
Air Quality Test Report

Compliance Test for NO_x, CO, SO₂, Sulfuric Acid
Mist and H₂S

BP West Coast Products, LLC
Blaine, WA

Second Tail Gas Unit (No. 2 TGU)

Approval to Construct (OAC) No. 890a

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This report is supported by GOLDEN's Quality Assurance Manual and ASTM D7036 Accreditation as an Air Emission Testing Body. The information included in the report is authentic and accurate to the best of our knowledge.



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EXECUTIVE SUMMARY

On October 14 and 15, 2008, Golden Specialty Consulting, Ltd. (GOLDEN) Northwest Regional Office was contracted by BP West Coast Products, LLC (BP) to perform air testing at their Cherry Point facility located in Blaine, Washington. GOLDEN was contracted to perform a compliance test program for oxides of nitrogen (NO_x), carbon monoxide (CO), sulfur dioxide (SO₂), sulfuric acid mist (H₂SO₄ & SO₃), and hydrogen sulfide (H₂S) on the Second Tail Gas Unit (No. 2 TGU) in the Sulfur Recovery Unit (SRU). The test program was performed to demonstrate continued compliance with BP's Northwest Clean Air Agency (NWCAA) Approval to Construct (OAC) No. 890a, which includes by reference the United States Environmental Protection Agency (USEPA) documents Title 40, Code of Federal Regulations, Part 60 (40 CFR 60), Subparts A and J, and Title 40, Code of Federal Regulations, Part 63 (40 CFR 630), Subparts A and UU.

Testing on the source was performed for the determination of concentrations and mass emission rates of NO_x, CO, SO₂, sulfuric acid mist, and H₂S. The concentrations of oxygen (O₂) and carbon dioxide (CO₂) were also determined during the test program. Testing consisted of three (3) 60-minute runs performed in accordance with USEPA Methods 1, 2, 3A, 4, 6C, 7E, 8, 9A, and 10. Sampling for H₂S consisted of three (3) 3-hour test periods, which consisted of 16 individual injections per test period, in accordance with USEPA Method 15.

BP's Air Operating Permit (AOP) Term 5.13.13 through 5.13.17 states that testing should be performed at or above 80% of full capacity. During this test program, the unit was operated at 96% of full capacity.

Provided in Table 1-1 is a summary of the results for this test program.

Test Dates	Analyte, Units	Run 1	Run 2	Run 3	Average	Permit Limit
10/14-15/2008	NO _x Emission Rate, lb/hr	2.31	2.30	2.21	2.27	2.5
	CO Emission Rate, lb/hr	4.13	3.24	2.78	3.39	3.9
	(M6C) SO ₂ Emission Rate, lb/hr	16.28	18.09	15.44	16.60	24.0
	(M8) SO ₂ Emission Rate, lb/hr	18.02	18.72	15.29	17.35	24.0
	H ₂ SO ₄ Emission Rate, lb/hr	0.346	0.498	0.397	0.414	1.23
	H ₂ S Emission Rate, lb/hr	< 0.095	< 0.094	< 0.095	< 0.095	0.43
	Opacity, %	0.0	0.0	0.0	0.0	< 10%

Table 1-1. Summary of Test Results

INTRODUCTION

Purpose of Test

The primary objective of this test program was to measure NO_x , CO, SO_2 , sulfuric acid mist (H_2SO_4 and SO_3), and H_2S concentrations and mass emission rates from the exhaust of the No. 2 TGU. The measured parameters used to demonstrate compliance with BP's Northwest Clean Air Agency (NWCAA) Approval to Construct (OAC) No. 890a. Mr. Robert Pegnam served as Project Manager, and performed the testing with the assistance of Messrs. Kevin Farwell, Sr and Daniel Farwell. All documents and data relating to this test program are presented in this report.

For the compliance test program, gas concentrations of SO_2 , NO_x , CO, O_2 , and CO_2 were measured with reference method (RM) analyzers using USEPA Methods 3A, 6C, 7E and 10. The measured concentrations of SO_2 , NO_x and CO (parts per million by volume, dry basis (ppmv db)) were then converted to emission rates in pounds per dry standard cubic feet (lb/dscf). Based on measured flow rates, the mass rates in pounds per hour (lb/hr) were calculated.

During the compliance tests, the exhaust gas stream was sampled for the targeted pollutant and diluent gases. Sampling was conducted according to USEPA Methods 1, 2, 4 and 8 for determination of volumetric flow, moisture, SO_2 and sulfuric acid concentrations and mass emissions. Testing for SO_2 and sulfuric acid mist consisted of drawing a representative sample from the exhaust using USEPA Method 8 that employs an isokinetic sampling rate and a series of impingers containing 80% isopropanol (IPA) for the collection of sulfuric acid mist and 3% hydrogen peroxide (H_2O_2) for the collection SO_2 . After each run, the sample train was purged for 15 minutes with clean ambient air. Samples were then transported to the GOLDEN Northwest Regional Office, located in Auburn, WA, and titrated to determine the concentrations of sulfuric acid mist. Mass emission rates were then calculated to determine emissions in units of lb/hr. Detailed procedures for sampling, analyses, and calculating combined $\text{H}_2\text{SO}_4/\text{SO}_3$ concentrations and mass emissions per the applicable reference methods are presented in the Performance Test Procedures section of this report.

This measurement of H_2S was conducted using USEPA Reference Method (RM) 15, which is detailed in 40 CFR 60, Appendix A. USEPA Method 15 uses the principle of gas chromatographic (GC) separation with a flame photometric detector (FPD) for quantifying levels of sulfur compounds in stationary sources. The use of USEPA Method 15 as an alternative for USEPA Method 11, which is the method referenced in Subpart J, is found in the USEPA's Emission Measurement Center's (EMC) Approved Alternative Method 010, "Alternatives for Method 11," dated July 1, 1994. Permission to use this test method as an acceptable compliance alternative to USEPA Method 11 was presented in the "Notice of Broadly Applicable Alternative Test Methods," which appeared in the Federal Register: January 30, 2007 (Volume 72, Number 19) (Notices) (Page 4257-4262).

Problems, Deviations, and/or Exceptions

No problems were encountered during this test program.

PERFORMANCE TEST PROCEDURES

Instrumental Analyzer Procedure

Stack gas emissions of SO₂, NO_x, CO, CO₂, and O₂ from the source were measured with continuous emissions monitors. These tests were performed in accordance with the applicable regulations, as outlined in Title 40, Part 60, Appendix A of the Code of Federal Regulations. All instrumentation field data collected during the testing and photocopies of the actual SO₂, NO_x, CO, CO₂, and O₂ one-minute averaging are provided in this report.

Sampling System

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

Analyzer Calibration

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

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

Analyzer Calibration Error

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

$$CE = \left(\frac{|CylinderValue - AnalyzerResponse|}{AnalyzerSpan} \right) \times 100$$

System Bias Check

Following the analyzer calibration procedure, a second test is required to determine the amount of bias the sampling system has on the calibration standard concentrations. In this procedure, the same calibration standards that were used to perform the analyzer calibration error test are introduced to the sampling system via a separate network of 1/4-inch Teflon® tubing. The calibration gases are allowed to flood the system via a "T" connection at the end of the sample probe at a rate of approximately 2 lpm higher than the sample rate. The excess calibration gas flows out the tip of the probe, preventing stack gas from being drawn into the sampling system during calibrations. The gas is then drawn back through the system by the conditioning pumps, and is introduced to the analyzers. The output from the analyzers is recorded, without adjusting the zero or span potentiometers. The bias created by the sampling system is then determined by the following equation.

$$Bias = \left(\frac{|SystemResponse - CalibrationErrorResponse|}{AnalyzerSpan} \right) \times 100$$

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

Analyzer Drift

Utilizing the data obtained during the post-test bias check, a third test is performed to determine the amount of drift experienced during the test run. The analyzer response from the post-test system bias check is compared to the pre-test response for the same calibration standard for drift determinations. If the drift value is greater than the allowable value, the test run is considered invalid and the analyzers must be re-calibrated before continuing the test. The drift for each constituent is determined using the equation below.

$$Drift = \left(\frac{FinalSystemCalibrationResponse - InitialSystemCalibrationResponse}{Span} \right) \times 100$$

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

Stratification Test

For the compliance portion of this test program, stratification was performed in order to determine the minimum number of sample points required. The stratification was performed using two separate sampling systems. One sample system was kept stationary during the test program in order to measure and record variations in the emissions due to process emission variations. The difference between the concentrations measured during the time the second system was at each point, and the mean average of the entire traverse period, was considered a variation due to process and used to normalize the traversed data. The data collected at each point from the traversed system (second system) was normalized for process variations using the data collected from the stationary system. Following the normalization of the data, the absolute difference and the percent difference from the mean average was determined for each sample point. The results of the stratification test, with the tolerances of the stratification determinations are included in Appendix E of this report.

Response Time

System response times for each analyzer were determined during the initial pretest bias prior to run number 1. The response time is determined by the length of time it takes the analyzer response to be within 95% or 0.5 ppm (whichever is less restrictive) of the certified gas concentration. The start of each run was a minimum of twice the response time following the completion of calibration checks.

USEPA Reference Methods

This section provides a detailed description of the individual USEPA Methods employed in this test (40 CFR 60, Appendix A). A schematic of the sampling system used to perform the test program on the source can be found in Figure 1-1. Specifics for the equipment utilized in this test program are presented in Appendix A.

USEPA Method 1: Sample and Velocity Traverses for Stationary Sources

Sampling traverse points were determined based on the ratio of the stack diameter to the upstream and downstream distances of the sampling plane to the closest disturbances. The minimum number of traverse points on the sampling plane is determined from Figure 1-2 and Table 1-2 of 40CFR60, Appendix A, Method 1.

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

The average velocity of the stream was determined from differential pressure readings at each traverse point using a Type-S Pitot tube and inclined manometer. The Pitot tube was constructed per USEPA Method 2 design specifications and a correction coefficient of 0.84 was assigned. Volumetric flow

rate was calculated to dry, standard conditions from the average differential pressure, source temperature, and moisture measurements.

USEPA Method 3: Oxygen and Carbon Dioxide Analysis

USEPA Method 3 was performed to determine the molecular weight of the gas based on measurements of the concentration of oxygen (O_2) and carbon dioxide (CO_2) in the stack gas. During each test run an integrated bag of the sampled gas stream was collected and analyzed onsite. Method 3A analyzers were used in lieu of the Orsat analyzer. O_2 was measured using a paramagnetic analyzer. CO_2 was measured using a non-dispersive infrared (NDIR) analyzer. The analyzers were calibrated with USEPA Protocol No. 1 gas prior to the bag analyses.

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

This method was employed to determine the concentrations of O_2 and CO_2 at the exit of the baghouse with the use of analytical instruments. A sample was continuously extracted from the source and introduced to a RM analyzer for determination of concentration. The minimum detection limit for this instrument is one-hundredth of one percent (0.01%). The instrument is connected to a DAS computer via an analog-to-digital converter for recording resulting values, and the data was recorded in one-minute averages. Zero-grade nitrogen and USEPA Protocol-1 calibration standards were used to calibrate the analytical instrument. The general guidelines for the calibration of a RM analyzer are described above, with the specifics pertaining to the calibration of an O_2 and CO_2 analyzer being set forth in USEPA Method 3A (40 CFR Part 60, Appendix A).

USEPA Method 4: Determination of Moisture Content in Stack Gases

The stack gas moisture content was determined in accordance with USEPA Method 4, which was performed inclusively with USEPA Method 8 and in addition to Method 15, as shown in Figure 1-2. Specifically, stack gas was extracted through a glass condenser train consisting of four impingers connected in series with leak free, glass U-tube connections. The extracted stack gas sample temperature exiting the last impinger was maintained at a temperature below 68°F by use of an ice bath surrounding the impingers. The gas sample was pulled through the impinger train using a rotary vane vacuum pump, and the amount of gas sampled was measured with a calibrated dry gas meter. At the end of each run, the pump was turned off and the final readings were recorded. The amount of moisture in the gas stream was determined by weighing each impinger to the nearest 0.5 g, using a top loading balance, and using the sum of the gain from all the impingers to calculate percent moisture in the stack flue gas stream.

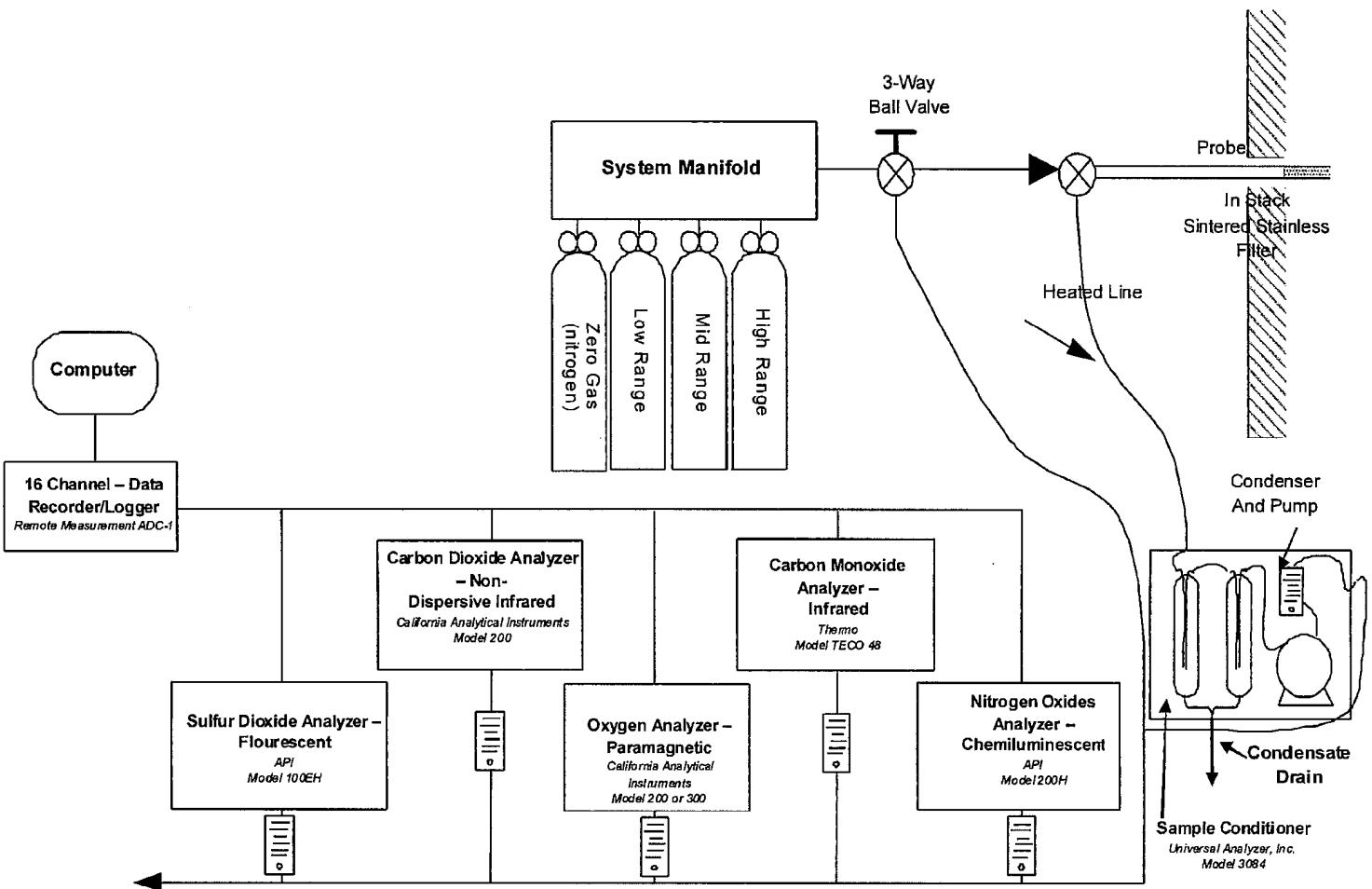


Figure 1-1. Sampling System Schematic

USEPA Method 6C: Sulfur Dioxide - Instrumental Method

USEPA Method 6C was performed to quantify emissions of sulfur dioxide (SO₂) using an ultraviolet (UV) analyzer. SO₂ concentrations were recorded in dry parts per million (ppm) at least once per minute using a data acquisition system and averaged. Prior to testing, a calibration error check was performed using low, mid, and high-range calibration gases. Before and after each test run, a system calibration bias and drift test was performed to check the drift of the analyzer and biases correct the data.

USEPA Method 7E: Nitrogen Oxides - Instrumental Method

USEPA Method 7E was performed to determine the concentration of nitrogen oxides (NO_x). NO_x was measured using a chemiluminescent analyzer. The gas measurements were recorded once per minute using a data acquisition system and averaged. Prior to testing, a calibration error check was performed using zero, mid, and high-level calibration gases. Before and after each test run, a system calibration bias and drift test was performed to check the drift of the analyzer and to bias-correct the data. A Method 7E analyzer NO₂ to NO converter efficiency test was also completed along with this test series.

USEPA Method 8: Sulfuric Acid Mist and Sulfur Dioxide

USEPA Method 8 was performed to quantify emissions of sulfuric acid mist (H₂SO₄/SO₃) and sulfur dioxide (SO₂). The sample train consisted of a quartz glass nozzle and heated probe liner, followed by a series of impingers. The first impinger contained 100 milliliters (mL) of 80% isopropyl alcohol (IPA) to trap the sulfuric acid mist. Next, the gas passed through an unheated back-half filter that prevents acid mist from carrying over into the next two impingers. These two impingers each contained 100 mL of 3% hydrogen peroxide (H₂O₂) to trap any sulfur dioxide (SO₂) that may be present in the gas stream. After a 15-minute purge with clean ambient air, the IPA impinger and H₂O₂ impinger solutions were recovered individually, and the IPA solution was combined with the nozzle/probe/IPA glassware rinse. Each solution was analyzed using a barium-thorin titration.

Testing Equipment

A buttonhook probe nozzle made of quartz glass with a sharp, tapered leading edge was used. The angle of the taper was <30°, and the taper was on the outside to preserve a constant internal diameter. A range of nozzle sizes suitable for isokinetic sampling from 1/8 to 1/2 inch was available the day of testing, and each nozzle was calibrated. The probe liner was made of quartz glass tubing with a heating system capable of maintaining a gas temperature at the exit end during sampling of 160±14°C (320 ± 25°F).

A Type S pitot tube was attached to the probe (as shown in Figure 1-2) to allow constant monitoring of the stack gas velocity. The impact (high pressure) opening plane of the pitot tube was even with or above the nozzle entry plane during sampling. The Type S pitot tube assembly has a correction coefficient, typically 0.84 when physical criteria are met. A dual

inclined/vertical oil-guage manometer was used for velocity head (Δp) and orifice differential pressure readings (ΔH). A borosilicate glass filter holder, with a glass frit filter support and a Teflon® coated gasket was used. The holder design has a positive pressure seal against leakage from the outside or around the filter. The holder is attached with connecting glassware to the outlet of the probe.

The heating system utilized for this test is capable of maintaining a temperature around the filter holder during the sampling of $160 \pm 14^\circ\text{C}$ ($320 \pm 25^\circ\text{F}$). A temperature gauge capable of measuring temperature to within 3°C (5.4°F) is installed so that the temperature of the "hot-box" can be regulated and monitored during sampling.

The impinger train used to remove moisture from the gas sample consisted of four impingers connected in series with leak-free ground glass fittings or any similar leak-free non-contaminating fittings. The first, third and fourth impingers were of the Greenburg-Smith design that have been modified by replacing the tip with a 1.3 cm (1/2 in.) ID glass tube extending to about 1.3 cm (1/2 in.) from the bottom of the flask. The second impinger was of the Greenburg-Smith design with the standard tip. A thermometer, capable of measuring temperature to within 1°C (2°F) was placed at the outlet of the fourth impinger for exit temperature monitoring purposes.

The metering system is made up of the following: vacuum gauge, leak-free pump, thermometers capable of measuring temperature to within 3°C (5.4°F), dry gas meter (DGM) capable of measuring volume to within 2 percent, and related equipment, as shown in Figure 1-2.

Preparation of Sample Train Collection

During preparation and assembly of the sampling train, all openings where contamination can occur are kept covered until just prior to assembly or until sampling is about to begin. 100 mL of 80% IPA was placed in the first impinger, the second and third impinger contained 100 mL each of 3 % H_2O_2 , and silica gel, was placed in the fourth impinger. The impingers were tared to within 0.5 g before being assembled in the sample train. The probe was marked to denote the sample point locations, and crushed ice was placed around the impingers just before the start of sampling.

Sample Train Operation

The sample ports were cleaned prior to the test run to minimize the chance of drawing deposited material into the sample when removing or inserting the probe. During the sampling run, an isokinetic sampling rate was maintained, and a temperature of $320 \pm 25^\circ\text{F}$ was maintained in the probe and hot box. For each run, pertinent data was recorded on the appropriate data sheet. The stack cross-section was traversed, being careful not to bump the probe nozzle into the stack walls when sampling near the walls or; this minimizes the chance of extracting deposited material.

During the test run, periodic adjustments were made to maintain an isokinetic sampling rate, and additional ice was added to the impinger train

in order to maintain an impinger outlet temperature of 68°F or lower. Also, periodic checks of the manometer were made to insure it was level and zeroed.

At the end of the sample run, the coarse adjust valve was closed, the probe and nozzle were removed from the stack, the pump was turned off, the final DGM meter reading was recorded, and a post-test leak-check was conducted. Also, the pitot lines were leak-checked. The lines must pass this leak-check in order to validate the velocity head data. The sample train was purged for 15 minutes with clean air at the average sample rate used during testing. Finally, the percent isokinetic was calculated to determine whether the run was valid or another test run should be made.

Sample Recovery

Sample recovery procedures began as soon as the probe was removed from the stack at the end of the sampling period. The probe was allowed to cool so it could be safely handled, all external PM near the tip of the probe nozzle was wiped off, and a cap was placed over it to contamination. The probe was removed from the sample train and the open outlet of the probe was capped. Care was taken not to lose any condensate that might be present. The umbilical cord was removed from the last impinger, and the impinger was closed off with Teflon® tape. The selected cleanup area was clean and protected from the wind so that the chances of contaminating or losing the sample was minimized.

The samples were recovered as follows:

Probe Rinse and Impinger 1. The probe was removed from the sample train and repetitively rinsed with an 80% IPA solution. An iodine flask with a female ball joint was attached to the male ball joint end of the probe and a clean nylon brush was used during this recovery. The contents of the iodine flask were quantitatively transferred to the storage container

The recovered IPA or any condensate from the probe nozzle, probe fitting, probe liner, impinger one, and front half of the filter holder was collected by rinsing the inner surfaces of these components with 80% IPA and placing the rinsate in a sample container. This container was properly labeled, sealed with Teflon® tape, and the sample level was marked with a permanent marker prior to transport to the lab. The quartz fiber back-half filters were removed from their housings and added to the IPA impinger solutions.

Impingers 2 and 3. Using a top loading balance, each of the impingers was weighed to within 0.5 g and the weight recorded on the field data sheet. This data was used in the stack gas moisture calculation. Any contained liquid was then discarded since no sulfur dioxide (SO₂) analysis was required for this test program.

Silica gel. The color of the indicating silica gel was noted to determine whether it had been completely spent, and a notation of its condition was

made. The silica gel impinger was then weighed so its delta weight could be added to that of the first three impingers.

Reagents: The reagents used in sampling are as follows: (1) Isopropanol (IPA), 80% by volume. Mix of 200 mL of isopropanol with 200 mL of water. (2) Hydrogen Peroxide (H_2O_2), 3% by volume. Dilution of 100 mL of 30% H_2O_2 to 1 L of water. This solution was prepared fresh daily. (3) Glass fiber filters, without organic binder, exhibiting at least 99.95 percent efficiency (<0.05 percent penetration) on 0.3-micron dioctyl phthalate smoke particles. The filter efficiency test is conducted in accordance with ASTM Method D 2986-71. (4) Silica Gel, Indicating type, 6- to 16-mesh. If it has been previously used, it is dried at 175°C (350°F) for 2 hours.

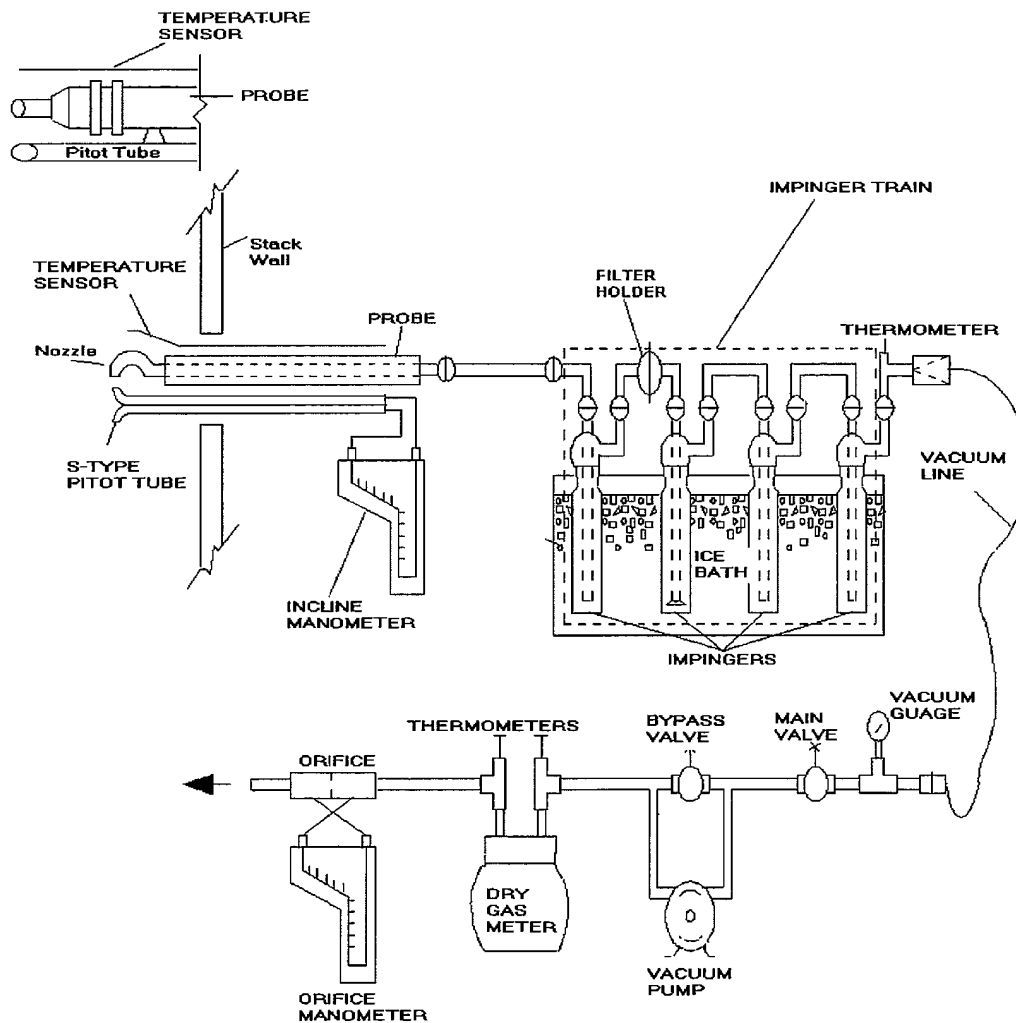


Figure 1-2. USEPA Method 8 Sampling Train

WDOE Method 9: Opacity

Two (3) sixty-minute WDOE Method 9 opacity observations were performed. Each run was performed concurrently with each run, while the plant was operating at the same production rate. Opacity observations were made by Mr. Robert Pegnam of GOLDEN who currently is certified to read opacity.

USEPA Method 10: Carbon Monoxide – Instrumental Method

USEPA Method 10 was performed to quantify emissions of carbon monoxide (CO) using a gas filter correlation non-dispersive infrared (NDIR) analyzer. CO concentrations were recorded in dry parts per million (ppm) at least once per minute using a data acquisition system, and averaged. Prior to testing, an analyzer calibration error check test was performed using low, mid, and high-level calibration gases. Before and after each test run, a system calibration bias and drift test was performed to check the drift of the analyzer and to bias correct the data.

USEPA Method 15 – Determination of Hydrogen Sulfide for Stationary Sources

USEPA Method 15 was performed to measure hydrogen sulfide (H₂S) using a GC with a flame photometric detector (FPD). The sample train was composed of a heated probe and filter connected to a heated sampling line which runs to the instrument trailer. The probe, filter and heated line were maintained at 320 °F. A Teflon headed sample pump supplied the sample to the GC. After calibrating with certified H₂S calibration gas, the probe was placed at the centroid of the stack. Each of the three (3) sample runs consisted of 16 individual injections performed over a three (3) hour period. Final calibrations were performed after the third run.

Calibration

The SRI Model 8610 gas chromatograph and flame photometric detector (GC/FPD) were calibrated before and after the test series. The calibration consists of a series of three injections of a known concentration within the linear range of the GC/FPD. A 3-point calibration series was used for this test project. At each calibration point, the three injections must fall within ±5 % of the average of the three injections. A copy of this calibration precision test is included in the Appendix C of this report.

Several USEPA Protocol No. 1 calibration gases were utilized to calibrate the GC/FPD system. Certificates of Analysis for each gas used are provided in Appendix C of this report.

USEPA Method 15, Section 13.4 requires that the calibration drift must not exceed 5% from the initial calibration to the final calibration in any test series. A sample line loss test, also called a recovery check, must be performed at the end of a series of tests. For this sample line loss test, an H₂S calibration gas is injected at the probe inlet to the sampling system. The results must be within 20% of the H₂S concentration measured when

the calibration gas was injected. The results for the recovery check are located in Appendix C of this report.

Demonstration of Separation

To demonstrate that adequate resolution can be achieved, a chromatogram of a calibration gas containing H₂S, CS₂, and COS was completed for this chromatography column and temperature program prior to the compliance test. The results for the demonstration of separation are provided in Appendix C of this report.

USEPA Method 15 Sampling System

Sample gas from the pressurized fuel gas line was injected into the RM gas chromatograph, by continually flowing fuel gas into the GC inlet port during the test period. Figure 1-3 provides a detailed diagram of the test equipment.

Gas Chromatograph with Flame Photometric Detector (GC/FPD)

Analysis

Following sample injection, the GC sample valve was switched to allow carrier gas to flow through a 1.5 mL volume sample loop and onto the column. After the compound peak had reached the detector and the area had been recorded, the column was back-flushed with carrier gas to remove any remaining sample.

The GC/FPD peak areas produced by the calibration gases were plotted in an Excel® spreadsheet. A least squares linear regression was performed using the Excel® curve fitting capability to determine an equation for the line that best fit the calibration data. A linear response curve was used for relating H₂S concentrations to GC output peak areas. The equation of this line is used to calculate the parts per million (ppm) results for each run using the peak areas provided by the GC. Least squares linear equations were generated separately for both the pre-test and post-test calibration data. The linear regression coefficient (R²) values for the pre-test and the post-test calibration curve were 0.925 and 0.940, respectively.

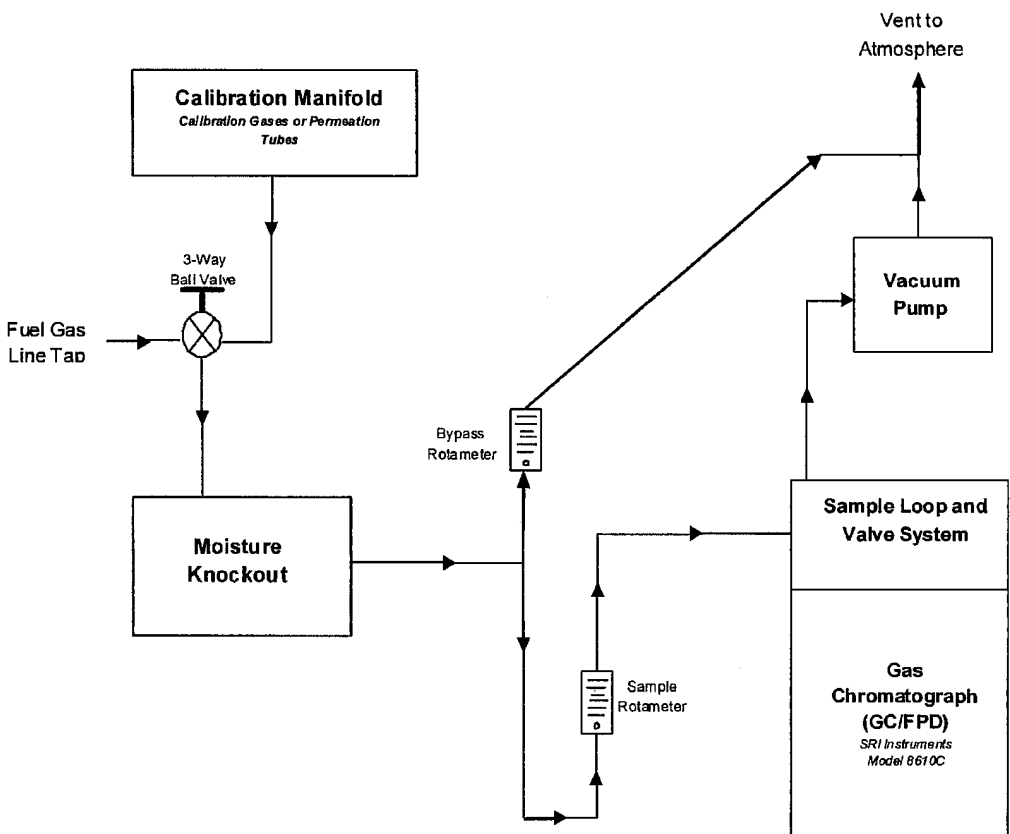
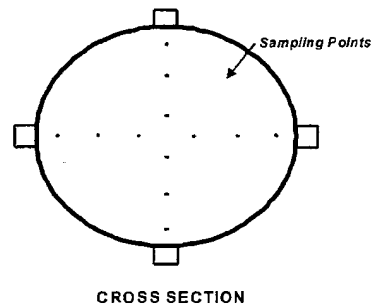


Figure 1-3. USEPA Method 15 Sampling System Schematic

SOURCE INFORMATION

As presented below in Figure 1-4, the testing location on the No. 2 TGU Stack consisted of two (2) sampling ports on the 35-inch ID stack.



TRAVERSE POINTS: 12
NUMBER OF PORTS: 2
POINTS/PORT: 6
STACK ID: 35.0 in.
PORT LENGTH: 9.0 in.

TRAVERSE POINT NO.	DISTANCE FROM INSIDE WALL, in.
1	1.5
2	5.1
3	10.4
4	24.6
5	29.9
6	33.5

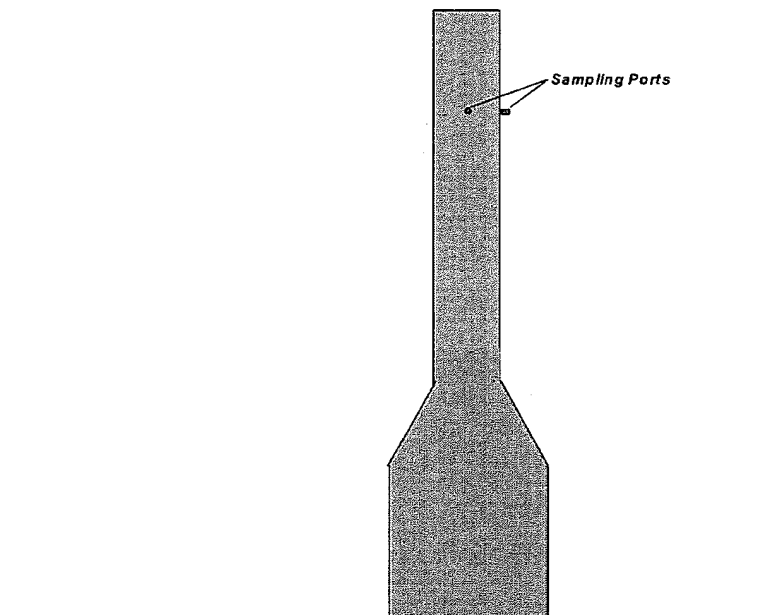


Figure 1-4. Diagram of Testing Location

SAMPLE CALCULATIONS

The following calculations were used in the determination of emission rates for the unit's exhaust. The data collected during Method 8 Run 1 is used for the calculations.

Stack Gas Flow Rate

Absolute Stack Gas Pressure (P_s)

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

Where: P_{bar} = Barometric pressure (in. Hg)
 P_{static} = Static pressure of stack gas (in. H₂O)

$$\underline{P_s = 29.84 \text{ in. Hg}}$$

Gas Volume Sampled at Standard Conditions ($V_{m(std)}$)

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

Where: V_m = Actual gas volume sampled
 Y = Gas meter calibration factor
 P_{bar} = Measured Barometric Pressure
 ΔH = Average differential pressure
 T_m = Absolute average meter temperature

$$\underline{V_{m(std)} = 32.757 \text{ dscf}}$$

Water Vapor Collected at Standard Conditions ($V_{w(std)}$)

$$V_{w(std)} = 0.04707 x V_{lc}$$

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

$$\underline{V_{w(std)} = 2.650 \text{ ft}^3}$$

Measured Stack Gas Moisture Content (B_{ws})

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

$$\underline{B_{ws}} = 7.45$$

Wet Molecular Weight of Stack Gas

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

$$\underline{M_s} = 27.72 \text{ lb/lb-Mole}$$

Stack Gas Velocity

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

Where:

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

$$\underline{V_s} = 28.30 \text{ fps}$$

Volumetric Flow Rate (Actual cubic feet per min)

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

Where:

- Q_s = Volumetric flow rate (acfm)
- P_s = Absolute Stack gas Pressure (in. Hg)
- T_s = Stack Temperature ($^{\circ}\text{R}$)

$$\underline{Q_{std}} = 11,344 \text{ acfm}$$

Volumetric Flow Rate (Standard Conditions, dry basis)

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

Where: Q_s = Volumetric flow rate (dscfm)
 P_s = Absolute Stack gas Pressure (in. Hg)
 T_s = Stack Temperature (°R)
 B_{ws} = Stack moisture content

$$\underline{Q_{std}} = 9,750 \text{ dscfm}$$

Method 8 Calculations**Concentration (mg/dscm)**

$$C_{mg/dscm} = K_3 [N(V_t - V_{tb})(V_{soln} \div V_a)] \div V_{m(std)}$$

Where: $C_{mg/dscm}$ = Pollutant concentration (mg/dscm)
 $K_3 = 49.04 \text{ mg/meq (metric units)}$
 N = Normality of titrant (meq/mL)
 V_t = Volume of titrant (mL)
 V_{tb} = Volume of titrant blank (mL)
 V_{soln} = Volume of solution (mL)
 V_a = Volume of aliquot (mL)
 $V_{m(std)}$ = Dry Gas Meter Volume Sampled (dscm)

$$\underline{C_{mg/dscm}} = 9.48 \text{ mg/dscf}$$

Concentration (ppm)

$$C_{ppm} = C_{mg/dscm} \times 24.055 \text{ mL / m-mole} / 98.08 \text{ mg / m-mole} / 10^6 \text{ mL / m}^3 \times 10^6 \text{ ppm}$$

$$\underline{C_{ppm}} = 2.13 \text{ ppm}$$

Emission Rate (lb/hr)

$$E_r = (C_{ppm} \times 35.31 \text{ ft}^3 / \text{m}^3) (Q_{std} \times 453,600) \times 60$$

E_r = Emission rate (lb/hr)

C_{ppm} = pollutant concentration (ppm, dry basis)

Q_{std} = Volumetric Flow rate (dscfm)

$$\underline{E_r} = 18.02 \text{ lb/hr}$$

Calibration Correction

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

Where:

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

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

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

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

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

Pollutant Concentration (lb/dscf)

$$C_d = C_{ppm} \left(\frac{MW \text{ (lb / lb mole)}}{385.26 \times 10^6} \right)$$

Pollutant Emission Rate (lb/hr)

$$E_r = (C_d \times Q_{std} \times 60) / 100,000$$

E_r = Emission rate (lb/hr)

C_d = pollutant concentration (ppm dry basis)

Q_{std} = Volumetric Flow rate (dscfm)

TEST RESULTS

A Comprehensive summary of results for the testing performed on the No. 2 TGU Stack, are listed below in Tables 1-2 and 1-3. All supporting calibration, process, and field data collected for this project are provided in the following Appendices.

Plant	BP West Coast Products - Cherry Point	Address	Blaine, WA	Job #	NW08BPCP111		
Location	No. 2 TGU Stack	Personnel	KEF, DDF, RCD	Date	10/14 - 10/15/08		
Run Number			1	2	3	Average	Compliance
Date	Test Date		10/14/08	10/14/08	10/15/08		
Start	Run Start Time		11:05	16:22	9:34		
End	Run Finish Time		12:19	17:27	10:40		
	Net Traversing Points		12	12	12	12	
C _p	Pitot Tube Coefficient		0.84	0.84	0.84	0.84	
P _{Br}	Barometric Pressure, in. Hg		29.85	29.85	30.15	29.95	
ΔH	Average orifice meter Differential, in. H ₂ O		0.907	0.900	0.853	0.887	
V _m	Dry Gas Meter Volume Sampled actual, acf		32.212	31.658	31.012	31.63	
T _m	Average Dry Gas Meter Temperature, °F		58.1	62.5	54.7	58.4	
V _{mstd}	Dry Gas Meter Volume Sampled standard, dscf		32.757	31.926	32.060	32.25	
%CO ₂	Carbon Dioxide, % volume		2.44	2.12	1.99	2.182	
%O ₂	Oxygen, % volume		2.91	2.73	2.71	2.785	
%CO+ N ₂	Carbon Monoxide & Nitrogen, %		94.7	95.2	95.3	95.0	
M _d	Dry Molecular Weight, lb/lb-Mole		28.51	28.45	28.43	28.46	
M _w	Wet Molecular weight, lb/lb-Mole		27.72	27.70	27.74	27.72	
B _{gas}	Moisture Concentration of Stack Gas, by volume		7.5	7.1	6.5	7.1	
P _o	Flue Gas Static Pressure, in. H ₂ O		-0.13	-0.12	-0.10	-0.12	
P _a	Absolute Flue Gas Pressure, in. Hg		29.84	29.84	30.14	29.94	
T _s	Average Stack Gas Temperature, °F		106.8	106.3	103.0	105.33	
ΔP _{avg}	Average Velocity Head, in. H ₂ O		0.476	0.474	0.462	0.471	
V _s	Average Stack Gas Velocity, ft/sec		28.30	28.19	27.21	27.90	
A _s	Stack Area, ft ²		6.68	6.68	6.68	6.68	
Q _a	Actual Volumetric Flow Rate, acfm		11,344	11,300	10,908	11,184	
Q _{std}	Dry Volumetric Flow Rate, dry scfm		9,750	9,760	9,632	9,714	
%I	Percent Isokinetic of Sampling Rate, %		101.5	100.5	100.5	100.8	90-110
VE	Visible Emissions, % opacity		0.0	0.0	0.0	0.0	10.0
NO _x ppm	Nitrogen Oxides Concentration, ppmvd		33.09	32.94	32.00	32.68	
NO _x lb/dscf	Nitrogen Oxides Concentration, lb/dscf x 10 ⁻⁶		3.95	3.93	3.82	3.90	
NO _x lb/hr	Nitrogen Oxides Emission Rate, lb/hr		2.31	2.30	2.21	2.27	2.5
SO ₂ ppm	Sulfur Dioxide Concentration, ppmvd		167.51	185.90	160.67	171.43	
SO ₂ lb/dscf	Sulfur Dioxide Concentration, lb/dscf x 10 ⁻⁶		27.83	30.88	26.72	28.48	
SO ₂ lb/hr	Sulfur Dioxide Emission Rate, lb/hr		16.28	18.09	15.44	16.60	24.0
CO ppm	Carbon Monoxide Concentration, ppmvd		97.23	76.12	66.23	79.86	
CO lb/dscf	Carbon Monoxide Concentration, lb/dscf x 10 ⁻⁶		7.07	5.53	4.81	5.80	
CO lb/hr	Carbon Monoxide Emission Rate, lb/hr		4.13	3.24	2.78	3.39	3.9
V _m (std)	Dry Gas Meter Volume Sampled standard, dscm		0.928	0.904	0.908	0.913	
N	Normality of Barium Standard Solution (BaCl ₂), meq/mL		0.0105	0.0105	0.0105	0.0105	
	Sulfuric Acid Mist						
V _{alliquot}	Volume of 80% IPA Impinger Sample, mL		195.0	160.0	155.0	170.0	
V _{IPA imp}	Volume of Aliquot, mL		50.0	50.0	50.0	50.0	
V _{titrant}	Volume of Titrant, mL		4.40	7.50	6.275	6.06	
V _{blank}	Volume of Blank, mL		0.02	0.02	0.02	0.02	
C _{mg/dscm}	Sulfuric Acid Mist Concentration, mg/dscm		9.48	13.63	11.00	11.37	
C _{ppm}	Sulfuric Acid Mist Concentration, ppm		2.13	3.07	2.47	2.56	
C _{ppm @ 7% O2}	Sulfuric Acid Mist Concentration, ppm @ 7% O ₂		1.65	2.35	1.89	1.96	
ER _{lb/hr}	Sulfuric Acid Mist Emission Rate, lb/hr		0.346	0.498	0.397	0.414	1.23
	Sulfur Dioxide						
V _{alliquot}	Volume of 3% H ₂ O ₂ Impinger Sample, mL		445.0	450.0	440.0	445.0	
V _{IPA imp}	Volume of Aliquot, mL		10.0	10.0	10.0	10.0	
V _{titrant}	Volume of Titrant, mL		30.60	30.70	26.025	29.11	
V _{blank}	Volume of Blank, mL		0.02	0.02	0.02	0.02	
C _{mg/dscm}	Sulfur Dioxide Concentration, mg/dscm		493.3	513.5	423.8	476.9	
C _{ppm}	Sulfur Dioxide Concentration, ppm		170.0	177.0	146.1	164.3	
C _{ppm @ 0% O2}	Sulfur Dioxide Concentration, ppm @ 0% O ₂		197.5	203.6	167.8	126.1	
ER _{lb/hr}	Sulfur Dioxide Emission Rate, lb/hr		18.02	18.78	15.29	17.35	24.0

Table 1-2. Comprehensive Summary of Gaseous and Method 8 Test Results

Plant	BP West Coast Products - Cherry Point	Address	Blaine, WA	Job #	NW08BPCP111	
Location	No. 2 TGU Stack	Personnel	RCP/KEF/DDF	Date	10/15/2008	
Run Number		1	2	3	Average	Compliance
Date	Test Date	10/15/08	10/15/08	10/15/08		
Start	Run Start Time	12:48	16:00	19:12		
End	Run Finish Time	15:48	19:00	22:12		
	Net Traversing Points	12	12	12	12	
C _p	Pitot Tube Coefficient	0.84	0.84	0.84	0.84	
P _{Br}	Barometric Pressure, in. Hg	30.15	30.15	30.15	30.15	
%CO ₂	Carbon Dioxide, % volume	3.0	3.0	3.0	3.00	
%O ₂	Oxygen, % volume	3.0	3.0	3.0	3.00	
% CO+ N ₂	Carbon Monoxide & Nitrogen, %	94.0	94.0	94.0	94.0	
M _d	Dry Molecular Weight, lb/lb-Mole	28.60	28.60	28.60	28.60	
M _s	Wet Molecular weight, lb/lb-Mole	27.87	27.87	27.85	27.87	
B _{ws}	Moisture Concentration of Stack Gas, by volume	6.8	6.9	7.0	6.9	
P _g	Flue Gas Static Pressure, in. H ₂ O	-0.10	-0.10	-0.10	-0.10	
P _s	Absolute Flue Gas Pressure, in. Hg	30.14	30.14	30.14	30.14	
T _s	Average Stack Gas Temperature, °F	104.3	103.9	104.8	104.34	
ΔP _{avg}	Average Velocity Head, in. H ₂ O	0.467	0.462	0.467	0.465	
v _s	Average Stack Gas Velocity, ft/sec	27.47	27.17	27.49	27.38	
A _s	Stack Area, ft ²	6.68	6.68	6.68	6.68	
Q _a	Actual Volumetric Flow Rate, acfm	11,011	10,892	11,020	10,974	
Q _{std}	Dry Volumetric Flow Rate, dry scfm	9,669	9,560	9,634	9,621	
H ₂ S _{ppm}	Hydrogen Sulfide Concentration, ppm	< 2.265	< 2.265	< 2.265	< 2.265	
H ₂ S _{lb/dscf}	Hydrogen Sulfide Concentration, lb/dscf x 10 ⁻⁶	< 0.165	< 0.165	< 0.165	< 0.165	
H ₂ S _{lb/hr}	Hydrogen Sulfide Emission Rate, lb/hr	< 0.095	< 0.094	< 0.095	< 0.095	0.43

Table 1-3. Comprehensive Summary of Method 15 Test Results

APPENDIX A - TESTING EQUIPMENT USED

Testing Equipment

Provided in Table 1-4 below is a list of all testing equipment used in the compliance determination of the No. 2 TGU.

Constituent	Make/ Model	Operating Range	Serial Number
Velocity	ESI	∞	P002NW
Method 4/8	ESI	∞	1696
Method 8	ESI/Impinger Train	N/A	N/A
Method 8	Glass Nozzle	N/A	0.260
H ₂ S	SRI 8610C	0-60	N3249
SO ₂	API 100 AH	0-500 ppm	111
NO _{x_1}	API 200AH	0-100 ppm	528
O _{2_1}	CAI 300	0-25%	1L12018
CO _{2_1}	CAI 300	0-20%	1L12018
NO _{x_2}	API 200AH	0-200 ppm	527
CO ₂	TECO 48	0-100 ppm	46539-276
O _{2_2}	CAI 200	0-25%	1N03012
CO _{2_2}	CAI 200	0-40%	1N03012

Table 1-4. Testing Equipment Used in the Compliance Testing

APPENDIX B - PERSONNEL

Scott B. Swiggard, M.S., QSTI (#2006-025)

President/Technical Director

Professional Experience Summary

- Broad background in environmental compliance and regulatory issues. Has directed projects associated with air permitting, groundwater contamination, air toxins emissions control, hazardous materials control and reporting, wastewater process control (metals removal), energy conservation, industrial ventilation, noise control, bioremediation, and storm water control.
- Extensive background in emission testing, with over 1,600 tests personally conducted and/or supervised.
- Responsible for the continued development of testing capabilities and their research and development.
- Provides project management for testing at assigned client's facilities. Provides field support to the project managers on testing protocols and methods.
- Responsible for verification and validation on test data as part of a Quality Assurance/ Quality Control Program.

Selected Publications/Presentations

Swiggard, Scott and Spellicy, Robert, PhD., FTIR Monitoring in High Water and Carbon Dioxide Environments. Presented at the 2003 Air and Waste Management Association 96th Annual Conference and Exhibition, San Diego, CA, June 22-26, 2003.

Swiggard, Scott B., Comparative study of NH₃ analysis and methods for SCR Slippage. Presented at Source Evaluation Society Annual Meeting, Kiawah Island, North Carolina, 2004

Swiggard, Scott B., Identifying In-Stack Detection Limits and Handling of Non-Detect Data, Presented at Source Evaluation Society Annual Meeting, Rohnert Park California, 2005

Swiggard, Scott B., Why Cooling Towers and Vents matter in Texas!, Presented at Source Evaluation Society Annual Meeting, Hilton Head North Carolina, 2006

Swiggard, Scott B., How accurate are your standards? Presented at Source Evaluation Society Annual Meeting, Hilton Head North Carolina, 2006

Swiggard, Scott B., Bonnette Sidney, PhD., and Palomarez Jorge., Gas Chromatography (GC) Analysis of HRVOC's in Cooling Towers and Vents; including degradation 1,3-Butadiene in the presence of NO_x compounds, Presented at the GAS2006 Conference, Galveston, Texas, April 2006

Professional Affiliations

Source Evaluation Society (SES) and Air and Waste Management Association (AWMA)
Source Testing Accreditation Council (STAC) – Member and Board of Directors

Karen L. Swiggard

Vice President / Director of Quality Assurance

Professional Work Summary

- Broad background in safety, environmental compliance and regulatory issues. Has managed projects associated with Hazard Communication, Blood borne pathogens, Tuberculosis Infection Control, Respiratory Protection, Personal Protective Equipment, Life Safety Code, Fire Safety, Electrical Safety, Back Injury Protection, Workplace Violence, Employee Injury and Illness Reporting, Emergency Response, Hazardous Drugs, Ventilation and Indoor Air Quality, and Joint Commission on Accreditation of Healthcare Organizations (JCAHO).
- Extensive background in employee Training in areas of: Hazard Communication, Blood borne pathogens, Tuberculosis Infection Control, Respiratory Protection, Personal Protective Equipment, Fire Safety, Electrical Safety, Back Injury Prevention, Emergency Response, and Computer Ergonomics.
- Developed and presented intensive training courses for Health and Safety professionals at all NASA centers including: Occupational Ergonomics and Blood borne Pathogens.
- While working for Texas Water Commission (now Texas Commission on Environmental Quality, TCEQ). She was responsible for the enforcement of RCRA program in Texas including the inspection and evaluation of RCRA programs at various chemical plants and other facilities handling hazardous waste. Was a key member for emergency response for chemical spills and accidents.
- Extensive experience in Quality Assurance programs including serving as Quality Assurance Officer for the Environmental Health Laboratory for NASA-Johnson Space Center for 5 years, and managing the environment of care accreditation process of Kelsey-Seybold, Houston Texas, for JCAHO in which it was awarded.

Work Experience

Golden Specialty Consulting, Ltd. (February 1999 - present)

Golden Specialty Laboratory, Ltd. (Dec. 2004 – present)

Position: Vice President / Director of Quality Assurance

Kelsey-Seybold Clinic (June 1995 – February 1999)

Position: Manager of Environmental Health and Safety

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

Position: Health & Safety Training Specialist/Industrial Hygienist/Quality Assurance Officer

Texas Water Commission (February 1984 – April 1986)

Position: Environmental Quality Specialist

Professional Affiliations

Source Evaluation Society (SES)

National Environmental Laboratory Accreditation Commission (NELAC)

Air and Waste Management Association (AWMA)

American Industrial Hygiene Association (AIHA)

Education

Studies towards Masters in Science in Environmental Science, University of Houston

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

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

NIOSH Quality Assurance Officer Training, 1990

James A. Guenthoer, QSTI (#2008-160)

Project Manager

Professional Experience Summary

- Responsible for supervising, planning and managing sampling programs, daily assignments of field testing crews, sample analysis, data reduction, QA/QC reviews, and reporting activities. Prepares proposals and test plans and acts as regulatory agency liaison.
- Supervised and/or participated in over 6,000 source tests in 40 states as well as Peru and Canada for most major industry types.
- Sampling experience includes essentially all EPA wet and instrumental test methods as well as those from the National Council for Air and Stream Improvement (NCASI), National Institute of Occupational Safety and Health (NIOSH), American Society of Testing and Materials (ASTM), California Air Resource Board (CARB), Bay Area Air Quality Management District (BAAQMD), SouthCoast Air Quality Management District (SCAQMD), Oregon Department of Environmental Quality (ODEQ), Washington State Department of Ecology (WDOE) and various regional agencies.
- Managed a company handling the design, technical service and sales of in-situ source test cascade impactors.
- Instructor for EPA 450 and 468 Source Sampling Short Courses as well as presenting workshops on the theory and use of in-situ cascade impactors.
- Performed research and development studies of novel particulate control technologies using enhanced electrostatics.
- Testing manager for a three office consulting firm providing water quality, industrial hygiene, SPCC , and source testing services to industrial clients, including serving as an expert witness.

Work Experience

Golden Specialty Consulting, Ltd. (April 2008 - Present)

Position: Project Manager

AmTest Air Quality. (August 1983 – April 2008)

Position: Manager, Source Testing Services

Pollution Control Systems Corporation. (September 1981 – December 1985)

Position: Operations Manager

Pollution Control Systems Corporation (October 1980 – August 1981)

Position: Research Scientist

Professional Affiliations

Source Evaluation Society (SES)

Air and Waste Management Association (AWMA)

Professional Education

M.S.E., Environmental Engineering Division, Department of Civil Engineering, University of Washington, Seattle, Washington, 1985

B.S., Geology, Juniata College, Huntingdon, Pennsylvania, 1972

Engineer-in-Training Certification

WDOE Plume Evaluation Training

CSTOP Training from Northwest Safety Training Council

QSTI Certification, 2008

Robert C. Pegnam III, QI (Groups I-IV)

Project Leader

Professional Experience Summary

- Responsible for planning and managing sampling programs, daily assignments of field testing crews, sample analysis, data reduction, QA/QC reviews, and reporting activities. Services and maintains instrumental analyzers.
- Supervised and/or participated in thousands of source tests across the Western United States and Alaska. Performed specialized in-situ particle sizing using cascade impactors.
- Sampling experience includes almost the entire gamut of EPA wet and instrumental test methods as well as those from the National Council for Air and Stream Improvement (NCASI), National Institute of Occupational Safety and Health (NIOSH), American Society of Testing and Materials (ASTM), California Air Resource Board (CARB), Bay Area Air Quality Management District (BAAQMD), SouthCoast Air Quality Management District (SCAQMD), Oregon Department of Environmental Quality (ODEQ), Washington State Department of Ecology (WDOE) and various regional agencies'.
- Mr. Pegnam instructed junior, senior, and graduate-level courses while working towards his Masters degree at the University of Washington. He also assisted in the instruction of EPA Air Pollution Training Institute (APTI) courses. Mr. Pegnam has been published in various publications and has presented papers at several technical association meetings over the past 12 years. Much of his research was related to his Master's thesis titled "Characterization of Aerosol Particulate Emissions from Chromic Acid and Boric-Sulfuric Acid Processes."

Work Experience

Golden Specialty Consulting, Ltd. (April 2008 - Present)
Position: Project Leader

AmTest Air Quality. (August 2001 – April 2008)
Position: Project Engineer

ETI, Inc. (June 1999 – August 2001)
Position: Environmental Engineer

University of Washington (June 1996 – November 1998)
Position: Research Engineer

Professional Affiliations

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

Professional Education

M.S.E., Environmental Engineering Division, Department of Civil Engineering, University of Washington, Seattle, Washington, 1994
B.S., Civil Engineering, University of Washington, Seattle, Washington, 1989
Engineer-in-Training Certification No. 15194
WDOE Plume Evaluation Training
CSTOP Training from Northwest Safety Training Council
Qualified Individual – EPA Method 23
Qualified Individual – EPA Method 28
Qualified Individual – EPA Method 30B

Kevin E. Farwell, Sr., QI (Groups I-III)

Environmental Supervisor

Professional Experience Summary

- Responsible for planning and managing sampling programs, daily assignments of field testing crews, sample analysis, data reduction, QA/QC reviews, and reporting activities.
- Supervised and/or participated in thousands of source tests across the Western United States and Alaska.
- Sampling experience includes almost the entire gamut of EPA wet and instrumental test methods as well as those from the National Council for Air and Stream Improvement (NCASI), National Institute of Occupational Safety and Health (NIOSH), American Society of Testing and Materials (ASTM), California Air Resource Board (CARB), Bay Area Air Quality Management District (BAAQMD), SouthCoast Air Quality Management District (SCAQMD), Oregon Department of Environmental Quality (ODEQ), Washington State Department of Ecology (WDOE) and various regional agencies.
- He has also been a mining industry Hazardous Waste Specialist responsible for solid and hazardous waste disposal, spill response and remediation, toxic release inventory upkeep and waste tracking and reporting.

Work Experience

Golden Specialty Consulting, Ltd. (April 2008 - Present)

Position: Environmental Supervisor

AmTest Air Quality. (August 2001 – April 2008)

Position: Senior Field Lead

Phelps Dodge Morenci, Inc. (July 2000 – August 2001)

Position: Hazardous Waste Specialist

Phelps Dodge Hidalgo, Inc. (May 1989 - July 2000)

Position: Testman III

Professional Affiliations

Source Evaluation Society (SES)

Air and Waste Management Association (AWMA)

Professional Education

Eastern Arizona College, Thatcher, Arizona

Course R450-97, Source Sampling for Pollutants

Hazardous Material Handler (HAZWOPER)

RCRA Certification

AHERA Asbestos Inspector Certification – C5299

Toxic Release Inventory Seminar

MSHA Certified

Visible Emissions Certified (EPA Method 9)

CSTOP Training from Northwest Safety Training Council

Course 450 – Source Testing for Particulate Matter (40 hrs)

Qualified Individual – EPA Method 23

Qualified Individual – EPA Method 28

Qualified Individual – EPA Method 30B

Paula M. Metz, QSTI (#2006-026)

Reports Coordinator / Environmental Technician II

Professional Experience Summary

- Experience with EPA testing regulations, including 40 CFR, Part 60, Part 75, and Part 266, and TCEQ testing regulations, including 30TAC115, 30TAC117, and TCEQ Sampling Procedures Manual.
- Over 6 years of experience and participation in over 500 tests in Texas, Arkansas, Ohio, Mississippi, South Dakota, Iowa, Kansas, and Louisiana.
- CEM instrumentation projects include continuous analysis for carbon monoxide (CO), total oxides of nitrogen (NO_x), oxygen (O₂), carbon dioxide (CO₂), total hydrocarbons (THC), and sulfur dioxide (SO₂).
- Sampling experience includes flow stream characterization and monitoring of a number of types of flow streams for engineering purposes; including analysis using 3-D spherical probes per Method 2F, emissions sampling for regulatory compliance demonstration; emissions sampling for systems audit requirements of continuous emission monitoring systems (CEMS).
- Conducted isokinetic sampling and calculations for Methods 1, 1A, 2, 2A, 2F, 3, 3B, 4, and 5, including sample recovery, preservation, and storage at the test site with associate sample custody requirements for the methods listed.
- Knowledgeable in the testing requirements and procedures for the testing and analysis of Predictive Emissions Monitoring Systems (PEMS). Participated in several new source performance standards (NSPS) for development of new PEMS, including initial data collection of emissions.
- Experienced in modified El Paso Method, Appendix P, (Cooling Tower Sampling for Volatile Organic Compounds); applicable to monthly sampling and troubleshooting leaks in Process systems.
- Experienced in report writing, review, and finished product.

Work Experience

Golden Specialty Consulting, Ltd. (February 2001 - Present)
Position: Reports Coordinator / Environmental Technician II

Professional Affiliations

Source Evaluation Society (SES)

Education

Working on general education to be credited to a BS Degree in Environmental Science (32 hours accumulated to date, including 8 hours of Chemistry towards AS)

Visible Emissions Certified (EPA Method 9), 2004-2007

12 Hour Basic Instrumentation Training, California Analytical Instruments, January 2003

Source Sampling and CEMS Workshop, Walter Smith & Associates, 2002, 2003 and 2004

Preparation for the SES QSTI Exam Workshop, Walter Smith and Associates, 2005

SkillPath® Seminars, Employee Management and Supervision Workshop, 2003

Hazardous Materials Shipping Qualified, 2006

QSTI Certification, June 2006 & April 2008

Man-Lift Training, August 2006

Fred Pryor®:Team Building Seminar, 2007

Fred Pryor®:Excel: Beyond the Basics" Seminar, 2007

Qualified Individual – Cylinder Gas Audits

Qualified Individual – EPA Method 30B

Qualified Individual – Portable Combustion Analyzer

Daniel Farwell

Technician In Training

Professional Experience Summary

- In training for instrumentation methods: carbon monoxide (CO), total oxides of nitrogen (NO_x), oxygen (O₂), and carbon dioxide (CO₂).
- In training of EPA testing regulations, including 40 CFR Part 60 and Part 75.
- In training for source compliance testing and emission sampling methodologies for stack gas velocity, moisture, and a variety of isokinetic (wet chemistry/particulate) testing.
- In training for performing maintenance and calibrations on a variety of air testing equipment.
- Computer skills include: Windows 9x, Windows 2000, Excel, Word and Access.

Work Experience

Golden Specialty Consulting, Ltd. (April 2008-present)
Position: Environmental Technician in Training

Education

8-hr CSTOP Training, WA, 2008
Basic Plus Training

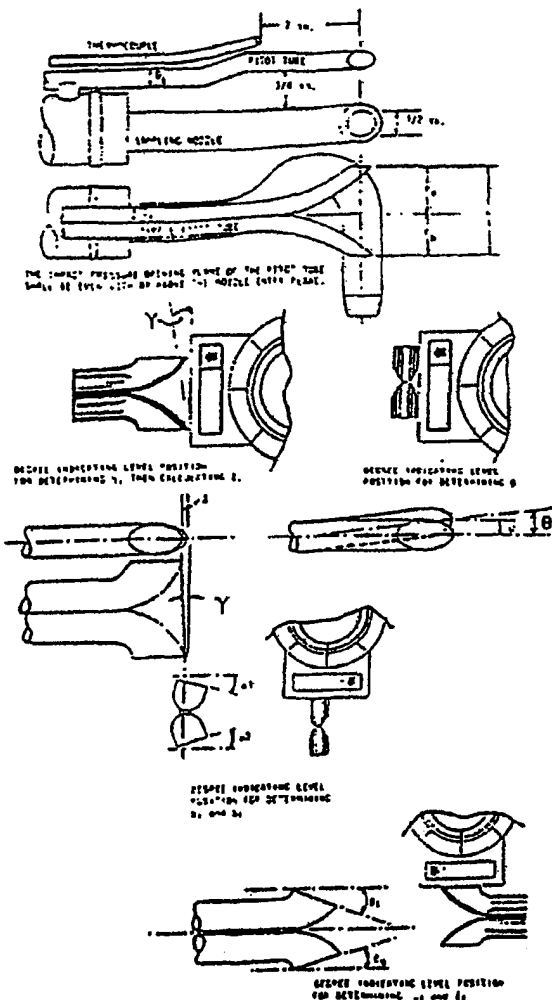
APPENDIX C - CALIBRATION DATA

PITOT TUBE INSPECTION DATA SHEET

Company Name: BP WEST COAST PRODUCTS

Pre-sample

Post Sample

Date 10/13/2008Date 10/21/2008

Y	level?	Y
N	obstructions?	N
N	damaged?	N
O	$-10^\circ < \alpha_1 < +10^\circ$	O
O	$-10^\circ < \alpha_2 < +10^\circ$	O
O	$-5^\circ < \beta_1 < +5^\circ$	O
O	$-5^\circ < \beta_2 < +5^\circ$	O
O	Y	O
O	0	O
0.936	A	0.936
0.468	$1.05 D_t < P_a < 1.5 D_t$	0.468
0.468	$1.05 D_t < P_b < 1.5 D_t$	0.468
0.375	$3/16" < D_t < 3/8"$	0.375
Y	$A \tan \gamma < 0.125"$	Y
Y	$A \tan \epsilon < 0.03125"$	Y
Y	$P_a = P_b \pm 0.063"$	Y

Comments:

Pitot tube/probe number P002WW meets or exceeds all specifications criteria and/or applicable design features* and is hereby assigned a pitot tube calibration factor of 0.84.

Signature [Signature]Date 10/13/2008 / 10/21/2008

*See 40 CFR 60, Vol. 42, No. 160, Method 2. Verify the minimum 2 inch setback of the thermocouple and the minimum 3/4 inch separation between the pitot tube and the nozzle as shown at the top of this page.

Project ID: NW08BPCP111
 Plant: BP West Coast Products
 Source: #2 Tail Gas Unit
 Description: Methods 3A, 6C, 7E, 8, 9, 10, 15
 Compliance Testing

Form GSC-TM003c

Rev. A, 2001

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

Model #: C5000
 Serial #: 1696

Date: 8/7/08
 Barometric Pressure: 30.05 (in. Hg)
 Theoretical Critical Vacuum: 14.17 (in. Hg)

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

----- DRY GAS METER READINGS -----					----- CRITICAL ORIFICE READINGS -----												
ΔH (in H ₂ O)	Time (min)	Volume Initial (ft ³)	Volume Final (ft ³)	Volume Total (ft ³)	Initial Temp.		Final Temp.		Orifice Serial #	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	-- Ambient Temperature --		-- Average Temperatures --			
					Inlet (°F)	Outlet (°F)	Inlet (°F)	Outlet (°F)				Initial (°F)	Final (°F)	Average (°F)	DGM Outlet (°R)	DGM Overall (°R)	Ambient Temp (°R)
0.28	17.00	38.000	43.201	5.201	82.0	81.0	84.0	82.0	40	0.3314	17.0	78.0	79.0	78.5	541.5	542.3	538.5
0.50	13.50	43.201	49.205	6.004	83.0	82.0	86.0	83.0	48	0.3370	15.0	79.0	79.0	79.0	542.5	543.5	539.0
1.15	10.00	49.205	55.208	6.002	84.0	83.0	88.0	84.0	55	0.4512	15.5	80.0	80.0	80.0	543.5	544.8	540.0
2.20	8.00	55.208	61.734	6.526	86.0	84.0	89.0	85.0	63	0.6121	15.0	80.0	80.0	80.0	544.5	546.0	540.0
3.90	6.00	61.734	68.160	6.427	87.0	85.0	90.0	86.0	73	0.8038	16.0	80.0	80.0	80.0	545.5	547.0	540.0

--- DRY GAS METER ---

VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME CORRECTED	VOLUME NOMINAL
Vm(std)	Vm(std)	Vm(std)	Vm(std)	Vm
(dscf)	(liters)	(dscf)	(liters)	(dscf)
5.088	144.1	5.094	144.3	5.175
5.865	166.1	5.889	166.6	5.988
5.857	165.9	5.835	165.2	5.944
6.370	180.4	6.332	179.3	6.451
6.266	178.0	6.237	176.6	6.353

----- ORIFICE -----

-- DRY GAS METER --

CALIBRATION FACTOR		
Y	Value	Variation
(number)	(number)	(number)
1.001	0.004	Pass / Fail
1.004	0.006	Pass
0.996	-0.001	Pass
0.994	-0.003	Pass
0.992	-0.005	Pass

----- ORIFICE -----

CALIBRATION FACTOR		
ΔHm	Value	Variation
(in H ₂ O)	(mm H ₂ O)	(in H ₂ O)
1.607	42.85	-0.140
1.745	44.33	-0.081
1.854	47.09	0.027
1.924	48.86	0.097
1.923	48.85	0.097

Average Y ----- 0.998

Average ΔHm ----- 1.827 46.40

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

For Orifice Calibration Factor ΔHm, the orifice differential pressure in inches of H₂O that equates to 0.75 cfm of air
 at 68 F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is ±0.1.

SIGNED:

Kevin E. Zell

Date:

8/7/08

**Alternative Method 5 Post-Test Calibration
Emission Measurement Center Approved Alternative Method (ALT-009)**

Test Date: 10/15/2008
Serial Number: 1696
Y Factor: 0.998
Delta H@: 1.827
Personnel: RCP/KEF/DDF

	Run Time (min)	Initial Meter Volume (ft ³)	Final Meter Volume (ft ³)	Volume Sampled (ft ³)	Meter Temp (°F)	Average ΔH (in. Hg)	Barometric Pressure (in. Hg)	Dry Molecular Weight (lb/lb-mole)	Y _{qa}
Run 1	120	819.319	891.126	71.807	60.8	1.25	30.15	28.60	1.0316
Run 2	120	891.386	963.617	72.231	57.0	1.25	30.15	28.60	1.0219
Run 3	120	964.049	1033.132	69.083	60.9	1.25	30.15	28.60	1.0725
Average:									1.0420

Percent Error: 4.22

PASS? YES!

Percent Error must be < 5% error

BP West Coast Products, LLC
Cherry Point Refinery
Blaine, WA

Calibration Data

No. 2 TGU Stack
October 14 and 15, 2008

Calibration Gas & Analyzer Configuration Data		O ₂ _1	CO_1	NO _x _1	CO ₂ _1	SO ₂ _1
Trailer 11	Mfg. And Model No.:	CAI 300	CAI 300	API 200AH	CAI 300	API 100AH
	Serial Number:	1L12018	1L12018	528	1L12018	111
	Range Setting:	25	200	100	25	500
	Calibration span:	22.0	95.5	96.7	21.5	198.0
Zero Gas	Cyl #:	Nitrogen	Nitrogen	Nitrogen	Nitrogen	Nitrogen
	value:	0.00	0.0	0.0	0.0	0.0
Mid Calibration Gas	Cyl #:	AAL021623	ALM034002	ALM034002	AAL021623	ALM025368
	value:	12.0	49.7	50.9	12.0	95.9
High Calibration Gas	Cyl #:	ALM028667	ALM025368	ALM025368	ALM028667	1L14443
	value:	22.0	95.5	96.7	21.5	198.0
Bias Gas Used	Run 1	MID	MID	MID	MID	MID
Calibration Error						
	Zero Reading	-0.01	0.50	-0.02	0.00	0.00
	Mid Reading	12.25	49.92	50.62	12.10	95.28
	High Reading	21.97	95.46	96.82	21.63	197.28
Percent Error	Zero Reading	0.05	0.52	0.02	0.00	0.00
	Mid Reading	1.14	0.23	0.29	0.47	0.31
	High Reading	0.14	0.04	0.12	0.60	0.36
Run 1						
Start 11:05						
End 12:05						
		O ₂ _1	CO_1	NO _x _1	CO ₂ _1	SO ₂ _1
Pretest Bias	Zero Reading	0.01	0.66	0.17	0.04	0.00
	Mid Reading	12.18	49.67	49.75	11.99	95.28
	Zero Bias	0.1	0.2	0.2	0.2	0.0
	Span Bias	-0.3	-0.3	-0.9	-0.5	0.0
Post Test Bias	Zero Reading	0.03	2.17	0.15	0.27	0.87
	Mid Reading	12.24	48.71	48.88	11.78	94.84
	Zero Bias	0.2	1.7	0.2	1.3	0.4
	Span Bias	0.0	-1.3	-1.8	-1.5	-0.2
	Zero Drift	0.1	1.6	0.0	1.1	0.4
	Span Drift	0.3	-1.0	-0.9	-1.0	-0.2
Calculated Data						
	Ave. Zero Bias (C ₀)=	0.020	1.415	0.160	0.155	0.435
	Ave upscale Bias(C _m)=	12.210	49.190	49.315	11.885	95.060
	actual upscale Concentration (C _{ma})=	12.00	49.70	50.90	12.00	95.90
	Measured Concentration (C) =					
	Run 1	2.977	94.879	32.115	2.536	165.719
	Corrected Concentration (C _{gas}) =					
	$C_{gas} = (C - C_0) \times (C_{ma} / (C_m - C_0))$					
	Run 1	2.911	97.23	33.09	2.436	167.51
Run 2						
Start 16:22						
End 17:22						
		O ₂ _1	CO_1	NO _x _1	CO ₂ _1	SO ₂ _1
Pretest Bias	Zero Reading	0.03	2.17	0.15	0.27	0.87
	Mid Reading	12.24	48.71	48.88	11.78	94.84
	Zero Bias	0.2	1.7	0.2	1.3	0.4
	Span Bias	0.0	-1.3	-1.8	-1.5	-0.2
Post Test Bias	Zero Reading	0.02	2.12	0.05	0.26	0.62
	Mid Reading	12.17	48.71	48.56	11.76	90.98
	Zero Bias	0.1	1.7	0.1	1.2	0.3
	Span Bias	-0.4	-1.3	-2.1	-1.6	-2.2
	Zero Drift	0.0	-0.1	-0.1	0.0	-0.1
	Span Drift	-0.3	0.0	-0.3	-0.1	-1.9

BP West Coast Products, LLC
Cherry Point Refinery
Blaine, WA

Calibration Data

No. 2 TGU Stack
October 14 and 15, 2008

Run 2 (Continued)		O _{2_1}	CO _{_1}	NO _{x_1}	CO _{2_1}	SO _{2_1}
Calculated Data						
Ave. Zero Bias (C ₀)=		0.025	2.145	0.100	0.265	0.745
Ave upscale Bias(C _m)=		12.205	48.710	48.720	11.770	92.910
actual upscale Concentration (C _{ma})=		12.00	49.70	50.90	12.00	95.90
Measured Concentration (C) =						
Run 2		2.799	73.460	31.566	2.295	179.403
Corrected Concentration (C _{gas}) =						
C _{gas} = (C-C ₀) x (C _{ma} /(C _m -C ₀))						
Run 2		2.733	76.12	32.94	2.117	185.90
Run 3						
Start 9:34						
End 10:34						
		O _{2_1}	CO _{_1}	NO _{x_1}	CO _{2_1}	SO _{2_1}
Pretest Bias	Zero Reading	0.01	0.30	0.0	0.26	0.62
	Mid Reading	12.19	48.51	50.99	11.76	90.98
	Zero Bias	0.1	-0.2	0.0	1.2	0.3
	Span Bias	-0.3	-1.5	0.4	-1.6	-2.2
Post Test Bias	Zero Reading	0.01	-1.82	0.10	-0.38	-0.75
	Mid Reading	12.12	49.42	53.35	12.32	94.22
	Zero Bias	0.1	-2.4	0.1	-1.8	-0.4
	Span Bias	-0.6	-0.5	2.8	1.0	-0.5
	Zero Drift	0.0	-2.2	0.1	-3.0	-0.7
	Span Drift	-0.3	1.0	2.4	2.6	1.6
Calculated Data						
Ave. Zero Bias (C ₀)=		0.010	-0.760	0.060	-0.060	-0.065
Ave upscale Bias(C _m)=		12.155	48.965	52.170	12.040	92.600
actual upscale Concentration (C _{ma})=		12.00	49.70	50.90	12.00	95.90
Measured Concentration (C) =						
Run 3		2.753	65.508	32.825	1.948	155.383
Corrected Concentration (C _{gas}) =						
C _{gas} = (C-C ₀) x (C _{ma} /(C _m -C ₀))						
Run 3		2.710	66.23	32.00	1.992	160.87

Golden Specialty Consulting, Ltd.

NO₂ Converter Efficiency

Trailer 11

Date	Time	NO _x -1	CO-1	O ₂ -1	NO _x -2	CO-2	O ₂ -2
		System 1			System 2		
		ppm	ppm	%	ppm	ppm	%
10/14/08	9:48:00	33.88	73.02	2.99	58.28	67.44	0.00
10/14/08	9:49:00	33.65	85.96	2.95	38.71	46.10	7.60
10/14/08	9:50:00	22.75	38.67	3.96	28.18	41.39	3.02
10/14/08	9:51:00	44.23	1.38	-0.01	43.39	1.38	-0.01
10/14/08	9:52:00	45.67	1.71	-0.01	44.93	0.10	-0.01
10/14/08	9:53:00	47.23	1.89	-0.01	46.00	0.05	-0.01
10/14/08	9:54:00	48.34	2.02	-0.02	46.97	0.06	-0.01
API 200AH	SN -	528		API 200AH	SN -		527
Converter Efficiency		93.90%					91.45%
Cylinder #	AAL8983	Cylinder Value			50.3		ppm
Converter Efficiency must be greater than 90%							

Method 7E in Appendix A of 40 CFR Part 60.

**AIR LIQUIDE**Scott Specialty Gases
Air Liquide America Specialty Gases LLC**RATA CLASS***Dual-Analyzed Calibration Standard*

500 WEAVER PARK RD, LONGMONT, CO 80501

Phone: 888-253-1635

Fax: 303-772-7673

CERTIFICATE OF ACCURACY: Interference Free™ Multi-Component EPA Protocol Gas**Assay Laboratory**SCOTT SPECIALTY GASES
500 WEAVER PARK RD
LONGMONT, CO 80501P.O. No.: 2008185
Project No.: 08-64220-004**Customer**

GOLDEN SPECIALTY CONSULTING, LTD.

2002 WEST VALLEY HWY
SUITE 200
AUBURN WA 98001**ANALYTICAL INFORMATION**

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: 1L14443**Certification Date:** 08Jul2008**Exp. Date:** 06Jan2009**Cylinder Pressure***:** 1910 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY**	TRACEABILITY
CARBON MONOXIDE	196 PPM	+/- 1%	Direct NIST and NMI
NITRIC OXIDE	196 PPM	+/- 1%	Direct NIST and NMI
SULFUR DIOXIDE *	198 PPM	+/- 1%	Direct NIST and NMI
NITROGEN - OXYGEN FREE	BALANCE		
TOTAL OXIDES OF NITROGEN	197. PPM		Reference Value Only

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

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

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

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 2636	02Oct2011	KAL003750	240.8 PPM	CARBON MONOXIDE
NTRM 1685	01Sep2010	KAL003453	247.1 PPM	NITRIC OXIDE
NTRM 0260	02Oct2012	ALM036804	254.4 PPM	SULFUR DIOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR/000929062	03Jul2008	FTIR
FTIR/000929062	26Jun2008	FTIR
FTIR/000929062	19Jun2008	FTIR

ANALYZER READINGS

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

First Triad Analysis**Second Triad Analysis****Calibration Curve****CARBON MONOXIDE**Date: 30Jun2008 Response Unit: PPM
Z1=-0.02701 R1=239.4589 T1=194.4392
R2=239.9784 Z2=-0.02147 T2=194.8116
Z3=-0.01500 T3=195.4885 R3=240.2279
Avg. Concentration: 195.7 PPMDate: 08Jul2008 Response Unit: PPM
Z1=-0.08312 R1=239.1203 T1=194.6638
R2=240.0963 Z2=-0.05483 T2=194.8965
Z3=0.01029 T3=194.9885 R3=240.5521
Avg. Concentration: 195.6 PPMConcentration = A + Bx + Cx2 + Dx3 + Ex4
r = 9.99999E-1
Constants: A = 0.00000E+0
B = 9.84111E-1 C = 6.91000E-4
D = 1.00000E-6 E = 0.00000E+0**NITRIC OXIDE**Date: 30Jun2008 Response Unit: PPM
Z1=-0.08368 R1=247.4911 T1=195.8029
R2=247.7139 Z2=0.01794 T2=196.2643
Z3=0.03284 T3=196.3125 R3=248.3816
Avg. Concentration: 195.5 PPMDate: 08Jul2008 Response Unit: PPM
Z1=0.00332 R1=246.5323 T1=195.6504
R2=247.0656 Z2=0.01582 T2=195.9883
Z3=0.08223 T3=196.0896 R3=247.0941
Avg. Concentration: 196.1 PPMConcentration = A + Bx + Cx2 + Dx3 + Ex4
r = 9.99981E-1
Constants: A = 0.00000E+0
B = 9.46070E-1 C = 1.88000E-4
D = 0.00000E+0 E = 0.00000E+0**SULFUR DIOXIDE ***Date: 30Jun2008 Response Unit: PPM
Z1=-0.01816 R1=255.0316 T1=198.0912
R2=255.3744 Z2=-0.01549 T2=198.3763
Z3=0.00341 T3=198.4863 R3=255.6584
Avg. Concentration: 197.6 PPMDate: 08Jul2008 Response Unit: PPM
Z1=-0.01187 R1=255.5892 T1=198.6407
R2=255.5998 Z2=0.00908 T2=198.6422
Z3=0.02183 T3=198.7024 R3=255.6333
Avg. Concentration: 197.7 PPMConcentration = A + Bx + Cx2 + Dx3 + Ex4
r = 9.99999E-1
Constants: A = 0.00000E+0
B = 1.00219E+0 C = 1.30000E-5
D = 0.00000E+0 E = 0.00000E+0

APPROVED BY: _____

Jon Witzak

Sep 24 08 11:42a

Air Liquide-Scott

303-682-1987

p.3

RATA CLASS*Dual-Analyzed Calibration Standard*

500 WEAVER PARK RD, LONGMONT, CO 80501

Phone: 888-253-1635

Fax: 303-772-7673

CERTIFICATE OF ACCURACY: Interference Free™ Multi-Component EPA Protocol Gas**Assay Laboratory**SCOTT SPECIALTY GASES
500 WEAVER PARK RD
LONGMONT, CO 80501P.O. No.: 2008185
Project No.: 08-64220-003**Customer**

GOLDEN SPECIALTY CONSULTING, LTD.

2002 WEST VALLEY HWY
SUITE 200
AUBURN WA 98001**ANALYTICAL INFORMATION**

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1: September, 1997.

Cylinder Number: **ALM025368**Certification Date: **09Jul2008**Exp. Date: **09Jul2010**Cylinder Pressure***: **1780 PSIG**

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ACCURACY**	TRACEABILITY
CARBON MONOXIDE	95.5	PPM	+/- 1%	Direct NIST and NMI
NITRIC OXIDE	96.6	PPM	+/- 1%	Direct NIST and NMI
SULFUR DIOXIDE *	95.9	PPM	+/- 1%	Direct NIST and NMI
NITROGEN - OXYGEN FREE		BALANCE		
TOTAL OXIDES OF NITROGEN	96.7	PPM		Reference Value Only

*** Do not use when cylinder pressure is below 160 psig.

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

* This Protocol has been certified using corrected NIST S02 standard values, per EPA guidance dated 7/24/96 and will not correlate with uncorrected Prot

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1694	01May2011	ALM028007	94.90 PPM	CARBON MONOXIDE
NTRM 1684	01Sep2010	KAL003334	97.68 PPM	NITRIC OXIDE
NTRM 1694	15Aug2008	ALM044283	97.81 PPM	SULFUR DIOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR/000929062	03Jul2008	FTIR
FTIR/000929062	26Jun2008	FTIR
FTIR/000929062	18Jun2008	FTIR

ANALYZER READINGS

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

First Triad Analysis	Second Triad Analysis	Calibration Curve
CARBON MONOXIDE		
Date: 30Jun2008 Response Unit: PPM	Date: 09Jul2008 Response Unit: PPM	Concentration = A + Bx + Cx2 + Dx3 + Ex4
Z1 = -0.02758 R1 = 94.89018 T1 = 95.96392	Z1 = -0.02338 R1 = 95.43395 T1 = 95.81572	r = 0.00009E-1
R2 = 95.33915 Z2 = -0.02003 T2 = 96.00059	R2 = 95.51493 Z2 = -0.01597 T2 = 95.86380	Constants: A = 0.00000E+0
Z3 = 0.01743 T3 = 96.13943 R3 = 95.43350	Z3 = 0.01673 T3 = 95.88540 R3 = 95.55305	B = 9.84111E-1 C = 0.81000E-4
Avg. Concentration: 95.71 PPM	Avg. Concentration: 95.25 PPM	D = 1.00000E-6 E = 0.00000E+0
NITRIC OXIDE		
Date: 30Jun2008 Response Unit: PPM	Date: 09Jul2008 Response Unit: PPM	Concentration = A + Bx + Cx2 + Dx3 + Ex4
Z1 = -0.18936 R1 = 97.15710 T1 = 96.27642	Z1 = -0.06579 R1 = 97.26020 T1 = 95.88981	r = 9.39981E-1
R2 = 97.32660 Z2 = -0.13325 T2 = 96.29823	R2 = 97.30460 Z2 = -0.04604 T2 = 96.15458	Constants: A = 0.00000E+0
Z3 = 0.08660 T3 = 96.38086 R3 = 97.43899	Z3 = 0.00496 T3 = 96.36423 R3 = 97.38236	B = 9.46070E-1 C = 1.86000E-4
Avg. Concentration: 96.87 PPM	Avg. Concentration: 96.50 PPM	D = 0.00000E+0 E = 0.00000E+0
SULFUR DIOXIDE *		
Date: 30Jun2008 Response Unit: PPM	Date: 09Jul2008 Response Unit: PPM	Concentration = A + Bx + Cx2 + Dx3 + Ex4
Z1 = -0.05878 R1 = 98.38871 T1 = 98.34328	Z1 = 0.00329 R1 = 98.08016 T1 = 96.35145	r = 9.89999E-1
R2 = 98.39314 Z2 = -0.06283 T2 = 98.35177	R2 = 98.15252 Z2 = 0.00857 T2 = 96.35881	Constants: A = 0.00000E+0
Z3 = -0.03299 T3 = 96.46865 R3 = 98.41973	Z3 = 0.02282 T3 = 96.48326 R3 = 98.20870	B = 1.00219E+0 C = 1.30000E-5
Avg. Concentration: 95.81 PPM	Avg. Concentration: 96.07 PPM	D = 0.00000E+0 E = 0.00000E+0

APPROVED BY:

Jon Witzak

RATA CLASS**Dual-Analyzed Calibration Standard**

500 WEAVER PARK RD, LONGMONT, CO 80501

Phone: 888-253-1635

Fax: 303-772-7673

CERTIFICATE OF ACCURACY: Interference Free™ Multi-Component EPA Protocol Gas**Assay Laboratory**SCOTT SPECIALTY GASES
500 WEAVER PARK RD
LONGMONT, CO 80501P.O. No.: 2008185
Project No.: 08-64220-002**Customer**

GOLDEN SPECIALTY CONSULTING, LTD.

