HORIZON

AIR MEASUREMENT SERVICES, INC.

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RESULTS OF THE CRITERIA AND AB 2588 AIR TOXICS SOURCE TEST ON SIMI VALLEY LANDFILL FLARE #1 (McGill)

VCAPCD Permit to Operate #01395

Prepared for:

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HORIZON

AIR MEASUREMENT SERVICES, INC.

December 15, 2005

Mr. Bruce Matlock
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2801 Madera Road
Simi Valley, California 93065

Dear Mr. Matlock:

Please find enclosed three copies of the final report entitled "Results of the Criteria and AB 2588 Air Toxics Source Test on the Simi Valley Landfill Flare" for submittal to VCAPCD.

If you have any questions, please call me at (805) 498-8781.

Sincerely,

HORIZON AIR MEASUREMENT SERVICES, INC.

Richard J. Vacherot
Technical Director

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1. INTRODUCTION

Under the requirements of Ventura County Air Pollution Control District (VCAPCD) Permit to Operate #01395, Simi Valley Landfill and Recycling Center (SVLRC) is required to conduct a biennial criteria source test on landfill gas Flare #1 (McGill) located at the landfill to determine emissions of criteria pollutants. In addition, emission rates of air toxic compounds, as defined under AB 2588 legislation and as specified by VCAPCD, are required to be quantified every four years. Horizon Air Measurement Services, Inc. (Horizon) had been retained by SVLRC to conduct the required emissions testing program.

All testing was conducted in accordance with the Source Test Protocol (Horizon # W07-043-TP) of September 2005 which had been formally approved by VCAPCD. Sampling and analytical procedures utilized in the testing program are provided, in detail, in Section 4 of this report. All criteria testing was completed on October 10 and 11, 2005; the air toxics test program was completed from October10 through 18. The hexavalent chromium testing was repeated on November 22 and 23, 2005 due to a laboratory error on the original samples.

The criteria pollutants and associated emission parameters tested for and the associated Permit limits are provided in Table 1-1. The destruction efficiency of the flare with respect to ROC was also determined as well as the landfill gas heating value/composition and C_1 to C_3 reduced sulfur compound (including H_2S) concentration. Three replicate test runs were completed for each parameter of interest.

The air toxic target compounds are identical to those quantified during the most recent flare emissions test conducted in 2001 (Horizon Report #W07-028-FR). All target air toxic compounds (Table 1-2) were sampled at the flare exhaust.

A summary of the criteria emissions results and the associated Permit limits are provided in Section 2. A more detailed description and discussion of the criteria pollutants results and the air toxics results are provided in Section 5. Results of the QA/QC procedures are discussed in Section 6.

During air toxic testing, the flare was operating under normal operating conditions. For the criteria testing, the flare landfill gas flow was maximized. A description of the flare and landfill gas collection system and its operation during testing is summarized in Section 3 of this report. All pertinent documentation can be found in the Appendices.

Table 1-1

Criteria Pollutants
Simi Valley Landfill Flare #1
October 2005

Parameter	Permit Limit
Reactive Organic Compounds (ROC)	1.09 lb/hr
Oxides of Nitrogen	0.05 lb/MMBtu 2.20 lb/hr
Carbon Monoxide	0.20 lb/MMBtu 8.8 lb/hr
ROC Destruction Efficiency	98% or 20 ppm, C6 @ 3 % O2
Oxides of Sulfur	0.02 lb/MMBtu

Table 1-2

Air Toxic Compounds of Interest
Simi Valley Landfill Flare #1
October 2005

Parameter	Sampling Location
Speciated VOC's (SCAQMD Rule 1150.1 List) including: ethylene dibromide acrylonitrile 1,4 dioxane 1,1,2,2 tetrachloroethane	Inlet and Outlet
1,3 butadiene	Outlet
Formaldehyde	Outlet
Polycyclic Aromatic Hydrocarbons (PAH's)	Outlet
Hexachlorobenzene	Outlet
Metals	Outlet
Total/Hexavalent Chromium	Outlet
Hydrogen Chloride/Hydrogen Flouride (HCl/HF)	Outlet

2. SUMMARY OF RESULTS

2.1 Criteria Pollutants

The results of the criteria testing test program are summarized in Table 2-1. Emission rate of ROC, NO_x and CO were within the allowable emission limits under the Permit to Operate #01395.

Emission rate of NO_X averaged 0.681 lb/hr and 0.0274 lb/MMBtu which is well below the VCAPCD Rule 74.17.1 limit of 2.20 lb/hr and 0.05 lb/MMBtu, respectively. Emissions of CO were well below the VCAPCD Rule 74.17.1 limit of 0.2 lb/MMBtu and 8.8 lb/hour. The oxides of sulfur emissions were below the limit of 0.02 lb/MMBtu. The ROC destruction efficiency average of 99.5% is within the Rule 74.17.1 limit of 98%.

A more detailed discussion of the criteria testing results are provided in Section 5. Air toxic emissions are also discussed in Section 5.

Table 2-1
Summary of Results
Criteria Pollutants
Simi Valley Landfill - Flare #1
October 2005

	Emission Rate								Allowable Emissions	
	Run 1		Run 2		Run 3		Average			
	(lb/hr)	(lb/MMBtu)	(lb/hr)	(lb/MMBtu)	(lb/hr)	(lb/MMBtu)	(lb/hr)	(lb/MMBtu)	(lb/hr)	(lb/MMBtu)
Reactive Organic Compounds (ROC), as CH_4	0.0862	NA	0.0812	NA	0.103	NA	0.0901	NA	1.09	NA
Oxides of Nitrogen, as NO_2	0.695	0.0277	0.652	0.0269	0.697	0.0276	0.681	0.0274	2.20	0.05
Carbon Monoxide	4.49	0.1794	1.83	0.0753	1.03	0.0408	2.45	0.0985	8.80	0.20
Oxides of Sulfur	0.577	0.0145	0.674	0.0171	0.655	0.0169	0.635	0.0162	NA	0.02
	Destruction Efficiency									
							Average			
Reactive Organic Compounds	99.5%	----	99.5%	----	99.4%	----	99.5%		98.0%	

3. PROCESS DESCRIPTION

1. Flare Description

The landfill gas collection system consists of a series of landfill gas collection wells, a gas collection manifold, a pumping system and the landfill gas flare. Landfill gas, collected from various wells located throughout the landfill, is manifolded to a common duct. The landfill gas then passes through a condensation collection system, a blower, then to the flare.

The McGill Environmental landfill gas flare (Flare #1) is rated at 44 MMBtu/hr and consists of an insulated steel cylinder eight feet in diameter and 40 feet above ground level. The four sample ports utilized are located 36 feet from ground level and four feet from the top of the flare. Landfill gas is supplied to the flare burners at a rate of up to 1390 cubic feet per minute (cfm). Flare combustion temperature is maintained above 1600°F to ensure complete combustion and is monitored by a thermocouple, located 28 feet above ground level, recording temperature on a strip chart. The flare is equipped with automatic air control louvers and a temperature controller to maintain the pre-set flare temperature. A flame failure detector automatically shuts off the blower in the event of a flame out.

2. Flare Operation During Testing

During the criteria testing program, the flare was operated at the maximum flow rate achievable. Landfill gas flow rate and flare operating temperature for each criteria test run are provided on Table 3-1.

During the air toxics testing program, the flare was operated at the normal landfill gas flow rate. Landfill gas flow rate and flare operating temperature for the air toxics testing is also provided in Table 3-1.

Table 3-1

Flare Operating Conditions
Simi Valley Landfill Flare #1
October / November 2005

Run#	Landfill Gas Flow Rate (scfm)	Flare Temperature (F)
1 - Criteria pollutants / metals	1370	1605
2 - Criteria pollutants / metals	1322	1634
3 - Criteria pollutants / metals	1340	1645
1 - PAH	700	1609
1 - Formaldehyde	700	1614
1 - HC1	701	1613
2 - PAH	706	1590
2 - Formaldehyde	705	1598
3 - PAH	699	1636
3 - Formaldehyde	700	1651
2 - HC1	699	1656
3 - HC1	698	1659
1 - Chromium	799	1648
2 - Chromium	799	1660
3 - Chromium	804	1643

4. SAMPLING/ANALYSES

The sampling/analyses program has been divided into criteria pollutant testing and air toxics testing.

4.1 Criteria Pollutants

The target compounds quantified as part of the criteria pollutant testing and the associated sampling methods are provided in Table 4-1. Three, replicate test runs were conducted for each parameter of interest using the procedures detailed in subsequent subsections. All methods followed the applicable CARB/SCAQMD testing procedure without modification.

4.1.1 Sampling Location

4.1.1.1 Flare Exhaust

Sample ports are located on the flare approximately 36 feet above ground level and four feet from the flare exit. Two sample ports were utilized. Twenty-four traverse points (12 per port) were utilized for velocity, oxides of nitrogen, carbon monoxide and ROC sampling.

4.1.1.2 Flare Inlet - Landfill Gas

Reactive organic compound, fixed gas, and moisture samples were obtained from the landfill gas feed duct at a location at least two diameters downstream and one diameter upstream from a flow disturbance. Landfill gas flow rate was monitored using the on-line, calibrated flow meter operated by Simi Valley Landfill. The flow meter is corrected to standard temperature/pressure and gas density.

Table 4-1

Criteria Pollutants - Test Methods
Simi Valley Landfill Flare
October 2005

Parameter	Test Method
Inlet and Outlet	
Flow Rate	Continuous, On-Line Monitor (Inlet) CARB Method 2 (Outlet)
Fixed Gases (O_2, CO_2, N_2)	CARB Method 100/EPA Method 3A (Outlet) CARB Method 3/SCAQMD Method 10.1
Moisture	Wet Bulb/Dry Bulb (Inlet) CARB Method 4 (Outlet)
ROC/Methane	EPA Method 25 - Modified (Inlet) EPA Method 25 - Modified (Outlet)
Outlet Only	
Carbon Monoxide	CARB Method 100/EPA Method 10
Oxides of Nitrogen	CARB Method 100/EPA Method 7E
Inlet Only	
C_1-C_3 Sulfur Compounds (with H_2S)	SCAQMD Method 307.91 Equivalent
Heating Value	ASTM D3588-91

4.1.2 Methane and Reactive Organic Compounds (ROC)

Methane and Reactive Organic Compounds (ROC) concentration were determined at the landfill gas flare inlet and exhaust using modified EPA Method 25 or EPA Method 25C as provided in VCAPCD Rule 74.17. The modification eliminated the use of a condensate trap and filter in the sample collection system.

Method 25 samples were collected using the SUMMA canister Method outlined in EPA Method 25C as depicted in Appendix A.

The organic content of the sample collected in each SUMMA canister is measured by injecting a portion into the FID/TCA analysis system which uses a two phase gas chromatography (GC) column to separate carbon monoxide (CO), methane (CH_4), and carbon dioxide (CO_2) from each other and from the total gaseous non-methane organics (TGNMO) which are eluted as backflush. All eluted components are first oxidized to CO_2 by a hopcalite catalyst and then reduced to methane by a nickel catalyst. The resulting methane is detected using the flame ionization detector. A gas standard containing CO, CH_4, CO_2 and propane, prepared by Scott Specialty Gases, traceable to NBS, is used to calibrate the FID/TCA analysis system Methane and Reactive Organic Compounds (ROC) concentration was determined at the landfill gas flare inlet using EPA Method 25 (Modified), as described in Appendix A. Three, one-hour test run were conducted simultaneously at the flare inlet and outlet.

4.1.3 Moisture

4.1.3.1 Inlet

Moisture content of the landfill gas was determined using a wet bulb/dry bulb thermometer

4.1.3.2 Outlet

Moisture content of the stack gas was determined in accordance with CARB/EPA Method 4 "Determination of Moisture Content in Stack Gases" as outlined in Appendix A.

4.1.4.1 Inlet

Inlet flow rate was determined using the facility's calibrated on-line flow meter.

4.1.4.2 Outlet

The flare exhaust flow rate was determined using EPA/CARB Method 2 as detailed in Appendix A.

4.1.5 Oxides of Nitrogen, Carbon Monoxide, Carbon Dioxide, Oxygen (Continuous Emissions Monitoring)

Three test runs were conducted at the landfill gas flare exhaust. Twenty-four points, per Method 1, were sampled. All sampling was performed under the guidelines of CARB Method 100/EPA Method 7E, CARB Method 100/EPA Method 3A and CARB Method 100/EPA Method 10 for the determination of NO_x, O_2, CO_2 and CO concentration. A description of Horizon's CEMS and the applicable EPA Methods, are detailed in Appendix A.

4.1.6 Hydrogen Sulfide (H_2S), and C_1 - C_3 Sulfur Compounds

Hydrogen sulfide and C_1 - C_3 sulfur compounds samples were collected at the inlet of the flare using the Tedlar bag collection system. All samples were analyzed using SCAQMD Method 307.91 equivalent as described in Appendix A.

4.2 Air Toxics Pollutants

All sampling/analytical procedures adhered to CARB test method requirements, where applicable, without modification with the exception of the 1,3 butadiene testing (See Section 4.2.8). Also, the HCl/HF (CARB Method 421) samples were collected non isokinetically and the filter was eliminated (Section 4.2.5). Also, all speciated VOC analyses were completed using GC/MS analyses instead of various GC/detector configurations (CARB Method 422, 410, etc.) with the exception of acrylonitrile which was analyzed using nitrogen/phosphorus detector (NPD).

instead of various GC/detector configurations (CARB Method 422, 410, etc.) with the exception of acrylonitrile which was analyzed using nitrogen/phosphorus detector (NPD).

4.2.1 Sampling Location

4.2.1.1 Flare Exhaust

Sample ports are located on the flare approximately 36 feet above ground level and four feet from the flare exit. Four sample ports were utilized. Twenty-four traverse points (12 per port) were utilized for metals, chromium, PAH and hexachlorobenzene sampling. A single point in the flare was used for the collection of formaldehyde and HCl/HF.

4.2.2 Polycyclic Aromatic Hydrocarbons (PAH's) and Hexachlorobenzene

Horizon utilized CARB Method 429 as described in Appendix A for PAH/ hexachlorobenzene determination. All sample train extracts were combined for a single analyses.

The collection of PAH and hexachlorobenzene was combined into one sample train, as detailed in the Test Plan. The resultant sample(s) were extracted and then split for respective PAH and hexachlorobenzene analyses. Three replicate test runs were performed. Each test run was approximately four hours in length with a target sample volume of 100 cubic feet.

A leak check of the pitot tube lines and sampling trains is conducted prior to and after each sampling run and prior to and after either changing any of the constituents of the train or disconnecting the umbilical cord to facilitate transport of the train. Leak checks prior to each sampling run are conducted at 15 inches mercury vacuum to insure a leak rate of no greater than 0.02 cfm. Leak checks at the conclusion of each run are conducted at the highest vacuum reached during that test run.

Upon completion of the sample run the nozzle, probe, and front half of the filter holder are brushed and rinsed with methanol, acetone, and methylene chloride (sample container #2). The filter is replaced in its original glass petri dish pending analysis (container #1). The sorbent module (XAD) is capped off with ground glass fittings, covered with pre-treated aluminum foil and refrigerated pending analysis. The back half of the filter housing and Teflon jumper are subsequently rinsed with methanol, acetone, and methylene chloride into sample container #3. The volume of

water collected in the first two impingers is determined volumetrically; the moisture collected in the silica gel in the last impinger is determined gravimetrically with a calibrated balance accurate to 0.1 grams. These two measurements are used to calculate stack gas moisture content as per CARB Method 429. Impinger #1 contents are collected, rinsed with methanol, acetone and methylene chloride and placed in container #4. Impingers #2 and #3 contents are collected and all connecting glassware and impingers are rinsed with distilled deionized water three times into container #5.

All sample bottles and filter containers are sealed with Teflon tape and all liquid levels are marked. All sample bottles are amber glass jars with Teflon-lined caps. All samples are kept on blue ice pending analyses. Each sample portion is extracted sequentially using a 16-hour methylene chloride extraction. One fourth of each sample extract will be analyzed for PAH's using CARB Method 429 and one fourth will be analyzed for hexachlorobenzene. The remaining half are archived. The resulting extracts from each sample portion (ie. container #1, #2, #3, #4 and XAD cartridge) are combined, as allowed, and analyzed using high resolution mass spectrometry (HRGC/HRMS). All analyses was completed by Alta Analytical Service.

A blank train was assembled on-site, recovered and analyzed in the exact manner as the samples. Field blanks of all sorbent filters and solutions were also obtained.

4.2.3 Multimetals

Three, replicate 90 minute test runs were conducted at the flare exhaust. Emissions of the metal species of interest were determined in accordance with CARB Method 436 "Determination of Multiple Metals Emissions from Stationary Sources" as described in Appendix A. In this method the stack sample is withdrawn isokinetically from the source, with particulate emissions collected in the probe and on a heated filter and gaseous emissions collected in a series of chilled impingers containing a solution of dilute nitric acid in hydrogen peroxide in two impingers, and acidic potassium permanganate solution in two impingers. Sampling train components are recovered and digested in separate front and back half fractions. Materials collected in the sampling train are digested with acid solutions to dissolve inorganics and to remove organic constituents that may create analytical interferences. Acid digestion is performed using conventional Parr Bomb or microwave digestion techniques. Except for the permanganate solution, the remainder of the sampling train catches are analyzed for metal species by CARB 436/EPA 6010B

The sampling train consists of a quartz buttonhook nozzle followed by a quartz probe; a heated filter box (225° - 275°F) containing a 47 mm diameter quartz fiber (non-binded) filter in a

glass holder and a 5/8" OD Teflon tube connecting the condensate portion of the sampling train.

The condensate portion of the sampling train consists of a series of seven impingers; the first impinger is empty, the second and third each contains 100 mls of 5% HNO_3/10% H_2O_2 solution; the fourth is empty; the fifth and six contain 100 ml of 4% $KMnO_4$/10% H_2SO_4; and the seventh contain approximately 200 grams of silica gel. The second impinger is the standard Greenburg Smith impinger with all others being the modified type. All impingers are connected with leak-free ground glass fittings and glass U-bends.

An umbilical cord connects the last impinger to the flow control console consist of a leakless, lubricated vane pump, dry gas meter and calibrated orifice. Flow rate is monitored using a calibrated magnahelic gauge. A leak check of the pitot tube lines and sampling trains is conducted prior to and after each sampling run and prior to and after either changing any of the constituents of the train or changing sample ports. Upon completion of the sampling run and post test leak check, the sample train is recovered according to the following procedures:

1. Container One: The probe, sample nozzle and front half of the filter housing is rinsed with 0.1 N nitric acid into a 500 ml Nalgene container.

2. Container Two: The quartz-fiber filter is removed and replaced in its original petri dish. The petri dish is labeled and sealed with Teflon tape.

3. Container Three: After volumetrically measuring the condensate volume, impingers one, two and three are collected into one liter Nalgene containers. Each impinger and all connecting glassware is rinsed with 0.1 N nitric acid. This rinse is combined with the impinger condensate. The container(s) are sealed, labeled and taped with all liquid levels marked.

4. Container Four: After volumetrically measuring the condensate volume, impinger four is rinsed with 0.1 N nitric acid into container #4 which was sealed with Teflon tape and labeled.

5. Container Five: After volumetrically measuring the condensate volume, impingers five and six, containing $KMnO_4$, is collected in 1 liter amber glass bottle(s). Each impinger and all connecting glassware is rinsed with 4% $KMnO_4$. The rinse is added to the condensate sample. The sample container(s) are sealed, labeled and taped with all liquid levels marked.

6. Container Six: The silica gel are recovered into its original bottle and the moisture gain determined gravimetrically.

Metal species concentration is determined using CARB Method 436/EPA 6010B. Blanks of all solutions used in the sample train and for sample recovery and a blank train were obtained and analyzed in the exact same manner as the samples.

4.2.4 Formaldehyde

Formaldehyde emissions were determined in accordance with CARB Method 430 "Determination of Formaldehyde Emissions from Stationary Sources" as described in Appendix A. In this method stack gas is withdrawn form the stack through a series of midget impingers containing a aqueous acidic solution of 2,4-dinitrophenol-hydrazine (DNPH) solution (used within 48 hours of preparation). Aldehydes react with DNPH by nucleophilic addition on the carbonyl followed by 1,2 elimination of water and the formulation of 2,4 dinitrophenol hydrazone.

Stack gases were withdrawn from a single traverse point through a quartz probe followed by a Teflon sample line. Following the probe are three glass midget impingers. The first two impingers contain 10 ml of 0.05% DNPH/2N HCL reagent; the third impinger contains a weighed amount of silica gel.

An umbilical cord is connected between the last impinger and the flow control system. The control system consisted of a vane pump, dry gas meter, a calibrated orifice and a rotometer. The sample flow was maintained at approximately 0.5 liter per minute throughout the test run as indicated on the rotometer. The sample rate was checked three times prior to and at the conclusion of each test run using a primary standard (bubble meter). All sample flow rates were adjusted to standard conditions. The impingers were kept on ice during sampling to maintain a sample temperature of less than 60°F at the last impinger.

A leak check of the sampling train is conducted prior to each test run by plugging the probe tip and turning on the sampling pump. If the rotometer indicates no flow, the sample system is deemed leak-free. Upon completion of the test run the sample line is rinsed with 2 ml of impinger solution into the first impinger. The sample line is then rinsed with 1 ml of reagent water into the first impinger. The impinger contents are then rinsed into a leak tight septum vial which is weighed and refrigerated pending analysis.

Prior to field sampling, four reagent blanks of each impinger solution batch was analyzed to verify anticipated reagent blank levels. In addition, three field blanks were carried through all the required steps for sample preparation and analysis. A field blank consists of an impinger and sample line which is similar to a sampling impinger. One field spike was also conducted as specified in Method 430.

4.2.5 Hexavalent and Total Chromium

Horizon determined hexavalent and total chromium emissions in accordance with CARB Method 425 procedures as described in Appendix A at the flare exhaust. In this method, stack gas is withdrawn isokinetically from the stack through a series of impingers containing 0.1 N NaOH solution, and a Teflon filter. Chromium aerosol is subsequently collected in solution and on the filter. Aliquots of the collected sample are analyzed for hexavalent chromium and total chromium using ion chromatography (IC) and atomic absorption spectrophotometry (AAS), respectively.

Horizon uses a sampling train which conforms to CARB Method 425 specifications. Stack gases are isokinetically withdrawn from each traverse point through a quartz buttonhook nozzle and quartz probe. A thermocouple and pitot tube are connected to the probe per CARB Method 425.

Following the probe is a four foot 3/8" OD Teflon line and four glass impingers. The first two are of the Greenburgh-Smith design with the last two of the modified design. The first two impingers contain 100 ml of 0.1 N NaOH; the third is empty; the fourth contains a preweighed amount of silica gel.

A 47 mm Teflon filter (0.3m) contained in a glass housing is placed between the third and fourth impinger. An umbilical cord is connected between the last impinger and the flow control console. The control console consists of a leakless, lubricated vane pump, dry gas meter, calibrated orifice, and a 0-0.25 inch magnahelic gauge. The impingers are kept on ice during sampling to maintain a sample temperature of less than 60°F at the last impinger.

A leak check of the pitot tube lines and sampling train was conducted prior to and at the conclusion of each test run. Upon completion of the test run, the nozzle and probe are rinsed in a sample bottle. The connective glassware and the impingers are rinsed with 0.1N NaOH

into a second acid washed container. The Teflon filter is added to the impinger condensate/rinse sample. All sample bottles are sealed with Teflon tape and all liquid levels marked. Samples are stored in ice pending analyses.

Analyses is conducted for hexavalent chromium using the IC method as described in Method 425. Total chromium is analyzed using the AAS graphite furnace method.

A blank train was set up and analyzed in the exact same manner as the sample trains. Blanks (reagent blanks) of all filters and solutions were obtained and analyzed in the same manner as the samples.

4.2.6 Hydrogen Chloride/Hydrogen Fluoride

Horizon used a sampling train which conformed to CARB Method 421 specifications with one exception: the heated filter was eliminated from the sample train since large particulate (>0.5 micron) matter was not present (the filter is not analyzed in Method 421). A description of CARB Method 421 is provided in Attachment A. Also, sample was withdrawn non-isokinetically from the source at a flow rate at approximately 0.75 cfm since water droplets were not present in the flare exhaust.

Stack gases were withdrawn through a quartz buttonhook nozzle and a quartz probe from the center of the stack. Following the probe are four glass impingers. The first, third and fourth are of the modified Greenburgh-Smith design, and the second is a standard type. Impingers one and two contain 100 milliliters of freshly prepared 3.0 mN sodium bicarbonate/2.4 mN sodium carbonate solution, respectively. The last contains a preweighed amount of silica gel. An umbilical cord connects the last impinger to the flow control console containing a leakless, lubricated vane pump, dry gas meter, calibrated orifice, and a zero to five inch magnahelic.

All glassware is cleaned by rinsing with sodium hydroxide, tap water and finally deionized water before use in the test program. A leak check of the pitot tube lines and sampling trains is conducted prior to and after each sampling run. Upon completion of each sampling run, the nozzle is removed. The nozzle and probe are brushed and rinsed with deionized water into a 500 ml amber glass container.

The contents of the impingers are poured into preweighed, precleaned, 500 ml amber glass bottles. The bottles are weighed to determine the amount of moisture trapped. All impingers and

connecting glassware is rinsed with deionized water and added to the condensate sample. The silica gel is then weighed to determine the moisture gain. The samples are then analyzed for hydrogen chloride (HCl) and hydrogen fluoride (HF) using an ion chromatography operated in the anion mode.

4.2.7 Speciated VOC's (SCAQMD Rule 1150.1 List) Including 1,1,2,2-Tetrachloroethane, Acrylonitrile, 1,4-Dioxane, and 1,2-Dibromoethane

Speciated VOC emissions were determined from Tedlar bag samples using the evacuated lung procedure outlined in Appendix A. All samples were analyzed using GC/MS techniques for each compound of interest.

4.2.8 1,3 Butadiene

Horizon used the Tedlar bag procedures Method 422.102, Appendix C. The primary concern with this Method is "rapid" degradation of the 1,3 butadiene prior to analyses. To minimize this problem, Horizon delivered the sample(s) to the laboratory immediately after collection to ensure that they were analyzed within four hours of collection.

Three test runs were completed. After the third test run, samples (including one blank) were delivered to the laboratory. All subsequent samples were analyzed using a GC equipped with a flame ionization detector (FID).

5. RESULTS DISCUSSION

The following subsections present and discuss the results of the criteria and air toxic compound testing program.

5.1 Criteria Pollutants

Three replicate test runs were conducted for each criteria compound of interest. The results of the criteria testing program are provided in Table 5-1.

5.2 Air Toxic Compounds

The following subsections present and discuss the results of the air toxics compound testing.

5.2.1 Speciated Volatile Organic Compounds (VOC's) Including 1,3 Butadiene

The results of each of the three speciated VOC flare test runs (inlet and outlet) are provided in Tables 5-2, 5-3 and 5-4, respectively. Results of the 1,3 butadiene testing at the flare exhaust are also included in Tables 5-2, 5-3 and 5-4. No sampling or analytical problems were encountered during the VOC testing.

5.2.2 Polycyclic Aromatic Hydrocarbons, Including Hexachlorobenzene

The results of each four-hour PAH test run is provided in Table 5-5. No sampling or analytical problems were encountered during the PAH testing.

One PAH/hexachlorobenzene blank train was collected and analyzed with the sample set. The results of these blanks and other QA/QC results are provided in Section 6.

Table 5-1
Summary of Results
Criteria Pollutants
Simi Valley Landfill Flare #1
October 2005

	LANDFILL GAS			FLARE EXHAUST		
	Run #1	Run #2	Run #3	Run #1	Run #2	Run #3
STACK GAS CHARACTERISTICS						
Temperature (°F)	----	----	----	1585	1607	1584
Moisture (%)	5.3	5.4	6.1	6.1	8.4	7.5
Flow Rate (acfm)	----	----	----	40225	41140	40563
(dscfm)*	1370	1322	1340	9311	9199	9259
Fixed Gases						
Methane (%)	47.15	48.31	46.86	<0.0001	<0.0001	<0.0001
Oxygen (%)	1.04	0.61	0.90	11.94	12.15	11.80
Carbon Dioxide (%)	38.52	38.81	37.80	8.00	7.81	8.11
Nitrogen	12.74	11.77	13.92	80.06	80.04	80.09
Heating Value, Btu/dscf	486	497	482	----	----	----
MMBtu/hr	39.9	39.4	38.8	----	----	----
EMISSIONS						
Oxides of Nitrogen						
ppm	----	----	----	10.41	9.89	10.50
ppm @ 3% O_2	----	----	----	20.80	20.23	20.65
lb/hr	----	----	----	0.695	0.652	0.697
lb/MMBtu	----	----	----	0.0277	0.0269	0.0276
Carbon Monoxide						
ppm	----	----	----	110.6	45.5	25.5
ppm @ 3% O_2	----	----	----	220.9	93.1	50.2
lb/hr	----	----	----	4.49	1.83	1.03
lb/MMBtu	----	----	----	0.1794	0.0753	0.0408
Reactive Organic Compounds						
ppm (as CH_4)	5120	4960	5120	3.66	3.49	4.38
lb/hr (as CH_4)	16.8	15.7	16.3	0.0862	0.0812	0.103
destruction efficiency (%)	----	----	----	99.5	99.5	99.4
Oxides of Sulfur						
lb/hr (as SO_2)	----	----	----	0.577	0.674	0.655
lb/MMBtu (as SO_2)	----	----	----	0.0145	0.0171	0.0169

* The flow rate (scfm) as measured using the facility's calibrated on-line landfill gas flow rate monitor.

Table 5-1 (Cont.)
Summary of Results
Simi Valley Landfill
March 2005

	LANDFILL GAS			FLARE EXHAUST		
	Run #1	Run #2	Run #3	Run #1	Run #2	Run #3
Sulfur Compounds						
hydrogen sulfide (ppm)	32.4	39.8	38.0	----	----	----
grains/100 ft^3	2.03	2.49	2.39			
methyl mercaptan (ppm)	3.44	4.14	4.28	----	----	----
grains/100ft^3	0.284	0.342	0.353			
ethyl mercaptan (ppm)	<0.1	<0.1	<0.1	----	----	----
grains/100ft^3	<0.013	<0.013	<0.013			
dimethyl sulfide (ppm)	6.20	7.34	7.12	----	----	----
grains/100ft^3	0.719	0.851	0.826			
carbonyl sulfide (ppm)	0.30	0.31	0.31	----	----	----
grains/100ft^3	0.033	0.034	0.034			
carbon disulfide (ppm)	0.17	0.21	0.20	----	----	----
grains/100ft^3	0.018	0.022	0.021			
dimethyl disulfide (ppm)	0.27	0.22	0.27	----	----	----
grains/100ft^3	0.050	0.041	0.050			
Total Sulfur Compounds (ppm, as H_2S)	43.9	53.2	51.4	----	----	----
grains/100 ft^3	2.76	3.34	3.23			

Table 5-2
Trace Organic Species
Destruction Efficiency Results
Simi Valley Landfill
Flare #1 (McGill)
October 11, 2005
Run 1

Species	Inlet Concentration (ppb)	Inlet Emission Rate (lb/hr)	Outlet Concentration (ppb)	Outlet Emission Rate (lb/hr)	Destruction Efficiency (%)
Hydrogen Sulfide	34700	2.43E-01	< 50	< 2.51E-03	> 98.97
Benzene	1620	2.59E-02	1.40	1.61E-04	99.38
Benzychloride	< 40	< 1.04E-03	< 0.8	< 1.50E-04	NA
Chlorobenzene	99.8	2.31E-03	< 0.3	< 4.99E-05	> 97.84
Dichlorobenzenes	846	2.55E-02	< 1.1	< 2.38E-04	> 99.07
1,1-dichloroethane	328	6.66E-03	< 0.3	< 4.37E-05	> 99.34
1,2-dichloroethane	156	3.17E-03	< 0.3	< 4.37E-05	> 98.62
1,1-dichloroethylene	59.0	1.17E-03	< 0.3	< 4.28E-05	> 96.35
Dichloromethane	1320	2.30E-02	3.78	4.73E-04	97.94
1,2-dibromoethane	< 30	< 1.16E-03	< 0.3	< 8.30E-05	NA
Perchloroethene	1480	7.19E-02	< 0.2	< 6.98E-05	> 99.90
Carbon tetrachloride	< 30	< 9.48E-04	< 0.2	< 4.53E-05	NA
Toluene	32000	6.04E-01	2.38	3.22E-04	99.95
1,1,1-trichloroethane	30.8	8.40E-04	< 0.2	< 3.92E-05	> 95.34
Trichloroethene	642	1.72E-02	< 0.2	< 3.86E-05	> 99.78
Chloroform	< 20	< 4.88E-04	< 0.2	< 3.50E-05	NA
Vinyl Chloride	401	5.14E-03	< 0.3	< 2.76E-05	> 99.46
m xylenes	13800	3.00E-01	0.87	1.36E-04	99.95
o+p xylene	4530	9.85E-02	0.38	5.93E-05	99.94
TNMHC	5120000	1.68E+01	3660	8.62E-02	99.49
Acrylonitrile	< 200	< 2.18E-03	< 2	< 1.56E-04	NA
1,3-butadiene	NM	NM	< 1.0	< 8.55E-05	NA
1,1,2,2-Tetrachloroethane	< 30	< 1.03E-03	< 0.3	< 7.41E-05	NA

Note: All values preceded by "<" are below the detection limit - reported values are detection limit values.
NA--Not applicable: Destruction efficiency cannot be calculated since both inlet and outlet values are below the detection limit.

Table 5-3
Trace Organic Species
Destruction Efficiency Results
Simi Valley Landfill
Flare #1 (McGill)
October 11, 2005
Run 2

Species	Inlet		Outlet		Destruction Efficiency (%)
	Concentration (ppb)	Emission Rate (lb/hr)	Concentration (ppb)	Emission Rate (lb/hr)	
Hydrogen Sulfide	39800	2.68E-01	< 50	< 2.48E-03	> 99.08
Benzene	1830	2.82E-02	1.41	1.60E-04	99.43
Benzychloride	< 40	< 1.00E-03	< 0.8	< 1.48E-04	NA
Chlorobenzene	110	2.46E-03	< 0.3	< 4.93E-05	> 97.99
Dichlorobenzenes	924	2.69E-02	< 1.1	< 2.35E-04	> 99.12
1,1-dichloroethane	363	7.10E-03	< 0.3	< 4.32E-05	> 99.39
1,2-dichloroethane	172	3.37E-03	< 0.3	< 4.32E-05	> 98.72
1,1-dichloroethylene	67.6	1.30E-03	< 0.3	< 4.23E-05	> 96.74
Dichloromethane	1500	2.52E-02	2.13	2.63E-04	98.96
1,2-dibromoethane	< 30	< 1.11E-03	< 0.3	< 8.20E-05	NA
Perchloroethene	1680	7.87E-02	< 0.2	< 6.89E-05	> 99.91
Carbon tetrachloride	< 30	< 9.13E-04	< 0.2	< 4.48E-05	NA
Toluene	36400	6.62E-01	1.04	1.39E-04	99.98
1,1,1-trichloroethane	34.1	8.97E-04	< 0.2	< 3.87E-05	> 95.69
Trichloroethene	721	1.87E-02	< 0.2	< 3.81E-05	> 99.80
Chloroform	< 20	< 4.71E-04	< 0.2	< 3.46E-05	NA
Vinyl Chloride	455	5.62E-03	< 0.3	< 2.73E-05	> 99.52
m xylenes	15400	3.23E-01	0.62	9.56E-05	99.97
o+p xylene	5080	1.06E-01	0.20	3.08E-05	99.97
TNMHC	4960000	1.57E+01	3490	8.12E-02	99.48
Acrylonitrile	< 200	< 2.10E-03	< 2	< 1.54E-04	NA
1,3-butadiene	NM	NM	< 1.0	< 8.45E-05	NA
1,1,2,2-Tetrachloroethane	< 30	< 9.96E-04	< 0.3	< 7.32E-05	NA

Note: All values preceded by "<" are below the detection limit - reported values are detection limit values.
NA--Not applicable: Destruction efficiency cannot be calculated since both inlet and outlet values are below the detection limit.

Table 5-4
Trace Organic Species
Destruction Efficiency Results
Simi Valley Landfill
Flare #1 (McGill)
October 11, 2005
Run 3

Species	Inlet		Outlet		Destruction Efficiency (%)
	Concentration (ppb)	Emission Rate (lb/hr)	Concentration (ppb)	Emission Rate (lb/hr)	
Hydrogen Sulfide	38000	2.58E-01	< 50	< 2.50E-03	> 99.03
Benzene	1860	2.89E-02	1.18	1.35E-04	99.53
Benzychloride	< 40	< 1.01E-03	< 0.8	< 1.49E-04	NA
Chlorobenzene	110	2.47E-03	< 0.3	< 4.96E-05	> 97.99
Dichlorobenzenes	969	2.83E-02	< 1.1	< 2.37E-04	> 99.16
1,1-dichloroethane	374	7.36E-03	< 0.3	< 4.35E-05	> 99.41
1,2-dichloroethane	174	3.43E-03	< 0.3	< 4.35E-05	> 98.73
1,1-dichloroethylene	68.1	1.31E-03	< 0.3	< 4.26E-05	> 96.76
Dichloromethane	1510	2.55E-02	2.10	2.61E-04	98.98
1,2-dibromoethane	< 30	< 1.12E-03	< 0.3	< 8.25E-05	NA
Perchloroethene	1700	8.01E-02	< 0.2	< 6.94E-05	> 99.91
Carbon tetrachloride	< 30	< 9.19E-04	< 0.2	< 4.51E-05	NA
Toluene	37100	6.79E-01	0.38	5.12E-05	99.99
1,1,1-trichloroethane	34.1	9.02E-04	< 0.2	< 3.89E-05	> 95.68
Trichloroethene	736	1.92E-02	< 0.2	< 3.83E-05	> 99.80
Chloroform	< 20	< 4.73E-04	< 0.2	< 3.48E-05	NA
Vinyl Chloride	443	5.51E-03	< 0.3	< 2.74E-05	> 99.50
m xylenes	15700	3.31E-01	0.97	1.50E-04	99.95
o+p xylene	5300	1.12E-01	0.27	4.19E-05	99.96
TNMHC	5120000	1.63E+01	4380	1.03E-01	99.37
Acrylonitrile	< 200	< 2.11E-03	< 2	< 1.55E-04	NA
1,3-butadiene	NM	NM	< 1.0	< 8.50E-05	NA
1,1,2,2-Tetrachloroethane	< 30	< 1.00E-03	< 0.3	< 7.37E-05	NA

Note: All values preceded by "<" are below the detection limit - reported values are detection limit values.
NA--Not applicable: Destruction efficiency cannot be calculated since both inlet and outlet values are below the detection limit.

Table 5-5
PAH Emission Results - Flare #1 (McGill Flare)
Simi Valley Landfill
October 2005

	Run #1	Run #2	Run #3
Stack Gas Characteristics			
Temperature, F	1593	1593	1541
Moisture, %	8.9	8.5	8.6
Fixed Gases,			
CO2, %	5.1	5.2	5.3
O2, %	15.2	15.3	15.7
N2, %	79.7	79.5	79.0
Flow rate			
dscfm	7424	7166	7231
acfm	33017	31313	30988

	Run #1		Run #2		Run #3	
PAH Emissions	**Conc. @ 12 % CO2** (ug/dscm)	**Emission Rate** (lb/hr)	**Conc. @ 12 % CO2** (ug/dscm)	**Emission Rate** (lb/hr)	**Conc. @ 12 % COm** (ug/dscm)	**Emission Rate** (lb/hr)
Napthalene	0.2050	2.42E-06	0.2006	2.33E-06	0.1043	1.25E-06
2-Methylnaphthalene	0.1158	1.37E-06	0.0881	1.02E-06	0.0366	4.38E-07
Acenaphthalene	< 0.0102	< 1.21E-07	< 0.0100	< 1.16E-07	< 0.0101	< 1.21E-07
Acenaphthene	0.0177	2.10E-07	< 0.0100	< 1.16E-07	< 0.0101	< 1.21E-07
Fluorene	0.0682	8.06E-07	0.0222	2.58E-07	0.0109	1.30E-07
Phenanthrene	0.3433	4.06E-06	0.1216	1.41E-06	0.0487	5.83E-07
Anthracene	< 0.0102	< 1.21E-07	0.0172	2.00E-07	< 0.0101	< 1.21E-07
Fluoranthene	0.0533	6.30E-07	0.0433	5.04E-07	0.0126	1.51E-07
Pyrene	0.0355	4.20E-07	0.0307	3.57E-07	< 0.0101	< 1.21E-07
Benz(a)anthracene*	< 0.0102	< 1.21E-07	< 0.0100	< 1.16E-07	< 0.0101	< 1.21E-07
Chrysene*	0.0133	1.57E-07	0.0257	2.99E-07	< 0.0101	< 1.21E-07
Benzo(b)fluoranthene*	0.0120	1.42E-07	0.0149	1.73E-07	< 0.0101	< 1.21E-07
Benzo(k)fluoranthene*	< 0.0102	< 1.21E-07	< 0.0100	< 1.16E-07	< 0.0101	< 1.21E-07
Benzo(e)pyrene*	< 0.0102	< 1.21E-07	0.0129	1.50E-07	< 0.0101	< 1.21E-07
Benzo(a)pyrene*	< 0.0102	< 1.21E-07	< 0.0100	< 1.16E-07	< 0.0101	< 1.21E-07
Pyryloene*	< 0.0102	< 1.21E-07	< 0.0100	< 1.16E-07	< 0.0101	< 1.21E-07
Benzo(g,h,i)perylene*	< 0.0102	< 1.21E-07	< 0.0100	< 1.16E-07	< 0.0101	< 1.21E-07
Dibenz(a,h)anthracene*	< 0.0102	< 1.21E-07	< 0.0100	< 1.16E-07	< 0.0101	< 1.21E-07
Indeno[1,2,3-cd]pyrene*	< 0.0102	< 1.21E-07	< 0.0100	< 1.16E-07	< 0.0101	< 1.21E-07
Hexachlorobenzene	0.0008	9.75E-09	0.0004	4.74E-09	< 0.0006	< 6.69E-09
Total PAH	0.9675	1.14E-05	0.6676	7.77E-06	0.3549	4.25E-06
Total PAH w/o Napthalene	0.7625	9.01E-06	0.4670	5.43E-06	0.2505	3.00E-06
Total Carcinogenic PAH	0.1081	1.28E-06	0.1239	1.44E-06	0.1014	1.21E-06

< - Below Quantifiable Limit. Reported values are based upon the lowest quantifiable limit.

* denotes carcinogenic species.

5.2.3 Formaldehyde

The results of each of the three, 8-hour aldehyde test runs are provided in Table 5-6. For a more complete discussion of the additional QA/QC results of the aldehyde sampling see Section 6.

5.2.4 Hydrochloric and Hydrofluoric Acid (HCl/HF)

The results of the HCl/HF testing are provided in Table 5-7. No sampling or analytical problems were encountered during any phase of the testing.

5.2.5 Multimetals

The results of the three multimetals test runs are reported in Table 5-8. Reported values are not blank corrected. No sampling or analytical problems were encountered during the testing program.

One blank train were processed with the sample set. Detectable amounts of some metals were found in the blank samples. The results of the blank samples are discussed in more detail in Section 6.

5.2.6 Total/Hexavalent Chromium

Chromium testing was completed on October 14 and 18. However, due to a laboratory error (the samples were acidified prior to hexavalent chromium analyses),the samples were rendered invalid. The chromium sampling was repeated on November 22 and 23,2005. The results of the valid chromium testing conducted on November 22 and 23 are provided in Table 5-9.

The results of the field blanks and blank trains were below the detection limit for both total and hexavalent chromium. A more complete summary of the QA/QC results are provided in Section 6.

Table 5-6

Formaldehyde Emissions
Simi Valley Landfill Flare #1
October 2005

	Run 1	Run 2	Run 3
Stack Gas Characteristics*			
Temperature (°F)	1593	1593	1541
Moisture (%)	8.9	8.5	8.6
Flow Rate			
(dscfm)	7,424	7,166	7,231
(acfm)	33,017	31,313	30,988
Fixed Gases			
O_2 (%)	15.2	15.3	15.7
CO_2 (%)	5.1	5.2	5.3
N_2 (%)	79.7	79.5	79.0
Formaldehyde Emissions			
(ppb)	42	756	154
(lb/hr)	0.0014	0.0253	0.0052

* Stack gas characteristics taken from concurrent CARB Method 429 sampling.

Table 5-7

Hydrochloric and Hydrofluoric Acid Emissions
Simi Valley Landfill Flare #1
October 2005

	Run 1	Run 2	Run 3
Stack Gas Characteristics			
Temperature (°F)	1573	1536	1549
Moisture (%)	7.0	7.7	8.0
Flow Rate			
(dscfm)	7,298	7,269	7,248
(acfm)	31,068	30,809	31,009
Fixed Gases			
O_2 (%)	14.4	13.8	16.0
CO_2 (%)	5.0	6.6	5.0
N_2 (%)	80.6	79.6	79.0
Acid Gas Emissions			
Hydrochloric Acid			
(mg/dscf)	0.0247	0.1281	0.1247
(lb/hr)	0.0238	0.1232	0.1196
Hydrofluoric Acid,			
(mg/dscf)	0.0101	0.0737	0.0570
(lb/hr)	0.0097	0.0708	0.0547

Table 5-8
Summary of Results
Stack Gas Characteristics - Metals Emissions
Flare #1 (McGill)

Run Number	******	1	2	3	
Date	******	10/11/05	10/11/05	10/11/05	
Run Start Time	******	1050	1330	1531	
Run End Time	******	1240	1515	1706	
Stack Gas Characteristics					**Average**
Stack Temperature	F	1585	1607	1584	1592
Moisture	%	6.1	8.4	7.5	7.3
Fixed Gases,					
CO 2	%	8.0	7.8	8.1	8.0
O 2	%	11.9	12.2	11.8	12.0
N 2	%	80.1	80.0	80.1	80.1
Stack Velocity	afpm	871	891	879	880
Volumetric Flow Rate	dscfm	9311	9199	9259	9256
Volumetric Flow Rate	acfm	40225	41140	40563	40643
Isokinetic Ratio	%	99	97	97	98
Metals Emissions					
ARSENIC*	lb/hr	2.35E-05	3.02E-05	3.14E-05	2.84E-05
CADMIUM*	lb/hr	1.09E-05	7.81E-06	7.66E-06	8.78E-06
COPPER	lb/hr	8.77E-05	4.41E-05	3.14E-05	5.44E-05
MANGANESE*	lb/hr	4.94E-05	1.76E-05	2.64E-05	3.11E-05
MERCURY*	lb/hr	5.93E-05	7.31E-05	2.76E-05	5.33E-05
NICKEL*	lb/hr	< 1.36E-05	< 1.39E-05	< 1.38E-05	< 1.38E-05
ZINC	lb/hr	3.70E-04	1.76E-04	1.26E-04	2.24E-04
Total	lb/hr	6.15E-04	3.63E-04	2.64E-04	4.14E-04
*Total HAPS	lb/hr	1.57E-04	1.43E-04	1.07E-04	1.35E-04

Values preceded by "<" are below the quantifiable limit. Actual values are less than those reported.

*Hazardous Air Pollutants (HAPS)

Table 5-9

Total/Hexavalent Chromium Emissions
Simi Valley Landfill Flare #1
November 2005

	Run 1	Run 2	Run 3
Stack Gas Characteristics,			
Temperature (°F)	1551	1549	1545
Moisture (%)	7.7	8.0	7.9
Flow Rate,			
dscfm	8046	8026	8034
acfm	33,366	33,390	33,315
Fixed Gases,			
O_2 (%)	14.0	14.0	14.0
CO_2 (%)	6.6	6.6	6.6
N_2 (%)	79.4	79.4	79.0
Chromium Emissions,			
Total Chromium,			
µg/dscf	0.0072	0.0052	< 0.0048
lb/hr	7.62×10^{-6}	5.53×10^{-6}	$< 5.05 \times 10^{-6}$
Hexavalent Chromium,			
µg/dscf	< 0.0015	< 0.0016	< 0.0016
lb/hr	$< 1.63 \times 10^{-6}$	$< 1.71 \times 10^{-6}$	$< 1.67 \times 10^{-6}$

Note: All values preceded by "<" are below the detection limit. Reported results are based upon detection limit values. Variability in detection limit value is due to variability in the sample volume.

6. QA/QC SUMMARY

All QA/QC requirements of each respective Method were adhered to throughout the testing program. Also, the guidelines of Horizon's corporate QA/QC manual, as appearing in the Test Plan, were followed by all sampling and analytical personnel. In addition, QA/QC measures taken which were beyond their respective Method requirements were incorporated into the testing program and are discussed in detail herein.

6.1 Continuous Emission Monitoring (CEM) - EPA Method 7E/10/3A

All CEM system performance checks, as detailed in Section 3, were within specifications including analyzer linearity, calibration drift, leak checks and system bias checks. The on-site CEM system performance checks can be found in Appendix A.

6.2 1,3 Butadiene

The 1,3 butadiene samples were analyzed within approximately four hours after collection of the last sample.

6.3 Speciated Volatile Organic (VOC) Compounds

Replicate analyses were performed for all detected VOC species. All replicate analyses agreed to within 10 percent of the mean concentration (Appendix B).

6.4 Polycyclic Aromatic Hydrocarbons (PAH's) Including Hexachlorobenzene

Prior to use in the sampling program all XAD resin was verified to be of sufficient cleanliness for purposes of the test program. All Method blanks displayed PAH concentrations below the quantifiable limit with the exception of naphthalene and 2-methylnaphthalene. All laboratory spikes recoveries were within the acceptable limits of Method 429.

All sample isotopic spike recovery was within +50% as required in the Method. One blank train was processed with the sample set for PAH analyses. All PAH concentrations were below the detectable limit for the field blank sample.

6.5 Aldehydes

All CARB Method 430 QA/QC procedures were strictly adhered to including the following:

- Pre-testing (4 samples) of DNPH solution.
- Complete extraction of DNPH solution within nine days of reagent blank analyses.
- Analyses completed within 39 days after reagent blank analyses.
- Three field blanks were obtained.
- A field spike analyses was performed.
- A sample matrix spike analyses was performed.
- Replicate sample analyses.

The matrix spike yielded the following results:

	Theoretical (µg)	Measured (µg)	Recovery (%)
Formaldehyde	0.8	0.8	100
Formaldehyde	2.9	2.9	100

The field spike yielded the following results:

	Theoretical (µg)	Measured (µg)	Recovery (%)
Formaldehyde	120	142	118
Formaldehyde	120	139	116

The agreement between replicate analyses was 0.1% from the mean for formaldehyde.

6.6 HCl/HF

One field blank was processed for HCl/HF analyses. The field blank value was below the detection limit for both HF and HC1. All laboratory control and sample spike recoveries were within the 80% to 120 % control limits.

6.7 Multimetals

In addition to all laboratory QA/QC samples, a blank train was analyzed with the set of multimetals samples as required by CARB Method 436. Three metal species were above the detection limit in the blank train. These compounds are as follows:

Copper	1.2 µg
Cadmium	0.59 µg
Manganese	0.70 µg

All sample matrix spike recovered were within the requirements of CARB Method 436.

6.8 Total/Hexavalent Chromium

In addition to laboratory QA/QC samples, one field blank and one blank train, as required by CARB Method 425, were analyzed with the set of samples. Both the field blank and blank train values were below the detection limit for total and hexavalent chromium (Appendix B).

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	183452
Client:	Horizon Air Measurement Services
Project:	W07.043
Location:	Waste Management
Request Date:	11/29/05
Samples Received:	11/29/05

This hardcopy data package contains sample and QC results for eight air samples, requested for the above referenced project on 11/29/05. The samples were received cold and intact.

Metals (EPA 6010B):
No analytical problems were encountered.

Ion Chromatography (EPA 7199):
Low recoveries were observed for hexavalent chromium in the MS/MSD for batch 108212; the parent sample was not a project sample, and the BS/BSD were within limits. No other analytical problems were encountered.

Curtis & Tompkins, Ltd.

Chromium

Lab #:	183452	Location:	Waste Management
Client:	Horizon Air Measurement Services	Prep:	CARB 425
Project#:	W07.043	Analysis:	EPA 6010B
Analyte:	Chromium	Sampled:	11/28/05
Matrix:	Air	Received:	11/29/05
Units:	ug/s	Prepared:	12/01/05
Diln Fac:	1.000	Analyzed:	12/01/05
Batch#:	108263		

Field ID	Type	Lab ID	Result	RL
W743-425-F1-R1	SAMPLE	183452-001	1.5	1.0
W743-425-F1-R2	SAMPLE	183452-002	1.1	1.0
W743-425-F1-R3	SAMPLE	183452-003	ND	1.0
W743-425-F2-R1	SAMPLE	183452-004	1.4	1.0
W743-425-F2-R2	SAMPLE	183452-005	1.1	1.0
W743-425-F2-R3	SAMPLE	183452-006	1.1	1.0
W743-425-FB	SAMPLE	183452-007	ND	1.0
W743-425-SB	SAMPLE	183452-008	ND	1.0
	BLANK	QC319235	ND	1.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Chromium

Lab #:	183452	Location:	Waste Management
Client:	Horizon Air Measurement Services	Prep:	CARB 425
Project#:	W07.043	Analysis:	EPA 6010B
Analyte:	Chromium	Batch#:	108263
Field ID:	W743-425-F1-R1	Sampled:	11/28/05
MSS Lab ID:	183452-001	Received:	11/29/05
Matrix:	Air	Prepared:	12/01/05
Units:	ug/s	Analyzed:	12/01/05
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	RL	%REC	Limits	RPD	Lim
SDUP	QC319236	1.540		1.550	1.000			1	20
SSPIKE	QC319237	1.540	200.0	199.0		99	80-120		

RL= Reporting Limit
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

LAB #: 183452
CLIENT: Horizon Air Measurement Services

HEXAVALENT CHROMIUM ANALYSIS SUMMARY

Lab ID	Field ID	Result ug/sample	Result ug/L	Volume mL
183452-001	W743-425-F1-R1	< 0.32	< 0.50	640
183452-002	W743-425-F1-R2	< 0.34	< 0.50	670
183452-003	W743-425-F1-R3	< 0.33	< 0.50	650
183452-004	W743-425-F2-R1	< 0.33	< 0.50	660
183452-005	W743-425-F2-R2	< 0.33	< 0.50	650
183452-006	W743-425-F2-R3	0.32	0.51	620
183452-007	W743-425-FB	< 0.16	< 0.50	320
183452-008	W743-425-SB	< 0.11	< 0.50	220
QC319026	METHOD BLANK	< 0.15	< 0.50	300

Curtis & Tompkins, Ltd.

Hexavalent Chromium

Lab #:	183452	Location:	Waste Management
Client:	Horizon Air Measurement Services	Prep:	METHOD
Project#:	W07.043	Analysis:	EPA 7199
Analyte:	Hexavalent Chromium	Batch#:	108212
Matrix:	Water	Sampled:	11/28/05
Units:	ug/L	Received:	11/29/05
Diln Fac:	1.000		

Field ID	Type	Lab ID	Result	RL	Analyzed
W743-425-F1-R1	SAMPLE	183452-001	ND	0.50	11/29/05 14:22
W743-425-F1-R2	SAMPLE	183452-002	ND	0.50	11/29/05 14:33
W743-425-F1-R3	SAMPLE	183452-003	ND	0.50	11/29/05 14:45
W743-425-F2-R1	SAMPLE	183452-004	ND	0.50	11/29/05 14:57
W743-425-F2-R2	SAMPLE	183452-005	ND	0.50	11/29/05 15:08
W743-425-F2-R3	SAMPLE	183452-006	0.51	0.50	11/29/05 15:55
W743-425-FB	SAMPLE	183452-007	ND	0.50	11/29/05 14:10
W743-425-SB	SAMPLE	183452-008	ND	0.50	11/29/05 13:59
	BLANK	QC319026	ND	0.50	11/29/05 12:26

ND= Not Detected
RL= Reporting Limit

Batch QC Report

Hexavalent Chromium

Lab #:	183452	Location:	Waste Management
Client:	Horizon Air Measurement Services	Prep:	METHOD
Project#:	W07.043	Analysis:	EPA 7199
Analyte:	Hexavalent Chromium	Batch#:	108212
Matrix:	Water	Received:	11/29/05
Units:	ug/L		

Field ID	Type	MSS Lab ID	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Dln Fac	Sampled	Analyzed
	BS		QC319027		20.00	20.14	101	90-110			1.000		11/29/05 12:38
	BSD		QC319028		20.00	20.49	102	90-110	2	20	1.000		11/29/05 12:50
W743-425-F1-R1	MS	183452-001	QC319029	0.4032	10.00	11.04	106	85-115			1.010	11/28/05	11/29/05 16:26
W743-425-F1-R1	MSD	183452-001	QC319030		10.00	11.09	107	85-115	0	20	1.010	11/28/05	11/29/05 16:37
ZZZZZZZZZZ	MS	183481-002	QC319031	<0.09281	10.10	0	0 *	85-115			1.020	11/29/05 13:21	11/29/05 17:42
ZZZZZZZZZZ	MSD	183481-002	QC319032		10.10	0	0 *	85-115	NC	20	1.020	11/29/05 13:21	11/29/05 17:54

*= Value outside of QC limits; see narrative
NC= Not Calculated
RPD= Relative Percent Difference

183452

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
WASTE MANAGEMENT	SIMI VALLEY, CA
Project No.	**Field Logbook No.**
W07.043	1
Sampler: (Signature)	**Chain of Custody Tape No.**

ANALYSES: CARB METHOD 425 HEXAVALENT CHROMIUM and TOTAL CHROMIUM

	Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample		REMARKS
-1	W743 425-F1-PR-1				PROBE RINSE	✓	
-2	-IMP1-1				IMPINGER 1 & FILTER	✓	
-3	-IMP2-1				IMPINGER 2	✓	
-4	-PR-2					✓	
-5	-IMP1-2					✓	
-6	-IMP2-2					✓	
-7	-PR-3					✓	
-8	-IMP1-3					✓	

	Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
		11-28-05		UPS# 1Z835E82 0193878313	11-28-05	
	Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	UPS				11-29-05	10⁰⁰
	Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
	Sample Disposal Method:			Disposed of by: (Signature)	Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

CURTIS AND TOMPKINS

Nº 09005

183452

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Waste Management	SIMI VALLEY, CA
Project No.	**Field Logbook No.**
W07.043	1
Sampler: (Signature)	**Chain of Custody Tape No.**

ANALYSES: CARB METHOD 425 HEXAVALENT CHROMIUM AND TOTAL CHROMIUM

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample							REMARKS
-9 W743.425.F1.IMP2.R3					✓						
W743.425.F2.PR.1 -10					✓						
-11 .IMP1.1					✓						
★ .IMP2.2					✓						
-12 .PR.2					✓						
-13 .IMP1.2					✓						
-14 .MP2.2					✓						
F1.3 .PR.3					✓						

	Date	Time		Date	Time
Relinquished by: (Signature)	11-28-05		Received by: (Signature) UPS # 1Z835E82 01 9357 8313	11-28-05	
Relinquished by: (Signature) UPS			Received by: (Signature)	11-29-05	1000
Relinquished by: (Signature)			Received for Laboratory: (Signature)		
Sample Disposal Method:			Disposed of by: (Signature)		

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CURTIS & TOMPKINS LTD

№ 09003

F2-PR-1 Labeled F1-PR-1 Id'd by Bottle lid #'s
F2-IMP-1 Labelled F1-IMP-1 " "

★ No Sample received Labeled W743.425.F2.IMP2.2

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183452

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
WASTE MANAGEMENT	SIMI VALLEY, CA
Project No.	**Field Logbook No.**
W07.043	1
Sampler: (Signature)	**Chain of Custody Tape No.**

ANALYSES: CARB METHOD 425 HEXAVALENT CHROMIUM and TOTAL CHROMIUM

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	REMARKS
-16 W743-425-F2-IMP1-3					
-17 ✓ -IMP2-3					
W743-425-FB-PR- -18					
-19 ✓ -FB-IMP1					FIELD BLANK
-20 -FB-IMP2					
-21 ✓ -SB					SOLUTION BLANK 200 ml
-22* W743-425-F1-IMP2-1 (Lid says F2) (F2)					

	Date	Time		Date	Time
Relinquished by: (Signature)	11-28-05		Received by: (Signature) UPS# 1Z835E820193575313	11-28-05	
Relinquished by: (Signature) UPS			Received by: (Signature)	11-29-05	10^00
Relinquished by: (Signature)			Received for Laboratory: (Signature)		
Sample Disposal Method:			Disposed of by: (Signature)		

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ANALYTICAL LABORATORY

CURTIS and TOMPKINS

No 09004

*Sample received not on COC W743-425-F1-IMP2-1 (Lid says F2)
F2 written on container Lid. (PP) Logged in for similar analysis (PP)

Rich Vacherot

From: "John Goyette" <goyette@ctberk.com>
To: <rich@horizonairmeasurement.com>
Sent: Friday, November 11, 2005 3:55 PM
Attach: 183047_COC.pdf; 183047_RPTS.pdf
Subject: Simi Valley, L.F. - C&T Reports (183047)

Rich, I have some very bad news for you. Due do a laboratory miscommunication error, we acidified these samples before an aliquot was removed for hexavalent chromium analysis, thus nullifying the samples for hex chrom. I am very sorry that this happened. You can call me at 510-204-2233 to disucss further. -John Goyette

Attached is a PDF version of the hardcopy reports for C&T job 183047.

