. The sample conditioning system, consisting of water knockout impingers and/or a thermoelectric condenser, removed moisture before the gas was delivered to the analyzers. Sample flow and delivery are controlled using a flow control panel that included valves, pressure gauges, and flow meters (rotameters). The flow control panel allows the user to deliver sample gas to any and all instruments. Instrument readings are recorded using a real-time strip chart and an electronic data acquisition system (DAS). Other pertinent data such as calibration gas cylinder numbers and concentrations, test location, dates, times, and operator identification are also recorded on the strip chart and on the field data form.

Sampling included pretest and post-test calibration and bias checks for each sampling run. Raw concentration data were corrected for sampling system bias according to Method 100.1 using the following equation:

$$C_{CORR} = C_{MA} \times \frac{(C_i - BIAS_{ZERO})}{(BIAS_{SPAN} - BIAS_{ZERO})}$$

Where:
- C_{CORR} = Concentration, corrected for drift and bias
- C_i = Average measured concentration (raw value)
- $BIAS_{ZERO}$ = Average instrument response during zero bias check
- C_{MA} = Certified concentration of applicable span gas
- $BIAS_{SPAN}$ = Average instrument response during span bias check

The following QA/QC activities were performed during testing.

- Prior to testing, each individual analyzer was calibrated (adjusted) by introducing zero, hi-span and mid-span gases directly into each analyzer and by making corresponding adjustments.

- Prior to testing, calibration error, linearity and system bias checks were performed on each analyzer. Calibration error and linearity checks were performed by injecting known calibration gases directly to each instrument. System bias checks were performed by injecting calibration gases at the sampling-probe/junction or at the sampling probe tip.

- The system response time for each parameter was determined at the moment when the calibration gas for the bias check reached 95% of its expected concentration value.

- A leak check was conducted before sampling and periodically thereafter to ensure that no leakage occurred in the entire sampling apparatus. The leak check was performed on the vacuum side by sealing the probe tip and increasing vacuum to above 20 inches of mercury. After the vacuum stabilized, it should have held constantly at about 20 in. Hg On the pressure side, the pressure gauge indicator should have dropped to zero and flow to each individual rotameter also should have dropped to zero to indicate a successful leak check.

- Calibration gases used to span instrumentation conformed to EPA Protocol-1. Certificates of analysis for calibration gases are included in the report.

Figure 5-1. Continuous Emissions Monitoring System

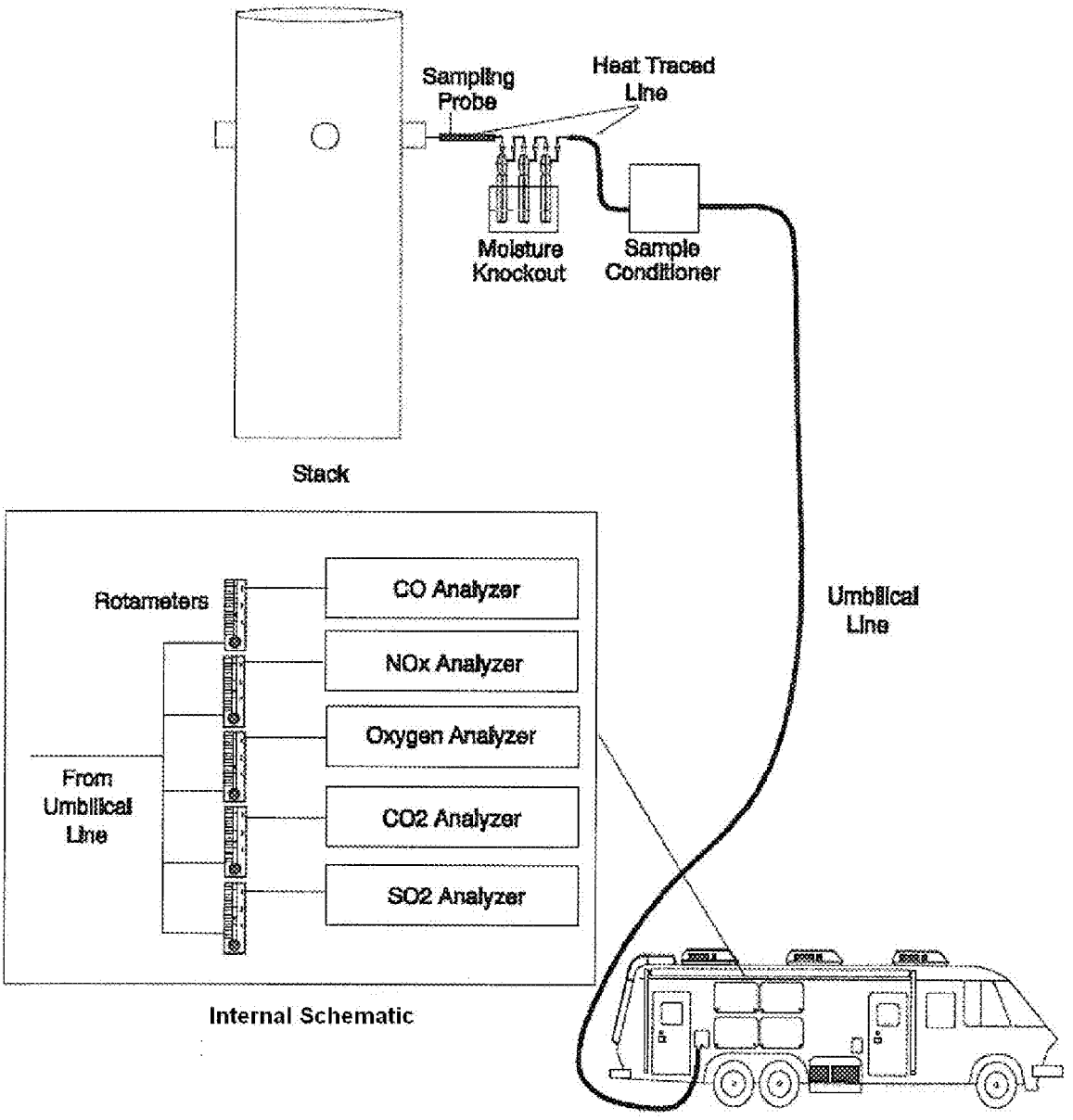


TABLE 5-1. ALMEGA CEMS – GENERAL EQUIPMENT SPECIFICATIONS

ANALYZERS					
Specification	**O2**	**CO2**	**NOx**	**CO**	**SO2**
Manufacturer	Teledyne	Servomex	T-API	Thermo Electron	Western Research
Model	326RA	1400B	200AH	48C	921
Analytical Principle	E-Chemical Cell	NDIR	Chemiluminescent	NDIR-GCC	NDUV
Ranges	%: 0-5, -10, -25	%: 0-5, -10, -20	ppmv: 0-2.5, -10, -25, -50, -100, -250, -1,000	ppmv: 0-20, -50, -100, -200, -500, -1k, x10	ppmv: 0-10, -25, -50, -100, -200, -300
Accuracy, % of Full Scale	+/- 1%	+/- 1%	+/- 1%	+/- 1%	+ 0.5%
Repeatability, % of Full Scale	0.5%	0.5%	0.5%	0.5%	0.5%
Sensitivity, % of Full Scale	0.5%	0.5%	0.5%	0.5%	<2% of Range
Zero/Span Drift, % of Full Scale	+/- 1%, in 24 Hrs	+/- 1%, in 24 Hrs	+/- 1%, in 24 Hrs	+/- 1%, in 24 Hrs	-
Response Time	3 Seconds	<2 Seconds	1.7 Seconds	<2.0 Seconds	30 seconds
Linearity, % of Full Scale	< 1%	< 1%	< 1%	< 1%	< 1%
Output	1V DC, 5V DC	0.1V DC, 1V DC	1V DC, 10V DC	1V DC, 10V DC	0-1V DC

OTHER CEMS EQUIPMENT				
Specification	**Sample Conditioner**		**Strip Chart Recorder**	
System used	Primary	Back-up	System used	Primary
Manufacturer	Almega	Universal	Manufacturer	Yokogawa
Model	(in-house)	Model 1090	Model	Model HR 2400
Principle	Refrigeration	Refrigeration	Pen Response	3 sec.
Max. Inlet Temperature	>700 F	500 F	Input Voltage	user-selectable
Max. Inlet Pressure	50 psi	50 psi	Chart Speed	user-selectable
Max. Flow Rate	10 SCFH	7.0 Lpm	Chart Width	10 inches
Max. Water Concentration	50%	50%	Output	user-selectable
Outlet Dew-Point Temperature	< 37 F	35 F +/- 2 F	No. of Channels	30 user-select. 30 calc'd
Dew-Point Stability		+/- 0.5 F	Colors	10 color, user-selectable

5.3 SCAQMD Method 5.2 - Total Particulate Matter

A series of preliminary measurements were made prior to conducting the particulate test. SCAQMD Methods 1.1, 2.1, and 4.1 were performed to determine location and number of traverse points, average gas velocity, molecular weight, and moisture content, respectively. The results of these measurements were used to determine the appropriate nozzle size for isokinetic sampling.

Figure 5-1 is a schematic of the sampling train used for SCAQMD Method 5.2. The sampling train consists of a glass nozzle, heated probe, jumper line and filter, a set of glass impingers, umbilical line, a vacuum pump, dry gas meter, and calibrated orifice. Impingers #1 and #2 in the absorption train were charged with 100 ml of distilled water, impinger #3 was left empty, and impinger #4 was filled with approximately 200 g of silica gel. The probe was brushed out, rinsed with acetone. The filter was tarred and placed in the filter holder. The sampling apparatus was sealed and transported to the sampling site where it was assembled and leak tested at 15 inches of mercury (Hg.) vacuum.

After the initial gas meter reading was appropriately recorded, the nozzle was positioned into the gas flow. The vacuum pump was started immediately and adjusted to obtain an isokinetic sample rate. A complete traverse was performed. Stack gas temperature, velocity pressure (dP), meter temperature, gas volume, and meter pressure vacuum were monitored and recorded at each sample point.

Upon completion of sampling, the apparatus was leak checked at a vacuum greater than the highest vacuum observed during testing. After the leak rate was recorded, the apparatus was disassembled, sealed and transported to the laboratory for recovery.

The probe, nozzle and filter housing was washed as instructions per SCAQMD Method 5.2. The wash fluid was subsequently transferred to clean, labeled Nalgene bottles, where the fluid level was appropriately marked.

ANALYSIS

The filter and any loose particulate were carefully removed from the filter holder with tweezers. The filter was placed into a labeled petri dish and secured until analysis. The nozzle, probe and filter housing was rinsed and brushed six times with distilled water. The sample fractions were combined, bottled, labeled and fluid levels marked for transportation to Almega laboratory for analysis. Aliquots of the distilled water were similarly treated for blank analysis.

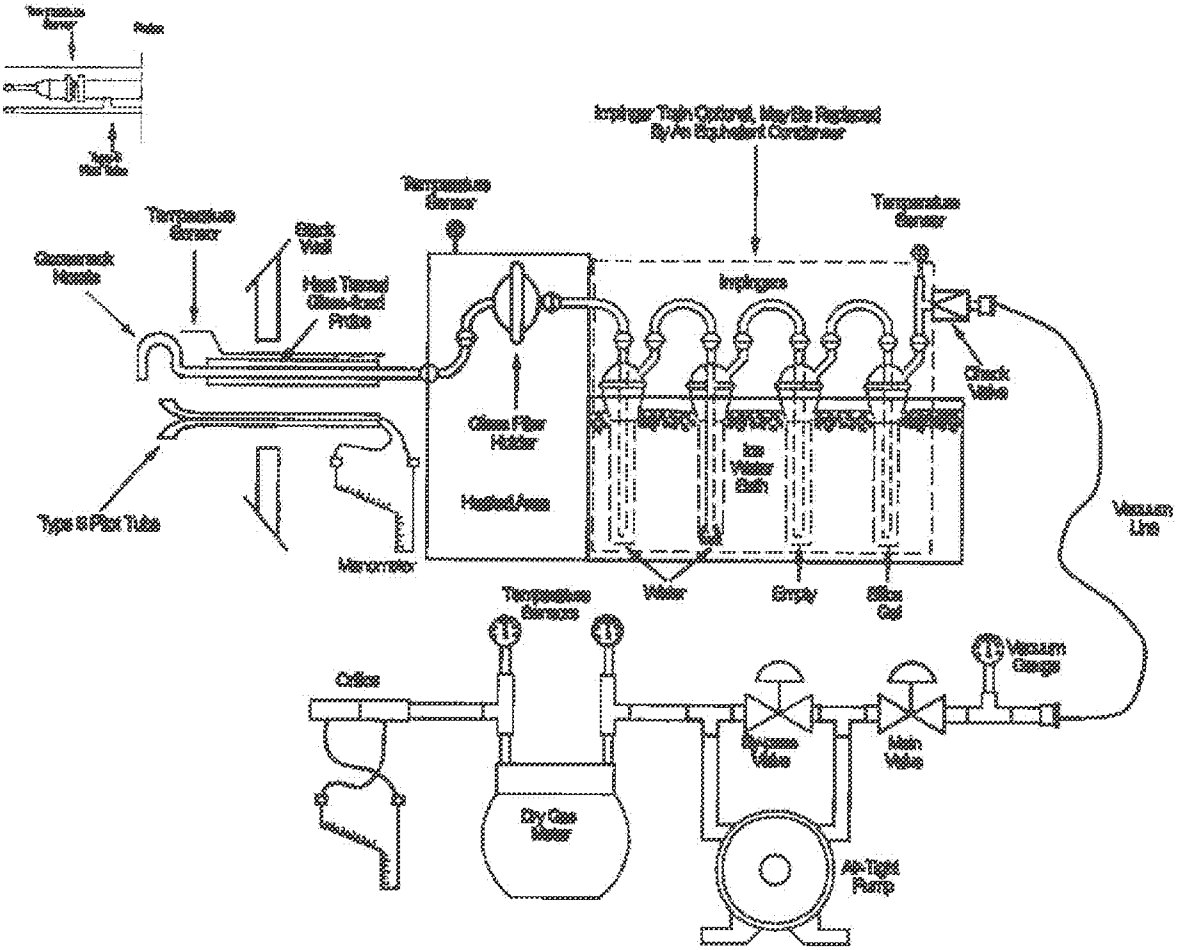
The absorption train was inspected for abnormalities and subsequently disassembled. The water gain in the impingers was weighed on a digital scale in order to determine percent moisture. The contents of the impingers were quantitatively transferred into separate bottles, sealed, labeled and fluid levels marked for transportation to Almega laboratory for analysis.

Aliquots of the reagent grade impinger contents were saved for blank analysis. The filter was transferred to an oven and heated to 105 deg. C for 2-3 hours and then placed in desiccators for 24 hours. The filter was then weighed on a digital scale to the nearest 0.1 mg and weighed to a constant weight.

The nozzle, probe and filter top was examined for any leakage during transportation and transferred to a tarred evaporation dish. The wash was then evaporated at an elevated temperature, below the boiling point of the wash. The dish and wash residue were then desiccated and weighed to a constant weight.

The contents of the first impinger were recovered and the sample was then evaporated, desiccated and weighed to a constant weight. Additionally, an organic extract of the condensable (back half) was taken, as the organic content was expected to be greater than 5 mg or 5 percent of the combined probe and impinger catch. The net weight of particulate matter was then calculated from both the filter portion and the impingers content.

Figure 5-2. Sampling Apparatus for Particulate Matter



5.4 SCAQMD Method 25.3 – VOC, as TGNMO (Low-level)

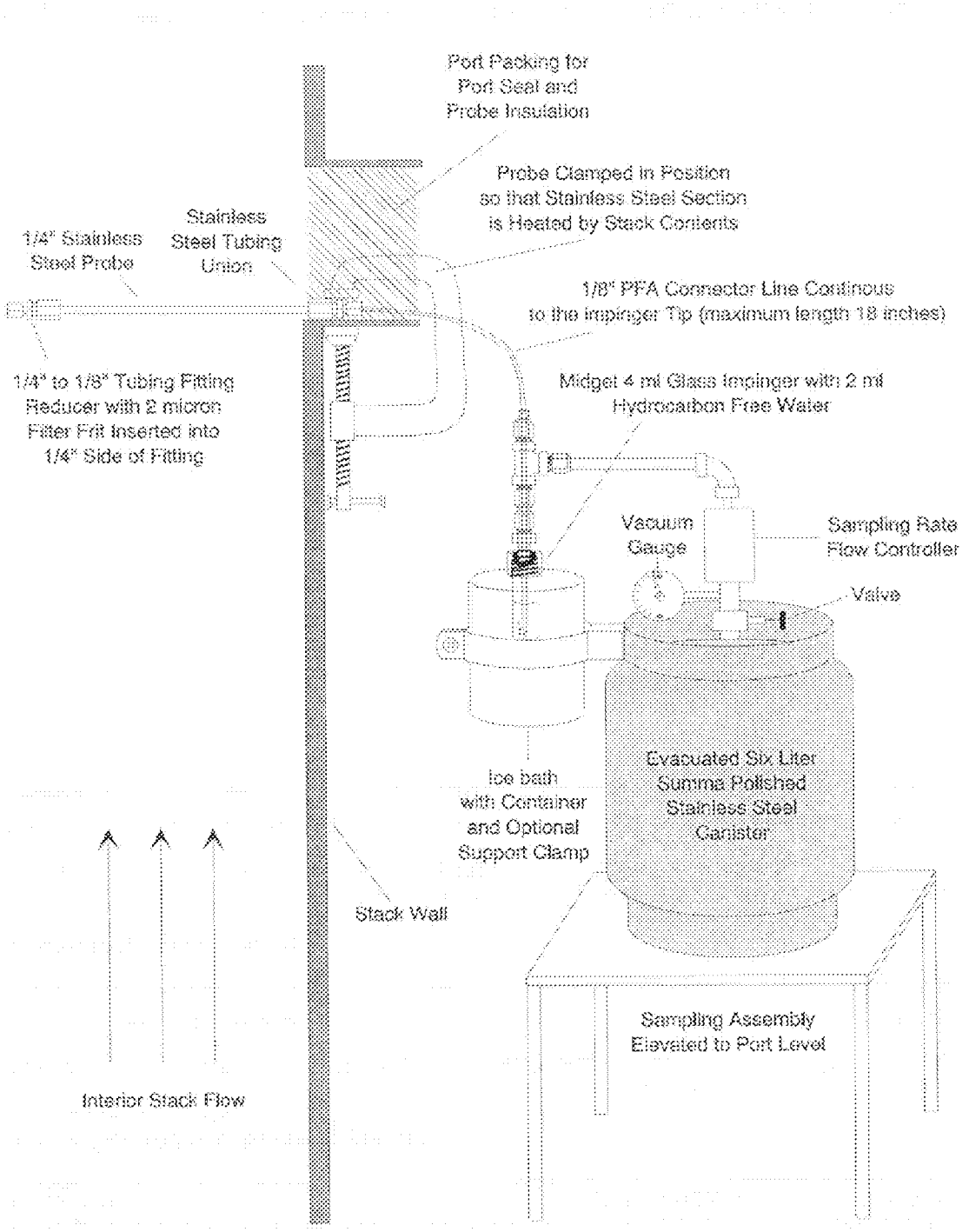
This method applies to the measurement of low-concentration (</= 50 ppmv) Volatile Organic Compounds (VOC) or total gaseous non-methane organics (TGNMO) as carbon in source emissions. In this method, gaseous samples are withdrawn from the gas stream at a constant rate through duplicate chilled condensate traps and collected in evacuated sample tanks. The sampling system is depicted in Figure 5-3. Each sampling train (there are two) consisted of an in-stack filter (optional), sample probe, water-chilled mini-impinger, a flow control system, and an evacuated sample tank. The flow controller incorporated a combination vacuum/pressure gauge, which was connected directly to the canister. The TGNMO was determined by combining the analytical results obtained from independent analyses of the condensate traps (condensible fraction) and the sample tanks (gaseous fraction).

Prior to testing, the sampling system was pre-cleaned and evacuated in preparation for sample collection. On-site, the sampling system was leak-checked and the impingers were placed in an ice-slurry (the impingers are chilled for at least 30 minutes prior to sampling). Then the sample probe was placed in the stack, facing downstream to prevent collection of particulate matter. Pretest data was recorded and the sample valve was opened. The flow controller was based on a critical orifice that was preset to flow at a rate of 80-cc/min +/- 15%. The sample probe was traversed when necessary. Periodically, sampling train readings (i.e. tank vacuum) were recorded on the field data sheet. Sampling was stopped when one hour had elapsed and/or and tank vacuum reached 5 inches as indicated by the vacuum gauge. Then, the sampling train was removed from the stack and a leak check was performed. Samples were logged in and delivered to the laboratory for analysis.

The analytical system consisted of two major sub-systems: a total organic carbon (TOC) analyzer capable of differentiating between total carbon (TC) and inorganic carbon (IC) and a non-methane organics (NMO) analyzer. The NMO analyzer was a gas chromatograph (GC) with back flush capability for NMO analysis and was equipped with an oxidation catalyst, reduction catalyst, and flame ionization detector (FID). The system for the recovery and conditioning of the organics captured in the condensate trap consisted of a heat source, oxidation catalyst, non-dispersive infrared (NDIR) CO_2 analyzer and an intermediate collection vessel (ICV.

NMO collected in the water impinger were analyzed in the TOC analyzer. The TOC analyzer determined both TC and IC. And the TOC was calculated as the difference between TC and IC.
The organic content of the sample fraction collected in the sampling tank was measured by injecting a gas sample into the GC to separate the NMO from carbon monoxide (CO), CO_2 and CH_4. The NMO were oxidized to CO_2, reduced to CH_4, and measured by the FID. In this manner, the variable response of the FID (associated with different type of organic compounds) was eliminated. The sampling apparatus and sample analysis services were provided by Almega, which is a SCAQMD-approved laboratory.

Figure 5-3. Sampling Apparatus for TGNMO per SCAQMD Method 25.3
(Figure shows one train – actual method was run in duplicate simultaneously)



6.0 QUALITY ASSURANCE AND QUALITY CONTROL

Almega applies stringent quality assurance and quality control (QA/QC) procedures to ensure the validity of measurements for all test methods. The following section discusses general and project-specific QA/QC measures.

6.1 General QA/QC

Almega's QA/QC procedures follow guidelines from the "Quality Assurance Handbook for Air Pollution Measurement Systems," Volume I through III. And, procedures for pretest preparation and calibration of sampling equipment are followed. Standardized written procedures, calculator programs, and computer spreadsheets are used for test planning, pre-survey, equipment checklist, preliminary calculations, testing, data analysis, and reporting. Pretest equipment preparation and maintenance include organization of the following equipment prior to testing:

- Mobile RM CEM test van: Check fluids, fuel, mechanical conditions, verify operation of CEM instruments, sample lines and sample conditioner prior to the date of the source test.

- Sampling Equipment: Check meter boxes, pitot tubes, manometers and thermocouples to ensure in good working conditions and in proper calibrations. Preclean sampling trains and seal all openings prior to use.

Calibrations are performed in accordance with Chapter III of the SCAQMD Source Test Manual (March 1989). Table 6-1 shows the test equipment calibration schedules. Table 6-2 shows the test equipment maintenance schedules.

6.2 Project-Specific QA/QC

This project includes specific QA/QC activities required to validate the test results. These QA/QC activities are based on the test methods discussed in Section 5 and generally acceptable test procedures. Reference Methods used for source testing are promulgated by the South Coast Air Quality Management District (SCAQMD), the California Air Resource Board (CARB), or the US Environmental Protection Agency (EPA). Any deviations from published Methods are approved in advance by the regulatory agency (i.e. SCAQMD), prior to implementation if possible. Project-specific QA/QC activities and results that may have impacted test results are discussed in Section 3.

TABLE 6-1. TEST EQUIPMENT CALIBRATION SCHEDULE

Equipment	Calibration Period	Standard or Method of Calibration
Thermocouples	6 Months and 2 Months	Mercury Thermometer, three point (ice, boiling water, hot oil)
Dry Gas Meters	6 Months and 2 Months	Critical orifice
Field Barometers	6 Months, Check prior to usage	Mercury Barometer
S-Type Pitot	6 Months Check prior to usage	EPA Method 2, Measure physical configuration. Reshape pitot tips or calibrate if configuration does not meet the limits.
Pressure gauges	6 Months 1 Month	Five-point calibration against manometer Three-point check
Temp. Meters	6 Months	Precision Potentiometer
CEM Systems	Bimonthly, or as needed	Specified by Manufacturer

TABLE 6-2. TEST EQUIPMENT MAINTENANCE

Equipment	Check For	Correction	Frequency
CEM Systems	Absence of malfunction, noise, drift, conversion efficiency for NOx anlzr.	As required by the manufacture, or depending on performance	Bimonthly
Pumps	Absence of leakage, flow, proper vacuum	Replace parts, inspect, clean	300 hours of usage
Flow Devices	Levelling, zeroing, obstruction, deformation	Clean, replace, or re-calibrate	300 hours of usage
Calibration Gases	Expiration date, tank pressure	Re-certify, order new gases	2 months and prior to field testing
Regulators	Malfunction, Gauge precision	Repair or replace	3 months and prior to field testing
Gas Divider	Malfunction, precision	Repair or replace	Monthly and before field testing
Condensers	Leakage, temperature	Repair or replace	Monthly and before field testing
Heated lines	Leakage, temperature, cleanliness	Repair, replace, clean	Monthly and before field testing

APPENDICES

APPENDIX A

GENERAL CALCULATIONS AND FORMULAE

GENERAL CALCULATIONS

Standard conditions: 29.92 in.Hg, 60 °F

Gas Moisture at standard conditions (scf): $V_{WTR} = K2*V_{COND}$
$K2 = 0.04707$ @ 68 °F, 0.0464 @ 60 °F

Sample volume at standard conditions (scf):
Vmstd =K1*Vmacf*Ym*(Pbar+dH/13.6)/(Tm+460)
K1 = 17.64 @ 68 °F, 17.38 @ 60 °F

Percent of water: $\%H_2O = 100*Vmstd/(Vmstd+Vwtr)$

Dry molecular weight: $M_d = (44*\%CO_2+32*\%O_2+28*(\%N_2+\%CO))/100$

Wet molecular weight: $M_w = M_d*(1-\%H_2O/100)+18*(\%H_2O/100)$

Stack gas pressure (In. Hg): $P_{stk} = P_{bar}+P_{stg}/13.6$

Average velocity head: Ave. dP = $\{SQRT\ (dP)\}^2$

Stack gas velocity (fps): $V = 85.49*C_p*SQRT(dP)*SQRT((T_S+460)/(P_{STK}*M_w))$

Percent of excess air: $\%EXCA = 100*(\%O_2-0.5\%CO)/(0.264(\%N_2-(\%O_2-0.5\%CO)))$

Stack gas flow (scfm): $Q_{STK} = 60(1-\%H_2O/100)*V*A*(528/(T_s+460))*P_{stk}/29.92$

Concentration at 3% O_2: $PPM\ @\ 3\%\ O_2 = PPM_{measured}*17.9/(20.9-\%O_2)$

Emissions lb/MMBtu:
lb/MMBtu=PPM*10^{-6}*(MW lb/lb-mole)/SV Mole*F_d*20.9/(20.9-%O_2)

Emissions lb/hr:
lb/hr = PPM*10^{-6}*((MW lb/lb-mole)/SV)*F_d*FF*(1050 Btu/scf)*20.9/(20.9-%O_2)

CALCULATIONS FOR METHOD 100.1:

Corrected PPM = $(PPM_{measured}-C_o)*C_{ma}/(C_m-C_o)$

Where: C_o = Average of initial and final bias zeros
C_m = Average of initial and final bias calibrations
C_{ma} = Certified gas value used for the bias calibration.

CALCULATIONS FOR METHOD 100.1, continued

Calibration Error=	100*(Certified value-Anlzr response)/Anlzr range
Percent Bias=	100*(Direct Anlzr response-Bias response)/Anlzr range
System Zero/Span Drifts=	100*(Final-Initial)/Anlzr range
Linearity=	100*(Anlzr mid. gas response-Predictive value)/range

Where the Predictive Value for the mid gas is found by a straight line drawn between hi gas and zero gas calibration points which can be calculated from the straight line equation, Y=mx+b where m is the slope of the line and b is the Y-intercept. The calculation is done by a computer spreadsheet for Method 100.1.

DEFINITIONS

A:	Stack cross area, Square feet
Cp:	Pitot coefficient
@h:	Orifice Pressure, In. H2O
MW:	Molecular weight
Md:	Dry molecular weight of flue gas
Mw:	Wet molecular weight of flue gas
Pbar:	Barometric pressure, In. Hg
Psta:	Static Pressure, In. H2O
Pstk:	Stack pressure, In. Hg
P:	Stack differential pressure, In. H2O
Qstk:	Stack gas flow, scfm
Tm:	Meter temperature, F
Ts:	Stack gas temperature, F
Vcond:	Volume of water condensation, ml
Vm:	Meter volume, acf
Vmstd:	Sample gas at standard conditions, scf
Vwtr:	Water vapor volume, scf
Ym:	Meter correction factor
SV:	Specific molar volume, 379.5 dscf/Lb.mole at 60F, or 385.3 dscf/Lb.mole at 68F
FF:	Fuel Flow Rate (SCF/HR)
Fd:	Dry Fuel Factor, for natural gas Fd=8710 Dscf/MMBTU at 68F.

APPENDIX B

APPROVALS AND CERTIFICATIONS

Appendix B1

SCAQMD and CARB Testing Approvals

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 · www.aqmd.gov

June 22, 2010

Mr. John W. Phillips
Almega Environmental
5251 McFadden Avenue
Huntington Beach, CA 92649

Subject: LAP Approval Notice
Reference # 93LA0827

Dear Mr. Phillips:

We completed our review of the renewal application you submitted for approval under the South Coast Air Quality Management District's Laboratory Approval Program (LAP). We are pleased to inform you that your firm is approved for the period beginning June 30, 2010 and ending June 30, 2011 for the following methods:

SCAQMD Methods 1-4
SCAQMD Methods 10.1
SCAQMD Method 25.1 (Analysis)
SCAQMD Method 25.1 (Sampling)
SCAQMD Method 25.3 (Analysis)
SCAQMD Method 5.1
SCAQMD Method 6.1
SCAQMD Method 7.1
SCAQMD Method 100.1
SCAQMD Rules1121/1146.2 Protocols
SCAQMD Rule 1420 (Ambient Sampling)
SCAQMD Rule 1420 (Source Sampling)
SCAQMD Rule 462 Test

Thank you for participating in the LAP program. Your cooperation helps us to achieve the goal of the LAP: to maintain high standards of quality in the sampling and analysis of source emissions.

You may direct any questions or information to LAP Coordinator, Ramiro Gonzalez. He may be reached by telephone at (909) 396-2228, by facsimile at (909) 396-2099 or via email: rgonzalez@aqmd.gov

Sincerely,

for Rudy Eden, Senior Manager
Source Test Engineering

RE:RG:av
cc: Ramiro Gonzalez

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 · www.aqmd.gov

June 9, 2010

John W. Phillips
Almega Environmental
5251 McFadden Avenue
Huntington Beach, CA 92649

Dear Mr. Phillips:

Subject: Laboratory Approval Program Approval
Re: Reference # 93LA0827

I am pleased to inform you that your firm is approved under the South Coast Air Quality Management District's Laboratory Approval Program (AQMD LAP) for the period beginning June 9, 2010 and ending June 30, 2011 for the following methods:

USEPA CTM-030
ASTM D6522-00

Thank you for participating in the AQMD LAP. Your cooperation helps us to achieve the goal of the AQMD LAP: to maintain high standards of quality in the sampling and analysis of source emissions.

You may direct any questions or information to AQMD LAP Coordinator Ramiro Gonzalez. He may be reached by telephone at (909)396-2228, by facsimile at (909)396-2099 or by email at rgonzalez@aqmd.gov .

Sincerely,

Rudy Eden, Sr. Manager
Laboratory Services and
Source Testing & Engineering

RWE:RG:av

cc: Ramiro Gonzalez

State of California

Air Resources Board

Approved Independent Contractor

Almega Environmental & Technical Services, Incorporated

This is to certify that the company listed above has been approved by the Air Resources Board to conduct compliance testing pursuant to California Code of Regulations, title 17, section 91207, until December 31, 2010, for those test methods listed below:

ARB Source Test Methods:
1, 2, 3, 4, 5, 8, 11, 13B, 17
100(CO, CO_2, NO_x, O_2, SO_2, THC), 410A, 434

Alberto Ayala, Ph.D., M.S.E.
Chief, Monitoring and Laboratory Division

6-3

Appendix B2

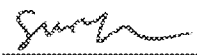
Certification of No Conflict-of-Interest

Certification of No Conflict-of-Interest

Almega Environmental & Technical Services
5251 McFadden Avenue
Huntington Beach, CA 92649

I certify that I am responsible for the testing operations of Almega and am authorized to sign this certificate on the Company's behalf.

Almega may conduct tests as an independent tester pursuant to SCAQMD Rule 304(k). I further certify that Almega has no conflict-of-interests, and is not related or owned in any way to the company being tested.

Company being tested:	BP West Coast Products, LLC.
Facility ID:	131003
Device ID:	C910
Signature:	
Name (printed or typed):	Surya Adhikari
Title:	Project Manager
Date:	January 18, 2011

APPENDIX C

REFERENCE METHOD CONTINUOUS EMISSIONS MONITORING SYSTEM

(RM CEMS)

Appendix C1

RM CEMS – Results and Calculations

Reference Method CEMS Summary

Facility: BP West Coast Product, LLC
Location: Carson, CA
Source: NO. 2 HDU
Device ID: C910

Run Information				Flue Gas Composition									Pollutant 1: CO (MW: 28 lb/lb-mole)		
Run No.	Test Date	Start Time	End Time	Moisture %	Flow Rate: dry scfm	dry scfh	wet scfm	wet scfh	O2 dry %	O2 wet %	CO2 dry %	CO2 wet %	dry ppm	dry ppm @3%O2	lbs/hr
1	12/16/10	10:15	12:26	8.82	29,306	1,758,360	32,141	1,928,449	8.40	7.66	4.71	4.30	480.8	688.7	62.38

* Based on Standard Conditions of:

60	deg. F and
29.92	in. Hg

Facility:	BP West Coast Product, LLC	Run No.:	1
Location:	Carson, CA	Test Date:	12/16/10
Source:	NO. 2 TGU	Run Start Time:	10:15
Device ID:	C910	Run End Time:	12:26

TEST DATA		Pollutant 1	Diluent 1	Diluent 2	
VARIABLE	DESCRIPTION	CO	O2	CO2	
A	ANALYTICAL RANGE	1000	25	30	
	Unit of Measurement	ppmd	% dry	% dry	
	CALIBRATION GAS INFORMATION				
B	Zero Gas	0.00	0.00	0.00	
C*	Low Gas Concentration				
	Low Gas Cylinder S/N:				
C	Mid Gas Concentration	446.70	12.09	4.278	
	Mid Gas Cylinder S/N:	CC162408	CC274244	CC274244	
D	High Gas Concentration	898.00	21.97	8.792	
	High Gas Cylinder S/N:	CC344665	CC277612	CC277612	
	Primary Gas Cylinder S/N:				
E	UPSCALE CALIBRATION GAS USED	446.70	12.09	4.28	
	L=Low, M=Mid, H=High	M	M	M	
	INITIAL CALIBRATION ERROR TEST				
F	Zero Gas Response	0.10	0.00	0.00	
G*	Low Gas Response				
G	Mid Gas Response	448.20	12.05	4.35	
H	High Gas Response	894.72	21.93	8.81	
	INITIAL SYSTEM CALIBRATION CHECK				
I	Zero Gas Response	1.00	0.00	0.00	
J	Upscale Gas Response	448.00	11.95	4.31	
	FINAL SYSTEM CALIBRATION CHECK				
K	Zero Gas Response	0.00	0.00	0.11	
L	Upscale Gas Response	437.02	12.15	4.40	
	FINAL CALIBRATION ERROR CHECK				
M	Zero Gas Response	1.00	0.00	-0.01	
N*	Low Gas Response				
N	Mid Gas Response	445.40	12.05	4.29	
O	High Gas Response	898.35	22.07	8.80	
P	AS MEASURED FLUE GAS CONCENTRATI	476.22	8.38	4.79	

CALCULATIONS					FORMULA
	AVERAGE SYSTEM CALIBRATION				
Q	Zero Response	0.50	0.00	0.06	(I+K)/2
R	Upscale Response	442.51	12.05	4.36	(J+L)/2
S	CORRECTED CONC.	480.77	8.40	4.71	E*(P-Q)/(R-Q)

QA/QC CALCULATIONS				
CALIBRATION GAS SELECTION, % of Range				
Low Gas				C*/100/A
Mid Gas	44.7	48.4	42.8	C*/100/A
High Gas	89.8	87.9	87.9	D*/100/A
CALIBRATION ERROR, % of Range				
Initial Zero Gas Error	0.01	0.00	0.00	(F-B)*100/A
Initial Low Gas Error				(G-C*)*100/A
Initial Mid Gas Error	0.15	-0.16	0.72	(G-C)*100/A
Initial High Gas Error	-0.33	-0.16	0.18	(H-D)*100/A
Final Zero Gas Error	0.10	0.00	-0.10	(M-B)*100/A
Final Low Gas Error				(N-C*)*100/A
Final Mid Gas Error	-0.13	-0.16	0.12	(N-C)*100/A
Final High Gas Error	-0.76	0.40	0.08	(O-D)*100/A
LINEARITY, % of Range				
Initial	0.31	-0.07	0.63	[(G-F)-[(H-F)*C]/D]*100/A
Final	0.20	-0.38	0.13	[(N-M)-[(O-M)*C]/D]*100/A
SAMPLING SYSTEM BIAS, % of Range				
Initial Zero Gas Bias	0.09	0.00	0.00	(I-F)*100/A
Initial Upscale Gas Bias	-0.02	-0.40	-0.40	(J-G[or G', or H])*100/A
Final Zero Gas Bias	-0.10	0.00	1.20	(K-M)*100/A
Final Upscale Gas Bias	-0.84	0.40	1.10	(L-N[or N', or O])*100/A
CALIBRATION DRIFT, % of Range				
Zero	-0.10	0.00	1.10	(K-I)*100/A
Upscale	-1.16	0.80	0.90	(L-J)*100/A

Cyl-2

AETS CEMS Data -- Run-by-Run Basis

	RUN 1.0			
	Time	CO	O2	CO2
#	AVG	476.22	8.38	4.79
1	10:15:01	385.15	8.18	4.81
2	10:16:01	459.52	8.31	4.76
3	10:17:01	487.75	8.30	4.76
4	10:18:01	422.33	8.28	4.77
5	10:19:01	466.08	8.37	4.71
6	10:20:01	466.70	8.29	4.73
7	10:21:01	420.05	8.23	4.77
8	10:22:01	499.27	8.37	4.71
9	10:23:01	455.47	8.23	4.79
10	10:24:01	453.47	8.31	4.75
11	10:25:01	513.62	8.33	4.78
12	10:26:01	397.68	8.23	4.81
13	10:27:01	463.43	8.35	4.77
14	10:28:01	485.53	8.43	4.74
15	10:29:01	479.12	8.29	4.75
16	10:30:01	485.45	8.32	4.74
17	10:31:01	514.45	8.33	4.74
18	10:32:01	447.40	8.25	4.78
19	10:33:01	503.17	8.37	4.73
20	10:34:01	457.82	8.23	4.81
21	10:35:01	457.67	8.33	4.79
22	10:36:01	480.07	8.27	4.83
23	10:37:01	377.87	8.18	4.89
24	10:38:01	446.47	8.31	4.82
25	10:39:01	459.18	8.33	4.79
26	10:40:01	469.18	8.37	4.77
27	10:41:01	511.36	8.45	4.70
28	10:42:01	487.43	8.34	4.73
29	10:43:01	492.88	8.41	4.74
30	10:44:01	471.20	8.30	4.77
32	10:45:01	473.58	8.33	4.77
33	10:46:01	488.45	8.38	4.76
34	10:47:01	471.13	8.28	4.77
35	10:48:01	440.03	8.29	4.79
36	10:49:01	506.67	8.45	4.74
37	10:50:01	469.82	8.35	4.78
38	10:51:01	461.68	8.36	4.78
39	10:52:01	504.62	8.31	4.77
40	10:53:01	476.55	8.29	4.77
41	10:54:01	508.73	8.36	4.77
42	10:55:01	470.73	8.27	4.83
43	10:56:01	429.47	8.28	4.87
44	10:57:01	469.60	8.33	4.84
45	10:58:01	444.33	8.33	4.84
46	10:59:01	441.93	8.33	4.83
47	11:00:01	473.60	8.36	4.82
48	11:01:01	492.67	8.37	4.79
49	11:02:01	495.47	8.37	4.78
50	11:03:01	474.70	8.39	4.78
51	11:04:01	490.83	8.39	4.80
52	11:05:01	445.47	8.31	4.84
53	11:06:01	473.67	8.39	4.83
54	11:07:01	490.28	8.34	4.84
55	11:08:01	418.27	8.30	4.88
56	11:09:01	498.15	8.42	4.83
57	11:10:01	463.72	8.34	4.86
58	11:11:01	447.75	8.38	4.86
59	11:12:01	499.12	8.41	4.82
60	11:13:01	456.05	8.37	4.83
61	11:14:01	435.35	8.40	4.83