2002 WEST VALLEY HWY
SUITE 200
AUBURN WA 98001**ANALYTICAL INFORMATION**

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: ALM034002 Certification Date: 10Jul2008 Exp. Date: 10Jul2010
Cylinder Pressure***: 1930 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY**	TRACEABILITY
CARBON MONOXIDE	49.7 PPM	+/- 1%	Direct NIST and NMI
NITRIC OXIDE	50.8 PPM	+/- 1%	Direct NIST and NMI
SULFUR DIOXIDE *	50.5 PPM	+/- 1%	Direct NIST and NMI
NITROGEN - OXYGEN FREE	BALANCE		
TOTAL OXIDES OF NITROGEN	50.9 PPM		Reference Value Only

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

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

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

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1678	15Aug2000	ALM063676	51.13 PPM	CARBON MONOXIDE
NTRM 1683	02Oct2000	KAL003372	46.90 PPM	NITRIC OXIDE
NTRM 1693	02Oct2012	AAL16630	51.04 PPM	SULFUR DIOXIDE

INSTRUMENTATION**INSTRUMENT/MODEL/SERIAL#**FIRK/000929062
FTIR/000929082
FTIR/000929062**DATE LAST CALIBRATED**03Jul2008
26Jun2008
19Jun2008**ANALYTICAL PRINCIPLE**FIR
FTIR
FTIR**ANALYZER READINGS**

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

First Triad Analysis**Second Triad Analysis****Calibration Curve****CARBON MONOXIDE**Date: 30Jun2008 Response Unit:PPM
Z1=-0.00643 R1=51.12362 T1=49.86795
R2=51.17205 Z2=0.02378 T2=49.86402
Z3=0.02575 T3=49.95836 R3=51.24924
Avg. Concentration: 49.78 PPMDate: 10Jul2008 Response Unit: PPM
Z1=-0.08626 R1=51.06266 T1=49.82613
R2=51.27696 Z2=0.03252 T2=49.87317
Z3=-0.00379 T3=49.69686 R3=51.28904
Avg. Concentration: 49.59 PPMConcentration = A + Bx + Cx2 + Dx3 + Ex4
r = 9.99999E-1
Constants: A = 0.00000E+0
B = 9.84111E-1 C = 6.01000E-4
D = 1.00000E-6 E = 0.00000E+0**NITRIC OXIDE**Date: 30Jun2008 Response Unit:PPM
Z1=-0.00592 R1=46.60355 T1=50.51381
R2=46.79091 Z2=0.12088 T2=50.53844
Z3=0.18004 T3=50.66160 R3=46.84090
Avg. Concentration: 50.75 PPMDate: 10Jul2008 Response Unit: PPM
Z1=-0.05009 R1=46.62190 T1=50.44455
R2=46.75140 Z2=0.11219 T2=50.56150
Z3=0.23833 T3=50.62343 R3=46.78024
Avg. Concentration: 50.75 PPMConcentration = A + Bx + Cx2 + Dx3 + Ex4
r = 9.99981E-1
Constants: A = 0.00000E+0
B = 9.05190E-1 C = 1.71000E-4
D = 0.00000E+0 E = 0.00000E+0**SULFUR DIOXIDE ***Date: 30Jun2008 Response Unit:PPM
Z1=-0.00751 R1=50.21890 T1=50.47251
R2=50.25325 Z2=0.03017 T2=50.52802
Z3=0.03089 T3=50.54144 R3=50.30198
Avg. Concentration: 50.48 PPMDate: 10Jul2008 Response Unit: PPM
Z1=-0.02155 R1=50.94247 T1=50.52507
R2=50.94949 Z2=-0.00629 T2=50.54810
Z3=0.02646 T3=50.58453 R3=50.98376
Avg. Concentration: 50.63 PPMConcentration = A + Bx + Cx2 + Dx3 + Ex4
r = 9.99990E-1
Constants: A = 0.00000E+0
B = 1.00219E+0 C = 1.30000E-4
D = 0.00000E+0 E = 0.00000E+0

APPROVED BY:

Jon Witzak

**AIR LIQUIDE**
 Scott Specialty Gases
 Air Liquide America Specialty Gases LLC
COMPLIANCE CLASS*Dual-Analyzed Calibration Standard*

9810 BAY AREA BLVD, PASADENA, TX 77507

Phone: 281-474-5800

Fax: 281-474-5857

CERTIFICATE OF ACCURACY: EPA Protocol GasAssay Laboratory
 SCOTT SPECIALTY GASES
 9810 BAY AREA BLVD
 PASADENA, TX 77507

 P.O. No.: SBS081602CONSULTING
 Project No.: 04-66450-001
Customer
 GOLDEN SPECIALTY CONSULTING, LTD
 GORDON GOSSETT
 931 SEACO COURT
 DEER PARK TX 77536
ANALYTICAL INFORMATION
 This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards;
 Procedure G-1; September, 1997.

 Cylinder Number: AAL8983 Certification Date: 13Jun2008 Exp. Date: 12Dec2008
 Cylinder Pressure***: 2000 PSIG
COMPONENTCERTIFIED CONCENTRATION (Moles)ANALYTICALACCURACY**TRACEABILITY
 NITROGEN DIOXIDE
 NITROGEN

 50.3 PPM
 BALANCE

 +/- 2%
 GMIS

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

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

REFERENCE STANDARD

<u>TYPE/SRM NO.</u>	<u>EXPIRATION DATE</u>	<u>CYLINDER NUMBER</u>	<u>CONCENTRATION</u>	<u>COMPONENT</u>
GMIS NO2/N2	18Apr2009	ALM038339	25.10 PPM	NITROGEN DIOXIDE

INSTRUMENTATIONINSTRUMENT/MODEL/SERIAL#

NONOX/CLA-220/41528750062

DATE LAST CALIBRATED

02Jun2008

ANALYTICAL PRINCIPLE

CHEMILUMINESCENT

APPROVED BY:

 SAM BENNETT

RATA CLASS**Dual-Analyzed Calibration Standard**

500 WEAVER PARK RD, LONGMONT, CO 80501

Phone: 888-253-1635

Fax: 303-772-7673

CERTIFICATE OF ACCURACY: EPA Protocol Gas**Assay Laboratory**SCOTT SPECIALTY GASES
500 WEAVER PARK RD
LONGMONT, CO 80501P.O. No.: 2008185
Project No.: 08-64220-018**Customer**

GOLDEN SPECIALTY CONSULTING, LTD.

2002 WEST VALLEY HWY
SUITE 200
AUBURN WA 98001**ANALYTICAL INFORMATION**

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards: Procedure G-1; September, 1997.

Cylinder Number: **ALM028667** Certification Date: **30Jun2008** Exp. Date: **30Jun2011**
Cylinder Pressure***: **2000 PSIG**

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY**	TRACEABILITY
CARBON DIOXIDE	21.5 %	+/- 1%	Direct NIST and NMI
CARBON MONOXIDE	1,009 PPM	+/- 1%	Direct NIST and NMI
OXYGEN	22.0 %	+/- 1%	Direct NIST and NMI
NITROGEN	BALANCE		

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

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

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1675	02Oct2012	K018062	13.93 %	CARBON DIOXIDE
NTRM 1681	01Apr2012	ALM031268	1013. PPM	CARBON MONOXIDE
NTRM 2658	07Oct2010	ALM065029	9.930 %	OXYGEN

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
HPGC/5890/3115A34624	30Jun2008	TCD
HP/6890/US00006537	10Jun2008	RD
HPGC/5890/3115A34624	01Jul2008	TCD

ANALYZER READINGS

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

First Triad Analysis**Second Triad Analysis****Calibration Curve****CARBON DIOXIDE**Date: 02Jul2008 Response Unit: AREA
Z1=0.00000 R1=293788.0 T1=456787.0
R2=203733.0 Z2=0.00000 T2=466830.0
Z3=0.00000 T3=467612.0 R3=293590.0
Avg. Concentration: 21.99 %Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999998
Constants: A = 0.0051954
B = 4.40E-05 C = 4.29E-12
D = E =**CARBON MONOXIDE**Date: 30Jun2008 Response Unit: AREA
Z1=0.00000 R1=9403204. T1=9398554.
R2=8447147. Z2=0.00000 T2=9455582.
Z3=0.00000 T3=9459927. R3=9469428.
Avg. Concentration: 1009. PPMDate: 08Jul2008 Response Unit: AREA
Z1=0.00000 R1=9474481. T1=9458884.
R2=9492204. Z2=0.00000 T2=9468627.
Z3=0.00000 T3=9472821. R3=9464647.
Avg. Concentration: 1009. PPMConcentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999996
Constants: A = -0.20101155
B = 1.07E-04 C =
D = E =**OXYGEN**Date: 01Jul2008 Response Unit: AREA
Z1=0.00000 R1=175433.0 T1=377804.0
R2=176497.0 Z2=0.00000 T2=378347.0
Z3=0.00000 T3=379138.0 R3=176437.0
Avg. Concentration: 21.55 %Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999948
Constants: A = -0.05739885
B = 5.73E-05 C =
D = E =APPROVED BY: 

JOHN ROZOF

Sep 24 08 11:42a

Air Liquide-Scott

303-882-1987

p.5

RATA CLASS*Dual-Analyzed Calibration Standard*

500 WEAVER PARK RD, LONGMONT, CO 80501

Phone: 888-253-1835

Fax: 303-772-7673

CERTIFICATE OF ACCURACY: EPA Protocol GasAssay LaboratorySCOTT SPECIALTY GASES
500 WEAVER PARK RD
LONGMONT, CO 80501P.O. No.: 2008185
Project No.: 08-64220-017Customer

GOLDEN SPECIALTY CONSULTING, LTD.

2002 WEST VALLEY HWY
SUITE 200
AUBURN WA 98001**ANALYTICAL INFORMATION**

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: **AAL021623** Certification Date: **30Jun2008** Exp. Date: **30Jun2011**
Cylinder Pressure***: **2000 PSIG**

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY**	TRACEABILITY
CARBON DIOXIDE	12.0 %	+/- 1 %	Direct NIST and NMI
CARBON MONOXIDE	500 PPM	+/- 1 %	Direct NIST and NMI
OXYGEN	12.1 %	+/- 1 %	Direct NIST and NMI
NITROGEN	BALANCE		

*** Do not use when cylinder pressure is below 160 psig.

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

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1675	02Oct2012	K018062	13.93 %	CARBON DIOXIDE
NTRM 1681	01Apr2012	ALMQ31258	1013. PPM	CARBON MONOXIDE
NTRM 2658	02Oct2010	ALMQ65029	9.930 %	OXYGEN

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
HPGC/5890/3115A34624	30Jun2008	TCD
HP/6890/US00006537	10Jun2008	FID
HPGC/5890/3115A34624	01Jul2008	YCD

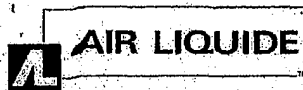
ANALYZER READINGS

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

First Triad Analysis**CARBON DIOXIDE**Date: 02Jul2008 Response Unit: AREA
Z1 = 0.00000 R1 = 293780.0 T1 = 254806.0
R2 = 293733.0 Z2 = 0.00000 T2 = 254850.0
Z3 = 0.00000 T3 = 254811.0 R3 = 293580.0
Avg. Concentration: 12.03 %**Second Triad Analysis****CARBON MONOXIDE**Date: 30Jun2008 Response Unit: AREA
Z1 = 0.00000 R1 = 9403204. T1 = 4680520.
R2 = 9447142. Z2 = 0.00000 T2 = 4680451.
Z3 = 0.00000 T3 = 4692382. R3 = 8468426.
Avg. Concentration: 500.5 PPMDate: 08Jul2008 Response Unit: AREA
Z1 = 0.00000 R1 = 9474481. T1 = 4689896.
R2 = 9462204. Z2 = 0.00000 T2 = 9688025.
Z3 = 0.00000 T3 = 4688019. R3 = 9464647.
Avg. Concentration: 499.4 PPM**Calibration Curve**Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999998
Constants: A = 0.0001954
B = 4.46E-05 C = 4.28E-12
D = E =Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999996
Constants: A = -0.20101155
B = 1.07E-04 C =
D = E =**OXYGEN**Date: 01Jul2008 Response Unit: AREA
Z1 = 0.00000 R1 = 175433.0 T1 = 212078.0
R2 = 175497.0 Z2 = 0.00000 T2 = 212765.0
Z3 = 0.00000 T3 = 213389.0 R3 = 176437.0
Avg. Concentration: 12.10 %Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999946
Constants: A = -0.0578986b
B = 5.73E-05 C =
D = E =

APPROVED BY:

F. ADAM HANLEY



Scott Specialty Gases
Air Liquide America Specialty Gases LLC

COMPLIANCE CLASS

Dual-Analyzed Calibration Standard

1290 COMBERMERE STREET, TROY, MI 48083

Phone: 248-589-2950

Fax: 248-589-2134

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
1290 COMBERMERE STREET
TROY, MI 48083

P.O. No.: 56306-71-65000
Project No.: 05-62048-004

Customer

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

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: ALM044868 Certification Date: 29Jan2008 Exp. Date: 28Jan2009
Cylinder Pressure***: 1950 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ANALYTICAL ACCURACY**	TRACEABILITY
HYDROGEN SULFIDE	50.2 PPM	+/- 2%	GMIS
NITROGEN	BALANCE		

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

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

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
GMIS H2S/N2	02Apr2008	ALM019878	201.0 PPM	HYDROGEN SULFIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
INTERSCAN/RM17716080	04Jan2008	ELECTROCHEMICAL

APPROVED BY:

ROBERT LESNIAK



Method 15 Calibration Data
Golden Specialty Consulting, LTD.

File Name: Cal Data
 Client: BP West Coast Products
 Source: No. 2 Tail Gas Unit
 Date: October 15, 2008

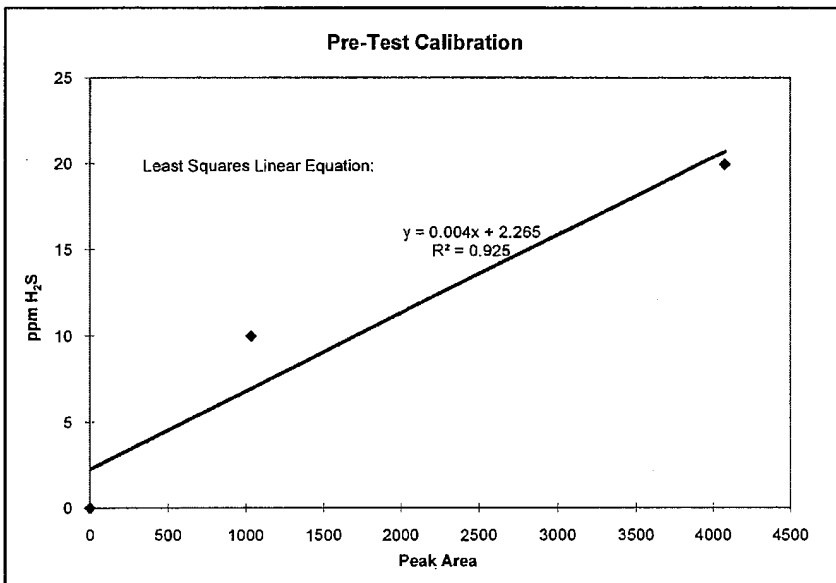
Calibration ID	Peak Area	Mean Peak Area	Calibration Precision (from mean area)
PreTest Cal Pt C	INJ #1: 0.000	0.000	0.0%
	INJ #2: 0.000	0.000	0.0%
	INJ #3: 0.000	0.000	0.0%
	AVG: 0.000		
PreTest Cal Pt B	INJ #1: 1020.091	1033.641	1.3%
	INJ #2: 1020.992	1033.641	1.2%
	INJ #3: 1059.840	1033.641	2.5%
	AVG: 1033.641		
PreTest Cal Pt A	INJ #1: 4066.132	4075.556	0.2%
	INJ #2: 4092.430	4075.556	0.4%
	INJ #3: 4068.106	4075.556	0.2%
	AVG: 4075.556		
PostTest Cal Pt C	INJ #1: 0.000	0.000	0.0%
	INJ #2: 0.000	0.000	0.0%
	INJ #3: 0.000	0.000	0.0%
	AVG: 0.000		
PostTest Cal Pt B	INJ #1: 1345.515	1354.957	0.7%
	INJ #2: 1339.282	1354.957	1.2%
	INJ #3: 1380.074	1354.957	1.9%
	AVG: 1354.957		
PostTest Cal Pt A	INJ #1: 4774.940	4810.661	0.7%
	INJ #2: 4779.474	4810.661	0.6%
	INJ #3: 4877.568	4810.661	1.4%
	AVG: 4810.661		

Sample Line Loss (Post-test Cal Pt. B)	INJ #1	1326.479	% Difference	-2.1%	LOSS
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Method 15 Calibration Curves
Golden Specialty Consulting, LTD.

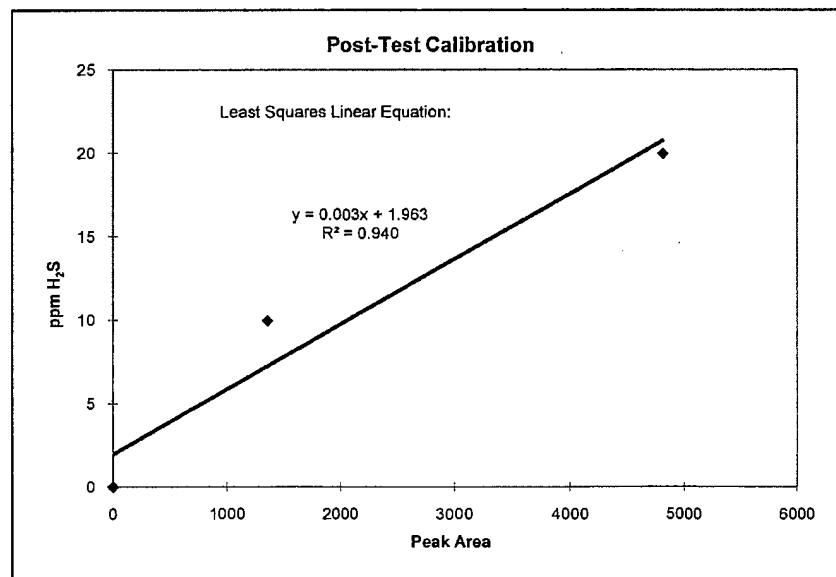
File Name: CalCurves
 Client: BP West Coast Products
 Source: No. 2 Tail Gas Unit
 Date: October 15, 2008



Peak Area	ppm H ₂ S
0.000	0.00
1033.641	9.98
4075.556	19.95

input from trendline equation:

Input slope	0.0045
Input y-intercept	2.2650



Peak Area	ppm H ₂ S
0.000	0.00
1354.957	9.98
4810.661	19.95

input from trendline equation:

Input slope	0.0039
Input y-intercept	1.9636

Environics®**205704****Series 4040**

System S/N 4339

ENVIRONICS FLOW CONTROLLER CALIBRATION SHEET

MFC#: 1 Size: 10000 SCCM

SERIAL NUMBER 4334600003

This flow controller was calibrated using a Sierra Cal Bench™, a NIST traceable Primary Flow Standard Calibration System. This calibration was performed with Nitrogen at a standard reference temperature and pressure of 32°F and 29.92 in.HG. This is not performance data. This data is used by the system operating modes to improve the flow accuracy.

<u>Set Flow</u>			<u>True Flow</u>		
5	%	500.0 CCM	486.288	CCM	
10	%	1000.0 CCM	1005.015	CCM	
20	%	2000.0 CCM	2031.111	CCM	
30	%	3000.0 CCM	3046.763	CCM	
40	%	4000.0 CCM	4061.812	CCM	
50	%	5000.0 CCM	5073.382	CCM	
60	%	6000.0 CCM	6081.602	CCM	
70	%	7000.0 CCM	7089.829	CCM	
80	%	8000.0 CCM	8091.219	CCM	
90	%	9000.0 CCM	9103.875	CCM	
100	%	10000.0 CCM	10140.325	CCM	

Verified by: _____

A handwritten signature in black ink, appearing to be 'MUL', is written over a horizontal line.

Date: _____

7-17-08

*Computerized Gas Mixing / Dilution / Calibration Systems***Environics Inc.** • 69 Industrial Park Road East • Tolland, CT 06084 • (860) 872-1111 • Fax (860) 870-9333World Wide Web: <http://www.environics.com>E-mail: info@environics.com

Environics®**205704****Series 4040**

System S/N 4339

ENVIRONICS FLOW CONTROLLER CALIBRATION SHEET

MFC#: 2 Size: 10000 SCCM

SERIAL NUMBER 4334600004

This flow controller was calibrated using a Sierra Cal Bench™, a NIST traceable Primary Flow Standard Calibration System. This calibration was performed with Nitrogen at a standard reference temperature and pressure of 32°F and 29.92 in.HG. This is not performance data. This data is used by the system operating modes to improve the flow accuracy.

<u>Set Flow</u>			<u>True Flow</u>	
5	%	500.0 CCM	498.014	CCM
10	%	1000.0 CCM	1019.206	CCM
20	%	2000.0 CCM	2050.824	CCM
30	%	3000.0 CCM	3065.613	CCM
40	%	4000.0 CCM	4069.287	CCM
50	%	5000.0 CCM	5067.468	CCM
60	%	6000.0 CCM	6057.153	CCM
70	%	7000.0 CCM	7052.149	CCM
80	%	8000.0 CCM	8053.976	CCM
90	%	9000.0 CCM	9063.275	CCM
100	%	10000.0 CCM	10091.881	CCM

Verified by: _____

A handwritten signature in black ink, appearing to be 'M. W.', is written over the line for 'Verified by:'.

Date: _____

7-17-08

Computerized Gas Mixing / Dilution / Calibration Systems

Environics Inc. • 69 Industrial Park Road East • Tolland, CT 06084 • (860) 872-1111 • Fax (860) 870-9333

World Wide Web: <http://www.environics.com>E-mail: info@environics.com

Series 4040

System S/N 4339

ENVIRONICS FLOW CONTROLLER CALIBRATION SHEET

MFC#: 3

Size: 1000 SCCM

SERIAL NUMBER 4334700001

This flow controller was calibrated using a Sierra Cal Bench™, a NIST traceable Primary Flow Standard Calibration System. This calibration was performed with Nitrogen at a standard reference temperature and pressure of 32°F and 29.92 in.HG. This is not performance data. This data is used by the system operating modes to improve the flow accuracy.

<u>Set Flow</u>			<u>True Flow</u>	
5 %	50.0	CCM	48.112	CCM
10 %	100.0	CCM	98.845	CCM
20 %	200.0	CCM	200.214	CCM
30 %	300.0	CCM	300.818	CCM
40 %	400.0	CCM	401.046	CCM
50 %	500.0	CCM	501.772	CCM
60 %	600.0	CCM	601.908	CCM
70 %	700.0	CCM	702.052	CCM
80 %	800.0	CCM	803.531	CCM
90 %	900.0	CCM	904.326	CCM
100 %	1000.0	CCM	1006.562	CCM

Verified by: _____



Date: _____

7-17-08

Computerized Gas Mixing / Dilution / Calibration Systems

Environics Inc. • 69 Industrial Park Road East • Tolland, CT 06084 • (860) 872-1111 • Fax (860) 870-9333

World Wide Web: <http://www.environics.com>E-mail: info@environics.com

Environics®

205704



Series 4040

System S/N 4339

ENVIRONICS FLOW CONTROLLER CALIBRATION SHEET

MFC#: 4 Size: 100 CCM

SERIAL NUMBER 4334800001

This flow controller was calibrated using a Sierra Cal Bench™, a NIST traceable Primary Flow Standard Calibration System. This calibration was performed with Nitrogen at a standard reference temperature and pressure of 32°F and 29.92 in.HG. This is not performance data. This data is used by the system operating modes to improve the flow accuracy.

<u>Set Flow</u>			<u>True Flow</u>	
5 %	5.0	CCM	5.013	CCM
10 %	10.0	CCM	10.205	CCM
20 %	20.0	CCM	20.512	CCM
30 %	30.0	CCM	30.621	CCM
40 %	40.0	CCM	40.733	CCM
50 %	50.0	CCM	50.696	CCM
60 %	60.0	CCM	60.707	CCM
70 %	70.0	CCM	70.667	CCM
80 %	80.0	CCM	80.525	CCM
90 %	90.0	CCM	90.610	CCM
100 %	100.0	CCM	100.759	CCM

Verified by: _____

Date: _____

7-17-08

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APPENDIX D - FIELD DATA



Probe Location Geometry

Project ID: NW08BPCP111	Test Date: 10/14-15/2008
Plant: BP West Coast Products	Team Members: RCP/KEF/DDF
Source: #2 Tail Gas Unit	Trailer Unit: 11
Description: Methods 3A, 6C, 7E, 8, 9, 10, 15 Compliance Testing	

Probe ID#: SYSTEM 1 SYSTEM 2	Probe Type: <input checked="" type="checkbox"/> Stainless Steel <input type="checkbox"/> Inconel <input type="checkbox"/> Other: REGULAR TUBING	
Probe Length: 40" EFFECTIVE		
Identification of Testing Port Utilized: EAST PORT (AKA "B" PORT)		
Visual Interference Inside of Port: NO		
Stack Diameter: 35	Number of Ports: 2	Port Standoff: 9
Depth of Probe Insertion:	Probe Location Consistent with Stratification Test? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Details:	
Downstream Measurement: > 8D	Upstream Measurement: > 8D	
STACK SKETCH:		
Signature of Person Recording Information: [Signature]		Date: 10/13/2008

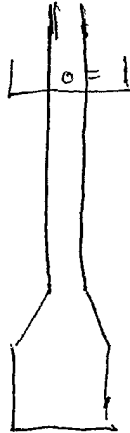
9/30/94: FD1-1

FIELD DATA SHEET 1
Sampling and Velocity Traverse Points

Client/Plant Name BP WEST COAST PRODUCTS Job # NW08BPCP111
City/State BLAINE, WA Date/Time 10/13/2008
Test Location #2 TGU STACK Personnel RCP / KEF / JLF

Port I.D.	N/A		
Distance from Far Wall to Outside of Port	44		
Nipple Length and/or Wall Thickness	9		
Stack/Duct (✓) Blue Print () Measured (✓)			
Depth/Diameter (> 12 in. ?)	3.5		
Width (if rectangular)			
Equiv. Diameter (if rect.) $D_e = 2 D W / (D + W)$			
Area (A) (> 113 in. ² ?) $A = \pi D_e^2 / 4$ or $D W$	962.113		
	Distance	D_e	No. Pts*
Upstream ($\geq 2 D_e$?)			3
Downstream ($\geq 0.5 D_e$?)			3
Rectangular Matrix			

* Circle larger of two.



Pt.	% Duct Depth	Dist. from Inside Wall*	Dist. from Outside of Port
1	16.7	5.8	14.8
2	50.0	17.5	26.5
3	83.3	29.2	38.2
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

* Do not place closer to stack walls than:
1.0 in. for stack dia. > 24 in.
0.5 in. for stack dia. 12 to ≤ 24 in.

Sketch of Location: In the space above, sketch a flow diagram of the test location; show the distance from the ports to flow disturbances before and after. Sketch the cross-sectional area; show sampling port locations. In horizontal ducts, check for dust buildups and measure or estimate the depth.

QA/QC Check
Completeness

Legibility

Accuracy

Specifications

Reasonableness

Checked by:

Personnel (Signature/Date)

Team Leader (Signature/Date)

Project ID: NW08BPCP111
Plant: BP West Coast Products
Source: #2 Tail Gas Unit
Description: Methods 3A, 6C, 7E, 8,
9, 10, 15
Compliance Testing

Form #GSC-TM002-001



Operating Discipline Checklist

Project ID: NW08BPCF111 Plant: BP West Coast Products Source: #2 Tail Gas Unit Description: Methods 3A, 6C, 7E, 8, 9, 10, 15 Compliance Testing		Test Date: 10/14-15/2008 Team Members: RCP/KEF/BSF Trailer Unit: 11	
Item to Check			(Initials Required)
1	EPA Protocol 1 Gases Used		RCP
2	Fully Redundant Sampling System System 1 <input checked="" type="checkbox"/> System 2 <input checked="" type="checkbox"/>		RCP
3	Stratification Test Conducted and Documented 10/14/2008 Start time: 1105 Finish Time: 1121 File Name:		RCP
4	Documentation of Probe Geometry and Location (on form GSC-TM001K)		RCP
5	Measurement of Ambient Conditions: Barometer: 29.85/30.15 Rel. Humidity: Temperature:		
6	Flanged Sample Probe or Port Closures		
7	Heated Sample Lines Set Temperature: 248/248/248/248 Measured Temperature: 246/248/247/246		RCP
8	Grounding and electrical requirements TAHILL Grounds		RCP
9	Data Exclusion Log (form # GSC-TM001B)		RCP
10	Data Communication List (form GSC-TM001K)		
11	Staggered Calibrations		RCP
12	Data Storage and Formatting: Headers on and checked? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Data Logging ON? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		RCP
13	Gas Conditioning System Temperature System 1: 3.9 System 2: 4.0		
14	Reasons for any exceptions: USE CO FROM SYSTEM 2 SYSTEM 1 CO NOT STABLE		
Signature of Person Recording Information: <i>[Signature]</i>		Date: 10/18/2008	
Approval of Client to Proceed with Testing:		Date:	

Form # GSC-WP007D (Rev. 7/2004)



Data Exclusion Log

Project ID: NW08BPCP111 Plant: BP West Coast Products Source: #2 Tail Gas Unit Description: Methods 3A, 6C, 7E, 8, 9, 10, 15 Compliance Testing	Test Dates From: 10/14/2009	To: 10/14/2009
	Trailer #: 11	Analysts: M.A.
	Data for Filename:	data

Date	System #	Time		Reason
		Start	End	
10/14/09	1	0928	0938	CALIBRATION ERROR
	2	0939	0949	CALIBRATION ERROR
	1/2	0949	0954	NOT CONVERTER CHECK
	1	0955	0959	INITIAL BIAS
	2	1000	1005	INITIAL BIAS
	1	1045	1057	50% CAL ERROR / IBIAS
	1/2	1105	1205	RUN #1
	1	1205	1216	FINAL BIAS
	2	1216	1221	FINAL BIAS
	1/2	1622	1722	RUN #2
	1	1745	1758	FINAL BIAS
	2	1758	1805	FINAL BIAS



REFERENCE METHOD

Analyzer Calibration Error

Project ID: NW08BPCP111 Plant: BP West Coast Products Source: #2 Tail Gas Unit Description: Methods 3A, 6C, 7E, 8, 9, 10, 15 Compliance Testing	Test Date: 10/14/2008 Analyst: RCP Trailer Unit: 11 Analyzer System: 1/2 Assigned Data:
---	---

Component	Cylinder Number	Range	Analyzer Response		Actual Conc.	Cylinder Exp. Date
			System 1	System 2		
Oxides of Nitrogen	ALM025368	High	96.82	96.80	96.7	07/09/2010
	ALM034002	Mid	50.62	50.40	50.9	07/09/2010
	NITROGEN	Zero	-0.02	-0.05	0.0	—
Nitrogen Dioxide	AAL8903	n/a	48.76	47.48	50.3	12/11/2008
Carbon Monoxide	ALM025368	High	95.46	95.79	95.5	07/09/2010
	ALM034002	Mid	49.92	50.16	49.7	07/09/2010
	NITROGEN	Zero	0.5	0.3	0.0	—
Oxygen	ALM028667	High	21.97	22.02	22.0	06/30/2011
	AAL021623	Mid	12.25	12.29	12.0	06/30/2011
	NITROGEN	Zero	-0.01	-0.01	0.0	—
Total Hydrocarbons		High				
		Mid				
		Low				
		Zero				
Sulfur Dioxide	1L14443	High	197.28		198	07/08/2010
	ALM025368	Mid	95.28		95.9	07/09/2010
	NITROGEN	Zero	0.00		0.0	—
Carbon Dioxide	ALM028667	High	21.63	21.52	21.5	06/30/2011
	AAL021623	Mid	12.10	12.05	12.0	06/30/2011
	NITROGEN	Zero	0.00	0.09	0.0	—

ANALYZER INFORMATION

Analyzer Type	SYSTEM #1			SYSTEM #2		
	Model	Serial #	Range	Model	Serial #	Range
NO _x	API 200 AH	528	0-100	API 200 AH	527	0-100
CO	CAI 300	1412018	0-200	TECO 48	46534-276	0-100
O ₂	CAI 300	1412018	0-25	CAI 200	1N03012	0-25
CO ₂	CAI 300	1412018	0-25	CAI 200	1N03012	0-40
SO ₂	API 100 AH	111	0-500			
VOC						



REFERENCE METHOD
Analyzer System Bias

Project ID: NW08BPCP111 Plant: BP West Coast Products Source: #2 Tail Gas Unit Description: Methods 3A, 6C, 7E, 8, 9, 10, 15 Compliance Testing				Test Date(s): <div style="text-align: center;">10/14/2008</div>		Analyst: <div style="text-align: center;">RCD</div>	
				Trailer Unit: <div style="text-align: center;">1</div>		Analyzer System: <div style="text-align: center;">1</div>	
				Assigned Data:			

RUN NO:	Calibration Gas / Conc.	Pre-Test Calibration ZERO	SPAN	Post Test Calibration ZERO	SPAN	Bias <5% (Check)	Drift <3% Of Span
1 Date: 10/14/08 Start Time: 1105 End Time: 1205	NO _x	0.17	49.75	0.15	48.88	RT	40/40
	CO	0.06	49.67	2.17	48.71		40/40
	O ₂	0.01	12.18	0.03	12.24		40/40
	CO ₂	0.04	11.99	0.27	11.78		40/40
	THC						
	SO ₂	0.00	95.28	0.97	94.84		40/40
2 Date: 10/14/08 Start Time: 1622 End Time: 1722	NO _x	0.15	48.88	0.05	48.56		
	CO	2.17	48.71	2.12	48.71		
	O ₂	0.03	12.24	0.02	12.17		
	CO ₂	0.27	11.78	0.26	11.76		
	THC						
	SO ₂	0.87	94.94	0.62	90.98		
3 Date: 10/15/08 Start Time: 0934 End Time: 1034	NO _x	0.02	50.99	0.10	53.35		
	CO	0.30	48.51	-1.82	49.42		
	O ₂	0.01	12.14	0.01	12.12		
	CO ₂	0.09	11.97	-0.38	12.32		
	THC						
	SO ₂	0.00	95.71	-0.75	94.22		
RUN NO: Date: Start Time: End Time:	Calibration Gas / Conc.	ZERO	SPAN	Post Test Calibration ZERO	SPAN	Bias <5% (Check)	Drift <3% Of Span
	NO _x						
	CO						
	O ₂						
	CO ₂						
	THC						
RUN NO: Date: Start Time: End Time:	Calibration Gas / Conc.	ZERO	SPAN	Post Test Calibration ZERO	SPAN	Bias <5% (Check)	Drift <3% Of Span
	NO _x						
	CO						
	O ₂						
	CO ₂						
	THC						

Comments:



REFERENCE METHOD Analyzer System Bias

Project ID: NW08BPCP111 Plant: BP West Coast Products Source: #2 Tail Gas Unit Description: Methods 3A, 6C, 7E, 8, 9, 10, 15 Compliance Testing				Test Date(s): <div style="text-align: center;">10/14/2009</div>		Analyst: <div style="text-align: center;">RCP</div>	
Trailer Unit: <div style="text-align: center;">11</div>				Analyzer System: <div style="text-align: center;">2</div>			
Assigned Data:							

RUN NO:	Calibration Gas / Conc.	Pre-Test Calibration ZERO	Pre-Test Calibration SPAN	Post Test Calibration ZERO	Post Test Calibration SPAN	Bias <5% (Check)	Drift <3% Of Span
1 Date: 10/14/09 Start Time: 1105 End Time: 1205	NO _x	0.20	49.78	0.15	49.63	RT	40/40
	CO	0.85	50.19	0.40	49.94		80/80
	O ₂	0.07	12.20	0.02	12.22		40/40
	CO ₂	0.32	11.99	0.29	11.79		40/40
	THC						
	SO ₂						
2 Date: 10/14/09 Start Time: 1622 End Time: 1722	NO _x	0.15	49.63	0.15	48.65		
	CO	0.40	49.84	0.90	50.36		
	O ₂	0.02	12.22	0.01	12.16		
	CO ₂	0.29	11.79	0.50	12.07		
	THC						
	SO ₂						
3 Date: 10/15/08 Start Time: 0934 End Time: 1034	NO _x	0.02	48.13	0.01	48.73		
	CO	0.53	49.74	3.00	51.06		
	O ₂	0.02	12.20	0.01	12.11		
	CO ₂	0.37	11.88	0.16	11.78		
	THC						
	SO ₂						
	NO _x						
	CO						
	O ₂						
	CO ₂						
	THC						
	SO ₂						
	NO _x						
	CO						
	O ₂						
	CO ₂						
	THC						
	SO ₂						

Comments:

Stratification Testing (Oxygen)

Plant: BP WEST COAST PRODUCTS
 Source: #2 TGU

Test Date: 10/14/2006
 Technician: RCP

Reference or Stationary Probe Sampling System Conc. (C_r)				
				Average
Time	1105	1113	1121	
Concentration %	3.03	3.03	2.94	3.00

Reference Sampling System (stationary) correction value (C_r - Avg) (Change in concentrations due to process variations)				
Correction Value (C_v)	0.03	0.03	-0.06	

Traversed System Concentrations (C)				
	Point 1 (16.7 %)	Point 2 (50%)	Point 3 (83.3%)	
Time	1105	1113	1121	
C	3.05	3.05	2.95	

Traversed System Conc. (C_t) Adjusted for Deviations in Reference System ($C + C_v$)				
	Point 1 (16.7 %)	Point 2 (50%)	Point 3 (83.3%)	Avg.
($C + C_v$)	3.08	3.08	2.89	3.017

Abs. Diff. (Avg. C_t - C_t)				
	Point 1 (16.7 %)	Point 2 (50%)	Point 3 (83.3%)	Max Deviation
	0.063	0.063	0.127	0.127

NOT STRATIFIED

IF maximum deviation is less than 0.3 % Oxygen, the source is considered not stratified and for COMPLIANCE only a single sample point is required. If the maximum deviation is greater than 0.3 %, but less than 0.5 %, the source is considered minimally stratified and three traverse points are required. If the maximum deviation is greater than 0.5 % oxygen, the source is considered stratified and 12 traverse points are required.

Project ID: NW08BPCP111
 Plant: BP West Coast Products
 Source: #2 Tail Gas Unit
 Description: Methods 3A, 6C, 7E, 8,
 9, 10, 15
 Compliance Testing



Stratification Testing (ppm) NO_x

Plant: BP WEST COAST PRODUCTS
Source: #2 TGU

Test Date: 10/14/2006
Technician: ACP

Reference or Stationary Probe Sampling System Conc. (C _r)				
				Average
Time	1105	1113	1121	
Concentration (ppm)	32.42	32.56	32.47	32.483

Reference Sampling System (stationary) correction value (C _r - Avg)				
(Change in concentrations due to process variations)				
Correction Value (C _v)	-0.063	0.077	-0.013	

Traversed System Concentrations (C _t)				
	Point 1 (16.7 %)	Point 2 (50%)	Point 3 (83.3%)	
Time	1105	1113	1121	
C	32.73	33.03	32.94	

Traversed System Conc. (C _t) Adjusted for Deviations in Reference System (C + C _v)				
	Point 1 (16.7 %)	Point 2 (50%)	Point 3 (83.3%)	Avg.
(C + C _v)	32.667	33.107	32.927	32.900

Abs. Diff. (Avg.C _t - C _t)				
	Point 1 (16.7 %)	Point 2 (50%)	Point 3 (83.3%)	Max % Deviation*
	0.233	0.207	0.027	0.233

* - Max % deviation = abs (max difference/avg C_t) x 100

= 0.71%

NOT STRATIFIED

IF maximum deviation is less than 0.5 ppm or less than 5%, the source is considered not stratified and for COMPLIANCE only a single sample point is required. If the maximum deviation is greater than 0.5 ppm, but less than 1 ppm, AND greater than 5 %, but less than 10%, the source is considered minimally stratified and three traverse points are required. If the maximum deviation is greater than 1 ppm and 10 %, the source is considered stratified and 12 traverse points are required.

Project ID: NW08BPCP111
Plant: BP West Coast Products
Source: #2 Tail Gas Unit
Description: Methods 3A, 6C, 7E, 8,
9, 10, 15
Compliance Testing



Operating Discipline Checklist

Project ID: NW08BPCP111 Plant: BP West Coast Products Source: #2 Tail Gas Unit Description: Methods 3A, 6C, 7E, 8, 9, 10, 15 Compliance Testing		Test Date: 10/15/2008 Team Members: REP/KEF/DDF Trailer Unit: 11	
Item to Check			(Initials Required)
1	EPA Protocol 1 Gases Used		REP
2	Fully Redundant Sampling System System 1 _____ System 2 <input checked="" type="checkbox"/> → SYSTEM 1 USED FOR GC		REP
3	Stratification Test Conducted and Documented Start time: _____ Finish Time: _____ File Name: _____		N/A
4	Documentation of Probe Geometry and Location (on form GSC-TM001K)		
5	Measurement of Ambient Conditions:		
	Barometer: 30.15	Rel. Humidity: _____ Temperature: _____	
6	Flanged Sample Probe or Port Closures		
7	Heated Sample Lines Set Temperature: 248/248 Measured Temperature: 248/247		REP
8	Grounding and electrical requirements		REP
	TRAILER GROUNDED		
9	Data Exclusion Log (form # GSC-TM001B)		REP
10	Data Communication List (form GSC-TM001K)		
11	Staggered Calibrations		N/A
12	Data Storage and Formatting: Headers on and checked? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Data Logging ON? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
13	Gas Conditioning System Temperature System 1: _____ System 2: 3-9		
14	Reasons for any exceptions:		
Signature of Person Recording Information:			Date: 10/15/2008
Approval of Client to Proceed with Testing:			Date:

Form # GSC-TM001D (Rev. 7/2004)

Project ID: NW08BPCP111 Plant: BP West Coast Products Source: #2 Tail Gas Unit Description: Methods 3A, 6C, 7E, 8, 9, 10, 15 Compliance Testing	Test Dates From: 10/15/04	To:
	Trailer #: 11	Analysts: RCB
	Data for Filename:	

Form # GSC-TM001B (Rev. 04Jul)

W. H. B.



REFERENCE METHOD Analyzer Calibration Error

Project ID: NW08BPCF111 Plant: BP West Coast Products Source: #2 Tail Gas Unit Description: Methods 3A, 6C, 7E, 8, 9, 10, 15 Compliance Testing	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Test Date: 10/17/2006</td> <td style="width: 50%;">Analyst: ACD</td> </tr> <tr> <td>Trailer Unit: 11</td> <td>Analyzer System: 2</td> </tr> <tr> <td colspan="2">Assigned Data:</td> </tr> </table>	Test Date: 10/17/2006	Analyst: ACD	Trailer Unit: 11	Analyzer System: 2	Assigned Data:	
Test Date: 10/17/2006	Analyst: ACD						
Trailer Unit: 11	Analyzer System: 2						
Assigned Data:							

Component	Cylinder Number	Range	Analyzer Response		Actual Conc.	Cylinder Exp. Date
			System 1	System 2		
Oxides of Nitrogen		High				
		Mid				
		Zero				
Nitrogen Dioxide		n/a				
Carbon Monoxide		High				
		Mid				
		Zero				
Oxygen	ALM028667	High	/	21.97	22.0	06/30/2011
	AA021623	Mid		12.32	12.1	06/30/2011
	NITROGEN	Zero		0.07	0.0	
Total Hydrocarbons		High				
		Mid				
		Low				
		Zero				
Sulfur Dioxide		High				
		Mid				
		Zero				
Carbon Dioxide	ALM028667	High	/	21.46	21.5	06/30/2011
	AA021623	Mid		12.13	12.0	06/30/2011
	NITROGEN	Zero		0.13	0.0	

ANALYZER INFORMATION

Analyzer Type	SYSTEM #1			SYSTEM #2		
	Model	Serial #	Range	Model	Serial #	Range
NO _x						
CO						
O ₂				C4I200	1N03012	0-25
CO ₂				C4I200	1N03012	0-40
SO ₂						
VOC						



REFERENCE METHOD Analyzer System Bias

Project ID: NW08BPCP111 Plant: BP West Coast Products Source: #2 Tail Gas Unit Description: Methods 3A, 6C, 7E, 8, 9, 10, 15 Compliance Testing				Test Date(s): <div style="text-align: center;">10/15/2009</div>		Analyst: <div style="text-align: center;">RLD</div>	
Trailer Unit: <div style="text-align: center;">11</div>				Analyzer System: <div style="text-align: center;">2</div>			
Assigned Data:							

RUN NO:	Calibration Gas / Conc.	Pre-Test Calibration ZERO	SPAN	Post Test Calibration ZERO	SPAN	Bias <5% (Check)	Drift <3% Of Span
1 Date: 10/15/2009	NO _x						
	CO						
	Start Time: O ₂	0.09	12.27	0.09	12.21		
	CO ₂	0.44	12.07	-0.04	11.92		
	End Time: THC						
2214	SO ₂						

RUN NO:	Calibration Gas / Conc.	Pre-Test Calibration ZERO	SPAN	Post Test Calibration ZERO	SPAN	Bias <5% (Check)	Drift <3% Of Span
	NO _x						
	CO						
	Start Time: O ₂						
	CO ₂						
	End Time: THC						
	SO ₂						

RUN NO:	Calibration Gas / Conc.	Pre-Test Calibration ZERO	SPAN	Post Test Calibration ZERO	SPAN	Bias <5% (Check)	Drift <3% Of Span
	NO _x						
	CO						
	Start Time: O ₂						
	CO ₂						
	End Time: THC						
	SO ₂						

RUN NO:	Calibration Gas / Conc.	Pre-Test Calibration ZERO	SPAN	Post Test Calibration ZERO	SPAN	Bias <5% (Check)	Drift <3% Of Span
	NO _x						
	CO						
	Start Time: O ₂						
	CO ₂						
	End Time: THC						
	SO ₂						

RUN NO:	Calibration Gas / Conc.	Pre-Test Calibration ZERO	SPAN	Post Test Calibration ZERO	SPAN	Bias <5% (Check)	Drift <3% Of Span
	NO _x						
	CO						
	Start Time: O ₂						
	CO ₂						
	End Time: THC						
	SO ₂						

RUN NO:	Calibration Gas / Conc.	Pre-Test Calibration ZERO	SPAN	Post Test Calibration ZERO	SPAN	Bias <5% (Check)	Drift <3% Of Span
	NO _x						
	CO						
	Start Time: O ₂						
	CO ₂						
	End Time: THC						
	SO ₂						

Comments:

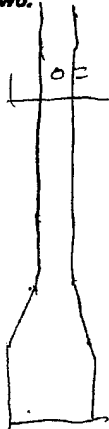
9/30/94: FD1-1

FIELD DATA SHEET 1
Sampling and Velocity Traverse Points

Client/Plant Name BP WEST COAST PRODUCTS Job # NW08BPCP111
 City/State BLAINE, WA Date/Time 10/13/2008
 Test Location #2 TCU STACK Personnel DCP/KFF/ADF

Port I.D.	N + E		
Distance from Far Wall to Outside of Port	44		
Nipple Length and/or Wall Thickness	9		
Stack/Duct (✓) Blue Print () Measured (✓)			
Depth/Diameter (> 12 in. ?)	35		
Width (if rectangular)			
Equiv. Diameter (if rect.) $D_e = 2 D W / (D + W)$			
Area (A) (> 113 in. ² ?) $A = \pi D_e^2 / 4$ or $D W$	962.113		
	Distance	D_e	No. Pts*
Upstream ($\geq 2 D_e$?)	~ 9 D		6
Downstream ($\geq 0.5 D_e$?)	~ 4 D		6
Rectangular Matrix			

* Circle larger of two.



Pt.	% Duct Depth	Dist. from Inside Wall*	Dist. from Outside of Port
1	4.4	1.5	10.5
2	14.6	5.1	14.1
3	29.6	10.4	19.4
4	70.4	24.6	33.6
5	85.4	29.9	38.9
6	95.6	33.5	42.5
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

* Do not place closer to stack walls than:
 1.0 in. for stack dia. > 24 in.
 0.5 in. for stack dia. 12 to ≤ 24 in.

Sketch of Location: In the space above, sketch a flow diagram of the test location; show the distance from the ports to flow disturbances before and after. Sketch the cross-sectional area; show sampling port locations. In horizontal ducts, check for dust buildups and measure or estimate the depth.

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

Project ID: NW08BPCP111
 Plant: BP West Coast Products
 Source: #2 Tail Gas Unit
 Description: Methods 3A, 6C, 7E, 8,
 9, 10, 15
 Compliance Testing

Form #GSC-TM002-001

Project ID: NW08BPCP111
Plant: BP West Coast Products
Source: #2 Tail Gas Unit
Description: Methods 3A, 6C, 7E, 8,
9, 10, 15
Compliance Testing

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Method 8 Source Test Data Sheet

Facility: BPC Cherry Pt
Location: Blaine WA
Test Team: KEF, DDF, RCP
Page 1 of 1

Unit: #2 TGU
Test No. 1
Date: 10/14/08

Leak Check Data		
Pre-test <u>0.000</u>	cfm @ <u>16"</u>	Init. <u>KEF</u>
Port change <u>-</u>	cfm @ <u>-</u>	Init. <u>-</u>
Port change <u>-</u>	cfm @ <u>-</u>	Init. <u>-</u>
Post Test <u>0.000</u>	cfm @ <u>16"</u>	Init. <u>KEF</u>

PRETEST DATA:

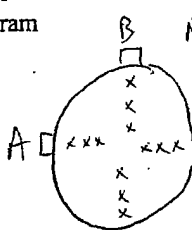
P Bar.: 29.85
Sample Time 60
P static -0.13
Ambient F -13
Pitot Factor 0.84
K3 Factor 3.412 3985

Meter No. 1696
Meter Factor 0.998
Filter No. -
Filter Tare -
Cal. H@ 1.827
Probe -
Nozzle .260

Impinger No.	Post	Grams		Net
		Pre	Net	
1. <u>100 mL IPA</u>	<u>734.3</u>	<u>744.8</u>	<u>-10.5</u>	
2. <u>100 mL H₂O</u>	<u>801.5</u>	<u>760.6</u>	<u>40.9</u>	
3. <u>100 mL H₂O</u>	<u>777.0</u>	<u>763.2</u>	<u>13.8</u>	
4. <u>5:1 G2/mL</u>	<u>723.4</u>	<u>911.3</u>	<u>121</u>	
5. <u>mL</u>				
6. <u>mL</u>				
Total gain			<u>30.3</u>	

O₂ 3
CO₂ 3
Mole. -
Bws. 0.8

Stack
Diagram



Point
Layout

Test Summary:
Notes:

Start Time: 1105 Stop Time: 1219

PITOT # P002NW

		Meter Conditions				Temperature						
Point	Time	ΔP	√ΔP	ΔH	Meter Volume	Stack	Probe	Oven	Imp. Out	Meter In	Meter Out	Vac.
			Initial Volume									
A 6	0	0.22		0.88	723.931	106	310	316	46	55	55	1
5	5	0.23		0.92	726.54	107	313	318	42	55	55	1
4	10	0.23		0.92	729.27	107	314	318	42	56	55	1
3	15	0.22		0.88	731.89	107	312	314	41	56	55	1
2	20	0.24		0.96	734.43	107	313	315	43	58	55	1
1	25	0.22		0.88	737.11	107	315	318	45	60	56	3
B 6	30	0.24		0.96	739.727	106	316	315	47	59	57	4
5	35	0.23		0.97	742.62	106	317	316	45	60	57	4
4	40	0.23		0.92	745.55	107	316	319	44	62	58	4
3	45	0.22		0.88	748.31	107	319	317	44	64	58	3
2	50	0.22		0.88	750.97	107	316	318	44	65	59	3
1	55	0.22		0.88	753.55	107	316	319	46	65	60	3
	60				756.143							
	</											

Unit: #2 TGU Facility: BP WET COAST PRODUCTS Location: BLAHNE, LA
 Test No: 1 Date: 10/14/2006 Method: 8
 Page 2 of 2

Imp	Tip Style	Volume	Contents	Pre	Post	Net
1						
2						
3						
4						
5						
6						

$$Vmstd = \frac{Y * Vm * \left[Pbar + \frac{\Delta H}{13.6} \right] * (460 + 68)}{29.92 * Tm * (460 + Tm)}$$

$$Vwstd = 0.04707 * Vlc$$

$$\%Moisture = 100 * \left(\frac{Vwstd}{Vwstd + Vmstd} \right) = 7.5\%$$

$$Ps = Pbar + \left(\frac{Pg}{13.6} \right)$$

$$Mfd = 1 - \left(\frac{\%Moisture}{100} \right)$$

$$Md = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO_2)$$

$$Ms = Md * Mfd + 18 \left(\frac{\%Moisture}{100} \right)$$

$$vs = 85.49 * Cp * \sqrt{\Delta Pavg} * \sqrt{\frac{Ts + 460}{Ps * Ms}}$$

$$Qstd = \frac{60 * Mfd * (68F + 460) * Ps * vs * As}{(Ts + 460) * 29.92}$$

$$Qa = 60 * vs * As$$

$$\%Isokinetic = \frac{144 * 100 * 29.92 * (Ts + 460) * Vmstd}{60 * \frac{\pi}{4} * (460 + 68F) * Ps * vs * Mfd * \Theta * Dn^2}$$

9749.57

Md, Dry molecular weight
Pbar, Barometric Pressure
Pg, Stack gas pressure, inches of water column
Ps, Absolute stack gas pressure
Qa, Actual Volumetric Flow rate
Qstd, Dry standard volumetric flowrate, dscfm
Vlc, grams of water collected
Vm, uncorrected meter volume
Vmstd, meter volume corrected to standard conditions
Y, meter coefficients
Θ, Sample time, minutes

Vlc 56.3
Ps 29.84
O2 2.94
CO2 2.44
N2 94.62
As 96.2.113 m²
Ts 106.7
Tm 58.1
ΔPavg 0.227
ΔH 0.911
√ΔPavg 0.476
Vm 32.212
Vmstd 32.758
Mfd 0.925
Md 28.51
Ms 27.72
Vs 28.32
Qstd 9758.48
Qa 11352.65
%Isokinetic 101.45

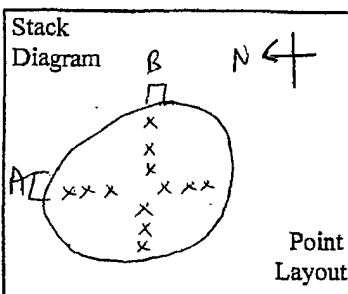
Method 8 Source Test Data Sheet

Facility: KPO Cherry Pt
Location: Blaire WA
Test Team: KEF, DDF, RCD
Page 1 of 1

Unit: #2 TGV STACK
Test No. 2
Date: 10/14/08

Leak Check Data		
Pre-test <u>0.004</u>	cfm @ <u>12"</u>	Init. <u>KEP</u>
Port change <u>—</u>	cfm @ <u>—</u>	Init. <u>—</u>
Port change <u>—</u>	cfm @ <u>—</u>	Init. <u>—</u>
Post Test <u>0.003</u>	cfm @ <u>10"</u>	Init. <u>KEP</u>

PRETEST DATA:		Meter No. <u>1696</u>	Impinger No.		Grams		O ₂ <u>3</u>
P Bar.: <u>29.85</u>	Meter Factor <u>0.998</u>	Filter No. <u>—</u>	1. <u> </u> mL <u> </u>	Post <u>736.8</u>	Pre <u>742.8</u>	Net <u>-6.0</u>	CO ₂ <u>3</u>
Sample Time <u>60</u>	Filter Tare <u>—</u>	Cal. H@ <u>1.827</u>	2. <u> </u> mL <u>784.3</u>	<u>784.3</u>	<u>748.8</u>	<u>35.5</u>	Mole. <u> </u>
P static <u>-0.12</u>	Probe <u> </u>	Nozzle <u>0.260</u>	3. <u> </u> mL <u>783.9</u>	<u>783.9</u>	<u>722.1</u>	<u>11.8</u>	Bws. <u>08</u>
Ambient F <u> </u>			4. <u> </u> mL <u>941.0</u>	<u>941.0</u>	<u>931.2</u>	<u>10.6</u>	
Pitot Factor <u>0.84</u>			5. <u> </u> mL <u> </u>	<u> </u>	<u> </u>	<u> </u>	
K3 Factor <u> </u>			6. <u> </u> mL <u> </u>	<u> </u>	<u> </u>	<u> </u>	
				Total gain		<u>51.9</u>	



Test Summary: Start Time: 1622 Stop Time: 1727
Notes: _____

Pitot # P002NW

[illegible]

Unit: #2 TGM Facility: BP WEST COAST Refinery Location: BLAINE, WA
 Test No: 2 Date: 10/14/2008 Method: 8
 Page 2 of 2

Imp	Tip Style	Volume	Contents	Pre	Post	Net
1						
2						
3						
4						
5						
6						

$$Vmstd = \frac{Y * Vm * \left[Pbar + \frac{\Delta H}{13.6} \right] * (460 + 68)}{29.92 * Tm * (460 + Tm)}$$

$$Vwstd = 0.04707 * Vlc$$

$$\%Moisture = 100 * \left(\frac{Vwstd}{Vwstd + Vmstd} \right) = 7.1\%$$

$$Ps = Pbar + \left(\frac{Pg}{13.6} \right)$$

$$Mfd = 1 - \left(\frac{\%Moisture}{100} \right)$$

$$Md = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO_2)$$

$$Ms = Md * Mfd + 18 \left(\frac{\%Moisture}{100} \right)$$

$$vs = 85.49 * Cp * \sqrt{\Delta Pavg} * \sqrt{\frac{Ts + 460}{Ps * Ms}}$$

$$Qstd = \frac{60 * Mfd * (68F + 460) * Ps * vs * As}{(Ts + 460) * 29.92}$$

$$Qa = 60 * vs * As$$

$$\%Isokinetic = \frac{144 * 100 * 29.92 * (Ts + 460) * Vmstd}{60 * \frac{\pi}{4} * (460 + 68F) * Ps * vs * Mfd * \Theta * Dn^2}$$

Md, Dry molecular weight
Pbar, Barometric Pressure
Pg, Stack gas pressure, inches of water column
Ps, Absolute stack gas pressure
Qa, Actual Volumetric Flow rate
Qstd, Dry standard volumetric flowrate, dscfm
Vlc, grams of water collected
Vm, uncorrected meter volume
Vmstd, meter volume corrected to standard conditions
Y, meter coefficient
Θ, Sample time, minutes

Vlc 51.9
Ps 29.84
O2 2.75
CO2 2.12
N2 95.13
As 962.113 in²
Ts 106.3
Tm 62.5
 $\Delta Pavg$ 0.225
 ΔH 0.900
 $\sqrt{\Delta Pavg}$ 0.474
Vm 31.658
Vmstd 31.923
Mfd 0.929
Md 28.45
Ms 27.71
Vs 28.19
Qstd 9761.12
Qa 11301.4
 $\%Isokinetic$ 98.83

Project ID: NW08BPCP111
 Plant: BP West Coast Products
 Source: #2 Tail Gas Unit
 Description: Methods 3A, 6C, 7E, 8, 9, 10, 15
 Compliance Testing

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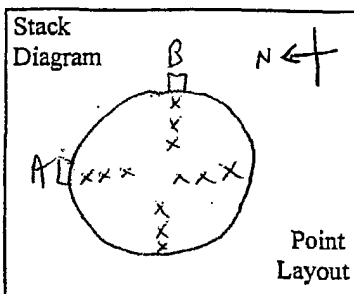
Method 8 Source Test Data Sheet

Facility: BPC Cherry Pt
 Location: Blaire WA
 Test Team: KEF, DDE, RCP
 Page 1 of 1

Unit: #2 TGU STACK
 Test No. 3
 Date: 10/15/08

Leak Check Data		
Pre-test <u>0.000</u>	cfm @ <u>13"</u>	Init. <u>KEF</u>
Port change <u>-</u>	cfm @ <u>-</u>	Init. <u>-</u>
Port change <u>-</u>	cfm @ <u>-</u>	Init. <u>-</u>
Post Test <u>0.000</u>	cfm @ <u>14"</u>	Init. <u>KEF</u>

PRETEST DATA:		Meter No. <u>1696</u>	Impinger No.		Grams			O ₂ <u>3</u>
P Bar.: <u>30.15</u>		Meter Factor <u>0.998</u>	1. <u> </u> mL <u> </u>	Post <u>735.4</u>	Pre <u>743.5</u>	Net <u>-8.1</u>	CO ₂ <u>3</u>	
Sample Time <u>60</u>		Filter No. <u>-</u>	2. <u> </u> mL <u> </u>	<u>790.1</u>	<u>753.8</u>	<u>36.3</u>	Mole. <u> </u>	
P static <u>-0.10</u>		Filter Tare <u>-</u>	3. <u> </u> mL <u> </u>	<u>778.4</u>	<u>768.2</u>	<u>10.2</u>	Bws. <u>0.08</u>	
Ambient F <u> </u>		Cal. H@ <u>1.827</u>	4. <u> </u> mL <u> </u>	<u>932.0</u>	<u>923.3</u>	<u>8.7</u>		
Pitot Factor <u>0.84</u>		Probe <u> </u>	5. <u> </u> mL <u> </u>	<u> </u>	<u> </u>	<u> </u>		
K3 Factor <u>3.985</u>		Nozzle <u>0.260</u>	6. <u> </u> mL <u> </u>	<u> </u>	<u> </u>	<u> </u>		
			Total gain			<u>47.6</u>		



Test Summary: Start Time: 0934 Stop Time: 1040
 Notes: PITOT A P002NW

Meter Conditions						Temperature						
Point	Time	ΔP	√ΔP	ΔH	Meter Volume	Stack	Probe	Oven	Imp. Out	Meter In	Meter Out	Vac.
			Initial Volume									
A6	0	0.22		0.88	788.118	103	312	318	42	47	46	1
5	5	0.22		0.88	790.73	103	314	319	41	49	47	1
4	10	0.21		0.84	793.49	103	316	320	41	53	48	1
3	15	0.21		0.84	795.72	103	316	321	41	54	48	1
2	20	0.21		0.84	—	103	314	319	41	56	51	1
1	25	0.20		0.80	801.07	103	315	318	41	58	51	1
B6	30	0.21		0.84	803.548	103	317	321	43	60	53	1
5	35	0.22		0.88	806.10	103	316	318	43	62	53	1
4	40	0.22		0.88	808.73	103	317	316	44	63	54	1
3	45	0.22		0.88	811.42	103	316	319	44	64	55	1
2	50	0.21		0.84	813.98	103	317	319	44	64	55	1
1	55	0.21		0.84	816.59	103	316	316	45	65	57	1
END	100				819.130							

Unit: #2 TCU Facility: BP WEST COAST PROCESS Location: BLAINE, WA
 Test No: 3 Date: 10/15/2009 Method: 8
 Page 2 of 2

Imp	Tip Style	Volume	Contents	Pre	Post	Net
1						
2						
3						
4						
5						
6						

$$Vmstd = \frac{Y * Vm * \left[Pbar + \frac{\Delta H}{13.6} \right] * (460 + 68)}{29.92 * Tm * (460 + Tm)}$$

$$Vwstd = 0.04707 * Vlc$$

$$\%Moisture = 100 * \left(\frac{Vwstd}{Vwstd + Vmstd} \right) = 6.5\%$$

$$Ps = Pbar + \left(\frac{Pg}{13.6} \right)$$

$$Mfd = 1 - \left(\frac{\%Moisture}{100} \right)$$

$$Md = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO_2)$$

$$Ms = Md * Mfd + 18 \left(\frac{\%Moisture}{100} \right)$$

$$vs = 85.49 * Cp * \sqrt{\Delta Pavg} * \sqrt{\frac{Ts + 460}{Ps * Ms}}$$

$$Qstd = \frac{60 * Mfd * (68F + 460) * Ps * vs * As}{(Ts + 460) * 29.92}$$

$$Qa = 60 * vs * As$$

$$\%Isokinetic = \frac{144 * 100 * 29.92 * (Ts + 460) * Vmstd}{60 * \frac{\pi}{4} * (460 + 68F) * Ps * vs * Mfd * \Theta * Dn^2}$$

Md, Dry molecular weight
Pbar, Barometric Pressure
Pg, Stack gas pressure, inches of water column
Ps, Absolute stack gas pressure
Qa, Actual Volumetric Flow rate
Qstd, Dry standard volumetric flowrate, dscfm
Vlc, grams of water collected
Vm, uncorrected meter volume
Vmstd, meter volume corrected to standard conditions
Y, meter coefficient
Θ, Sample time, minutes

Vlc 47.6
Ps 30.14
O2 2.73
CO2 2.04
N2 95.23
As 962.43 in²
Ts 103
Tm 54.7
ΔPavg 0.213
ΔH 0.853
√ΔPavg 0.462
Vm 31.012
Vmstd 32.060
Mfd 0.935
Md 28.44
Ms 27.75
Vs 27.19
Qstd 9624.29
Qa 10899.55
%Isokinetic 100.7

Method 8

Client Source - BP@ Cherry Pt.

Source - #2 TGV (~~various~~ locations) stack

Date: 9/23/08 -

10/14/08

BaCl₂ Normality

$$\frac{\text{Aliquot} \times N \text{ H}_2\text{SO}_4 \text{ standards}}{\text{Titrant} - \text{BLANK}} = \frac{10 \text{ ml} \times 0.1 \text{ N H}_2\text{SO}_4}{95.1 - 0.02}$$

Blank 10.02

2-0.02

$$N = 0.0105 \text{ BaCl}_2$$

	Date	Run	Source	Titrant 1	Titrant 2	Aliquot	Avg.	Volume
H ₂ O ₂	10/14/08	1	STACK	30.6	30.6	10	30.6	445ml
IPA	10/14/08	1	STACK	4.4	4.4	50	4.4	195ml
H ₂ O ₂	10/14/08	2	STACK	30.7	30.7	10	30.7	450ml
IPA	10/14/08	2	STACK	7.5	7.5	50	7.5	160ml
H ₂ O ₂	10/15/08	3	STACK	26.05	26.0	10	26.025	440ml
IPA	10/15/08	3	STACK	6.25	6.30	50	6.275	155ml

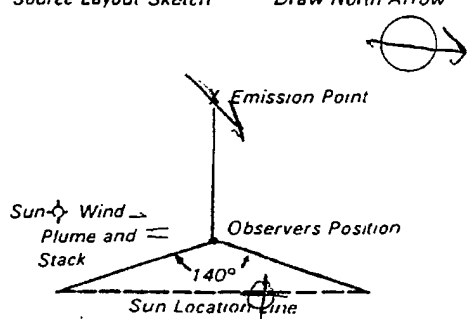
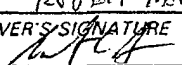
Visible Emission Observation Form

SOURCE NAME BP WEST COAST PRODUCTS			OBSERVATION DATE 10/14/2008				START TIME 1105				STOP TIME 1205					
ADDRESS 4519 GRANDVIEW ROAD			SEC MIN		0	15	30	45	SEC MIN		0	15	30	45		
CITY BLAINE			STATE WA		ZIP 98230		1		31		0		0			
PHONE			SOURCE ID NUMBER		2		0		32		0		0			
PROCESS EQUIPMENT #2 TGU			OPERATING MODE		3		0		33		0		0			
CONTROL EQUIPMENT			OPERATING MODE		4		0		34		0		0			
DESCRIBE EMISSION POINT START STACK EXIT STOP STACK EXIT			5		0		0		35		0		0			
HEIGHT ABOVE GROUND LEVEL START ~175' STOP ~175'			HEIGHT RELATIVE TO OBSERVER START 175' STOP 175'		6		0		36		0		0			
DISTANCE FROM OBSERVER START 1000' STOP 1000'			DIRECTION FROM OBSERVER START SW STOP SW		7		0		37		0		0			
DESCRIBE EMISSIONS START STEAM STOP STEAM			8		0		0		38		0		0			
EMISSION COLOR START WHT STOP WHT			PLUME TYPE CONTINUOUS <input checked="" type="checkbox"/> FUGITIVE <input type="checkbox"/> INTERMITTENT <input type="checkbox"/>		9		0		39		0		0			
WATER DROPLETS PRESENT NO <input type="checkbox"/> YES <input checked="" type="checkbox"/>			IF WATER DROPLET PLUME ATTACHED <input checked="" type="checkbox"/> DETACHED <input type="checkbox"/>		10		0		40		0		0			
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START CENTER STOP CENTER			11		0		0		41		0		0			
DESCRIBE BACKGROUND START SKY STOP SKY			12		0		0		42		0		0			
BACKGROUND COLOR START GRAY STOP GRAY			SKY CONDITIONS START CLDY STOP CLDY		13		0		43		0		0			
WIND SPEED START 1-10 STOP 1-10			WIND DIRECTION START NE STOP NE		14		0		44		0		0			
AMBIENT TEMP START 53 STOP 54			WET BULB TEMP		RH, percent		15		45		0		0			
Source Layout Sketch Draw North Arrow			16		0		0		46		0		0			
Emission Point			17		0		0		47		0		0			
Sun Wind Plume and Stack			18		0		0		48		0		0			
Observers Position			19		0		0		49		0		0			
Sun Location Line			20		0		0		50		0		0			
140°			21		0		0		51		0		0			
			22		0		0		52		0		0			
			23		0		0		53		0		0			
			24		0		0		54		0		0			
			25		0		0		55		0		0			
			26		0		0		56		0		0			
			27		0		0		57		0		0			
			28		0		0		58		0		0			
			29		0		0		59		0		0			
			30		0		0		60		0		0			
AVERAGE OPACITY FOR HIGHEST PERIOD			NUMBER OF READINGS ABOVE % WERE													
RANGE OF OPACITY READINGS MINIMUM			MAXIMUM													
OBSERVER'S NAME (PRINT) ROBERT PEGNAM																
OBSERVER'S SIGNATURE R. PEGNAM			DATE 10/14/2008													
ORGANIZATION GOLDEN SPECIALTY CONSULTING																
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE			CERTIFIED BY		DATE											
TITLE			DATE		VERIFIED BY		DATE									

Visible Emission Observation Form

SOURCE NAME BP WEST COAST PROPOSED			OBSERVATION DATE 10/14/2009				START TIME 1622				STOP TIME 1722			
ADDRESS 4519 GRANDVIEW ROAD			SEC MIN		0	15	30	45	SEC MIN		0	15	30	45
CITY BLAINE			STATE WA		ZIP 96230		1		31		0		0	
PHONE			SOURCE ID NUMBER		2		0		32		0		0	
PROCESS EQUIPMENT #2 TGU			OPERATING MODE		3		0		33		0		0	
CONTROL EQUIPMENT			OPERATING MODE		4		0		34		0		0	
DESCRIBE EMISSION POINT START STACK EXIT STOP STACK EXIT			5		0		0		35		0		0	
HEIGHT ABOVE GROUND LEVEL START 175 STOP 175			6		0		0		36		0		0	
DISTANCE FROM OBSERVER START 1000 STOP 1000			7		0		0		37		0		0	
DIRECTION FROM OBSERVER START NE STOP NE			8		0		0		38		0		0	
DESCRIBE EMISSIONS START STEAM STOP STEAM			9		0		0		39		0		0	
EMISSION COLOR START WHT STOP WHT			10		0		0		40		0		0	
PLUME TYPE CONTINUOUS <input checked="" type="checkbox"/> FUGITIVE <input type="checkbox"/> INTERMITTENT <input type="checkbox"/>			11		0		0		41		0		0	
WATER DROPLETS PRESENT NO <input type="checkbox"/> YES <input checked="" type="checkbox"/>			12		0		0		42		0		0	
IF WATER DROPLET PLUME ATTACHED <input checked="" type="checkbox"/> DETACHED <input type="checkbox"/>			13		0		0		43		0		0	
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START CENTER STOP CENTER			14		0		0		44		0		0	
DESCRIBE BACKGROUND START SKY STOP SKY			15		0		0		45		0		0	
BACKGROUND COLOR START GRAY STOP GRAY			16		0		0		46		0		0	
SKY CONDITIONS START CLDY STOP CLDY			17		0		0		47		0		0	
WIND SPEED START 3-5 STOP 3-5			18		0		0		48		0		0	
WIND DIRECTION START NE STOP NE			19		0		0		49		0		0	
AMBIENT TEMP START 56 STOP 56			20		0		0		50		0		0	
WET BULB TEMP			21		0		0		51		0		0	
RH. percent			22		0		0		52		0		0	
Source Layout Sketch			23		0		0		53		0		0	
Draw North Arrow			24		0		0		54		0		0	
Emission Point			25		0		0		55		0		0	
Observers Position			26		0		0		56		0		0	
Sun Wind Plume and Stack			27		0		0		57		0		0	
140°			28		0		0		58		0		0	
Sun Location Line			29		0		0		59		0		0	
			30		0		0		60		0		0	
COMMENTS GUESSING ON SUN LOCATION			AVERAGE OPACITY FOR HIGHEST PERIOD				NUMBER OF READINGS ABOVE % WERE							
TOO CLOUDY			RANGE OF OPACITY READINGS MINIMUM				MAXIMUM							
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS			OBSERVER'S NAME (PRINT) ROBERT PEGAN				OBSERVER'S SIGNATURE [Signature]							
SIGNATURE			DATE 10/14/2009				ORGANIZATION GALFA SPECIALTY CONSULTING							
TITLE			CERTIFIED BY				DATE							
DATE			VERIFIED BY				DATE							

Visible Emission Observation Form

SOURCE NAME BP WEST COAST PRODUCTS			OBSERVATION DATE 10/15/2008				START TIME 0935				STOP TIME 1035			
ADDRESS 4519 GRANDVIEW ROAD			SEC MIN		0	15	30	45	SEC MIN		0	15	30	45
CITY BLAINE			STATE WA		ZIP 98230		1		31		0		0	
PHONE			SOURCE ID NUMBER		2		0		32		0		0	
PROCESS EQUIPMENT #2 T64			OPERATING MODE		3		0		33		0		0	
CONTROL EQUIPMENT			OPERATING MODE		4		0		34		0		0	
DESCRIBE EMISSION POINT START STACK-EXIT STOP STACK-EXIT			5		0		0		35		0		0	
HEIGHT ABOVE GROUND LEVEL START 175 STOP 175			6		0		0		36		0		0	
DISTANCE FROM OBSERVER START 1000 STOP 1000			7		0		0		37		0		0	
DIRECTION FROM OBSERVER START W STOP N			8		0		0		38		0		0	
DESCRIBE EMISSIONS START STEAM STOP STEAM			9		0		0		39		0		0	
EMISSION COLOR START WHT STOP WHT			10		0		0		40		0		0	
PLUME TYPE CONTINUOUS <input checked="" type="checkbox"/> FUGITIVE <input type="checkbox"/> INTERMITTENT <input type="checkbox"/>			11		0		0		41		0		0	
WATER DROPLETS PRESENT NO <input type="checkbox"/> YES <input checked="" type="checkbox"/>			12		0		0		42		0		0	
IF WATER DROPLET PLUME ATTACHED <input checked="" type="checkbox"/> DETACHED <input type="checkbox"/>			13		0		0		43		0		0	
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED START CENTER STOP CENTER			14		0		0		44		0		0	
DESCRIBE BACKGROUND START SKY STOP SKY			15		0		0		45		0		0	
BACKGROUND COLOR START GRAY STOP GRAY			16		0		0		46		0		0	
SKY CONDITIONS START CLR STOP CLR			17		0		0		47		0		0	
WIND SPEED START 3-5 STOP 3-5			18		0		0		48		0		0	
WIND DIRECTION START NE STOP NE			19		0		0		49		0		0	
AMBIENT TEMP START 53 STOP 53			20		0		0		50		0		0	
WET BULB TEMP			21		0		0		51		0		0	
RH, percent			22		0		0		52		0		0	
23			0		0		0		53		0		0	
24			0		0		0		54		0		0	
25			0		0		0		55		0		0	
26			0		0		0		56		0		0	
27			0		0		0		57		0		0	
28			0		0		0		58		0		0	
29			0		0		0		59		0		0	
30			0		0		0		60		0		0	
Source Layout Sketch Draw North Arrow 			AVERAGE OPACITY FOR HIGHEST PERIOD				NUMBER OF READINGS ABOVE % WERE							
COMMENTS NO SUN VISIBLE, GUESSING AT LOCATION			RANGE OF OPACITY READINGS MINIMUM				MAXIMUM							
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE			OBSERVER'S NAME (PRINT) ROBERT BROWN				OBSERVER'S SIGNATURE 							
TITLE			ORGANIZATION GOLDEN SPECIALTY CONSULTING				DATE 10/15/2008							
DATE			CERTIFIED BY				DATE							
			VERIFIED BY				DATE							

H₂S Schedule 10/15/2008

Run #1	1	1248	Run #2	1	1608	Run #3	1	1912
	2	1300		2	1612		2	1924
Flow 1	3	1312	Flow 5	3	1624	Flow 9	3	1936
	4	1324		4	1636		4	1948
	5	1336		5	1648		5	2000
	6	1348		6	1700		6	2012
Flow 2	7	1400		7	1712		7	2024
	8	1412	MY Flow 6	8	1724	MY Flow 10	8	2036
	9	1424		9	1736		9	2048
	10	1436		10	1748		10	2100
Flow 3	11	1448	Flow 7	11	1800		11	2112
	12	1500		12	1812	Flow 11	12	2124
	13	1512		13	1824		13	2136
Flow 4	14	1524		14	1836		14	2148
	15	1536	Flow 8	15	1848	Flow 12	15	2200
	16	1548		16	1900		16	2212

Project ID: NW08BPCP111
 Plant: BP West Coast Products
 Source: #2 Tail Gas Unit
 Description: Methods 3A, 6C, 7E, 8,
 9, 10, 15
 Compliance Testing

Unit: #2 TGV STACK
Test No. 1
Date: 10/15/08

Meter No. 1696
Meter Factor 0.998
Filter No. —
Filter Tare —
Cal. H@ 1.827
Probe ⊗
Nozzle —

		Grams		
Impinger No.		Post	Pre	Net
1.	mL	809.2	760.6	48.6
2.	mL	738.9	701.0	22.1
3.	mL	735.7	603.2	72.5
4.	mL	447.4	431.9	15.5
5.	mL	—	—	—
6.	mL	—	—	—
		Total gain		114.5

O ₂	3
CO ₂	3
Mole.	
Bws.	0.08

PITOT # P002NW

Project ID: NW08BPCP111
 Plant: BP West Coast Products
 Source: #2 Tail Gas Unit
 Description: Methods 3A, 6C, 7E, 8,
 9, 10, 15
 Compliance Testing

BP @ Cherry Pt

10/15/08

#2 TGU STACK

A = NORTH PORT

B = EAST PORT

Time	ΔP	Temp	Time	ΔP	Temp	Time	ΔP	Temp
1333			1414			1515		
A 6	0.22	104		0.20	104		0.22	104
5	0.23	104		0.21	105		0.21	105
4	0.23	104		0.21	104		0.22	105
3	0.22	104		0.22	104		0.23	105
2	0.21	104		0.21	104		0.23	105
1	0.20	104		0.22	105		0.22	105
B 6	0.22	104		0.22	105		0.21	105
5	0.23	104		0.23	104		0.22	105
4	0.22	104		0.22	105		0.23	105
3	0.21	104		0.22	105		0.23	105
2	0.22	104		0.22	105		0.23	105
1	0.21	103		0.21	104		0.22	105

Method 4 Source Test Data Sheet

Facility: BP Cherry Pt
 Location: Blaine WA
 Test Team: KEF, DDF, RCP
 Page 1 of 1

Unit: #2 TGU STACK
 Test No. 2
 Date: 10/15/08

Leak Check Data		
Pre-test <u>0.000</u>	cfm @ <u>12"</u>	Init. <u>KEF</u>
Port change <u>-</u>	cfm @ <u>-</u>	Init. <u>-</u>
Port change <u>-</u>	cfm @ <u>-</u>	Init. <u>-</u>
Post Test <u>0.000</u>	cfm @ <u>12"</u>	Init. <u>KEF</u>

PRETEST DATA:

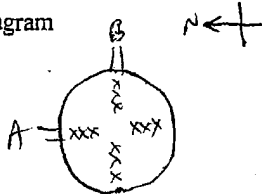
P Bar.: 30.15
 Sample Time 180 120
 P static -0.10
 Ambient F -
 Pitot Factor 0.84
 K3 Factor -

Meter No. 1694
 Meter Factor 0.998
 Filter No. -
 Filter Tare -
 Cal. H@ 1.827
 Probe -
 Nozzle -

Impinger No.	Grams		
	Post	Pre	Net
1. mL	<u>810.5</u>	<u>731.1</u>	<u>79.4</u>
2. mL	<u>733.9</u>	<u>655.0</u>	<u>78.9</u>
3. mL	<u>708.8</u>	<u>656.1</u>	<u>52.7</u>
4. mL	<u>958.5</u>	<u>941.7</u>	<u>16.8</u>
5. mL	<u>-</u>	<u>-</u>	<u>-</u>
6. mL	<u>-</u>	<u>-</u>	<u>-</u>
Total gain			<u>117.9</u>

O₂ 3
 CO₂ 3
 Mole. -
 Bws. 0.08

Stack
Diagram



Point
Layout

Test Summary:
Notes:

Start Time: 1630 Stop Time: 1836

PITOT # P002NW

Handwritten signature

Meter Conditions						Temperature						
Point	Time	ΔP	√ΔP	ΔH	Meter Volume	Stack	Probe	Oven	Imp. Out	Meter In	Meter Out	Vac.
Initial Volume												
A6	0	.22		1.25	891.386	104	241	251	50	60	60	0
5	10	.22			897.42	104	243	251	50	61	60	0
4	20	.21			903.45	104	244	250	51	61	60	0
3	30.45	.20			909.48	104	243	250	51	61	60	0
2	40.60	.21			915.51	104	244	249	51	62	59	0
1	50.75	.21			921.54	104	245	251	51	62	59	0
B6	60	.22			927.572	104	245	251	51	63	59	0
5	70.8	.23			933.60	104	244	251	52	63	59	0
4	80	.21			939.63	104	245	252	52	64	59	0
3	90.35	.21			945.66	104	246	251	52	64	59	0
2	100	.20			951.61	104	245	251	53	65	59	0
1	110.50	.20			957.71	104	246	251	53	65	59	0
End	120				963.617							
	↑											
	KEF											
Project ID: NW08BPCP111												
Plant: BP West Coast Products												
Source: #2 Tail Gas Unit												
Description: Methods 3A, 6C, 7E, 8, 9, 10, 15												
Compliance Testing												
Avg.						104					61.0	

low @
606

BP @ Cherry PT

10/15/08

#2 TGU Stack

Project ID: NW08BPCP111
 Plant: BP West Coast Products
 Source: #2 Tail Gas Unit
 Description: Methods 3A, 6C, 7E, 8,
 9, 10, 15
 Compliance Testing

Time	1648		1737		1830	
	ΔP	Temp	ΔP	Temp	ΔP	Temp
A 6	.20	104	.21	104	.20	103
5	.21	104	.22	104	.21	104
4	.21	104	.22	104	.22	104
3	.22	104	.21	104	.21	104
2	.22	104	.21	104	.21	104
1	.21	104	.21	104	.20	103
B 6	.21	104	.22	104	.22	104
5	.21	104	.23	104	.22	104
4	.22	104	.22	104	.21	104
3	.23	104	.21	104	.21	104
2	.22	104	.21	104	.22	103
1	.21	104	.21	104	.22	103

Method 4 Source Test Data Sheet

Facility: BPC chemistry Pt
 Location: Bmine WA
 Test Team: KEF, DDF, RCP
 Page 1 of 1

Unit: #2 TGU STACK
 Test No. 3
 Date: 10/15/08

Leak Check Data		
Pre-test <u>0.001</u>	cfm @ <u>10"</u>	Init. <u>KEF</u>
Port change <u>-</u>	cfm @ <u>-</u>	Init. <u>-</u>
Port change <u>-</u>	cfm @ <u>-</u>	Init. <u>-</u>
Post Test <u>0.000</u>	cfm @ <u>10"</u>	Init. <u>KEF</u>

PRETEST DATA:

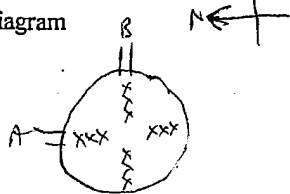
P Bar.: 30.15
 Sample Time 120
 P static -0.10
 Ambient F -
 Pitot Factor 0.84
 K3 Factor -

Meter No. 1696
 Meter Factor 0.998
 Filter No. -
 Filter Tare -
 Cal. H@ 1.827
 Probe -
 Nozzle -

Impinger No.	Grams		
	Post	Pre	Net
1. mL	<u>887.2</u>	<u>809.2</u>	<u>78.0</u>
2. mL	<u>754.2</u>	<u>738.9</u>	<u>15.3</u>
3. mL	<u>737.6</u>	<u>735.7</u>	<u>1.9</u>
4. mL	<u>945.7</u>	<u>925.0</u>	<u>20.7</u>
5. mL	<u>-</u>	<u>-</u>	<u>-</u>
6. mL	<u>-</u>	<u>-</u>	<u>-</u>
Total gain			<u>115.9</u>

O₂ 3
 CO₂ 3
 Mole. -
 Bws. 08

Stack
Diagram



Point
Layout

Test Summary:
Notes:

Start Time: 1948 Stop Time: 2048

PITOT # P002NW

KEF

Meter Conditions						Temperature						
Point	Time	ΔP	√ΔP	ΔH	Meter Volume	Stack	Probe	Oven	Imp. Out	Meter In	Meter Out	Vac.
			Initial Volume									
A4	0	0.21		1.25	964.049	105	246	251	53	60	59	0
5	10	0.22			969.81	104	247	250	50	60	59	0
4	20	0.22			975.57	105	245	250	47	64	60	0
3	30	0.21			981.33	105	248	251	47	62	60	0
2	40	0.22			987.09	105	247	251	46	63	60	0
1	50	0.21			992.85	105	244	252	46	64	60	0
B6	60	0.23			998.613	105	247	250	46	64	60	0
5	70	0.22			1004.37	105	246	251	47	64	60	0
4	80	0.23			1010.13	105	245	251	48	65	60	0
3	90	0.22			1015.89	105	245	251	48	65	60	0
2	100	0.22			1021.65	104	248	252	48	66	61	0
1	110	0.21			1027.41	104	249	252	49	66	60	0
	120				1033.132							
Project ID: NW08BPCP111												
Plant: BP West Coast Products												
Source: #2 Tail Gas Unit												
Description: Methods 3A, 6C, 7E, 8, 9, 10, 15												
Compliance Testing												

BP @ Cherry Pt
10/15/08
#2 TGU Stack

Project ID: NW08BPCP111
Plant: BP West Coast Products
Source: #2 Tail Gas Unit
Description: Methods 3A, 6C, 7E, 8,
9, 10, 15
Compliance Testing

Time	AP	Temp	Time	AP	Temp	Time	AP	Temp
1948			2036			2124		
A6	.23	104	.22	105		.23	104	
5	.22	105	.21	105		.22	104	
4	.22	105	.21	105		.22	104	
3	.22	105	.22	105		.22	105	
2	.21	105	.22	105		.21	105	
1	.21	105	.22	104		.20	105	
36	.21	105	.23	105		.21	105	
5	.22	105	.23	105		.22	105	
4	.23	105	.24	105		.23	105	
3	.22	105	.22	105		.22	105	
2	.22	105	.22	105		.22	104	
1	.20	105	.21	105		.21	104	