Email compiled and sent 11/11/05 03:55 PM.

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Chromium

Lab #:	183047	Location:	Simi Valley, L.F.
Client:	Horizon Air Measurement Services	Prep:	CARB 425
Project#:	STANDARD	Analysis:	EPA 6010B
Analyte:	Chromium	Batch#:	107662
Matrix:	Air	Received:	10/24/05
Units:	ug/s	Prepared:	11/11/05
Diln Fac:	1.000	Analyzed:	11/11/05

Field ID	Type	Lab ID	Result	RL	Sampled
07-043-425-F1-R1	SAMPLE	183047-001	0.83	0.50	10/17/05
07-043-425-F1-R2	SAMPLE	183047-002	1.1	0.50	10/18/05
07-043-425-F1-R3	SAMPLE	183047-003	1.1	0.50	10/18/05
07-043-425-F2-R1	SAMPLE	183047-004	1.6	0.50	10/19/05
07-043-425-F2-R2	SAMPLE	183047-005	1.4	0.50	10/20/05
07-043-425-F2-R3	SAMPLE	183047-006	1.3	0.50	10/21/05
07-043-425-FB-C1	SAMPLE	183047-007	0.60	0.50	10/18/05
07-043-425-FB-C2	SAMPLE	183047-008	0.72	0.50	10/18/05
07-043-425-SB	SAMPLE	183047-009	0.66	0.50	10/18/05
	BLANK	QC316737	ND	0.50	

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Chromium

Lab #:	183047	Location:	Simi Valley, L.F.
Client:	Horizon Air Measurement Services	Prep:	CARB 425
Project#:	STANDARD	Analysis:	EPA 6010B
Analyte:	Chromium	Batch#:	107662
Field ID:	07-043-425-F1-R1	Sampled:	10/17/05
MSS Lab ID:	183047-001	Received:	10/24/05
Matrix:	Air	Prepared:	11/11/05
Units:	ug/s	Analyzed:	11/11/05
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	RL	%REC	Limits	RPD	Lim
SDUP	QC316738	0.8250		0.7950	0.5000			4	20
SSPIKE	QC316739	0.8250	100.0	96.50		96	80-120		

RL= Reporting Limit
RPD= Relative Percent Difference

CHAIN OF CUSTODY RECORD

183047

Client/Project Name	Project Location
Simi Valley L.F.	Simi Valley, CA
Project No.	**Field Logbook No.**
W07-043	
Sampler: (Signature)	**Chain of Custody Tape No.**

ANALYSES

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample							REMARKS
043-425-F1-R1-C1	10/14/05			Nozzle/probe rinse	X						Flare #1 Run #1
043-425-F1-R1-C2				filter/impinger rinse	X						
043-425-F1-R2-C1	10/17/05			nozzle/probe rinse	X						Run #2
043-425-F1-R2-C2				filter & impinger rinse	X						
043-425-F1-R3-C1				nozzle/probe rinse	X						Run #3
043-425-F1-R3-C2				filter & impinger rinse	X						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
Sample Disposal Method:	Disposed of by: (Signature)			Date	Time

SAMPLE COLLECTOR

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(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

Nº 8395

CHAIN OF CUSTODY RECORD

183047

Client/Project Name	Project Location
Simi Valley L.F	Simi Valley, CA
Project No.	**Field Logbook No.**
W07-043	
Sampler: (Signature)	**Chain of Custody Tape No.**

ANALYSES: METHOD #25 — CO2 / TOC + CO2

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample							REMARKS
0741 3425 F2 R1 C2	10/19/05				✓						Impl + Rinse
0743 3425 F2 R1 C3	10/19/05				✓						Imp2 + Rinse
0745 3425 F2 R1 C1	10/19/05				✓						Probe Rinse
0749 3425 F2 R2 C2	10/20/05				✓						Imp 1 + Rinse
0751 3425 F2 R2 C3	10/20/05				✓						Imp 2 + Rinse
0753 3425 F2 R2 C1	10/20/05				✓						Probe Rinse

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	**Date**	**Time**	**Received by: (Signature)**	**Date**	**Time**
Relinquished by: (Signature)	**Date**	**Time**	**Received for Laboratory: (Signature)**	**Date**	**Time**
Sample Disposal Method:	**Disposed of by: (Signature)**			**Date**	**Time**

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ANALYTICAL LABORATORY

No 8472

183047

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Simi Valley L.F	Simi Valley CA
Project No. W07-013	**Field Logbook No.**
Sampler: (Signature) [signature]	**Chain of Custody Tape No.**

ANALYSES: CARB METHOD 425 Cr6+ / TOTAL Cr

Flare 2 Run #3

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	CARB METHOD 425 Cr6+ / TOTAL Cr						REMARKS
W07043425F2E3 C2	10/21/05				✓						Imp 1 + Rinse + Filter
W07043425F2E3 C3	10/21/05				✓						2nd Imp + Rinse
W07043425F2E3 C1	10/21/05				✓						Probe / Jumper + Rinse

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]					
Relinquished by: (Signature)	**Date**	**Time**	**Received by: (Signature)**	**Date**	**Time**
Relinquished by: (Signature)	**Date**	**Time**	**Received for Laboratory: (Signature)**	**Date**	**Time**
Sample Disposal Method:	**Disposed of by: (Signature)**			**Date**	**Time**

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ANALYTICAL LABORATORY

№ 8478

183047

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSES
Simi Valley L.F.	Simi Valley, CA	
Project No.	**Field Logbook No.**	
W07-043		
Sampler: (Signature)	**Chain of Custody Tape No.**	
[signature]		

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	Total Cr + Cr6+ ...						REMARKS
W07043925 FB C1	10/18/05		-7		X						Probe Rinse Field Blank
W07043925 FB C2	10/18/05		-8		X						Imp Rinse + Filter Field Blank
W07-043925-SB	10/18/05		-9	Solution 250ml + Filter	X						Filter plus Solution Blank (250...)

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]					
Relinquished by: (Signature)	**Date**	**Time**	**Received by: (Signature)**	**Date**	**Time**
Relinquished by: (Signature)	**Date**	**Time**	**Received for Laboratory: (Signature)**	**Date**	**Time**
Sample Disposal Method:	**Disposed of by: (Signature)**			**Date**	**Time**

SAMPLE COLLECTOR

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ANALYTICAL LABORATORY

№ 8462

146

ALTA

November 12, 2005

Alta Project I.D.: 26831

Mr. Richard Vacherot
Horizon Air Measurements
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320

Dear Mr. Vacherot,

Enclosed are the results for seven of the eight MM5 samples received at Alta Analytical Laboratory on October 24, 2005 under your Project Name "Simi Valley L.F.". These samples were extracted and analyzed using CARB Method 429 for PAHs and Modified EPA Method 1625 for hexachlorobenzene. A standard turnaround time was provided for this work.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at mmaier@altalab.com. Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha M. Maier
Director of HRMS Services

ACCREDITED IN ACCORDANCE WITH nelac

nelac

Section I: Sample Inventory Report

Date Received: 10/24/2005
Project No.: 26831
Project Name: Simi Valley L.F.

Lab. Sample ID	Client Sample ID	Component ID
001	W07043-429-F1-R1	FILTER
		IMP CONTENT
		IMP RINSE
		RINSE(BACK HALF)
		RINSE(PROBE)
		XAD
002	W07043-429-F1-R2	FILTER
		IMP CONTENT
		IMP RINSE
		RINSE(BACK HALF)
		RINSE(PROBE)
		XAD
003	W07043-429-F1-R3	FILTER
		IMP CONTENT
		IMP RINSE
		RINSE(BACK HALF)
		RINSE(PROBE)
		XAD
004	W07043-429-F2-R1	FILTER
		IMP CONTENT
		IMP RINSE
		RINSE(BACK HALF)
		RINSE(PROBE)
		XAD
005	W07043-429-F2-R2	FILTER
		IMP CONTENT
		IMP RINSE
		RINSE(BACK HALF)
		RINSE(PROBE)
		XAD
006	W07043-429-F2-R3	FILTER
		IMP CONTENT
		IMP RINSE
		RINSE(BACK HALF)

Smpinvgnmm5.rpt

Section I: Sample Inventory Report

Date Received: 10/24/2005
Project No.: 26831
Project Name: Simi Valley L.F.

Lab. Sample ID	Client Sample ID	Component ID
006	W07043-429-F2-R3	RINSE(PROBE)
		XAD
007	W07043-429-FB	FILTER
		IMP CONTENT
		IMP RINSE
		RINSE(BACK HALF)
		RINSE(PROBE)
		XAD
008	W07043-429-SB	ACETONE
		HEXANE
		MeCL2
		PAH SOLUTION

Smpinvgnmm5.rpt

SECTION II

ALTA

Method Blank					Modified EPA Method 1625
Matrix:	MM5	QC Batch No.:	7379	Lab Sample:	0-MB001
Sample Size:	Sample	Date Extracted:	3-Nov-05	Date Analyzed DB-5:	7-Nov-05

Analyte	Conc. (ng/Sample)	RL[a]	Qualifiers		Labeled Standard[c]	%R	LCL-UCL[d]	Qualifiers
Hexachlorobenzene	ND	0.256		IS	13C-Hexachlorobenzene	73.2	13 - 595	
				AS	d10-Anthracene	78.9	13 - 595	

a. Sample specific estimated detection limit.
b. Estimated maximum possible concentration.
c. Method detection limit.
d. Lower control limit - upper control limit.

Analyst: DMS

Approved By: Martha M. Maier 12-Nov-2005 13:06

ALTA

LCS Results — Modified EPA Method 1625

Matrix:	MM5	QC Batch No.:	7379	Lab Sample:	0-001LCS1/LCS2
Sample Size:	Sample	Date Extracted:	3-Nov-05	Date Analyzed DB-5:	7-Nov-05

Analyte	LCS1-%R	LCS2-%R	%-RPD
Hexachlorobenzene	102	103	0.976

IS Type	Internal Standard	LCS1-%R	LCS2-%R
IS	13C-Hexachlorobenzene	68.8	65.6
CRS	d10-Anthracene	77.2	74.6

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ALTA

Sample ID:	W07043-429-F1-R1			Modified EPA Method 1625	
Client Data		**Sample Data**		**Laboratory Data**	
Name:	Horizon Air Measurements	Matrix:	MM5	Lab Sample:	26831-001
Project:	Simi Valley L.F.	Sample Size:	Sample	QC Batch No.:	7379
Date Collected:	13-Oct-05			Date Analyzed DB-5:	7-Nov-05
Time Collected:	NA				

Analyte	Conc. (ng/Sample)	RL [a]	Qualifiers		Labeled Standard [c]	%R	LCL-UCL [d]	Qualifiers
Hexachlorobenzene	1.61		J	IS	13C-Hexachlorobenzene	63.6	13 - 595	
				AS	d10-Anthracene	87.7	13 - 595	

a. Sample specific estimated detection limit.
b. Estimated maximum possible concentration.
c. Method detection limit.
d. Lower control limit - upper control limit.

Analyst: DMS

Approved By: Martha M. Maier 12-Nov-2005 13:06

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ALTA

Sample ID:	W07043-429-F1-R2			Modified EPA Method 1625	
Client Data		**Sample Data**		**Laboratory Data**	
Name:	Horizon Air Measurements	Matrix:	MM5	Lab Sample:	26831-002
Project:	Simi Valley L.F.	Sample Size:	Sample	QC Batch No.:	7379
Date Collected:	14-Oct-05			Date Analyzed DB-5:	7-Nov-05
Time Collected:	NA				

Analyte	Conc. (ng/Sample)	RL [a]	Qualifiers	Labeled Standard [c]	%R	LCL-UCL [d]	Qualifiers
Hexachlorobenzene	0.815		J	IS 13C-Hexachlorobenzene	61.2	13 - 595	
				AS d10-Anthracene	86.5	13 - 595	

a. Sample specific estimated detection limit.
b. Estimated maximum possible concentration.
c. Method detection limit.
d. Lower control limit - upper control limit.

Analyst: DMS

Approved By: Martha M. Maier 12-Nov-2005 13:06

ALTA

Sample ID:	W07043-429-F1-R3			Modified EPA Method 1625	
Client Data		**Sample Data**		**Laboratory Data**	
Name:	Horizon Air Measurements	Matrix:	MM5	Lab Sample:	26831-003
Project:	Simi Valley L.F.	Sample Size:	Sample	QC Batch No.:	7379
Date Collected:	17-Oct-05			Date Analyzed DB-5:	7-Nov-05
Time Collected:	NA				

Analyte	Conc. (ng/Sample)	RL [a]	Qualifiers		Labeled Standard [c]	%R	LCL-UCL [d]	Qualifiers
Hexachlorobenzene	1.11		J	IS	13C-Hexachlorobenzene	57.8	13 - 595	
				AS	d10-Anthracene	82.2	13 - 595	

a. Sample specific estimated detection limit.
b. Estimated maximum possible concentration.
c. Method detection limit.
d. Lower control limit - upper control limit.

Analyst: DMS

Approved By: Martha M. Maier 12-Nov-2005 13:06

ALTA

Sample ID:	W07043-429-FB			Modified EPA Method 1625	
Client Data		**Sample Data**		**Laboratory Data**	
Name:	Horizon Air Measurements	Matrix:	MM5	Lab Sample:	26831-007
Project:	Simi Valley L.F.	Sample Size:	Sample	QC Batch No.:	7379
Date Collected:	13-Oct-05			Date Analyzed DB-5:	9-Nov-05
Time Collected:	NA			Date Received:	24-Oct-05
				Date Extracted:	3-Nov-05

Analyte	Conc. (ng/Sample)	RL [a]	Qualifiers
Hexachlorobenzene	0.343		J

	Labeled Standard [c]	%R	LCL-UCL [d]	Qualifiers
IS	13C-Hexachlorobenzene	103	13 - 595	
AS	d10-Anthracene	74.1	13 - 595	

a. Sample specific estimated detection limit.

b. Estimated maximum possible concentration.

c. Method detection limit.

d. Lower control limit - upper control limit.

Analyst: DMS

Approved By: Martha M. Maier 12-Nov-2005 13:06

ALTA

Method Blank — **CARB Method 429**

Matrix:	MM5	QC Batch No.:	7379	Lab Sample:	0-MB001
Sample Size:	Sample	Date Extracted:	3-Nov-05	Date Analyzed DB-5:	8-Nov-05

Analyte	Conc. (ng/Sample)	RL[a]	Qualifiers
Naphthalene	77.9	50.0	
2-Methylnaphthalene	25.9	20.0	
Acenaphthylene	0.588	20.0	
Acenaphthene	2.07	20.0	
Fluorene	5.55	20.0	
Phenanthrene	14.0	50.0	
Anthracene	1.99	20.0	
Fluoranthene	2.89	20.0	
Pyrene	1.69	20.0	
Benz(a)anthracene	0.456	20.0	
Chrysene	0.894	20.0	
Benzo(b)fluoranthene	1.09	20.0	
Benzo(k)fluoranthene	0.693	20.0	
Benzo(e)pyrene	0.548	20.0	
Benzo(a)pyrene	0.794	20.0	
Perylene	0.654	20.0	
Indeno(1,2,3-c,d)pyrene	0.798	20.0	
Dibenz(a,h)anthracene	0.520	20.0	
Benzo(g,h,i)perylene	0.649	20.0	

	Labeled Standard[c]	%R	LCL-UCL[d]	Qualifiers
IS	d8-Naphthalene	70.3	50 - 150	
	d8-Acenaphthylene	70.5	50 - 150	
	d10-Acenaphthene	70.9	50 - 150	
	d10-Fluorene	75.1	50 - 150	
	d10-Phenanthrene	66.2	50 - 150	
	d10-Fluoranthene	79.9	50 - 150	
	d12-Benz(a)anthracene	75.7	50 - 150	
	d12-Chrysene	81.5	50 - 150	
	d12-Benzo(b)fluoranthene	86.0	50 - 150	
	d12-Benzo(k)fluoranthene	82.9	50 - 150	
	d12-Benzo(a)pyrene	75.9	50 - 150	
	d12-Indeno(1,2,3-c,d)pyrene	86.5	50 - 150	
	d14-Dibenz(a,h)anthracene	88.2	50 - 150	
	d12-Benzo(g,h,i)perylene	84.1	50 - 150	
PS	d14-Terphenyl	99.6	50 - 150	
	d12-Benzo(e)pyrene	101	50 - 150	
AS	d10-Anthracene	67.4	50 - 150	

a. Reporting limit.
b. Method detection limit.
c. IS; Internal Standards
d. Lower control limit - upper control limit.

Analyst: DMS

Approved By: Martha M. Maier 11-Nov-2005 15:21

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ALTA

LCS Results — CARB Method 429

Matrix:	MM5	QC Batch No.:	7379	Lab Sample: 0-001LCS1/LCS2	Date Analyzed DB-5:8-Nov-05
Sample Size:	Sample	Date Extracted:	3-Nov-05		

Analyte	LCS1-%R	LCS2-%R	%-RPD
Naphthalene	108	107	0.930
2-Methylnaphthalene	95.8	103	7.24
Acenaphthylene	97.5	104	6.45
Acenaphthene	98.8	106	7.03
Fluorene	98.5	95.5	3.09
Phenanthrene	96.9	108	10.8
Anthracene	89.0	97.8	9.42
Fluoranthene	96.5	96.8	0.310
Pyrene	96.5	96.5	0
Benz(a)anthracene	96.8	97.8	1.03
Chrysene	99.8	102	2.18
Benzo(b)fluoranthene	97.0	105	7.92
Benzo(k)fluoranthene	97.2	94.0	3.35
Benzo(e)pyrene	93.5	91.2	2.49
Benzo(a)pyrene	106	106	0
Perylene	106	106	0
Indeno(1,2,3-c,d)pyrene	97.8	97.2	0.615
Dibenz(a,h)anthracene	94.5	95.5	1.05
Benzo(g,h,i)perylene	99.5	99.0	0.504

IS Type	Internal Standard	LCS1-%R	LCS2-%R
IS	d8-Naphthalene	64.0	68.0
	d8-Acenaphthylene	72.2	71.8
	d10-Acenaphthene	72.2	69.9
	d10-Fluorene	75.6	77.0
	d10-Phenanthrene	80.4	73.2
	d10-Fluoranthene	80.1	84.7
	d12-Benz(a)anthracene	85.1	84.2
	d12-Chrysene	82.5	83.5
	d12-Benzo(b)fluoranthene	89.7	90.5
	d12-Benzo(k)fluoranthene	88.7	95.4
	d12-Benzo(a)pyrene	79.4	81.8
	d12-Indeno(1,2,3-c,d)pyrene	92.2	96.3
	d14-Dibenz(a,h)anthracene	94.6	96.6
	d12-Benzo(g,h,i)perylene	89.1	92.5
PS	d14-Terphenyl	NA	NA
	d12-Benzo(e)pyrene	NA	NA
AS	d10-Anthracene	72.5	75.4

ALTA

Sample ID:	W07043-429-F1-R1		CARB Method 429

Client Data		Sample Data		Laboratory Data			
Name:	Horizon Air Measurements	Matrix:	MM5	Lab Sample:	26831-001	Date Received:	24-Oct-05
Project:	Simi Valley L.F.	Sample Size:	Sample	QC Batch No.:	7379	Date Extracted:	3-Nov-05
Date Collected:	13-Oct-05			Date Analyzed DB-5:	8-Nov-05		
Time Collected:	NA						

Analyte	Conc. (ng/Sample)	RL [a]	Qualifiers
Naphthalene	400	390	B
2-Methylnaphthalene	226	130	B
Acenaphthylene	ND	20.0	
Acenaphthene	34.6	20.0	
Fluorene	133	20.0	
Phenanthrene	670	50.0	
Anthracene	ND	20.0	
Fluoranthene	104	20.0	
Pyrene	69.3	20.0	
Benz(a)anthracene	ND	20.0	
Chrysene	25.9	20.0	
Benzo(b)fluoranthene	23.5	20.0	
Benzo(k)fluoranthene	ND	20.0	
Benzo(e)pyrene	ND	20.0	
Benzo(a)pyrene	ND	20.0	
Perylene	ND	20.0	
Indeno(1,2,3-c,d)pyrene	ND	20.0	
Dibenz(a,h)anthracene	ND	20.0	
Benzo(g,h,i)perylene	ND	20.0	

	Labeled Standard [c]	%R	LCL-UCL [d]	Qualifiers
IS	d8-Naphthalene	62.3	50 - 150	
	d8-Acenaphthylene	75.9	50 - 150	
	d10-Acenaphthene	71.2	50 - 150	
	d10-Fluorene	87.9	50 - 150	
	d10-Phenanthrene	102	50 - 150	
	d10-Fluoranthene	85.5	50 - 150	
	d12-Benz(a)anthracene	73.9	50 - 150	
	d12-Chrysene	71.5	50 - 150	
	d12-Benzo(b)fluoranthene	99.0	50 - 150	
	d12-Benzo(k)fluoranthene	100	50 - 150	
	d12-Benzo(a)pyrene	82.3	50 - 150	
	d12-Indeno(1,2,3-c,d)pyrene	91.4	50 - 150	
	d14-Dibenz(a,h)anthracene	96.4	50 - 150	
	d12-Benzo(g,h,i)perylene	89.6	50 - 150	
PS	d14-Terphenyl	96.6	50 - 150	
	d12-Benzo(e)pyrene	92.8	50 - 150	
AS	d10-Anthracene	83.9	50 - 150	

a. Reporting limit.
b. Method detection limit.
c. IS; Internal Standards, PS; Pre-Spike Surrogates.
d. Lower control limit - upper control limit.

Analyst: DMS

Approved By: Martha M. Maier 11-Nov-2005 15:21

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ALTA

Sample ID: W07043-429-F1-R2 **CARB Method 429**

Client Data		Sample Data		Laboratory Data			
Name:	Horizon Air Measurements	Matrix:	MM5	Lab Sample:	26831-002	Date Received:	24-Oct-05
Project:	Simi Valley L.F.	Sample Size:	Sample	QC Batch No.:	7379	Date Extracted:	3-Nov-05
Date Collected:	14-Oct-05			Date Analyzed DB-5:	8-Nov-05		
Time Collected:	NA						

Analyte	Conc. (ng/Sample)	RL [a]	Qualifiers
Naphthalene	401	390	B
2-Methylnaphthalene	176	130	B
Acenaphthylene	ND	20.0	
Acenaphthene	ND	20.0	
Fluorene	44.4	20.0	
Phenanthrene	243	50.0	
Anthracene	34.3	20.0	
Fluoranthene	86.6	20.0	
Pyrene	61.3	20.0	
Benz(a)anthracene	ND	20.0	
Chrysene	51.3	20.0	
Benzo(b)fluoranthene	29.8	20.0	
Benzo(k)fluoranthene	ND	20.0	
Benzo(e)pyrene	25.8	20.0	
Benzo(a)pyrene	ND	20.0	
Perylene	ND	20.0	
Indeno(1,2,3-c,d)pyrene	ND	20.0	
Dibenz(a,h)anthracene	ND	20.0	
Benzo(g,h,i)perylene	ND	20.0	

	Labeled Standard [c]	%R	LCL-UCL [d]	Qualifiers
IS	d8-Naphthalene	71.2	50 - 150	
	d8-Acenaphthylene	69.0	50 - 150	
	d10-Acenaphthene	65.7	50 - 150	
	d10-Fluorene	79.2	50 - 150	
	d10-Phenanthrene	81.0	50 - 150	
	d10-Fluoranthene	84.1	50 - 150	
	d12-Benz(a)anthracene	80.1	50 - 150	
	d12-Chrysene	77.9	50 - 150	
	d12-Benzo(b)fluoranthene	93.4	50 - 150	
	d12-Benzo(k)fluoranthene	93.1	50 - 150	
	d12-Benzo(a)pyrene	82.1	50 - 150	
	d12-Indeno(1,2,3-c,d)pyrene	88.6	50 - 150	
	d14-Dibenz(a,h)anthracene	90.1	50 - 150	
	d12-Benzo(g,h,i)perylene	85.0	50 - 150	
PS	d14-Terphenyl	102	50 - 150	
	d12-Benzo(e)pyrene	98.4	50 - 150	
AS	d10-Anthracene	69.5	50 - 150	

a. Reporting limit.
b. Method detection limit.
c. IS; Internal Standards, PS; Pre-Spike Surrogates.
d. Lower control limit - upper control limit.

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Analyst: DMS

Approved By: Martha M. Maier 11-Nov-2005 15:21

ALTA

Sample ID:	W07043-429-F1-R3		CARB Method 429
Client Data		**Sample Data**	**Laboratory Data**
Name:	Horizon Air Measurements	Matrix: MM5	Lab Sample: 26831-003 Date Received: 24-Oct-05
Project:	Simi Valley L.F.	Sample Size: Sample	QC Batch No.: 7379 Date Extracted: 3-Nov-05
Date Collected:	17-Oct-05		Date Analyzed DB-5: 8-Nov-05
Time Collected:	NA		

Analyte	Conc. (ng/Sample)	RL [a]	Qualifiers
Naphthalene	207	390	B
2-Methylnaphthalene	72.7	130	B
Acenaphthylene	ND	20.0	
Acenaphthene	ND	20.0	
Fluorene	21.6	20.0	
Phenanthrene	96.6	50.0	
Anthracene	ND	20.0	
Fluoranthene	25.0	20.0	
Pyrene	ND	20.0	
Benz(a)anthracene	ND	20.0	
Chrysene	ND	20.0	
Benzo(b)fluoranthene	ND	20.0	
Benzo(k)fluoranthene	ND	20.0	
Benzo(e)pyrene	ND	20.0	
Benzo(a)pyrene	ND	20.0	
Perylene	ND	20.0	
Indeno(1,2,3-c,d)pyrene	ND	20.0	
Dibenz(a,h)anthracene	ND	20.0	
Benzo(g,h,i)perylene	ND	20.0	

	Labeled Standard [c]	%R	LCL-UCL [d]	Qualifiers
IS	d8-Naphthalene	69.1	50 - 150	
	d8-Acenaphthylene	70.5	50 - 150	
	d10-Acenaphthene	73.7	50 - 150	
	d10-Fluorene	76.5	50 - 150	
	d10-Phenanthrene	76.0	50 - 150	
	d10-Fluoranthene	83.9	50 - 150	
	d12-Benz(a)anthracene	78.5	50 - 150	
	d12-Chrysene	82.1	50 - 150	
	d12-Benzo(b)fluoranthene	91.7	50 - 150	
	d12-Benzo(k)fluoranthene	93.6	50 - 150	
	d12-Benzo(a)pyrene	82.3	50 - 150	
	d12-Indeno(1,2,3-c,d)pyrene	92.7	50 - 150	
	d14-Dibenz(a,h)anthracene	96.1	50 - 150	
	d12-Benzo(g,h,i)perylene	89.7	50 - 150	
PS	d14-Terphenyl	104	50 - 150	
	d12-Benzo(e)pyrene	97.5	50 - 150	
AS	d10-Anthracene	70.5	50 - 150	

a. Reporting limit.

b. Method detection limit.

c. IS; Internal Standards, PS; Pre-Spike Surrogates.

d. Lower control limit - upper control limit.

Analyst: DMS

Approved By: Martha M. Maier 11-Nov-2005 15:21

1C1

ALTA

Sample ID:	W07043-429-F2-R1			CARB Method 429
Client Data		**Sample Data**	**Laboratory Data**	
Name:	Horizon Air Measurements	Matrix: MM5	Lab Sample: 26831-004	Date Received: 24-Oct-05
Project:	Simi Valley L.F.	Sample Size: Sample	QC Batch No.: 7379	Date Extracted: 3-Nov-05
Date Collected:	19-Oct-05		Date Analyzed DB-5: 8-Nov-05	
Time Collected:	NA			

Analyte	Conc. (ng/Sample)	RL [a]	Qualifiers
Naphthalene	372	390	B
2-Methylnaphthalene	94.3	130	B
Acenaphthylene	ND	20.0	
Acenaphthene	ND	20.0	
Fluorene	25.3	20.0	
Phenanthrene	120	50.0	
Anthracene	ND	20.0	
Fluoranthene	61.0	20.0	
Pyrene	55.2	20.0	
Benz(a)anthracene	ND	20.0	
Chrysene	23.3	20.0	
Benzo(b)fluoranthene	ND	20.0	
Benzo(k)fluoranthene	ND	20.0	
Benzo(e)pyrene	ND	20.0	
Benzo(a)pyrene	ND	20.0	
Perylene	ND	20.0	
Indeno(1,2,3-c,d)pyrene	ND	20.0	
Dibenz(a,h)anthracene	ND	20.0	
Benzo(g,h,i)perylene	ND	20.0	

	Labeled Standard [c]	%R	LCL-UCL [d]	Qualifiers
IS	d8-Naphthalene	69.7	50 - 150	
	d8-Acenaphthylene	76.4	50 - 150	
	d10-Acenaphthene	68.5	50 - 150	
	d10-Fluorene	75.1	50 - 150	
	d10-Phenanthrene	81.2	50 - 150	
	d10-Fluoranthene	84.7	50 - 150	
	d12-Benz(a)anthracene	82.8	50 - 150	
	d12-Chrysene	82.7	50 - 150	
	d12-Benzo(b)fluoranthene	94.8	50 - 150	
	d12-Benzo(k)fluoranthene	96.0	50 - 150	
	d12-Benzo(a)pyrene	83.2	50 - 150	
	d12-Indeno(1,2,3-c,d)pyrene	90.9	50 - 150	
	d14-Dibenz(a,h)anthracene	93.6	50 - 150	
	d12-Benzo(g,h,i)perylene	88.6	50 - 150	
PS	d14-Terphenyl	107	50 - 150	
	d12-Benzo(e)pyrene	96.2	50 - 150	
AS	d10-Anthracene	75.7	50 - 150	

a. Reporting limit.
b. Method detection limit.
c. IS; Internal Standards, PS; Pre-Spike Surrogates.
d. Lower control limit - upper control limit.

Analyst: DMS

Approved By: Martha M. Maier 11-Nov-2005 15:21

ALTA

Sample ID:	W07043-429-F2-R2		CARB Method 429
Client Data		**Sample Data**	**Laboratory Data**
Name:	Horizon Air Measurements	Matrix: MM5	Lab Sample: 26831-005
Project:	Simi Valley L.F.	Sample Size: Sample	QC Batch No.: 7379
Date Collected:	20-Oct-05		Date Analyzed DB-5: 8-Nov-05
Time Collected:	NA		Date Received: 24-Oct-05
			Date Extracted: 3-Nov-05

Analyte	Conc. (ng/Sample)	RL [a]	Qualifiers
Naphthalene	291	390	B
2-Methylnaphthalene	98.0	130	B
Acenaphthylene	ND	20.0	
Acenaphthene	ND	20.0	
Fluorene	26.2	20.0	
Phenanthrene	101	50.0	
Anthracene	ND	20.0	
Fluoranthene	26.5	20.0	
Pyrene	24.0	20.0	
Benz(a)anthracene	ND	20.0	
Chrysene	ND	20.0	
Benzo(b)fluoranthene	ND	20.0	
Benzo(k)fluoranthene	ND	20.0	
Benzo(e)pyrene	ND	20.0	
Benzo(a)pyrene	ND	20.0	
Perylene	ND	20.0	
Indeno(1,2,3-c,d)pyrene	ND	20.0	
Dibenz(a,h)anthracene	ND	20.0	
Benzo(g,h,i)perylene	ND	20.0	

	Labeled Standard [c]	%R	LCL-UCL [d]	Qualifiers
IS	d8-Naphthalene	65.2	50 - 150	
	d8-Acenaphthylene	75.4	50 - 150	
	d10-Acenaphthene	81.4	50 - 150	
	d10-Fluorene	98.9	50 - 150	
	d10-Phenanthrene	104	50 - 150	
	d10-Fluoranthene	96.3	50 - 150	
	d12-Benz(a)anthracene	80.7	50 - 150	
	d12-Chrysene	87.5	50 - 150	
	d12-Benzo(b)fluoranthene	99.3	50 - 150	
	d12-Benzo(k)fluoranthene	100	50 - 150	
	d12-Benzo(a)pyrene	81.1	50 - 150	
	d12-Indeno(1,2,3-c,d)pyrene	95.8	50 - 150	
	d14-Dibenz(a,h)anthracene	99.0	50 - 150	
	d12-Benzo(g,h,i)perylene	92.9	50 - 150	
PS	d14-Terphenyl	96.6	50 - 150	
	d12-Benzo(e)pyrene	95.7	50 - 150	
AS	d10-Anthracene	85.2	50 - 150	

a. Reporting limit.
b. Method detection limit.
c. IS; Internal Standards, PS; Pre-Spike Surrogates.
d. Lower control limit - upper control limit.

Analyst: DMS

Approved By: Martha M. Maier 11-Nov-2005 15:21

ALTA

Sample ID:	W07043-429-F2-R3		CARB Method 429

Client Data		Sample Data		Laboratory Data			
Name:	Horizon Air Measurements	Matrix:	MM5	Lab Sample:	26831-006	Date Received:	24-Oct-05
Project:	Simi Valley L.F.	Sample Size:	Sample	QC Batch No.:	7379	Date Extracted:	3-Nov-05
Date Collected:	21-Oct-05			Date Analyzed DB-5:	8-Nov-05		
Time Collected:	NA						

Analyte	Conc. (ng/Sample)	RL [a]	Qualifiers
Naphthalene	498	390	B
2-Methylnaphthalene	220	130	B
Acenaphthylene	29.5	20.0	
Acenaphthene	34.5	20.0	
Fluorene	134	20.0	
Phenanthrene	695	50.0	
Anthracene	49.2	20.0	
Fluoranthene	162	20.0	
Pyrene	64.1	20.0	
Benz(a)anthracene	ND	20.0	
Chrysene	ND	20.0	
Benzo(b)fluoranthene	22.4	20.0	
Benzo(k)fluoranthene	ND	20.0	
Benzo(e)pyrene	ND	20.0	
Benzo(a)pyrene	ND	20.0	
Perylene	ND	20.0	
Indeno(1,2,3-c,d)pyrene	ND	20.0	
Dibenz(a,h)anthracene	ND	20.0	
Benzo(g,h,i)perylene	ND	20.0	

	Labeled Standard [c]	%R	LCL-UCL [d]	Qualifiers
IS	d8-Naphthalene	76.8	50 - 150	
	d8-Acenaphthylene	75.1	50 - 150	
	d10-Acenaphthene	76.1	50 - 150	
	d10-Fluorene	92.0	50 - 150	
	d10-Phenanthrene	108	50 - 150	
	d10-Fluoranthene	85.8	50 - 150	
	d12-Benz(a)anthracene	75.7	50 - 150	
	d12-Chrysene	76.6	50 - 150	
	d12-Benzo(b)fluoranthene	96.5	50 - 150	
	d12-Benzo(k)fluoranthene	103	50 - 150	
	d12-Benzo(a)pyrene	84.1	50 - 150	
	d12-Indeno(1,2,3-c,d)pyrene	91.5	50 - 150	
	d14-Dibenz(a,h)anthracene	93.4	50 - 150	
	d12-Benzo(g,h,i)perylene	88.9	50 - 150	
PS	d14-Terphenyl	95.6	50 - 150	
	d12-Benzo(e)pyrene	91.2	50 - 150	
AS	d10-Anthracene	82.0	50 - 150	

a. Reporting limit.

b. Method detection limit.

c. IS; Internal Standards, PS; Pre-Spike Surrogates.

d. Lower control limit - upper control limit.

Analyst: DMS

Approved By: Martha M. Maier 11-Nov-2005 15:21

ALTA

Sample ID: W07043-429-FB **CARB Method 429**

Client Data		Sample Data		Laboratory Data			
Name:	Horizon Air Measurements	Matrix:	MM5	Lab Sample:	26831-007	Date Received:	24-Oct-05
Project:	Simi Valley L.F.	Sample Size:	Sample	QC Batch No.:	7379	Date Extracted:	3-Nov-05
Date Collected:	13-Oct-05			Date Analyzed DB-5:	8-Nov-05		
Time Collected:	NA						

Analyte	Conc. (ng/Sample)	RL [a]	Qualifiers
Naphthalene	ND	390	B
2-Methylnaphthalene	ND	130	B
Acenaphthylene	ND	20.0	
Acenaphthene	ND	20.0	
Fluorene	ND	20.0	
Phenanthrene	ND	50.0	
Anthracene	ND	20.0	
Fluoranthene	ND	20.0	
Pyrene	ND	20.0	
Benz(a)anthracene	ND	20.0	
Chrysene	ND	20.0	
Benzo(b)fluoranthene	ND	20.0	
Benzo(k)fluoranthene	ND	20.0	
Benzo(e)pyrene	ND	20.0	
Benzo(a)pyrene	ND	20.0	
Perylene	ND	20.0	
Indeno(1,2,3-c,d)pyrene	ND	20.0	
Dibenz(a,h)anthracene	ND	20.0	
Benzo(g,h,i)perylene	ND	20.0	

	Labeled Standard [c]	%R	LCL-UCL [d]	Qualifiers
IS	d8-Naphthalene	76.1	50 - 150	
	d8-Acenaphthylene	72.7	50 - 150	
	d10-Acenaphthene	72.6	50 - 150	
	d10-Fluorene	75.9	50 - 150	
	d10-Phenanthrene	69.5	50 - 150	
	d10-Fluoranthene	84.4	50 - 150	
	d12-Benz(a)anthracene	80.1	50 - 150	
	d12-Chrysene	87.1	50 - 150	
	d12-Benzo(b)fluoranthene	92.6	50 - 150	
	d12-Benzo(k)fluoranthene	92.4	50 - 150	
	d12-Benzo(a)pyrene	83.8	50 - 150	
	d12-Indeno(1,2,3-c,d)pyrene	95.8	50 - 150	
	d14-Dibenz(a,h)anthracene	96.6	50 - 150	
	d12-Benzo(g,h,i)perylene	92.6	50 - 150	
PS	d14-Terphenyl	103	50 - 150	
	d12-Benzo(e)pyrene	99.7	50 - 150	
AS	d10-Anthracene	73.1	50 - 150	

a. Reporting limit.
b. Method detection limit.
c. IS; Internal Standards, PS; Pre-Spike Surrogates.
d. Lower control limit - upper control limit.

Analyst: DMS

Approved By: Martha M. Maier 11-Nov-2005 15:21

APPENDIX

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank.
D	The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.
E	The reported value exceeds the calibration range of the instrument.
H	The signal-to-noise ratio is greater than 10:1.
I	Chemical interference
J	The amount detected is below the Lower Calibration Limit of the instrument.
*	See Cover Letter
Conc.	Concentration
DL	Sample-specific estimated Detection Limit
MDL	The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.
EMPC	Estimated Maximum Possible Concentration
NA	Not applicable
RL	Reporting Limit – concentrations that corresponds to low calibration point
ND	Not Detected
TEQ	Toxic Equivalency

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

CERTIFICATIONS

Accrediting Authority	Certificate Number
State of Alaska, DEC	CA413-02
State of Arizona	AZ0639
State of Arkansas, DEQ	05-013-0
State of Arkansas, DOH	Reciprocity through CA
State of California – NELAP Primary AA	02102CA
State of Colorado	
State of Connecticut	PH-0182
State of Florida, DEP	E87777
Commonwealth of Kentucky	90063
State of Louisiana, Health and Hospitals	LA050001
State of Louisiana, DEQ	01977
State of Maine	CA0413
State of Michigan	81178087
State of Mississippi	Reciprocity through CA
Naval Facilities Engineering Service Center	
State of Nevada	CA413
State of New Jersey	CA003
State of New Mexico	Reciprocity through CA
State of New York, DOH	11411
State of North Carolina	06700
State of North Dakota, DOH	R-078
State of Oklahoma	D9919
State of Oregon	CA200001-002
State of Pennsylvania	68-00490
State of South Carolina	87002001
State of Tennessee	02996
State of Texas	TX247-2005A
U.S. Army Corps of Engineers	
State of Utah	9169330940
Commonwealth of Virginia	00013
State of Washington	C1285
State of Wisconsin	998036160
State of Wyoming	8TMS-Q

CHAIN OF CUSTODY RECORD

26831

5.6°C
9.2°C
12.5°C

Client/Project Name	Project Location
Simi Valley L.F.	Simi Valley, CA.

Project No.	Field Logbook No.
W07-043	

Sampler: (*Signature*)	Chain of Custody Tape No.

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	ANALYSES: TO-15 (PAHs)	Methane 429 (PAHs)	hexane & chlorobenzene				REMARKS
W07-043-429-F1-R1 C1	10/13/05			Rinse (Probe Filter XAD (back half) Rinse (impinger contents) Impinger Catch Rinse (trap)	✓	✓					Flare #1 R1
W07-043-429-F1 R1 C2					✓	✓					
W07-043-429 F1 R1 C3					✓	✓					
W07-043-429-F1 R1 C4					✓	✓					
W07-043-429-F1 R1 C5					✓	✓					
W07-043-429-F1 R1 C6					✓	✓					

Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
	10/20/05	1100		10/22/05	1000
Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
	10/24/05	1300	Bettina A. Benedict	10/24/05	1300
Relinquished by: (*Signature*)	Date	Time	Received for Laboratory: (*Signature*)	Date	Time
Sample Disposal Method:	Disposed of by: (*Signature*)			Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

Nº 8451

691

CHAIN OF CUSTODY RECORD

26831 5.6°C 9.2°C 12.5°C

Client/Project Name	Project Location
Simi Valley L.F.	Simi Valley, CA.

Project No.	Field Logbook No.
407-043	

Sampler: (Signature)	Chain of Custody Tape No.
T. Hilliard	

ANALYSES: PAH's by CARB METHOD 429 (PAH'S) HEXACHLOROBENZENE

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample							REMARKS
407043-429-F1-RZ-C1	10/14/05			Rinse (PROBE)	✓	✓					Plant #1 Run #2
407043-429-F1-RZ-C2				Filter	✓	✓					
407043-429-F1-RZ-C3				XAD	✓	✓					
407043-429-F1-RZ-C4				Rinse (Back half)	✓	✓					
407043-429-F1-RZ-C5				Impinger Contents	✓	✓					
407043-429-F1-RZ-C6				Rinse (impingers)	✓	✓					

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
T. Hilliard	10/22/05	1000		10/22/05	1000
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	10/24/05	1300	Bettina D. Benedict	10/24/05	1300
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
Sample Disposal Method:	Disposed of by: (Signature)			Date	Time

SAMPLE COLLECTOR	ANALYTICAL LABORATORY
HORIZON AIR MEASUREMENT SERVICES, INC 996 Lawrence Drive, Suite 108 Newbury Park, CA 91320 (805) 498-8781 Fax (805) 498-3173	

№ 8449

5.6°C
9.2°C
12.5°C

CHAIN OF CUSTODY RECORD

2683

Client/Project Name	Project Location
Simi Valley L.F.	Simi Valley, CA
Project No.	**Field Logbook No.**
W07-043	
Sampler: (Signature)	**Chain of Custody Tape No.**
Tim Williams	

ANALYSES: MM5248 (ARB METHOD 429 DATA); HEXACHLOROBENZENE

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample			REMARKS
W07043-429-F1-R3-C1	10/17/05			Rinse (Probe)	✓	✓	Flare #1 Run #3
07043-429-F1-R3-C2	↓			Filter	✓	✓	
07043-429-F1-R3-C3				XAD	✓	✓	
W07043-429-F1-R3-C4				Rinse (back half)	✓	✓	
W07043-429-F1-R3-C5				Impinger Contents	✓	✓	
W07043 429-F1 R3 C6				Rinse (impingers)	✓	✓	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Tim Williams	10/20/05	1000		10/20/05	1000
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	10/24/05	1300	Bettina A Benedict	10/24/05	1300
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
Sample Disposal Method:	Disposed of by: (Signature)			Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
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ANALYTICAL LABORATORY

Nº 8399

171

26831 5.6°C 9.2°C 12.5°C

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Simi Valley L.F.	Simi Valley, CA
Project No. W07-043	**Field Logbook No.**
Sampler: (Signature) [signature]	**Chain of Custody Tape No.**

ANALYSES: CARB METHOD 429 (PAH'S); HEXACHLOROBENZENE

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	CARB Method 429 (PAH's)	Hexachlorobenzene					REMARKS
W07043-429-FZ R1C1	10/19/05			Rinse (Probe)	✓	✓					Flare 2 R-1
W07043-429-FZ R1C2	↓			Filter	✓	✓					Flare 2 R1
W07043-429-FZ-R1C3	↓			XAD	✓	✓					↓
W07043-429-FZ-R1C4	↓			Rinse (Back half)	✓	✓					↓
W07043-429-FZ-R1C5	↓			Impinger Content	✓	✓					↓
W07043-429-FZ-R1C6	↓			Rinse (imp)	✓	✓					↓

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	10/22/05	1000	[signature]	10/22/05	1000
[signature]	10/24/05	1300	Bettina A. Benedict	10/24/05	1300
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time

Sample Disposal Method:	Disposed of by: (Signature)	Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
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ANALYTICAL LABORATORY

Nº 8467

172

CHAIN OF CUSTODY RECORD

26831

5.6°C
9.2°C
12.5°C

Client/Project Name	Project Location
Simi Valley L.F	Simi Valley, CA
Project No.	**Field Logbook No.**
W07-043	
Sampler: (Signature)	**Chain of Custody Tape No.**

ANALYSES: 429 CARB METHOD 429 (PAH's) HEXACHLOROBENZENE

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample			REMARKS
W07043-429-F2-R2C1	10/20/05			Rinse (Probe)	✓	✓	Plume 2 R2
W07043-429-F2-R2C2				Filter	✓	✓	
W07043-429-F2-R2C3				XAD	✓	✓	
W07043-429-F2-R2C4				Rinse (Back half)	✓	✓	
W07043-429-F2-R2C5				Impinger Content	✓	✓	
W07043-429-F2-R2C6				Rinse (Imp)	✓	✓	

	Date	Time		Date	Time
Relinquished by: (Signature)	10/21/05	1000	Received by: (Signature)	10/21/05	1000
Relinquished by: (Signature)	10/21/05	1300	Received by: (Signature) Bettina P. Benedict	10/21/05	1300
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
Sample Disposal Method:	Disposed of by: (Signature)			Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
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(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

Nº 8473

CHAIN OF CUSTODY RECORD

26831 5.6°C 9.2°C 12.5°C

Client/Project Name	Project Location
Simi Valley L.F	Simi Valley CA
Project No.	**Field Logbook No.**
W07-043	
Sampler: (Signature)	**Chain of Custody Tape No.**

ANALYSES: Method 429 (CARB) (PAH's) Hexachlorobenzene

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample			REMARKS
07043-429-F2-R3-C1	10/21/05			Rinse (Probe)	✓	✓	Flare 2 R-3
-R3-C2				Filter	✓	✓	
-R3-C3				XAD	✓	✓	
-R3-C4				Rinse (Back-half)	✓	✓	
-R3-C5				Impinger (Inlet)	✓	✓	
-R3-C6				Rinse (Impinger)	✓	✓	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	10/21/05	1000		10/22/05	1000
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	10/24/05	1300	Bettina L. Benedict	10/24/05	1300
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
Sample Disposal Method:	Disposed of by: (Signature)			Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

No 8477

CHAIN OF CUSTODY RECORD

26831

5.6°C
9.2°C
12.5°C

Client/Project Name	Project Location
Simi Valley, CA	S.V., CA.
Project No.	**Field Logbook No.**
WA-043	
Sampler: (Signature)	**Chain of Custody Tape No.**
T. Winn	

ANALYSES: MATRIX CARB METHOD 429 (DAHS) HEXACHLOROBENZENE

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample							REMARKS
WA7043-429-FB-C1	10/13/05			Rinse (Probe)	✓	✓					Field Blank
WA7-043-429-FBC2				Filter	✓	✓					
WA7-043-429-FB-C3				XAD	✓	✓					
WA7-043-429-FBC4				Rinse (Back half)	✓	✓					
WA7-043-429-FBC5				Impinger Contents	✓	✓					
WA7-043-429-FBC6				Rinse (Imp)	✓	✓					

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
T. Winn	10/22/05	1000		10/22/05	1000
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	10/24/05	1300	Kathleen T. Benedict	10/24/05	1300
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
Sample Disposal Method:	Disposed of by: (Signature)			Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
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(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

Nº 8450

C-21

CHAIN OF CUSTODY RECORD

2683 | 5.6°C 9.2°C 12.5°C

Client/Project Name	Project Location
Simi Valley L.F.	S.V., CA.
Project No.	**Field Logbook No.**
W07-043	
Sampler: (*Signature*)	**Chain of Custody Tape No.**

ANALYSES: METHOD 429 (PARTIAL CARB); HEXACHLOROBENZENE

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample							REMARKS
W07043429 SB-1	10/13/05			Acetone 250mL	X	X					Solution Blanks
W07043-429 SB-2				MeCl2 250mL	X	X					
W07043 429 SB-3				Hexane 250mL	X	X					
W07043-429 SB-4				DNH Solution 250mL	X	X					

Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
	10/22/05	1000		10/22/05	1000
Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
	10/24/05	1300	Bettina S. Benedict	10/24/05	1300
Relinquished by: (*Signature*)	Date	Time	Received for Laboratory: (*Signature*)	Date	Time
Sample Disposal Method:	Disposed of by: (*Signature*)			Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

Nº 8307

ORSAT DATA SHEET
METHOD 3

Client: Waste Management **Project #:** W07.043

Facility: Simi Valley **Date:** 10.27.05

Source: Flare 1 **Analyzed by:** [signature]

Run #: W07.043.F1.M3.425.R1 (10.14.05)

Gas \ Run	1		2		3		Average Net Volume
	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net	
CO_2	5.0		5.0		5.0		5.0
O_2 (Net is Actual O_2 minus Actual CO_2 Reading)	20.4	14.4	20.4	14.4	20.4	14.4	14.4
CO (Net is Actual CO minus Actual O_2 reading)							
N_2 (Net is 100 minus Acutal CO reading)							

ORSAT DATA SHEET
METHOD 3

Client: Waste Management **Project #:** W07.043

Facility: Simi Valley **Date:** 10.31.05

Source: Flare #1 **Analyzed by:** [signature]

Run #: W07 043 F1 M3 429 R1
(10.13.05)

Gas \ Run	1		2		3		Average Net Volume
	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net	
CO_2	5.1		5.1		5.1		5.1
O_2 (Net is Actual O_2 minus Actual CO_2 Reading)	20.3	15.2	20.3	15.2	20.3	15.2	15.2
CO (Net is Actual CO minus Actual O_2 reading)							
N_2 (Net is 100 minus Acutal CO reading)							

ORSAT DATA SHEET
METHOD 3

Client: Waste Management **Project #:** W07-043

Facility: Simi Valley **Date:** 10.27.05

Source: Flare # 1 **Analyzed by:** [signature]

Run #: W07043-F1 M3 429 R2
(10.14.05)

Gas \ Run	1		2		3		Average Net Volume
	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net	
CO_2	5.2		5.2		5.2		5.2
O_2 (Net is Actual O_2 minus Actual CO_2 Reading)	20.5	15.3	20.5	15.3	20.5	15.3	15.3
CO (Net is Actual CO minus Actual O_2 reading)							
N_2 (Net is 100 minus Acutal CO reading)							

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Simi Valley L.F.	S.V.L.F.
Project No.	**Field Logbook No.**
W07-043	
Sampler: (*Signature*)	**Chain of Custody Tape No.**
T. Williams	

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	M3 CO2						REMARKS
J07043 F1M3-429 R1		10/13/05			X						
J07-043 F1M3-429 R2		10/14/05			X						
J07043 F1 M3 425 R1		10/14/05			X						

ANALYSES

Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
				10.25.05	0700
Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
Relinquished by: (*Signature*)	Date	Time	Received for Laboratory: (*Signature*)	Date	Time
Sample Disposal Method:			Disposed of by: (*Signature*)	Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

HAMS

Nº 8439

081

ORSAT DATA SHEET
METHOD 3

Client: Waste Management **Project #:** W07.043

Facility: Simi Valley **Date:** 10.27.05

Source: Flare 1 **Analyzed by:**

Run #: W07.043-F1-M3-429.R3
10.17.05

Gas \ Run	1		2		3		Average Net Volume
	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net	
CO_2	5.3		5.3		5.3		5.3
O_2 (Net is Actual O_2 minus Actual CO_2 Reading)	21.0	15.7	21.0	15.7	21.0	15.7	15.7
CO (Net is Actual CO minus Actual O_2 reading)							
N_2 (Net is 100 minus Acutal CO reading)							

ORSAT DATA SHEET
METHOD 3

Client: Waste Management
Facility: Simi Valley
Source: Flare 1
Run #: W07.043.F1.M3.425.R2
10.18.05

Project #: W07.043
Date: 10.27.05
Analyzed by: [signature]

Gas \ Run	1		2		3		Average Net Volume
	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net	
CO_2	6.6		6.6		6.6		6.6
O_2 (Net is Actual O_2 minus Actual CO_2 Reading)	20.4	13.8	20.4	13.8	20.4	13.8	13.8
CO (Net is Actual CO minus Actual O_2 reading)							
N_2 (Net is 100 minus Acutal CO reading)							

ORSAT DATA SHEET
METHOD 3

Client: Waste Management **Project #:** W07.043

Facility: Simi Valley **Date:** 10.27.05

Source: Flare 1 **Analyzed by:**

Run #: W07.043.F1.M3.425.R3
(10.18.05

Gas \ Run	1		2		3		Average Net Volume
	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net	
CO_2	5.0		5.0		5.0		5.0
O_2 (Net is Actual O_2 minus Actual CO_2 Reading)	21.0	16.0	21.0	16.0	21.0	16.0	16.0
CO (Net is Actual CO minus Actual O_2 reading)							
N_2 (Net is 100 minus Acutal CO reading)							

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Simi Valley L.F.	Simi Valley CA
Project No.	**Field Logbook No.**
W07-043	
Sampler: (*Signature*)	**Chain of Custody Tape No.**

ANALYSES: M3 CO2

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	M3	CO2	REMARKS
W040 43F1M3-429 R3	10/17/05				X		
07043 F1M3-425 R2	10/18/05				X		
W043 F1M3-425-R3	10/18/05				X		

Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
	10/25/05	0700		10.25.05	0700
Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
Relinquished by: (*Signature*)	Date	Time	Received for Laboratory: (*Signature*)	Date	Time
Sample Disposal Method:	Disposed of by: (*Signature*)			Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

HAMS

Nº 8438

ORSAT DATA SHEET
METHOD 3

Client: WASTE MANAGEMENT **Project #:** W07.043/C58.001

Facility: SIMI VALLEY L.F. **Date:** 11.22.05

Source: FLARE #1 **Analyzed by:**

Run #: Flare 1.R1.TB1

Gas \ Run	1		2		3		Average Net Volume
	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net	
CO_2	6.6		6.6		6.6		6.6
O_2 (Net is Actual O_2 minus Actual CO_2 Reading)	20.6	14.0	20.6	14.0	20.6	14.0	14.0
CO (Net is Actual CO minus Actual O_2 reading)							
N_2 (Net is 100 minus Acutal CO reading)							

ORSAT DATA SHEET
METHOD 3

Client: Waste Management **Project #:** W07.043

Facility: Simi Valley L.F. **Date:** 11.29.05

Source: Flare 1 exhaust **Analyzed by:**

Run #: Flare 1 RZ TB1

Gas \ Run	1		2		3		Average Net Volume
	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net	
CO_2	6.6		6.6		6.6		6.6
O_2 (Net is Actual O_2 minus Actual CO_2 Reading)	20.6	14.0	20.6	14.0	20.6	14.0	14.0
CO (Net is Actual CO minus Actual O_2 reading)							
N_2 (Net is 100 minus Acutal CO reading)							