AETS CEMS Data – Run-by-Run Basis

	RUN 1.8			
	Time	CO	O2	CO2
#	AVG	476.22	8.38	4.79
62	11:27:01	233.13	8.42	4.80
63	11:28:01	449.78	8.43	4.82
64	11:29:01	464.95	8.41	4.83
65	11:30:01	426.27	8.33	4.85
66	11:31:01	464.66	8.46	4.79
67	11:32:01	503.20	8.45	4.78
68	11:33:01	481.52	8.42	4.80
69	11:34:01	497.15	8.49	4.80
70	11:35:01	457.92	8.40	4.83
71	11:36:01	459.97	8.46	4.81
72	11:37:01	466.82	8.46	4.80
73	11:38:01	432.77	8.43	4.82
74	11:39:01	452.37	8.45	4.81
75	11:40:01	484.98	8.41	4.81
76	11:41:01	436.36	8.39	4.84
77	11:42:01	485.82	8.49	4.79
78	11:43:01	464.15	8.47	4.80
79	11:44:01	481.87	8.53	4.80
80	11:45:01	488.57	8.47	4.80
81	11:46:01	453.97	8.46	4.80
82	11:47:01	509.33	8.52	4.77
83	11:48:01	471.00	8.37	4.81
84	11:49:01	479.68	8.44	4.81
85	11:50:01	496.38	8.03	4.56
86	11:51:01	457.60	8.36	4.84
87	11:52:01	512.42	8.49	4.78
88	11:53:01	484.75	8.38	4.84
89	11:54:01	460.17	8.42	4.85
90	11:55:01	497.33	8.43	4.85
91	11:56:01	525.30	8.52	4.80
92	11:57:01	520.22	8.44	4.81
93	11:58:01	446.23	8.39	4.85
94	11:59:01	509.98	8.21	4.66
95	12:00:01	541.10	8.43	4.81
96	12:01:01	487.08	8.46	4.84
97	12:02:01	512.27	8.44	4.85
98	12:03:01	529.60	8.41	4.85
99	12:04:01	446.42	8.00	4.60
100	12:05:01	545.33	8.45	4.80
101	12:06:01	547.95	8.43	4.80
102	12:07:01	505.68	8.39	4.80
103	12:08:01	532.87	8.46	4.80
104	12:09:01	522.83	8.43	4.81
105	12:10:01	469.57	8.45	4.82
106	12:11:01	536.13	8.49	4.80
107	12:12:01	470.78	8.44	4.84
108	12:13:01	509.83	8.45	4.83
109	12:14:01	434.25	8.29	4.74
110	12:15:01	511.20	8.50	4.78
111	12:16:01	553.20	8.47	4.79
112	12:17:01	477.03	8.40	4.81
113	12:18:01	539.18	8.52	4.75
114	12:19:01	544.17	8.48	4.75
115	12:20:01	441.90	8.43	4.81
116	12:21:01	488.18	8.54	4.79
117	12:22:01	525.42	8.53	4.77
118	12:23:01	510.53	8.43	4.78
119	12:24:01	476.23	8.48	4.80
120	12:25:01	474.13	8.39	4.86
121	12:26:01	507.28	8.43	4.84

Appendix C2

RM CEMS – Strip Chart

MANUAL 0.0002% 02 0.0000% 03 0.000 ppm 04 0.0400 ppm
05 1.1902 ppm

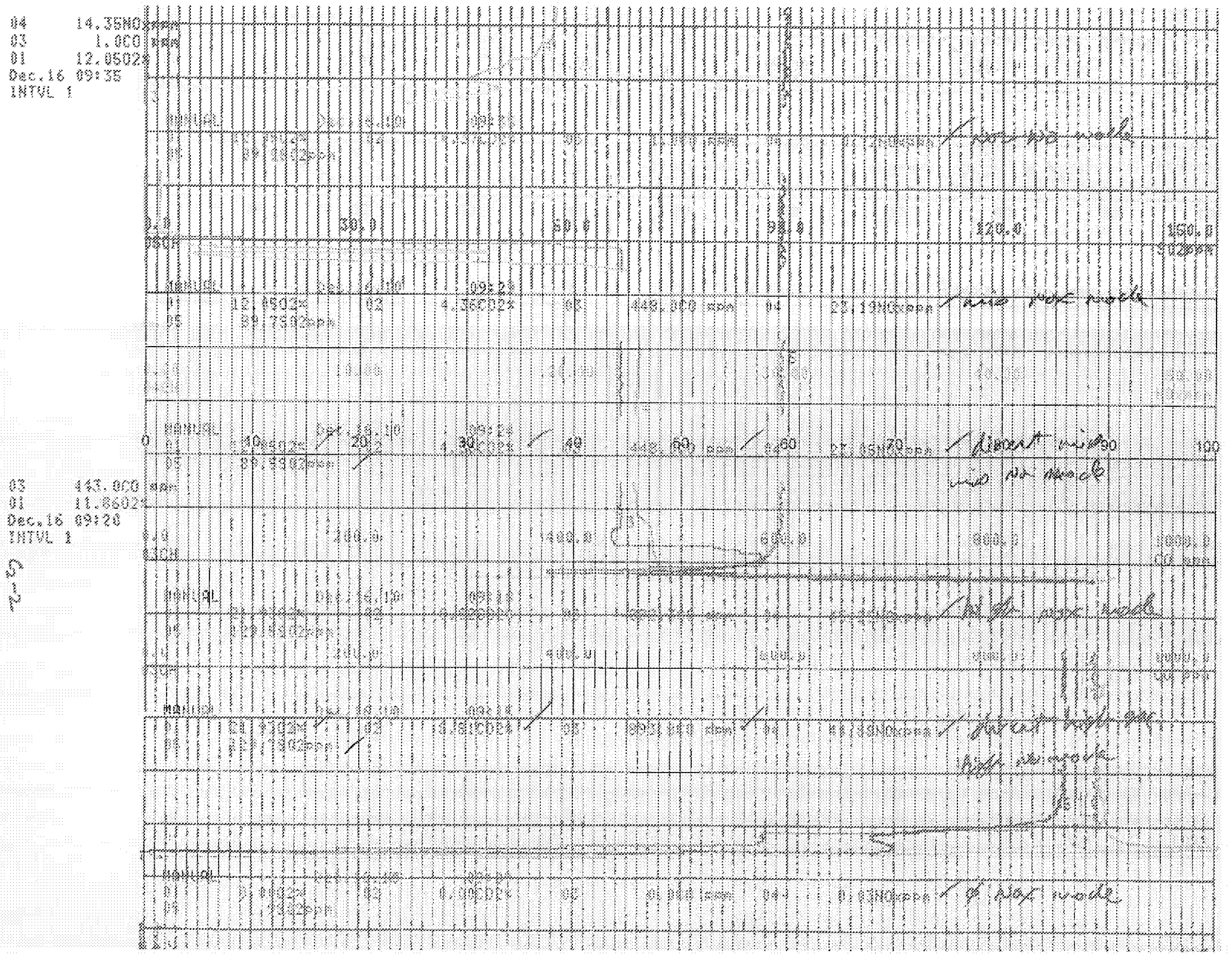
direct @
no mode

0 10 20 30 40 50 60 70 80 90 100

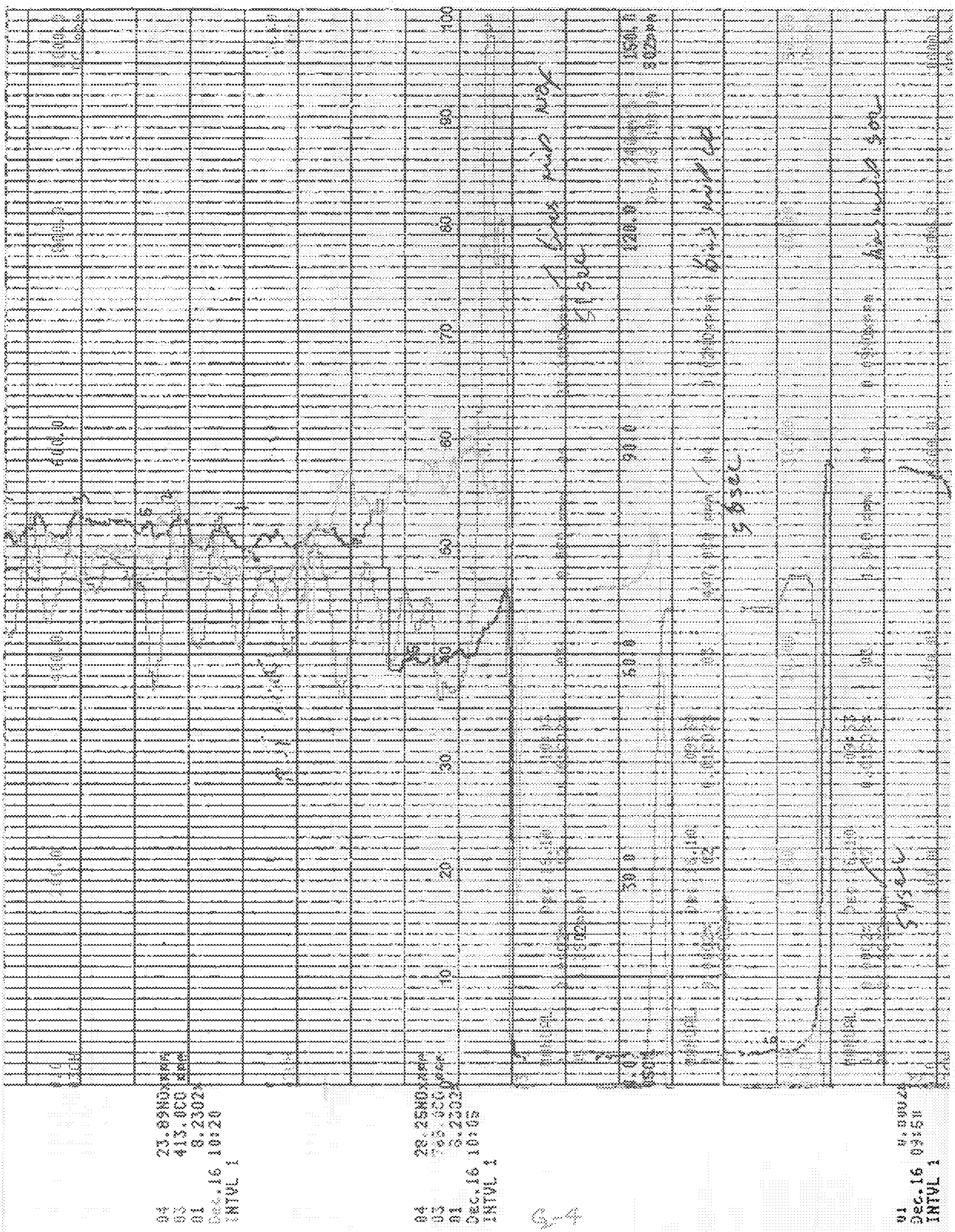
5251 McFadden Ave
Huntington Beach

Project No. 9036		Parameters	Ranges	cal gas value	Cylinder #	Exp. Date
Facility: BP West Coast Product, LLC		O_2/CO_2 (m)	25/10%	12.49/4.278%	CC274244	08/16/2013
Location: Carson, CA		O_2/CO_2 (h)	25/10%	21.17/8.792%	CC277612	01/14/2013
Source: No. 2 TGU		NOx (m)	50 PPM	23.16 PPM	CC111460	06/04/2012
Test: NOx, SO_2 RATA &		NOx (h)	50 PPM	45.20 PPM	CC277871	12/16/2011
CO compliance		SO_2 (m)	150 PPM	87.39 PPM	CC275360	09/02/2011
Test Team: T.TY/CH/DJ		SO_2 (h)	150 PPM	146.8 PPM	XC025946B	03/17/2012
		NO_2	–	19.68 PPM	XC024356C	03/04/2011
		CO (m)	1000 PPM	446.70 PPM	CC162408	08/16/2012
		CO (h)	1000 PPM	898.0 PPM	CC54465	04/07/2012

G-1



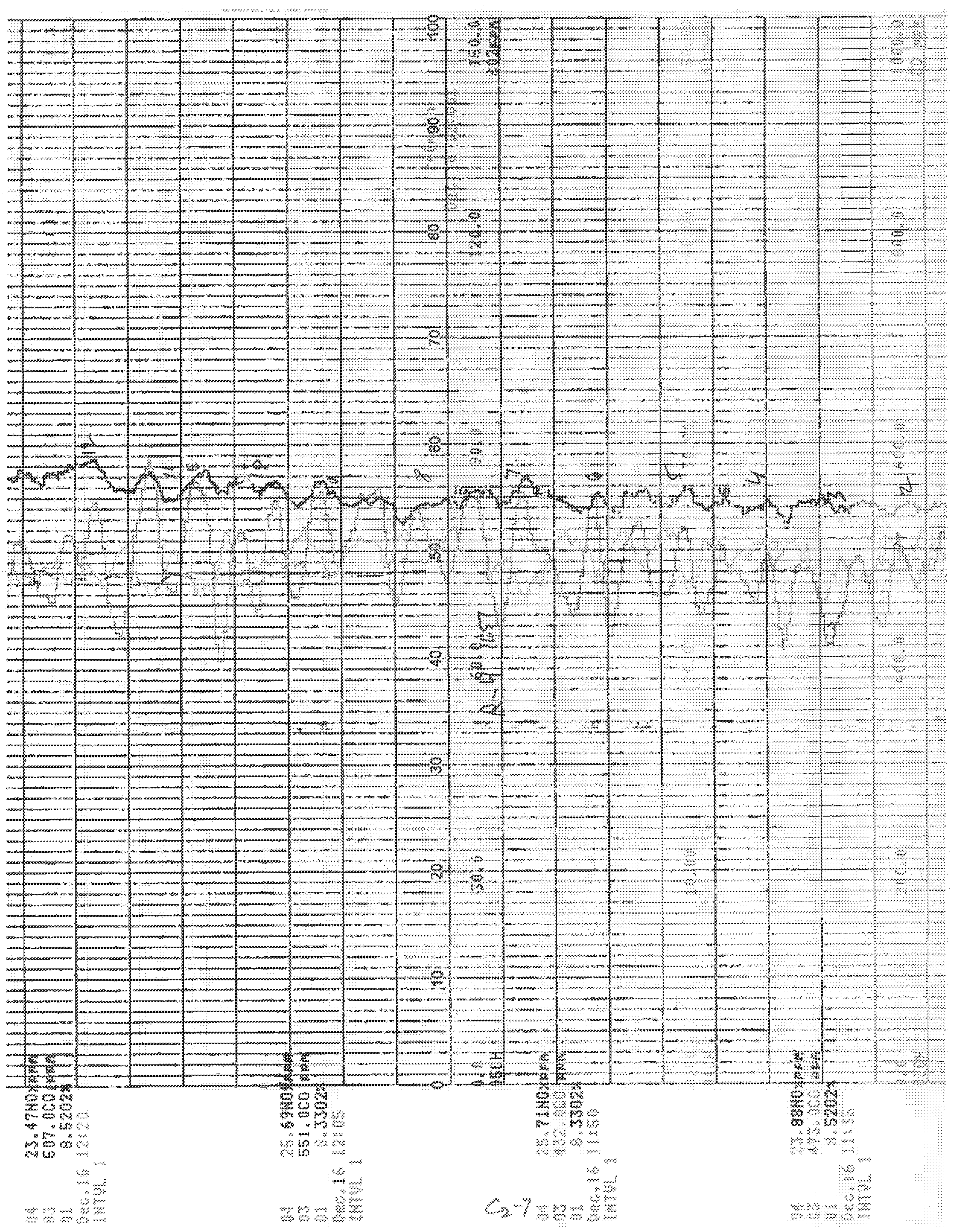
BPCAR-00000227



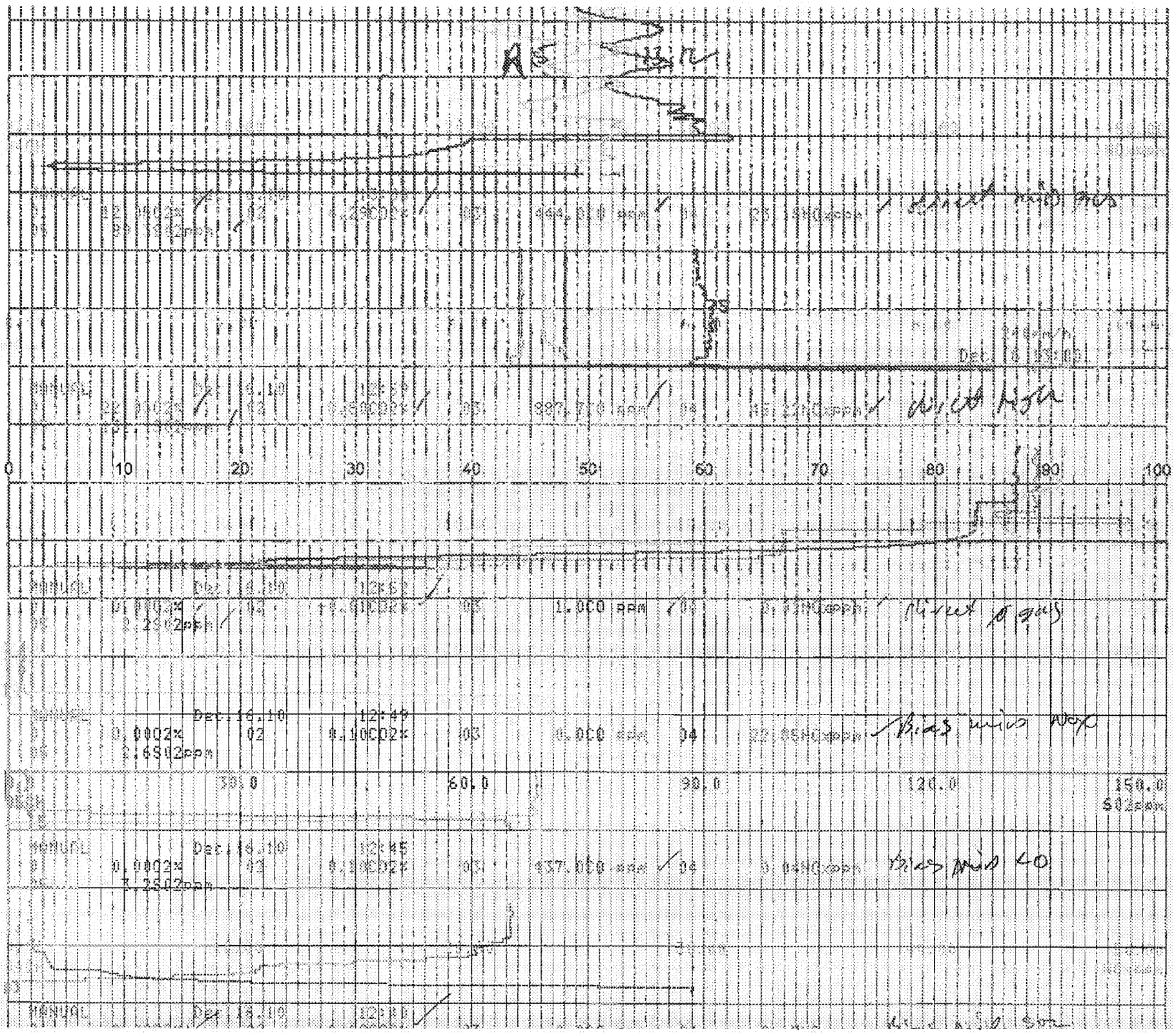
Dec.16 10:20
INTVL 1
Dec.16 10:05
INTVL 1
Dec.16 09:5
INTVL 1
G-4

24.4NOxppm
492.0COppm
8.4202%
Dec.16 11:05
INTVL 1
25.5NOxppm
488.0COppm
8.4302%
Dec.16 10:50
INTVL 1
26.4NOxppm
460.0COppm
8.2302%
Dec.16 10:35
INTVL 1
23.8NOxppm
472.0COppm
8.2302%
Dec.16 10:20
INTVL 1
100
90
80
70
60
50
40
30
20
10
0

BPCAR-00000230


23.47NOx ppm
507.0CO ppm
8.52O2%
Dec.16 12:20
INTVL 1
25.69NOx ppm
551.0CO ppm
8.33O2%
Dec.16 12:05
INTVL 1
25.71NOx ppm
8.33O2%
Dec.16 11:50
INTVL 1
23.88NOx ppm
8.52O2%
Dec.16 11:35
INTVL 1
C2-7

BPCAR-00000232



Appendix C3

RM CEMS – One-Minute DAS Data

Reference Method Reduced DAS Data

Client	BP West Coast Product, LLC.
Location	Carson, CA
Unit	2 TGU
Date/Time	12/16/2010 9:00
Job Number	9036

Date	Time	O2%	CO2%	CO ppm	
12/16/2010	9:01:01	0.00	0.00	40.82	
12/16/2010	9:02:01	0.00	0.00	0.40	Pre Internal Calibration
12/16/2010	9:03:01	0.00	0.00	0.30	
12/16/2010	9:04:01	0.00	0.00	0.10	
12/16/2010	9:05:01	0.00	0.00	0.30	
12/16/2010	9:06:01	0.00	0.00	0.10	Zero
12/16/2010	9:07:01	0.00	0.00	0.10	
12/16/2010	9:08:01	0.00	0.00	0.30	
12/16/2010	9:09:01	0.00	0.00	0.48	
12/16/2010	9:10:01	0.00	26.98	0.98	
12/16/2010	9:11:01	17.07	14.11	450.97	
12/16/2010	9:12:01	20.07	7.86	705.19	
12/16/2010	9:13:01	22.15	8.84	894.56	
12/16/2010	9:14:01	21.95	8.81	894.43	
12/16/2010	9:15:01	21.93	8.81	894.72	High
12/16/2010	9:16:01	21.93	8.81	894.15	
12/16/2010	9:17:01	21.93	8.81	893.87	
12/16/2010	9:18:01	21.93	8.82	892.37	
12/16/2010	9:19:01	19.89	7.15	781.40	
12/16/2010	9:20:01	12.47	4.20	515.83	
12/16/2010	9:21:01	11.88	4.23	514.23	
12/16/2010	9:22:01	12.05	4.34	443.37	
12/16/2010	9:23:01	12.05	4.35	448.00	
12/16/2010	9:24:01	12.05	4.35	448.20	Mid
12/16/2010	9:25:01	12.05	4.36	447.92	
12/16/2010	9:25:01	12.05	4.36	447.92	
12/16/2010	9:26:01	12.05	4.36	447.60	
12/16/2010	9:27:01	12.05	4.36	447.40	
12/16/2010	9:28:01	12.05	4.36	447.38	
12/16/2010	9:29:01	12.05	4.36	447.40	
12/16/2010	9:30:01	12.05	4.36	447.72	
12/16/2010	9:31:01	12.05	4.37	418.87	
12/16/2010	9:32:01	12.05	4.37	27.17	
12/16/2010	9:33:01	12.05	4.37	1.00	
12/16/2010	9:34:01	12.05	4.37	1.00	
12/16/2010	9:35:01	12.05	4.37	1.00	
12/16/2010	9:36:01	12.05	4.37	1.00	
12/16/2010	9:37:01	12.11	4.37	1.00	
12/16/2010	9:38:01	12.22	4.37	1.00	
12/16/2010	9:39:01	12.42	4.36	1.00	
12/16/2010	9:40:01	12.67	4.35	1.00	
12/16/2010	9:41:01	13.10	4.33	1.00	
12/16/2010	9:42:01	13.80	3.07	5.08	
12/16/2010	9:43:01	1.07	0.07	5.92	
12/16/2010	9:44:01	0.00	0.06	1.00	System Calibration

C3-1

Reference Method Reduced DAS Data

Client	BP West Coast Product, LLC.
Location	Carson, CA
Unit	2 TGU
Date/Time	12/16/2010 9:00
Job Number	9036

Date	Time	O2%	CO2%	CO ppm	
12/16/2010	9:45:01	0.00	0.00	1.00	Bias Zero
12/16/2010	9:46:01	0.41	0.64	1.00	
12/16/2010	9:47:01	11.18	4.28	0.32	
12/16/2010	9:48:01	11.95	4.31	0.00	Bias Mid O2/CO2
12/16/2010	9:49:01	11.96	4.31	0.00	
12/16/2010	9:50:01	4.31	0.80	0.00	
12/16/2010	9:51:01	0.00	0.02	0.58	
12/16/2010	9:52:01	0.00	0.01	0.70	
12/16/2010	9:53:01	0.00	0.01	0.72	
12/16/2010	9:54:01	0.00	0.01	4.73	
12/16/2010	9:55:01	0.00	0.01	381.20	
12/16/2010	9:56:01	0.00	0.01	476.33	
12/16/2010	9:57:01	0.00	0.01	453.47	
12/16/2010	9:58:01	0.00	0.01	448.00	Bis Mid CO
12/16/2010	9:59:01	0.00	0.01	447.32	
12/16/2010	10:00:01	0.13	0.01	419.73	
12/16/2010	10:01:01	0.00	0.01	87.65	
12/16/2010	10:02:01	0.00	0.01	0.82	
12/16/2010	10:03:01	0.00	0.01	0.50	
12/16/2010	10:04:01	0.00	0.01	0.00	
12/16/2010	10:05:01	0.47	1.76	75.80	
12/16/2010	10:06:01	7.83	4.67	800.65	
12/16/2010	10:07:01	8.31	4.72	730.47	
12/16/2010	10:08:01	8.21	4.80	389.10	
12/16/2010	10:09:01	8.23	4.81	369.73	
12/16/2010	10:10:01	8.24	4.80	433.08	
12/16/2010	10:11:01	8.31	4.75	443.60	
12/16/2010	10:12:01	7.43	4.29	375.65	
12/16/2010	10:13:01	7.74	4.42	415.05	
12/16/2010	10:14:01	8.24	4.75	459.97	
12/16/2010	10:15:01	8.18	4.81	385.15	Port A
12/16/2010	10:16:01	8.31	4.76	459.52	
12/16/2010	10:17:01	8.30	4.76	487.75	
12/16/2010	10:18:01	8.28	4.77	422.33	
12/16/2010	10:19:01	8.37	4.71	466.08	Point-1
12/16/2010	10:20:01	8.29	4.73	466.70	
12/16/2010	10:21:01	8.23	4.77	420.05	
12/16/2010	10:22:01	8.37	4.71	499.27	
12/16/2010	10:23:01	8.23	4.79	455.47	
12/16/2010	10:24:01	8.31	4.75	453.47	Point-2
12/16/2010	10:25:01	8.33	4.78	513.62	
12/16/2010	10:26:01	8.23	4.81	397.68	
12/16/2010	10:27:01	8.35	4.77	463.43	
12/16/2010	10:28:01	8.43	4.74	485.53	
12/16/2010	10:29:01	8.29	4.75	479.12	Point-3

C3-2

Reference Method Reduced DAS Data

Client	BP West Coast Product, LLC.
Location	Carson, CA
Unit	2 TGU
Date/Time	12/16/2010 9:00
Job Number	9036

Date	Time	O2%	CO2%	CO ppm	
12/16/2010	10:30:01	8.32	4.74	485.45	
12/16/2010	10:31:01	8.33	4.74	514.45	
12/16/2010	10:32:01	8.25	4.78	447.40	
12/16/2010	10:33:01	8.37	4.73	503.17	
12/16/2010	10:34:01	8.23	4.81	457.82	Point-4
12/16/2010	10:35:01	8.33	4.79	457.67	
12/16/2010	10:36:01	8.27	4.83	480.07	
12/16/2010	10:37:01	8.18	4.89	377.87	
12/16/2010	10:38:01	8.31	4.82	446.47	
12/16/2010	10:39:01	8.33	4.79	459.18	Point-5
12/16/2010	10:40:01	8.37	4.77	469.18	
12/16/2010	10:41:01	8.45	4.70	511.38	
12/16/2010	10:42:01	8.34	4.73	487.43	
12/16/2010	10:43:01	8.41	4.74	492.88	
12/16/2010	10:44:01	8.30	4.77	471.20	Point-6
12/16/2010	10:45:01	8.33	4.77	473.58	
12/16/2010	10:46:01	8.38	4.76	488.45	
12/16/2010	10:47:01	8.28	4.77	471.13	
12/16/2010	10:48:01	8.29	4.79	440.03	
12/16/2010	10:49:01	8.45	4.74	506.67	Point-7
12/16/2010	10:50:01	8.35	4.78	469.82	
12/16/2010	10:51:01	8.36	4.78	461.68	
12/16/2010	10:52:01	8.31	4.77	504.62	
12/16/2010	10:53:01	8.29	4.77	476.55	
12/16/2010	10:54:01	8.36	4.77	508.73	Point-8
12/16/2010	10:55:01	8.27	4.83	470.73	
12/16/2010	10:56:01	8.28	4.87	429.47	
12/16/2010	10:57:01	8.33	4.84	469.60	
12/16/2010	10:58:01	8.33	4.84	444.33	
12/16/2010	10:59:01	8.33	4.83	441.93	Point-9
12/16/2010	11:00:01	8.36	4.82	473.60	
12/16/2010	11:01:01	8.37	4.79	492.67	
12/16/2010	11:02:01	8.37	4.78	495.47	
12/16/2010	11:03:01	8.39	4.78	474.70	
12/16/2010	11:04:01	8.39	4.80	490.83	Point-10
12/16/2010	11:05:01	8.31	4.84	445.47	
12/16/2010	11:06:01	8.39	4.83	473.67	
12/16/2010	11:07:01	8.34	4.84	490.28	
12/16/2010	11:08:01	8.30	4.88	418.27	
12/16/2010	11:09:01	8.42	4.83	498.15	Point-11
12/16/2010	11:10:01	8.34	4.86	463.72	
12/16/2010	11:11:01	8.38	4.86	447.75	
12/16/2010	11:12:01	8.41	4.82	499.12	
12/16/2010	11:13:01	8.37	4.83	456.05	
12/16/2010	11:14:01	8.40	4.83	435.35	Point-12
12/16/2010	11:15:01	8.43	4.81	491.27	Switch Port

C3-3

Reference Method Reduced DAS Data

Client	BP West Coast Product, LLC.
Location	Carson, CA
Unit	2 TGU
Date/Time	12/16/2010 9:00
Job Number	9036

Date	Time	O2%	CO2%	CO ppm	
12/16/2010	11:16:01	15.43	1.30	337.62	Switch Port
12/16/2010	11:17:01	21.16	0.79	6.67	Switch Port
12/16/2010	11:18:01	9.79	4.70	331.70	Switch Port
12/16/2010	11:19:01	8.43	4.77	463.88	Switch Port
12/16/2010	11:20:01	8.43	4.78	485.48	Switch Port
12/16/2010	11:21:01	8.35	4.88	450.53	Switch Port
12/16/2010	11:22:01	8.45	4.84	400.75	Switch Port
12/16/2010	11:23:01	8.43	4.83	385.67	Switch Port
12/16/2010	11:24:01	8.36	4.86	254.12	Switch Port
12/16/2010	11:25:01	8.45	4.79	288.55	Switch Port
12/16/2010	11:26:01	8.44	4.78	239.35	Switch Port
12/16/2010	11:27:01	8.42	4.80	233.13	Port B
12/16/2010	11:28:01	8.43	4.82	449.78	
12/16/2010	11:29:01	8.41	4.83	464.95	
12/16/2010	11:30:01	8.33	4.85	426.27	
12/16/2010	11:31:01	8.46	4.79	464.68	Point-1
12/16/2010	11:32:01	8.45	4.78	503.20	
12/16/2010	11:33:01	8.42	4.80	481.52	
12/16/2010	11:34:01	8.49	4.80	497.15	
12/16/2010	11:35:01	8.40	4.83	457.92	
12/16/2010	11:36:01	8.46	4.81	459.97	Point-2
12/16/2010	11:37:01	8.46	4.80	486.82	
12/16/2010	11:38:01	8.43	4.82	432.77	
12/16/2010	11:39:01	8.45	4.81	452.37	
12/16/2010	11:40:01	8.41	4.81	484.98	
12/16/2010	11:41:01	8.39	4.84	436.38	Point-3
12/16/2010	11:42:01	8.49	4.79	485.82	
12/16/2010	11:43:01	8.47	4.80	464.15	
12/16/2010	11:44:01	8.53	4.80	481.87	
12/16/2010	11:45:01	8.47	4.80	488.57	
12/16/2010	11:46:01	8.46	4.80	453.97	Point-4
12/16/2010	11:47:01	8.52	4.77	509.33	
12/16/2010	11:48:01	8.37	4.81	471.00	
12/16/2010	11:49:01	8.44	4.81	479.88	
12/16/2010	11:50:01	8.03	4.56	496.38	
12/16/2010	11:51:01	8.36	4.84	457.60	Point-5
12/16/2010	11:52:01	8.49	4.78	512.42	
12/16/2010	11:53:01	8.38	4.84	484.75	
12/16/2010	11:54:01	8.42	4.85	460.17	
12/16/2010	11:55:01	8.43	4.85	497.33	
12/16/2010	11:56:01	8.52	4.80	525.30	Point-6
12/16/2010	11:57:01	8.44	4.81	520.22	
12/16/2010	11:58:01	8.39	4.85	446.23	
12/16/2010	11:59:01	8.21	4.66	509.98	
12/16/2010	12:00:01	8.43	4.81	541.10	
12/16/2010	12:01:01	8.46	4.84	487.08	Point-7

Reference Method Reduced DAS Data

Client	BP West Coast Product, LLC.
Location	Carson, CA
Unit	2 TGU
Date/Time	12/16/2010 9:00
Job Number	9036

Date	Time	O2%	CO2%	CO ppm	
12/16/2010	12:02:01	8.44	4.85	512.27	
12/16/2010	12:03:01	8.41	4.85	529.60	
12/16/2010	12:04:01	8.00	4.60	446.42	
12/16/2010	12:05:01	8.45	4.80	545.33	
12/16/2010	12:06:01	8.43	4.80	547.95	Point-8
12/16/2010	12:07:01	8.39	4.80	505.68	
12/16/2010	12:08:01	8.46	4.80	532.87	
12/16/2010	12:09:01	8.43	4.81	522.83	
12/16/2010	12:10:01	8.45	4.82	469.57	
12/16/2010	12:11:01	8.49	4.80	536.13	Point-9
12/16/2010	12:12:01	8.44	4.84	470.78	
12/16/2010	12:13:01	8.45	4.83	509.83	
12/16/2010	12:14:01	8.29	4.74	434.25	
12/16/2010	12:15:01	8.50	4.78	511.20	
12/16/2010	12:16:01	8.47	4.79	553.20	Point-10
12/16/2010	12:17:01	8.40	4.81	477.03	
12/16/2010	12:18:01	8.52	4.75	539.18	
12/16/2010	12:19:01	8.48	4.75	544.17	
12/16/2010	12:20:01	8.43	4.81	441.90	
12/16/2010	12:21:01	8.54	4.79	488.18	Point-11
12/16/2010	12:22:01	8.53	4.77	525.42	
12/16/2010	12:23:01	8.43	4.78	510.53	
12/16/2010	12:24:01	8.48	4.80	476.23	
12/16/2010	12:25:01	8.39	4.86	474.13	
12/16/2010	12:26:01	8.43	4.84	507.28	Point-12
12/16/2010	12:27:01	8.26	4.53	511.25	
12/16/2010	12:28:01	12.06	4.37	178.22	
12/16/2010	12:29:01	12.15	4.39	0.22	
12/16/2010	12:30:01	12.15	4.40	0.00	
12/16/2010	12:31:01	11.54	4.18	0.00	
12/16/2010	12:32:01	11.34	4.11	0.00	System Calibration
12/16/2010	12:33:01	12.15	4.40	0.00	
12/16/2010	12:34:01	12.15	4.40	0.00	Bias Mid O2/CO2
12/16/2010	12:35:01	11.90	3.80	0.00	Bias Zero CO
12/16/2010	12:36:01	1.19	0.15	0.00	
12/16/2010	12:37:01	0.00	0.11	0.00	
12/16/2010	12:38:01	0.00	0.11	0.00	
12/16/2010	12:39:01	0.00	0.11	0.00	
12/16/2010	12:40:01	0.00	0.11	0.00	Bias Zero O2/CO2
12/16/2010	12:41:01	0.00	0.10	0.83	
12/16/2010	12:42:01	0.00	0.10	164.23	
12/16/2010	12:43:01	0.00	0.10	374.18	
12/16/2010	12:44:01	0.00	0.10	431.78	
12/16/2010	12:45:01	0.00	0.10	437.02	Bias Mid CO
12/16/2010	12:46:01	0.00	0.10	436.50	
12/16/2010	12:47:01	0.00	0.10	202.82	

Reference Method Reduced DAS Data

Client	BP West Coast Product, LLC.
Location	Carson, CA
Unit	2 TGU
Date/Time	12/16/2010 9:00
Job Number	9036

Date	Time	O2%	CO2%	CO ppm	
12/16/2010	12:48:01	0.00	0.10	0.25	Post Internal Calibration
12/16/2010	12:49:01	0.00	0.10	0.00	
12/16/2010	12:50:01	0.00	0.07	0.08	
12/16/2010	12:51:01	0.00	-0.01	1.00	
12/16/2010	12:52:01	0.00	-0.01	1.00	Zero
12/16/2010	12:53:01	7.87	4.74	91.89	
12/16/2010	12:54:01	22.10	8.26	664.85	
12/16/2010	12:55:01	20.75	8.04	669.68	
12/16/2010	12:56:01	21.01	8.28	853.87	
12/16/2010	12:57:01	22.12	8.79	889.54	
12/16/2010	12:58:01	22.12	8.79	890.72	
12/16/2010	12:59:01	22.07	8.80	890.35	High
12/16/2010	13:00:01	18.26	6.52	745.89	
12/16/2010	13:01:01	12.01	4.24	443.62	
12/16/2010	13:02:01	12.05	4.28	445.72	
12/16/2010	13:03:01	11.85	4.22	438.07	
12/16/2010	13:04:01	11.05	3.93	408.47	
12/16/2010	13:05:01	12.05	4.29	445.60	
12/16/2010	13:06:01	12.05	4.29	445.40	Mid
12/16/2010	13:07:01	7.50	1.97	-631.08	
12/16/2010	13:08:01	6.19	4.40	-3209.60	

APPENDIX D

SCAQMD METHOD 5.1 – PARTICULATE MATTER

Appendix D1

PARTICULATE MATTER – Results and Calculations

PARTICULATE TEST SUMMARY

No. 2 TGU

Run Number	1
Run Date	12/16/10
Run Start Time	10:15
Run Stop Time	12:26
Test Train Parameters	
Volume of Dry Gas Sample, SCF*	88.696
Flue Gas Parameters	
CO2, Percent By Volume, Dry	4.71
O2, Percent By Volume, Dry	8.40
Temperature, Degrees F	1268
Moisture , %	8.82
Air Flow Rate, Wet ACFM	106,918
Air Flow Rate, Dry SCFM*	29,306
Total Particulate	
Total catch, mg	69.77
Concentration, Gr/DSCF	0.0121
Concentration @ 12% CO2	0.0309
Emission Rate, lb/hr	3.049

* 60 Degrees F and 29.92 Inches of Mercury

D1-1

Concentration and Mass Emission Tables

SCAQMD RULE 404(a)

	Flow Rate (dscfm)	Concentration Measured (gr/dscf)	Concentration Allowable (gr/dscf)
Table	28,250	XX	0.0537
Measured	29,306	0.0121	**0.0530**
Table	31,780	XX	0.0515

Concentration at 12% CO2

SCAQMD RULE 409

Concentration at 12% CO2 = Concentration (Std) x 12 / CO2 Measured
= 0.0309 gr/dscf

ISOKINETIC SAMPLING TRAIN RESULTS - METHOD: SCAQMD M5.2

Client Name	BP West Coast Products, LLC.	Operator		DJ
Plant Name	BP West Coast Products, LLC.	Project #		9036
Sampling Location	NO. 2 TGU	Standard Temperature, °F		60

USE IN AVERAGE OF RUN SET? 1 or 0 =>		1			SET AVERAGE
Run Number		1			
Run Date		12/16/10			
Run Start Time	hh:mm	10:15			
Run Stop Time	hh:mm	12:26			
Meter Calibration Factor	Y	0.9838			
Pitot Tube Coefficient	C_p	0.84			
Actual Nozzle Diameter	in	0.520			
Sample Volume	ft^3	94.040			94.040
Total Sampling Time	min	120			120
Average Meter Temperature	°F	85.7			85.7
Average Stack Temperature	°F	1268.2			1268.2
Barometric Pressure	in Hg	29.98			30.0
Stack/Duct Static Pressure	in H_2O	-1.20			-1.20
Absolute Stack/Duct Pressure	in Hg	29.9			29.9
Average Delta H	in H_2O	1.82			1.82
Absolute Meter Pressure	in Hg	30.1			30.1
Avg Differential Pressure (Delta P)	in H_2O	0.093			0.093
Total Water Volume Collected	mL	185.1			185.1
Volume of Water vapor @ STP	SCF	8.581			8.581
Volume Metered @ STP	DSCF	88.696			88.696
Calculated Stack Moisture	% H_2O	8.82			8.8
Saturated Stack Moisture	% H_2O	100.0			100.0
Reported Stack Moisture Content	% H_2O	8.82			8.82
Carbon Dioxide Percentage	% CO_2	4.71			4.7
Oxygen Percentage	% O_2	8.40			8.40
Nitrogen Percentage	% N_2	86.9			86.9
Dry Mole Fraction	decimal	0.912			0.912
Dry Gas Molecular Weight	lb/lb-mole	29.09			29.09
Wet Stack Gas Molecular Weight	lb/lb-mole	28.11			28.11
Flue Gas Density	lb/ft^3	0.0730			0.0730
Calculated Fuel Factor	F_o	2.65			2.65
Percent Excess Air	% EA	57.8			57.8
Stack Cross-Sectional Area	in^2	8171.3			8171.3
Stack Cross-Sectional Area	ft^2	56.75			56.75
Percent of Isokinetic Rate	% ISO	97.1			97.1
Air Flow Rate Results					
Average Stack Gas Velocity	ft/sec	31.40			31.40
Actual Stack Flow/Minute	ACFM	106,918			106,918
Dry Standard Stack Flow/Minute	DSCFM	29,306			29,306