APPENDIX E - REFERENCE METHOD DATA LISTING

Methods 6C, 7E, 8, & 10
Test Results Summary

Plant	BP West Coast Products - Cherry Point	Address	Blaine, WA	Job #	NW08BPCP111	
Location	No. 2 TGU Stack	Personnel	KEF, DDF, RCD	Date	10/14 - 10/15/08	
Run Number		1	2	3	Average	Compliance
Date	Test Date	10/14/08	10/14/08	10/15/08		
Start	Run Start Time	11:05	16:22	9:34		
End	Run Finish Time	12:19	17:27	10:40		
	Net Traversing Points	12	12	12	12	
C _p	Pitot Tube Coefficient	0.84	0.84	0.84	0.84	
P _{br}	Barometric Pressure, in. Hg	29.85	29.85	30.15	29.95	
ΔH	Average orifice meter Differential, in. H ₂ O	0.907	0.900	0.853	0.887	
V _m	Dry Gas Meter Volume Sampled actual, acf	32.212	31.658	31.012	31.63	
T _m	Average Dry Gas Meter Temperature, °F	58.1	62.5	54.7	58.4	
V _{mstd}	Dry Gas Meter Volume Sampled standard, dscf	32.757	31.926	32.060	32.25	
%CO ₂	Carbon Dioxide, % volume	2.44	2.12	1.99	2.182	
%O ₂	Oxygen, % volume	2.91	2.73	2.71	2.785	
% CO+ N ₂	Carbon Monoxide & Nitrogen, %	94.7	95.2	95.3	95.0	
M _d	Dry Molecular Weight, lb/lb-Mole	28.51	28.45	28.43	28.46	
M _w	Wet Molecular weight, lb/lb-Mole	27.72	27.70	27.74	27.72	
B _{ws}	Moisture Concentration of Stack Gas, by volume	7.5	7.1	6.5	7.1	
P _g	Flue Gas Static Pressure, in. H ₂ O	-0.13	-0.12	-0.10	-0.12	
P _a	Absolute Flue Gas Pressure, in. Hg	29.84	29.84	30.14	29.94	
T _s	Average Stack Gas Temperature, °F	106.8	106.3	103.0	105.33	
ΔP _{stk}	Average Velocity Head, in. H ₂ O	0.476	0.474	0.462	0.471	
V _s	Average Stack Gas Velocity, ft/sec	28.30	28.19	27.21	27.90	
A _s	Stack Area, ft ²	6.68	6.68	6.68	6.68	
Q _a	Actual Volumetric Flow Rate, acfm	11,344	11,300	10,908	11,184	
Q _{std}	Dry Volumetric Flow Rate, dry scfm	9,750	9,760	9,632	9,714	
%I	Percent Isokinetic of Sampling Rate, %	101.5	100.5	100.5	100.8	90-110
VE	Visible Emissions, % opacity	0.0	0.0	0.0	0.0	10.0
NO _{x ppm}	Nitrogen Oxides Concentration, ppm	33.09	32.94	32.00	32.68	
NO _{x lb/dscf}	Nitrogen Oxides Concentration, lb/dscf x 10 ⁻⁶	3.95	3.93	3.82	3.90	
NO _{x lb/hr}	Nitrogen Oxides Emission Rate, lb/hr	2.31	2.30	2.21	2.27	2.5
SO _{2 ppm}	Sulfur Dioxide Concentration, ppm	167.51	185.90	160.87	171.43	
SO _{2 lb/dscf}	Sulfur Dioxide Concentration, lb/dscf x 10 ⁻⁶	27.83	30.88	26.72	28.48	
SO _{2 lb/hr}	Sulfur Dioxide Emission Rate, lb/hr	16.28	18.09	15.44	16.60	24.0
CO ppm	Carbon Monoxide Concentration, ppm	97.23	76.12	66.23	79.86	
CO lb/dscf	Carbon Monoxide Concentration, lb/dscf x 10 ⁻⁶	7.07	5.53	4.81	5.80	
CO lb/hr	Carbon Monoxide Emission Rate, lb/hr	4.13	3.24	2.78	3.39	3.9
V _{m (std)}	Dry Gas Meter Volume Sampled standard, dscm	0.928	0.904	0.908	0.913	
N	Normality of Barium Standard Solution (BaCl ₂), meq/mL	0.0105	0.0105	0.0105	0.0105	
	Sulfuric Acid Mist					
V _{aliquot}	Volume of 80% IPA Impinger Sample, mL	195.0	160.0	155.0	170.0	
V _{IPA Imp}	Volume of Aliquot, mL	50.0	50.0	50.0	50.0	
V _{titrant}	Volume of Titrant, mL	4.40	7.50	6.275	6.06	
V _{blank}	Volume of Blank, mL	0.02	0.02	0.02	0.02	
C _{mg/dscm}	Sulfuric Acid Mist Concentration, mg/dscm	9.48	13.63	11.00	11.37	
C _{ppm}	Sulfuric Acid Mist Concentration, ppm	2.13	3.07	2.47	2.56	
C _{ppm @7% O2}	Sulfuric Acid Mist Concentration, ppm @ 7% O ₂	1.65	2.35	1.89	1.96	
ER _{lb/hr}	Sulfuric Acid Mist Emission Rate, lb/hr	0.346	0.498	0.397	0.414	1.23
	Sulfur Dioxide					
V _{aliquot}	Volume of 3% H ₂ O ₂ Impinger Sample, mL	445.0	450.0	440.0	445.0	
V _{IPA Imp}	Volume of Aliquot, mL	10.0	10.0	10.0	10.0	
V _{titrant}	Volume of Titrant, mL	30.60	30.70	26.025	29.11	
V _{blank}	Volume of Blank, mL	0.02	0.02	0.02	0.02	
C _{mg/dscm}	Sulfur Dioxide Concentration, mg/dscm	493.3	513.5	423.8	476.9	
C _{ppm}	Sulfur Dioxide Concentration, ppm	170.0	177.0	146.1	164.3	
C _{ppm @ 0% O2}	Sulfur Dioxide Concentration, ppm @ 0% O ₂	197.5	203.6	167.8	126.1	
ER _{lb/hr}	Sulfur Dioxide Emission Rate, lb/hr	18.02	18.78	15.29	17.35	24.0

E - 2

BPCHP-00000165

Method 8
Run 2

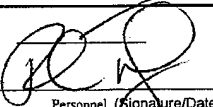
Plant	BP West Coast Products - Cherry Point		Run No.	2	Date	10/14/2008	Job #	NW08BPCP111
Address	Blaine, WA		Equipment ID		Constants		Checks	Pre Mid Post
Location	No. 2 TGU Stack		Reag. Box	Samp. box	A_2 foot ²	6.68	Vacuum	13 14
Personnel	KEF, DDF, RCD		Umbical	Meter box	Y	0.998	Init DGM	
% Moisture	7.1	Meas	Stack TC	TC Readout	ΔH_a	1.827	Final DGM	
P_{Br} in "Hg	29.85		Meter Box	Pitot	C_p	0.840	Leak rate	0.000 0.000
P static in H ₂ O	-0.12		Orsat Pump	Nozzle	D_N in inches	0.260	Pitot	Good Good
K factor			Est. Moisture	gm H ₂ O	M3	2.12	%CO ₂	Nozzle Good Good
Filter #				$B_{measured}$		7.1	%O ₂	Stack TC Good Good
Filter Wt.				$B_{unsaturated}$		7.4	Fo=	8.582
							Ms	27.70
								M _d 28.46

Traverse Point No.	Elapsed Time In Minutes		Clock Time	DGM Reading	Velocity	Stack Temp.	DGM Temp.	Orifice Pressure ΔH in H ₂ O		Probe Temp.	Box Temp.	Filter Outlet	Imping. Temp.	Pump Vac.	Notes
	Begin	End	24 hr	ft ³	ΔP	°F	°F	Desired	Actual	°F	°F	°F	°F	Hg	
A6	0.0	5.0	18:22:00	756.303	0.21	105	60.5		0.84	310	311		55	1	
A5	5.0	10.0		759.780	0.24	107	60.0		0.96	312	316		51	1	
A4	10.0	15.0		761.740	0.23	107	60.5		0.92	314	317		48	1	
A3	15.0	20.0		764.330	0.23	107	61.5		0.92	315	315		48	1	
A2	20.0	25.0		767.060	0.23	107	61.5		0.92	317	315		48	1	
A1	25.0	30.0		769.620	0.22	107	61.5		0.88	315	316		48	1	
B6	30.0	35.0		772.168	0.22	106	62.5		0.88	317	319		49	1	
B5	35.0	40.0		774.790	0.22	106	63.5		0.88	317	320		49	2	
B4	40.0	45.0		777.410	0.23	106	64.5		0.92	317	319		49	2	
B3	45.0	50.0		780.054	0.23	106	64.5		0.92	316	321		50	2	
B2	50.0	55.0		782.770	0.22	106	64.5		0.88	317	319		50	2	
B1	55.0	60.0		785.360	0.22	105	64.5		0.88	316	317		50	2	
		60.0	17:27:00	787.961											

Final	17:27	787.961													
Sum or avg	60.0	31.658	0.225	106.3	62.5	0.90									Max 2

Flow		Impingers					Particulates			
ft/sec	28.2	Contents	Vol. (mL)	Post weight	Pre weight	gain	mgms	lb/hr	gr/scf	lb/mmBTU
dscfm	9,760.4	1	80% IPA	100	736.8	742.8	-6.0			
acfm	11,298.6	2	3% H ₂ O ₂	100	784.3	748.8	35.5			
		3	3% H ₂ O ₂	100	783.9	772.1	11.8			
		4	SG	250	941.8	931.2	10.6			

Probe Rinse	N/A	N/A	N/A	
Filter	N/A	N/A	N/A	
Impinger Catch	N/A	N/A	N/A	
Total	N/A	N/A	N/A	

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

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BP West Coast Products, LLC
Cherry Point Refinery
Blaine, WA

One - Minute Reference Method Data
Trailer 11

No. 2 TGU Stack

Date	Time	System 1					System 2				Trailer	Calibration Status
		SO ₂ 1	NO _x 1	CO 1	O ₂ 1	CO ₂ 2	NO _x 2	CO 2	O ₂ 2	CO ₂ 2	Temp	
		ppm	ppm	ppm	%	%	ppm	ppm	%	%	deg F	
10/14/2008	9:24:00	0.00	-0.02	-11.16	21.141	-0.280	-0.06	0.32	21.165	-0.865	62.3	Calibrating Both Systems
10/14/2008	9:25:00	0.00	-0.02	-11.16	21.141	-0.278	-0.06	0.46	21.161	-0.884	62.3	Calibrating Both Systems
10/14/2008	9:26:00	0.00	-0.02	-11.16	21.140	-0.277	-0.06	0.47	21.158	-0.888	62.3	Calibrating Both Systems
10/14/2008	9:27:00	0.00	-0.02	-11.16	21.141	-0.279	-0.06	0.47	21.159	-0.882	62.3	Calibrating Both Systems
10/14/2008	9:28:00	0.00	-0.02	-11.16	21.114	-0.279	-0.06	0.45	21.155	-0.874	62.3	Calibrating Both Systems
10/14/2008	9:29:00	0.00	0.04	-7.89	0.466	-0.112	-0.06	0.49	21.156	-0.885	62.3	Calibrating Both Systems
10/14/2008	9:30:00	0.00	0.00	0.65	-0.016	0.005	-0.06	0.48	21.152	-0.887	62.3	Calibrating Both Systems
10/14/2008	9:31:00	0.00	-0.03	57.36	6.973	6.261	-0.06	0.51	21.149	-0.870	62.3	Calibrating Both Systems
10/14/2008	9:32:00	0.00	-0.02	206.71	21.856	20.567	-0.06	0.52	21.151	-0.879	62.3	Calibrating Both Systems
10/14/2008	9:33:00	0.00	-0.02	206.71	20.406	19.129	-0.06	0.55	21.151	-0.866	62.3	Calibrating Both Systems
10/14/2008	9:34:00	0.00	-0.02	206.71	12.251	12.349	-0.06	0.52	21.152	-0.876	62.3	Calibrating Both Systems
10/14/2008	9:35:00	0.00	56.45	138.80	3.297	3.199	-0.06	0.56	21.135	-0.867	62.3	Calibrating System 2
10/14/2008	9:36:00	0.00	99.31	97.10	-0.024	0.020	-0.06	0.60	21.149	-0.855	62.3	Calibrating Both Systems
10/14/2008	9:37:00	0.00	68.95	62.22	0.069	0.024	-0.06	0.57	21.149	-0.857	62.3	Calibrating Both Systems
10/14/2008	9:38:00	0.00	51.07	49.57	-0.032	0.015	-0.06	0.63	21.147	-0.856	62.3	Calibrating Both Systems
10/14/2008	9:39:00	0.00	19.98	12.31	16.554	0.075	-0.06	0.67	16.666	-0.876	62.3	Calibrating System 2
10/14/2008	9:40:00	0.00	1.40	18.51	17.827	0.542	-0.06	0.60	0.016	-1.006	62.4	Calibrating System 2
10/14/2008	9:41:00	0.00	32.82	83.37	3.182	2.452	-0.05	0.30	0.008	-1.025	62.5	Calibrating System 2
10/14/2008	9:42:00	0.00	33.50	77.64	3.217	2.450	-0.06	0.28	-0.001	-0.809	62.6	Calibrating System 2
10/14/2008	9:43:00	0.00	33.18	73.36	3.000	2.509	-0.06	9.18	5.784	4.602	62.7	Calibrating System 2
10/14/2008	9:44:00	0.00	33.26	80.25	2.978	2.531	-0.06	99.84	21.943	22.269	62.7	Calibrating System 2
10/14/2008	9:45:00	0.00	33.39	78.55	3.014	2.542	-0.05	99.82	14.316	14.461	62.8	Calibrating System 2
10/14/2008	9:46:00	0.00	33.47	77.78	2.952	2.558	78.14	99.37	0.680	1.616	62.8	
10/14/2008	9:47:00	0.00	33.74	70.55	2.970	2.558	96.60	97.54	-0.010	0.228	62.8	Calibrating System 2
10/14/2008	9:48:00	0.00	33.88	73.02	2.991	2.541	58.28	67.44	-0.004	0.258	62.9	Calibrating System 2
10/14/2008	9:49:00	0.00	33.65	85.96	2.947	2.546	38.71	46.10	7.598	0.312	63.0	
10/14/2008	9:50:00	0.00	22.75	38.67	3.958	0.539	28.18	41.39	3.023	1.711	63.2	
10/14/2008	9:51:00	0.00	44.23	1.38	-0.011	0.017	43.39	1.38	-0.010	0.281	63.2	Calibrating Both Systems
10/14/2008	9:52:00	0.00	45.67	1.71	-0.013	0.015	44.93	0.10	-0.011	0.277	63.2	Calibrating Both Systems
10/14/2008	9:53:00	0.00	47.23	1.89	-0.015	0.016	46.00	0.05	-0.012	0.266	63.2	Calibrating Both Systems
10/14/2008	9:54:00	0.00	48.34	2.02	-0.016	0.016	46.97	0.06	-0.012	0.257	63.3	Calibrating Both Systems
10/14/2008	9:55:00	0.00	40.92	13.73	0.581	0.364	45.28	3.59	1.092	0.919	63.5	
10/14/2008	9:56:00	0.00	10.92	18.82	0.636	0.532	34.40	70.66	3.009	3.049	63.6	
10/14/2008	10:06:00	0.00	33.61	75.01	2.992	2.596	41.59	61.31	1.903	1.978	64.5	
10/14/2008	10:08:00	0.00	33.71	80.42	3.034	2.564	33.86	79.85	3.039	3.165	64.6	
10/14/2008	10:09:00	0.00	33.77	75.59	3.031	2.564	33.96	75.39	3.037	3.182	64.8	
10/14/2008	10:10:00	0.00	33.99	73.45	3.077	2.553	34.18	79.92	3.080	3.172	65.0	
10/14/2008	10:11:00	0.00	33.79	74.98	3.078	2.562	34.04	71.25	3.089	3.172	65.0	
10/14/2008	10:12:00	0.00	33.56	80.23	2.902	2.576	33.78	81.10	2.907	3.195	65.1	
10/14/2008	10:13:00	0.00	33.91	75.56	3.007	2.545	34.12	77.88	3.012	3.178	65.4	
10/14/2008	10:14:00	0.00	33.69	80.97	2.963	2.554	33.87	80.06	2.971	3.189	65.5	
10/14/2008	10:15:00	0.00	33.78	75.20	2.989	2.557	33.98	74.19	2.990	3.201	65.5	
10/14/2008	10:16:00	0.00	33.76	83.60	2.987	2.560	33.98	80.98	2.997	3.197	65.8	
10/14/2008	10:17:00	0.00	33.45	80.46	3.008	2.569	33.64	80.34	3.017	3.220	65.9	
10/14/2008	10:18:00	0.00	33.43	75.72	3.039	2.566	33.64	79.56	3.046	3.219	65.9	
10/14/2008	10:19:00	0.00	33.56	78.79	2.991	2.565	33.77	75.60	3.004	3.220	66.1	
10/14/2008	10:20:00	0.00	33.84	74.60	2.902	2.554	34.05	76.89	2.903	3.214	66.3	
10/14/2008	10:21:00	0.00	34.07	78.97	3.084	2.511	34.27	74.14	3.084	3.191	66.4	
10/14/2008	10:22:00	0.18	32.89	82.56	3.021	2.510	33.23	81.19	3.009	3.183	66.6	
10/14/2008	10:23:00	0.00	33.24	90.56	3.016	2.518	33.44	87.23	2.993	3.206	66.8	
10/14/2008	10:24:00	0.00	32.85	82.06	3.071	2.523	33.10	82.64	3.073	3.205	66.9	
10/14/2008	10:25:00	0.00	33.12	80.72	2.896	2.549	33.42	79.89	2.902	3.235	67.2	
10/14/2008	10:26:00	0.00	33.75	76.01	2.969	2.540	34.06	73.70	2.966	3.239	67.3	
10/14/2008	10:27:00	0.25	33.21	87.41	3.000	2.542	33.45	79.93	3.008	3.243	67.5	
10/14/2008	10:28:00	0.26	33.01	84.18	2.898	2.548	33.21	85.54	2.901	3.259	67.7	
10/14/2008	10:29:00	0.27	33.55	78.04	2.949	2.527	33.79	74.71	2.947	3.230	67.8	
10/14/2008	10:30:00	0.27	33.31	78.77	3.016	2.507	33.60	76.90	3.022	3.201	68.1	
10/14/2008	10:31:00	0.28	33.10	89.47	2.960	2.520	33.39	80.92	2.960	3.241	68.2	
10/14/2008	10:32:00	0.30	33.04	82.78	3.009	2.515	33.33	83.86	3.012	3.241	68.5	
10/14/2008	10:33:00	0.32	33.35	93.03	3.023	2.526	33.59	84.20	3.028	3.249	68.6	
10/14/2008	10:34:00	0.31	32.78	88.88	3.151	2.525	33.08	88.31	3.161	3.261	68.9	
10/14/2008	10:35:00	0.31	32.87	89.72	2.989	2.565	33.19	85.33	2.995	3.302	69.1	
10/14/2008	10:36:00	0.31	33.43	74.70	2.982	2.565	33.68	73.07	2.988	3.313	69.2	
10/14/2008	10:37:00	0.31	33.51	83.88	2.951	2.557	33.67	79.12	2.959	3.307	69.5	
10/14/2008	10:38:00	0.31	33.34	80.78	2.974	2.546	33.57	74.42	2.984	3.302	69.6	
10/14/2008	10:39:00	0.32	33.09	89.13	3.021	2.530	33.32	81.80	3.033	3.277	70.0	
10/14/2008	10:40:00	0.31	32.66	91.31	2.943	2.549	33.03	87.16	2.958	3.297	70.0	
10/14/2008	10:41:00	0.31	33.06	85.24	2.946	2.562	33.34	81.08	2.957	3.318	70.3	
10/14/2008	10:42:00	0.31	33.43	82.38	2.980	2.569	33.70	77.74	2.990	3.326	70.4	
10/14/2008	10:43:00	0.31	33.33	83.48	2.938	2.582	33.61	77.16	2.950	3.339	70.7	
10/14/2008	10:44:00	0.31	33.52	81.94	2.957	2.567	33.77	75.85	2.972	3.336	70.9	
10/14/2008	10:45:00	0.31	33.35	85.17	2.935	2.528	33.65	77.35	2.962	3.310	70.9	
10/14/2008	10:46:00	0.31	89.33	184.69	0.255	0.255	33.35	80.29	2.985	3.278	71.3	
10/14/2008	10:47:00	0.36	101.96	201.53	0.030	0.176	33.19	82.90	2.867	3.267	71.3	Calibrating System 1
10/14/2008	10:48:00	19.02	101.96	201.88	0.027	0.176	33.28	72.83	3.050	3.240	71.5	Calibrating System 1
10/14/2008	10:49:00	190.68	101.96	202.11	0.027	0.176	33.25	80.74	2.846	3.287	71.8	Calibrating System 1
10/14/2008	10:50:00	140.46	97.54	131.76	0.157	0.293	33.23	83.79	2.959	3.265	71.8	Calibrating System 1
10/14/2008	10:51:00	100.86	95.52	105.30	0.021	0.182	32.56	90.89	2.886	3.304	72.1	Calibrating System 1

BP West Coast Products, LLC
Cherry Point Refinery
Blaine, WA

One - Minute Reference Method Data
Trailer 11

No. 2 TGU Stack

Date	Time	System 1					System 2				Trailer Temp deg F	Calibration Status
		SO ₂ 1 ppm	NO _x 1 ppm	CO 1 ppm	O ₂ 1 %	CO ₂ 2 %	NO _x 2 ppm	CO 2 ppm	O ₂ 2 %	CO ₂ 2 %		
10/14/2008	10:52:00	98.57	95.22	105.37	0.020	0.186	33.03	82.86	2.942	3.311	72.2	Calibrating System 1
10/14/2008	10:53:00	36.91	13.90	17.95	0.016	0.186	32.87	83.32	3.025	3.296	72.3	Calibrating System 1
10/14/2008	10:54:00	12.17	0.31	13.05	0.017	0.186	32.64	83.09	2.899	3.304	72.6	Calibrating System 1
10/14/2008	10:55:00	9.51	0.21	13.25	0.015	0.189	32.78	88.99	2.947	3.273	72.7	Calibrating System 1
10/14/2008	10:56:00	8.51	0.14	13.41	0.015	0.195	32.42	86.26	2.987	3.277	72.7	Calibrating System 1
10/14/2008	10:57:00	8.03	0.09	13.65	0.016	0.196	33.09	78.76	2.971	3.293	73.0	Calibrating System 1
10/14/2008	10:58:00	3.78	0.08	13.85	0.015	0.196	33.22	81.69	3.020	3.286	73.1	Calibrating System 1
10/14/2008	10:59:00	70.31	21.76	67.42	2.365	2.038	32.94	70.10	3.003	3.293	73.1	
10/14/2008	11:00:00	150.94	32.78	86.75	2.915	2.518	32.91	80.58	2.932	3.299	73.4	
10/14/2008	11:01:00	158.50	32.91	82.53	3.039	2.492	33.22	71.14	3.055	3.268	73.5	
10/14/2008	11:02:00	163.34	32.36	88.74	3.027	2.511	32.70	74.95	3.048	3.280	73.6	
10/14/2008	11:03:00	163.08	32.34	92.36	3.003	2.521	32.69	82.77	3.018	3.298	73.8	
10/14/2008	11:04:00	163.27	32.66	85.84	3.063	2.512	32.93	75.34	3.077	3.298	74.0	
10/14/2008	11:05:00	162.88	32.42	86.20	3.027	2.536	32.73	73.86	3.047	3.318	74.0	
10/14/2008	11:06:00	162.38	32.77	86.74	2.992	2.562	33.10	75.89	2.999	3.320	74.1	
10/14/2008	11:07:00	162.89	32.75	84.93	2.997	2.555	33.07	73.48	3.003	3.332	74.3	
10/14/2008	11:08:00	163.36	32.60	82.72	3.008	2.551	32.93	70.30	3.014	3.313	74.4	
10/14/2008	11:09:00	164.62	32.69	85.49	2.950	2.541	33.16	76.22	2.959	3.310	74.5	
10/14/2008	11:10:00	166.91	32.94	91.57	3.011	2.540	33.34	72.31	3.020	3.298	74.5	
10/14/2008	11:11:00	167.93	32.33	91.68	3.115	2.541	32.67	81.41	3.126	3.291	74.5	
10/14/2008	11:12:00	169.32	32.34	93.77	3.086	2.574	32.74	79.58	3.096	3.338	74.5	
10/14/2008	11:13:00	170.17	32.56	89.39	3.033	2.593	33.03	77.17	3.045	3.334	74.6	
10/14/2008	11:14:00	169.20	32.87	89.30	3.002	2.594	33.28	73.46	3.013	3.363	74.9	
10/14/2008	11:15:00	173.16	32.89	90.92	2.949	2.598	33.18	76.73	2.960	3.363	74.9	
10/14/2008	11:16:00	176.37	32.85	80.67	3.011	2.589	33.19	70.24	3.026	3.356	74.9	
10/14/2008	11:17:00	174.30	32.57	88.49	3.017	2.565	32.98	71.80	3.031	3.327	74.9	
10/14/2008	11:18:00	174.17	32.36	92.50	3.011	2.559	32.82	79.48	3.024	3.329	75.2	
10/14/2008	11:19:00	173.33	32.44	87.94	3.012	2.569	32.93	73.92	3.026	3.343	75.3	
10/14/2008	11:20:00	175.49	32.58	92.17	2.946	2.579	33.07	78.15	2.958	3.354	75.4	
10/14/2008	11:21:00	175.01	32.47	90.26	2.936	2.571	32.93	74.08	2.952	3.341	75.4	
10/14/2008	11:22:00	174.65	32.22	94.28	2.985	2.550	32.71	81.30	3.002	3.313	75.6	
10/14/2008	11:23:00	173.43	32.19	87.36	2.980	2.542	32.73	71.89	2.998	3.319	75.8	
10/14/2008	11:24:00	171.24	32.38	95.72	3.025	2.538	32.89	78.66	3.039	3.317	75.8	
10/14/2008	11:25:00	170.91	32.36	91.82	2.973	2.551	32.82	78.16	2.992	3.316	75.8	
10/14/2008	11:26:00	170.65	32.60	88.12	2.958	2.561	33.04	74.90	2.972	3.328	76.1	
10/14/2008	11:27:00	172.42	32.47	91.78	3.019	2.537	32.99	74.38	3.040	3.327	76.2	
10/14/2008	11:28:00	171.36	32.06	94.50	3.038	2.572	32.63	76.60	3.046	3.336	76.2	
10/14/2008	11:29:00	167.19	32.05	98.05	2.872	2.603	32.60	80.45	2.891	3.357	76.3	
10/14/2008	11:30:00	164.72	32.58	92.47	2.880	2.577	33.04	81.67	2.883	3.345	76.3	
10/14/2008	11:31:00	165.11	32.48	92.29	2.990	2.536	32.90	73.44	2.993	3.297	76.3	
10/14/2008	11:32:00	164.28	31.97	95.63	2.966	2.530	32.46	75.53	3.015	3.276	76.3	
10/14/2008	11:33:00	161.52	32.20	87.87	2.911	2.514	32.68	76.78	2.907	3.272	76.2	
10/14/2008	11:34:00	160.98	32.10	100.43	3.003	2.495	32.58	74.68	3.028	3.245	76.2	
10/14/2008	11:35:00	158.48	31.87	97.33	2.804	2.510	32.30	84.39	2.815	3.284	76.2	
10/14/2008	11:36:00	157.12	32.16	97.31	3.048	2.475	32.60	79.16	3.059	3.222	76.2	
10/14/2008	11:37:00	159.15	31.30	104.57	2.980	2.508	31.88	85.88	3.009	3.237	76.2	
10/14/2008	11:38:00	153.07	32.02	98.03	2.885	2.513	32.46	84.96	2.888	3.266	76.2	
10/14/2008	11:39:00	153.03	31.93	98.46	3.073	2.492	32.37	77.33	3.097	3.231	76.0	
10/14/2008	11:40:00	153.63	31.70	99.94	2.864	2.519	32.09	85.82	2.879	3.245	75.9	
10/14/2008	11:41:00	155.81	32.20	95.46	2.960	2.496	32.72	77.34	2.971	3.221	75.9	
10/14/2008	11:42:00	153.55	31.54	104.54	3.002	2.490	32.11	83.11	3.026	3.207	75.9	
10/14/2008	11:43:00	155.32	31.71	98.23	2.930	2.497	32.21	89.36	2.940	3.214	75.9	
10/14/2008	11:44:00	151.34	32.12	89.06	3.112	2.477	32.59	71.57	3.124	3.156	75.8	
10/14/2008	11:45:00	155.44	31.60	95.93	3.040	2.497	32.10	80.13	3.045	3.165	75.8	
10/14/2008	11:46:00	160.55	31.96	96.88	2.986	2.512	32.41	80.83	2.994	3.155	76.1	
10/14/2008	11:47:00	164.87	31.97	96.17	3.047	2.503	32.37	82.84	3.051	3.131	76.2	
10/14/2008	11:48:00	167.73	31.62	95.75	3.040	2.520	32.08	79.88	3.050	3.127	76.3	
10/14/2008	11:49:00	168.62	31.75	92.96	3.019	2.527	32.24	76.13	3.027	3.145	76.4	
10/14/2008	11:50:00	167.36	32.01	98.26	2.947	2.530	32.51	81.06	2.961	3.126	76.7	
10/14/2008	11:51:00	168.85	31.73	99.36	3.096	2.506	32.20	84.70	3.111	3.090	76.7	
10/14/2008	11:52:00	168.62	31.22	107.62	2.898	2.548	31.73	94.74	2.913	3.111	77.1	
10/14/2008	11:53:00	166.89	31.67	105.00	2.930	2.541	32.19	88.33	2.943	3.110	77.2	
10/14/2008	11:54:00	166.60	31.80	93.44	2.917	2.538	32.33	86.15	2.919	3.123	77.4	
10/14/2008	11:55:00	168.71	31.99	93.51	3.003	2.528	32.45	74.60	3.025	3.078	77.6	
10/14/2008	11:56:00	166.37	31.74	100.93	2.877	2.533	32.19	85.90	2.890	3.076	77.6	
10/14/2008	11:57:00	163.92	31.94	98.70	2.894	2.518	32.41	85.01	2.903	3.079	77.7	
10/14/2008	11:58:00	164.32	31.87	97.45	2.949	2.503	32.49	81.14	2.962	3.051	78.0	
10/14/2008	11:59:00	165.58	31.48	98.69	2.996	2.507	32.04	87.10	3.014	3.041	78.1	
10/14/2008	12:00:00	166.05	31.45	103.15	2.959	2.531	31.97	88.05	2.973	3.073	78.1	
10/14/2008	12:01:00	163.69	31.70	96.47	2.962	2.542	32.16	85.19	2.979	3.079	78.4	
10/14/2008	12:02:00	161.31	31.91	103.25	2.875	2.555	32.40	87.09	2.891	3.095	78.5	
10/14/2008	12:03:00	162.22	31.82	101.06	2.903	2.534	32.32	86.21	2.912	3.078	78.5	
10/14/2008	12:04:00	167.20	31.72	102.28	2.995	2.523	32.21	90.18	3.009	3.049	78.8	
10/14/2008	12:05:00	179.68	31.73	104.10	2.953	2.535	32.27	87.39	2.973	3.074	79.0	
10/14/2008	12:06:00	131.37	19.15	69.57	1.596	1.359	32.22	88.58	2.899	3.010	79.0	
10/14/2008	12:07:00	14.22	0.17	18.53	0.019	0.261	30.94	75.45	2.737	2.888	79.0	Calibrating System 1
10/14/2008	12:08:00	4.19	0.13	18.60	0.014	0.255	29.97	76.86	2.735	2.869	79.1	Calibrating System 1
10/14/2008	12:09:00	1.61	0.08	11.14	0.014	0.255	30.03	78.81	2.738	2.878	79.4	Calibrating System 1

BP West Coast Products, LLC
Cherry Point Refinery
Blaine, WA

One - Minute Reference Method Data
Trailer 11

No. 2 TGU Stack

Date	Time	System 1					System 2				Trailer	Calibration Status
		SO ₂ 1 ppm	NO _x 1 ppm	CO 1 ppm	O ₂ 1 %	CO ₂ 2 %	NO _x 2 ppm	CO 2 ppm	O ₂ 2 %	CO ₂ 2 %	Temp deg F	
10/14/2008	12:10:00	0.69	0.02	96.72	5.664	5.343	30.01	74.72	3.062	3.050	79.4	Calibrating System 1
10/14/2008	12:11:00	-0.18	0.05	206.28	11.686	11.157	30.39	98.76	3.535	3.530	79.4	Calibrating System 1
10/14/2008	12:12:00	23.68	41.35	50.08	0.063	0.337	31.00	93.42	2.647	2.819	79.6	Calibrating System 1
10/14/2008	12:13:00	45.99	51.15	62.10	0.026	0.275	33.88	85.54	2.625	2.715	79.8	Calibrating System 1
10/14/2008	12:14:00	148.69	101.96	186.09	0.021	0.262	50.03	95.57	2.531	2.706	79.9	Calibrating System 1
10/14/2008	12:15:00	118.28	96.67	100.10	0.025	0.261	43.53	89.76	2.602	2.688	79.9	Calibrating System 1
10/14/2008	12:16:00	94.86	93.91	91.94	0.018	0.256	41.23	83.06	2.551	2.668	80.1	Calibrating System 1
10/14/2008	12:17:00	111.16	63.15	79.24	2.040	1.781	28.24	76.24	1.853	1.676	80.3	
10/14/2008	12:18:00	163.40	32.20	80.43	3.019	2.552	0.24	2.81	0.026	0.342	80.3	Calibrating System 2
10/14/2008	12:19:00	168.31	31.94	75.75	3.085	2.551	0.09	25.63	5.601	4.744	80.3	Calibrating System 2
10/14/2008	12:20:00	171.06	31.94	76.45	3.025	2.565	2.44	99.80	10.016	10.587	80.4	
10/14/2008	12:21:00	167.58	31.92	73.35	3.172	2.548	48.75	75.27	0.053	0.451	80.7	Calibrating System 2
10/14/2008	12:22:00	169.42	31.40	72.48	3.049	2.588	49.49	50.50	0.273	0.443	80.8	Calibrating System 2
10/14/2008	12:23:00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
10/14/2008	12:24:00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
10/14/2008	12:25:00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
10/14/2008	12:26:00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
10/14/2008	12:27:00	160.48	31.58	73.71	2.985	2.533	33.15	73.67	2.969	3.022	80.3	
10/14/2008	12:28:00	159.45	31.40	75.87	3.020	2.515	32.10	79.36	3.036	3.011	81.2	
10/14/2008	12:29:00	158.19	31.62	80.29	2.971	2.511	32.19	81.23	2.970	3.004	81.2	
10/14/2008	12:30:00	153.72	31.70	81.88	3.116	2.495	32.30	85.00	3.125	2.987	81.2	
10/14/2008	12:31:00	152.96	31.16	83.22	2.980	2.537	31.68	89.31	3.000	2.959	81.2	
10/14/2008	12:32:00	155.27	31.75	78.91	2.940	2.458	32.40	82.26	2.971	2.906	78.6	
10/14/2008	12:33:00	159.34	31.80	78.24	3.061	2.529	32.37	82.16	3.074	3.030	81.5	
10/14/2008	12:34:00	160.04	31.53	81.53	2.944	2.539	32.08	86.99	2.955	3.030	81.6	
10/14/2008	12:35:00	159.60	32.19	71.38	2.983	2.521	32.73	77.34	2.999	3.001	81.6	
10/14/2008	12:36:00	165.92	32.17	71.30	3.152	2.498	32.77	73.75	3.159	2.961	81.7	
10/14/2008	12:37:00	168.66	31.58	86.53	2.946	2.514	32.15	83.75	2.988	3.032	80.3	
10/14/2008	12:38:00	170.87	31.83	79.42	3.021	2.545	32.47	86.70	3.034	3.032	81.7	
10/14/2008	12:39:00	174.60	32.03	78.77	3.124	2.531	32.70	82.25	3.129	3.029	81.9	
10/14/2008	12:40:00	174.84	31.75	76.35	3.027	2.554	32.41	79.95	3.051	3.050	82.1	
10/14/2008	12:41:00	176.39	32.07	78.35	2.983	2.562	32.67	79.46	2.990	3.055	82.1	
10/14/2008	12:42:00	175.23	32.36	74.16	3.072	2.551	33.04	77.04	3.086	3.033	82.1	
10/14/2008	12:43:00	176.07	32.22	74.60	3.177	2.547	32.92	80.29	3.184	3.032	82.1	
10/14/2008	12:44:00	175.26	32.08	78.88	3.039	2.577	32.69	79.84	3.055	3.073	82.1	
10/14/2008	12:45:00	176.35	32.50	76.30	3.061	2.582	33.17	79.04	3.072	3.069	82.1	
10/14/2008	12:46:00	172.01	32.53	75.05	3.125	2.581	33.33	79.69	3.143	3.092	81.9	
10/14/2008	12:47:00	176.21	32.46	80.43	3.082	2.608	33.12	79.83	3.095	3.121	81.6	
10/14/2008	12:48:00	179.40	32.33	88.87	2.985	2.620	32.91	90.23	2.996	3.122	81.2	
10/14/2008	12:49:00	176.91	32.33	75.30	2.988	2.626	32.94	82.55	2.999	3.145	80.8	
10/14/2008	12:50:00	175.67	32.54	78.38	3.013	2.609	33.22	81.95	3.030	3.116	80.4	
10/14/2008	12:51:00	174.07	32.61	76.88	3.025	2.595	33.33	81.46	3.034	3.126	80.1	
10/14/2008	12:52:00	173.55	32.78	74.12	3.039	2.580	33.39	78.00	3.056	3.117	79.7	
10/14/2008	12:53:00	171.50	32.60	75.58	3.016	2.565	33.29	79.65	3.032	3.093	79.3	
10/14/2008	12:54:00	169.55	32.38	78.17	2.985	2.548	33.07	80.19	3.005	3.078	79.0	
10/14/2008	12:55:00	166.09	32.34	73.46	3.017	2.528	33.02	81.47	3.028	3.060	78.5	
10/14/2008	12:56:00	163.01	32.40	74.44	3.037	2.511	33.07	77.60	3.053	3.037	78.2	
10/14/2008	12:57:00	163.98	32.17	83.07	3.030	2.516	32.76	84.22	3.047	3.041	77.8	
10/14/2008	12:58:00	162.08	32.20	86.63	3.020	2.533	32.82	94.78	3.037	3.059	77.4	
10/14/2008	12:59:00	161.01	32.26	84.23	3.034	2.543	32.90	91.59	3.047	3.084	77.1	
10/14/2008	13:00:00	159.65	32.15	82.67	3.043	2.556	32.77	86.68	3.062	3.087	76.7	
10/14/2008	13:01:00	159.98	32.25	87.39	2.884	2.573	32.87	97.30	2.902	3.103	76.3	
10/14/2008	13:02:00	159.58	32.58	74.40	2.924	2.553	33.19	84.27	2.935	3.086	76.1	
10/14/2008	13:03:00	159.32	32.49	70.31	3.020	2.531	33.13	74.69	3.039	3.066	75.8	
10/14/2008	13:04:00	160.78	32.43	72.41	3.002	2.512	33.09	78.68	3.019	3.044	75.4	
10/14/2008	13:05:00	162.87	32.45	75.26	3.103	2.494	33.04	80.82	3.121	3.020	75.2	
10/14/2008	13:06:00	163.46	32.37	77.11	2.995	2.521	32.94	85.54	3.016	3.046	74.9	
10/14/2008	13:07:00	164.60	32.60	75.67	2.963	2.531	33.23	82.60	2.984	3.076	74.6	
10/14/2008	13:08:00	165.92	32.62	77.97	2.950	2.535	33.27	85.07	2.967	3.062	74.5	
10/14/2008	13:09:00	177.57	32.64	73.16	3.004	2.531	33.33	82.13	3.023	3.054	74.1	
10/14/2008	13:10:00	160.43	32.68	75.46	3.002	2.538	33.38	85.31	3.013	3.072	74.0	
10/14/2008	13:11:00	161.34	32.82	72.68	3.014	2.530	33.44	81.82	3.030	3.056	73.7	
10/14/2008	13:12:00	162.98	32.88	64.91	3.085	2.520	33.37	74.54	3.105	3.063	73.5	
10/14/2008	13:13:00	161.33	32.89	74.96	2.901	2.524	33.37	79.70	2.917	3.052	73.3	
10/14/2008	13:14:00	160.50	32.62	70.50	3.186	2.481	33.22	82.33	3.210	3.000	73.1	
10/14/2008	13:15:00	161.94	32.33	77.22	2.929	2.531	32.89	86.59	2.947	3.070	72.9	
10/14/2008	13:16:00	162.50	32.69	71.45	3.061	2.511	33.29	80.76	3.079	3.039	72.7	
10/14/2008	13:17:00	165.38	32.40	67.95	3.088	2.521	33.03	79.49	3.109	3.039	72.6	
10/14/2008	13:18:00	167.02	32.75	72.71	2.971	2.531	33.25	80.03	2.990	3.075	72.3	
10/14/2008	13:19:00	167.87	32.99	70.97	2.984	2.521	33.47	82.34	3.004	3.057	72.2	
10/14/2008	13:20:00	171.90	32.86	68.49	3.118	2.507	33.36	78.65	3.137	3.041	72.0	
10/14/2008	13:21:00	175.29	32.56	75.48	3.026	2.540	32.98	85.52	3.046	3.075	71.8	
10/14/2008	13:22:00	172.52	33.01	68.03	3.008	2.545	33.48	81.25	3.030	3.076	71.8	
10/14/2008	13:23:00	185.11	33.12	70.15	3.010	2.532	33.62	82.49	3.031	3.073	71.5	
10/14/2008	13:24:00	185.14	32.70	68.84	3.064	2.532	33.26	79.93	3.080	3.066	71.3	
10/14/2008	13:25:00	180.71	32.93	68.63	3.062	2.549	33.41	80.84	3.087	3.093	71.3	
10/14/2008	13:26:00	181.77	33.03	70.73	3.024	2.560	33.45	81.34	3.048	3.094	71.1	
10/14/2008	13:27:00	184.26	32.95	72.97	3.069	2.554	33.43	85.84	3.088	3.093	70.9	

BP West Coast Products, LLC
Cherry Point Refinery
Blaine, WA

One - Minute Reference Method Data
Trailer 11

No. 2 TGU Stack

Date	Time	System 1					System 2				Trailer	Calibration Status
		SO ₂ 1	NO _x 1	CO 1	O ₂ 1	CO ₂ 2	NO _x 2	CO 2	O ₂ 2	CO ₂ 2	Temp	
		ppm	ppm	ppm	%	%	ppm	ppm	%	%	deg F	
10/14/2008	13:28:00	184.08	33.12	66.61	3.038	2.572	33.54	81.75	3.064	3.114	70.9	
10/14/2008	13:29:00	181.37	33.27	62.68	2.972	2.577	33.71	76.68	2.998	3.122	70.8	
10/14/2008	13:30:00	178.19	33.24	59.12	3.013	2.557	33.67	72.37	3.034	3.111	70.6	
10/14/2008	13:31:00	177.97	33.04	60.06	3.105	2.513	33.54	71.06	3.127	3.049	70.4	
10/14/2008	13:32:00	179.25	32.82	69.72	2.997	2.520	33.32	77.17	3.032	3.063	70.4	
10/14/2008	13:33:00	175.10	32.60	72.48	2.986	2.517	33.09	89.41	3.008	3.039	70.4	
10/14/2008	13:34:00	174.86	32.77	69.15	3.033	2.524	33.16	82.31	3.057	3.074	70.4	
10/14/2008	13:35:00	175.77	32.68	70.04	3.023	2.527	33.12	84.40	3.048	3.074	70.2	
10/14/2008	13:36:00	173.98	32.65	67.67	2.974	2.530	33.01	86.85	2.998	3.071	70.0	
10/14/2008	13:37:00	172.84	33.20	65.06	2.995	2.528	33.63	77.66	3.019	3.078	70.0	
10/14/2008	13:38:00	173.39	33.31	48.13	3.048	2.516	33.78	67.94	3.072	3.067	70.0	
10/14/2008	13:39:00	172.83	33.52	53.08	3.035	2.490	34.02	61.62	3.062	3.041	69.9	
10/14/2008	13:40:00	192.35	33.32	50.88	3.017	2.457	33.79	65.09	3.033	3.002	69.6	
10/14/2008	13:41:00	173.06	33.28	56.06	3.111	2.412	33.89	66.15	3.125	2.961	69.5	
10/14/2008	13:42:00	172.92	32.45	61.24	3.067	2.412	32.99	77.82	3.112	2.937	69.5	
10/14/2008	13:43:00	167.74	33.09	54.95	3.044	2.419	33.37	70.43	3.068	2.955	69.5	
10/14/2008	13:44:00	166.57	33.01	53.52	3.116	2.410	33.44	68.18	3.156	2.938	69.5	
10/14/2008	13:45:00	165.47	32.85	55.00	2.869	2.418	33.17	69.19	2.893	2.954	69.4	
10/14/2008	13:46:00	170.64	33.11	51.14	3.021	2.356	33.50	65.63	3.030	2.902	69.2	
10/14/2008	13:47:00	162.16	32.60	59.36	3.077	2.336	33.07	70.43	3.107	2.869	69.1	
10/14/2008	13:48:00	159.18	32.75	69.15	2.964	2.363	33.06	80.68	2.986	2.893	69.1	
10/14/2008	13:49:00	157.27	33.05	50.35	3.102	2.345	33.39	74.95	3.102	2.869	69.1	
10/14/2008	13:50:00	155.72	32.90	53.42	2.952	2.363	33.32	66.53	3.006	2.894	69.1	
10/14/2008	13:51:00	162.23	33.02	47.04	3.006	2.332	33.43	60.12	3.020	2.871	69.0	
10/14/2008	13:52:00	150.43	32.63	52.72	2.972	2.299	33.12	64.61	2.992	2.815	68.9	
10/14/2008	13:53:00	148.48	32.03	62.43	2.958	2.256	32.43	77.71	2.977	2.782	68.7	
10/14/2008	13:54:00	146.62	32.28	53.95	2.943	2.230	32.56	73.83	2.963	2.740	68.6	
10/14/2008	13:55:00	145.62	32.49	69.05	2.944	2.230	32.80	77.09	2.962	2.739	68.6	
10/14/2008	13:56:00	145.56	32.65	40.45	2.922	2.244	32.85	71.21	2.946	2.749	68.6	
10/14/2008	13:57:00	147.21	33.40	47.17	2.930	2.237	33.77	53.52	2.948	2.747	68.6	
10/14/2008	13:58:00	148.03	33.00	56.59	3.062	2.228	33.44	73.97	3.040	2.733	68.6	
10/14/2008	13:59:00	151.77	32.78	43.04	3.037	2.241	33.08	61.99	3.084	2.737	68.6	
10/14/2008	14:00:00	150.75	33.46	55.18	3.001	2.240	33.77	57.40	3.017	2.737	68.3	
10/14/2008	14:01:00	150.31	32.80	53.34	3.187	2.225	33.26	76.20	3.200	2.724	68.2	
10/14/2008	14:02:00	153.08	32.54	46.53	3.034	2.269	32.73	65.54	3.044	2.754	68.2	
10/14/2008	14:03:00	151.29	33.08	53.46	2.995	2.286	33.41	63.72	3.031	2.780	68.2	
10/14/2008	14:04:00	148.66	33.17	33.85	2.975	2.283	33.52	62.19	2.988	2.787	68.1	
10/14/2008	14:05:00	148.83	33.60	44.11	2.985	2.282	33.96	51.23	2.988	2.768	68.1	
10/14/2008	14:06:00	150.86	33.33	40.78	2.975	2.286	33.64	57.87	2.998	2.766	68.0	
10/14/2008	14:07:00	150.87	33.59	36.56	2.981	2.285	33.90	56.01	2.987	2.766	67.8	
10/14/2008	14:08:00	149.57	33.72	55.20	3.001	2.281	34.13	61.93	3.011	2.773	67.7	
10/14/2008	14:09:00	152.02	33.28	38.16	3.123	2.257	33.67	60.10	3.128	2.750	67.7	
10/14/2008	14:10:00	151.34	33.09	43.83	2.947	2.278	33.46	58.93	2.961	2.762	67.7	
10/14/2008	14:11:00	151.39	33.39	43.02	2.937	2.277	33.67	57.36	2.947	2.778	67.7	
10/14/2008	14:12:00	155.14	33.17	52.80	2.910	2.274	33.33	65.87	2.921	2.757	67.7	
10/14/2008	14:13:00	157.66	33.02	47.75	3.002	2.261	33.22	63.46	3.013	2.754	67.6	
10/14/2008	14:14:00	158.45	33.04	39.53	3.012	2.273	33.27	62.14	3.021	2.758	67.5	
10/14/2008	14:15:00	153.62	33.21	47.21	2.970	2.288	33.43	61.11	2.981	2.775	67.3	
10/14/2008	14:16:00	151.11	33.22	46.19	2.954	2.290	33.51	60.55	2.962	2.800	67.3	
10/14/2008	14:17:00	153.50	33.16	34.11	2.925	2.286	33.41	55.53	2.932	2.798	67.3	
10/14/2008	14:18:00	154.91	33.87	27.04	3.089	2.266	34.12	45.78	3.096	2.762	67.3	
10/14/2008	14:19:00	155.23	33.83	43.99	3.051	2.269	34.07	48.97	3.061	2.775	67.3	
10/14/2008	14:20:00	157.10	33.29	39.72	2.938	2.285	33.52	62.41	2.945	2.789	67.3	
10/14/2008	14:21:00	158.70	33.47	46.63	2.932	2.284	33.71	55.05	2.942	2.781	67.3	
10/14/2008	14:22:00	209.33	33.09	37.10	2.987	2.280	33.27	62.63	2.995	2.789	67.3	
10/14/2008	14:23:00	159.00	33.62	43.68	3.017	2.269	33.89	53.48	3.030	2.769	67.3	
10/14/2008	14:24:00	158.26	33.52	33.36	3.079	2.263	33.74	55.58	3.090	2.764	67.2	
10/14/2008	14:25:00	164.05	33.67	36.99	3.001	2.283	33.98	51.90	3.006	2.794	67.1	
10/14/2008	14:26:00	164.17	33.98	34.46	2.994	2.297	34.23	49.27	3.004	2.797	67.0	
10/14/2008	14:27:00	166.05	34.01	38.60	3.000	2.290	34.18	54.05	3.008	2.800	66.9	
10/14/2008	14:28:00	172.88	34.07	31.74	2.949	2.295	34.31	53.56	2.962	2.803	66.9	
10/14/2008	14:29:00	165.03	33.99	42.35	2.968	2.278	34.23	49.41	2.967	2.781	66.9	
10/14/2008	14:30:00	165.19	33.70	37.73	3.039	2.267	33.97	58.16	3.050	2.762	66.8	
10/14/2008	14:31:00	165.79	34.00	26.83	3.003	2.276	34.25	50.28	3.007	2.765	66.8	
10/14/2008	14:32:00	165.91	34.46	33.12	2.976	2.277	34.62	45.11	2.988	2.790	66.8	
10/14/2008	14:33:00	176.45	34.01	36.76	2.965	2.270	34.21	49.27	2.971	2.774	66.8	
10/14/2008	14:34:00	166.03	33.60	47.17	3.041	2.258	33.83	62.60	3.053	2.753	66.8	
10/14/2008	14:35:00	162.67	33.38	42.30	3.075	2.266	33.62	61.70	3.079	2.755	66.8	
10/14/2008	14:36:00	165.83	33.66	37.00	3.140	2.266	33.84	56.19	3.136	2.767	66.8	
10/14/2008	14:37:00	167.33	33.56	40.29	3.103	2.278	33.83	52.80	3.124	2.780	66.8	
10/14/2008	14:38:00	174.45	33.46	41.39	3.059	2.287	33.71	64.40	3.072	2.792	66.8	
10/14/2008	14:39:00	168.18	33.34	40.29	2.941	2.286	33.64	56.46	2.954	2.792	66.8	
10/14/2008	14:40:00	164.67	33.58	37.94	3.005	2.275	33.88	51.95	3.010	2.779	66.8	
10/14/2008	14:41:00	165.64	33.54	45.72	3.056	2.263	33.76	60.16	3.059	2.762	66.8	
10/14/2008	14:42:00	168.44	33.05	48.17	3.093	2.275	33.31	67.82	3.105	2.773	66.8	
10/14/2008	14:43:00	171.27	33.34	45.79	3.045	2.292	33.51	64.38	3.051	2.790	66.8	
10/14/2008	14:44:00	167.37	33.49	46.49	3.113	2.282	33.72	66.51	3.111	2.785	66.8	
10/14/2008	14:45:00	168.03	33.00	55.63	3.084	2.291	33.22	67.73	3.100	2.781	66.8	

BP West Coast Products, LLC
Cherry Point Refinery
Blaine, WA

One - Minute Reference Method Data
Trailer 11

No. 2 TGU Stack

Date	Time	System 1					System 2				Trailer	Calibration Status
		SO ₂ 1	NO _x 1	CO 1	O ₂ 1	CO ₂ 2	NO _x 2	CO 2	O ₂ 2	CO ₂ 2	Temp	
		ppm	ppm	ppm	%	%	ppm	ppm	%	%	deg F	
10/14/2008	14:46:00	164.88	32.86	50.15	2.973	2.306	33.09	71.70	2.979	2.817	66.7	
10/14/2008	14:47:00	165.06	33.27	32.81	3.051	2.306	33.42	56.40	3.055	2.806	66.5	
10/14/2008	14:48:00	168.43	33.42	42.90	3.178	2.301	33.62	61.53	3.182	2.794	66.6	
10/14/2008	14:49:00	186.00	33.30	38.55	3.022	2.344	33.54	52.35	3.034	2.851	66.6	
10/14/2008	14:50:00	170.49	33.43	47.02	3.008	2.344	33.67	62.52	3.005	2.844	66.6	
10/14/2008	14:51:00	169.06	33.30	42.66	3.045	2.341	33.41	61.49	3.052	2.832	66.4	
10/14/2008	14:52:00	169.29	33.14	47.10	3.064	2.328	33.33	65.43	3.063	2.818	66.4	
10/14/2008	14:53:00	169.68	32.96	45.43	3.059	2.334	33.22	66.01	3.061	2.831	66.4	
10/14/2008	14:54:00	171.05	33.17	38.07	3.127	2.327	33.40	55.47	3.135	2.827	66.4	
10/14/2008	14:55:00	171.59	33.43	38.01	2.971	2.341	33.67	53.36	2.974	2.850	66.4	
10/14/2008	14:56:00	169.04	33.60	35.10	3.058	2.296	33.79	54.38	3.061	2.817	66.4	
10/14/2008	14:57:00	171.52	33.24	42.84	3.078	2.272	33.43	58.54	3.084	2.777	66.4	
10/14/2008	14:58:00	173.26	33.05	45.83	3.054	2.279	33.21	64.26	3.062	2.783	66.4	
10/14/2008	14:59:00	169.63	33.17	39.22	3.054	2.276	33.38	54.35	3.054	2.769	66.4	
10/14/2008	15:00:00	168.56	33.08	47.58	3.053	2.277	33.27	67.85	3.058	2.779	66.4	
10/14/2008	15:01:00	170.03	33.14	36.44	3.059	2.281	33.24	55.22	3.061	2.788	66.4	
10/14/2008	15:02:00	169.58	33.23	47.59	3.102	2.281	33.36	61.29	3.107	2.788	66.4	
10/14/2008	15:03:00	166.63	32.79	48.94	3.040	2.300	32.89	68.68	3.049	2.813	66.4	
10/14/2008	15:04:00	166.82	32.90	47.10	2.980	2.309	33.03	69.09	2.988	2.813	66.4	
10/14/2008	15:05:00	165.07	33.41	43.97	2.994	2.311	33.52	60.42	3.003	2.822	66.4	
10/14/2008	15:06:00	163.82	33.16	45.89	3.063	2.293	33.24	65.33	3.069	2.806	66.4	
10/14/2008	15:07:00	165.66	33.02	50.99	3.008	2.319	33.01	63.92	3.011	2.828	66.3	
10/14/2008	15:08:00	163.32	33.16	46.13	2.994	2.307	33.15	67.59	2.997	2.833	66.3	
10/14/2008	15:09:00	164.92	33.33	48.63	3.050	2.299	33.36	67.43	3.056	2.807	66.2	
10/14/2008	15:10:00	168.88	33.06	42.95	3.016	2.309	33.10	62.58	3.018	2.828	66.3	
10/14/2008	15:11:00	169.71	33.60	46.29	3.015	2.308	33.61	61.71	3.018	2.822	66.3	
10/14/2008	15:12:00	169.63	33.38	44.23	3.204	2.288	33.44	65.72	3.205	2.803	66.2	
10/14/2008	15:13:00	170.36	33.02	44.17	3.027	2.331	33.08	62.62	3.034	2.832	66.1	
10/14/2008	15:14:00	166.46	33.44	45.74	2.988	2.317	33.44	62.40	2.993	2.831	66.1	
10/14/2008	15:15:00	167.15	33.45	44.28	3.112	2.299	33.47	64.06	3.116	2.816	66.2	
10/14/2008	15:16:00	169.65	33.23	44.83	2.969	2.326	33.32	62.33	2.973	2.831	66.2	
10/14/2008	15:17:00	167.48	33.64	43.34	3.065	2.305	33.71	63.66	3.072	2.826	66.2	
10/14/2008	15:18:00	167.05	33.51	43.53	3.188	2.289	33.58	59.76	3.194	2.810	66.3	
10/14/2008	15:19:00	165.58	33.36	42.85	3.015	2.327	33.41	62.58	3.020	2.848	66.2	
10/14/2008	15:20:00	212.11	33.48	56.95	3.048	2.303	33.56	71.93	3.037	2.830	66.3	
10/14/2008	15:21:00	177.47	32.79	37.53	3.068	2.300	33.02	64.12	3.080	2.818	66.3	
10/14/2008	15:22:00	160.65	33.57	41.94	3.045	2.312	33.72	57.75	3.049	2.827	66.3	
10/14/2008	15:23:00	162.94	33.65	34.22	3.124	2.294	33.72	51.65	3.130	2.817	66.3	
10/14/2008	15:24:00	164.33	33.21	50.94	2.988	2.301	33.27	62.58	2.990	2.818	66.3	
10/14/2008	15:25:00	164.47	32.90	44.05	2.983	2.310	33.04	69.79	2.986	2.831	66.3	
10/14/2008	15:26:00	163.18	33.09	55.45	2.866	2.324	33.25	70.00	2.899	2.851	66.4	
10/14/2008	15:27:00	160.76	32.83	53.70	2.891	2.317	32.94	76.06	2.897	2.845	66.4	
10/14/2008	15:28:00	158.59	33.00	60.74	2.870	2.311	33.10	77.97	2.873	2.840	66.4	
10/14/2008	15:29:00	155.90	32.58	59.43	2.744	2.319	32.75	79.91	2.746	2.844	66.4	
10/14/2008	15:30:00	153.97	32.85	52.63	2.803	2.282	32.96	74.97	2.809	2.818	66.4	
10/14/2008	15:31:00	155.37	32.61	55.42	2.950	2.233	32.60	73.00	2.955	2.764	66.4	
10/14/2008	15:32:00	155.03	31.84	77.34	2.844	2.235	31.93	92.19	2.847	2.761	66.4	
10/14/2008	15:33:00	153.31	31.17	94.64	2.691	2.241	31.23	98.59	2.693	2.764	66.4	
10/14/2008	15:34:00	150.64	31.54	75.42	2.684	2.225	31.67	95.32	2.692	2.757	66.4	
10/14/2008	15:35:00	149.66	31.87	78.12	2.862	2.183	31.90	95.74	2.871	2.717	66.4	
10/14/2008	15:36:00	148.16	31.44	92.67	2.717	2.200	31.48	91.88	2.719	2.731	66.4	
10/14/2008	15:37:00	145.65	31.90	73.21	2.712	2.203	31.98	87.41	2.719	2.734	66.4	
10/14/2008	15:38:00	146.62	31.84	80.47	2.961	2.182	31.87	98.39	2.971	2.708	66.4	
10/14/2008	15:39:00	146.12	31.55	71.44	2.729	2.242	31.60	94.29	2.731	2.751	66.4	
10/14/2008	15:40:00	144.76	32.28	64.90	2.721	2.239	32.37	85.18	2.723	2.760	66.4	
10/14/2008	15:41:00	146.78	32.37	69.12	2.759	2.237	32.44	90.19	2.764	2.750	66.4	
10/14/2008	15:42:00	149.49	32.85	44.00	2.903	2.220	33.01	63.59	2.909	2.730	66.4	
10/14/2008	15:43:00	147.20	32.40	85.00	2.811	2.239	32.45	86.41	2.811	2.756	66.4	
10/14/2008	15:44:00	145.29	32.10	68.63	2.763	2.243	32.23	89.98	2.765	2.764	66.4	
10/14/2008	15:45:00	142.70	32.54	60.15	2.968	2.217	32.61	82.49	2.980	2.752	66.4	
10/14/2008	15:46:00	144.44	31.94	77.82	2.860	2.245	31.91	95.13	2.863	2.779	66.4	
10/14/2008	15:47:00	148.06	32.08	70.57	2.846	2.262	32.04	90.39	2.844	2.798	66.4	
10/14/2008	15:48:00	151.29	32.28	60.90	2.852	2.262	32.32	85.48	2.857	2.791	66.4	
10/14/2008	15:49:00	152.80	32.63	56.85	2.774	2.276	32.82	77.37	2.775	2.803	66.4	
10/14/2008	15:50:00	155.20	32.94	59.38	2.774	2.273	33.03	74.94	2.779	2.800	66.4	
10/14/2008	15:51:00	154.18	32.67	63.14	2.762	2.276	32.74	88.53	2.763	2.811	66.4	
10/14/2008	15:52:00	153.45	32.70	60.13	2.904	2.256	32.79	75.96	2.914	2.780	66.3	
10/14/2008	15:53:00	155.85	32.48	60.08	2.859	2.281	32.53	78.91	2.859	2.802	66.4	
10/14/2008	15:54:00	155.22	32.63	59.09	2.819	2.295	32.66	82.28	2.823	2.825	66.4	
10/14/2008	15:55:00	155.00	32.70	72.75	2.813	2.303	32.68	86.87	2.814	2.833	66.4	
10/14/2008	15:56:00	210.81	32.41	64.23	2.826	2.313	32.63	81.00	2.837	2.838	66.4	
10/14/2008	15:57:00	177.53	32.18	60.11	2.690	2.313	32.46	87.09	2.692	2.844	66.4	
10/14/2008	15:58:00	149.73	32.47	63.48	2.768	2.284	32.63	81.05	2.774	2.810	66.4	
10/14/2008	15:59:00	152.15	32.47	63.27	2.724	2.276	32.64	79.85	2.726	2.809	66.3	
10/14/2008	16:00:00	152.91	32.33	71.13	2.745	2.258	32.40	95.60	2.750	2.800	66.4	
10/14/2008	16:01:00	156.76	32.75	55.47	2.812	2.255	32.94	69.68	2.822	2.789	66.4	
10/14/2008	16:02:00	160.04	32.48	74.66	2.855	2.256	32.61	92.64	2.857	2.788	66.4	
10/14/2008	16:03:00	159.63	32.10	77.40	2.940	2.254	32.20	98.48	2.946	2.792	66.3	

BP West Coast Products, LLC
Cherry Point Refinery
Blaine, WA

One - Minute Reference Method Data
Trailer 11

No. 2 TGU Stack

Date	Time	System 1					System 2				Trailer		Calibration Status
		SO ₂ 1	NO _x 1	CO 1	O ₂ 1	CO ₂ 2	NO _x 2	CO 2	O ₂ 2	CO ₂ 2	Temp	deg F	
		ppm	ppm	ppm	%	%	ppm	ppm	%	%			
10/14/2008	16:04:00	161.87	32.04	58.97	2.830	2.295	32.11	81.02	2.834	2.833	66.3		
10/14/2008	16:05:00	161.20	32.29	66.97	2.811	2.302	32.34	88.63	2.814	2.838	66.3		
10/14/2008	16:06:00	163.27	32.44	53.41	2.747	2.310	32.52	73.16	2.754	2.852	66.3		
10/14/2008	16:07:00	162.67	32.62	63.07	2.736	2.293	32.66	76.84	2.740	2.829	66.4		
10/14/2008	16:08:00	159.46	32.41	59.21	2.729	2.272	32.49	83.81	2.735	2.794	66.4		
10/14/2008	16:09:00	158.42	32.45	79.15	2.777	2.255	32.55	86.65	2.786	2.805	66.4		
10/14/2008	16:10:00	158.58	32.19	61.08	2.822	2.255	32.29	84.18	2.826	2.804	66.3		
10/14/2008	16:11:00	164.44	32.29	65.26	2.865	2.252	32.33	82.91	2.872	2.791	66.4		
10/14/2008	16:12:00	175.47	31.77	78.07	2.754	2.267	31.84	95.07	2.759	2.822	66.4		
10/14/2008	16:13:00	174.62	31.84	72.81	2.736	2.273	32.00	96.22	2.745	2.835	66.4		
10/14/2008	16:14:00	161.94	32.38	61.54	2.698	2.281	32.47	79.03	2.702	2.836	66.4		
10/14/2008	16:15:00	163.40	32.33	68.27	2.789	2.264	32.36	83.46	2.795	2.812	66.4		
10/14/2008	16:16:00	165.06	31.89	59.61	2.765	2.269	31.86	84.10	2.767	2.815	66.4		
10/14/2008	16:17:00	165.87	32.19	72.10	2.687	2.276	32.21	85.10	2.690	2.828	66.4		
10/14/2008	16:18:00	164.04	32.36	62.13	2.761	2.257	32.40	86.54	2.767	2.807	66.4		
10/14/2008	16:19:00	166.78	32.33	67.97	2.850	2.243	32.31	77.60	2.855	2.812	66.4		
10/14/2008	16:20:00	174.27	31.57	84.36	2.686	2.265	31.58	94.79	2.698	2.817	66.5		
10/14/2008	16:21:00	164.94	31.64	75.47	2.651	2.262	31.73	91.85	2.656	2.819	66.5		
10/14/2008	16:22:00	167.05	31.71	86.65	2.729	2.239	31.74	99.71	2.728	2.819	66.6		
10/14/2008	16:23:00	170.31	31.33	88.61	2.893	2.227	31.36	99.79	2.899	2.785	66.7		
10/14/2008	16:24:00	172.36	31.08	75.36	2.805	2.273	31.20	95.40	2.808	2.841	66.8		
10/14/2008	16:25:00	171.48	31.83	73.74	2.795	2.284	31.88	89.43	2.801	2.869	66.8		
10/14/2008	16:26:00	171.31	31.82	78.45	2.750	2.294	31.79	98.02	2.757	2.878	66.8		
10/14/2008	16:27:00	173.20	32.03	63.88	2.714	2.299	32.09	81.07	2.718	2.892	66.8		
10/14/2008	16:28:00	177.27	32.21	54.50	2.830	2.289	32.25	82.71	2.835	2.869	66.8		
10/14/2008	16:29:00	179.11	32.19	75.55	2.775	2.297	32.22	82.74	2.777	2.875	66.8		
10/14/2008	16:30:00	181.51	31.96	77.61	2.840	2.294	32.07	92.25	2.846	2.873	66.8		
10/14/2008	16:31:00	183.50	32.04	75.05	2.845	2.298	32.10	88.16	2.852	2.891	66.8		
10/14/2008	16:32:00	188.69	31.75	75.70	2.856	2.310	31.80	94.38	2.865	2.901	66.8		
10/14/2008	16:33:00	189.71	31.90	70.21	2.776	2.320	31.99	93.45	2.779	2.918	66.9		
10/14/2008	16:34:00	188.40	32.36	64.64	2.826	2.311	32.47	74.27	2.832	2.912	67.1		
10/14/2008	16:35:00	187.14	32.00	63.70	2.651	2.328	32.05	89.86	2.655	2.935	67.2		
10/14/2008	16:36:00	199.11	32.43	66.30	2.763	2.297	32.49	74.96	2.760	2.910	67.3		
10/14/2008	16:37:00	215.52	31.96	69.71	2.809	2.280	32.04	86.21	2.814	2.891	67.3		
10/14/2008	16:38:00	213.47	31.49	73.75	2.842	2.281	31.61	96.92	2.841	2.895	67.3		
10/14/2008	16:39:00	192.66	31.70	79.71	2.629	2.299	31.87	85.74	2.834	2.906	67.3		
10/14/2008	16:40:00	191.22	31.62	77.94	2.804	2.310	31.72	96.34	2.809	2.930	67.3		
10/14/2008	16:41:00	197.40	31.85	58.69	2.855	2.304	31.93	83.69	2.860	2.930	67.7		
10/14/2008	16:42:00	199.80	31.92	80.92	2.784	2.312	32.05	80.56	2.789	2.943	67.7		
10/14/2008	16:43:00	193.74	31.40	93.10	2.884	2.292	31.43	99.80	2.889	2.924	67.7		
10/14/2008	16:44:00	200.25	31.12	88.40	3.007	2.312	31.19	98.34	3.010	2.933	67.8		
10/14/2008	16:45:00	202.66	31.00	76.33	2.832	2.371	31.11	93.76	2.836	3.003	68.0		
10/14/2008	16:46:00	198.72	31.40	68.94	2.806	2.387	31.49	89.51	2.810	3.015	68.2		
10/14/2008	16:47:00	196.20	31.75	66.73	2.787	2.392	31.84	83.24	2.793	3.029	68.2		
10/14/2008	16:48:00	196.34	32.15	64.52	2.709	2.391	32.27	75.02	2.713	3.031	68.2		
10/14/2008	16:49:00	192.59	31.85	73.36	2.729	2.348	31.97	88.86	2.730	2.990	68.5		
10/14/2008	16:50:00	190.23	31.64	69.24	2.807	2.306	31.74	84.99	2.813	2.963	68.6		
10/14/2008	16:51:00	191.00	31.79	71.88	2.805	2.296	31.86	84.31	2.810	2.952	68.6		
10/14/2008	16:52:00	187.14	31.78	70.23	2.756	2.309	31.86	83.73	2.762	2.960	68.7		
10/14/2008	16:53:00	186.51	31.80	64.49	2.720	2.312	31.97	83.00	2.725	2.957	68.9		
10/14/2008	16:54:00	180.95	31.91	69.44	2.755	2.303	32.06	79.13	2.760	2.963	69.1		
10/14/2008	16:55:00	177.57	31.88	60.24	2.823	2.302	32.05	76.30	2.824	2.955	69.1		
10/14/2008	16:56:00	176.02	31.94	68.70	2.826	2.294	32.07	76.82	2.832	2.955	69.1		
10/14/2008	16:57:00	175.61	31.55	79.21	2.804	2.302	31.61	90.86	2.809	2.953	69.1		
10/14/2008	16:58:00	173.74	31.48	72.41	2.789	2.308	31.67	87.60	2.793	2.967	69.5		
10/14/2008	16:59:00	173.60	31.74	69.41	2.788	2.306	31.87	83.59	2.795	2.959	69.5		
10/14/2008	17:00:00	172.81	31.68	81.37	2.768	2.313	31.80	90.01	2.773	2.983	69.5		
10/14/2008	17:01:00	171.40	31.49	67.65	2.700	2.316	31.66	82.04	2.703	2.974	69.7		
10/14/2008	17:02:00	172.25	31.40	76.77	2.780	2.283	31.62	90.84	2.784	2.957	70.0		
10/14/2008	17:03:00	171.50	31.27	75.89	2.799	2.270	31.42	85.35	2.802	2.930	70.0		
10/14/2008	17:04:00	232.78	31.34	51.76	2.787	2.264	31.51	72.63	2.796	2.926	70.0		
10/14/2008	17:05:00	167.49	31.50	84.58	2.815	2.245	31.82	81.30	2.818	2.919	70.3		
10/14/2008	17:06:00	165.08	30.91	79.81	2.749	2.255	31.15	94.92	2.753	2.920	70.4		
10/14/2008	17:07:00	173.82	31.68	79.17	2.848	2.249	31.92	86.01	2.852	2.905	70.4		
10/14/2008	17:08:00	168.33	31.19	72.48	2.920	2.250	31.40	81.02	2.931	2.923	70.7		
10/14/2008	17:09:00	166.05	30.94	78.37	2.815	2.278	31.16	91.31	2.817	2.941	70.9		
10/14/2008	17:10:00	166.69	31.18	80.79	2.783	2.297	31.35	91.04	2.785	2.955	70.9		
10/14/2008	17:11:00	164.85	31.34	63.04	2.727	2.314	31.49	83.22	2.735	2.985	71.0		
10/14/2008	17:12:00	166.11	31.89	71.22	2.763	2.303	32.18	89.43	2.769	2.975	71.3		
10/14/2008	17:13:00	181.62	31.12	70.18	2.756	2.293	31.39	87.76	2.760	2.970	71.3		
10/14/2008	17:14:00	161.93	31.51	68.25	2.763	2.275	31.71	76.70	2.768	2.950	71.4		
10/14/2008	17:15:00	157.42	31.37	81.00	2.779	2.260	31.58	84.30	2.787	2.923	71.7		
10/14/2008	17:16:00	161.34	31.20	79.81	2.606	2.275	31.36	87.25	2.614	2.943	71.8		
10/14/2008	17:17:00	156.91	31.21	80.66	2.960	2.215	31.40	88.11	2.975	2.885	71.8		
10/14/2008	17:18:00	153.31	30.89	71.68	2.722	2.251	31.12	85.16	2.719	2.913	71.8		
10/14/2008	17:19:00	150.31	31.37	74.62	2.894	2.227	31.61	83.49	2.874	2.896	72.1		
10/14/2008	17:20:00	149.75	30.62	86.15	2.969	2.241	30.82	91.89	2.993	2.892	72.2		
10/14/2008	17:21:00	149.68	30.40	81.92	2.824	2.275	30.58	93.19	2.833	2.937	72.2		

BP West Coast Products, LLC
Cherry Point Refinery
Blaine, WA

One - Minute Reference Method Data
Trailer 11

No. 2 TGU Stack

Date	Time	System 1					System 2				Trailer Temp deg F	Calibration Status
		SO ₂ 1 ppm	NO _x 1 ppm	CO 1 ppm	O ₂ 1 %	CO ₂ 2 %	NO _x 2 ppm	CO 2 ppm	O ₂ 2 %	CO ₂ 2 %		
10/14/2008	17:22:00	146.69	30.80	80.24	2.728	2.285	31.03	89.89	2.737	2.947	72.2	
10/14/2008	17:23:00	143.47	31.59	71.63	2.780	2.269	31.76	72.58	2.784	2.936	72.5	
10/14/2008	17:24:00	142.71	31.14	76.33	2.942	2.248	31.35	93.05	2.941	2.901	72.7	
10/14/2008	17:25:00	145.12	30.47	83.18	2.847	2.263	30.71	87.86	2.855	2.933	72.7	
10/14/2008	17:26:00	144.33	30.57	94.60	2.761	2.303	30.78	91.30	2.775	2.953	72.7	
10/14/2008	17:27:00	144.13	30.63	80.58	2.695	2.309	30.85	94.08	2.699	2.962	72.7	
10/14/2008	17:28:00	144.59	31.03	80.07	2.774	2.299	31.24	91.71	2.775	2.960	73.0	
10/14/2008	17:29:00	140.88	31.03	81.85	2.727	2.306	31.17	84.10	2.739	2.974	73.1	
10/14/2008	17:30:00	139.17	31.07	75.85	2.786	2.297	31.29	86.99	2.790	2.960	73.1	
10/14/2008	17:31:00	141.32	31.04	81.19	2.943	2.288	31.30	86.50	2.946	2.952	73.1	
10/14/2008	17:32:00	141.19	30.67	74.72	2.878	2.319	30.93	86.44	2.886	2.980	73.1	
10/14/2008	17:33:00	140.76	31.13	77.58	2.825	2.340	31.39	81.27	2.836	2.992	73.4	
10/14/2008	17:34:00	141.78	31.00	83.08	2.752	2.344	31.23	87.68	2.758	3.021	73.5	
10/14/2008	17:35:00	143.11	30.76	82.84	2.809	2.332	31.03	90.98	2.818	3.010	73.5	
10/14/2008	17:36:00	145.45	30.85	77.57	2.754	2.335	31.12	85.52	2.764	2.999	73.6	
10/14/2008	17:37:00	146.61	31.22	85.15	2.764	2.327	31.46	90.04	2.771	2.997	73.6	
10/14/2008	17:38:00	144.45	31.23	79.59	2.822	2.314	31.50	83.70	2.830	2.984	73.6	
10/14/2008	17:39:00	146.15	31.08	66.02	2.857	2.312	31.38	77.10	2.863	2.983	73.7	
10/14/2008	17:40:00	197.23	31.35	74.53	2.783	2.313	31.60	76.05	2.789	2.982	74.0	
10/14/2008	17:41:00	154.40	30.86	85.20	2.779	2.295	31.15	90.30	2.782	2.970	74.0	
10/14/2008	17:42:00	140.60	30.76	82.54	2.838	2.288	31.07	92.17	2.843	2.952	74.0	
10/14/2008	17:43:00	147.15	30.91	78.21	2.769	2.301	31.21	84.73	2.780	2.967	74.0	
10/14/2008	17:44:00	148.71	30.98	85.76	2.765	2.310	31.27	84.86	2.773	2.984	74.0	
10/14/2008	17:45:00	147.54	30.78	84.08	2.744	2.318	31.11	94.31	2.748	2.970	74.0	
10/14/2008	17:46:00	147.90	31.12	87.46	3.039	2.021	31.20	80.05	2.739	2.970	74.2	
10/14/2008	17:47:00	76.78	3.67	2.76	0.032	0.261	31.17	80.17	2.623	2.874	74.4	Calibrating System 1
10/14/2008	17:48:00	8.27	0.14	2.10	0.014	0.255	30.65	84.17	2.614	2.879	74.4	Calibrating System 1
10/14/2008	17:49:00	2.25	0.09	2.18	0.012	0.254	30.46	81.00	2.677	2.861	74.4	Calibrating System 1
10/14/2008	17:50:00	0.28	0.03	2.17	0.011	0.253	30.37	69.24	2.863	2.837	74.5	Calibrating System 1
10/14/2008	17:51:00	-0.81	0.01	157.51	9.490	8.459	30.56	81.49	2.832	2.954	74.5	Calibrating System 1
10/14/2008	17:52:00	-1.36	5.20	162.89	8.045	7.815	30.93	96.99	2.880	2.996	74.5	
10/14/2008	17:53:00	30.21	49.20	48.84	0.029	0.299	31.30	88.14	2.836	2.823	74.5	Calibrating System 1
10/14/2008	17:54:00	41.83	48.61	48.76	0.018	0.272	31.42	82.47	2.740	2.862	74.7	Calibrating System 1
10/14/2008	17:55:00	49.79	68.27	75.90	0.033	0.268	31.93	80.59	2.705	2.877	74.9	Calibrating System 1
10/14/2008	17:56:00	84.68	93.52	92.15	0.018	0.266	32.99	82.23	2.767	2.893	74.9	Calibrating System 1
10/14/2008	17:57:00	89.32	93.43	92.14	0.017	0.265	33.49	67.12	2.725	2.891	74.9	Calibrating System 1
10/14/2008	17:58:00	90.95	93.24	92.21	0.015	0.266	33.98	62.38	2.783	2.908	74.9	Calibrating System 1
10/14/2008	17:59:00	87.69	75.46	81.33	1.236	1.148	24.87	71.55	2.534	2.236	74.9	
10/14/2008	18:00:00	49.64	11.18	20.70	17.491	0.777	0.17	16.65	0.086	0.601	75.0	Calibrating System 2
10/14/2008	18:01:00	0.75	0.10	2.17	21.262	0.383	0.02	0.90	0.011	0.555	75.0	Calibrating Both Systems
10/14/2008	18:02:00	-1.87	0.08	2.27	21.259	0.383	-0.03	0.55	0.491	0.562	75.3	Calibrating Both Systems
10/14/2008	18:03:00	-2.33	0.08	2.37	21.255	0.388	-0.03	86.12	12.136	11.607	75.3	Calibrating Both Systems
10/14/2008	18:04:00	-2.63	0.03	2.38	21.255	0.393	38.27	85.84	0.745	2.129	75.4	Calibrating System 1
10/14/2008	18:05:00	-2.87	0.01	2.41	21.251	0.393	48.54	50.79	0.173	0.589	75.4	Calibrating Both Systems
10/14/2008	18:06:00	-2.87	0.01	2.61	21.246	0.398	7.13	22.75	20.443	0.873	75.4	Calibrating System 1
10/15/2008	7:46:00	95.67	29.90	80.92	3.157	2.547	29.70	75.82	3.168	3.320	83.5	
10/15/2008	7:47:00	123.46	26.52	99.79	3.725	1.844	29.22	84.67	2.697	2.561	83.5	
10/15/2008	7:48:00	13.85	0.45	7.90	0.030	0.343	28.95	82.29	2.718	2.499	83.5	Calibrating System 1
10/15/2008	7:49:00	-0.79	0.09	7.66	0.014	0.335	28.34	79.84	2.891	2.506	83.5	Calibrating System 1
10/15/2008	7:50:00	-3.55	1.60	1.54	0.011	0.200	28.51	63.97	3.007	2.562	83.5	Calibrating System 1
10/15/2008	7:51:00	-2.12	0.02	0.44	0.009	0.088	28.70	75.93	2.673	2.576	83.5	Calibrating System 1
10/15/2008	7:52:00	-1.09	0.02	177.09	10.572	8.576	28.77	81.23	2.933	2.731	83.5	Calibrating System 1
10/15/2008	7:53:00	-1.72	1.66	206.71	12.844	11.573	28.84	86.62	2.945	2.833	83.5	
10/15/2008	7:54:00	-1.66	7.19	150.11	6.958	7.008	29.21	77.28	2.797	2.795	83.5	
10/15/2008	7:55:00	30.52	49.94	45.75	0.032	0.155	29.97	66.68	2.645	2.644	83.5	Calibrating System 1
10/15/2008	7:56:00	41.73	48.13	46.55	0.018	0.123	30.14	64.55	2.699	2.612	83.5	Calibrating System 1
10/15/2008	7:57:00	43.34	47.74	48.48	0.011	0.112	30.10	65.25	2.696	2.578	83.5	Calibrating System 1
10/15/2008	7:58:00	43.68	50.86	52.74	0.041	0.114	29.66	80.38	2.732	2.597	83.5	Calibrating System 1
10/15/2008	7:59:00	64.48	91.87	93.40	0.013	0.105	29.49	90.73	2.712	2.609	83.5	Calibrating System 1
10/15/2008	8:00:00	84.85	98.55	93.43	0.011	0.105	29.96	86.41	2.702	2.609	83.5	Calibrating System 1
10/15/2008	8:01:00	86.33	98.44	93.41	0.010	0.104	30.27	82.37	2.638	2.620	83.5	Calibrating System 1
10/15/2008	8:02:00	88.17	98.24	93.46	0.010	0.104	29.97	91.55	2.685	2.651	83.5	Calibrating System 1
10/15/2008	8:03:00	90.79	81.20	88.44	1.162	0.949	24.97	96.18	3.990	2.158	83.4	
10/15/2008	8:04:00	120.88	31.17	77.77	2.848	2.092	0.25	14.37	0.036	0.354	83.3	Calibrating System 2
10/15/2008	8:05:00	148.25	31.01	91.54	2.865	2.118	0.03	0.47	0.019	0.343	83.0	Calibrating System 2
10/15/2008	8:06:00	155.56	32.30	81.77	2.777	2.420	1.58	61.46	9.572	8.328	97.0	
10/15/2008	8:07:00	151.04	31.20	77.31	2.754	2.152	-0.01	99.79	12.190	11.677	83.0	Calibrating System 2
10/15/2008	8:08:00	149.57	31.22	73.31	2.704	2.161	3.22	99.81	12.196	11.724	98.4	
10/15/2008	8:09:00	152.57	32.56	60.79	2.713	2.154	1.50	99.79	12.200	11.751	83.0	
10/15/2008	8:10:00	152.48	32.00	73.25	2.682	2.157	38.43	87.00	0.841	2.099	97.9	
10/15/2008	8:11:00	150.57	31.68	58.18	3.130	2.136	48.13	50.22	0.021	0.513	83.1	Calibrating System 2
10/15/2008	8:12:00	150.26	31.47	80.41	2.700	2.133	45.18	52.21	0.872	1.104	83.1	
10/15/2008	8:13:00	148.61	31.19	67.98	2.672	2.132	29.59	79.62	2.673	2.815	83.3	
10/15/2008	8:14:00	148.95	31.44	77.17	2.731	2.119	30.07	66.72	2.738	2.811	83.4	
10/15/2008	8:15:00	147.69	31.04	72.54	2.728	2.109	29.26	82.00	2.731	2.801	83.4	
10/15/2008	8:16:00	144.73	31.23	61.64	2.757	2.102	29.45	71.56	2.765	2.787	83.5	
10/15/2008	8:17:00	148.27	31.36	94.23	2.797	2.091	29.58	80.81	2.801	2.767	83.5	
10/15/2008	8:18:00	147.91	30.64	84.27	2.778	2.092	28.88	93.22	2.784	2.755	83.5	