ORSAT DATA SHEET
METHOD 3

Client: Waste Management **Project #:** W07.043

Facility: Simi Valley L.F. **Date:** 11.29.05

Source: Flare 1 exhaust **Analyzed by:**

Run #: Flare 1 R3 TB1

Gas \ Run	1		2		3		Average Net Volume
	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net	
CO_2	7.0		7.0		7.0		7.0
O_2 (Net is Actual O_2 minus Actual CO_2 Reading)	21.0	14.0	21.0	14.0	21.0	14.0	14.0
CO (Net is Actual CO minus Actual O_2 reading)							
N_2 (Net is 100 minus Acutal CO reading)							

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Simi Valley L.F. Waste Management	Simi Valley, CA
Project No.	**Field Logbook No.**
W7-013	
Sampler: (*Signature*)	**Chain of Custody Tape No.**

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	ANALYSES: CH4 CO2 TOC	REMARKS
Flare 1 R2 TB1	11/23/05			5L bag	X	Flare 1 R-2
Flare 1 R3 TB1	↓	↓		↓	X	Flare 1 R-3

Relinquished by: (*Signature*)	Date 11/28/05	Time 0700	Received by: (*Signature*)	Date	Time
Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
Relinquished by: (*Signature*)	Date	Time	Received for Laboratory: (*Signature*)	Date 11-28-05	Time 0700
Sample Disposal Method:	Disposed of by: (*Signature*)			Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

HAMS

Nº 8782

1 of 1

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
SVLF Waste Management	Simi Valley, CA
Project No.	**Field Logbook No.**
407013 / C58-021	
Sampler: (Signature)	**Chain of Custody Tape No.**

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	ANALYSES: m^3 CO_2 / O_2	REMARKS
Flare 2 R3 TB1	11/22/05			5 L bag	X	Flare 2 R3
Flare 1 R1 TB1				↓	X	Flare 1 R1

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	11/22/05	1900			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
				11/22/05	1900
Sample Disposal Method:	Disposed of by: (Signature)			Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

HAMS

Nº 8796

APPENDIX D - Field Data Sheets

VELOCITY DATA SHEET - METHOD 2

Facility: Simi Valley LF
Source: McGill Flare #1
Job #: W07.043
Date: 10/11/05
Operator: EC

Baro. Press: 28.58
Static Press: -0.005
Pitot Tube #: 10 ins
Pitot Tube Type: S
Magnahelic: Manometer

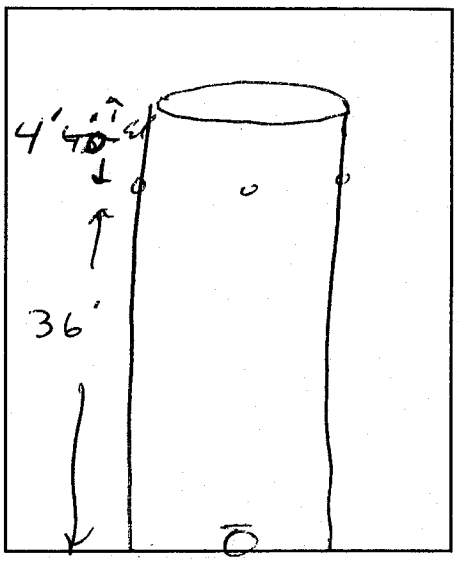
D_1 upstream: 0.52
D_1 downstream: 4.7
Stack Diameter: 92"

Leak Check
Initial: ✓/✓ **Final:** ✓/✓

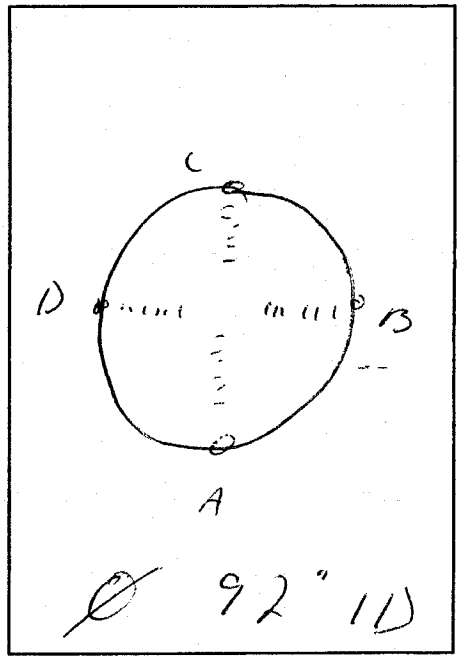
Run #: Pre lim

Point #	Position in.	Velocity Head in. H_2O	Stack Temp °F	Cyclonic Flow Angle
A 12	90.1	0.015	1542	
11	85.8	0.015	1555	
10	81.1	0.015	1561	
9	75.7	0.020	1570	
8	69.0	0.020	1568	
7	59.2	0.020	1546	
6	32.8	0.020	1540	
5	23.0	0.015	1565	
4	16.3	0.015	1551	
3	10.9	0.015	1555	
2	6.2	0.015	1547	
1	1.9	0.015	1538	
B 12		0.015	1527	
11		0.015	1539	
10		0.015	1540	
9		0.020	1548	
8		0.020	1545	
7		0.015	1551	
6		0.015	1549	
5		0.020	1542	
4		0.020	1546	
3		0.015	1550	
2		0.015	1556	
1		0.015	1561	
Average		√ΔP=	T_s=	∠=

Side View



Top View



PARTICULATE FIELD DATA

PLANT Simi Valley LF
DATE 10/11/05
LOCATION Simi Valley
OPERATOR EL
SOURCE MeG. II Flare Out
RUN NO. 1 CARB 436 MM
SAMPLE BOX NO. C-5

TIME START 1050

METER BOX NO. 11
METER ΔH @ 1.5672
Y= 0.9856
PROBE I.D. NO. CC5
NOZZLE DIAMETER, in. .010
STACK DIAMETER, in. 92"
PROBE HEATER SETTING —
HEATER BOX SETTING 250
Δ Cp FACTOR 0.84
FILTER NO. Q 5038

ASSUMED MOISTURE, % 10%
AMBIENT TEMPERATURE 71°F
BARO. PRESS. 28.58
STATIC PRESS. -0.005
NOMAGRAPH INDEX 220

PRE TEST LEAK CHECKS
METER 0.018 @ 15 in. Hg
PITOTS ✓ ✓ @ 5 1/4 in. Hg
ORSAT

P#	TIME	T_s °F	Δ P in H_2O	√Δ P	Δ H in H_2O	Vm ft^3	$T_{m\,IN}$ °F	T_m OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
A-12	0	1569	0.015		3.3	298.287	80	78	252	52	7
11	3.75	1556	0.015		3.3	302.4	85	78	250	50	6
10	7.5	1547	0.015		3.3	307.0	88	79	259	51	5
9	11.25	1585	0.020		4.4	312.0	89	80	258	50	5
8	15.0	1593	0.020		4.4	316.7	89	80	250	52	5.0
7	18.75	1570	0.020		4.4	321.3	89	81	255	50	5
6	22.5	1588	0.020		4.4	325.9	89	81	251	49	5
5	26.25	1529	0.015		3.3	330.5	90	81	251	49	4
4	30	1619	0.015		3.3	335.4	90	82	250	50	4
3	33.75	1636	0.015		3.3	340.0	91	83	248	50	4
2	37.5	1652	0.015		3.3	344.4	91	84	251	49	4
1	41.25	1562	0.015		3.3	349.0	91	85	250	49	4
B 12	45	1558	0.015		3.3	353.468	86	86	252	53	4
11	48.75	1580	0.015		3.3	357.6	86	85	255	50	4
10	52.5	1571	0.015		3.3	361.	88	86	257	50	4
9	56.25	1653	0.020		4.4	365.9	91	86	258	49	5
8	60	1586	0.020		4.4	370.2	92	86	252	49	5
7	63.75	1575	0.015		3.3	375.2	92	86	257	49	4
6	67.5	1573	0.015		3.3	380.0	92	87	257	49	4
5	71.25	1602	0.020		4.4	384.2	94	87	255	49	4
4	75	1610	0.020		4.4	388.8	94	87	254	49	4
3	78.75	1598	0.015		3.3	393.7	94	88	258	48	4
2	82.5	1558	0.015		3.3	398.3	94	89	254	48	4
1	86.25	1579	0.015		3.3	402.6	94	89	255	48	4
	90					406.995					
Avg.		1585.4		0.1288	3.67	105.708		86.9			

TIME END = 1240 SB SB SB SB SB SB

Volume of Liquid Water Collected	Impinger Volume 1/2	3/4	5/6	4	Silica Gel Wght. 5
Final	197/120	5/96	102/c		268
Initial	100/100	mf/100	100/dry		250
Liquid Collected	97/20	5/4	2/0		18
Total Vol. Collected					136

SB

POST TEST LEAK CHECKS
Meter 0.005 @ 15 in. Hg
Pitots 3 1 @ 3 / 3 in. Hg
Orsat

Orsat Meas.	Time	CO_2	O_2	CO	N_2
1					
2					
3					

Nozzle Cal	D_1	D_2	D_3	Average
				192

PARTICULATE FIELD DATA

PLANT Simi Valley Landfill
DATE 10/11/05
LOCATION Simi Valley
OPERATOR BI
SOURCE MG 6,11 Flare out
RUN NO. 2 436 MM
SAMPLE BOX NO. C-11
METER START 1330

METER BOX NO. 7
METER ΔH@ 1.5672
Y= 0.9856
PROBE I.D. NO. CQS
NOZZLE DIAMETER, in. 1.010
STACK DIAMETER, in. 92"
PROBE HEATER SETTING
HEATER BOX SETTING 250
Δ Cp FACTOR .84
FILTER NO. A 5040

ASSUMED MOISTURE, % 10 %
AMBIENT TEMPERATURE 86
BARO. PRESS. 28.58
STATIC PRESS. -0.005
NOMAGRAPH INDEX 220

PRE TEST LEAK CHECKS
METER 0.010 @ 15 in. Hg
PITOTS Ø Ø @ 5/4 in. Hg
ORSAT

P#	TIME	T_s °F	Δ P in H_2O	√Δ P	Δ H in H_2O	Vm ft^3	$T_{m\,IN}$ °F	T_m OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
4 12	0	1568	0.015		3.3	407.250	87	87	251	56	~~3.75~~
11	3.75	1551	0.015		3.3	411.5	87	86	259	50	5
10	7.5	1576	0.015		3.3	415.6	90	87	257	49	5
9	11.25	1603	0.020		4.4	419.8	92	88	259	48	5
8	15.0	1571	0.020		4.4	424.8	93	88	256	48	5
7	18.75	1611	0.020		4.4	429.7	93	89	257	48	5
6	22.5	1562	0.020		4.4	434.2	94	89	262	48	5
5	26.25	1568	0.020		4.4	493.2	94	89	258	48	5
4	30	1549	0.015		3.3	444.3	94	90	263	48	5
3	33.75	1577	0.015		3.3	448.8	94	90	262	48	5
2	37.5	1652	0.015		3.3	452.4	94	90	258	48	5
1	41.25	1629	0.015	456.9	3.3	~~460.124~~	93	90	259	48	5
3 12	45	1613	0.015		3.3	460.124	91	90	261	52	5
11	48.75	1601	0.015		3.3	464.2	93	90	257	50	5
10	52.5	1625	0.015		3.3	468.4	93	90	259	49	5
9	56.25	1687	0.015		3.3	472.6	92	90	257	49	5
8	60	1610	0.020		4.4	477.1	93	90	252	49	5
7	63.75	1617	0.020		4.4	481.6	93	90	256	48	5
6	67.5	1677	0.020		4.4	486.3	93	90	258	48	5
5	71.25	1654	0.020		4.4	491.9	93	89	255	48	5
4	75	1601	0.020		4.4	496.2	92	90	261	48	5
3	78.75	1667	0.015		3.3	500.6	92	89	256	49	5
2	82.5	1602	0.015		3.3	505.1	92	89	252	49	5
1	86.25	1597	0.015		3.3	509.0	92	89	255	49	5
	90		~~0.015~~			513.244					
Avg.		1607.0		0.1304	~~3.79~~	105.994		90.7			

TIME END = 1515 SB SB 3.76 SB SB SB

Volume of Liquid Water Collected	Impinger Volume 1 / 2	3 / 4	5 / 3		Silica Gel Wght.
Final	213 / 135	8 / 102	107		272
Initial	100 / 100	0 / 100	100		250
Liquid Collected					22
Total Vol. Collected	113 / 35	8 / 2	7		187

SB

POST TEST LEAK CHECKS
Meter 0.010 @ 15 in. Hg
Pitots Ø Ø @ 3/3 in. Hg
Orsat

Orsat Meas.	Time	CO_2	O_2	CO	N_2
1					
2					
3					

Nozzle Cal	D_1	D_2	D_3	Average
				193

PARTICULATE FIELD DATA

PLANT Simi Valley Landf
DATE 10/11/05
LOCATION Simi Valley
OPERATOR CL
SOURCE McGill Flare out
RUN NO. 3 436 MM R-3
SAMPLE BOX NO. C-5

TIME START 1531

METER BOX NO. 7
METER ΔH@ 1.5672
Y= 0.9856
PROBE I.D. NO. CQS
NOZZLE DIAMETER, in. ~~0.401~~ 1.010
STACK DIAMETER, in. 92"
PROBE HEATER SETTING —
HEATER BOX SETTING 250
Δ Cp FACTOR 0.84
FILTER NO. Q5039

ASSUMED MOISTURE, % 10%
AMBIENT TEMPERATURE 80
BARO. PRESS. 28.58
STATIC PRESS. -0.005
NOMAGRAPH INDEX 220

PRE TEST LEAK CHECKS
METER 0.017 @ 15 in. Hg
PITOTS ~~0~~ @ 3/3 in. Hg
ORSAT

P#	TIME	T_S °F	ΔP in H_2O	√ΔP	ΔH in H_2O	Vm ft^3	$T_{m\,IN}$ °F	T_m OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
A-12	0	1650	0.015		3.3	513.516	87	87	251	54	5
11	3.75	1663	0.015		3.3	517.7	86	86	254	50	5
10	7.5	1589	0.015		3.3	521.9	87	86	262	49	5
9	11.25	1565	0.015		3.3	526.8	90	86	260	49	5
8	15.0	1579	0.020		4.4	530.2	91	86	262	50	5
7	18.75	1565	0.020		4.4	535.2	91	86	259	49	5
6	22.5	1570	0.020		4.4	540.2	91	86	258	48	5
5	26.25	1557	0.020		4.4	545.4	93	87	256	48	5
4	30	1567	0.020		4.4	549.6	93	88	255	47	5
3	33.75	1670	0.015		3.3	554.8	94	88	258	47	5
2	37.5	1588	0.015		3.3	559.1	93	88	257	47	5
1	41.25	1603	0.015		3.3	563.4	92	87	256	47	5
B 12	45	1623	0.015		3.3	667.872	90	86	252	50	5
11	48.75	1542	0.015		3.3	571.8	90	86	257	50	5
10	52.5	1551	0.015		3.3	576.1	90	86	252	50	5
9	56.25	1584	0.015		3.3	580.4	89	85	255	49	5
8	60	1633	0.020		4.4	584.2	89	85	256	48	5
7	63.75	1566	0.020		4.4	589.1	89	85	263	48	5
6	67.5	1545	0.020		4.4	593.9	90	84	264	48	5
5	71.25	1550	0.020		4.4	599.0	90	84	264	48	5
4	75	1576	0.015		3.3	603.5	90	83	262	48	5
3	78.75	1569	0.015		3.3	607.8	90	83	265	48	5
2	82.5	1542	0.015		3.3	612.1	90	83	263	48	5
1	86.25	1555	0.015		3.3	616.5	90	83	263	48	5
	90					620.010					
Avg.		1583.6		0.1296	3.71	106.494		87.9			

TIME END = 1706 SB SB SB SB SB

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
#s	1 / 2	3 / F1	5 / 3	4	6
R-2 Cl. ~~Final~~	213 / 435	8 / 102	104 /		~~277~~
Final ~~Initial~~	230 / 116	3 / 100	100 /		250
Initial Liquid Collected	100 / 100	0 / 100	100 /		209
Vol. Collected	130 / 16	3 / 0	0 /		19
					168

SB

AIR MEASUREMENT SERVICES, INC.

POST TEST LEAK CHECKS
Meter 0.008 @ 15 in. Hg
Pitots ~~0~~ @ 3/3 in. Hg
Orsat

Orsat Meas.	Time	CO_2	O_2	CO	N_2
1					
2					
3					

Nozzle Cal	D_1	D_2	D_3	Average
				191

TOTAL COMBUSTION ANALYSIS
EPA METHOD 25
FIELD SAMPLING DATA SHEET

Job #: W07-043
Facility: Simi Valley LF
Location: Simi Valley
Date: 10/11/05
Operator: CL

Control Device: Flare inlet McGill
Sample Location: inlet
Ambient Temp.: 72°
Baro. Pressure: 28.58

Run 1 R-2

SAMPLE A

Tank #: T **Trap #:** NA
Initial Vacuum:
Final Vacuum:

SAMPLE B

Tank #: V **Trap #:** NA
Initial Vacuum:
Final Vacuum:

Start Time:

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	30	100
05	28.5	
10	27	
15	25.5	
20	24	
25	22.5	
30	21	
35	19.5	
40	18	
45	16.5	
50	15	
55	13.5	
60	12	

End Time:

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	30	
05	28.5	
10	27	
15	25.5	
20	24	
25	22.5	
30	21	
35	19.5	
40	18	
45	16.5	
50	15	
55	13.5	
60	12	

LEAK RATE

Pre Test : ✓ ✓
Post Test: ✓ ✓

TOTAL COMBUSTION ANALYSIS
EPA METHOD 25
FIELD SAMPLING DATA SHEET

Job #: W07-043
Facility: Simi Valley LF
Location: Simi Valley
Date: 10/11/05
Operator: EI

Control Device: Flare MoGill
Sample Location: inlet
Ambient Temp.: 80
Baro. Pressure: 28.58

Run 3

SAMPLE A

Tank #: A **Trap #:** NA
Initial Vacuum: _____
Final Vacuum: _____

Start Time:

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	30	
05	28.5	
10	27	
15	25.5	
20	24	
25	22.5	
30	21	
35	19.5	
40	18	
45	16.5	
50	15	
55	13.5	
60	12	

SAMPLE B

Tank #: _____ **Trap #:** NA
Initial Vacuum: _____
Final Vacuum: _____

End Time:

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00		
05		
10		
15		
20		
25		
30		
35		
40		
45		
50		
55		
60		

LEAK RATE

Pre Test : ✓
Post Test: ✓

TOTAL COMBUSTION ANALYSIS
EPA METHOD 25
FIELD SAMPLING DATA SHEET

Job #: W07-043
Facility: Simi Valley L.F. (WM)
Location: Simi Valley CA
Date: 10/11/05
Operator: MB

Control Device: Flare #1
Sample Location: OUTLET
Ambient Temp.: ~80°F
Baro. Pressure: 28.58

SAMPLE A R1

Tank #: S4 **Trap #:** NA
Initial Vacuum: 30" / 1.0 torr
Final Vacuum: 10.5"

Start Time:

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	30	
05	28.5	
10	27	
15	25.5	
20	24	
25	22.5	
30	21	
35	19.5	
40	18	
45	16.0	
50	14.5	
55	12.5	
60	10.5	

SAMPLE B R2

Tank #: S11 **Trap #:** NA
Initial Vacuum: 30" / 1.0 torr
Final Vacuum: 10"

End Time:

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	30	
05	28	
10	26.5	
15	25	
20	23.5	
25	22	
30	20.5	
35	19	
40	17.5	
45	16	
50	14	
55	12	
60	10	

LEAK RATE

Pre Test : √/ TW
Post Test: √/ TW

TOTAL COMBUSTION ANALYSIS
EPA METHOD 25
FIELD SAMPLING DATA SHEET

Job #: 107-043 **Control Device:** Flare #1

Facility: Simi Valley L.F. **Sample Location:** OUTLET

Location: Simi Valley, CA **Ambient Temp.:** 80° F

Date: 10/11/05 **Baro. Pressure:** 28.58

Operator: MB

SAMPLE A R3

Tank #: S3 **Trap #:** NA

Initial Vacuum: 30 " / 1.0 tare

Final Vacuum: 10.5"

Start Time:

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	30	
05	28.5	
10	27	
15	25	
20	23	
25	21	
30	19	
35	17.5	
40	16	
45	14.5	
50	13	
55	11.5	
60	10	

SAMPLE B

Tank #: NONE **Trap #:** NA

Initial Vacuum: ——

Final Vacuum: ——

End Time:

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	X	
05		
10		
15		
20		
25		
30		
35		
40		
45		
50		
55		
60		

LEAK RATE

Pre Test : ✓ TW

Post Test: ✓ TW

PARTICULATE FIELD DATA

PLANT Simi Valley LF
DATE 10/14/05
LOCATION Simi Ca
OPERATOR SL
SOURCE Flare 1
RUN NO. 1 CARB 421
SAMPLE BOX NO. C-7
TIME START 1210

METER BOX NO. 4
METER ΔH@ 1.7037
Y= 0.9903
PROBE I.D. NO. —
NOZZLE DIAMETER, in. —
STACK DIAMETER, in. —
PROBE HEATER SETTING —
HEATER BOX SETTING —
Δ Cp FACTOR —
FILTER NO. —

ASSUMED MOISTURE, % —
AMBIENT TEMPERATURE 90
BARO. PRESS. 29.11
STATIC PRESS. —
NOMAGRAPH INDEX —

PRE TEST LEAK CHECKS
METER 0.002 @ 15 in. Hg
PITOTS — @ — in. Hg
ORSAT —

P#	TIME	T_s °F	Δ P in H_2O	√Δ P	Δ H in H_2O	Vm ft^3	$T_{m\,IN}$ °F	T_m OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
Start	0				3.0	350.703	101	99		56	2
	10				3.0	360.4	107	102		54	2
	20				3.0	370.7	108	101		51	2
	30				3.0	381.4	109	102		50	2
	40				3.0	391.4	111	103		50	2
	50				3.0	401.5	112	104		50	2
	60					411.899					
Avg.					3.00	61.196		104.8			

TIME END = 1310

SB SB SB

Volume of Liquid Water Collected	Impinger Volume 1	2	3	4	Silica Gel Wght. 5
Final	166	121	4		265
Initial	100	100	0		250
Liquid Collected	66	21	4		15
Total Vol. Collected					106

SB

POST TEST LEAK CHECKS
Meter 0.002 @ 15 in. Hg
Pitots — @ — in. Hg
Orsat —

Orsat Meas.	Time	CO_2	O_2	CO	N_2
1					
2					
3					

Nozzle Cal	D_1	D_2	D_3	Average

PARTICULATE FIELD DATA

PLANT Simi Valley landfill
DATE 10/18/05
LOCATION Simi Valley
OPERATOR EF
SOURCE Flare 1
RUN NO. R-2 CARB 421 R-2 M4
SAMPLE BOX NO. C-7
TIME START 0810

METER BOX NO. 4
METER ΔH@ 1.7037
Y= 0.9903
PROBE I.D. NO. -
NOZZLE DIAMETER, in. -
STACK DIAMETER, in. -
PROBE HEATER SETTING -
HEATER BOX SETTING -
Δ Cp FACTOR -
FILTER NO. -

ASSUMED MOISTURE, % -
AMBIENT TEMPERATURE 60
BARO. PRESS. 28.92
STATIC PRESS. -
NOMAGRAPH INDEX -

PRE TEST LEAK CHECKS
METER 0.007 @ 15 in. Hg
PITOTS ~~-~~ @ 3/3 in. Hg
ORSAT ~~EF~~ EF

P#	TIME	T_s °F	Δ P in H_2O	√Δ P	Δ H in H_2O	Vm ft^3	$T_{m\,IN}$ °F	T_m OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
Single	0				3.0	411.915	59	52		50	4
	10				3.0	422.1	72	57		48	4
	20				3.0	433.2	78	59		48	4
	30				3.0	443.2	80	60		47	4
	40				3.0	453.2	81	62		46	4
	50				3.0	463.2	82	63		46	4
	60					473.326					
Avg.					3.00	61.411		67.1			

TIME END = 0910 SB SB SB

Volume of Liquid Water Collected	Impinger Volume 1	2	3	4	Silica Gel Wght. 5
Final	121	168	6		268
Initial	100	100	0		250
Liquid Collected	21	68	6		18
Total Vol. Collected					113

SB

POST TEST LEAK CHECKS
Meter 0.005 @ 15 in. Hg
Pitots ____ @ ____ in. Hg
Orsat ____

Orsat Meas.	Time	CO_2	O_2	CO	N_2
1					
2					
3					

Nozzle Cal	D_1	D_2	D_3	Average
				200

PARTICULATE FIELD DATA

PLANT Simi Valley landfill
DATE 10/18/05
LOCATION Simi Valley
OPERATOR CI
SOURCE Flare 1
RUN NO. R-3 CARB 421 HCL
SAMPLE BOX NO. C-7

TIME START 1235

METER BOX NO. 4
METER ΔH@ 1.7037
Y= 0.9903
PROBE I.D. NO. -
NOZZLE DIAMETER, in. -
STACK DIAMETER, in. -
PROBE HEATER SETTING -
HEATER BOX SETTING -
Δ Cp FACTOR -
FILTER NO. -

ASSUMED MOISTURE, % -
AMBIENT TEMPERATURE 67
BARO. PRESS. 28.92
STATIC PRESS. -
NOMAGRAPH INDEX -

PRE TEST LEAK CHECKS
METER 0.000 @ 15 in. Hg
PITOTS ____ @ ____ in. Hg
ORSAT ____

P#	TIME	T_S °F	Δ P in H_2O	√Δ P	Δ H in H_2O	Vm ft^3	$T_{m\,IN}$ °F	T_m OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
Sing	0				3.0	472.634	74	69		57	5
	10				3.0	482.7	88	71		50	5
	20				3.0	492.8	91	73		48	5
	30				3.0	502.9	89	76		48	5
	40				3.0	513.0	89	76		48	5
	50				3.0	522.9	86	75		48	5
	60					533.065					
Avg.					3.00	60.431		72.8			

TIME END = 1335

SB SB SB

Volume of Liquid Water Collected	Impinger Volume 1	2	3	4	Silica Gel Wght. 5
Final	167	117	7		270
Initial	100	100	0		250
Liquid Collected	67	17	7		20
Total Vol. Collected					~~106~~ 111

SB

POST TEST LEAK CHECKS
Meter 0.000 @ 15 in. Hg
Pitots ____ @ ____ in. Hg
Orsat ____

Orsat Meas.	Time	CO_2	O_2	CO	N_2
1					
2					
3					

Nozzle Cal	D_1	D_2	D_3	Average
				201

PARTICULATE FIELD DATA

PLANT Simi Valley LF
DATE 10/14/05
LOCATION Simi Ca
OPERATOR EV
SOURCE Flare 1
RUN NO. 1 CARB 425 cnt
SAMPLE BOX NO. C-4

TIME START 1210

METER BOX NO. 7
METER ΔH @ 1.5672
Y= ~~0.995~~ 0.9856
PROBE I.D. NO. CQ 3
NOZZLE DIAMETER, in. 1.054
STACK DIAMETER, in. 92"
PROBE HEATER SETTING –
HEATER BOX SETTING –
Δ Cp FACTOR 0.84
FILTER NO.

ASSUMED MOISTURE, % 10%
AMBIENT TEMPERATURE 90
BARO. PRESS. 29.11
STATIC PRESS. -0.005
NOMAGRAPH INDEX 250

PRE TEST LEAK CHECKS
METER 0.018 @ 15 in. Hg
PITOTS ✓ ✓ @ 3/4 in. Hg
ORSAT

P#	TIME	T_s °F	Δ P in H_2O	√Δ P	Δ H in H_2O	Vm ft^3	$T_{m\,IN}$ °F	T_m OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
0	A-12	1604	0.01		2.5	312.573	104	104	–	54	3
10	11	1604	0.010		2.5	320.2	107	104		58	3
20	10	1597	0.01		2.5	327.8	105	103		57	3
30	9	1554	0.01		2.5	336.4	107	102		57	3
40	8	1533	0.01		2.5	351.7	109	102		56	3
50	7	1625	0.01		2.5	361.0	109	102		55	3
60	6	1597	0.01		2.5	370.7	104	104		54	3
70	5	1568	0.01		2.5	380.4	103	99		55	3
80	4	1575	0.01		2.5	390.1	104	99		54	3
90	3	1551	0.01		2.5	399.8	106	100		55	3
100	2	1572	0.01		2.5	409.5	107	101		54	3
110	1	1527	0.01		2.5	419.2	108	102		54	3
120	B-12	1588	0.01		2.5	429.0	104	102		54	3
130	11	1519	0.01		2.5	438.7	108	102		50	3
140	10	1522	0.01		2.5	448.4	108	103		50	3
150	9	1577	0.01		2.5	458.1	108	103		48	3
160	8	1603	0.01		2.5	467.8	107	103		47	3
170	7	1549	0.01		2.5	477.5	107	103		47	3
180	6	1563	0.01		2.5	487.2	108	102		47	3
190	5	1548	0.01		2.5	496.9	107	103		48	3
200	4	1582	0.01		2.5	506.6	104	102		48	3
210	3	1623	0.01		2.5	516.3	100	96		48	3
220	2	1577	0.01		2.5	526.0	96	93		48	3
230	1	1603	0.01		2.5	535.7	92	90		48	3
240						545.489	~~TR~~	~~89~~	EV		
Avg.		1579.4		0.1000	2.50	232.916		~~101.2~~			

TIME END = 1645 SB SB SB SB 103.1 SB

Volume of Liquid Water Collected	Impinger Volume 1	2	3	4	Silica Gel Wght. 5
Final	304	195	18		278
Initial	100	100			250
Liquid Collected	204	95	18		20
Total Vol. Collected					337

SB

POST TEST LEAK CHECKS
Meter 0.005 @ 13 in. Hg
Pitots ✓ ✓ @ 3/4 in. Hg
Orsat

Orsat Meas.	Time	CO_2	O_2	CO	N_2
1					
2					
3					

Nozzle Cal	D_1	D_2	D_3	Average
				202

PARTICULATE FIELD DATA

PLANT Simi Valley Landfill
DATE 10/18/05
LOCATION Simi Valley
OPERATOR [illegible]
SOURCE Exit
RUN NO. 2 CARB 425 Cr6+
SAMPLE BOX NO. C-9
TIME START 0805

METER BOX NO. 7
METER ΔH @ 1.8672
Y= 0.9856
PROBE I.D. NO. CO-3
NOZZLE DIAMETER, in. 1.054
STACK DIAMETER, in. 92"
PROBE HEATER SETTING -
HEATER BOX SETTING -
Δ Cp FACTOR 0.84
FILTER NO.

ASSUMED MOISTURE, % 10%
AMBIENT TEMPERATURE 58
BARO. PRESS. 28.92
STATIC PRESS. -0.005
NOMAGRAPH INDEX 250

PRE TEST LEAK CHECKS
METER 0.008 @ 20 in. Hg
PITOTS Ø @ 3/4 in. Hg
ORSAT

P#	TIME	T_s °F	Δ P in H_2O	√Δ P	Δ H in H_2O	Vm ft^3	$T_{m\,IN}$ °F	T_m OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
A-12	0	1577	0.01		2.5	714.382	61	60	-	48	3
11	10	1528	0.01		2.5	724.2	75	64	-	48	3
10	20	1551	0.01		2.5	734.0	78	66		46	3
9	30	1542	0.01		2.5	744.1	80	67		45	3
8	40	1554	0.01		2.5	753.7	82	69		45	3
7	50	1577	0.01		2.5	763.0	83	71		45	3
6	60	1540	0.01		2.5	772.8	83	72		45	3
5	70	1523	0.01		2.5	782.4	84	73		46	3
4	80	1550	0.01		2.5	791.9	85	74		46	3
3	90	1545	0.01		2.5	801.4	86	75		46	3
2	100	1562	0.01		2.5	810.9	86	76		47	3
1	110	1537	0.01		2.5	820.4	87	77		47	3
12	120	1523	0.01		2.5	830.008	83	77		50	3
11	130	1524	0.01		2.5	839.5	86	77		47	3
10	140	1531	0.01		2.5	848.8	86	78		47	3
9	150	1520	0.01		2.5	858.2	86	78		47	3
8	160	1507	0.01		2.5	867.7	86	78		47	3
7	170	1536	0.01		2.5	877.2	86	78		46	3
6	180	1525	0.01		2.5	886.7	87	78		47	3
5	190	1541	0.01		2.5	896.2	87	79		48	3
4	200	1530	0.01		2.5	905.7	87	79		48	3
3	210	1548	0.01		2.5	915.2	87	79		48	3
2	220	1526	0.01		2.5	924.6	88	80		49	3
1	230	1503	0.01		2.5	932.7	88	81		49	3
	240					942.148					
Avg.		1535.8		0.1000	2.50	227.766		79.0			

TIME END = 1217 SB SB SB SB SB

Volume of Liquid Water Collected	Impinger Volume 1	2	3	4	Silica Gel Wght. 5
Final	356	167	20		250
Initial	100	100	0		257
Liquid Collected	256	67	20		37
Total Vol. Collected					380

SB

POST TEST LEAK CHECKS
Meter 0.002 @ 15 in. Hg
Pitots Ø Ø @ 4/3 in. Hg
Orsat

Orsat Meas.	Time	CO_2	O_2	CO	N_2
1					
2					
3					

Nozzle Cal	D_1	D_2	D_3	Average
				203

PARTICULATE FIELD DATA

PLANT Simi Valley Landfill
DATE 12/18/05
LOCATION Simi Valley
OPERATOR JL
SOURCE Flare 1
RUN NO. 3 Carb 925 C. Eff
SAMPLE BOX NO. C-7

TIME START 1235

METER BOX NO. 7
METER ΔH@ 1.5672
Y= 0.9856
PROBE I.D. NO. CQ 3
NOZZLE DIAMETER, in. 1.054
STACK DIAMETER, in. 72
PROBE HEATER SETTING -
HEATER BOX SETTING -
Δ Cp FACTOR 0.84
FILTER NO.

ASSUMED MOISTURE, % 10 %
AMBIENT TEMPERATURE 64
BARO. PRESS. 28.32
STATIC PRESS. - 0.005
NOMAGRAPH INDEX 2.50

PRE TEST LEAK CHECKS
METER 0.018 @ 15 in. Hg
PITOTS 0 @ 3/4 in. Hg
ORSAT

P#	TIME	T_s °F	Δ P in H_2O	√Δ P	Δ H in H_2O	Vm ft^3	$T_{m\,IN}$ °F	T_m OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
A-12	0	1523	0.01		2.5	942.652	79	78		56	6
11	10	1551	0.01		2.5	953.4	83	78		50	6
10	20	1664	0.01		2.5	962.1	87	78		48	6
9	30	1550	0.01		2.5	971.8	89	78		48	6
8	40	1549	0.01		2.5	981.5	87	81		47	6
7	50	1575	0.01		2.5	991.2	85	80		47	6
6	60	1561	0.01		2.5	1001.0	84	79		47	6
5	70	1550	0.01		2.5	10.9	84	78		46	6
4	80	1572	0.01		2.5	20.5	83	77		46	6
3	90	1549	0.01		2.5	30.3	82	77		45	6
2	100	1539	0.01		2.5	39.2	82	76		46	6
1	110	1507	0.01		2.5	49.8	82	75		46	6
B-12	120	1536	0.01		2.5	60.473	80	74		47	6
11	130	1527	0.01		2.5	69.2	81	75		48	6
10	140	1544	0.01		2.5	79.0	81	75		48	6
9	150	1532	0.01		2.5	88.7	81	74		48	6
8	160	1557	0.01		2.5	98.1	81	74		48	6
7	170	1558	0.01		2.5	107.8	80	74		48	6
6	180	1525	0.01		2.5	117.4	80	74		48	6
5	190	1536	0.01		2.5	127.0	81	74		49	6
4	200	1544	0.01		2.5	136.6	81	74		49	6
3	210	1548	0.01		2.5	146.1	82	74		49	6
2	220	1550	0.01		2.5	155.6	82	74		49	6
1	230	1522	0.01		2.5	165.2	81	74		50	6
	240					1174.590					
Avg.		1546.7		0.1000	2.50	231.938		79.2			

TIME END = 1647 SB SB SB SB SB

Volume of Liquid Water Collected	Impinger Volume 1	2	3	4	Silica Gel Wght. 5
Final	319	235	16		252
Initial	100	100	0		250
Liquid Collected	219	135	16		32
Total Vol. Collected					402

SB

POST TEST LEAK CHECKS
Meter 0.005 @ 12 in. Hg
Pitots 0/5 @ 3/4 in. Hg
Orsat

Orsat Meas.	Time	CO_2	O_2	CO	N_2
1					
2					
3					

Nozzle Cal	D_1	D_2	D_3	Average

PARTICULATE FIELD DATA

PLANT SVLF
DATE 11-22-05
LOCATION Simi Valley, CA
OPERATOR TW
SOURCE Flare 1 Mc Co. 11
RUN NO. 1 M425
SAMPLE BOX NO. C9

TIME START 12:05

METER BOX NO. 7
METER ΔH @ 1.759
Y= 0.999
PROBE I.D. NO. CQ4
NOZZLE DIAMETER, in. 0.994
STACK DIAMETER, in. 92"
PROBE HEATER SETTING NA
HEATER BOX SETTING NA
Δ Cp FACTOR 0.841
FILTER NO.

ASSUMED MOISTURE, % 10
AMBIENT TEMPERATURE 70°F
BARO. PRESS. 29.79
STATIC PRESS. -.005
NOMAGRAPH INDEX .220

PRE TEST LEAK CHECKS
METER .005 @ 17 in. Hg
PITOTS ✓✓ @ 5 in. Hg
ORSAT

P#	TIME	T_s °F	Δ P in H_2O 0.012	√Δ P	Δ H in H_2O 2.6	Vm ft^3	$T_{m\,IN}$ °F	T_m OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
A 12	00	1563	~~0.015~~ TW		~~3.3~~ TW	587.713	87	87	NA	43	9
11	10	1523	0.012		2.6	596.9	93	86		45	9
10	20	1515	0.012		2.6	605.8	99	86		46	9.5
9	30	1560	0.012		2.6	615.2	102	88		48	9.5
8	40	1587	0.012		2.6	624.4	102	90		49	9.5
7	50	1562	0.012		2.6	~~TW~~ 633.6	103	90		50	9.5
6	60	1513	0.012		2.6	642.8	106	91		50	9.5
5	70	1571	0.012		2.6	652.0	106	93		51	9.5
4	80	1602	0.012		2.6	661.2	106	94		53	9.5
3	90	1588	0.012		2.6	670.5	~~106~~ TW 107	~~TW 95~~ 94		53	9.5
2	100	1562	0.012		2.6	679.7	107	95		54	9.5
1	110	1526	0.012		2.6	688.9	106	95		55	9.5
B 12	120	1541	0.012	648.186	2.6	*695.186	99	94		52	9.5
11	130	1572	0.012		2.6	707.9	106	95		55	9.5
10	140	1558	0.012		2.6	716.6	108	96		54	9.5
9	150	1522	0.012		2.6	725.7	107	96		54	9.5
8	160	1513	0.012		2.6	734.8	107	96		55	9.5
7	170	1568	0.012		2.6	743.7	104	95		55	9.5
6	180	1556	0.012		2.6	753.4	102	95		56	9.5
5	190	1528	0.012		2.6	762.6	102	93		57	9.5
4	200	1550	0.012		2.6	771.8	103	92		57	9.5
3	210	1548	0.012		2.6	781.0	103	92		57	9.5
2	220	1582	0.012		2.6	790.3	104	92		57	9.5
1	230	1520	0.012		2.6	799.5	101	91		58	9.5
STOP	240	—	—		—	808.799	—	—		—	—
Avg.		1551		0.1095	2.6	221.0860	102.9	92.5			

TIME END = 16:29

N 97.16

Volume of Liquid Water Collected	Impinger Volume 1	2	3	4	Silica Gel Wght. 5
Final	325	207	15		276
Initial	100	100	0		250
Liquid Collected	225	107	15		26
Total Vol. Collected					373

POST TEST LEAK CHECKS
Meter .005 @ 15 in. Hg
Pitots ✓✓ @ 4.5 in. Hg
Orsat

Orsat Meas.	Time	CO_2	O_2	CO	N_2
1					
2					
3					

Nozzle Cal	D_1	D_2	D_3	Average
				205

PARTICULATE FIELD DATA

PLANT Simi Valley L.F.
DATE 11-23-05
LOCATION Simi Valley, CA
OPERATOR TW
RCE Flare 1 McGill
RUN NO. 2 M425
SAMPLE BOX NO. C-3

TIME START 0650

METER BOX NO. 7
METER ΔH @ 1.784
Y= 0.999
PROBE I.D. NO. CQ-4
NOZZLE DIAMETER, in. 0.494
STACK DIAMETER, in. 42"
PROBE HEATER SETTING NA
HEATER BOX SETTING NA
Δ Cp FACTOR 0.84
FILTER NO.

ASSUMED MOISTURE, % 10%
AMBIENT TEMPERATURE 66°F
BARO. PRESS. 29.74
STATIC PRESS. -.005
NOMAGRAPH INDEX 220

PRE TEST LEAK CHECKS
METER 2.005 @ 18 in. Hg
PITOTS ✓✓ @ 5 in. Hg
ORSAT

P#	TIME	T_s °F	Δ P in H_2O	√Δ P	Δ H in H_2O	Vm ft^3	$T_{m\,IN}$ °F	T_m OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
A12	00	1572	0.012		2.6	812.730	70	67	NA	45	7
11	10	1510	0.012		2.6	821.7	81	69		48	7
10	20	1602	0.012		2.6	830.7	85	71		49	7
9	30	1494	0.012		2.6	839.7	89	73		50	7
8	40	1558	0.012		2.6	848.7	90	75		52	7
7	50	1570	0.012		2.6	857.8	91	77		52	7
6	60	1532	0.012		2.6	866.9	91	78		53	7
5	70	1589	0.012		2.6	875.9	92	79		55	7
4	80	1538	0.012		2.6	885.0	93	80		55	7
3	90	1550	0.012		2.6	894.1	94	81		57	7
2	100	1574	0.012	903.2 N	2.6	903.2	94	81		57	7
1	110	1550	0.012		2.6	912.3	95	82		57	7
B12	120	1518	0.012		2.6	*921.434	90	80		54	7
11	130	1513	0.012		2.6	930.5	96	83		54	7
10	140	1570	0.012		2.6	939.7	96	84		54	7
9	150	1562	0.012		2.6	948.8	97	84		55	7
8	160	1518	0.012		2.6	958.0	97	85		55	7
7	170	1602	0.012		2.6	967.1	97	85		55	7.5
6	180	1510	0.012		2.6	976.3	98	85		55	7.5
5	190	1539	0.012		2.6	985.5	98	86		56	7.5
4	200	1556	0.012		2.6	994.7	98	86		56	7.5
3	210	1570	0.012		2.6	1003.9	98	87		56	7.5
2	220	1539	0.012		2.6	1013.1	99	87		56	7.5
1	230	1515	0.012		2.6	1022.2	99	88		57	7.5
STOP	240	—	—		—	1031.468	—	—		—	—
Avg.		1548.8	0.1095		2.6	218.7320		86.7			

TIME END = 11:07

Volume of Liquid Water Collected	Impinger Volume 1	2	3	4	Silica Gel Wght. 5
Final	331	222	8		275
Initial	100	100	0		247
Liquid Collected	231	122	8		28
Total Vol. Collected					389

POST TEST LEAK CHECKS
Meter 2.005 @ 15 in. Hg
Pitots ✓✓ @ 5 in. Hg
Orsat

Orsat Meas.	Time	CO_2	O_2	CO	N_2
1					
2					
3					

Nozzle Cal	D_1	D_2	D_3	Average
				206

PARTICULATE FIELD DATA

PLANT SVLF
DATE 11-23-05
LOCATION Simi Valley, CA
OPERATOR TN
SOURCE Flare 1 McGill
RUN NO. C9 3 17425
SAMPLE BOX NO. C9

TIME START 11:20

METER BOX NO. 7
METER ΔH @ 1.759
Y= 0.999
PROBE I.D. NO. CQ854
NOZZLE DIAMETER, in. 0.494
STACK DIAMETER, in. 92"
PROBE HEATER SETTING NA
HEATER BOX SETTING NA
Δ Cp FACTOR 0.84
FILTER NO.

ASSUMED MOISTURE, % 10
AMBIENT TEMPERATURE 68°F
BARO. PRESS. 29.74
STATIC PRESS. -.05
NOMAGRAPH INDEX 220

PRE TEST LEAK CHECKS
METER 2.005 @ 16 in. Hg
PITOTS ✓✓ @ 5 in. Hg
ORSAT

P#	TIME	T_s °F	Δ P in H_2O	√Δ P	Δ H in H_2O	Vm ft^3	$T_{m\,IN}$ °F	T_m OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
A 12	00	1530	0.012		2.6	032.394	84	84	M	45	6
11	10	1547	0.012		2.6	041.5	91	83		45	6
10	20	1542	0.012		2.6	050.6	96	84		46	6
9	30	1562	0.012		2.6	059.7	98	85		47	6
8	40	1505	0.012		2.6	068.8	99	86		49	6.5
7	50	1514	0.012		2.6	078.0	100	87		49	6.5
6	60	1532	0.012		2.6	087.2	101	88		50	6.5
5	70	1560	0.012		2.6	096.3	102	88		50	6.5
4	80	1542	0.012		2.6	105.5	102	89		50	6.5
3	90	1559	0.012		2.6	114.7	103	90		51	6.5
2	100	1526	0.012		2.6	123.9	103	91		51	6.5
1	110	1518	0.012		2.6	133.1	103	91		52	6.5
A 12	120	1510	0.012		2.6	142.306	100	89		50	6.5
11	130	1540	0.012		2.6	151.9	102	90		50	6.5
10	140	1560	0.012		2.6	161.2	103	91		50	7
9	150	1578	0.012		2.6	170.4	102	90		53	7
8	160	1548	0.012		2.6	179.6	102	90		53	7
7	170	1530	0.012		2.6	188.8	103	91		53	7
6	180	1561	0.012		2.6	198.0	102	90		54	7
5	190	1570	0.012		2.6	207.3	103	91		54	7
4	200	1553	0.012		2.6	216.5	103	91		54	7
3	210	1582	0.012		2.6	225.7	101	90		53	7.5
2	220	1536	0.012		2.6	234.9	101	90		54	7.5
1	230	1522	0.012		2.6	244.2	97	89		55	7.5
STOP	240	—	—		—	253.435	—	—		—	—
Avg.		1544.8	0.1095		2.6	221.094		94.4			

TIME END = 15:36

Volume of Liquid Water Collected	Impinger Volume 1	2	3	4	Silica Gel Wght. 5
Final	328	216	7		281
Initial	100	100	0		250
Liquid Collected	228	116	7		31
Total Vol. Collected					382

POST TEST LEAK CHECKS
Meter 2.005 @ 15 in. Hg
Pitots ✓✓ @ 4.5 in. Hg
Orsat

Orsat Meas.	Time	CO_2	O_2	CO	N_2
1					
2					
3					

Nozzle Cal	D_1	D_2	D_3	Average
				207

PARTICULATE FIELD DATA

PLANT Ni Landfill
DATE 10/13/05
LOCATION Simi Valley
OPERATOR AL
SOURCE Flare & McGill
RUN NO. 1 ~~M429~~ M429 PAH
SAMPLE BOX NO. C-10
TIME START 1345

METER BOX NO. 7
METER ΔH @ 1.5672
Y= 0.9856
PROBE I.D. NO. CQ-2
NOZZLE DIAMETER, in. 1.0537
STACK DIAMETER, in. 42"
PROBE HEATER SETTING -
HEATER BOX SETTING 250
Δ Cp FACTOR 0.84
FILTER NO.

ASSUMED MOISTURE, % 10 %
AMBIENT TEMPERATURE 88
BARO. PRESS. 28.70
STATIC PRESS. -0.005
NOMAGRAPH INDEX 250

PRE TEST LEAK CHECKS
METER 0.004 @ 15 in. Hg
PITOTS ~~0~~ 0 @ 3/4 in. Hg
ORSAT

P#	TIME	T_s °F	Δ P in H_2O	√Δ P	Δ H in H_2O	Vm ft^3	$T_{m\,IN}$ °F	T_m OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
A-12	0	1605	0.015		3.8	948.500	104	104	254	54	11
11	7.5	1580	0.015		3.8	958.7	106	104	255	50	12
10	15	1587	0.015		3.8	968.9	107	105	260	48	13
9	22.5	1568	0.012		3.0	979.3	107	106	256	47	14
8	30	1616	0.013		3.25	989.3	108	106	254	47	13
7	37.5	1642	0.014		3.5	995.4	110	107	250	47	11
6	45	1602	0.010		2.5	999.5	110	108	252	47	11
5	52.5	1612	0.010		2.5	1009.1	111	108	253	47	11
4	60	1589	0.010		2.5	1018.7	112	109	255	47	11
3	67.5	1571	0.010		2.5	1026.2	112	109	252	47	11
2	75	1540	0.010		2.5	31.7	112	110	251	47	11
1	82.5	1579	0.010		2.5	37.5	112	111	255	47	11
B 12	90	1588	0.010		2.5	44.010	110	110	257	47	11
11	97.5	1592	0.010		2.5	51.2	113	110	254	47	11
10	105	1595	0.010		2.5	58.6	113	111	253	47	11
9	112.5	1574	0.010		2.5	65.8	113	111	256	47	11
8	120	1601	0.010		2.5	73.0	113	111	254	48	11
7	127.5	1616	0.010		2.5	80.3	113	111	252	48	11
6	135	1601	0.010		2.5	87.6	112	111	252	48	11
5	142.5	1588	0.010		2.5	94.9	111	110	251	48	11
4	150	1608	0.010		2.5	102.5	111	110	251	48	11
3	157.5	1591	0.010		2.5	110.0	109	108	251	48	11
2	165	1600	0.010		2.5	117.7	102	104	251	48	11
1	172.5	1590	0.010		2.5	124.2	101	101	256	48	11
	180					1131.973					
Avg.		1593.1		0.1046	2.76	183.473		108.9			

TIME END = 1705 SB SB SB SB SB

Volume of Liquid Water Collected	Impinger Volume 1	2	3	4	Silica Gel Wght.
Final	364	123	2		295
Initial	100	100	0		250
Liquid Collected	264	23	2		45
Total Vol. Collected					~~274~~ 334

SB

POST TEST LEAK CHECKS
Meter 0.004 @ 15 in. Hg
Pitots 0 0 @ 3/3 in. Hg
Orsat

Orsat Meas.	Time	CO_2	O_2	CO	N_2
1					
2					
3					

Nozzle Cal	D_1	D_2	D_3	Average
				208

PARTICULATE FIELD DATA

PLANT Simi Valley LF
DATE 10/14/05
LOCATION Simi Ca
OPERATOR CS
SOURCE Flare 1
RUN NO. 2 Ca.6429 PAH
SAMPLE BOX NO. C-11

TIME START 0810

METER BOX NO. 7
METER ΔH @ 1.5672
Y= 0.9856
PROBE I.D. NO. CQ-2
NOZZLE DIAMETER, in. 1.0537
STACK DIAMETER, in. 42
PROBE HEATER SETTING
HEATER BOX SETTING 250
Δ Cp FACTOR 0.84
FILTER NO.

ASSUMED MOISTURE, % 10%
AMBIENT TEMPERATURE 89
BARO. PRESS. 29.11
STATIC PRESS. -0.005
NOMAGRAPH INDEX 250

PRE TEST LEAK CHECKS
METER 0.004 @ 15 in. Hg
PITOTS Ø Ø @ 3 3 in. Hg
ORSAT

P#	TIME	T_s °F	Δ P in H_2O	√Δ P	Δ H in H_2O	Vm ft^3	$T_{m\,IN}$ °F	T_m OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
A-12	0	1518	0.010		2.5	134.248	70	68	251	50	8
11	7.5	1520	0.010		2.5	141.5	77	69	254	50	8
10	15	1544	0.010		2.5	148.7	82	72	256	50	8
9	22.5	1556	0.010		2.5	155.9	88	77	258	48	8
8	30	1542	0.010		2.5	163.2	89	78	255	47	8
7	37.5	1522	0.010		2.5	170.4	90	78	257	47	8
6	45	1612	0.010		2.5	177.7	92	80	259	47	8
5	52.5	1620	0.010		2.5	184.9	94	84	256	47	8
4	60	1601	0.010		2.5	192.2	97	86	261	47	9
3	67.5	1650	0.010		2.5	198.6	100	88	258	47	9
2	75	1623	0.010		2.5	206.2	100	89	254	47	9
1	82.5	1598	0.010		2.5	213.8	100	90	255	47	9
B 12	90	1603	0.010		2.5	221.410	100	97	260	50	9
11	97.5	1624	0.010		2.5	229.0	108	101	258	47	9
10	105	1579	0.010		2.5	236.6	109	101	256	47	9
9	112.5	1666	0.010		2.5	244.2	109	101	251	47	9
8	120	1645	0.010		2.5	251.8	110	103	257	47	9
7	127.5	1598	0.010		2.5	259.4	110	104	251	47	9
6	135	1621	0.010		2.5	267.0	111	104	256	47	9
5	142.5	1604	0.010		2.5	274.6	111	105	256	47	9
4	150	1575	0.010		2.5	282.2	112	105	257	47	9
3	157.5	1601	0.010		2.5	288.8	112	106	259	47	9
2	165	1598	0.010		2.5	297.4	113	106	258	47	9
1	172.5	1620	0.010		2.5	305.0	113	107	261	47	9
	180					311.896					
Avg.		1593.3		0.1000	2.50	177.648		95.8			

TIME END = @ 1772 SB SB SB SB SB

Volume of Liquid Water Collected	Impinger Volume 1	2	3	4	Silica Gel Wght. 5
Final	244	131	2		295
Initial	100	100	0		250
Liquid Collected	244	31	2		45
Total Vol. Collected					322

SB

POST TEST LEAK CHECKS
Meter 0.001 @ 15 in. Hg
Pitots Ø Ø @ 3 3 in. Hg
Orsat

Orsat Meas.	Time	CO_2	O_2	CO	N_2
1					
2					
3					

Nozzle Cal	D_1	D_2	D_3	Average

PARTICULATE FIELD DATA

PLANT Simi Valley Landfill
DATE 10/17/05
LOCATION Simi Valley
OPERATOR EJ
SOURCE Flare 1
RUN NO. 3 C-6429 PAH R-3
SAMPLE BOX NO. C-11

TIME START 0802

METER BOX NO. MB 7
METER ΔH@ 1.5672
Y= 0.9856
PROBE I.D. NO. CQ-2 ✓
NOZZLE DIAMETER, in. 1.054 / 1.0557
STACK DIAMETER, in. 92
PROBE HEATER SETTING -
HEATER BOX SETTING 250
Δ Cp FACTOR 0.84
FILTER NO.