DJ-3

ISOKINETIC SAMPLING TRAIN DATASHEET - METHOD SCAQMD M5.2

Client Name	BP West Coast Products, LLC	Run #	1		
Plant Name	BP West Coast Products, LLC	Project #	9038	Run Start	10:15
Plant City, State	Carson, CA	Personnel	CJ	Run End	12:26
Test Location	NO. 2 TGU	Tester Signature	Signature on File		
Date of Test	12/16/10	Checked By	TG		

Isokinetic Factor Setup		Pressures		Sampling Equipment		Filter ID & Tares		Actuals
ΔH @ 0.75 SCFM	1.728	Pbar	29.88	Meter Console #	AL-2			CO_2
Meter Calibration Factor	0.9838	Pstatic	-1.20	Ideal Nozzle Diameter	0.535			4.71
Pitot Tube Coefficient	0.840	Abs P	29.9	Nozzle #	0.520			O_2
Estimated Dry Gas Meter Temp	90	Tstd, °F	60	Actual Nozzle Diameter	0.520			8.40
Estimated Stack Temp or M2 Avg.	1250	Pstd	29.92	Probe Lgth/ID #	4			CO
Estimated Delta P or M2 Avg.	0.085	Estimates		Liner Material		XAD ID & Tares		
Estimated Moisture Content	12.3	CO_2	5.0	Filter Box #	NA			N_2
Estimated Dry Molecular Weight	29.10	O_2	7.5	Cold Box ID #	NA			86.9
Estimated Velocity, ft/sec	30.1	CO		Umbilical ID #	NA			H_2O
K Factor (delta H/delta P)	19.85	N_2	87.5	TC ID #s	4			185.1

Equipment & Leak Check Data, OK? Y or N			Leak Checks	1	2	3	4	5	6	Status
	PRE	POST								
Tambient			DGM Initial	845.444						845.444
Thermocouples	Y	Y	Vacuum	15						15
Pitots	Y	Y	Leak Rate	0.001						OK
Tedlar Bag	N	N	DGM final	845.521						845.521

Point #	Clock Time	Test Time	Dry Gas Meter Reading	Velocity Head	Desired Orifice ΔH	Actual Orifice ΔH	Pump Vac.	DGM Inlet Temp	DGM Outlet Temp	Stack Temp	Filter Temp	Imp. Exit Temp	Cond. Exit Temp
	24 hr	min	ft^3	in H_2O	in H_2O	in H_2O	in Hg	°F	°F	°F	°F	°F	°F
E - 0	10:15	0.0	799.481	0.100	1.98	1.89	5.00	75	73	1268	241	58	NA
E - 12		5.0	803.441	0.110	2.18	2.08	5.50	76	73	1270	245	56	
E - 11		10.0	807.602	0.090	1.79	1.70	4.00	77	75	1271	248	52	
E - 10		15.0	811.588	0.080	1.59	1.51	3.50	77	75	1273	248	53	
E - 9		20.0	814.982	0.080	1.59	1.52	3.50	78	77	1270	245	53	
E - 8		25.0	818.548	0.040	0.79	0.76	2.00	78	77	1269	244	52	
E - 7		30.0	821.104	0.110	2.18	2.10	5.50	81	79	1268	241	53	
E - 6		35.0	825.311	0.120	2.38	2.30	6.00	84	82	1270	245	53	
E - 5		40.0	829.724	0.110	2.18	2.11	5.50	86	82	1268	248	54	
E - 4		45.0	833.983	0.110	2.18	2.12	5.50	85	83	1266	250	54	
E - 3		50.0	838.266	0.100	1.98	1.94	5.00	88	85	1265	249	53	
E - 2		55.0	842.273	0.060	1.19	1.17	3.00	89	87	1264	247	53	
E - 1		60.0	845.444	0.110	2.18	2.13	5.50	89	88	1271	250	54	
S - 12		65.0	849.798	0.110	2.18	2.13	5.50	89	88	1270	248	55	
S - 11		70.0	854.081	0.100	1.98	1.94	5.00	90	89	1270	248	53	
S - 10		75.0	858.163	0.100	1.98	1.95	5.00	90	90	1267	245	53	
S - 9		80.0	862.260	0.100	1.98	1.94	5.00	91	89	1268	248	53	
S - 8		85.0	866.354	0.110	2.18	2.14	5.50	92	90	1268	250	55	
S - 7		90.0	870.636	0.110	2.18	2.15	5.50	93	92	1269	247	54	
S - 6		95.0	874.963	0.100	1.98	1.95	5.00	93	92	1268	246	54	
S - 5		100.0	879.082	0.080	1.59	1.57	3.50	95	93	1267	246	52	
S - 4		105.0	882.774	0.080	1.59	1.57	3.50	96	93	1265	248	52	
S - 3		110.0	886.473	0.090	1.79	1.77	4.00	96	92	1266	251	53	
S - 2		115.0	890.383	0.060	1.19	1.17	3.00	93	89	1269	250	52	
S - 1	12:26	120.0	893.578										
						MAX =>	6.00						
Average Values		120.0	94.040	0.093	1.869	1.817		85.7		1268.2			

D1-4

	Water 1	Water 2	Empty	SG
Initial	573.0	580.3	567.5	792.8
Final	683.3	623.0	577.1	815.3
H2O gain	110.3	42.7	9.6	22.5
Total H2O	185.1			

Cumul. Percent ISO	Point Percent ISO	Square Root DP	Local Stack Velocity	Cumulative Meter Volume	Point Meter Volume
%	%	$(in\ H_2O)^{1/2}$	ft/sec	scf	scf
100.4	100.4	0.316	32.8	3.896	3.896
100.2	100.1	0.332	34.4	7.967	4.071
100.2	100.3	0.300	31.1	11.656	3.690
100.3	100.5	0.283	29.4	15.137	3.482
100.3	100.4	0.283	29.3	18.618	3.482
100.4	101.1	0.200	20.7	21.093	2.481
100.3	100.1	0.332	34.4	25.170	4.074
100.3	100.1	0.346	35.9	29.428	4.252
100.3	100.2	0.332	34.4	33.511	4.079
100.3	100.2	0.332	34.4	37.593	4.079
100.3	100.1	0.316	32.8	41.485	3.890
100.3	100.3	0.245	25.4	44.492	3.019
100.4	102.1	0.332	34.4	48.650	4.152
100.4	100.4	0.332	34.4	52.738	4.084
100.4	100.1	0.316	32.8	56.623	3.883
100.4	100.3	0.316	32.8	60.519	3.894
100.4	100.3	0.316	32.8	64.411	3.891
100.4	100.3	0.332	34.4	68.499	4.083
100.4	100.2	0.332	34.4	72.580	4.077
100.4	100.4	0.316	32.8	76.479	3.897
100.4	100.2	0.283	29.3	79.953	3.481
100.4	100.3	0.283	29.3	83.431	3.484
100.4	100.1	0.300	31.1	87.118	3.688
100.4	100.6	0.245	25.4	90.135	3.026
100.4	100.6	Final Values		90.135	3.026
		0.305	31.6		

EXAMPLE CALCULATIONS, RUN 1

ABSOLUTE PRESSURE, INCHES OF MERCURY

Ps = Pbar + Pg/13.6
= 29.98 + -1.20/13.6
= 29.89

VOLUME OF WATER VAPOR, STANDARD CUBIC FEET

Vwstd = 0.002667 * [(Tstd + 460) / Pstd] * Vlc
= 0.002667 * [(60 + 460) / 29.92 * 185.1
= 8.581

SAMPLED VOLUME OF SOURCE GAS, DRY STANDARD CUBIC FEET

Vmstd = [(Tstd + 460)/Pstd] * Y * Vm * (Pbar + Delta-H/13.6) / (460 + tm)
= [(60 + 460)/ 29.92] * 0.9838 * 94.040 * (29.98 + 1.817/13.6) / (460 + 86)
= 88.696

MOISTURE CONTENT, PERCENT BY VOLUME

%H2O = Vwstd / (Vwstd + Vmstd)
= 8.581 / (8.581 + 88.696)
= 8.82

DRY MOLE FRACTION, LB-MOLE/LB-MOLE

Mfd = 1 - %H2O/100
= 1 - 8.82/100
= 0.912

DRY MOLECULAR WEIGHT, LB/LB-MOLE

Md = 44*(%CO2/100) + 32*(%O2/100) + 28*([100-(%CO2+%O2)]/100)
= 44*(4.7/100) + 32*(8.4/100) + 28*([100-(4.7+8.4)]/100)
= 29.09

WET MOLECULAR WEIGHT, LB/LB-MOLE

Ms = Md*Mfd + 18.0*%H2O/100
= 29.09*0.912 + 18.0*8.82/100
= 28.11

FUEL FACTOR

Fo = (20.9 - %O2) / %CO2
= (20.9 - 8.4) / 4.7
= 2.654

ISOKINETIC SAMPLING RATE, PERCENT

%I = Pstd/(Tstd + 460) * (100/60) * Vmstd*(ts + 460)/[Ps*vs*Mfd*Theta*(PI*Dia*Dia/576)]
= 29.92/(60 + 460) * (100/60) * 88.696*(1268 + 460)/[29.89*31.40*0.912*120.00*(PI*0.520*0.520/576)]
= 97.1

VELOCITY, FEET PER SECOND

vs = 85.49 * Cp * SQRT[Delta-p*(460+ts)/Ps/Ms]
= 85.49 * 0.84 * SQRT[0.0930*(460+1268)/29.89/28.11]
= 31.40

VOLUMETRIC FLOW RATE, ACTUAL CUBIC FEET PER MINUTE

Qaw = (60/144) * vs * A
= (60/144) * 31.40 * 8171
= 106918

VOLUMETRIC FLOW RATE, DRY STANDARD CUBIC FEET PER MINUTE

Qsd = (60/144) * Mfd * vs * A * (Tstd + 460)/(ts + 460) * (Ps/Pstd)
= (60/144) * 0.912 * 31.40 * 8171 * (60 + 460)/(1268 + 460) * (29.89/29.92)
= 29306

EXAMPLE CALCULATIONS, RUN 1

TOTAL PARTICULATE CONCENTRATION, GRAINS PER DRY STANDARD CUBIC FOOT

gr/DSCF = (Catch/Conversion) * 7,000 / 453.592 / Vmstd

= (69.77/1000) * 7,000 / 453.592 / 88.696

= 0.01214

TOTAL PARTICULATE CONCENTRATION, GRAINS PER DRY STANDARD CUBIC FOOT @ 12% CO2

Gr@12%CO2 = gr/DSCF * 12 / %CO2

= 0.01214 * 12 / 4.7

= 0.03093

TOTAL PARTICULATE CONCENTRATION, GRAINS PER DRY STANDARD CUBIC FOOT @ 7% O2

Gr@7%O2 = gr/DSCF * (20.9-7) / (20.9-%O2)

= 0.01214 * (20.9-7) / (20.9-8.40)

= 0.01350

TOTAL PARTICULATE EMISSION RATE, POUNDS PER HOUR

lb/hr = 60 * (Catch/Conversion) * Qsd / 453.592 / Vmstd

= 60 * (69.77/1000) * 29306 / 453.592 / 88.696

= 3.049

Appendix D2

PARTICULATE MATTER – Field Data

SAMPLING AND VELOCITY TRAVERSE POINT DETERMINATION
SCAQMD METHOD 1.1

CLIENT: BP West Coast Products, LLC
CITY, STATE: Carson, CA
SAMPLING LOCATION: No. 2 TGU
TYPE OF TESTING: Compliance

NO. OF PORTS AVAILABLE:
NO. OF PORTS TO BE USED:
PORT INSIDE DIAMETER: inches

DISTANCE FROM FAR WALL TO OUTSIDE OF PORT: 111.00 inches
NIPPLE LENGTH AND/OR WALL THICKNESS: 9.00 inches
DEPTH OF STACK OR DUCT, D: 102.00 inches
STACK OR DUCT WIDTH (IF RECTANGULAR), W: 80.8 inches

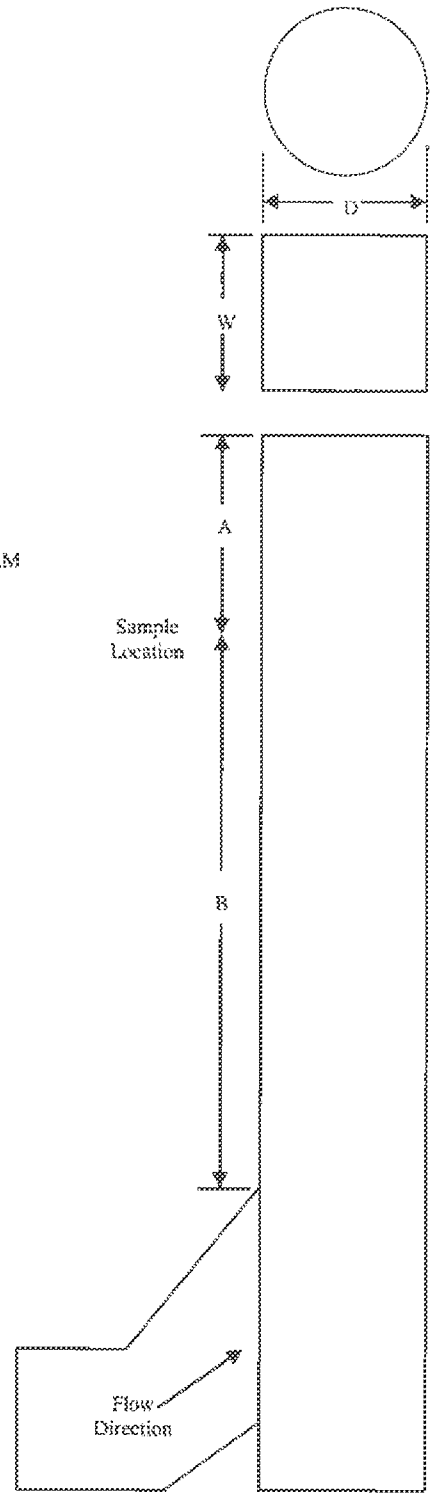
EQUIVALENT DIAMETER
De = 2*(DEPTH)*(WIDTH)/(DEPTH+WIDTH) = 102.00 inches

STACK/DUCT AREA = 56.75 sq.feet 8171.3 sq.inches

DISTANCE FROM PORT TO FLOW DISTURBANCES	UPSTREAM B	DOWNSTREAM A
# OF INCHES	273.00	590.00
# OF DIAMETERS	2.68	5.79

MINIMUM NUMBER OF TRAVERSE POINTS: 24

POINT NO.	% OF DUCT DEPTH	DISTANCE FROM INSIDE WALL (in.)	DISTANCE FROM OUTSIDE OF PORT (in.)
1	2.1	2.14	11 1/8
2	6.7	6.83	15 7/8
3	11.8	12.04	21
4	17.7	18.05	27
5	25.0	25.50	34 1/2
6	35.6	36.31	45 1/4
7	64.4	65.69	74 3/4
8	75.0	76.50	85 1/2
9	82.3	83.95	93
10	88.2	89.96	99
11	93.3	95.17	104 1/8
12	97.9	99.86	108 7/8



DRAWING NOT TO SCALE

D2 - 2

Almega

ISOKINETIC DATA FORM, TE COOLER & CYCLONIC FLOW

M 5.2

Run # :	# 1	Pitot ID :	4	Impinger #	Initial	Final	Net	Pitot Leak Check	
Date :	12-16-10	Pitot Coeff :	.84	1	573.0	683.3	110.3	Initial : ✓	✓
Client :	BP	Meter Box # :	AL-2	2	580.5	623.0	42.7	Final : ✓	✓
Unit :	No. 2 TGU	Meter @ Dh :	1.729	3	567.5	571.1	3.6		
Operator :	DORIAN	Meter Y :	.9858	4	792.8	815.3	22.5	Meter Box Leak Check	
Stack Dia :	102"	TC # :	4	5				Rate	"HG
Amb. Press :	29.98	Start Time :	1015	Nozzle Dia	H2O Gain = 185.1			Initial : .001	15"
Static Press :	-1.2	Stop Time :	1226	.52	Filter : 0.3465			Final : .001	16"

Traverse Points	Time (Minute)	Delta P ("H2O)	Stack Temp (F)	Set delta H ("H2O)	Meter Volume (acf)	Mtr. Inlet Temp. (F)	Mtr. Outlet Temp. (F)	Oven Temp. (F)	Probe Temp. (F)	Impinger Temp. (F)	Pump Vac. ("HG)	TE Cooler Temp. (F)	Cyclonic Flow ("H2O)
0	—	—	—	—	799.461	—	—	—	—	—	—	32	
E 12	5	.10	1268	1.89	803.441	75	73	241	248	58	5	33	0
11	10	.11	1270	2.08	807.602	76	73	245	250	56	5.5	35	1
10	15	.09	1271	1.70	811.388	77	75	248	251	52	4	32	0
9	20	.08	1273	1.51	814.962	77	75	248	249	53	3.5	33	4
8	25	.08	1270	1.52	818.546	78	77	245	250	53	3.5	33	2
7	30	.04	1269	0.76	821.104	78	77	249	251	52	2	33	0
6	35	.11	1268	2.10	825.311	81	79	241	247	53	5.5	34	1
5	40	.12	1270	2.30	829.724	84	82	245	247	53	6	33	1
4	45	.11	1268	2.11	833.963	85	82	248	248	54	5.5	32	0
3	50	.11	1266	2.12	838.206	85	83	250	250	54	5.5	33	0
2	55	.10	1265	1.94	842.278	88	85	249	252	53	5	32	1
1	60	.06	1264	1.17	845.444	89	87	247	251	53	3	32	1
0	—	—	—	—	845.521	—	—	—	—	—	—	—	—
S 12	5	.11	1271	2.13	849.798	89	88	250	251	54	5.5	33	2
11	10	.11	1270	2.13	854.081	89	88	245	250	55	5.5	32	1
10	15	.10	1270	1.94	858.163	90	89	248	251	53	5	32	3
9	20	.10	1267	1.95	862.260	90	90	245	253	53	5	32	1
8	25	.10	1268	1.94	866.354	91	89	248	250	53	5	33	0
7	30	.11	1268	2.14	870.656	92	90	250	249	55	5.5	33	1
6	35	.11	1267	2.15	874.963	93	92	247	250	54	5.5	33	3
5	40	.10	1268	1.95	879.082	93	92	246	251	54	5	33	0
4	45	.08	1267	1.57	882.774	95	93	246	247	52	3.5	34	1
3	50	.08	1265	1.57	886.473	96	93	248	248	52	3.5	32	0
2	55	.09	1266	1.77	890.383	96	92	251	249	53	4	33	0
1	60	.06	1265	1.17	893.578	93	89	250	251	52	3	32	1

Isokinetic Factor Setup

Estimated Dry Gas Meter Temp.	90
Estimated Stack Temp.	1250
Estimated Delta P	.085
Estimated Moisture Content	16.2
Estimated O2	7.5
Estimated CO2	5

Equipment Evaluation , OK? Y or N

Ambient Temp.	
TC Check	✓
Pitot Check	✓
Tedlar Bag	

Dry Gas Meter Leak Checks

	1	2	3	4	5	6
DGM Initial	845.444					
Vacuum	15					
Leak Rate	.001					
DGM Final	845.521					

D2-2

Almega M-5.2 ISOKINETIC DATA FORM, TE COOLER & CYCLONIC FLOW

Run #	FB	Pitot ID		Impinger #	Initial	Final	Net	Pitot Leak Check			
Date	12/16/10	Pitot Coeff.		1	521.7			Initial			
Client	BP	Meter Box #	AL-2	2	538.4			Final			
Unit	TGU #2	Meter @ Dh	1.729	3	564.5						
Operator	RS/BH	Meter Y	.9858	4	792.8			Meter Box Leak Check			
Stack Dia	10.2"	TC #		5					Rate	"HG	
Amb. Press	29.98	Start Time	0927	Nozzle Dia	H2O Gain =			Initial	.000	17"	
Static Press	-1.2	Stop Time		.52	Filter	3962		Final			

Traverse Points	Time (Minute)	Delta P ("H2O)	Stack Temp (F)	Set delta H ("H2O)	Meter Volume (acf)	Mtr. Inlet Temp. (F)	Mtr. Outlet Temp. (F)	Oven Temp. (F)	Probe Temp. (F)	Impinger Temp. (F)	Pump Vac. ("HG)	TE Cooler Temp (F)	Cyclonic Flow ("H2O)
0					799.061								

Isokinetic Factor Setup

Estimated Dry Gas Meter Temp	
Estimated Stack Temp	
Estimated Delta P	
Estimated Moisture Content	
Estimated O2	
Estimated CO2	

Equipment Evaluation, OK? Y or N

Ambient Temp.	
TC Check	
Pitot Check	
Tedlar Bag	

Dry Gas Meter Leak Checks

	1	2	3	4	5	6
DGM Initial						
Vacuum						
Leak Rate						
DGM Final						

D2-3

Appendix D3

PARTICULATE MATTER – Laboratory Data

Calculation Data Sheet for Particulate Matter SCAQMD Method 5.2

LAB ANALYSIS

A.	Filter Catch	32.25	mg
B.	(1) Filter Acid	18.42	mg
	(2) Filter total Sulfate	31.61	mg
C.	Probe Catch	26.56	mg
D.	(1) Probe Acid	6.36	mg
	(2) Probe total Sulfate	13.75	mg
E.	Impinger Catch	105.71	mg
F.	(1) Impinger Acid	70	mg
	(2) Impinger total Sulfate	75.68	mg
G.	Organic Extract	0.03	mg
H.	$H_2SO_4.2H_2O$ from SOx Train Thimble	NA	mg
I.	Particulate Train corrected Gas Volume Metered	88.696	dscf
J.	SOx Train corrected Gas Volume Metered		dscf
K.	Prorated $H_2SO_4.2H_2O$ Mass (H*I)/J		mg

FILTER PARTICULATE TEMPERATURE GREATER THAN 200°F

L.	Total particulate (A-B*+C-D*+E-F*+G+K)	69.77	mg
M.	Solid particulate (L-G-K)	69.74	mg
N.	Total Particulate (Corrected for Ammonium Sulfate) (A-B*+C-D*+E-F(1)+G+K-{F(2)-(1)}.132/134)	64.17	mg
O.	Solid Particulate (Corrected for Ammonium Sulfate) (N-G-J)	64.14	mg

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LABORATORY REPORT

SCAQMD m5.2

Lab Report No.	A 221	Project No.:	s 9036
Client Name:	BP	Date Sampled:	16-Dec-11
Unit Tested:	TGU #2	Analyst:	DW

Client ID	Run # 1	Field Blank
Container No 1 (Filter)	1	1
Client ID No.:	R1 - Filter	FB - Filter
Lab ID No.:	A 221 - R1 - C1	A 221 - FB - C1
Filter ID #	9465	9462
Filter wt., total , mg (m_{F1})	32.25	0.70
Filter Acid, mg	18.42	NA
Filter SO4, mg	31.61	NA
Filter wt, net ,mg (m_{FN})	**32.25**	**0.70**
Container No 2 (Probe) - Water	2	2
Client ID No.:	R1 - FH	FB - FH
Lab ID No.:	A 221 - R1 - C2	A 221 - FB - C2
Volume, ml (V_{WW})	230	175
FH Catch, total, mg (m_{FH})	26.70	7.50
DI Water Blank, mg (W_W)	0.14	0.11
FH Acid, mg (m_{FHA})	6.36	NA
FH SO4, mg (m_{FHA})	13.75	NA
FH Catch, net, mg (m_{FHN}) (m_{FHN}=m_{FHT}-W_W)	**26.56**	**7.39**
Container No 3 (Impinger) -Water org	3	3
Client ID No.:	R1 - BH	FB - BH
Lab ID No.:	A 221 - R1 - C3 org	A 221 - FB - C3 org
Volume, ml (V_{WW})	100	100
BH Organic Catch, total, mg (m_{BH})	0.05	0.20
Methylen Chloride Blank, mg (W_M)	0.02	0.02
FH Catch, net, mg (m_{BHN}) (m_{BHN}=m_{BHT}-W_M)	**0.03**	**0.18**
Container No 3 (Impinger) -Water sr	3	3
Client ID No.:	R1 - BH	FB - BH
Lab ID No.:	A 221 - R1 - C3 sr	A 221 - FB - C3 sr
Volume, L (V_{WW})	650	425
BH Solid Residue Catch, total, mg (m_{BH})	106.10	23.20
DI Water Blank, mg (W_W)	0.39	0.26
BH Acid, mg (m_{BHA})	70.00	NA
BH SO4, mg (m_{BHA})	75.68	NA
BH Catch, net, mg (mB_{HN}) (m_{BHN}=m_{BHT}-W_W)	105.71	22.94
Total Particulate mass, net, mg (m_T)	**165.10**	**31.60**
Blank correction weight of PM, mg (m_{TB})	**164.55**	**31.22**

$m_T = m_{FN} + m_{FHN} - m_{BHN}$

Checked by: GA

Almega Environmental & Technical Services
5281 McFadden Ave Huntington Beach CA 92649
Phone 714-895-8400 Fax 714-895-2080
www.almegaenvironmental.com

D3-2

SULFURIC ACID & SULFUR OXIDES - LABORATORY DATA SHEET

Client: BP
Site Location:
Analyst: GA

Project #: c 9036
Unit Tested: TGU #2
Date Analyzed: 7-Jan-11

Checked by: GA

Sample No.	Sample			Sample Titration			Acid, as $H_2SO_4*2H_2O$ mg	Sulfate, as $H_2SO_4*2H_2O$ mg
	Total, V (mL)	Aliquot, A (mL)	Factor, F = V/A	T1 (mL)	T2 (mL)	Avg, V (mL)		
ANALYSIS FOR ACID								
A 221 - R1 - C1	50	10	5	0.55	0.55	0.55	18.42	
A 221 - R1 - C2	50	10	5	0.18	0.20	0.19	6.36	
A 221 - R1 - C3 sr	50	10	5	2.08	2.10	2.09	70.00	
ANALYSIS FOR SULFATE								
A 221 - R1 - C1	50	5	10	4.86	4.88	4.87		31.61
A 221 - R1 - C2	50	10	5	4.24	4.24	4.24		13.75
A 221 - R1 - C3 sr	50	5	10	11.62	11.64	11.63		75.68

No.	Sodium Hydroxide Titration			Barium Chloride Titration		
	KHP (mg)	Volume, Vs (mL)	Normality, Ns	Aliquot, VI (10 mL)	Volume, VT (mL)	Normality, NB
Blank	-	0.00	-	-	0.02	
1				4	8.28	0.00973
2				4	8.30	0.00971
Avg.			0.09990			0.00972

Detection Limit	
Sulfate,as $H_2SO_4*2H_2O$, mg	0.04
Acid,as $H_2SO_4*2H_2O$, mg	0.33

Sulfuric Acid Concentration 0.0201 N
PolarChem Lot S03468 Exp Jan 2011
Sodium Hydroxide Solution 0.0999 N
PolarChem Lot U39346 Exp Oct. 2012

CALCULATIONS: $N_B = (V_I \times N_{H2SO4})/(V_T - V_{TB})$

Sulfate
as SO_4, mg=$(V_S-V_B) \times N_B \times 134.11/2 \times F$

Acid
as SO_4, mg=$(V_S-V_B) \times N_S \times 134.11/2 \times F$

D 2.3

SUMMARY
SCAQMD m5.2

Laboratory:	Almega	Project No.:	c 9035
Project:	BP	Filter, Beaker Wt. Log Page(s):	#24, ##38-39
Unit Tested:	TGU #2		
Lab. ID No.:	A 221		

Sample Number	Lab ID	Tare Wt. (avg. g)	Final Wt. (avg. g)	Net Change (mg)	Volume ml	Blank mg	Comments
R1 - Filter	A 221 - R1 - C1	0.3436	0.3758	32.25	-		Run # 1
R1 - FH	A 221 - R1 - C2	28.5166	28.5433	26.70	230	0.14	Run # 1
R1 - BH	A 221 - R1 - C3 org	29.6360	29.6360	0.85	100	0.02	Run # 1
R1 - BH	A 221 - R1 - C3 sr	29.3359	29.4420	106.10	650	0.39	Run # 1
FB - Filter	A 221 - FB - C1	0.3431	0.3438	0.70	-		Field Blank
FB - FH	A 221 - FB - C2	28.8891	28.8966	7.50	175	0.11	Field Blank
FB - BH	A 221 - FB - C3 org	27.6878	27.6880	0.20	100	0.02	Field Blank
FB - BH	A 221 - FB - C3 sr	28.6932	28.7164	23.20	425	0.26	Field Blank
Reagent Blank		28.3990	28.3991	0.10	500		Methylene Chloride
Reagent Blank		27.8972	27.8975	0.30	500		DI Water

CALCULATIONS

$C_A = m_A/(V_A * \rho_A)$

Where:

C_A - Blank Concentration

m_A - Mass of residue of after evaporation, mg

V_A - Volume of blank, ml

ρ_A - Density , g/ml

$W_A = C_A * V_{WA} * \rho_A$

Where:

W_A - Weight of residue , mg

V_{WA} - Volume of liquid use, ml

Reagent Blank

Methylene Chloride

Density of methylene chloride ρM, g/ml =	1.3550
Methylene Chloride blank volume V_M, ml =	500
Methylene Chloride blank concentration C_M, mg/g =	0.0001

MeCl Lot No. 50294

DI Water

Density of Water ρW, g/ml =	0.998
Water blank volume VW, ml =	500
Water blank concentration C_W, mg/g =	0.0006

DI Water System - Pure Water Co.

Checked by:

23-4

Beakers Weight Record

x Pretest

(page__of__)

Laboratory: Almega
Project: BP
Project No.: e 9036
Unit Tested: TGU #2
Lab. ID No.: A 221

Balanced ID: A&D ER-182A
Serial No.: 47022866
Last Calibration: 2-Jun-10
Beaker Weight Log Page(s): ##38-39

Sample Number	Lab ID	Beaker ID	Beaker Weights (g)							D Wt. (mg)	Volume ml	Comments
			Date/Time	By	Wt. 1	Date/Time	By	Wt. 2	Average			
R1 - FH	A 221 - R1 - C2	6743	12/6/10 16:00	DW	28.5167	12/8/10 8:00	DW	28.5165	28.5166	0.20	230	Run # 1
R1 - BH	A 221 - R1 - C3 org	6893	12/6/10 16:00	DW	29.6361	12/8/10 8:00	DW	29.6358	29.6360	0.30	100	Run # 1
R1 - BH	A 221 - R1 - C3 ar	6846	12/6/10 16:00	DW	29.3357	12/8/10 8:00	DW	29.3361	29.3359	0.40	630	Run # 1
FB - FH	A 221 - FB - C2	5213	12/6/10 16:00	DW	28.8891	12/8/10 8:00	DW	28.8890	28.8891	0.10	175	Field Blank
FB - BH	A 221 - FB - C3 org	7614	12/6/10 16:00	DW	27.6879	12/8/10 8:00	DW	27.6876	27.6878	0.30	100	Field Blank
FB - BH	A 221 - FB - C3 ar	7587	12/6/10 16:00	DW	28.6932	12/8/10 8:00	DW	28.6932	28.6932	0.00	425	Field Blank
Reagent Blank		6771	12/17/10 10:00	DW	28.3990	12/21/10 8:00	DW	28.3990	28.3990	0.00	500	Methylene Chloride
Reagent Blank		7341	3/25/10 9:30	DW	27.8971	3/26/10 10:30	DW	27.8973	27.8972	0.20	500	DI Water

Checked by:

D3-5

Beakers Weight Record

x Post-test (page__of__)

Laboratory: Almega
Project: BP
Project No.: e 9036
Unit Tested: TGU #2
Lab. ID No.: A 221

Balance ID: A&D HR-182A
Serial No.: 4702866
Last Calibration: 2-Jun-10
Beaker Weight Log Page(s): ##38-39

Sample Number	Lab ID	Beaker ID	Beaker Weights (g)							D Wt. (mg)	Volume ml	Comments
			Date/Time	By	Wt. 1	Date/Time	By	Wt. 2	Average			
R1 - FH	A 221 - R1 - C2	6743	12/27/10 14:00	DW	28.5433	1/3/11 13:00	DW	28.5433	28.5433	0.00	230	Run # 1
R1 - BH	A 221 - R1 - C3 org	6893	12/27/10 14:00	DW	29.6359	1/3/11 13:00	DW	29.6361	29.6360	-0.20	100	Run # 1
R1 - BH	A 221 - R1 - C3 ar *	6846	~~12/27/10 14:00~~	~~DW~~	~~29.4420~~	1/3/11 13:00	DW	29.4420	29.4420	0.00	650	Run # 1
FB - FH	A 221 - FB - C2	5213	12/27/10 14:00	DW	28.8966	1/3/11 13:00	DW	28.8965	28.8966	0.10	175	Field Blank
FB - BH	A 221 - FB - C3 org	7614	12/27/10 14:00	DW	27.6879	1/3/11 13:00	DW	27.6880	27.6880	-0.10	100	Field Blank
FB - BH	A 221 - FB - C3 ar	7587	12/27/10 14:00	DW	28.7165	1/3/11 13:00	DW	28.7163	28.7164	0.20	425	Field Blank
Reagent Blank		6771	12/27/10 14:00	DW	28.3990	1/3/11 13:00	DW	28.3992	28.3991	-0.20	500	Methylene Chloride
Reagent Blank		7541	6/1/10 11:00	DW	27.8974	6/3/10 13:00	DW	27.8976	27.8975	-0.30	500	DI Water

Checked by:

* only 1 value used

Filter Weight Record

x Pretest (page__of__)

Laboratory: Almega
Project: BP
Project No.: c 9036
Unit Tested: TGU #2
Lab. ID No.: A 221

Balanced ID: A&D ER-182A
Serial No.: 4702866
Last Calibration: 2-Jun-10
Filter Weight Log Page(s): #24

Client Sample No.	Lab ID	Filter ID	Filter Weights (g)							D Wt. (mg)	Comments
			Date/Time	By	Wt. 1	Date/Time	By	Wt. 2	Average		
R1 - Filter	A 221 - R1 - C1	9465	12/8/10 14:00	DW	0.3435	12/13/10 13:00	DW	0.3436	**0.3436**	-0.10	Run # 1
FB - Filter	A 221 - FB - C1	9462	12/8/10 14:00	DW	0.3428	12/13/10 13:00	DW	0.3433	**0.3431**	-0.50	Field Blank

Checked By:

Filter Weight Record

x Post-test (page__of__)

Laboratory: Almega
Project: BP
Project No.: c 9036
Unit Tested: TGU #2
Lab. ID No.: A 221

Balanced ID: A&D ER-182A
Serial No.: 4702866
Last Calibration: 2-Jun-10
Filter Weight Log Page(s): #24

Client Sample No.	Lab ID	Filter ID	Filter Weights (g)							D Wt. (mg)	Comments
			Date/Time	By	Wt. 1	Date/Time	By	Wt. 2	Average		
R1 - Filter	A 221 - R1 - C1	9465	12/21/10 15:00	DW	0.3758	1/3/11 13:00	DW	0.3758	**0.3758**	0.00	Run # 1
FB - Filter	A 221 - FB - C1	9462	12/21/10 15:00	DW	0.3438	1/3/11 13:00	DW	0.3437	**0.3438**	0.10	Field Blank

Checked By:

Hat # A221

Almega ENVIRONMENTAL

CHAIN OF CUSTODY RECORDS

INVOICE TO:

ATTN:

REPORT TO:

ALMEGA Environmental & Technical Services
5251 McFadden Ave.
Huntington Beach, CA 92649
(714) 889-4000 Fax (714) 889-7030
lab@almegaenvironmental.com
Contact:

PO # _____

Turnaround Time
Standard: Other:

Rush:
Depends on # of Samples
5 - 10 days
3 - 7 days

Job # 9036 | Unit # TGU #2 | Client: BP | Location: Casco, CA

Samplers: (Signature)

Project Manager: T. Tran

Unit Information:

ANALYSIS REQUESTED

Sample Date	Sample Time	Sample Identification	Lab Sample #	Type Of Sample: LIQUID	GAS	SOLID	No of Containers	H-S-2	25.3				Return or Dispose / REMARKS
12/16/10	0927	FB - FILTER				✓	1	✓					
	↓	FB - FH		✓			1	✓					
		FB - BH		✓			1	✓					
	1015	R1 - FILTER				✓	1	✓					
	↓	R1 - FH		✓			1	✓					
		R1 - BH		✓			1	✓					
	1055	TNK A	A221-011A		✓		1		✓				TNK # A119
	↓	TNK B	011B		✓		1		✓				TNK # A2
		TRP 154	012A	✓			1		✓				TNK A
	↓	TRP 155	012B	✓			1		✓				TNK B

Relinquished by: _____
Date: 12/16/10 Time 18:45

Received by: G. Alexandroff
Date: 12/16/10 Time: 18:45

Relinquished by:
Date: Time:

Received by:
Date: Time

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Standard Receipt
Sample LOG in Checklist

Project No: 9036 BP TGU #2

Lab ID: A 221 Method: S2, 25.3

Sampling Date: 12/16/10 Location:______ Int:______

Date & Time Rc'd: 12/16/10 18:45 Location:______ Int:______

Arrived By: (circle) FedEx UPS Drop Off (Int) ✓ Other______

Condition of Package(s): (comment): Package Type: Box (Cooler — circled) Other:______

Number of Sample Container(s): 1-FB + 1 [illegible] Correct Containers (per Method): Y N

Preservation: (circle) (ICE — circled) DryICE ICEPacks None

Sample Conditions:

Sample Temp (C): ~4 °C Ambient Temp (C): 21 C

Sample Temp (C):______ Filter Condition:______

PH ______ Components Sealed: Y N

Sample Recovery Completed On: (date & time) ______

Recovered In: (circle) (Field — circled) Lab Other______ Silica Gel Condition:______

Tedlar Bags -
Condensation: Y N

Comments: Vial # 154 – 1mL in Vial /
155 – 3mL in Vial

Container(s) Requested: Glass ____ Plastic____

Additional Comments:

D3-10

APPENDIX E

SCAQMD METHOD 25.3 – VOC AS TGNMO (LOW-LEVEL)

Appendix E1

VOC AS TGNMO (LOW-LEVEL) – Results and Calculations

TGNMO SOURCE TEST RESULTS

Facility: BP West Coast Products, LLC.
City: Carson, CA
Source: No. 2 TGU
Test Date: 12/16/10

Parameter	units	Run 1		
		1A**	1B	**AVG
Sampling Method		25.3	25.3	25.3
Standard Temperature	deg. F	60	60	60
Stack Gas Parameters				
Barometric Pressure	in. Hg	29.98	29.98	29.98
Temperature	deg.F	1268	1268	1268
O2 Content	%,dry	15.70	7.90	7.90
CO2 content	%,dry	2.90	5.00	5.00
Moisture Content	%	8.82	8.82	8.82
Flow Rate, dry	DSCFM	29,306	29,306	29,306
TGNMO, as Methane *				
CONCENTRATION				
measured as Methane (1)	ppmv	11.85	1.38	1.38
measured as Methane ***	ppmv	11.36	1.24	1.24
EMISSION RATE				
measured as Hexane(1)	lb/hr	0.788	0.0921	0.0921
measured as Hexane***	lb/hr	0.756	0.0824	0.0824

* corrected based on carbon number: Methane = 1

(1) One half of the reporting limit is reported for the ND results specified in AB2588 guidelines.

** Run 1A leaked and therefore not used for reporting purposes.

*** Fractions of the reported values are below reporting limit.

Stack flow rate was measured during isokinetic sampling per SCAQMD Method 5.2.

E1-1

Test Data Reduction and Calculations for Method 25.3

Facility:	BP West Coast Products, LLC.	Operator:	DJ
City:	Carson, CA	Entered by:	TG
Source:	No. 2 TGU	Checked by:	SA
Location:	Stack		

DATA ENTRY		Symbol	units	Test No. 1A**	Test No. 1B
Run Data:	Test Date	**	m/d/y	12/16/10	12/16/10
	Start Time	**	hh:mm	10:55	10:55
	End Time	**	hh:mm	11:55	11:55
Standard Temperature		**	deg. F	60	60
Standard Pressure		**	in. Hg	29.92	29.92
Molar Volume of Air at Standard Conditions		Vmol	dscM	23.68	23.68
Calculation Factor K1 for Standard Corrections		X1	deg./in. Hg	17.38	17.38
Barometric Pressure		Ps	in. Hg	29.98	29.98
Stack Temperature		Ts	deg.F	1268.3	1268.3
Stack Gas Moisture Content		H2O	%	8.82	8.82
Stack Gas Flow Rate		Qstd	DSCFM	29,306	29,306
Mol. Wt.:	TGNMO, as Hexane *	MWi	g/g-mole	14.36	14.36
	METHANE	MW1	g/g-mole	16	16

LABORATORY DATA		Symbol	units	1A**	1B
Canister (tank):	VACUUM, Initial	P1	mm Hg	-763	-763
	VACUUM, Final	P2	mm Hg	-185	-161
	VOLUME of Gas Sample	Vtank	Liters	4.466	4.652
Concentration:	OXYGEN	O2	%,dry	15.70	7.90
	CARBON DIOXIDE	CO2	%,dry	2.9	5.0
	TGNMO, as Methane	Ci,t	ppmv	< 1.62	< 1.55
Condensate:	VOLUME of Condensate Sample	Vtank	ml	1.00	3.00
	TGNMO, as Methane	Ci,c	ppmv	10.10	< 1.00

TEST RESULTS		Symbol	units	1A**	1B
TGNMO, as Methane *					
CONCENTRATION, measured as Methane[1]		Ci	ppmv	10.91	1.28
	corrected for bias factor of 1.086	Ci'	ppmv	11.85	1.38
	TGNMO, as Methane *	**Ci,x**	**ppmv**	**11.85**	**1.38**
MASS RATE:	TGNMO, as Hexane *				
	lb/hr = [TGNMO]xMWxDSCFMx60/(379.5a6)	Mi	lb/hr	0.788	0.0921
	kg/hr = Mi/1000*453.6	Mi,m	kg/hr	0.358	0.0418

NOTE: * corrected based on carbon number: Methane = 1

(1) One half of the reporting limit is reported for the ND results specified in AB2588 guidelines.