BP West Coast Products, LLC
Cherry Point Refinery
Blaine, WA

One - Minute Reference Method Data
Trailer 11

No. 2 TGU Stack

Date	Time	System 1					System 2				Trailer	Calibration Status
		SO ₂ _1	NO _x _1	CO_1	O ₂ _1	CO ₂ _2	NO _x _2	CO_2	O ₂ _2	CO ₂ _2	Temp	
		ppm	ppm	ppm	%	%	ppm	ppm	%	%	deg F	
10/15/2008	8:19:00	145.86	30.84	79.92	2.901	2.082	29.03	88.18	2.905	2.738	83.5	
10/15/2008	8:20:00	146.97	31.09	68.00	2.795	2.112	29.39	66.92	2.798	2.763	83.5	
10/15/2008	8:21:00	148.18	31.45	80.65	2.764	2.110	29.74	81.26	2.768	2.753	83.5	
10/15/2008	8:22:00	149.64	30.78	87.81	2.896	2.102	29.05	89.51	2.908	2.735	83.5	
10/15/2008	8:23:00	151.05	30.96	65.91	2.799	2.126	29.25	76.95	2.809	2.760	83.6	
10/15/2008	8:24:00	149.81	31.95	57.14	2.824	2.118	30.18	61.93	2.832	2.762	83.8	
10/15/2008	8:25:00	150.63	31.75	66.57	2.773	2.127	29.99	65.54	2.782	2.764	83.9	
10/15/2008	8:26:00	150.79	31.65	75.12	2.831	2.124	29.86	74.18	2.841	2.738	83.9	
10/15/2008	8:27:00	151.51	31.35	77.42	2.974	2.113	29.59	76.98	2.977	2.732	83.9	
10/15/2008	8:28:00	151.18	31.10	71.88	2.814	2.154	29.39	73.71	2.822	2.761	83.9	
10/15/2008	8:29:00	152.98	31.51	66.82	2.784	2.157	29.75	71.59	2.793	2.760	83.9	
10/15/2008	8:30:00	151.86	31.74	71.19	2.793	2.159	29.98	75.73	2.800	2.782	83.9	
10/15/2008	8:31:00	153.21	31.98	66.78	2.762	2.168	30.31	68.68	2.771	2.789	83.5	
10/15/2008	8:32:00	153.76	32.00	65.43	2.871	2.149	30.26	62.04	2.879	2.762	83.3	
10/15/2008	8:33:00	154.96	31.71	68.70	2.767	2.164	29.90	74.11	2.775	2.766	82.9	
10/15/2008	8:34:00	185.61	31.79	73.20	2.792	2.169	30.07	82.69	2.804	2.787	82.4	
10/15/2008	8:35:00	145.67	31.68	77.20	2.879	2.165	30.05	70.96	2.886	2.768	81.9	
10/15/2008	8:36:00	146.01	31.32	74.81	2.743	2.189	29.69	82.80	2.753	2.797	81.3	
10/15/2008	8:37:00	151.31	31.87	70.70	2.703	2.194	30.11	74.73	2.710	2.797	80.6	
10/15/2008	8:38:00	150.48	31.99	72.26	2.699	2.178	30.23	73.55	2.705	2.792	80.0	
10/15/2008	8:39:00	151.66	31.96	63.65	2.751	2.164	30.18	70.51	2.765	2.770	79.4	
10/15/2008	8:40:00	166.96	31.91	73.03	2.675	2.158	30.05	77.07	2.686	2.778	78.8	
10/15/2008	8:41:00	154.83	32.17	50.63	2.637	2.131	30.28	56.67	2.643	2.750	78.2	
10/15/2008	8:42:00	152.52	32.33	73.97	2.725	2.085	30.43	75.99	2.737	2.693	77.6	
10/15/2008	8:43:00	154.76	31.47	86.38	2.669	2.082	29.69	85.42	2.677	2.697	77.1	
10/15/2008	8:44:00	152.31	31.30	86.73	2.690	2.064	29.52	94.75	2.696	2.667	76.5	
10/15/2008	8:45:00	151.99	31.57	62.82	2.850	2.046	29.67	77.12	2.858	2.647	76.0	
10/15/2008	8:46:00	151.05	31.49	85.75	2.692	2.070	29.55	89.78	2.697	2.677	75.4	
10/15/2008	8:47:00	152.89	31.64	87.89	2.702	2.063	29.67	95.56	2.712	2.670	74.8	
10/15/2008	8:48:00	160.29	31.68	68.61	2.896	2.045	29.80	78.24	2.911	2.654	74.3	
10/15/2008	8:49:00	157.36	31.45	79.32	2.767	2.079	29.62	87.11	2.775	2.693	73.8	
10/15/2008	8:50:00	153.38	31.90	73.93	2.693	2.098	29.95	80.30	2.704	2.711	73.4	
10/15/2008	8:51:00	156.21	31.92	66.92	2.758	2.083	29.92	89.12	2.761	2.702	72.9	
10/15/2008	8:52:00	157.67	32.02	71.29	2.636	2.088	30.13	73.49	2.656	2.704	72.5	
10/15/2008	8:53:00	157.18	31.96	77.66	2.656	2.064	29.98	88.76	2.666	2.691	72.2	
10/15/2008	8:54:00	163.53	31.93	59.68	2.769	2.031	29.92	79.40	2.773	2.657	71.8	
10/15/2008	8:55:00	155.38	32.26	65.11	2.696	2.031	30.30	75.64	2.715	2.655	71.7	
10/15/2008	8:56:00	152.46	32.42	60.73	2.727	2.020	30.41	75.85	2.727	2.650	71.3	
10/15/2008	8:57:00	152.99	32.39	68.86	2.812	2.013	30.36	81.01	2.810	2.635	71.1	
10/15/2008	8:58:00	153.08	32.06	53.98	2.829	2.018	30.06	69.10	2.854	2.626	70.9	
10/15/2008	8:59:00	150.64	32.47	53.31	2.702	2.027	30.32	71.29	2.710	2.637	70.6	
10/15/2008	9:00:00	152.63	32.63	65.15	2.703	2.024	30.59	72.24	2.713	2.632	70.4	
10/15/2008	9:01:00	150.79	32.35	59.83	2.746	2.015	30.25	81.46	2.754	2.623	70.0	
10/15/2008	9:02:00	151.68	32.18	65.21	2.856	1.996	30.09	80.26	2.863	2.605	69.7	
10/15/2008	9:03:00	155.47	32.14	77.14	2.757	2.022	29.99	86.57	2.771	2.630	69.5	
10/15/2008	9:04:00	153.38	32.36	70.36	2.741	2.024	30.23	94.62	2.755	2.636	69.1	
10/15/2008	9:05:00	164.22	32.78	46.78	2.861	2.010	30.58	75.36	2.882	2.619	69.0	
10/15/2008	9:06:00	151.39	32.85	59.44	2.770	2.026	30.70	68.09	2.782	2.643	68.6	
10/15/2008	9:07:00	152.76	32.67	53.12	2.719	2.034	30.51	78.47	2.725	2.652	68.5	
10/15/2008	9:08:00	154.71	33.05	47.24	2.764	2.018	30.79	68.26	2.773	2.645	68.2	
10/15/2008	9:09:00	155.32	33.04	61.39	2.775	1.997	30.88	66.77	2.782	2.630	68.1	
10/15/2008	9:10:00	153.71	32.60	46.53	2.804	1.989	30.46	78.54	2.815	2.604	67.7	
10/15/2008	9:11:00	152.86	33.21	50.58	2.762	2.000	31.00	67.39	2.774	2.616	67.7	
10/15/2008	9:12:00	151.79	33.35	49.77	2.741	1.995	31.10	65.39	2.749	2.625	67.4	
10/15/2008	9:13:00	155.02	33.09	58.63	2.743	1.982	30.78	76.22	2.753	2.617	67.3	
10/15/2008	9:14:00	162.58	32.76	61.23	2.687	1.970	30.50	81.78	2.705	2.614	67.2	
10/15/2008	9:15:00	150.62	32.91	60.79	2.692	1.960	30.65	85.76	2.687	2.582	66.9	
10/15/2008	9:16:00	150.13	33.06	62.04	2.862	1.941	30.76	84.07	2.854	2.579	66.8	
10/15/2008	9:17:00	150.86	32.49	58.96	2.833	1.948	30.23	82.93	2.871	2.571	66.8	
10/15/2008	9:18:00	155.98	32.81	55.89	2.775	1.959	30.47	80.34	2.784	2.593	66.6	
10/15/2008	9:19:00	155.45	32.99	65.00	2.706	1.965	30.75	83.64	2.717	2.611	66.4	
10/15/2008	9:20:00	158.79	33.00	51.21	2.853	1.954	30.77	77.74	2.839	2.595	66.4	
10/15/2008	9:21:00	160.63	32.95	58.23	2.796	1.983	30.65	78.25	2.822	2.619	66.3	
10/15/2008	9:22:00	166.78	33.26	50.95	2.765	1.988	30.91	77.19	2.778	2.645	66.0	
10/15/2008	9:23:00	166.85	33.19	51.17	2.714	1.986	30.83	79.03	2.724	2.628	65.9	
10/15/2008	9:24:00	168.92	33.39	59.98	2.793	1.979	30.97	76.18	2.803	2.608	65.9	
10/15/2008	9:25:00	171.77	33.02	57.05	2.782	1.981	30.63	83.43	2.789	2.632	65.9	
10/15/2008	9:26:00	171.94	33.10	41.99	2.780	1.986	30.77	77.87	2.792	2.627	65.8	
10/15/2008	9:27:00	173.70	33.91	43.52	2.783	1.987	31.51	60.16	2.789	2.635	65.6	
10/15/2008	9:28:00	174.14	33.41	48.28	2.712	1.981	31.09	73.40	2.719	2.623	65.5	
10/15/2008	9:29:00	177.62	33.40	53.52	2.662	1.964	31.02	69.20	2.680	2.613	65.5	
10/15/2008	9:30:00	179.20	33.45	33.47	2.792	1.931	31.12	69.27	2.790	2.588	65.5	
10/15/2008	9:31:00	175.06	33.33	53.00	2.777	1.921	31.05	71.78	2.788	2.548	65.4	
10/15/2008	9:32:00	171.71	33.11	65.88	2.767	1.914	30.77	87.30	2.774	2.546	65.4	
10/15/2008	9:33:00	174.32	32.71	59.64	3.013	1.888	30.37	88.01	3.008	2.508	65.1	
10/15/2008	9:34:00	173.28	32.16	69.10	2.739	1.924	29.87	92.89	2.750	2.555	65.0	
10/15/2008	9:35:00	169.96	32.58	69.91	2.774	1.926	30.20	96.44	2.781	2.562	65.0	
10/15/2008	9:36:00	171.52	32.85	48.52	2.808	1.933	30.45	88.14	2.806	2.559	65.0	

BP West Coast Products, LLC
Cherry Point Refinery
Blaine, WA

One - Minute Reference Method Data
Trailer 11

No. 2 TGU Stack

Date	Time	System 1					System 2				Trailer	Calibration Status
		SO _x 1 ppm	NO _x 1 ppm	CO 1 ppm	O ₂ 1 %	CO ₂ 2 %	NO _x 2 ppm	CO 2 ppm	O ₂ 2 %	CO ₂ 2 %	Temp deg F	
10/15/2008	9:37:00	170.67	33.77	48.57	2.888	1.933	31.36	63.55	2.895	2.549	65.0	
10/15/2008	9:38:00	167.20	33.27	38.50	2.910	1.947	30.91	77.73	2.921	2.578	65.0	
10/15/2008	9:39:00	166.97	33.73	46.22	2.790	1.967	31.34	68.67	2.805	2.604	65.0	
10/15/2008	9:40:00	165.64	33.66	48.56	2.799	1.975	31.22	75.57	2.801	2.605	65.0	
10/15/2008	9:41:00	169.20	33.80	51.39	2.762	1.987	31.34	72.20	2.772	2.620	65.0	
10/15/2008	9:42:00	168.58	33.47	47.87	2.780	1.986	31.07	77.58	2.785	2.624	65.0	
10/15/2008	9:43:00	163.67	33.71	35.47	2.761	1.989	31.24	67.82	2.769	2.622	65.0	
10/15/2008	9:44:00	160.56	33.67	77.06	2.688	1.982	31.25	80.23	2.597	2.631	65.0	
10/15/2008	9:45:00	158.09	32.92	63.41	2.721	1.940	30.53	98.67	2.717	2.575	65.0	
10/15/2008	9:46:00	158.52	32.94	48.36	2.944	1.916	30.58	80.83	2.944	2.550	65.0	
10/15/2008	9:47:00	156.06	32.47	74.30	2.712	1.937	30.13	88.53	2.729	2.568	65.0	
10/15/2008	9:48:00	153.52	32.37	66.40	2.738	1.927	29.96	96.69	2.739	2.551	65.0	
10/15/2008	9:49:00	155.91	32.91	51.89	2.870	1.922	30.51	80.48	2.872	2.546	65.0	
10/15/2008	9:50:00	155.33	32.87	66.48	2.788	1.945	30.44	90.23	2.795	2.558	65.0	
10/15/2008	9:51:00	154.53	32.77	61.31	2.731	1.958	30.34	90.46	2.739	2.579	65.0	
10/15/2008	9:52:00	153.48	32.94	82.17	2.667	1.957	30.61	95.65	2.671	2.588	65.0	
10/15/2008	9:53:00	151.77	32.40	64.89	2.889	1.932	30.10	99.43	2.870	2.552	65.0	
10/15/2008	9:54:00	153.38	32.44	65.76	2.727	1.952	30.13	87.19	2.755	2.562	65.0	
10/15/2008	9:55:00	153.54	32.76	66.23	2.717	1.952	30.30	94.90	2.717	2.571	65.0	
10/15/2008	9:56:00	153.90	32.67	64.43	2.663	1.947	30.27	94.38	2.664	2.562	65.0	
10/15/2008	9:57:00	154.94	32.50	70.34	2.740	1.923	30.08	96.72	2.741	2.525	65.0	
10/15/2008	9:58:00	171.17	32.15	69.96	2.773	1.910	29.74	97.43	2.781	2.507	65.0	
10/15/2008	9:59:00	144.94	32.40	79.71	2.587	1.915	30.04	95.49	2.579	2.531	65.0	
10/15/2008	10:00:00	153.93	32.44	77.19	2.837	1.884	30.00	89.27	2.860	2.473	65.0	
10/15/2008	10:01:00	158.76	31.54	103.42	2.697	1.900	29.24	99.81	2.696	2.506	65.0	
10/15/2008	10:02:00	158.78	31.60	80.98	2.774	1.899	29.22	99.80	2.763	2.488	65.0	
10/15/2008	10:03:00	159.10	31.77	90.79	2.735	1.912	29.42	99.81	2.745	2.507	65.0	
10/15/2008	10:04:00	158.71	31.47	106.73	2.611	1.928	29.08	99.82	2.620	2.523	65.0	
10/15/2008	10:05:00	161.87	31.51	86.28	2.677	1.915	29.03	99.82	2.667	2.509	65.0	
10/15/2008	10:06:00	160.98	31.95	97.02	2.750	1.910	29.49	99.73	2.754	2.499	65.0	
10/15/2008	10:07:00	160.90	31.54	84.15	2.668	1.929	29.11	99.81	2.673	2.532	65.0	
10/15/2008	10:08:00	160.70	32.48	76.78	2.657	1.937	29.97	98.36	2.657	2.530	65.0	
10/15/2008	10:09:00	163.55	32.62	70.66	2.761	1.930	30.20	99.69	2.763	2.525	65.0	
10/15/2008	10:10:00	164.14	32.88	62.39	2.810	1.927	30.42	95.74	2.797	2.539	65.0	
10/15/2008	10:11:00	172.53	32.31	91.07	2.661	1.943	29.95	93.88	2.680	2.544	65.0	
10/15/2008	10:12:00	153.81	32.47	58.26	2.673	1.949	29.98	95.79	2.675	2.545	65.0	
10/15/2008	10:13:00	159.45	33.17	61.02	2.841	1.933	30.82	87.79	2.831	2.526	65.0	
10/15/2008	10:14:00	158.41	32.98	68.34	2.729	1.950	30.56	86.51	2.750	2.549	65.0	
10/15/2008	10:15:00	154.73	33.04	69.28	2.754	1.947	30.65	98.62	2.751	2.541	65.0	
10/15/2008	10:16:00	156.44	33.11	45.72	2.918	1.944	30.70	84.72	2.917	2.541	65.0	
10/15/2008	10:17:00	154.02	33.06	51.43	2.811	1.982	30.76	75.03	2.819	2.590	65.0	
10/15/2008	10:18:00	150.48	33.67	39.94	2.650	2.001	31.23	68.90	2.653	2.592	65.0	
10/15/2008	10:19:00	147.73	33.81	56.03	2.707	1.970	31.39	74.50	2.703	2.570	65.0	
10/15/2008	10:20:00	150.19	33.13	52.68	2.738	1.960	30.84	86.03	2.735	2.563	65.0	
10/15/2008	10:21:00	146.27	33.17	63.10	2.757	1.953	30.84	87.09	2.756	2.541	65.0	
10/15/2008	10:22:00	146.47	33.17	59.32	2.786	1.969	30.72	91.22	2.787	2.566	65.0	
10/15/2008	10:23:00	143.85	33.08	67.60	2.785	1.982	30.68	92.62	2.790	2.583	65.0	
10/15/2008	10:24:00	132.91	33.01	64.29	2.703	1.988	30.61	98.02	2.696	2.572	65.0	
10/15/2008	10:25:00	142.95	33.63	45.35	2.843	1.977	31.22	66.24	2.852	2.581	65.0	
10/15/2008	10:26:00	142.73	33.01	75.03	2.660	1.998	30.68	93.88	2.654	2.600	65.0	
10/15/2008	10:27:00	141.80	32.92	68.46	2.723	1.988	30.44	96.78	2.726	2.591	65.0	
10/15/2008	10:28:00	144.39	33.08	48.08	2.723	1.977	30.68	87.46	2.720	2.577	65.0	
10/15/2008	10:29:00	147.13	33.52	55.40	2.725	1.959	31.14	74.48	2.725	2.564	65.1	
10/15/2008	10:30:00	141.50	32.95	77.48	2.697	1.956	30.55	94.47	2.695	2.561	65.2	
10/15/2008	10:31:00	143.66	32.92	47.23	2.723	1.963	30.48	89.68	2.727	2.558	65.1	
10/15/2008	10:32:00	143.03	33.51	75.50	2.800	1.947	31.14	85.48	2.786	2.549	65.1	
10/15/2008	10:33:00	142.17	32.53	65.37	2.950	1.952	30.19	94.17	2.959	2.554	65.2	
10/15/2008	10:34:00	141.89	32.43	80.34	2.723	1.991	30.03	98.64	2.722	2.592	65.3	
10/15/2008	10:35:00	143.55	32.62	83.18	2.729	1.990	30.16	99.81	2.733	2.586	65.3	
10/15/2008	10:36:00	127.52	28.83	56.48	1.901	0.938	30.02	99.83	2.814	2.547	65.4	
10/15/2008	10:37:00	15.96	0.30	-11.16	0.008	-0.374	29.05	99.80	2.599	2.544	65.4	Calibrating System 1
10/15/2008	10:38:00	1.08	0.16	-7.23	0.001	-0.383	28.99	97.76	2.592	2.525	65.4	Calibrating System 1
10/15/2008	10:39:00	-1.57	0.09	26.51	1.948	1.437	28.95	99.83	2.637	2.522	65.5	Calibrating System 1
10/15/2008	10:40:00	-2.65	0.07	206.71	12.085	12.100	29.42	99.80	2.748	2.628	65.5	Calibrating System 1
10/15/2008	10:41:00	-2.63	7.55	155.51	7.397	7.525	29.82	99.80	2.766	2.582	65.5	
10/15/2008	10:42:00	32.91	54.75	49.39	0.018	-0.281	30.11	98.77	2.607	2.444	65.5	Calibrating System 1
10/15/2008	10:43:00	47.43	68.84	76.99	0.032	-0.313	30.38	96.11	2.726	2.502	65.5	Calibrating System 1
10/15/2008	10:44:00	87.74	101.96	97.21	0.008	-0.364	30.64	96.61	2.850	2.519	65.5	Calibrating System 1
10/15/2008	10:45:00	92.86	101.90	97.26	0.008	-0.374	30.85	80.35	2.728	2.557	65.5	Calibrating System 1
10/15/2008	10:46:00	93.88	101.51	97.23	0.005	-0.383	31.03	98.70	2.686	2.551	65.6	Calibrating System 1
10/15/2008	10:47:00	93.61	80.79	93.76	1.380	0.712	26.72	93.44	2.317	1.812	65.7	
10/15/2008	10:48:00	127.20	32.46	106.59	2.839	1.956	0.25	12.91	0.008	0.169	65.8	Calibrating System 2
10/15/2008	10:49:00	142.87	32.25	108.03	2.691	1.997	0.05	4.88	0.004	0.137	65.8	Calibrating System 2
10/15/2008	10:50:00	147.17	32.69	114.26	2.736	1.990	-0.02	4.20	0.001	0.152	65.9	Calibrating System 2
10/15/2008	10:51:00	148.80	32.49	87.12	2.950	1.969	-0.02	4.29	0.001	0.135	65.9	Calibrating System 2
10/15/2008	10:52:00	149.10	32.99	82.88	2.886	2.002	-0.06	3.09	-0.001	0.121	65.9	Calibrating System 2
10/15/2008	10:53:00	146.04	33.15	76.69	2.863	2.028	-0.09	3.57	0.951	0.357	65.9	Calibrating System 2
10/15/2008	10:54:00	145.91	33.77	68.58	2.872	2.044	-0.03	89.35	12.076	11.554	66.0	Calibrating System 2

BP West Coast Products, LLC
Cherry Point Refinery
Blaine, WA

One - Minute Reference Method Data
Trailer 11

No. 2 TGU Stack

Date	Time	System 1					System 2				Trailer	Calibration Status
		SO ₂ 1	NO _x 1	CO 1	O ₂ 1	CO ₂ 2	NO _x 2	CO 2	O ₂ 2	CO ₂ 2	Temp	
		ppm	ppm	ppm	%	%	ppm	ppm	%	%	deg F	
10/15/2008	10:55:00	146.22	33.99	80.75	2.761	2.066	-0.08	99.80	11.630	11.752	66.2	Calibrating System 2
10/15/2008	10:56:00	143.93	33.87	70.04	2.807	2.056	42.84	86.21	0.060	0.579	66.3	Calibrating System 2
10/15/2008	10:57:00	143.30	34.04	64.11	2.805	2.055	48.65	52.87	0.010	0.200	66.4	Calibrating System 2
10/15/2008	10:58:00	146.94	34.34	66.39	2.810	2.049	48.68	51.61	0.291	0.303	66.4	Calibrating System 2

		System 1					System 2					Trailer	
Date	Time	SO ₂ _1	NO _x _1	CO_1	O ₂ _1	CO ₂ _2	NO _x _2	CO_2	O ₂ _2	CO ₂ _2	Temp	Calibration Status	
		ppm	ppm	ppm	%	%	ppm	ppm	%	%	deg F		
10/14/2008	9:23:31	0.00	-0.025	-11.16	21.131	-0.271	-0.07	0.58	21.169	-0.833	62.31	Calibrating Both Systems	
10/14/2008	9:23:41	0.00	-0.025	-11.16	21.137	-0.281	-0.07	0.18	21.163	-0.846	62.31	Calibrating Both Systems	
10/14/2008	9:23:52	0.00	-0.025	-11.16	21.143	-0.271	-0.07	0.35	21.169	-0.859	62.31	Calibrating Both Systems	
10/14/2008	9:24:02	0.00	-0.025	-11.16	21.131	-0.281	-0.05	0.73	21.169	-0.922	62.31	Calibrating Both Systems	
10/14/2008	9:24:13	0.00	-0.025	-11.16	21.143	-0.271	-0.05	0.80	21.163	-0.821	62.31	Calibrating Both Systems	
10/14/2008	9:24:24	0.00	-0.050	-11.16	21.143	-0.271	-0.07	0.45	21.163	-0.922	62.31	Calibrating Both Systems	
10/14/2008	9:24:35	0.00	-0.050	-11.16	21.143	-0.281	-0.07	0.15	21.156	-0.934	62.31	Calibrating Both Systems	
10/14/2008	9:24:46	0.00	-0.025	-11.16	21.150	-0.281	-0.05	0.28	21.156	-0.922	62.31	Calibrating Both Systems	
10/14/2008	9:24:57	0.00	-0.025	-11.16	21.137	-0.281	-0.07	0.35	21.163	-0.922	62.31	Calibrating Both Systems	
10/14/2008	9:25:08	0.00	-0.025	-11.16	21.150	-0.281	-0.05	0.65	21.175	-0.947	62.31	Calibrating Both Systems	
10/14/2008	9:25:19	0.00	0.000	-11.16	21.137	-0.281	-0.05	0.68	21.156	-0.833	62.31	Calibrating Both Systems	
10/14/2008	9:25:30	0.00	0.000	-11.16	21.143	-0.281	-0.05	0.28	21.156	-0.833	62.31	Calibrating Both Systems	
10/14/2008	9:25:41	0.00	-0.050	-11.16	21.131	-0.271	-0.05	0.15	21.150	-0.833	62.31	Calibrating Both Systems	
10/14/2008	9:25:52	0.00	-0.025	-11.16	21.143	-0.271	-0.07	0.60	21.163	-0.859	62.31	Calibrating Both Systems	
10/14/2008	9:26:02	0.00	-0.025	-11.16	21.131	-0.271	-0.07	0.65	21.156	-0.859	62.31	Calibrating Both Systems	
10/14/2008	9:26:13	0.00	-0.025	-11.16	21.137	-0.271	-0.05	0.68	21.163	-0.859	62.31	Calibrating Both Systems	
10/14/2008	9:26:24	0.00	-0.050	-11.16	21.143	-0.281	-0.07	0.40	21.156	-0.897	62.31	Calibrating Both Systems	
10/14/2008	9:26:35	0.00	-0.050	-11.16	21.150	-0.281	-0.05	0.05	21.156	-0.922	62.31	Calibrating Both Systems	
10/14/2008	9:26:46	0.00	0.000	-11.16	21.137	-0.281	-0.07	0.25	21.163	-0.871	62.31	Calibrating Both Systems	
10/14/2008	9:26:57	0.00	-0.050	-11.16	21.137	-0.281	-0.07	0.80	21.156	-0.821	62.31	Calibrating Both Systems	
10/14/2008	9:27:08	0.00	-0.025	-11.16	21.137	-0.271	-0.05	0.68	21.163	-0.897	62.31	Calibrating Both Systems	
10/14/2008	9:27:18	0.00	-0.025	-11.16	21.143	-0.281	-0.05	0.48	21.156	-0.833	62.31	Calibrating Both Systems	
10/14/2008	9:27:28	0.00	0.025	-11.16	21.131	-0.281	-0.07	0.23	21.156	-0.846	62.31	Calibrating Both Systems	
10/14/2008	9:27:39	0.00	-0.025	-11.16	21.143	-0.281	-0.05	0.28	21.150	-0.821	62.31	Calibrating Both Systems	
10/14/2008	9:27:50	0.00	0.000	-11.16	21.137	-0.281	-0.05	0.80	21.156	-0.846	62.31	Calibrating Both Systems	
10/14/2008	9:28:01	0.00	-0.025	-11.16	21.112	-0.271	-0.07	0.68	21.156	-0.897	62.31	Calibrating Both Systems	
10/14/2008	9:28:11	0.00	0.050	-11.16	0.075	-0.417	-0.05	0.25	21.156	-0.922	62.31	Calibrating Both Systems	
10/14/2008	9:28:22	0.00	0.050	-11.16	0.000	-0.080	-0.05	0.15	21.156	-0.871	62.31	Calibrating Both Systems	
10/14/2008	9:28:32	0.00	0.050	-11.16	0.000	0.005	-0.07	0.45	21.156	-0.922	62.31	Calibrating Both Systems	
10/14/2008	9:28:43	0.00	0.050	-4.75	-0.006	0.005	-0.05	0.65	21.150	-0.859	62.31	Calibrating Both Systems	
10/14/2008	9:28:54	0.00	0.050	-4.75	-0.019	0.005	-0.05	0.78	21.156	-0.884	62.31	Calibrating Both Systems	
10/14/2008	9:29:05	0.00	0.050	1.11	-0.019	0.005	-0.05	0.58	21.156	-0.821	62.31	Calibrating Both Systems	
10/14/2008	9:29:16	0.00	0.000	0.45	-0.019	0.005	-0.07	0.30	21.156	-0.859	62.31	Calibrating Both Systems	
10/14/2008	9:29:27	0.00	0.000	0.61	-0.019	0.005	-0.07	0.33	21.156	-0.808	62.31	Calibrating Both Systems	
10/14/2008	9:29:38	0.00	-0.025	0.71	-0.013	0.005	-0.07	0.45	21.150	-0.909	61.86	Calibrating Both Systems	
10/14/2008	9:29:48	0.00	-0.050	0.40	-0.013	0.005	-0.07	0.78	21.156	-0.897	62.31	Calibrating Both Systems	
10/14/2008	9:30:00	0.00	-0.025	0.91	-0.025	0.005	-0.05	0.38	21.150	-0.897	62.31	Calibrating Both Systems	
10/14/2008	9:30:11	0.00	-0.050	0.45	-0.019	0.005	-0.05	0.28	21.150	-0.821	62.31	Calibrating Both Systems	
10/14/2008	9:30:21	0.00	-0.050	0.50	-0.019	0.005	-0.07	0.50	21.150	-0.884	62.31	Calibrating Both Systems	
10/14/2008	9:30:33	0.00	-0.050	0.81	-0.019	0.005	-0.07	0.65	21.150	-0.897	62.31	Calibrating Both Systems	
10/14/2008	9:30:43	0.00	-0.025	17.72	14.278	7.082	-0.07	0.75	21.150	-0.871	62.31	Calibrating Both Systems	
10/14/2008	9:30:53	0.00	-0.050	206.71	21.859	20.568	-0.05	0.58	21.150	-0.859	62.31	Calibrating Both Systems	
10/14/2008	9:31:04	0.00	0.000	206.71	21.859	20.568	-0.05	0.38	21.150	-0.871	62.31	Calibrating Both Systems	
10/14/2008	9:31:16	0.00	-0.025	206.71	21.840	20.568	-0.07	0.40	21.144	-0.884	62.31	Calibrating Both Systems	
10/14/2008	9:31:26	0.00	-0.025	206.71	21.840	20.568	-0.07	0.68	21.150	-0.833	62.31	Calibrating Both Systems	
10/14/2008	9:31:37	0.00	-0.025	206.71	21.815	20.568	-0.07	0.83	21.150	-0.821	62.31	Calibrating Both Systems	
10/14/2008	9:31:48	0.00	-0.025	206.71	21.822	20.568	-0.05	0.75	21.150	-0.897	62.31	Calibrating Both Systems	
10/14/2008	9:31:58	0.00	-0.050	206.71	21.985	20.568	-0.07	0.38	21.150	-0.871	62.31	Calibrating Both Systems	
10/14/2008	9:32:09	0.00	-0.025	206.71	21.979	20.568	-0.07	0.15	21.150	-0.833	62.31	Calibrating Both Systems	
10/14/2008	9:32:20	0.00	-0.025	206.71	21.972	20.568	-0.05	0.68	21.163	-0.846	62.31	Calibrating Both Systems	
10/14/2008	9:32:30	0.00	-0.025	206.71	21.960	20.568	-0.05	0.75	21.144	-0.859	62.31	Calibrating Both Systems	
10/14/2008	9:32:41	0.00	-0.025	206.71	21.916	20.568	-0.05	0.68	21.150	-0.846	62.31	Calibrating Both Systems	
10/14/2008	9:32:52	0.00	-0.050	206.71	20.433	17.559	-0.07	0.38	21.144	-0.833	62.31	Calibrating Both Systems	
10/14/2008	9:33:02	0.00	-0.025	206.71	12.242	11.889	-0.07	0.33	21.156	-0.909	62.31	Calibrating Both Systems	
10/14/2008	9:33:13	0.00	-0.050	206.71	12.242	12.456	-0.05	0.55	21.150	-0.909	62.31	Calibrating Both Systems	
10/14/2008	9:33:24	0.00	-0.025	206.71	12.255	12.632	-0.07	0.88	21.156	-0.909	62.31	Calibrating Both Systems	
10/14/2008	9:33:34	0.00	-0.025	206.71	12.255	12.647	-0.07	0.73	21.150	-0.922	62.31	Calibrating Both Systems	
10/14/2008	9:33:45	0.00	0.000	206.71	12.261	12.315	-0.07	0.38	21.156	-0.871	62.31	Calibrating Both Systems	
10/14/2008	9:33:55	0.00	0.000	206.71	12.249	12.105	-0.05	0.25	21.156	-0.897	62.31	Calibrating Both Systems	
10/14/2008	9:34:07	0.00	-0.050	206.71	12.255	12.110	-0.05	0.50	21.150	-0.846	62.31	Calibrating Both Systems	
10/14/2008	9:34:17	0.00	-0.050	206.71	12.318	11.934	-0.07	0.88	21.144	-0.846	62.31	Calibrating Both Systems	
10/14/2008	9:34:29	0.00	49.851	101.72	-0.013	0.035	-0.05	0.88	21.144	-0.922	62.31	Calibrating Both Systems	
10/14/2008	9:34:40	0.00	101.963	101.06	-0.025	0.035	-0.05	0.33	20.994	-0.909	62.31	Calibrating Both Systems	
10/14/2008	9:34:51	0.00	101.615	101.31	-0.013	0.025	-0.05	0.25	21.156	-0.884	62.31	Calibrating Both Systems	
10/14/2008	9:35:01	0.00	100.298	101.67	-0.019	0.025	-0.07	0.58	21.150	-0.934	62.31	Calibrating Both Systems	
10/14/2008	9:35:11	0.00	100.199	101.36	-0.013	0.025	-0.07	0.88	21.144	-0.909	62.31	Calibrating Both Systems	
10/14/2008	9:35:22	0.00	99.727	97.07	-0.031	0.025	-0.07	0.78	21.150	-0.897	62.31	Calibrating Both Systems	
10/14/2008	9:35:32	0.00	99.404	95.25	-0.025	0.015	-0.05	0.58	21.150	-0.808	62.31	Calibrating Both Systems	
10/14/2008	9:35:43	0.00	99.578	95.31	-0.025	0.015	-0.07	0.38	21.150	-0.859	62.31	Calibrating Both Systems	
10/14/2008	9:35:54	0.00	96.819	95.41	-0.025	0.015	-0.07	0.35	21.150	-0.909	62.31	Calibrating Both Systems	
10/14/2008	9:36:05	0.00	96.894	95.71	-0.025	0.015	-0.05	0.65	21.150	-0.833	62.31	Calibrating Both Systems	
10/14/2008	9:36:17	0.00	96.919	93.59	0.534	0.251	-0.07	0.65	21.156	-0.808	62.31	Calibrating System 2	
10/14/2008	9:36:2												

Date	Time	System 1					System 2				Trailer	Calibration Status
		SO ₂ _1	NO _x _1	CO_1	O ₂ _1	CO ₂ _2	NO _x _2	CO_2	O ₂ _2	CO ₂ _2	Temp	
		ppm	ppm	ppm	%	%	ppm	ppm	%	%	deg F	
10/14/2008	9:38:37	0.00	0.447	-1.21	21.288	0.095	-0.05	0.25	21.144	-0.909	62.31	Calibrating Both Systems
10/14/2008	9:38:48	0.00	0.149	-1.31	21.294	0.095	-0.07	0.68	20.388	-0.871	62.31	Calibrating Both Systems
10/14/2008	9:38:58	0.00	0.099	-1.62	21.281	0.095	-0.05	0.95	0.050	-0.998	62.31	Calibrating Both Systems
10/14/2008	9:39:08	0.00	0.099	-1.62	21.269	0.095	-0.07	1.23	0.019	-1.061	62.31	Calibrating Both Systems
10/14/2008	9:39:19	0.00	0.099	-1.41	21.269	0.095	-0.05	0.85	0.025	-0.998	62.31	Calibrating Both Systems
10/14/2008	9:39:29	0.00	0.050	-0.76	21.244	0.095	-0.05	0.20	0.013	-0.985	62.31	Calibrating Both Systems
10/14/2008	9:39:40	0.00	0.025	13.12	21.150	0.101	-0.05	0.50	0.006	-1.061	62.31	Calibrating Both Systems
10/14/2008	9:39:51	0.00	0.124	45.33	6.891	1.989	-0.05	0.58	0.006	-0.985	62.31	Calibrating Both Systems
10/14/2008	9:40:02	0.00	22.490	91.01	3.160	2.456	-0.05	0.38	0.006	-0.972	62.31	Calibrating System 2
10/14/2008	9:40:13	0.00	32.828	93.84	3.116	2.456	-0.05	0.18	0.006	-1.035	62.31	Calibrating System 2
10/14/2008	9:40:24	0.00	33.524	77.64	3.166	2.456	-0.05	0.05	0.006	-1.023	62.76	Calibrating System 2
10/14/2008	9:40:35	0.00	33.499	79.76	3.197	2.446	-0.05	0.38	0.006	-0.960	62.31	Calibrating System 2
10/14/2008	9:40:46	0.00	33.723	84.30	3.254	2.446	-0.05	0.45	0.006	-1.073	62.76	Calibrating System 2
10/14/2008	9:40:56	0.00	33.623	80.51	3.266	2.446	-0.05	0.45	0.013	-1.073	62.76	Calibrating System 2
10/14/2008	9:41:07	0.00	33.549	80.31	3.210	2.446	-0.05	0.30	0.006	-0.972	62.31	Calibrating System 2
10/14/2008	9:41:18	0.00	33.574	89.10	3.147	2.446	-0.05	0.05	0.000	-1.010	62.31	Calibrating System 2
10/14/2008	9:41:29	0.00	33.524	84.76	3.178	2.446	-0.05	0.08	0.000	-1.035	62.76	Calibrating System 2
10/14/2008	9:41:40	0.00	33.449	78.90	3.254	2.446	-0.07	0.45	-0.006	-1.061	62.31	Calibrating System 2
10/14/2008	9:41:50	0.00	33.400	61.39	3.367	2.436	-0.05	0.45	-0.006	-0.442	62.76	Calibrating System 2
10/14/2008	9:42:01	0.00	33.350	67.39	3.160	2.476	-0.05	0.18	0.000	0.076	62.76	Calibrating System 2
10/14/2008	9:42:12	0.00	33.275	76.68	3.072	2.496	-0.05	0.00	-0.006	-0.025	62.76	Calibrating System 2
10/14/2008	9:42:23	0.00	33.176	69.61	2.971	2.516	-0.05	0.28	-0.006	0.000	62.76	Calibrating System 2
10/14/2008	9:42:34	0.00	33.176	78.55	2.984	2.501	-0.05	0.50	-0.006	0.088	62.76	Calibrating System 2
10/14/2008	9:42:45	0.00	33.077	70.27	2.996	2.506	-0.05	0.35	0.000	0.063	62.76	Calibrating System 2
10/14/2008	9:42:56	0.00	33.201	67.74	2.921	2.526	-0.05	32.77	21.850	22.109	62.76	Calibrating System 2
10/14/2008	9:43:07	0.00	33.300	83.75	2.902	2.536	-0.05	99.85	21.856	22.475	62.76	Calibrating System 2
10/14/2008	9:43:18	0.00	33.251	80.36	2.996	2.526	-0.05	99.87	21.856	22.614	62.76	Calibrating System 2
10/14/2008	9:43:30	0.00	33.226	80.77	2.946	2.536	-0.05	99.77	21.888	22.702	62.76	Calibrating System 2
10/14/2008	9:43:40	0.00	33.251	82.28	2.977	2.536	-0.05	99.77	22.025	22.399	62.76	Calibrating System 2
10/14/2008	9:43:51	0.00	33.251	77.28	3.028	2.526	-0.07	99.90	22.025	21.566	62.76	Calibrating System 2
10/14/2008	9:44:03	0.00	33.350	82.84	2.984	2.547	-0.05	99.77	22.025	21.515	62.76	Calibrating System 2
10/14/2008	9:44:14	0.00	33.275	76.48	2.965	2.557	-0.07	99.82	17.869	21.591	62.76	Calibrating System 2
10/14/2008	9:44:25	0.00	33.325	72.74	3.059	2.536	-0.07	99.87	12.294	11.944	62.76	Calibrating System 2
10/14/2008	9:44:35	0.00	33.449	70.37	3.059	2.536	-0.07	99.90	12.288	11.894	62.76	Calibrating System 2
10/14/2008	9:44:46	0.00	33.449	77.59	3.034	2.536	-0.05	99.77	12.294	11.970	62.76	Calibrating System 2
10/14/2008	9:44:56	0.00	33.449	89.60	2.990	2.547	-0.05	99.77	12.294	11.982	62.76	Calibrating System 2
10/14/2008	9:45:07	0.00	33.474	70.87	3.003	2.552	2.60	99.90	1.006	11.755	62.76	
10/14/2008	9:45:18	0.00	33.474	88.59	2.915	2.567	88.36	99.77	0.006	0.265	62.76	Calibrating System 2
10/14/2008	9:45:28	0.00	33.425	75.11	2.933	2.567	95.65	99.85	-0.006	0.164	62.76	Calibrating System 2
10/14/2008	9:45:39	0.00	33.449	68.75	2.971	2.557	95.75	99.80	-0.006	0.240	62.76	Calibrating System 2
10/14/2008	9:45:51	0.00	33.449	75.06	2.952	2.552	95.90	97.70	-0.013	0.253	62.76	Calibrating System 2
10/14/2008	9:46:03	0.00	33.499	86.93	2.927	2.557	96.23	96.57	-0.006	0.164	62.76	Calibrating System 2
10/14/2008	9:46:14	0.00	33.574	61.18	2.984	2.557	96.23	98.80	-0.006	0.202	62.76	Calibrating System 2
10/14/2008	9:46:26	0.00	33.698	65.62	3.015	2.557	96.35	99.27	-0.006	0.177	62.76	Calibrating System 2
10/14/2008	9:46:37	0.00	33.822	79.05	2.952	2.562	96.80	97.97	-0.013	0.278	62.76	Calibrating System 2
10/14/2008	9:46:49	0.00	33.847	67.29	2.965	2.557	96.80	96.30	-0.013	0.189	62.76	Calibrating System 2
10/14/2008	9:47:00	0.00	33.922	67.39	2.940	2.567	96.93	97.30	-0.013	0.253	62.76	Calibrating System 2
10/14/2008	9:47:10	0.00	33.946	83.75	2.965	2.547	81.32	92.32	-0.013	0.328	62.76	Calibrating System 2
10/14/2008	9:47:21	0.00	33.897	66.43	2.984	2.547	51.10	70.39	-0.013	0.303	62.76	Calibrating System 2
10/14/2008	9:47:32	0.00	33.872	71.28	2.984	2.547	50.52	54.17	-0.006	0.215	62.76	Calibrating System 2
10/14/2008	9:47:43	0.00	33.847	76.48	2.977	2.536	50.65	49.51	-0.013	0.227	63.21	Calibrating System 2
10/14/2008	9:47:53	0.00	33.822	70.92	3.072	2.526	50.45	49.21	-0.019	0.202	63.21	Calibrating System 2
10/14/2008	9:48:04	0.00	33.797	74.41	3.034	2.531	50.35	50.31	-0.019	0.303	63.21	Calibrating System 2
10/14/2008	9:48:14	0.00	33.673	91.17	3.040	2.526	50.40	50.81	-0.019	0.290	63.21	Calibrating System 2
10/14/2008	9:48:25	0.00	33.623	82.63	2.977	2.536	50.47	50.19	-0.019	0.215	62.76	Calibrating System 2
10/14/2008	9:48:35	0.00	33.648	80.92	2.896	2.557	50.47	49.29	-0.013	0.227	62.76	Calibrating System 2
10/14/2008	9:48:46	0.00	33.549	100.40	2.820	2.567	32.39	48.84	21.269	0.404	62.76	
10/14/2008	9:48:57	0.00	33.574	91.72	2.946	2.557	0.82	35.27	21.225	0.467	63.21	Calibrating System 2
10/14/2008	9:49:07	0.00	33.574	69.51	2.971	2.552	14.79	17.45	3.169	2.715	63.21	
10/14/2008	9:49:19	0.00	25.547	88.34	19.460	0.221	33.57	25.88	3.006	3.030	63.21	
10/14/2008	9:49:30	0.00	1.914	2.93	1.168	0.065	34.04	65.01	12.306	2.816	63.21	
10/14/2008	9:49:41	0.00	12.276	-0.15	0.063	0.025	23.73	58.30	0.050	0.985	63.21	Calibrating Both Systems
10/14/2008	9:49:52	0.00	32.083	0.35	-0.006	0.025	33.34	32.37	-0.006	0.341	63.21	Calibrating Both Systems
10/14/2008	9:50:02	0.00	42.197	0.81	-0.006	0.015	39.91	9.44	-0.006	0.290	63.21	Calibrating Both Systems
10/14/2008	9:50:14	0.00	43.141	1.11	-0.013	0.015	42.58	1.13	0.000	0.341	63.21	Calibrating Both Systems
10/14/2008	9:50:25	0.00	44.135	1.41	-0.013	0.015	43.28	-0.15	-0.006	0.227	63.21	Calibrating Both Systems
10/14/2008	9:50:35	0.00	44.707	1.31	-0.019	0.015	43.91	0.00	-0.019	0.240	63.21	Calibrating Both Systems
10/14/2008	9:50:45	0.00	45.030	1.67	-0.013	0.015	44.13	-0.03	-0.006	0.240	63.21	Calibrating Both Systems
10/14/2008	9:50:56	0.00	45.179	1.62	-0.019	0.015	44.63	0.05	-0.006	0.227	63.21	Calibrating Both Systems
10/14/2008	9:51:07	0.00	45.254	1.67	-0.019	0.015	44.66	0.35	-0.006	0.278	63.21	Calibrating Both Systems
10/14/2008	9:51:18	0.00	45.378	1.56	-0.019	0.015	44.71	0.20	-0.013	0.316	63.21	Calibrating Both Systems
10/14/2008	9:51:29	0.00	45.552	1.67	-0.013	0.015	44.83	0.00	-0.013	0.3163		

		System 1					System 2				Trailer	
Date	Time	SO ₂ _1	NO _x _1	CO_1	O ₂ _1	CO ₂ _2	NO _x _2	CO_2	O ₂ _2	CO ₂ _2	Temp	Calibration Status
		ppm	ppm	ppm	%	%	ppm	ppm	%	%	deg F	
10/14/2008	9:53:45	0.00	48.509	1.87	-0.019	0.015	47.18	0.18	-0.013	0.202	63.21	Calibrating Both Systems
10/14/2008	9:53:56	0.00	48.608	1.97	-0.013	0.015	47.23	0.25	-0.013	0.278	63.66	Calibrating Both Systems
10/14/2008	9:54:06	0.00	48.658	2.17	-0.019	0.015	47.35	0.10	-0.006	0.316	63.21	Calibrating Both Systems
10/14/2008	9:54:17	0.00	48.758	2.07	-0.019	0.015	47.40	-0.18	-0.013	0.189	63.21	Calibrating Both Systems
10/14/2008	9:54:28	0.00	48.758	1.97	-0.019	0.025	47.48	-0.13	-0.019	0.189	63.66	Calibrating Both Systems
10/14/2008	9:54:39	0.00	48.832	2.32	-0.013	0.025	47.53	0.08	-0.019	0.303	63.66	Calibrating Both Systems
10/14/2008	9:54:50	0.00	29.796	12.57	0.496	0.116	42.18	12.14	3.488	2.828	63.66	
10/14/2008	9:55:01	0.00	13.196	103.38	3.122	2.416	35.26	45.46	3.531	2.879	63.66	
10/14/2008	9:55:12	0.00	33.350	51.99	1.539	0.974	34.57	67.61	3.019	3.018	63.66	
10/14/2008	9:55:22	0.00	19.110	5.96	0.232	0.085	34.64	72.14	2.988	3.106	63.66	Calibrating System 1
10/14/2008	9:55:32	0.00	1.093	1.01	0.038	0.065	34.39	76.17	2.944	3.030	63.66	Calibrating System 1
10/14/2008	9:55:43	0.00	0.398	0.96	0.025	0.045	34.17	78.12	3.031	3.043	63.66	Calibrating System 1
10/14/2008	9:55:54	0.00	0.273	0.71	0.019	0.045	34.09	76.30	2.950	3.093	63.66	Calibrating System 1
10/14/2008	9:56:06	0.00	0.273	0.76	0.025	0.035	34.09	77.02	2.938	3.018	63.66	Calibrating System 1
10/14/2008	9:56:17	0.00	0.199	0.86	0.025	0.035	34.12	80.98	2.994	3.056	63.66	Calibrating System 1
10/14/2008	9:56:27	0.00	0.249	0.86	0.019	0.035	34.12	83.00	3.000	2.992	63.66	Calibrating System 1
10/14/2008	9:56:39	0.00	0.224	0.86	0.019	0.035	34.17	79.22	2.994	3.043	63.66	Calibrating System 1
10/14/2008	9:56:49	0.00	0.149	0.66	0.019	0.035	34.22	71.86	3.081	3.106	63.66	Calibrating System 1
10/14/2008	9:57:01	0.00	0.174	0.81	0.013	0.035	34.27	72.37	3.069	3.093	63.66	Calibrating System 1
10/14/2008	9:57:12	0.00	0.174	1.01	0.025	0.035	34.34	73.89	3.006	3.068	63.66	Calibrating System 1
10/14/2008	9:57:23	0.00	0.149	0.81	0.019	0.035	34.39	77.22	3.025	3.119	63.66	Calibrating System 1
10/14/2008	9:57:34	0.00	0.174	15.55	8.794	8.172	34.34	81.70	3.119	3.093	63.66	Calibrating System 1
10/14/2008	9:57:45	0.00	0.149	206.71	12.129	11.683	34.09	84.91	3.181	3.081	63.66	Calibrating System 1
10/14/2008	9:57:57	0.00	0.174	206.71	12.186	11.969	33.82	81.73	3.256	3.056	63.66	Calibrating System 1
10/14/2008	9:58:09	0.00	0.174	206.71	12.192	12.019	33.57	77.60	3.056	3.030	63.66	Calibrating System 1
10/14/2008	9:58:20	0.00	0.124	206.71	12.199	12.029	33.39	81.90	2.950	3.144	63.66	Calibrating System 1
10/14/2008	9:58:31	0.00	0.075	206.71	12.192	12.044	33.34	79.35	2.975	3.068	63.66	Calibrating System 1
10/14/2008	9:58:41	0.00	0.075	206.71	6.143	4.571	33.29	75.32	2.919	3.106	63.66	Calibrating System 1
10/14/2008	9:58:51	0.00	27.162	52.09	0.113	0.246	33.34	77.40	2.981	3.144	63.66	Calibrating System 1
10/14/2008	9:59:01	0.00	48.459	50.13	0.075	0.156	33.52	79.97	3.050	3.131	63.66	Calibrating System 1
10/14/2008	9:59:12	0.00	49.354	49.52	0.038	0.118	33.74	78.40	3.038	3.018	64.11	Calibrating System 1
10/14/2008	9:59:24	0.00	49.602	49.57	0.050	0.095	33.92	76.07	3.056	3.068	63.66	Calibrating System 1
10/14/2008	9:59:35	0.00	49.528	49.77	0.031	0.085	33.99	81.40	3.138	3.030	64.11	Calibrating System 1
10/14/2008	9:59:46	0.00	49.553	49.62	0.038	0.075	33.92	82.98	3.081	3.030	64.11	Calibrating System 1
10/14/2008	9:59:56	0.00	49.752	49.52	0.038	0.065	33.97	81.40	3.094	3.131	64.11	Calibrating System 1
10/14/2008	10:00:07	0.00	49.702	67.29	2.607	2.110	33.99	80.40	3.131	3.030	64.11	
10/14/2008	10:00:18	0.00	36.928	89.55	3.059	2.526	33.92	80.88	3.244	3.131	64.11	
10/14/2008	10:00:29	0.00	33.897	82.89	3.103	2.526	22.65	84.00	4.475	0.669	64.11	
10/14/2008	10:00:40	0.00	33.822	84.91	3.128	2.536	0.60	28.06	0.113	0.417	64.11	Calibrating System 2
10/14/2008	10:00:51	0.00	33.425	80.06	3.248	2.526	0.25	5.98	0.075	0.328	64.11	Calibrating System 2
10/14/2008	10:01:02	0.00	32.878	79.35	3.248	2.536	0.20	1.18	0.069	0.341	64.11	Calibrating System 2
10/14/2008	10:01:13	0.00	32.952	90.16	3.260	2.547	0.12	0.85	0.056	0.328	64.11	Calibrating System 2
10/14/2008	10:01:24	0.00	33.002	90.81	3.172	2.567	0.12	0.90	0.050	0.391	64.11	Calibrating System 2
10/14/2008	10:01:34	0.00	33.002	89.10	3.141	2.567	0.07	0.65	0.050	0.404	64.11	Calibrating System 2
10/14/2008	10:01:45	0.00	33.101	81.68	3.122	2.577	0.07	0.25	0.050	0.303	64.11	Calibrating System 2
10/14/2008	10:01:56	0.00	33.226	68.30	3.078	2.592	0.07	0.50	4.288	0.328	64.11	Calibrating System 2
10/14/2008	10:02:07	0.00	33.449	86.42	3.003	2.607	0.07	18.22	12.150	11.591	64.11	Calibrating System 2
10/14/2008	10:02:19	0.00	33.673	82.38	3.015	2.607	0.07	99.87	12.188	12.008	64.11	Calibrating System 2
10/14/2008	10:02:29	0.00	33.748	82.89	2.977	2.612	0.07	99.80	12.200	12.045	64.11	Calibrating System 2
10/14/2008	10:02:41	0.00	33.897	82.89	2.977	2.617	0.07	99.90	12.200	12.071	64.11	Calibrating System 2
10/14/2008	10:02:52	0.00	33.946	84.76	2.959	2.607	0.00	99.85	12.206	12.121	64.11	Calibrating System 2
10/14/2008	10:03:04	0.00	34.021	81.17	2.984	2.607	0.00	99.85	12.213	12.083	64.11	Calibrating System 2
10/14/2008	10:03:15	0.00	33.996	79.56	2.959	2.607	0.03	99.77	10.294	12.083	64.11	Calibrating System 2
10/14/2008	10:03:26	0.00	33.971	71.53	3.047	2.597	31.99	99.77	0.131	0.884	64.11	Calibrating System 2
10/14/2008	10:03:38	0.00	33.922	94.40	3.009	2.592	48.53	99.77	0.088	0.492	64.11	Calibrating System 2
10/14/2008	10:03:49	0.00	33.922	77.23	2.977	2.602	49.13	99.90	0.063	0.404	64.11	Calibrating System 2
10/14/2008	10:04:00	0.00	33.897	76.68	3.059	2.592	49.33	53.79	0.063	0.467	64.11	Calibrating System 2
10/14/2008	10:04:10	0.00	33.922	73.55	3.053	2.597	49.45	51.09	0.056	0.404	64.11	Calibrating System 2
10/14/2008	10:04:21	0.00	33.847	84.40	2.952	2.617	49.65	50.11	0.050	0.467	64.56	Calibrating System 2
10/14/2008	10:04:31	0.00	33.822	76.22	2.971	2.607	49.83	50.41	0.044	0.467	64.56	Calibrating System 2
10/14/2008	10:04:41	0.00	33.772	71.28	3.078	2.597	49.78	50.24	0.050	0.356	64.56	Calibrating System 2
10/14/2008	10:04:51	0.00	33.748	82.58	3.034	2.597	49.78	51.44	0.050	0.467	64.11	Calibrating System 2
10/14/2008	10:05:02	0.00	33.698	85.71	3.040	2.582	49.70	50.89	0.044	0.429	64.56	Calibrating System 2
10/14/2008	10:05:13	0.00	33.698	83.86	3.053	2.597	49.65	50.59	0.044	0.354	64.56	Calibrating System 2
10/14/2008	10:05:23	0.00	33.623	80.21	3.021	2.597	49.53	49.86	1.588	0.391	64.56	
10/14/2008	10:05:18	0.25	101.963	198.18	0.050	0.196	33.49	73.14	2.981	3.295	71.31	Calibrating System 1
10/14/2008	10:05:28	0.30	101.963	200.66	0.038	0.186	33.37	77.25	3.031	3.295	71.31	Calibrating System 1
10/14/2008	10:05:39	0.33	101.963	200.91	0.031	0.186	33.27	83.23	2.944	3.220	71.31	Calibrating System 1
10/14/2008	10:05:49	0.34	101.963	201.26	0.044	0.176	33.14	85.71	2.994	3.207	71.31	Calibrating System 1
10/14/2008	10:06:01	0.35	101.963	201.62	0.031	0.176	33.12	79.15	2.975	3.220	71.31	Calibrating System 1
10/14/2008	10:06:13	0.35	101.963	201.26	0.031	0.176	32.99	77.47	2.931	3.232	71.31	Calibrating System 1
10/14/2008	10:06:24	0.36	101.963	201.46	0.031	0.176	33.					

Date	Time	System 1					System 2				Trailer Temp deg F	Calibration Status
		SO ₂ _1 ppm	NO _x _1 ppm	CO_1 ppm	O ₂ _1 %	CO ₂ _2 %	NO _x _2 ppm	CO_2 ppm	O ₂ _2 %	CO ₂ _2 %		
10/14/2008	10:48:48	197.53	101.963	202.02	0.031	0.176	33.42	81.33	2.775	3.245	71.76	Calibrating System 1
10/14/2008	10:48:58	197.91	101.963	201.92	0.025	0.176	33.42	81.33	2.756	3.245	71.76	Calibrating System 1
10/14/2008	10:49:10	197.66	101.963	181.63	0.735	0.854	33.44	83.03	2.694	3.258	71.76	
10/14/2008	10:49:21	180.21	101.963	147.40	0.302	0.362	33.37	87.21	2.731	3.245	71.76	
10/14/2008	10:49:33	107.55	83.897	105.40	0.025	0.186	33.27	88.46	3.056	3.245	71.76	Calibrating System 1
10/14/2008	10:49:44	100.08	96.372	105.25	0.025	0.176	33.12	83.35	3.138	3.258	71.76	Calibrating System 1
10/14/2008	10:49:55	101.57	95.428	105.65	0.019	0.176	32.94	79.17	3.163	3.258	71.76	Calibrating System 1
10/14/2008	10:50:07	102.19	95.552	105.20	0.013	0.186	32.72	78.75	3.081	3.207	71.76	Calibrating System 1
10/14/2008	10:50:17	101.32	95.751	105.25	0.025	0.176	32.54	80.78	2.863	3.321	71.76	Calibrating System 1
10/14/2008	10:50:27	101.20	95.701	105.15	0.025	0.186	32.54	91.71	2.825	3.346	71.76	Calibrating System 1
10/14/2008	10:50:38	100.95	95.452	105.35	0.025	0.176	32.42	99.27	2.819	3.359	72.21	Calibrating System 1
10/14/2008	10:50:48	100.45	95.403	105.35	0.025	0.186	32.49	99.77	2.838	3.346	72.21	Calibrating System 1
10/14/2008	10:50:59	99.20	95.353	105.15	0.019	0.186	32.62	93.67	2.900	3.371	72.21	Calibrating System 1
10/14/2008	10:51:09	99.83	95.303	105.45	0.019	0.186	32.79	83.73	2.931	3.333	72.21	Calibrating System 1
10/14/2008	10:51:19	95.71	95.378	105.25	0.025	0.186	32.92	80.25	2.931	3.270	72.21	Calibrating System 1
10/14/2008	10:51:29	95.71	95.254	105.65	0.013	0.186	33.07	85.83	2.944	3.245	72.21	Calibrating System 1
10/14/2008	10:51:40	95.59	95.204	105.55	0.025	0.186	33.14	81.20	3.031	3.258	72.21	Calibrating System 1
10/14/2008	10:51:51	95.46	95.080	105.35	0.019	0.186	33.19	79.15	2.925	3.270	72.21	Calibrating System 1
10/14/2008	10:52:01	95.09	95.030	105.15	0.057	0.191	33.19	84.73	2.881	3.283	72.21	Calibrating System 1
10/14/2008	10:52:13	63.56	32.853	13.43	0.019	0.186	33.09	90.49	3.044	3.359	72.21	Calibrating System 1
10/14/2008	10:52:23	35.39	1.069	13.18	0.025	0.186	32.97	89.46	3.144	3.308	72.21	Calibrating System 1
10/14/2008	10:52:35	24.18	0.572	13.18	0.013	0.186	32.84	84.83	3.144	3.232	72.21	Calibrating System 1
10/14/2008	10:52:45	18.82	0.572	13.02	0.013	0.186	32.72	77.35	2.975	3.321	72.66	Calibrating System 1
10/14/2008	10:52:56	15.83	0.423	12.87	0.019	0.186	32.59	73.79	2.838	3.333	72.21	Calibrating System 1
10/14/2008	10:53:08	14.21	0.348	13.02	0.013	0.186	32.54	80.58	2.781	3.283	72.21	Calibrating System 1
10/14/2008	10:53:19	13.34	0.298	13.02	0.025	0.186	32.49	88.46	2.875	3.359	72.66	Calibrating System 1
10/14/2008	10:53:30	12.09	0.323	13.33	0.013	0.186	32.57	87.56	2.925	3.270	72.66	Calibrating System 1
10/14/2008	10:53:40	11.22	0.298	13.23	0.025	0.186	32.72	76.97	2.913	3.283	72.66	Calibrating System 1
10/14/2008	10:53:52	10.97	0.273	12.97	0.025	0.186	32.77	71.81	2.975	3.295	72.66	Calibrating System 1
10/14/2008	10:54:03	10.34	0.273	13.12	0.019	0.196	32.89	70.89	2.975	3.220	72.66	Calibrating System 1
10/14/2008	10:54:14	9.97	0.249	13.38	0.025	0.186	32.97	76.35	2.906	3.321	72.66	Calibrating System 1
10/14/2008	10:54:25	9.35	0.199	13.23	0.025	0.186	32.84	86.73	2.925	3.245	72.66	Calibrating System 1
10/14/2008	10:54:35	9.47	0.199	13.02	0.013	0.186	32.84	98.87	2.975	3.270	72.66	Calibrating System 1
10/14/2008	10:54:45	9.10	0.199	13.33	0.000	0.196	32.67	99.85	2.931	3.258	72.66	Calibrating System 1
10/14/2008	10:54:55	8.85	0.199	13.58	0.013	0.196	32.54	95.74	2.975	3.232	72.66	Calibrating System 1
10/14/2008	10:55:06	8.85	0.174	13.53	0.019	0.191	32.49	89.76	2.994	3.220	72.66	Calibrating System 1
10/14/2008	10:55:16	8.47	0.149	13.63	0.013	0.196	32.37	83.23	2.988	3.295	72.66	Calibrating System 1
10/14/2008	10:55:27	8.60	0.124	13.33	0.013	0.196	32.32	86.01	3.063	3.232	72.66	Calibrating System 1
10/14/2008	10:55:38	8.60	0.174	13.68	0.019	0.196	32.37	90.31	3.031	3.220	72.66	Calibrating System 1
10/14/2008	10:55:49	8.23	0.149	13.43	0.019	0.196	32.42	84.98	2.913	3.258	72.66	Calibrating System 1
10/14/2008	10:56:00	8.23	0.149	13.38	0.013	0.196	32.62	87.23	2.900	3.321	73.11	Calibrating System 1
10/14/2008	10:56:11	8.35	0.099	13.58	0.019	0.196	32.79	86.13	2.994	3.245	73.11	Calibrating System 1
10/14/2008	10:56:22	7.98	0.099	13.53	0.006	0.196	32.97	80.83	2.950	3.346	73.11	Calibrating System 1
10/14/2008	10:56:33	7.98	0.124	13.43	0.025	0.196	33.19	71.69	2.925	3.295	73.11	Calibrating System 1
10/14/2008	10:56:44	7.98	0.075	13.83	0.019	0.196	33.32	71.51	3.013	3.245	73.11	Calibrating System 1
10/14/2008	10:56:55	7.85	0.050	13.88	0.019	0.196	33.37	74.94	3.025	3.270	73.11	Calibrating System 1
10/14/2008	10:57:05	7.98	0.099	13.73	0.013	0.196	33.37	80.38	2.931	3.295	73.11	Calibrating System 1
10/14/2008	10:57:18	7.60	0.050	14.03	0.013	0.196	33.27	85.26	2.944	3.346	73.11	Calibrating System 1
10/14/2008	10:57:28	7.73	0.050	13.73	0.019	0.196	33.19	87.78	2.981	3.321	73.11	Calibrating System 1
10/14/2008	10:57:38	0.00	0.075	13.83	0.006	0.196	33.19	83.93	2.975	3.258	73.11	Calibrating System 1
10/14/2008	10:57:49	-0.37	0.075	13.73	0.025	0.196	33.19	78.87	3.150	3.295	73.11	Calibrating System 1
10/14/2008	10:57:59	-0.25	0.075	14.13	0.025	0.201	33.02	72.62	3.194	3.245	73.11	Calibrating System 1
10/14/2008	10:58:11	-0.37	0.050	14.49	1.715	0.311	33.02	69.21	3.094	3.232	73.11	Calibrating System 1
10/14/2008	10:58:22	30.03	20.378	78.29	3.053	2.476	33.02	70.74	3.100	3.346	73.11	
10/14/2008	12:05:44	97.21	2.485	24.18	0.057	0.286	32.22	85.88	2.756	2.828	78.96	Calibrating System 1
10/14/2008	12:05:55	48.11	0.373	18.53	0.019	0.266	31.89	81.15	2.763	2.967	78.96	Calibrating System 1
10/14/2008	12:06:06	25.92	0.249	18.37	0.013	0.266	31.69	75.67	2.794	2.854	78.96	Calibrating System 1
10/14/2008	12:06:17	17.70	0.199	18.43	0.013	0.266	31.42	74.42	2.725	2.942	78.96	Calibrating System 1
10/14/2008	12:06:28	13.09	0.199	18.37	0.019	0.266	31.04	75.34	2.725	2.854	78.96	Calibrating System 1
10/14/2008	12:06:38	10.34	0.124	18.43	0.019	0.266	30.87	73.87	2.663	2.904	78.96	Calibrating System 1
10/14/2008	12:06:48	8.60	0.149	18.22	0.013	0.256	30.27	74.92	2.738	2.955	78.96	Calibrating System 1
10/14/2008	12:06:59	6.48	0.124	18.63	0.013	0.256	30.27	78.35	2.756	2.828	78.96	Calibrating System 1
10/14/2008	12:07:10	5.81	0.149	18.53	0.013	0.256	30.02	79.32	2.694	2.854	78.96	Calibrating System 1
10/14/2008	12:07:22	4.74	0.174	18.43	0.019	0.256	29.90	84.66	2.763	2.854	78.96	Calibrating System 1
10/14/2008	12:07:33	4.11	0.174	18.73	0.025	0.256	29.92	77.42	2.738	2.816	78.96	Calibrating System 1
10/14/2008	12:07:44	3.24	0.075	18.83	0.013	0.246	30.00	70.34	2.688	2.879	79.41	Calibrating System 1
10/14/2008	12:07:55	2.62	0.099	18.68	0.013	0.256	29.92	73.24	2.744	2.879	79.41	Calibrating System 1
10/14/2008	12:08:06	2.37	0.099	18.32	0.006	0.256	29.97	76.67	2.694	2.828	79.41	Calibrating System 1
10/14/2008	12:08:17	1.74	0.075	18.63	0.019	0.256	29.97	76.45	2.725	2.854	79.41	Calibrating System 1
10/14/2008	12:08:28	1.74	0.075	18.48	0.013	0.256	30.14	82.25	2.700	2.866	78.96	Calibrating System 1
10/14/2008	12:08:39	1.50	0.050	4.90	0.006	0.256	30.09	81.95	2.813	2.904	79.41	Calibrating System 1
10/14/2008	12:											

BP West Coast Products, LLC
Cherry Point Refinery
Blaine, WA

10 - Second Reference Method Data
Trailer 11

No. 2 TGU Stack

		System 1					System 2					Trailer	
Date	Time	SO ₂ _1	NO _x _1	CO_1	O ₂ _1	CO ₂ _2	NO _x _2	CO_2	O ₂ _2	CO ₂ _2	Temp	Calibration Status	
		ppm	ppm	ppm	%	%	ppm	ppm	%	%	deg F		
10/14/2008	12:11:09	-0.25	13.146	49.97	0.088	0.392	29.92	99.72	2.644	2.904	79.41	Calibrating System 1	
10/14/2008	12:11:20	10.34	49.652	49.07	0.050	0.337	30.39	99.77	2.650	2.765	79.86	Calibrating System 1	
10/14/2008	12:11:31	28.91	48.981	48.41	0.025	0.306	30.92	88.89	2.706	2.715	79.41	Calibrating System 1	
10/14/2008	12:11:41	36.27	48.683	48.71	0.038	0.296	31.32	87.06	2.663	2.664	79.41	Calibrating System 1	
10/14/2008	12:11:51	40.88	48.584	48.46	0.025	0.286	31.89	87.48	2.556	2.715	79.86	Calibrating System 1	
10/14/2008	12:12:03	43.62	48.708	48.61	0.038	0.286	32.62	87.76	2.613	2.740	79.86	Calibrating System 1	
10/14/2008	12:12:13	44.74	48.832	48.41	0.025	0.276	33.14	84.96	2.625	2.677	79.86	Calibrating System 1	
10/14/2008	12:12:24	45.99	48.683	48.71	0.038	0.276	34.09	82.35	2.581	2.778	79.86	Calibrating System 1	
10/14/2008	12:12:34	46.61	48.683	48.51	0.019	0.266	34.14	85.33	2.581	2.702	79.86	Calibrating System 1	
10/14/2008	12:12:44	46.86	48.683	48.56	0.013	0.266	34.14	87.66	2.631	2.677	79.86	Calibrating System 1	
10/14/2008	12:12:56	47.48	57.729	154.37	0.031	0.271	34.14	86.13	2.689	2.740	79.86	Calibrating System 1	
10/14/2008	12:13:06	51.60	101.963	185.26	0.025	0.266	42.36	89.49	2.550	2.702	79.86	Calibrating System 1	
10/14/2008	12:13:16	113.41	101.963	186.37	0.025	0.266	49.18	94.87	2.525	2.790	79.86	Calibrating System 1	
10/14/2008	12:13:26	162.01	101.963	186.27	0.031	0.261	52.47	96.95	2.525	2.689	79.86	Calibrating System 1	
10/14/2008	12:13:36	178.22	101.963	186.07	0.019	0.266	52.65	99.75	2.581	2.689	79.86	Calibrating System 1	
10/14/2008	12:13:46	186.69	101.963	186.57	0.019	0.266	52.12	97.17	2.569	2.652	79.86	Calibrating System 1	
10/14/2008	12:13:57	190.80	101.963	186.42	0.013	0.266	51.45	95.17	2.600	2.765	79.86	Calibrating System 1	
10/14/2008	12:14:07	192.30	101.963	179.56	0.138	0.316	50.57	96.37	2.531	2.677	79.86	Calibrating System 1	
10/14/2008	12:14:17	126.00	101.963	92.68	0.013	0.256	46.35	99.12	2.556	2.702	79.86	Calibrating System 1	
10/14/2008	12:14:27	99.58	96.645	92.18	0.013	0.256	40.58	97.05	2.663	2.689	79.86	Calibrating System 1	
10/14/2008	12:14:39	96.96	94.185	92.07	0.006	0.266	40.88	87.03	2.606	2.702	79.86	Calibrating System 1	
10/14/2008	12:14:50	95.09	93.812	92.07	0.019	0.256	41.13	82.05	2.638	2.727	79.86	Calibrating System 1	
10/14/2008	12:15:02	95.71	93.837	92.07	0.019	0.256	41.31	82.00	2.638	2.652	79.86	Calibrating System 1	
10/14/2008	12:15:13	94.84	94.160	92.07	0.013	0.256	41.26	77.85	2.525	2.689	79.86	Calibrating System 1	
10/14/2008	12:15:23	94.47	93.912	91.82	0.019	0.256	41.18	79.85	2.506	2.702	80.31	Calibrating System 1	
10/14/2008	12:15:33	94.47	93.912	91.77	0.013	0.256	41.18	84.26	2.538	2.614	80.31	Calibrating System 1	
10/14/2008	12:15:44	94.84	93.767	91.62	0.031	0.256	41.18	87.36	2.575	2.614	80.31	Calibrating System 1	
10/14/2008	12:15:56	94.84	93.738	92.23	0.025	0.256	41.28	85.51	2.569	2.715	80.31	Calibrating System 1	
10/14/2008	12:16:07	94.59	93.613	92.23	0.025	0.251	41.41	85.53	2.594	2.588	80.31	Calibrating System 1	
10/14/2008	12:16:19	94.59	93.638	91.97	0.031	0.256	41.48	86.56	2.588	2.689	80.31	Calibrating System 1	
10/14/2008	12:16:30	93.72	76.342	78.80	2.990	2.526	40.01	87.96	3.319	2.841	80.31		
10/14/2008	12:16:40	108.67	35.611	72.79	3.047	2.547	32.49	87.98	0.744	0.833	80.31	Calibrating System 2	
10/14/2008	12:16:50	136.72	32.903	64.92	3.040	2.552	4.32	46.98	0.044	0.328	80.31	Calibrating System 2	
10/14/2008	12:17:01	151.42	32.853	75.42	2.996	2.557	0.57	15.32	0.031	0.316	80.31	Calibrating System 2	
10/14/2008	12:17:13	160.52	32.505	77.69	3.090	2.536	0.37	2.88	0.031	0.303	80.31	Calibrating System 2	
10/14/2008	12:17:23	163.14	32.232	74.31	3.034	2.547	0.27	0.98	0.031	0.316	80.31	Calibrating System 2	
10/14/2008	12:17:34	164.38	31.983	80.67	3.015	2.557	0.20	0.78	0.031	0.290	80.31	Calibrating System 2	
10/14/2008	12:17:44	165.75	32.083	81.47	2.996	2.557	0.15	0.45	0.025	0.341	80.31	Calibrating System 2	
10/14/2008	12:17:56	166.63	32.033	82.99	2.959	2.557	0.15	0.40	0.025	0.404	80.31	Calibrating System 2	
10/14/2008	12:18:07	166.13	32.008	79.76	2.952	2.567	0.15	0.38	0.019	0.404	80.31	Calibrating System 2	
10/14/2008	12:18:17	165.75	32.132	81.47	3.021	2.557	0.10	0.70	0.025	0.278	80.31	Calibrating System 2	
10/14/2008	12:18:28	167.62	32.008	62.95	3.317	2.511	0.10	0.90	0.019	0.404	80.31	Calibrating System 2	
10/14/2008	12:18:39	169.37	31.859	72.64	3.084	2.552	0.07	0.70	11.925	7.652	80.31	Calibrating System 2	
10/14/2008	12:18:50	171.36	31.809	81.47	3.015	2.567	0.10	38.82	12.200	11.591	80.31	Calibrating System 2	
10/14/2008	12:19:01	169.87	31.834	67.24	3.028	2.567	0.03	99.77	12.213	11.831	80.31	Calibrating System 2	
10/14/2008	12:19:11	170.49	31.859	74.71	2.990	2.567	0.03	99.85	12.225	11.856	80.31	Calibrating System 2	
10/14/2008	12:19:22	172.61	31.859	78.75	3.003	2.567	0.03	99.75	12.231	11.818	80.31	Calibrating System 2	
10/14/2008	12:19:33	172.86	31.933	75.62	3.059	2.557	0.03	99.87	12.231	11.919	80.31	Calibrating System 2	
10/14/2008	12:19:43	171.11	32.008	81.47	3.040	2.567	0.03	99.85	12.238	11.957	80.31	Calibrating System 2	
10/14/2008	12:19:53	169.99	32.107	73.75	3.003	2.577	3.67	99.75	1.100	9.154	80.76		
10/14/2008	12:20:05	168.99	32.182	77.33	3.078	2.557	44.01	99.72	0.088	0.568	80.76	Calibrating System 2	
10/14/2008	12:20:15	168.12	32.157	76.53	3.053	2.567	49.05	99.72	0.063	0.429	80.76	Calibrating System 2	
10/14/2008	12:20:26	167.37	32.033	84.55	3.021	2.557	49.05	99.85	0.050	0.455	80.31	Calibrating System 2	
10/14/2008	12:20:36	166.75	31.933	68.40	3.298	2.526	49.35	62.35	0.050	0.366	80.76	Calibrating System 2	
10/14/2008	12:20:47	167.25	31.735	66.48	3.317	2.536	49.35	51.91	0.038	0.379	80.76	Calibrating System 2	
10/14/2008	12:20:58	167.50	31.586	69.56	3.222	2.557	49.53	50.51	0.038	0.417	80.76	Calibrating System 2	
10/14/2008	12:21:08	167.87	31.461	73.80	3.072	2.577	49.65	49.84	0.038	0.366	80.76	Calibrating System 2	
10/14/2008	12:21:18	167.87	31.238	68.90	3.059	2.587	49.65	49.71	0.031	0.455	80.76	Calibrating System 2	
10/14/2008	12:21:30	168.37	31.362	67.29	3.047	2.597	49.58	51.24	0.031	0.366	80.76	Calibrating System 2	
10/14/2008	12:21:42	169.87	31.387	81.17	2.990	2.607	49.53	51.24	0.038	0.442	80.76	Calibrating System 2	
10/14/2008	12:21:52	172.11	31.436	78.39	3.047	2.587	49.48	50.34	0.031	0.366	80.76	Calibrating System 2	
10/14/2008	12:22:04	173.23	31.561	71.48	3.065	2.587	42.43	51.01	3.056	2.790	80.76		
10/14/2008	15:14:04	165.63	33.574	53.66	3.003	2.305	33.54	66.76	3.019	2.841	65.91	Calibrating System 1	
10/14/2008	15:14:15	166.38	33.499	51.44	2.984	2.315	33.47	69.04	3.000	2.879	66.36	Calibrating System 1	
10/14/2008	15:14:26	166.63	33.524	35.54	3.097	2.295	33.54	69.66	3.063	2.879	66.36	Calibrating System 1	
10/14/2008	15:14:37	167.12	33.499	37.71	3.216	2.285	33.54	62.93	3.225	2.753	66.36	Calibrating System 1	
10/14/2008	15:14:48	168.37	33.375	45.03	3.191	2.295	33.42	57.75	3.206	2.790	66.36	Calibrating System 1	
10/14/2008	15:14:58	169.12	33.251	47.35	3.134	2.295	33.29	58.82	3.138	2.803	66.36	Calibrating System 1	
10/14/2008	15:15:09	170.11	33.101	48.59	3.047	2.305	33.24	61.80	3.056	2.866	65.91	Calibrating System 1	
10/14/2008	15:15:20	170.11	33.176	38.21	3.009	2.315	33.24	62.78	3.019	2.803	65.91	Calibrating System 1	
10/14/2008	15:15:31	169											

		System 1					System 2					Trailer	
Date	Time	SO ₂ _1	NO _x _1	CO_1	O ₂ _1	CO ₂ _2	NO _x _2	CO_2	O ₂ _2	CO ₂ _2	Temp	Calibration Status	
		ppm	ppm	ppm	%	%	ppm	ppm	%	%	deg F		
10/14/2008	15:18:03	166.87	33.350	50.53	3.141	2.315	33.37	63.05	3.131	2.854	66.36	Calibrating System 2	
10/14/2008	15:18:14	166.25	33.226	50.38	3.021	2.326	33.29	68.06	3.038	2.841	66.36	Calibrating System 2	
10/14/2008	15:18:25	165.75	33.226	32.26	2.977	2.336	33.32	67.96	2.969	2.879	65.91	Calibrating System 2	
10/14/2008	15:18:36	165.13	33.375	43.61	2.984	2.326	33.42	59.52	2.981	2.828	66.36	Calibrating System 2	
10/14/2008	15:18:46	164.76	33.449	49.37	3.040	2.326	33.47	56.40	3.044	2.904	66.36	Calibrating System 2	
10/14/2008	15:18:57	164.88	33.549	37.41	2.959	2.326	33.59	61.15	2.956	2.879	65.91	Calibrating System 2	
10/14/2008	15:19:08	164.88	33.723	49.47	3.059	2.305	33.77	61.43	3.088	2.904	66.36	Calibrating System 2	
10/14/2008	15:19:19	164.38	33.646	47.85	3.009	2.315	33.77	61.95	3.031	2.790	66.36	Calibrating System 2	
10/14/2008	15:19:29	164.88	33.648	69.06	2.940	2.315	33.64	66.96	2.950	2.866	66.36	Calibrating System 2	
10/14/2008	15:19:40	170.74	33.425	68.90	2.927	2.326	33.47	73.54	2.931	2.828	65.91	Calibrating System 2	
10/14/2008	15:19:50	330.51	33.201	55.53	3.141	2.285	33.37	81.05	3.025	2.879	65.91	Calibrating System 2	
10/14/2008	15:20:00	289.26	33.002	49.72	3.285	2.265	33.19	80.95	3.281	2.740	66.36	Calibrating System 2	
10/14/2008	15:20:10	214.23	32.778	36.80	3.266	2.265	32.94	73.64	3.288	2.727	66.36	Calibrating System 2	
10/14/2008	15:20:21	173.60	32.604	34.83	3.078	2.295	32.89	62.98	3.119	2.828	66.36	Calibrating System 2	
10/14/2008	15:20:32	158.90	32.604	51.79	2.952	2.315	32.89	55.92	2.963	2.891	66.36	Calibrating System 2	
10/14/2008	15:20:42	158.28	32.803	38.52	2.952	2.315	33.02	58.22	2.944	2.790	66.36	Calibrating System 2	
10/14/2008	15:20:53	158.03	33.027	27.51	3.021	2.315	33.24	57.97	3.019	2.879	66.36	Calibrating System 2	
10/14/2008	15:21:03	157.53	33.151	30.34	3.040	2.305	33.34	51.86	3.044	2.816	66.36	Calibrating System 2	
10/14/2008	15:21:14	160.14	33.350	49.37	3.040	2.315	33.54	48.39	3.063	2.803	65.91	Calibrating System 2	
10/14/2008	15:21:25	161.02	33.574	50.48	3.090	2.305	33.77	55.24	3.100	2.778	66.36	Calibrating System 2	
10/14/2008	15:21:36	160.64	33.648	41.54	3.059	2.315	33.84	64.00	3.069	2.778	66.36	Calibrating System 2	
10/14/2008	15:21:46	161.27	33.723	40.43	2.977	2.326	33.84	64.76	2.968	2.790	66.36	Calibrating System 2	
10/14/2008	15:21:56	162.14	33.698	39.73	3.015	2.305	33.84	61.43	3.025	2.790	66.36	Calibrating System 2	
10/14/2008	15:22:06	161.89	33.648	36.65	3.065	2.305	33.77	58.45	3.069	2.841	66.36	Calibrating System 2	
10/14/2008	15:22:17	163.01	33.673	27.21	3.065	2.305	33.77	56.42	3.075	2.778	66.36	Calibrating System 2	
10/14/2008	15:22:27	162.39	33.723	24.03	3.178	2.295	33.82	52.54	3.175	2.803	66.36	Calibrating System 2	
10/14/2008	15:22:38	162.76	33.723	37.20	3.266	2.275	33.77	45.73	3.263	2.740	65.91	Calibrating System 2	
10/14/2008	15:22:49	163.63	33.524	42.00	3.134	2.295	33.59	44.78	3.131	2.778	66.36	Calibrating System 2	
10/14/2008	15:23:00	164.51	33.524	38.36	2.959	2.315	33.54	58.12	2.981	2.778	66.36	Calibrating System 2	
10/14/2008	15:23:10	164.26	33.449	33.97	2.952	2.315	33.54	58.17	2.944	2.828	66.36	Calibrating System 2	
10/14/2008	15:23:20	164.51	33.400	51.74	2.990	2.305	33.42	57.27	3.006	2.854	66.36	Calibrating System 2	
10/14/2008	15:23:30	164.26	33.251	46.90	2.965	2.305	33.32	62.55	2.956	2.778	66.36	Calibrating System 2	
10/14/2008	15:23:41	164.51	33.151	52.45	2.959	2.305	33.12	64.16	2.963	2.841	66.36	Calibrating System 2	
10/14/2008	15:23:51	164.26	32.977	71.98	3.084	2.275	33.02	74.39	3.088	2.803	66.36	Calibrating System 2	
10/14/2008	15:24:02	164.01	32.903	51.03	3.072	2.285	33.02	84.73	3.069	2.753	66.36	Calibrating System 2	
10/14/2008	15:24:12	164.26	32.927	43.72	3.047	2.295	32.99	78.87	3.056	2.854	66.36	Calibrating System 2	
10/14/2008	15:24:23	163.88	32.828	54.06	3.021	2.295	32.94	68.81	3.000	2.778	66.36	Calibrating System 2	
10/14/2008	15:24:34	164.51	32.878	42.66	2.977	2.315	33.02	65.26	2.988	2.866	66.36	Calibrating System 2	
10/14/2008	15:24:45	164.76	32.903	38.92	2.908	2.336	33.07	63.45	2.900	2.790	66.36	Calibrating System 2	
10/14/2008	15:24:56	165.13	32.977	41.70	2.921	2.326	33.24	60.65	2.931	2.816	66.36	Calibrating System 2	
10/14/2008	15:25:06	164.76	33.126	44.02	2.933	2.326	33.37	59.42	2.938	2.866	66.36	Calibrating System 2	
10/14/2008	15:25:17	163.88	33.226	52.60	2.896	2.326	33.37	60.93	2.888	2.803	66.36	Calibrating System 2	
10/14/2008	15:25:28	163.26	33.126	67.39	2.902	2.315	33.29	63.35	2.925	2.866	66.36	Calibrating System 2	
10/14/2008	15:25:39	162.39	33.077	51.14	2.915	2.326	33.24	72.92	2.913	2.866	66.36	Calibrating System 2	
10/14/2008	17:19:38	150.05	30.442	92.02	2.883	2.255	30.62	94.17	2.913	2.967	72.21	Calibrating System 1	
10/14/2008	17:19:48	150.17	30.343	85.11	2.839	2.265	30.49	99.75	2.856	2.879	72.21	Calibrating System 1	
10/14/2008	17:19:59	150.42	30.219	82.48	2.858	2.265	30.37	99.77	2.856	2.917	72.21	Calibrating System 1	
10/14/2008	17:20:10	150.17	30.194	94.45	2.833	2.265	30.32	90.89	2.869	2.980	72.21	Calibrating System 1	
10/14/2008	17:20:22	149.80	30.244	71.48	2.820	2.275	30.44	96.37	2.813	2.992	72.21	Calibrating System 1	
10/14/2008	17:20:32	149.55	30.368	85.36	2.827	2.275	30.62	96.04	2.819	2.980	72.21	Calibrating System 1	
10/14/2008	17:20:43	149.18	30.517	78.70	2.820	2.275	30.72	92.99	2.825	2.980	72.21	Calibrating System 1	
10/14/2008	17:20:54	149.55	30.716	78.90	2.827	2.275	30.84	90.89	2.838	2.980	72.21	Calibrating System 1	
10/14/2008	17:21:04	149.05	30.716	73.14	2.814	2.275	30.92	87.31	2.819	2.980	72.21	Calibrating System 1	
10/14/2008	17:21:15	148.43	30.741	71.48	2.827	2.275	30.94	83.35	2.825	3.005	72.21	Calibrating System 1	
10/14/2008	17:21:26	147.56	30.815	114.19	2.663	2.295	31.02	81.10	2.669	2.891	72.21	Calibrating System 1	
10/14/2008	17:21:36	146.31	30.765	87.18	2.701	2.285	31.02	94.07	2.688	3.005	72.21	Calibrating System 1	
10/14/2008	17:21:47	144.82	30.815	69.21	2.707	2.285	31.04	99.75	2.713	2.904	72.21	Calibrating System 1	
10/14/2008	17:21:57	144.57	31.039	67.44	2.670	2.285	31.27	97.47	2.688	2.955	72.21	Calibrating System 1	
10/14/2008	17:22:08	143.69	31.188	55.02	2.795	2.265	31.37	81.18	2.781	2.955	72.21	Calibrating System 1	
10/14/2008	17:22:19	143.69	31.387	62.04	2.827	2.265	31.62	71.81	2.831	2.967	72.66	Calibrating System 1	
10/14/2008	17:22:30	143.94	31.586	55.53	2.770	2.275	31.79	66.36	2.794	2.917	72.66	Calibrating System 1	
10/14/2008	17:22:41	143.45	31.884	77.69	2.776	2.265	32.02	66.56	2.775	2.904	72.66	Calibrating System 1	
10/14/2008	17:22:51	142.82	31.859	114.19	2.764	2.265	32.02	78.70	2.756	2.866	72.66	Calibrating System 1	
10/14/2008	17:23:03	142.57	31.735	89.95	2.770	2.265	31.89	97.85	2.781	2.929	72.66	Calibrating System 1	
10/14/2008	17:23:14	141.58	31.486	94.45	2.776	2.265	31.74	99.55	2.794	2.904	72.66	Calibrating System 1	
10/14/2008	17:23:25	142.20	31.213	98.59	2.915	2.245	31.44	99.85	2.825	2.980	72.66	Calibrating System 1	
10/14/2008	17:23:36	142.70	30.989	52.85	3.034	2.235	31.27	99.75	3.044	2.929	72.66	Calibrating System 1	
10/14/2008	17:23:46	143.32	30.815	56.84	3.134	2.225	31.02	92.77	3.144	2.904	72.66	Calibrating System 1	
10/14/2008	17:23:57	144.32	30.891	69.81	2.940	2.255	30.89	73.54	3.000	2.929	72.66	Calibrating System 1	
10/14/2008	17:24:07	144.94	30.716	101.46	2.858	2.275	30.89	67.06	2.869	2.9			