ASSUMED MOISTURE, % 10 Zo
AMBIENT TEMPERATURE 67°
BARO. PRESS. 28.95"
STATIC PRESS. -0.005"
NOMAGRAPH INDEX 250

PRE TEST LEAK CHECKS
METER 0.007 @ 15" in. Hg
PITOTS Ø Ø @ 3 / 5" in. Hg
ORSAT

P#	TIME	T_s °F	Δ P in H_2O	√Δ P	Δ H in H_2O	Vm ft^3	$T_{m\,IN}$ °F	T_m OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
A-12	0	1592	0.01		2.5	546.549	66	62	252	47	7
11	7.5	1589	0.01		2.5	559.5	76	67	259	46	7
10	15	1537	0.01		2.5	566.4	78	70	252	46	7
9	22.5	1495	0.01		2.5	569.2	80	71	257	46	7
8	30	1525	0.01		2.5	573.6	81	72	255	46	7
7	37.5	1547	0.01		2.5	580.7	81	73	257	47	7
6	45	1555	0.01		2.5	587.8	81	74	256	46	7
5	52.5	1603	0.01		2.5	594.9	82	74	254	45	7
4	60	1546	0.01		2.5	602.0	82	75	256	45	7
3	67.5	1537	0.01		2.5	609.2	82	76	258	45	7
2	75	1542	0.01		2.5	616.2	82	76	254	46	7
1	82.5	1543	0.01		2.5	623.3	82	76	256	46	7
B-12	90	1562	0.01		2.5	630.440	80	75	254	46	7
11	97.5	1533	0.01		2.5	637.5	70	69	256	47	7
10	105	1547	0.01		2.5	644.1	78	70	257	46	7
9	112.5	1524	0.01		2.5	651.0	79	71	255	46	8
8	120	1502	0.01		2.5	658.1	80	72	254	45	8
7	127.5	1571	0.01		2.5	665.1	98	70	256	46	8
6	135	1555	0.01		2.5	672.2	77	70	258	47	8
5	142.5	1537	0.01		2.5	679.2	78	68	260	47	8
4	150	1545	0.01		2.5	686.330	74	66	255	42	8
3	157.5	1500	0.01		2.5	693.4	73	64	256	43	8
2	165	1520	0.01		2.5	700.0	71	63	255	43	8
1	172.5	1486	0.01		2.5	706.6	69	63	255	43	8
	180					713.654					
Avg.		1541.4		0.000	2.50	167.105		73.9			

TIME END = 1355 SB SB SB SB SB

Volume of Liquid Water Collected	Impinger Volume 1	2	3	4	Silica Gel Wght. 5
Final	319	176	3		268
Initial	100	100	0		250
Liquid Collected	219	76	3		18
Total Vol. Collected					316

SB

POST TEST LEAK CHECKS
Meter 0.002 @ 15" in. Hg
Pitots Ø Ø @ 3 / 4 in. Hg
Orsat

Orsat Meas.	Time	CO_2	O_2	CO	N_2
1					
2					
3					

Nozzle Cal	D_1	D_2	D_3	Average
				210

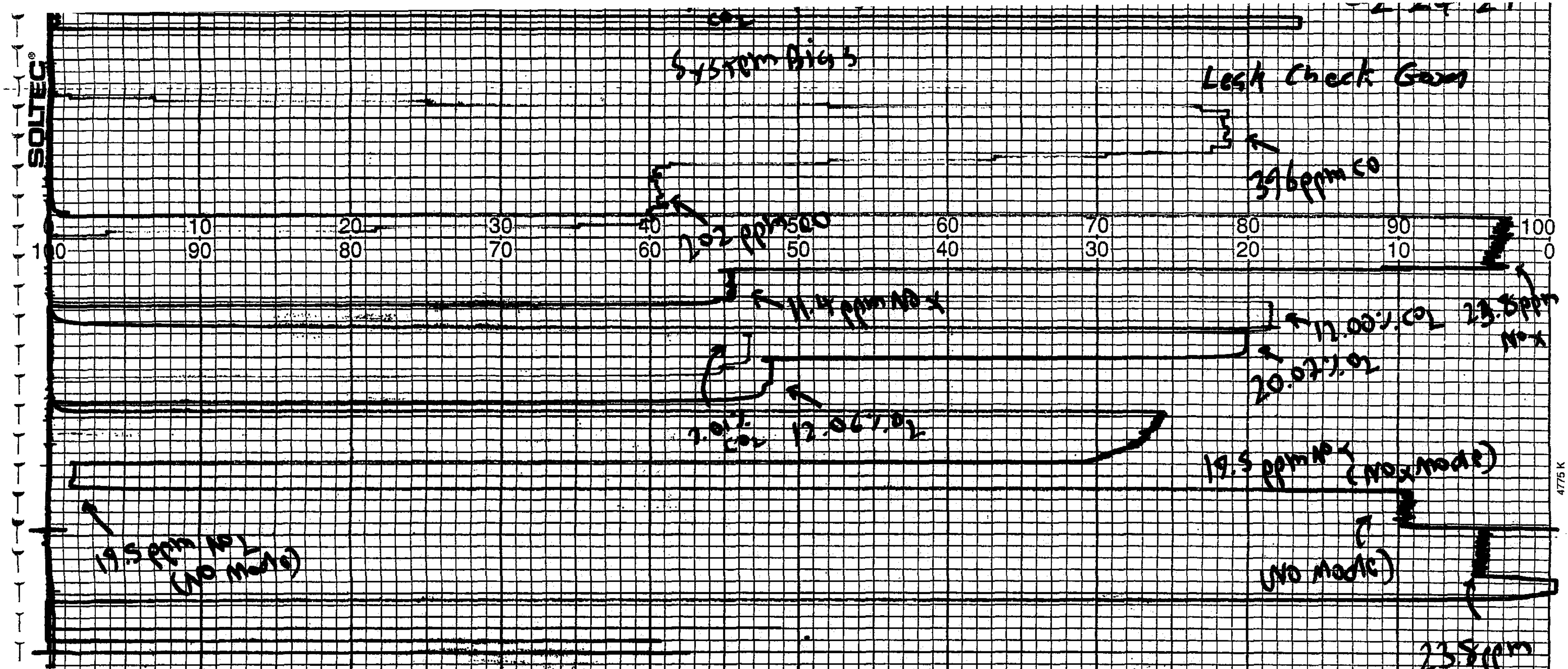
Data Sheet
CARB Method 430 - Aldehydes

Client: Waste Management Job No.: W07-043

Facility: Simi LF Run No.: 1, 2, 3

Source: Flare #1 McGill Date: 10/14-18/05

Run #1 10/13/05			
	Start	**End**	**Average**
Time,	1320	1920	
Temperature, °F	85	~~85~~ 73	85 79
Barometric, P_b	28.70	28.70	28.20
Relative Humidity, %	NA	NA	
Sample Rate, #1 100 cc	12.52 sec	12.48 sec	
#2 100 cc	12.49 sec	12.61 sec	
#3 100 cc	12.51 sec	12.55 sec	
Average	12.51 sec	12.55 sec	
Rotometer Setting cc/min	479.6	478.1	478.9
Leak Check	OK	OK	
Run #2 10/14/05			
	Start	**End**	**Average**
Time,	735	1610	
Temperature, °F	70	~~70~~ 86	78
Barometric, P_b	29.11	29.11	
Relative Humidity, %	NA	NA	
Sample Rate, #1 100 cc	12.33 sec	12.45 sec	
#2 100 cc	12.52 sec	12.43 sec	
#3 100 cc	12.44 sec	12.51 sec	
Average	~~NA~~ 12.43 sec	12.46 sec	
Rotometer Setting cc/min	482.7	481.5	
Leak Check	OK	OK	
Run #3 10/18/05			
	Start	**End**	**Average**
Time,	0738	1538	
Temperature, °F	58	~~58~~ 68	
Barometric, P_b	28.92	28.92	
Relative Humidity, %	NA	NA	
Sample Rate, #1 100 cc	12.40 sec	12.44 sec	
#2 100 cc	12.51 sec	12.53 sec	
#3 100 cc	12.47 sec	12.40 sec	
Average	12.46 sec	12.46 sec	
Rotometer Setting cc/min	481.5	481.5	
Leak Check			



W07-043

Waste Management

Simi Valley Landfill

Flare Compliance

Simi Valley CA

10/11/07 By SP, ES, TW, MB

19.5 ppm NO_2 (as NOx) - CC137428

11.4 ppm NOx - CC181767

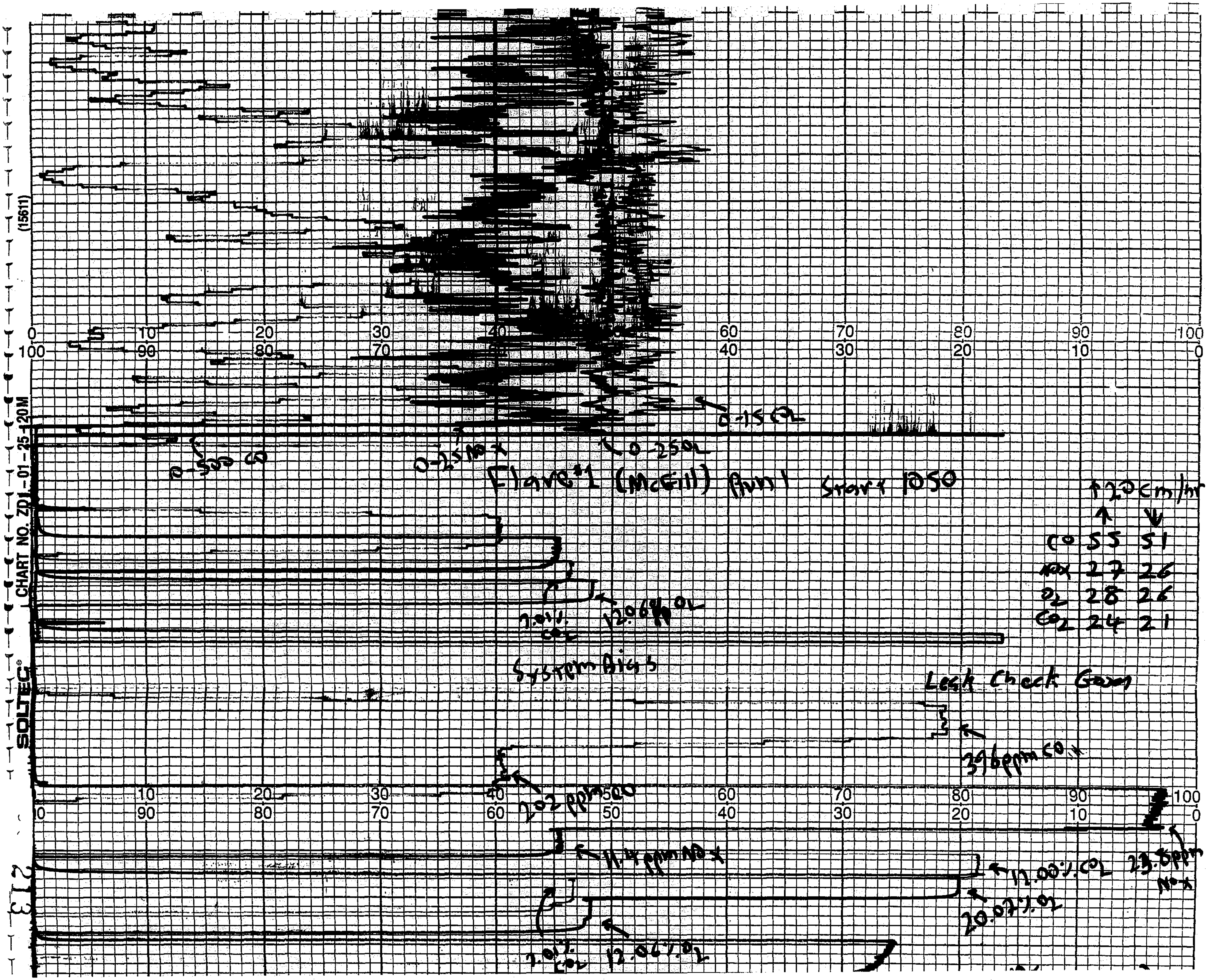
23.8 ppm NOx - CC118008

202 ppm CO - CC144968

396 ppm CO - CC164230

7.01% CO_2 / 12.06% O_2 - CC107967

12.00% CO_2 / 20.07% O_2 - CC90440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SOLTEC
(15611)
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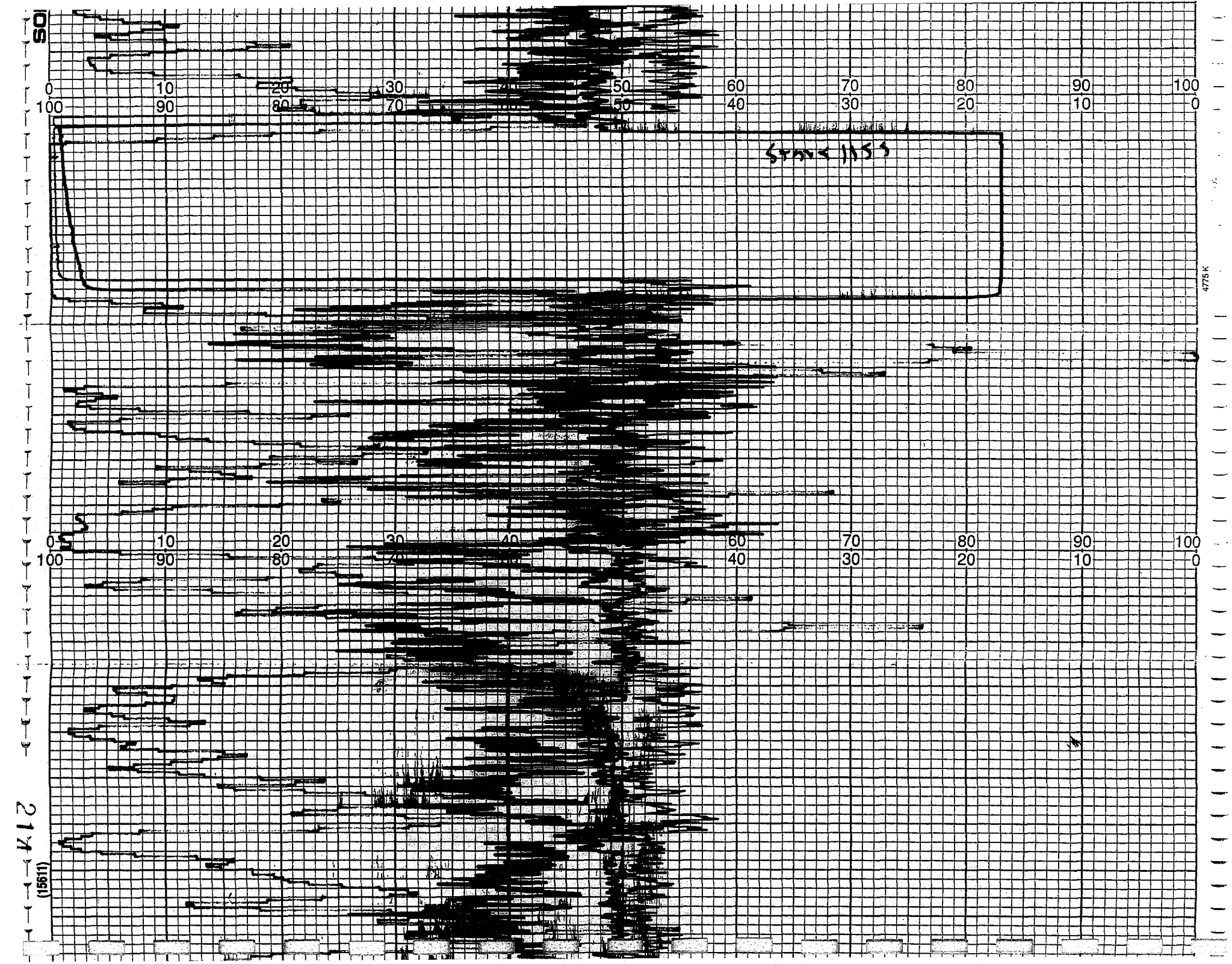
100 90 80 70 60 50 40 30 20 10 0
0-500 CO
0-25 NOx
0-25 O2
0-15 CO2
Flare #1 (McGill) Run 1 Start 1050
↑20cm/hr
CO 55 51
NOx 27 26
O2 28 26
CO2 24 21
7.01% CO2
12.06% O2
System Bias
Leak Check Gases
396ppm CO
202 ppm CO
11.4 ppm NOx
12.00% CO2
23.8 ppm NOx
20.07% O2
7.01% CO2
12.06% O2
213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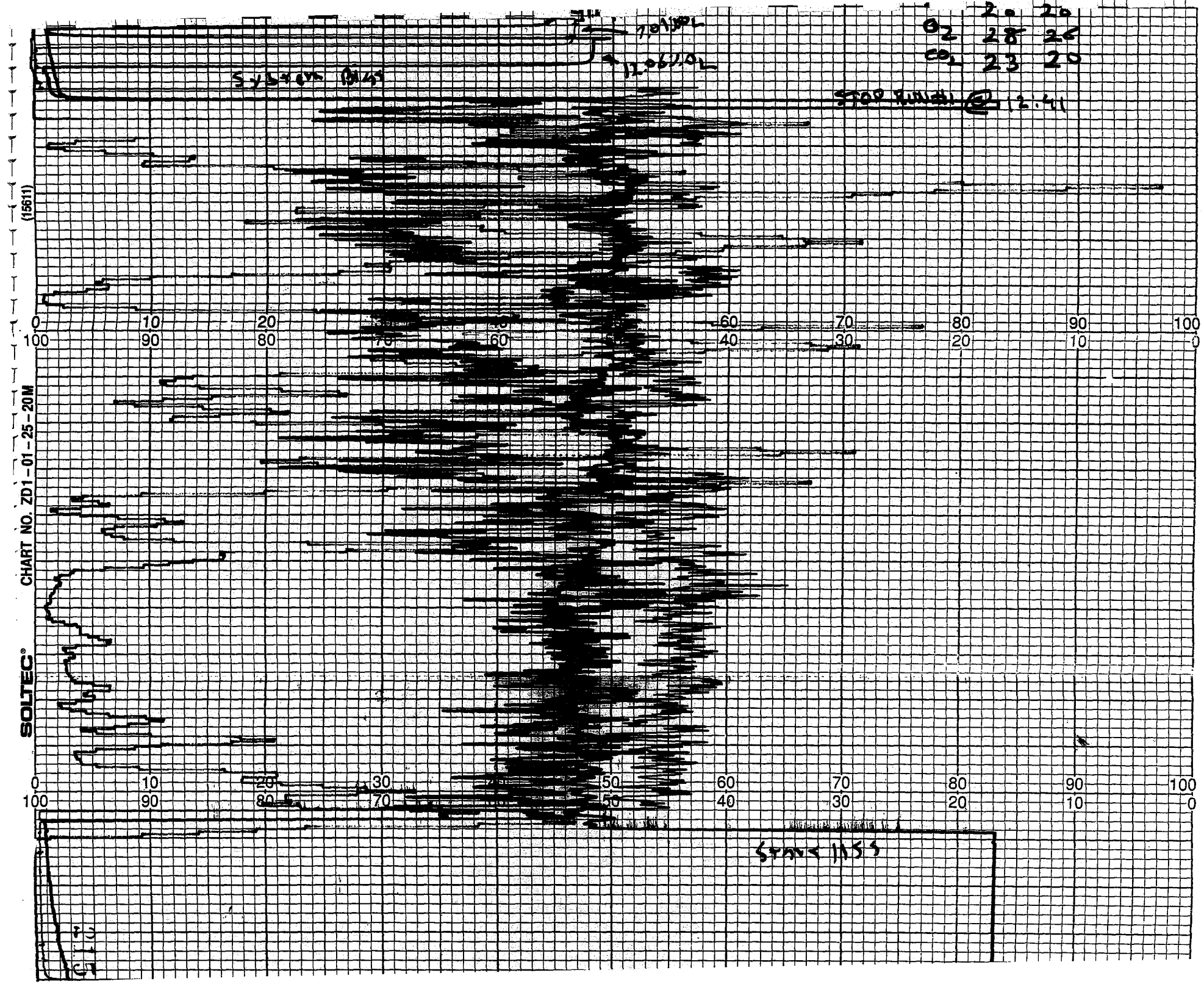
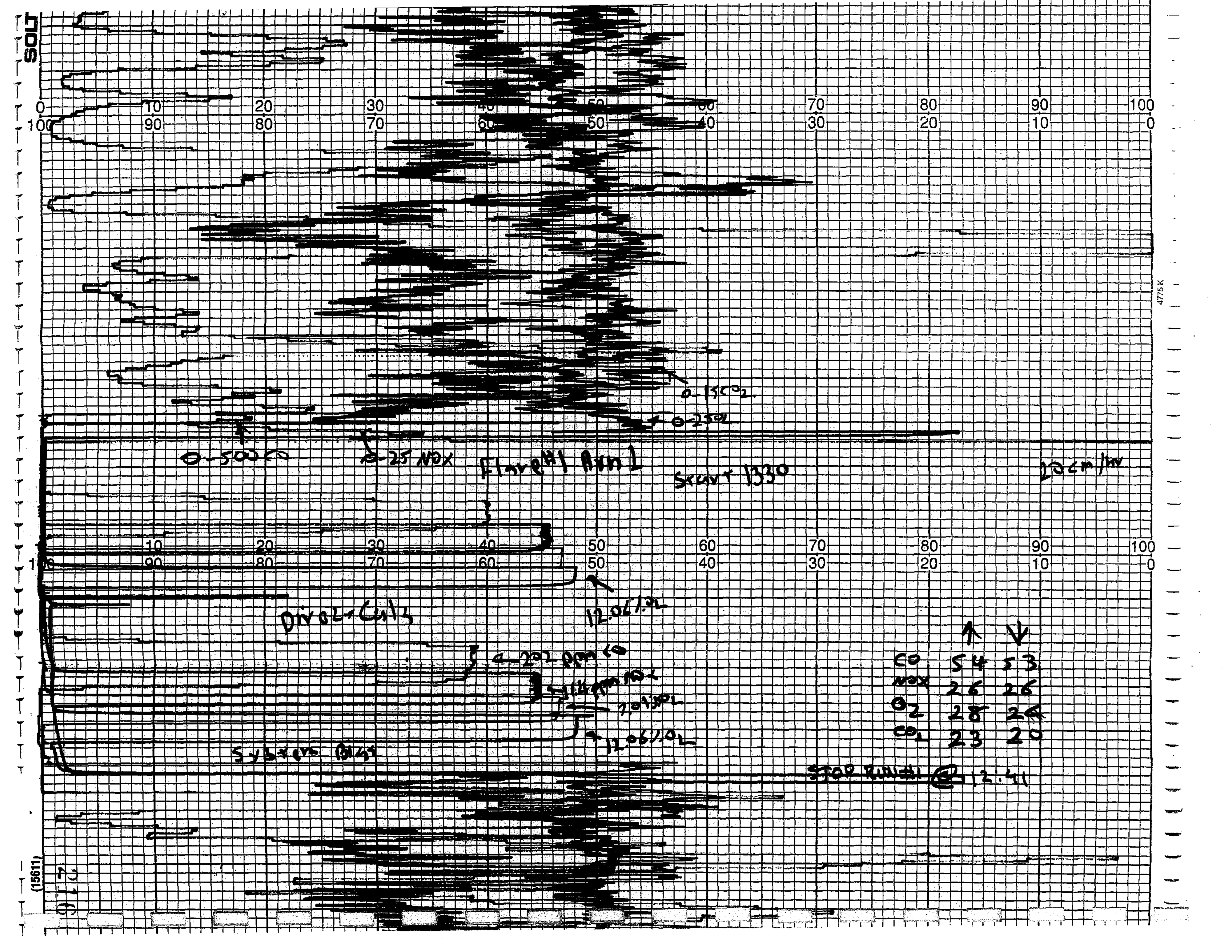
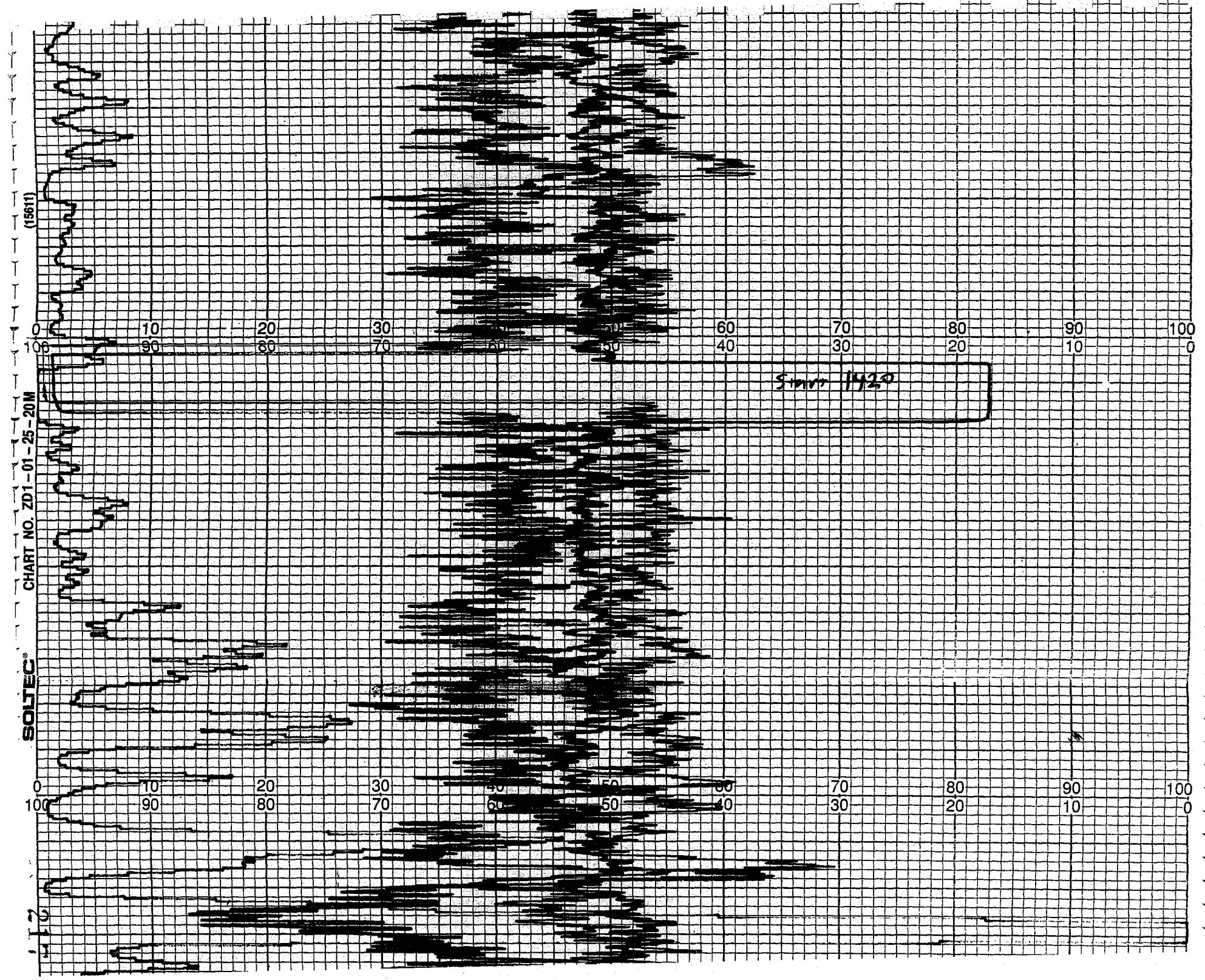
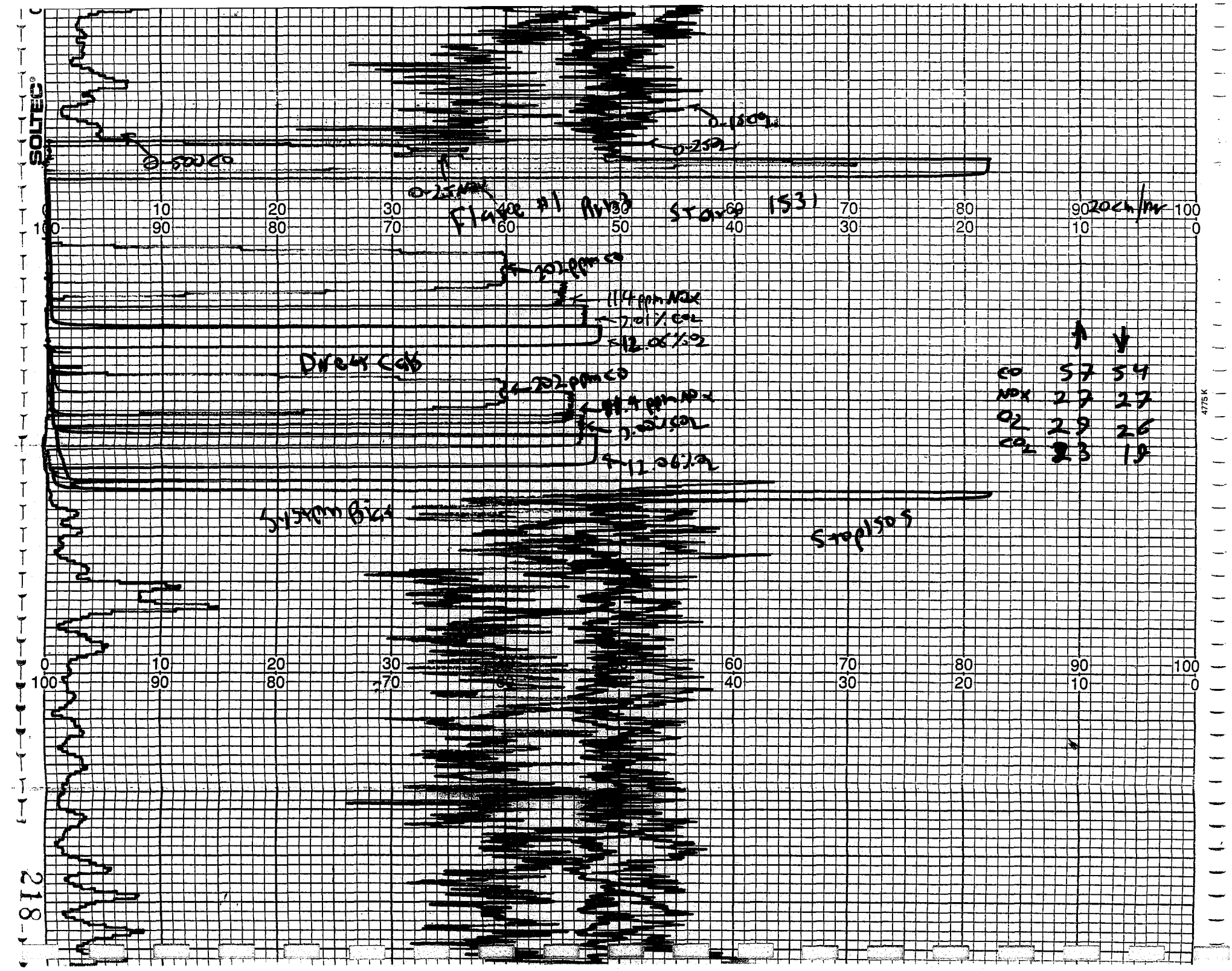
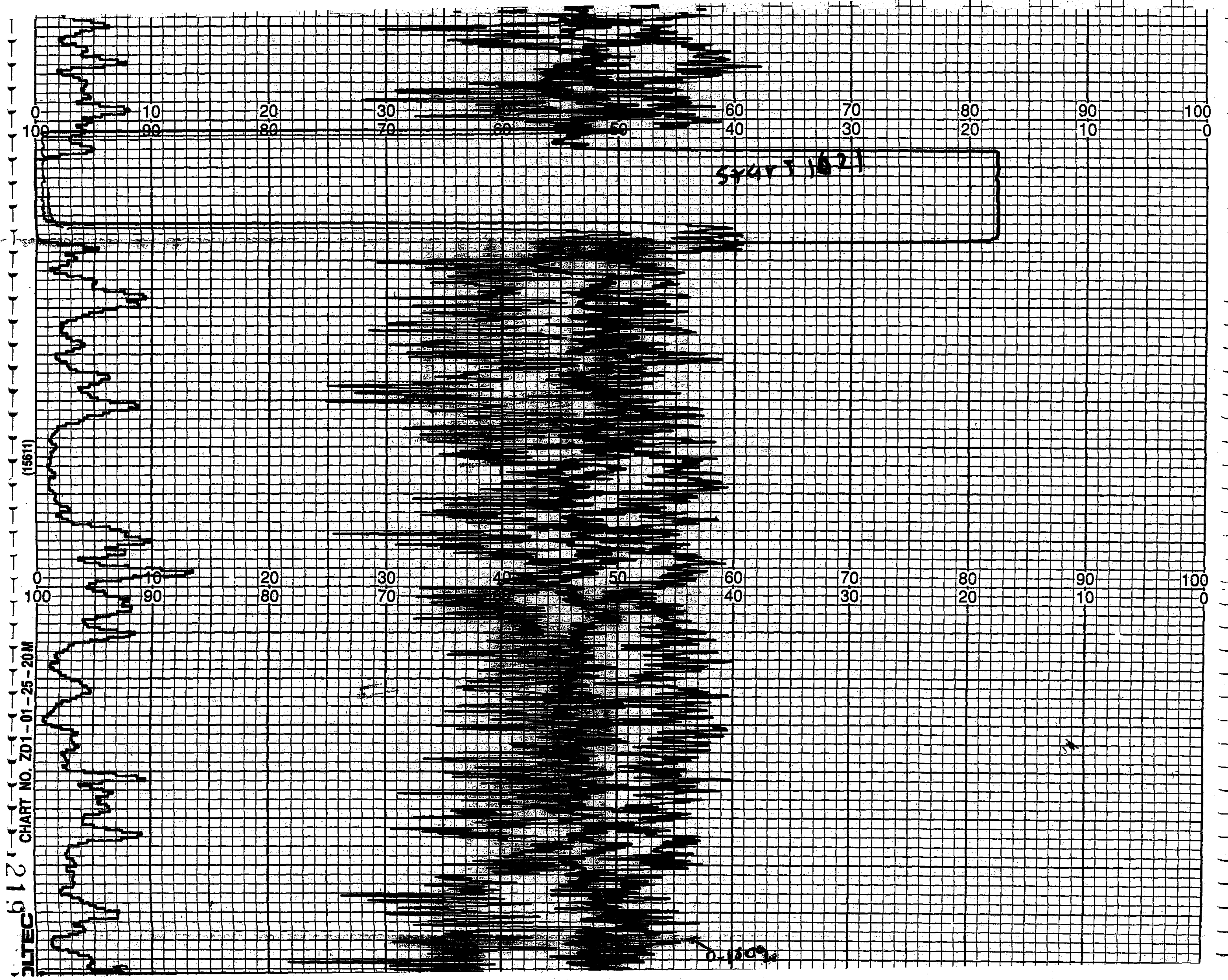
100 90 80 70 60 50 40 30 20 10 0
STATE LINE
4775 K
214
(15611)

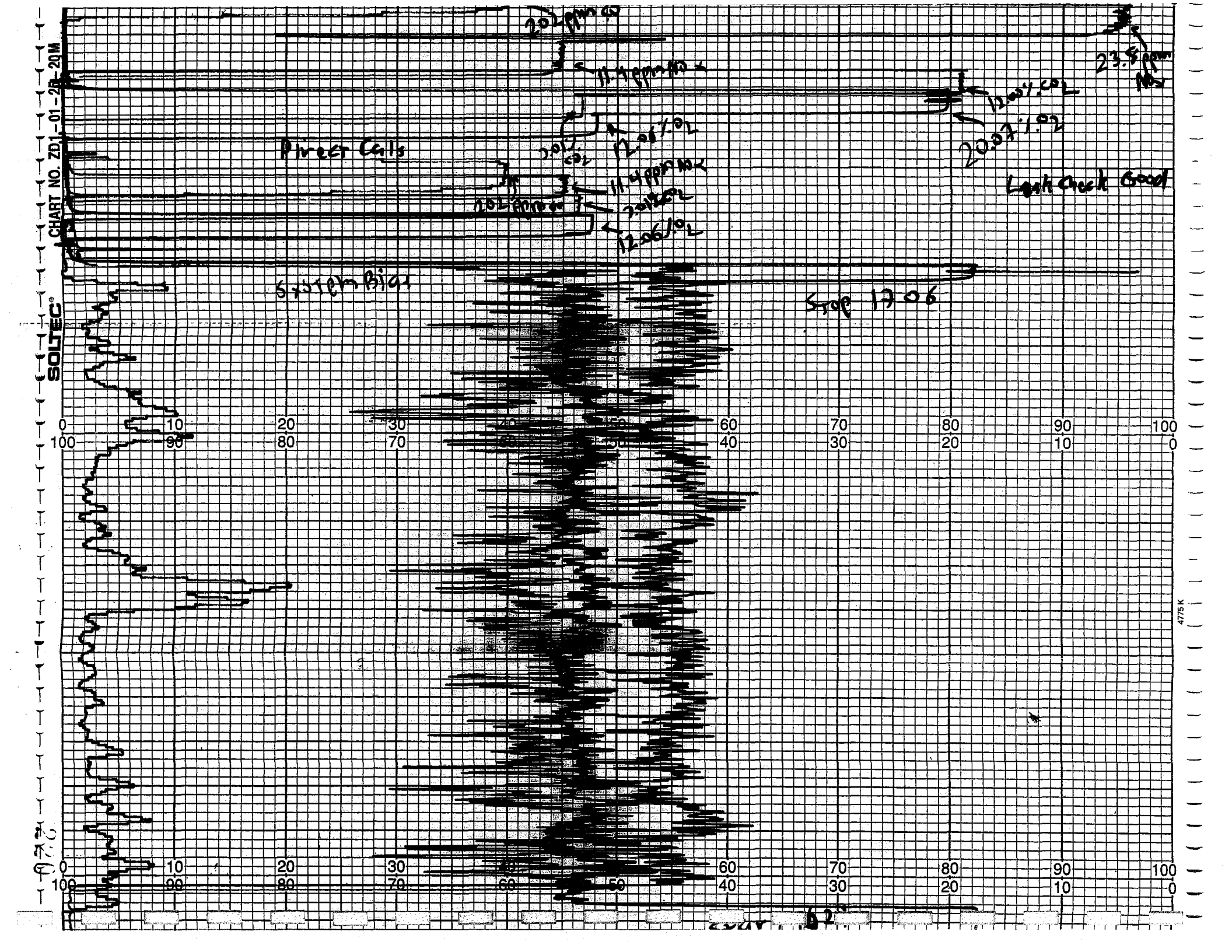

SOLTEC®
CHART NO. ZD1-01-25-20M
(15611)
O2 2.0 2.6
CO2 23 20
STOP RUN 12.41
START 11.55
0 10 20 30 50 60 70 80 90 100
100 90 80 70 50 40 30 20 10 0


SOLT
0 10 20 30 40 50 60 70 80 90 100
100 90 80 70 60 50 40 30 20 10 0
0-15% O2
0-25% O2
0-500 CO
0-25 NOx
Flare #1 Run 1
Start 1330
20 cm/hr
Direct Cals
12.06% O2
4-202 ppm CO
114 ppm NOx
7.01% O2
12.06% O2
System Bias
CO 54 53
NOx 26 26
O2 28 26
CO2 23 20
STOP RUN #1 @ 12:41
4775 K
(15611)


SOLTEC®
CHART NO. ZD1 - 01 - 25 - 20M
(15611)
Start 1420
0 10 20 30 40 50 60 70 80 90 100
100 90 80 70 60 50 40 30 20 10 0


SOLTEC
0-500 CO
0-25 NOx
0-1500
0-25
Flame #1 Run 3 Start 1531
20 ch/hr
202 ppm CO
114 ppm NOx
7.01% CO2
12.06% O2
Drop CO
202 ppm CO
12.06% O2
System Bias
Stop 1505
CO 57 54
NOx 27 27
O2 29 26
CO2 13 15
4775 K
218


0 10 20 30 40 50 60 70 80 90 100
100 90 80 70 60 50 40 30 20 10 0
Start 1621
(15611)
CHART NO. ZD1-01-25-20M
OLTEC
219
0-1809


SOLTEC®
CHART NO. ZD1-01-2R-20M
Direct Cells
Leak check Good
Stop 17:06
4775 K

APPENDIX E - Operating Data

OPERATING DATA
FOR LANDFILL FLARES

Facility: Simi Valley LF Date: 10/11/05

Job No.: W07-043 Run #: 1

Source: Flare #1 (McGill)

142 °F Dry 5.3% H_2O
180 °F Wet

S.P. 1375 S.P. 1600 - Top T.C. S.P. [illegible]

Time	Landfill Gas Flow (SCFM)	Condensate Injection (_____)	Flare Temerature (°F)	Fuel Pressure (_____)	Fuel Temp (°F) [illegible]
1055	1378	NA	1629	NA	NA
1110	1371		1630		
1125	1378		1591		
1140	1356		1586		
1155	1371		1602		
1210	1375		1610		
1225	1371		1598		
1240	1359		1594		
AVG	1369.9		1605.0		

$1369.9 \times \frac{100 - 5.3}{100} = 1297.3$ DSCFM

OPERATING DATA
FOR LANDFILL FLARES

Facility: Simi Valley LF Date: 10/11/05

Job No.: W07-043 Run #: 2

Source: Flare #1 (McGill)

5.4% H_2O

140 °F Dry

102 °F Wet

S.P. 1312 S.P. 1650 °F Top T.C.

Time	Landfill Gas Flow (SCFM)	Condensate Injection ( )	Flare Temerature (°F)	Fuel Pressure ( )	Fuel Temp (°F)
1335	1318	NA	1598	NA	NA
1350	1320		1621		
1405	1304		1632		
1420	1352		1654		
1435	1340		1643		
1450	1320		1642		
1505	1300		1646		
Ave	1322.0		1633.7		

$1322.0 \times \frac{100-5.4}{100} \times 1250.6$ DSCFM

OPERATING DATA
FOR LANDFILL FLARES

Facility: Simi Valley LF Date: 10/11/05

Job No.: W07-043 Run #: 3

Source: Flare #1 (McGill)

140 °F Dry 6.1 % H_2O

104 °F WET

S.P. 1350 Sp. 1650 °F Top TC.

Time	Landfill Gas Flow (SCFM)	Condensate Injection ( )	Flare Temerature (°F)	Fuel Pressure ( )	Fuel Temp (°F)
1535	1329	NA	1631	NA	NA
1550	1345		1639		
1605	1338		1637		
1620	1350		1665		
1635	1357		1665		
1650	1339		1641		
1705	1321		1636		
Ave.	1339.9		1644.9		

$1339.9 \times \frac{100-6.1}{100} = 1258.2$

OPERATING DATA
FOR LANDFILL FLARES

Facility: Simi Valley LF Date: 10/13/05

Job No.: W07-043 Run #: 1 Alc1/PAH

Source: Flare #1 (McGill)

131 °F Dry 5.8 % H_2O
103 °F Wet
Top T.C.

Time	Landfill Gas Flow (SCFM)	Condensate Injection ( )	Flare Temerature (°F)	Fuel Pressure ( )	Fuel Temp (°F)
1330	699	NA	1608	NA	NA
1400	707		1610		
1430	695		1611		
1500	700		1615		
1530	701		1612		
1600	702		1615		
1630	698		1585		
1700	699		1619		
1730	700		1620		
1800	701		1622		
1830	697		1624		
1900	697		1623		
Ave	699.7		1613.7		

PAH #1

Alc #1

$699.7 \times \frac{100-5.8}{100} = 659.1$ DSCFM

OPERATING DATA
FOR LANDFILL FLARES

Facility: Simi Valley LF
Job No.: W07-043
Source: Flare #1 (McGill)

Date: 10/14/03
Run #: 2 PAH, ALD, Cr, HCL

135 °F Dry 5.0% H_2O
98 °F Wet

Top T.C.

Time	Landfill Gas Flow (SCFM)	Condensate Injection (_____)	Flare Temerature (°F)	Fuel Pressure (_____)	Fuel Temp (°F)
0730	702		1598		
0800	705		1520		
0830	704		1598		
0900	710		1627		
0930	708		1600		
1000	710		1620		
1030	704		1589		
1100	703		1591		
1130	709		1600		
1200	698		1610		
1230	702		1627		
1300	703		1610		
1330	705		1611		
1400	—		—		
1430	710.		1604		

PAH-2

HCl

Ave 705.2 1598

OPERATING DATA
FOR LANDFILL FLARES

Facility: Simi Valley landfill Date: 10/17/05

Job No.: W07-043 Run #: 3 PAH

Source: Flare 1 McGill

139°F Dry 5.0% H_2O
99°F Wet

Time	Landfill Gas Flow (SCFM)	Condensate Injection ( )	Flare Temerature (°F)	Fuel Pressure ( )	Fuel Temp (°F)
0815	695		1621		
0845	706		1651		
0915	697		1646.7		
0945	706		1641		
1015	703		1615		
1045	702		1644		
1115	688		1643		
1145	697		1641		
1215	698		1627		
1245	702		1602		
1315	699		1648		
1345	702		1654		
1415	698		1637		
1445					
1515					
Ave.	699.5		1636.2		

PAH-3

OPERATING DATA
FOR LANDFILL FLARES

Facility: Simi Valley Ca Date: 10/18/05

Job No.: W07-043 Run #: 3:730 / 2-921 / 2-925

Source: Flare 1

138 °F Dry 5.4 % H_2O
101 °F Wet

Time	Landfill Gas Flow (SCFM)	Condensate Injection ( )	Flare Temerature (°F)	Fuel Pressure ( )	Fuel Temp (°F)
0800	702		1640		
830	696		1645		
900	700		1684		
930	699		1638		
1000	707		1649		
1030	701		1645		
1100	703		1641		
1130	696		1662		
1200	701		1650		
1230	702		1664		
1300	699		1685		
1330	693		1627		
1400	705		1614		
1430	703		1650		
1500	699		1664		
1530	702		1645		
1600	698		1668		
1630					
1730					
Ave	700.4		1651.2		

Hee 2

Hee 3

Ave

OPERATING DATA
FOR LANDFILL FLARES

Facility: SVLF Date: 11-22-05

Job No.: C55-001 Run #: 1

Source: Flare 1 McGill

Time	Landfill Gas Flow (SCFM)	Condensate Injection ( )	Flare Temerature (°F)	Fuel Pressure ( )	Fuel Temp (°F)
Port A 00	809		1648		
10	830		1650		
20	813		1648		
30	797		1633		
40	819		~~1666~~ 1667 TW		
50	830		1666		
60	762		1679		
Port B ~~70~~	803		1685		
~~80~~	758		1690		
~~90~~	791		1596		
100	808		1607		
100	802		1685		
~~120~~	785 TW		1652		
~~60~~ TW					
	800.5		1654.2		

OPERATING DATA
FOR LANDFILL FLARES

Facility: SVLF Date: 11-22-05

Job No.: C58-001 Run #: 2W

Source: Flare 1 McGill

Time	Landfill Gas Flow (Scfm)	Condensate Injection ( )	Flare Temerature (°F)	Fuel Pressure ( )	Fuel Temp (°F)
Port B 00	~~805~~ ~~1656~~ TW		~~1656~~ ~~805~~ TW		
10	800		1658		
20	810		1652		
30	809		1623		
40	~~801~~		1618		
50	~~810~~ TW 810		1652		
60	797		1628		
Port B ~~70~~	766		1634		
~~80~~	779		1656		
~~90~~	~~800~~		1640		
~~100~~	791		1658		
110	793		1637		
~~120~~	788		1631		
~~60~~ TW					
	796.1		1641.9		

OPERATING DATA
FOR LANDFILL FLARES

Facility: SVLF Date: 11-23-05

Job No.: C556001 / 407-043 Run #: #2

Source: Flare 1 McGill

Time	Landfill Gas Flow (SCFM)	Condensate Injection (_____)	Flare Temerature (°F)	Fuel Pressure (_____)	Fuel Temp (°F)
00	808		1644		
10	798		1651		
20	793		1667		
30	805		1645		
40	791		1686		
50	806		1629		
60	793		1668		
70	804		1657		
80	806		1639		
90	792		1672		
100	799		1662		
110	779		1657		
120	782		1670		
	796.6		1659.5		

Port B

OPERATING DATA
FOR LANDFILL FLARES

Facility: SVLF Date: 11-23-05

Job No.: C58-01 / WO7-0103 Run #: 2

Source: Flare #1 McGill

Time	Landfill Gas Flow (SCFM)	Condensate Injection ( )	Flare Temerature (°F)	Fuel Pressure ( )	Fuel Temp (°F)
00	830 ~~TW 802~~		1702 ~~830~~ TW		
10	789		1643		
20	7800		1654		
30	8324		1720		
40	774		1640		
50	811		1618		
60	796		1665		
70	7848		1654		
80	795		1691		
90	8024		1665		
100	806		1661		
110	778		1660		
120	820		1649		
	800.4		1663.2		
	798.5		1660.4		

Post A

OPERATING DATA
FOR LANDFILL FLARES

Facility: SVLF Date: 11-23-05

Job No.: 407-0413/C55-001 Run #: 3

Source: Flare 1

Time	Landfill Gas Flow (SCFM)	Condensate Injection ( )	Flare Temerature (°F)	Fuel Pressure ( )	Fuel Temp (°F)
00	812		1677		
10	784		1649		
20	798		1645		
30	809		1677		
40	803		1637		
50	811		1651		
60	790		1644		
70	800		1638		
80	802		1640		
90	799		1644		
100	809		1630		
110	812		1620		
120	794		1645		
	801.8		1645.5		

Port A

OPERATING DATA
FOR LANDFILL FLARES

Facility: SVLF Date: 11-23-05

Job No.: W07-243/C58-001 Run #: 3

Source: Flare 1

Time	Landfill Gas Flow (SCFM)	Condensate Injection ( )	Flare Temerature (°F)	Fuel Pressure ( )	Fuel Temp (°F)
00	800		1646		
10	811		1641.0		
20	790		1589		
30	800		1652		
40	~~815~~ 805		1644		
50	802		1646		
60	814		1662		
70	819		1669		
80	812		1673		
90	781		1612		
100	800		1623		
110	816		1632		
120	822		1646		
	805.5		1641.1		
	~~803.7~~		~~1643.3~~		

Port B

APPENDIX F - Correspondences

Ventura County Air Pollution Control District

669 County Square Drive
Ventura, California 93003

tel 805/645-1400
fax 805/645-1444
www.vcapcd.org

Michael Villegas
Air Pollution Control Officer

September 19, 2005

Richard J. Vacherot, Technical Director
Horizon Air Measurement Services, Incorporated
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320

Subject: Source Test Protocol Approval

Dear Mr. Vacherot:

We have reviewed the source test protocol for Waste Management, Incorporated's 44 MMBTU/hr McGill Environmental System and 75 MMBTU/hr John Zinc landfill gas flares at the Simi Valley Landfill located at 2801 Madera Road, Simi Valley, CA 93065. Mercury is not included in the source test protocol in Table 3-2, but the exclusive test method for mercury is included in the protocol. From a telephone conversation between Horizon Air Measurement Services and the District,we understand that the source test will include testing for mercury. Therefore we find that the protocol is acceptable. You are authorized to conduct the source test on October 10, 2005. Please contact us 2 working days prior to this date to confirm the test date, so that we can arrange to observe the tests.

Thank you for your cooperation in this matter. If you have any questions, please contact air quality engineer Lyle Olson at 805/645-1413.

Sincerely,

Keith Duval, Manager
Compliance Division

c. Scott Tignac, District Manager, Waste Management, Incorporated
James Riley, Environmental Engineer, Waste Management, Incorporated
Terri Thomas, Supervising Engineer, APCD

STP01395

APPENDIX G - Calibration Data

INCONEL 10-1

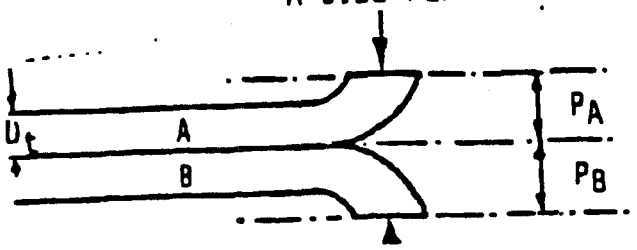
TYPE S PITOT TUBE INSPECTION DATA FORM

Tubing diameter, D_t 0.394 in.

Pitot Tube Assembly Level? (Yes) / No

Pitot Tube Openings Damaged? Yes / (No)

A-SIDE PLANE

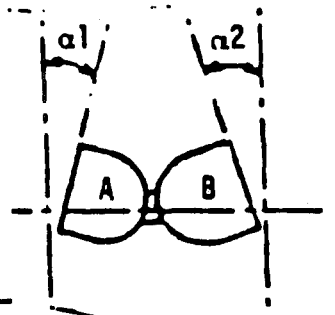


NOTE: 0.848 P_A = 0.424 in.

$1.05\ D_t < P < 1.50\ D_t$ P_B = 0.424 in.

$P_A = P_B$

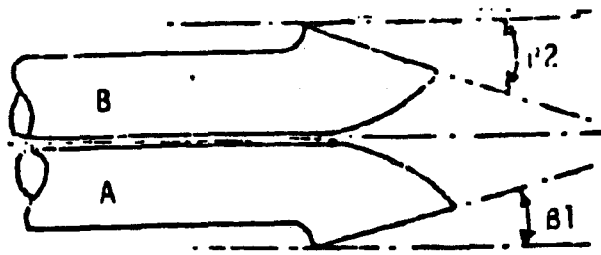
$0.4137 = 0.5910$



α_1 = 1.2°

α_2 = 1.0°

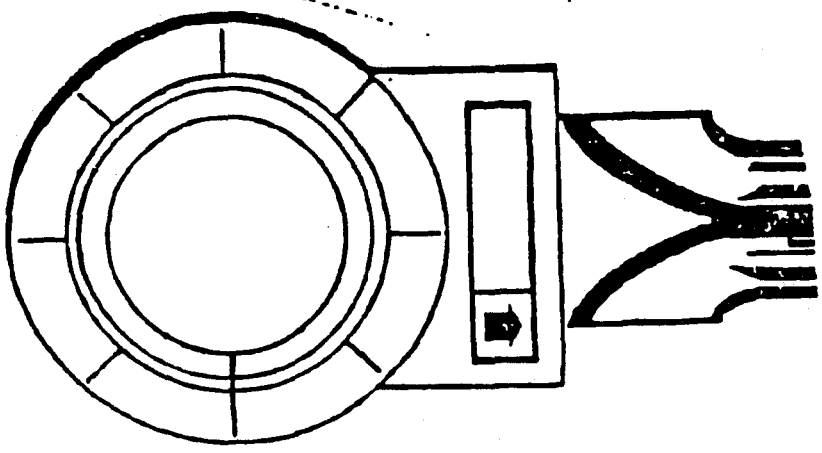
(<10°)

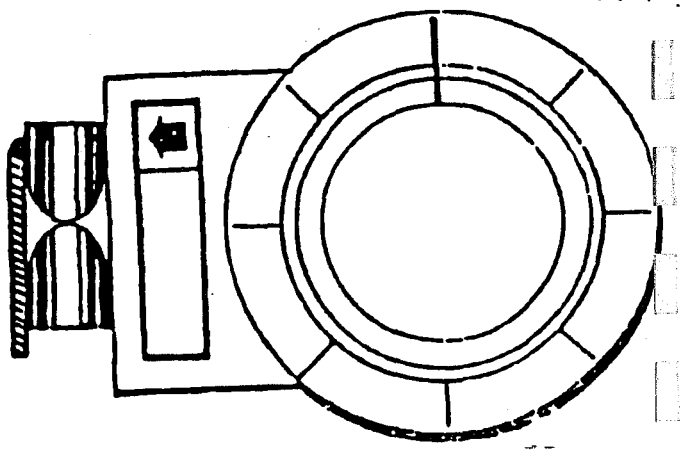


S_1 1.0

S_2 1.0

(< 5°)





Level Position to Find γ = 1.0

Z = A sin γ 0.018 in. (< 1/8 in.)

Level Position to find θ 1.0

W = A sin θ = 0.018 in. (< 1/32 i

Comments _____

Checked by: _____ Date: 09-21-05

Calibration Required? NO

STACK TEMPERATURE SENSOR CALIBRATION DATA- APEX PROBE ASSEMBLIES

Date: 09/15/05
Calibrated by: B. Jones

THERMOCOUPLE ID:

	ICE WATER						ABSOLUTE T DIFF., %			BOILING WATER						ABSOLUTE T DIFF., %			BOILING OIL						ABSOLUTE T DIFF., %		
	REF			TC						REF			TC						REF			TC					
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Stainless Steel Probes																											
3-1	32	32	32	34	34	34	-0.4	-0.4	-0.4	212	212	212	211	212	210	0.1	0.0	0.3	549	545	535	543	542	536	0.6	0.3	-0.1
4-2	32	32	32	32	33	33	0.0	-0.2	-0.2	212	212	212	209	209	209	0.4	0.4	0.4	535	530	525	531	525	526	0.4	0.5	-0.1
4-3	32	32	32	33	33	33	-0.2	-0.2	-0.2	212	212	212	210	210	208	0.3	0.3	0.6	535	545	543	539	540	540	-0.4	0.5	0.3
6-2	32	32	32	32	34	34	0.0	-0.4	-0.4	212	212	212	209	209	209	0.4	0.4	0.4	500	510	512	499	503	505	0.1	0.7	0.7
6-3	32	32	32	36	35	35	-0.8	-0.6	-0.6	212	212	212	211	211	210	0.1	0.1	0.3	515	517	520	505	510	515	1.0	0.7	0.5
6-4	32	32	32	35	33	34	-0.6	-0.2	-0.4	212	212	212	210	209	209	0.2	0.4	0.4	520	525	543	515	515	536	0.5	1 0	0.7
A6-5	32	32	32	33	35	35	-0.2	-0.6	-0.6	212	212	212	212	210	210	0.0	0.3	0.3	545	541	542	537	536	537	0.8	0.5	0.5
A8-1	32	32	32	33	33	32	-0.2	-0.2	0.0	212	212	212	208	208	208	0.6	0.6	0.6	543	544	535	545	535	539	-0.2	0.9	-0.4
A8-2	32	32	32	35	35	35	-0.6	-0.6	-0.6	212	212	212	211	211	210	0.1	0.1	0.3	540	541	545	535	536	539	0.5	0.5	0.6
A8-3	32	32	32	33	35	35	-0.2	-0.6	-0.6	212	212	212	207	209	209	0.7	0.4	0.4	546	541	541	535	532	540	1.1	0.9	0.1
10-1	32	32	32	32	33	33	0.0	-0.2	-0.2	212	212	212	209	209	209	0.4	0.4	0.4	540	540	538	540	540	535	0.0	0.0	0.3
M17-1	32	32	32	34	34	34	-0.4	-0.4	-0.4	212	212	212	211	210	212	0.1	0.3	0.0	540	541	541	547	540	540	-0.7	0.1	0.1
M17-2	32	32	32	36	35	35	-0.8	-0.6	-0.6	212	212	212	208	209	208	0.6	0.4	0.6	542	540	541	540	539	538	0.2	0.1	0.3
M17-3	32	32	32	36	36	37	-0.8	-0.8	-1.0	212	212	212	210	210	210	0.3	0.3	0.3	545	550	551	540	550	550	0.5	0.0	0.1
Inconel																											
10-2 Inc	32	32	32	33	33	33	-0.2	-0.2	-0.2	212	212	212	211	211	209	0.1	0.1	0.4	550	550	549	538	542	545	1.2	0.8	0.4
6-1 Inc	32	32	32	36	36	36	-0.8	-0.8	-0.8	212	212	212	206	207	208	0.9	0.7	0.6	549	550	549	543	540	540	0.6	1.0	0.9
Loose Thermocouple																											
6-5	32	32	32	33	34	34	-0.2	-0.4	-0.4	212	212	212	208	208	208	0.6	0.6	0.6	549	549	550	548	551	542	0.1	-0.2	0.8
6-8	32	32	32	35	35	35	-0.6	-0.6	-0.6	212	212	212	210	210	209	0.3	0.3	0.4	550	550	549	542	545	545	0.8	0.5	0.4
7-1	32	32	32	34	36	33	-0.4	-0.8	-0.2	212	212	212	207	207	207	0.7	0.7	0.7	548	548	540	548	548	541	0.0	0.0	-0.1
8-3	32	32	32	33	34	35	-0.2	-0.4	-0.6	212	212	212	210	210	210	0.3	0.3	0.3	515	525	535	510	516	530	0.5	0.9	0.5

Note: If absolute temperature values of the reference thermometer being calibrated and the stack temperature sensors agree within 1.5 percent at each of the three calibration p` no correction is needed.