** Run 1A leaked and therefore not used for reporting purposes.

E1-2

Test Data Reduction and Calculations for Method 25.3

Facility:	BP West Coast Products, LLC.	Operator:	BH
City:	Carson, CA	Entered by:	TG
Source:	No. 2 TGU	Checked by:	SA
Location:	Stack		

DATA ENTRY		Symbol	units	Test No. 1A	Test No. 1B
Run Data:	Test Date	**	m/d/y	12/16/10	12/16/10
	Start Time	**	hh:mm	10:55	10:55
	End Time	**	hh:mm	11:55	11:55
Standard Temperature		**	deg. F	60	60
Standard Pressure		**	in. Hg	29.92	29.92
Molar Volume of Air at Standard Conditions		Vmol	dscM	23.68	23.68
Calculation Factor K1 for Standard Corrections		X1	deg./in. Hg	17.38	17.38
Barometric Pressure		Ps	in. Hg	29.98	29.98
Stack Temperature		Ts	deg.F	1268.2	1268.2
Stack Gas Moisture Content		H2O	%	8.82	8.82
Stack Gas Flow Rate		Qstd	DSCFM	29306	29,306
Mol. Wt.:	TGNMO, as Hexane *	MWi	g/g-mole	14.36	14.36
	METHANE	MW1	g/g-mole	16	16

LABORATORY DATA		Symbol	units	1A	1B
Canister (tank):	VACUUM, Initial	P1	mm Hg	-763	-763
	VACUUM, Final	P2	mm Hg	-185	-161
	VOLUME of Gas Sample	Vtank	Liters	4.466	4.652
Concentration:	OXYGEN	O2	%,dry	15.70	7.90
	CARBON DIOXIDE	CO2	%,dry	2.90	5.00
	TGNMO, as Methane	Ci, t	ppmv	** 0.36	** 0.24
Condensate:	VOLUME of Condensate Sample	Vtank	ml	1.00	3.00
	TGNMO, as Methane	Ci, c	ppmv	10.1	** 0.00

TEST RESULTS		Symbol	units	1A	1B
TGNMO, as Methane *					
CONCENTRATION, measured as Methane		Ci	ppmv	10.46	1.14
	corrected for bias factor of 1.086	Ci'	ppmv	11.36	1.24
	TGNMO, as Methane *	Ci,x	**ppmv**	**11.36**	**1.24**
MASS RATE:	TGNMO, as Hexane *				
	lb/hr = [TGNMO]xMWxDSCFMx60/(379.5e6)	Mi	lb/hr	0.7558	0.082
	kg/hr = Mi/1000*453.6	Mi,m	**kg/hr**	0.343	0.037

NOTE: * corrected based on carbon number: Methane = 1

** Reported values are below the reporting limit.

** Run 1A leaked and therefore not used for reporting purposes.

E1-3

Appendix E2

VOC AS TGNMO (LOW LEVEL) – Field Data

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VOC FIELD DATA SHEET - SCAQMD METHOD 25.3

Date: 12/16/10
Client: BP
Unit: TGU #2
Operator Name: BH
Fuel:
Location: Carson, CA

Test No.: 1
Barometric Pressure (in. Hg): 29.98
Pretest Leak Check:
A: ✓ B: ✓
Post-test Leak check:
A: ✓ B: ✓

1055

Time 24 Hours	SAMPLE A Flow ml/min.	SAMPLE A Vacuum inch Hg	SAMPLE B Flow ml/min.	SAMPLE B Vacuum inch Hg
	Tank #A119 Trap #154 Control ID: 36		Tank # A2 Trap #155 Control ID: 6	
0	Orifice	27.0	Orifice	27.5
10		24.0		24.5
20		19.5		19.5
30		15.0		16.0
40		11.5		12.0
50		8.5		9.0
60		5.5		5.0

E2-1

Appendix E3

VOC AS TGNMO (LOW-LEVEL) – Laboratory Data

Almega
ENVIRONMENTAL

LABORATORY REPORT

Non-Methane Non-Ethane Organic compound Emissions by SCAQMD Method 25.3 (TCA/FID)

Client: BP
Project No.: c9836
Unit Tested: TGU #2
Sampling Date: 16-Dec-10
Analyzed Date: 22-Dec-10
Lab No.: A 221

Client Sample ID	Lab ID	Almega Sample ID		Total* NMNEO ppm	NMNEO ppm condensable	NMNEO ppm noncondensable	CH_4 ppm	C_2H_6 ppm	CO_2 % v/v by TCD	O_2 % v/v by TCD
		Tank	Trap							
TGU #2										
INK A	A 221 - 011 A	A 119	154	**10.7**	10.1	< 2.0	8.52	ND	2.9	15.7
INK B	A 221 - 011 B	A2	155	**< 2.0**	< 1.0	< 2.0	39.8	ND	5.0	7.9
Detection Limit					1	2	2	2	0.3	0.3

* NOTE - the BIAS FACTOR (of 1.086) is NOT applied on these results.
ND Not Detected

	Run A	Run B
Detection Limit NMNEO noncondensable	1.82	1.86

Water Blank , ppmC 6.824

TGNMNEO concentration values are reported in ppm (v/v) as Methane (carbon = 1)

The sample cylinder is analyzed for NMNEO, CO, CH_4, CO_2 and C_2H_6. It is then directed to a separation column where all heavy organics (C_{3+}) separate from the light organics (CO, CO_2, CH_4 and C_2H_6). The light organics are then passed through a reduction catalyst to convert CO and CO_2 to CH_4, and are then directed to a FID for detection and quantification. The heavy organics are backflushed off the holding column, passed through an oxidation catalyst, which convert all organics to CO_2, then through a reduction catalyst to convert CO_2 to CH_4 and then to a FID for detection and quantification.

Reviewed by: .....

CALCULATIONS

Client:	BP		Lab No.: A 221	
Project No.:	c9036			
Unit Tested:	TGU #2			
Sampling Date:	16-Dec-10			
Date tested:	22-Dec-10			
Parameter	Symbol	Units	Run #1 A	Run #1 B
Sample ID			TNK A	TNK B
Lab ID			A 221 - 011 A	A 221 - 011 B
Sample Tank				
Tank No			A 119	A2
Sample Tank Volume	V_T	L	6.000	6.000
Barometric Pressure	P_b	mm Hg	763	763
Pre-test Pressure	P_{TI}	mm Hg (abs)	0	0
Pre-test Temperature	t_{TI}	°C	22	22
Abs. Pre-test Temperature	T_{TI}	°K	295	295
Post-test Pressure	P_{TS}	mm Hg (abs)	578	602
Post-test Temperature	t_{TS}	°C	22	22
Abs. Post-test Temperature	T_{TS}	°K	295	295
Final Pressure	P_{TF}	mm Hg (abs)	930	926
Abs.Final Temperature	T_{TF}	°K	293	293
Dilution Factor	DF_T		1.62	1.55
Concentration Methane	C_{CH4}	ppm	5.26	25.67
Concentration Carbon Monoxide	C_{CO}	ppm	39.71	579.24
NMNEO (noncond)	C_{SA}	ppm	0.36	0.24
Sample Volume	V_S	L	4.466	4.652
Methane in Tank(C_{CH4}*DF_T)	C_{CH4T}	ppm	8.52	39.8
Carbon Monoxide in Tank(C_{CO}*DF_T)	C_{COT}	ppm	64.3	897
NMNEO (noncond)	C_{SAT}	ppm	0.58	0.37
Condensate Recovery - Trap				
Sample ID			TRP 154	TRP 155
Trap No			154	155
Lab No.:			A 221 - 012 A	A 221 - 012 B
Sample Impinger Volume	V_{IMP}	ml	1.0	3.0
Sample Volume	V_S	L	4.466	4.652
TC Concentration	C_{TC}	mg/L	27.94	18.22
IC Concentration	C_{IC}	mg/L	4.972	17.51
TOC Concentration	C_{TOC}	mg/L	22.97	0.71
NMNEO, Condensable	C_T	ppm	10.15	0.90
TNMNEOC (C_{SA}+C_T)	C	ppmC	**10.72**	**1.38**

Calculations

$V_S = k_1 * V_T * (P_{TS}/T_{TS} - P_{TI}/T_{TI})$

$k_1 = (273+15.56)/760 = 0.3799$

$C_{SAT} = DF * C_{SA}$

$C_{CH4T} = DF * C_{CH4}$

$DF = (P_{TF}/T_{TF})/(P_{TS}/T_{TS} - P_{TI}/T_{TI})$

$C_T = (C_{TOC} * V_{IMP} * V_m)/(V_S * A_C)$

$V_m = 23.6902$ L/mole

QA/QC SUMMARY
(Repeat Analysis)

Client Project No.: c9036 Lab No.: A 221
Sampling Date: 16-Dec-10 Analyzzd Date: 22-Dec-10
Run #1 A

Analyte	Sample ID	Area Count #1	Area Count #2	Area % diff (±20%)	Conc # 1	Conc # 2	Mean Conc ppm	% diff from Mean
Tank Analysis								
CO	A 221 - 011 A	983386	967168	1.65	40.0	39.4	39.7	1.66
CH4	A 221 - 011 A	130832	130074	0.58	5.28	5.25	5.26	0.58
CO2*	A 221 - 011 A	102863	109914	-6.85	1.7	1.8	1.8	-6.63
O2*	A 221 - 011 A	2039493	1955066	4.14	9.9	9.5	9.7	4.23
C2H6	A 221 - 011 A	ND	ND	ND	ND	ND	ND	ND
NMNEO	A 221 - 011 A	8931	8596	3.75	0.36	0.35	0.36	3.82

Analyte	Sample ID	Conc # 1	Conc # 2	Conc # 3	Mean Conc ppm	COV 10%	
Trap Analysis							
TC	A 221 - 012 A	7.412	7.085	6.461	27.94	6.68	DF=4
IC	A 221 - 012 A	1.260	1.277	1.192	4.972	3.08	

Run #1 B

Analyte	Sample ID	Area Count #1	Area Count #2	Area % diff (±20%)	Conc # 1	Conc # 2	Mean Conc ppm	% diff from Mean
Tank Analysis								
CO	A 221 - 011 B	14240825	14212617	0.20	580	579	579	0.20
CH4	A 221 - 011 B	662611	610368	7.88	26.7	24.6	25.7	8.21
CO2*	A 221 - 011 B	193954	193711	0.13	3.2	3.2	3.2	0.13
O2*	A 221 - 011 B	1048742	1038693	0.96	5.1	5.1	5.1	0.96
C2H6	A 221 - 011 B	ND	ND	ND	ND	ND	ND	ND
NMNEO	A 221 - 011 B	6148	5691	7.43	0.25	0.23	0.24	7.72

Analyte	Sample ID	Conc # 1	Conc # 2	Conc # 3	Mean Conc ppm	COV 10%	
Trap Analysis							
TC	A 221 - 012 B	14.69	12.73	13.76	18.22	6.91	DF=1.33
IC	A 221 - 012 B	13.37	13.18	12.94	17.51	1.93	

Water blank
TC 0.068
IC 0.044
TOC 0.024
* - by GC/TCD

$Conc_{CO}$ in tank = $MeanConc_{CO}$ * DF
$Conc_{CO2}$ in tank = $MeanConc_{CO2}$ * DF
$Conc_{O2}$ in tank = $MeanConc_{O2}$ * DF
$Conc_{C2H6}$ in tank = $MeanConc_{C2H6}$ * DF

E3-3

SAMPLE INVENTORY REPORT

Method 25.3 Sampling Train

Project No.:	c9036	Lab No.:	A 221
Client:	BP	Sampling Date:	16-Dec-10

Laboratory ID	Client ID	Component ID	
Run #1 A			
A 221 - 011 A	TNK A	Tank #	A 119
A 221 - 012 A	TRP 154	Impinger	154
Run #1 B			
A 221 - 011 B	TNK B	Tank #	A2
A 221 - 012 B	TRP 155	Impinger	155

Lab # A221

Almega ENVIRONMENTAL

CHAIN OF CUSTODY RECORDS

INVOICE TO:

ATTN:

REPORT TO:

PO # _____

ALMEGA Environmental & Technical Services
5251 McFadden Ave.
Huntington Beach, CA 92649
(714) 889-4000 Fax (714) 889-7030
lab@almegaenvironmental.com
Contact:

Turnaround Time
Standard: Other:
Rush:
Depends on # of Samples
5 - 10 days _____
3 - 7 days _____

Job # 9036 | Unit # RU #2 | Client: BP | Location: CARSON, CA

Samplers: (Signature) [signature]

Project Manager: T. TRAN

Unit Information:

ANALYSIS REQUESTED

Sample Date	Sample Time	Sample Identification	Lab Sample #	Type Of Sample: LIQUID	GAS	SOLID	No. of Containers	M-52	25-3				Return or Dispose / REMARKS
12/16/10	0927	FB - FILTER				✓	1	✓					
	↓	FB - FH		✓			1	✓					
	↓	FB - RH		✓			1	✓					
	1016	R1 - FILTER				✓	1	✓					
	↓	R1 - FH		✓			1	✓					
	↓	R1 - RH		✓			1	✓					
	1055	TNK A	A221-011A		✓		1		✓				TNK # A119
	↓	TNK B	011B		✓		1		✓				TNK # A2
	↓	TRP 154	012A	✓			1		✓				TNK A
↓	↓	TRP 155	012B	✓			1		✓				TNK B

Relinquished by:	Received by:	Relinquished by:	Received by:
Date: 12/16/10 Time 14:45	Date: 12/16/10 Time: 18:45	Date: Time:	Date: Time

5-53

Almega
ENVIRONMENTAL

Standard Receipt
Sample LOG in Checklist

Project No: 9036 BP TBU # 2

Lab ID: A821

Method: 52, 25.3

Sampling Date: 12/16/10 Location: Int:

Date & Time Rc'd: 12/16/10 18:45 Location: Int:

Arrived By: (circle) FedEx UPS Drop Off (int) ✓ Other

Condition of Package(s): (comment): Package Type: Box (Cooler) Other:

Number of Sample Container(s): 1-FB+1Lab Correct Containers (per Method): Y N

Preservation: (circle) (ICE) DryICE ICEPacks None

Sample Conditions:

Sample Temp (C): ~4 'C Ambient Temp (C): 21 C

Sample Temp (C): Filter Condition:

PH : Components Sealed: Y N

Sample Recovery Completed On: (date & time)

Recovered In: (circle) (Field) Lab Other Silica Gel Condition:

Tedlar Bags -
Condensation: Y N

Comments: * 1501 - 1mL
* 1555 - 3mL

Container(s) Requested: Glass Plastic

Additional Comments:

Pg 6

APPENDIX F

QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC)

Appendix F1

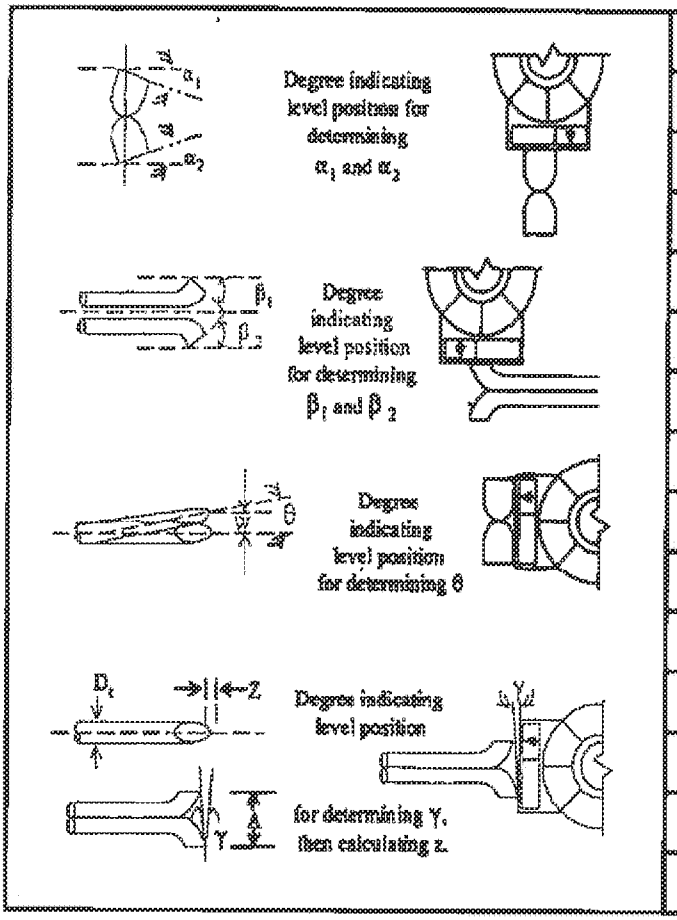
Test Equipment Calibration Data

TYPE S PITOT TUBE INSPECTION SHEET

CAL DATE: 11/17/2010

NEXT DUE DATE: May-11

PITOT ID: PT-4



Parameter	Values	Allowable Range
Level and Perpendicular?	Yes OR No	Yes
Obstruction?	Yes OR No	No
Damaged?	Yes OR No	No
α1	2	$-10° \leq \alpha1 \leq +10°$
α2	2	$-10° \leq \alpha2 \leq +10°$
β1	2	$-5° \leq \beta1 \leq +5°$
β2	2	$-5° \leq \beta2 \leq +5°$
γ	1	NA
θ	2	NA
Z = A (tan γ)	0.014	≤ 0.125 in.
W = A (tan θ)	0.027	≤ 0.031 in.
Dt	0.37	0.188 ≤ Dt ≤ 0.375
A	0.785	NA
A/2/(Dt)	1.06	1.05 ≤ PA/Dt ≤ 1.5

Certification:

I certify that this pitot tube meets or exceeds all specifications, criteria and/or applicable design features and is hereby assigned a pitot tube calibration factor Cp of 0.84.

Certified By: _____ Date: 11/17/2010

Fig 3

ALMEGA ENVIRONMENTAL AND TECHNICAL SERVICES
5251 MCFADDEN AVENUE
HUNTINGTON BEACH, CA 92649

STACK TEMPERATURE SENSOR CALIBRATION

TEMPERATURE SENSOR I.D:	4	REF. IN HG. GLASS THERMOMETER ID:	20-500
READ OUT I.D:	RO-1	ICE BATH: YES	
PITOT TUBE I.D:	4	BOILING WATER:	YES
PITOT TUBE LENGTH:	110"	HOT OIL:	YES
DATE:	11/17/2010	CALIBRATED BY:	KA

ICE BATH			
REF. IN HG. GLASS THERMOMETER TEMPERATURE (^{o}F)	FIELD METER TEMPERATURE (^{o}F)	ABSOLUTE DIFFERENCE TEMPERATURE (^{o}F)	% DIFFERENCE (%)
33.0	33.3	0.3	0.9
33.0	33.2	0.2	0.6
33.0	33.2	0.2	0.6

BOILING WATER			
REF. IN HG. GLASS THERMOMETER TEMPERATURE (^{o}F)	FIELD METER TEMPERATURE (^{o}F)	ABSOLUTE DIFFERENCE TEMPERATURE (^{o}F)	% DIFFERENCE (%)
216.0	214.5	1.5	0.7
216.0	214.0	2.0	0.9
216.0	214.4	1.6	0.7

HOT OIL			
REF. IN HG. GLASS THERMOMETER TEMPERATURE (^{o}F)	FIELD METER TEMPERATURE (^{o}F)	ABSOLUTE DIFFERENCE TEMPERATURE (^{o}F)	% DIFFERENCE (%)
352.0	351.0	1.0	0.3
352.0	350.5	1.5	0.4
352.0	351.0	1.0	0.3

NOTE:
MAXIMUM TOLERANCE BETWEEN ANY TWO MEASUREMENT IS 1.5%.
TAKE READING EVERY ONE MINUTE.

Field Dry Gas Meter Calibration*

Calibration Date: 11/10/2010

Orifice Series: 33-73

Serial Number: AE_1/AE_2

Orifice Cal. Date(m/d/y): 5/7/2010

Calibrated by: KA

(signature):

DRY GAS METER CALIBRATION FACTOR Y	ORIFICE CALIBRATION FACTOR dH@
Yds = 0.9838	dH@ = 1.729

DRY GAS METER READINGS								QUALITY CONTROL CHECKS				DGM ID: AL-2
DGM INLET		DGM OUTLET		Meter Reading		Orifice Reading						Serial #:
Initial (°F)	Final (°F)	Initial (°F)	Final (°F)	Initial (cu.ft.)	Final (cu.ft.)	Initial (in.H2O)	Final (in.H2O)	$(Y_{ds,max} - Y_{ds,min}) < 0.010$ **	$0.98 < (Y_{ds}/Y_{ds}) < 1.02$	Average Coeff. Y_{ds}	$dH@_{Ave} < (dH@ \pm 0.15)$	Calibration Interval:
71.0	73.0	68.0	70.0	588.995	606.005	0.120	0.120					Semi-Annual: x
73.0	75.0	70.0	73.0	606.005	612.086	0.120	0.120	0.0092	0.982	0.986	1.587	Bi-monthly:
75.0	77.0	73.0	74.0	612.086	618.132	0.120	0.120	PASS	PASS	PASS	PASS	Other:
86.0	94.0	75.0	79.0	618.416	624.765	0.800	0.800					
94.0	96.0	79.0	77.0	624.765	631.135	0.800	0.800	0.0002	0.992	0.976	1.757	Standard Temperature (deg.F)
96.0	97.0	77.0	78.0	631.135	637.520	0.800	0.800	PASS	PASS	PASS	PASS	Tstd = 60
100.0	108.0	78.0	79.0	637.880	643.635	2.000	2.000					
108.0	112.0	79.0	81.0	643.635	649.390	2.000	2.000	0.0068	1.013	0.997	1.762	Barometric Pressure (in.Hg)
112.0	113.0	81.0	82.0	649.390	655.150	2.000	2.000	PASS	PASS	PASS	PASS	Initial: 30
115.0	122.0	82.0	83.0	655.903	662.740	3.800	3.800					Final: 30
122.0	124.0	83.0	84.0	662.740	669.535	3.800	3.800	0.0084	1.013	0.997	1.788	Pstd: 30.00
124.0	125.0	84.0	85.0	669.535	676.372	3.800	3.800	PASS	PASS	PASS	PASS	

Orifice Series No.	Run Time (min)	CRITICAL ORIFICE					DRY GAS METER					CALCULATIONS	
		Orifice K-factor	Tested Vacuum (in.Hg)	Ambient Temp. (°F)	Corrected Flowrate Q'm (SCFM)	Corrected Volume (cu.ft.)	Orifice dH (in.H2O)	AVG Temp. (°F)	NET Volume (cu.ft.)	Corrected Flowrate Q'm (SCFM)	Corrected Volume (SCF)	Coefficient $Y_{ds,i}$ $(0.95 < Y_{ds,i} < 1.05)$	Orifice $dH@_i$ (in.H2O)
33	28	0.1549	25.0	57.0	0.204	5.724	0.120	70.50	6.010	0.211	5.912	0.9882	1.591
33	28	0.1549	25.0	58.0	0.204	5.719	0.120	72.75	6.091	0.213	5.957	0.9600	1.587
33	28	0.1549	25.0	58.0	0.204	5.719	0.120	74.75	6.046	0.211	5.900	0.9882	1.581
52	12	0.3769	23.0	59.0	0.496	5.958	0.800	83.50	6.349	0.509	6.106	0.9757	1.761
52	12	0.3769	23.0	60.0	0.496	5.952	0.800	85.75	6.370	0.508	6.101	0.9755	1.757
52	12	0.3769	23.0	60.0	0.496	5.952	0.800	87.00	6.385	0.508	6.102	0.9755	1.753
63	7	0.5890	21.0	60.0	0.775	5.428	2.000	91.25	5.745	0.761	5.464	0.9931	1.791
63	7	0.5890	21.0	60.0	0.775	5.428	2.000	95.00	5.755	0.777	5.436	0.9981	1.778
63	7	0.5890	21.0	61.0	0.774	5.421	2.000	97.00	5.760	0.774	5.421	0.9999	1.776
73	6	0.8109	19.0	61.0	1.066	6.397	3.800	100.50	6.837	1.070	6.423	0.9959	1.785
73	6	0.8109	19.0	62.0	1.065	6.390	3.800	96.75	6.795	1.073	6.438	0.9926	1.804
73	6	0.8109	19.0	62.0	1.065	6.390	3.800	104.50	6.837	1.063	6.377	1.0021	1.776

* Critical Orifice used.

Fig-3

Almega
ENVIRONMENTAL

NOZZLE CALIBRATION FORM

NOZZLE ID # : .52 CLIENT : BP

CALIPER ID : CALIPER DATE : 12/16/10

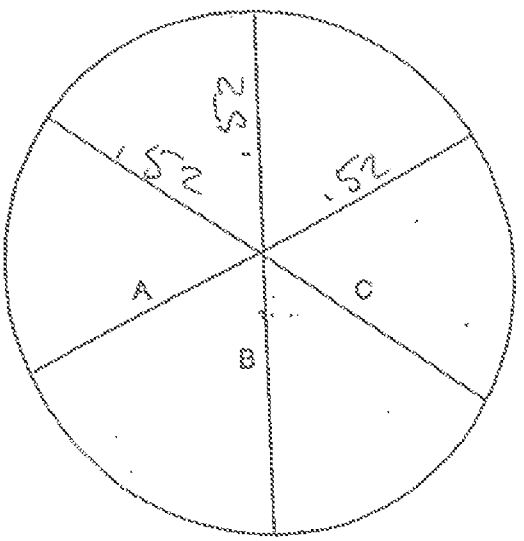
CALIBRATOR : Bryan Harrison

SIGNATURE : [signature]

Measured Diameter A: .52 inch

Measured Diameter B: .52 inch

Measured Diameter C: .52 inch



Nozzle inside diameter

Almega Environmental & Technical Services
5251 McFadden Ave. Huntington Beach CA. 92649
Phone 714-889-4000 Fax 714-889-7030
www.almegaenvironmental.com

E-4

Appendix F2

CEMS Calibration Gas Certificates

Airgas

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Airgas Specialty Gases
11711 S. Alameda Street
Los Angeles, CA 90059-2130
(323) 357-6881
Fax: (323) 567-3688
www.airgas.com

Part Number:	E03NI83E15A3830	Reference Number:	48-124230108-11
Cylinder Number:	CC274244	Cylinder Volume:	148 Cu.Ft.
Laboratory:	ASG - Los Angeles - CA	Cylinder Pressure:	2015 PSIG
Analysis Date:	Aug 16, 2010	Valve Outlet:	590

Expiration Date: Aug 16, 2013

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON DIOXIDE	4.260 %	4.278 %	G1	+/- 1% NIST Traceable
OXYGEN	12.00 %	12.09 %	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	82658	SG9168290	16.04% OXYGEN/	Dec 01, 2015
NTRM	81674	XC018412B	4.811% CARBON DIOXIDE/	May 15, 2012

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
SIEMENS % CO2	NDIR	Aug 13, 2010
Siemens %O2	PARAMAGNETIC	Aug 13, 2010

Triad Data Available Upon Request

Notes:

Approved for Release

F-1

Airgas

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Airgas Specialty Gases
11711 S. Alameda Street
Los Angeles, CA 90059-2130
(323) 357-6881
Fax: (323) 567-3688
www.airgas.com

Part Number:	E03NI69E15A3832	Reference Number:	48-124203748-11
Cylinder Number:	CC277612	Cylinder Volume:	151 Cu.Ft.
Laboratory:	ASG - Los Angeles - CA	Cylinder Pressure:	2015 PSIG
Analysis Date:	Jan 14, 2010	Valve Outlet:	590

Expiration Date: Jan 14, 2013

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON DIOXIDE	8.750 %	8.762 %	G1	+/- 1% NIST Traceable
OXYGEN	22.00 %	21.87 %	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	060608	CC207779	22.51% OXYGEN/	May 01, 2010
NTRM	970510	SG9198971	10.818% CARBON DIOXIDE/NITROGEN	May 15, 2012

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
SIEMENS % CO2	NDIR	Jan 04, 2010
Siemens %O2	PARAMAGNETIC	Jan 04, 2010

Triad Data Available Upon Request

Notes:

QA Approval

Ex-2

Airgas

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Airgas Specialty Gases
11711 S Alameda Street
Los Angeles, CA 90059-2130
(323) 357-6881
Fax: (323) 567-3585
www.airgas.com

Part Number:	E02NI99E15A0499	Reference Number:	48-124179252-6
Cylinder Number:	CC162408	Cylinder Volume:	144 Cu.Ft.
Laboratory:	ASG - Los Angeles - CA	Cylinder Pressure:	2015 PSIG
Analysis Date:	Jun 16, 2009	Valve Outlet:	350

Expiration Date: Jun 16, 2012

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON MONOXIDE	450.0 PPM	446.7 PPM	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	05120508	CC180349	495.8PPM CARBON MONOXIDE/NITROGEN	Feb 02, 2013

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 CO	FTIR	Jun 10, 2009

Triad Data Available Upon Request

Notes:

QA Approval

Ex-3

AIR LIQUIDE

CERTIFICATION OF ANALYSIS

Interference Free Multi-Component EPA Protocol Gases

Note: Analytical uncertainty and NIST traceability are in compliance with EPA-600/R-97/121
Section 2.2, Procedure G-1

Cylinder S/N: CC54468

Customer: ALMEGA ENVIRONMENTAL & TECHNICAL
Location: HUNTINGTON BEACH, CA

P.O. Number: STOCK REPLACEMENT

Shipping Order Number: 32845670
Transfer Number:
Lot Number: SFS130918
Valve: CGA 350
Cylinder Pressure*: 2000 PSIG
*Cylinder should not be used when gas pressure is below 150 psig

Assay Date: 7-Apr-2009 Expiration Date: 7-Apr-2012

Components	Requested Concentration	Assay Concentration
Nitrogen	Balance	Balance
Carbon Monoxide	900 ppm	898 ± 11 ppm

Reference Standard(s) Employed For Analysis

Certified Concentration and Uncertainty	Component	Balance	Cyl. No.	SRM/PRM/Mix No	Exp. Date	Sample No.	Type
1010 ± 2 ppm	Carbon Monoxide	Nitrogen	AL3127	SFS111118	23-Jul-2010	EE	GMIS

Analytical Data

Component:	Carbon Monoxide		FIRST TRIAD ANALYSIS 31-Mar-2009					SECOND TRIAD ANALYSIS 7-Apr-2009				
Analyzer Information			Trial 1	Trial 2	Trial 3	Units		Trial 1	Trial 2	Trial 3	Units	
Analyzer Type:	Gas Chromatograph	Zero	0.0000	0.0000	0.0000	area	Zero	0.0000	0.0000	0.0000	area	
Manufacturer:	Varian	Reference	5588500	5608000	5609100	area	Reference	5536900	5517700	5529300	area	
Model Number:	3400A	Candidate	4992300	4987700	4981500	area	Candidate	4930800	4911500	4923400	area	
Serial Number	2505	Result	892.2	892.2	893.8	ppm	Result	892.2	890.0	892.5	ppm	
MPR Last Calibrated:	6-Apr-2009	Evaluation	Valid	Valid	Valid		Evaluation	Valid	Valid	Valid		
Analytical Principle	FID & TCD				Mean Analytical Result	892.1	ppm			Mean Analytical Result	890.9	ppm

Analyst: Eric Barron

Approved by: Jason Unger

AIR LIQUIDE AMERICA, L.P. Region Office • 8932 Dice Road, Santa Fe Springs, CA 90670-2516
Phone (562) 945-1383 • Fax (562) 693-1150

F2-4

APPENDIX G

FACILITY PROCESS DATA

Facility Process Data

DATE/TIME	PPM 2INCIN STK NOX 88A8999A	PERCEN 2INCIN STK O2 88A8888B	PPM 2INCIN STK SO2 88A8999C	DEG F 2INCIN STACK TEMP 8877099	MMSCFH 2INCIN STKFLO-DSCFH 88FY1888B	LB/HR 2INCIN NOX STK EMIS-LB/H 88FY1888C	LB/HR 2INCIN SO2 STK EMIS-LB/H 88FY1888D	BIAS 2INCIN NOX STK EMIS BIAS 88FY1888E	BIAS 2INCIN SO2 STK EMIS BIAS 88FY1888F	FACTOR 2INCIN STK K FACTOR 88FY1999K
12/16/2010 10:15	24.24	8.441	80.31	1256.13	1.75	5.069	23.402	1.000	1.000	0.840
12/16/2010 10:16	24.95	8.430	81.49	1256.13	1.76	5.250	23.819	1.000	1.000	0.840
12/16/2010 10:17	25.46	8.281	77.91	1257.67	1.75	5.330	22.708	1.000	1.000	0.840
12/16/2010 10:18	25.54	8.430	77.01	1256.13	1.77	5.389	22.803	1.000	1.000	0.840
12/16/2010 10:19	24.82	8.371	78.99	1257.67	1.75	5.191	22.985	1.000	1.000	0.840
12/16/2010 10:20	23.96	8.451	79.72	1255.09	1.76	5.042	23.288	1.000	1.000	0.840
12/16/2010 10:21	24.91	8.361	81.79	1255.09	1.78	5.309	24.201	1.000	1.000	0.840
12/16/2010 10:22	24.62	8.350	82.22	1257.17	1.76	5.191	24.098	1.000	1.000	0.840
12/16/2010 10:23	24.19	8.441	77.60	1255.09	1.77	5.132	22.916	1.000	1.000	0.840
12/16/2010 10:24	24.19	8.441	77.60	1255.09	1.77	5.132	22.916	1.000	1.000	0.840
12/16/2010 10:25	25.04	8.312	78.82	1256.13	1.76	5.330	22.985	1.000	1.000	0.840
12/16/2010 10:26	23.88	8.361	78.99	1255.09	1.76	5.080	23.402	1.000	1.000	0.840
12/16/2010 10:27	25.71	8.409	78.12	1256.13	1.77	5.451	22.985	1.000	1.000	0.840
12/16/2010 10:28	24.80	8.330	79.72	1257.67	1.77	5.281	23.506	1.000	1.000	0.840
12/16/2010 10:29	24.84	8.399	77.50	1257.17	1.76	5.212	22.603	1.000	1.000	0.840
12/16/2010 10:30	24.88	8.552	78.12	1257.17	1.75	5.222	22.706	1.000	1.000	0.840
12/16/2010 10:31	24.73	8.371	78.40	1256.13	1.75	5.160	22.512	1.000	1.000	0.840
12/16/2010 10:32	23.98	8.399	81.91	1255.09	1.72	4.809	23.506	1.000	1.000	0.840
12/16/2010 10:33	25.03	8.399	80.52	1254.05	1.76	5.260	23.506	1.000	1.000	0.840
12/16/2010 10:34	25.24	8.319	79.20	1255.09	1.73	5.212	22.512	1.000	1.000	0.840
12/16/2010 10:35	24.76	8.451	77.81	1254.05	1.77	5.239	23.916	1.000	1.000	0.840
12/16/2010 10:36	25.79	8.330	79.20	1254.05	1.76	5.441	23.194	1.000	1.000	0.840
12/16/2010 10:37	24.81	8.392	78.82	1255.09	1.78	5.319	23.402	1.000	1.000	0.840
12/16/2010 10:38	26.53	8.281	79.79	1257.67	1.80	5.600	23.888	1.000	1.000	0.840
12/16/2010 10:39	25.18	8.361	80.62	1259.95	1.82	5.462	24.305	1.000	1.000	0.840
12/16/2010 10:40	24.72	8.409	83.71	1255.95	1.80	5.330	25.103	1.000	1.000	0.840
12/16/2010 10:41	24.41	8.409	80.00	1257.17	1.81	5.291	24.096	1.000	1.000	0.840
12/16/2010 10:42	24.88	8.469	77.50	1256.13	1.81	5.389	23.402	1.000	1.000	0.840
12/16/2010 10:43	24.23	8.392	81.59	1256.13	1.81	5.239	24.513	1.000	1.000	0.840
12/16/2010 10:44	24.23	8.392	81.59	1256.13	1.81	5.239	24.513	1.000	1.000	0.840
12/16/2010 10:45	24.27	8.462	82.50	1254.05	1.79	5.191	24.513	1.000	1.000	0.840
12/16/2010 10:46	24.72	8.319	82.39	1255.09	1.77	5.339	24.305	1.000	1.000	0.840
12/16/2010 10:47	24.12	8.388	83.19	1255.09	1.78	5.132	24.617	1.000	1.000	0.840
12/16/2010 10:48	24.29	8.441	86.81	1255.09	1.80	5.212	25.902	1.000	1.000	0.840
12/16/2010 10:49	25.10	8.361	83.19	1255.09	1.80	5.399	24.895	1.000	1.000	0.840
12/16/2010 10:50	25.03	8.371	82.81	1255.09	1.77	5.291	24.305	1.000	1.000	0.840
12/16/2010 10:51	25.02	8.472	78.71	1254.05	1.77	5.302	23.194	1.000	1.000	0.840
12/16/2010 10:52	26.03	8.350	79.09	1255.09	1.76	5.541	23.090	1.000	1.000	0.840
12/16/2010 10:53	24.95	8.409	80.41	1254.05	1.75	5.222	23.402	1.000	1.000	0.840

Ex. 1

Facility Process Data

DATE/TIME	PPM 2INCIN STK NOX 68AI888A	PERCEN 2INCIN STK O2 68AI888B	PPM 2INCIN STK SO2 68AI888C	DEG F 2INCIN STACK TEMP 68TI793	MMSCFH 2INCIN STKFLO-DSCFH 68FY188B	LB/HR 2INCIN NOX STK EMIS-LB/H 68FY189C	LB/HR 2INCIN SO2 STK EMIS-LB/H 68FY189D	BIAS 2INCIN NOX STK EMIS BIAS 68FY189E	BIAS 2INCIN SO2 STK EMIS BIAS 68FY189F	FACTOR 2INCIN STK K FACTOR 68FY189K
12/16/2010 10:54	36.06	8.330	79.72	1255.09	1.76	5.350	23.194	1.000	1.000	0.840
12/16/2010 10:55	24.97	8.312	78.12	1254.05	1.73	5.179	22.499	1.000	1.000	0.840
12/16/2010 10:56	25.54	8.382	78.02	1253.01	1.72	5.238	22.157	1.000	1.000	0.840
12/16/2010 10:57	28.01	8.302	80.62	1255.09	1.73	5.361	23.090	1.000	1.000	0.840
12/16/2010 10:58	28.74	8.271	80.52	1256.13	1.73	5.281	22.985	1.000	1.000	0.840
12/16/2010 10:59	26.06	8.340	78.61	1257.17	1.71	5.319	22.291	1.000	1.000	0.840
12/16/2010 11:00	25.50	8.382	77.50	1258.81	1.69	5.148	21.605	1.000	1.000	0.840
12/16/2010 11:01	34.80	8.371	78.30	1257.87	1.66	4.979	21.909	1.000	1.000	0.840
12/16/2010 11:02	24.84	8.371	78.83	1257.17	1.69	4.972	22.117	1.000	1.000	0.840
12/16/2010 11:03	25.42	8.382	80.10	1257.17	1.71	5.212	22.612	1.000	1.000	0.840
12/16/2010 11:04	24.77	8.420	80.62	1255.09	1.73	5.121	23.194	1.000	1.000	0.840
12/16/2010 11:05	24.77	8.420	80.62	1255.09	1.73	5.121	23.194	1.000	1.000	0.840
12/16/2010 11:06	25.59	8.399	79.72	1254.05	1.76	5.389	23.298	1.000	1.000	0.840
12/16/2010 11:07	25.36	8.340	82.22	1255.09	1.77	5.361	24.201	1.000	1.000	0.840
12/16/2010 11:08	35.12	8.359	81.00	1256.13	1.77	5.330	23.888	1.000	1.000	0.840
12/16/2010 11:09	25.97	8.330	78.30	1256.13	1.81	5.611	23.506	1.000	1.000	0.840
12/16/2010 11:10	25.63	8.291	78.50	1256.13	1.81	5.631	23.610	1.000	1.000	0.840
12/16/2010 11:11	25.31	8.362	79.62	1255.09	1.82	5.600	23.992	1.000	1.000	0.840
12/16/2010 11:12	25.74	8.302	83.92	1257.17	1.81	5.559	25.208	1.000	1.000	0.840
12/16/2010 11:13	24.57	8.361	83.01	1256.13	1.80	5.291	24.617	1.000	1.000	0.840
12/16/2010 11:14	25.63	8.382	78.40	1255.09	1.81	5.559	23.610	1.000	1.000	0.840
12/16/2010 11:27	25.07	8.491	80.00	1256.13	1.78	5.371	23.819	1.000	1.000	0.840
12/16/2010 11:28	35.24	8.361	79.20	1257.17	1.78	5.399	23.610	1.000	1.000	0.840
12/16/2010 11:29	28.13	8.389	81.11	1257.17	1.80	5.410	24.305	1.000	1.000	0.840
12/16/2010 11:30	24.78	8.382	82.29	1256.13	1.81	5.361	24.791	1.000	1.000	0.840
12/16/2010 11:31	25.13	8.330	81.70	1257.17	1.84	5.531	24.999	1.000	1.000	0.840
12/16/2010 11:32	35.06	8.319	82.12	1257.17	1.82	5.462	24.695	1.000	1.000	0.840
12/16/2010 11:33	24.91	8.389	80.69	1257.17	1.82	5.420	24.409	1.000	1.000	0.840
12/16/2010 11:34	25.43	8.399	78.40	1256.13	1.82	5.531	23.716	1.000	1.000	0.840
12/16/2010 11:35	25.85	8.340	78.82	1254.05	1.67	5.111	21.805	1.000	1.000	0.840
12/16/2010 11:36	35.44	8.420	81.21	1249.88	1.84	5.580	24.791	1.000	1.000	0.840
12/16/2010 11:37	26.11	8.312	79.51	1250.92	1.84	5.739	24.305	1.000	1.000	0.840
12/16/2010 11:38	25.25	8.420	82.91	1251.97	1.84	5.541	25.312	1.000	1.000	0.840
12/16/2010 11:39	25.43	8.350	83.02	1256.09	1.76	5.399	24.513	1.000	1.000	0.840
12/16/2010 11:40	24.84	8.420	82.39	1256.13	1.77	5.260	24.305	1.000	1.000	0.840
12/16/2010 11:41	25.79	8.361	81.00	1256.13	1.78	5.479	23.888	1.000	1.000	0.840
12/16/2010 11:42	25.53	8.319	80.21	1257.87	1.79	5.472	23.888	1.000	1.000	0.840
12/16/2010 11:43	25.85	8.382	78.50	1256.13	1.81	5.601	23.715	1.000	1.000	0.840
12/16/2010 11:44	25.66	8.382	78.71	1257.87	1.81	5.541	23.610	1.000	1.000	0.840
12/16/2010 11:45	25.30	8.382	81.70	1257.17	1.80	5.451	24.513	1.000	1.000	0.840
12/16/2010 11:46	25.30	8.382	81.70	1257.17	1.80	5.451	24.513	1.000	1.000	0.840
12/16/2010 11:47	26.01	8.371	80.21	1256.13	1.83	5.670	24.305	1.000	1.000	0.840
12/16/2010 11:48	25.17	8.371	85.62	1257.17	1.80	5.410	25.589	1.000	1.000	0.840