BP West Coast Products, LLC
Cherry Point Refinery
Blaine, WA

10 - Second Reference Method Data
Trailer 11

No. 2 TGU Stack

		System 1					System 2					Trailer	
Date	Time	SO ₂ _1 ppm	NO _x _1 ppm	CO_1 ppm	O ₂ _1 %	CO ₂ _2 %	NO _x _2 ppm	CO_2 ppm	O ₂ _2 %	CO ₂ _2 %	Temp deg F	Calibration Status	
10/14/2008	17:26:46	144.32	30.815	64.31	2.701	2.305	31.02	89.76	2.706	2.929	72.66	Calibrating System 2	
10/14/2008	17:26:57	144.32	30.915	93.74	2.726	2.305	31.19	76.27	2.725	2.904	72.66	Calibrating System 2	
10/14/2008	17:27:07	144.57	30.989	102.52	2.714	2.295	31.24	78.30	2.706	2.929	73.11	Calibrating System 2	
10/14/2008	17:27:18	144.57	31.089	67.95	2.814	2.295	31.32	94.64	2.788	2.904	73.11	Calibrating System 2	
10/14/2008	17:27:28	144.94	31.089	103.03	2.795	2.295	31.27	96.27	2.863	2.904	73.11	Calibrating System 2	
10/14/2008	17:27:39	144.94	31.039	82.63	2.758	2.295	31.22	91.39	2.763	3.018	73.11	Calibrating System 2	
10/14/2008	17:27:50	144.19	30.989	52.30	2.795	2.295	31.19	90.49	2.794	3.018	73.11	Calibrating System 2	
10/14/2008	17:28:00	143.69	30.964	82.48	2.808	2.295	31.14	90.39	2.813	2.942	73.11	Calibrating System 2	
10/14/2008	17:28:11	142.57	30.915	89.65	2.751	2.305	31.09	77.47	2.744	2.929	73.11	Calibrating System 2	
10/14/2008	17:28:22	141.33	31.014	86.88	2.776	2.295	31.12	89.24	2.788	3.005	73.11	Calibrating System 2	
10/14/2008	17:28:34	140.20	31.039	69.41	2.714	2.305	31.14	94.22	2.794	2.967	73.11	Calibrating System 2	
10/14/2008	17:28:45	139.58	31.089	73.60	2.670	2.315	31.19	86.26	2.675	2.917	73.11	Calibrating System 2	
10/14/2008	17:28:56	139.21	31.089	97.48	2.676	2.305	31.27	81.68	2.669	3.030	73.11	Calibrating System 2	
10/14/2008	17:29:06	139.21	30.989	77.13	2.739	2.305	31.14	87.93	2.719	2.955	73.11	Calibrating System 2	
10/14/2008	17:29:17	138.96	31.014	82.03	2.764	2.305	31.22	90.26	2.769	2.942	73.11	Calibrating System 2	
10/14/2008	17:29:28	138.96	31.064	81.42	2.783	2.295	31.27	88.26	2.788	2.904	73.11	Calibrating System 2	
10/14/2008	17:29:38	138.96	31.039	78.55	2.852	2.285	31.32	88.09	2.831	2.992	73.11	Calibrating System 2	
10/14/2008	17:29:49	139.33	31.089	71.28	2.802	2.285	31.39	88.06	2.850	2.929	73.11	Calibrating System 2	
10/14/2008	17:29:59	139.96	31.163	76.17	2.758	2.295	31.39	80.88	2.775	2.980	73.11	Calibrating System 2	
10/14/2008	17:30:09	140.45	31.188	85.76	2.852	2.285	31.49	77.67	2.831	2.992	73.11	Calibrating System 2	
10/14/2008	17:30:21	141.08	31.138	90.91	2.940	2.285	31.44	87.81	2.938	2.992	73.11	Calibrating System 2	
10/14/2008	17:30:32	141.33	31.039	78.80	2.996	2.285	31.27	94.72	2.994	2.891	73.11	Calibrating System 2	
10/14/2008	17:30:43	141.95	30.939	74.51	3.034	2.285	31.19	91.26	3.025	2.891	73.11	Calibrating System 2	
10/14/2008	17:30:55	141.82	30.865	84.25	2.940	2.295	31.14	85.23	2.975	2.955	73.11	Calibrating System 2	
10/14/2008	17:31:05	142.57	30.785	87.13	2.915	2.305	30.97	83.95	2.913	2.942	73.11	Calibrating System 2	
10/14/2008	17:31:15	142.07	30.582	73.14	2.927	2.305	30.87	88.08	2.938	2.980	73.11	Calibrating System 2	
10/14/2008	17:31:27	141.58	30.587	86.07	2.833	2.326	30.79	89.19	2.869	2.955	73.11	Calibrating System 2	
10/14/2008	17:31:38	140.45	30.616	73.45	2.858	2.326	30.92	88.26	2.856	2.955	73.11	Calibrating System 2	
10/14/2008	17:31:49	140.08	30.716	67.14	2.896	2.315	31.02	88.89	2.888	2.942	73.11	Calibrating System 2	
10/14/2008	17:31:59	140.45	30.865	61.23	2.877	2.336	31.14	82.38	2.875	2.942	73.11	Calibrating System 2	
10/14/2008	17:32:10	141.08	30.964	91.57	2.839	2.336	31.27	74.04	2.844	3.043	73.11	Calibrating System 2	
10/14/2008	17:32:20	141.33	31.014	84.76	2.852	2.336	31.27	72.52	2.844	3.030	73.11	Calibrating System 2	
10/14/2008	17:32:30	141.08	31.163	65.83	2.839	2.336	31.42	89.79	2.850	3.056	73.11	Calibrating System 2	
10/14/2008	17:46:13	145.19	2.112	2.52	0.031	0.266	31.39	79.75	2.700	2.879	74.46	Calibrating System 1	
10/14/2008	17:46:23	92.97	0.472	2.12	0.025	0.266	31.32	84.46	2.519	2.866	74.46	Calibrating System 1	
10/14/2008	17:46:33	49.48	0.298	2.22	0.025	0.256	31.14	81.55	2.669	2.841	74.46	Calibrating System 1	
10/14/2008	17:46:45	30.03	0.298	2.02	0.025	0.256	31.02	78.67	2.575	2.854	74.46	Calibrating System 1	
10/14/2008	17:46:56	20.31	0.199	1.97	0.006	0.256	30.84	80.45	2.544	2.854	74.01	Calibrating System 1	
10/14/2008	17:47:07	13.58	0.124	2.27	0.019	0.256	30.74	82.55	2.581	2.929	74.46	Calibrating System 1	
10/14/2008	17:47:19	9.97	0.149	2.17	0.013	0.256	30.62	82.65	2.588	2.828	74.46	Calibrating System 1	
10/14/2008	17:47:30	7.35	0.149	2.22	0.013	0.256	30.69	84.63	2.613	2.841	74.46	Calibrating System 1	
10/14/2008	17:47:41	5.86	0.149	2.12	0.019	0.256	30.62	83.73	2.631	2.879	74.46	Calibrating System 1	
10/14/2008	17:47:53	4.99	0.149	2.32	0.013	0.256	30.62	87.58	2.675	2.866	74.01	Calibrating System 1	
10/14/2008	17:48:04	3.86	0.149	2.17	0.019	0.256	30.54	86.73	2.644	2.828	74.46	Calibrating System 1	
10/14/2008	17:48:15	2.99	0.075	2.12	0.019	0.256	30.57	82.95	2.650	2.904	74.46	Calibrating System 1	
10/14/2008	17:48:26	2.37	0.099	2.12	0.019	0.256	30.49	80.15	2.650	2.854	74.46	Calibrating System 1	
10/14/2008	17:48:37	1.99	0.075	1.92	0.013	0.256	30.44	78.57	2.669	2.790	74.46	Calibrating System 1	
10/14/2008	17:48:49	1.50	0.075	2.32	0.006	0.256	30.39	77.07	2.713	2.866	74.46	Calibrating System 1	
10/14/2008	17:49:00	0.87	0.075	2.32	0.000	0.256	30.39	80.48	2.769	2.816	74.46	Calibrating System 1	
10/14/2008	17:49:11	0.62	0.025	2.12	0.013	0.251	30.44	78.55	2.831	2.904	74.46	Calibrating System 1	
10/14/2008	17:49:21	0.25	0.000	2.02	0.019	0.256	30.44	69.04	2.956	2.879	74.46	Calibrating System 1	
10/14/2008	17:49:31	0.25	0.000	2.12	0.006	0.256	30.32	64.28	2.950	2.778	74.46	Calibrating System 1	
10/14/2008	17:49:43	0.00	0.000	2.22	0.006	0.246	30.32	63.15	2.844	2.828	74.46	Calibrating System 1	
10/14/2008	17:49:54	0.00	0.025	2.02	0.013	0.256	30.37	60.63	2.844	2.841	74.46	Calibrating System 1	
10/14/2008	17:50:04	-0.37	0.025	2.12	0.019	0.256	30.37	64.76	2.719	2.929	74.46	Calibrating System 1	
10/14/2008	17:50:15	-0.37	0.025	2.73	0.829	0.608	30.37	74.14	2.756	2.929	74.46	Calibrating System 1	
10/14/2008	17:50:27	-0.75	0.000	206.71	11.683	9.734	30.44	80.83	2.838	2.929	74.46	Calibrating System 1	
10/14/2008	17:50:38	-1.00	0.025	206.71	12.104	11.487	30.62	86.33	2.888	3.030	74.46	Calibrating System 1	
10/14/2008	17:50:50	-1.00	0.000	206.71	12.155	11.723	30.79	88.86	2.856	2.955	74.46	Calibrating System 1	
10/14/2008	17:51:01	-1.37	0.000	206.71	12.173	11.758	30.84	95.12	2.906	2.992	74.46	Calibrating System 1	
10/14/2008	17:51:13	-1.25	0.000	206.71	12.173	11.783	30.87	99.87	2.900	3.056	74.46	Calibrating System 1	
10/14/2008	17:51:23	-1.25	0.025	206.71	12.180	11.793	30.92	99.87	2.875	3.081	74.46	Calibrating System 1	
10/14/2008	17:51:33	-1.62	0.025	206.71	12.186	11.798	30.89	99.75	2.938	2.967	74.46	Calibrating System 1	
10/14/2008	17:51:45	-1.62	0.746	206.71	0.678	0.814	30.97	97.60	2.894	3.169	74.46	Calibrating System 1	
10/14/2008	17:51:55	-1.12	28.106	49.92	0.075	0.387	31.02	89.34	2.700	2.803	74.46	Calibrating System 1	
10/14/2008	17:52:07	14.71	52.386	49.17	0.038	0.337	31.19	88.16	2.675	2.879	74.46	Calibrating System 1	
10/14/2008	17:52:17	25.92	48.832	48.71	0.031	0.316	31.32	90.79	2.888	2.803	74.46	Calibrating System 1	
10/14/2008	17:52:27	32.65	48.683	48.71	0.031	0.306	31.29	92.12	2.906	2.765	74.46	Calibrating System 1	
10/14/2008	17:52:38	36.52	48.633	48.61	0.025	0.286	31.32	90.29	2.919	2.854	74.46	Calibrating System 1	
10/14/2008	17:52:48	38.01	48.758	48.91	0.025	0.286	31.32	84.26	2.856	2.879	74.46	Calibrating System 1	
10/14/2008	17:52:59	39.76	48.758	48.51	0.031	0.286	31.32	83.15	2.725	2.828	74		

Date	Time	System 1					System 2				Trailer	Calibration Status
		SO ₂ _1 ppm	NO _x _1 ppm	CO_1 ppm	O ₂ _1 %	CO ₂ _2 %	NO _x _2 ppm	CO_2 ppm	O ₂ _2 %	CO ₂ _2 %		
10/14/2008	17:55:32	85.37	93.340	92.18	0.019	0.266	33.14	82.05	2.794	2.904	74.91	Calibrating System 1
10/14/2008	17:55:43	86.62	93.514	92.07	0.019	0.265	33.32	77.67	2.781	2.879	74.91	Calibrating System 1
10/14/2008	17:55:55	87.99	93.489	92.33	0.025	0.266	33.14	82.20	2.694	2.891	74.91	Calibrating System 1
10/14/2008	17:56:06	87.74	93.514	92.13	0.019	0.266	33.14	90.66	2.700	2.955	74.91	Calibrating System 1
10/14/2008	17:56:16	89.11	93.539	92.58	0.013	0.266	33.22	86.83	2.719	2.942	74.91	Calibrating System 1
10/14/2008	17:56:28	88.98	93.464	92.02	0.006	0.266	33.42	70.94	2.700	2.866	74.91	Calibrating System 1
10/14/2008	17:56:40	90.10	93.390	92.07	0.031	0.266	33.62	57.25	2.744	2.879	74.91	Calibrating System 1
10/14/2008	17:56:51	90.35	93.340	92.07	0.006	0.266	33.84	49.64	2.756	2.955	74.91	Calibrating System 1
10/14/2008	17:57:03	90.35	93.241	92.07	0.013	0.266	33.97	54.07	2.744	2.967	74.91	Calibrating System 1
10/14/2008	17:57:14	90.60	93.315	92.18	0.025	0.266	34.14	61.03	2.819	2.841	74.91	Calibrating System 1
10/14/2008	17:57:24	90.10	93.241	92.68	0.013	0.266	34.19	62.53	2.756	2.879	74.91	Calibrating System 1
10/14/2008	17:57:36	91.60	93.216	92.18	0.006	0.266	34.07	61.55	2.769	2.904	74.91	Calibrating System 1
10/14/2008	17:57:47	90.98	93.216	91.97	0.006	0.266	33.84	63.85	2.838	2.955	74.91	Calibrating System 1
10/14/2008	17:57:59	90.98	93.265	92.28	0.013	0.266	33.62	67.96	2.769	2.929	74.91	Calibrating System 1
10/14/2008	17:58:11	90.98	93.216	92.38	0.006	0.266	33.39	75.12	2.744	2.879	74.91	Calibrating System 1
10/14/2008	17:58:22	90.98	93.216	91.92	0.013	0.266	33.32	72.62	2.719	2.955	74.91	Calibrating System 1
10/14/2008	17:58:34	91.23	93.141	92.28	1.124	0.281	33.27	65.28	2.963	2.841	74.91	
10/14/2008	17:58:45	79.76	60.288	59.26	2.852	2.265	18.88	73.97	1.419	1.250	74.91	
10/14/2008	17:58:55	80.63	32.281	58.30	2.770	2.295	1.57	69.86	0.756	0.859	74.91	Calibrating System 2
10/14/2008	17:59:06	99.20	31.486	81.37	3.141	2.255	0.37	44.38	0.406	0.796	74.91	Calibrating System 2
10/14/2008	17:59:17	101.32	27.510	22.31	20.854	0.417	0.27	24.03	0.031	0.682	74.91	Calibrating System 2
10/14/2008	17:59:28	43.87	3.131	2.07	21.193	0.392	0.10	15.57	0.025	0.543	74.91	Calibrating System 2
10/14/2008	17:59:39	17.70	0.249	1.97	21.143	0.382	0.10	9.84	0.013	0.619	74.91	Calibrating Both Systems
10/14/2008	17:59:50	8.47	0.199	2.37	21.250	0.387	0.05	5.38	0.013	0.556	74.91	Calibrating Both Systems
10/14/2008	18:00:00	4.99	0.199	2.02	21.250	0.382	0.05	3.10	0.013	0.530	74.91	Calibrating Both Systems
10/14/2008	18:00:10	2.37	0.149	2.02	21.269	0.387	0.05	1.23	0.006	0.518	74.91	Calibrating Both Systems
10/14/2008	18:00:20	1.12	0.124	2.12	21.269	0.382	0.03	1.18	0.006	0.518	74.91	Calibrating Both Systems
10/14/2008	18:00:31	0.50	0.075	1.97	21.256	0.382	0.03	0.40	0.013	0.593	75.36	Calibrating Both Systems
10/14/2008	18:00:41	-0.37	0.050	2.17	21.269	0.382	0.03	0.33	0.013	0.568	74.91	Calibrating Both Systems
10/14/2008	18:00:53	-1.00	0.050	2.42	21.269	0.382	-0.05	0.60	0.006	0.581	74.91	Calibrating Both Systems
10/14/2008	18:01:04	-1.12	0.075	1.97	21.263	0.382	-0.03	0.78	0.006	0.556	74.91	Calibrating Both Systems
10/14/2008	18:01:15	-1.50	0.075	2.22	21.269	0.382	-0.05	0.73	0.013	0.518	74.91	Calibrating Both Systems
10/14/2008	18:01:26	-1.74	0.075	2.68	21.263	0.382	-0.03	0.50	0.006	0.593	75.36	Calibrating Both Systems
10/14/2008	18:01:37	-1.62	0.099	2.37	21.256	0.382	-0.03	0.30	0.006	0.505	75.36	Calibrating Both Systems
10/14/2008	18:01:48	-1.99	0.075	2.17	21.269	0.392	-0.03	0.30	0.013	0.530	75.36	Calibrating Both Systems
10/14/2008	18:01:58	-1.99	0.099	1.97	21.256	0.387	-0.03	0.70	5.231	0.543	75.36	Calibrating Both Systems
10/14/2008	18:02:09	-2.37	0.099	2.42	21.263	0.382	-0.03	12.29	12.106	11.553	75.36	Calibrating Both Systems
10/14/2008	18:02:19	-2.24	0.099	2.52	21.263	0.392	-0.03	99.85	12.156	11.995	75.36	Calibrating Both Systems
10/14/2008	18:02:29	-2.24	0.099	2.37	21.250	0.382	-0.05	99.85	12.169	11.982	75.36	Calibrating Both Systems
10/14/2008	18:02:40	-2.24	0.075	2.37	21.256	0.392	-0.03	99.82	12.163	12.083	75.36	Calibrating Both Systems
10/14/2008	18:02:52	-2.62	0.075	2.47	21.256	0.392	-0.03	99.75	12.181	12.020	75.36	Calibrating Both Systems
10/14/2008	18:03:03	-2.62	0.050	2.37	21.256	0.397	-0.03	99.80	12.138	12.045	75.36	Calibrating Both Systems
10/14/2008	18:03:15	-2.62	0.025	2.68	21.244	0.392	25.50	99.75	0.094	1.212	75.36	Calibrating Both Systems
10/14/2008	18:03:26	-2.62	0.000	2.22	21.269	0.392	47.68	99.75	0.044	0.631	75.36	Calibrating Both Systems
10/14/2008	18:03:38	-2.62	0.000	2.68	21.250	0.392	48.28	99.75	0.038	0.657	75.36	Calibrating Both Systems
10/14/2008	18:03:49	-2.62	0.025	2.07	21.256	0.392	48.45	69.66	0.031	0.644	75.36	Calibrating Both Systems
10/14/2008	18:03:59	-2.87	0.000	2.62	21.263	0.392	48.43	53.07	0.025	0.631	75.36	Calibrating Both Systems
10/14/2008	18:04:09	-2.87	0.000	2.62	21.263	0.397	48.45	52.07	0.025	0.631	75.36	Calibrating Both Systems
10/14/2008	18:04:20	-2.87	0.000	2.42	21.256	0.392	48.65	51.44	0.019	0.556	75.36	Calibrating Both Systems
10/14/2008	18:04:32	-2.87	0.050	2.37	21.256	0.397	48.55	49.86	0.019	0.631	75.36	Calibrating Both Systems
10/14/2008	18:04:43	-2.87	0.025	2.17	21.250	0.392	48.63	49.94	0.013	0.568	75.36	Calibrating Both Systems
10/14/2008	18:04:53	-2.87	0.025	2.07	21.256	0.392	48.63	50.84	0.019	0.619	75.36	Calibrating Both Systems
10/14/2008	18:05:03	-2.87	0.025	2.42	21.250	0.407	45.05	52.94	4.688	1.667	75.36	Calibrating System 1
10/14/2008	18:05:14	-2.87	0.000	2.47	21.250	0.392	13.71	52.42	21.213	0.796	75.36	Calibrating System 1
10/14/2008	18:05:25	-2.87	-0.025	2.62	21.237	0.392	0.45	28.49	21.225	0.720	75.36	Calibrating Both Systems
10/14/2008	18:05:36	-2.87	0.050	2.42	21.250	0.407	0.10	8.06	21.231	0.682	75.36	Calibrating Both Systems
10/14/2008	18:05:47	-2.87	0.000	2.78	21.250	0.397	0.03	1.20	21.231	0.745	75.36	Calibrating Both Systems
10/14/2008	18:05:57	-2.87	0.025	2.62	21.250	0.407	-0.05	0.68	21.225	0.644	75.36	Calibrating Both Systems
10/14/2008	18:06:08	-2.99	0.000	2.52	21.256	0.407	-0.03	0.70	21.238	0.694	75.36	Calibrating Both Systems
10/14/2008	18:06:18	-2.87	0.000	2.62	21.244	0.407	-0.05	0.58	21.238	0.631	75.36	Calibrating Both Systems
10/14/2008	18:06:28	-3.24	0.000	2.62	21.250	0.392	-0.03	0.38	21.231	0.631	75.36	Calibrating Both Systems
10/15/08	7:46:53	111.91	22.192	166.63	1.633	0.417	29.22	99.75	2.819	2.500	83.46	
10/15/08	7:47:04	43.87	1.491	8.93	0.075	0.357	29.27	84.96	2.731	2.525	83.46	Calibrating System 1
10/15/08	7:47:15	20.94	0.398	7.98	0.044	0.347	29.22	73.19	2.756	2.513	83.46	Calibrating System 1
10/15/08	7:47:25	11.84	0.199	7.93	0.019	0.342	29.00	79.25	2.700	2.462	83.46	Calibrating System 1
10/15/08	7:47:37	6.73	0.149	7.62	0.025	0.347	28.87	81.15	2.700	2.563	83.46	Calibrating System 1
10/15/08	7:47:48	4.11	0.174	7.47	0.019	0.342	28.70	83.05	2.731	2.462	83.46	Calibrating System 1
10/15/08	7:47:59	2.37	0.075	7.62	0.019	0.337	28.65	90.96	2.725	2.462	83.46	Calibrating System 1
10/15/08	7:48:10	0.62	0.099	7.57	0.019	0.337	28.45	88.51	2.888	2.563	83.46	Calibrating System 1
10/15/08	7:48:20	0.00	0.099	7.47	0.006	0.332	28.40	88.39	2.981	2.525	83.46	Calibrating System 1
10/15/08	7:48:30	-1.12	0.099	7.82	0.006	0.337	28.40	72.07	2.963	2.538	83.46	Calibrating System 1
10/15/08	7:48:42	-1.37	0.124	7.72	0.025	0.337	28.22	71.84	2.850	2.487	83.46	Calibrating System 1
10/15/08	7:48:53	-1.87										

BP West Coast Products, LLC
Cherry Point Refinery
Blaine, WA

10 - Second Reference Method Data
Trailer 11

No. 2 TGU Stack

		System 1					System 2				Trailer	
Date	Time	SO ₂ _1	NO _x _1	CO_1	O ₂ _1	CO ₂ _2	NO _x _2	CO_2	O ₂ _2	CO ₂ _2	Temp	Calibration Status
		ppm	ppm	ppm	%	%	ppm	ppm	%	%	deg F	
10/15/08	7:51:04	-0.25	0.025	0.20	0.006	0.095	28.62	71.46	2.781	2.626	83.46	Calibrating System 1
10/15/08	7:51:15	-0.75	0.025	206.71	11.005	7.207	28.70	76.44	2.913	2.614	83.46	Calibrating System 1
10/15/08	7:51:26	-1.00	0.000	206.71	12.048	10.497	28.80	84.53	2.988	2.763	83.46	Calibrating System 1
10/15/08	7:51:38	-1.12	0.025	206.71	12.161	10.884	28.85	83.55	2.944	2.803	83.46	Calibrating System 1
10/15/08	7:51:49	-1.62	0.050	206.71	12.161	10.944	28.87	81.23	2.956	2.753	83.46	Calibrating System 1
10/15/08	7:51:59	-1.50	0.000	206.71	12.173	10.964	28.75	88.39	2.988	2.765	83.46	Calibrating System 1
10/15/08	7:52:09	-1.62	0.000	206.71	12.180	10.984	28.82	91.31	2.925	2.790	83.46	Calibrating System 1
10/15/08	7:52:20	-1.74	0.000	206.71	12.186	11.251	28.87	83.15	2.975	2.904	83.46	Calibrating System 1
10/15/08	7:52:32	-1.74	0.000	206.71	12.180	11.738	28.87	87.88	2.981	2.765	83.46	Calibrating System 1
10/15/08	7:52:42	-1.74	-0.025	206.71	12.186	11.939	28.80	92.54	2.869	2.904	83.46	Calibrating System 1
10/15/08	7:52:54	-1.74	0.000	206.71	12.180	11.969	28.85	88.49	2.963	2.866	83.46	Calibrating System 1
10/15/08	7:53:04	-1.74	-0.025	206.71	12.186	11.969	29.00	81.65	2.900	2.854	83.46	Calibrating System 1
10/15/08	7:53:14	-1.74	0.025	206.71	12.186	11.969	29.10	78.95	2.850	2.879	83.46	Calibrating System 1
10/15/08	7:53:25	-1.74	0.000	206.71	12.205	11.979	29.20	74.64	2.838	2.790	83.46	Calibrating System 1
10/15/08	7:53:35	-1.74	0.025	206.71	9.554	7.936	29.22	67.66	3.025	2.904	83.46	Calibrating System 1
10/15/08	7:53:45	-1.74	9.518	49.37	0.163	0.337	29.22	79.17	2.656	2.702	83.46	Calibrating System 1
10/15/08	7:53:57	-1.50	30.442	46.44	0.063	0.206	29.52	84.03	2.656	2.652	83.46	Calibrating System 1
10/15/08	7:54:08	14.71	57.828	45.99	0.038	0.186	29.85	64.63	2.613	2.664	83.46	Calibrating System 1
10/15/08	7:54:19	27.17	49.329	46.04	0.031	0.166	29.92	49.84	2.625	2.677	83.46	Calibrating System 1
10/15/08	7:54:29	33.52	48.285	45.99	0.031	0.156	29.85	64.06	2.600	2.689	83.46	Calibrating System 1
10/15/08	7:54:40	37.14	48.136	45.53	0.025	0.146	29.87	81.20	2.656	2.576	83.46	Calibrating System 1
10/15/08	7:54:50	38.26	48.037	45.58	0.013	0.136	30.22	78.07	2.706	2.601	83.46	Calibrating System 1
10/15/08	7:55:00	39.76	48.062	45.58	0.019	0.136	30.39	56.32	2.694	2.588	83.46	Calibrating System 1
10/15/08	7:55:12	40.38	48.260	45.43	0.019	0.126	30.14	60.00	2.675	2.601	83.46	Calibrating System 1
10/15/08	7:55:22	41.25	48.186	45.73	0.019	0.126	30.05	65.76	2.769	2.626	83.46	Calibrating System 1
10/15/08	7:55:32	42.12	48.211	46.09	0.006	0.126	30.09	66.93	2.694	2.563	83.46	Calibrating System 1
10/15/08	7:55:42	42.12	48.136	46.90	0.013	0.116	30.09	70.04	2.650	2.652	83.46	Calibrating System 1
10/15/08	7:55:53	42.75	48.012	47.70	0.019	0.116	30.14	67.73	2.713	2.664	83.46	Calibrating System 1
10/15/08	7:56:03	43.00	47.937	48.36	0.019	0.116	30.09	58.30	2.719	2.588	83.46	Calibrating System 1
10/15/08	7:56:14	43.00	47.813	48.66	0.013	0.116	30.09	56.87	2.719	2.538	83.46	Calibrating System 1
10/15/08	7:56:24	43.00	47.788	48.51	0.013	0.116	30.17	55.12	2.763	2.538	83.46	Calibrating System 1
10/15/08	7:56:35	43.00	47.689	48.31	0.019	0.116	30.09	61.85	2.713	2.563	83.46	Calibrating System 1
10/15/08	7:56:46	43.62	47.639	48.16	0.019	0.106	30.09	71.69	2.581	2.551	83.46	Calibrating System 1
10/15/08	7:56:57	43.87	47.639	48.61	0.006	0.106	30.05	82.85	2.700	2.563	83.46	Calibrating System 1
10/15/08	7:57:07	43.87	50.994	48.46	0.006	0.106	29.85	90.54	2.731	2.639	83.46	Calibrating System 1
10/15/08	7:57:18	43.87	50.969	48.41	0.000	0.106	29.80	90.56	2.738	2.601	83.46	Calibrating System 1
10/15/08	7:57:28	43.87	50.969	48.31	0.013	0.106	29.75	79.50	2.775	2.614	83.46	Calibrating System 1
10/15/08	7:57:39	44.24	51.044	48.46	0.013	0.106	29.57	70.89	2.706	2.626	83.46	Calibrating System 1
10/15/08	7:57:49	44.24	50.994	48.31	0.019	0.106	29.52	73.92	2.738	2.601	83.46	Calibrating System 1
10/15/08	7:58:00	35.64	49.627	92.88	0.082	0.106	29.40	79.17	2.725	2.563	83.46	Calibrating System 1
10/15/08	7:58:11	38.26	80.616	93.84	0.013	0.106	29.40	93.67	2.750	2.652	83.46	Calibrating System 1
10/15/08	7:58:21	58.57	101.963	93.39	0.013	0.106	29.57	85.56	2.719	2.664	83.46	Calibrating System 1
10/15/08	7:58:31	72.41	100.696	93.39	0.019	0.106	29.52	86.43	2.675	2.614	83.46	Calibrating System 1
10/15/08	7:58:42	79.76	98.708	93.03	0.013	0.106	29.52	96.95	2.738	2.639	83.46	Calibrating System 1
10/15/08	7:58:52	82.13	98.882	93.29	0.000	0.106	29.57	93.19	2.713	2.601	83.46	Calibrating System 1
10/15/08	7:59:02	83.13	98.807	93.29	0.019	0.106	29.70	90.31	2.725	2.551	83.46	Calibrating System 1
10/15/08	7:59:14	84.25	98.459	93.39	0.000	0.106	29.85	92.92	2.725	2.614	83.46	Calibrating System 1
10/15/08	7:59:25	84.87	98.559	93.44	0.006	0.106	29.97	92.27	2.744	2.652	83.46	Calibrating System 1
10/15/08	7:59:35	85.37	98.559	93.64	0.006	0.106	29.87	84.23	2.800	2.652	83.46	Calibrating System 1
10/15/08	7:59:46	85.74	98.584	93.44	0.006	0.106	30.05	84.36	2.706	2.614	83.46	Calibrating System 1
10/15/08	7:59:56	85.74	98.584	93.44	0.013	0.106	30.22	77.95	2.675	2.652	83.46	Calibrating System 1
10/15/08	8:00:08	85.37	98.584	93.54	0.006	0.106	30.27	70.21	2.706	2.652	83.46	Calibrating System 1
10/15/08	8:00:19	86.62	98.509	93.34	0.006	0.106	30.22	78.02	2.644	2.639	83.46	Calibrating System 1
10/15/08	8:00:30	86.62	98.434	93.13	0.006	0.106	30.34	84.81	2.638	2.588	83.46	Calibrating System 1
10/15/08	8:00:40	86.24	98.385	93.03	0.013	0.106	30.34	84.86	2.550	2.588	83.46	Calibrating System 1
10/15/08	8:00:50	86.24	98.360	93.13	0.006	0.106	30.32	74.12	2.594	2.614	83.46	Calibrating System 1
10/15/08	8:01:02	86.62	98.385	92.98	0.006	0.095	30.17	99.72	2.675	2.588	83.46	Calibrating System 1
10/15/08	8:01:13	86.62	98.261	93.24	0.006	0.106	30.02	95.59	2.663	2.601	83.46	Calibrating System 1
10/15/08	8:01:23	86.62	98.211	93.74	0.006	0.095	30.02	84.53	2.625	2.614	83.46	Calibrating System 1
10/15/08	8:01:34	86.62	98.236	93.59	0.000	0.106	30.09	88.99	2.744	2.652	83.46	Calibrating System 1
10/15/08	8:01:44	86.86	98.211	93.49	0.019	0.106	29.92	88.09	2.700	2.702	83.46	Calibrating System 1
10/15/08	8:01:54	95.71	98.236	93.59	0.006	0.106	29.77	94.67	2.681	2.664	83.46	Calibrating System 1
10/15/08	8:02:04	95.71	98.161	93.29	0.000	0.106	29.75	98.92	2.731	2.677	83.46	Calibrating System 1
10/15/08	8:02:15	95.71	98.111	93.19	0.000	0.106	29.62	99.77	2.681	2.689	83.46	Calibrating System 1
10/15/08	8:02:25	95.71	98.087	93.39	0.006	0.106	29.57	99.85	2.700	2.689	83.46	Calibrating System 1
10/15/08	8:02:37	95.71	98.136	93.69	1.646	0.311	29.57	99.75	2.775	2.588	83.46	
10/15/08	8:02:48	80.76	55.169	65.93	2.739	2.079	24.40	94.64	16.244	1.515	83.46	
10/15/08	8:02:58	79.26	32.257	102.78	2.714	2.099	5.32	90.51	0.206	0.429	83.46	Calibrating System 2
10/15/08	8:03:09	96.09	30.939	91.92	2.707	2.099	0.50	65.23	0.056	0.417	83.46	Calibrating System 2
10/15/08	8:03:20	111.67	31.586	64.26	2.789	2.094	0.25	28.69	0.044	0.303	83.01	Calibrating System 2
10/15/08	8:03:30	124.00	31.635	76.38	2.871	2.089	0.20	1.10	0.038	0.366	83.46	Calibrating System 2
10/15/08	8:03:41	130.98	30.865	96.52	2.921	2.084	0.15	0.48	0.025	0.366	83.46	Calibrating System 2

BP West Coast Products, LLC
Cherry Point Refinery
Blaine, WA

10 - Second Reference Method Data
Trailer 11

No. 2 TGU Stack

		System 1						System 2						Trailer	
Date	Time	SO ₂ _1	NO _x _1	CO_1	O ₂ _1	CO ₂ _2	NO _x _2	CO_2	O ₂ _2	CO ₂ _2	Temp	Calibration Status			
		ppm	ppm	ppm	%	%	ppm	ppm	%	%	deg F				
10/15/08	8:06:01	151.67	30.989	72.29	2.764	2.150	0.03	99.75	12.181	11.604	83.01	Calibrating System 2			
10/15/08	8:06:11	151.92	31.163	81.07	2.802	2.150	0.03	99.85	12.188	11.679	83.01	Calibrating System 2			
10/15/08	8:06:22	151.92	31.238	70.27	2.820	2.145	0.03	99.87	12.188	11.717	83.01	Calibrating System 2			
10/15/08	8:06:33	151.05	31.238	68.10	2.714	2.160	-0.03	99.75	12.188	11.629	83.01	Calibrating System 2			
10/15/08	8:06:43	150.42	31.163	87.28	2.695	2.155	-0.03	99.87	12.188	11.717	83.01	Calibrating System 2			
10/15/08	8:06:54	149.80	31.163	75.06	2.789	2.145	-0.03	99.72	12.194	11.742	83.01	Calibrating System 2			
10/15/08	8:07:05	149.55	31.262	73.95	2.764	2.160	-0.03	99.80	12.194	11.730	83.01	Calibrating System 2			
10/15/08	8:07:15	149.68	31.213	87.08	2.701	2.160	-0.03	99.82	12.194	11.667	83.01	Calibrating System 2			
10/15/08	8:07:27	149.30	31.138	56.18	2.726	2.160	-0.10	99.85	12.194	11.780	83.01	Calibrating System 2			
10/15/08	8:07:38	149.68	31.238	87.73	2.676	2.165	-0.10	99.75	12.200	11.768	83.01	Calibrating System 2			
10/15/08	8:07:49	149.55	31.163	66.94	2.688	2.155	-0.10	99.75	12.200	11.679	83.01	Calibrating System 2			
10/15/08	8:07:59	150.17	31.312	56.74	2.739	2.155	-0.10	99.75	12.194	11.705	83.01	Calibrating System 2			
10/15/08	8:08:10	151.05	31.461	61.69	2.707	2.155	-0.10	99.72	12.194	11.730	83.01	Calibrating System 2			
10/15/08	8:08:21	151.92	31.610	60.93	2.676	2.155	-0.10	99.85	12.200	11.755	83.01	Calibrating System 2			
10/15/08	8:08:31	152.79	31.685	63.35	2.701	2.145	-0.10	99.85	12.206	11.818	83.01	Calibrating System 2			
10/15/08	8:08:42	153.42	31.933	47.50	2.751	2.145	-0.10	99.75	12.200	11.742	83.01	Calibrating System 2			
10/15/08	8:08:52	153.66	32.058	75.57	2.695	2.155	51.05	99.75	12.200	11.780	83.01				
10/15/08	8:09:03	153.79	32.182	70.17	2.745	2.150	-0.10	99.80	12.181	11.843	83.01	Calibrating System 2			
10/15/08	8:09:14	153.66	32.232	52.25	2.739	2.160	28.45	99.82	0.106	1.301	83.01	Calibrating System 2			
10/15/08	8:09:24	153.04	32.107	87.68	2.701	2.155	47.78	99.75	0.056	0.556	83.01	Calibrating System 2			
10/15/08	8:09:35	152.42	32.008	75.11	2.645	2.155	47.88	99.85	0.044	0.530	83.01	Calibrating System 2			
10/15/08	8:09:46	151.30	31.859	106.92	2.651	2.165	48.10	73.14	0.038	0.581	83.01	Calibrating System 2			
10/15/08	8:09:56	150.67	31.660	74.00	2.626	2.155	48.18	52.34	0.031	0.505	83.46	Calibrating System 2			
10/15/08	8:10:07	150.17	31.685	56.39	2.695	2.145	48.15	49.74	0.025	0.568	83.01	Calibrating System 2			
10/15/08	8:10:18	149.93	31.759	51.19	2.652	2.125	48.13	49.81	0.025	0.581	83.01	Calibrating System 2			
10/15/08	8:10:28	150.17	31.635	62.49	2.808	2.140	48.13	50.86	0.019	0.455	83.01	Calibrating System 2			
10/15/08	8:10:39	151.05	31.635	55.17	2.783	2.135	48.13	50.94	0.013	0.556	83.01	Calibrating System 2			
10/15/08	8:10:49	151.42	31.685	61.64	2.827	2.115	48.08	50.44	0.019	0.556	83.46	Calibrating System 2			
10/15/08	8:11:00	151.30	31.685	52.80	2.789	2.130	48.13	49.74	0.013	0.492	83.01	Calibrating System 2			
10/15/08	8:11:11	150.80	31.680	67.14	2.651	2.150	48.13	49.46	0.019	0.568	83.46	Calibrating System 2			
10/15/08	8:11:21	150.42	31.635	89.65	2.688	2.130	48.13	49.31	0.019	0.442	83.46	Calibrating System 2			
10/15/08	8:11:32	150.42	31.337	78.95	2.739	2.125	48.20	50.66	0.006	0.556	83.01	Calibrating System 2			
10/15/08	8:11:42	150.17	31.337	67.59	2.695	2.140	48.20	50.89	1.206	0.543	83.01				
10/15/08	10:35:47	112.91	32.852	-11.16	0.025	-0.332	29.95	99.87	2.763	2.513	65.46	Calibrating System 1			
10/15/08	10:35:59	58.45	1.069	-11.16	0.006	-0.362	29.67	99.77	2.719	2.487	65.46	Calibrating System 1			
10/15/08	10:36:10	31.16	0.447	-11.16	0.006	-0.362	29.50	99.75	2.663	2.487	65.46	Calibrating System 1			
10/15/08	10:36:21	18.32	0.323	-11.16	0.006	-0.372	29.32	99.87	2.600	2.588	65.46	Calibrating System 1			
10/15/08	10:36:31	11.96	0.273	-11.16	0.013	-0.382	29.02	99.77	2.569	2.563	65.46	Calibrating System 1			
10/15/08	10:36:41	7.85	0.199	-11.16	-0.006	-0.382	28.80	99.82	2.525	2.475	65.46	Calibrating System 1			
10/15/08	10:36:51	5.48	0.199	-11.16	0.013	-0.377	28.67	99.75	2.563	2.500	65.46	Calibrating System 1			
10/15/08	10:37:02	3.36	0.199	-11.16	0.000	-0.392	28.72	99.80	2.613	2.500	65.46	Calibrating System 1			
10/15/08	10:37:12	2.49	0.174	-11.16	0.000	-0.382	28.85	99.77	2.631	2.487	65.46	Calibrating System 1			
10/15/08	10:37:23	1.74	0.199	-11.16	0.006	-0.382	28.85	99.87	2.613	2.563	65.46	Calibrating System 1			
10/15/08	10:37:34	0.75	0.124	-11.16	0.000	-0.377	29.07	99.77	2.588	2.475	65.46	Calibrating System 1			
10/15/08	10:37:45	-0.12	0.149	-2.37	0.000	-0.382	29.20	90.91	2.600	2.601	65.46	Calibrating System 1			
10/15/08	10:37:56	-0.37	0.099	-2.02	0.000	-0.392	29.15	95.64	2.544	2.576	65.46	Calibrating System 1			
10/15/08	10:38:07	-1.00	0.099	-1.62	0.000	-0.382	29.12	99.77	2.538	2.475	65.46	Calibrating System 1			
10/15/08	10:38:19	-1.25	0.075	-1.92	0.000	-0.392	28.95	99.87	2.625	2.588	65.46	Calibrating System 1			
10/15/08	10:38:30	-1.50	0.075	-2.12	0.006	-0.387	29.02	99.77	2.725	2.525	65.46	Calibrating System 1			
10/15/08	10:38:41	-1.74	0.099	-1.82	0.000	-0.387	28.95	99.85	2.638	2.475	65.46	Calibrating System 1			
10/15/08	10:38:52	-2.12	0.075	40.84	5.722	4.013	28.72	99.87	2.631	2.525	65.46	Calibrating System 1			
10/15/08	10:39:02	-2.37	0.050	206.71	11.822	10.688	28.72	99.75	2.769	2.601	65.46	Calibrating System 1			
10/15/08	10:39:13	-2.49	0.075	206.71	12.065	12.034	29.02	99.87	2.800	2.601	65.46	Calibrating System 1			
10/15/08	10:39:25	-2.49	0.075	206.71	12.104	12.245	29.50	99.75	2.719	2.601	65.46	Calibrating System 1			
10/15/08	10:39:35	-2.87	0.050	206.71	12.111	12.265	29.60	99.75	2.813	2.576	65.46	Calibrating System 1			
10/15/08	10:39:45	-2.74	0.050	206.71	12.111	12.285	29.67	99.80	2.731	2.601	65.46	Calibrating System 1			
10/15/08	10:39:56	-3.12	0.050	206.71	12.117	12.305	29.80	99.87	2.713	2.664	65.46	Calibrating System 1			
10/15/08	10:40:08	-2.99	0.025	206.71	12.123	12.315	29.95	99.75	2.775	2.614	65.46	Calibrating System 1			
10/15/08	10:40:19	-2.99	0.000	206.71	12.123	12.326	30.07	99.77	2.825	2.588	65.46	Calibrating System 1			
10/15/08	10:40:31	-3.36	-0.025	206.71	12.117	12.336	29.90	99.75	2.800	2.551	65.46	Calibrating System 1			
10/15/08	10:40:42	-3.36	0.099	112.97	0.735	0.422	29.72	99.75	2.775	2.727	65.46	Calibrating System 1			
10/15/08	10:40:52	-3.24	14.016	50.73	0.063	-0.060	29.55	99.75	2.663	2.412	65.46	Calibrating System 1			
10/15/08	10:41:03	10.22	57.580	49.82	0.038	-0.181	29.62	99.75	2.569	2.412	65.46	Calibrating System 1			
10/15/08	10:41:14	25.42	55.790	49.07	0.025	-0.251	29.92	99.77	2.656	2.450	65.46	Calibrating System 1			
10/15/08	10:41:24	32.90	54.597	49.17	0.013	-0.281	30.07	99.75	2.588	2.386	65.46	Calibrating System 1			
10/15/08	10:41:35	37.89	53.728	49.22	0.013	-0.296	30.19	93.49	2.656	2.349	65.46	Calibrating System 1			
10/15/08	10:41:47	40.25	53.429	49.32	0.006	-0.311	30.32	99.87	2.556	2.513	65.46	Calibrating System 1			
10/15/08	10:41:58	41.75	53.429	49.32	0.013	-0.327	30.42	99.77	2.625	2.399	65.46	Calibrating System 1			
10/15/08	10:42:08	43.25	53.380	49.37	0.000	-0.332	30.42	99.82	2.631	2.424	65.46	Calibrating System 1			
10/15/08	10:42:19	44.12	53.305	49.67	0.019	-0.337	30.44	99.75	2.756	2.450	65.46	Calibrating System 1			
10/15/08	10:42:31	42.87	50.323	95.61	0.038	-0.332	30.29	99.87	2.700	2.576	65.46	Calibrating System 1			
10/15/08	10:42:42	37.64	78.827	96.87	0.013	-0.342	3								

BP West Coast Products, LLC
Cherry Point Refinery
Blaine, WA

10 - Second Reference Method Data
Trailer 11

No. 2 TGU Stack

Date	Time	System 1					System 2				Trailer Temp deg F	Calibration Status
		SO ₂ _1 ppm	NO _x _1 ppm	CO ₂ _1 ppm	O ₂ _1 %	CO ₂ _2 %	NO _x _2 ppm	CO ₂ _2 ppm	O ₂ _2 %	CO ₂ _2 %		
10/15/08	10:45:07	93.22	101.640	97.27	0.000	-0.382	31.24	91.49	2.681	2.538	65.46	Calibrating System 1
10/15/08	10:45:17	93.47	101.541	96.67	0.013	-0.382	31.14	99.82	2.763	2.500	65.91	Calibrating System 1
10/15/08	10:45:29	94.22	101.516	97.17	0.006	-0.377	30.94	99.75	2.606	2.551	65.46	Calibrating System 1
10/15/08	10:45:40	93.84	101.441	97.22	0.000	-0.382	30.97	99.85	2.694	2.538	65.46	Calibrating System 1
10/15/08	10:45:52	94.22	101.392	97.27	0.000	-0.387	30.92	99.82	2.688	2.500	65.46	Calibrating System 1
10/15/08	10:46:02	94.09	101.417	97.12	0.019	-0.392	30.84	99.75	2.688	2.551	65.46	Calibrating System 1
10/15/08	10:46:13	94.09	101.491	97.27	0.000	-0.392	30.67	99.75	2.713	2.487	65.91	Calibrating System 1
10/15/08	10:46:25	94.09	101.441	97.53	0.006	-0.387	30.72	99.85	2.850	2.538	65.46	Calibrating System 1
10/15/08	10:46:37	94.09	100.199	93.19	2.670	1.542	30.59	99.87	3.250	2.588	65.91	
10/15/08	10:46:48	92.97	43.290	85.41	2.946	1.919	28.97	95.47	0.269	0.543	65.46	Calibrating System 2
10/15/08	10:46:58	92.10	33.002	101.82	2.933	1.929	8.27	78.90	0.025	0.253	65.46	Calibrating System 2
10/15/08	10:47:08	105.43	32.580	101.11	2.921	1.939	0.45	43.30	0.013	0.164	65.46	Calibrating System 2
10/15/08	10:47:19	121.51	32.381	103.53	2.896	1.949	0.35	17.05	0.013	0.139	65.91	Calibrating System 2
10/15/08	10:47:30	131.11	32.927	87.88	2.915	1.949	0.15	7.03	0.000	0.215	65.91	Calibrating System 2
10/15/08	10:47:41	137.34	32.530	111.31	2.858	1.959	0.10	5.41	0.006	0.177	65.91	Calibrating System 2
10/15/08	10:47:52	139.21	32.033	131.70	2.701	1.979	0.10	5.01	0.006	0.189	65.46	Calibrating System 2
10/15/08	10:48:03	140.83	31.983	116.36	2.688	1.989	0.10	5.08	0.000	0.101	65.91	Calibrating System 2
10/15/08	10:48:14	141.20	31.983	140.03	2.569	2.009	0.03	5.11	0.000	0.101	65.91	Calibrating System 2
10/15/08	10:48:25	142.32	32.083	102.27	2.676	1.999	0.05	5.11	0.006	0.114	65.91	Calibrating System 2
10/15/08	10:48:36	142.45	32.257	77.94	2.739	1.999	0.03	5.01	0.006	0.202	65.91	Calibrating System 2
10/15/08	10:48:47	143.82	32.406	109.89	2.726	1.999	0.05	4.71	0.000	0.114	65.91	Calibrating System 2
10/15/08	10:48:57	146.19	32.505	98.64	2.751	1.989	0.03	4.38	0.000	0.101	65.91	Calibrating System 2
10/15/08	10:49:09	145.94	32.654	114.89	2.714	1.994	0.00	4.41	-0.006	0.202	65.46	Calibrating System 2
10/15/08	10:49:19	147.31	32.704	104.95	2.714	1.999	-0.03	4.11	0.000	0.202	65.91	Calibrating System 2
10/15/08	10:49:30	147.43	32.903	106.06	2.739	1.989	-0.03	3.90	0.000	0.139	65.91	Calibrating System 2
10/15/08	10:49:41	146.81	32.729	118.83	2.783	1.979	-0.03	4.21	0.006	0.189	65.91	Calibrating System 2
10/15/08	10:49:52	148.31	32.505	126.50	2.732	1.989	-0.03	4.61	-0.006	0.177	65.91	Calibrating System 2
10/15/08	10:50:03	149.05	32.406	124.58	2.839	1.964	-0.03	4.63	0.006	0.076	65.91	Calibrating System 2
10/15/08	10:50:14	148.55	32.381	80.97	2.889	1.969	-0.03	4.61	0.000	0.068	65.91	Calibrating System 2
10/15/08	10:50:25	148.80	32.480	92.58	2.814	1.984	-0.03	4.51	0.000	0.126	65.91	Calibrating System 2
10/15/08	10:50:36	148.55	32.505	93.79	2.820	1.989	-0.03	4.11	0.000	0.177	65.91	Calibrating System 2
10/15/08	10:50:47	148.80	32.580	73.90	3.072	1.954	-0.03	3.90	0.000	0.101	65.91	Calibrating System 2
10/15/08	10:50:58	149.18	32.679	64.82	3.191	1.949	-0.03	4.21	-0.006	0.164	65.91	Calibrating System 2
10/15/08	10:51:08	149.43	32.754	70.07	3.015	1.964	-0.03	3.80	0.000	0.177	65.91	Calibrating System 2
10/15/08	10:51:19	149.80	32.952	82.79	2.946	1.984	-0.03	3.08	0.000	0.076	65.91	Calibrating System 2
10/15/08	10:51:30	149.55	33.027	75.72	2.883	2.009	-0.07	2.73	0.000	0.164	65.91	Calibrating System 2
10/15/08	10:51:41	148.93	33.101	74.76	2.820	2.019	-0.10	3.10	0.000	0.088	65.91	Calibrating System 2
10/15/08	10:51:52	148.68	33.101	108.73	2.814	2.014	-0.07	3.33	0.000	0.164	65.91	Calibrating System 2
10/15/08	10:52:02	147.31	33.027	83.14	2.795	2.024	-0.10	3.10	0.006	0.101	65.91	Calibrating System 2
10/15/08	10:52:14	146.19	33.151	84.50	2.896	2.024	-0.10	3.10	0.000	0.076	65.91	Calibrating System 2
10/15/08	10:52:25	145.69	33.201	80.26	2.877	2.029	-0.10	3.15	-0.006	0.114	65.91	Calibrating System 2
10/15/08	10:52:35	145.44	33.176	79.05	2.940	2.019	-0.10	3.23	0.000	0.152	65.91	Calibrating System 2
10/15/08	10:52:46	145.94	33.201	77.94	2.814	2.034	-0.10	3.20	0.000	0.051	65.91	Calibrating System 2
10/15/08	10:52:57	146.31	33.201	64.71	2.858	2.029	-0.10	3.33	7.638	0.126	65.91	Calibrating System 2
10/15/08	10:53:08	146.56	33.425	48.06	2.902	2.029	-0.03	16.22	12.031	11.338	65.91	Calibrating System 2
10/15/08	10:53:18	146.19	33.772	52.35	2.915	2.039	-0.03	99.75	12.075	11.540	65.91	Calibrating System 2
10/15/08	10:53:29	145.69	33.872	98.08	2.889	2.039	-0.03	99.85	12.088	11.667	65.91	Calibrating System 2
10/15/08	10:53:39	145.69	33.847	89.20	2.921	2.039	-0.03	99.87	12.100	11.768	66.36	Calibrating System 2
10/15/08	10:53:49	145.56	33.847	65.52	2.833	2.054	-0.03	99.87	12.100	11.793	65.91	Calibrating System 2
10/15/08	10:54:01	145.94	34.021	44.07	2.745	2.079	-0.03	99.77	12.106	11.730	66.36	Calibrating System 2
10/15/08	10:54:11	146.19	34.170	52.60	2.802	2.069	-0.10	99.75	12.100	11.793	65.91	Calibrating System 2
10/15/08	10:54:22	146.56	34.195	79.00	2.802	2.064	-0.10	99.75	12.113	11.780	66.36	Calibrating System 2
10/15/08	10:54:33	146.93	33.971	109.64	2.732	2.069	-0.07	99.77	12.113	11.730	66.36	Calibrating System 2
10/15/08	10:54:43	146.31	33.772	91.82	2.776	2.059	-0.10	99.77	12.106	11.755	65.91	Calibrating System 2
10/15/08	10:54:54	145.44	33.822	80.26	2.726	2.064	-0.07	99.77	12.113	11.768	65.91	Calibrating System 2
10/15/08	10:55:05	144.82	33.897	43.87	2.764	2.069	11.96	99.80	0.125	1.465	66.36	Calibrating System 2
10/15/08	10:55:15	144.82	34.021	37.71	2.846	2.049	48.05	99.77	0.056	0.290	66.36	Calibrating System 2
10/15/08	10:55:26	144.44	33.872	84.25	2.814	2.054	48.45	99.75	0.044	0.215	66.36	Calibrating System 2
10/15/08	10:55:36	143.82	33.698	96.47	2.776	2.059	48.55	99.77	0.025	0.164	66.36	Calibrating System 2
10/15/08	10:55:47	143.32	33.772	76.48	2.795	2.059	48.80	68.36	0.019	0.164	66.36	Calibrating System 2
10/15/08	10:55:58	142.07	33.946	74.10	2.833	2.059	48.73	59.42	0.019	0.240	66.36	Calibrating System 2
10/15/08	10:56:08	141.82	34.095	53.51	2.751	2.064	48.68	55.44	0.013	0.240	66.36	Calibrating System 2
10/15/08	10:56:19	142.20	34.046	75.37	2.808	2.059	48.63	52.57	0.013	0.202	66.36	Calibrating System 2
10/15/08	10:56:30	142.70	33.872	74.66	2.827	2.044	48.63	53.77	0.006	0.202	66.36	Calibrating System 2
10/15/08	10:56:40	143.82	33.922	51.29	2.820	2.044	48.68	53.57	0.013	0.253	66.36	Calibrating System 2
10/15/08	10:56:51	145.07	34.145	65.02	2.770	2.059	48.70	51.44	0.013	0.152	66.36	Calibrating System 2
10/15/08	10:57:01	145.69	34.220	59.01	2.852	2.049	48.75	50.49	0.013	0.164	66.36	Calibrating System 2
10/15/08	10:57:12	146.06	34.369	63.00	2.883	2.034	48.73	51.06	0.006	0.215	66.36	Calibrating System 2
10/15/08	10:57:23	146.31	34.394	59.92	2.795	2.059	48.80	51.19	0.000	0.215	66.36	Calibrating System 2
10/15/08	10:57:35	147.18	34.369	65.62	2.839	2.044	48.85	52.77	0.006	0.202	66.36	Calibrating System 2
10/15/08	10:57:45	147.81	34.394	58.56	2.783	2.054	48.85	52.14	0.000	0.139	66.36	Calibrating System 2
10/15/08	10:57:55	148.06	34.269	78.90	2.745	2.059	48.90	51.26	1.388	0.164	66.36	

Time	NO _x 1	O ₂ 1	NO _x 2	O ₂ 2			
	Stationary System		Traversed System				
	ppm	%	ppm	%			
11:04:00	32.659	3.063	32.933	3.077			
11:05:00	32.417	3.027	32.732	3.047		Point #1	
11:06:00	32.769	2.992	33.098	2.999			
11:07:00	32.753	2.997	33.066	3.003			
11:08:00	32.600	3.008	32.925	3.014			
11:09:00	32.691	2.950	33.158	2.959			
11:10:00	32.939	3.011	33.337	3.020			
11:11:00	32.328	3.115	32.669	3.126			
11:12:00	32.341	3.086	32.737	3.096			
11:13:00	32.561	3.033	33.032	3.045		Point #2	
11:14:00	32.868	3.002	33.283	3.013			
11:15:00	32.889	2.949	33.176	2.960			
11:16:00	32.850	3.011	33.188	3.026			
11:17:00	32.570	3.017	32.976	3.031			
11:18:00	32.359	3.011	32.825	3.024			
11:19:00	32.436	3.012	32.925	3.026			
11:20:00	32.579	2.946	33.072	2.958			
11:21:00	32.467	2.936	32.934	2.952		Point #3	
11:22:00	32.222	2.985	32.708	3.002			
11:23:00	32.191	2.980	32.732	2.998			
11:24:00	32.385	3.025	32.886	3.039			
11:25:00	32.357	2.973	32.816	2.992			
11:26:00	32.603	2.958	33.038	2.972			
11:27:00	32.470	3.019	32.993	3.040			
11:28:00	32.059	3.038	32.629	3.046			
Point #1		Point #2		Point #3			
Traversed		Traversed		Traversed			
NO _x	O ₂	NO _x	O ₂	NO _x	O ₂		
32.965	3.033	33.059	3.010	32.842	3.005		
Point #1		Point #2		Point #3			
Stationary		Stationary		Stationary			
NO _x	O ₂	NO _x	O ₂	NO _x	O ₂		
32.605	3.023	32.639	2.997	32.344	2.989		

Stratification Testing (O₂)

Plant: BP - Cherry Point
Source: No. 2 TGU Stack

Test Date: 10/14/2008
Technician: RCP/KEF/DDF

Reference or Stationary Probe Sampling System Conc. (C _r)				
				Average
Time	11:05	11:13	11:21	
Concentration %	3.02	3.00	2.99	3.00

Reference Sampling System (stationary) correction value (C _r - Avg)				
(Change in concentrations due to process variations)				
Correction Value (C _v)	-0.02	0.01	0.01	

Traversed System Concentrations (C)				
	Point 1 (16.7 %)	Point 2 (50%)	Point 3 (83.3%)	
Time	11:05	11:13	11:21	
C	3.03	3.01	3.00	

Traversed System Conc. (C _t) Adjusted for Deviations in Reference System (C + C _v)				
	Point 1 (16.7 %)	Point 2 (50%)	Point 3 (83.3%)	Avg.
(C + C _v)	3.01	3.02	3.02	3.02

Abs. Diff. (Avg.C _t - C _t)				
	Point 1 (16.7 %)	Point 2 (50%)	Point 3 (83.3%)	Max Deviation
	0.00	0.00	0.00	0.00

Not Stratified - Less than ± 0.3% O ₂				
Source is Not Stratified				

Stratification Testing (NO_x)

Plant: BP - Cherry Point
Source: No. 2 TGU Stack

Test Date: 10/14/2008
Technician: RCP/KEF/DDF

Reference or Stationary Probe Sampling System Conc. (C _r)				
				Average
Time	11:05	11:13	11:21	
Concentration (ppm)	32.60	32.64	32.34	32.53

Reference Sampling System (stationary) correction value (C _r - Avg)				
(Change in concentrations due to process variations)				
Correction Value (C _v)	-0.08	-0.11	0.19	

Traversed System Concentrations (C)				
	Point 1 (16.7 %)	Point 2 (50%)	Point 3 (83.3%)	
Time	11:05	11:13	11:21	
C _t	32.97	33.06	32.84	

Traversed System Conc. (C _t) Adjusted for Deviations in Reference System (C + C _v)				
	Point 1 (16.7 %)	Point 2 (50%)	Point 3 (83.3%)	Avg.
(C + C _v)	32.89	32.95	33.03	32.96

Abs. Diff. (Avg.C _t - C _t)				
	Point 1 (16.7 %)	Point 2 (50%)	Point 3 (83.3%)	Max % Deviation*
	0.07	0.01	0.07	0.22%

* - Max % deviation = abs (max difference/avg C_t) x 100

Not Stratified - Less than ± 0.5 ppm deviation				
Source is Not Stratified				

No. 2 TGU Method 15
Test Results Summary

Plant	BP West Coast Products - Cherry Point	Address	Blaine, WA	Job #	NW08BPCP111	
Location	No. 2 TGU Stack	Personnel	RCP/KEF/DDF	Date	10/15/2008	
Run Number		1	2	3	Average	Compliance
Date	Test Date	10/15/08	10/15/08	10/15/08		
Start	Run Start Time	12:48	16:00	19:12		
End	Run Finish Time	15:48	19:00	22:12		
	Net Traversing Points	12	12	12	12	
C _D	Pitot Tube Coefficient	0.84	0.84	0.84	0.84	
P _{Br}	Barometric Pressure, in. Hg	30.15	30.15	30.15	30.15	
%CO ₂	Carbon Dioxide, % volume	3.0	3.0	3.0	3.00	
%O ₂	Oxygen, % volume	3.0	3.0	3.0	3.00	
% CO+ N ₂	Carbon Monoxide & Nitrogen, %	94.0	94.0	94.0	94.0	
M _d	Dry Molecular Weight, lb/lb-Mole	28.60	28.60	28.60	28.60	
M _s	Wet Molecular weight, lb/lb-Mole	27.87	27.87	27.85	27.87	
B _{ws}	Moisture Concentration of Stack Gas, by volume	6.8	6.9	7.0	6.9	
P _g	Flue Gas Static Pressure, in. H ₂ O	-0.10	-0.10	-0.10	-0.10	
P _s	Absolute Flue Gas Pressure, in. Hg	30.14	30.14	30.14	30.14	
T _s	Average Stack Gas Temperature, °F	104.3	103.9	104.8	104.34	
ΔP _{avg}	Average Velocity Head, in. H ₂ O	0.467	0.462	0.467	0.465	
v _s	Average Stack Gas Velocity, ft/sec	27.47	27.17	27.49	27.38	
A _s	Stack Area, ft ²	6.68	6.68	6.68	6.68	
Q _a	Actual Volumetric Flow Rate, acfm	11,011	10,892	11,020	10,974	
Q _{std}	Dry Volumetric Flow Rate, dry scfm	9,669	9,560	9,634	9,621	
H ₂ S _{ppm}	Hydrogen Sulfide Concentration, ppmd	< 2.265	< 2.265	< 2.265	< 2.265	
H ₂ S _{lb/dscf}	Hydrogen Sulfide Concentration, lb/dscf x 10 ⁻⁶	< 0.165	< 0.165	< 0.165	< 0.165	
H ₂ S _{lb/hr}	Hydrogen Sulfide Emission Rate, lb/hr	< 0.095	< 0.094	< 0.095	< 0.095	0.43

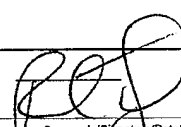
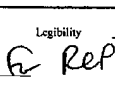
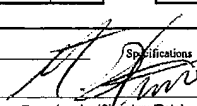
Method 2 & 4

Run 1

Plant BP West Coast Products - Cherry Point				Run No. 1		Date 10/15/2008		Job # NW08BPCP111	
Address Blaine, WA				Equipment ID		Constants		Checks	
Location No. 2 TGU Stack				Reag. Box		A _g foot ³		Vacuum (in. Hg)	
Personnel RCP/KEF/DDF				Umbical		Y		Init DGM	
% Moisture 6.8 Meas				Stack TC		1.827		Final DGM	
P _{at} in "Hg 30.15				Meter box 1886		C _p		Leak rate	
P static in H ₂ O -0.10				Orsat Pump		D ₄ in inches		Pilot	
K factor				Est. Moisture		gm H ₂ O 114.5		Nozzle	
Filter #				B _{measured} 6.8		M3A 3.0 %CO ₂		Stack TC	
Filter WL				B _{measured} 6.9		Fo= 5.967		Good	
								Ms 27.87	
								M _g 28.60	

Traverse Point No.	Elapsed Time		Clock Time	DGM Reading	Velocity	Stack Temp.	DGM Temp.	Orifice Pressure		Probe Temp.	Box Temp.	Filter Outlet	Imping. Temp.	Pump Vac.	Notes
	Begin	End						24 hr	ft ³						
A6	0.0	10.0	13:18:00	819.319	0.22	103	57.5		1.25	248	250		50	0	
A5	10.0	20.0		825.300	0.23	104	58.0		1.25	249	255		47	0	
A4	20.0	30.0		831.280	0.22	104	59.0		1.25	250	253		42	0	
A3	30.0	40.0		837.280	0.21	104	59.5		1.25	250	254		42	0	
A2	40.0	50.0		843.240	0.21	104	60.0		1.25	247	253		43	0	
A1	50.0	60.0		849.220	0.21	104	60.5		1.25	248	254		45	0	
B6	60.0	70.0		855.200	0.23	104	61.0		1.25	248	252		46	0	
B5	70.0	80.0		861.180	0.22	104	61.5		1.25	249	251		46	0	
B4	80.0	90.0		867.180	0.22	104	62.5		1.25	251	250		47	0	
B3	90.0	100.0		873.140	0.21	104	62.5		1.25	247	251		47	0	
B2	100.0	110.0		879.120	0.21	104	63.0		1.25	245	253		47	0	
B1	110.0	120.0		885.100	0.21	104	64.0		1.25	249	250		48	0	
A6	120.0		15:18:00	891.126	0.22	104									Start: 13:33
A5					0.23	104									
A4					0.23	104									
A3					0.22	104									
A2					0.21	104									
A1					0.20	104									
B6					0.20	104									
B5					0.23	104									
B4					0.22	104									
B3					0.21	104									
B2					0.22	104									
B1					0.21	103									
A6					0.20	104									Start: 14:14
A5					0.21	105									
A4					0.21	104									
A3					0.22	104									
A2					0.21	104									
A1					0.22	105									
B6					0.22	105									
B5					0.23	104									
B4					0.22	105									
B3					0.22	105									
B2					0.22	105									
B1					0.21	104									
A6					0.22	104									Start: 15:15
A5					0.21	105									
A4					0.22	105									
A3					0.23	105									
A2					0.23	105									
A1					0.22	105									
B6					0.21	105									
B5					0.22	105									
B4					0.23	105									
B3					0.23	105									
B2					0.23	105									
B1					0.22	105									
Final			15:18	891.126											
Sum or avg	120.0			71.807	0.218	104.3	60.8		1.25					Max 0	

Flow		Impingers				Particulates				
ft ³ /sec	27.5	Contents	Vol. (mL)	Post weight	Pre weight	gain	mg	lb/hr	g/scf	lb/mmBTU
dscfm	9,688.6	1	H ₂ O	100	809.2	760.5	48.6	N/A	N/A	N/A
acfm	11,011.3	2	H ₂ O	100	738.9	761.0	-22.1	N/A	N/A	N/A
		3	M ₁	0	735.7	663.2	72.5	N/A	N/A	N/A
		4	SG	300	947.4	931.9	15.5	N/A	N/A	N/A

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

Method 2 & 4
Run 2

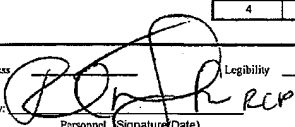
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Method 2 & 4
Run 3

Plant Address Location Personnel		BP West Coast Products - Cherry Point Blaine, WA No. 2 TGU Stack RCP/KEF/DDF		Run No. 3		Date 10/15/2008		Job # NW08BPCP111	
Equipment ID		Reag. Box Umbical Stack TC Meter box Orsat Pump Est. Moisture		Samp. box Meter box TC Readout Pilot Nozzle gm H ₂ O B _{measured} B _{unmeasured}		Constants A _g foot ² Y Alt _a C _p D _N in inches M3A 3.0 7.2 7.0		Checks Vacuum Init DGM Final DGM Leak rate Pilot Nozzle Stack TC Ms M _g	
% Moisture		7.0		Sat		3.0		%CO ₂	
P _{st} in Hg		30.15				3.0		%O ₂	
P static in H ₂ O		-0.10				5.967		27.85	
Filter #								26.60	
Filter Wt									

Traverse Point No.	Elapsed Time		Clock Time	DGM Reading	Velocity	Stack Temp.	DGM Temp.	Orifice Pressure		Probe Temp.	Box Temp.	Filter Outlet	Imping. Temp.	Pump Vac.	Notes
	Begin	End						ΔP	ΔH in H ₂ O						
A6	0.0	10.0	19:48:00	984.049	0.21	105	59.5		1.25	246	251		53	0	
A5	10.0	20.0		969.810	0.22	104	59.5		1.25	247	250		50	0	
A4	20.0	30.0		975.570	0.22	105	62.0		1.25	245	250		47	0	
A3	30.0	40.0		981.330	0.21	105	61.0		1.25	244	251		47	0	
A2	40.0	50.0		987.090	0.22	105	61.5		1.25	247	251		46	0	
A1	50.0	60.0		992.850	0.21	105	62.0		1.25	244	252		46	0	
B6	60.0	70.0		998.613	0.23	105	62.0		1.25	247	250		46	0	
B5	70.0	80.0		1004.370	0.22	105	62.0		1.25	246	251		47	0	
B4	80.0	90.0		1010.130	0.23	105	62.5		1.25	245	251		46	0	
B3	90.0	100.0		1015.890	0.22	105	62.5		1.25	245	251		48	0	
B2	100.0	110.0		1021.650	0.22	104	58.5		1.25	248	252		48	0	Additional Flow and Stack Temperature Measurements
B1	110.0	120.0		1027.410	0.21	104	58.0		1.25	249	252		49	0	
A6	120.0		21:48:00	1033.132	0.23	104									Start: 19:48
A5					0.22	105									
A4					0.22	105									
A3					0.22	105									
A2					0.21	105									
A1					0.21	105									
B6					0.21	105									
B5					0.22	105									
B4					0.23	105									
B3					0.22	105									
B2					0.22	105									
B1					0.20	105									
A6					0.22	105									Start: 20:36
A5					0.21	105									
A4					0.21	105									
A3					0.22	105									
A2					0.22	105									
A1					0.22	104									
B6					0.23	105									
B5					0.23	105									
B4					0.21	105									
B3					0.22	105									
B2					0.22	105									
B1					0.21	105									
A6					0.23	104									Start: 21:24
A5					0.22	104									
A4					0.22	104									
A3					0.22	105									
A2					0.21	105									
A1					0.20	105									
B6					0.21	105									
B5					0.22	105									
B4					0.23	105									
B3					0.22	105									
B2					0.22	104									
B1					0.21	104									
Final			21:48	1033.132											
Sum or avg			120.0	59.083	0.218	104.8	60.9		1.25					Max	0

Flow		Impingers				Particulates				
Flow	27.5	Contents	Vol. (mL)	Post weigh	Pre weight	gain	mgms	lb/hr	gr/act	lb/mmBTU
Flow	9,633.8	H ₂ O	100	887.2	809.2	78.0				
Flow	11,020.4	H ₂ O	100	754.2	736.9	15.3				
		M _T	0	737.6	735.7	1.9				
		SG	300	945.7	925	20.7				
Probe Rinse	N/A									
Filter	N/A									
Impinger Catch	N/A									
Total	N/A									

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

APPENDIX F – GC CHROMATOGRAPHY PRINTOUTS

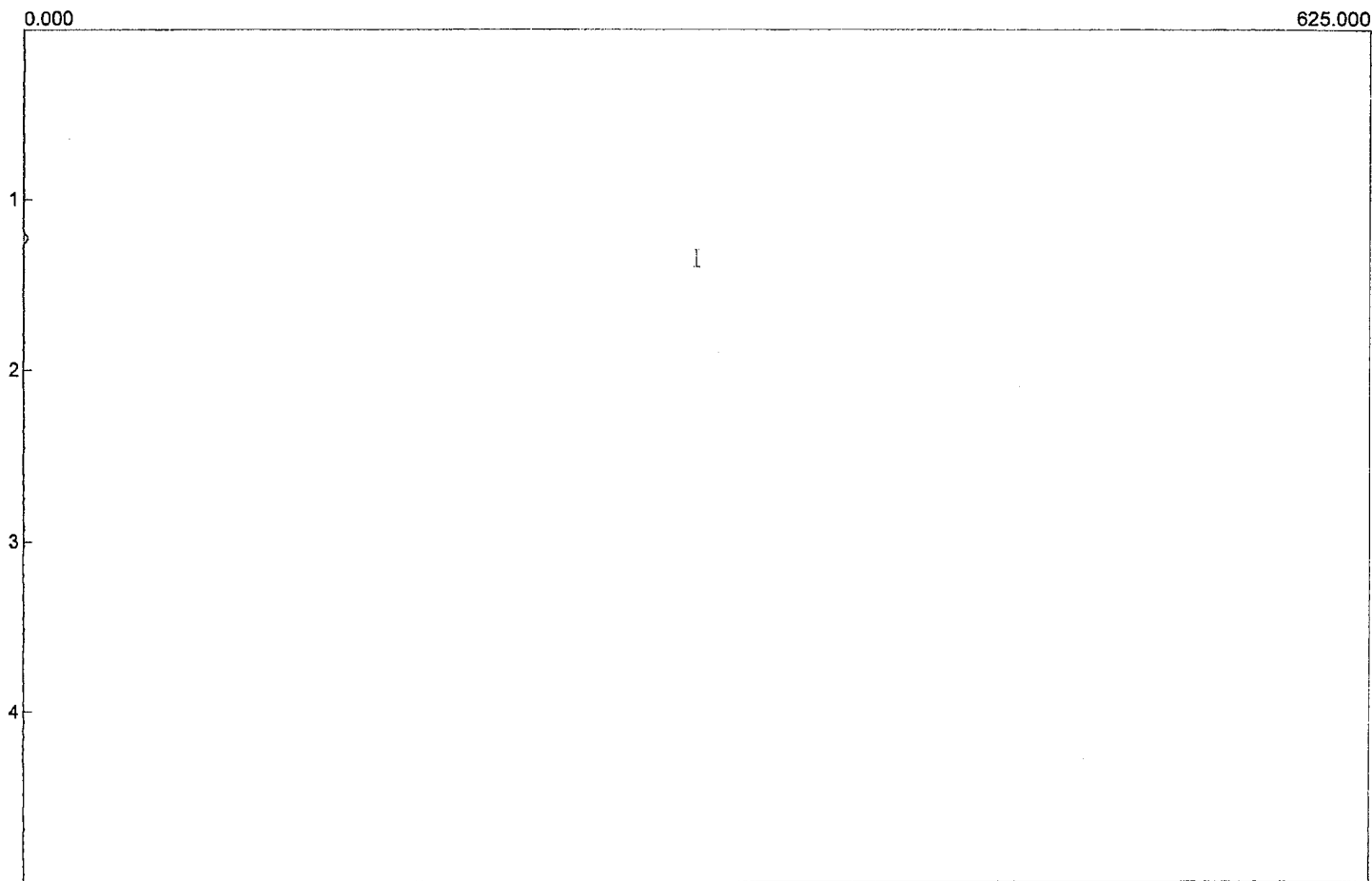
Lab name: Golden Specialty Consulting
 Client: BP West Coast Products
 Client ID: #2 TGU
 Analysis date: 10/15/2008 10:14:46
 Method: Valve
 Description: FPD-CHANNEL 1
 Column: RESTEK 60METER MXT-1
 Carrier: Helium at 27 PSI
 Data file: pretest03.CHR (C:\BPTGUH2S)
 Sample: Pretest Cal Point C
 Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
50.00	3.000	20.000	50.00

Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

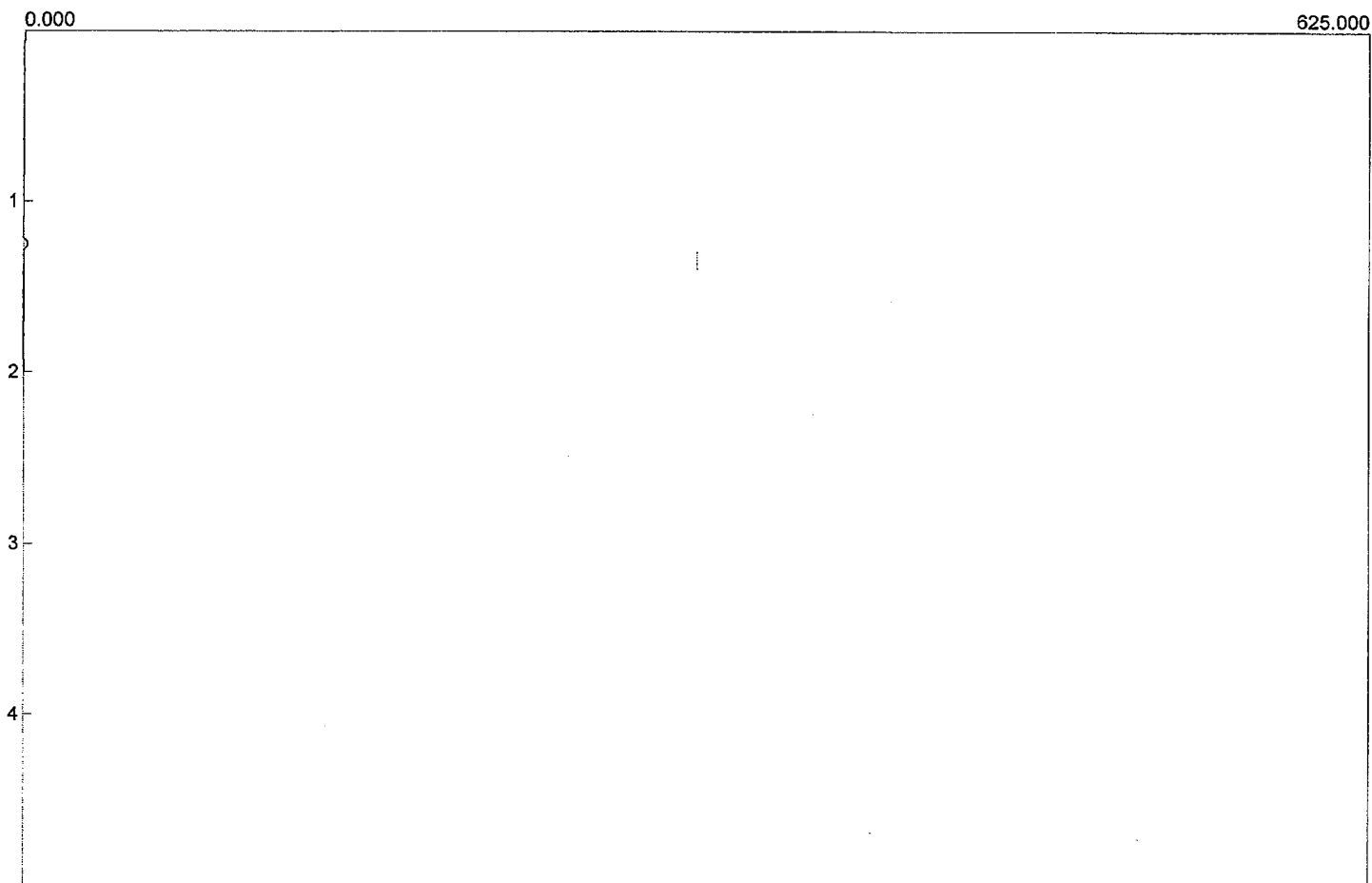
Lab name: Golden Specialty Consulting
 Client: BP West Coast Products
 Client ID: #2 TGU
 Analysis date: 10/15/2008 10:34:03
 Method: Valve
 Description: FPD-CHANNEL 1
 Column: RESTEK 60METER MXT-1
 Carrier: Helium at 27 PSI
 Data file: pretest04.CHR (C:\BPTGUH2S)
 Sample: Pretest Cal Point C
 Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
50.00	3.000	20.000	50.00

Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

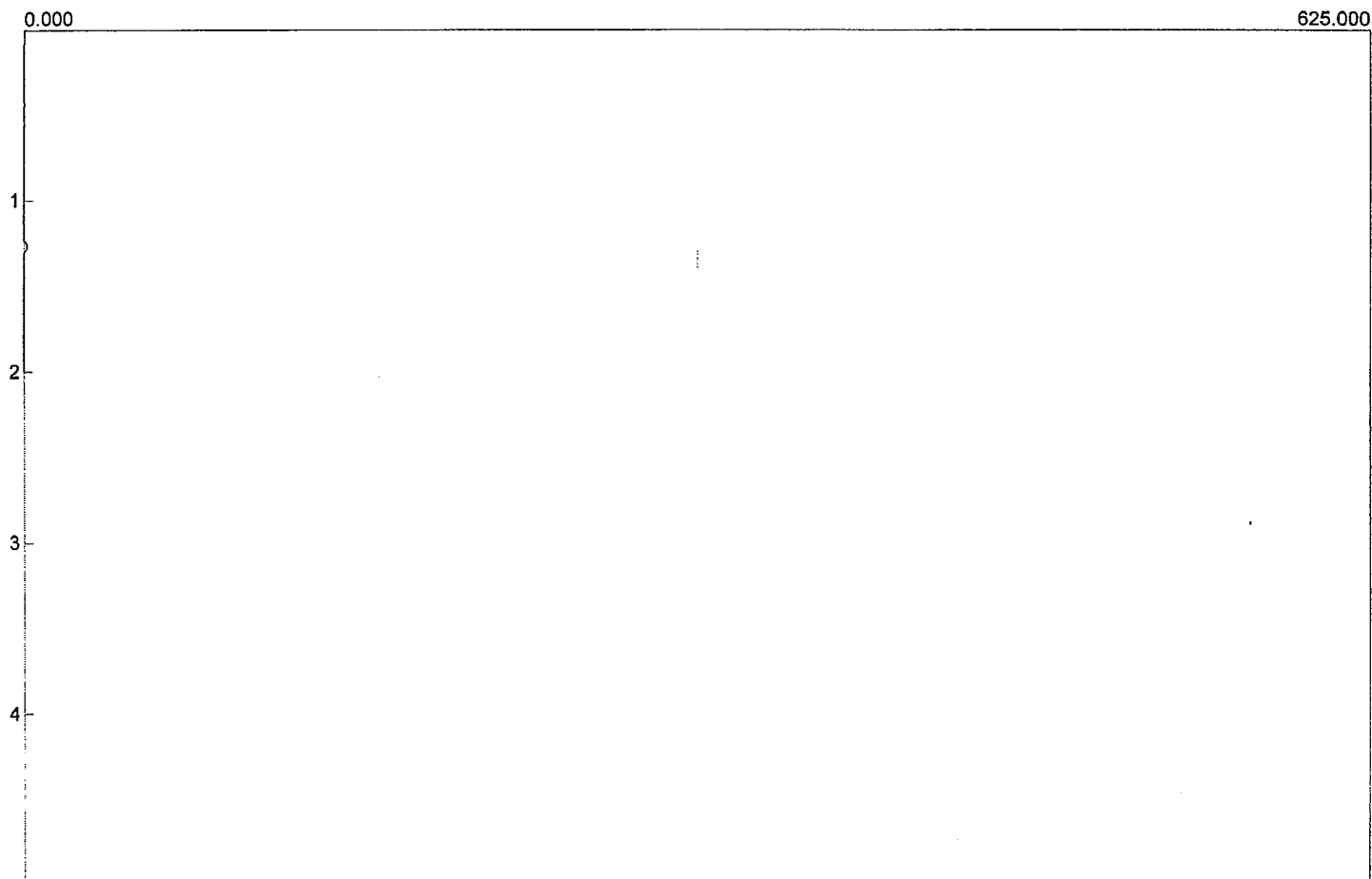
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 10:39:09
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: pretest05.CHR (C:\BPTGUH2S)
Sample: Pretest Cal Point C
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
50.00	3.000	20.000	50.00

Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

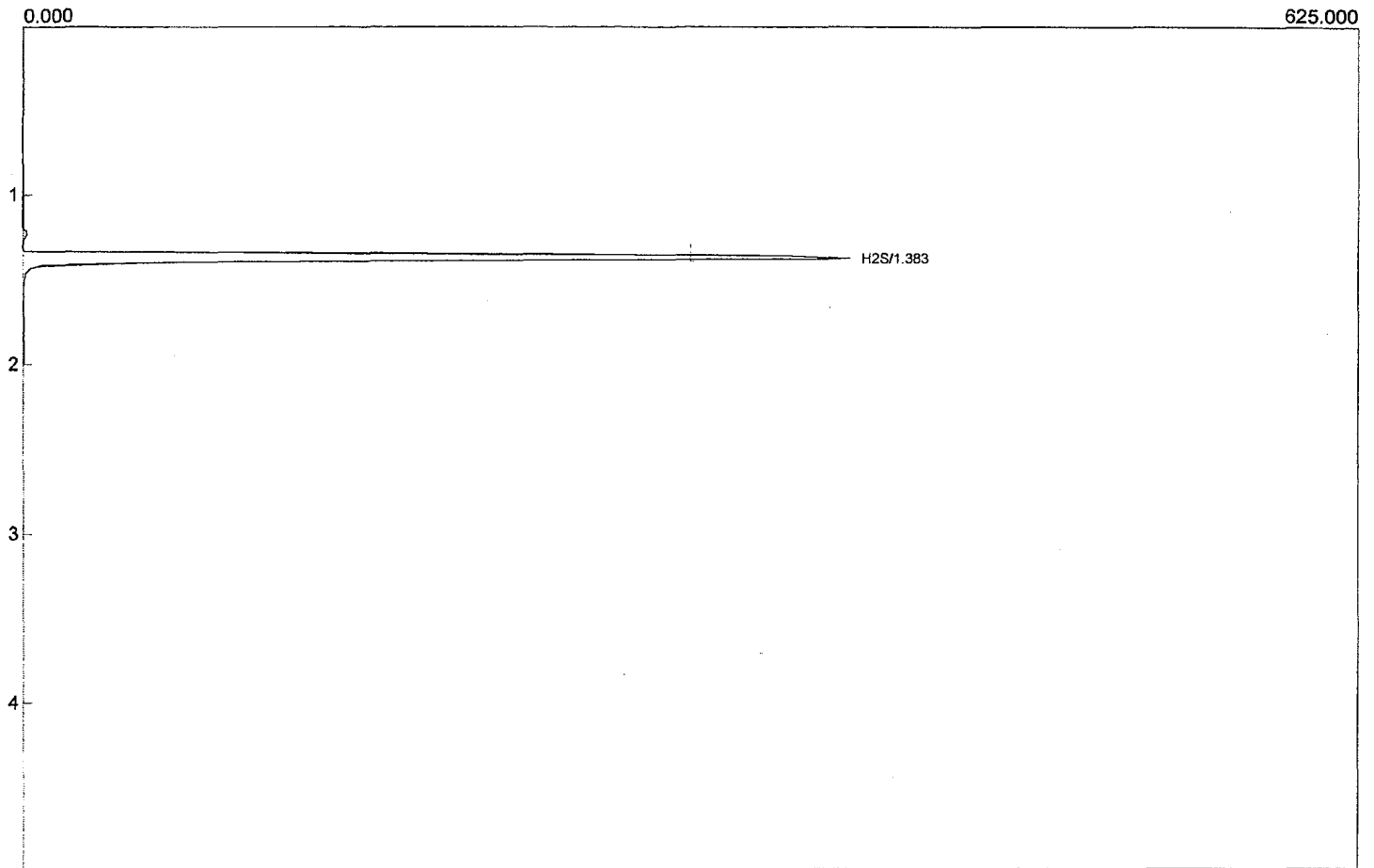
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 12:01:16
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: pretest16.CHR (C:\BPTGUH2S)
Sample: Pretest Cal Point B
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
50.00	3.000	20.000	50.00

Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
H2S	1.383	1011.8070
		1011.8070

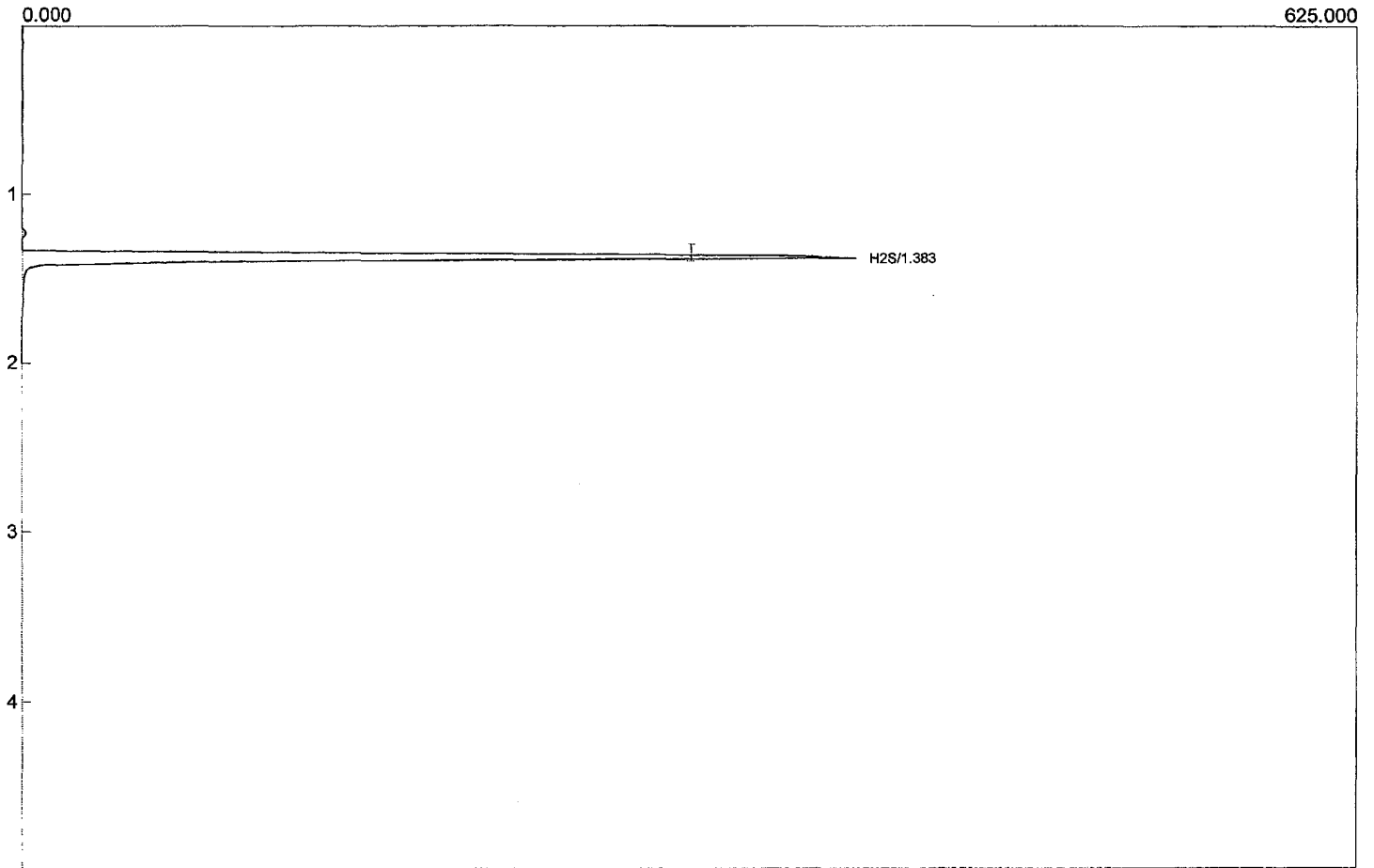
Lab name: Golden Specialty Consulting
 Client: BP West Coast Products
 Client ID: #2 TGU
 Analysis date: 10/15/2008 12:04:33
 Method: Valve
 Description: FPD-CHANNEL 1
 Column: RESTEK 60METER MXT-1
 Carrier: Helium at 27 PSI
 Data file: pretest17.CHR (C:\BPTGUH2S)
 Sample: Pretest Cal Point B
 Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
50.00	3.000	20.000	50.00

Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
H2S	1.383	1020.0910
		1020.0910

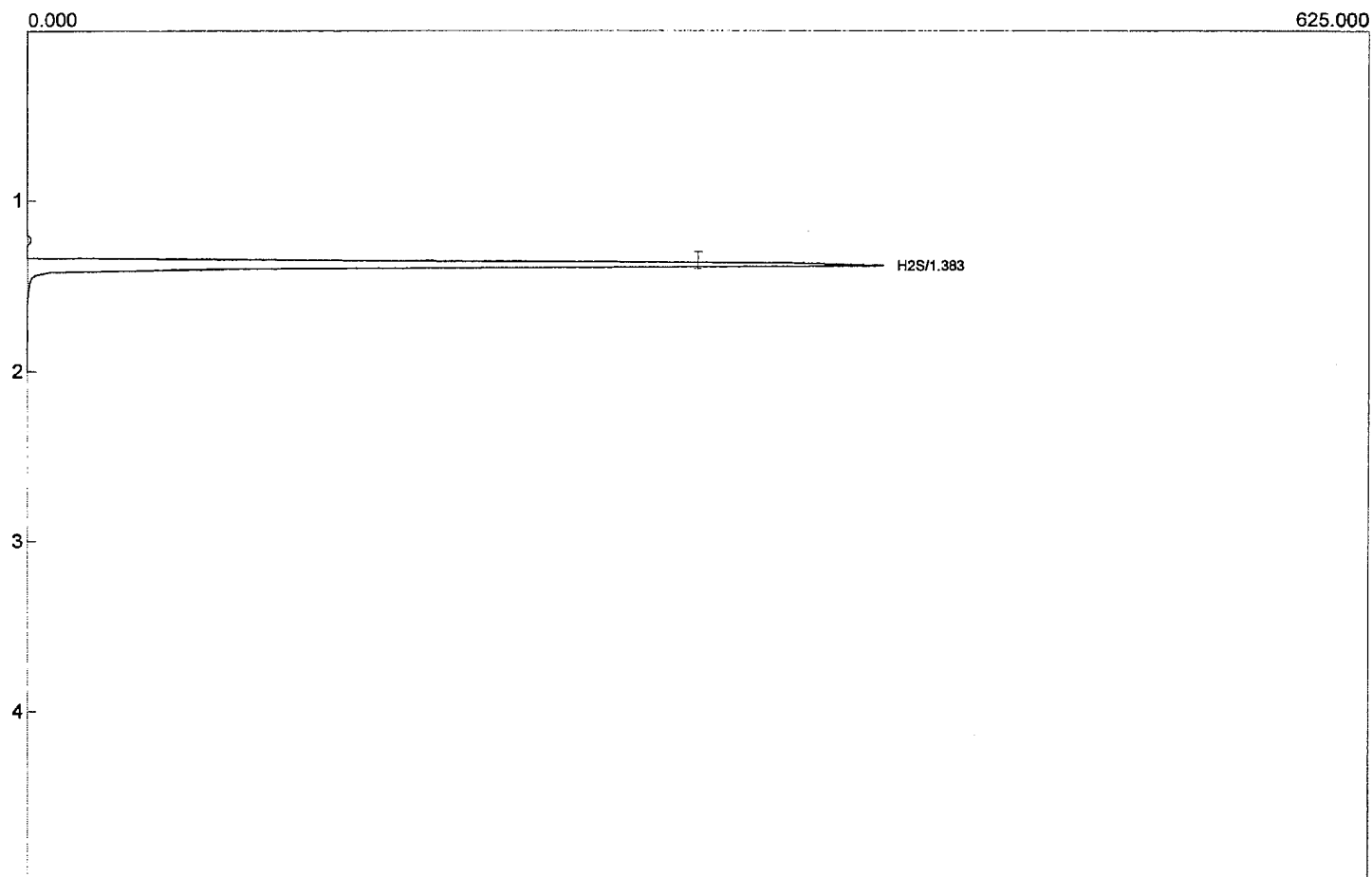
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 12:07:01
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: pretest18.CHR (C:\BPTGUH2S)
Sample: Pretest Cal Point B
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
50.00	3.000	20.000	50.00

Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
H2S	1.383	1020.9920
		1020.9920

Lab name: Golden Specialty Consulting

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Client: BP West Coast Products

Client ID: #2 TGU

Analysis date: 10/15/2008 12:21:09

Method: Valve

Description: FPD-CHANNEL 1

Column: RESTEK 60METER MXT-1

Carrier: Helium at 27 PSI

Data file: pretest20.CHR (C:\BPTGUH2S)

Sample: Pretest Cal Point A

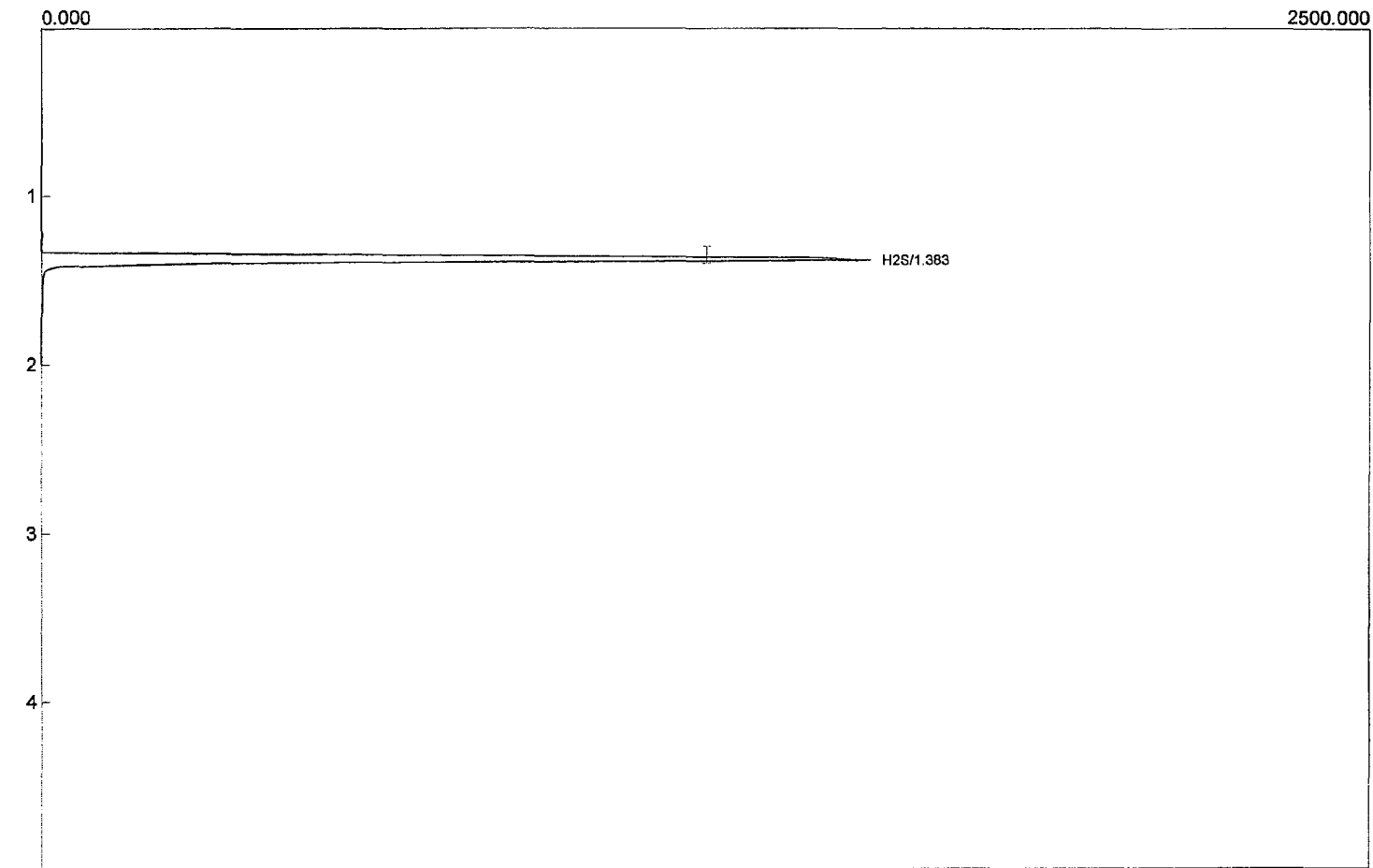
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
50.00	3.000	20.000	50.00

Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
H2S	1.383	4065.1320
		4065.1320

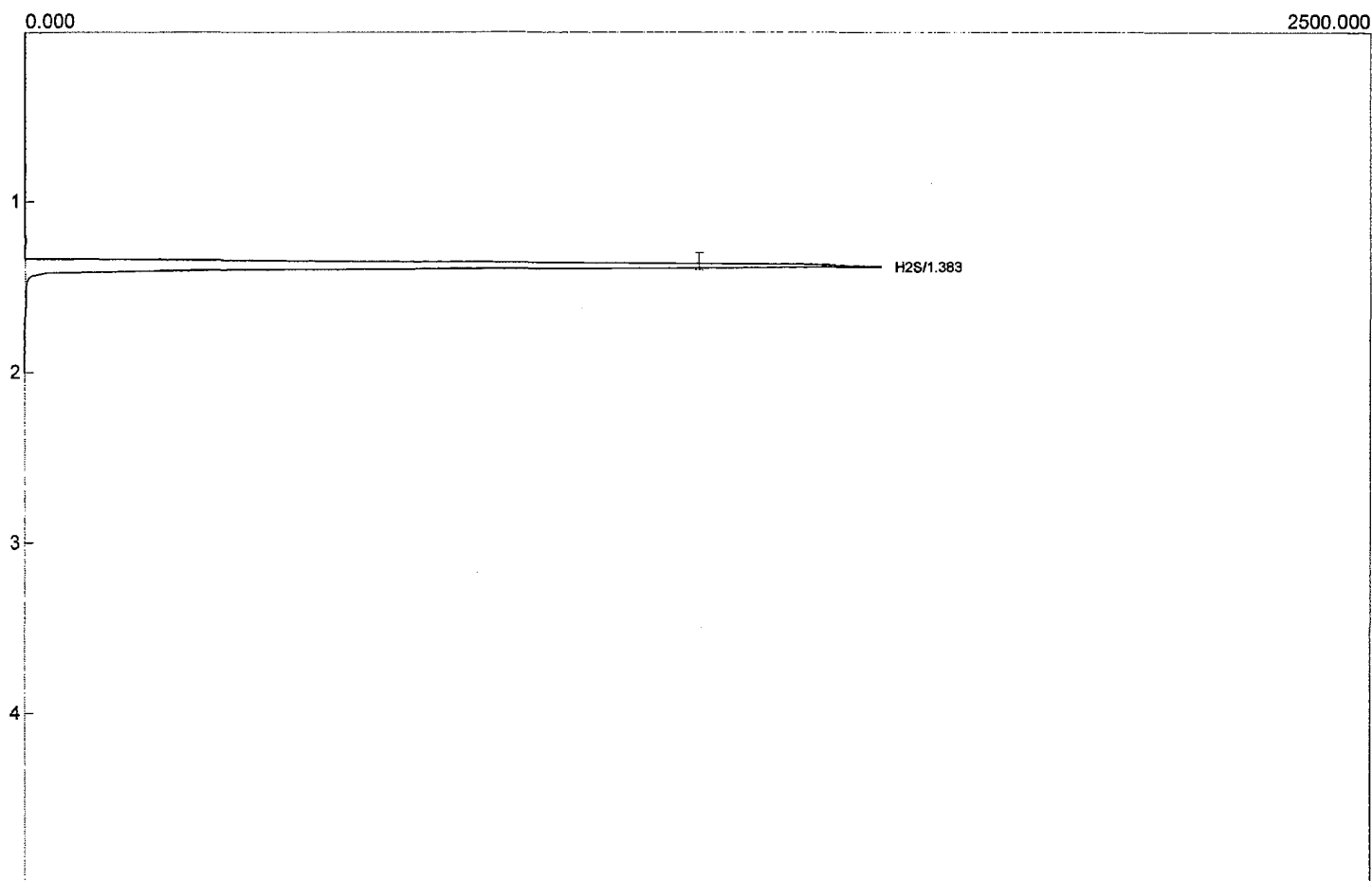
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 12:23:48
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: pretest21.CHR (C:\BPTGUH2S)
Sample: Pretest Cal Point A
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
50.00	3.000	20.000	50.00

Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
H2S	1.383	4092.4300
		4092.4300

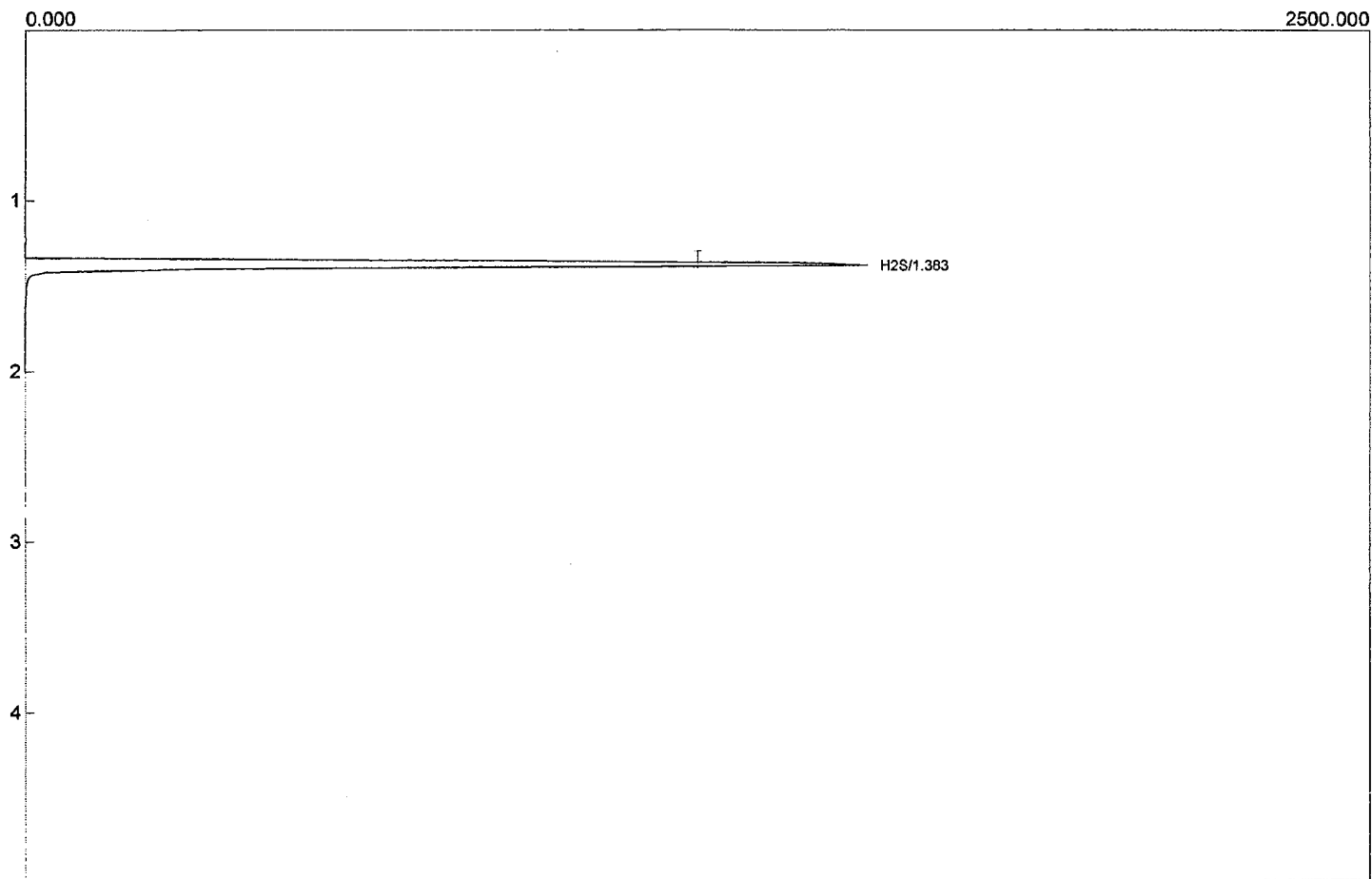
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 12:26:26
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: pretest22.CHR (C:\BPTGUH2S)
Sample: Pretest Cal Point A
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
50.00	3.000	20.000	50.00

Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
H2S	1.383	4068.1060
		4068.1060

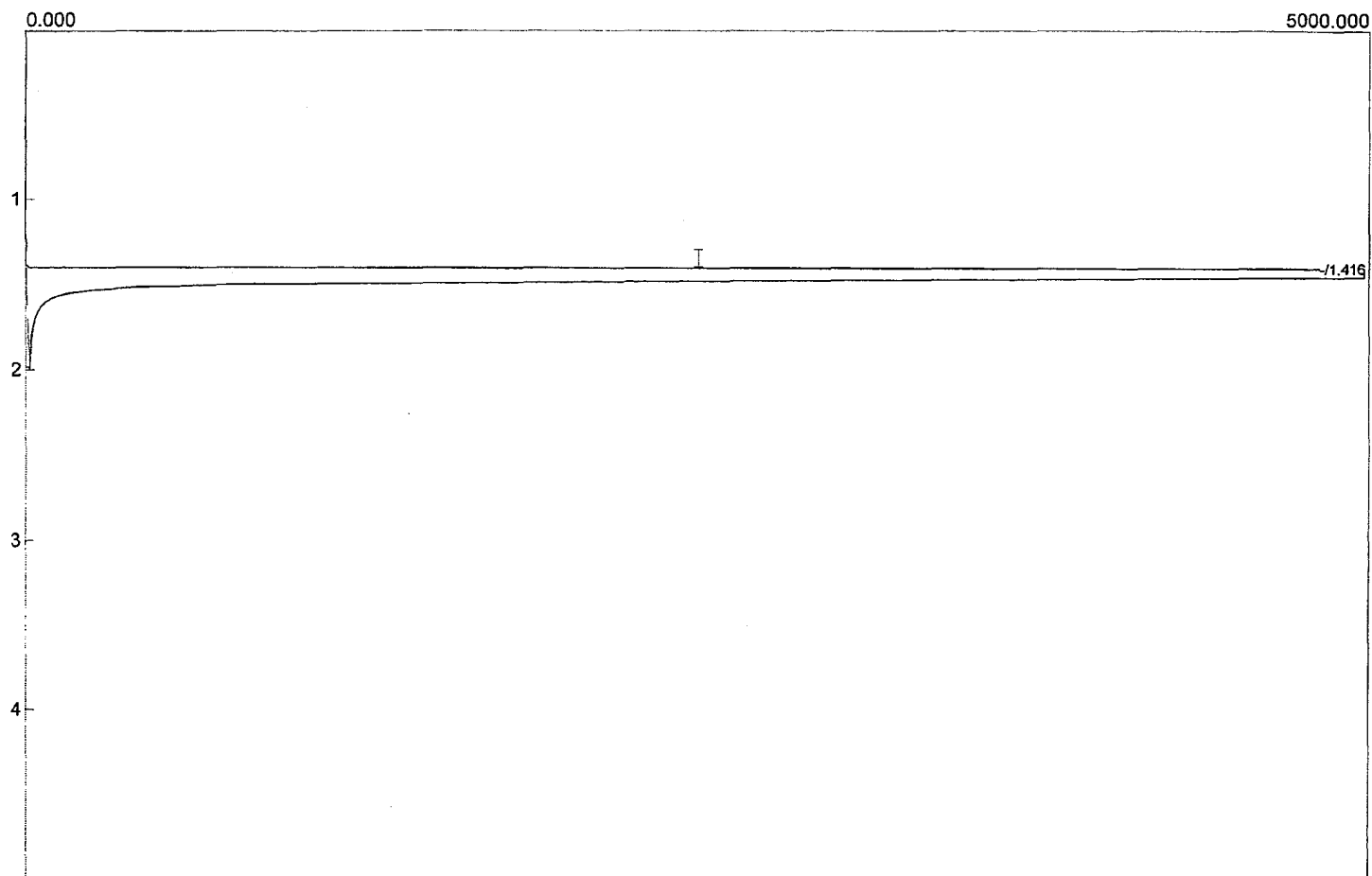
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 12:48:01
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run01.chr (C:\BPTGUH2S)
Sample: Run 1 Inj. 1
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

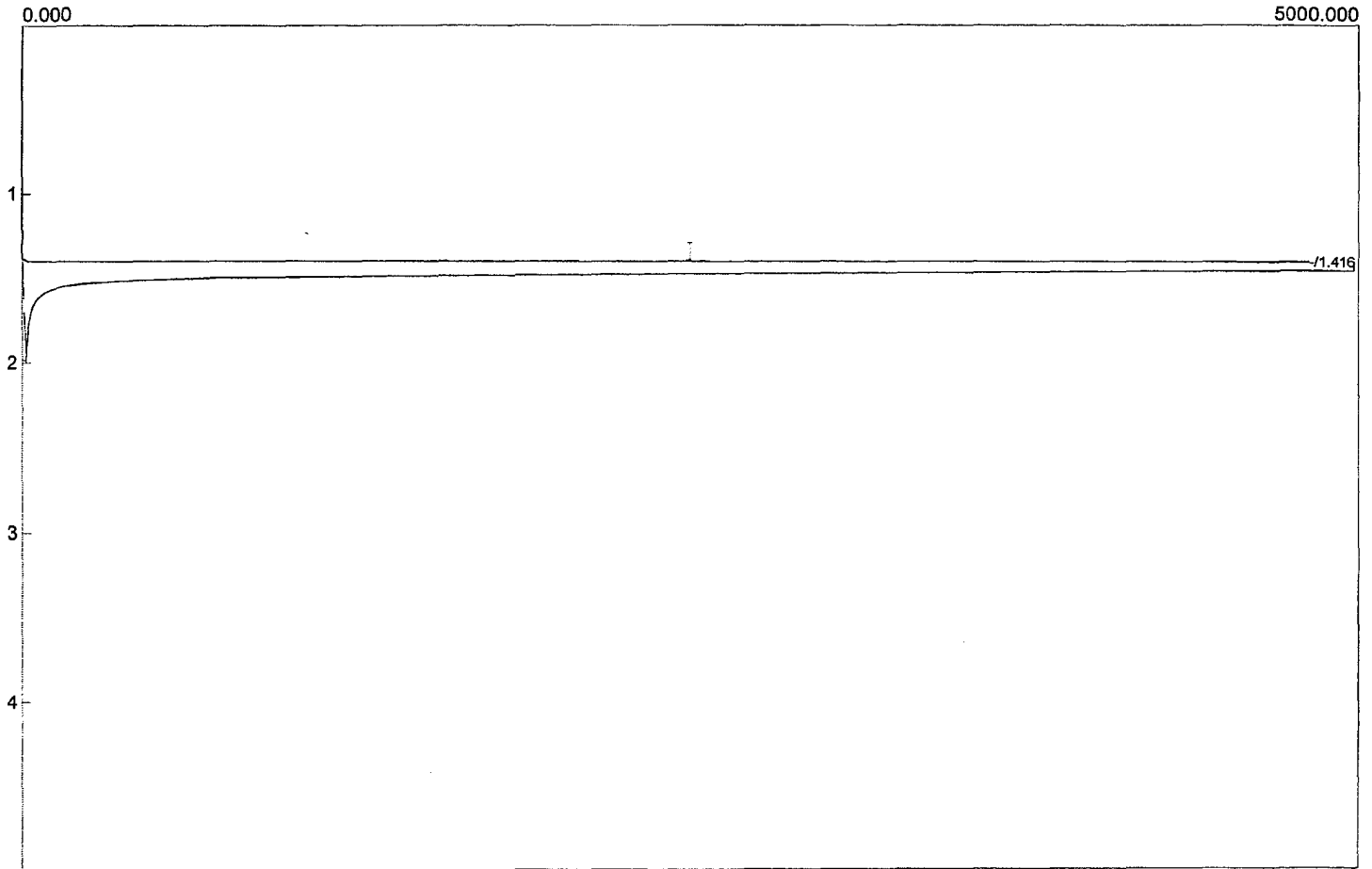
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 13:00:01
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run02.chr (C:\BPTGUH2S)
Sample: Run 1 Inj. 2
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
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	0.0000	
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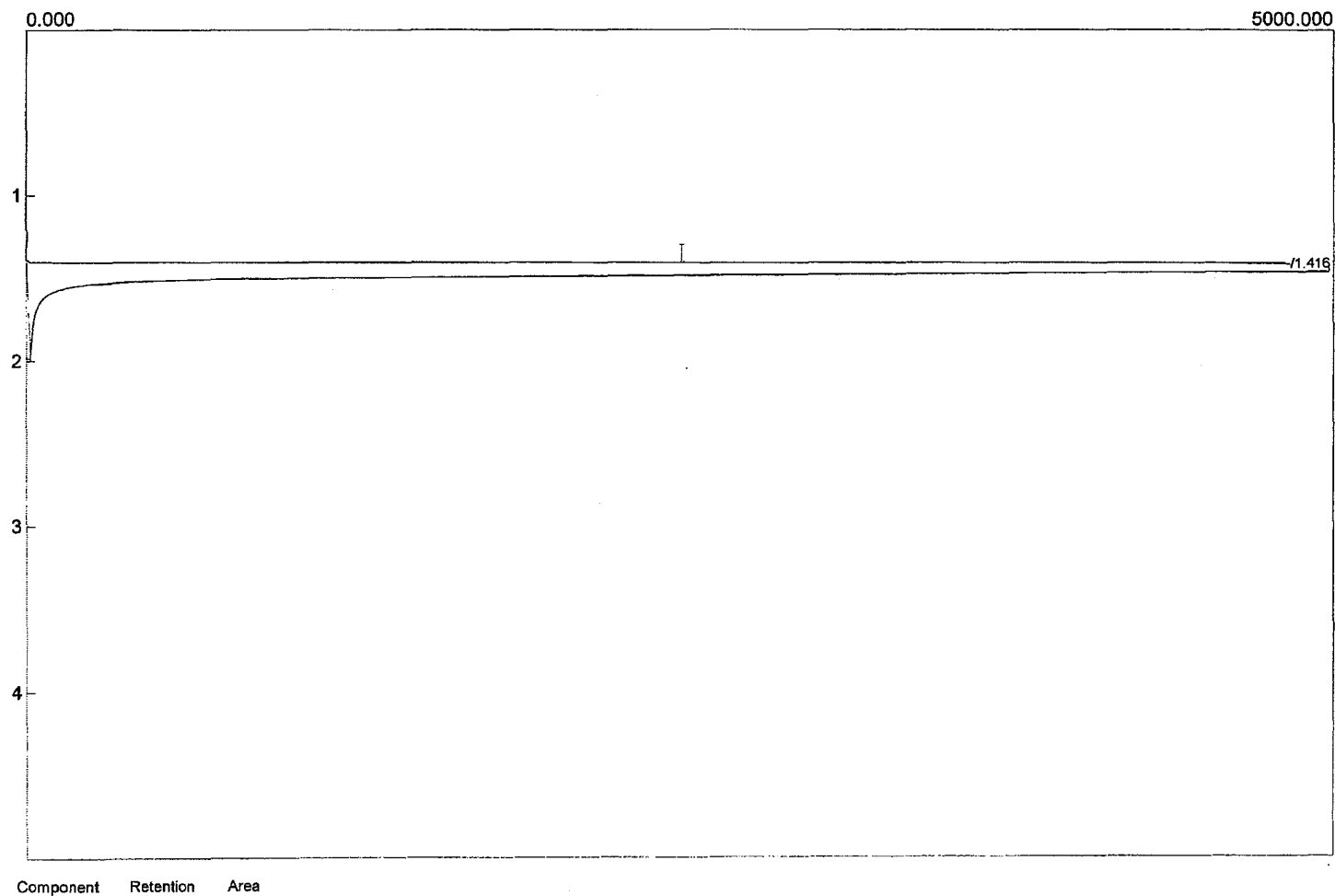
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 13:12:01
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run03.chr (C:\BPTGUH2S)
Sample: Run 1 Inj. 3
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 13:24:01
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run04.chr (C:\BPTGUH2S)
Sample: Run 1 Inj. 4
Operator: RCP

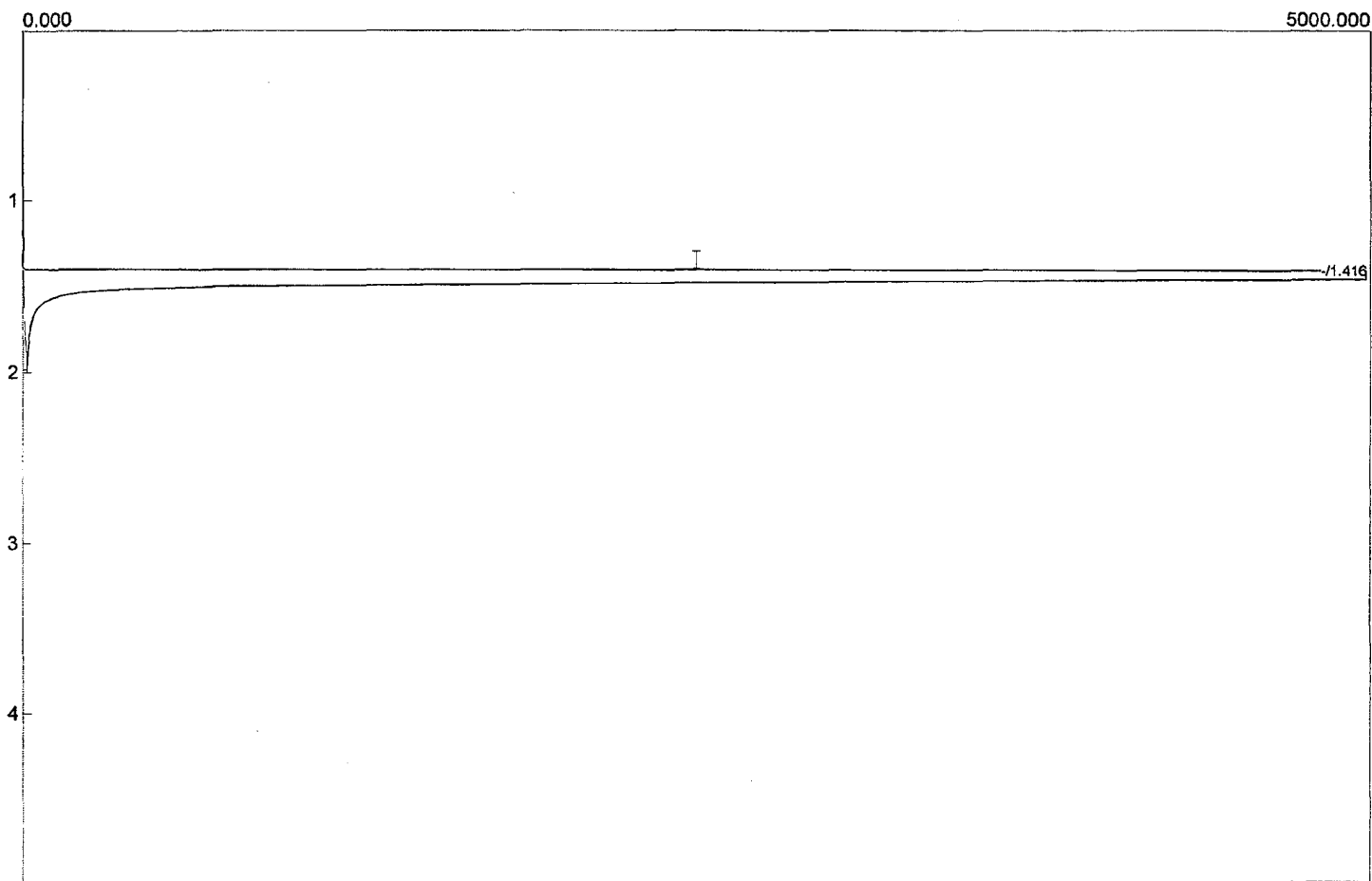
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Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

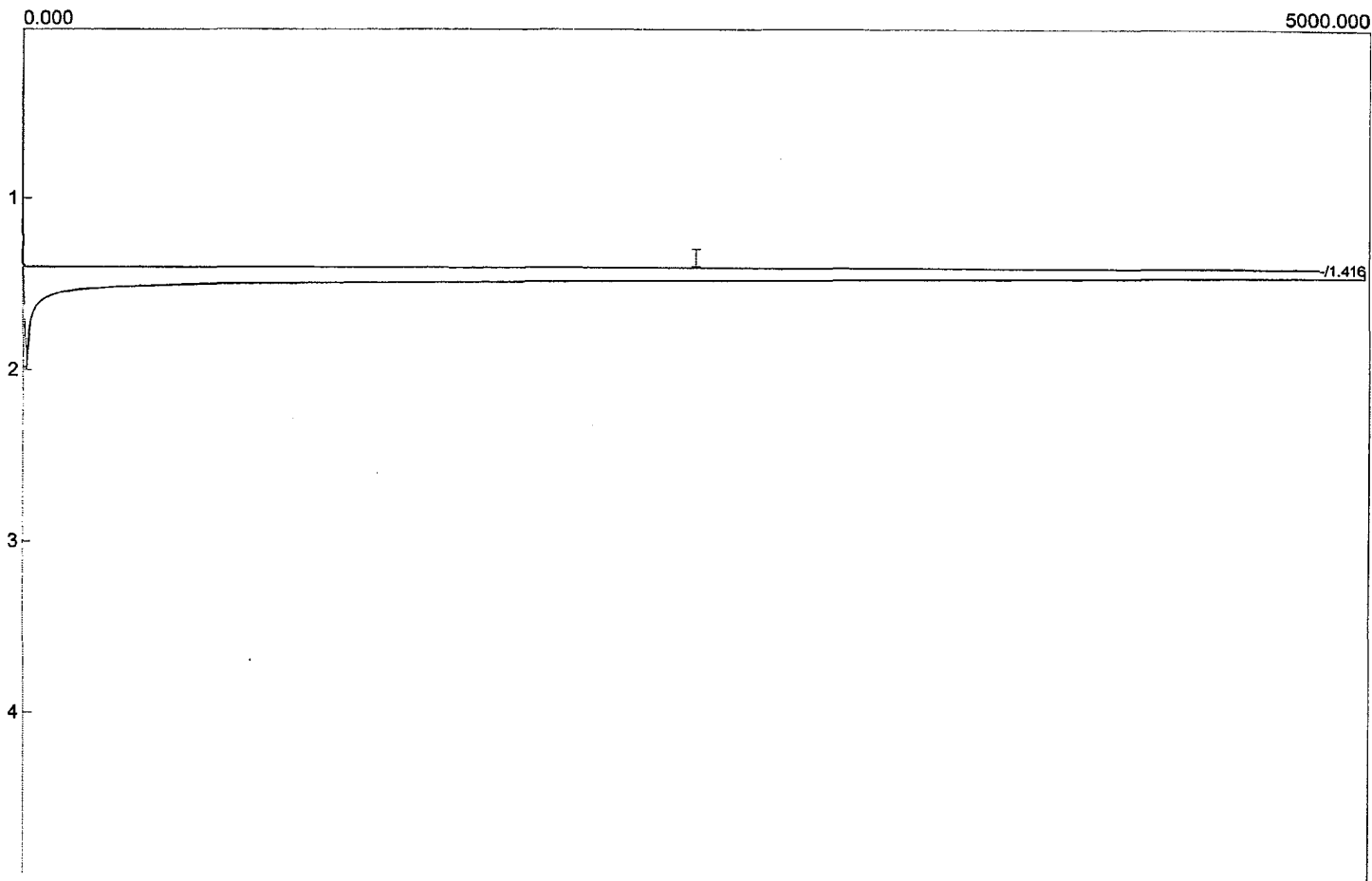
Lab name: Golden Specialty Consulting
 Client: BP West Coast Products
 Client ID: #2 TGU
 Analysis date: 10/15/2008 13:36:01
 Method: Valve
 Description: FPD-CHANNEL 1
 Column: RESTEK 60METER MXT-1
 Carrier: Helium at 27 PSI
 Data file: Run05.chr (C:\BPTGUH2S)
 Sample: Run 1 Inj. 5
 Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

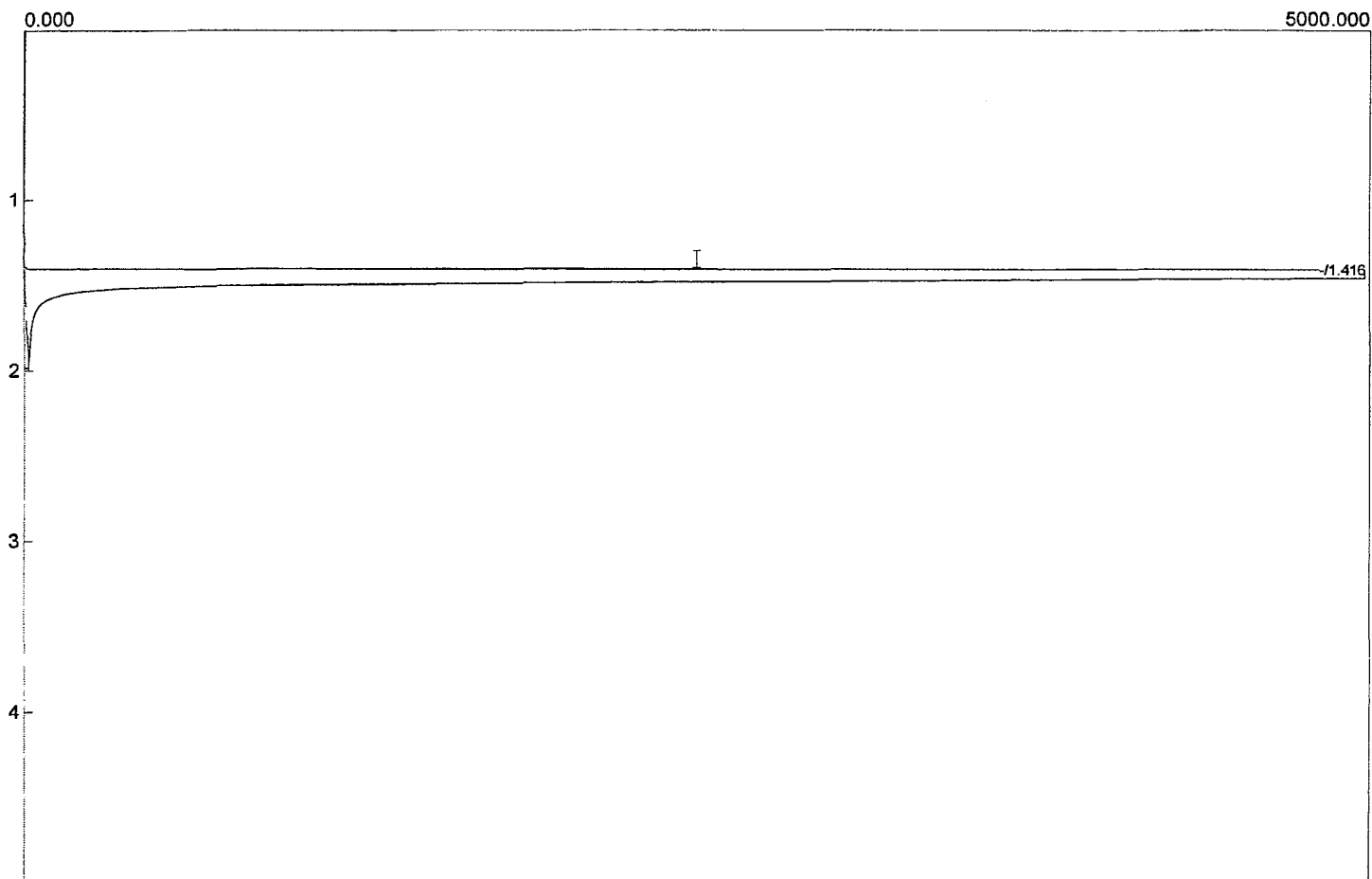
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 13:48:01
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run06.chr (C:\BPTGUH2S)
Sample: Run 1 Inj. 6
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

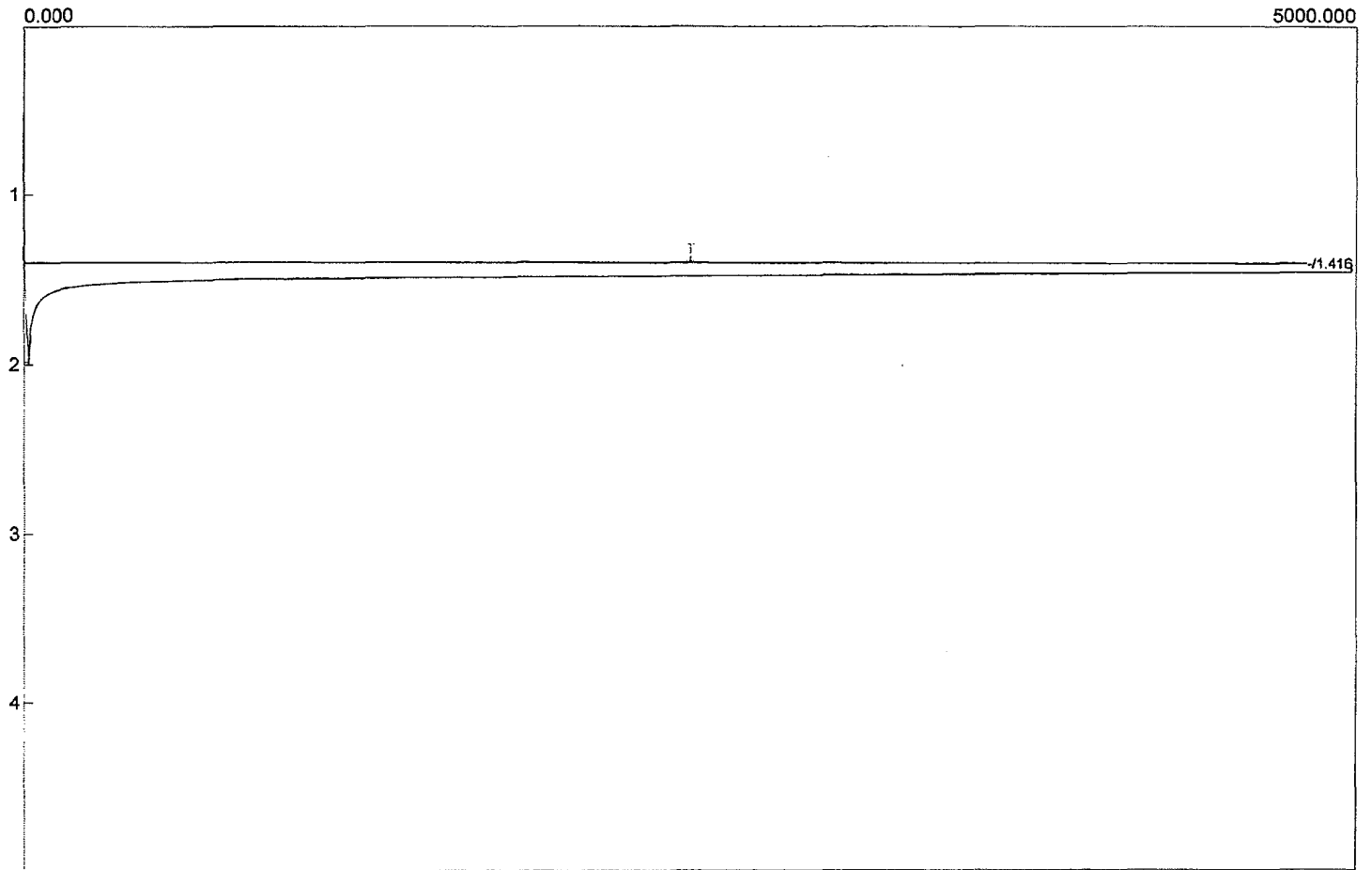
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 14:00:01
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run07.chr (C:\BPTGU\H2S)
Sample: Run 1 Inj. 7
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

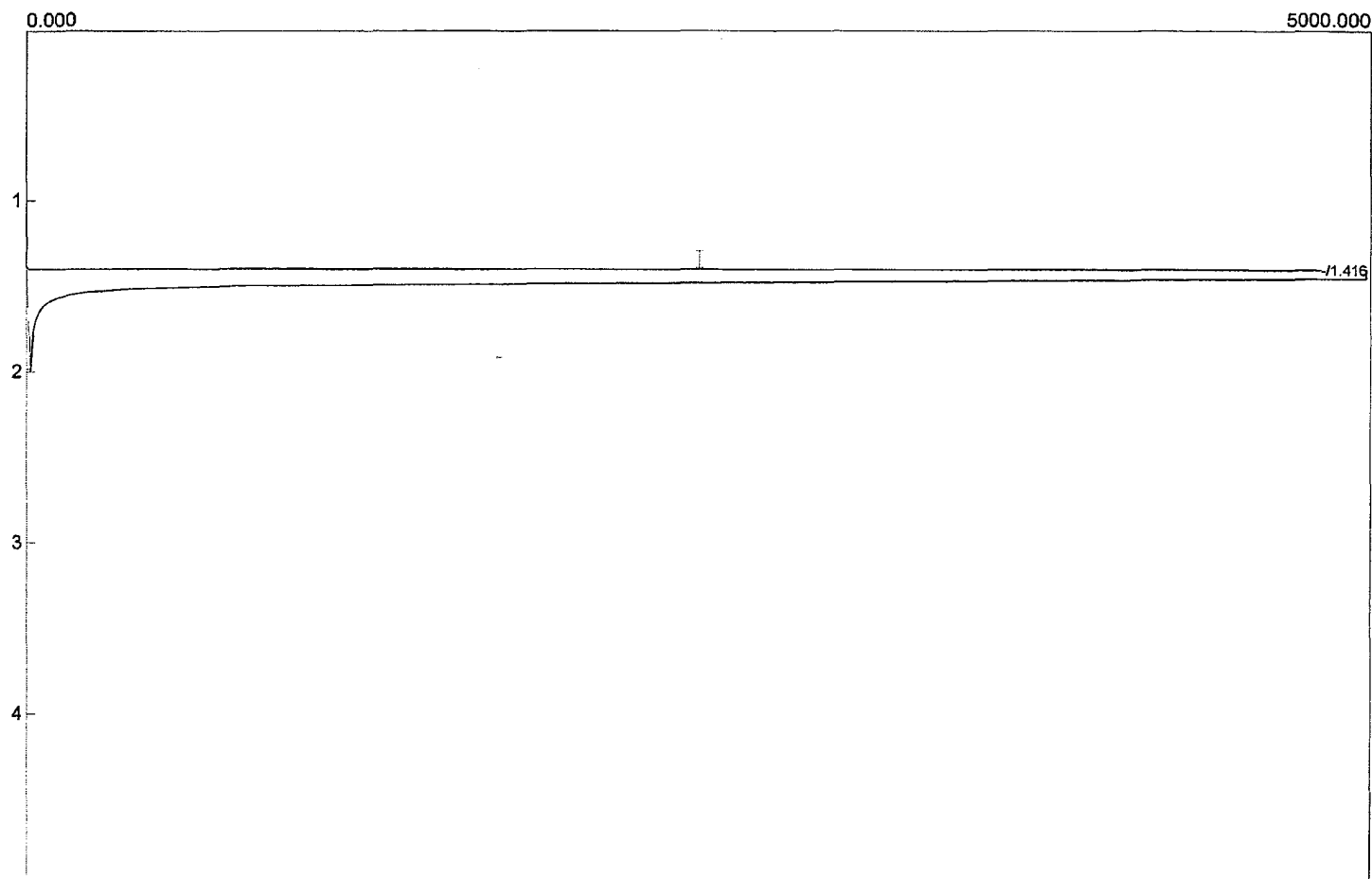
Lab name: Golden Specialty Consulting
 Client: BP West Coast Products
 Client ID: #2 TGU
 Analysis date: 10/15/2008 14:12:01
 Method: Valve
 Description: FPD-CHANNEL 1
 Column: RESTEK 60METER MXT-1
 Carrier: Helium at 27 PSI
 Data file: Run08.chr (C:\BPTGUH2S)
 Sample: Run 1 Inj. 2
 Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

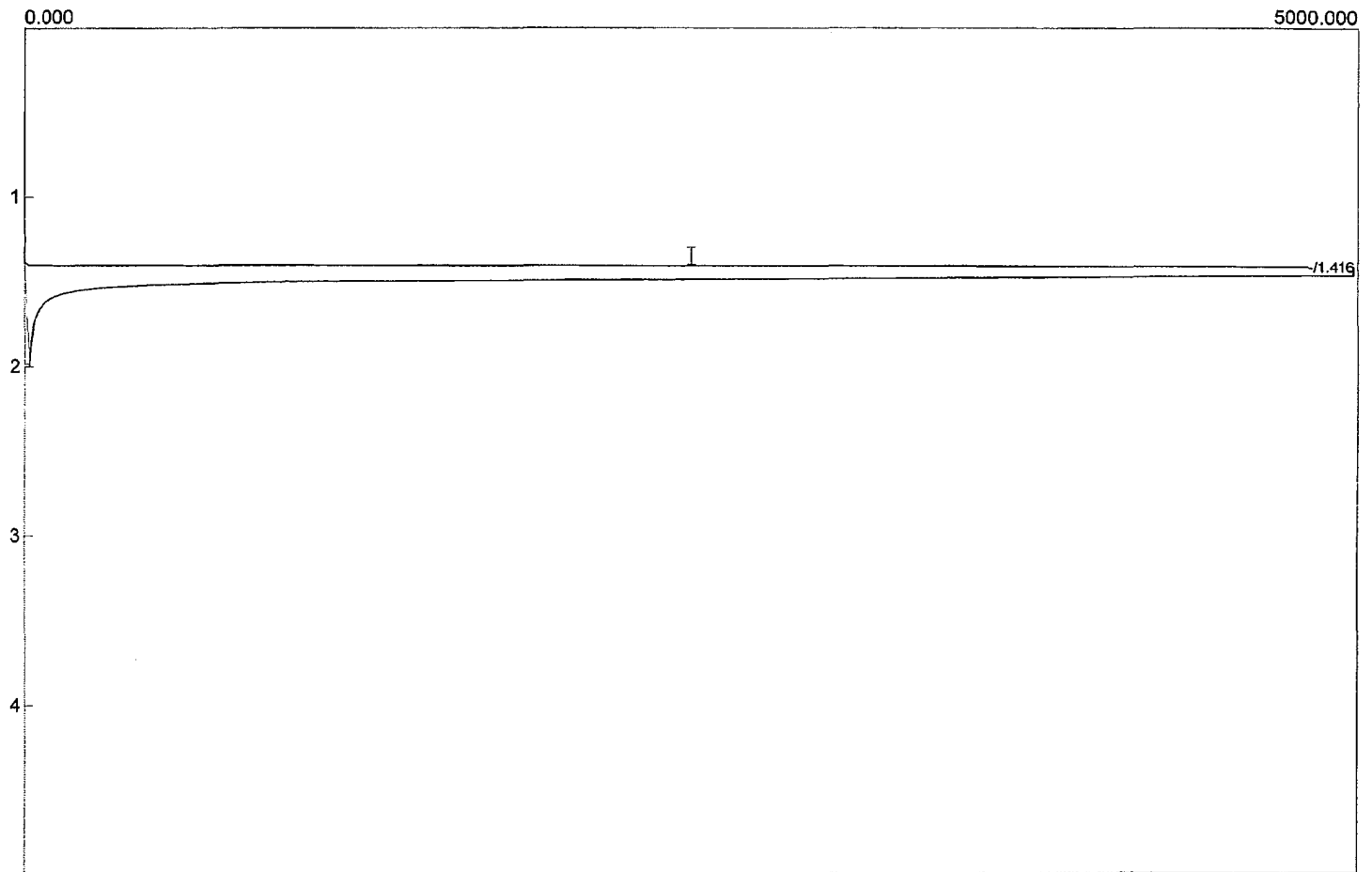
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 14:24:01
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run09.chr (C:\BPTGUH2S)
Sample: Run 1 Inj. 9
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
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	0.0000	
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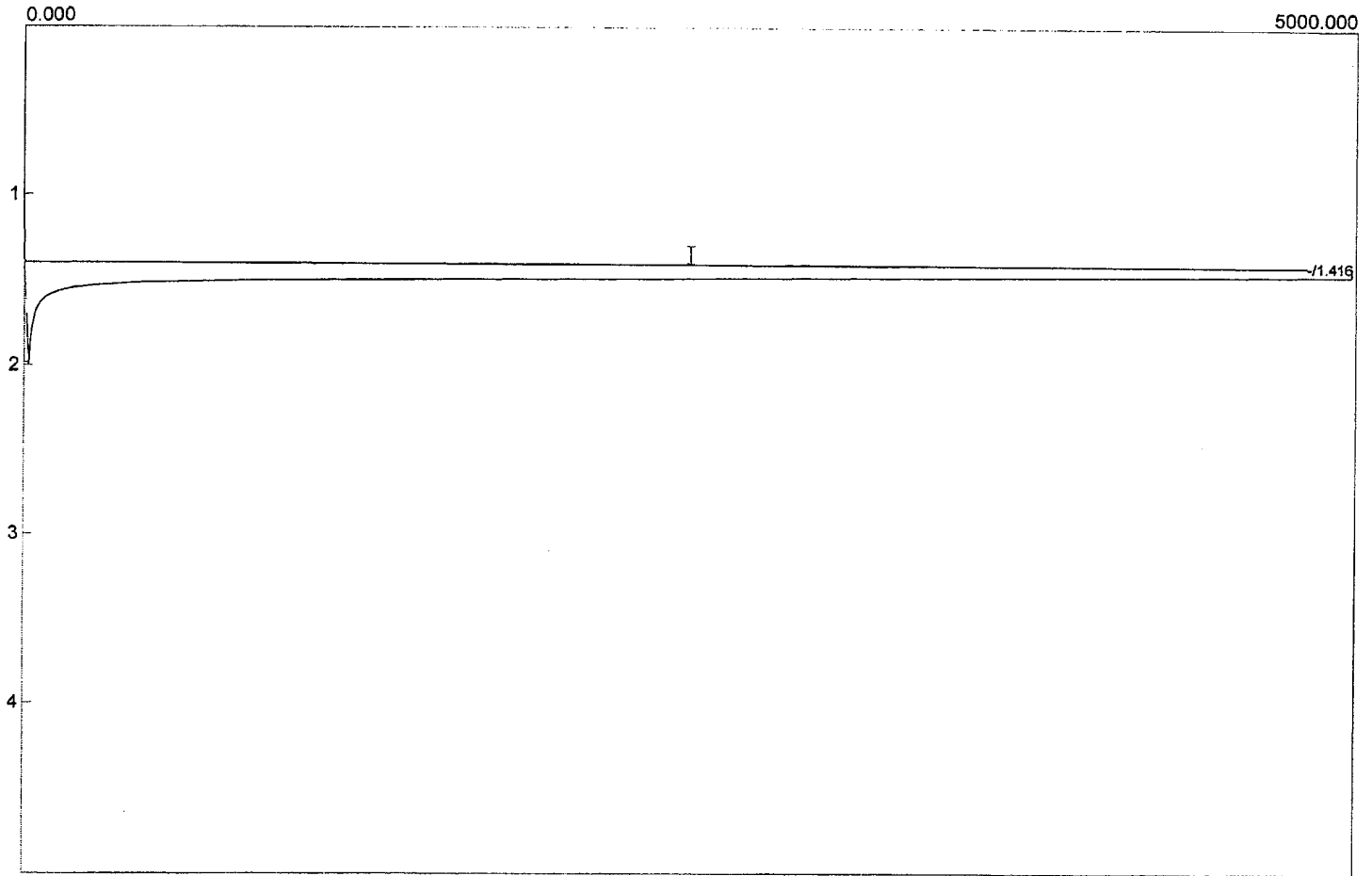
Lab name: Golden Specialty Consulting
 Client: BP West Coast Products
 Client ID: #2 TGU
 Analysis date: 10/15/2008 14:36:01
 Method: Valve
 Description: FPD-CHANNEL 1
 Column: RESTEK 60METER MXT-1
 Carrier: Helium at 27 PSI
 Data file: Run10.chr (C:\BPTGUH2S)
 Sample: Run 1 Inj. 10
 Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 14:48:01
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run11.chr (C:\BPTGUH2S)
Sample: Run 1 Inj. 1
Operator: RCP

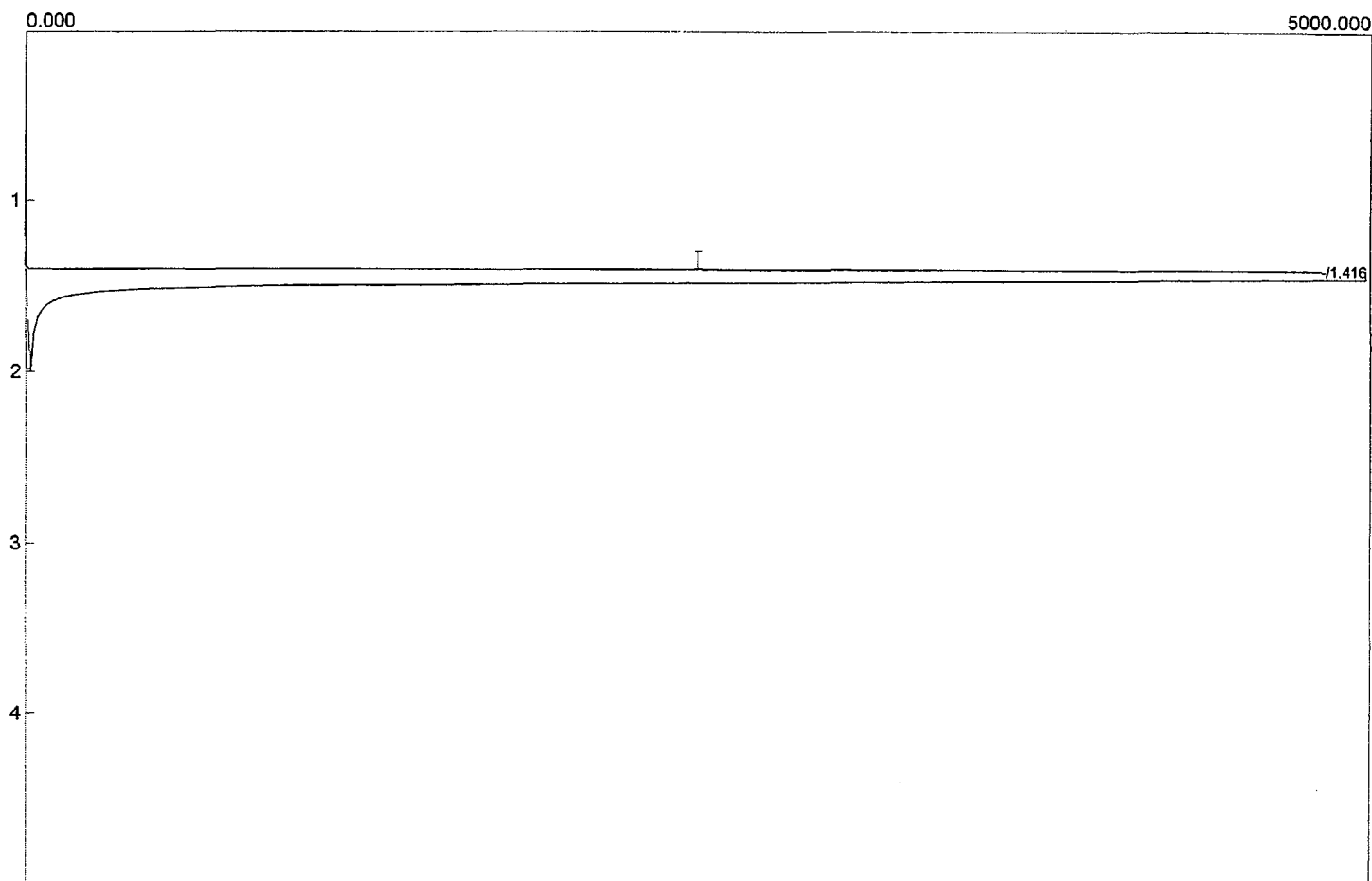
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Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

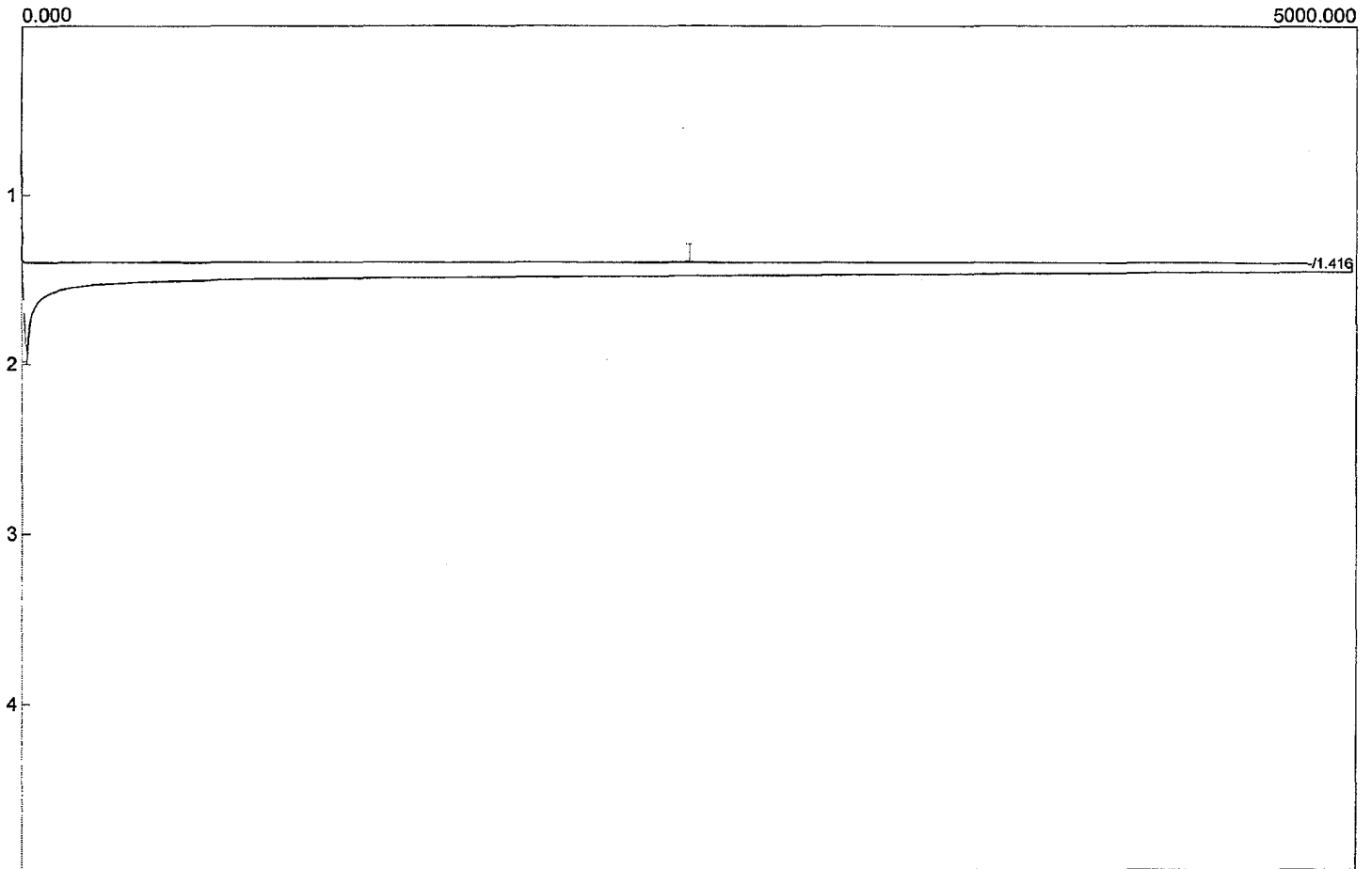
Lab name: Golden Specialty Consulting
 Client: BP West Coast Products
 Client ID: #2 TGU
 Analysis date: 10/15/2008 15:00:01
 Method: Valve
 Description: FPD-CHANNEL 1
 Column: RESTEK 60METER MXT-1
 Carrier: Helium at 27 PSI
 Data file: Run12.chr (C:\BPTGUH2S)
 Sample: Run 1 Inj. 12
 Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

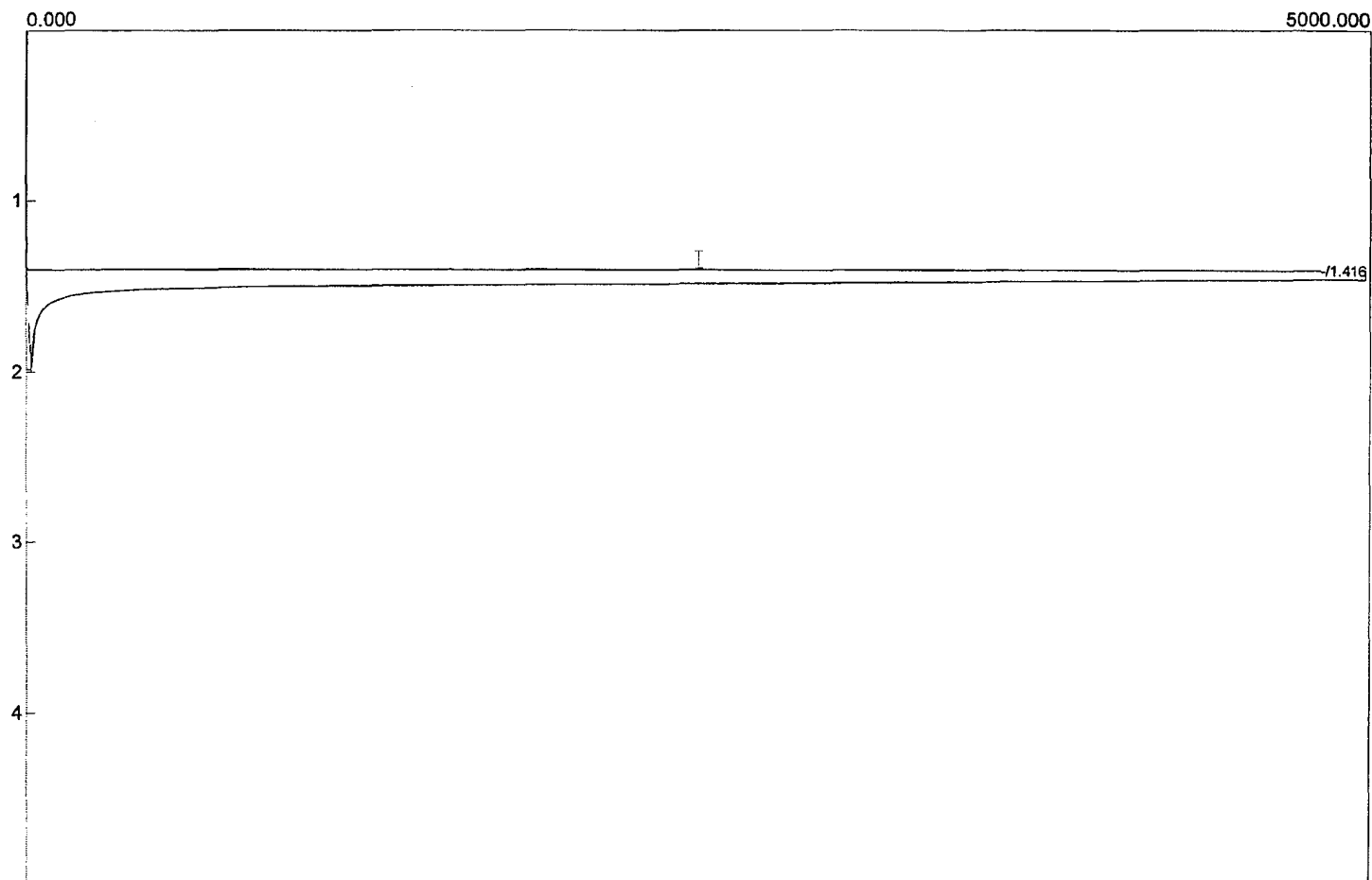
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 15:12:01
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run13.chr (C:\BPTGUH2S)
Sample: Run 1 Inj. 13
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
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	0.0000	
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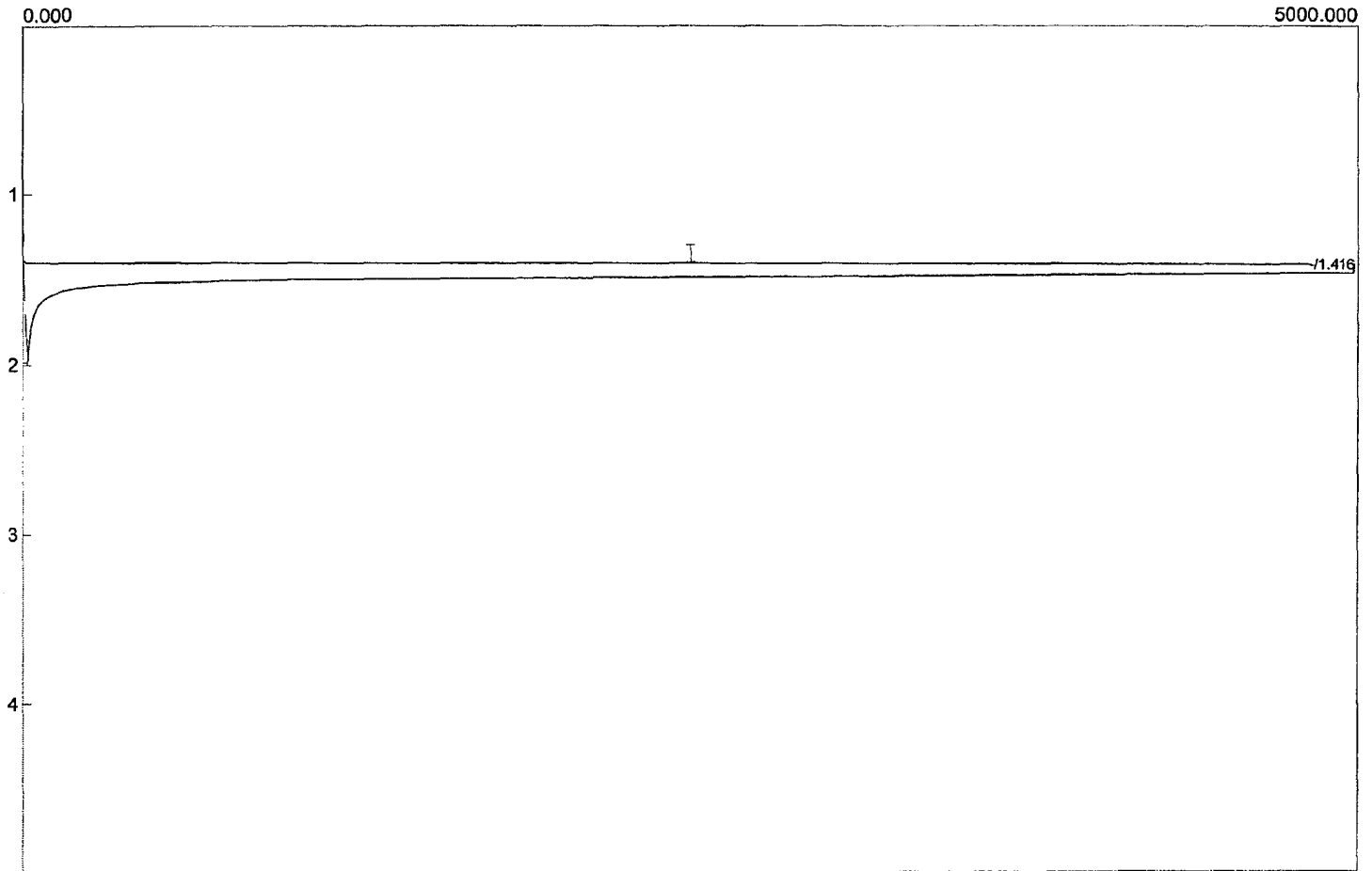
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 15:24:01
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run14.chr (C:\BPTGUH2S)
Sample: Run Inj.
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
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	0.0000	
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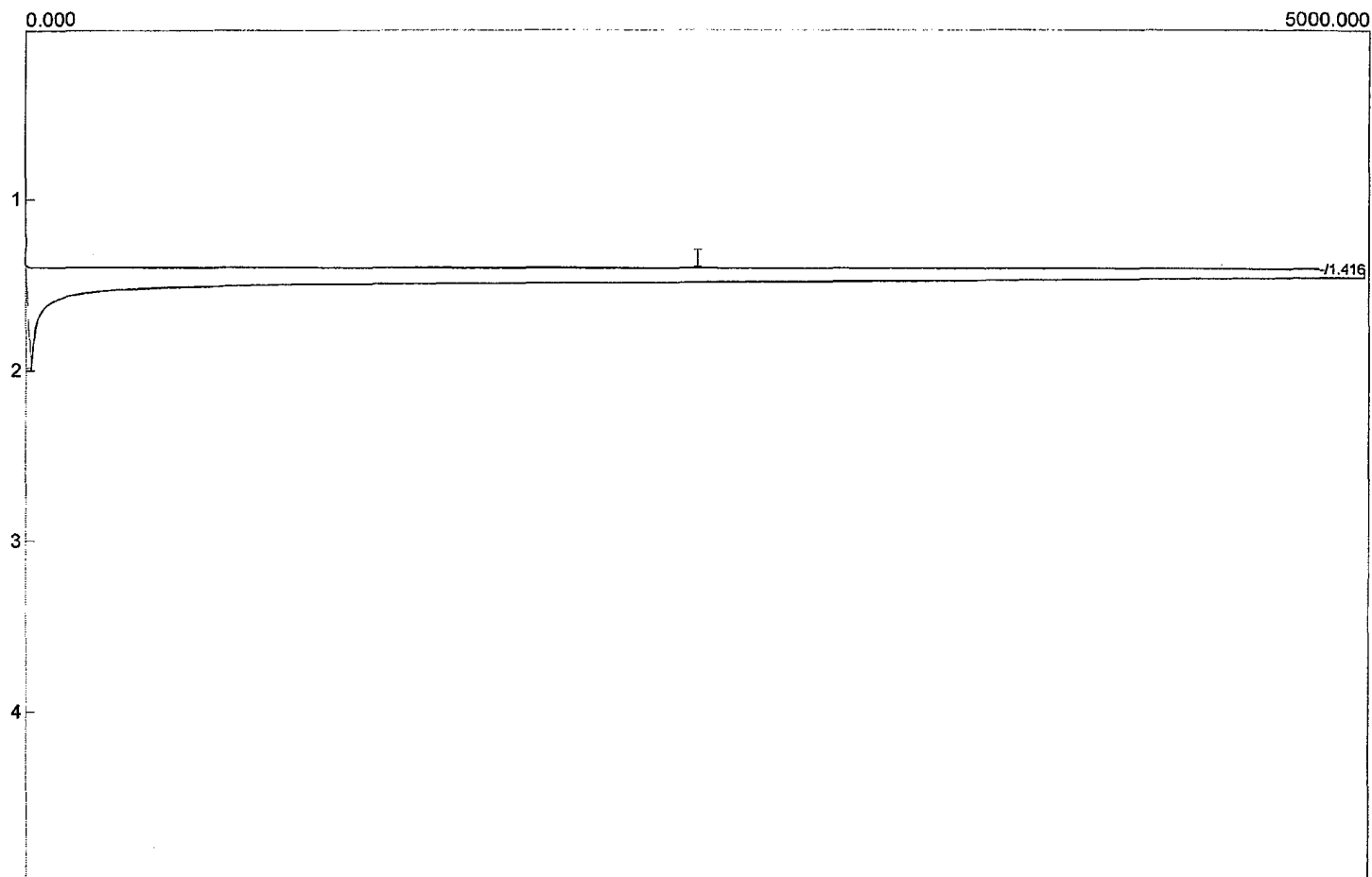
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 15:36:01
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run15.chr (C:\BPTGUH2S)
Sample: Run 1 Inj. 15
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

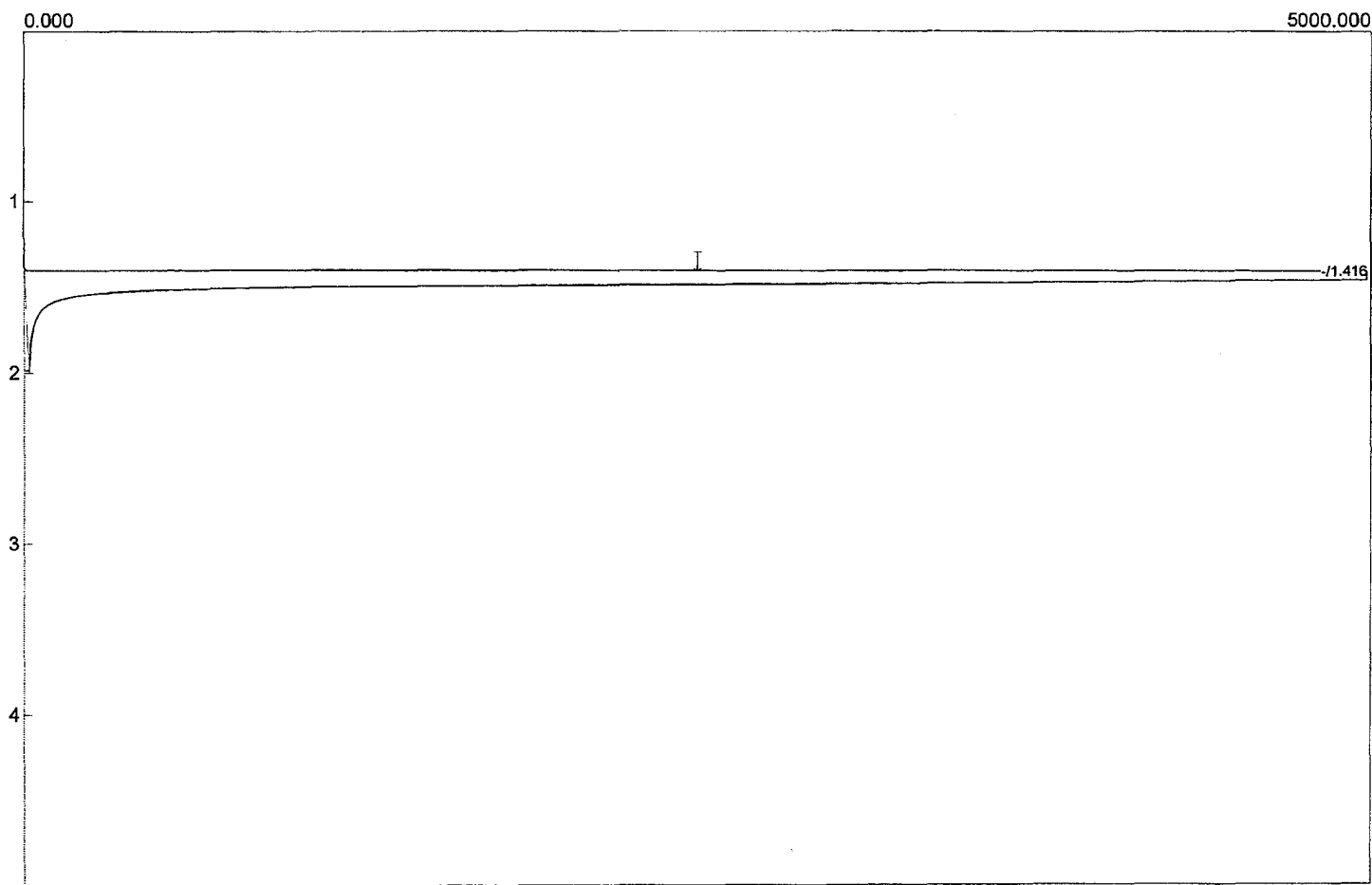
Lab name: Golden Specialty Consulting
 Client: BP West Coast Products
 Client ID: #2 TGU
 Analysis date: 10/15/2008 15:48:01
 Method: Valve
 Description: FPD-CHANNEL 1
 Column: RESTEK 60METER MXT-1
 Carrier: Helium at 27 PSI
 Data file: Run16.chr (C:\BPTGUH2S)
 Sample: Run 1 Inj. 16
 Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

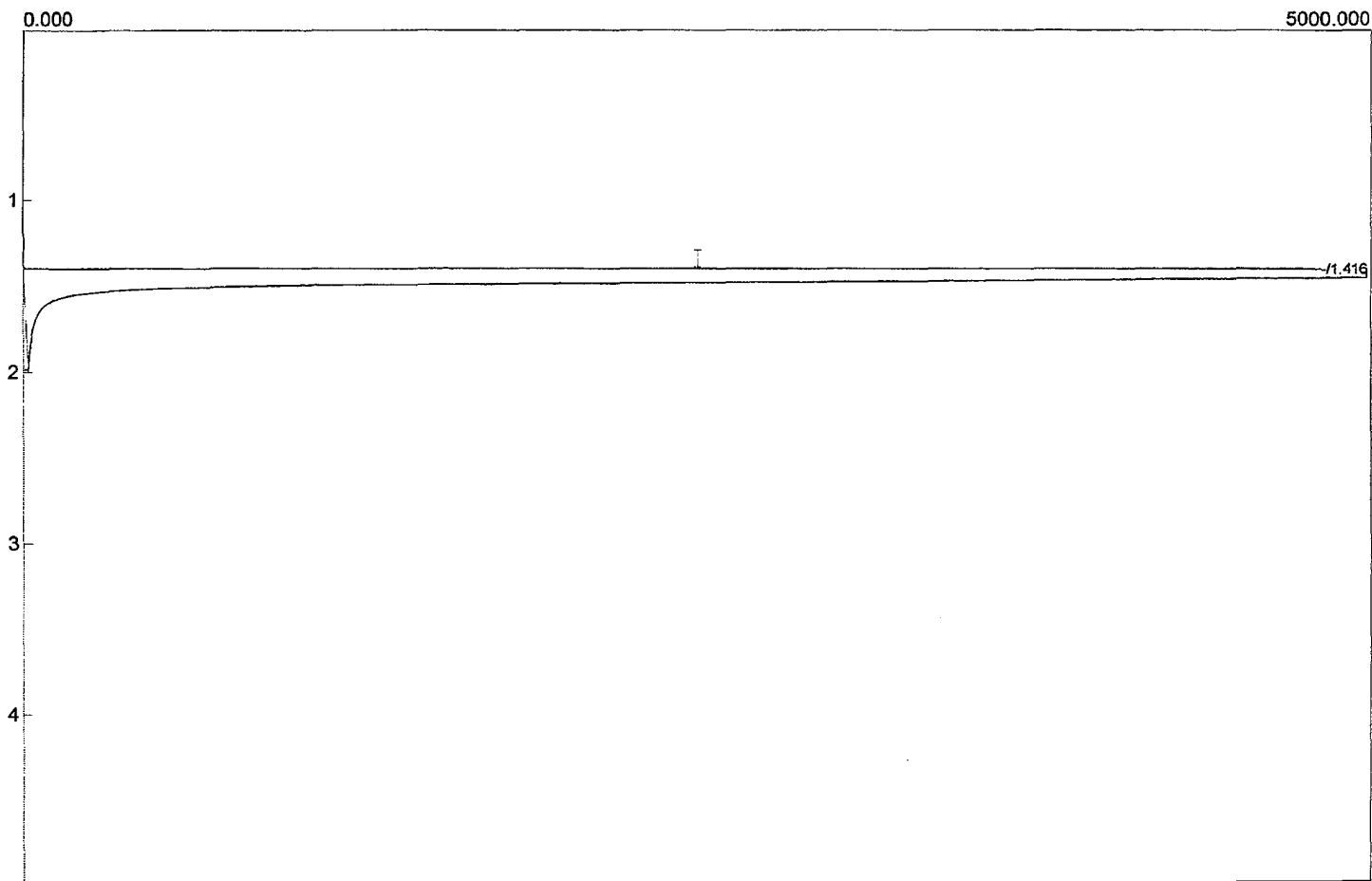
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 16:00:02
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run17.chr (C:\BPTGUH2S)
Sample: Run 2 Inj. 1
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