Nozzle Calibration Data
Continuous Quartz

Date: 09/26/05
Calibrated by: Bill Jones

QUARTZ NOZZLES

NOZZLE ID	D1 ±.001	D2 ±.001	D3 ±.001	Delta D (.004 Max)	Avg. D
CQ-1(10')	1.027	1.020	1.026		1.024
CQ-2(10')	1.054	1.054	1.054		1.0537
CQ-3(10')	1.054	1.053	1.055		1.054
CQ-4(10')	0.996	0.990	0.997		0.994
CQ-5(10')	1.009	1.011	1.010		1.010
CQ-6(10')	1.009	1.009	1.006		1.008
CQ-7(6')	1.021	1.022	1.021		1.021
CQ-8(6')	1.054	1.054	1.056		1.055
CQ-9(6')	1.053	1.052	1.052		1.052

Control Box Calibration Data

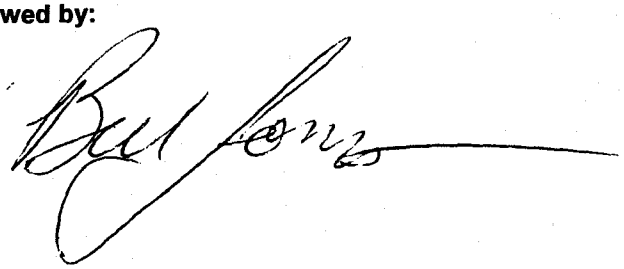
Date: 05/23/05 **Calibrated by:** Ferodie Torres

Meter Box Number: 4 **Barometric Pressure:** 28.96

Wet Test Meter Cf: 1.0022

Orifice setting (H)	Gas Volumes: Wet Test (cu.ft)	Gas Volumes: Dry Gas Initial (cu.ft)	Gas Volumes: Dry Gas Final (cu.ft)	Temperatures: DGM Initial (°F)	Temperatures: DGM final (°F)	Temperatures: WTM (°F)	Time (min)	Y	H@
0.5	12.781	213.888	226.630	75	75	81	30	0.9919	1.6439
1.0	9.514	203.221	212.707	75	76	81	16	0.9920	1.6854
1.5	25.572	136.166	161.749	75	77	80	35	0.9901	1.6668
2.0	13.289	122.681	135.974	75	77	80	16	0.9890	1.7197
3.0	23.100	99.326	122.371	75	77	80	23	0.9901	1.7609
4.0	23.286	75.798	98.952	71	76	78	20	0.9890	1.7455
						AVERAGE		0.9903	1.7037

Reviewed by:



APEX INSTRUMENTS METHOD 5 PRE-TEST CONSOLE CALIBRATION
USING CALIBRATED CRITICAL ORIFICES
5-POINT ENGLISH UNITS

Meter Console Information	
Console Model Number	522/MB04
Console Serial Number	40622
DGM Model Number	S110
DGM Serial Number	300230

Calibration Conditions			
Date	Time	26-Oct-05	8:00:00 AM
Barometric Pressure		29.1	in Hg
Theoretical Critical Vacuum[1]		13.7	in Hg
Calibration Technician		FT	

Factors/Conversions		
Std Temp	528	°R
Std Press	29.92	in Hg
K_1	17.647	oR/in Hg

[1]For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.

[2]The Critical Orifice Coefficient, K', must be entered in English units, $(ft^3 \cdot {}^oR^{1/2})/(in.Hg \cdot min)$.

Calibration Data

Run Time	Metering Console					Critical Orifice				
Elapsed	DGM Orifice ΔH	Volume Initial	Volume Final	Outlet Temp Initial	Outlet Temp Final	Serial Number	Coefficient	Amb Temp Initial	Amb Temp Final	Actual Vacuum
(Θ)	(P_m)	(V_{mi})	(V_{mf})	(t_{mi})	(t_{mf})		K'	(t_{amb})	(t_{amb})	
min	in H_2O	cubic feet	cubic feet	°F	°F		see above2	°F	°F	in Hg
19.0	0.2	95.987	101.708	61	61	RN-40	0.2338	69	69	24
13.0	0.5	101.708	107.561	61	62	RN-48	0.3466	69	69	23
13.0	0.9	107.561	115.000	62	63	RN-55	0.4447	70	70	22
22.0	1.7	115.000	132.450	63	68	RN-66	0.6048	70	70	21
9.0	3.0	132.450	141.721	67	71	RN-73	0.7894	70	70	18

Results

Standardized Data				Dry Gas Meter				
				Calibration Factor		Flowrate	ΔH @	
Dry Gas Meter		Critical Orifice		Value	Variation	Std & Corr	0.75 SCFM	Variation
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(ΔY)	($Q_{m(std)(corr)}$)	(ΔH@)	(ΔΔH@)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
5.648	0.297	5.626	0.296	0.996	0.006	0.296	1.459	-0.125
5.780	0.445	5.707	0.439	0.987	-0.003	0.439	1.560	-0.024
7.339	0.565	7.315	0.563	0.997	0.006	0.563	1.618	0.034
17.151	0.780	16.836	0.765	0.982	-0.009	0.765	1.613	0.029
9.082	1.009	8.990	0.999	0.990	0.000	0.999	1.671	0.087
				0.990	Y Average		1.584	ΔH@ Average

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.

I certify that the above Dry Gas Meter was calibrated in accordance with USEPA Methods, CFR Title 40, Part 60, Appendix A-3, Method 5, 16.2.3

Signature _____ Date 10.26.05

2472

Control Box Calibration Data

Date: 06/07/05 **Calibrated by:** Bill Jones

Meter Box Number: 7 **Barometric Pressure:** 28.92

Wet Test Meter Cf: 1.0022

	Gas Volumes			Temperatures			Time	Y	H@
Orifice setting (H)	Wet Test (cu.ft)	Dry Gas Initial (cu.ft)	Dry Gas Final (cu.ft)	DGM Initial (°F)	DGM final (°F)	WTM (°F)	(min)		
0.5	11.778	25.755	37.810	83	86	78	27	0.9897	1.5243
1.0	12.149	13.054	25.509	85	87	78	20	0.9887	1.5693
1.5	30.035	981.856	1012.571	79	88	77	40	0.9877	1.5412
2.0	12.855	968.457	981.544	77	83	76	15	0.9863	1.5818
3.0	12.618	955.055	967.852	73	81	76	12	0.9825	1.5827
4.0	13.306	941.325	954.752	70	75	75	11	0.9786	1.6036
						AVERAGE		0.9856	1.5672

Reviewed by: 

APEX INSTRUMENTS METHOD 5 PRE-TEST CONSOLE CALIBRATION
USING CALIBRATED CRITICAL ORIFICES
5-POINT ENGLISH UNITS

Meter Console Information	
Console Model Number	522/MB07
Console Serial Number	608193
DGM Model Number	S110
DGM Serial Number	1039620

Calibration Conditions			
Date	Time	25-Oct-05	15:00 PM
Barometric Pressure		29.1	in Hg
Theoretical Critical Vacuum[1]		13.7	in Hg
Calibration Technician		FT	

Factors/Conversions		
Std Temp	528	°R
Std Press	29.92	in Hg
K_1	17.647	oR/in Hg

[1]For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.

[2]The Critical Orifice Coefficient, K', must be entered in English units, $(ft^3 \cdot {}^oR^{1/2})/(in.Hg \cdot min)$.

Calibration Data

Run Time	Metering Console					Critical Orifice				
Elapsed	DGM Orifice ΔH	Volume Initial	Volume Final	Outlet Temp Initial	Outlet Temp Final	Serial Number	Coefficient	Amb Temp Initial	Amb Temp Final	Actual Vacuum
(Θ)	(P_m)	(V_m)	(V_{mf})	(t_{mi})	(t_{mf})		K'	(t_{amb})	(t_{amb})	
min	in H_2O	cubic feet	cubic feet	°F	°F		see above2	°F	°F	in Hg
17.0	0.3	447.263	452.434	72	72	RN-40	0.2338	72	72	24
13.0	0.6	466.140	472.039	74	74	RN-48	0.3466	74	74	22
15.0	1.1	457.422	466.140	72	72	RN-55	0.4447	72	72	21
10.0	1.9	472.039	479.949	73	77	RN-66	0.6048	74	74	19
6.0	3.3	479.949	486.140	75	80	RN-73	0.7894	74	74	16

Results

Standardized Data				Dry Gas Meter				
				Calibration Factor		Flowrate	ΔH @	
Dry Gas Meter		Critical Orifice		Value	Variation	Std & Corr	0.75 SCFM	Variation
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(ΔY)	($Q_{m(std)(corr)}$)	(ΔH@)	(ΔΔH@)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
5.000	0.294	5.020	0.295	1.004	0.005	0.295	1.624	-0.135
5.693	0.438	5.680	0.437	0.998	-0.002	0.437	1.739	-0.020
8.446	0.563	8.424	0.562	0.997	-0.002	0.562	1.820	0.061
7.640	0.764	7.624	0.762	0.998	-0.001	0.762	1.786	0.027
5.973	0.996	5.971	0.995	1.000	0.000	0.995	1.825	0.066
				0.999	Y Average		1.759	ΔH@ Average

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.

I certify that the above Dry Gas Meter was calibrated in accordance with USEPA Methods, CFR Title 40, Part 60, Appendix A-3, Method 5, 16.2.3

Signature _____ Date _____

PRAXAIR

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Telephone: (323) 585-2154
Facsimile: (714) 542-6689

2/10/05

Horizon Air
996 Lawrence Dr Ste 108
Newbury Park, CA
USA 91320

Attention: Deborah Vacherst

Praxair Order No. **06570800**
Customer Reference No. **8A065**
Intended End User: **HORIZON AIR MEASUREMENTS**

Product Lot/Batch No. **109401605**
Praxair Part No. **EV NINX19MP-AS**

CERTIFICATE OF ANALYSIS

Primary Standard

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Nitrogen dioxide (AS NOX)	**19 ppm**	**19.5 ppm**	**U**	**±1 %**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Thermo Environmental~42H~42H~Chemiluminescence**
Cylinder Style: **ALS**
Cylinder Pressure @70F: **1700 psig**
Cylinder Volume: **122 ft3**
Valve Outlet Connection: **660**
Cylinder No(s). **CC 137428**
Comments: **VALUES NOT VALID BELOW 150 PSIG, NO=0.4 ppm (REFERENCE ONLY)**

Filling Method: **Gravimetric**
Date of Fill: **1/10/04**
Expiration Date: **2/10/07**

Analyst: **Joseph Charles**

QA Reviewer: **Phil Kim**

The gas calibration cylinder standard prepared by Praxair Distribution is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST) or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A Flame Ionization with Methanizer	B Gas Chromatography with Discharge Ionization Detector	C Gas Chromatography with Electrolytic Conductivity Detector	D Gas Chromatography with Flame Ionization Detector
E Gas Chromatography with Flame Photometric Detector	F Gas Chromatography with Helium Ionization Detector	G Gas Chromatography with Methanizer Carbonizer	H Gas Chromatography with Photoionization Detector
I Gas Chromatography with Reduction Gas Analyzer	J Gas Chromatography with Thermal Conductivity Detector	K Gas Chromatography with Ultrasonic Detector	L Infrared - FTIR or NDIR
M Mass Spectrometry - MS or GC/MS	N Proprietary	O Paramagnetic	P Specific Water Analyzer
Q Total Hydrocarbon Analyzer	R Wet Chemical	S Detector Tube	T Odor
U Chemiluminescence	V Gravimetric	W Electrolytic Cell/Electrochemical	X Photoionization
Y Pulsed Fluoroescence	Z UV Spectrometry		

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CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

CUSTOMER HORIZON AIR MEASUREMENTS **P.O NUMBER**

REFERENCE STANDARD

COMPONENT	NIST SRM NO.	CYLINDER NO.	CONCENTRATION
NITRIC OXIDE GMIS	vsSRM#2029a	CC 144870	24.81 ppm

ANALYZER READINGS

R=REFERENCE STANDARD *Z=ZERO GAS* *C=GAS CANDIDATE*

1. **COMPONENT** NITRIC OXIDE GMIS **ANALYZER MAKE-MODEL-S/N** Thermo Env. 42H S/N 42H-44979-273

ANALYTICAL PRINCIPLE CHEMILUMINESCENCE **LAST CALIBRATION DATE** 07/01/05

FIRST ANALYSIS DATE 07/14/05 **SECOND ANALYSIS DATE**

Z 0.1	R 24.7	C 11.3	CONC. 11.3		Z	R	C	CONC.	
R 24.8	Z 0.1	C 11.3	CONC. 11.3		R	Z	C	CONC.	
Z 0.0	C 11.2	R 24.8	CONC. 11.2		Z	C	R	CONC.	
U/M ppm		MEAN TEST ASSAY 11.3			U/M ppm		MEAN TEST ASSAY		

VALUES NOT VALID BELOW 150 PSIG.
NOX VALUE FOR REFERENCE USE ONLY.
LAST CONC. CERTIFIED ON 04/05/05 WAS NO=11.4ppm.

THIS CYLINDER NO. CC 181767
HAS BEEN CERTIFIED ACCORDING TO SECTION EPA-600/R97/121
OF TRACEABILITY PROTOCOL NO. REV.9/97
PROCEDURE G1
CERTIFIED ACCURACY ± 1 **% NIST TRACEABLE**
CYLINDER PRESSURE 2000 **PSIG**
CERTIFICATION DATE 07/14/05
EXPIRATION DATE 07/14/07 **TERM** 24 MONTHS

CERTIFIED CONCENTRATION

NITRIC OXIDE	11.3 ppm
NITROGEN	BALANCE
NOx	11.4 ppm

ANALYZED BY JOSEPH CHARLES ***CERTIFIED BY*** PHU TIEN NGUYEN

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Telephone: (525) 585-2154
Facsimile: (714) 542-6689

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

CUSTOMER HORIZON AIR **P.O NUMBER**

REFERENCE STANDARD

COMPONENT	NIST SRM NO.	CYLINDER NO.	CONCENTRATION
NITRIC OXIDE	vs.SRM#2629	CC 144870	24.81 ppm

ANALYZER READINGS

R=REFERENCE STANDARD *Z=ZERO GAS* *C=GAS CANDIDATE*

1. **COMPONENT** NITRIC OXIDE **ANALYZER MAKE-MODEL-S/N** Thermo Env. 42H S/N 42H-44979-272

ANALYTICAL PRINCIPLE CHEMILUMINESCENCE **LAST CALIBRATION DATE** 09,02,04

FIRST ANALYSIS DATE 07,17,04 **SECOND ANALYSIS DATE** 09/20/04

Z	0.0	R	23.4	C	21.3	CONC.	22.6	Z	0.0	R	24.3	C	22.4	CONC.	22.9
R	23.6	Z	0.0	C	21.7	CONC.	22.8	R	24.6	Z	0.0	C	22.7	CONC.	22.9
Z	0.0	C	21.9	R	23.8	CONC.	22.9	Z	0.0	C	22.7	R	24.6	CONC.	22.9
U/M	ppm			MEAN TEST ASSAY			22.7	U/M	ppm			MEAN TEST ASSAY			22.9

NOx values for reference only.
All values not valid below 150 psig.

THIS CYLINDER NO. CC 119008
HAS BEEN CERTIFIED ACCORDING TO SECTION EPA-600, R97/121
OF TRACEABILITY PROTOCOL NO. Rev. 9/97
PROCEDURE G1
CERTIFIED ACCURACY ± 1 % **NIST TRACEABLE**
CYLINDER PRESSURE 2000 **PSIG**
CERTIFICATION DATE 09 20 04
EXPIRATION DATE 09 20 06 **TERM** 24 MONTHS

CERTIFIED CONCENTRATION

NITRIC OXIDE	22.8 ppm
NITROGEN	BALANCE
NOx	22.8 ppm

ANALYZED BY PHIL KIM **CERTIFIED BY** JOSEPH CHARLES

PRAXAIR

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Los Angeles, CA 90058
Telephone: (323) 585-2154
Facsimile: (714) 542-6689

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

CUSTOMER HORIZON AIR MEASUREMENTS **P.O NUMBER**

REFERENCE STANDARD

COMPONENT	NIST SRM NO.	CYLINDER NO.	CONCENTRATION
CARBON MONOXIDE GMIS	vs.SRM#2636	CC 86363	247 ppm

ANALYZER READINGS

R=REFERENCE STANDARD *Z=ZERO GAS* *C=GAS CANDIDATE*

1. **COMPONENT** CARBON MONOXIDE GMIS **ANALYZER MAKE-MODEL-S/N** Siemens Ultramat 5E S/N A12-729

ANALYTICAL PRINCIPLE NDIR **LAST CALIBRATION DATE** 05/03/04

FIRST ANALYSIS DATE 05/05/03 **SECOND ANALYSIS DATE** 05/17/04

Z	0	R	250.0	C	202.3	CONC.	202	Z	0	R	247.0	C	202.4	CONC.	202
R	250.0	Z	0	C	202.0	CONC.	202	R	247.0	Z	0	C	202.2	CONC.	202
Z	0	C	202.2	R	250.0	CONC.	202	Z	0	C	202.2	R	247.0	CONC.	202
U/M	ppm			MEAN TEST ASSAY			202	U/M	ppm			MEAN TEST ASSAY			202

Values not valid below 150 psig

THIS CYLINDER NO. CC 144968

HAS BEEN CERTIFIED ACCORDING TO SECTION EPA-600/R97/121

OF TRACEABILITY PROTOCOL NO. Rev. 9/97

PROCEDURE G1

CERTIFIED ACCURACY ± 1 **% NIST TRACEABLE**

CYLINDER PRESSURE 2000 **PSIG**

CERTIFICATION DATE 05/17/04

EXPIRATION DATE 05/17/07 **TERM** 36 MONTHS

CERTIFIED CONCENTRATION

CARBON MONOXIDE	202 ppm
NITROGEN	BALANCE

ANALYZED BY VICTOR DOTAN ***CERTIFIED BY*** PHIL KIM

PRAXAIR

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CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

CUSTOMER HORIZON AIR MEASUREMENTS **P.O NUMBER** 8665

REFERENCE STANDARD

COMPONENT	NIST SRM NO.	CYLINDER NO.	CONCENTRATION
CARBON MONOXIDE GMIS	vs.SRM#1680	CC 106625	498 ppm

ANALYZER READINGS

R=REFERENCE STANDARD ***Z=ZERO GAS*** ***C=GAS CANDIDATE***

1. **COMPONENT** CARBON MONOXIDE GMIS **ANALYZER MAKE-MODEL-S/N** Siemens Ultramat 5E S/N A12-729

ANALYTICAL PRINCIPLE NDIR **LAST CALIBRATION DATE** 08/01/05

FIRST ANALYSIS DATE 02/18/05 **SECOND ANALYSIS DATE** 08/17/05

Z 0	R 505	C 396	CONC. 396	Z 0	R 498	C 396	CONC. 396
R 505	Z 0	C 396	CONC. 396	R 498	Z 0	C 396	CONC. 396
Z 0	C 396	R 505	CONC. 396	Z 0	C 396	R 498	CONC. 396
U/M ppm		MEAN TEST ASSAY 396		U/M ppm		MEAN TEST ASSAY 396	

VALUES NOT VALID BELOW 150 PSIG.
CO FIRST ANALYSIS DONE vs 505ppm GMIS.

THIS CYLINDER NO. CC 164230
HAS BEEN CERTIFIED ACCORDING TO SECTION EPA-600/R97/121
OF TRACEABILITY PROTOCOL NO. REV 9/97
PROCEDURE G1
CERTIFIED ACCURACY ± 1 **% NIST TRACEABLE**
CYLINDER PRESSURE 2000 **PSIG**
CERTIFICATION DATE 08/17/05
EXPIRATION DATE 08/17/08 **TERM** 36 MONTHS

CERTIFIED CONCENTRATION

CARBON MONOXIDE	396 ppm
NITROGEN	BALANCE

ANALYZED BY ISMAEL RANGSIYAMONG

CERTIFIED BY HELENA TRAN

PRAXAIR

Praxair
5700 South Alameda Street
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Telephone: (323) 585-215
Facsimile: (714) 542-668

9/30/2005

Horizon Air
996 Lawrence Dr Ste 108
Newbury Park, CA
USA 91320

Attention: Deborah Vacherst

Praxair Order No. **23379400**
Customer Reference No.

Product Lot/Batch No. **109526414**
Praxair Part No. **EV NICDOXP1-AS**

CERTIFICATE OF ANALYSIS
Primary Standard

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Carbon dioxide	**7 %**	**7.01 %**	**V**	**±0.02 % abs.**
Oxygen	**12 %**	**12.06 %**		**±0.02 % abs.**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Mettler~ID5~Gravimetric**
Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **147 ft3**
Valve Outlet Connection: **590**
Cylinder No(s). **CC 107967**

Filling Method: **Gravimetric**
Date of Fill: **9/21/2005**
Expiration Date: **9/30/2008**

Analyst: **Jack Fu**

QA Reviewer: **Ty Triplett**

The gas calibration cylinder standard prepared by Praxair Distribution is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST) or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted.

Key to Analytical Techniques:

A Flame Ionization with Methanizer	B Gas Chromatography with Discharge Ionization Detector	C Gas Chromatography with Electrolytic Conductivity Detector	D Gas Chromatography with Flame Ionization Detector
E Gas Chromatography with Flame Photometric Detector	F Gas Chromatography with Helium Ionization Detector	G Gas Chromatography with Methanizer Carbonizer	H Gas Chromatography with Photoionization Detector
I Gas Chromatography with Reduction Gas Analyzer	J Gas Chromatography with Thermal Conductivity Detector	K Gas Chromatography with Ultrasonic Detector	L Infrared - FTIR or NDIR
M Mass Spectrometry - MS or GC/MS	N Proprietary	O Paramagnetic	P Specific Water Analyzer
Q Total Hydrocarbon Analyzer	R Wet Chemical	S Detector Tube	T Odor
U Chemiluminescence	V Gravimetric	W Electrolytic Cell/Electrochemical	X Photoionization
Y Pulsed Fluorescence	Z UV Spectrometry		

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PRAXAIR

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8/31/2005

Horizon Air
996 Lawrence Dr Ste 108
Newbury Park, CA
USA 91320

Attention: Deborah Vacherst

Praxair Order No. **98947500**
Customer Reference No.

Product Lot/Batch No. **109517318**
Praxair Part No. **NI CDOXP80-AS**

CERTIFICATE OF ANALYSIS
Primary Standard

Component	Requested Concentration	Certified Concentration	Analytical Principle	Analytical Accuracy
Carbon dioxide	**12 %**	**12.00 %**	**V**	**±0.02 % abs.**
Oxygen	**20 %**	**20.07 %**		**±0.02 % abs.**
Nitrogen	**balance**	**balance**		

Analytical Instruments: **Mettler-ID5-Gravimetric**
Cylinder Style: **AS**
Cylinder Pressure @70F: **2000 psig**
Cylinder Volume: **151 ft3**
Valve Outlet Connection: **590**
Cylinder No(s). **CC 90440**

Filling Method: **Gravimetric**
Date of Fill: **6/22/2005**
Expiration Date: **12/31/2008**

Analyst: **Jack Fu**

QA Reviewer: **Ty Triplett**

The gas calibration cylinder standard prepared by Praxair Distribution is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST) or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g. ppmv) unless otherwise noted.

Key to Analytical Techniques:

A	Flame Ionization with Methanizer	B	Gas Chromatography with Discharge Ionization Detector	C	Gas Chromatography with Electrolytic Conductivity Detector	D	Gas Chromatography with Flame Ionization Detector
E	Gas Chromatography with Flame Photometric Detector	F	Gas Chromatography with Helium Ionization Detector	G	Gas Chromatography with Methanizer Carbonizer	H	Gas Chromatography with Photoionization Detector
I	Gas Chromatography with Reduction Gas Analyzer	J	Gas Chromatography with Thermal Conductivity Detector	K	Gas Chromatography with Ultrasonic Detector	L	Infrared - FTIR or NDIR
M	Mass Spectrometry - MS or GC/MS	N	Proprietary	O	Paramagnetic	P	Specific Water Analyzer
Q	Total Hydrocarbon Analyzer	R	Wet Chemical	S	Detector Tube	T	Odor
U	Chemiluminescence	V	Gravimetric	W	Electrolytic Cell/Electrochemical	X	Photoionization
Y	Pulsed Fluoroescence	Z	UV Spectrometry				

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APPENDIX A - Test Method Descriptions

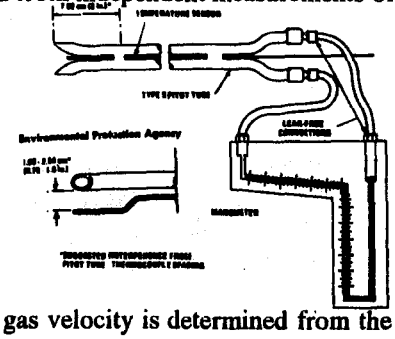
Method:	**Sample Velocity Traverses for Stationary Sources**
Applicable for Methods:	EPA Method 1, SCAQMD Method 1.1, CARB Method 1
Principle:	To aid in the representative measurements of pollutant emissions and/or total volumetric flow rate from a stationary source, a measurement site where the effluent stream is flowing in a known direction is selected, and the cross section of the stack is divided into a number of equal areas. A traverse point is then located within these equal areas. The method cannot be used when, 1) flow is cyclonic or swirling, 2) stack is small than about 0.30 meter (12 inches) in diameter or 3) the measurement of the site is less than two stack or duct diameters downstream or less than a half diameter upstream from the flow disturbance.

Method: **Stack Gas Velocity and Volumetric Flow Rate**

Applicable for Methods: EPA Method 2, CARB 2, SCAQMD Method 2.1

Principle: The average gas velocity in a stack gas is determined from the gas density and from measurement of the average velocity head with a type S or standard pitot tube.

Sampling Procedure: Set up the apparatus as shown in the figure. Measure the velocity head and temperature at the traverse points specified by EPA Method 2, CARB Method 2 or SCAQMD Method 2.1. Measure the static pressure in the stack and determine the atmospheric pressure. The stack gas molecular weight is determined from independent measurements of O_2, CO_2 and H_2O concentrations.



Sample Recovery: and Analyses: The stack gas velocity is determined from the measured average velocity head, the measured dry concentrations of O_2 and CO_2 and the measured concentration of H_2O. The velocity is determined from the following set of equations:

Where,

ΔP = velocity head, inches in H_2O
Ts = gas/temperature, degrees R
Ps = absolute static pressure
Mwd = dry molecular weight
Mw = molecular weight
Cp = pitot flow coefficient

Dry molecular weight of stack gas

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

Molecular weight of stack gas, wet basis

$$M_w = (M_{wd}\ x\ M_d) + 18\ (1 - M_d)$$

$$Where,\ M_d = \frac{100 - Bws}{100}$$

Stack gas velocity

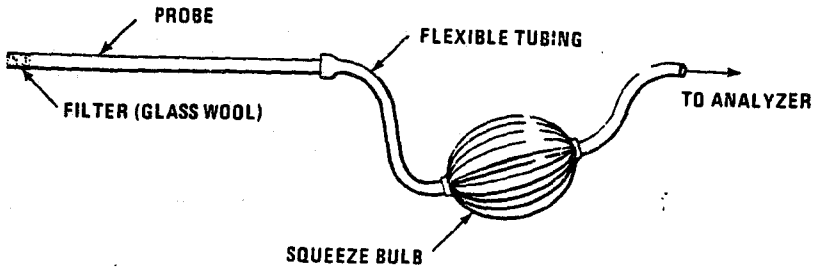
$$(V_s)\ avg. = (5130)\ C_p\ x\ \sqrt{\Delta P}\ avg.\ x\ \sqrt{T_s}\ x\ \left(\frac{1}{P_s\ x\ M_w}\right)^{1/2}$$

Method: **Gas Analysis for Dry Molecular Weight and Excess Air**

Applicable for Methods: EPA Method 3, SCAQMD Method 3.1, CARB Method 3

Sampling Procedure:

a) Single Point, Grab Sampling - set up equipment as shown in the figure. Position probe at the centroid of the stack. Purge sample line and draw sample straight to the Orsat/Dyrite analyzer and immediately analyze for percent CO_2 & O_2



b) Integrated Gas Sampling Train - set up equipment as shown in the figure. Position probe at the centroid of the stack. Purge sample line and draw sample into the Tedlar bag. Fill bag concurrent to the criteria pollutant sample, analyze samples immediately.

c) Multi-Point Integrated Sampling - set up equipment the same as b) integrated gas sampling. Follow procedures from (b) except traverse all points and sample at each point for an equal length of time.

* To determine the percentage of gas that is N_2 and CO by subtracting the sum of the percent CO_2 and percent O_2 from 100.

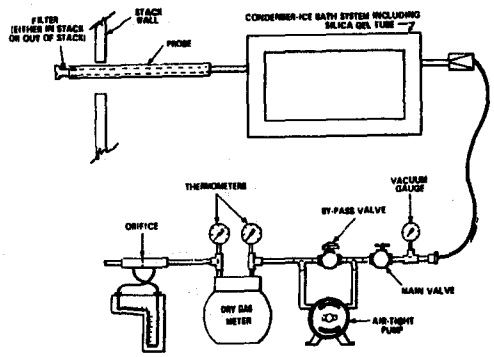
* Dry molecular weight calculation of stack gases:

$$Md = 0.440\ (\%\ CO_2) + 0.320\ (\%\ O_2) + 0.280\ (\%\ N_2 + \%\ CO)$$

<u>To Remember:</u>

The equation above does not consider argon in air (about 0.9% molecular weight of 39.9). A negative error of about 0.4 percent is introduced.

Method:	**Determination of Moisture in Stack Gases**
Applicable for Methods:	EPA Method 4, ARB 1-4, SCAQMD Method 4.1
Principle:	A gas sample is extracted at a constant rate from the source; moisture is removed from the stream and determined either volumetrically or gravimetrically.
Sampling Procedure:	Set up train as shown in the following figure. Sample is drawn at a constant rate through a sufficiently heated probe. The probe is connected to the impinger train by Teflon or glass tubing. The train consists of two greenburg smith impinger (SCAQMD 4.1) or one modified and 1 greenburg smith impinger (CARB & EPA) each containing 100 ml of water, an empty impinger as a knock-out and an impinger containing silica gel to protect the pump from moisture.



Sample Recovery: and Analyses:	Following testing, moisture content is determined gravimetrically or volumetrically from initial and final impinger contents weights or volume.

Method: **Methane and Total Non-Methane Hydrocarbons by Total Carbon Analyses**

Reference: EPA Method 25C

Principle: Gaseous samples are collected in stainless steel canisters. The canisters are then pressurized with nitrogen and analyzed for methane and total non methane hydrocarbons (TNMHC) using a TCA/FID.

Sampling Procedure: Samples are collected, in duplicate, using stainless steel canisters which are evacuated to less than 10 mm Hg absolute. The tanks are pressurized and evacuated three times with ultrapure nitrogen and leak checked prior to use. A gas flow metering device and stainless steel shutoff valve is located just upstream of the canister. Representative, integrated samples are collected through a heat conditioned 1/4" stainless steel probe. The gas samples are metered into the canisters through the vacuum regulator maintaining a constant flow rate throughout each sampling period.

The sampling apparatus is checked for leaks prior to the sampling program by attaching the probe end to an absolute pressure gauge and vacuum pump in series. The sample lines were evacuated to less than 10 mm Hg and the gauge shutoff valve is then closed. The sample lines are deemed to be leak-free if no loss of vacuum occurs as indicated by the vacuum gauge. During sampling the tank pressures are monitored with a 0-30 inch vacuum gauge to ensure integrated sampling.

Analytical Procedure: Samples are analyzed for methane and total non methane hydrocarbons (TNMHC) by total combustion analyses (TCA)/flame ionization detection (FID).

CONTINUOUS EMISSIONS MONITORING SYSTEM - TRUCK

CARB Method 100

The continuous emissions monitoring system consists of a Thermo Electron Model 10AR chemiluminescence NO/NO_x analyzer, a Teledyne electro chemical O_2 analyzer, a Thermo Electron Model 48H CO gas filter correlation analyzer and a Horiba PIR2000 non dispersive infrared CO_2 analyzer. All analyzer specifications are provided in Table 1. All concentrations are determined on a dry basis. Concentrations of NO_x, CO, O_2 and CO_2 are continuously recorded on a Linseis 10-inch strip chart recorder. The extractive monitoring system conforms with the requirements of CARB Method 100.

The sampling probe (heated to 250°F), constructed of 1/2 inch-diameter 316 stainless steel, is connected to a condenser with a six foot length of 3/8 inch Teflon line (heated to 250°F). A Nupro stainless steel filter (10 micron) is connected at the tip of the probe and maintained at stack temperature.

The condenser consists of a series of two stainless steel moisture knock-out bottles immersed in an ethylene glycol/dry ice bath. The system is designed to minimize contact between the sample and the condensate. Condensate is continuously removed from the knock-out bottles via a peristaltic pump. The condenser outlet temperature is monitored either manually at 10-minute intervals or on a strip chart recorder/DAS system. The sample exiting the condenser is then transported through a filter, housed in a stainless steel holder, followed by 3/8 inch O.D. Teflon tubing and a Teflon coated (or stainless steel/viton) diaphragm pump to the sample manifold. The sample manifold is constructed of stainless steel tubing and directs the sample through each of five rotameters to the NO_x monitor, O_2 monitor, CO monitor, CO_2 monitor and excess sample exhaust line, respectively. Sample flow through each channel is controlled by a back pressure regulator and by stainless steel needle valves on each rotameter. All components of the sampling system that contact the sample are composed of stainless steel, Teflon or glass.

The calibration system is comprised of two parts: the analyzer calibration and the system bias check. The calibration gases are, at a minimum, certified to ± 1% by the manufacturer. Where necessary to comply with the reference method requirements, EPA Protocol 1 gases are used. The cylinders are equipped with pressure regulators which supply the calibration gas to the analyzers at the same pressure and flow rate as the sample. The selection of zero, span or sample gas directed to each analyzer is accomplished by operation of the zero, calibration or sample selector knobs located on the main flow control panel.

For CARB Method 100 the following procedures are conducted before and after each series of test runs:

Leak Check:

The leak check is performed by plugging the end of the sampling probe, evacuating the system to at least 20 inches of Hg. The leak check is deemed satisfactory if the system holds 20 inches of Hg vacuum for five minutes with less than one inch Hg loss.

Alternately the leak check is accomplished by plugging the probe at the tip and operating the system in the "sample" position. The excess sample vent is closed and the flow observed on the low-flow (0-140 cc/min) sample delivery system. If no flow is observed the system is deemed leak tight.

Pre-Test Calibration:

The NO_x analyzer calibration is performed by introducing, at a minimum, zero gas and high range calibration gas (80-100% scale). The CO analyzer calibration is performed by introducing zero gas and high range (80-100%) calibration gas. The oxygen (O_2) and carbon dioxide (CO_2) analyzer calibration is performed by introducing zero gas and high range calibration gas (80-100% of scale).

Stratification Check:

A stack stratification check is performed (pre-test only) by traversing the stack (6 points per traverse). If the gas composition is homogenous, <10% variation between any two points in the gas stream throughout the cross sectional diameter of the stacks, single point gas sampling is performed at an average point. If stratification exceeds the 10% criteria, then the stack cross section is traversed during sampling.

System Bias Check:

The system bias check is accomplished by transporting the same gases used to zero and span the analyzers to the sample system as close as practical to the probe inlet. This is accomplished by opening a valve located on the probe, allowing the gas to flow to the probe and back through the moisture knockout and sample line to the analyzers. During this check the system is operated at the normal sampling rate with no adjustments. The system bias check is considered valid if the difference between the gas concentration exhibited by the measurement system which a known concentration gas is introduced at the sampling probe tip and when the sample gas is introduced directly to the analyzer, does not exceed ± 5% of the analyzer range.

In between each sampling run the following procedures are conducted:

Analyzer Calibration:

The analyzer calibration is performed by introducing the zero and high range gases to each analyzer prior to each test run and adjusting the instrument calibration as necessary.

Zero and Calibration Drift Check:

The zero and calibration drift check is performed by introducing zero and high range calibration gases to the instruments, with no adjustments (with the exception of flow to instruments) after each test run. The analyzer response must be within ± 3% of the actual calibration gas value.

A schematic of the sample system and specific information on the analytical equipment is provided in the following pages.

TABLE 1

CONTINUOUS EMISSIONS MONITORING LABORATORY - TRUCK

NO_X CHEMILUMINESCENT ANALYZER -- THERMO ELECTRON MODEL 10 A

Response Time (0-90%)	1.5 sec -- NO mode/1.7 sec -- NO_x mode
Zero Drift	Negligible after 1/2 hour warmup
Linearity	± 1% of full scale
Accuracy	Derived from the NO or NO_2 calibration gas, ± 1% of full scale
Operating Ranges (ppm)	2.5, 10, 25, 100, 250, 1000, 2500, 10000
Output	0-1 volt

O_2 ANALYZER, FUEL TYPE -- TELEDYNE MODEL 326RA

Response Time (0-90%)	60 seconds
Accuracy	± 1% of scale at constant temperature ± 1% of scale of ± 5% of reading, whichever is greater, over the operation temperature range.
Operating Ranges (%)	0-5, 0-25, 0-100
Output	0-1 volt

O_2 ANALYZER, PARAMAGNETIC -- SERVOMEX MODEL 1400B

Response Time (0-90%)	15 seconds
Accuracy	0.1% oxygen
Linearity	± 1% scale
Operating Ranges (%)	0-25, 0-100
Output	0-1 volt

CO GAS FILTER CORRELATION -- THERMO ELECTRON MODEL 48H

Response Time (0-95%)	1 minute
Zero Drift	± 0.2 ppm CO
Span Drift	Less than 1% full scale in 24 hours
Linearity	± 1% full scale, all ranges
Accuracy	± 0.1 ppm CO
Operating Ranges (ppm)	50, 100, 250, 500, 1000, 2500, 5000, 10,000, 25,000, 50,000
Output	0-1 volt

CO_2 INFRARED GAS ANALYZER -- HORIBA - MODEL PIR 2000

Response Time (0-90%)	5 seconds
Zero Drift	± 1% of full scale in 24 hours
Span Drift	± 1% of full scale in 24 hours
Linearity	± 2% of full scale
Resolution	Less than 1% of full scale
Operating Ranges (%)	0-5, 0-15, 0-25
Output	0-1 volt

RATFISCH FID TOTAL HYDROCARBON ANALYZER -- MODEL 55CA

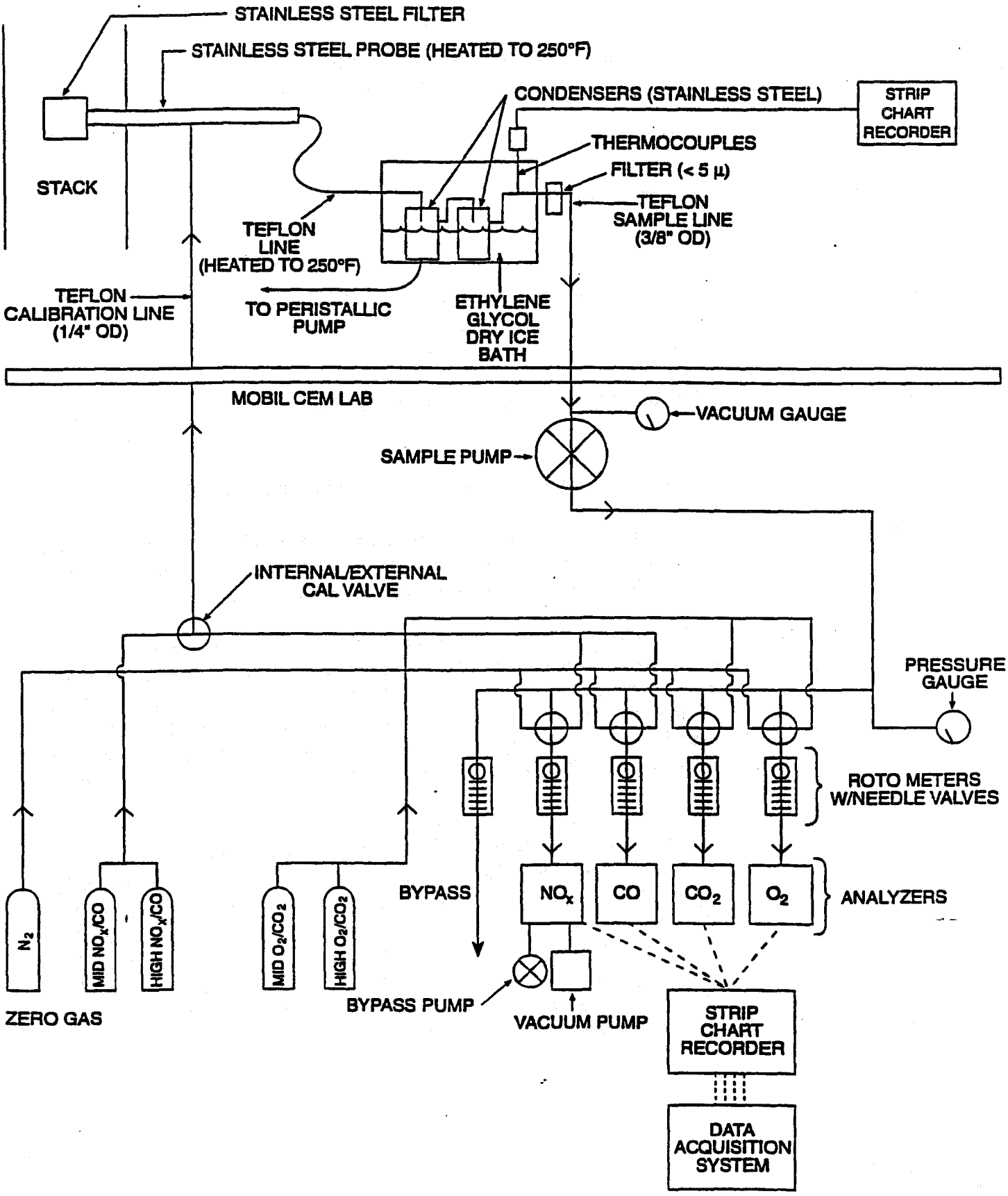
Response Time (0-90%)	5 seconds
Zero Drift	± 1% full scale in 24 hours
Span Drift	± 1% full scale in 24 hours
Linearity	± 1% full scale - constant
Accuracy	± 1% full scale at constant temp.
Operating Ranges (ppm)	10, 100, 1000, 10,000
Output	0 - 10 volts

LINSEIS MODEL L2045 FOUR PEN STRIP CHART RECORDER

Pen Speed	up to 120 cm/min
Measuring Response	0-20 volts
Linearity Error	0.25%
Accuracy	0.3%
Zero Suppression	Manual (from 1 to 10X full scale)

LINEAR 3 PEN CONTINUOUS -- MODEL 595 STRIP CHART

Pen Response	20 inches/second
Measuring Response	1 Mv through 5V
Zero Set	Electronically adjustable full scale with 1 full scale of zero suppression
Accuracy	Total limit of error ± 0.5%



CEM System Schematic

Method: **NO/NO_X by Continuous Analyzer**

Applicable Reference Methods: EPA 7E, EPA 20; CARB 100, BAAQMD ST-13A, SCAQMD 100.1

Principle: A sample is continuously withdrawn from the flue gas stream, conditioned and conveyed to the instrument for direct readout of NO or NO_X.

Analyzer: TECO Model 10AR

Measurement Principle: Chemiluminescence

Accuracy: 1% of full scale

Ranges: 0-2.5, 0-10, 0-25, 0-250, 0-1000, 0-2500, 0-10,000 ppm

Output: 0-10 V

Inferences: Compounds containing nitrogen (other than ammonia) may cause interference.

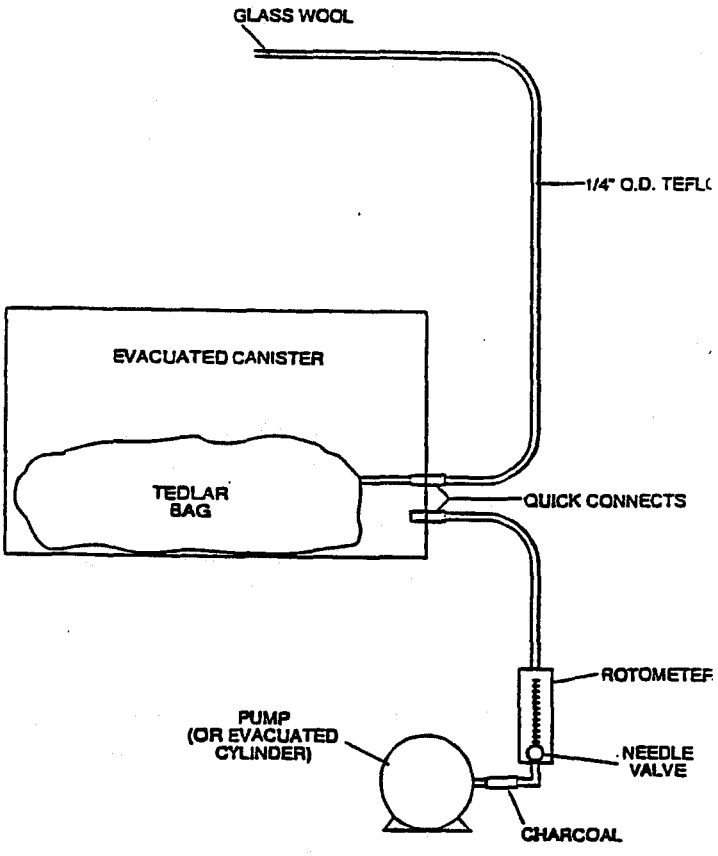
Response Time: 90%, 1.5 seconds (NO mode) and 1.7 seconds (NO_X mode)

Sampling Procedure: A representative flue gas sample is collected and conditioned using the CEM system described previously. If EPA Method 20 is used, that method's specific procedures for selecting sample points are used.

Analytical Procedure: The oxides of nitrogen monitoring instrument is a chemiluminescent nitric oxide analyzer. The operational basis of the instrument is the chemiluminescent reaction of NO and ozone (O_3) to form NO_2 in an excited state. Light emission results chemiluminescence is monitored through an optical filter by a high sensitivity photomultiplier tube, the output of which is electronically processed so it is linearly proportional to the NO concentration. The output of the instrument is in ppmV.

When NO_2 is expected to be present in the flue gas, a supercooled water dropout flask will be placed in the sample line to avoid loss of NO_2. Since NO_2 is highly soluble in water, "freezing out" the water will allow the NO_2 to reach the analyzers for analysis. The analyzer measures NO only. In the NO_X mode, the gas is passed through a moly converter which converts NO_2 to NO and a total NO_X measurement is obtained. NO_2 is determined as the difference between NO and NO_X. Use of a moly converter instead of a stainless steel converter eliminates NH_3 interference; NH_3 is converted to NO with a stainless converter, but not with a moly converter.

Method:	**Speciated VOC's by GC/MS Analyses**
Reference:	EPA TO-14
Principle:	A Tedlar bag is filled with flue gas at a constant rate. The bag contents are analyzed by GC/MS for the TO-14 list of speciated volatile organic compounds.
Sampling Procedure:	Sample is collected by evacuating the canister (see figure) at a constant rate over each test run using a rotameter/needle valve and a diaphragm pump. Prior to each sampling run, the evacuated canister (containing the Tedlar bag) is leak checked at 2" Hg vacuum. The sample train upstream of the Tedlar bag is then purged with stack gas. At the conclusion of each test run, each Tedlar bag sample is sealed and stored in a opaque container pending analysis.
Analytical Procedure:	Speciated volatile organic compound concentration is determined using GC/MS analyses.

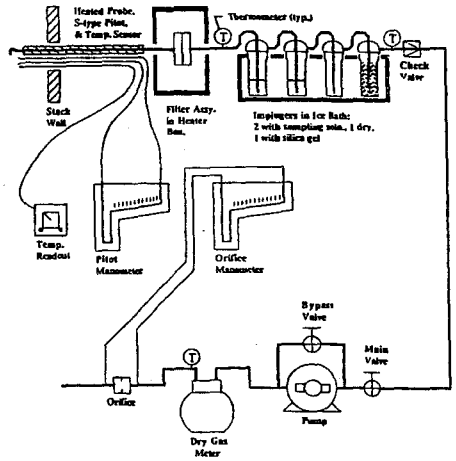


Method: **Determination of Gaseous Chloride and Fluoride in Emissions From Stationary Sources**

Reference: CARB Method 421

Principle: Gas with entrained aerosols is extracted isokinetically from the stack with a heated glass or quartz probe and passed through a heated filter to a series of chilled impingers where gaseous chlorides and fluorides are absorbed in a solution of sodium bicarbonate and sodium carbonate. This impinger solution is analyzed for chloride and fluoride by ion chromatography with conductivity detection. The chloride and fluoride peaks are identified by characteristic retention times and quantified by reference to external standards.

Sampling Procedure: The sampling train is shown in the figure. The sample is drawn isokinetically through a heated glass probe. The probe is connected to a heated filter which is then connected to an impinger train by Teflon tubing or glass. The train consists of one modified impinger (1st) and one standard greenburg-smith impinger (2nd) which contain 100 ml of impinger solution each; one empty modified impinger (3rd); and one modified impinger with approximately 200 grams of silica gel. The impinger solution consists of 1.7 mM sodium bicarbonate and 1.8 mM sodium carbonate. Sample is withdrawn isokinetically from each predetermined sample point (using Method 1) through the sample train which is followed by a vacuum line, pump, dry gas meter and calibrated orifice.



Sample Recovery: Following testing, moisture content is determined gravimetrically or volumetrically from initial and final impinger weights or volume. Samples are recovered as follows:

Container #1 - The contents of the first, second and third impingers are recovered into a 1 liter Nalgene bottle. Each impinger and connecting glassware is rinsed twice with impinger solution into Container #1.

Container #2 - Silica gel

Note: Particulate material or cleanup rinse from the probe, filter or filter holder is not added to Container No. 1; rather, any such material if not require for other analysis is discarded.

A field blank is collected and analyzed in the same manner as the samples.

Sample Analyses: Container #1 - The Container #1 sample is filtered and analyzed using ion chromatography for the chloride and fluoride ion.

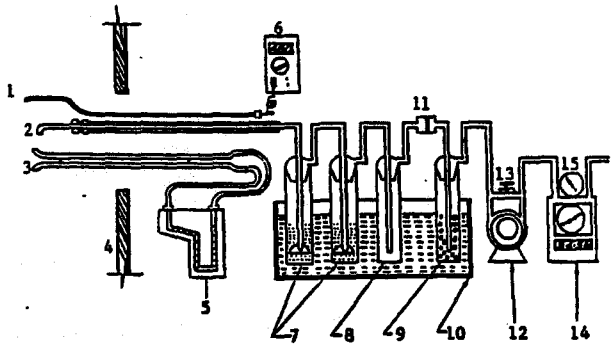
Container #2 - silica gel is weighed to the nearest 0.5 g.

Method: **Determination of Hexavalent Chromium and Total Chromium Emissions From Stationary Sources**

Reference: CARB Method 425

Principle: Stack gases are withdrawn isokinetically from the source through a wet impingement train. The chromium aerosol is collected in impingers containing 0.1M sodium hydroxide solution and a Teflon-coated glass fiber filter. Aliquots of the collected sample are taken for hexavalent chromium analysis and total chromium analysis.

Sampling Procedure: The sample train is shown in the figure below. The sample is withdrawn isokinetically through a glass nozzle and glass probe and a series of four impingers. The first two impingers contain 100 ml of 0.1M NaOH; third impinger is empty; and the fourth contains 200 to 300 grams of silica gel. Between the third and fourth impinger is a Teflon-coated glass fiber filter.



1. Temperature Sensor
2. Probe: Glass Lined Stainless Steel
3. Type "S" Pitot Tube
4. Stack Wall
5. Pitot Tube Inclined Manometer
6. Temperature Sensor Meter
7. Impinger
8. Empty Bubbler
9. Bubbler with Tared Silica Gel
10. Ice Bath
11. Back-Up Filter
12. Sealed Pump
13. By-Pass Valve
14. Dry Gas Meter
15. Temperature Gauge

Sample Recovery: The nozzle and probe are rinsed three times with 0.1M NaOH into Container #1. The impingers and all connecting glassware are rinsed three times into Container #2. The Teflon-coated glass fiber filter is added to Container #2.

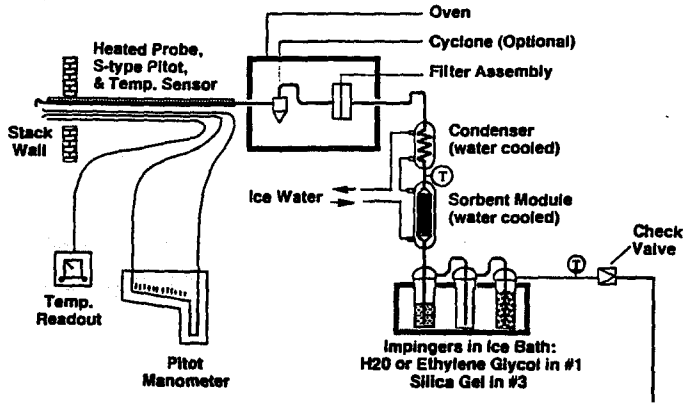
Sample Analyses: Each sample is split quantitatively. The hexavalent chromium analysis is performed using ion chromatography (IC) on each sample fraction. The split sample fractions are prepared for total chromium analysis by an acid digestion procedure. The total chromium analysis is performed with an atomic absorption spectrophotometer (AAS) equipped with a graphite furnace.

Method: **Determination of Polycyclic Aromatic Hydrocarbon (PAH) Emissions From Stationary Sources**

Reference: CARB Method 429 (DRAFT Ammendment March 1992)

Principle: Particulate and gaseous phase polycyclic aromatic hydrocarbons (PAH) are extracted isokinetically from the stack and collected on XAD-2 resin, in impingers, or in upstream sampling components (filter, probe and nozzle). The subsequent sample portions are extracted, combined and analyzed using gas chromatography coupled with either low or high resolution mass spectrometry (HRGC/HRMS) for individual PAH species.

Sampling Procedure: The sampling train is shown in the figure below. Sample is drawn isokinetically through a heated glass/quartz probe. The probe is connected to a heated filter which is then connected by Teflon tubing to the condenser, XAD-2 resin and into the impinger train. The train consists of three impingers; one modified short stem impinger with 100 ml of deionized water; one modified empty impinger; and one modified impinger with silica gel.



Sampling Recovery Procedures: The front half, back half and impinger train components are rinsed three times with acetone, hexane and dichloromethane into their respective containers. The filter is placed in an amber glass container (stored in dry ice). Prior to solvent rinsing the impinger contents are determined gravimetrically and placed in a separate amber glass sample container. The XAD sorbent module is capped and wrapped with aluminum foil and stored in a cool (4°C) clean container away from sunlight.

QA/QC samples include (1) a blank train which is leak checked and recovered as a sample and (2) a field blank of all sample solutions/sorbents is submitted to the lab in the event of blank train contamination.

Analytical Procedure: The required analytical method is isotope dilution mass spectrometry combined with high resolution gas chromatography. This entails the addition of internal standards to all samples in known quantities, matrix-specific extraction of the sample with appropriate organic solvents, preliminary fractionation and cleanup of extracts and analysis of the processed extract for PAH using high-resolution capillary column gas chromatography coupled with either low resolution mass spectrometry (HRGC/LRMS), or high resolution mass spectrometry (HRGC/HRMS).

Method: **Determination of Formaldehyde and Acetaldehyde Emissions From Stationary Sources**

Reference: CARB Method 430

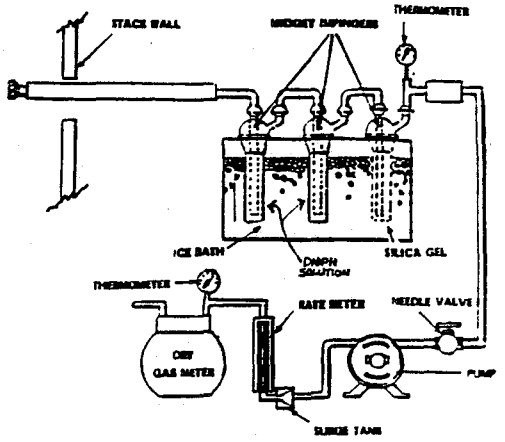
Principle: A sample of the source effluent is withdrawn from the stack through a series of two midget impingers containing 0.05 percent 2,4-dinitrophenol-hydrazine (DNPH). Aldehydes react with the DNPH solution by nucleophilic addition on the carbonyl followed by 1,2-elimination of water and the formulation of 2,4-dinitrophenylhydrazone.

Sampling Procedure: Prior to field sampling, four reagent blanks of the impinger solution are analyzed to verify anticipated reagent blank levels. In this method, 10 mls of the DNPH solution is placed into each of two midget impingers. Note: The DNPH solution must be used within 48 hours from makeup. The third impinger contains silica gel. The impingers are then placed in an ice bath. A leak check is performed by blocking the inlet to the impinger train. Any indication of a leak is considered unacceptable.

Initial dry gas meter readings and barometric pressure are recorded for each run. A constant flow rate of approximately 0.5 liter/minute is maintained during the sample run. Readings (dry gas meter, inlet/outlet temperature, sample flow rate and total cubic feet of sample) are recorded every ten minutes. Ice is added during the run to keep the temperature of the gas leaving the impingers at or below 68 degrees fahrenheit. At the conclusion of each run, the pump is turned off and the final dry gas meter readings are recorded. A final leak check is not required.

The contents of the midget impingers are recovered into their original containers. Two mls of the impinger solution is used to rinse the sample line into the first impinger. The sample line is then rinsed with 1 ml of reagent grade water. The sample containers are then sealed, labeled, weighed and transported back to the lab for analysis. One matrix spike is also conducted at this time. In addition, three field blanks are carried through all the required steps for sample preparation and analysis. A field blank consists of an impinger and sample line which is similar to a sampling impinger.

Analytical Procedure: The contents of each sample container are analyzed for aldehydes using high performance liquid chromatography (HPLC). All reported emission values are field blank corrected.

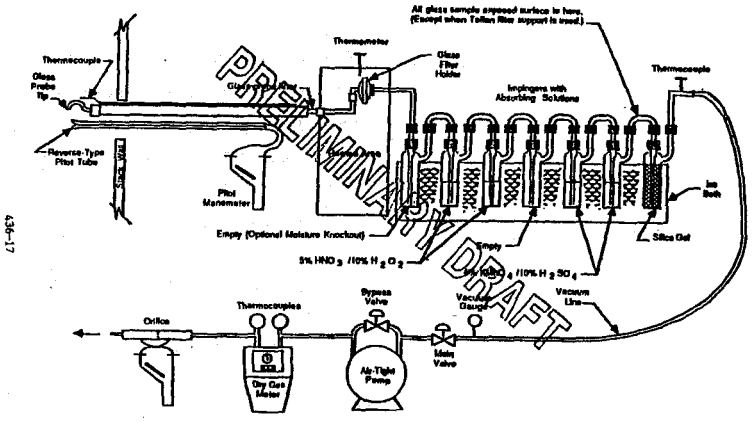


Method: **Determination of Multiple Metals Emissions From Stationary Sources**

Reference: CARB Draft Method 436

Principle: Stack sample is withdrawn isokinetically from the source, with particulate emissions collected in the probe and on a heated filter and gaseous emissions collected in a series of chilled impingers containing an aqueous solution of dilute nitric acid combined with dilute hydrogen peroxide in two impingers, and acidic potassium permanganate solution in two impingers. The subsequent sample fractions are digested in acid and analyzed for mercury by CVAAS and metals species using AA or ICP.