Cy-2

Facility Process Data

DATE/TIME	PPM 2INCIN STK NOX 66A9999A	PERCEN 2INCIN STK O2 66A9999B	PPM 2INCIN STK SO2 66A9999C	DEG F 2INCIN STACK TEMP 66TI799	MMSCFH 2INCIN STKFLO-DSCFM 66FY1999B	LB/HR 2INCIN NOX STK EMIS-LB/H 66FY1999C	LB/HR 2INCIN SO2 STK EMIS-LB/H 66FY1999D	BIAS 2INCIN NOX STK EMIS BIAS 66FY1999E	BIAS 2INCIN SO2 STK EMIS BIAS 66FY1999F	FACTOR 2INCIN STK K FACTOR 66FY1999K
12/16/2010 11:49	25.13	8.479	86.80	1255.09	1.81	5.430	26.110	1.000	1.000	0.840
12/16/2010 11:50	25.72	8.291	82.39	1256.13	1.80	5.541	24.687	1.000	1.000	0.840
12/16/2010 11:51	25.01	8.330	81.21	1255.09	1.81	5.410	24.409	1.000	1.000	0.840
12/16/2010 11:52	25.73	8.371	82.12	1255.09	1.82	5.601	24.895	1.000	1.000	0.840
12/16/2010 11:53	25.86	8.260	82.71	1257.17	1.80	5.568	24.791	1.000	1.000	0.840
12/16/2010 11:54	25.21	8.430	83.50	1255.09	1.82	5.479	25.208	1.000	1.000	0.840
12/16/2010 11:55	26.11	8.319	84.09	1255.09	1.82	5.691	25.485	1.000	1.000	0.840
12/16/2010 11:56	26.24	8.350	85.00	1256.13	1.82	5.701	25.694	1.000	1.000	0.840
12/16/2010 11:57	24.74	8.330	87.01	1256.13	1.78	5.260	25.694	1.000	1.000	0.840
12/16/2010 11:58	24.80	8.451	90.31	1254.05	1.79	5.260	26.805	1.000	1.000	0.840
12/16/2010 11:59	25.58	8.382	90.90	1255.09	1.81	5.641	27.395	1.000	1.000	0.840
12/16/2010 12:00	24.47	8.392	86.99	1260.01	1.82	5.330	27.013	1.000	1.000	0.840
12/16/2010 12:01	25.60	8.319	90.69	1255.09	1.81	5.531	27.187	1.000	1.000	0.840
12/16/2010 12:02	25.03	8.361	91.32	1255.09	1.74	5.201	26.368	1.000	1.000	0.840
12/16/2010 12:03	24.26	8.430	89.62	1256.09	1.73	5.000	25.589	1.000	1.000	0.840
12/16/2010 12:04	25.53	8.319	84.62	1255.09	1.71	5.229	24.096	1.000	1.000	0.840
12/16/2010 12:05	24.47	8.340	85.80	1256.13	1.73	5.052	24.617	1.000	1.000	0.840
12/16/2010 12:06	24.47	8.340	85.80	1256.13	1.73	5.052	24.617	1.000	1.000	0.840
12/16/2010 12:07	25.05	8.399	82.22	1255.09	1.76	5.281	24.096	1.000	1.000	0.840
12/16/2010 12:08	25.01	8.350	82.81	1256.13	1.77	5.302	24.409	1.000	1.000	0.840
12/16/2010 12:09	24.97	8.340	85.00	1256.09	1.76	5.170	24.895	1.000	1.000	0.840
12/16/2010 12:10	24.85	8.409	83.71	1254.05	1.76	5.232	24.513	1.000	1.000	0.840
12/16/2010 12:11	26.31	8.371	80.21	1254.05	1.76	5.552	23.508	1.000	1.000	0.840
12/16/2010 12:12	25.52	8.409	80.21	1256.13	1.75	5.351	23.402	1.000	1.000	0.840
12/16/2010 12:13	25.52	8.441	82.60	1256.13	1.75	5.430	24.409	1.000	1.000	0.840
12/16/2010 12:14	24.60	8.361	86.11	1256.13	1.77	5.191	25.312	1.000	1.000	0.840
12/16/2010 12:15	24.93	8.409	85.41	1257.17	1.75	5.250	24.999	1.000	1.000	0.840
12/16/2010 12:16	25.69	8.350	86.20	1257.57	1.74	5.351	25.798	1.000	1.000	0.840
12/16/2010 12:17	24.21	8.451	88.30	1256.13	1.73	5.021	25.485	1.000	1.000	0.840
12/16/2010 12:18	24.48	8.441	85.62	1257.17	1.73	5.059	24.617	1.000	1.000	0.840
12/16/2010 12:19	25.26	8.399	84.51	1257.17	1.72	5.191	24.096	1.000	1.000	0.840
12/16/2010 12:20	25.78	8.451	87.03	1255.09	1.76	5.420	26.486	1.000	1.000	0.840
12/16/2010 12:21	26.31	8.392	89.30	1257.17	1.77	5.569	26.319	1.000	1.000	0.840
12/16/2010 12:22	25.28	8.479	88.71	1257.17	1.78	5.410	26.388	1.000	1.000	0.840
12/16/2010 12:23	25.21	8.409	89.41	1256.13	1.78	5.351	26.368	1.000	1.000	0.840
12/16/2010 12:24	26.17	8.371	88.30	1257.17	1.79	5.389	26.319	1.000	1.000	0.840
12/16/2010 12:25	26.77	8.409	88.12	1256.13	1.79	5.521	26.319	1.000	1.000	0.840
12/16/2010 12:26	26.77	8.409	88.12	1256.13	1.79	5.521	26.319	1.000	1.000	0.840
Average	25.14	8.38	82.08	1255.84	1.77	5.33	24.22	1.00	1.00	0.84

APPENDIX H

SCAQMD PERMIT TO OPERATE

FACILITY PERMIT TO OPERATE
BP WEST COAST PROD.LLC BP CARSON REF.

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
Process 13 : SULFUR RECOVERY					
System 6 : THERMAL OXIDIZERS					
KNOCK OUT POT, RPV-0636, WASTE GAS, HEIGHT: 12 FT; DIAMETER: 9 FT A/N: 457434	D835				
OXIDIZER, THERMAL, NO. 2, WASTE GAS, REFINERY GAS OR NATURAL GAS, J.T.THORPE, 44.5 MMBTU/HR WITH A/N: 457434 BURNER, JOHN ZINK, WITH 2 BURNERS	C910	D790 D893 C896 S912 C2406	NOX: MAJOR SOURCE**; SOX: MAJOR SOURCE**	CO: 2000 PPMV (5) [RULE 407,4-2-1982] ; PM: 0.1 GRAINS/SCF (5) [RULE 409,8-7-1981] ; PM: (9) [RULE 404,2-7-1986]	B61.4, C8.2, D82.2, D90.4, D328.1, H23.1
KNOCK OUT POT, SFIA, WASTE GAS, RW-1009, LENGTH: 25 FT; DIAMETER: 9 FT A/N: 457434	D2745				
KNOCK OUT POT, SFIA, WASTE GAS BLOWCASE, RW-5196, LENGTH: 6 FT 6 IN; DIAMETER: 2 FT 6 IN A/N: 457434	D2746				
FILTER, QUENCH TOWER, RPV 4197, FRAM, HEIGHT: 5 FT 5 IN; DIAMETER: 2 FT 8 IN A/N: 457434	D904				
STACK, HEIGHT: 300 FT; DIAMETER: 6 FT A/N: 457434	S912	C910 C2413			

* (1)(1A)(1B) Denotes RECLAIM emission factor (2)(2A)(2B) Denotes RECLAIM emission rate
(3) Denotes RECLAIM concentration limit (4) Denotes BACT emission limit
(5)(5A)(5B) Denotes command and control emission limit (6) Denotes air toxic control rule limit
(7) Denotes NSR applicability limit (8)(8A)(8B) Denotes 40 CFR limit(e.g. NSPS, NESHAPS,etc.)
(9) See App B for Emission Limits (10) See Section J for NESHAP/MACT requirements

** Refer to Section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

H-1

FACILITY PERMIT TO OPERATE
BP WEST COAST PROD.LLC BP CARSON REF.

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

B61.2 The operator shall only use butane containing the following specified compounds:

Compound	ppm by volume
Total Sulfur less than	50

[RULE 1303(a)(1)-BACT, 5-10-1996]

[Devices subject to this condition : D1226, D1227, D1233, D1234, D1236, D1237, D1239, D1240]

B61.3 The operator shall only use natural gas containing the following specified compounds:

Compound	ppm by volume
Total Sulfur less than	5

[RULE 1303(a)(1)-BACT, 5-10-1996]

[Devices subject to this condition : D1226, D1227, D1233, D1234, D1236, D1237, D1239, D1240]

B61.4 The operator shall not use fuel gas, except uncombined natural gas which is not regulated by the condition, containing the following specified compounds:

Compound	ppm by volume
H2S greater than	160

[40CFR 60 Subpart J, 6-24-2008]

[Devices subject to this condition : D27, D29, D31, D33, D67, D69, D151, D153, D155, D250, D252, D416, D417, D418, D419, D421, D423, D425, D532, D535, D538, D539, D541, D570, D625, D626, D627, D628, D629, C910, D1226, D1227, D1233, D1234, D1236, D1237, D1239, D1240, D1262, C1326, D1439, D1465, C2413, D2837]

FACILITY PERMIT TO OPERATE
BP WEST COAST PROD.LLC BP CARSON REF.

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

C6.2 The operator shall use this equipment in such a manner that the hydrocarbon concentration being monitored, as indicated below, does not exceed 30 percent of the Lower Explosive Limit.

The operator shall use an explosimeter to measure the Lower Explosive Limit (LEL) in the vapor space above the floating roof, twice a year at a 4 to 8 month interval.

The operator shall maintain records in a manner approved by the District, to demonstrate compliance with this condition.

[RULE 1178, 4-7-2006]

[Devices subject to this condition : D1153, D1154, D1155, D1156, D1158, D1161, D1166, D1167, D1168, D1169, D1170, D1171, D1172, D1173, D1174, D1176, D1179, D1180, D1181, D1182, D1183, D1184, D1188, D1190, D1194, D1195, D2850]

C8.1 The operator shall use this equipment in such a manner that the percent excess air being monitored, as indicated below, is not less than 1 percent.

This condition shall only apply during normal operation. This limit is not applicable during startup, shutdown, or process upset.

[RULE 1303(a)(1)-BACT, 5-10-1996]

[Devices subject to this condition : D1465]

C8.2 The operator shall use this equipment in such a manner that the temperature being monitored, as indicated below, is not less than 1200 Deg F.

To comply with this condition, the operator shall install and maintain a(n) temperature reading device to accurately indicate the temperature in the firebox or in the ductwork immediatly downstream from the firebox.

The operator shall also install and maintain a device to continuously record the parameter being measured.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997]

[Devices subject to this condition : C910, C2413]

FACILITY PERMIT TO OPERATE
BP WEST COAST PROD.LLC BP CARSON REF.

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

D82.2 The operator shall install and maintain a CEMS to measure the following parameters:

NOX concentration in ppmv

SOX concentration in ppmv

Concentrations shall be corrected to 3 percent oxygen on a dry basis.

The CEMS will convert the actual NOX concentrations to mass emission rates (lbs/hr) and record the hourly emission rates on a continuous basis.

The CEMS will convert the actual SOX concentrations to mass emission rates (lbs/hr) and record the hourly emission rates on a continuous basis.

The CEMS shall be installed and certified no later than 12 months after the initial start up according to the requirements of Rule 2011 for SOx major sources and Rule 2012 for NOx major sources

[RULE 2011, 5-6-2005; RULE 2012, 5-6-2005]

[Devices subject to this condition : C910, C2413]

D82.4 The operator shall install and maintain a CEMS to measure the following parameters:

CO concentration in ppmv

Oxygen concentration in percent volume

[40CFR 63 Subpart UUU, 4-20-2006]

[Devices subject to this condition : D164]

FACILITY PERMIT TO OPERATE
BP WEST COAST PROD.LLC BP CARSON REF.

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

D90.3 The operator shall periodically analyze the fuel gas for total sulfur content in the refinery gases and butane used in the cogeneration facility according to the following specifications:

The operator shall analyze once every week.

[RULE 2005, 5-6-2005; RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997]

[Devices subject to this condition : D860, D866, D1226, D1227, D1233, D1234, D1236, D1237, D1239, D1240]

D90.4 The operator shall continuously monitor the H2S concentration in the fuel gases before being burned in this device according to the following specifications:

The operator shall use Gas Chromatograph meeting the requirements of 40CFR60 Subpart J to monitor the parameter.

The operator shall also install and maintain a device to continuously record the parameter being monitored.

The operator may monitor the H2S concentration at a single location for fuel combustion devices, if monitoring at this location accurately represents the concentration of H2S in the fuel gas being burned in this device.

[40CFR 60 Subpart J, 6-24-2008]

[Devices subject to this condition : D27, D29, D31, D33, D67, D69, D151, D153, D155, D250, D252, D313, D416, D417, D418, D419, D421, D423, D425, D532, D535, D538, D539, D541, D570, D625, D626, D627, D628, D629, C910, D1226, D1227, D1233, D1234, D1236, D1237, D1239, D1240, D1262, D1439, C2413, D2837]

FACILITY PERMIT TO OPERATE
BP WEST COAST PROD.LLC BP CARSON REF.

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

D328.1 The operator shall determine compliance with the CO emission limit(s) either: (a) conducting a source test at least once every five years using AQMD Method 100.1 or 10.1; or (b) conducting a test at least annually using a portable analyzer and AQMD-approved test method. The test shall be conducted when the equipment is operating under normal conditions to demonstrate compliance with the CO emission limit(s). The operator shall comply with all general testing, reporting, and recordkeeping requirements in Sections E and K of this permit.

[**RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; RULE 407, 4-2-1982**]

[Devices subject to this condition : D27, D29, D31, D33, D63, D67, D151, D153, D155, D250, D313, D416, D417, D418, D419, D421, D423, D425, D532, D535, D538, D539, D541, D570, D625, D626, D627, D628, D629, C910, D1262, D1433, D1439, D1465, C2413]

D330.1 The operator shall have a person that has been trained in accordance with Rule 461conduct a semi-annual inspection of the gasoline transfer and dispensing equipment. The first inspection shall be in accordance with Rule 461, Attachment B, the second inspection shall be in accordance with Rule 461, Attachment C, and the subsequent inspections shall alternate protocols. The operator shall keep records of the inspection and the repairs in accordance to Rule 461 and Section K of this Permit.

[**RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997**; RULE 461, 3-7-2008]

[Devices subject to this condition : D1276]

D332.1 The operator shall determine compliance with the CO emission limit(s) by conducting a test at least once every five years using a portable analyzer and AQMD-approved test method or, if not available, a non-AQMD approved test method. The test shall be conducted when the equipment is operating under normal conditions to demonstrate compliance with the CO emission limit(s). The operator shall comply with all general testing, reporting, and recordkeeping requirements in Sections E and K of this permit.

[**RULE 1146.1, 5-13-1994**; RULE 1146.1, 9-5-2008; **RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; RULE 407, 4-2-1982**]

[Devices subject to this condition : D69, D252, D705]

FACILITY PERMIT TO OPERATE
BP WEST COAST PROD.LLC BP CARSON REF.

SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS

The operator shall comply with the terms and conditions set forth below:

E336.13 The operator shall vent the vent gases from this equipment as follows:

All vent gases under normal operating conditions shall be directed to Thermal Oxidizer No.1 and/or Thermal Oxidizer No.2 of System 6 of Process 13.

This equipment shall not be operated unless either the Thermal Oxidizer No.1 and/or Thermal Oxidizer No.2 of System 6 of Process 13 are in full use and have a valid permit to receive vent gases from this equipment.

[RULE 1176, 9-13-1996]

[Devices subject to this condition : D830, D832]

H. Applicable Rules

H23.1 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
H2S	40CFR60, SUBPART	J

[40CFR 60 Subpart J, 6-24-2008]

[Devices subject to this condition : D27, D29, D31, D33, D67, D69, D151, D153, D155, D250, D252, D313, D416, D417, D418, D419, D421, D423, D425, D532, D535, D538, D539, D541, D570, D625, D626, D627, D628, D629, C910, D1227, D1233, D1234, D1236, D1237, D1239, D1240, D1262, C1326, D1439, D1465, C2413, D2837]

APPENDIX I

SCAQMD CHECKLIST FOR SOURCE TEST REPORTS, FORM STR.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING FORM STR
CHECK LIST FOR SOURCE TEST REPORTS

Please check off all the following items to verify that the information is provided in the source test report, and then send the checklist along with the source test report.

[X] Brief description of the equipment tested.

[X] Brief process description, including maximum and normal operating temperatures, pressures, through-put, etc.

[X] Operating conditions under which test was performed.

[X] Process schematic diagram showing the ports and sampling locations, including the dimensions of the ducts/stacks at the sampling locations, along with upstream and downstream locations, and distances of flow disturbances, (e.g. elbows, tees, fans, dampers) from the sampling locations (upstream and downstream).

[X] Field and laboratory data forms, strip charts and analyses.

[X] Brief description of sampling and analytical methods for each gaseous and particulate constituent measured.

[X] Calculations for volumetric flow rates and emission rates.

[X] Description of calibration and quality assurance procedures.

[X] Determination that the testing laboratory qualifies as an "independent testing laboratory" under Rule 304 (no conflict of interest).

ATTACHMENTS

Attachment 1

Laboratory Report and Data Package for TGNMO per SCAQMD

Method 25.3

Almega
ENVIRONMENTAL

LABORATORY REPORT

Non-Methane Non-Ethane Organic compound Emissions by SCAQMD Method 25.3 (TCA/FID)

Client: BP
Project No.: c9036
Unit Tested: TGU #2
Sampling Date: 16-Dec-10
Analyzed Date: 22-Dec-10
Lab No.: A 221

Client Sample ID	Lab ID	Almega Sample ID		Total* NMNEO ppm	NMNEO ppm condensable	NMNEO ppm noncondensable	CH_4 ppm	C_2H_6 ppm	CO_2 % v/v by TCD	O_2 % v/v by TCD
		Tank	Trap							
TGU #2										
TNK A	A 221 - 013 A	A 119	154	**10.7**	10.1	< 2.0	8.52	ND	2.9	18.7
TNK B	A 221 - 013 B	A2	155	**< 2.0**	< 1.0	< 2.0	39.8	ND	5.0	7.9
Detection Limit					1	2	2	2	0.3	0.3

* NOTE - the BIAS FACTOR (of 1.058) is NOT applied in these results.

ND Not Detected

	Run A	Run B
Detection Limit NMNEO noncondensable	1.62	1.88

Water Blank , ppmC 0.824

[GNMNEO concentration values are reported in ppm (v/v) as Methane (carbon=1)

The sample cylinder is analyzed for NMNEO, CO, CH_4, CO_2 and C_2H_6. It is then directed to a separation column where all heavy organics (C_{3+}) separate from the light organics (CO, CO_2, CH_4 and C_2H_6). The light organics are then passed through a reduction catalyst to convert CO and CO_2 to CH_4, and are then directed to a FID for detection and quantification. The heavy organics are backflushed off the holding column, passed through an oxidation catalyst, which convert all organics to CO_2, then through a reduction catalyst to convert CO_2 to CH_4 and then to a FID for detection and quantification.

Reviewed by:

Almega Environmental & Technical Services
5271 McFadden Ave. Huntington Beach CA. 92649
Phone 714 840-4000 Fax 714 899-7640
www.almegaenvironmental.com

CALCULATIONS

Client:	BP	Lab No.: A 221	
Project No.:	c9036		
Unit Tested:	TGU #2		
Sampling Date:	16-Dec-10		
Date tested:	22-Dec-10		

Parameter	Symbol	Units	Run #1 A	Run #1 B
Sample ID			TNK A	TNK B
Lab ID			A 221 - 011 A	A 221 - 011 B
Sample Tank				
Tank No			A 119	A2
Sample Tank Volume	V_T	L	6.000	6.000
Barometric Pressure	P_b	mm Hg	763	763
Pre-test Pressure	P_{TI}	mm Hg (abs)	0	0
Pre-test Temperature	t_{TI}	°C	22	22
Abs. Pre-test Temperature	T_{TI}	°K	295	295
Post-test Pressure	P_{TS}	mm Hg (abs)	578	602
Post-test Temperature	t_{TS}	°C	22	22
Abs. Post-test Temperature	T_{TS}	°K	295	295
Final Pressure	P_{TF}	mm Hg (abs)	930	926
Abs.Final Temperature	T_{TF}	°K	293	293
Dilution Factor	DF_T		1.62	1.55
Concentration Methane	C_{CH4}	ppm	5.26	25.67
Concentration Carbon Monoxide	C_{CO}	ppm	39.71	579.24
NMNEO (noncond)	C_{SA}	ppm	0.36	0.24
Sample Volume	Vs	L	4.466	4.652
Methane in Tank(C_{CH4}*DF_T)	C_{CHAT}	ppm	8.52	39.8
Carbon Monoxide in Tank(C_{CO}*DF_T)	C_{COT}	ppm	64.3	897
NMNEO (noncond)	C_{SAT}	ppm	0.58	0.37
Condensate Recovery - Trap				
Sample ID			TRP 154	TRP 155
Trap No			154	155
Lab No.:			A 221 - 012 A	A 221 - 012 B
Sample Impinger Volume	V_{IMP}	ml	1.0	3.0
Sample Volume	V_s	L	4.466	4.652
TC Concentration	C_{TC}	mg/L	27.94	18.22
IC Concentration	C_{IC}	mg/L	4.972	17.51
TOC Concentration	C_{TOC}	mg/L	22.97	0.71
NMNEO, Condensable	C_T	ppm	10.15	0.90
TNMNEOC (C_{SA}+C_T)	C	ppmC	**10.72**	**1.28**

Calculations

$V_S = k_1 * V_T * (P_{TS}/T_{TS} - P_{TI}/T_{TI})$

$k_1 = (273+15.56)/760 = 0.3799$

$C_{SAT} = DF * C_{SA}$

$C_{CH4T} = DF * C_{CH4}$

$DF = (P_{TF}/T_{TF})/(P_{TS}/T_{TS} - P_{TI}/T_{TI})$

$C_T = (C_{TOC} * V_{IMP} * V_{ID})/(V_S * A_C)$

$V_{ID} = 23.6902$ L/mole

QA/QC SUMMARY
(Repeat Analysis)

Client Project No.: c9036 Lab No.: A 221
Sampling Date: 16-Dec-10 Analyzed Date: 22-Dec-10
Run #1 A

Analyte	Sample ID	Area Count #1	Area Count #2	Area % diff (±20%)	Conc # 1	Conc # 2	Mean Conc ppm	% diff from Mean
Tank Analysis								
CO	A 221 - 011 A	983386	967168	1.65	40.0	39.4	39.7	1.66
CH4	A 221 - 011 A	130832	130074	0.58	5.28	5.25	5.26	0.58
CO2*	A 221 - 011 A	102863	109914	-6.85	1.7	1.8	1.8	-6.63
O2*	A 221 - 011 A	2039493	1955066	4.14	9.9	9.5	9.7	4.23
C2H6	A 221 - 011 A	ND	ND	ND	ND	ND	ND	ND
NMNEO	A 221 - 011 A	8931	8596	3.75	0.36	0.35	0.36	3.82

Analyte	Sample ID	Conc # 1	Conc # 2	Conc # 3	Mean Conc ppm	COV 10%	
Trap Analysis							
TC	A 221 - 012 A	7.412	7.085	6.461	27.94	6.68	DF=4
IC	A 221 - 012 A	1.260	1.277	1.192	4.972	3.08	

Run #1 B

Analyte	Sample ID	Area Count #1	Area Count #2	Area % diff (±20%)	Conc # 1	Conc # 2	Mean Conc ppm	% diff from Mean
Tank Analysis								
CO	A 221 - 011 B	14240825	14212617	0.20	380	379	379	0.20
CH4	A 221 - 011 B	662611	610368	7.88	26.7	24.6	25.7	8.21
CO2*	A 221 - 011 B	193954	193711	0.13	3.2	3.2	3.2	0.13
O2*	A 221 - 011 B	1048742	1038693	0.96	5.1	5.1	5.1	0.96
C2H6	A 221 - 011 B	ND	ND	ND	ND	ND	ND	ND
NMNEO	A 221 - 011 B	6148	5691	7.43	0.25	0.23	0.24	7.72

Analyte	Sample ID	Conc # 1	Conc # 2	Conc # 3	Mean Conc ppm	COV 10%	
Trap Analysis							
TC	A 221 - 012 B	14.60	13.73	13.36	18.22	6.91	DF=1.33
IC	A 221 - 012 B	13.37	13.18	12.94	17.51	1.93	

Water blank

TC	0.068
IC	0.044
TOC	0.024

* - by GC/TCD

$Conc_{CO}$ in tank = $MeanConc_{CO}$ * DF
$Conc_{CO2}$ in tank = $MeanConc_{CO2}$ * DF
$Conc_{O2}$ in tank = $MeanConc_{O2}$ * DF
$Conc_{CH4}$ in tank = $MeanConc_{CH4}$ * DF

SAMPLE INVENTORY REPORT

Method 25.3 Sampling Train

Project No.:	c9036	Lab No.:	A 221
Client:	BP	Sampling Date:	16-Dec-10

Laboratory ID	Client ID	Component ID	
Run #1 A			
A 221 - 011 A	TNK A	Tank #	A 119
A 221 - 012 A	TRP 154	Impinger	154
Run #1 B			
A 221 - 011 B	TNK B	Tank #	A2
A 221 - 012 B	TRP 155	Impinger	155

lot # A221

Almega ENVIRONMENTAL

CHAIN OF CUSTODY RECORDS

INVOICE TO:

ATTN:

REPORT TO:

ALMEGA Environmental & Technical Services
5251 McFadden Ave.
Huntington Beach, CA 92649
(714) 889-4000 Fax (714) 889-7030
lab@almegaenvironmental.com
Contact:

PO # _____

Turnaround Time
Standard: Other:
Rush:
Depends on # of Samples
5 - 10 days
3 - 7 days

Job # 9036 | Unit # TGU #2 | Client: BP | Location: CARSON, CA

Samplers: (Signature)

Project Manager: T. TRAN

Unit Information:

ANALYSIS REQUESTED

Return or Dispose

Sample Date	Sample Time	Sample Identification	Lab Sample #	Type Of Sample: LIQUID	GAS	SOLID	No. of Containers	M-52	25-3				REMARKS
12/16/10	0927	FB - FILTER				✓	1	✓					
	↓	FB - FH		✓			1	✓					
	↓	FB - BH		✓			1	✓					
	1016	R1 - FILTER				✓	1	✓					
	↓	R1 - FH		✓			1	✓					
	↓	R1 - BH		✓			1	✓					
	1055	TNK A	A221-011A		✓		1		✓				TNK # A119
	↓	TNK B	011B		✓		1		✓				TNK # A2
	↓	TRP 154	012A	✓			1		✓				TNK A
↓	↓	TRP 155	012B	✓			1		✓				TNK B

Relinquished by:	Received by:	Relinquished by:	Received by:
Date: 12/16/10 Time 19:45	Date: 12/16/10 Time: 18:45	Date: Time:	Date: Time

5

Almega
ENVIRONMENTAL

Standard Receipt
Sample LOG in Checklist

Project No: 9036 BP TGU#2

Lab ID: A 221

Method: S2, 25.3

Sampling Date: 12/16/10 Location: ______ Int: ______

Date & Time Rc'd: 12/16/10 18:45 Location: ______ Int: ______

Arrived By: (circle) FedEx UPS Drop Off (Int) ✓ Other ______

Condition of Package(s): (comment):

Package Type: Box (Cooler) Other: ______

Number of Sample Container(s): 1-FB +1 Leak

Correct Containers (per Method): Y N

Preservation: (circle) (ICE) DryICE ICEPacks None

Sample Conditions:

Sample Temp (C): ~4 °C

Ambient Temp (C): 21 C

Sample Temp (C): ______

Filter Condition: ______

PH: ______

Components Sealed: Y N

Sample Recovery Completed On: (date & time) ______

Recovered In: (circle) (Field) Lab Other ______

Silica Gel Condition: ______

Tedlar Bags -
Condensation: Y N

Comments: * 154 – 1mL
* 155 – 3mL in Vial

Container(s) Requested: Glass ______ Plastic ______

Additional Comments:

BPCAR-00000311

CHROMATOGRAM

TEST SAMPLES

Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\dec_10\12-21-2010, 10;47;40, a 221 - 011 a dup.run
Method File : c:\docume~1\user\locals~1\temp\~12-21-2010, 07;10;49, lab air-2.tmp
Sample ID : A 221 - 011 A dup

Injection Date: 12/21/2010 10:47 Calculation Date: 12/21/2010 11:06

Operator : Galina
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	40.4315	2.340	0.027	967168	BB	5.3	
2	Methane	5.3870	2.780	0.040	130074	BB	5.7	
3	Carbon Dioxi	7544.8029	3.887	-0.053	1893591B4	BB	17.5	C
4	Ethane		8.326					M
5	NMOC	0.3601	12.927	0.374	8596	BB	10.8	
	Totals:	7590.6815		0.388	1904650?2			

Status Codes:
M - Missing peak
C - Out of calibration range

Total Unidentified Counts : 0 counts

Detected Peaks: 5 Rejected Peaks: 1 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -54 microVolts LSB: 1 microVolts

Noise (used): 224 microVolts - monitored before this run

Stream: 1 Injection Number: 1 Sampling Time: 0.00 min

Calib. out of range; No Recovery Action Specified

Original Notes:

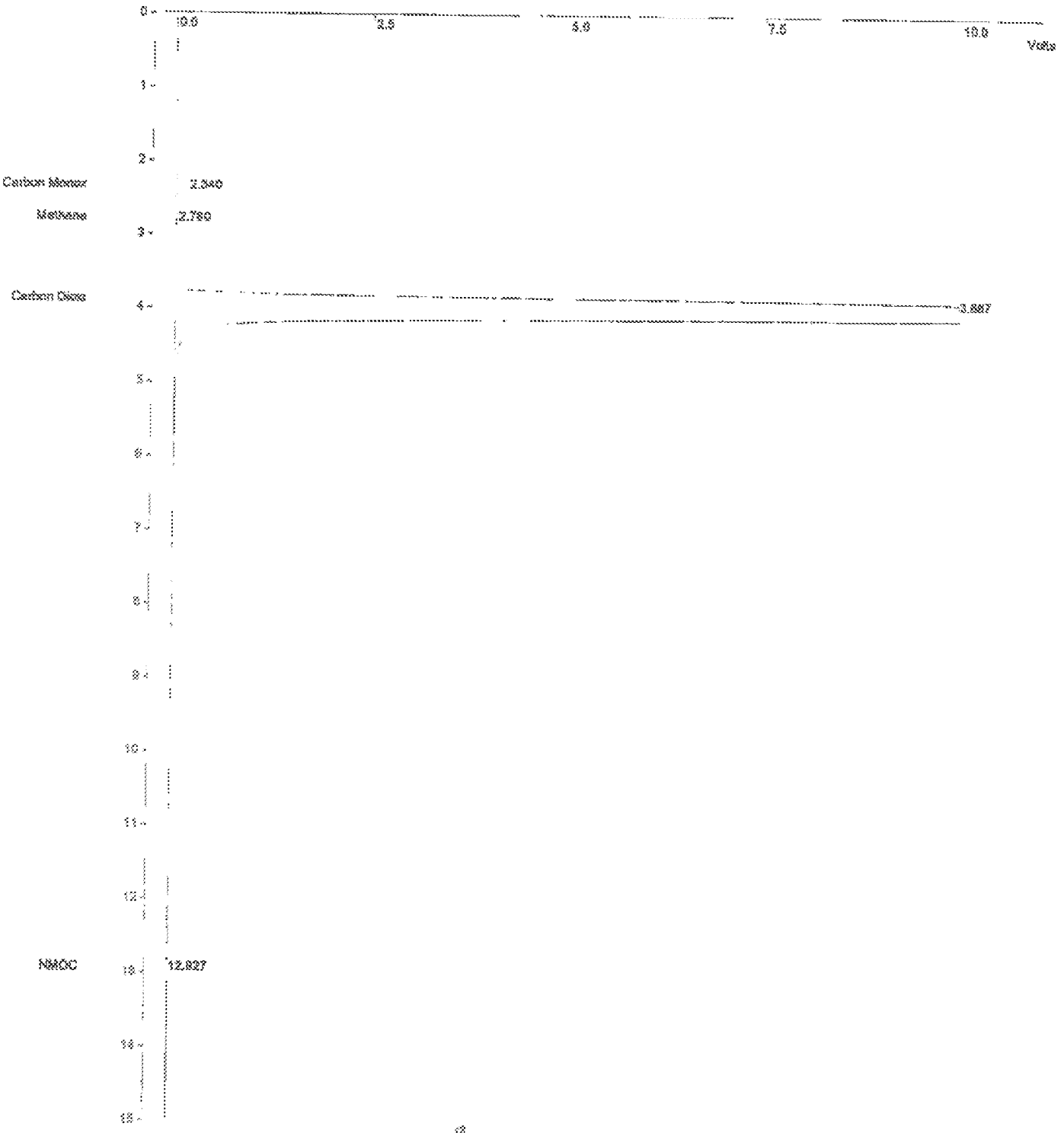
c9036 BP

Appended Notes:

c9036 BP

****

```
Title        : SCAQMD Methods 25.x
Run File     : c:\star\data\2010\dec_10\12-21-2010, 10;47;40, a 221 - 011 a dup.run
Method File  : c:\docume~1\user\locals~1\temp\~12-21-2010, 07;18;49, lab air~2.tmp
Sample ID    : A 221 - 011 A dup

Injection Date: 12/21/2010 10:47     Calculation Date: 12/21/2010 11:06

Operator    : Galina                 Detector Type: 0800 (10 Volts)
Workstation:                         Bus Address  : 88
Instrument : Varian Star #1          Sample Rate  : 1.25 Hz
Channel     : 2 = Foreflush 10       Run Time     : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Chart Speed =    1.33 cm/min   Attenuation = 4728          Zero Offset = 2%
Start Time  =   0.000   min     End Time    = 15.013  min   Min / Tick  = 1.00
```



Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\dec 10\12-21-2010, 10;19;33, a 221 - 011 a.run
Method File : c:\docume~1\user\locals~1\temp\~12-21-2010, 07;18;49, lab air-2.tmp
Sample ID : A 221 - 011 A

Injection Data: 12/21/2010 10:19 Calculation Date: 12/21/2010 11:06

Operator : Galina
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foxeflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	41.1035	2.327	0.014	983386	BB	5.3	
2	Methane	5.3882	2.767	0.027	130833	BB	5.7	
3	Carbon Dioxi	7620.8599	3.873	-0.067	191275664	BB	17.7	C
4	Ethane		8.326					M
5	NMOC	0.3741	12.940	0.387	8931	BB	14.5	
	Totals:	7667.7317		0.361	192398813			

Status Codes:
M - Missing peak
C - Out of calibration range

Total Unidentified Counts : 0 counts

Detected Peaks: 5 Rejected Peaks: 1 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -212 microVolts LSB: 1 microVolts

Noise (used): 407 microVolts - monitored before this run

Stream: 1 Injection Number: 1 Sampling Time: 0.00 min

Calib. out of range: No Recovery Action Specified

Original Notes:

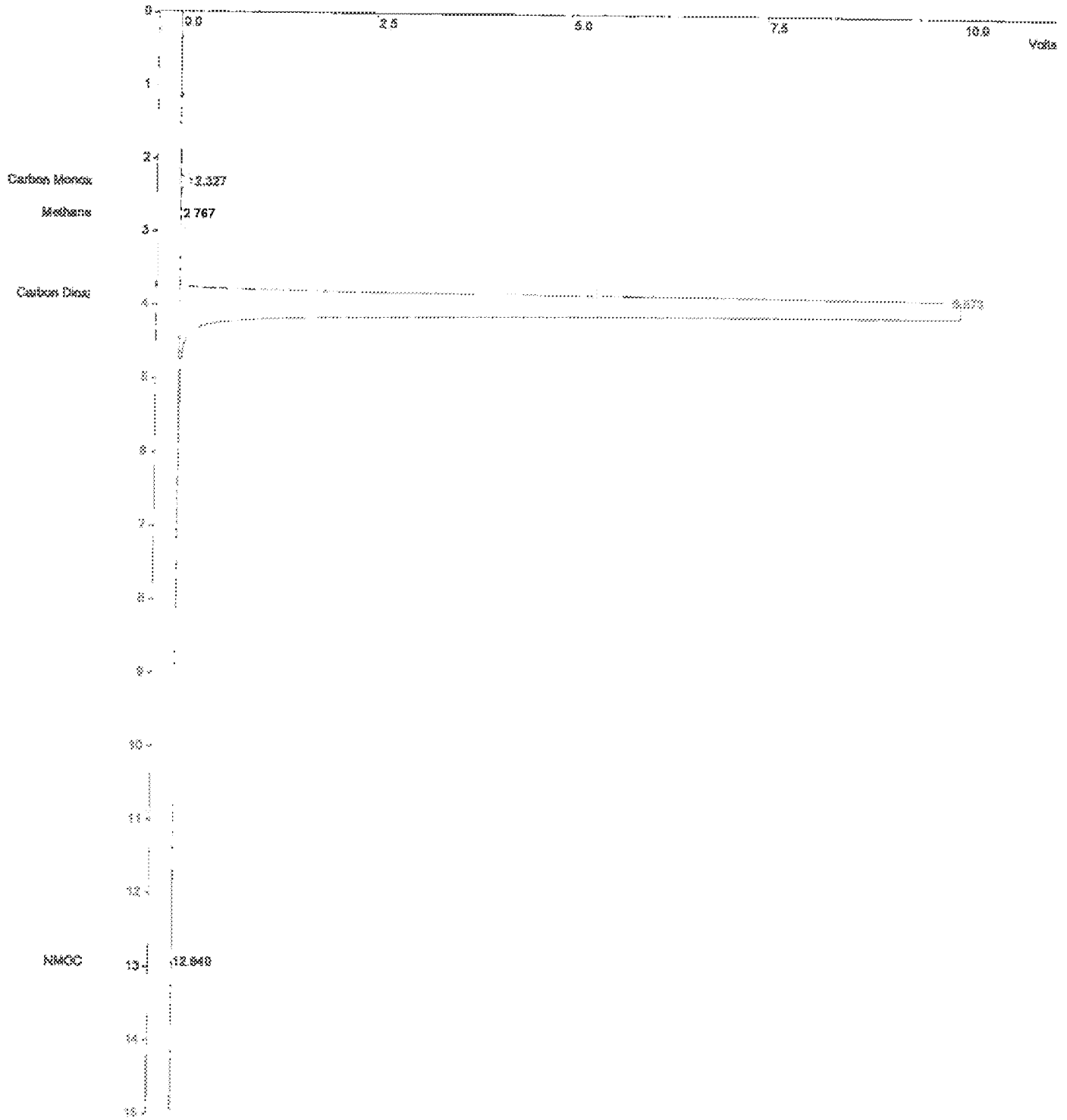
c9036 BP

Appended Notes:

c9036 BP

****

```
Title        : SCAQMD Methods 25.x
Run File     : c:\star\data\2010\dec 10\12-21-2010, 10;19;33, a 221 - 011 a.run
Method File  : c:\docume~1\user\locals~1\temp\~12-21-2010, 07;18;49, lab air-2.tmp
Sample ID    : A 221 - 011 A

Injection Date: 12/21/2010 10:19     Calculation Date: 12/21/2010 11:06

Operator    : Galina                 Detector Type: 0800 (10 Volts)
Workstation:                         Bus Address  : 88
Instrument  : Varian Star #1         Sample Rate  : 1.25 Hz
Channel     : 2 = Foreflush 10       Run Time     : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Chart Speed =    1.33 cm/min   Attenuation = 4728          Zero Offset = 2%
Start Time  =   0.000   min     End Time    = 15.013  min   Min / Tick  = 1.00
```



Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\dec_10\12-21-2010, 11;14;14, a 321 - 011 b.run
Method File : c:\docume~1\user\locals~1\temp\~12-21-2010, 07;18;49, lab air~2.tmp
Sample ID : A 221 - 011 B

Injection Date: 12/21/2010 11:14 Calculation Date: 12/21/2010 11:35

Operator : Galina
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d5b-21s1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	595.3241	2.313	0.000	14240825	BB	5.1	
2	Methane	27.3831	2.753	0.013	662611	BB	5.7	
3	Carbon Dioxi	8517.3428	3.833	-0.107	213776464	BB	19.7	C
4	Ethane		8.328					M
5	NMOC	0.2576	12.940	0.387	6148	BB	11.6	
	Totals:	9140.2136		0.293	228686048			

Status Codes:
M - Missing peak
C - Out of calibration range

Total Unidentified Counts : 0 counts

Detected Peaks: 5 Rejected Peaks: 1 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: 45 microVolts LSB: 1 microVolts

Noise (used): 353 microVolts - monitored before this run

Stream: 1 Injection Number: 1 Sampling Time: 0.00 min

Calib. out of range; No Recovery Action Specified

Original Notes:

c9036 BP

Appended Notes:

c9036 BP

****

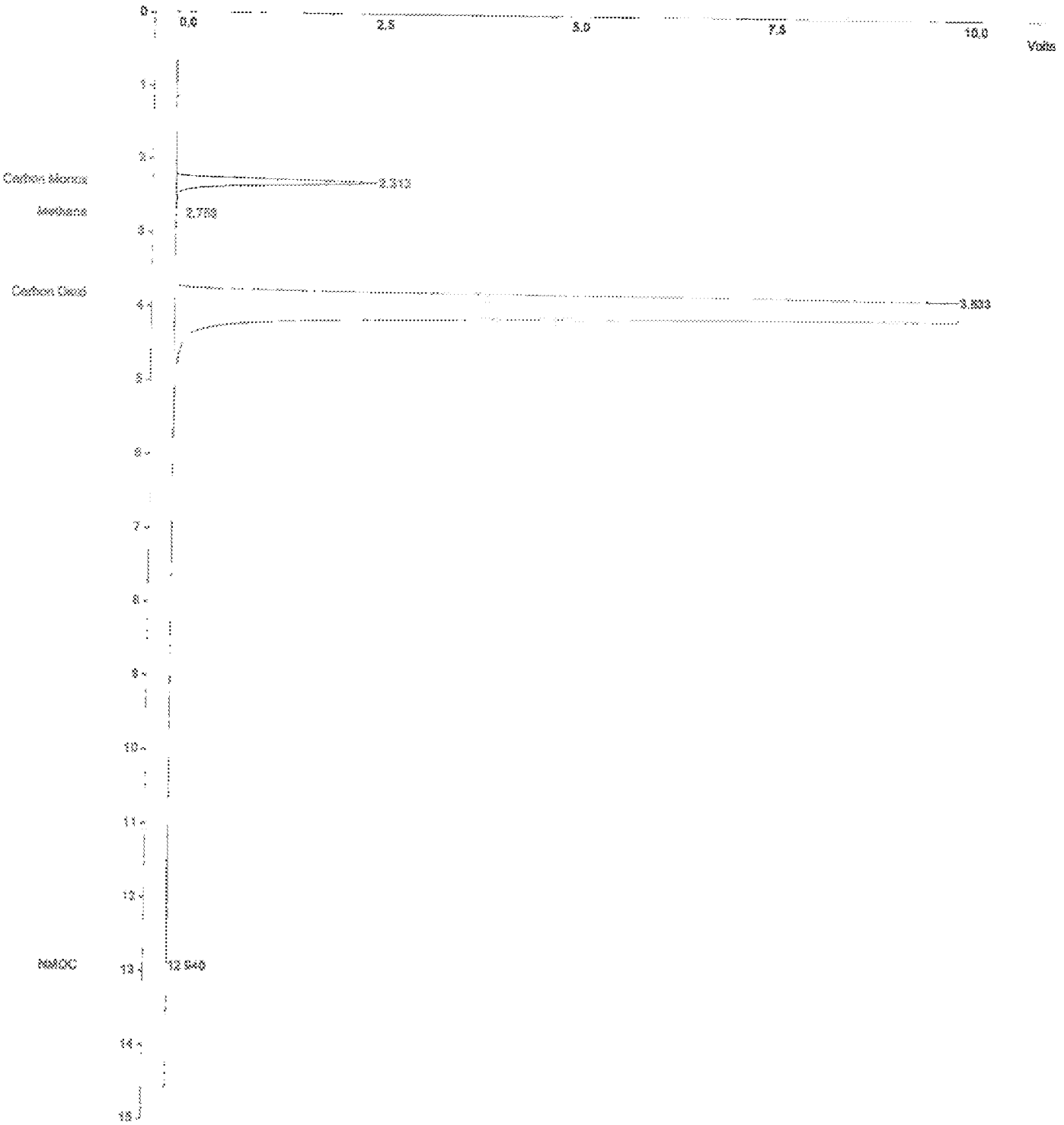
Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\dec_10\12-21-2010, 11;14;14, a 221 - 011 b.run
Method File : c:\docume~1\user\locals~1\temp\~12-21-2010, 07;18;49, lab air-2.tmp
Sample ID : A 221 - 011 B

Injection Date: 12/21/2010 11:14 Calculation Date: 12/21/2010 11:35

Operator : Galina Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 88
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Chart Speed = 1.33 cm/min Attenuation = 4720 Zero Offset = 2%
Start Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00



Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\dec_10\12-21-2010, 11;38;32, a 221 - 011 b dup.run
Method File : c:\docume~1\user\locals~1\temp\~12-21-2010, 07;18;49, lab air-2.tmp
Sample ID : A 221 - 011 B dup

Injection Date: 12/21/2010 11:38 Calculation Date: 12/21/2010 13:11

Operator : Galina
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (1.0 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.015 min

** Star Chromatography Workstation Version 6.00 ** 00298-3588-d6b-21e1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	594.1448	8.300	-0.013	14312617	BB	5.0	
2	Methane	25.1375	2.740	0.000	610368	BB	3.4	
3	Carbon Dioxi	8456.7548	3.820	-0.120	213259712	BB	18.6	C
4	Ethane		6.326					M
5	NMOC	0.2364	12.940	0.387	5691	BB	13.6	
	Totals:	9116.2756		0.254	228088388			

Status Codes:
M - Missing peak
C - Out of calibration range

Total Unidentified Counts : 0 counts

Detected Peaks: 5 Rejected Peaks: 1 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -84 microVolts LSB: 1 microVolts

Noise (used): 361 microVolts - monitored before this run

Stream: 1 Injection Number: 1 Sampling Time: 0.00 min

Calib. out of range; No Recovery Action Specified

Original Notes:

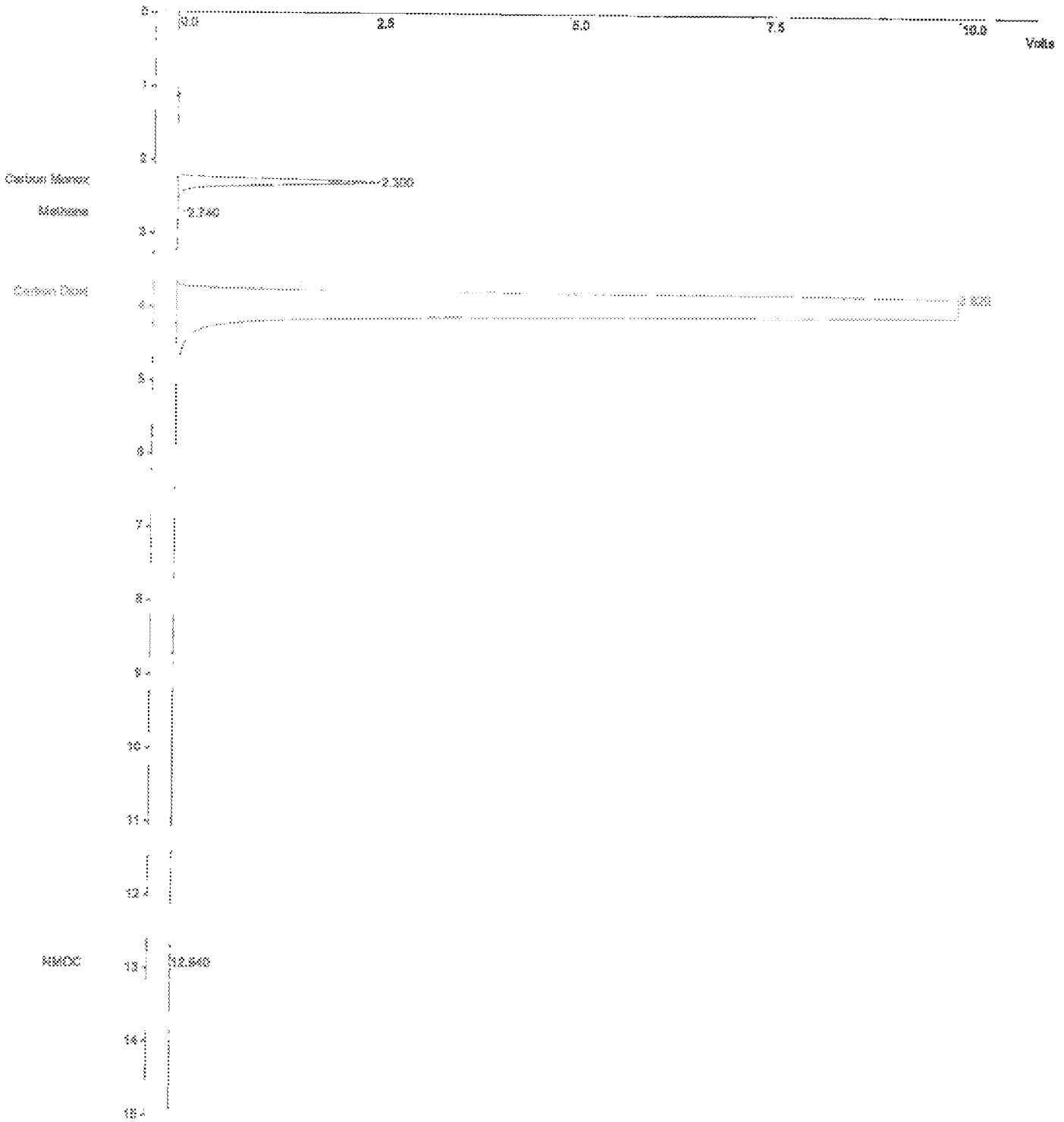
c9036 BP

Appended Notes:

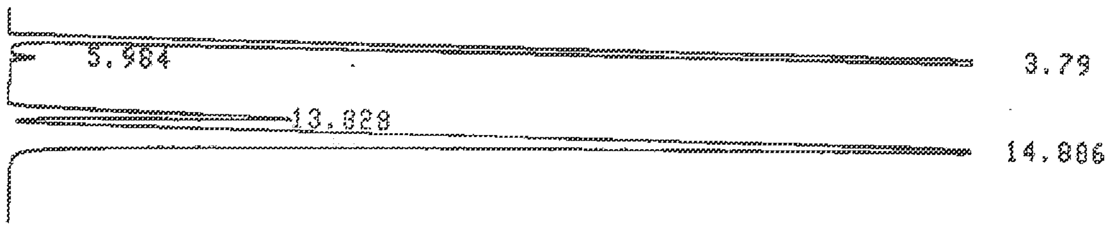
c9036 BP

****

```
Title        : SCAQMD Methods 25.x
Run File     : c:\star\data\2010\dec_10\12-21-2010, 11;38;32, a 221 - 011 b dup.run
Method File  : c:\docume~1\user\locals~1\temp\~12-21-2010, 07;18;49, lab air~2.tmp
Sample ID    : A 221 - 011 B dup

Injection Date: 12/21/2010 11:38     Calculation Date: 12/21/2010 13:11

Operator    : Galina                 Detector Type: 0800 (10 Volts)
Workstation:                         Bus Address  : 88
Instrument : Varian Star #1          Sample Rate  : 1.25 Hz
Channel     : 2 = Foreflush 10       Run Time     : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Chart Speed =    1.33 cm/min   Attenuation = 4728          Zero Offset = 2%
Start Time  =   0.000   min     End Time    = 15.013  min   Min / Tick  = 1.00
```



223-02037-01



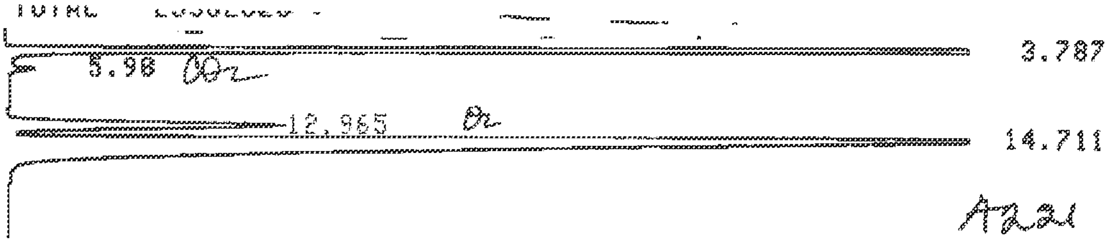
CHROMATOGRAM 1 MEMORIZED

A221
-011A

C-R5A CHROMATOPAC
CHANNEL NO 1
SAMPLE NO 0
REPORT NO 40

FILE 0
METHOD 41

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.79	8377282			35.2905	
2	5.984	102863			0.4333	
3	13.028	2039493			8.5917	
4	14.806	13218417	V		55.6845	
	TOTAL	23738054			100	



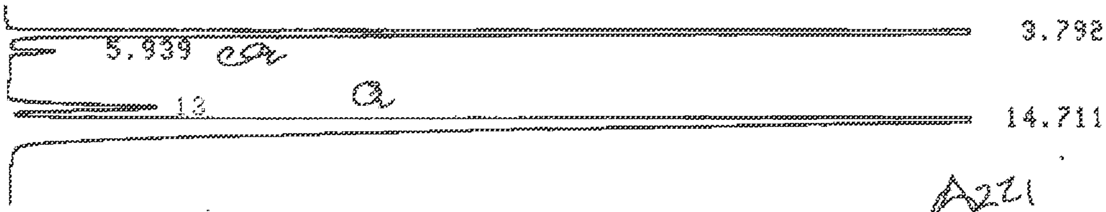
A221
011A
dup

CHROMATOGRAM 1 MEMORIZED

C-R5A CHROMATOPAC
CHANNEL NO 1
SAMPLE NO 0
REPORT NO 179

FILE 0
METHOD 41

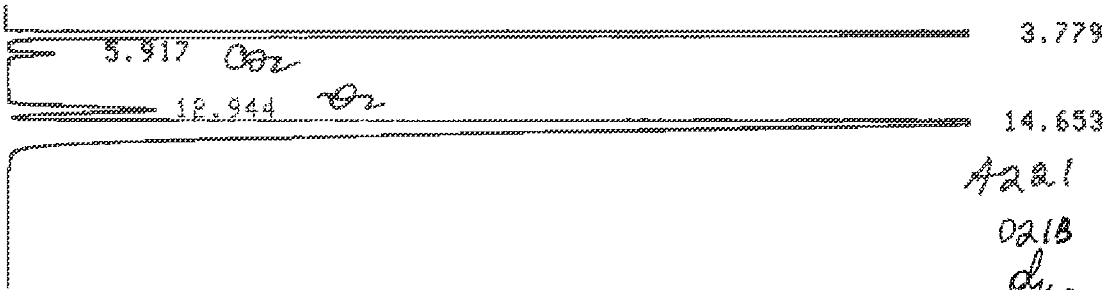
PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.787	8379111			35.526	
2	5.98	109914	V		0.466	
3	12.965	1955066			8.2891	
4	14.711	13141769	V		55.7188	
	TOTAL	23585858			100	



CHROMATOGRAM 1 MEMORIZED

C-R5A CHROMATOPAC
CHANNEL NO 1 FILE 0
SAMPLE NO 0 METHOD 41
REPORT NO 180

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.792	8193966			35.4436	
2	5.939	193954			0.839	
3	13	1048742			4.5364	
4	14.711	13681681	V		59.1811	
	TOTAL	23118344			100	



CHROMATOGRAM 1 MEMORIZED

C-R5A CHROMATOPAC
CHANNEL NO 1 FILE 0
SAMPLE NO 0 METHOD 41
REPORT NO 181

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.779	8137284			35.4388	
2	5.917	193711			0.8436	
3	12.944	1038693			4.5236	
4	14.653	13591836	V		59.194	
	TOTAL	22961522			100	

QAQC

Print Date: Tue Dec 21 07:48:55 2010 Page 1 of 1

Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\dec_10\12-21-2010, 07;18;49, lab air.run
Method File : c:\docume~1\user\locals~1\temp\~12-21-2010, 07;18;49, lab air~2.tmp
Sample ID : Lab Air

Injection Date: 12/21/2010 07:18 Calculation Date: 12/21/2010 07:48

Operator : Galina
Workstation:
Instrument : Varian Star #1
Channel : 2 - Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21a1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	4.3486	2.300	-0.013	104024	BB	6.8	
2	Methane	1.8073	2.740	0.000	43803	BB	5.5	
3	Carbon Dioxi	542.8745	3.353	0.013	13625585	BB	9.1	
4	Ethane		8.326					M
5	NMOC		12.553					M
	Totals:	548.0304		0.000	13773492			

Status Codes:
M - Missing peak

Total Unidentified Counts : 0 counts

Detected Peaks: 15 Rejected Peaks: 12 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: 41 microVolts LSB: 1 microVolts

Noise (used): 67 microVolts - monitored before this run

Stream: 1 Injection Number: 1 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

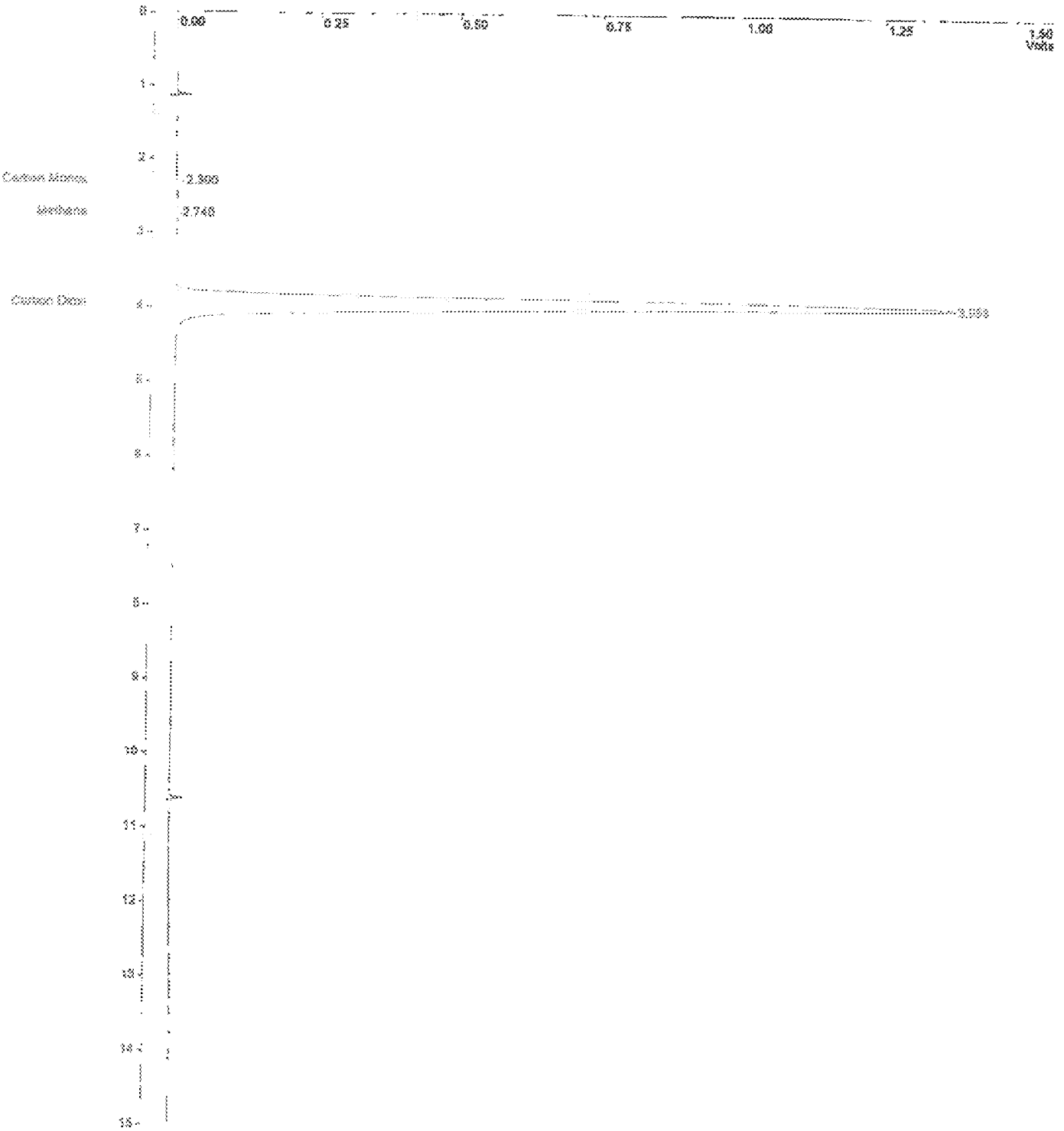
Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\dec_10\12-21-2010, 07;18;49, lab air.run
Method File : c:\docume~1\user\locals~1\temp\~12-21-2010, 07;18;49, lab air~2.tmp
Sample ID : Lab Air

Injection Date: 12/21/2010 07:18 Calculation Date: 12/21/2010 07:48

Operator : Galina Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 88
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Chart Speed = 1.33 cm/min Attenuation = 654 Zero Offset = 2%
Start Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00



Print Date: Tue Dec 21 08:20:49 2010 Page 1 of 1

Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\dec_10\12-21-2010, 07;50;18, n2 blank 39.run
Method File : c:\docume~1\user\locals~1\temp\~12-21-2010, 07;18;49, lab air-2.tmp
Sample ID : M2 Blank 39

Injection Date: 12/21/2010 07:50 Calculation Date: 12/21/2010 08:20

Operator : Galina
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00289-3588-d6b-21e1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	0.4620	2.327	0.014	11051	BB	6.0	
2	Methane		2.740					M
3	Carbon Dioxi	0.7915	3.993	0.053	19866	BB	9.6	
4	Ethane		8.326					M
5	NMOC		12.553					M
	Totals:	1.2535		0.067	30917			

Status Codes:
M - Missing peak

Total Unidentified Counts : 0 counts

Detected Peaks: 9 Rejected Peaks: 7 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -216 microVolts LSB: 1 microVolts

Noise (used): 83 microVolts - monitored before this run

Stream: 1 Injection Number: 1 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

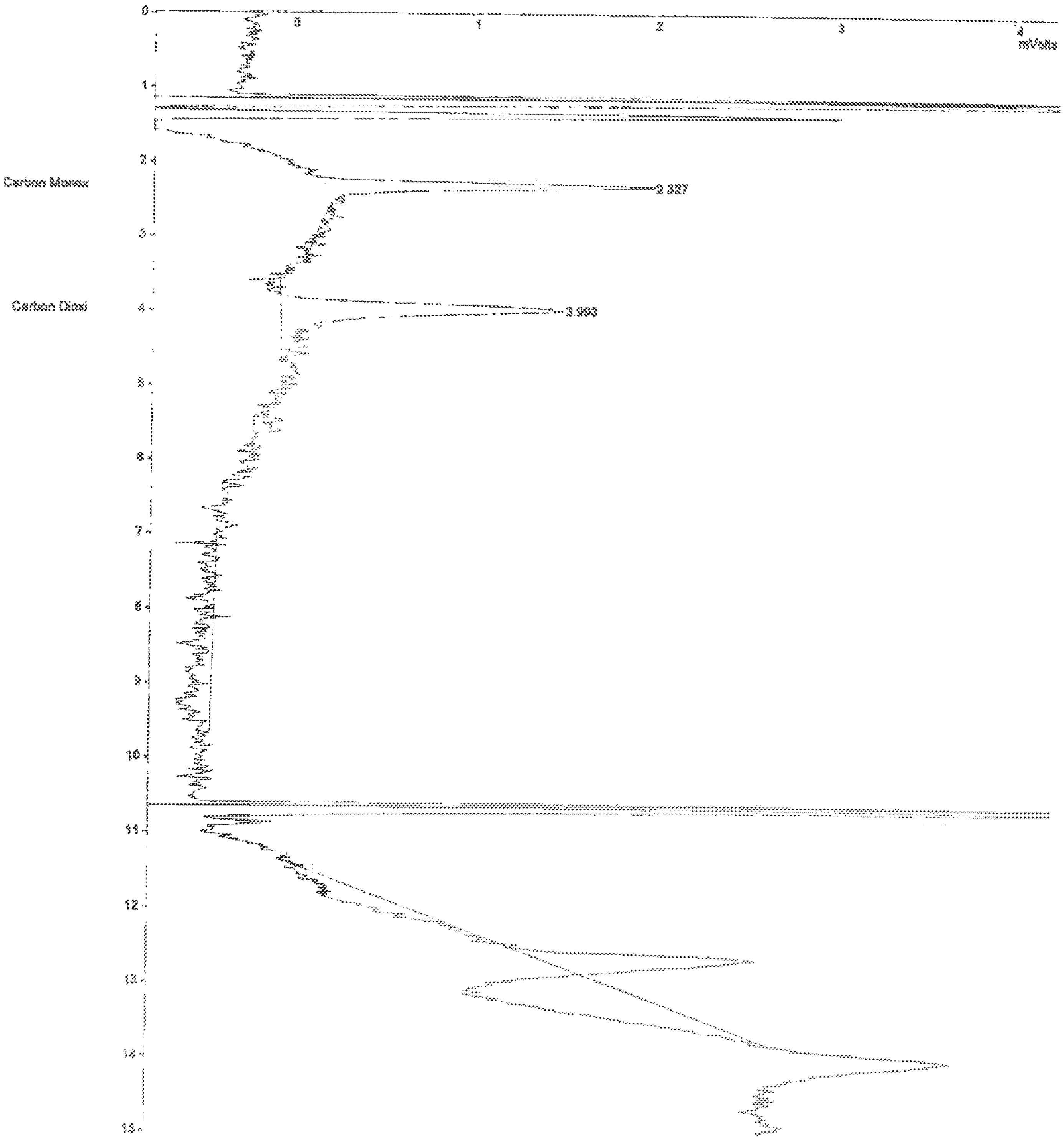
Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\dec_10\12-21-2010, 07;50;18, n2 blank 39.run
Method File : c:\docume~1\user\locals~1\temp\~12-21-2010, 07;18;49, lab air-2.tmp
Sample ID : N2 Blank 39

Injection Date: 12/21/2010 07:50   Calculation Date: 12/21/2010 08:20

Operator : Galina   Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 88
Instrument : Varian Star #1   Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10   Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Chart Speed = 1.33 cm/min   Attenuation = 2   Zero Offset = 15%
Start Time = 0.000 min   End Time = 15.013 min   Min / Tick = 1.00



Print Date: Tue Dec 21 08:44:04 2010 Page 1 of 1

Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\dec_10\12-21-2010, 08:22:11, 20ppm mix.run
Method File : c:\docume~1\user\locals~1\temp\~12-21-2010, 07:18:49, lab air-2.tmp
Sample ID : 20ppm mix

Injection Date: 12/21/2010 08:22 Calculation Date: 12/21/2010 08:43

Operator : Galina
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21a1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	20.5529	3.327	0.014	491648	BB	5.3	
2	Methane	20.9013	2.767	0.027	507507	BB	5.9	
3	Carbon Dioxi	23.1927	3.980	0.040	582113	BB	9.3	
4	Ethane	20.3467	8.393	0.067	508184	BB	23.2	
5	NMOC	32.2406	12.180	-0.373	769608	BB	18.3	
	Totals:	117.2342		-0.225	2859060			

Total Unidentified Counts : 0 counts

Detected Peaks: 5 Rejected Peaks: 0 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -272 microVolts LSB: 1 microVolts

Noise (used): 265 microVolts - monitored before this run

Stream: 1 Injection Number: 1 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

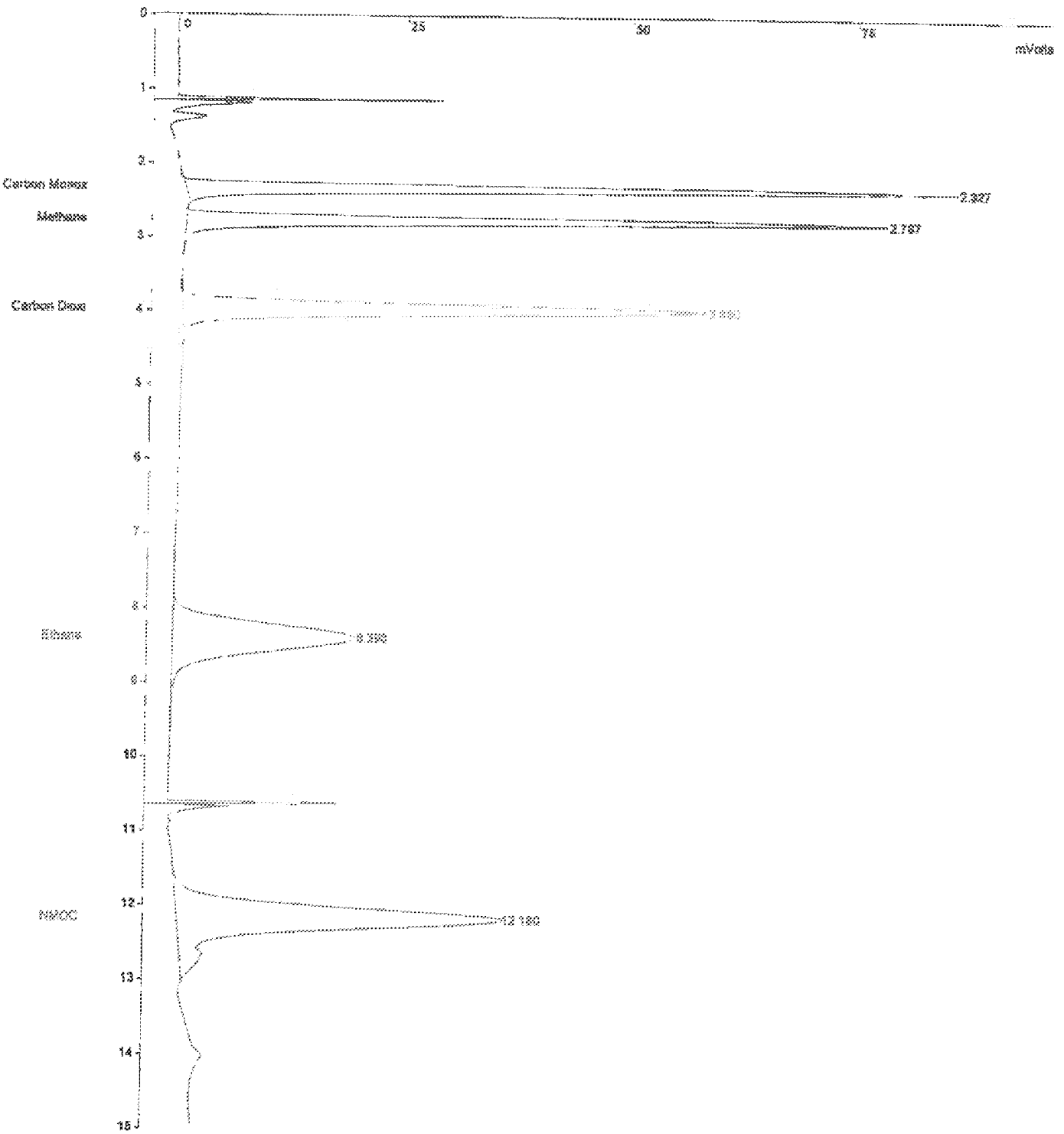
Title : Standard Methods 25.x
Run File : c:\star\data\2010\dec_10\12-21-2010, 08;22;11, 20ppm mix.run
Method File : c:\docume~1\user\locals~1\temp\~12-21-2010, 07;18;49, lab air~2.tmp
Sample ID : 20ppm mix

Injection Date: 12/21/2010 08:22 Calculation Date: 12/21/2010 08:43

Operator : Galina Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 88
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21a1 **

Chart Speed = 1.33 cm/min Attenuation = 41 Zero Offset = 2%
Start Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00



Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\dec 10\12-21-2010, 08;50;10, 20ppm mix.run
Method File : c:\docume~1\user\locals~1\temp\~12-21-2010, 07;18;49, lab air~2.rmp
Sample ID : 20ppm mix

Injection Date: 12/21/2010 08:50 Calculation Date: 12/21/2010 09:15

Operator : Galina
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299~3588~d6b~21a1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	20.4965	2.313	0.000	480300	BB	5.3	
2	Methane	20.9867	2.753	0.013	509580	BB	5.9	
3	Carbon Dioxi	20.2355	3.967	0.027	507851	BB	9.3	
4	Ethane	19.7129	6.433	0.107	492331	BB	23.5	
5	NMOC	33.0553	13.167	-0.386	789055	BB	18.6	
	Totals:	114.4860		-0.239	2769157			

Total Unidentified Counts : 0 counts

Detected Peaks: 5 Rejected Peaks: 0 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -201 microVolts LSB: 1 microVolts

Noise (used): 171 microVolts ~ monitored before this run

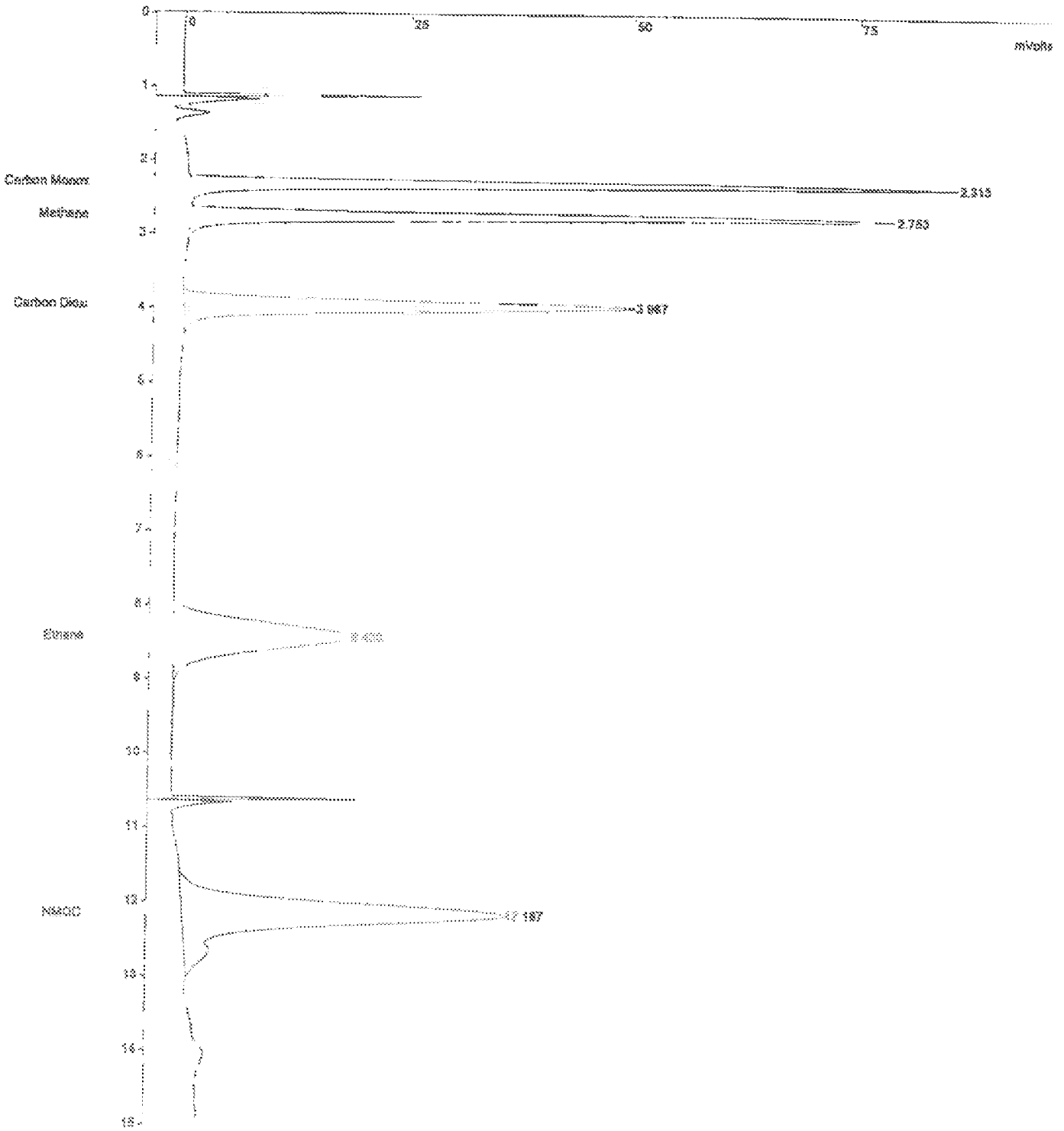
Stream: 1 Injection Number: 2 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

```
Title        : SCAQMD Methods 25.x
Run File     : c:\star\data\2010\dec 10\12-21-2010, 08;50;10, 20ppm mix.run
Method File  : c:\docume~1\user\locals~1\temp\~12-21-2010, 07;18;49, lab air-2.tmp
Sample ID    : 20ppm mix

Injection Date: 12/21/2010 08:50     Calculation Date: 12/21/2010 09:15

Operator    : Galina                 Detector Type: 0800 (10 Volts)
Workstation:                         Bus Address  : 88
Instrument : Varian Star #1          Sample Rate  : 1.25 Hz
Channel     : 2 = Foreflush 10       Run Time     : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21a1 **

Chart Speed =    1.33 cm/min   Attenuation = 41          Zero Offset = 3%
Start Time  =   0.000   min     End Time    = 15.013  min   Min / Tick  = 1.00
```



Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\dec_10\12-21-2010, 09;21;33, n2 blank 34.run
Method File : C:\star\nmoc.mth
Sample ID : N2 Blank 34

Injection Date: 12/21/2010 09:21 Calculation Date: 12/21/2010 09:36

Operator : Galina
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	0.4699	2.327	0.014	11240	BB	6.1	
2	Methane		2.740					M
3	Carbon Dioxi	0.8592	3.993	0.053	21566	BB	10.7	
4	Ethane		8.326					M
5	NMOC		12.553					M
	Totals:	1.3291		0.067	32806			

Status Codes:
M - Missing peak

Total Unidentified Counts : 0 counts

Detected Peaks: 5 Rejected Peaks: 4 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -136 microVolts LSB: 1 microVolts

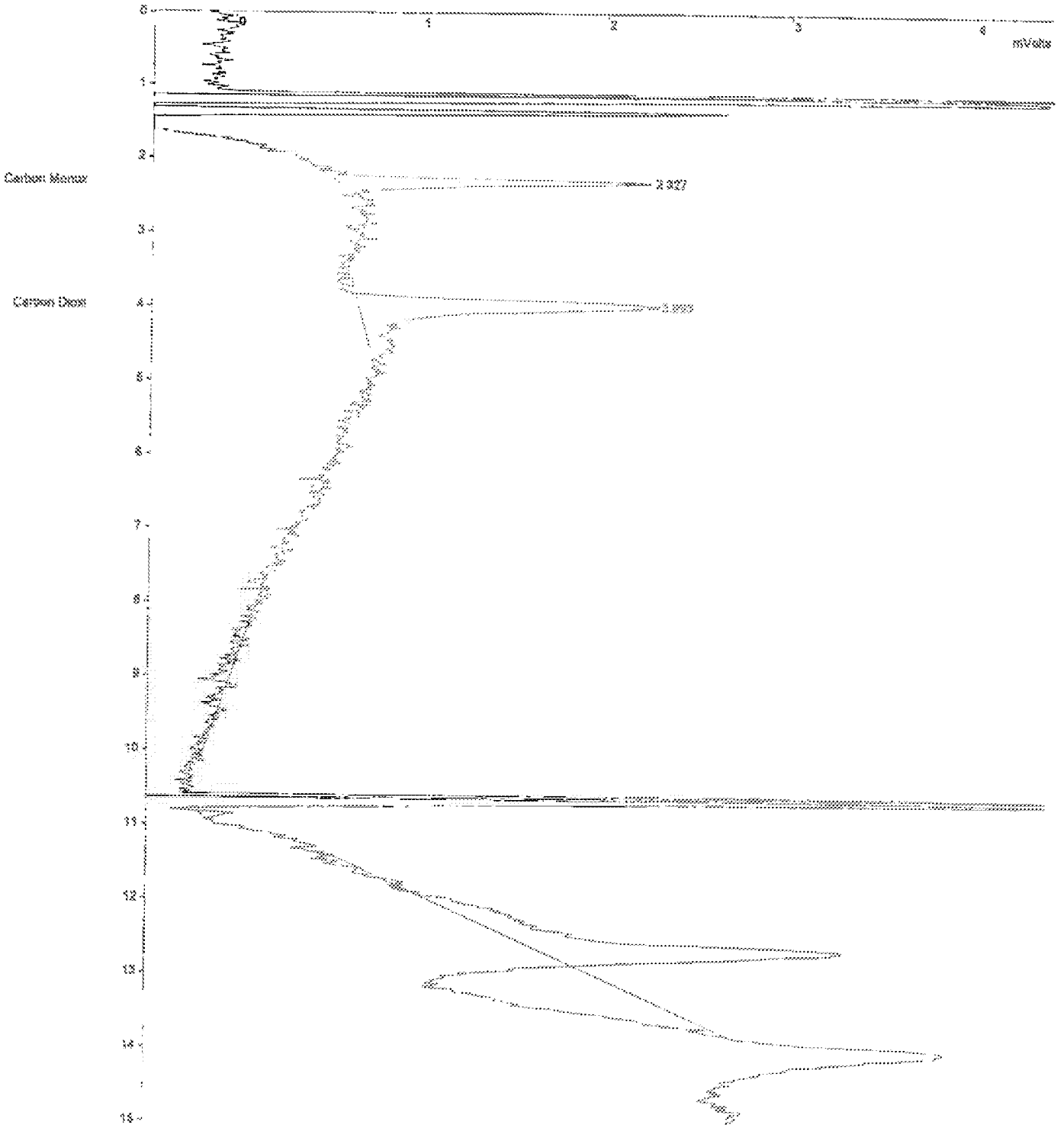
Noise (used): 179 microVolts - monitored before this run