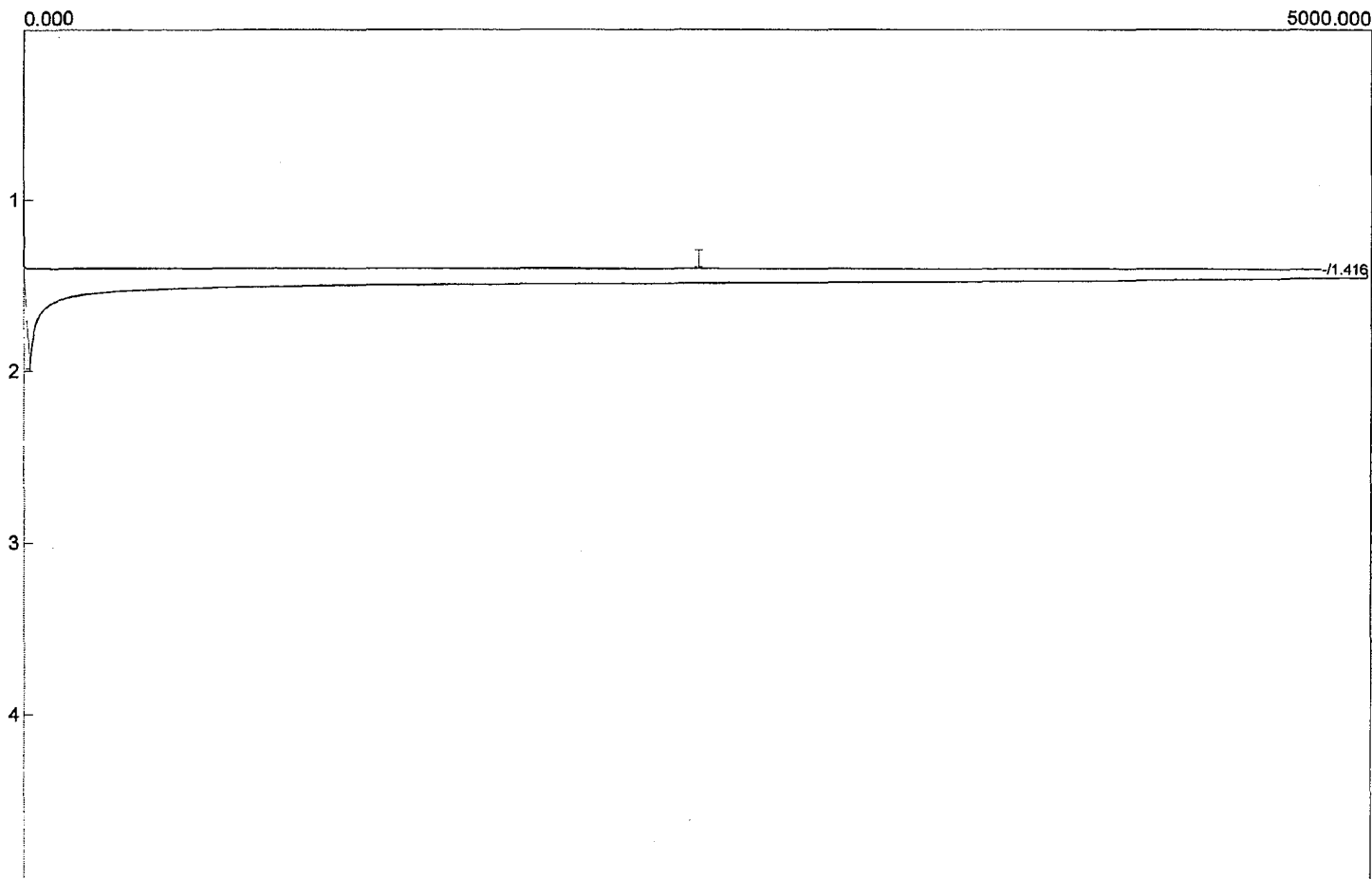
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 16:12:02
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run18.chr (C:\BPTGUH2S)
Sample: Run 2 Inj. 2
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
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	0.0000	
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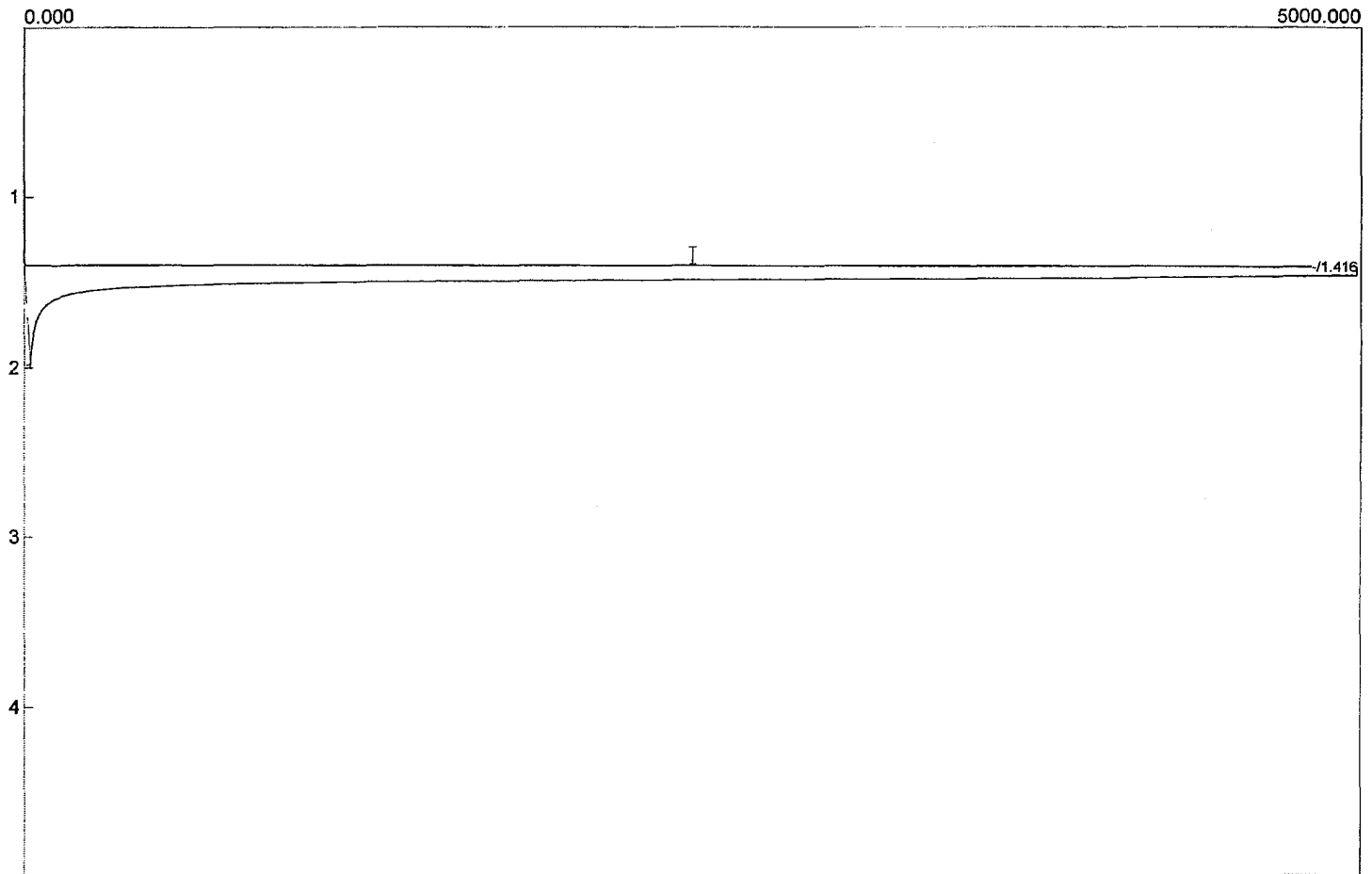
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 16:24:02
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run19.chr (C:\BPTGUH2S)
Sample: Run 2 Inj. 3
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
		0.0000

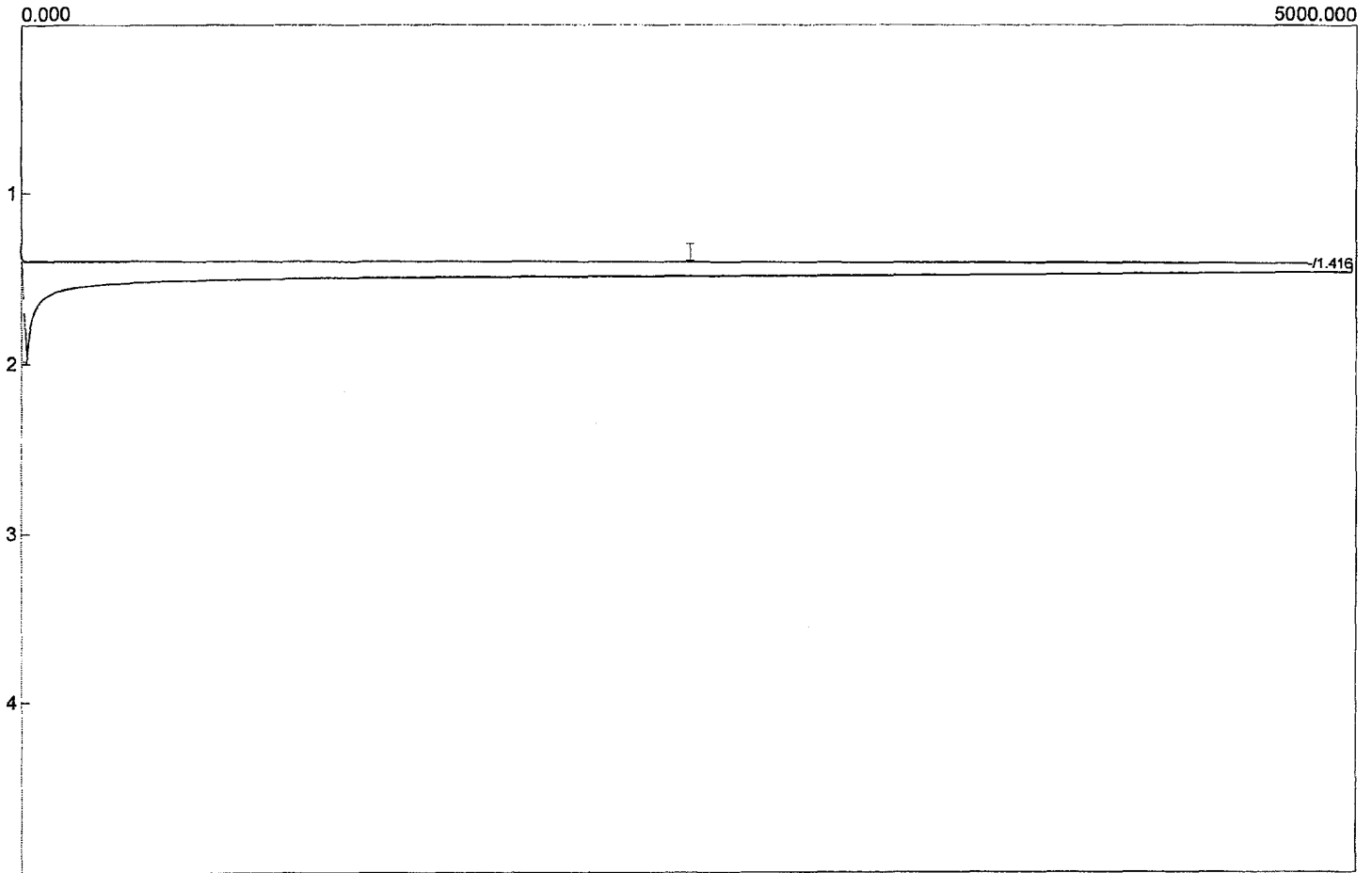
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 16:36:02
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run20.chr (C:\BPTGUH2S)
Sample: Run 2 Inj. 4
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

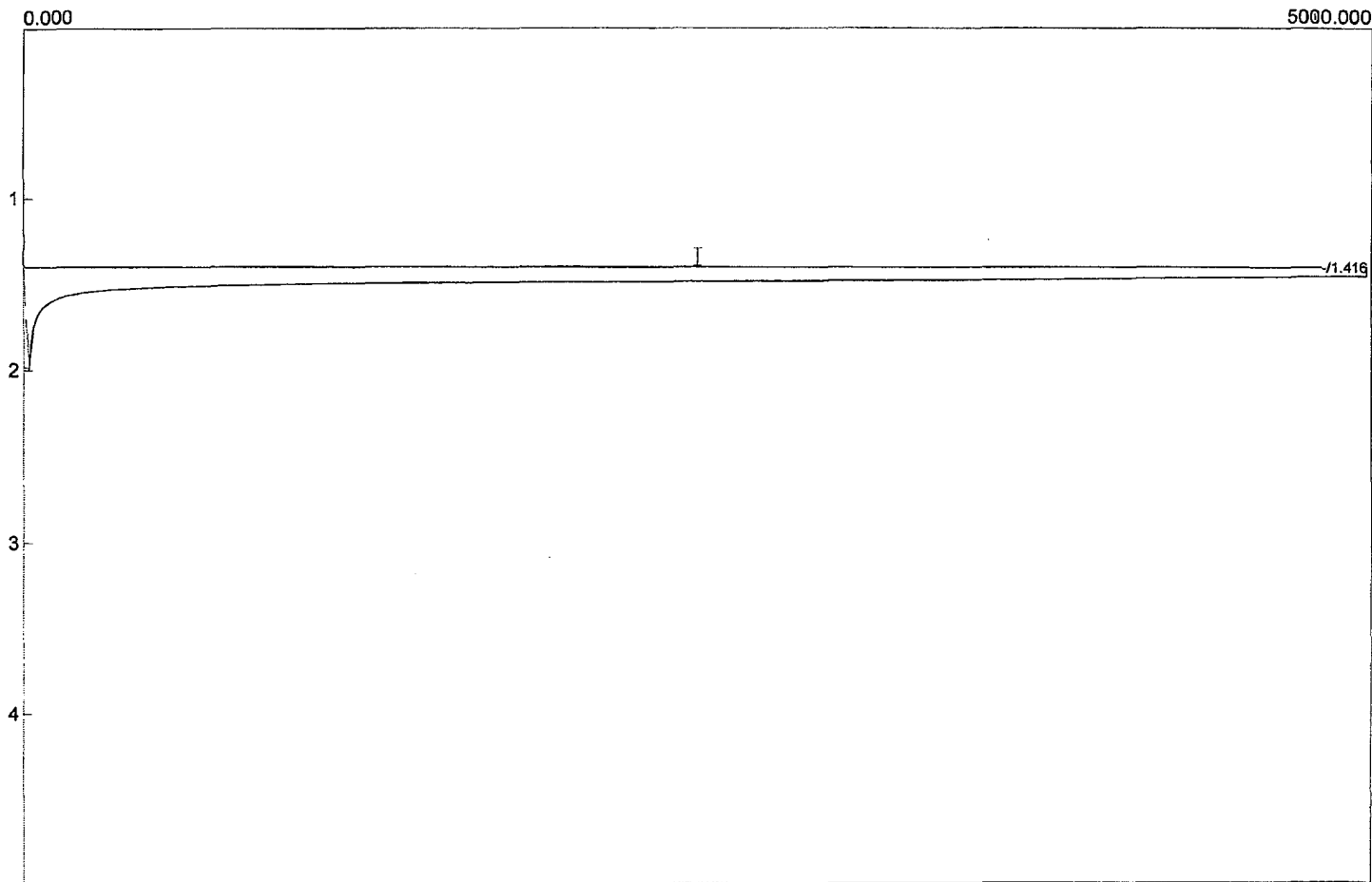
Lab name: Golden Specialty Consulting
 Client: BP West Coast Products
 Client ID: #2 TGU
 Analysis date: 10/15/2008 16:48:02
 Method: Valve
 Description: FPD-CHANNEL 1
 Column: RESTEK 60METER MXT-1
 Carrier: Helium at 27 PSI
 Data file: Run21.chr (C:\BPTGUH2S)
 Sample: Run 2 Inj. 5
 Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

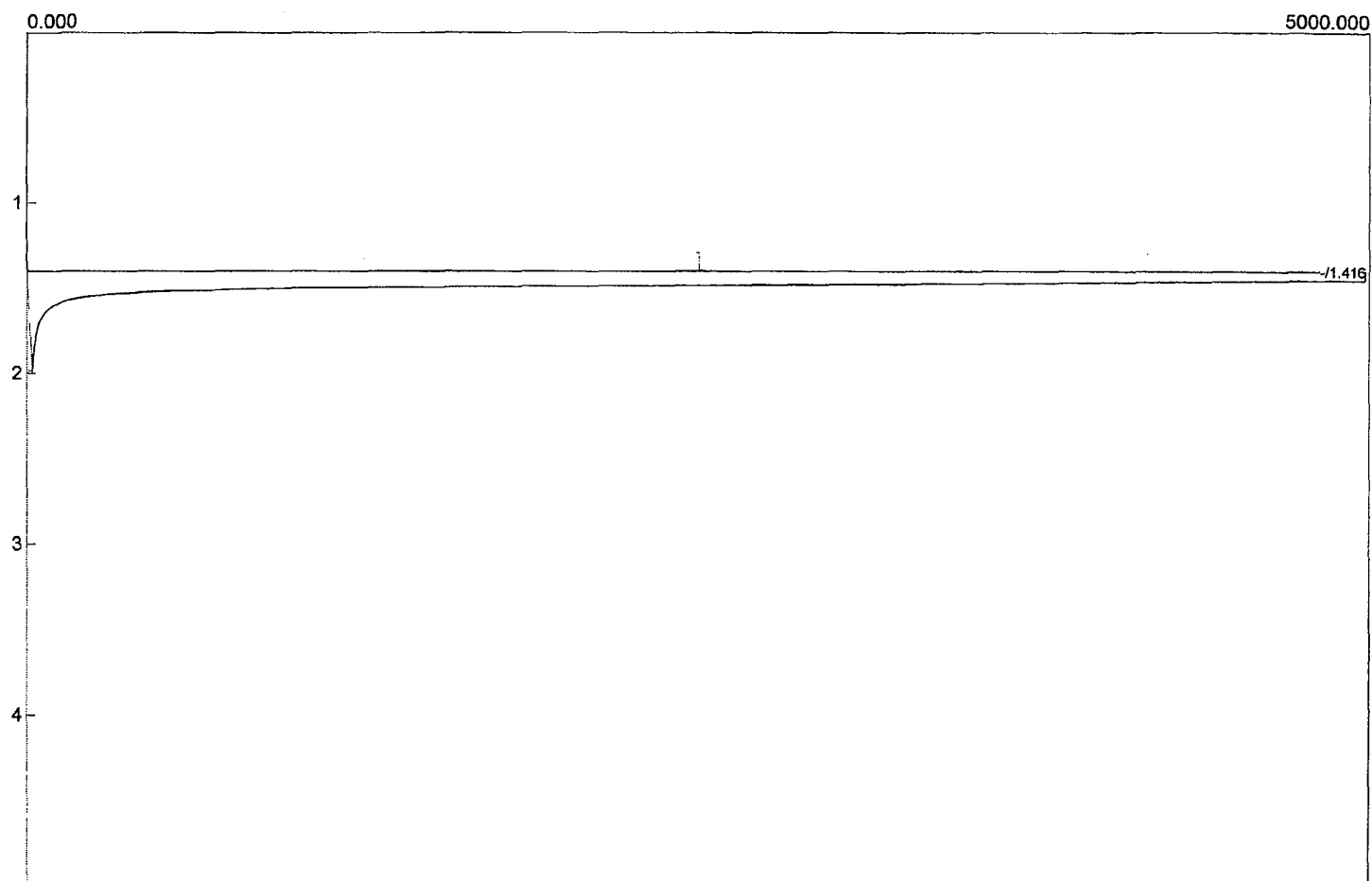
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 17:00:02
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run22.chr (C:\BPTGUH2S)
Sample: Run 2 Inj. 6
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
		0.0000

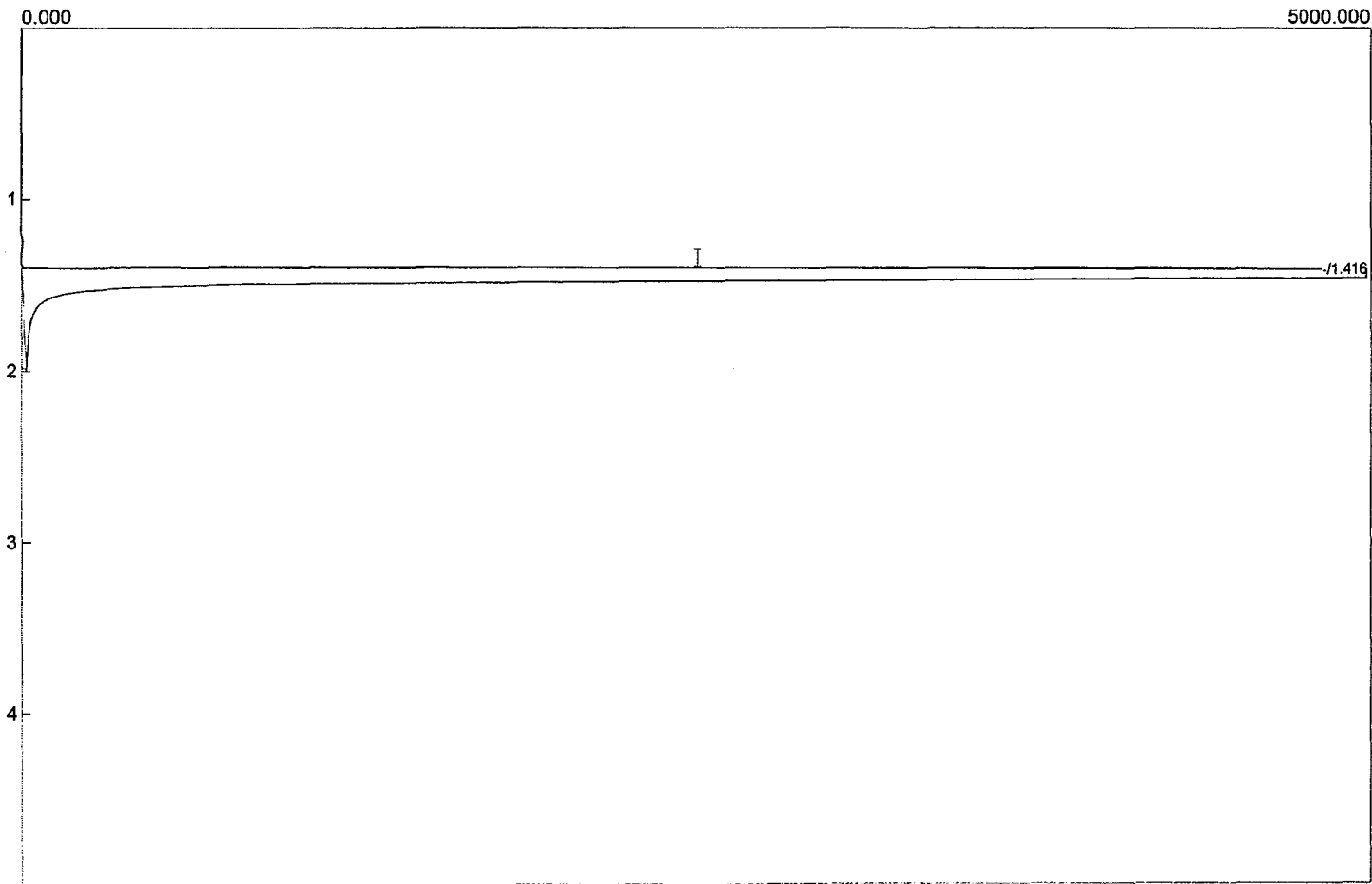
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 17:12:02
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run23.chr (C:\BPTGUH2S)
Sample: Run 2 Inj. 7
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

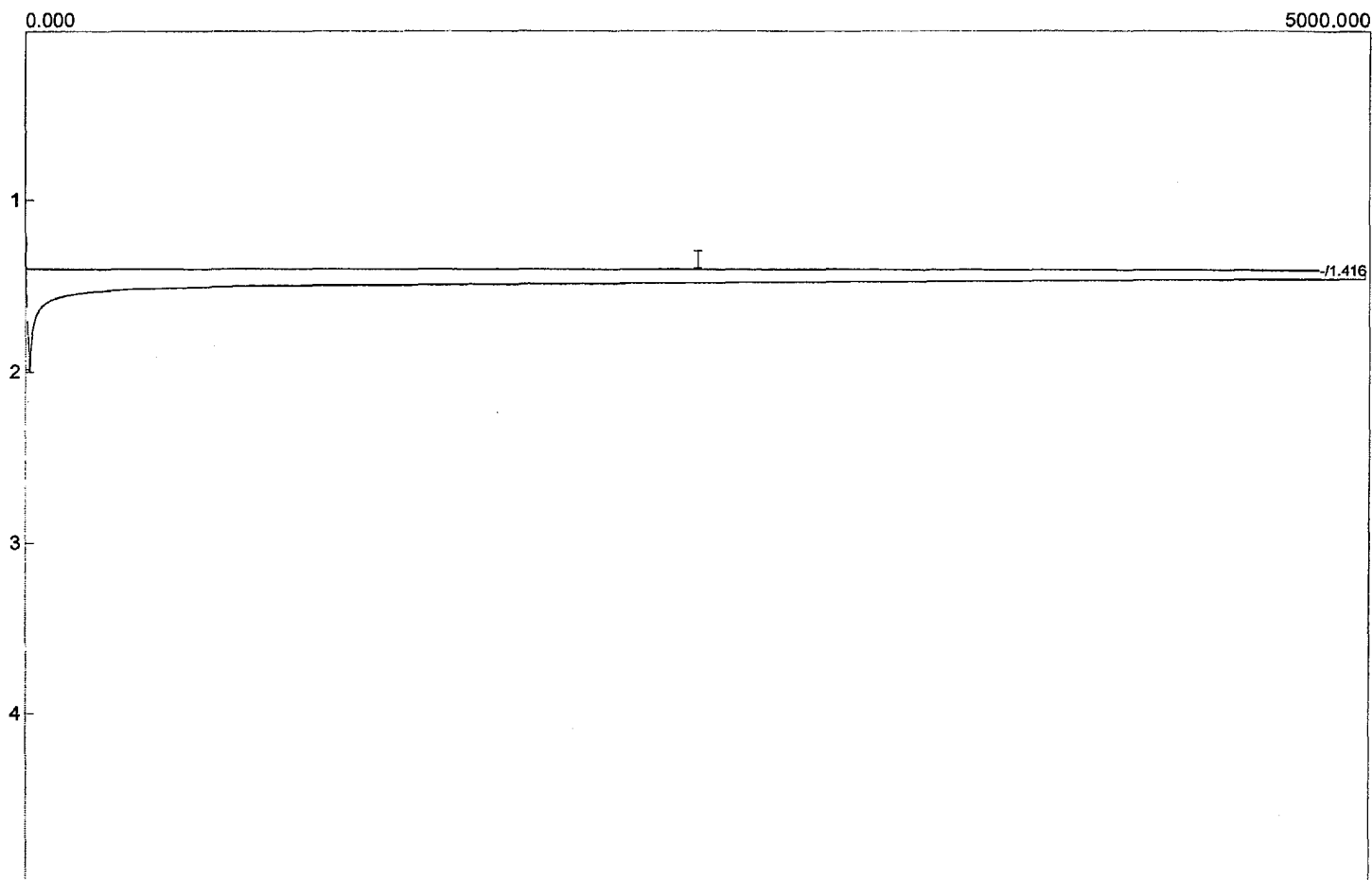
Lab name: Golden Specialty Consulting
 Client: BP West Coast Products
 Client ID: #2 TGU
 Analysis date: 10/15/2008 17:24:02
 Method: Valve
 Description: FPD-CHANNEL 1
 Column: RESTEK 60METER MXT-1
 Carrier: Helium at 27 PSI
 Data file: Run24.chr (C:\BPTGUH2S)
 Sample: Run 2 Inj. 8
 Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

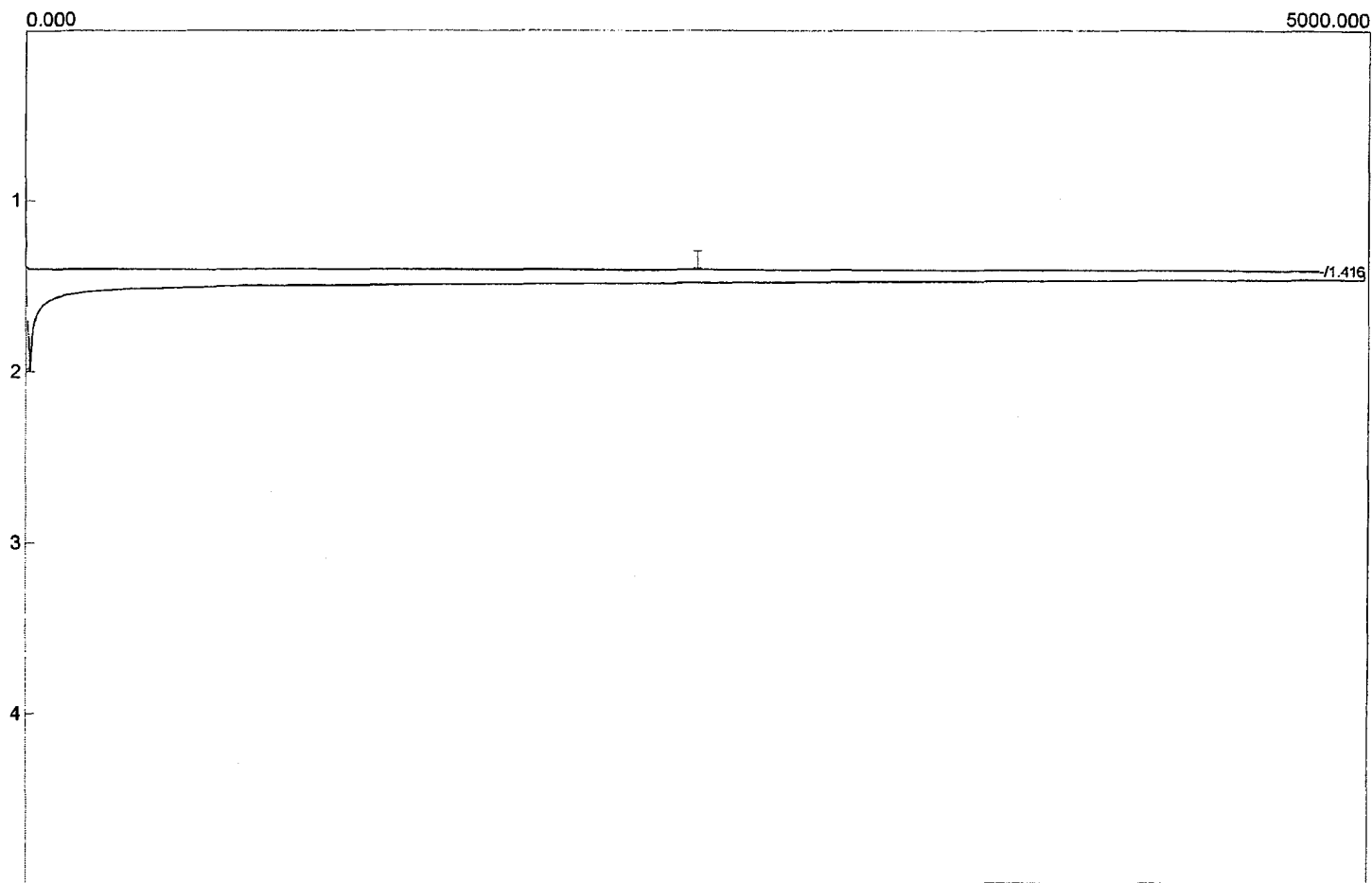
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 17:36:02
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run25.chr (C:\BPTGUH2S)
Sample: Run 2 Inj. 9
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

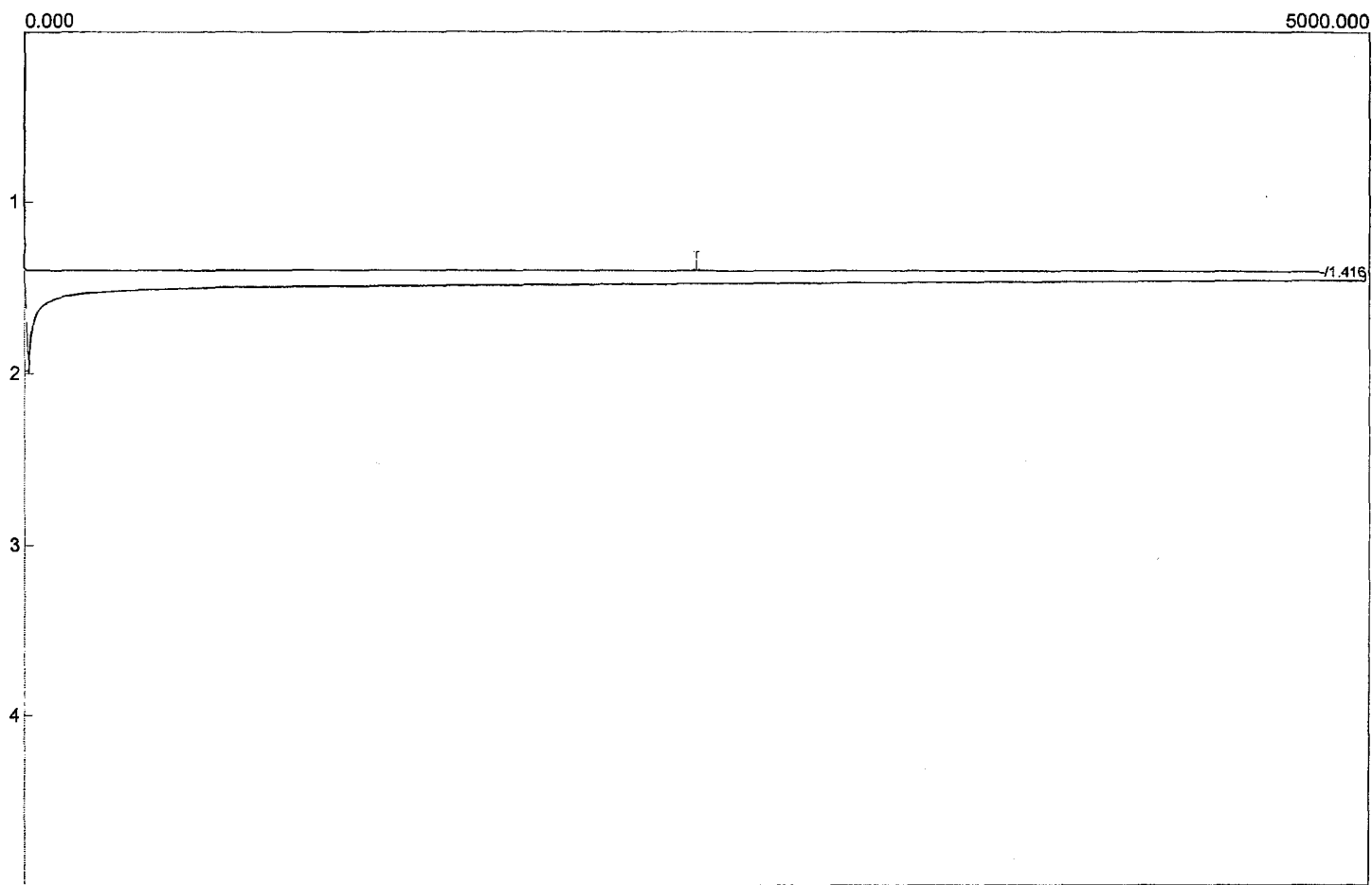
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 17:48:02
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run26.chr (C:\BPTGUH2S)
Sample: Run 2 Inj. 10
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

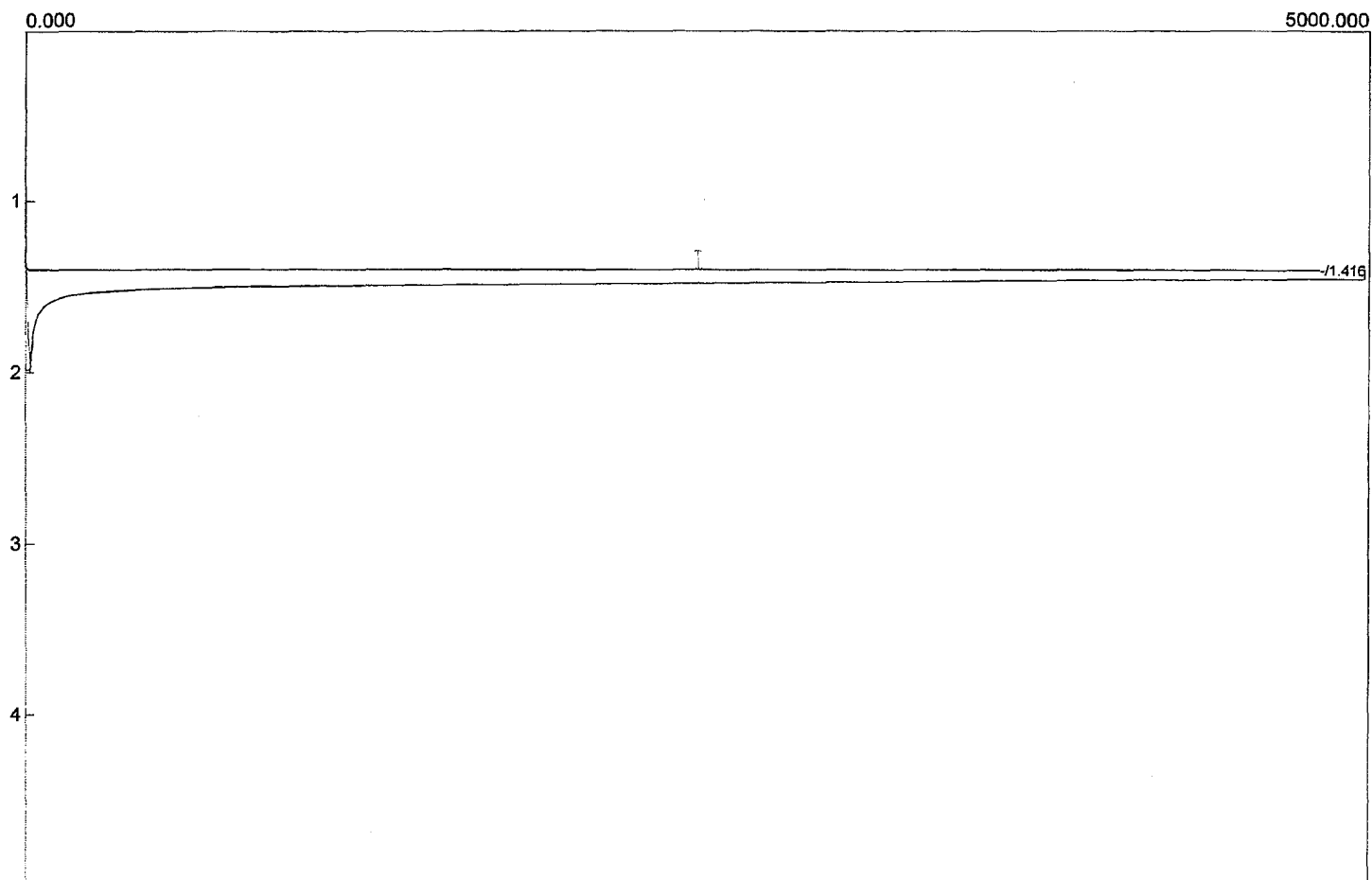
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 18:00:02
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run27.chr (C:\BPTGUH2S)
Sample: Run 2 Inj. 1
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

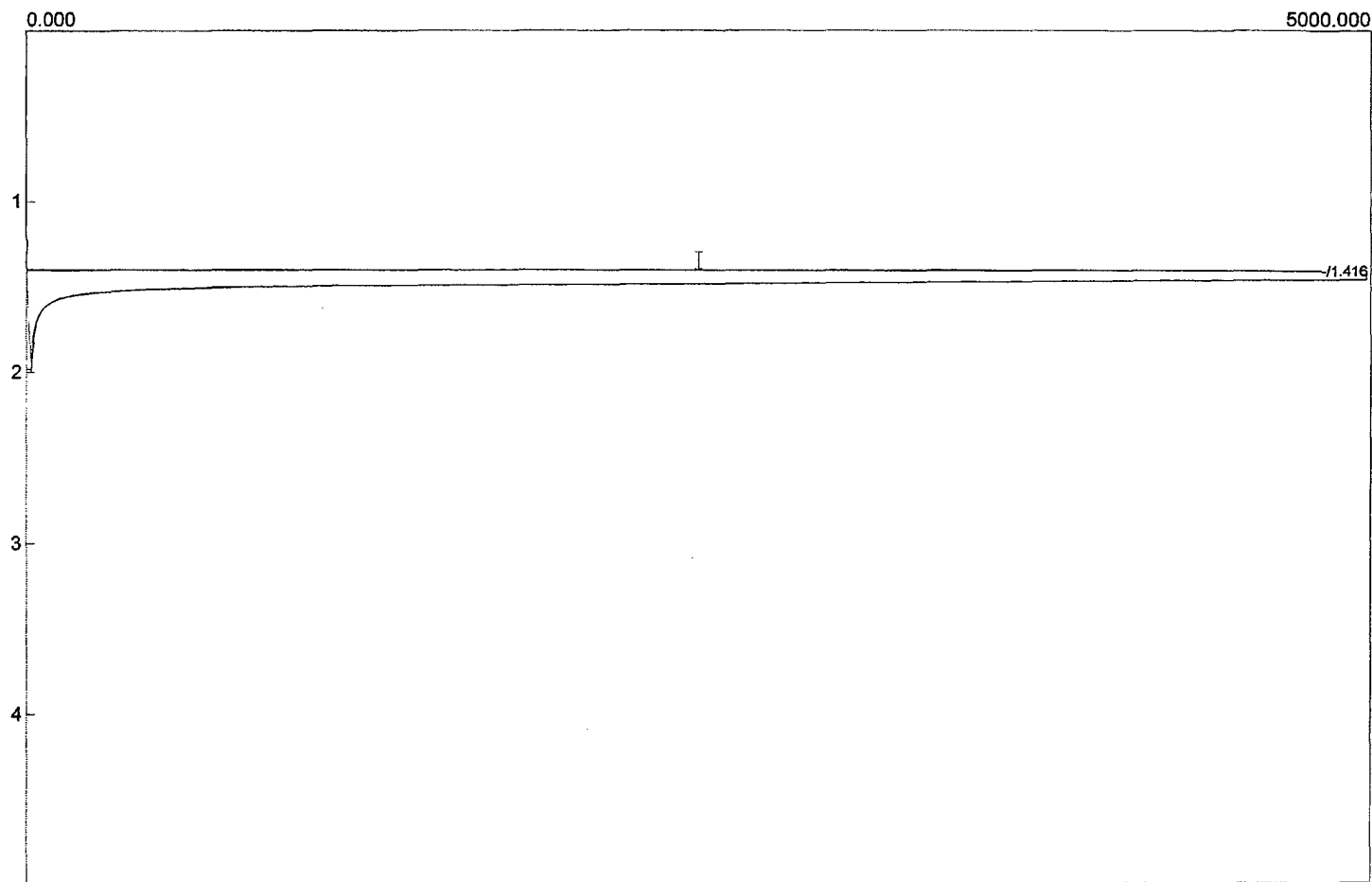
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 18:12:02
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run28.chr (C:\BPTGUH2S)
Sample: Run 2 Inj. 12
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
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	0.0000	
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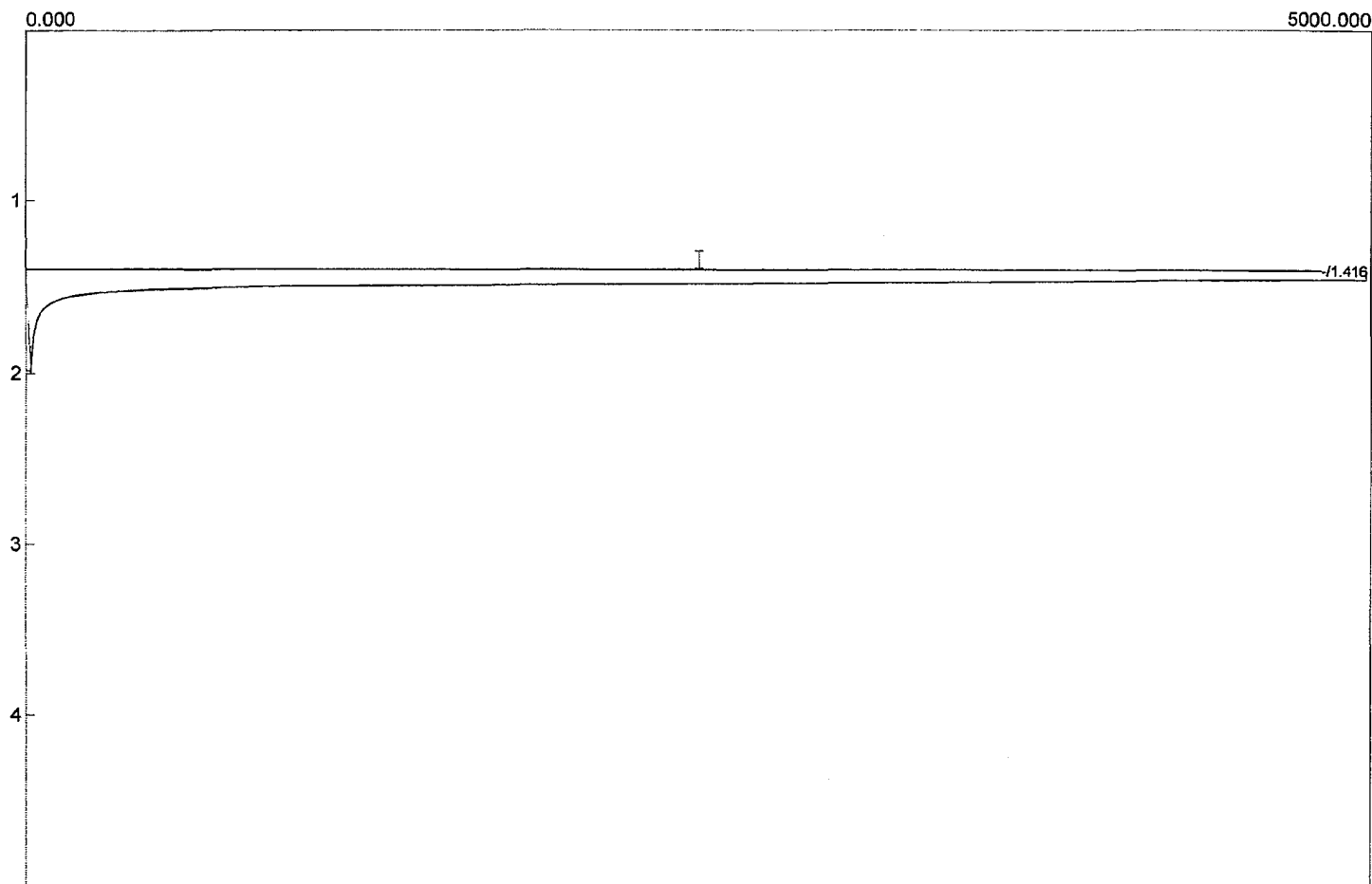
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 18:24:02
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run29.chr (C:\BPTGUH2S)
Sample: Run 2 Inj. 13
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
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	0.0000	
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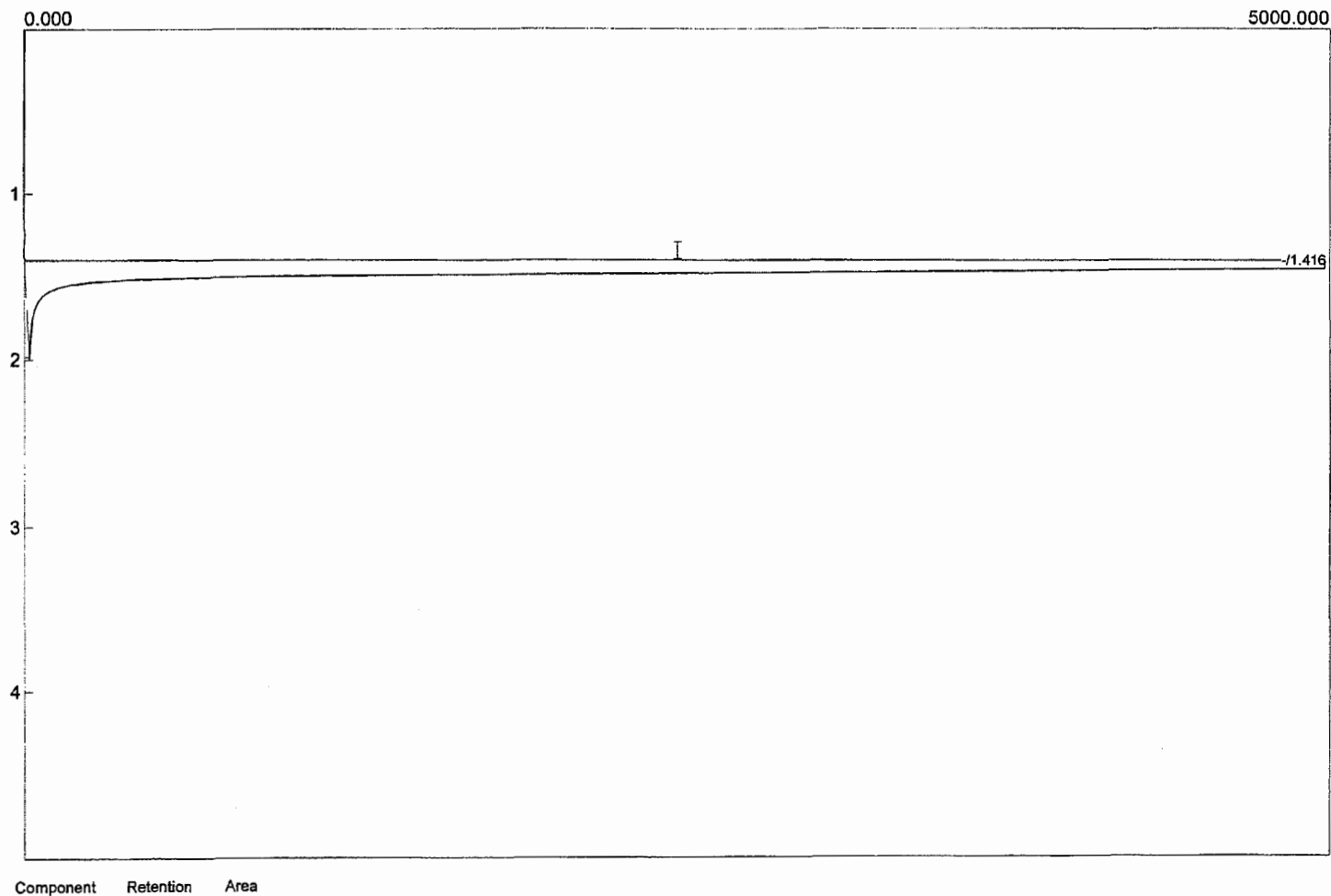
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 18:36:02
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run30.chr (C:\BPTGUH2S)
Sample: Run 2 Inj. 14
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

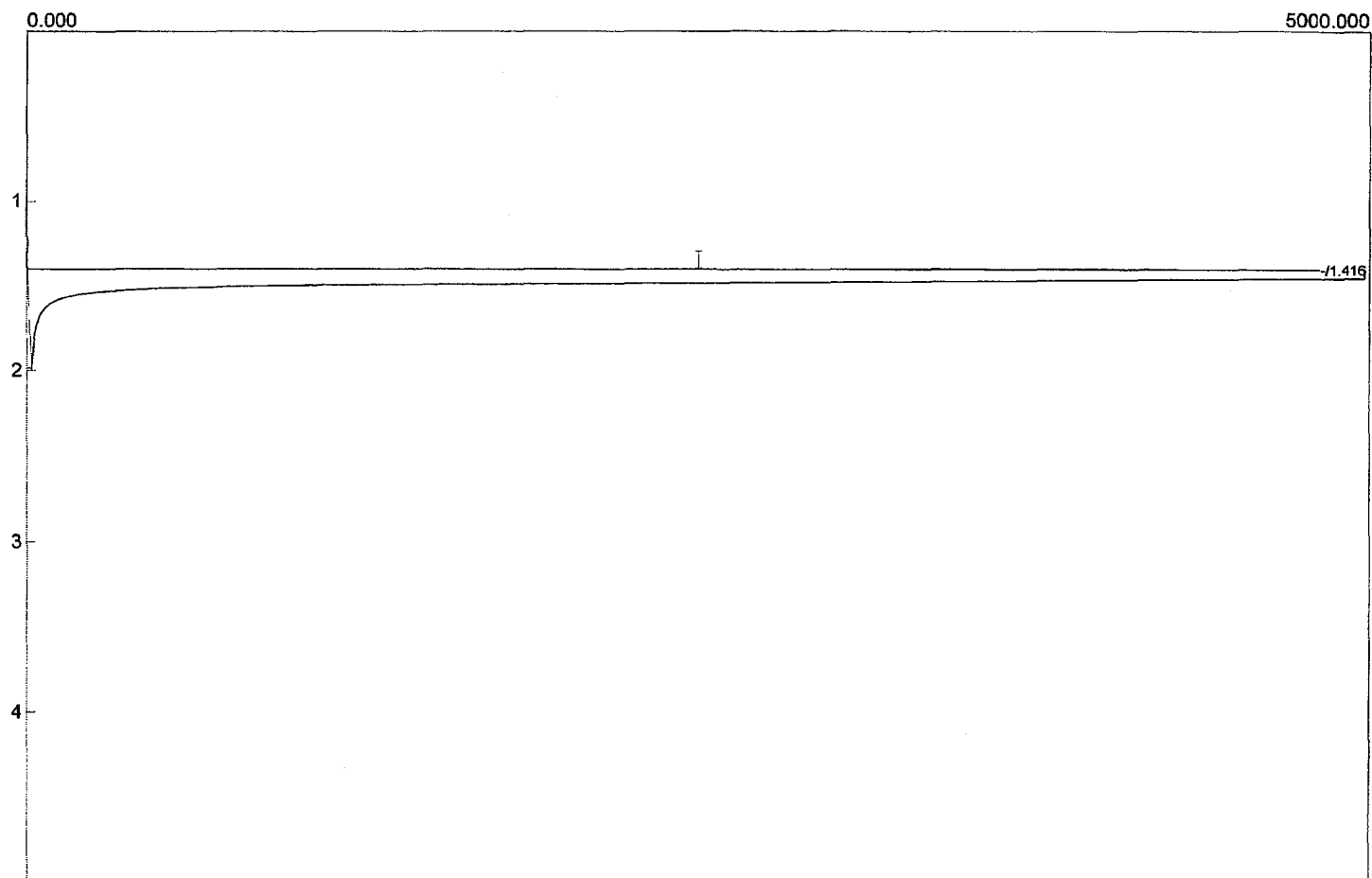
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 18:48:02
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run31.chr (C:\BPTGUH2S)
Sample: Run 2 Inj. 15
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
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	0.0000	
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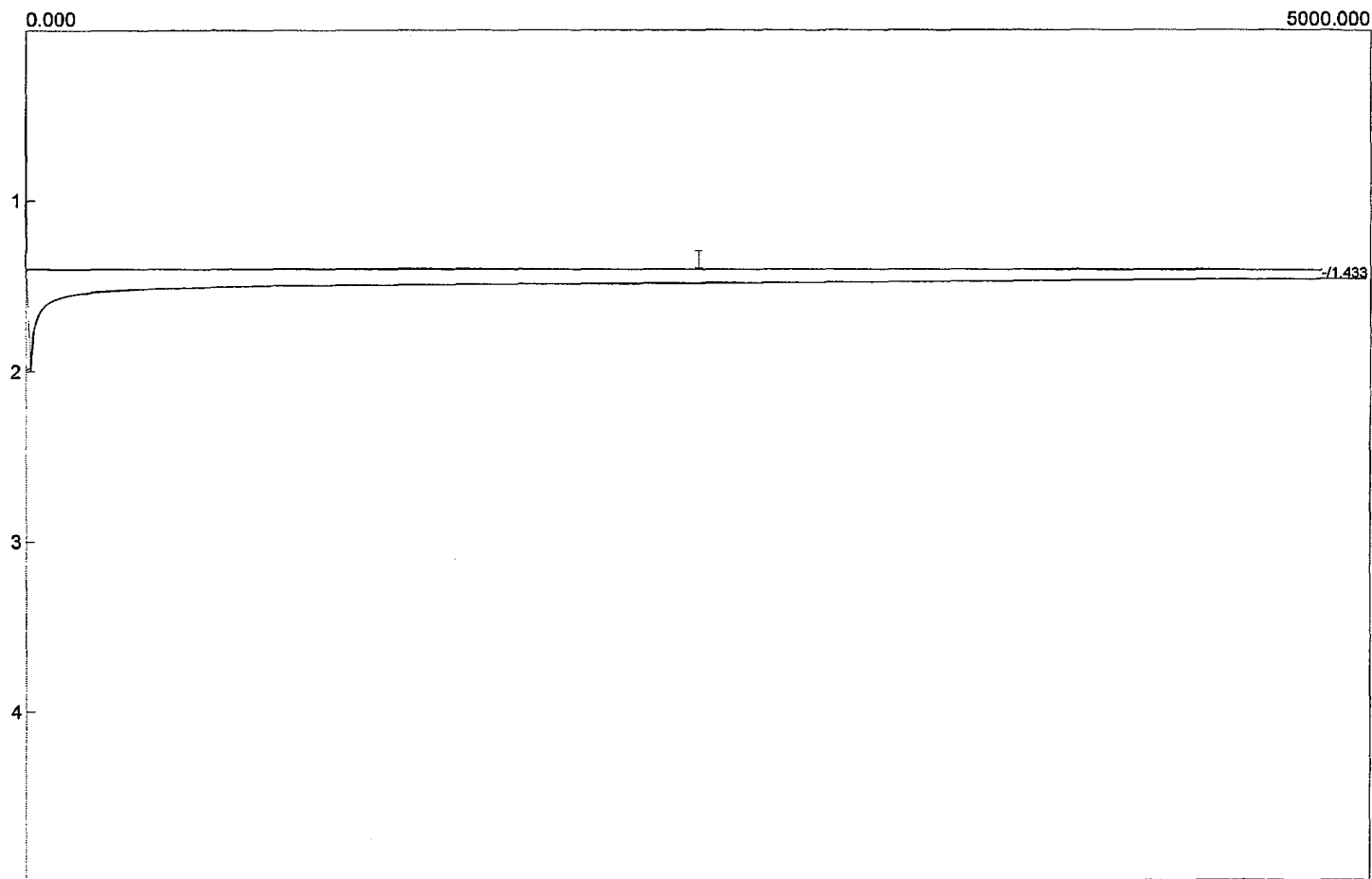
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 19:00:02
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run32.chr (C:\BPTGUH2S)
Sample: Run 2 Inj. 16
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
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	0.0000	
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Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 19:12:02
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run33.chr (C:\BPTGUH2S)
Sample: Run 3 Inj. 1
Operator: RCP

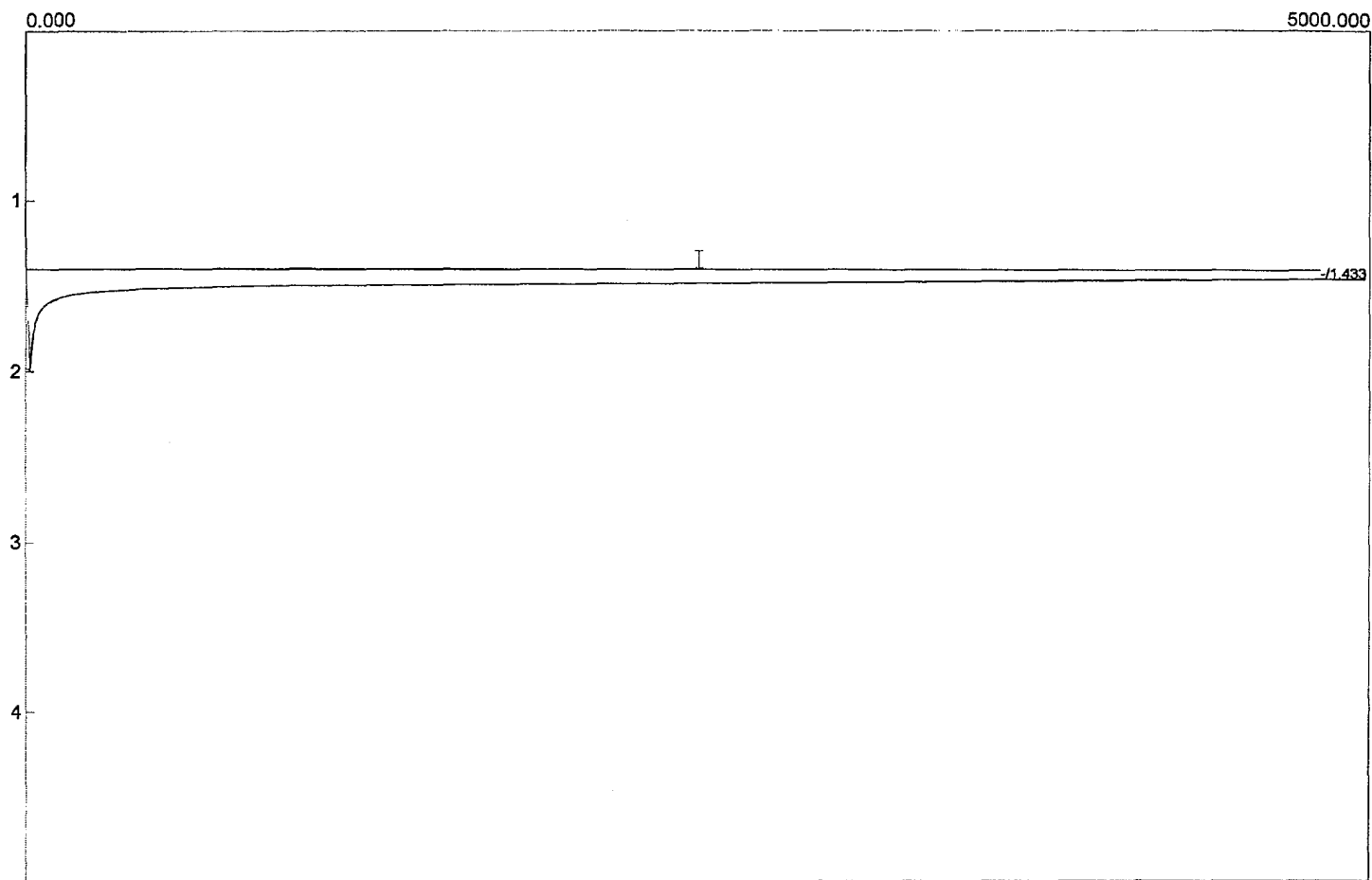
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Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
		0.0000

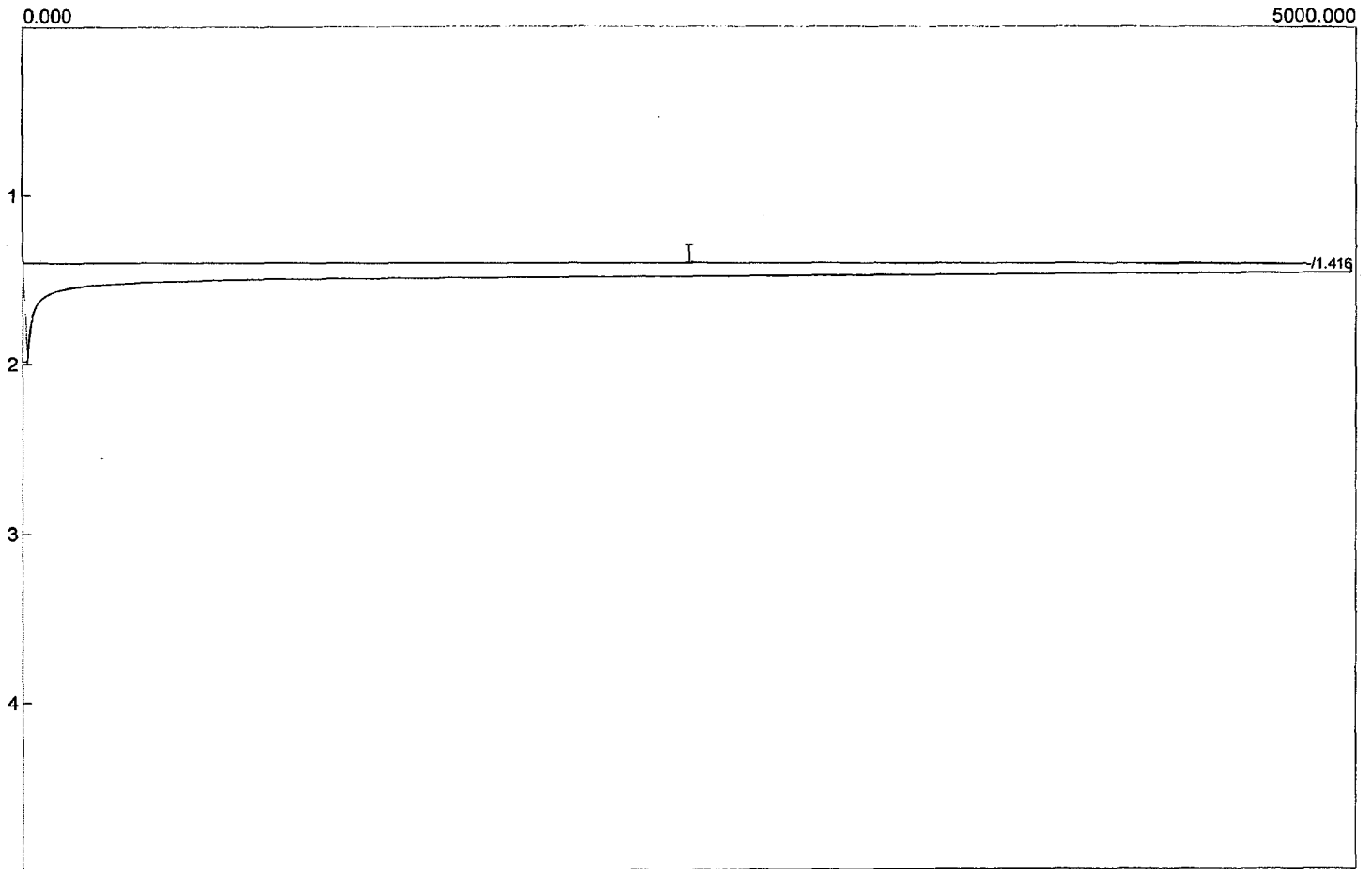
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 19:24:02
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run34.chr (C:\BPTGUH2S)
Sample: Run 3 Inj. 2
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
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	0.0000	
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Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 19:36:03
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run35.chr (C:\BPTGUH2S)
Sample: Run 3 Inj. 3
Operator: RCP

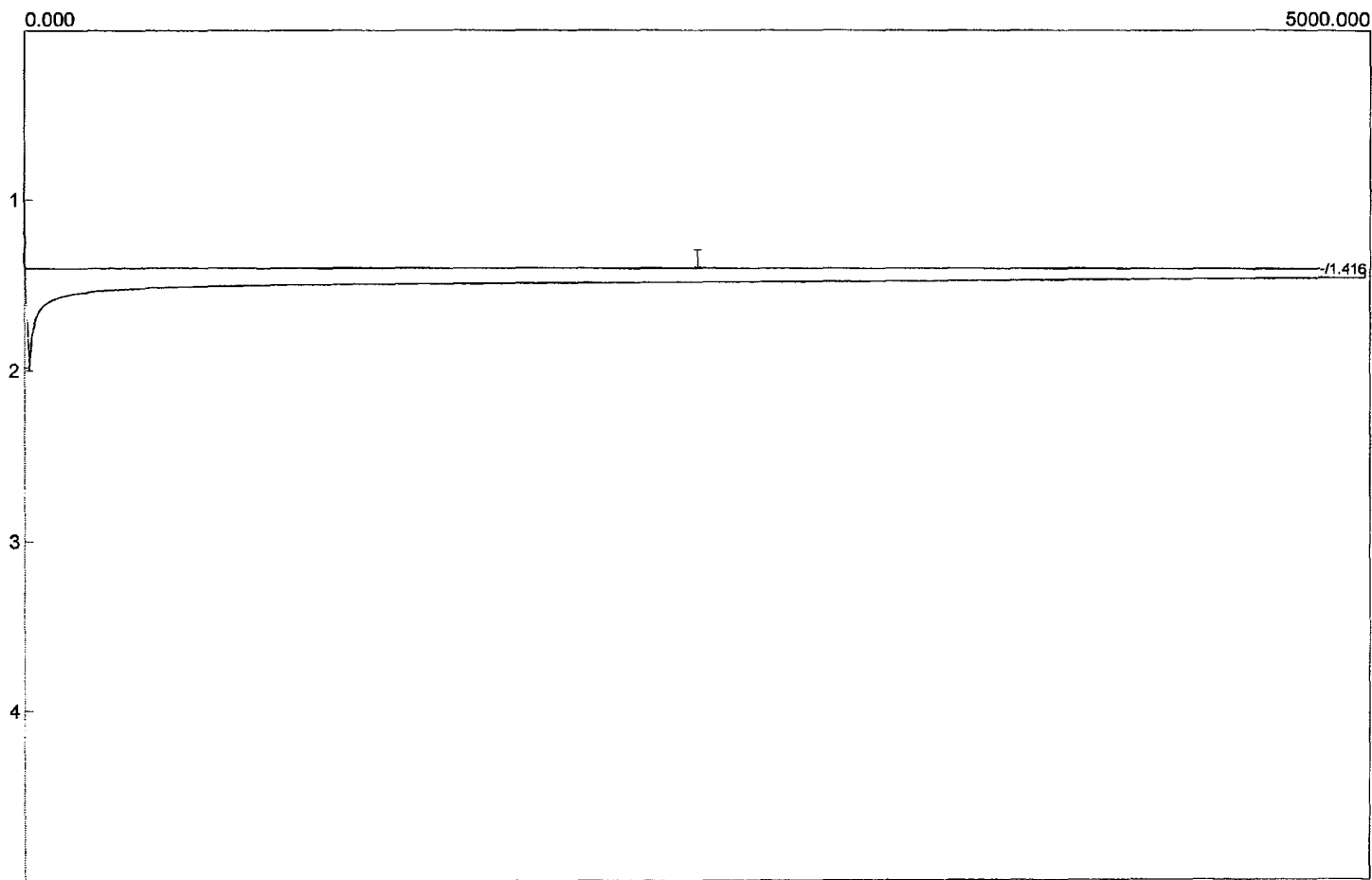
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Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

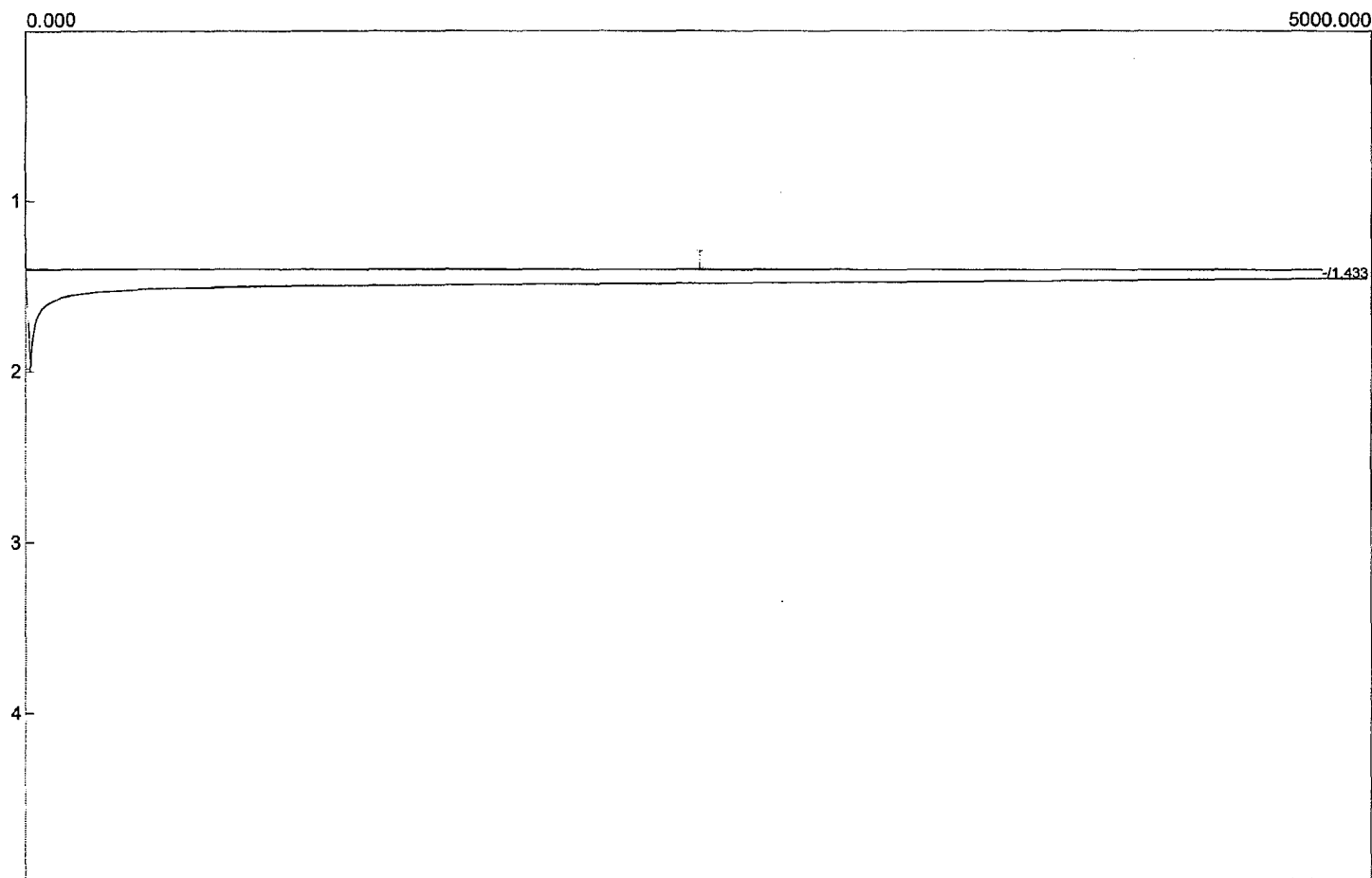
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 19:48:03
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run36.chr (C:\BPTGUH2S)
Sample: Run 3 Inj. 4
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
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	0.0000	
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Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 20:00:03
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run37.chr (C:\BPTGUH2S)
Sample: Run 3 Inj. 5
Operator: RCP

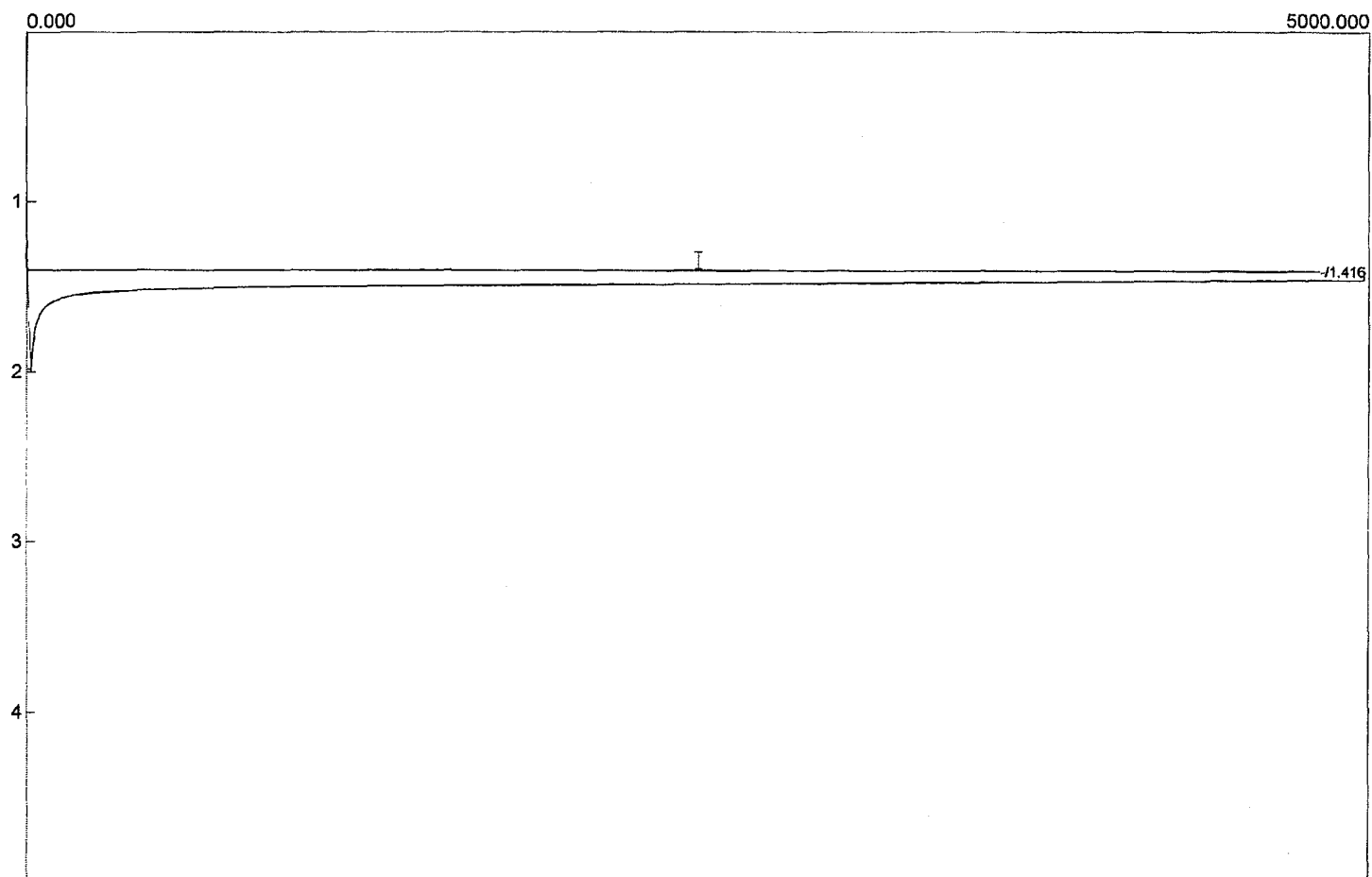
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Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
		0.0000

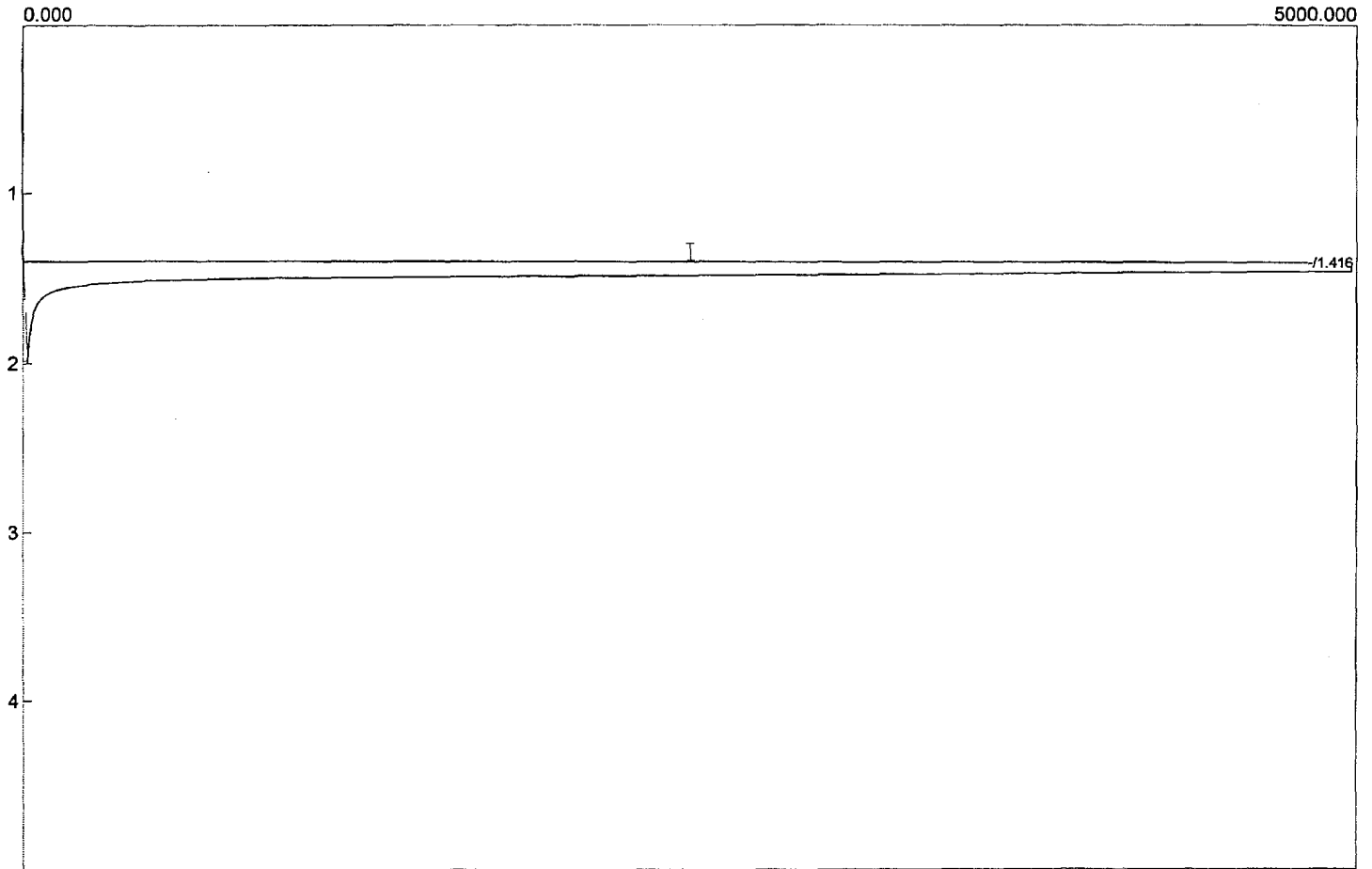
Lab name: Golden Specialty Consulting
 Client: BP West Coast Products
 Client ID: #2 TGU
 Analysis date: 10/15/2008 20:12:03
 Method: Valve
 Description: FPD-CHANNEL 1
 Column: RESTEK 60METER MXT-1
 Carrier: Helium at 27 PSI
 Data file: Run38.chr (C:\BPTGUH2S)
 Sample: Run 3 Inj. 6
 Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

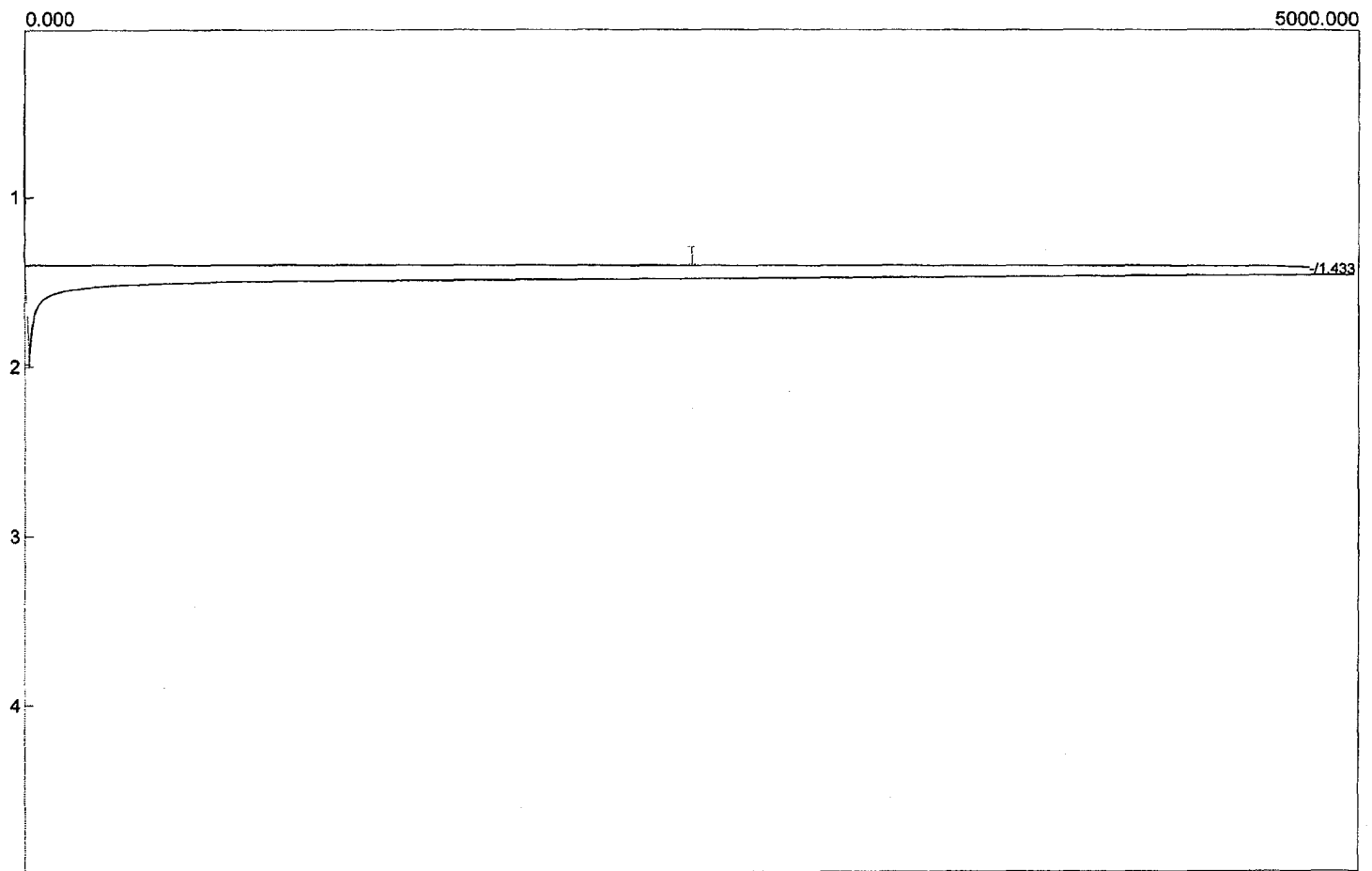
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 20:24:03
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run39.chr (C:\BPTGUH2S)
Sample: Run 3 Inj. 7
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
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	0.0000	
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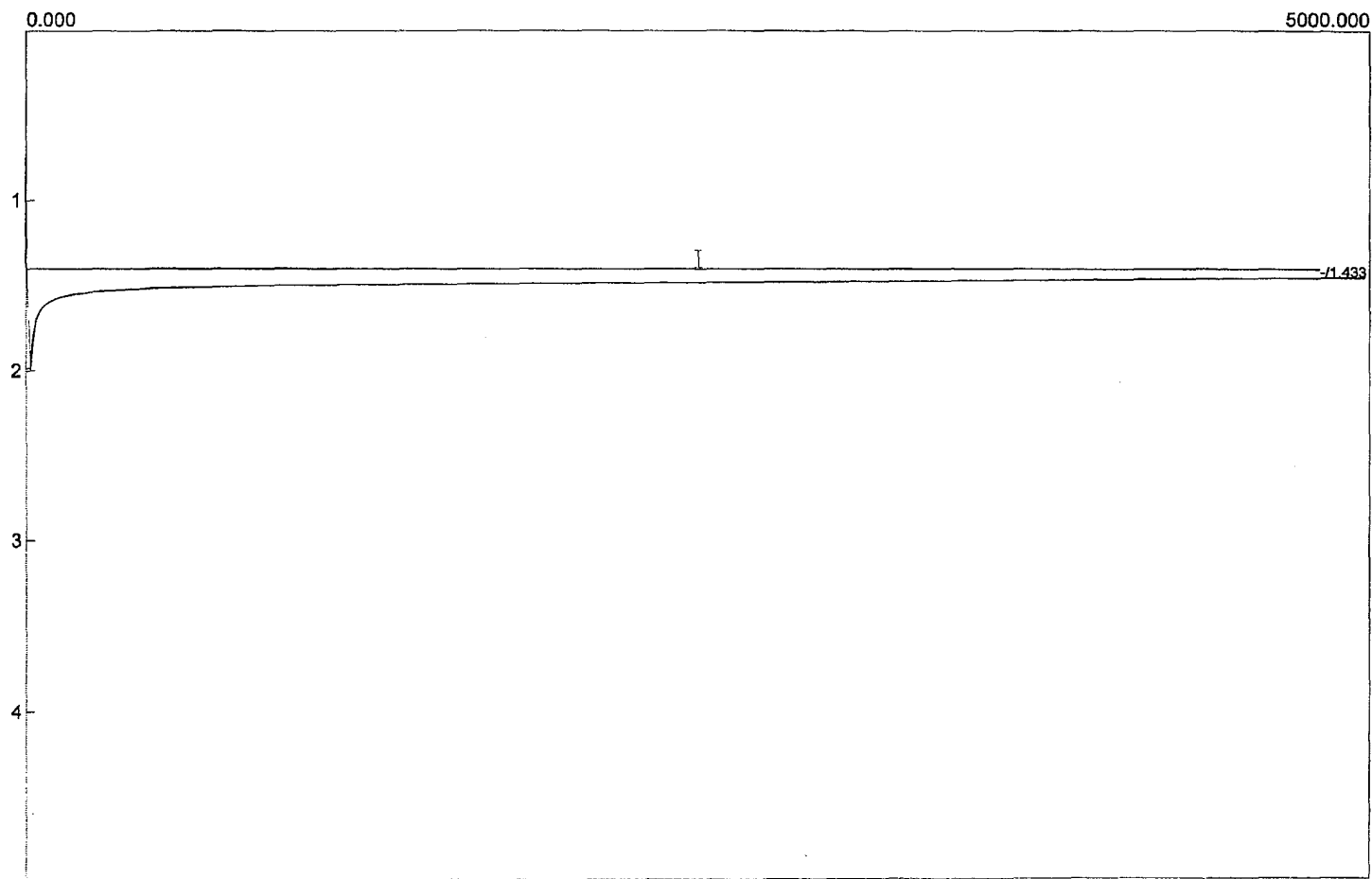
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 20:36:03
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run40.chr (C:\BPTGUH2S)
Sample: Run 3 Inj. 8
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
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	0.0000	
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Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 20:48:03
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run41.chr (C:\BPTGUH2S)
Sample: Run 3 Inj. 9
Operator: RCP