Sampling Procedure: The sampling train is shown in the figure. The sample is drawn isokinetically through a heated glass nozzle/probe. The probe is connected to a heated quartz filter which is then connected to an impinger train by Teflon tubing or glass. The train consists of one modified impinger (1st) and one standard Greenburg-Smith impinger (2nd) which contain 100 ml of 5% HNO_3/10% H_2O_2 solution each; one empty modified impinger (3rd); and two modified impingers (4th and 5th) with approximately 100 ml of 4% $KMnO_4$/10% H_2SO_4, and impinger #6 with approximately 200 g of silica gel. Sample is withdrawn isokinetically from each predetermined sample point (using Method 1) through the sample train which is followed by a vacuum line, pump, dry gas meter and calibrated orifice.



Sample Recovery

Container #1 - The filter is covered in its original petri dish.

Container #2 - The front half of the sample train is rinsed with 100 ml with 0.1N HNO_3 into a Nalgene container.

Container #3 - The contents of impingers 1 and 2 and the filter back half are rinsed two times with 0.1N HNO_3 into a precleaned glass sample bottle.

Container #4 - Impinger 3 is rinsed with 0.1N HNO_3 into a precleaned sample bottle.

Container #5 - Impingers 5 and 6 are rinsed with acidified potassium permangenate into a precleaned glass sample bottle.

Container #6 - If visible particulate is present, impingers 5 and 6 are rinsed with 25 ml of 8N HCl followed by 200 ml of DI H_2O in a glass sample container.

A blank train and reagent blank are collected and analyzed in the same manner as the samples.

Sample Analyses: An acid digestion is performed on sample containers 1, 2 and 3. An aliquot (10%) is removed for mercury analyses. The remaining samples are analyzed for individual metal species using ICAP or AA. Containers #4, 5, 6 and the container 1, 2 and 3 aliquots are analyzed for mercury using CVAAS.

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03-060

3/30/93

This method measures selected reduced sulfur species, including but not limited to hydrogen sulfide, carbonyl sulfide, methyl mercaptan, ethyl mercaptan, dimethyl sulfide, carbon disulfide, isopropyl mercaptan, n-propyl mercaptan, and dimethyl disulfide in gaseous sample matrices using gas chromatographic separation and a mass spectrometric and electrolytic conductivity detector (ELCD), where the ELCD measures hydrogen sulfide only. A non-polar methyl silicon capillary gas chromatographic column is used for component separation and selected ion monitoring is used for component quantification. Component quantification is obtained using a multi-component external standard prepared by Scott Specialty Gases. The lower detection limit varies by component but is at least 0.1 ppmv ethyl mercaptan (component of lowest sensitivity) for a 0.31 ml sample volume injection. The upper quantitation limit has not been determined but is at least beyond 80 ppmv dimethyl disulfide, for which response remained linear from 0.1 ppmv to 80 ppmv.

Hydrogen sulfide is measured using an electrolytic conductivity detector operated in the oxidative sulfur mode. A Chromosil 310 column, operated isothermally at 45°C. is used to separate H_2S from other sulfur components. A fixed volume loop injection is used in the analysis for H_2S.

Lower Detection Limits (LDL's):

Using a 1 ml injection volume for H_2S by electrolytic conductivity detector and 0.40 ml injection volume for GC/MS measured sulfur compounds, the following LDL's are obtained:

	(ppmv)
Hydrogen sulfide	0.5
Carbonyl sulfide	0.03
Methyl mercaptan	0.03
Ethyl mercaptan	0.04
Dimethyl sulfide	0.02
Carbon disulfide	0.02
i-propyl mercaptan	0.03
n-propyl mercaptan	0.03
Dimethyl disulfide	0.02

Equipment:

A Hewlett-Packard 5890 series II gas chromatograph (GC), Hewlett-Packard 5971A Mass Selective Detector, 486 MS/DOS computer and HP operating software are used for all sulfur species except H_2S. The GC is fitted with a heated 6-port Valco 1/16" line, sample injection valve. All gas transfer lines to the sample loop are fused silica lined Restek tubing. The fixed volume (0.40 ml) sample loop is Teflon. The transfer line from the valve to the GC column is cleaned and treated blank 0.53 mm OD fused silica line with polyimide coating.

H_2S is measured using a Varian 1400 GC with the Hall oxidative quartz tube furnace and electrolytic cell attached. Nitrogen is used as carrier and oxygen is used as the combustion gas.

Multi-component gaseous standards are prepared by Scott Specialty Gas and are contained in two separate aluminum cylinders and a Scotty IV canister as follows:

Cylinder A (CAL12250)		Cylinder B (CAL3563)	
Carbonyl sulfide	15.2 ppmv	Hydrogen sulfide	12.3 ppmv
Ethyl mercaptan	13.4 ppmv	Methyl mercaptan	22.6 ppmv
Carbon disulfide	16.1 ppmv	Dimethyl sulfide	20.3 ppmv
		Dimethyl disulfide	

Scotty IV (mix 252)

Hydrogen Sulfide 93.8 ppmv

Gas tight clean glass volumetric syringes of 10, 20, & 50 ml capacity, with smooth glass barrel (not sintered glass) are used to make volumetric dilutions of sample or standard.

GC/MS SIM parameters:

	Dwell per ion	start time	Ions
Group 1:	75 msec.	8.0 min.	60
Group 2:	75 msec.	10.0 min.	47,48,64
Group 3:	75 msec.	14.5 min.	47,62,76,78,43,61
Group 4:	75 msec.	19.5 min.	79,94,122,142,156,-128

Components monitored:

Group 1: carbonyl sulfide
Group 2: methyl mercaptan
Group 3: ethyl mercaptan, dimethyl disulfide, carbon disulfide, isopropyl mercaptan, n-propyl mercaptan
Group 4: dimethyl sulfide

Component	Quantitation ion	Confirmation ion
carbonyl sulfide	60	none
methyl mercaptan	47	48
ethyl mercaptan	62	47
dimethyl sulfide	62	47
carbon disulfide	76	78
iso-propyl mercaptan	76	43,47,61
n-propyl mercaptan	76	43,47,61
dimethyl disulfide	94	79

Sulfur dioxide is analyzed by monitoring mass 64 which is included in Group 2 ions.

Calibration:

Gaseous standards can be analyzed prior to or after a set of samples. Response factors are determined from a single point standard calibration. Multi-point calibrations are performed to verify linearity. Consistency of standard response with continuing calibrations is observed to indicate performance of multi-point calibration.

Samples containing components at less than the stated LDL can be analyzed by cryogenically focusing a measured volume of gaseous sample onto a glass bead filled Teflon loop immersed in liquid argon. The sample is thermally transferred upon injection by immersing the sample loop in near boiling temperature water. The LDL obtained by this technique is calculated as:

$$LDL_{cryo} = (\text{cryo volume}/0.40) * LDL_{0.40}$$

Acceptable volumes for cryogenic concentration range from 3 to 100 ml. and are determined based on amounts of other components in the sample such as water, carbon dioxide or hydrocarbons.

Procedure:

A volumetric sample of landfill or source collected gas is transferred from a Tedlar® bag to the 6-port valve injection line using a glass syringe of approximately 10 ml. A Teflon loop of 0.40 ml volume is used to inject the sample. When sample concentrations exceed that of the standard, appropriate volumetric sample dilutions are made using the glass syringes with dry nitrogen diluent. Immediately after sample injection, the GC/MS is started. Standards are analyzed in the same manner as samples. Appropriate component peaks are monitored and integrated after sample analysis data set has been obtained.

Hydrogen sulfide is measured using the electrolytic conductivity detector by a separate direct fixed loop valve injection using heated Teflon loop, transfer lines, and Teflon Chromosil 310 GC column.

A response factor for a standard component is calculated as:

rf = std. amt. / std. area

Sample concentration is calculated using the response factor:

conc. = rf x sample area

At least 10% of samples in a sample set, or minimum of one sample per set are analyzed twice to determine precision. A separate report showing repeat analyses results is included with an analytical report of sulfur component concentrations per each sample set. Repeat analyses must agree within +/- 10% except for component concentrations less than 1 ppmv. A nitrogen blank is analyzed between standards and samples to verify that there is no component carry-over. Samples are analyzed as soon after they are collected as possible, preferably same day and within four hours of collection. Data is being gathered to determine stability of sulfur compounds in Tedlar® bag containers in an effort to extend sample holding time. Samples are usually analyzed before standards to prevent carry-over, since most sulfur components measured in landfill gas samples are lower in concentration than those in the standards.

GC/MS Analysis Conditions:

GC conditions: a 30 M x 0.2 mm, 0.50 um film methyl silicon PONA column from Hewlett-Packard is temperature programmed as follows:

-65 degrees C, hold min.
15 degrees C min. to 220 degrees C, hold 5 min.

Valve oven Temp. 150 degrees C
GC/MS transfer line 180 degrees C
Carrier gas is helium, pressure regulated at 21 psi.

MS Conditions:

MS calibration is performed periodically prior to performing analyses using PFTBA (perfluoro-tributylamine) as supplied by Hewlett-Packard and as controlled by HP software under the mid-range auto tune program.
Solvent delay = 8 min.

Hall Detector/GC Analysis Conditions:

6' x 1/8" Teflon, Chromosil 310 analytical column
45 degrees C, isothermal
Valve oven & transfer line Temp. 105 degrees C.
Carrier gas is nitrogen, flow rate 18 cc/min.
Oxygen oxidation gas, flow rate 18 cc/min.
Quartz tube oxidation oven Temp. 650 degrees C.

Designation: D 3588 – 98 (Reapproved 2003)

Standard Practice for Calculating Heat Value, Compressibility Factor, and Relative Density of Gaseous Fuels[1]

This standard is issued under the fixed designation D 3588; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers procedures for calculating heating value, relative density, and compressibility factor at base conditions (14.696 psia and 60°F (15.6°C)) for natural gas mixtures from compositional analysis.[2] It applies to all common types of utility gaseous fuels, for example, dry natural gas, reformed gas, oil gas (both high and low Btu), propane-air, carbureted water gas, coke oven gas, and retort coal gas, for which suitable methods of analysis as described in Section 6 are available. Calculation procedures for other base conditions are given.

1.2 The values stated in inch-pound units are to be regarded as the standard. The SI units given in parentheses are for information only.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*

D 1717 Method for Analysis of Commercial Butane-Butene Mixtures and Isobutylene by Gas Chromatography[3]

D 1945 Test Method for Analysis of Natural Gas by Gas Chromatography[4]

D 1946 Practice for Analysis of Reformed Gas by Gas Chromatography[4]

D 2163 Test Method for Analysis of Liquefied Petroleum (LP) Gases and Propane Concentrates by Gas Chromatography[5]

D 2650 Test Method for Chemical Composition of Gases by Mass Spectrometry[5]

2.2 *GPA Standards:*

GPA 2145 Physical Constants for the Paraffin Hydrocarbons and Other Components in Natural Gas[6]

GPA Standard 2166 Methods of Obtaining Natural Gas Samples for Analysis by Gas Chromatography[6]

GPA 2172 Calculation of Gross Heating Value, Relative Density, and Compressibility Factor for Natural Gas Mixtures from Compositional Analysis[6,7]

GPA Standard 2261 Method of Analysis for Natural Gas and Similar Gaseous Mixtures by Gas Chromatography[6]

GPA Technical Publication TP-17 Table of Physical Properties of Hydrocarbons for Extended Analysis of Natural Gases[6]

GPSA Data Book, Fig. 23-2, Physical Constants[6]

2.3 *TRC Document:*

TRC Thermodynamic Tables—Hydrocarbons[8]

2.4 *ANSI Standard:*

ANSI Z 132.1-1969: Base Conditions of Pressure and Temperature for the Volumetric Measurement of Natural Gas[9,10]

3. Terminology

3.1 *Definitions:*

3.1.1 *British thermal unit*—the defined International Tables British thermal unit (Btu).

3.1.1.1 *Discussion*—The defining relationships are:

$$1\ \text{Btu}\cdot\text{lb}^{-1} = 2.326\ \text{J}\cdot\text{g}^{-1}\ \text{(exact)}$$

$$1\ \text{lb} = 453.592\ 37\ \text{g (exact)}$$

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[1] This practice is under the jurisdiction of ASTM Committee D03 on Gaseous Fuels and is the direct responsibility of Subcommittee D03.03 on Determination of Heating Value and Relative Density of Gaseous Fuels.

Current edition approved May 10, 2003. Published May 2003. Originally approved in 1998. Last previous edition approved in 1998 as D 3588 – 98.

[2] A more rigorous calculation of *Z(TP)* at both base conditions and higher pressures can be made using the calculation procedures in "Compressibility and Super Compressibility for Natural Gas and Other Hydrocarbon Gases," American Gas Association Transmission Measurement Committee Report 8, AGA Cat. No. XQ1285, 1985, AGA, 1515 Wilson Blvd., Arlington, VA 22209.

[3] Discontinued. See 1981 *Annual Book of ASTM Standards*, Vol 05.01.

[4] *Annual Book of ASTM Standards*, Vol 05.06.

[5] *Annual Book of ASTM Standards*, Vol 05.01.

[6] Available from Gas Processors Association, 6526 E. 60th, Tulsa, OK 74145.

[7] The sole source of supply of the program in either BASIC or FORTRAN suitable for running on computers known to the committee at this time is the Gas Processors Association. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee [1], which you may attend.

[8] Available from Thermodynamics Research Center, The Texas A&M University, College Station, TX 77843-3111.

[9] Available from the American National Standards Institute, 25 W. 43rd St., 4th Floor, New York, NY 10036.

[10] Supporting data have been filed at ASTM International Headquarters and may be obtained by requesting Research Report RR: D03-1007.

By these relationships, 1 Btu = 1 055.055 852 62 J (exact). For most purposes, the value (rounded) 1 Btu = 1055.056 J is adequate.

3.1.2 *compressibility factor (z)*—the ratio of the actual volume of a given mass of gas at a specified temperature and pressure to its volume calculated from the ideal gas law under the same conditions.

3.1.3 *gross heating value*—the amount of energy transferred as heat from the complete, ideal combustion of the gas with air, at standard temperature, in which all the water formed by the reaction condenses to liquid. The values for the pure gases appear in GPA Standard 2145, which is revised annually. If the gross heating value has a volumetric rather than a mass or molar basis, a base pressure must also be specified.

3.1.4 *net heating value*—the amount of energy transferred as heat from the total, ideal combustion of the gas at standard temperature in which all the water formed by the reaction remains in the vapor state. Condensation of any "spectator" water does not contribute to the net heating value. If the net heating value has a volumetric rather than a mass or molar basis, a base pressure must also be specified.

3.1.5 *relative density*—the ratio of the density of the gaseous fuel, under observed conditions of temperature and pressure, to the density of dry air (of normal carbon dioxide content) at the same temperature and pressure.

3.1.6 *standard cubic foot of gas*—the amount of gas that occupies 1 ft^3 (0.028 m^3) at a temperature of 60°F (15.6°C) under a given base pressure and either saturated with water vapor (wet) or free of water vapor (dry) as specified (see ANSI Z 132.1). In this practice, calculations have been made at 14.696 psia and 60°F (15.6°C), because the yearly update of GPA 2145 by the Thermodynamics Research Center, on which these calculations are based, are given for this base pressure. Conversions to other base conditions should be made at the end of the calculation to reduce roundoff errors.

3.1.7 *standard temperature (USA)*—60°F (15.6°C).

3.2 *Symbols*:

3.2.1 *Nomenclature*:

3.2.1.1 *B*—second virial coefficient for gas mixture

3.2.1.2 $\sqrt{\beta_{ij}}$ —summation factor for calculating real gas correction (alternate method)

3.2.1.3 (cor)—corrected for water content

3.2.1.4 (dry)—value on water-free basis

3.2.1.5 *d*—density for gas relative to the density of air.

3.2.1.6 d^{id}—ideal relative density or relative molar mass, that is, molar mass of gas relative to molar mass of air

3.2.1.7 G^{id}—molar mass ratio

3.2.1.8 H_m^{id} —gross heating value per unit mass

3.2.1.9 H_v^{id} —gross heating value per unit volume

3.2.1.10 H_n^{id} —gross heating value per unit mole

3.2.1.11 h_m^{id} —net heating value per unit mass

3.2.1.12 h_v^{id} —net heating value per unit volume

3.2.1.13 h_n^{id} —net heating value per unit mole

3.2.1.14 a, b, c—in Eq 1, integers required to balance the equation: C, carbon; H, hydrogen; S, sulfur; O, oxygen

3.2.1.15 *(id)*—ideal gas state

3.2.1.16 *(l)*—liquid phase

3.2.1.17 *M*—molar mass

3.2.1.18 *m*—mass flow rate

3.2.1.19 *n*—number of components

3.2.1.20 *P*—pressure in absolute units (psia)

3.2.1.21 Q^{id}—ideal energy per unit time released as heat upon combustion

3.2.1.22 *R*—gas constant, 10.7316 psia.ft^3/(lb mol•R) in this practice (based upon R = 8.314 48 J/(mol•K))

3.2.1.23 (sat)—denotes saturation value

3.2.1.24 *T*—absolute temperature, °*R* = °F + 459.67 or *K* = °C + 273.15

3.2.1.25 *(T, P)*—value dependent upon temperature and pressure

3.2.1.26 *V*—gas volumetric flow rate

3.2.1.27 *x*—mole fraction

3.2.1.28 *Z*—gas compressibility factor repeatability of property

3.2.1.29 δ—repeatability of property

3.2.1.30 ρ—density in mass per unit volume

3.2.1.31 $\sum_{j=1}^{n}$ —property summed for Components 1 through *n*, where *n* represents the total number of components in the mixture

3.2.2 *Superscripts*:

3.2.2.1 *id*—ideal gas value

3.2.2.2 *l*—liquid

3.2.2.3 σ—value at saturation (vapor pressure)

3.2.2.4 ′—reproducibility

3.2.3 *Subscripts*:

3.2.3.1 *a*—value for air

3.2.3.2 *a*—relative number of atoms of carbon in Eq 1

3.2.3.3 *b*—relative number of atoms of hydrogen in Eq 1

3.2.3.4 *c*—relative number of atoms of sulfur in Eq 1

3.2.3.5 *j*—property for component *j*

3.2.3.6 *ii*—non-ideal gas property for component *i*

3.2.3.7 *ij*—non-ideal gas property for mixture of *i* and *j*

3.2.3.8 *jj*—non-ideal gas property for component *j*

3.2.3.9 *w*—value for water

3.2.3.10 1—property for Component 1

3.2.3.11 2—property for Component 2

4. Summary of Practice

4.1 The ideal gas heating value and ideal gas relative density at base conditions (14.696 psia and 60°F (5.6°C)) are calculated from the molar composition and the respective ideal gas values for the components; these values are then adjusted by means of a calculated compressibility factor.

5. Significance and Use

5.1 The heating value is a measure of the suitability of a pure gas or a gas mixture for use as a fuel; it indicates the amount of energy that can be obtained as heat by burning a unit of gas. For use as heating agents, the relative merits of gases from different sources and having different compositions can be compared readily on the basis of their heating values. Therefore, the heating value is used as a parameter for determining the price of gas in custody transfer. It is also an essential factor in calculating the efficiencies of energy conversion devices such as gas-fired turbines. The heating values of a gas depend not only upon the temperature and pressure, but also upon the degree of saturation with water vapor.

However, some calorimetric methods for measuring heating values are based upon the gas being saturated with water at the specified conditions.

5.2 The relative density (specific gravity) of a gas quantifies the density of the gas as compared with that of air under the same conditions.

6. Methods of Analysis

6.1 Determine the molar composition of the gas in accordance with any ASTM or GPA method that yields the complete composition, exclusive of water, but including all other components present in amounts of 0.1 % or more, in terms of components or groups of components listed in Table 1. At least 98 % of the sample must be reported as individual components (that is, not more than a total of 2 % reported as groups of components such as butanes, pentanes, hexanes, butenes, and so forth). Any group used must be one of those listed in Table 1 for which average values appear. The following test methods are applicable to this practice when appropriate for the sample under test: Test Methods D 1717, D 1945, D 2163, and D 2650.

7. Calculation—Ideal Gas Values; Ideal Heating Value

7.1 An ideal combustion reaction in general terms for fuel and air in the ideal gas state is:

$$C_aH_bS_c(id) + (a + b/4 + c)O_2(id) \rightarrow aCO_2(id) + (b/2)H_2O\ (id \text{ or } l) + cSO_2(id) \quad (1)$$

where *id* denotes the ideal gas state and *l* denotes liquid phase. The ideal net heating value results when all the water remains in the ideal gas state. The ideal gross heating value results when all the water formed by the reaction condenses to liquid. For water, the reduction from $H_2O(id)$ to $H_2O(l)$ is H_w^{id}

TABLE 1 Properties of Natural Gas Components at 60°F and 14.696 psia[A]

Compound	Formula	Molar Mass, lb·lbmol^{-1} [B]	Molar Mass, Ratio, G^{id} [C]	Ideal Gross Heating Value [D]			Ideal Net Heating Value			Summation Factor, b_i, psia^{-1}
				H_n^{id}, kJ · mol^{-1}	H_m^{id}, Btu · lbm^{-1}	H_v^{id}, Btu · ft^{-3}	h_n^{id}, kJ · mol^{-1}	h_m^{id}, Btu · lbm^{-1}	h_v^{id}, Btu · ft^{-3}	
Hydrogen	H_2	2.0159	0.069 60	286.20	6 1022	324.2	241.79	51 566	273.93	0
Helium	He	4.0026	0.138 20	0	0	0	0	0	0	0
Water	H_2O	18.0153	0.622 02	44.409	1059.8	50.312	0	0	0	0.0623
Carbon monoxide	CO	28.010	0.967 11	282.9	4342	320.5	282.9	4 342	320.5	0.0053
Nitrogen	N_2	28.0134	0.967 23	0	0	0	0	0	0	0.0044
Oxygen	O_2	31.9988	1.104 8	0	0	0	0	0	0	0.0073
Hydrogen sulfide	H_2S	34.08	1.176 7	562.4	7 094.2	637.1	517.99	6 534	586.8	0.0253
Argon	Ar	39.948	1.379 3	0	0	0	0	0	0	0.0071
Carbon dioxide	CO_2	44.010	1.519 6	0	0	0	0	0	0	0.0197
Air	[E]	28.9625	1.000 0	0	0	0	0	0	0	0.0050
Methane	CH_4	16.043	0.553 92	891.63	23 891	1010.0	802.71	21 511	909.4	0.0116
Ethane	C_2H_6	30.070	1.038 2	1562.06	22 333	1769.7	1428.83	20 429	1618.7	0.0239
Propane	C_3H_8	44.097	1.522 6	2220.99	21 653	2516.1	2043.3	19 922	2314.9	0.0344
i-Butane	C_4H_{10}	58.123	2.006 8	2870.45	21 232	3251.9	2648.4	19 590	3000.4	0.0458
n-Butane	C_4H_{10}	58.123	2.006 8	2879.63	21 300	3262.3	2657.6	19 658	3010.8	0.0478
i-Pentane	C_5H_{12}	72.150	2.491 2	3531.5	21 043	4000.9	3265.0	19 456	3699.0	0.0581
n-Pentane	C_5H_{12}	72.150	2.491 2	3535.8	21 085	4008.9	3269.3	19 481	3703.9	0.0631
n-Hexane	C_6H_{14}	86.177	2.975 5	4198.1	20 943	4755.9	3887.2	19 393	4403.9	0.0802
n-Heptane	C_7H_{16}	100.204	3.459 8	4857.2	20 839	5502.5	4501.9	19 315	5100.3	0.0944
n-Octane	C_8H_{18}	114.231	3.944 1	5515.9	20 759	6248.9	5116.2	19 256	5796.2	0.1137
n-Nonane	C_9H_{20}	128.258	4.428 4	6175.9	20 701	6996.5	5731.8	19 213	6493.6	0.1331
n-Decane	$C_{10}H_{22}$	142.285	4.912 7	6834.9	20 651	7742.9	6346.4	19 176	7189.9	0.1538
Neopentane	C_5H_{12}	72.015	2.491 2	3517.27	20 958	3985	3250.8	19 371	3683	
2-Methylpentane	C_6H_{14}	86.177	2.975 5	4190.43	20 905	4747	3879.6	19 355	4395	0.080
3-Methylpentane	C_6H_{14}	86.177	2.975 5	4193.03	20 918	4750	3882.2	19 367	4398	0.080
2,2-Dimethylbutane	C_6H_{14}	86.177	2.975 5	4180.63	20 856	4736	3869.8	19 306	4384	0.080
2,3-Dimethylbutane	C_6H_{14}	86.177	2.975 5	4188.41	20 895	4745	3877.5	19 344	4393	0.080
Cyclopropane	C_3H_6	42.081	1.452 9	2092.78	21 381	2371	1959.6	20 020	2220	. . .
Cyclobutane	C_4H_8	56.108	1.937 3	2747.08	21 049	2747	2569.4	19 688	2911	. . .
Cyclopentane	C_5H_{10}	70.134	2.421 5	3322.04	20 364	3764	3100.0	19 003	3512	. . .
Cyclohexane	C_6H_{12}	84.161	2.905 9	3955.84	20 208	4482	3689.4	18 847	4180	. . .
Ethyne (acetylene)	C_2H_2	26.038	0.899 0	1301.32	21 487	1474	1256.9	20 753	1424	0.021
Ethene (ethylene)	C_2H_4	28.054	0.968 6	1412.06	21 640	1600	1323.2	20 278	1499	0.020
Propene (propylene)	C_3H_6	42.081	1.452 9	2059.35	21 039	2333	1926.1	19 678	2182	0.033
Benzene	C_6H_6	78.114	2.697 1	3202.74	18 177	3742	3169.5	17 444	3591	0.069
Butanes (ave)	C_4H_{10}	58.123	2.006 8	2875	21 266	3257	2653	19 623	3006	0.046
Pentanes (ave)	C_5H_{12}	72.150	2.491 2	3534	21 056	4003	3267	19 469	3702	0.062
Hexanes (ave)	C_6H_{14}	86.177	2.975 5	4190	20 904	4747	3879	19 353	4395	0.080
Butenes (ave)	C_4H_8	56.108	1.937 2	2740	20 811	3077	2538	19 450	2876	0.046
Pentenes (ave)	C_5H_{10}	70.134	2.421 5	3375	20 691	3824	3153	19 328	3572	0.060

[A] This table is consistent with GPA 2145-89, but it is necessary to use the values from the most recent edition of GPA 2145 for custody transfer calculations.
[B] 1984 Atomic Weights: C = 12.011, H = 1.00794, O = 15.9994, N = 14.0067, S = 32.06.
[C] Molar mass ratio is the ratio of the molar mass of the gas to that of air.
[D] Based upon ideal reaction; the entry for water represents the total enthalpy of vaporization.
[E] Composition from: F. E. Jones, *J. Res. Nat. Bur. Stand.*, Vol. 83, 419, 1978.

$-H_w^l$, the ideal enthalpy of vaporization, which is somewhat larger than the enthalpy of vaporization $H_w^v - H_w^l$.

7.1.1 Because the gross heating value results from an ideal combustion reaction, ideal gas relationships apply. The ideal gross heating value per unit mass for a mixture, H_m^{id}, is:

$$H_m^{id} = \sum_{j=1}^{n} x_j M_j H_{m,j}^{id} / \sum_{j=1}^{n} x_j M_j \quad (2)$$

where: x_j is the mole fraction of Component *j*, M_j *is the molar mass of Component j from Table 1, and n is the total number of components.*

7.1.2 $H_{m,j}^{id}$ is the pure component, ideal gross heating value per unit mass for Component *j* (at 60°F (15.6°C) in Table 1). Values of H_m^{id} are independent of pressure, but they vary with temperature.

7.2 *Ideal Gas Density*

7.2.1 The ideal gas density, ρ^{id}, is:

$$\rho^{id} = (P/RT) \sum_{j=1}^{n} x_j M_j = MP/RT \quad (3)$$

where: M is the molar mass of the mixture,

$$M = \sum_{j=1}^{n} x_j M_j \quad (4)$$

P is the base pressure in absolute units (psia), R is the gas constant, 10.7316 psia.ft^3/(lb mol•°R) in this practice, based upon R = 8.314 48 J/(mol•K), T is the base temperature in absolute units (°R = °F + 459.67). Values of the ideal gas density at 60°F (15.6°C) and 14.696 psia are in GPA Standard 2145.

7.3 *Ideal Relative Density*:

7.3.1 The ideal relative density d^{id} is:

$$d^{id} = \sum_{j=1}^{n} x_j d_j = \Sigma x_j M_j / M_a = M/M_a \quad (5)$$

where: M_a is the molar mass of air. The ideal relative density is the molar mass ratio.

7.4 *Gross Heating Value per Unit Volume*:

7.4.1 Multiplication of the gross heating value per unit mass by the ideal gas density provides the gross heating value per unit volume, H_v^{id}:

$$H_v^{id} = \rho^{id} H_m^{id} = \sum_{j=1}^{n} x_j H_{v,j}^{id} \quad (6)$$

$H_{v,j}^{id}$ is the pure component gross heating value per unit volume for Component *j* at specified temperature and pressure (60°F (15.6°C) and 14.696 psia in Table 1, ideal gas values).

7.4.2 Conversion of values in Table 1 to different pressure bases results from multiplying by the pressure ratio:

$$H_v^{id}(P) = H_v^{id}(P = 14.696) \times P/14.696 \quad (7)$$

7.5 *Real Gas Values—Compressibility Factor*:

7.5.1 The compressibility factor is:

$$Z(T,P) = \rho^{id}/\rho = (MP/RT)/\rho \quad (8)$$

where ρ is the real gas density in mass per unit volume. At conditions near ambient, the truncated virial equation of state satisfactorily represents the volumetric behavior of natural gas:

$$Z(T,P) = 1 + BP/RT \quad (9)$$

where B is the second virial coefficient for the gas mixture. The second virial coefficient for a mixture is:

$$B = x_1^2 B_{11} + x_2^2 B_{22} + \cdots + x_n^2 B_{nn} + 2x_1x_2B_{12} + \cdots + 2x_{n-1}x_nB_{n-1,n}$$

$$= \sum_{i=1}^{n}\sum_{j=1}^{n} x_i x_j B_{ij} \quad (10)$$

where B_{jj} is the second virial coefficient for Component *j* and B_{ij} is the second cross virial coefficient for Components *i* and *j*. The second virial coefficients are functions of temperature. Eq 9 can be used with Eq 10 for calculation of the compressibility factor for the various pressure bases, but it is not accurate at pressures greater than two atmospheres. Special treatment is not required for H_2 and He at mole fractions up to 0.01. Calculations can be made with $B_{jj} = 0$ for hydrogen and helium.

7.5.2 Eq 9 and Eq 10 for calculation of $Z(T,P)$ for a gas mixture are rigorous but require considerable calculations and information that is not always available. An alternative, approximate expression for $Z(T,P)$ that is more convenient for hand calculations is:

$$Z(T,P) = 1 - P[\sum_{j=1}^{n} x_j \sqrt{\beta_{jj}}]^2 \quad (11)$$

where $\beta_{jj} = B_{jj}/RT$ and $\sqrt{\beta_{jj}}$ is the summation factor for Component *j*. Values of $\sqrt{\beta_{jj}}$ at 60°F (15.6°C) appear in Table 2. The method based upon Eq 11 has been adopted for this practice.

7.6 *Real Gas Density*:

7.6.1 The real gas density ρ at a specific temperature and pressure is:

$$\rho = \rho^{id}/Z \quad (12)$$

where: ρ^{id} and Z are evaluated at the same temperature and pressure.

7.7 *Real Relative Density*:

7.7.1 The real relative density d is:

$$d = \rho/\rho_a = MZ_a/M_aZ \quad (13)$$

7.8 *Real Heating Value*—The real heating value is not given by division of the ideal heating value by the compressibility factor. Real gas heating values differ from the ideal gas values by less than one part in 10^4 at 14.696 psia, which is of the order of the accuracy of the heating values.

7.9 *Gross Heating Value of Water Wet Gas*:

7.9.1 If the gas contains water as a component but the compositional analysis is on a dry basis, it is necessary to adjust the mole fractions to reflect the presence of water. The corrected mole fractions are:

$$x_j(\text{cor}) = x_j(1 - x_w) \quad (14)$$

The mole fraction of water can range from zero up to the saturated value. The saturated value for x_w is, assuming Raoult's Law:

$$x_w(\text{sat}) = P_w^v/P \quad (15)$$

where: P_w^v is the vapor pressure of water (0.256 36 psia at 60°F (15.6°C)).

7.9.2 Technically, water has a gross heating value, the ideal enthalpy of condensation. If only the water that is formed

TABLE 2 Example Calculations of Gas Properties at 60°F and 14.696 psia (Gas Analysis on Dry Basis)[A]

NOTE—Division of Hv^{id} by Z does not give a real gas heating value but rather an ideal gas heating value per real cubic feet. Any digits carried beyond 1 part in 1000 are not significant but only alleviate roundoff error. Although CO_2 has a carbon atom, its $\alpha = 0$ because it is not part of the fuel formula $C_\alpha H_\beta S_\gamma$.

Compound	x_i	α_i	β_i	γ_i	Hv_i^d	G_i^d	b_i	$x_i\alpha_i$	$x_i\beta_i$	$x_i\gamma_i$	$x_i\,Hv_i^{id}$	$x_i\,G_i^{id}$	$x_i b_i$
Methane	0.8302	1	4	0	1010.0	0.553 92	0.0116	0.8302	3.3208	0	838.5	0.4599	0.009 63
Ethane	0.0745	2	6	0	1769.7	1.038 20	0.0239	0.1490	0.4470	0	131.8	0.0773	0.001 78
Propane	0.0439	3	8	0	2516.1	1.522 60	0.0344	0.1317	0.3512	0	110.5	0.0668	0.001 51
i-Butane	0.0083	4	10	0	3251.9	2.006 80	0.0458	0.0332	0.0830	0	27.0	0.0167	0.000 38
n-Butane	0.0108	4	10	0	3262.3	2.006 80	0.0478	0.0432	0.1080	0	35.2	0.0217	0.000 52
i-Pentane	0.0031	5	12	0	4000.9	2.491 20	0.0581	0.0155	0.0372	0	12.4	0.0077	0.000 18
n-Pentane	0.0025	5	12	0	4008.9	2.491 20	0.0631	0.0125	0.03	0	10.0	0.0062	0.000 16
Hexane	0.0030	6	14	0	4755.9	2.975 50	0.0802	0.0180	0.0420	0	14.3	0.0089	0.000 24
Helium	0.0003	0	0	0	0	0.138 20	0	0	0	0	0	0.0000	0.000 00
Nitrogen	0.0032	0	0	0	0	0.967 23	0.0044	0	0	0	0	0.0031	0.000 01
Carbon dioxide	0.0202	0	0	0	0	1.519 60	0.0197	0	0	0	0	0.0307	0.000 40
Summation	1.0000	...	...	...	...	...	...	1.2333	4.4192	0	1179.7	0.6991	0.014 81

[A] x_w = (0.256 36)/14.696 = 0.0174
G^{id} (dry gas) = 0.6991
Z (dry gas) = 1 – [0.014 81]^2(14.696) = 0.9968
Z (dry air) = 1 – [0.0050]^2(14.696) = 0.9996
G (dry gas, dry air) = 0.6991(0.9996)/0.9968 = 0.7011
G (dry gas, sat air) = 0.6991(0.9995)/0.9968 = 0.7010
Hv^d (dry gas, dry air) = 1179.7 Btu·ft^{-3}
Hv^{id} (sat gas, dry air) = 1179.7(0.9826) = 1159.1 Btu·ft^{-3}
$1 - x_w$ = 0.9826
G^{id} (sat gas) = 0.6991(0.9826) + 0.0174(0.622 02) = 0.6978
Z (sat gas) = 1 – [0.9826(0.014 81) + 0.0174(0.0623)]^2(14.696) = 0.9964
Z (sat air) = 1 – [0.9826(0.0050) + 0.0174(0.0623)]^2(14.696) = 0.9995
G (sat gas, dry air) = 0.6978(0.9996)/0.9964 = 0.7001
G (sat gas, sat air) = 0.6978(0.9995)/0.9964 = 0.7000
{Hv^d/Z}(dry gas, dry air) = 1179.7/0.9968 = 1183.5 Btu·ft^{-3}
{Hv^d/Z} (sat gas, dry air) = 1159.1/(0.9964) = 1163.3 Btu·ft^{-3}

during the combustion condenses, then the heat released upon combustion of a wet gas with dry air becomes:

$$H_v^{id}\,(\text{wet gas}) = (1 - x_w)H_v^{id}\,(\text{dry gas}) \tag{16}$$

For water-saturated gas, x_w, at 60° F (15.6° C) is 0.256 36/P_b where P_b is the base pressure. Eq 16 is adequate for custody transfer applications as a matter of definition. However, this equation does not accurately describe the effect of water upon the heating value. Appendix X1 contains a rigorous examination of the effect of water.

7.10 *Calculation of the Ideal Energy Released as Heat*:

7.10.1 When multiplied by the gas flow rate, the ideal gross heating value provides the ideal energy released as heat upon combustion, $\dot{Q}^{id}$, an ideal gas property:

$$\dot{Q}^{id} = \dot{m}H_m^{id} \tag{17}$$

where $\dot{m}$ is the mass flow rate. For an ideal gas, the mass flow rate is related to the volumetric flow rate, $\dot{V}^{id}$, by:

$$\dot{m} = \dot{V}^{id}\,\rho^{id} \tag{18}$$

and

$$\dot{Q}^{id} = \dot{V}^{id}H_v^{id} \tag{19}$$

7.10.2 The ideal gas flow rate is related to the real gas flow rate by:

$$\dot{V}^{id} = \dot{V}/Z \tag{20}$$

where $\dot{V}$ is the real gas volumetric flow rate and $Z(T,P)$ is the real gas compressibility factor at the same T and P. Hence, combining Eq 19 and Eq 20 gives:

$$\dot{Q}^{id} = H_v^{id}\,\dot{V}/Z\,(T,P) \tag{21}$$

NOTE 1—The ideal energy released per unit time as heat upon combustion, $\dot{Q}^{id}$, can be calculated using the mass flow rate (Eq 17), the ideal gas flow rate (Eq 19), or the real gas flow rate (Eq 21), but is always an ideal gas property. Division of H_v^{id} by the gas compressibility factor $Z(T,P)$ does not produce a real gas heating value but only allows calculation of $\dot{Q}^{id}$ using the real gas flow rate rather than the ideal gas flow rate.

8. Precision

8.1 The properties reported in this practice derive from experimental enthalpy of combustion measurements which, in general, are accurate to 1 part in 1000. The extra digits that appear in the accompanying tables alleviate problems associated with roundoff errors and internal consistency, but they are not significant.Table 3

8.2 The values of properties in this practice are those that appear in GPA Standard 2172-97, Fig. 23-2 of the GPSA Engineering Data Book, GPA TP-17, and the TRC Thermodynamic Tables—Hydrocarbons. GPA Standard 2145 is updated annually and the values in that standard should be used in all calculations.

NOTE 2—Three sources of error must be considered: errors in heating values of the components, errors in the calculated compressibility factor, and errors in the composition. The uncertainty (twice the standard deviation) of the ideal gas heating values for components should be 0.03 %. Such errors affect the bias and the agreement between calculated and measured heating values, but they do not affect the precision. Error in the calculated compressibility factor varies with the composition of the gas, but for natural gas, this error should be less than 0.03 % and

TABLE 3 Example Calculations of Gas Properties at 60°F and 14.696 psia (Gas Analysis on Wet Basis)[A]

NOTE—Division of Hv^{id} by Z does not give a real gas heating value but rather an ideal gas heating value per real cubic feet. Any digits carried beyond 1 part in 1000 are not significant but only alleviate roundoff error. Although CO_2 has a carbon atom, its $\alpha = 0$ because it is not part of the fuel formula $C_\alpha H_\beta S_\gamma$.

Compound	x_i	α_i	β_i	γ_i	Hv_i^{id}	G_i^{id}	b_i	$x_i\alpha_i$	$x_i\beta_i$	$x_i\gamma_i$	$x_i Hv_i^{id}$	$x_i G_i^{id}$	$x_i b_i$
Methane	0.8157	1	4	0	1010.0	0.553 92	0.0116	0.8157	3.2629	0	823.9	0.4518	0.009 46
Ethane	0.0732	2	6	0	1769.7	1.038 20	0.0239	0.1464	0.4392	0	129.5	0.0760	0.001 75
Propane	0.0431	3	8	0	2516.1	1.522 60	0.0344	0.1294	0.3451	0	108.5	0.0657	0.001 48
i-Butane	0.0082	4	10	0	3251.9	2.006 80	0.0458	0.0326	0.0816	0	26.5	0.0164	0.000 37
n-Butane	0.0106	4	10	0	3262.3	2.006 80	0.0478	0.0424	0.1061	0	34.6	0.0213	0.000 51
i-Pentane	0.0030	5	12	0	4000.9	2.491 20	0.0581	0.0152	0.0366	0	12.2	0.0076	0.000 18
n-Pentane	0.0025	5	12	0	4008.9	2.491 20	0.0631	0.0123	0.0295	0	9.8	0.0061	0.000 15
Hexane	0.0029	6	14	0	4755.9	2.975 50	0.0802	0.0177	0.0413	0	14.0	0.0088	0.000 24
Helium	0.0003	0	0	0	0	0.138 20	0	0	0	0	0	0	0
Nitrogen	0.0031	0	0	0	0	0.967 23	0.0044	0	0	0	0	0.0030	0
Carbon dioxide	0.0198	0	0	0	0	1.519 60	0.0197	0	0	0	0	0.0302	0.000 39
Water	0.0174	0	0	0	50.3	0.622 02	0.0623	0	0	0	0.9	0.0108	0.001 09
Summation	1.0000	...	...	...	...	...	...	1.2118	4.3421	0	1160.0	0.6977	0.015 64

[A] G^{id} (sat gas) = 0.6977
Z (sat gas) = 1 – [0.015 64]^2(14.696) = 0.9964
Z (dry air) = 1 – [0.0050]^2(14.696) = 0.9996
G (sat gas, dry air) = 0.6977(0.9996)/0.9964 = 0.6999
Hv^{id} (sat gas, dry air) = 1160.0 – 0.9 = 1159.1 Btu·ft^{-3}
Z (sat air) = 1 – [0.9826(0.050) + 0.0174(0.0623)]^2(14.696) = 0.9995
G (sat gas, sat air) = 0.6977(0.9995)/0.9964 = 0.6999
(Hv^{id}/Z)(sat gas, dry air) = 1159.1/(0.9964) = 1163.3 Btu·ft^{-3}

negligible compared to errors arising from uncertainty in composition. In this practice, the errors in the heating values of the components and the calculated compressibility factor, Z, are neglected. The precision of the method is related to the repeatability and reproducibility of the analysis. An example appears in .

NOTE 3—It is essential to include all components in the gas sample that appear with mole fractions greater than or equal to 0.001 in the analysis. Some routine analyses do not determine compounds such as He and H_2S, but these compounds are important to the calculations.

8.3 *Repeatability*:

8.3.1 If all the components are analyzed and the results are normalized, then the repeatability of the heating value, δH is:

$$\frac{\delta H}{H^{id}} = \sqrt{\frac{1}{(H^{id})^2}\sum_{j=1}^{n}[(H^{id} - H_j^{id})\delta x_j]^2} \quad (22)$$

8.3.2 If the results of the analysis are made to sum to 1.0 by calculating the methane mole fraction as the difference between 1.0 and the sum of the mole fractions of the other components, then

$$\frac{\delta H}{H^{id}} = \sqrt{\frac{1}{(H^{id})^2}\sum_{j=1}^{n}[H_j^{id}\delta x_j]^2} \quad (23)$$

where δx_j is the repeatability of the method of analysis for Component j. The differences between heating values calculated from successive pairs of analysis performed by the same operator using the same sample of gas and the same instrument should exceed $2\delta H$ in only 5 % of the tests when δH is taken as one standard deviation.

8.4 *Reproducibility*—The reproducibility $\delta H'$ is calculated from Eq 22 and Eq 23 using $\delta x'_j$, the reproducibility of the method of analysis for Compound j. The difference between heating values calculated from analysis obtained in different laboratories is expected to exceed $\delta H'$ for only 5 % of the analyses.

APPENDIXES

(Nonmandatory Information)

X1. EFFECT OF WATER UPON THE HEATING VALUE

X1.1 Custody transfer of natural gas uses a simple pricing equation that states that the cost of gas is the rate of energy released upon combustion multiplied by the price of gas per energy unit multiplied by the time or accounting period. The rate of energy released upon combustion is the product of the heating value of the gas and the flow rate of the gas. The flow rate of the gas requires knowledge of the compressibility factor and the relative density of the gas. All three custody transfer properties (heating value, compressibility factor, and relative density) can be calculated from the composition given pure component property tables. The equations for calculating the properties of dry natural gas are well known, but this appendix also presents an account of the effects of water contained in the gas and in the air used to burn the gas.

X1.2 The heating value of a natural gas is the absolute value of its enthalpy of combustion in an ideal combustion reaction. The heating value is, therefore, an ideal-gas property

that can be calculated unambiguously from tables of pure component values and it has no pressure dependence.

X1.3 An ideal combustion reaction with fuel and air in the ideal gas state and the possibility of water in the fuel and air is:

$$C_\alpha H_\beta S_\gamma(id) + (\alpha + \beta/4 + \gamma)(1 + \epsilon)O_2(id) + 0.043\,83(\alpha + \beta/4 + \gamma)(1 + \epsilon)\mathrm{Ar}(id) \quad (X1.1)$$

$$+ [0.001\,62(\alpha - \beta/4 - \gamma)(1 + \epsilon) + x_c/(1 - x_N - x_C)]CO_2(id)$$

$$+ [3.728\,73(\alpha + \beta/4 + \gamma)(1 + \epsilon) + x_N/(1 - x_N - x_C)]N_2(id) + (n_w^a + n_w^u)H_2O(id)$$

$$= [\alpha + 0.001\,62(\alpha + \beta/4 + \gamma)(1 + \epsilon) + x_c/(1 - x_N - x_C)]CO_2(id) + n_w^v H_2O(id) + n_w^l H_2O(l) + \gamma SO_2(id)$$

$$+ [3.728\,73(\alpha + \beta/4 + \gamma)(1 + \epsilon) + x_N/(1 - x_N - x_C)]N_2(id) + 0.043\,83(\alpha + \beta/4 + \gamma)(1 + \epsilon)\mathrm{Ar}(id) + (\alpha + \beta/4 + \gamma)\epsilon O_2(id)$$

where: α, β, and γ are stoichiometric coefficients, ϵ is the fraction excess air, the composition of air is assumed to be that of Table X1.1, n_w^a and the moles of water contained in the gas, n_w^a are the moles of water contained in the air, n_w^v are the moles of water contained in the product gas mixture, n_w^l are the moles of gas that actually condense, X_c is the mole fraction of CO_2 in the gas, and x_N is the mole fraction of N_2 in the gas. If air has been injected into the gas, it is assumed that the effect is accounted for in the excess fraction ϵ. Fuel gas mixtures would have non-integer values of α, β and γ.

X1.4 It is customary to define hypothetical reference states for the water formed by the reaction denoted by Eq 1 (as opposed to "spectator" water that enters the reaction carried by the gas or air). If we assume that the water formed in the reaction remains in the ideal gas state, the heating value is termed "net." If we assume that the water formed in the reaction condenses totally to the liquid state, the heating value is termed "gross." The gross heating value is greater than the net heating value by the ideal enthalpy of vaporization for water:

$$\text{heating value (gross)} - \text{heating value (net)} = H_w(id) - H_w(l) \quad (X1.2)$$

where:
H = enthalpy,
l = liquid state, and
w = water.

The quantity $H_w(id) - H_w(l)$ is the ideal enthalpy of vaporization for water.

X1.5 It is possible to calculate a real gas heating value rather than using a hypothetical state, but the calculations are tedious, the numerical values are negligibly different, and the mathematical simplicity of the defining equation is lost. It is customary in the gas industry to use gross heating value for most calculations, so for the remainder of this appendix, the term "heating value" refers to the gross value.

X1.6 Eq 7 in Section 7 provides the recipe to convert the heating value from one base pressure to another. Note that when using Eq 7, H_v^{id} should be calculated using the values from Table 1 before converting the pressure; the individual values in Table 1 should not be converted. Conversion to another temperature is more complicated. Heating value data exist at 25°C based upon the reaction:

$$C_\alpha H_\beta S_\gamma(id) + (\alpha + \beta/4 + \gamma)O_2(id) = \alpha CO_2(id) + (\beta/2)H_2O(l) + \gamma SO_2(id) \quad (X1.3)$$

X1.7 The experiments use pure oxygen and are corrected to stoichiometric proportions. It is necessary to correct the sensible heat effects to arrive at a different temperature:

$$Hn^{id}(T) = Hn^{id}(25) + \int_{25}^{T}[\sum_{r'} C_p^{id} - \sum_{r} C_p^{id}]dT \quad (X1.4)$$

where:

$$\sum_{r'} C_p^{id} = \alpha C_{p,CO_2}^{id} + (\beta/2)C_{p,H_2O}^{id} + \gamma C_{p,SO_2}^{id} \quad (X1.5)$$

$$\sum_{r} C_p^{id} = C_{p,C_\alpha H_\beta S_\gamma}^{id} + (\alpha + \beta/4 + \gamma)C_{p,O_2}^{id} \quad (X1.6)$$

and: C_p^{id} is the ideal specific heat at constant pressure, r denotes reactants and r' denotes products.

TABLE X1.1 Example Calculation of Precision

Compound	Composition, x_j	$H_v^d - H_v^a$ Btu·ft^{-3}	Repeatability		Reproducibility	
			δx_j	$[(H_v^d - H_v^a)\delta x_j]^2$ (Btu·ft^{-3})^2	$\delta x'_j$	$[(H_v^d - H_v^a)\delta x'_j]^2$ (Btu·ft^{-3})^2
Methane	0.8302	169.7	0.0010	0.029	0.0020	0.115
Ethane	0.0745	−590.0	0.0002	0.014	0.0004	0.056
Propane	0.0439	−1336.4	0.0002	0.071	0.0004	0.286
Isobutane	0.0083	−2072.2	0.0001	0.043	0.0002	0.171
Butane	0.0108	−2082.6	0.0002	0.173	0.0004	0.694
Isopentane	0.0031	−2821.2	0.0001	0.080	0.0002	0.318
Pentane	0.0025	−2829.2	0.0001	0.080	0.0002	0.320
Hexane	0.0030	−3576.2	0.0001	0.128	0.0002	0.512
Helium	0.0003	1179.7	0.0001	0.014	0.0002	0.056
Nitrogen	0.0032	1179.7	0.0001	0.014	0.0002	0.056
Carbon dioxide	0.0202	1179.7	0.0002	0.056	0.0004	0.223
Total	1.0000			0.702		2.807

X2. ACCOUNTING FOR WATER

X2.1 If the gas contains water (or must be assumed to be saturated) but the compositional analysis is on a dry basis, it is necessary to adjust the mole fractions to account for the fact that water has displaced some gas, thus lowering the heating value. The mole fraction of water in the gas results from the definition of relative humidity:

$$x_w = h^s P_w^{sr}/P = n_w/(1 + n_w) \quad \text{(X2.1)}$$

(Based upon one mole of the fuel $C_\alpha H_\beta S_\gamma$) where h^s is the relative humidity of the gas, P_w^{sr} is the vapor pressure of water, and n_w denotes moles of water. For saturated gas h^s is unity. Rearranging Eq X2.1 gives the moles of water:

$$n_w = x_w/(1 - x_w) \quad \text{(X2.2)}$$

The corrected mole fractions then become:

$$x_i(\text{cor}) = x_i\left[\frac{1}{1 + n_w}\right] = x_i\left[\frac{1}{1 + x_w/(1 - x_w)}\right] = (1 - x_w)x_i \quad \text{(X2.3)}$$

and the heating value becomes:

$$Hv^{id} = (1 - x_w)\sum_{i=1}^{N} x_i^{dry} Hv_i^{id} \quad \text{(X2.4)}$$

where water is not included in the N components of the summation. If the compositional analysis determines x_w and water is included in the N components of the summation:

$$Hv^{id} = \sum_{i=1}^{N} x_i^{wet} Hv_i^{id} - x_w Hv_w^{id} \quad \text{(X2.5)}$$

X2.2 It is necessary to remove the effect of water because, although water has a heating value, it is only a condensation effect. Water carried by wet gas (spectator water) does not actually condense, and only water formed in the reaction contributes to heating value.

X2.3 Accounting for water in the above manner is sufficient for defined custody transfer conditions, but when trying to model actual situations, the question becomes much more complicated. It is obvious that all of the reaction water actually cannot condense because in a situation in which both gas and air are dry some of the reaction water saturates the product gases and the remainder condenses. It is possible to account for these effects in a general manner. To do so, it is necessary to calculate n_w^g, n_w^a, n_w^v, and n_w^l.

$$n_w^g[1 + (x_N + x_C)/(1 - x_N - x_C) + n_w^g] = h^s P_w^{sr}/P \quad \text{(X2.6)}$$

$$n_w^g = (h^s P_w^{sr}/P)/[(1 - x_N - x_C)(1 - h^s P_w^{sr}/P)]$$

$$n_w^a[4.774\,18(\alpha + \beta/4 + \gamma)(1 + \epsilon) + n_w^a] = h^a P_w^{sr}/P \quad \text{(X2.7)}$$

$$n_w^a = 4.774\,18(\alpha + \beta/4 + \gamma)(1 + \epsilon)(h^a P_w^{sr}/P)/(1 - h^a P_w^{sr}/P)$$

$$n_w^v = \{\alpha + \gamma + (x_N + x_C)/(1 - x_N - x_C) + (\alpha + \beta/4 + \gamma)[0.001\,62(1 + \epsilon) \quad \text{(X2.8)}$$

$$+3.728\,73(1 + \epsilon) + 0.043\,83(1 + \epsilon) + \epsilon] + n_w^v\} = P_w^{sr}/P$$

$$n_w^v = \{\alpha + \gamma + (x_N + x_C)/(1 - x_N - x_C) + (\alpha + \beta/4 + \gamma)[0.001\,62(1 + \epsilon)$$

$$+3.728\,73(1 + \epsilon) + 0.043\,83(1 + \epsilon) + \epsilon]\}(P_w^{sr}/P)/(1 - P_w^{sr}/P)$$

$$n_w^l = \beta/2 + n_w^g + n_w^a - n_w^v \quad \text{(X2.9)}$$

where: h_a is the relative humidity of the air. Eq X2.6 and Eq X2.7 are reformulations of Eq X2.1 to reflect inlet conditions. Eq X2.8 reflects Eq X2.1 for the saturated product gas (it must be saturated before any water can condense). Eq X2.9 is a water balance: $\beta/2$ are the moles of water formed by the reaction, $n_w^g + n_w^a$ are the moles of water that enter with the gas and air, n_w^v are the moles of water that saturate the product gas, and n_w^l are the moles of water that condense. Therefore, the complete correction for the effect of water on heating value is:

$$H_v^{id} = H_v^{id}\,(\text{Eq X2.4 or Eq X2.5}) + (h^a P_w^{sr}/P)/(1 - x_a - x_c)(1 - h^a P_w^{sr}/P) \quad \text{(X2.10)}$$

$$+ 4.774\,18(\alpha + \beta/4 + \gamma)(1 + \epsilon)(h^a P_w^{sr}/P)/(1 - h^a P_w^{sr}/P) - [\alpha + \gamma$$

$$+ (x_a - x_c)$$

$$(1 - x_a - x_c) + (\alpha + \beta/4 + \gamma)(3.774\,18 + 4.774\,18\,\epsilon)]$$

$$\times (P_w^{sr}/P)/(1 - P_w^{sr})\}H_w^{id}]$$

X2.4 Depending upon the relative humidities of the gas and air, the observed heating value can be greater or smaller than that calculated using Eq X2.4 or Eq X2.5. A humidity of air exists for each gas above which Hv^{id} is greater than that calculated by Eq X2.4 or Eq X2.5. That critical value depends upon the gas composition, the humidity of the gas, and the amount of excess air. For pure, dry methane with no excess air, $h_a = 0.793\,45$.

X3. REAL GAS PROPERTIES

X3.1 In principal, we have enough information to convert the heating value to a real gas property (it is not necessary to do so for relative density because the molar mass ratio, G^{id}, is the desired property). This is simply a matter of evaluating the integral:

$$Hn - Hn^{ol} = \int_0^P \left\{ \left| \left(\frac{\partial H}{\partial P} \right)_T \right|_{P'} - \left[\left(\frac{\partial H}{\partial P} \right)_T \right]_P \right\} dP \qquad \text{(X3.1)}$$

where:

$$\left(\frac{\partial H}{\partial T} \right)_P = V - T\left(\frac{\partial V}{\partial T} \right)_P = B - T\frac{dB}{dT} = 2RT^2 b \frac{dB}{dT} \qquad \text{(X3.2)}$$

where V is the molar volume. The temperature dependence of b must be defined, but in the custody transfer region it is easy to do so. The products and reactants again correspond to Eq X1.3.

X3.2 While it is obviously possible to make the required calculations to convert the heating value into a real gas property, it serves no custody transfer purpose to do so. As we have seen, the cost equation is unchanged; the calculations while obvious are tedious. Hv is slightly different from Hv^{ol} because the base pressure is low; the likelihood of having all the information required to use Eq X3.1 is remote. The heating value is defined in a hypothetical state. It is not possible, at base conditions, to have all the water formed in the reaction be either all gas or all liquid; some of the water formed is in each state. Thus, if the definition is of a hypothetical state, using a hypothetical real gas rather than an ideal gas state adds nothing but complexity.