Stream: 1 Injection Number: 1 Sampling Time: 0.00 min

Original Notes:

****

```
Title        : SCAQMD Methods 25.x
Run File     : c:\star\data\2010\dec_10\12-21-2010, 09;21;33, n2 blank 34.run
Method File  : C:\star\nmoc.mth
Sample ID    : N2 Blank 34

Injection Date: 12/21/2010 09:21     Calculation Date: 12/21/2010 09:36

Operator     : Galina                Detector Type: 0800 (10 Volts)
Workstation:                         Bus Address  : 88
Instrument : Varian Star #1          Sample Rate  : 1.25 Hz
Channel      : 2 = Foreflush 10      Run Time     : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Chart Speed =    1.33 cm/min   Attenuation = 1              Zero Offset = 17%
Start Time  =    0.000   min     End Time    = 15.013  min   Min / Tick  = 1.00
```



Print Date: Tue Dec 21 17:57:03 2010 Page 1 of 1

Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\dec_10\12-21-2010, 17;29;08, 20 ppm mix.run
Method File : c:\docums~1\user\locals~1\temp\~12-21-2010, 17;29;08, 20 ppm mix-2.tmp
Sample ID : 20 ppm mix

Injection Date: 12/21/2010 17:29 Calculation Date: 12/21/2010 17:56

Operator : Galina
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d8b-21e1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	20.6565	2.340	0.027	494128	BB	5.2	
2	Methane	21.4592	2.767	0.027	521054	BB	5.9	
3	Carbon Dioxi	27.4161	3.380	0.040	688117	BB	9.2	
4	Ethane	20.8621	8.407	0.081	523554	BB	23.4	
5	NMOC	35.8610	12.193	-0.360	856029	BB	18.2	
	Totals:	126.3549		-0.185	3082882			

Total Unidentified Counts : 0 counts

Detected Peaks: 5 Rejected Peaks: 0 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -229 microVolts LSB: 1 microVolts

Noise (used): 349 microVolts - monitored before this run

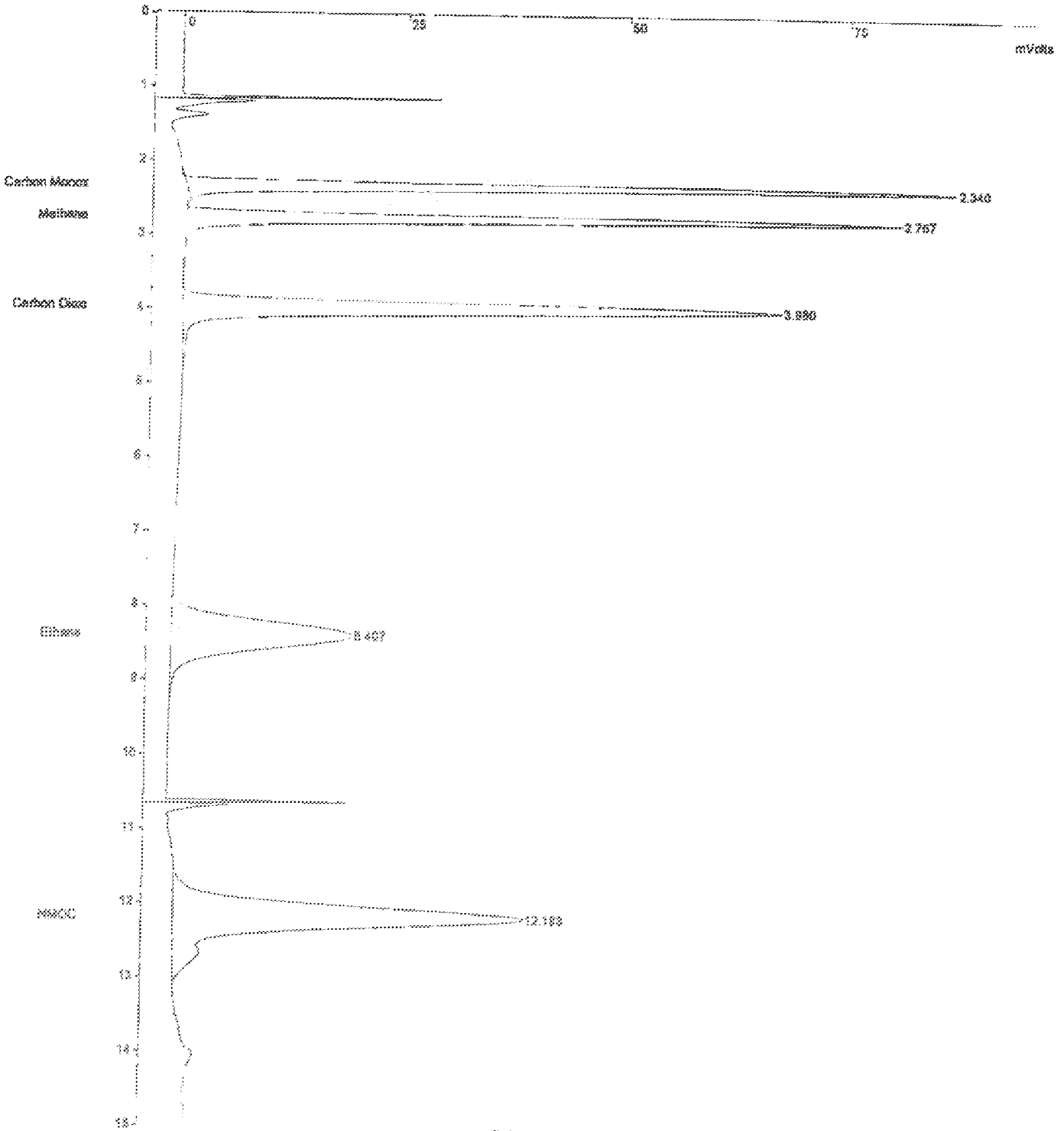
Stream: 1 Injection Number: 1 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

```
Title        : SCAQMD Methods 25.x
Run File     : c:\star\data\2010\dec_10\12-21-2010, 17;29;08, 20 ppm mix.run
Method File  : c:\docume~1\user\locals~1\temp\~12-21-2010, 17;29;08, 20 ppm mix~2.tmp
Sample ID    : 20 ppm mix

Injection Date: 12/21/2010 17:29     Calculation Date: 12/21/2010 17:56

Operator    : Galina                 Detector Type: 0800 (10 Volts)
Workstation:                         Bus Address  : 88
Instrument : Varian Star #1          Sample Rate  : 1.25 Hz
Channel     : 2 = Foreflush 10       Run Time     : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Chart Speed =    1.33 cm/min   Attenuation = 41          Zero Offset = 3%
Start Time  =    0.000   min    End Time    = 15.013  min   Min / Tick  = 1.00
```



Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\dec_10\12-21-2010, 17;57;03, 20 ppm mix.run
Method File : c:\docume~1\user\locals~1\temp\~12~21~2010, 17;39;08, 20 ppm mix~2.tmp
Sample ID : 20 ppm mix

Injection Date: 12/21/2010 17:57 Calculation Date: 12/21/2010 18:21

Operator : Galina Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 88
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299~3588~d5b~21e1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Results (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	20.9419	2.313	0.000	500933	BB	5.3	
2	Methane	21.4336	2.740	0.000	520432	BB	5.9	
3	Carbon Dioxi	21.6526	3.967	0.027	543458	BB	9.2	
4	Ethane	20.3933	8.407	0.081	508346	BB	23.5	
5	NMOC	36.7214	12.167	-0.388	876566	BB	18.4	
	Totals:	121.1428		-0.276	2950755			

Total Unidentified Counts : 0 counts

Detected Peaks: 5 Rejected Peaks: 0 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -119 microVolts LSB: 1 microVolts

Noise (used): 224 microVolts - monitored before this run

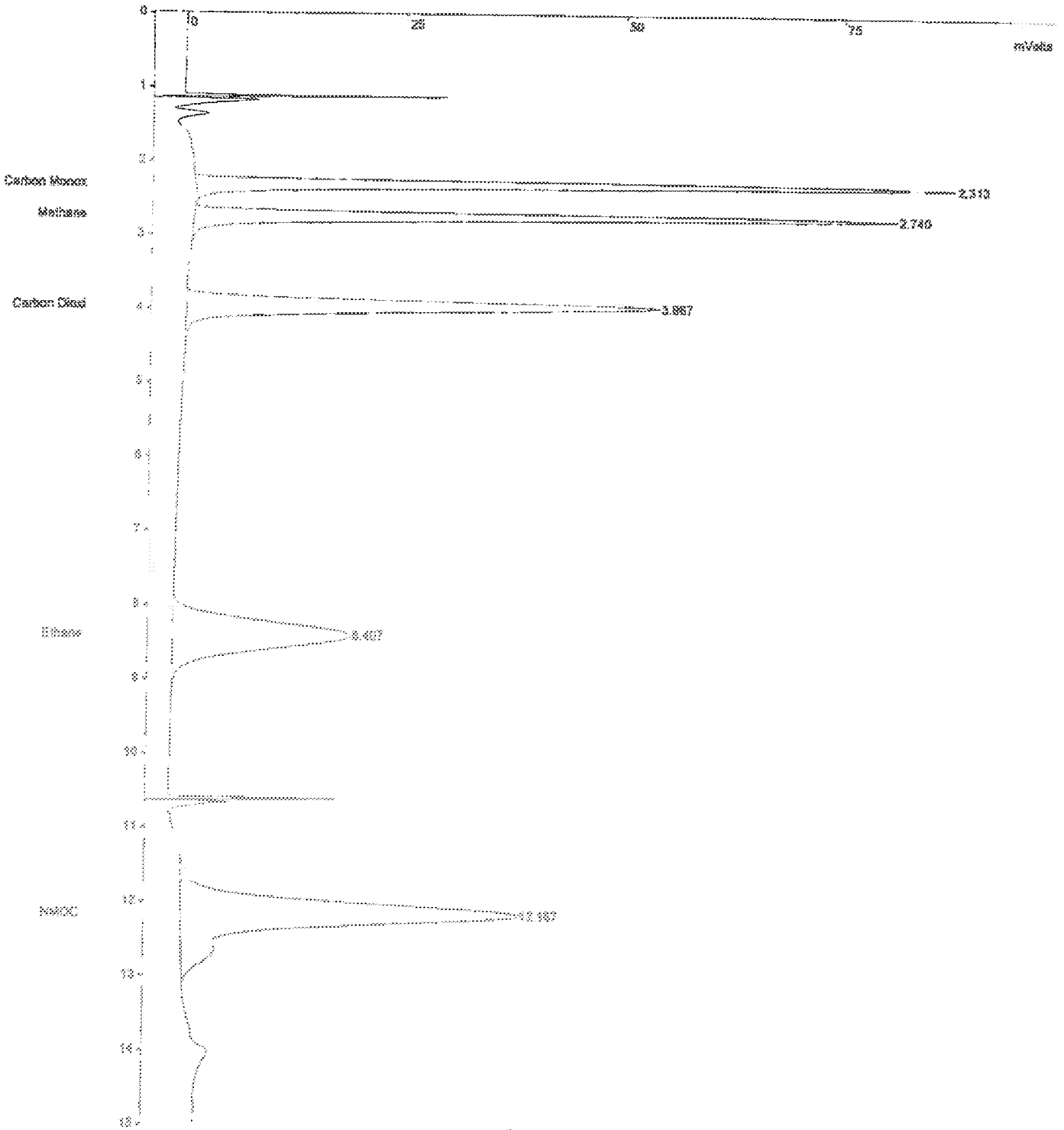
Stream: 1 Injection Number: 2 Sampling Time: 0.00 min

Original Notes:

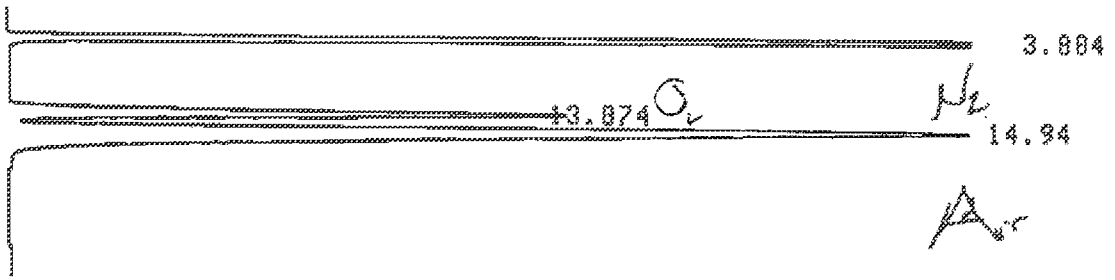
Appended Notes:

****

```
Title        : SCAQMD Methods 25.x
Run File     : c:\star\data\2010\dec_10\12-21-2010, 17;57;03, 20 ppm mix.run
Method File  : c:\docume~1\user\locals~1\temp\~12-21-2010, 17;29;08, 20 ppm mix-2.tmp
Sample ID    : 20 ppm mix

Injection Date: 12/21/2010 17:57     Calculation Date: 12/21/2010 18:21

Operator    : Galina                 Detector Type: 0800 (10 Volts)
Workstation:                         Bus Address  : 88
Instrument  : Varian Star #1         Sample Rate  : 1.25 Hz
Channel     : 2 = Foreflush 10       Run Time     : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Chart Speed =    1.33 cm/min   Attenuation = 42            Zero Offset = 3%
Start Time  =    0.000   min    End Time    = 15.013  min   Min / Tick  = 1.00
```



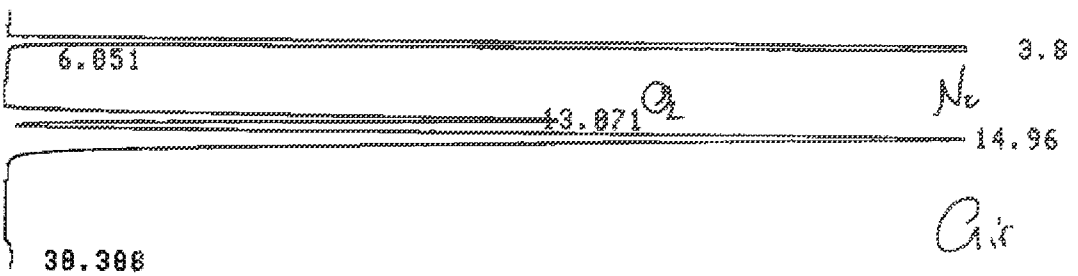
12/22



CHROMATOGRAM 1 MEMORIZED

C-R5A CHROMATOPAC
CHANNEL NO 1 FILE 0
SAMPLE NO 0 METHOD 41
REPORT NO 169

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.884	8765262			35.7319	
2	13.074	4092854			16.6847	
3	14.94	11672518	V		47.5834	
TOTAL		24530634			100	

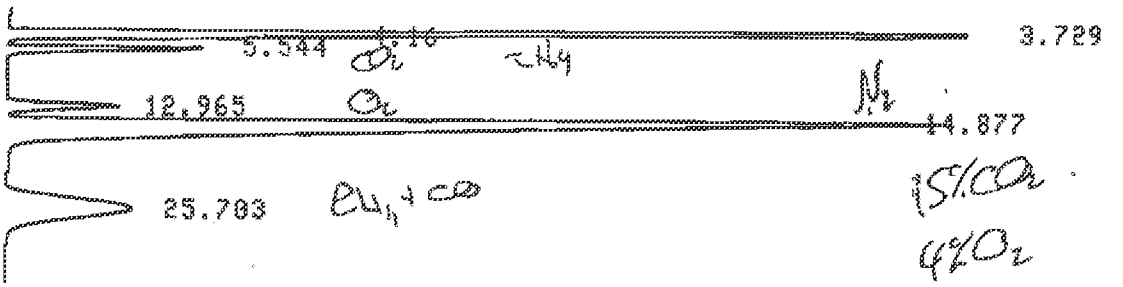


CHROMATOGRAM 1 MEMORIZED

C-R5A CHROMATOPAC
CHANNEL NO 1 FILE 0
SAMPLE NO 0 METHOD 41
REPORT NO 170

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.8	8702758			35.4317	
2	13.071	4080450			16.6454	
3	14.96	11694654	V		47.6127	
4	38.388	76180			0.3102	
TOTAL		24562040			100	

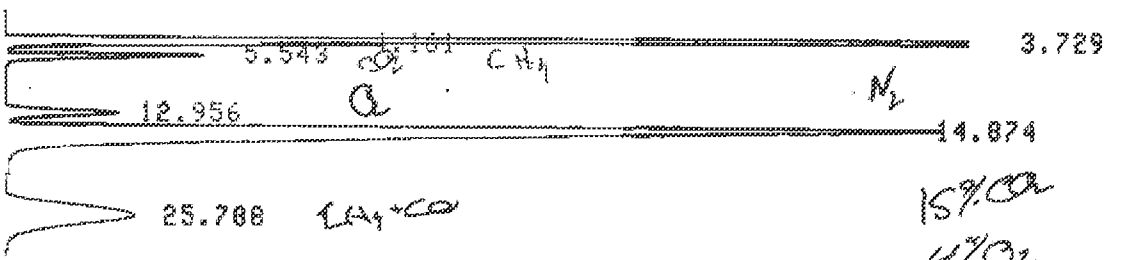
84



CHROMATOGRAM 1 MEMORIZED

C-R5A CHROMATOPAC
CHANNEL NO 1 FILE 0
SAMPLE NO 0 METHOD 41
REPORT NO 171

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.729	6791073			29.3395	
2	4.16	986857	V		4.2635	
3	5.544	902502			3.8991	
4	12.965	834943			3.6072	
5	14.877	10761388	V		46.492	
6	25.703	2869864			12.3987	
	TOTAL	23146536			100	



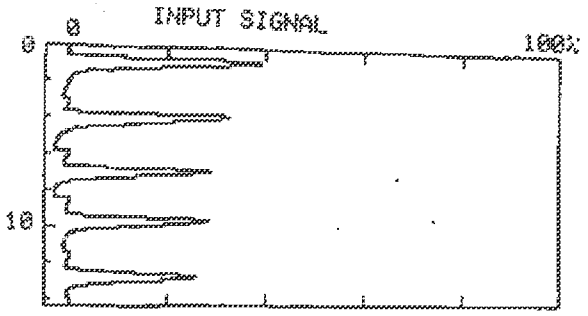
CHROMATOGRAM 1 MEMORIZED

C-R5A CHROMATOPAC
CHANNEL NO 1 FILE 0
SAMPLE NO 0 METHOD 41
REPORT NO 172

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.729	6764650			29.2184	
2	4.161	995326	V		4.2979	
3	5.543	910070	V		3.9298	
4	12.956	811819			3.5055	
5	14.874	10791646	V		46.5994	
6	25.700	2884816			12.4569	
	TOTAL	23158326			100	

TOC ANALYSIS

on the TRAPS

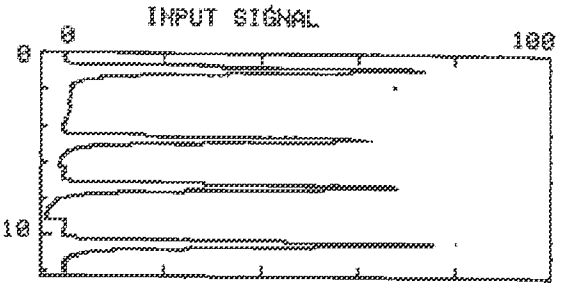


TIME [min]

SAMPLE# 8 TC
[x 1, 42µl, C# 7, #WASH 2, SP 0min]

#	AREA	ppm	C#	µl	RG
1	22961	10.01			
2	19233	8.410			
3	16888	7.412			
+ 4	16143	7.085			
+ 5	14788	6.461			
MN	15934	6.986			
SD	1065	0.483			
CV	6.68 %				
COR CONC DIL	6.986 [x 1.0]				
COR CONC INJ	6.986 [x 1.0]				

DATE 12(DEC)-20-2010 16:48

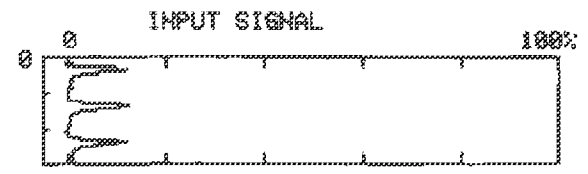


TIME [min]

SAMPLE# 9 TC
[x 1, 42µl, C# 7, #WASH 2, SP 0min

#	AREA	ppm	C#	µl	RG
1	33689	14.60			
2	26798	11.65			
3	29326	12.73			
+ 4	31726	13.76			
MN	31500	13.69			
SD	2185	0.934			
CV	6.91 %				
COR CONC DIL	13.69 [x 1.0]				
COR CONC INJ	13.69 [x 1.0]				

DATE 12(DEC)-20-2010 17:15



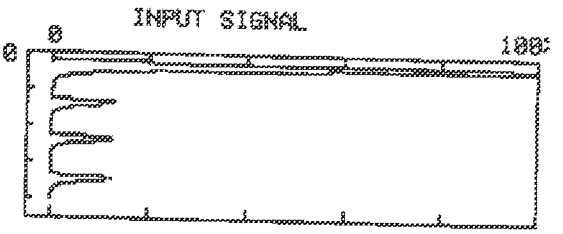
TIME [min]

SAMPLE# 8 IC
[x 1, 53µl, C# 8, #WASH 2, SP 0min]

#	AREA	ppm	C#	µl	RG
1	4608	1.268			
2	4668	1.277			
3	4395	1.192			
MN	4554	1.243			
SD	140	0.044			
CV	3.08 %				
COR CONC DIL	1.243 [x 1.0]				
COR CONC INJ	1.243 [x 1.0]				

SAMPLE# 8 TOC(TC-IC) 5.743 ppm

DATE 12(DEC)-20-2010 16:59



TIME [min]

SAMPLE# 9 IC
[x 1, 53µl, C# 8, #WASH 2, SP 0min]

#	AREA	ppm	C#	µl	RG
1	44971	14.67	M		
2	4914	13.37		6	
3	4831	13.10			
4	4728	12.94			
MN	4824	13.16			
SD	93	0.214			
CV	1.93 %				
COR CONC DIL	13.16 [x 1.0]				
COR CONC INJ	13.16 [x 1.0]				

SAMPLE# 9 TOC(TC-IC) 0.530 ppm

DATE 12(DEC)-20-2010 17:25

Almega Environmental Technical Services

SCAQMD Method 25.3
TOC Analysis on the Trap

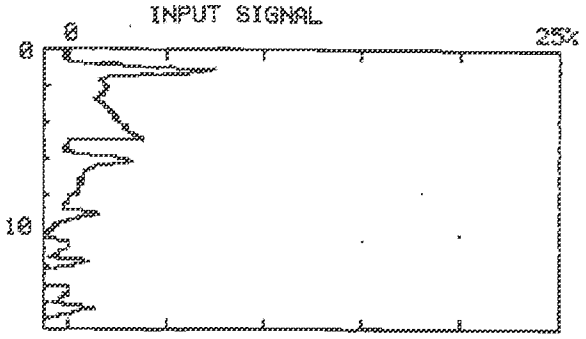
Calibration Curve No.: TC IC

Page: # 195

	No	Sample ID	Date	Sample Volume, ml		Dilution Factor	Concentration, ppmC			
				Initial	Final		TC	IC	TOC	
	1	Blank	12/20	—	—	1	.068	.044	.024	
	2	TCSL1		—	—	1	12.11	.168	11.92	97
	3	TCSL2		—	—	1	14.94	13.56	—	102
	4	LCS		—	—	1	15.88	.291	15.58	106
	5	Blank		—	—	1	.135	.061	.074	
106	6	A220-012A		2	4	2	16.02	14.35	1.670	
109	7	-012B		2	4	2	20.08	14.84	5.240	
154	8	A221-012A		1	4	4	6.986	1.243	5.743	
155	9	-012B		3	4	1.33	13.69	13.16	.530	
101	10	A213 072A		4	4	1	9.109	5.485	3.624	
102	11	072B		4	4	1	6.305	3.436	2.869	
107	12	082A		4	4	1	5.676	3.853	1.823	
108	13	082B		4	4	1	5.241	3.472	1.769	
14	14	122A		4	4	1	13.40	10.89	2.570	
15	15	122B		4	4	1	13.73	10.17	3.560	
	16	LCS		—	—	1	26.86	1.691	25.18	98
	17									
	18									
	19									
	20									
	21									

Comments _____

Checked by: _____

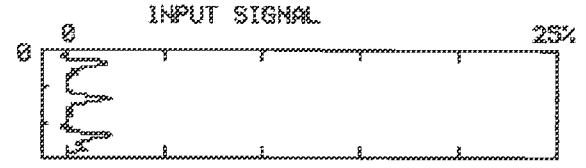


TIME [min]

SAMPLE# 1 TC
[x 1, 42µl, C# 7, #WASH 2, SP 0min]

#	AREA	ppm	C#	µl RG
1-	3467	1.237T		
2~	2375	0.717		
3	968	0.046		
+ 4	1018	0.070		
+ 5	1057	0.088		
MN	1014	0.068		
SD	44	0.021		
CV	4.39 %			
COR CONC DIL	0.068 [x 1.0]			
COR CONC INJ	0.068 [x 1.0]			

DATE 12(DEC)-20-2010 14:01



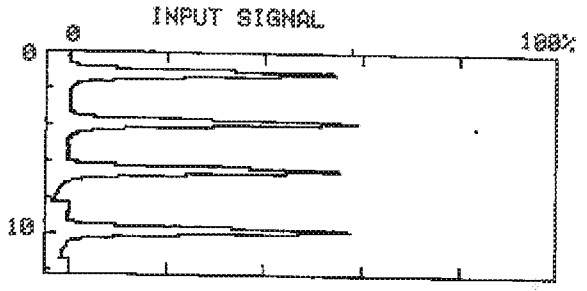
TIME [min]

SAMPLE# 1 IC
[x 1, 53µl, C# 0, #WASH 2, SP 0min]

#	AREA	ppm	C#	µl RG
1	787	0.047		
2	843	0.065		
3	782	0.020		
MN	777	0.044		
SD	70	0.022		
CV	9.13 %			
COR CONC DIL	0.044 [x 1.0]			
COR CONC INJ	0.044 [x 1.0]			

SAMPLE# 1 TOC(TC-IC) 0.024 ppm

DATE 12(DEC)-20-2010 14:12

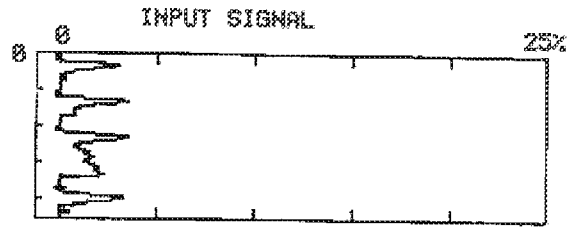


TIME [min]

SAMPLE# 2 TC
[x 1, 42µl, C# 7, #WASH 2, SP 0min]

#	AREA	ppm	C#	µl RG
1~	25888	11.26		
2	27588	11.99		
3	28328	12.30		
+ 4	27698	12.03		
MN	27871	12.11		
SD	399	0.170		
CV	1.43 %			
COR CONC DIL	12.11 [x 1.0]			
COR CONC INJ	12.11 [x 1.0]			

DATE 12(DEC)-20-2010 13:13



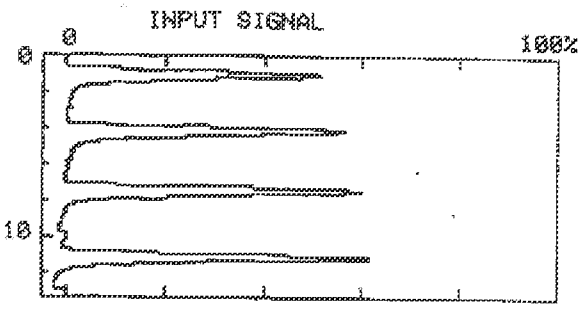
TIME [min]

SAMPLE# 2 IC
[x 1, 53µl, C# 0, #WASH 2, SP 0min]

#	AREA	ppm	C#	µl RG
1	1109	0.149		
2	1275	0.202		
3~	1676	0.329		
+ 4	1389	0.213		
MN	1231	0.188		
SD	187	0.034		
CV	0.69 %			
COR CONC DIL	0.188 [x 1.0]			
COR CONC INJ	0.188 [x 1.0]			

SAMPLE# 2 TOC(TC-IC) 11.92 ppm

DATE 12(DEC)-20-2010 13:42



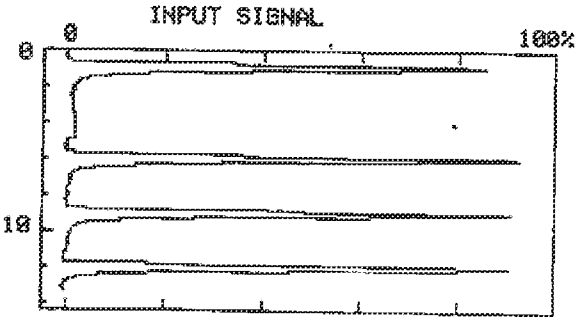
TIME [min]

SAMPLE# 3 TC
[x 1, 42µl, C# 7, #WASH 2, SP 0min]

	#	AREA	ppm	C#	µl	RG
	1	29584	12.84			
	2	34015	14.74			
	3	34678	15.02			
+	4	34791	15.07			
MN		34494	14.94			
SD		419	0.179			
CV		1.21 %				

COR CONC DIL 14.94 [x 1.0]
COR CONC INJ 14.94 [x 1.0]

DATE 12(DEC)-20-2010 14:28



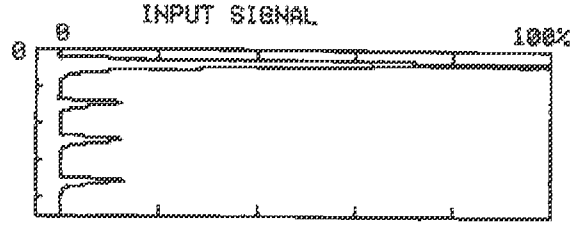
TIME [min]

SAMPLE# 4 TC
[x 1, 42µl, C# 7, #WASH 2, SP 0min]

	#	AREA	ppm	C#	µl	RG
	1	38074	16.47T			
	2	37695	16.31			
	3	36423	15.77			
+	4	35947	15.56			
MN		36600	15.88			
SD		903	0.386			
CV		2.46 %				

COR CONC DIL 15.88 [x 1.0]
COR CONC INJ 15.88 [x 1.0]

DATE 12(DEC)-20-2010 14:55



TIME [min]

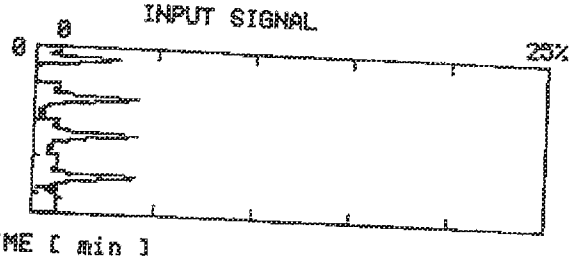
SAMPLE# 3 IC
[x 1, 53µl, C# 8, #WASH 2, SP 0min]

	#	AREA	ppm	C#	µl	RG
	1	42176	13.73	H		
	2	4981	13.52	6		
	3	5006	13.58			
	4	5002	13.57			
MN		4996	13.56			
SD		13	0.031			
CV		0.26 %				

COR CONC DIL 13.56 [x 1.0]
COR CONC INJ 13.56 [x 1.0]

SAMPLE# 3 TOC(TC-IC) 1.300 ppm

DATE 12(DEC)-20-2010 14:39



TIME [min]

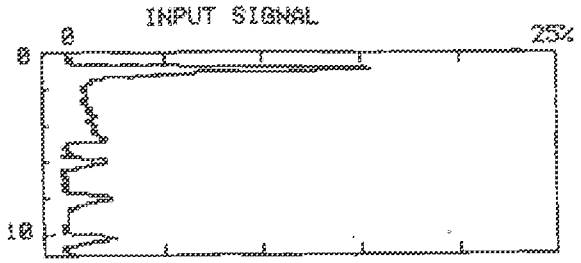
SAMPLE# 4 IC
[x 1, 53µl, C# 8, #WASH 2, SP 0min]

	#	AREA	ppm	C#	µl	RG
	1	1101	0.147			
	2	1620	0.311			
	3	1524	0.281			
+	4	1523	0.281			
MN		1555	0.291			
SD		55	0.017			
CV		3.58 %				

COR CONC DIL 0.291 [x 1.0]
COR CONC INJ 0.291 [x 1.0]

SAMPLE# 4 TOC(TC-IC) 15.50 ppm

DATE 12(DEC)-20-2010 15:05



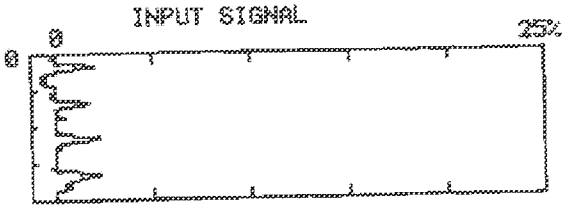
TIME [min]

SAMPLE# 5 TC
[x 1, 42Al, C# 7, #WASH 2, SP 0min]

#	AREA	ppm	C#	Al	RG
1-	6517	2.677T			
2	1063	0.091			
3	1197	0.153			
+ 4	1287	0.160			
MN	1155	0.135			
SD	88	0.038			

CV 6.95 %
COR CONC DIL 0.135 [x 1.0]
COR CONC INJ 0.135 [x 1.0]

DATE 12(DEC)-20-2010 15:19



TIME [min]

SAMPLE# 5 IC
[x 1, 53Al, C# 8, #WASH 2, SP 0min]

#	AREA	ppm	C#	Al	RG
1	839	0.063			
2-	655	0.005			
3	913	0.055			
+ 4	844	0.065			
MN	832	0.061			
SD	16	0.005			

CV 2.0 %
COR CONC DIL 0.061 [x 1.0]
COR CONC INJ 0.061 [x 1.0]

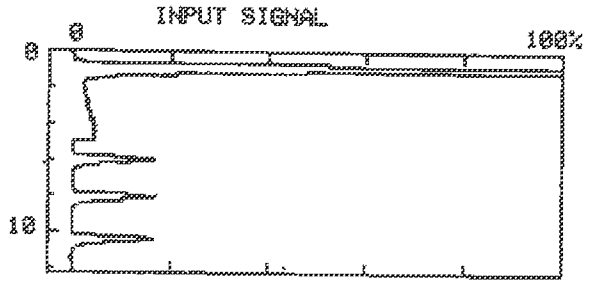
SAMPLE# 5 TOC(TC-IC) 0.074 ppm

DATE 12(DEC)-20-2010 15:31

TOC-5000 DATA REPORT
DATE 12(DEC)-20-2010 21:04

SPL#	TC, ppm	RMK	IC, ppm	RMK	TOC, ppm
1	0.068	7****	0.044	8****	0.024
2	12.11	7****	0.180	8****	11.92
3	14.94	7****	13.56	6****	1.380
4	15.00	7****	0.291	8****	15.58
5	0.135	7****	0.061	8****	0.074
6	16.02	7****	14.35	6****	1.670
7	25.00	5****	19.84	6****	5.240
8	6.986	7****	1.243	8****	5.743
9	13.69	7****	13.16	6****	0.530
10	9.109	7****	5.485	8****	3.624
11	6.305	7****	3.436	8****	2.869
12	5.676	7****	3.853	8****	1.823
13	5.241	7****	3.472	8****	1.769
14	13.40	7****	10.89	8****	2.510
15	13.73	7****	10.17	8****	3.560
16	26.86	5****	1.691	8****	25.16

ANALYST :
SAMPLE :



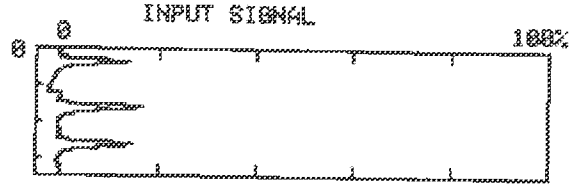
TIME [min]

SAMPLE# 16 TC
[x 1, 42μl, C# 7, #WASH 2, SP 0min]

#	AREA	PPM	C#	μl	RG
1	-53666	23.14	TH		
2	6558	27.09		5	
3	6545	27.03			
4	6487	26.45			
MN	6583	26.86			
SD	83	0.351			
CV	1.28	%			

COR CONC DIL 26.86 [x 1.0]
COR CONC INJ 26.86 [x 1.0]

DATE 12(DEC)-20-2010 20:55



TIME [min]
SAMPLE# 16 IC
[x 1, 53μl, C# 8, #WASH 2, SP 0min]

#	AREA	PPM	C#	μl	RG
1	5815	1.643			
2	6312	1.801			
3	5767	1.628			
MN	5964	1.691			
SD	301	0.095			
CV	5.05	%			

COR CONC DIL 1.691 [x 1.0]
COR CONC INJ 1.691 [x 1.0]

SAMPLE# 16 TOC(TC-IC) 25.16 PPM

DATE 12(DEC)-20-2010 21:04

TANK PREPARATION

TANK PREPARATIONS

Client: BP Lab No.: A 221
Project No.: c9036
Unit Tested: TGU #2
Sampling Date: 16-Dec-10
Date pressurized: 16-Dec-10

Tank ID	Sample ID	Pre-test pressure mm Hg		Post-test pressure mm Hg	Final Pressure	Comments
		1	2			
A 119	A 221 - 011 A	-760	-760	-182 *	170	Run #1 A
A2	A 221 - 011 B	-760	-760	-158 *	166	Run #1 B

* - Post -test Pressure is less then 200 mm Hg.