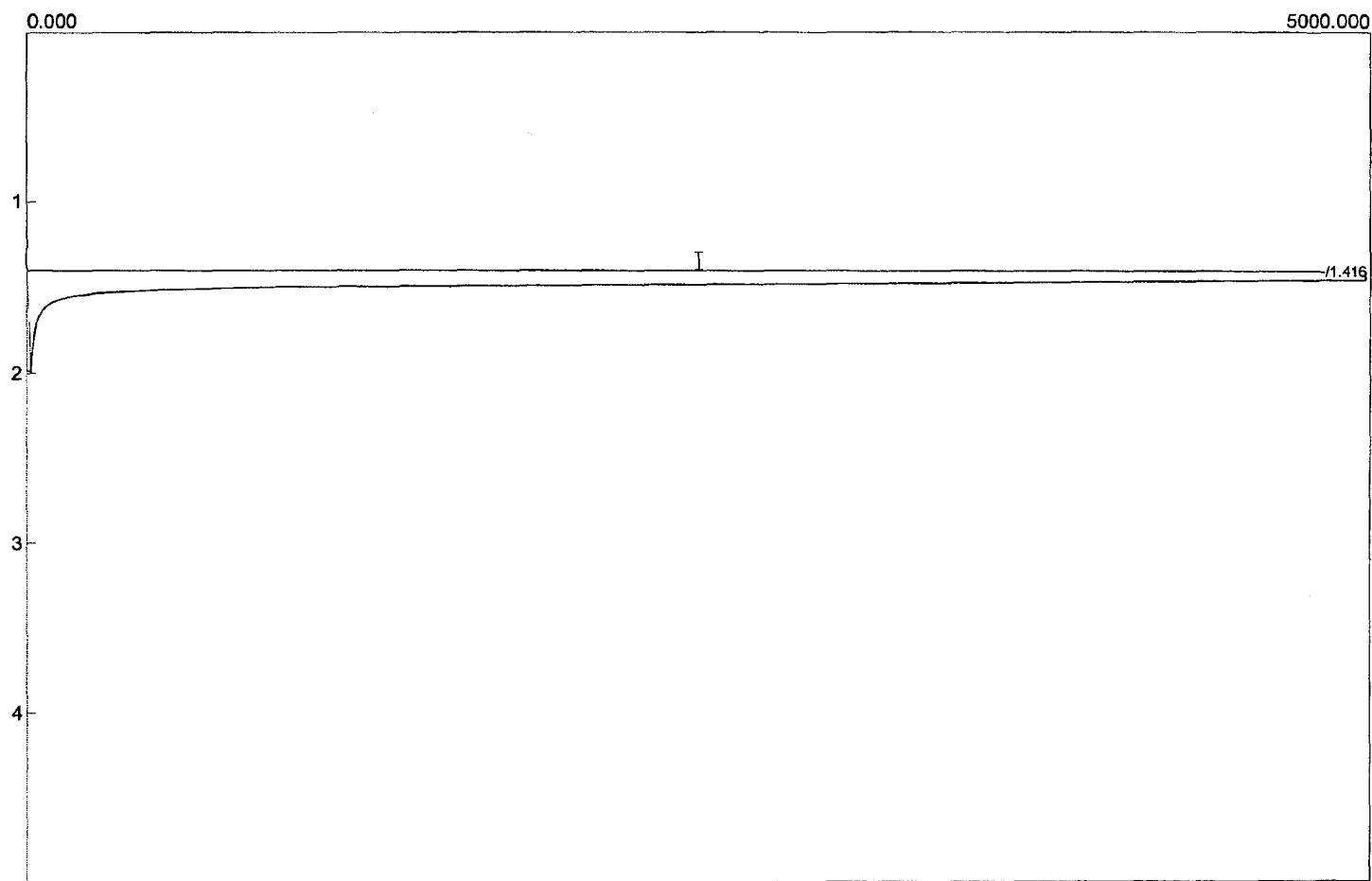
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Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 21:00:03
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run42.chr (C:\BPTGUH2S)
Sample: Run 3 Inj. 10
Operator: RCP

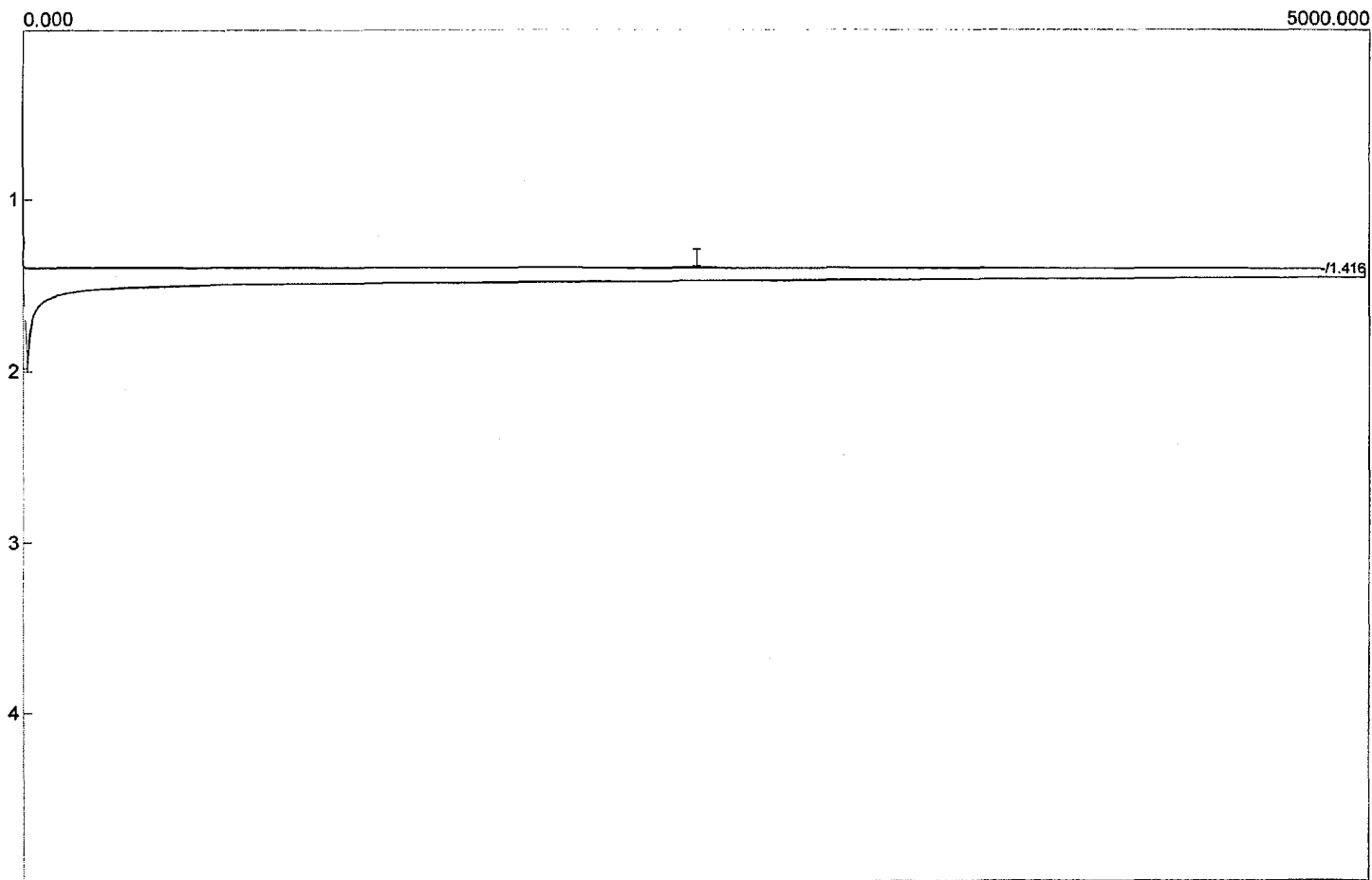
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Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 21:12:03
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run43.chr (C:\BPTGUH2S)
Sample: Run 3 Inj. 11
Operator: RCP

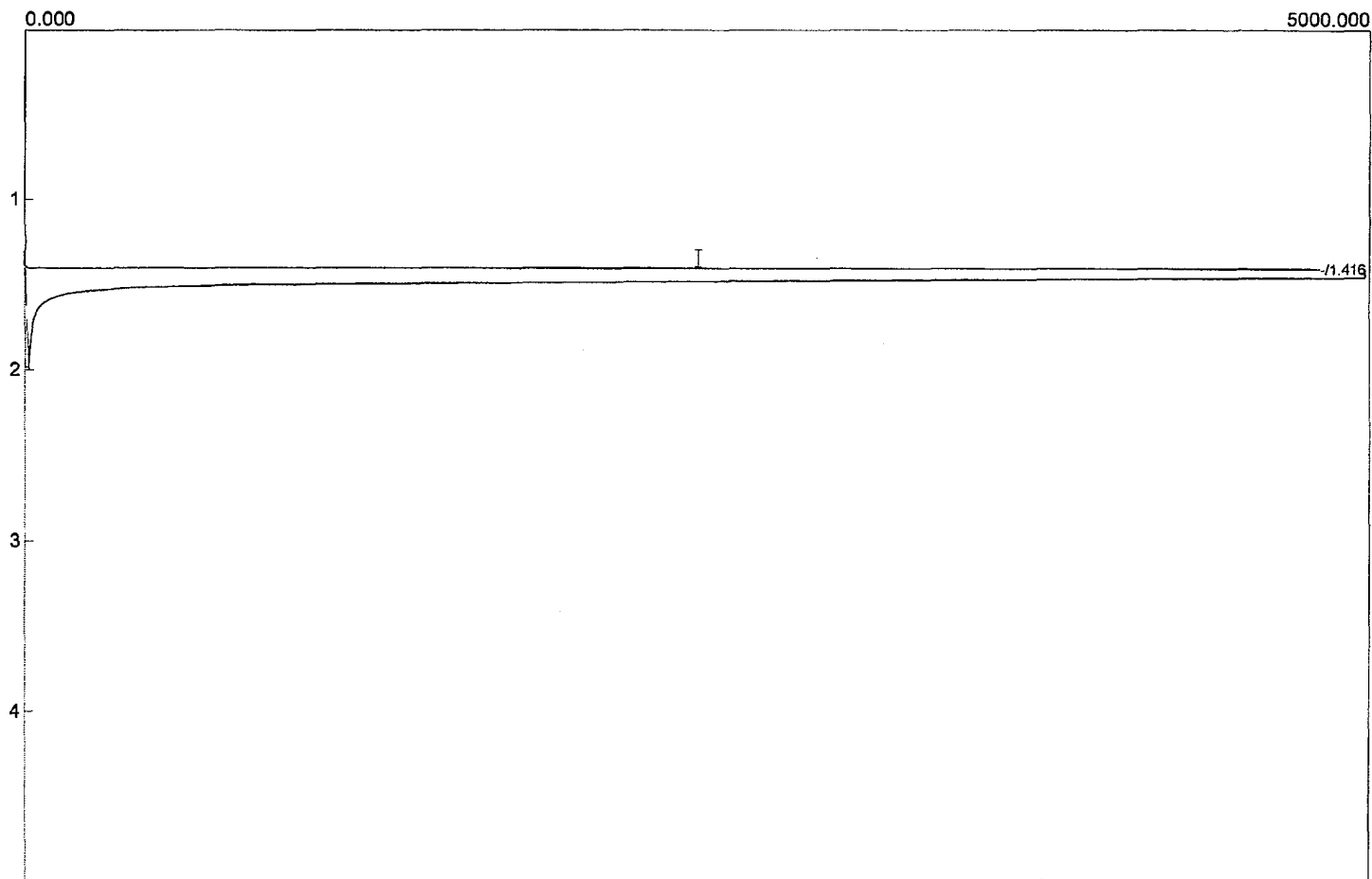
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Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
		0.0000

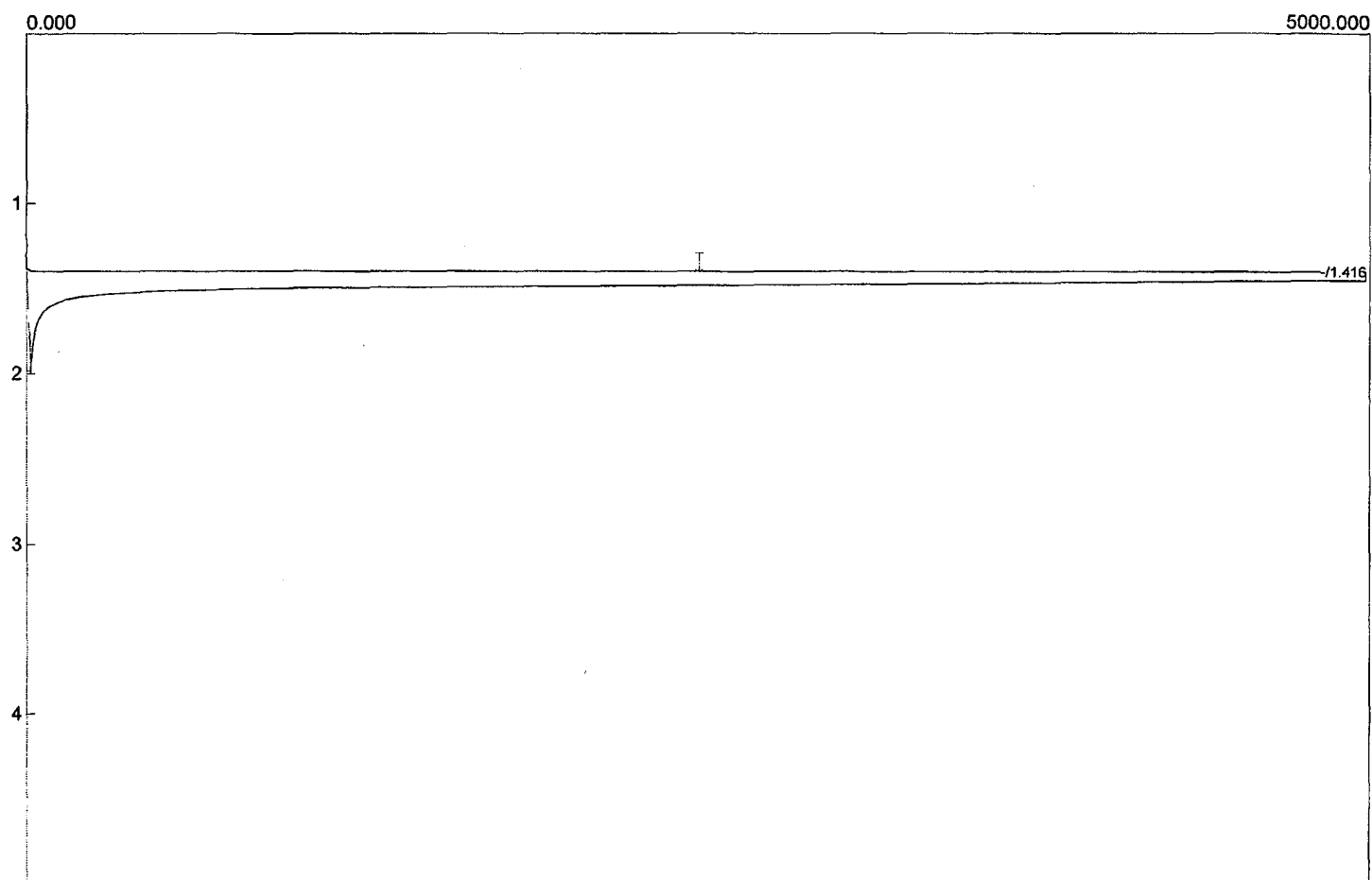
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 21:24:03
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run44.chr (C:\BPTGUH2S)
Sample: Run 3 Inj. 1 2
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 21:36:03
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run45.chr (C:\BPTGUH2S)
Sample: Run 3 Inj. 13
Operator: RCP

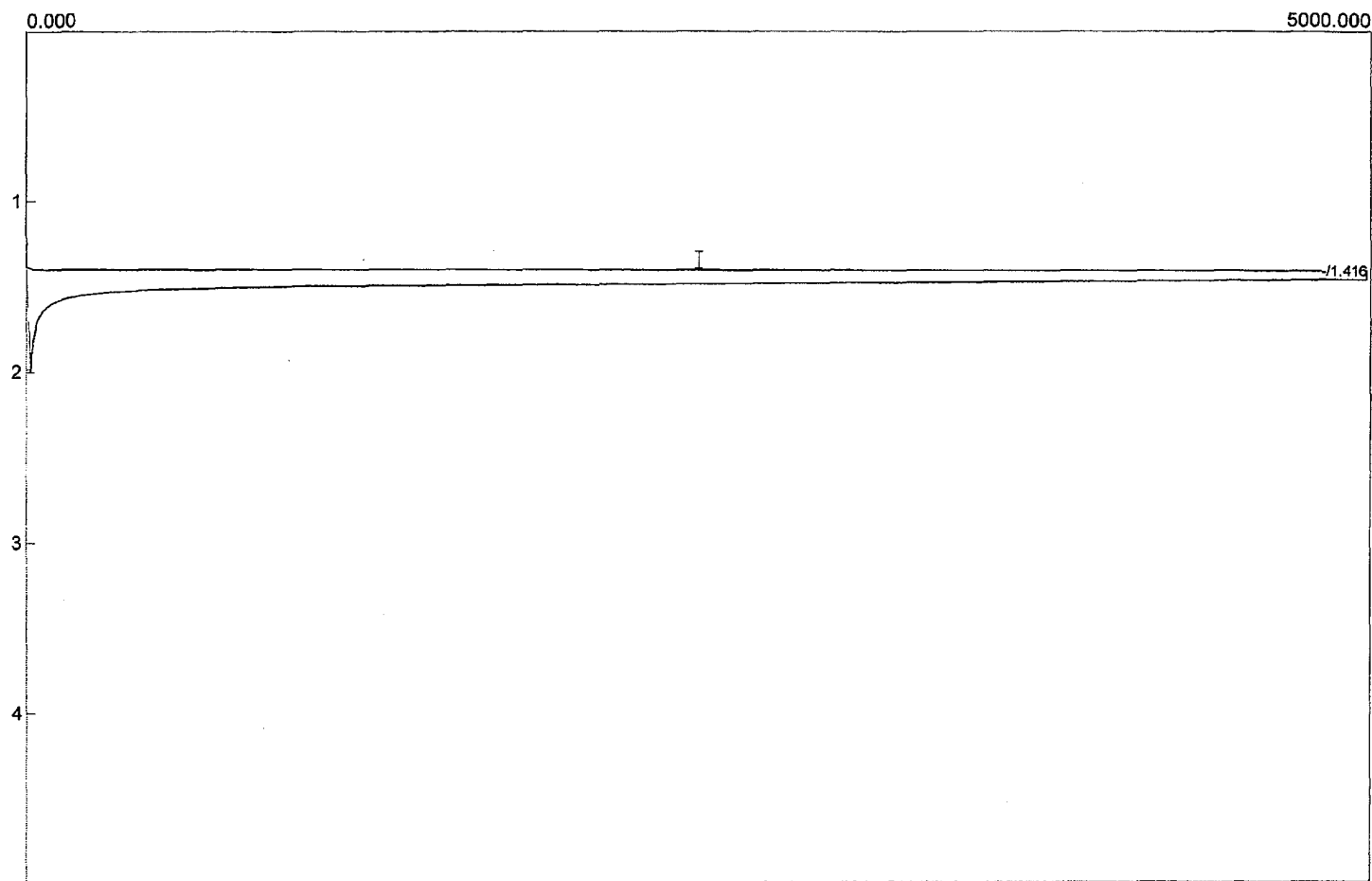
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Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
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0.0000

Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 21:48:03
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run46.chr (C:\BPTGUH2S)
Sample: Run 3 Inj. 14
Operator: RCP

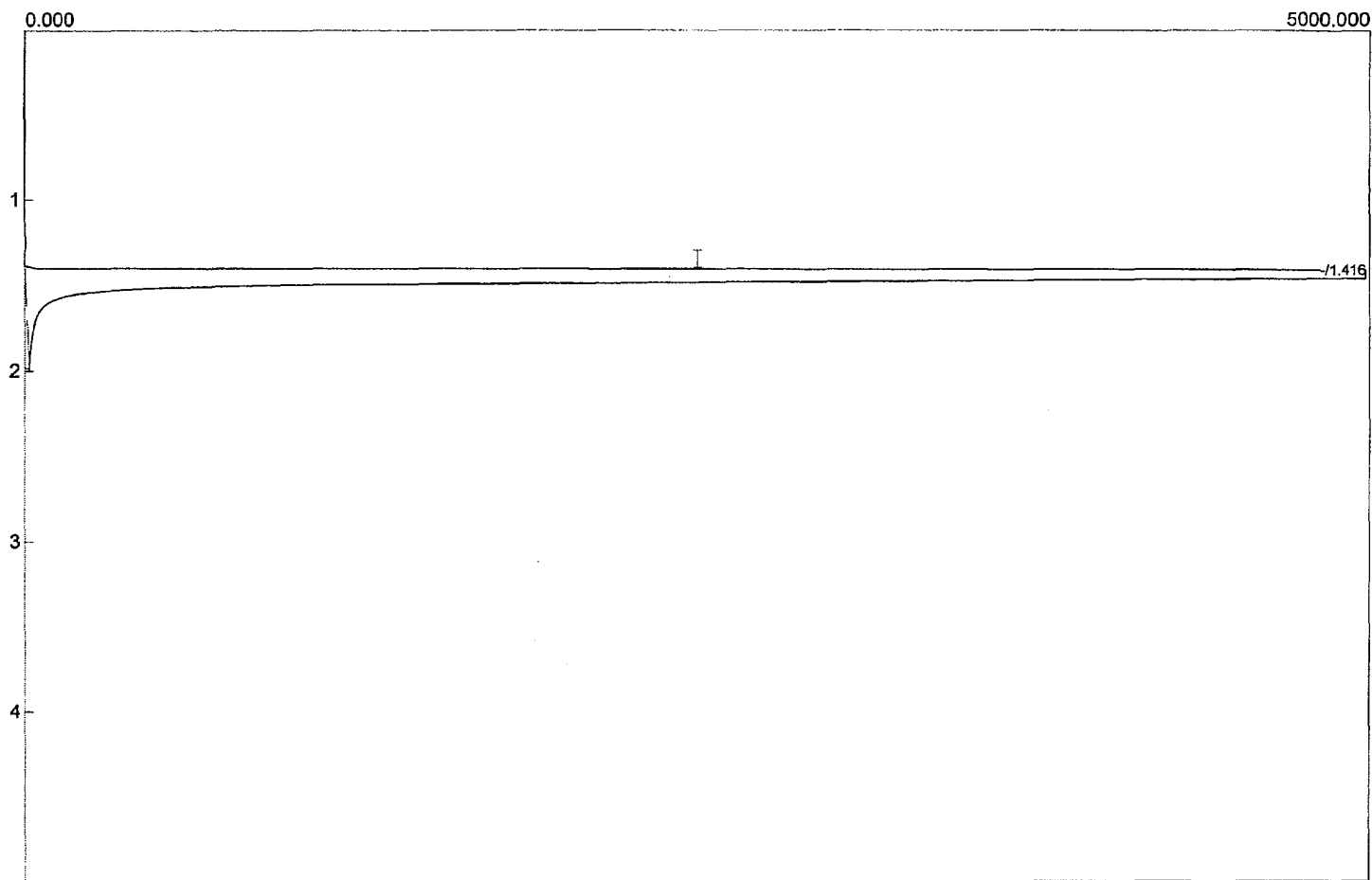
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Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 22:00:03
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run47.chr (C:\BPTGUH2S)
Sample: Run 3 Inj. 15
Operator: RCP

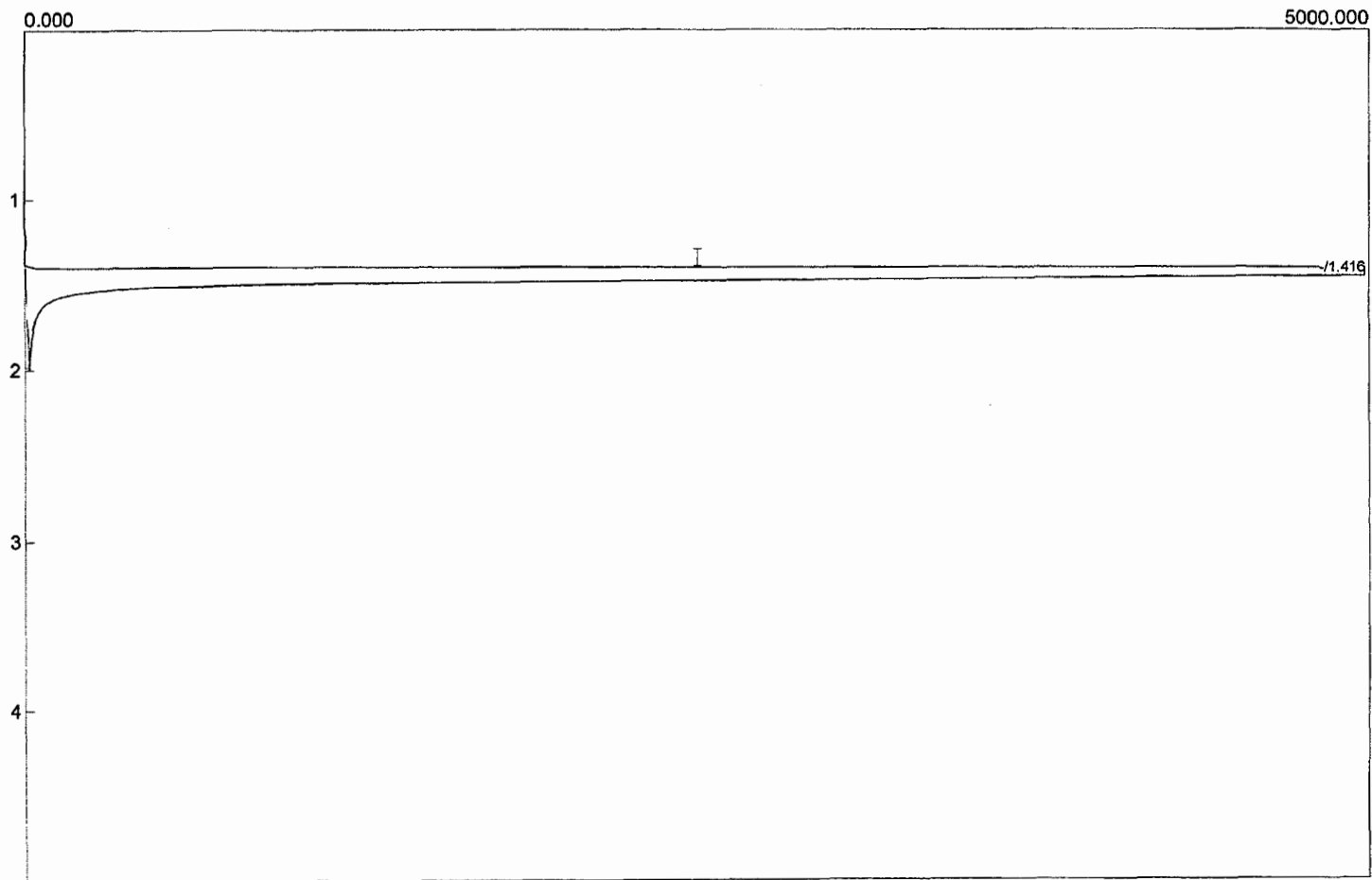
179 of 197

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

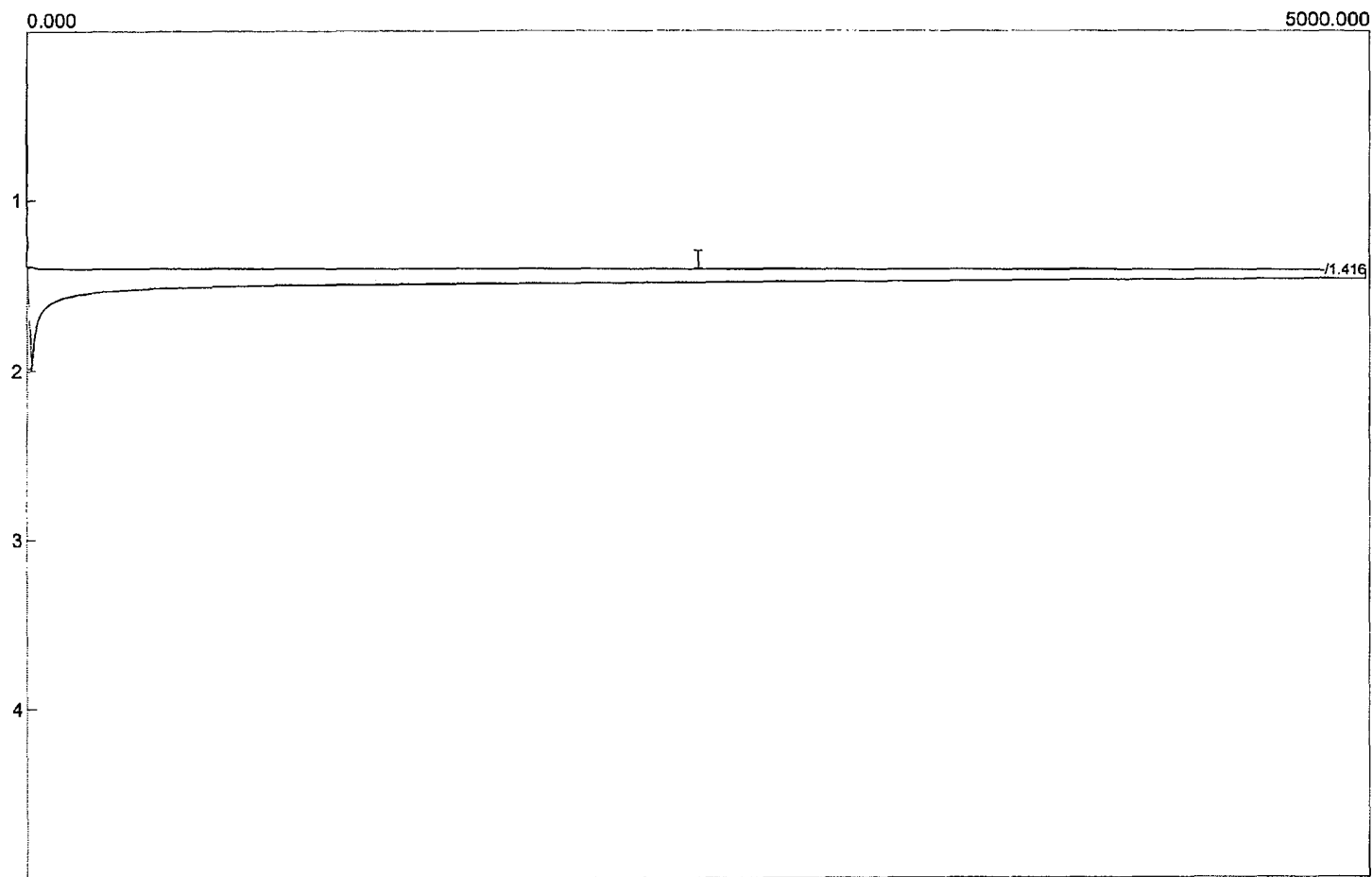
Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 22:12:03
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Run48.chr (C:\BPTGUH2S)
Sample: Run 3 Inj. 16
Operator: RCP

Temperature program:

Init temp	Hold	Ramp	Final temp
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Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 22:18:51
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Post02.chr (C:\BPTGUH2S)
Sample: Post Test Cal Point A
Operator: RCP

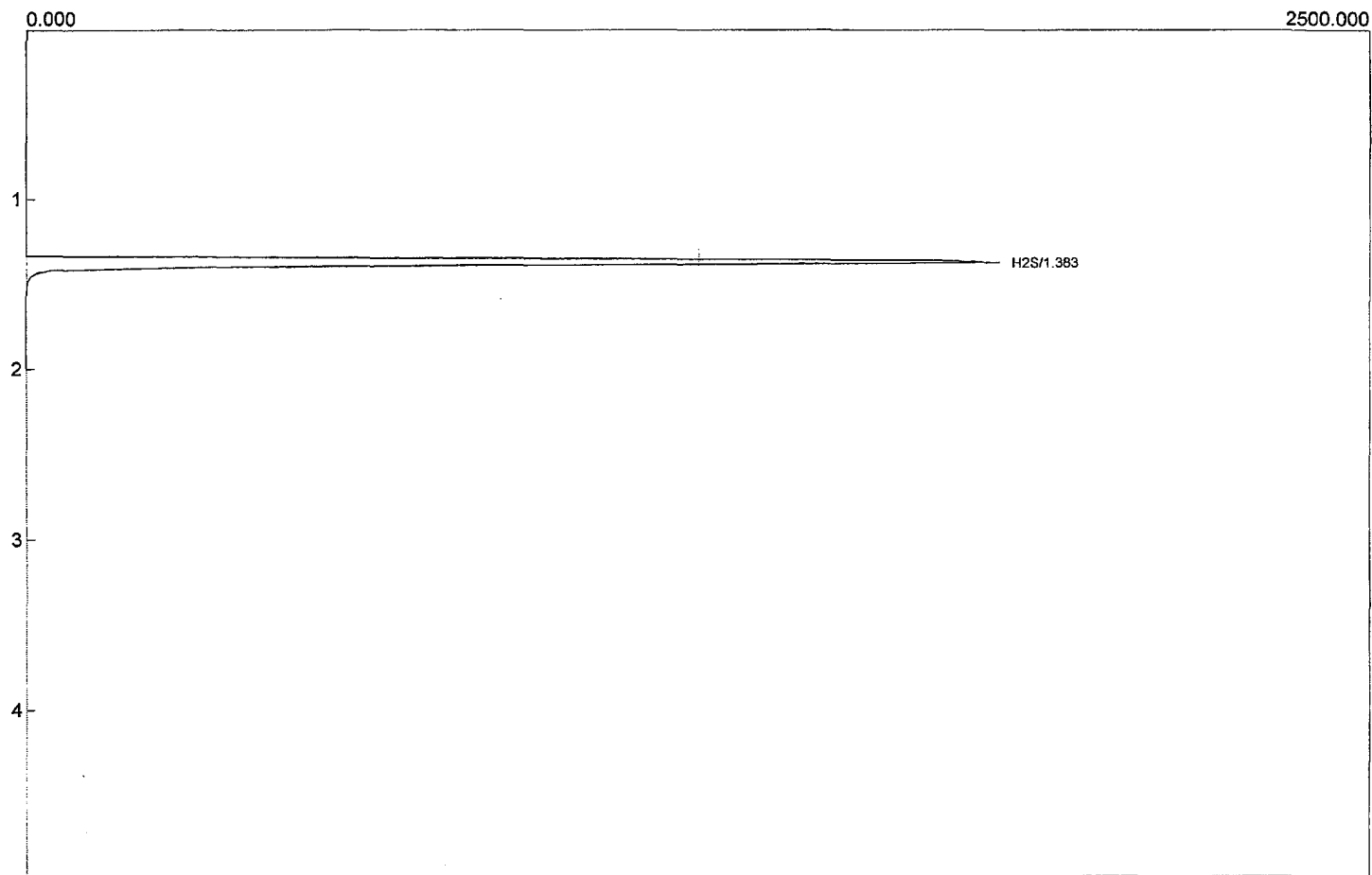
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Temperature program:

Init temp	Hold	Ramp	Final temp
50.00	3.000	20.000	50.00

Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
H2S	1.383	4774.9400
		4774.9400

Lab name: Golden Specialty Consulting
 Client: BP West Coast Products
 Client ID: #2 TGU
 Analysis date: 10/15/2008 22:21:44
 Method: Valve
 Description: FPD-CHANNEL 1
 Column: RESTEK 60METER MXT-1
 Carrier: Helium at 27 PSI
 Data file: Post03.chr (C:\BPTGUH2S)
 Sample: Post Test Cal Point A
 Operator: RCP

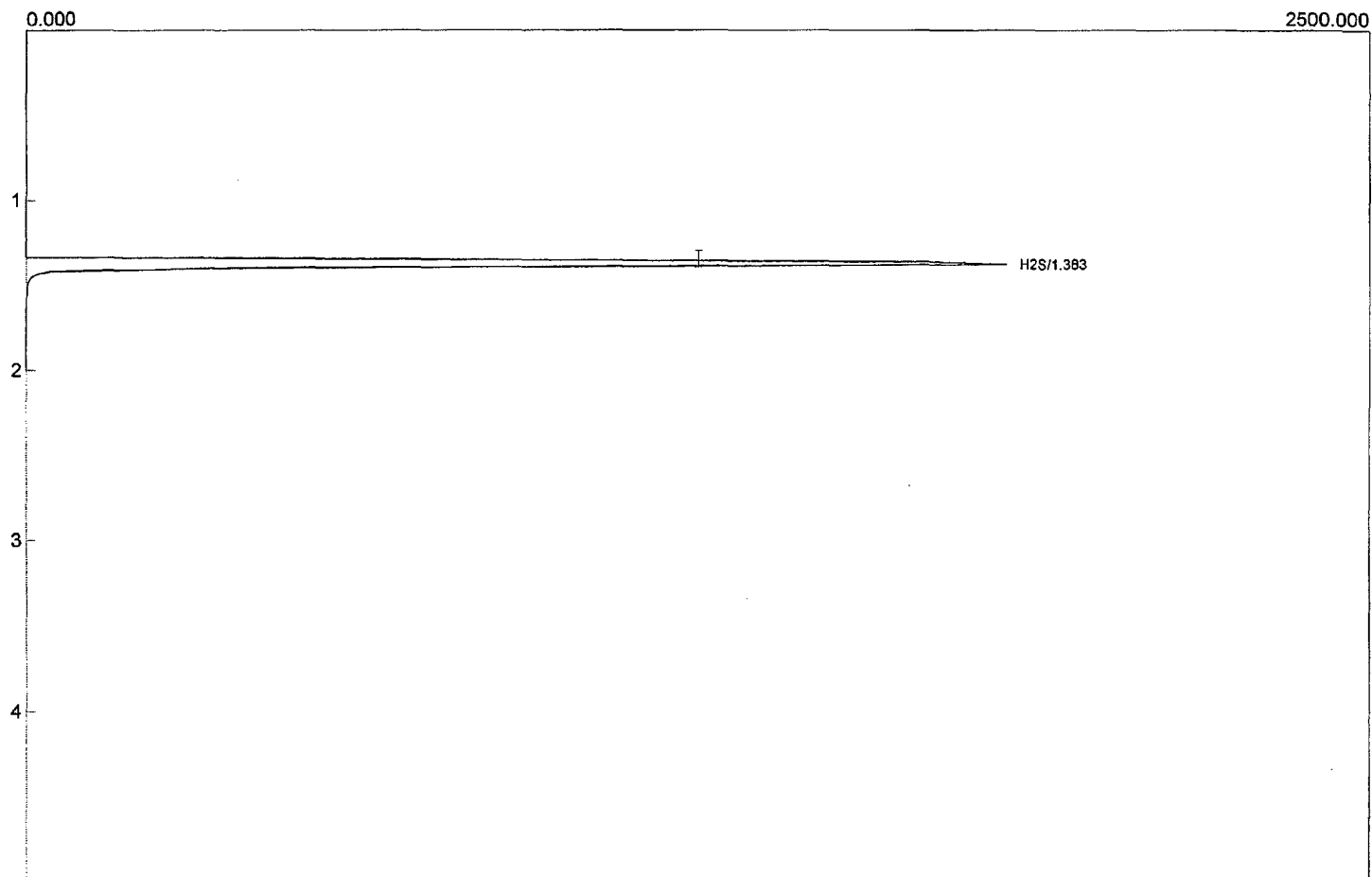
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Temperature program:

Init temp	Hold	Ramp	Final temp
50.00	3.000	20.000	50.00

Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
H2S	1.383	4779.4740
		4779.4740

Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 22:24:00
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Post04.chr (C:\BPTGUH2S)
Sample: Post Test Cal Point A
Operator: RCP

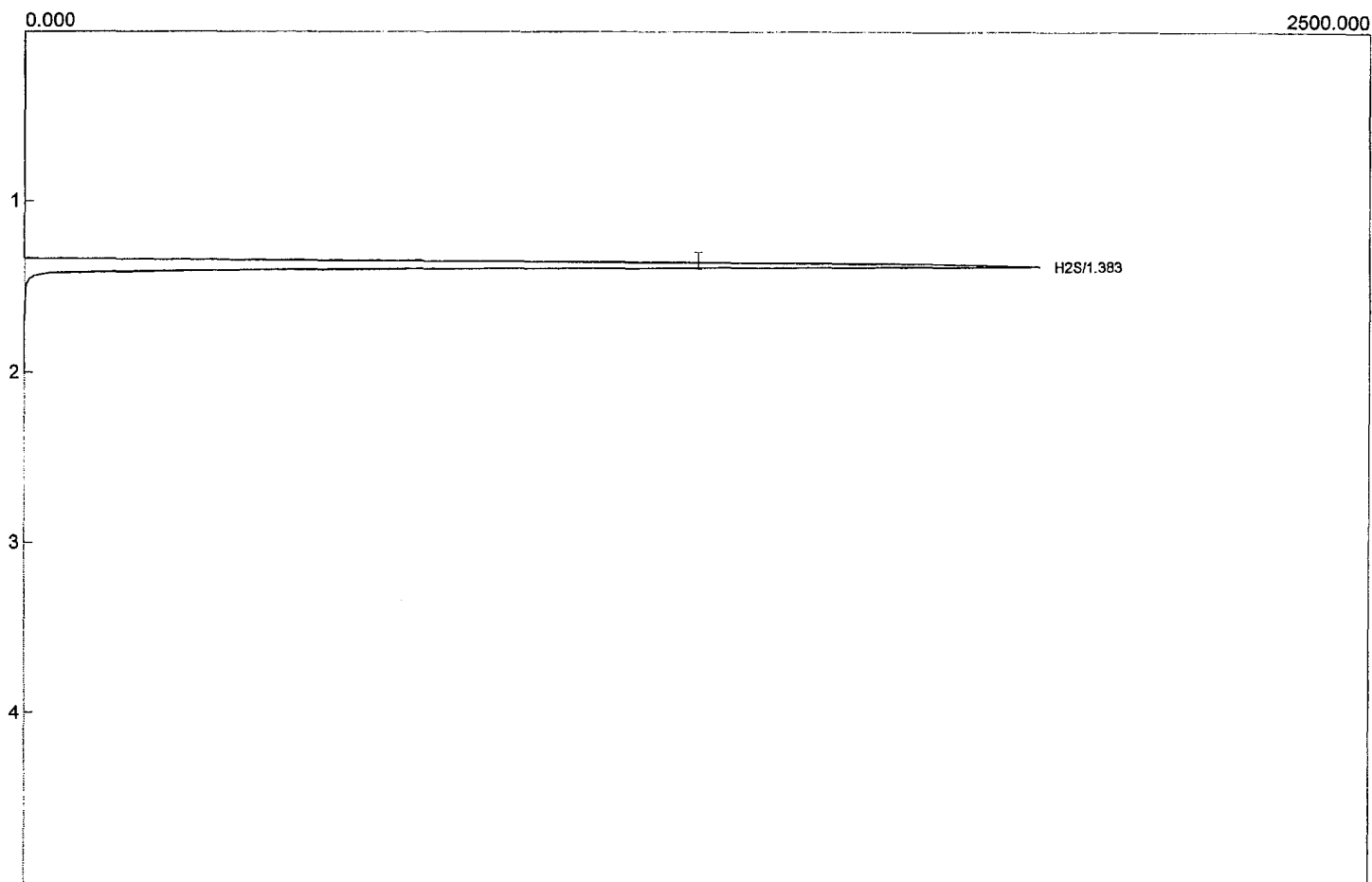
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Temperature program:

Init temp	Hold	Ramp	Final temp
50.00	3.000	20.000	50.00

Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
H2S	1.383	4877.5680
		4877.5680

Lab name: Golden Specialty Consulting
 Client: BP West Coast Products
 Client ID: #2 TGU
 Analysis date: 10/15/2008 22:27:51
 Method: Valve
 Description: FPD-CHANNEL 1
 Column: RESTEK 60METER MXT-1
 Carrier: Helium at 27 PSI
 Data file: Post05.chr (C:\BPTGUH2S)
 Sample: Post Test Cal Point B - *SAMPLE LINE LOSS*
 Operator: RCP

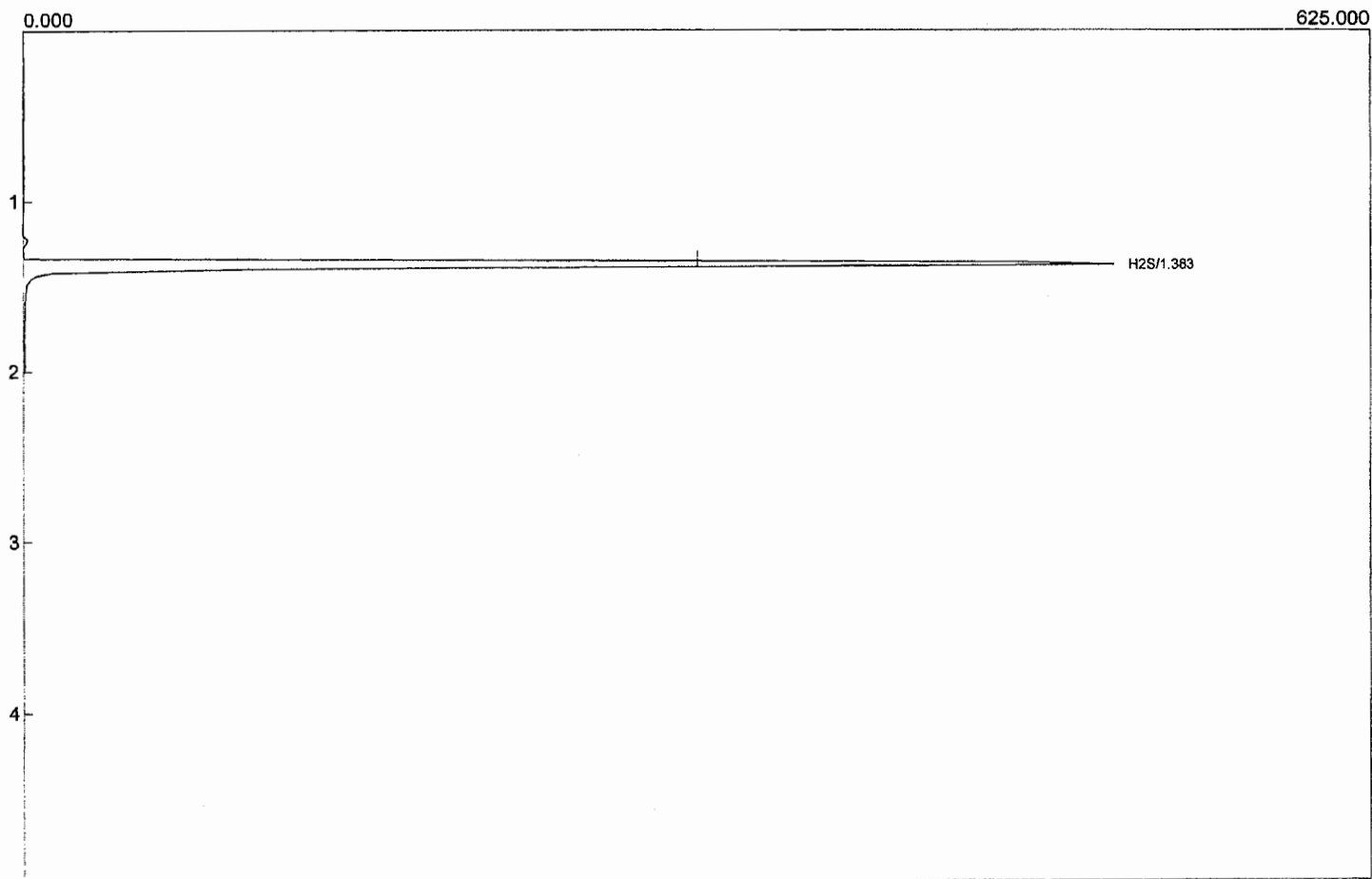
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Temperature program:

Init temp	Hold	Ramp	Final temp
50.00	3.000	20.000	50.00

Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
H2S	1.383	1326.4790
		1326.4790

Lab name: Golden Specialty Consulting
 Client: BP West Coast Products
 Client ID: #2 TGU
 Analysis date: 10/15/2008 22:32:24
 Method: Valve
 Description: FPD-CHANNEL 1
 Column: RESTEK 60METER MXT-1
 Carrier: Helium at 27 PSI
 Data file: Post07.chr (C:\BPTGUH2S)
 Sample: Post Test Cal Point B
 Operator: RCP

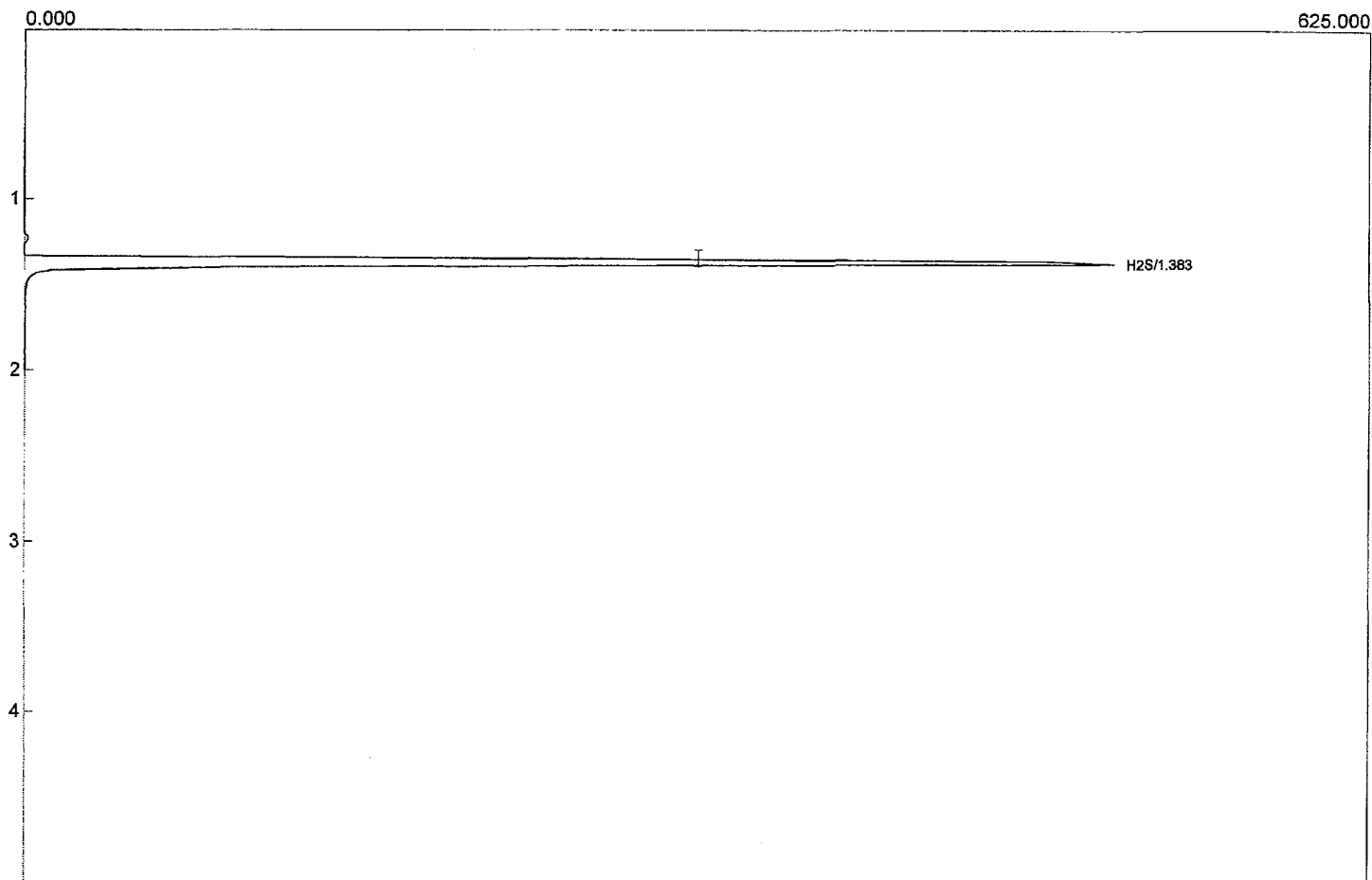
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Temperature program:

Init temp	Hold	Ramp	Final temp
50.00	3.000	20.000	50.00

Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
H2S	1.383	1345.5150
		1345.5150

Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 22:34:27
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Post08.chr (C:\BPTGUH2S)
Sample: Post Test Cal Point B
Operator: RCP

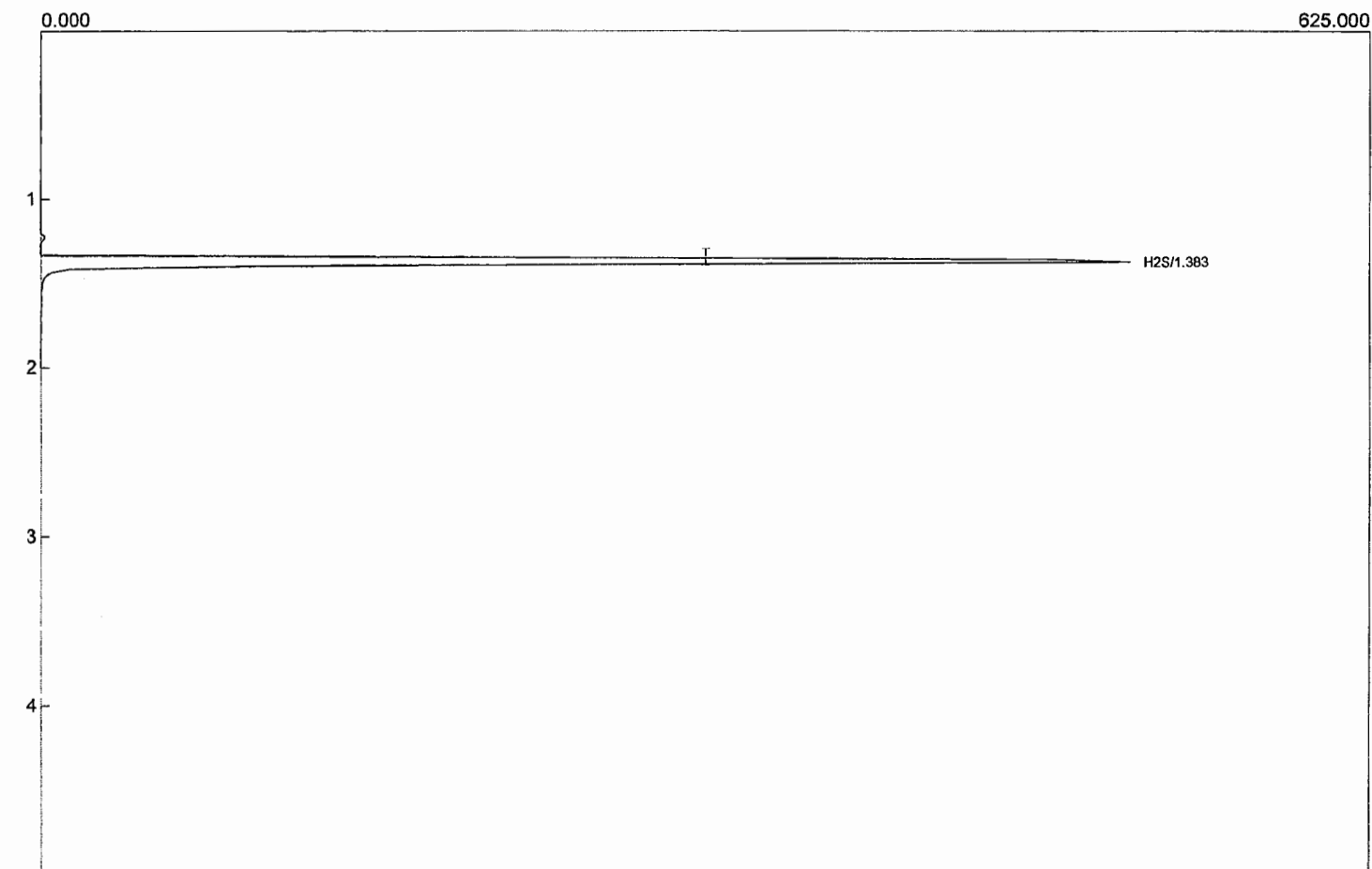
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Temperature program:

Init temp	Hold	Ramp	Final temp
50.00	3.000	20.000	50.00

Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
H2S	1.383	1339.2820
		1339.2820

Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 22:36:29
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Post09.chr (C:\BPTGUH2S)
Sample: Post Test Cal Point B
Operator: RCP

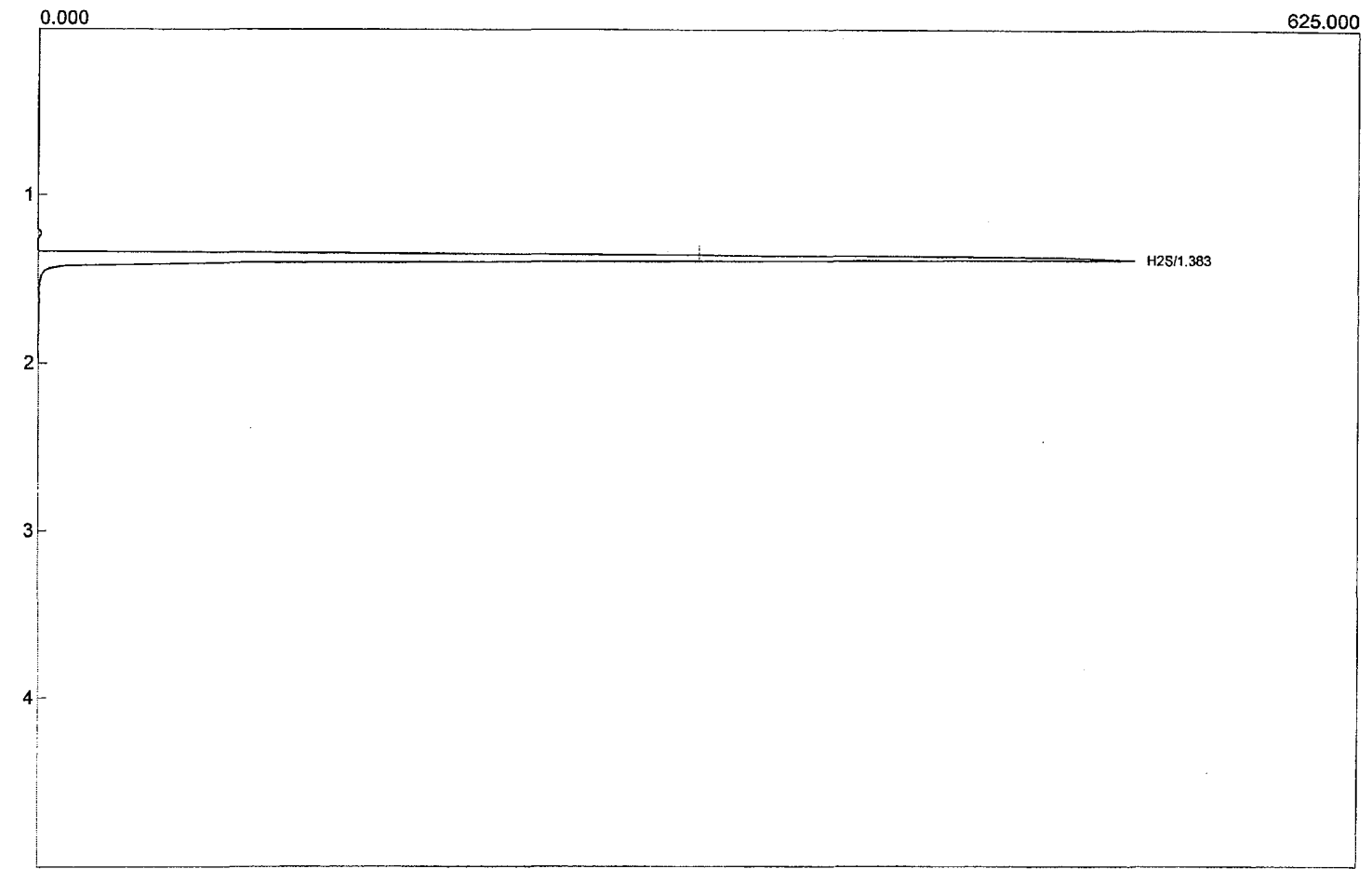
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Temperature program:

Init temp	Hold	Ramp	Final temp
50.00	3.000	20.000	50.00

Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
H2S	1.383	1380.0740
		1380.0740

Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 22:41:45
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Post10.chr (C:\BPTGUH2S)
Sample: Post Test Cal Point C
Operator: RCP

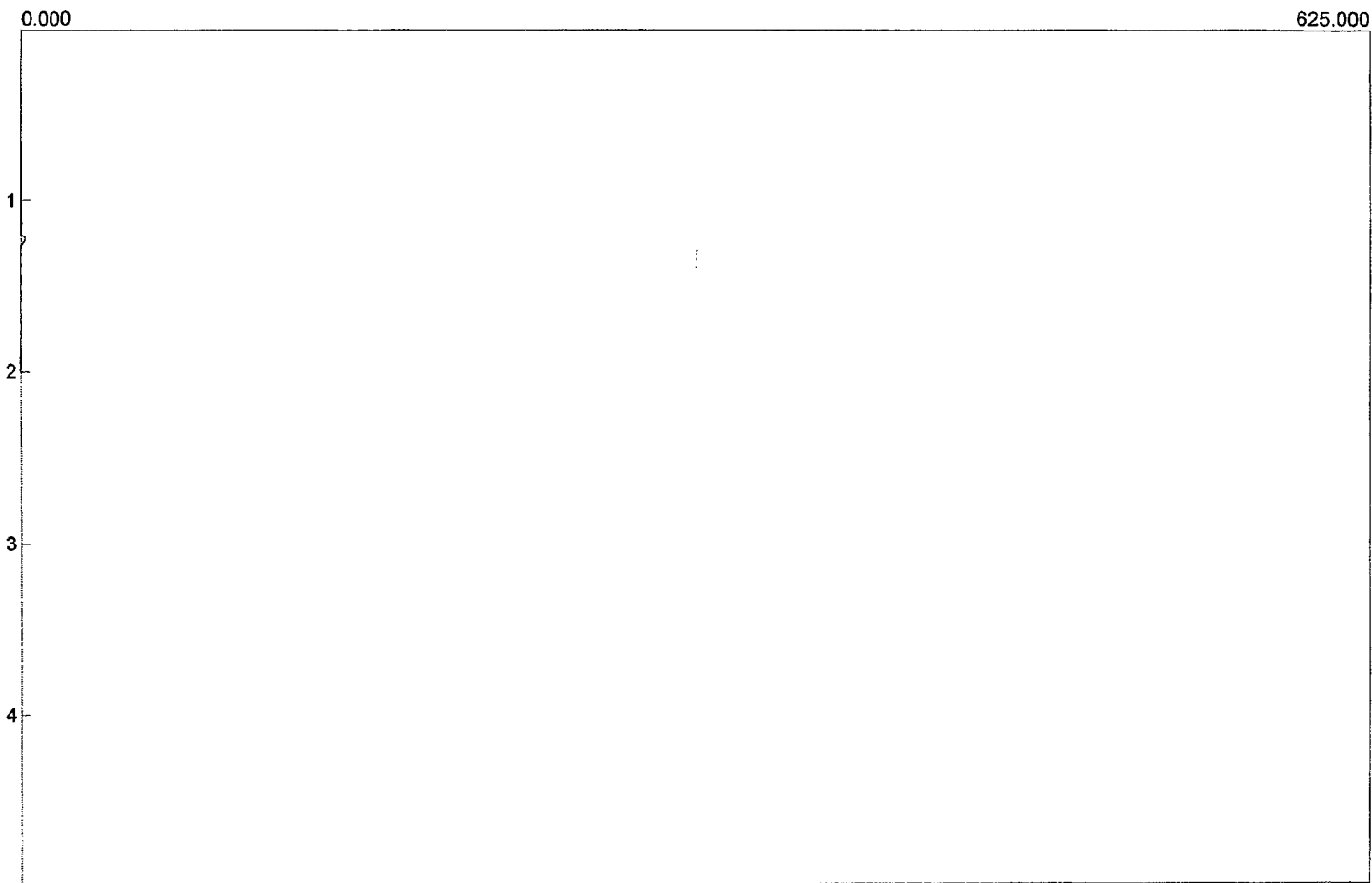
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Temperature program:

Init temp	Hold	Ramp	Final temp
50.00	3.000	20.000	50.00

Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

Lab name: Golden Specialty Consulting
Client: BP West Coast Products
Client ID: #2 TGU
Analysis date: 10/15/2008 22:43:52
Method: Valve
Description: FPD-CHANNEL 1
Column: RESTEK 60METER MXT-1
Carrier: Helium at 27 PSI
Data file: Post11.chr (C:\BPTGUH2S)
Sample: Post Test Cal Point C
Operator: RCP

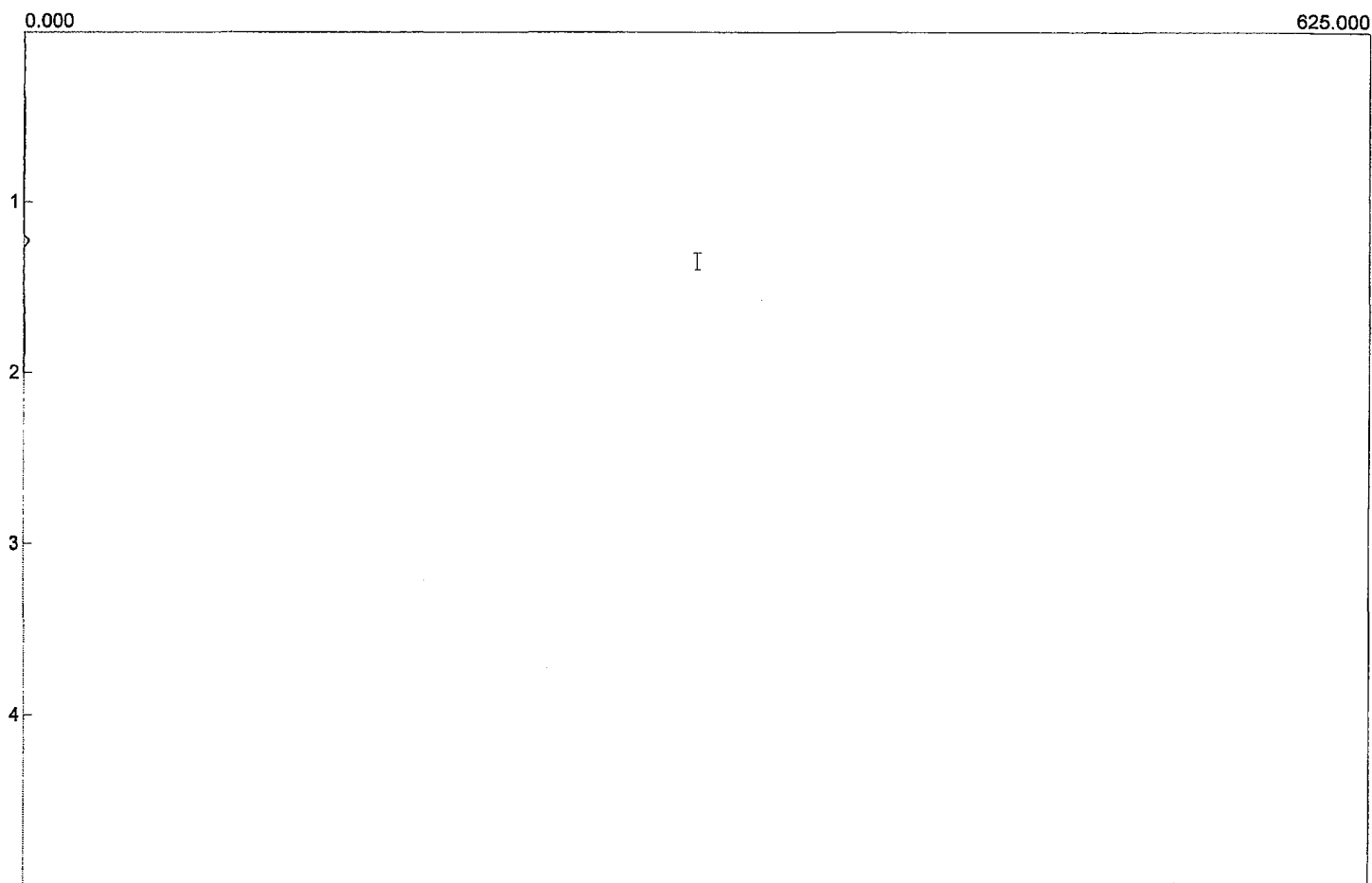
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Temperature program:

Init temp	Hold	Ramp	Final temp
50.00	3.000	20.000	50.00

Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
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0.0000

Lab name: Golden Specialty Consulting
 Client: BP West Coast Products
 Client ID: #2 TGU
 Analysis date: 10/15/2008 22:46:00
 Method: Valve
 Description: FPD-CHANNEL 1
 Column: RESTEK 60METER MXT-1
 Carrier: Helium at 27 PSI
 Data file: Post12.chr (C:\BPTGUH2S)
 Sample: Post Test Cal Point C
 Operator: RCP

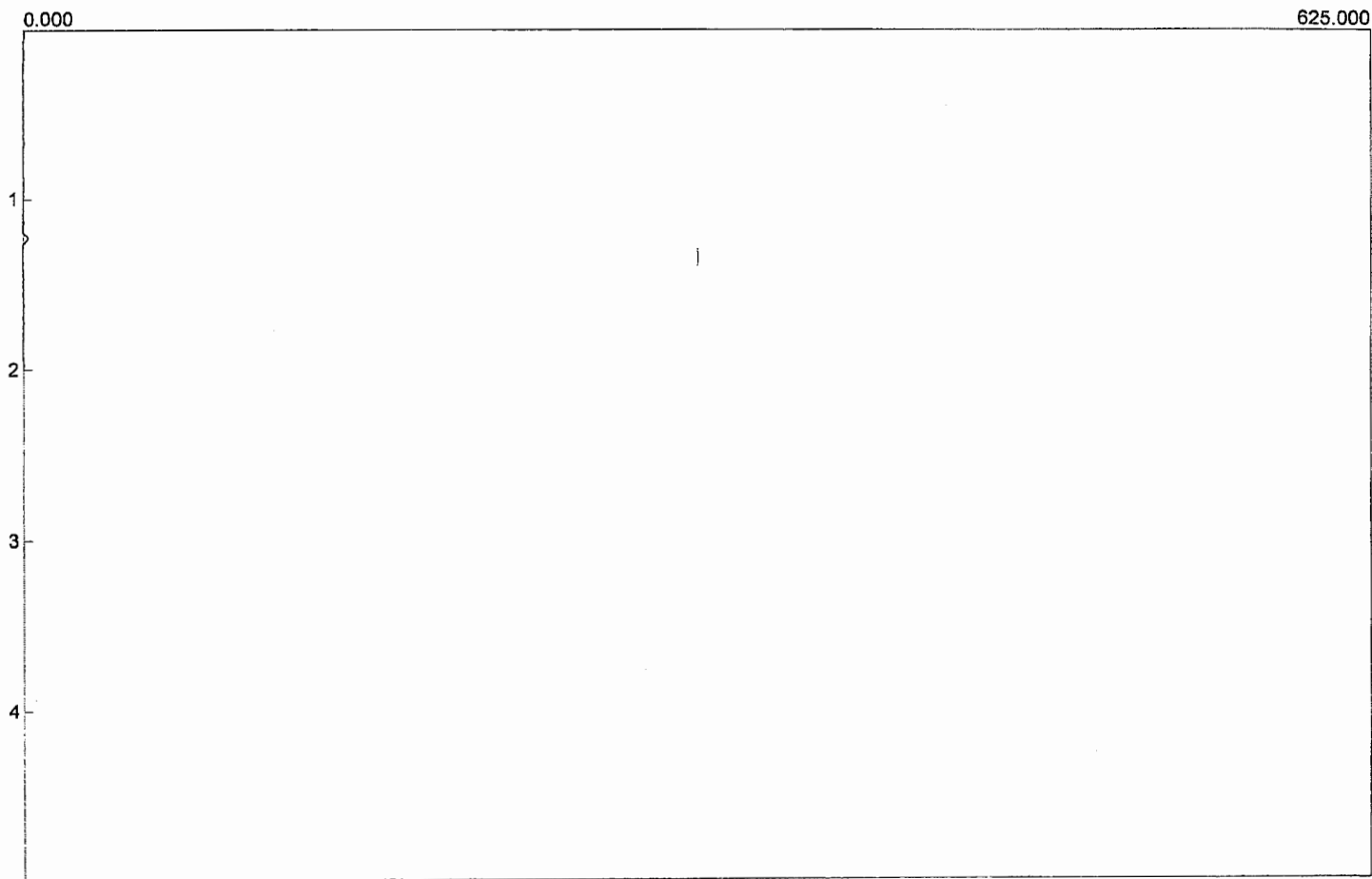
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Temperature program:

Init temp	Hold	Ramp	Final temp
50.00	3.000	20.000	50.00

Events:

Time	Event
0.050	ZERO
0.100	G ON ()
1.100	G OFF ()



Component	Retention	Area
	0.0000	

APPENDIX G - PROCESS DATA LISTING

Process Data

Start Time	10/14/2008 11:05	SOUTH SULFUR PRODUCTION
Stop Time	10/14/2008 12:19	LT/DAY 17WK5015.PV
	11:05	109.0
	11:06	109.0
	11:07	109.1
	11:08	109.1
	11:09	109.1
	11:10	109.1
	11:11	109.1
	11:12	109.1
	11:13	109.1
	11:14	109.1
	11:15	109.1
	11:16	109.1
	11:17	109.1
	11:18	109.1
	11:19	109.0
	11:20	109.0
	11:21	109.0
	11:22	109.0
	11:23	109.0
	11:24	109.0
	11:25	109.0
	11:26	109.0
	11:27	109.0
	11:28	109.0
	11:29	109.0
	11:30	109.0
	11:31	109.0
	11:32	109.0
	11:33	109.0
	11:34	109.0
	11:35	109.0
	11:36	109.0
	11:37	109.0
	11:38	109.0
	11:39	109.0
	11:40	109.0
	11:41	109.0
	11:42	109.0
	11:43	109.0
	11:44	109.0
	11:45	109.0
	11:46	109.0
	11:47	108.9
	11:48	108.9
	11:49	108.9
	11:50	108.9
	11:51	108.9
	11:52	108.9
	11:53	108.9
	11:54	108.9
	11:55	108.9
	11:56	108.9
	11:57	108.9
	11:58	108.9
	11:59	108.9
	12:00	108.9
	12:01	108.9
	12:02	108.9
	12:03	108.9
	12:04	108.9
	12:05	108.9
	12:06	108.9
	12:07	108.9
	12:08	108.9
	12:09	108.9
	12:10	108.9
	12:11	108.9
	12:12	108.9
	12:13	108.9
	12:14	108.9
	12:15	108.8
	12:16	108.8
	12:17	108.8
	12:18	108.8

Start Time	10/14/2008 16:22	SOUTH SULFUR PRODUCTION
Stop Time	10/14/2008 17:27	LT/DAY 17WK5015.PV
	16:22	109.1
	16:23	109.1
	16:24	109.1
	16:25	109.1
	16:26	109.1
	16:27	109.2
	16:28	109.2
	16:29	109.2
	16:30	109.2
	16:31	109.2
	16:32	109.2
	16:33	109.2
	16:34	109.2
	16:35	109.2
	16:36	109.2
	16:37	109.2
	16:38	109.2
	16:39	109.2
	16:40	109.2
	16:41	109.2
	16:42	109.2
	16:43	109.2
	16:44	109.2
	16:45	109.2
	16:46	109.2
	16:47	109.2
	16:48	109.2
	16:49	109.2
	16:50	109.2
	16:51	109.2
	16:52	109.2
	16:53	109.2
	16:54	109.2
	16:55	109.2
	16:56	109.2
	16:57	109.2
	16:58	109.2
	16:59	109.2
	17:00	109.2
	17:01	109.2
	17:02	109.2
	17:03	109.2
	17:04	109.2
	17:05	109.2
	17:06	109.2
	17:07	109.2
	17:08	109.2
	17:09	109.2
	17:10	109.2
	17:11	109.2
	17:12	109.2
	17:13	109.2
	17:14	109.2
	17:15	109.2
	17:16	109.2
	17:17	109.2
	17:18	109.2
	17:19	109.2
	17:20	109.2
	17:21	109.2
	17:22	109.2
	17:23	109.2
	17:24	109.2
	17:25	109.2
	17:26	109.2

Start Time	10/15/2008 9:34	SOUTH SULFUR PRODUCTION
Stop Time	10/15/2008 10:40	LT/DAY 17WK5015.PV
	9:34	108.2
	9:35	108.2
	9:36	108.2
	9:37	108.2
	9:38	108.2
	9:39	108.2
	9:40	108.2
	9:41	108.2
	9:42	108.2
	9:43	108.1
	9:44	108.1
	9:45	108.1
	9:46	108.1
	9:47	108.1
	9:48	108.1
	9:49	108.1
	9:50	108.1
	9:51	108.1
	9:52	108.1
	9:53	108.1
	9:54	108.1
	9:55	108.1
	9:56	108.1
	9:57	108.1
	9:58	108.1
	9:59	108.1
	10:00	108.1
	10:01	108.0
	10:02	108.0
	10:03	108.0
	10:04	108.0
	10:05	108.0
	10:06	108.0
	10:07	108.0
	10:08	108.0
	10:09	108.0
	10:10	108.0
	10:11	108.0
	10:12	108.0
	10:13	108.0
	10:14	108.0
	10:15	108.0
	10:16	108.0
	10:17	108.0
	10:18	107.9
	10:19	107.9
	10:20	107.9
	10:21	107.9
	10:22	107.9
	10:23	107.9
	10:24	107.9
	10:25	107.9
	10:26	107.9
	10:27	107.9
	10:28	107.9
	10:29	107.9
	10:30	107.9
	10:31	107.9
	10:32	107.9
	10:33	107.9
	10:34	107.9
	10:35	107.9
	10:36	107.8
	10:37	107.8
	10:38	107.8
	10:39	107.8

BP - CHERRY POINT REFINERY									
#2 TGU COMPLIANCE TEST									
OCTOBER 14-15, 2008									
COVERS AOP TERMS 5.13.13 THROUGH 5.13.17									
COVERS OAC 890A CONDITION 5									
BOTH REQUIRE 80% LOAD DURING SOURCE TESTING									
		NORTH SULFUR PRODUCTION	SOUTH SULFUR PRODUCTION	S. Sulfur Plant To Incin	N. Sulfur Plant To Incin	S SULF PLANT TG TO TGU1	N SULF PLANT TG TO TGU1	S SULF PLANT TG TO TGU2	N SULF PLANT TG TO TGU2
		LT/DAY 17WK5014.PV	LT/DAY 17WK5015.PV	% OPEN 19HC1A.pv	% OPEN 19HC3A.pv	VLV % 19HC1B.pv	VLV % 19HC3B.pv	VALVE % 25HC1C.pv	VALVE % 25HC3C.pv
RUN 1									
	14-Oct-08 11:05:00	101.14	109.04	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:06:00	101.11	109.05	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:07:00	101.09	109.05	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:08:00	101.06	109.05	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:09:00	101.03	109.06	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:10:00	101.01	109.06	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:11:00	100.98	109.07	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:12:00	100.95	109.07	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:13:00	100.93	109.07	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:14:00	100.90	109.07	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:15:00	100.87	109.06	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:16:00	100.85	109.06	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:17:00	100.82	109.06	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:18:00	100.79	109.05	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:19:00	100.76	109.05	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:20:00	100.74	109.04	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:21:00	100.71	109.04	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:22:00	100.68	109.04	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:23:00	100.66	109.03	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:24:00	100.63	109.03	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:25:00	100.60	109.03	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:26:00	100.58	109.02	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:27:00	100.55	109.02	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:28:00	100.52	109.02	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:29:00	100.50	109.01	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:30:00	100.47	109.01	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:31:00	100.44	109.01	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:32:00	100.42	109.00	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:33:00	100.39	109.00	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:34:00	100.36	108.99	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:35:00	100.34	108.99	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:36:00	100.31	108.99	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:37:00	100.28	108.98	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:38:00	100.26	108.98	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:39:00	100.23	108.98	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:40:00	100.20	108.97	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:41:00	100.18	108.97	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:42:00	100.15	108.97	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:43:00	100.12	108.96	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:44:00	100.10	108.96	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:45:00	100.06	108.96	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:46:00	99.98	108.95	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:47:00	99.88	108.95	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:48:00	99.79	108.94	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:49:00	99.70	108.94	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:50:00	99.61	108.94	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:51:00	99.52	108.93	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:52:00	99.43	108.93	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:53:00	99.33	108.93	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:54:00	99.24	108.92	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:55:00	99.15	108.92	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:56:00	99.06	108.92	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:57:00	98.97	108.91	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:58:00	98.88	108.91	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 11:59:00	98.79	108.91	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 12:00:00	98.69	108.90	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 12:01:00	98.60	108.90	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 12:02:00	98.51	108.90	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 12:03:00	98.42	108.89	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 12:04:00	98.33	108.89	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 12:05:00	98.24	108.88	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 12:06:00	98.14	108.88	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 12:07:00	98.05	108.88	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 12:08:00	97.96	108.87	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 12:09:00	97.87	108.87	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 12:10:00	97.78	108.87	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 12:11:00	97.69	108.86	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 12:12:00	97.60	108.86	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 12:13:00	97.50	108.86	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 12:14:00	97.41	108.85	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 12:15:00	97.32	108.85	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 12:16:00	97.23	108.85	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 12:17:00	97.14	108.84	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 12:18:00	97.05	108.84	-6.90	-6.90	-6.90	100.00	105.00	-6.90
	14-Oct-08 12:19:00	96.95	108.83	-6.90	-6.90	-6.90	100.00	105.00	-6.90
Average			108.96	ltpd		96.86%	Load		

BP - CHERRY POINT REFINERY								
#2 TGU COMPLIANCE TEST								
OCTOBER 14-15, 2008								
COVERS AOP TERMS 5.13.13 THROUGH 5.13.17								
COVERS OAC 890A CONDITION 5								
BOTH REQUIRE 80% LOAD DURING SOURCE TESTING								
	NORTH SULFUR PRODUCTION LT/DAY 17WK5014.PV	SOUTH SULFUR PRODUCTION LT/DAY 17WK5015.PV	S. Sulfur Plant To Inch % OPEN 19HC1A.pv	N. Sulfur Plant To Inch % OPEN 19HC3A.pv	S SULF PLANT TG TO TGU1 VLV % 19HC1B.pv	N SULF PLANT TG TO TGU1 VLV % 19HC3B.pv	S SULF PLANT TG TO TGU2 VALVE % 25HC1C.pv	N SULF PLANT TG TO TGU2 VALVE % 26HC3C.pv
RUN 2								
14-Oct-08 16:22:00	110.14	109.08	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:23:00	110.21	109.10	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:24:00	110.28	109.11	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:25:00	110.35	109.12	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:26:00	110.42	109.14	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:27:00	110.49	109.15	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:28:00	110.56	109.16	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:29:00	110.63	109.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:30:00	110.70	109.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:31:00	110.77	109.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:32:00	110.84	109.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:33:00	110.91	109.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:34:00	110.98	109.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:35:00	111.05	109.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:36:00	111.13	109.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:37:00	111.20	109.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:38:00	111.27	109.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:39:00	111.34	109.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:40:00	111.41	109.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:41:00	111.48	109.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:42:00	111.55	109.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:43:00	111.62	109.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:44:00	111.69	109.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:45:00	111.76	109.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:46:00	111.83	109.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:47:00	111.90	109.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:48:00	111.97	109.18	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:49:00	112.04	109.18	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:50:00	112.11	109.18	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:51:00	112.18	109.18	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:52:00	112.25	109.18	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:53:00	112.32	109.18	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:54:00	112.39	109.18	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:55:00	112.47	109.18	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:56:00	112.54	109.18	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:57:00	112.61	109.18	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:58:00	112.68	109.18	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 16:59:00	112.75	109.18	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:00:00	112.82	109.18	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:01:00	112.89	109.18	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:02:00	112.96	109.18	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:03:00	113.03	109.18	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:04:00	113.09	109.18	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:05:00	113.09	109.18	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:06:00	113.08	109.18	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:07:00	113.07	109.19	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:08:00	113.05	109.19	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:09:00	113.04	109.19	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:10:00	113.03	109.19	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:11:00	113.02	109.19	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:12:00	113.00	109.19	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:13:00	112.99	109.19	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:14:00	112.98	109.19	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:15:00	112.97	109.19	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:16:00	112.95	109.19	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:17:00	112.94	109.19	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:18:00	112.93	109.19	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:19:00	112.92	109.19	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:20:00	112.91	109.19	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:21:00	112.89	109.19	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:22:00	112.88	109.19	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:23:00	112.87	109.19	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:24:00	112.86	109.19	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:25:00	112.84	109.19	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:26:00	112.83	109.20	-6.90	-6.90	-6.90	100.00	105.00	-6.90
14-Oct-08 17:27:00	112.82	109.20	-6.90	-6.90	-6.90	100.00	105.00	-6.90
Average		109.17	tpd		97.04%	Load		

BP - CHERRY POINT REFINERY								
#2 TGU COMPLIANCE TEST								
OCTOBER 14-15, 2008								
COVERS AOP TERMS 5.13.13 THROUGH 5.13.17								
COVERS OAC 890A CONDITION 5								
BOTH REQUIRE 80% LOAD DURING SOURCE TESTING								
	NORTH SULFUR PRODUCTION LT/DAY	SOUTH SULFUR PRODUCTION LT/DAY	S. Sulfur Plant To Inch % OPEN	N. Sulfur Plant To Inch % OPEN	S SULF PLANT TG TO TGU1 VLV %	N SULF PLANT TG TO TGU1 VLV %	S SULF PLANT TG TO TGU2 VALVE %	N SULF PLANT TG TO TGU2 VALVE %
	17WK8014.PV	17WK5015.PV	19HC1A.pv	19HC3A.pv	19HC1B.pv	19HC3B.pv	25HC1C.pv	26HC3C.pv
RUN 3								
15-Oct-08 09:34:00	111.45	108.20	-6.90	-6.90	-6.90	100.00	105.00	-5.90
15-Oct-08 09:35:00	111.45	108.19	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:36:00	111.45	108.19	-6.90	-6.90	-6.90	100.00	105.00	-5.90
15-Oct-08 09:37:00	111.45	108.18	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:38:00	111.45	108.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:39:00	111.45	108.17	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:40:00	111.45	108.16	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:41:00	111.45	108.16	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:42:00	111.44	108.15	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:43:00	111.34	108.15	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:44:00	111.20	108.14	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:45:00	111.07	108.13	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:46:00	110.94	108.13	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:47:00	110.81	108.12	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:48:00	110.68	108.12	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:49:00	110.55	108.11	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:50:00	110.41	108.11	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:51:00	110.28	108.10	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:52:00	110.15	108.10	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:53:00	110.02	108.09	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:54:00	109.89	108.08	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:55:00	109.76	108.08	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:56:00	109.62	108.07	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:57:00	109.49	108.07	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:58:00	109.37	108.06	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 09:59:00	109.37	108.06	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:00:00	109.39	108.05	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:01:00	109.41	108.04	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:02:00	109.43	108.04	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:03:00	109.45	108.03	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:04:00	109.47	108.03	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:05:00	109.50	108.02	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:06:00	109.52	108.02	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:07:00	109.54	108.01	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:08:00	109.56	108.01	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:09:00	109.58	108.00	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:10:00	109.60	107.99	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:11:00	109.63	107.99	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:12:00	109.65	107.98	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:13:00	109.67	107.98	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:14:00	109.69	107.97	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:15:00	109.71	107.97	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:16:00	109.66	107.96	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:17:00	109.60	107.95	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:18:00	109.54	107.95	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:19:00	109.47	107.94	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:20:00	109.41	107.94	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:21:00	109.35	107.93	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:22:00	109.29	107.93	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:23:00	109.23	107.92	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:24:00	109.16	107.91	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:25:00	109.10	107.91	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:26:00	109.04	107.90	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:27:00	108.98	107.90	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:28:00	108.92	107.89	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:29:00	108.85	107.89	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:30:00	108.79	107.88	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:31:00	108.73	107.88	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:32:00	108.67	107.87	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:33:00	108.61	107.86	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:34:00	108.54	107.86	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:35:00	108.48	107.85	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:36:00	108.42	107.85	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:37:00	108.36	107.84	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:38:00	108.30	107.84	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:39:00	108.23	107.83	-6.90	-6.90	-6.90	100.00	105.00	-6.90
15-Oct-08 10:40:00	108.17	107.82	-6.90	-6.90	-6.90	100.00	105.00	-6.90
Average	108.01	108.01	96.01%	96.01%	96.01%	100.00	105.00	-6.90

APPENDIX H - OPACITY CERTIFICATION

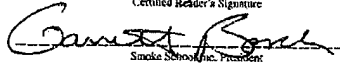
Smoke School Inc

EPA Reference Method 9 Certification Card

Robert Pegnam

Cert. No. WA-S00-32 Exp. Date 2009-04-01


Certified Reader's Signature


Smoke School Inc, President