APPENDIX B - Computer Printout of Results

CARB Method 2 Flow Rate

Facility: Simi Valley Landfill
Source: Flare #1 (McGill)
Job No.: W07-043
Date: 10/11/05

STANDARD TEMPERATURE	Degrees F	68		
RUN NUMBER	******	1	2	3
CLOCK TIME: INITIAL	******	1050	1330	1531
CLOCK TIME: FINAL	******	1240	1515	1706
AVG. STACK TEMPERATURE	Degrees F	1585	1607	1584
AVG. SQUARE DELTA P	Inches H20	0.1288	0.1304	0.1296
BAROMETRIC PRESSURE	Inches HG	28.58	28.58	28.58
SAMPLING TIME	Minutes	90	90	90
SAMPLE VOLUME	Cubic Feet	108.708	105.994	106.494
AVG. METER TEMP.	Degrees F	87	91	88
AVG. DELTA H	Inches H20	3.67	3.76	3.71
DGM CALIB. FACTOR [Y]	******	0.9856	0.9856	0.9856
WATER COLLECTED	Milliliters	138	187	168
CO 2	Percent	8.00	7.81	8.11
O 2	Percent	11.94	12.15	11.80
CO	Percent			
CH4	Percent			
N 2	Percent	80.06	80.04	80.09
STACK AREA	Square Inches	6647.6	6647.6	6647.6
STATIC PRESSURE	Inches WG.	-0.005	-0.005	-0.005
PITOT COEFFICIENT	******	0.84	0.84	0.84
SAMPLE VOLUME DRY	DSCF	99.74	96.60	97.54
WATER AT STD.	SCF	6.5	8.8	7.9
MOISTURE	Percent	6.1	8.4	7.5
MOLE FRACTION DRY GAS	******	0.94	0.92	0.92
MOLECULAR WT.DRY	lb/lb Mole	29.76	29.74	29.77
EXCESS AIR	Percent	130	135	126
MOLECULAR WT. WET	lb/lb Mole	29.04	28.75	28.89
STACK GAS PRESSURE	Inches HG	28.58	28.58	28.58
STACK VELOCITY	AFPM	871	891	879
VOLUMETRIC FLOWRATE, DRY STD.	DSCFM	9311	9199	9259
VOLUMETRIC FLOWRATE, ACTUAL	ACFM	40225	41140	40563

EXPANSION AND F-FACTOR CALC. METHOD

Client:	Simi Valley Landfill	Date:	10/11/05
Location:	Simi Valley, CA	Job #:	W07-043
Unit:	Flare #1 (McGill)	Run#:	1

Fuel temperature		deg. F	Std. Temp.	68 deg. F
Fuel Pressure		psi		
Fuel Flow Rate		cfm	Fuel Flow	1297 dscfm
Exhaust Outlet O2	11.94	%		
Barometric Pressure	28.58			

COMPONENTS		MOLE %	HHV btu/ft3	LLV btu/ft3	Exp Factor dscf/scf fuel
Oxygen		1.04			0.010
Nitrogen		12.74			0.127
Carbon Dioxide		38.52			0.385
Methane		47.15	476.22	428.78	4.041
Ethane	C2	0.547	9.68	8.85	0.083
Propane	C3		0.00	0.00	0.000
Iso-Butane	C4		0.00	0.00	0.000
N-Butane			0.00	0.00	0.000
Iso-Pentane	C5		0.00	0.00	0.000
N-Pentane			0.00	0.00	0.000
Hexane	C6		0.00	0.00	0.000
Heptane	C7		0.00	0.00	0.000
Octane	C8		0.00	0.00	0.000
Nonane	C9		0.00	0.00	
Total		**100.00**	**485.90**	**437.64**	**4.65**

CALCULATIONS

EPA F-Factor = (scf exhaust/scf fuel)/(btu/scf fuel)*(1000000 btu/MMbtu)

9564 dscf/Mmbtu

EXPANSION AND F-FACTOR CALC. METHOD

Client:	Simi Valley Landfill	Date:	10/11/05
Location:	Simi Valley, CA	Job #:	W07-043
Unit:	Flare #1 (McGill)	Run#:	2

Fuel temperature		deg. F	Std. Temp.	68	deg. F
Fuel Pressure		psi			
Fuel Flow Rate		cfm	Fuel Flow	1251	dscfm
Exhaust Outlet O2	12.15	%			
Barometric Pressure	28.58				

COMPONENTS		MOLE %	HHV btu/ft3	LLV btu/ft3	Exp Factor dscf/scf fuel
Oxygen		0.61			0.006
Nitrogen		11.77			0.118
Carbon Dioxide		38.81			0.388
Methane		48.31	487.93	439.33	4.140
Ethane	C2	0.501	8.87	8.11	0.076
Propane	C3		0.00	0.00	0.000
Iso-Butane	C4		0.00	0.00	0.000
N-Butane			0.00	0.00	0.000
Iso-Pentane	C5		0.00	0.00	0.000
N-Pentane			0.00	0.00	0.000
Hexane	C6		0.00	0.00	0.000
Heptane	C7		0.00	0.00	0.000
Octane	C8		0.00	0.00	0.000
Nonane	C9		0.00	0.00	
Total		**100.00**	**496.80**	**447.44**	**4.73**

CALCULATIONS

EPA F-Factor = (scf exhaust/scf fuel)/(btu/scf fuel)*(1000000 btu/MMbtu)

9518 dscf/Mmbtu

EXPANSION AND F-FACTOR CALC. METHOD

Client:	Simi Valley Landfill	Date:	10/11/05
Location:	Simi Valley, CA	Job #:	W07-043
Unit:	Flare #1 (McGill)	Run#:	3

Fuel temperature		deg. F	Std. Temp.	68	deg. F
Fuel Pressure		psi			
Fuel Flow Rate		cfm	Fuel Flow	1258	dscfm
Exhaust Outlet O2	11.80	%			
Barometric Pressure	28.58				

COMPONENTS		MOLE %	HHV btu/ft3	LLV btu/ft3	Exp Factor dscf/scf fuel
Oxygen		0.90			0.009
Nitrogen		13.92			0.139
Carbon Dioxide		37.80			0.378
Methane		46.86	473.29	426.14	4.016
Ethane	C2	0.518	9.17	8.38	0.079
Propane	C3		0.00	0.00	0.000
Iso-Butane	C4		0.00	0.00	0.000
N-Butane			0.00	0.00	0.000
Iso-Pentane	C5		0.00	0.00	0.000
N-Pentane			0.00	0.00	0.000
Hexane	C6		0.00	0.00	0.000
Heptane	C7		0.00	0.00	0.000
Octane	C8		0.00	0.00	0.000
Nonane	C9		0.00	0.00	
Total		**100.00**	**482.45**	**434.53**	**4.62**

CALCULATIONS

EPA F-Factor = (scf exhaust/scf fuel)/(btu/scf fuel)*(1000000 btu/MMbtu)

9578 dscf/Mmbtu

Facility: **Simi Valley Landfill**
Source: **Flare #1 (McGill)**
Job No.: **W07-043**
Date: **10/11/05**
Run: **1**

Sulfur Compounds

Speciated Compound		Concentration ppm, as H2S	No. of S molecules in Compound	Total S ppm, as H2S	SO2 Conc. mg/dscf	Inlet Flow Rate dscfm	SO2 Rate lb/hr
Hydrogen Sulfide		32.4	1	32.4	2.481	1297	0.4257
Carbonyl Sulfide		0.30	1	0.30	0.023	1297	0.0039
Methyl mercaptan		3.44	1	3.44	0.263	1297	0.0452
Ethyl mercaptan	<	0.1	1	0.1	0.008	1297	0.0013
Dimethyl sulfide		6.20	1	6.20	0.475	1297	0.0815
Carbon disulfide		0.17	2	0.34	0.026	1297	0.0045
Dimethyl disulfide		0.27	2	0.54	0.041	1297	0.0071
iso-propyl mercaptan		0.51	1	0.51	0.039	1297	0.0067
n-propyl mercaptan	<	0.06	1	0.06	0.005	1297	0.0008
Total				43.89			0.5767

037

Facility: **Simi Valley Landfill**
Source: **Flare #1 (McGill)**
Job No.: **W07-043**
Date: **10/11/05**
Run: **2**

Sulfur Compounds

Speciated Compound		Concentration ppm, as H2S	No. of S molecules in Compound	Total S ppm, as H2S	SO2 Conc. mg/dscf	Avg. Inlet Flow Rate dscfm	SO2 Rate lb/hr
Hydrogen Sulfide		39.8	1	39.8	3.048	1251	0.5041
Carbonyl Sulfide		0.31	1	0.31	0.024	1251	0.0039
Methyl mercaptan		4.14	1	4.14	0.317	1251	0.0524
Ethyl mercaptan	<	0.1	1	0.1	0.008	1251	0.0013
Dimethyl sulfide		7.34	1	7.34	0.562	1251	0.0930
Carbon disulfide		0.21	2	0.42	0.032	1251	0.0053
Dimethyl disulfide		0.22	2	0.44	0.034	1251	0.0056
iso-propyl mercaptan		0.60	1	0.60	0.046	1251	0.0076
n-propyl mercaptan	<	0.06	1	0.06	0.005	1251	0.0008
Total				53.21			0.6740

Facility: **Simi Valley Landfill**
Source: **Flare #1 (McGill)**
Job No.: **W07-043**
Date: **10/11/05**
Run: **3**

Sulfur Compounds

Speciated Compound		Concentration ppm, as H2S	No. of S molecules in Compound	Total S ppm, as H2S	SO2 Conc. mg/dscf	Avg. Inlet Flow Rate dscfm	SO2 Rate lb/hr
Hydrogen Sulfide		38.0	1	38.0	2.910	1258	0.4843
Carbonyl Sulfide		0.31	1	0.31	0.024	1258	0.0040
Methyl mercaptan		4.28	1	4.28	0.328	1258	0.0545
Ethyl mercaptan	<	0.1	1	0.1	0.008	1258	0.0013
Dimethyl sulfide		7.12	1	7.12	0.545	1258	0.0907
Carbon disulfide		0.20	2	0.40	0.031	1258	0.0051
Dimethyl disulfide		0.27	2	0.54	0.041	1258	0.0069
iso-propyl mercaptan		0.60	1	0.60	0.046	1258	0.0076
n-propyl mercaptan	<	0.06	1	0.06	0.005	1258	0.0008
Total				51.41			0.6552

CARB Method 100 Emission Rates

Facility: Simi Valley Landfill
Source: Flare #1 (McGill)
Job No.: W07-043
Date: 10/11/05

Run Number	******	1	2	3
Load	******	as Found	as Found	as Found
EPA F-Factor	dscf/MMBtu	9564	9518	9578
		CARB Method 2	CARB Method 2	CARB Method 2
Stack Flow Rate	dscfm	9311	9199	9259
Oxygen	%	11.94	12.15	11.80
Carbon Dioxide	%	8.00	7.81	8.11
Oxides of Nitrogen				
Concentration	ppm	10.41	9.89	10.50
Concentration @ 3% O2	ppm	20.80	20.23	20.65
Concentration	lb/dscf	1.24E-06	1.18E-06	1.25E-06
Emission Rate	lb/MMBtu	0.0277	0.0269	0.0276
Emission Rate	lb/hr	0.695	0.652	0.697
Carbon Monoxide				
Concentration	ppm	110.6	45.5	25.5
Concentration @ 3% O2	ppm	220.9	93.1	50.2
Concentration	lb/dscf	8.04E-06	3.31E-06	1.86E-06
Emission Rate	lb/MMBtu	0.1794	0.0753	0.0408
Emission Rate	lb/hr	4.49	1.83	1.03

Facility:	**Simi Valley Landfill**	**Run No.:**	**1**
Source:	**Flare #1 (McGill)**	**Fuel:**	**L.F.G.**
Job No.:	**W07-043**	**Std. O2:**	**3**
Date:	**10/11/05**		

	O2 %	CO2 %	NOx ppm	CO ppm
Range:	25	15	25	500
Span:	12.06	7.01	11.40	202.00
Low:				
High:	20.07	12.00	23.80	396.00

** POST-TEST DRIFT (DIRECT)**

Values				
Zero:	0.00	0.00	0.00	0.00
Span:	12.00	7.02	11.38	200.00

Percent Drift				
Zero:	0.00	0.00	0.00	0.00
Span:	-0.24	0.07	-0.10	-0.40

** PRE-TEST BIAS **

Values				
Zero:	0.05	0.00	0.05	0.00
Span:	12.05	6.95	11.30	201.00

** POST-TEST BIAS **

Values				
Zero:	0.25	0.00	0.25	0.00
Span:	12.05	7.01	11.18	193.50

** BIAS CORRECTION **

Zero Average	0.15	0.00	0.15	0.00
Span Average	12.05	6.98	11.24	197.25

** POST-TEST DRIFT (BIAS)**

Percent Drift				
Zero:	-0.80	0.00	-0.80	0.00
Span:	0.00	-0.40	0.50	1.50

Bias-Corrected Concentration	**11.94**	**8.00**	**10.41**	**110.55**
Bias-Corrected Conc.(O2 adjusted)			**20.80**	**220.97**

** RAW AVERAGE CONCENTRATION **

Average:		11.94	7.96	10.27	107.95
O2 adjust:	3.0			20.51	215.57
Date	Time	O2	CO2	NOx	CO
11-Oct-05	1050	11.93	7.98	10.53	32.69
11-Oct-05	1051	12.06	7.88	10.38	78.62
11-Oct-05	1052	12.25	7.72	9.62	117.32
11-Oct-05	1053	12.08	7.85	10.54	119.36
11-Oct-05	1054	12.27	7.70	9.98	152.03
11-Oct-05	1055	11.97	7.95	10.93	77.44
11-Oct-05	1056	11.93	7.98	10.92	23.30
11-Oct-05	1057	12.26	7.70	9.49	73.88
11-Oct-05	1058	12.08	7.86	10.33	151.42

11-Oct-05	1059	12.20	7.76	9.86	76.75	
11-Oct-05	1100	12.25	7.70	9.53	182.43	
11-Oct-05	1101	12.28	7.68	9.39	207.50	
11-Oct-05	1102	12.13	7.82	10.26	145.54	
11-Oct-05	1103	12.21	7.74	9.77	114.43	
11-Oct-05	1104	12.09	7.85	10.62	118.51	
11-Oct-05	1105	12.05	7.88	10.63	80.12	
11-Oct-05	1106	11.51	8.35	12.35	31.17	
11-Oct-05	1107	12.02	7.91	10.19	22.28	
11-Oct-05	1108	12.11	7.83	9.81	173.13	
11-Oct-05	1109	12.28	7.68	9.25	164.06	
11-Oct-05	1110	12.09	7.85	10.28	119.61	
11-Oct-05	1111	11.92	7.99	10.93	74.04	
11-Oct-05	1112	11.90	8.02	10.59	61.51	
11-Oct-05	1113	11.77	8.11	11.13	37.15	
11-Oct-05	1114	11.83	8.07	10.79	25.95	
11-Oct-05	1115	11.86	8.04	10.64	31.49	
11-Oct-05	1116	12.00	7.93	10.31	46.24	
11-Oct-05	1117	12.39	7.58	9.28	56.63	
11-Oct-05	1118	12.41	7.56	8.81	164.63	
11-Oct-05	1119	12.37	7.60	8.73	164.06	
11-Oct-05	1120	12.47	7.49	8.22	217.12	
11-Oct-05	1121	12.35	7.62	9.31	270.98	
11-Oct-05	1122	12.45	7.50	8.51	125.18	
11-Oct-05	1123	11.86	8.05	11.20	160.76	
11-Oct-05	1124	12.41	7.55	9.16	79.91	
11-Oct-05	1125	11.93	7.99	10.70	134.86	
11-Oct-05	1126	11.34	8.49	12.52	16.97	
11-Oct-05	1127	11.73	8.15	11.39	10.43	
11-Oct-05	1128	11.91	8.00	10.72	18.66	
11-Oct-05	1129	12.63	7.35	7.80	128.57	
11-Oct-05	1130	11.95	7.96	10.59	168.07	
11-Oct-05	1131	12.06	7.85	10.23	69.11	
11-Oct-05	1132	12.36	7.61	9.20	130.26	
11-Oct-05	1133	11.69	8.19	11.12	93.58	
11-Oct-05	1134	11.91	7.98	10.64	17.22	
11-Oct-05	1135	11.25	8.57	12.32	68.67	
11-Oct-05	1155	11.82	7.98	9.83	174.09	Port Change
11-Oct-05	1156	11.60	8.21	10.80	142.20	
11-Oct-05	1157	11.63	8.20	10.88	131.01	
11-Oct-05	1158	11.69	8.17	11.37	95.25	
11-Oct-05	1159	11.72	8.12	11.50	23.27	
11-Oct-05	1200	11.76	8.10	11.03	57.83	
11-Oct-05	1201	11.69	8.17	11.13	42.17	
11-Oct-05	1202	11.15	8.65	12.37	36.97	
11-Oct-05	1203	11.59	8.26	11.19	18.61	
11-Oct-05	1204	11.33	8.49	11.83	24.26	
11-Oct-05	1205	11.47	8.37	11.69	14.02	
11-Oct-05	1206	11.48	8.35	11.43	14.47	
11-Oct-05	1207	11.43	8.40	11.31	25.59	
11-Oct-05	1208	11.20	8.59	12.10	13.41	
11-Oct-05	1209	11.00	8.76	12.49	6.06	
11-Oct-05	1210	11.37	8.45	11.56	8.23	
11-Oct-05	1211	11.49	8.35	11.02	12.58	
11-Oct-05	1212	11.84	8.06	9.65	63.24	
11-Oct-05	1213	11.70	8.17	10.24	126.15	
11-Oct-05	1214	11.54	8.31	11.02	36.95	
11-Oct-05	1215	11.30	8.50	11.90	31.25	

11-Oct-05	1216	11.60	8.25	10.76	28.35
11-Oct-05	1217	12.15	7.77	8.57	239.68
11-Oct-05	1218	12.15	7.78	9.52	158.97
11-Oct-05	1219	12.47	7.49	8.02	232.90
11-Oct-05	1220	12.16	7.75	9.02	195.19
11-Oct-05	1221	11.65	8.22	10.66	133.32
11-Oct-05	1222	11.71	8.16	10.67	73.14
11-Oct-05	1223	12.03	7.88	9.81	96.34
11-Oct-05	1224	12.28	7.67	9.04	90.19
11-Oct-05	1225	12.46	7.51	8.61	181.67
11-Oct-05	1226	12.56	7.41	8.01	306.87
11-Oct-05	1227	12.26	7.68	9.24	259.53
11-Oct-05	1228	11.71	8.14	11.03	191.18
11-Oct-05	1229	11.27	8.53	12.51	12.26
11-Oct-05	1230	11.90	7.98	10.43	24.59
11-Oct-05	1231	12.27	7.68	8.92	119.05
11-Oct-05	1232	12.61	7.37	7.77	226.14
11-Oct-05	1233	12.25	7.67	8.79	321.44
11-Oct-05	1234	11.90	8.00	9.94	160.56
11-Oct-05	1235	12.27	7.65	8.76	169.99
11-Oct-05	1236	12.63	7.33	7.04	350.07
11-Oct-05	1237	11.92	7.95	10.16	313.54
11-Oct-05	1238	11.56	8.29	11.56	91.29
11-Oct-05	1239	11.53	8.29	11.83	21.15
11-Oct-05	1240	12.23	7.69	8.64	203.13

Facility:	**Simi Valley Landfill**	**Run No.:**	**2**
Source:	**Flare #1 (McGill)**	**Fuel:**	**L.F.G.**
Job No.:	**W07-043**	**Std. O2:**	**3**
Date:	**10/11/05**		

	O2 %	CO2 %	NOx ppm	CO ppm
Range:	25	15	25	500
Span:	12.06	7.01	11.40	202.00
Low:				
High:	20.07	12.00	23.80	396.00

** POST-TEST DRIFT (DIRECT)**

Values				
Zero:	0.05	0.00	0.00	0.00
Span:	12.03	7.04	11.25	199.50

Percent Drift				
Zero:	0.20	0.00	0.00	0.00
Span:	-0.14	0.17	-0.60	-0.50

** PRE-TEST BIAS **

Values				
Zero:	0.25	0.00	0.25	0.00
Span:	12.05	7.01	11.18	193.50

** POST-TEST BIAS **

Values				
Zero:	0.15	0.02	0.00	0.00
Span:	11.98	6.99	11.40	199.00

** BIAS CORRECTION **

Zero Average	0.20	0.01	0.13	0.00
Span Average	12.01	7.00	11.29	196.25

** POST-TEST DRIFT (BIAS)**

Percent Drift				
Zero:	0.40	-0.10	1.00	0.00
Span:	0.30	0.10	-0.90	-1.10

Bias-Corrected Concentration	**12.15**	**7.81**	**9.89**	**45.52**
Bias-Corrected Conc.(O2 adjusted)			**20.23**	**93.14**

** RAW AVERAGE CONCENTRATION **

Average:		12.10	7.80	9.81	44.23
O2 adjust:	3.0			19.95	89.98
Date	Time	O2	CO2	NOx	CO
11-Oct-05	1330	13.23	6.78	7.12	145.84
11-Oct-05	1331	12.43	7.51	9.00	78.91
11-Oct-05	1332	11.89	7.99	10.17	90.64
11-Oct-05	1333	11.99	7.88	10.20	83.67
11-Oct-05	1334	11.89	7.96	10.28	33.34
11-Oct-05	1335	12.42	7.51	8.64	89.80
11-Oct-05	1336	12.19	7.72	9.22	201.08
11-Oct-05	1337	12.99	7.00	7.87	67.66
11-Oct-05	1338	13.03	6.98	7.73	52.82

11-Oct-05	1339	12.35	7.60	9.13	38.51	
11-Oct-05	1340	12.11	7.79	9.47	28.69	
11-Oct-05	1341	12.91	7.08	8.12	49.09	
11-Oct-05	1342	13.18	6.82	5.83	200.10	
11-Oct-05	1343	13.05	6.92	5.88	499.93	
11-Oct-05	1344	12.90	7.10	7.75	285.10	
11-Oct-05	1345	10.60	9.10	13.41	62.23	
11-Oct-05	1346	12.03	7.81	10.01	9.44	
11-Oct-05	1347	12.29	7.64	9.09	77.57	
11-Oct-05	1348	12.15	7.76	8.98	142.83	
11-Oct-05	1349	11.53	8.30	10.97	170.59	
11-Oct-05	1350	11.79	8.07	10.96	16.76	
11-Oct-05	1351	11.57	8.25	11.29	6.11	
11-Oct-05	1352	11.80	8.07	10.21	20.15	
11-Oct-05	1353	11.47	8.36	11.13	54.44	
11-Oct-05	1354	11.82	8.05	10.50	11.19	
11-Oct-05	1355	11.88	7.98	9.89	82.66	
11-Oct-05	1356	12.26	7.66	8.87	106.49	
11-Oct-05	1357	12.17	7.74	9.88	84.95	
11-Oct-05	1358	12.24	7.67	9.57	17.35	
11-Oct-05	1359	11.45	8.37	11.08	47.24	
11-Oct-05	1400	11.87	8.00	10.27	73.47	
11-Oct-05	1401	12.04	7.86	9.60	81.82	
11-Oct-05	1402	12.15	7.76	10.02	57.07	
11-Oct-05	1403	12.09	7.82	9.64	30.09	
11-Oct-05	1404	12.02	7.86	10.41	46.29	
11-Oct-05	1405	12.15	7.77	9.91	12.70	
11-Oct-05	1406	11.93	7.95	10.50	17.78	
11-Oct-05	1407	11.89	7.98	10.67	16.78	
11-Oct-05	1408	11.75	8.09	10.84	11.92	
11-Oct-05	1409	11.85	8.00	10.27	19.45	
11-Oct-05	1410	11.85	8.01	10.23	29.44	
11-Oct-05	1411	11.91	7.96	10.76	29.22	
11-Oct-05	1412	11.89	7.98	10.41	9.96	
11-Oct-05	1413	11.82	8.05	10.46	14.34	
11-Oct-05	1414	11.98	7.89	10.51	8.44	
11-Oct-05	1415	12.37	7.47	9.77	10.15	
11-Oct-05	1420	12.07	7.83	9.76	23.45	Port Change
11-Oct-05	1421	12.05	7.84	10.40	28.59	
11-Oct-05	1422	12.11	7.77	10.14	9.40	
11-Oct-05	1423	12.08	7.81	9.98	10.64	
11-Oct-05	1424	12.25	7.64	10.01	8.94	
11-Oct-05	1425	12.28	7.64	9.46	17.88	
11-Oct-05	1426	12.16	7.73	10.06	18.29	
11-Oct-05	1427	12.24	7.67	9.33	9.78	
11-Oct-05	1428	12.24	7.69	9.68	11.88	
11-Oct-05	1429	12.51	7.44	8.81	14.27	
11-Oct-05	1430	11.55	8.29	10.85	14.83	
11-Oct-05	1431	10.83	8.90	12.37	4.19	
11-Oct-05	1432	11.92	7.95	10.03	6.46	
11-Oct-05	1433	12.12	7.79	9.79	23.55	
11-Oct-05	1434	11.92	7.95	9.78	20.54	
11-Oct-05	1435	12.01	7.89	9.94	27.44	
11-Oct-05	1436	12.07	7.83	9.71	13.11	
11-Oct-05	1437	12.18	7.73	9.60	30.28	
11-Oct-05	1438	11.54	8.31	10.80	13.15	
11-Oct-05	1439	11.95	7.94	10.24	21.69	
11-Oct-05	1440	12.13	7.77	9.98	7.54	

11-Oct-05	1441	12.24	7.68	9.39	9.87
11-Oct-05	1442	12.13	7.79	9.96	15.24
11-Oct-05	1443	12.26	7.66	9.68	6.53
11-Oct-05	1444	12.28	7.65	9.72	8.40
11-Oct-05	1445	12.26	7.66	9.48	13.71
11-Oct-05	1446	12.05	7.86	10.20	14.04
11-Oct-05	1447	12.54	7.42	9.04	9.85
11-Oct-05	1448	11.72	8.16	10.92	15.00
11-Oct-05	1449	11.98	7.94	10.17	7.69
11-Oct-05	1450	11.98	7.93	10.03	12.12
11-Oct-05	1451	12.25	7.69	9.69	9.98
11-Oct-05	1452	12.37	7.60	9.20	11.39
11-Oct-05	1453	12.08	7.85	9.50	22.74
11-Oct-05	1454	11.99	7.91	10.21	16.02
11-Oct-05	1455	12.30	7.64	9.00	12.72
11-Oct-05	1456	12.21	7.73	9.19	54.27
11-Oct-05	1457	11.95	7.95	9.75	45.67
11-Oct-05	1458	11.82	8.03	10.49	18.22
11-Oct-05	1459	11.83	8.03	10.81	10.15
11-Oct-05	1500	11.97	7.91	10.07	6.58
11-Oct-05	1501	12.16	7.77	9.97	11.36
11-Oct-05	1502	12.92	7.00	9.86	10.58
11-Oct-05	1503	11.95	7.95	9.75	45.67
11-Oct-05	1504	12.16	7.77	9.97	11.36
11-Oct-05	1505	12.54	7.42	9.04	9.85

Facility:	**Simi Valley Landfill**	**Run No.:**	**3**
Source:	**Flare #1 (McGill)**	**Fuel:**	**L.F.G.**
Job No.:	**W07-043**	**Std. O2:**	**3**
Date:	**10/11/05**		

	O2 %	CO2 %	NOx ppm	CO ppm
Range:	25	15	25	500
Span:	12.06	7.01	11.40	202.00
Low:				
High:	20.07	12.00	23.80	396.00

** POST-TEST DRIFT (DIRECT)**

Values				
Zero:	0.03	0.00	0.00	0.00
Span:	12.00	7.02	11.25	201.00

Percent Drift				
Zero:	0.10	0.00	0.00	0.00
Span:	-0.24	0.07	-0.60	-0.20

** PRE-TEST BIAS **

Values				
Zero:	0.15	0.02	0.00	0.00
Span:	11.98	6.99	11.40	199.00

** POST-TEST BIAS **

Values				
Zero:	0.08	0.00	0.20	0.00
Span:	11.93	6.95	11.25	199.00

** BIAS CORRECTION **

Zero Average	0.11	0.01	0.10	0.00
Span Average	11.95	6.97	11.33	199.00

** POST-TEST DRIFT (BIAS)**

Percent Drift				
Zero:	0.30	0.10	-0.80	0.00
Span:	0.20	0.30	0.60	0.00

Bias-Corrected Concentration	**11.80**	**8.11**	**10.50**	**25.51**
Bias-Corrected Conc.(O2 adjusted)			**20.66**	**50.18**

** RAW AVERAGE CONCENTRATION **

Average:		11.70	8.06	10.44	25.13
O2 adjust:	3.0			20.31	48.87
Date	Time	O2	CO2	NOx	CO
11-Oct-05	1531	12.33	7.39	8.75	253.10
11-Oct-05	1532	11.94	7.79	9.53	116.29
11-Oct-05	1533	12.23	7.57	9.27	23.11
11-Oct-05	1534	12.02	7.78	9.91	10.46
11-Oct-05	1535	12.49	7.34	8.98	15.84
11-Oct-05	1536	12.28	7.56	9.07	29.56
11-Oct-05	1537	12.01	7.79	9.86	19.33
11-Oct-05	1538	11.72	8.02	10.49	14.52
11-Oct-05	1539	11.55	8.19	10.72	16.05

11-Oct-05	1540	12.05	7.75	9.60	14.51	
11-Oct-05	1541	11.73	8.02	10.11	34.40	
11-Oct-05	1542	11.60	8.15	10.40	23.45	
11-Oct-05	1543	11.53	8.20	10.86	29.68	
11-Oct-05	1544	11.79	7.99	10.16	27.35	
11-Oct-05	1545	11.49	8.23	10.84	32.27	
11-Oct-05	1546	11.25	8.43	11.60	13.20	
11-Oct-05	1547	11.52	8.23	10.69	16.19	
11-Oct-05	1548	11.54	8.17	10.80	12.42	
11-Oct-05	1549	11.76	8.01	10.28	6.25	
11-Oct-05	1550	11.42	8.27	10.94	15.84	
11-Oct-05	1551	11.62	8.13	10.44	18.71	
11-Oct-05	1552	11.39	8.31	11.08	8.49	
11-Oct-05	1553	11.58	8.14	10.57	11.13	
11-Oct-05	1554	11.87	7.91	9.85	31.28	
11-Oct-05	1555	11.99	7.78	9.70	24.16	
11-Oct-05	1556	11.51	8.21	10.60	38.30	
11-Oct-05	1557	11.34	8.38	11.14	27.12	
11-Oct-05	1558	11.94	7.84	9.76	48.64	
11-Oct-05	1559	11.87	7.90	9.85	28.76	
11-Oct-05	1600	11.70	8.06	10.09	41.05	
11-Oct-05	1601	11.76	7.97	10.18	31.21	
11-Oct-05	1602	11.27	8.42	11.30	12.39	
11-Oct-05	1603	11.35	8.33	11.21	8.88	
11-Oct-05	1604	11.97	7.79	10.06	6.33	
11-Oct-05	1605	11.97	7.82	10.15	6.83	
11-Oct-05	1606	11.88	7.87	10.14	7.77	
11-Oct-05	1607	11.91	7.87	9.82	7.76	
11-Oct-05	1608	12.52	7.32	8.35	18.38	
11-Oct-05	1609	12.30	7.51	8.82	36.66	
11-Oct-05	1610	11.59	8.15	10.46	22.09	
11-Oct-05	1611	12.33	7.48	9.16	25.19	
11-Oct-05	1612	11.95	7.80	9.91	11.32	
11-Oct-05	1613	12.25	7.56	9.32	17.45	
11-Oct-05	1614	12.04	7.75	9.68	12.23	
11-Oct-05	1615	11.77	7.97	9.99	27.69	
11-Oct-05	1616	11.97	7.83	9.72	41.31	
11-Oct-05	1621	11.30	8.33	11.24	22.53	Port Change
11-Oct-05	1622	10.92	8.72	12.19	11.66	
11-Oct-05	1623	11.57	8.20	10.71	19.95	
11-Oct-05	1624	11.89	7.94	10.12	18.72	
11-Oct-05	1625	11.90	7.91	10.10	30.70	
11-Oct-05	1626	11.01	8.69	11.92	23.34	
11-Oct-05	1627	11.06	8.64	11.98	20.36	
11-Oct-05	1628	11.85	7.94	10.25	22.16	
11-Oct-05	1629	11.90	7.88	10.10	22.87	
11-Oct-05	1630	11.69	8.07	10.53	15.17	
11-Oct-05	1631	11.63	8.15	10.79	22.19	
11-Oct-05	1632	11.63	8.14	10.62	11.99	
11-Oct-05	1633	11.59	8.19	10.67	21.52	
11-Oct-05	1634	11.28	8.44	11.52	12.11	
11-Oct-05	1635	11.35	8.39	11.22	9.58	
11-Oct-05	1636	11.65	8.12	10.50	13.84	
11-Oct-05	1637	11.39	8.33	11.18	11.71	
11-Oct-05	1638	11.35	8.38	11.08	12.84	
11-Oct-05	1639	11.37	8.36	11.05	11.05	
11-Oct-05	1640	11.80	7.98	10.19	12.36	
11-Oct-05	1641	11.71	8.08	10.46	11.58	

11-Oct-05	1642	11.62	8.14	10.48	14.95
11-Oct-05	1643	11.73	8.06	10.12	65.12
11-Oct-05	1644	11.80	8.00	9.98	84.39
11-Oct-05	1645	11.60	8.17	10.78	41.86
11-Oct-05	1646	11.64	8.15	10.55	27.49
11-Oct-05	1647	11.25	8.46	11.49	13.24
11-Oct-05	1648	11.06	8.63	11.96	17.65
11-Oct-05	1649	11.25	8.47	11.63	12.37
11-Oct-05	1650	11.37	8.37	11.25	12.38
11-Oct-05	1651	11.44	8.32	11.18	11.10
11-Oct-05	1652	11.72	8.06	10.50	14.28
11-Oct-05	1653	11.77	8.01	10.29	17.55
11-Oct-05	1654	12.02	7.82	9.57	37.92
11-Oct-05	1655	12.04	7.80	9.47	33.99
11-Oct-05	1656	11.76	8.03	10.29	43.52
11-Oct-05	1657	11.43	8.31	11.06	33.11
11-Oct-05	1658	11.18	8.54	11.61	17.68
11-Oct-05	1659	11.44	8.31	11.20	14.47
11-Oct-05	1700	11.53	8.22	10.95	21.87
11-Oct-05	1701	11.37	8.38	11.47	15.29
11-Oct-05	1702	11.47	8.28	11.12	11.46
11-Oct-05	1703	11.54	8.21	10.87	17.17
11-Oct-05	1704	12.72	7.21	9.64	23.90
11-Oct-05	1705	12.04	7.80	9.47	33.99
11-Oct-05	1706	11.53	8.22	10.95	21.87

CEM Performance Data

Facility: Simi Valley Landfill
Source: Flare #1 (McGill)
Job No.: W07-043
Date: 10/11/05

PRETEST CALIBRATION ERROR				
LEAK CHECK	Good			
RANGE :	25 O2	15 CO2	500 CO	25 NOx
ZERO				
Instrument	0.00	0.00	0.00	0.00
Cylinder	0.00	0.00	0.00	0.00
Difference (%)	0.00	0.00	0.00	0.00
LOW LEVEL				
Instrument				
Cylinder				
Difference (%)				
MID LEVEL				
Instrument	12.00	7.01	202.00	11.35
Cylinder	12.06	7.01	202.00	11.40
Difference (%)	-0.24	-0.03	0.00	-0.20
HIGH LEVEL				
Instrument	20.00	12.23	392.50	24.20
Cylinder	20.07	12.00	396.00	23.80
Difference (%)	-0.28	1.50	-0.70	1.60

PRETEST LINEARITY	Cylinder	Instrument
	O2	
Zero	0.00	0.00
High Level	20.07	20.00
Slope	1.00	
Intercept	0.00	Status
Predicted Value	12.02	<2
Linearity (%)	-0.07	PASS
	CO2	
Zero	0.00	0.00
High Level	12.00	12.07
Slope	0.99	
Intercept	0.00	Status
Predicted Value	7.05	<2
Linearity (%)	-0.31	PASS
	CO	
Zero	0.00	0.00
High Level	396.00	392.50
Slope	1.01	
Intercept	0.00	Status
Predicted Value	200.21	<2
Linearity (%)	0.36	PASS
	NOX	
Zero	0.00	0.00
High Level	23.80	24.20
Slope	0.98	
Intercept	0.00	Status
Predicted Value	11.59	<2
Linearity (%)	-0.97	PASS

SYSTEM RESPONSE TIME	#1	#2	#3
Upscale			
NOx	27	26	27
CO	55	54	57
O2	28	28	29
CO2	24	23	23
Downscale			
NOx	26	26	27
CO	51	53	54
O2	26	26	26
CO2	21	20	19

NO2 CONVERTER EFFICIENCY	ppm	%	status
Cylinder(Co)	19.50		
NO Mode(C1)	0.40		
NOx Mode(C2)	18.55		
D1	19.10		
D2	18.15		
D3	0.95		
CE		95.03	
CE > 90 %			PASS
D3 <1.0 ppm	0.95		PASS

POST TEST CALIBRATION ERROR				
LEAK CHECK	Good			
	O2	CO2	CO	NOx
ZERO				
Instrument	0.03	0.00	0.00	0.00
Cylinder	0.00	0.00	0.00	0.00
Difference (%)	0.10	0.00	0.00	0.00
LOW LEVEL				
Instrument				
Cylinder				
Difference (%)				
MID LEVEL				
Instrument	12.00	7.02	201.00	11.25
Cylinder	12.06	7.01	202.00	11.40
Difference (%)	-0.24	0.07	-0.20	-0.60
HIGH LEVEL				
Instrument	19.98	12.15	395.00	23.83
Cylinder	20.07	12.00	396.00	23.80
Difference (%)	-0.38	1.00	-0.20	0.10

POST TEST LINEARITY	Cylinder	Instrument
	O2	
Zero	0.00	0.03
High Level	20.07	19.98
Slope	1.01	
Intercept	-0.03	Status
Predicted Value	12.01	<2
Linearity (%)	-0.05	PASS
	CO2	
Zero	0.00	0.00
High Level	12.00	12.15
Slope	0.99	
Intercept	0.00	Status
Predicted Value	7.10	<2
Linearity (%)	-0.52	PASS
	CO	
Zero	0.00	0.00
High Level	396.00	395.00
Slope	1.00	
Intercept	0.00	Status
Predicted Value	201.49	<2
Linearity (%)	-0.10	PASS
	NOX	
Zero	0.00	0.00
High Level	23.80	23.83
Slope	1.00	
Intercept	0.00	Status
Predicted Value	11.41	<2
Linearity (%)	-0.65	PASS

Trace Organic Species
Destruction Efficiency Results
Simi Valley Landfill
Flare #1 (McGill)
October 11, 2005
Run 1

	INLET				OUTLET			
	Flow rate	1297	dscfm		Flow rate	9311	dscfm	
Species	Conc. (ppb)	Conc. (mg/dscf)	Em. Rate (lb/hr)	Conc. (ppb)	Conc. (mg/dscf)	Em. Rate (lb/hr)	Dest. Eff. (%)	
Hydrogen Sulfide	34700	1.41E+00	2.43E-01	< 50	< 2.04E-03	< 2.51E-03	>	98.97
Benzene	1620	1.51E-01	2.59E-02	1.40	1.31E-04	1.61E-04		99.38
Benzychloride	< 40	< 6.07E-03	< 1.04E-03	< 0.8	< 1.21E-04	< 1.50E-04		NA
Chlorobenzene	99.8	1.35E-02	2.31E-03	< 0.3	< 4.05E-05	< 4.99E-05	>	97.84
Dichlorobenzenes	846	1.49E-01	2.55E-02	< 1.1	< 1.93E-04	< 2.38E-04	>	99.07
1,1-dichloroethane	328	3.88E-02	6.66E-03	< 0.3	< 3.55E-05	< 4.37E-05	>	99.34
1,2-dichloroethane	156	1.85E-02	3.17E-03	< 0.3	< 3.55E-05	< 4.37E-05	>	98.62
1,1-dichloroethylene	59.0	6.84E-03	1.17E-03	< 0.3	< 3.48E-05	< 4.28E-05	>	96.35
Dichloromethane	1320	1.34E-01	2.30E-02	3.78	3.84E-04	4.73E-04		97.94
1,2-Dibromoethane	< 30	< 6.74E-03	< 1.16E-03	< 0.3	< 6.74E-05	< 8.30E-05		NA
Perchloroethene	1480	4.19E-01	7.19E-02	< 0.2	< 5.66E-05	< 6.98E-05	>	99.90
Carbon tetrachloride	< 30	< 5.52E-03	< 9.48E-04	< 0.2	< 3.68E-05	< 4.53E-05		NA
Toluene	32000	3.52E+00	6.04E-01	2.38	2.62E-04	3.22E-04		99.95
1,1,1-trichloroethane	30.8	4.90E-03	8.40E-04	< 0.2	< 3.18E-05	< 3.92E-05	>	95.34
Trichloroethene	642	1.01E-01	1.72E-02	< 0.2	< 3.13E-05	< 3.86E-05	>	99.78
Chloroform	< 20	< 2.84E-03	< 4.88E-04	< 0.2	< 2.84E-05	< 3.50E-05		NA
Vinyl Chloride	401	3.00E-02	5.14E-03	< 0.3	< 2.24E-05	< 2.76E-05	>	99.46
m+p-xylenes	13800	1.75E+00	3.00E-01	0.87	1.10E-04	1.36E-04		99.95
o-xylene	4530	5.74E-01	9.85E-02	0.38	4.81E-05	5.93E-05		99.94
TNMHC	5120000	9.79E+01	1.68E+01	3660	7.00E-02	8.62E-02		99.49
Acrylonitrile	< 200	< 1.27E-02	< 2.18E-03	< 2	< 1.27E-04	< 1.56E-04		NA
1,3-butadiene	NM	NM	NM	< 1.0	< 6.94E-05	< 8.55E-05		NA
1,1,2,2-Tetrachloroethane	< 30	< 6.02E-03	< 1.03E-03	< 0.3	< 6.02E-05	< 7.41E-05		NA

Note: All values preceded by "<" are below the detection limit. The reported values are the detection limit.
NA--Not Applicale: Destruction efficiency can not be calculated since both inlet and outlet values are below the detection limit.

Trace Organic Species
Destruction Efficiency Results
Simi Valley Landfill
Flare #1 (McGill)
October 11, 2005
Run 2

		INLET Flow rate	1251	dscfm		OUTLET Flow rate	9199	dscfm
Species	Conc. (ppb)	Conc. (mg/dscf)	Em. Rate (lb/hr)		Conc. (ppb)	Conc. (mg/dscf)	Em. Rate (lb/hr)	Dest. Eff. (%)
Hydrogen Sulfide	39800	1.62E+00	2.68E-01		< 50	< 2.04E-03	< 2.48E-03	> 99.08
Benzene	1830	1.71E-01	2.82E-02		1.41	1.31E-04	1.60E-04	99.43
Benzychloride	< 40	< 6.07E-03	< 1.00E-03		< 0.8	< 1.21E-04	< 1.48E-04	NA
Chlorobenzene	110	1.49E-02	2.46E-03		< 0.3	< 4.05E-05	< 4.93E-05	> 97.99
Dichlorobenzenes	924	1.62E-01	2.69E-02		< 1.1	< 1.93E-04	< 2.35E-04	> 99.12
1,1-dichloroethane	363	4.29E-02	7.10E-03		< 0.3	< 3.55E-05	< 4.32E-05	> 99.39
1,2-dichloroethane	172	2.04E-02	3.37E-03		< 0.3	< 3.55E-05	< 4.32E-05	> 98.72
1,1-dichloroethylene	67.6	7.84E-03	1.30E-03		< 0.3	< 3.48E-05	< 4.23E-05	> 96.74
Dichloromethane	1500	1.52E-01	2.52E-02		2.13	2.16E-04	2.63E-04	98.96
1,2-Dibromoethane	< 30	< 6.74E-03	< 1.11E-03		< 0.3	< 6.74E-05	< 8.20E-05	NA
Perchloroethene	1680	4.76E-01	7.87E-02		< 0.2	< 5.66E-05	< 6.89E-05	> 99.91
Carbon tetrachloride	< 30	< 5.52E-03	< 9.13E-04		< 0.2	< 3.68E-05	< 4.48E-05	NA
Toluene	36400	4.00E+00	6.62E-01		1.04	1.14E-04	1.39E-04	99.98
1,1,1-trichloroethane	34.1	5.42E-03	8.97E-04		< 0.2	< 3.18E-05	< 3.87E-05	> 95.69
Trichloroethene	721	1.13E-01	1.87E-02		< 0.2	< 3.13E-05	< 3.81E-05	> 99.80
Chloroform	< 20	< 2.84E-03	< 4.71E-04		< 0.2	< 2.84E-05	< 3.46E-05	NA
Vinyl Chloride	455	3.40E-02	5.62E-03		< 0.3	< 2.24E-05	< 2.73E-05	> 99.52
m+p-xylenes	15400	1.95E+00	3.23E-01		0.62	7.85E-05	9.56E-05	99.97
o-xylene	5080	6.44E-01	1.06E-01		0.20	2.53E-05	3.08E-05	99.97
TNMHC	4960000	9.48E+01	1.57E+01		3490	6.67E-02	8.12E-02	99.48
Acrylonitrile	< 200	< 1.27E-02	< 2.10E-03		< 2	< 1.27E-04	< 1.54E-04	NA
1,3-butadiene	NM	NM	NM		< 1.0	< 6.94E-05	< 8.45E-05	NA
1,1,2,2-Tetrachloroethane	< 30	< 6.02E-03	< 9.96E-04		< 0.3	< 6.02E-05	< 7.32E-05	NA

Note: All values preceded by "<" are below the detection limit. The reported values are the detection limit.
NA--Not Applicale: Destruction efficiency can not be calculated since both inlet and outlet values are below the detection limit.

Trace Organic Species
Destruction Efficiency Results
Simi Valley Landfill
Flare #1 (McGill)
October 11, 2005
Run 3

		INLET Flow rate	1258	dscfm		OUTLET Flow rate	9259	dscfm	
Species	Conc. (ppb)	Conc. (mg/dscf)	Em. Rate (lb/hr)		Conc. (ppb)	Conc. (mg/dscf)	Em. Rate (lb/hr)		Dest. Eff. (%)
Hydrogen Sulfide	38000	1.55E+00	2.58E-01		< 50	< 2.04E-03	< 2.50E-03		> 99.03
Benzene	1860	1.73E-01	2.89E-02		1.18	1.10E-04	1.35E-04		99.53
Benzychloride	< 40	< 6.07E-03	< 1.01E-03		< 0.8	< 1.21E-04	< 1.49E-04		NA
Chlorobenzene	110	1.49E-02	2.47E-03		< 0.3	< 4.05E-05	< 4.96E-05		> 97.99
Dichlorobenzenes	969	1.70E-01	2.83E-02		< 1.1	< 1.93E-04	< 2.37E-04		> 99.16
1,1-dichloroethane	374	4.43E-02	7.36E-03		< 0.3	< 3.55E-05	< 4.35E-05		> 99.41
1,2-dichloroethane	174	2.06E-02	3.43E-03		< 0.3	< 3.55E-05	< 4.35E-05		> 98.73
1,1-dichloroethylene	68.1	7.89E-03	1.31E-03		< 0.3	< 3.48E-05	< 4.26E-05		> 96.76
Dichloromethane	1510	1.53E-01	2.55E-02		2.10	2.13E-04	2.61E-04		98.98
1,2-Dibromoethane	< 30	< 6.74E-03	< 1.12E-03		< 0.3	< 6.74E-05	< 8.25E-05		NA
Perchloroethene	1700	4.82E-01	8.01E-02		< 0.2	< 5.66E-05	< 6.94E-05		> 99.91
Carbon tetrachloride	< 30	< 5.52E-03	< 9.19E-04		< 0.2	< 3.68E-05	< 4.51E-05		NA
Toluene	37100	4.08E+00	6.79E-01		0.38	4.18E-05	5.12E-05		99.99
1,1,1-trichloroethane	34.1	5.42E-03	9.02E-04		< 0.2	< 3.18E-05	< 3.89E-05		> 95.68
Trichloroethene	736	1.15E-01	1.92E-02		< 0.2	< 3.13E-05	< 3.83E-05		> 99.80
Chloroform	< 20	< 2.84E-03	< 4.73E-04		< 0.2	< 2.84E-05	< 3.48E-05		NA
Vinyl Chloride	443	3.31E-02	5.51E-03		< 0.3	< 2.24E-05	< 2.74E-05		> 99.50
m+p-xylenes	15700	1.99E+00	3.31E-01		0.97	1.23E-04	1.50E-04		99.95
o-xylene	5300	6.71E-01	1.12E-01		0.27	3.42E-05	4.19E-05		99.96
TNMHC	5120000	9.79E+01	1.63E+01		4380	8.38E-02	1.03E-01		99.37
Acrylonitrile	< 200	< 1.27E-02	< 2.11E-03		< 2	< 1.27E-04	< 1.55E-04		NA
1,3-butadiene	NM	NM	NM		< 1.0	< 6.94E-05	< 8.50E-05		NA
1,1,2,2-Tetrachloroethane	< 30	< 6.02E-03	< 1.00E-03		< 0.3	< 6.02E-05	< 7.37E-05		NA

Note: All values preceded by "<" are below the detection limit. The reported values are the detection limit.
NA--Not Applicale: Destruction efficiency can not be calculated since both inlet and outlet values are below the detection limit.

CARB Method 429 PAH Emissions

STD.TEMP.: 68

		RUN	RUN	RUN
RUN NUMBER	******	1	2	3
DATE OF RUN	******	10/13/05	10/14/05	10/17/05
CLOCK TIME: INITIAL	******	1345	810	802
CLOCK TIME: FINAL	******	1705	1122	1355
AVG. STACK TEMPERATURE	Degrees F	1593	1593	1541
AVG. SQUARE DELTA P	Inches H20	0.1046	0.1000	0.1000
NOZZLE DIAMETER	Inches	1.054	1.054	1.054
BAROMETRIC PRESSURE	Inches HG	28.70	29.11	28.95
BAROMETRIC PRESSURE	Minutes	180	180	180
SAMPLE VOLUME	Cubic Feet	183.473	177.648	167.105
AVG. METER TEMP.	Degrees F	109	96	74
AVG. DELTA H	Inches H20	2.76	2.50	2.50
DGM CALIB. FACTOR [Y]	******	0.9856	0.9856	0.9856
WATER COLLECTED	Milliliters	334	322	316
CO 2	Percent	5.1	5.2	5.3
O 2	Percent	15.2	15.3	15.7
CO	Percent	0.0	0.0	0.0
N 2	Percent	79.7	79.5	79.0
STACK AREA	Square Inches	6647.6	6647.6	6647.6
STATIC PRESSURE	Inches WG.	-0.005	-0.005	-0.005
PITOT COEFFICIENT	******	0.84	0.84	0.84
SAMPLE VOLUME DRY	DSCF	162.13	162.85	158.60
WATER AT STD.	SCF	15.7	15.2	14.9
MOISTURE	Percent	8.9	8.5	8.6
MOLE FRACTION DRY GAS	******	0.91	0.91	0.91
MOLECULAR WT.DRY	lb/lb Mole	29.42	29.44	29.48
EXCESS AIR	Percent	260	269	304
MOLECULAR WT. WET	lb/lb Mole	28.41	28.47	28.49
STACK GAS PRESSURE	Inches HG	28.70	29.11	28.95
STACK VELOCITY	AFPM	715	678	671
VOLUMETRIC FLOWRATE, DRY STD	DSCFM	7424	7166	7231
VOLUMETRIC FLOWRATE, ACT.	ACFM	33017	31313	30988
ISOKINETIC RATIO	Percent	92	96	93

CALCULATIONS FOR GRAIN LOADING AND EMISSION RATES

CARB Method 429 PAH Emissions

	RUN	RUN	RUN
RUN NUMBER	1	2	3
DATE OF RUN	10/13/05	10/14/05	10/17/05
CLOCK TIME: INITIAL	1345	810	802
CLOCK TIME: FINAL	1705	1122	1355

PAH EMISSION RATES	WEIGHT (ug)	CONC. @ 12 % CO2 (ug/dscm)	EMISSION RATE (lb/hr)	WEIGHT (ug)	CONC. @ 12 % CO2 (ug/dscm)	EMISSION RATE (lb/hr)	WEIGHT (ug)	CONC. @ 12 % CO2 (ug/dscm)	EMISSION RATE (lb/hr)
NAPHTHALENE	0.400000	0.2050	2.42E-06	0.401000	0.2006	2.33E-06	0.207000	0.1043	1.25E-06
2-METHYLNAPHTHALENE	0.226000	0.1158	1.37E-06	0.176000	0.0881	1.02E-06	0.072700	0.0366	4.38E-07
ACENAPHTHYLENE	< 0.020000	< 0.0102	< 1.21E-07	< 0.020000	< 0.0100	< 1.16E-07	< 0.020000	< 0.0101	< 1.21E-07
ACENAPHTHENE	0.034600	0.0177	2.10E-07	< 0.020000	< 0.0100	< 1.16E-07	< 0.020000	< 0.0101	< 1.21E-07
FLUORENE	0.133000	0.0682	8.06E-07	0.044400	0.0222	2.58E-07	0.021600	0.0109	1.30E-07
PHENANTHRENE	0.670000	0.3433	4.06E-06	0.243000	0.1216	1.41E-06	0.096600	0.0487	5.83E-07
ANTHRACENE	< 0.020000	< 0.0102	< 1.21E-07	0.034300	0.0172	2.00E-07	< 0.020000	< 0.0101	< 1.21E-07
FLUORANTHENE	0.104000	0.0533	6.30E-07	0.086600	0.0433	5.04E-07	0.025000	0.0126	1.51E-07
PYRENE	0.069300	0.0355	4.20E-07	0.061300	0.0307	3.57E-07	< 0.020000	< 0.0101	< 1.21E-07
BENZ(A)ANTHRACENE	< 0.020000	< 0.0102	< 1.21E-07	< 0.020000	< 0.0100	< 1.16E-07	< 0.020000	< 0.0101	< 1.21E-07
CHRYSENE	0.025900	0.0133	1.57E-07	0.051300	0.0257	2.99E-07	< 0.020000	< 0.0101	< 1.21E-07
BENZO(B)FLUORANTHENE	0.023500	0.0120	1.42E-07	0.029800	0.0149	1.73E-07	< 0.020000	< 0.0101	< 1.21E-07
BENZO(K)FLUORANTHENE	< 0.020000	< 0.0102	< 1.21E-07	< 0.020000	< 0.0100	< 1.16E-07	< 0.020000	< 0.0101	< 1.21E-07
BENZO(E)PYRENE	< 0.020000	< 0.0102	< 1.21E-07	0.025800	0.0129	1.50E-07	< 0.020000	< 0.0101	< 1.21E-07
BENZO(A)PYRENE	< 0.020000	< 0.0102	< 1.21E-07	< 0.020000	< 0.0100	< 1.16E-07	< 0.020000	< 0.0101	< 1.21E-07
PYRYLENE	< 0.020000	< 0.0102	< 1.21E-07	< 0.020000	< 0.0100	< 1.16E-07	< 0.020000	< 0.0101	< 1.21E-07
BENZO(G,H,I)PERYLENE	< 0.020000	< 0.0102	< 1.21E-07	< 0.020000	< 0.0100	< 1.16E-07	< 0.020000	< 0.0101	< 1.21E-07
DIBENZ(A,H)ANTHRACENE	< 0.020000	< 0.0102	< 1.21E-07	< 0.020000	< 0.0100	< 1.16E-07	< 0.020000	< 0.0101	< 1.21E-07
INDENO[1,2,3-cd]PYRENE	< 0.020000	< 0.0102	< 1.21E-07	< 0.020000	< 0.0100	< 1.16E-07	< 0.020000	< 0.0101	< 1.21E-07
HEXACHLOROBENZENE	0.001610	0.0008	9.75E-09	0.000815	0.0004	4.74E-09	0.001110	0.0006	6.69E-09
Total PAH		**0.9675**	**1.14E-05**		**0.6676**	**7.77E-06**		**0.3549**	**4.25E-06**
Total PAH w/o Napthalene		**0.7625**	**9.01E-06**		**0.4670**	**5.43E-06**		**0.2505**	**3.00E-06**
Total Carcinogenic PAH		**0.1081**	**1.28E-06**		**0.1239**	**1.44E-06**		**0.1014**	**1.21E-06**

CALCULATIONS FOR GRAIN LOADING AND EMISSION RATES

	FIELD BLANK	FIELD BLANK	FIELD BLANK
RUN NUMBER	1	2	3
DATE OF RUN	10/13/05	10/14/05	10/17/05
CLOCK TIME: INITIAL	1345	810	802
CLOCK TIME: FINAL	1705	1122	1355

PAH EMISSION RATES		WEIGHT (ug)	CONC. @ 12 % CO2 (ug/dscm)	EMISSION RATE (lb/hr)		WEIGHT (ug)	CONC. @ 12 % CO2 (ug/dscm)	EMISSION RATE (lb/hr)		WEIGHT (ug)	CONC. @ 12 % CO2 (ug/dscm)	EMISSION RATE (lb/hr)
NAPHTHALENE	<	0.390	0.1999	2.36E-06	<	0.390	0.1951	2.27E-06	<	0.390	0.1966	2.35E-06
2-METHYLNAPHTHALENE	<	0.130	0.0666	7.87E-07	<	0.130	0.0650	7.57E-07	<	0.130	0.0655	7.84E-07
ACENAPHTHYLENE	<	0.020	0.0102	1.21E-07	<	0.020	0.0100	1.16E-07	<	0.020	0.0101	1.21E-07
ACENAPHTHENE	<	0.020	0.0102	1.21E-07	<	0.020	0.0100	1.16E-07	<	0.020	0.0101	1.21E-07
FLUORENE	<	0.020	0.0102	1.21E-07	<	0.020	0.0100	1.16E-07	<	0.020	0.0101	1.21E-07
PHENANTHRENE	<	0.050	0.0256	3.03E-07	<	0.050	0.0250	2.91E-07	<	0.050	0.0252	3.02E-07
ANTHRACENE	<	0.020	0.0102	1.21E-07	<	0.020	0.0100	1.16E-07	<	0.020	0.0101	1.21E-07
FLUORANTHENE	<	0.020	0.0102	1.21E-07	<	0.020	0.0100	1.16E-07	<	0.020	0.0101	1.21E-07
PYRENE	<	0.020	0.0102	1.21E-07	<	0.020	0.0100	1.16E-07	<	0.020	0.0101	1.21E-07
BENZ(A)ANTHRACENE	<	0.020	0.0102	1.21E-07	<	0.020	0.0100	1.16E-07	<	0.020	0.0101	1.21E-07
CHRYSENE	<	0.020	0.0102	1.21E-07	<	0.020	0.0100	1.16E-07	<	0.020	0.0101	1.21E-07
BENZO(B)FLUORANTHENE	<	0.020	0.0102	1.21E-07	<	0.020	0.0100	1.16E-07	<	0.020	0.0101	1.21E-07
BENZO(K)FLUORANTHENE	<	0.020	0.0102	1.21E-07	<	0.020	0.0100	1.16E-07	<	0.020	0.0101	1.21E-07
BENZO(E)PYRENE	<	0.020	0.0102	1.21E-07	<	0.020	0.0100	1.16E-07	<	0.020	0.0101	1.21E-07
BENZO(A)PYRENE	<	0.020	0.0102	1.21E-07	<	0.020	0.0100	1.16E-07	<	0.020	0.0101	1.21E-07
PYRYLENE	<	0.020	0.0102	1.21E-07	<	0.020	0.0100	1.16E-07	<	0.020	0.0101	1.21E-07
BENZO(G,H,I)PERYLENE	<	0.020	0.0102	1.21E-07	<	0.020	0.0100	1.16E-07	<	0.020	0.0101	1.21E-07
DIBENZ(A,H)ANTHRACENE	<	0.020	0.0102	1.21E-07	<	0.020	0.0100	1.16E-07	<	0.020	0.0101	1.21E-07
INDENO[1,2,3-cd]PYRENE	<	0.020	0.0102	1.21E-07	<	0.020	0.0100	1.16E-07	<	0.020	0.0101	1.21E-07
Total PAH			**0.4561**	**5.391E-06**			**0.4453**	**5.180E-06**			**0.4486**	**5.367E-06**
Total PAH w/o Napthalene			**0.2562**	**3.028E-06**			**0.2502**	**2.910E-06**			**0.2520**	**3.015E-06**
Total Carcinogenic PAH			**0.1025**	**1.21E-06**			**0.1001**	**1.16E-06**			**0.1008**	**1.21E-06**

Facility: Simi Valley Landfill
Source: Flare #1 (McGill)
Job No.: W07-043
Test Date: 10/11/05

CARB Method 436 Metals

STD. TEMP 68

RUN NUMBER	******	1	2	3
DATE OF RUN	******	10/11/05	10/11/05	10/11/05
CLOCK TIME: INITIAL	******	1050	1330	1531
CLOCK TIME: FINAL	******	1240	1515	1706
AVG. STACK TEMPERATURE	Degrees F	1585	1607	1584
AVG. SQUARE DELTA P	Inches H20	0.1288	0.1304	0.1296
NOZZLE DIAMETER	Inches	1.010	1.010	1.010
BAROMETRIC PRESSURE	Inches HG	28.58	28.58	28.58
SAMPLING TIME	Minutes	90	90	90
SAMPLE VOLUME	Cubic Feet	108.708	105.994	106.494
AVG. METER TEMP.	Degrees F	87	91	88
AVG. DELTA H	Inches H20	3.67	3.76	3.71
DGM CALIB. FACTOR [Y]	******	0.9856	0.9856	0.9856
WATER COLLECTED	Milliliters	138	187	168
CO 2	Percent	8.00	7.81	8.11
O 2	Percent	11.94	12.15	11.80
CO	Percent	0.0	0.0	0.0
CH4	Percent	0.0	0.0	0.0
N 2	Percent	80.06	80.04	80.09
STACK AREA	Square Inches	6647.6	6647.6	6647.6
STATIC PRESSURE	Inches WG.	-0.005	-0.005	-0.005
PITOT COEFFICIENT	******	0.84	0.84	0.84
SAMPLE VOLUME DRY	DSCF	99.74	96.60	97.54
WATER AT STD.	SCF	6.5	8.8	7.9
MOISTURE	Percent	6.1	8.4	7.5
MOLE FRACTION DRY GAS	******	0.94	0.92	0.92
MOLECULAR WT.DRY	lb/lb Mole	29.76	29.74	29.77
MOLECULAR WT. WET	lb/lb Mole	29.04	28.75	28.89
STACK GAS PRESSURE	Inches HG	28.58	28.58	28.58
STACK VELOCITY	AFPM	871.4	891	879
VOLUMETRIC FLOWRATE, DRY STD.	DSCFM	9311	9199	9259
VOLUMETRIC FLOWRATE, ACTUAL	ACFM	40225	41140	40563
ISOKINETIC RATIO	Percent	99	97	97

Facility: **Simi Valley Landfill**
Source: **Flare #1 (McGill)**
Job No.: **W07-043**
Test Date: **10/11/05**

CARB Method 436 Metals

CALCULATIONS FOR EMISSION RATES

		RUN	RUN	RUN
RUN NUMBER	******	1	2	3
DATE OF RUN	******	10/11/05	10/11/05	10/11/05
CLOCK TIME: INITIAL	******	1050	1330	1531
CLOCK TIME: FINAL	******	1240	1515	1706

METALS EMISSION RATES

		WEIGHT (ug)	CONC. (mg/dscf)	EMISSION RATE (lb/hr)		WEIGHT (ug)	CONC. (mg/dscf)	EMISSION RATE (lb/hr)		WEIGHT (ug)	CONC. (mg/dscf)	EMISSION RATE (lb/hr)
ARSENIC		1.9	1.90E-05	2.35E-05		2.4	2.48E-05	3.02E-05		2.5	2.56E-05	3.14E-05
CADMIUM		0.88	8.82E-06	1.09E-05		0.62	6.42E-06	7.81E-06		0.61	6.25E-06	7.66E-06
COPPER		7.1	7.12E-05	8.77E-05		3.5	3.62E-05	4.41E-05		2.5	2.56E-05	3.14E-05
MANGANESE		4.0	4.01E-05	4.94E-05		1.4	1.45E-05	1.76E-05		2.1	2.15E-05	2.64E-05
MERCURY		4.8	4.81E-05	5.93E-05		6	6.00E-05	7.31E-05		2	2.26E-05	2.76E-05
NICKEL	<	1.1	1.10E-05	1.36E-05	<	1.1	1.14E-05	1.39E-05	<	1.1	1.13E-05	1.38E-05
ZINC		30	3.01E-04	3.70E-04		14.0	1.45E-04	1.76E-04		10	1.03E-04	1.26E-04
TOTAL				6.15E-04				3.63E-04				2.64E-04

" < "-Denotes the use of reportable limit values.