CALIBRATIONS

28-Sep-10
Current

	100 ppm mix					1000 ppm mix					2000 ppm mix						
	conc	area 1	area 2	RF 1	RF 2	conc	area 1	area 2	RF 1	RF 2	conc	area 1	area 2	RF 1	RF 3	Ave	RSD
Carbon Monoxide	99.6	2495939	2489550	3.99E-05	4.00E-05	1007	24980934	25233440	4.03E-05	3.99E-05	1984	45244456	49219680	4.39E-05	4.03E-05	4.07E-05	4.6
Methane	102.4	2547858	2542384	4.02E-05	4.03E-05	1017	25844622	25999334	3.94E-05	3.91E-05	2022	46688044	50823792	4.33E-05	3.98E-05	4.03E-05	8.6
Carbon Dioxide	100.5	2671168	2656993	3.76E-05	4.12E-05	1004	26581484	26818943	3.78E-05	3.79E-05	2006	47892276	52193728	4.19E-05	3.84E-05	3.97E-05	1.8
Ethane	102.9	2661568	2646777	3.87E-05	3.89E-05	1014	26703788	26659332	3.80E-05	3.80E-05	2024	48093788	52402784	4.21E-05	3.86E-05	3.98E-05	2.6
TGNMO	101.2	2514029	2527613	4.03E-05	4.00E-05	1013	25585582	25464480	3.96E-05	3.97E-05	2008	45699892	49676556	4.39E-05	4.04E-05	4.07E-05	1.4
	Average	2598656	2593491	4.00E-05	4.01E-05	Average	25939506	25978110	3.96E-05	3.89E-05	Average	46723651	50863376	4.30E-05	3.95E-05		
			Average	4.01E-05				Average	3.93E-05				Average	4.13E-05			
	RSD%			0.3					2.5					3.5			

Average **4.01E-05**

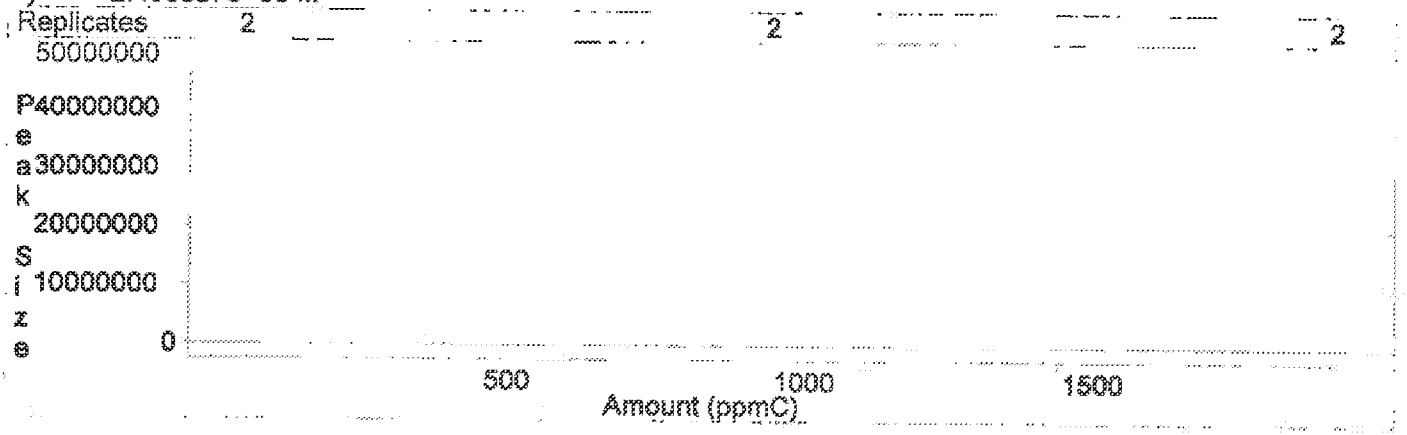
RSD, %			
RSD_{CO} =	2.641	r_{CO} =	0.99816
RSD_{CH4} =	2.785	r_{CH4} =	0.99792
RSD_{CO2} =	3.563	r_{CO2} =	0.99785
RSD_{C2H6} =	8.472	r_{C2H6} =	0.99786
RSD_{NMHC} =	2.629	r_{NMHC} =	0.99790

Print Date: 28 Sep 2010 12:11:03
Calibration Curves Report - Page 1
File: c:\star\nmoc.mth
Detector: 800 Interface Box, Address: 88, Channel ID: 2

Carbon Monoxide

External Standard Analysis
Curve Type: Linear
Origin: Force
y = +2.403887e+004x

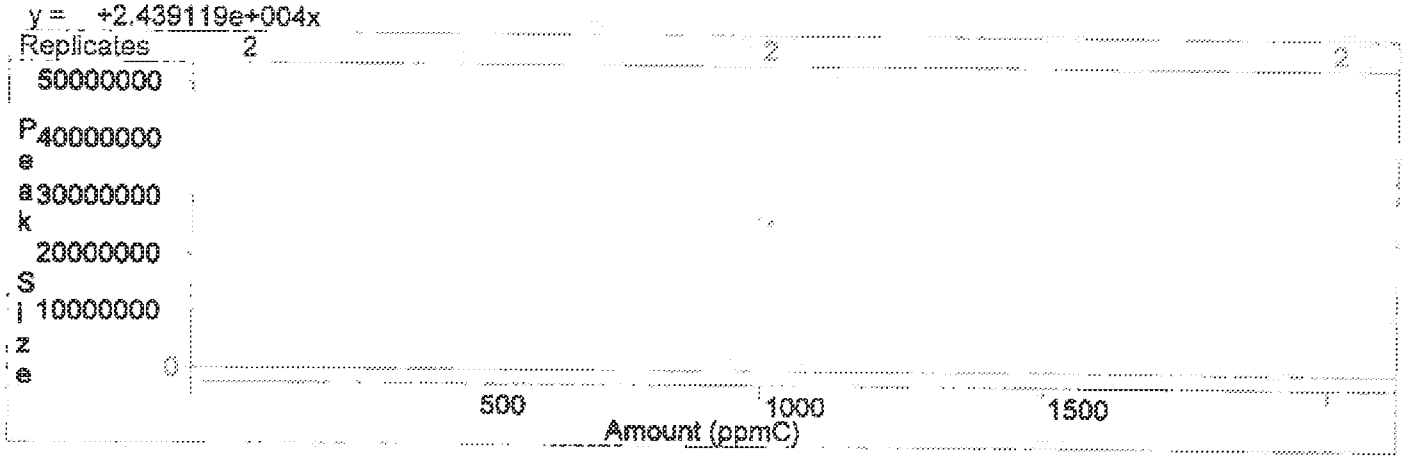
Resp. Fact. RSD: 2.641%
Coeff. Det.(r^2): 0.996209



Methane

External Standard Analysis
Curve Type: Linear
Origin: Force
y = +2.439119e+004x

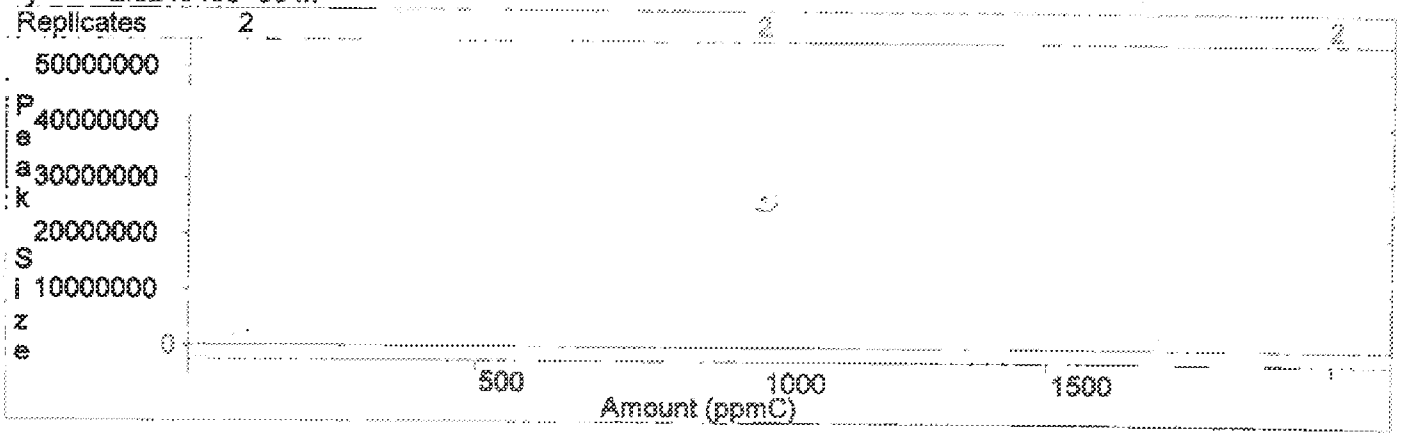
Resp. Fact. RSD: 2.785%
Coeff. Det.(r^2): 0.995849



Carbon Dioxide

External Standard Analysis
Curve Type: Linear
Origin: Force
y = +2.524946e+004x

Resp. Fact. RSD: 3.563%
Coeff. Det.(r^2): 0.995712

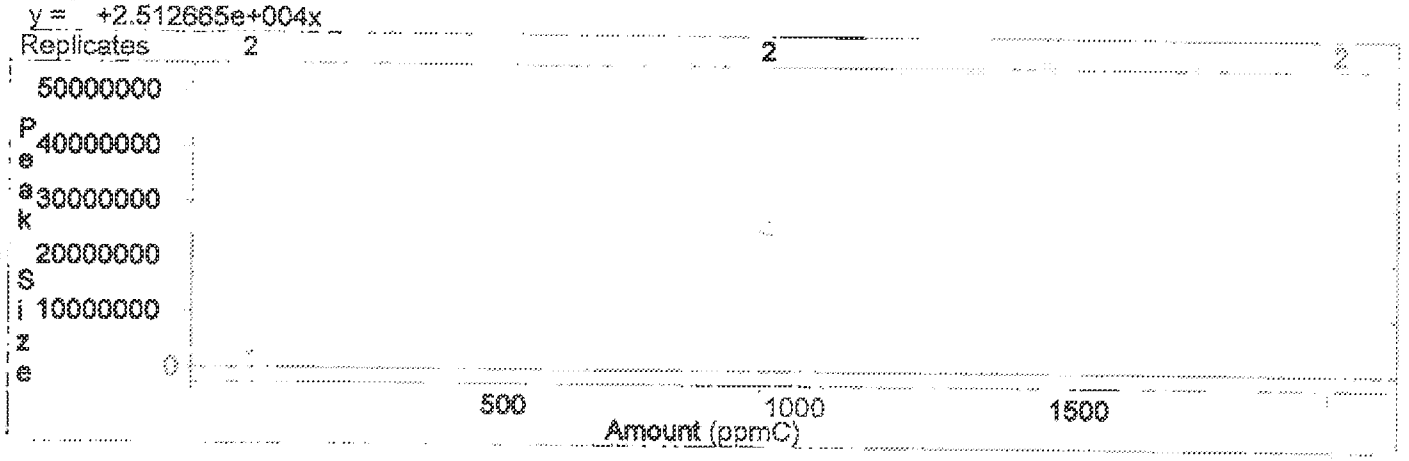


Print Date: 28 Sep 2010 12:11:03
Calibration Curves Report - Page 2
File: c:\star\nmoc.mth
Detector: 800 Interface Box, Address: 88, Channel ID: 2

Ethane

External Standard Analysis
Curve Type: Linear
Origin: Force
y = +2.512665e+004x

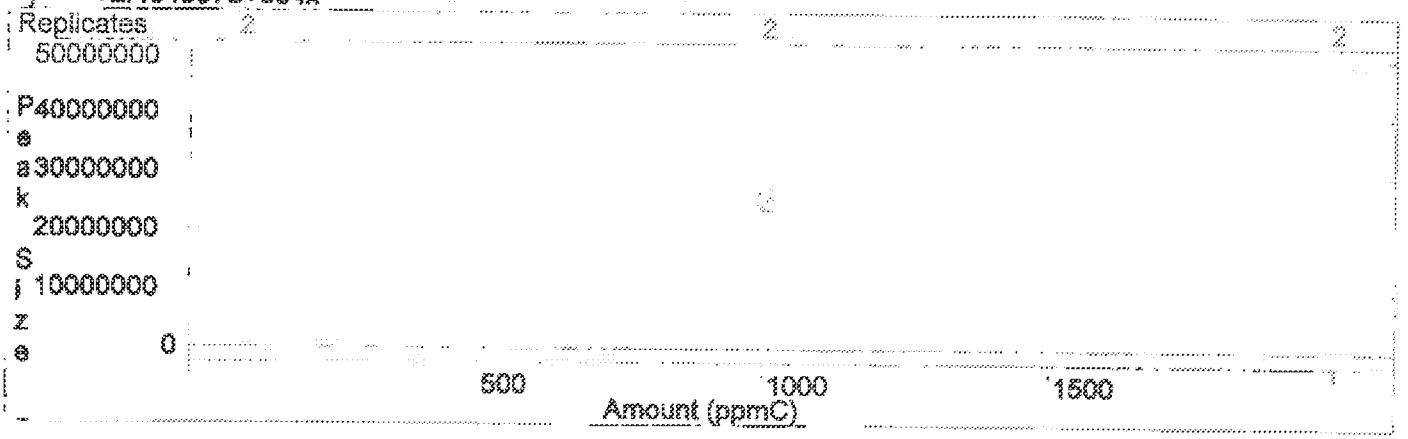
Resp. Fact. RSD: 3.188%
Coeff. Det.(r^2): 0.995719



NMOC

External Standard Analysis
Curve Type: Linear
Origin: Force
y = +2.404997e+004x

Resp. Fact. RSD: 3.425%
Coeff. Det.(r^2): 0.995809



Print Date: Tue Sep 28 12:11:57 2010 Page 1 of 1

Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\sept_10\9-28-2010, 09:38:00, 100ppm mix.run
Method File : c:\docume~1\user\locals~1\temp\~nmoc.tmp
Sample ID : 100ppm mix

Injection Date: 9/28/2010 09:38 Calculation Date: 9/28/2010 12:10

Operator : Galina
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Run Mode : Calibration
Peak Measurement: Peak Area
Calculation Type: External Standard
Level : 3

Peak No.	Peak Name	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	2.340	0.027	2495959	BB	5.1	
2	Methane	2.767	0.014	2547859	BB	5.8	
3	Carbon Dioxi	3.980	0.014	2671168	BB	9.2	
4	Ethane	8.393	0.000	2681568	BB	23.4	
5	NMOC	12.567	0.014	2514029	BB	18.8	
	Totals:		0.069	12890582			

Total Unidentified Counts : 0 counts

Detected Peaks: 5 Rejected Peaks: 0 Identified Peaks: 5

Multiplier: N/A Divisor: N/A Unidentified Peak Factor: 0

Baseline Offset: -148 microVolts LSB: 1 microVolts

Noise (used): 198 microVolts - monitored before this run

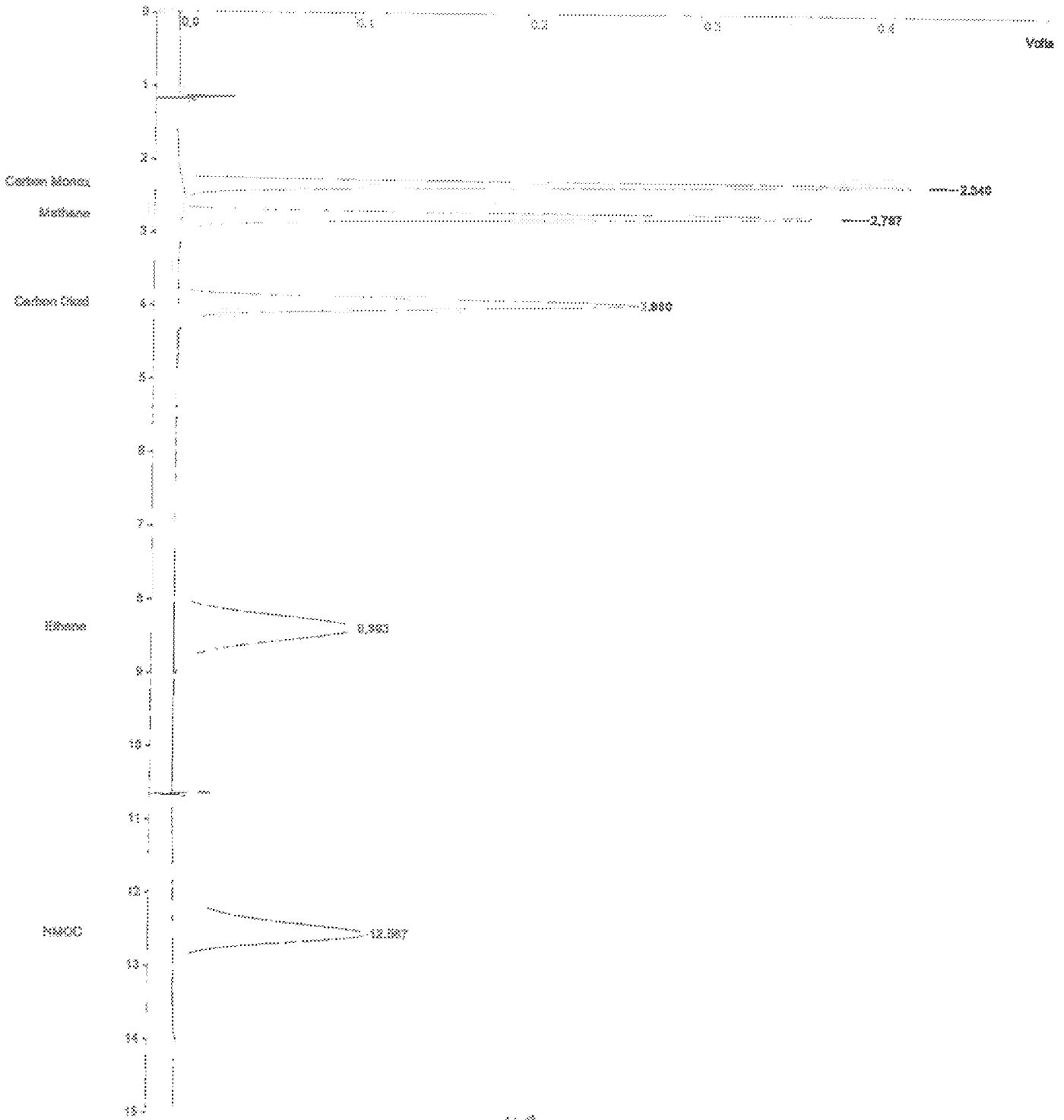
Stream: 1 Injection Number: 1 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

```
Title        : SCAQMD Methods 25.x
Run File     : c:\star\data\2010\sept_10\9-28-2010, 09;38;00, 100ppm mix.run
Method File  : c:\docume~1\user\locals~1\temp\~nmoc.tmp
Sample ID    : 100ppm mix

Injection Date: 9/28/2010 09:38     Calculation Date: 9/28/2010 12:10

Operator    : Galina                  Detector Type: 0800 (10 Volts)
Workstation:                          Bus Address  : 88
Instrument : Varian Star #1           Sample Rate  : 1.25 Hz
Channel     : 2 = Foreflush 10        Run Time     : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Chart Speed =    1.33 cm/min   Attenuation = 212           Zero Offset = 2%
Start Time  =   0.000   min     End Time    = 15.013  min   Min / Tick  = 1.00
```



Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\sept_10\9-28-2010, 10;02;52, 100ppm mix.run
Method File : c:\docume~1\user\locals~1\temp\~nmoc.tmp
Sample ID : 100ppm mix

Injection Date: 9/28/2010 10:02 Calculation Date: 9/28/2010 12:10

Operator : Galina
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Run Mode : Calibration
Peak Measurement: Peak Area
Calculation Type: External Standard
Level : 3

Peak No.	Peak Name	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	2.340	0.000	2489550	BB	5.1	
2	Methane	2.780	0.014	2542584	BB	5.8	
3	Carbon Dioxi	3.980	0.000	2656993	BB	9.2	
4	Ethane	8.420	0.027	2646777	BB	23.5	
5	NMOC	12.560	0.014	2527613	BB	18.9	
	Totals:		0.055	12863517			

Total Unidentified Counts : 0 counts

Detected Peaks: 5 Rejected Peaks: 0 Identified Peaks: 5

Multiplier: N/A Divisor: N/A Unidentified Peak Factor: 0

Baseline Offset: -166 microVolts LSB: 1 microVolts

Noise (used): 401 microVolts - monitored before this run

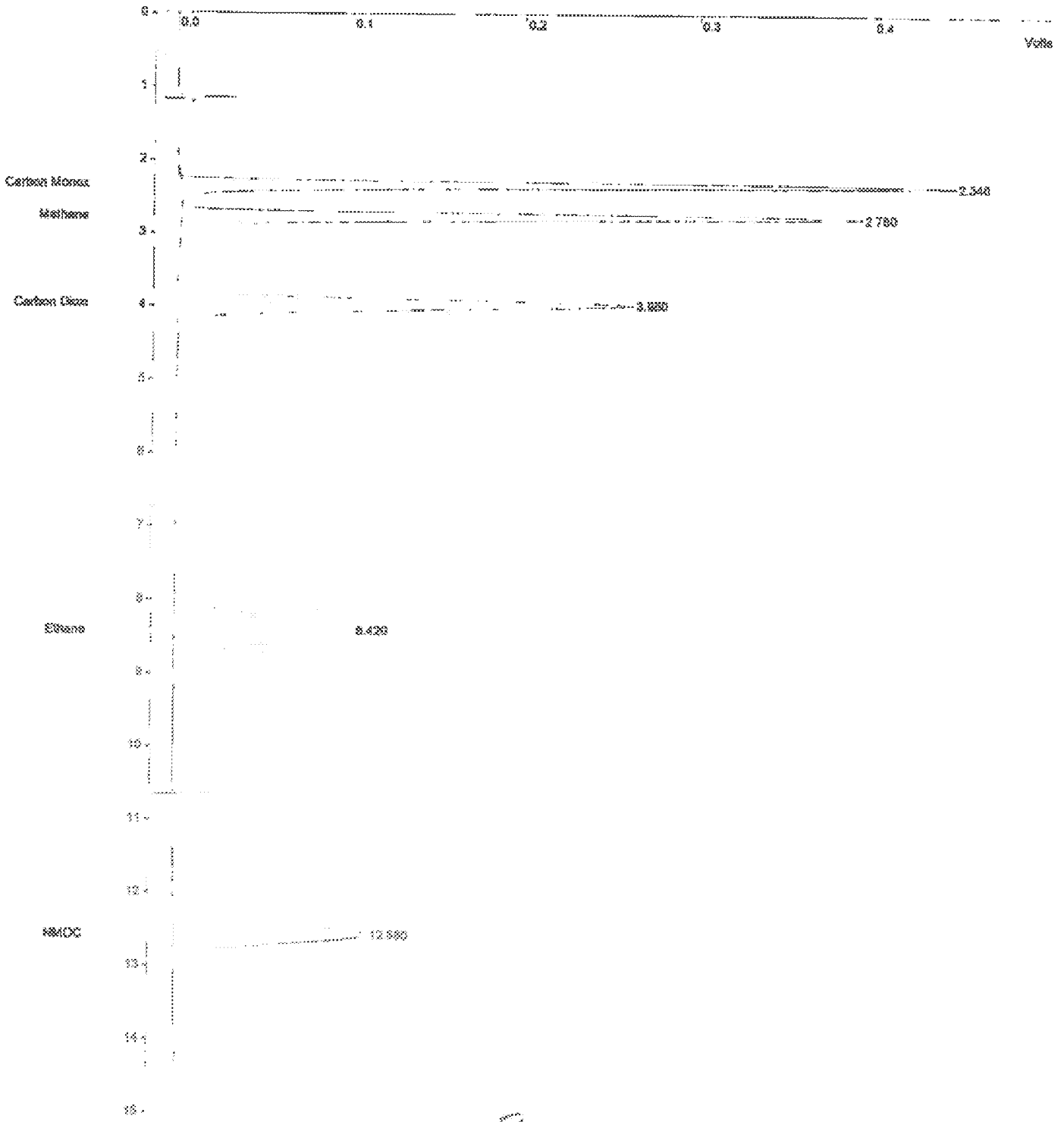
Stream: 1 Injection Number: 2 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

```
Title        : SCAQMD Methods 25.x
Run File     : c:\star\data\2010\sept_10\9-28-2010, 10;02;52, 100ppm mix.run
Method File  : c:\docume~1\user\locals~1\temp\~nmoc.tmp
Sample ID    : 100ppm mix

Injection Date: 9/28/2010 10:02     Calculation Date: 9/28/2010 12:10

Operator    : Galina                  Detector Type: 0800 (10 Volts)
Workstation:                          Bus Address  : 88
Instrument : Varian Star #1           Sample Rate  : 1.25 Hz
Channel     : 2 = Foreflush 10        Run Time     : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21el **

Chart Speed =    1.33 cm/min   Attenuation = 212           Zero Offset = 2%
Start Time  =    0.000   min     End Time    = 15.013  min   Min / Tick  = 1.00
```



51

Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\sept_10\9-28-2010, 10;31;41, 1000ppm mix.run
Method File : c:\docume~1\user\locals~1\temp\~nmoc.tmp
Sample ID : 1000ppm mix

Injection Date: 9/28/2010 10:31 Calculation Date: 9/28/2010 12:10

Operator : Galina
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Run Mode : Calibration
Peak Measurement: Peak Area
Calculation Type: External Standard
Level : 2

Peak No.	Peak Name	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	2.353	0.013	24980054	BB	5.0	
2	Methane	2.780	0.000	25844622	BB	5.7	
3	Carbon Dioxi	3.993	0.013	26581404	BB	9.1	
4		6.437	0.000	53260	BB	15.4	
5	Ethane	8.433	0.013	26703788	BB	23.5	
6	NMOC	12.580	0.000	25587582	BB	19.0	
	Totals:		0.039	129750790			

Total Unidentified Counts : 53260 counts

Detected Peaks: 6 Rejected Peaks: 0 Identified Peaks: 5

Multiplier: N/A Divisor: N/A Unidentified Peak Factor: 0

Baseline Offset: 19 microVolts LSB: 1 microVolts

Noise (used): 184 microVolts ~ monitored before this run

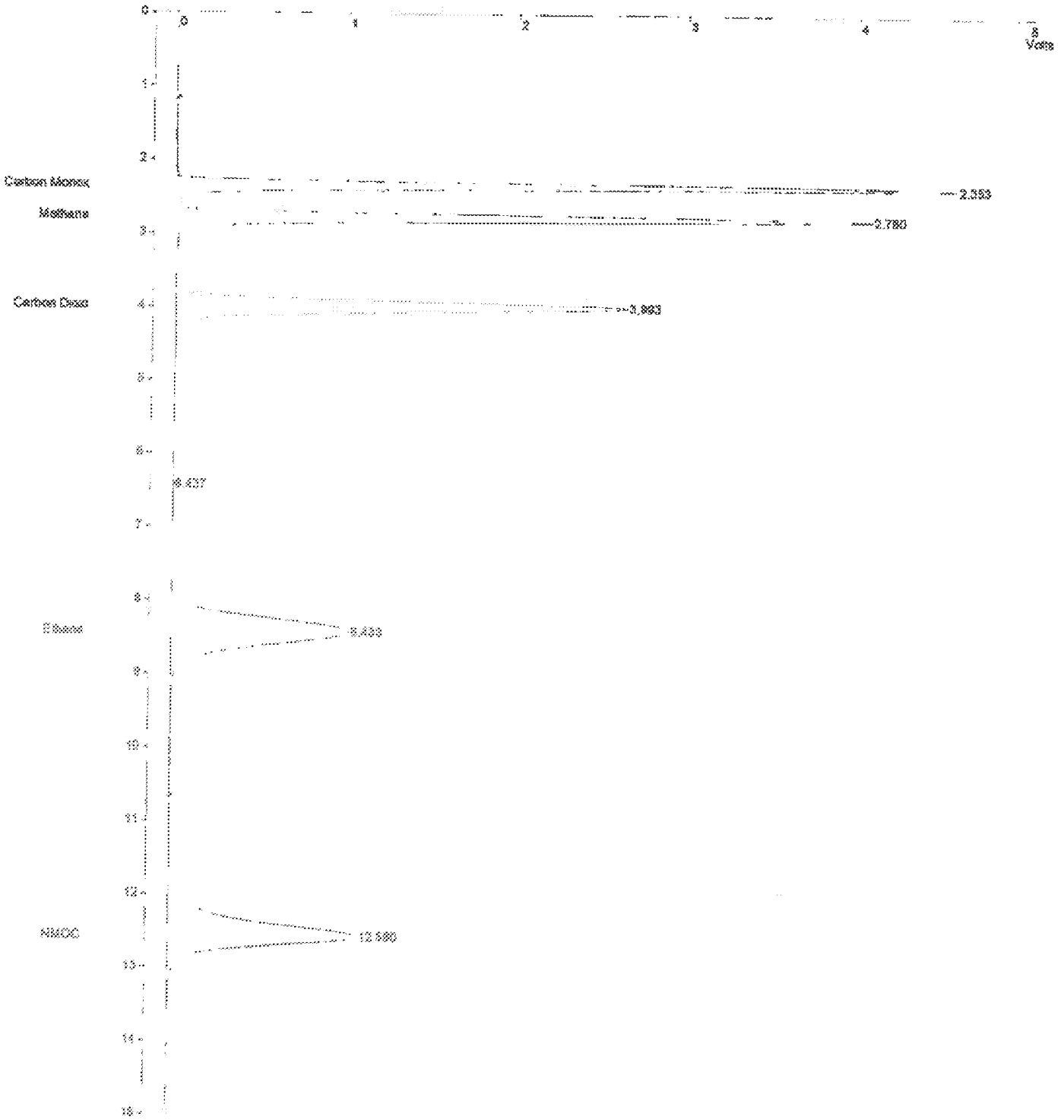
Stream: 1 Injection Number: 1 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

```
Title        : SCAQMD Methods 25.x
Run File     : c:\star\data\2010\sept_10\9-28-2010, 10;31;41, 1000ppm mix.run
Method File  : c:\docume~1\user\locals~1\temp\~nmoc.tmp
Sample ID    : 1000ppm mix

Injection Date: 9/28/2010 10:31     Calculation Date: 9/28/2010 12:10

Operator    : Galina                 Detector Type: 0800 (10 Volts)
Workstation:                         Bus Address  : 88
Instrument : Varian Star #1          Sample Rate  : 1.25 Hz
Channel     : 2 = Foreflush 10       Run Time     : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Chart Speed =    1.33 cm/min   Attenuation = 2170          Zero Offset = 2%
Start Time  =    0.000   min     End Time    = 15.013  min   Min / Tick  = 1.00
```



Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\sept_10\9-28-2010, 10;58;48, 1000ppm mix.xun
Method File : c:\docume~1\user\locals~1\temp\~nmoc.tmp
Sample ID : 1000ppm mix

Injection Date: 9/28/2010 10:58 Calculation Date: 9/28/2010 12:10

Operator : Galina
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 5.00 ** 00299-3588-d6b-21e1 **

Run Mode : Calibration
Peak Measurement: Peak Area
Calculation Type: External Standard
Level : 2

Peak No.	Peak Name	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	2.313	-0.013	25233440	BB	5.1	
2	Methane	2.753	0.000	25999354	BB	5.8	
3	Carbon Dioxi	3.967	0.001	26518942	BB	9.2	
4		6.417	0.000	55944	BB	16.6	
5	Ethane	8.407	-0.013	26659332	BB	23.6	
6	NMOC	12.553	-0.013	25464480	BB	19.2	
	Totals:		-0.038	129931492			

Total Unidentified Counts : 55944 counts

Detected Peaks: 6 Rejected Peaks: 0 Identified Peaks: 5

Multiplier: N/A Divisor: N/A Unidentified Peak Factor: 0

Baseline Offset: -318 microVolts LSB: 1 microVolts

Noise (used): 281 microVolts ~ monitored before this run

Stream: 1 Injection Number: 2 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\sept_10\9-28-2010, 10;58;48, 1000ppm mix.run
Method File : c:\docume~1\user\locals~1\temp\~nmoc.tmp
Sample ID : 1000ppm mix

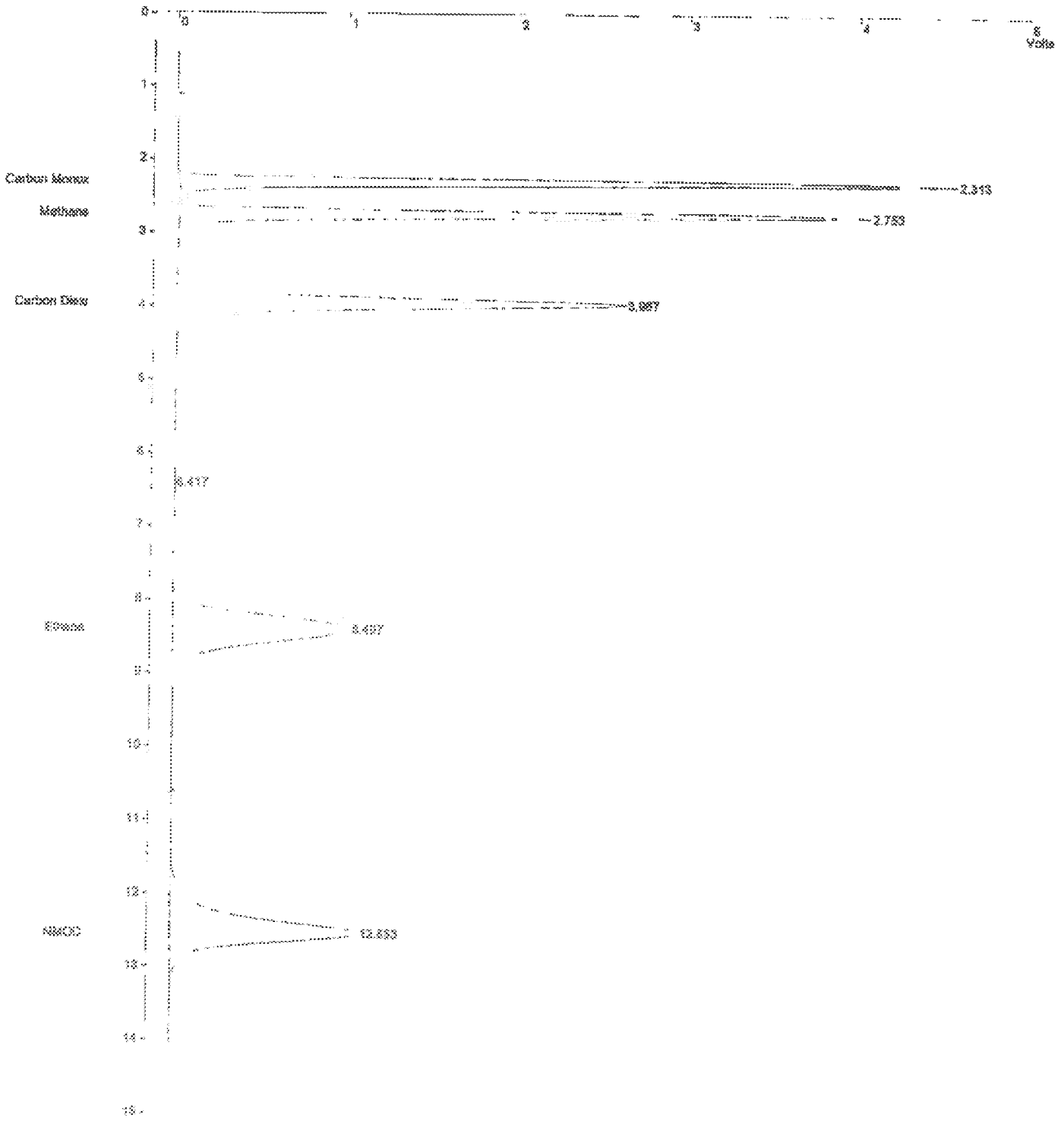
Injection Date: 9/28/2010 10:58 Calculation Date: 9/28/2010 12:10

Operator : Galina
Workstation:
Instrument : Varian Star #1
Channel : 2 = ForeFlush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Chart Speed = 1.33 cm/min Attenuation = 2167 Zero Offset = 2%
Start Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00



Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\sept_10\9-28-2010, 11;23;08, 2000 ppm mix.run
Method File : c:\docume~1\user\locals~1\temp\~nmoc.tmp
Sample ID : 2000 ppm mix

Injection Date: 9/28/2010 11:23 Calculation Date: 9/28/2010 12:10

Operator : Galina
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Run Mode : Calibration
Peak Measurement: Peak Area
Calculation Type: External Standard
Level : 1

Peak No.	Peak Name	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	2.313	0.000	45244456	BB	5.1	
2	Methane	2.753	0.000	46686044	BB	5.7	
3	Carbon Dioxi	3.967	0.001	47892276	BB	9.2	
4		6.413	0.000	98412	BB	16.2	
5	Ethane	8.393	-0.013	48093788	BB	23.5	
6	NMOC	12.553	0.000	45699692	BB	19.3	
	Totals:		-0.013	233716668			

Total Unidentified Counts : 98412 counts

Detected Peaks: 6 Rejected Peaks: 0 Identified Peaks: 5

Multiplier: N/A Divisor: N/A Unidentified Peak Factor: 0

Baseline Offset: 10 microVolts LSB: 1 microVolts

Noise (used): 244 microVolts - monitored before this run

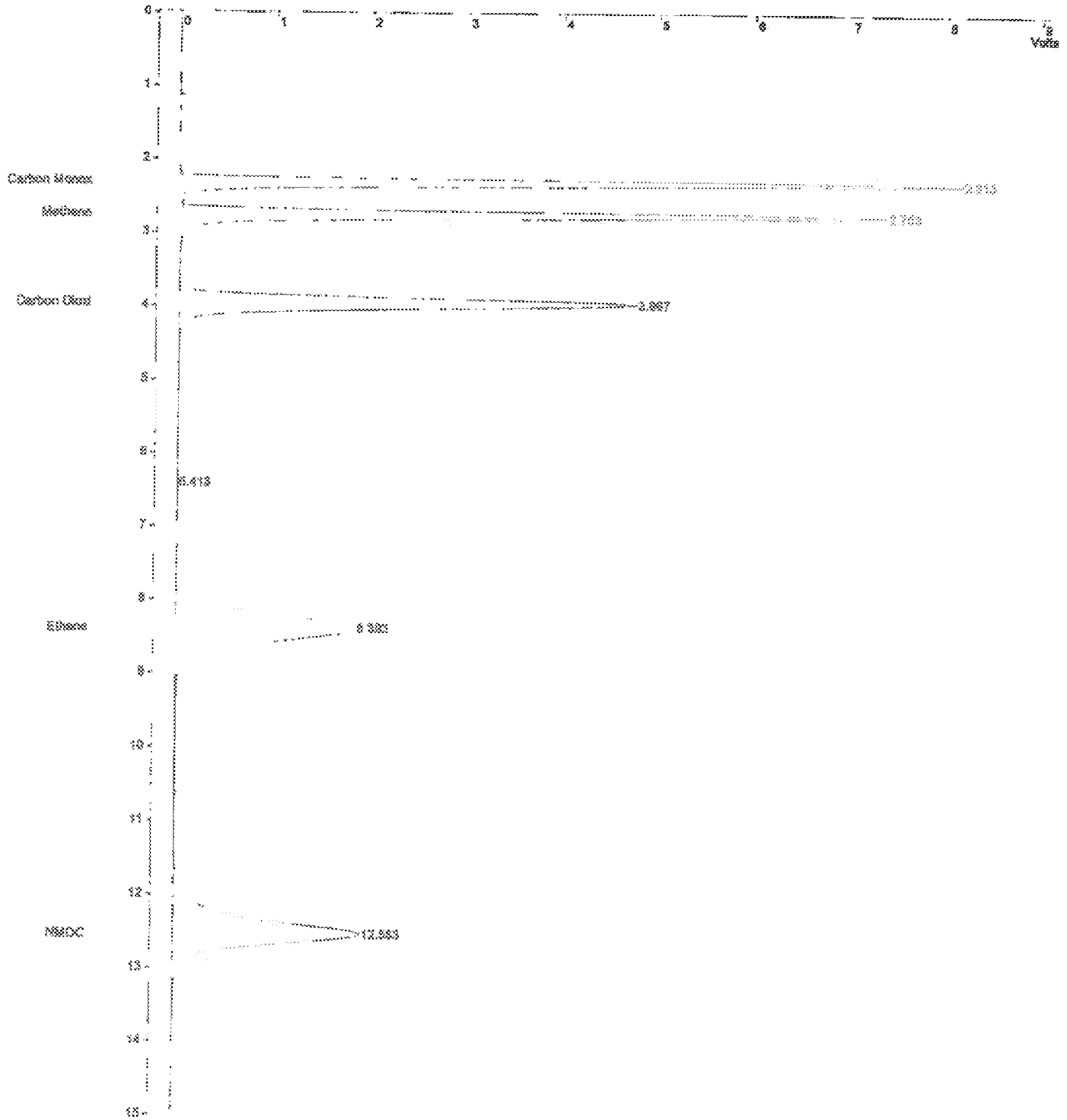
Stream: 1 Injection Number: 1 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

```
Title        : SCAQMD Methods 25.x
Run File     : c:\star\data\2010\sept_10\9-28-2010, 11;23;08, 2000 ppm mix.run
Method File  : c:\docume~1\user\locals~1\temp\~nmoc.tmp
Sample ID    : 2000 ppm mix

Injection Date: 9/28/2010 11:23     Calculation Date: 9/28/2010 12:10

Operator    : Galina                  Detector Type: 0800 (10 Volts)
Workstation:                          Bus Address  : 88
Instrument : Varian Star #1           Sample Rate  : 1.25 Hz
Channel     : 2 = Foreflush 10        Run Time     : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Chart Speed =    1.33 cm/min   Attenuation = 3865          Zero Offset = 2%
Start Time  =   0.000   min     End Time    = 15.013  min   Min / Tick  = 1.00
```



Title : SCAQMD Methods 25.x
Run File : c:\star\data\2010\sept_10\9-28-2010, 11;51;21, 2000 ppm mix.run
Method File : c:\docume~1\user\locals~1\temp\~nmoc.tmp
Sample ID : 2000 ppm mix

Injection Date: 9/28/2010 11:51 Calculation Date: 9/28/2010 12:10

Operator : Galina
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Run Mode : Calibration
Peak Measurement: Peak Area
Calculation Type: External Standard
Level : 1

Peak No.	Peak Name	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	2.327	-0.026	49219600	BB	5.1	
2	Methane	2.753	-0.027	30823782	BB	5.8	
3	Carbon Dioxi	3.967	-0.026	52193728	BB	9.2	
4		6.429	0.000	108723	BB	16.2	
5	Ethane	8.420	-0.013	52402704	BB	23.6	
6	NMOC	12.567	-0.013	49676556	BB	19.4	
	Totals:		-0.105	254425103			

Total Unidentified Counts : 108723 counts

Detected Peaks: 6 Rejected Peaks: 0 Identified Peaks: 5

Multiplier: N/A Divisor: N/A Unidentified Peak Factor: 0

Baseline Offset: -195 microVolts LSB: 1 microVolts

Noise (used): 212 microVolts - monitored before this run

Stream: 1 Injection Number: 2 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

```
Title        : SCAQMD Methods 25.x
Run File     : c:\star\data\2010\sept_10\9-28-2010, 11;51;21, 2000 ppm mix.run
Method File  : c:\docume~1\user\locals~1\temp\~nmoc.tmp
Sample ID    : 2000 ppm mix

Injection Date: 9/28/2010 11:51     Calculation Date: 9/28/2010 12:10

Operator    : Galina                  Detector Type: 0800 (10 Volts)
Workstation:                          Bus Address  : 88
Instrument : Varian Star #1           Sample Rate  : 1.25 Hz
Channel     : 2 = Foreflush 10        Run Time     : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-d6b-21e1 **

Chart Speed =    1.33 cm/min   Attenuation = 4205          Zero Offset = 2%
Start Time  =    0.000   min     End Time    = 15.013  min   Min / Tick  = 1.00
```