Facility: Simi Valley Landfill
Source: Flare #1 (McGill)
Job No.: W07-043
Test Date: 10/14-18/05

CARB Method 425 Chromium Emissions

STD TEMP: 68

		RUN	RUN	RUN
RUN NUMBER	******	1	2	3
DATE OF RUN	******	10/14/05	10/18/05	10/18/05
CLOCK TIME: INITIAL	******	1210	805	1235
CLOCK TIME: FINAL	******	1645	1217	1644
AVG. STACK TEMPERATURE	Degrees F	1573	1536	1549
AVG. SQUARE DELTA P	Inches H20	0.1000	0.1000	0.1000
NOZZLE DIAMETER	Inches	1.054	1.054	1.054
BAROMETRIC PRESSURE	In. HG.	29.11	28.92	28.92
SAMPLING TIME	Minutes	240	240	240
SAMPLE VOLUME	Cubic Feet	232.916	227.766	231.938
AVG. METER TEMP.	Degrees F	103	79	79
AVG. DELTA H	In. H20	2.50	2.50	2.50
DGM CALIB. FACTOR [Y]	******	0.9856	0.9856	0.9856
WATER COLLECTED	Milliliters	337	380	402
CO 2	Percent	5.0	6.6	5.0
O 2	Percent	14.4	13.8	16.0
CO	Percent	0.0	0.0	0.0
N 2	Percent	80.6	79.6	79.0
STACK AREA	Square Inches	6647.6	6647.6	6647.6
STATIC PRESSURE	Inches WG.	-0.005	-0.005	-0.005
PITOT COEFFICIENT	******	0.84	0.84	0.84
SAMPLE VOLUME DRY	DSCF	210.75	213.91	217.74
WATER AT STD.	SCF	15.9	17.9	19.0
MOISTURE	Percent	7.0	7.7	8.0
MOLE FRACTION DRY GAS	******	0.93	0.92	0.92
MOLECULAR WT.DRY	lb/lb Mole	29.38	29.61	29.44
EXCESS AIR	Percent	209	191	329
MOLECULAR WT. WET	lb/lb Mole	28.58	28.71	28.52
STACK GAS PRESSURE	Inches HG.	29.11	28.92	28.92
STACK VELOCITY	AFPM	673	667	672
VOLUMETRIC FLOWRATE, DRY STI	DSCFM	7298	7269	7248
VOLUMETRIC FLOWRATE, ACTUAL	ACFM	31068	30809	31009
ISOKINETIC RATIO	Percent	92	93	95
CR+6 TOTAL	mg	NA	NA	NA
CR+6 CONCENTRATION	mg/dscf	0.00000	0.00000	0.00000
CR+6 EMISSION RATE	mg/hr	0.00000	0.00000	0.00000
TOTAL CHROMIUM	mg	0.0008	0.0011	0.0011
CROMIUM CONCENTRATION	mg/dscf	0.0000039	0.0000051	0.0000051
CROMIUM EMISSION RATE	mg/hr	1.72	2.24	2.20

Facility: Simi Valley Landfill
Source: Flare #1 (McGill)
Job No.: W07-043
Test Date: 11/22/05-11/23/05

CARB Method 425 Chromium Emissions

		STD TEMP:	68		
			RUN	RUN	RUN
RUN NUMBER	******		1	2	3
DATE OF RUN	******		11/22/05	11/23/05	11/23/05
CLOCK TIME: INITIAL	******		1205	650	1120
CLOCK TIME: FINAL	******		1629	1107	1536
AVG. STACK TEMPERATURE	Degrees F		1551	1549	1545
AVG. SQUARE DELTA P	Inches H20		0.1095	0.1095	0.1095
NOZZLE DIAMETER	Inches		0.994	0.994	0.994
BAROMETRIC PRESSURE	In. HG.		29.79	29.74	29.74
SAMPLING TIME	Minutes		240	240	240
SAMPLE VOLUME	Cubic Feet		221.086	218.732	221.094
AVG. METER TEMP.	Degrees F		98	87	94
AVG. DELTA H	In. H20		2.60	2.60	2.60
DGM CALIB. FACTOR [Y]	******		0.9990	0.9990	0.9990
WATER COLLECTED	Milliliters		373	389	382
CO 2	Percent		6.6	6.6	7.0
O 2	Percent		14.0	14.0	14.0
CO	Percent		0.0	0.0	0.0
N 2	Percent		79.4	79.4	79.0
STACK AREA	Square Inches		6647.6	6647.6	6647.6
STATIC PRESSURE	Inches WG.		-0.005	-0.005	-0.005
PITOT COEFFICIENT	******		0.84	0.84	0.84
SAMPLE VOLUME DRY	DSCF		209.57	211.12	210.43
WATER AT STD.	SCF		17.6	18.3	18.0
MOISTURE	Percent		7.7	8.0	7.9
MOLE FRACTION DRY GAS	******		0.92	0.92	0.92
MOLECULAR WT.DRY	lb/lb Mole		29.62	29.62	29.68
EXCESS AIR	Percent		201	201	204
MOLECULAR WT. WET	lb/lb Mole		28.72	28.69	28.76
STACK GAS PRESSURE	Inches HG.		29.79	29.74	29.74
STACK VELOCITY	AFPM		723	723	722
VOLUMETRIC FLOWRATE, DRY STI	DSCFM		8046	8026	8034
VOLUMETRIC FLOWRATE, ACTUAL	ACFM		33366	33390	33315
ISOKINETIC RATIO	Percent		93	94	93
CR+6 TOTAL	mg	<	0.00032	< 0.00034	< 0.00033
CR+6 CONCENTRATION	mg/dscf	<	0.0000015	< 0.0000016	< 0.0000016
CR+6 EMISSION RATE	mg/hr	<	0.73712	< 0.77555	< 0.75589
TOTAL CHROMIUM	mg		0.0015	0.0011	< 0.0010
CROMIUM CONCENTRATION	mg/dscf		0.0000072	0.0000052	< 0.0000048
CROMIUM EMISSION RATE	mg/hr		3.46	2.51	< 2.29

Facility: Simi Valley Landfill
Source: Flare #1 (McGill)
Job No.: W07-043
Test Date: 10/13-17/05

CARB Method 421 HCl Emissions

		RUN	RUN	RUN
RUN NUMBER	******	1	2	3
DATE OF RUN	******	10/14/05	10/18/05	10/18/05
CLOCK TIME: INITIAL	******	1210	810	1235
CLOCK TIME: FINAL	******	1310	910	1335
AVG. STACK TEMPERATURE	DEGREES F	NA	NA	NA
AVG. SQUARE DELTA P	INCHES H20	NA	NA	NA
BAROMETRIC PRESSURE	IN. HG.	29.11	28.92	28.92
SAMPLING TIME	MIN.	60	60	60
SAMPLE VOLUME	CUBIC FEET	61.196	61.411	60.431
AVG. METER TEMP.	DEGREES F	105	67	80
AVG. DELTA H	IN. H20	3.00	3.00	3.00
DGM CALIB. FACTOR [Y]	******	0.9903	0.9903	0.9903
WATER COLLECTED	MILLITERS	106	113	111
CO 2	PERCENT	5.0	6.6	5.0
O 2	PERCENT	14.4	13.8	16.0
CO	PERCENT	0.0	0.0	0.0
N 2	PERCENT	80.6	79.6	79.0
STACK AREA	SQUARE INCHES	6647.6	6647.6	6647.6
STATIC PRESSURE	INCHES WG.	NA	NA	NA
PITOT COEFFICIENT	******	0.84	0.84	0.84
SAMPLE VOLUME DRY	DSCF	55.54	59.33	57.01
WATER AT STD.	SCF	5.0	5.3	5.2
MOISTURE	PERCENT	8.3	8.2	8.4
MOLE FRACTION DRY GAS	******	0.92	0.92	0.92
MOLECULAR WT.DRY	LB/LB MOLE	29.38	29.61	29.44
EXCESS AIR	PERCENT	209.35	191.28	329.49
MOLECULAR WT. WET	LB/LB MOLE	28.44	28.65	28.48
STACK GAS PRESSURE	INCHES HG.	29.11	28.92	28.92
STACK VELOCITY	AFPM	NA	NA	NA
VOLUMETRIC FLOWRATE, DRY S	DSCFM	7298	7269	7248
VOLUMETRIC FLOWRATE, ACTUA	ACFM	NA	NA	NA

STD. TEMP: 68

CALCULATIONS FOR GRAIN LOADING AND EMISSION RATES

Total HCl	mg	1.37	7.60	7.11
HCl Concentration	mg/dscf	0.0247	0.1281	0.1247
HCl Emissions Rate	lb/hr	0.0238	0.1232	0.1196
Total HF	mg	0.56	4.37	3.25
HF Concentration	mg/dscf	0.0101	0.0737	0.0570
HF Emissions Rate	lb/hr	0.0097	0.0708	0.0547

Facility: Simi Valley Landfill
Source: Flare #1 (McGill)
Job No.: W07-043
Test Date: 10/13-18/05

CARB Method 430

ALDEHYDES

		RUN	RUN	RUN
Run Number	******	1	2	3
Date of Run	******	10/13/05	10/14/05	10/18/05
Clock Time: Start	******	1320	735	738
Clock Time: End	******	1920	1610	1538
Standard Temperature	F	68	68	68
Standard Pressure	mm Hg	760	760	760
Sample Flow Rate				
Ambient Pressure	mm Hg	729	739	735
Ambient Temperature	F	79	78	63
Sample Rate (Start)	l/min	0.480	0.483	0.482
Sample Rate (end)	l/min	0.478	0.482	0.482
Standard Sample Rate	standard l/min	0.450	0.460	0.471
Run Duration	min	360	515	480
Standard Sample Volume	standard liters	162.0	237.1	225.9
Stack Flow Rate				
Volumetric Flow Rate	dscfm	7424	7166	7231
Volumetric Flow Rate	acfm	33017	31313	30988
Emission Rate Calculations				
Formaldehyde				
Average Blank Conc.	ug/ml	0.0100	0.0100	0.0167
Sample Conc.	ug/ml	0.4300	11.1850	2.1900
Blank-Corrected Sample Conc.	ug/ml	0.4200	11.1750	2.1733
Sample Volume	ml	20	20	20
Total Weight	ug/sample	8.40	223.50	43.47
Concentration	ug/l	0.05184	0.94252	0.19242
Concentration	ppm	0.042	0.756	0.154
Emission Rate	mg/hr	653.9803	11476.5616	2364.2766
Emission Rate	lb/hr	0.0014	0.0253	0.0052
Acetaldehyde				
Average Blank Conc.	ug/ml	0.0133	0.0133	0.0067
Sample Conc.	ug/ml	0.0450	0.0300	0.0500
Blank-Corrected Sample Conc.	ug/ml	0.0317	0.0167	0.0433
Sample Volume	ml	20	20	20
Total Weight	ug/sample	0.63	0.33	0.87
Concentration	ug/dscf	0.00391	0.00141	0.00383
Concentration	ppm	0.0021	0.0008	0.0021
Emission Rate	mg/hr	49.3599	17.1507	47.1049
Emission Rate	lb/hr	0.0001	0.0000	0.0001

APPENDIX C - Laboratory Results

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LABORATORY ANALYSIS REPORT

Methane and Total Gaseous Non-Methane Organics Analysis in Tank and Canister Samples

Report Date: October 27, 2005
Client: Horizon Air Measurement Services
Site: WM - Simi Valley
Client Project No.: W07-043

Date Received: October 12, 2005
Date Analyzed: October 14, & 17, 2005

ANALYSIS DESCRIPTION

Percent level methane was measured by thermal conductivity detection/gas chromatography (TCD/GC). Low level methane and TGNMO were measured by Method 25 analysis, (FID/TCA).

AtmAA Lab No.:	02855-1	02855-2	02855-3	02855-4	02855-5	02855-6
Sample ID:	SUMMA 4	SUMMA 11	SUMMA 3	Tank T	Tank U	Tank A
	(Concentration, ppmv)					
Methane	84.7	88.0	90.9	470000	478000	463000
Ethane	0.94	0.80	0.74	10.1	5.71	7.40
TGNMO	3.66	3.49	4.38	5450	4960	5120

TGNMO is total gaseous non-methane organics (excluding ethane), reported as ppmv methane. Ethane is reported as ppmv methane.

Michael L. Porter
Laboratory Director

QUALITY ASSURANCE SUMMARY

(Repeat Analyses)

Site: WM - Simi Valley
Date Received: October 12, 2005
Date Analyzed: October 14, & 17, 2005

Components	Sample ID	Repeat Analysis Run #1	Repeat Analysis Run #2	Mean Conc.	% Diff. From Mean
		(Concentration, ppmv)			
Methane	S4	83.7	85.6	84.7	1.1
	S11	88.2	87.8	88.0	0.23
	S3	92.7	89.1	90.9	2.0
	Tank T	468000	471000	470000	0.32
Ethane	S4	0.88	1.00	0.94	6.4
	S11	0.80	0.80	0.80	0.0
	S3	0.70	0.78	0.74	5.4
	Tank T	9.70	10.4	10.1	3.5
	Tank U	5.69	5.72	5.71	0.26
	Tank A	8.11	6.69	7.40	9.6
TGNMO	S4	3.61	3.71	3.66	1.4
	S11	3.24	3.74	3.49	7.2
	S3	4.53	4.22	4.38	3.5
	Tank T	5410	5490	5450	0.73
	Tank U	4890	5020	4960	1.3
	Tank A	5030	5200	5120	1.7

Six tank and canister samples, laboratory numbers 02855-(1-6), were analyzed for methane and TGNMO. Agreement between repeat analyses is a measure of precision and is shown in the column "% Difference from Mean". The average % Difference from Mean for 16 repeat measurements from six samples is 2.8%.

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LABORATORY ANALYSIS REPORT

Oxygen and Carbon Dioxide Analysis in Tank Samples

Report Date: October 27, 2005
Client: Horizon Air Measurement Services
Site: WM - Simi Valley
Client Project No.: W07-043

Date Received: October 12, 2005
Date Analyzed: October 14, & 17, 2005

ANALYSIS DESCRIPTION

Oxygen and carbon dioxide were measured by thermal conductivity detection/gas chromatography (TCD/GC).

AtmAA Lab No.:	02855-4	02855-5	02855-6			
Sample ID:	Tank T	Tank U	Tank A			
	(Concentration, %v)					
Oxygen	1.09	0.63	0.93			
Carbon Dioxide	38.4	38.4	37.4			

Michael L. Porter
Laboratory Director

QUALITY ASSURANCE SUMMARY

(Repeat Analyses)

Site: WM - Simi Valley
Date Received: October 12, 2005
Date Analyzed: October 14, & 17, 2005

Components	Sample ID	Repeat Analysis Run #1	Repeat Analysis Run #2	Mean Conc.	% Diff. From Mean
		(Concentration, %v)			
Oxygen	Tank U	0.66	0.60	0.63	4.8
Carbon Dioxide	Tank T	38.5	38.3	38.4	0.26

Three tank samples, laboratory numbers 02855-(4-6), were analyzed for oxygen and carbon dioxide. Agreement between repeat analyses is a measure of precision and is shown in the column "% Difference from Mean". The average % Difference from Mean for 2 repeat measurements from three samples is 2.5%.

Calculated values for Specific Volume, BTU and F (factor)

Report Date: October 27, 2005
Client: Horizon
Project Location: WM - Simi Valley
Date Received: October 12, 2005
Date Analyzed: October 14, & 17, 2005
AtmAA Lab No.: 02855-4, Tank T

Specific volume, BTU, and F factor are calculated using labortatory analysis results for methane, carbon dioxide, nitrogen, oxygen, TGNMO, and sulfur compounds in equations that include assumed values for the specific volume of gases (CH4, CO2, N2, O2, Ar, and (CH2)n). The specific volume of gases were taken from the Scott Speciality Gases catalogue, 2001, and represents as is gas at 60° F and 1 atm. The F factor is calculated according to the equation in ASTM D-3588.B89

Component	Mole %	Wt %	C,H,O,N,S,	Wt.%
Methane	47.00	26.49	Carbon	36.33
Carbon dioxide	38.40	59.52	Hydrogen	6.66
Nitrogen	12.65	12.48	Oxygen	44.46
Oxygen	1.04	1.18	Nitrogen	12.48
Argon	0.046	0.065	Argon	0.07
$(CH_2)_n$	0.545	0.269	Sulfur	0.00

Specific Volume	13.193
BTU/ft^3	479
BTU/ lb.	6320
F (factor)	9671

dry gas at 60° F, 1 atm, where CH4-1010, TGNMO-804 BTU/cu.ft.

Component	Specific volume reference values *
Methane	23.35 (ft^3/lb)
Carbon dioxide	8.59
Nitrogen	13.54
Oxygen	11.87
Argon	9.52
(CH2)n	21

* reference, Scott Specialty Gases Catalogue, 2001 adjusted to 60°F

Calculated values for Specific Volume, BTU and F (factor)

Report Date: October 27, 2005
Client: Horizon
Project Location: WM - Simi Valley
Date Received: October 12, 2005
Date Analyzed: October 14, & 17, 2005
AtmAA Lab No.: 02855-5, Tank U

Specific volume, BTU, and F factor are calculated using labortatory analysis results for methane, carbon dioxide, nitrogen, oxygen, TGNMO, and sulfur compounds in equations that include assumed values for the specific volume of gases (CH4, CO2, N2, O2, Ar, and (CH2)n). The specific volume of gases were taken from the Scott Speciality Gases catalogue, 2001, and represents as is gas at 60° F and 1 atm. The F factor is calculated according to the equation in ASTM D-3588.B89

Component	Mole %	Wt %	C,H,O,N,S,	Wt.%
Methane	47.80	27.24	Carbon	37.05
Carbon dioxide	38.40	60.17	Hydrogen	6.84
Nitrogen	11.65	11.62	Oxygen	44.45
Oxygen	0.60	0.69	Nitrogen	11.62
Argon	0.027	0.038	Argon	0.04
$(CH_2)_n$	0.496	0.247	Sulfur	0.00

Specific Volume	13.241
BTU/ft^3	487
BTU/ lb.	6446
F (factor)	9740

dry gas at 60° F, 1 atm, where CH4-1010, TGNMO-804 BTU/cu.ft.

Component	Specific volume reference values *	
Methane	23.35	(ft^3/lb)
Carbon dioxide	8.59	
Nitrogen	13.54	
Oxygen	11.87	
Argon	9.52	
(CH2)n	21	

* reference, Scott Specialty Gases Catalogue, 2001 adjusted to 60°F

Calculated values for Specific Volume, BTU and F (factor)

Report Date: October 27, 2005
Client: Horizon
Project Location: WM - Simi Valley
Date Received: October 12, 2005
Date Analyzed: October 14, & 17, 2005
AtmAA Lab No.: 02855-6, Tank A

Specific volume, BTU, and F factor are calculated using labortatory analysis results for methane, carbon dioxide, nitrogen, oxygen, TGNMO, and sulfur compounds in equations that include assumed values for the specific volume of gases (CH4, CO2, N2, O2, Ar, and (CH2)n). The specific volume of gases were taken from the Scott Speciality Gases catalogue, 2001, and represents as is gas at 60° F and 1 atm. The F factor is calculated according to the equation in ASTM D-3588.B89

Component	Mole %	Wt %	C,H,O,N,S,	Wt.%
Methane	46.30	26.36	Carbon	35.96
Carbon dioxide	37.40	58.56	Hydrogen	6.63
Nitrogen	13.80	13.75	Oxygen	43.60
Oxygen	0.89	1.01	Nitrogen	13.75
Argon	0.039	0.056	Argon	0.06
$(CH_2)_n$	0.512	0.255	Sulfur	0.00

Specific Volume	13.230
BTU/ft^3	472
BTU/ lb.	6241
F (factor)	9776

dry gas at 60° F, 1 atm, where CH4-1010, TGNMO-804 BTU/cu.ft.

Component	Specific volume reference values *
Methane	23.35 (ft^3/lb)
Carbon dioxide	8.59
Nitrogen	13.54
Oxygen	11.87
Argon	9.52
(CH2)n	21

* reference, Scott Specialty Gases Catalogue, 2001 adjusted to 60°F

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LABORATORY ANALYSIS REPORT

Selected Components Analysis in Outlet Tedlar Bag Samples

Report Date: October 19, 2005
Client: Horizon
Project Location: Wast Management / Simi Valley LF
Client Project No.: W07-043
Date Received: October 12, 2005
Date Analyzed: October 12, 2005

AtmAA Lab No.:	02855-7	02855-8	02855-9
Sample I.D.:	W07043	W07043	W07043
	TB-Out-R1	TB-Out-R2	TB-Out-R3
Components	*(Concentration in ppbv)*		
Hydrogen sulfide	<50	<50	<50
Benzene	1.40	1.41	1.18
Benzylchloride	<0.8	<0.8	<0.8
Chlorobenzene	<0.3	<0.3	<0.3
Dichlorobenzenes*	<1.1	<1.1	<1.1
1,1-dichloroethane	<0.3	<0.3	<0.3
1,2-dichloroethane	<0.3	<0.3	<0.3
1,1-dichloroethylene	<0.3	<0.3	<0.3
Dichloromethane	3.78	2.13	2.10
1,2-dibromoethane	<0.3	<0.3	<0.3
Perchloroethylene	<0.2	<0.2	<0.2
Carbon tetrachloride	<0.2	<0.2	<0.2
Toluene	2.38	1.04	0.38
1,1,1-trichloroethane	<0.2	<0.2	<0.2
Trichloroethene	<0.2	<0.2	<0.2
Chloroform	<0.2	<0.2	<0.2
Vinyl chloride	<0.3	<0.3	<0.3
m+p-xylenes	0.87	0.62	0.97
o-xylene	0.38	0.20	0.27
Acrylonitrile	<2	<2	<2
1,1,2,2-tetrachloroethane	<0.3	<0.3	<0.3

** total amount containing meta, para, and ortho isomers*

Michael L. Porter
Laboratory Director

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QUALITY ASSURANCE SUMMARY
(Repeat Analyses)

Client Project No.: W07-043
Date Received: October 12, 2005
Date Analyzed: October 12, 2005

Components	Sample ID	Repeat Analysis Run #1	Repeat Analysis Run #2	Mean Conc.	% Diff. From Mean
		(Concentration in ppbv)			
Hydrogen sulfide	TB-Out-R1	<50	<50	---	---
Benzene	TB-Out-R1	1.35	1.45	1.40	3.6
Benzylchloride	TB-Out-R1	<0.8	<0.8	---	---
Chlorobenzene	TB-Out-R1	<0.3	<0.3	---	---
Dichlorobenzenes	TB-Out-R1	<1.1	<1.1	---	---
1,1-dichloroethane	TB-Out-R1	<0.3	<0.3	---	---
1,2-dichloroethane	TB-Out-R1	<0.3	<0.3	---	---
1,1-dichloroethylene	TB-Out-R1	<0.3	<0.3	---	---
Dichloromethane	TB-Out-R1	3.71	3.85	3.78	1.8
1,2-dibromoethane	TB-Out-R1	<0.3	<0.3	---	---
Perchloroethylene	TB-Out-R1	<0.2	<0.2	---	---
Carbon tetrachloride	TB-Out-R1	<0.2	<0.2	---	---
Toluene	TB-Out-R1	2.39	2.36	2.38	0.63
1,1,1-trichloroethane	TB-Out-R1	<0.2	<0.2	---	---
Trichloroethene	TB-Out-R1	<0.2	<0.2	---	---
Chloroform	TB-Out-R1	<0.2	<0.2	---	---
Vinyl chloride	TB-Out-R1	<0.3	<0.3	---	---
m+p-xylenes	TB-Out-R1	0.87	0.87	0.87	0.0
o-xylene	TB-Out-R1	0.37	0.38	0.38	1.3
Acrylonitrile	TB-Out-R1	<2	<2	---	---
1,1,2,2-tetrachloroethane	TB-Out-R1	<0.3	<0.3	---	---

Three Tedlar bag samples, laboratory numbers 02855-(7-9), were analyzed for selected components. Agreement between repeat analyses is a measure of precision and is shown above in the column "% Difference from Mean". Repeat analyses are an important part of AtmAA's quality assurance program. The average % Difference from Mean for 5 repeat measurements from the three Tedlar bag samples is 1.5%.

072

AtmAA Inc.
23917 Craftsman Rd., Calabasas, CA 91302 • (818) 223-3277 • FAX (818) 223-8250

LABORATORY ANALYSIS REPORT

environmental consultants
laboratory services

Selected Components Analysis in Inlet Gas Tedlar Bag Samples

Report Date: October 19, 2005
Client: Horizon
Project Location: Wast Management / Simi Valley LF
Client Project No.: W07-043
Date Received: October 12, 2005
Date Analyzed: October 12, 2005

AtmAA Lab No.:	02855-10	02855-11	02855-12	Avg
Sample I.D.:	W07043 TB-IN-R1	W07043 TB-IN-R2	W07043 TB-IN-R3	
Components	*(Concentration in ppmv)*			
Hydrogen sulfide	34.7	39.8	38.0	37.5
	(Concentration in ppbv)			ppbv
Benzene	1620	1830	1860	1770
Benzylchloride	<40	<40	<40	<40 *
Chlorobenzene	99.8	110	110	106.6
Dichlorobenzenes*	846	924	969	913
1,1-dichloroethane	328	363	374	355
1,2-dichloroethane	156	172	174	167
1,1-dichloroethylene	59.0	67.6	68.1	64.9 *
Dichloromethane	1320	1500	1510	1443
1,2-dibromoethane	<30	<30	<30	<30
Perchloroethylene	1480	1680	1700	1620
Carbon tetrachloride	<30	<30	<30	<30
Toluene	32000	36400	37100	35166.7
1,1,1-trichloroethane	30.8	34.1	34.1	33
Trichloroethene	642	721	736	699.7
Chloroform	<20	<20	<20	<20
Vinyl chloride	401	455	443	433
m+p-xylenes	13800	15400	15700	14966.7
o-xylene	4530	5080	5300	4970
Acrylonitrile	<200	<200	<200	<200
1,1,2,2-tetrachloroethane	<30	<30	<30	<30

ppbv / 1000 = ppmv

* *total amount containing meta, para, and ortho isomers*

Michael L. Porter
Laboratory Director

073

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LABORATORY ANALYSIS REPORT

Hydrogen Sulfide and Reduced Sulfur Compounds
Analysis in Inlet Tedlar Bag Sample

Report Date: October 19, 2005
Client: Horizon
Project Location: Wast Management / Simi Valley LF
Client Project No.: W07-043
Date Received: October 12, 2005
Date Analyzed: October 12, 2005

ANALYSIS DESCRIPTION

Hydrogen sulfide was analyzed by gas chromatography with a Hall electrolytic conductivity detector operated in the oxidative sulfur mode. All other components were measured by GC/ Mass Spec.

AtmAA Lab No.:	02855-10	02855-11	02855-12	
Sample I.D.:	W07043 TB-IN-R1	W07043 TB-IN-R2	W07043 TB-IN-R3	Avg
Components	*(Concentration in ppmv)*			
Hydrogen sulfide	32.4	39.8	38.0	36.7
Carbonyl sulfide	0.30	0.31	0.31	0.31
Methyl mercaptan	3.44	4.14	4.28	3.95 *
Ethyl mercaptan	<0.1	<0.1	<0.1	<0.1 *
Dimethyl sulfide	6.20	7.34	7.12	6.89 *
Carbon disulfide	0.17	0.21	0.20	.19
isopropyl mercaptan	0.51	0.60	0.60	.57
n-propyl mercaptan	<0.06	<0.06	<0.06	<0.06
Dimethyl disulfide	0.27	0.22	0.27	.25 *
TRS	43.7	53.1	51.3	49.4 *

TRS - total reduced sulfur

* = not in AP-42 list

Michael L. Porter
Laboratory Director

QUALITY ASSURANCE SUMMARY
(Repeat Analyses)

Client Project No.: W07-043
Date Received: October 12, 2005
Date Analyzed: October 12, 2005

Components	Sample ID	Repeat Analysis Run #1	Repeat Analysis Run #2	Mean Conc.	% Diff. From Mean
		(Concentration in ppbv)			
Benzene	TB-IN-R1	1590	1640	1620	1.5
Benzylchloride	TB-IN-R1	<40	<40	---	---
Chlorobenzene	TB-IN-R1	101	98.6	99.8	1.2
Dichlorobenzenes	TB-IN-R1	832	859	846	1.6
1,1-dichloroethane	TB-IN-R1	324	332	328	1.2
1,2-dichloroethane	TB-IN-R1	155	156	156	0.32
1,1-dichloroethylene	TB-IN-R1	58.5	59.6	59.0	0.93
Dichloromethane	TB-IN-R1	1290	1340	1320	1.9
1,2-dibromoethane	TB-IN-R1	<30	<30	---	---
Perchloroethylene	TB-IN-R1	1450	1510	1480	2.0
Carbon tetrachloride	TB-IN-R1	<30	<30	---	---
Toluene	TB-IN-R1	31400	32700	32000	2.0
1,1,1-trichloroethane	TB-IN-R1	30.6	30.9	30.8	0.49
Trichloroethene	TB-IN-R1	631	653	642	1.7
Chloroform	TB-IN-R1	<20	<20	---	---
Vinyl chloride	TB-IN-R1	396	406	401	1.2
m+p-xylenes	TB-IN-R1	13500	14000	13800	1.8
o-xylene	TB-IN-R1	4460	4600	4530	1.5
Acrylonitrile	TB-IN-R1	<200	<200	---	---
1,1,2,2-tetrachloroethane	TB-IN-R1	<30	<30	---	---

QUALITY ASSURANCE SUMMARY
(Repeat Analyses)
(continued)

Sulfur Components	Sample ID	Repeat Analysis Run #1	Repeat Analysis Run #2	Mean Conc.	% Diff. From Mean
		(Concentration in ppmv)			
Hydrogen sulfide	TB-IN-R1	32.4	32.4	32.4	0.0
	TB-IN-R2	40.5	39.1	39.8	1.8
	TB-IN-R3	38.5	37.4	38.0	1.4
Carbonyl sulfide	TB-IN-R1	0.31	0.30	0.30	1.6
Methyl mercaptan	TB-IN-R1	3.30	3.58	3.44	4.1
Ethyl mercaptan	TB-IN-R1	<0.1	<0.1	---	---
Dimethyl sulfide	TB-IN-R1	6.08	6.32	6.20	1.9
Carbon disulfide	TB-IN-R1	0.17	0.17	0.17	0.0
iso-propyl mercaptan	TB-IN-R1	0.48	0.54	0.51	5.9
n-propyl mercaptan	TB-IN-R1	<0.06	<0.06	---	---
Dimethyl disulfide	TB-IN-R1	0.29	0.25	0.27	7.4

Three Tedlar bag samples, laboratory numbers 02855-(10-12), were analyzed for selected components, hydrogen sulfide, and total reduced sulfur compounds. Agreement between repeat analyses is a measure of precision and is shown above in the column "% Difference from Mean". Repeat analyses are an important part of AtmAA's quality assurance program. The average % Difference from Mean for 23 repeat measurements from the three Tedla bag samples is 1.9%.

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Waste Management / Simi Valley LF	Simi Valley, CA
Project No. W07-043	**Field Logbook No.**
Sampler: (Signature)	**Chain of Custody Tape No.**

Sample No./ Identification	~~Date~~	~~Time~~	Lab Sample Number	Type of Sample	SCAQMD 1150.1 List	ethylene dibromide	acrylonitrile	1,1,2,2 tetrachloroethane	C1-C3 sulfur compounds (w/n2)		REMARKS
W07043-TB-OUT-R1	10/11/05		02855-7	SL Tedlar Bag	X	X	X	X			Flare #1 Outlet Run 1
W07043-TB-OUT-R2			8		X	X	X	X			" " Run 2
W07043-TB-OUT-R3			9		X	X	X	X			" " Run 3
W07043-TB-IN-R1			10		X	X	X	X	X		Flare #1 Inlet Run 1
W07043-TB-IN-R2			11		X	X	X	X	X		" " Run 2
W07043-TB-IN-R3			12		X	X	X	X	X		" " Run 3

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	10/12/05	0800		10/12/05	0800
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	10/12/05	0855			
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
				10-12-05	9:00
Sample Disposal Method:	Disposed of by: (Signature)			Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

Atm AA
Calabasas, CA

№ 8393

220

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Waste Management / Simi Valley LF	Simi Valley
Project No.	**Field Logbook No.**
iN07-043	
Sampler: (Signature)	**Chain of Custody Tape No.**

ANALYSES: EPA Method 25C (CH4 TGNMO) | O2/CO2 ASTM D3588-91 (H.H.V.)

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	EPA 25C	O2/CO2	ASTM				REMARKS
Summa S4	10/11/05		02853-1	6 L Summa	X						Flare #1 Run 1 Outlet
" S11	↓		2	↓	X						" Run 2 "
" S3			3		X						" Run 3 "
Tank T			4	12 L Tank	X	X	X				Flare #1 Run 1 Inlet
" U			5	↓	X	X	X				" Run 2 "
" A			6		X	X	X				" Run 3 "

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	10/12/05	0800		10/12/05	0800
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	10/12/05	0855			
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
				10-12-05	9:00
Sample Disposal Method:			Disposed of by: (Signature)	Date	Time

SAMPLE COLLECTOR

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ANALYTICAL LABORATORY

Atm AA
Calabasas, CA

No 8392

070

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LABORATORY ANALYSIS REPORT

Speciated Hydrocarbons Analysis in Tedlar Bag Samples

Report Date: October 24, 2005
Client: Horizon Air Measurement Sevices, Inc.
Site: Simi Valley LF
Project No.: W07-043

Date Received: October 17, 2005
Date Analyzed: October 17, 2005

ANALYSIS DESCRIPTION

1,3-Butadiene analysis was performed by flame ionization detection/gas chromatography (FID/GC), CARB method 422.

AtmAA Lab No.:	02905-1	(repeat)	02905-2	02905-3
Sample ID:	W07043-422 F1-R1-TB1	W07043-422 F1-R1-TB1	W07043-422 F1-R2-TB2	W07043-422 F1-R3-TB3
Components	(Concentration in ppbv)			
1,3-Butadiene	<1.0	<1.0	<1.0	<1.0

Michael L. Porter
Laboratory Director

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Simi Valley L.F.	Simi Valley, CA
Project No.	**Field Logbook No.**
WO7-043	
Sampler: (Signature)	**Chain of Custody Tape No.**
T. Wilson	

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	ANALYSES: 1,3 Butadiene	REMARKS
WO7043-422-F1-R1 TB1	10/17/05		02905 - 1	5 L bag	✓	Flare #1
WO7043-422-F1 R2 TB2			02905 - 2		✓	outlet
WO7-043-422 F1 R3 TB3			02905 - 3		✓	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
T. Wilson	10/17/05	0910	[signature]	10/17/05	0910
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	10/17/05	0945	[signature]	10/17/05	0945
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time

Sample Disposal Method:	Disposed of by: (Signature)	Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
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ANALYTICAL LABORATORY

ATMAA

Nº 8398

080

Atmospheric Analysis & Consulting, Inc.

CLIENT : Horizon Air Measurement Services, Inc.
PROJECT NAME : Simi Valley
AAC PROJECT NO. : 050518
REPORT DATE : 10/24/2005

On October 17, 2005, Atmospheric Analysis & Consulting, Inc. received eight (8) DNPH impinger contents for Formaldehyde and Acetaldehyde by Method CARB 430. The samples were assigned unique Laboratory ID numbers as follows:

Client ID	Lab No.
W07-043-M430-F1-R1-IMP 1	050518-12978
W07-043-M430-F1-R1-IMP 2	050518-12979
W07-043-M430-F1-R2-IMP 1	050518-12980
W07-043-M430-F1-R2-IMP 2	050518-12981
Trip Blank	050518-12982
Trip Spike	050518-12983
W07-043-M430-F1-FB 2	050518-12984
W07-043-M430-F1-FB 3	050518-12985

CARB 430 – Ten (10) ml of Methylene Chloride: Hexane (30:70) was added to each impinger prior to sampling. Five (5) milliliters of the organic layer was removed from all samples. The organic extracts were then concentrated to dryness under a stream of UHP Nitrogen. When the samples reached dryness the vials were removed from the nitrogen stream and five (5) ml of Carbonyl-free Acetonitrile was added to the vial. A 20ul aliquot of the extract was analyzed by HPLC/UV following CARB Method 430 as specified in the chain of custody. Holding times for preparation and analysis were complied with.

No problems were encountered during receiving, preparation and/ or analysis of these samples. The test results included in this report meet all requirements of the NELAC Standards and/or AAC SOPs# AACI-TO-5/CARB430. Estimated Uncertainty of the test results will be provided upon request.

I certify that this data is technically accurate, complete and in compliance with the terms and conditions of the contract. Release of the data contained in this hardcopy data package and its electronic data deliverable submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature. For further questions please contact the undersigned.

If you have any questions or require further explanation of data results, please contact the undersigned.

Sucha S. Parmar, PhD
Technical Director

This report consists of 4 pages.

Atmospheric Analysis & Consulting, Inc.

LABORATORY ANALYSIS REPORT

CLIENT : Horizon Air Measurment Services, Inc.
PROJECT NO.: 050518
UNITS : ug/sample

SAMPLING DATE : 10/17/2005
RECEIVING DATE : 10/17/2005
ANALYSIS DATE : 10/17/2005
REPORTING DATE : 10/24/2005

Formaldehyde and Acetaldehyde by Method CARB 430

Analyte		*Formaldehyde*	*Acetaldehyde*
Limit of Detection		*0.002ug/ml*	*0.002ug/ml*
Client ID#	**Lab No.**	**ug/sample**	**ug/sample**
W07-043-M430-F1-R1-IMP 1	**050518-12978**	**0.3**	**0.3**
W07-043-M430-F1-R1-IMP 2	**050518-12979**	**8.3**	**0.6**
W07-043-M430-F1-R2-IMP 1	**050518-12980**	**223**	**ND**
W07-043-M430-F1-R2-IMP 2	**050518-12981**	**0.7**	**0.6**
Trip Blank	**050518-12982**	**ND**	**0.2**
Trip Spike	**050518-12983**	**142**	**1.2**
W07-043-M430-F1-FB2	**050518-12984**	**0.1**	**0.1**
W07-043-M430-F1-FB3	**050518-12985**	**0.1**	**0.1**

Dr. Sucha Parmar
Technical Director

Atmospheric Analysis & Consulting, Inc.

QUALITY CONTROL/QUALITY ASSURANCE REPORT

CLIENT ID : Horizon Air Measurment Services
LAB NO. : 050518
MEDIA : DNPH

ANALYSIS DATE: : 10/17/2005
REPORT DATE: : 10/24/2005

I-Method Blank - ug/ml

Analyte	Sample Analysis
Formaldehyde	ND

II-Duplicate Analysis - 050518-12978 ug/ml

Analyte	Sample Analysis	Duplicate Analysis	Mean	% RPD
Formaldehyde	0.03	0.03	0.03	**0.0**
Acetaldehyde	0.03	0.02	0.03	**12**

III-Spiked Sample - 050518-12978 ug/ml

	Sample	Spike	Spike	Dup Spike	Spike	Spike Dup	RPD**
Analyte	Conc.	Added	Res	Res	% Rec *	% Rec *	%
Formaldehyde	0.02	0.8	0.8	0.8	104	105	**1.4**
Acetaldehyde	0.01	0.8	0.8	0.8	102	102	**0.9**

IV-Laboratory Control Spike -ug/ml

	Spike	Spike	Dup Spike	Spike	Spike Dup	RPD**
Analyte	Added	Res	Res	% Rec *	% Rec *	%
Formaldehyde	1.5	1.6	1.6	108	103	**4.0**
Acetaldehyde	1.5	1.6	1.5	106	101	**4.0**
Acrolein	1.5	1.6	1.6	110	106	**3.8**

* Must be 70-130%

** Must be < 25%

Dr. Sucha Parmar
President

Atmospheric Analysis & Consulting, Inc.

CARB 430 DNPH SOLUTION CERTIFICATION

CLIENT	: **Horizon Air Management**	ANALYSIS DATE	: 10/17/05
PREP DATE	: 10/14/05	SHIPPING DATE	: 10/17/05
AAC PROJECT NO	: 050518	CLIENT PROJECT NO	: W07-043

CARB 430

MDL	*0.002 ug/ml*	*0.002 ug/ml*	*0.001 ug/ml*
	Formaldehyde	*Acetaldehyde*	*Acrolein*
DNPH sol	**ug/ml**	**ug/ml**	**ug/ml**
DNPH sol. Run #1	0.037	0.021	ND
DNPH sol. Run #2	ND	ND	ND
DNPH sol. Run #3	0.037	0.021	ND
DNPH sol. Run #4	ND	ND	ND
Average	0.019	0.011	ND

I certify that the above DNPH solution lot complies with the requirements as stated in the SOW.

Dr. Sucha Parmar
Technical Director

1534 Eastman Avenue • Suite A • Ventura, California 93003 (805) 650-1642 • FAX (805) 650-1644

Atmospheric Analysis & Consulting, Inc.

Spike Recovery

CARB 430 DNPH SOLUTION

CLIENT : **Horizon Air Management**
AAC Project No : 050518
Client Project No : W07-043

CARB 430

Sample	*Formaldehyde Conc. (ug/mL)*
DNPH sol. Spike #1	120
Trip Spike - 050518-12983	142

Percent Recovery	118

Sucha Parmar
Technical Director

1534 Eastman Avenue • Suite A • Ventura, California 93003 (805) 650-1642 • FAX (805) 650-1644

Page 4

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Simi Valley L.F.	Simi Valley, CA.

Project No.	Field Logbook No.
W07-043	

Sampler: (*Signature*)	Chain of Custody Tape No.
[signature]	

ANALYSES

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample		CARB Method 430 - Acetaldehyde, formaldehyde		weight (g)	lab weight (g)		REMARKS
W07-043-M430-F1-R1-imp1			12978	DNPH vial		✓					impinger 1
W07-043-M430-F1-R1-imp2			12979	↓		✓					impinger 2
W07-043-M430-F1-R2-imp1			12980	↓		✓					impinger 1
W07-043-M430-F1-R2-imp2			12981	↓		✓					impinger 2
W07-043-M430-F1-Spike1			12983	↓		✓					spike
W07-043-M430-F1-FB1			12982	↓		✓					Field Blank
W07-043-M430-F1-FB2			12984	↓		✓		31.6			Field Blank
W07-043-M430-F1-FB3			12985	↓		✓		31.7			Field Blank

Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
[signature]	10/17/05	1230	[signature]	[illegible]	

Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
[signature]	10/17/05	1320	[signature]		

Relinquished by: (*Signature*)	Date	Time	Received for Laboratory: (*Signature*)	Date	Time

Sample Disposal Method:	Disposed of by: (*Signature*)	Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

AAC

Nº

Atmospheric Analysis & Consulting, Inc.

CLIENT	: Horizon Air Measurement Services, Inc.
PROJECT NAME	: Simi Valley L.F
AAC PROJECT NO.	: 050522
REPORT DATE	: 10/24/2005

On October 19, 2005, Atmospheric Analysis & Consulting, Inc. received six (6) DNPH impinger contents for Formaldehyde and Acetaldehyde by Method CARB 430. The samples were assigned unique Laboratory ID numbers as follows:

Client ID	Lab No.
W07-043-M430-R1-R3-IMP 1	050522-12998
W07-043-M430-R1-R3-IMP 2	050522-12999
W07-043-M430-R1-R3-Blank 1	050522-13000
W07-043-M430-R1-R3-Blank 2	050522-13001
W07-043-M430-R1-R3-Blank 3	050522-13002
W07-043-M430-R1-R3-Spike	050522-13003

CARB 430 – Ten (10) ml of Methylene Chloride: Hexane (30:70) was added to each impinger prior to sampling. Five (5) milliliters of the organic layer was removed from all samples. The organic extracts were then concentrated to dryness under a stream of UHP Nitrogen. When the samples reached dryness the vials were removed from the nitrogen stream and five (5) ml of Carbonyl-free Acetonitrile was added to the vial. A 20ul aliquot of the extract was analyzed by HPLC/UV following CARB Method 430 as specified in the chain of custody. Holding times for preparation and analysis were complied with.

No problems were encountered during receiving, preparation and/ or analysis of these samples. The test results included in this report meet all requirements of the NELAC Standards and/or AAC SOPs# AACI-TO-5/CARB430. Estimated Uncertainty of the test results will be provided upon request.

I certify that this data is technically accurate, complete and in compliance with the terms and conditions of the contract. Release of the data contained in this hardcopy data package and its electronic data deliverable submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature. For further questions please contact the undersigned.

If you have any questions or require further explanation of data results, please contact the undersigned.

Sucha S. Parmar, PhD
Technical Director

This report consists of 5 pages.

Atmospheric Analysis & Consulting, Inc.

LABORATORY ANALYSIS REPORT

CLIENT : Horizon Air Measurment Services, Inc.
PROJECT NO.: 050522
UNITS : ug/sample

SAMPLING DATE : 10/18/2005
RECEIVING DATE : 10/19/2005
ANALYSIS DATE : 10/19/2005
REPORTING DATE : 10/24/2005

Formaldehyde and Acetaldehyde by Method CARB 430

Analyte		*Formaldehyde*	*Acetaldehyde*
Limit of Detection		*0.002ug/ml*	*0.002ug/ml*
Client ID#	**Lab No.**	**ug/sample**	**ug/sample**
W07-043-M430-R1-R3-IMP 1	050522-12998	43	0.7
W07-043-M430-R1-R3-IMP 2	050522-12999	0.8	0.3
W07-043-M430-R1-R3-Blank 1	050522-13000	0.2	0.1
W07-043-M430-R1-R3-Blank 2	050522-13001	0.1	0.0
W07-043-M430-R1-R3-Blank 3	050522-13002	0.2	0.1
W07-043-M430-R1-R3-Spike	050522-13003	139	0.7

Dr. Sucha Parmar
Technical Director

Atmospheric Analysis & Consulting, Inc.

QUALITY CONTROL/QUALITY ASSURANCE REPORT

CLIENT ID : Horizon Air Measurment Services
LAB NO. : 050522
MEDIA : DNPH

ANALYSIS DATE: : 10/19/2005
REPORT DATE: : 10/24/2005

I-Method Blank - ug/ml

Analyte	Sample Analysis
Formaldehyde	ND

II-Duplicate Analysis - 050522-12998 ug/ml

Analyte	Sample Analysis	Duplicate Analysis	Mean	% RPD
Formaldehyde	4.3	4.3	4.3	**0.1**
Acetaldehyde	0.1	0.1	0.1	**2.7**
Acrolein	0.0	0.0	0.0	**0.0**

III-Spiked Sample - 050522-12998 ug/ml

Analyte	Sample Conc.	Spike Added	Spike Res	Dup Spike Res	Spike % Rec *	Spike Dup % Rec *	RPD** %
Formaldehyde	2.1	0.8	2.9	2.9	102	104	**2.3**
Acetaldehyde	0.04	0.8	0.8	0.8	105	102	**3.2**
Acrolein	0.0	0.8	0.8	0.8	110	107	**2.5**

IV-Laboratory Control Spike -ug/ml

Analyte	Spike Added	Spike Res	Dup Spike Res	Spike % Rec *	Spike Dup % Rec *	RPD** %
Formaldehyde	1.5	1.6	1.6	108	106	**2.6**
Acetaldehyde	1.5	1.6	1.5	106	102	**4.0**
Acrolein	1.5	1.7	1.6	111	110	**1.0**

* Must be 70-130%

** Must be < 25%

Dr. Sucha Parmar
President

Atmospheric Analysis & Consulting, Inc.

CARB 430 DNPH SOLUTION CERTIFICATION

CLIENT	: **Horizon Air Management**	ANALYSIS DATE	: 10/12/05
PREP DATE	: 10/12/05	SHIPPING DATE	: 10/12/05
AAC Project No	: 050522	Client Project No	: W07-043

CARB 430

MDL	*0.002 ug/ml*	*0.002 ug/ml*	*0.001 ug/ml*
	Formaldehyde	*Acetaldehyde*	*Acrolein*
DNPH sol	**ug/ml**	**ug/ml**	**ug/ml**
DNPH sol. Run #1	0.018	0.013	ND
DNPH sol. Run #2	ND	ND	ND
DNPH sol. Run #3	0.018	0.013	ND
DNPH sol. Run #4	ND	ND	ND
Average	0.009	0.007	ND

I certify that the above DNPH solution lot complies with the requirements as stated in the SOW.

Dr. Sucha Parmar
Technical Director

Atmospheric Analysis & Consulting, Inc.

Spike Recovery

CARB 430 DNPH SOLUTION

CLIENT : **Horizon Air Management**
AAC Project No : 050522
Client Project No : W07-043

CARB 430

Sample	*Formaldehyde Conc. (ug/mL)*
DNPH sol. Spike #1	120
W07-043-M430-R1-R3-Spike	139

Percent Recovery	116

Sucha Parmar
Technical Director

1534 Eastman Avenue • Suite A • Ventura, California 93003 (805) 650-1642 • FAX (805) 650-1644

050522

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Simi Valley L.F.	Simi Valley, CA
Project No.	**Field Logbook No.**
W07-043	
Sampler: (Signature)	**Chain of Custody Tape No.**
T. Willis	

ANALYSES: CARB 430 | Acetaldehyde, Formaldehyde | Weight (9) | LAB Weigh (O)

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	CARB 430	Acetaldehyde, Formaldehyde	Weight (9)	LAB Weigh (O)	REMARKS
W07-043-M430 F1 R3 Vile #1	10/18/05		12996	DNPH Vial		✓	39g		Flare #1 Run #3
W07-043-M430 F1 R3 Vile #2	10/18/05		12999				33g		
			13000						
W07-043 M430 F1 R3 Blank-1	10/18/05		13001			✓	30g		Blank-1
W07-043 M430 F1 R3 Blank-2	10/18/05		13002			✓	31g		Blank-2
W07-043 M430 F1 R3 Blank-3	10/18/05		13003			✓	30g		Blank-3
W07-043 M430 F1 R3 SPIKE	10/18/05		[illegible]			✓	31g		Spike

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
T. Willis	10/19/05	0800	[signature]	10/19/05	0800
[signature]	10/19/05	0835	[signature]		
[signature]			[signature]	10/19/05	0836

Sample Disposal Method:	Disposed of by: (Signature)	Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

AAC

Nº 8761

260

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Horizon Air Measurement Services
996 Lawrence Drive
Suite 108
Newbury Park, CA 91320

Date: 11-NOV-05
Lab Job Number: 182803
Project ID: STANDARD
Location: Simi Valley L.F.

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by: _____
Project Manager

Reviewed by: _____
Operations Manager

Curtis & Tompkins, Ltd

CASE NARRATIVE

Laboratory number:	**182803**
Client:	**Horizon Air Measurement Services**
Location:	**Simi Valley L.F.**
Request Date:	**10/27/05**
Samples Received:	**10/24/05**

This hardcopy data package contains sample and QC results for fifteen water samples, requested for the above referenced project on 10/27/05. The samples were received intact.

Ion Chromatography (EPA 300.0):
No analytical problems were encountered.

Volume Measurement (MEASURE):
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

Volume Measurement

Lab #:	182803	Location:	Simi Valley L.F.
Client:	Horizon Air Measurement Services	Analysis:	MEASURE
Project#:	STANDARD		
Analyte:	Sample Volume	Diln Fac:	1.000
Matrix:	Water	Received:	10/24/05
Units:	mL	Analyzed:	11/01/05

Field ID	Lab ID	Result	RL	Sampled
W07043421-F1-R1-C1	182803-001	210	1.0	10/14/05
W07043421-F1-R1-C2	182803-002	390	1.0	10/14/05
W07043421-F1-R2-C1	182803-003	220	1.0	10/18/05
W07043421-F1-R2-C2	182803-004	470	1.0	10/18/05
W07043421-F1-R3-C1	182803-005	170	1.0	10/18/05
W07043421-F1-R3-C2	182803-006	450	1.0	10/18/05
W07043421-F2-R1-C1	182803-007	110	1.0	10/19/05
W07043421-F2-R1-C2	182803-008	490	1.0	10/19/05
W07043421-F2-R2-C1	182803-009	100	1.0	10/19/05
W07043421-F2-R2-C2	182803-010	400	1.0	10/19/05
W07043421-F2-R3-C1	182803-011	200	1.0	10/20/05
W07043421-F2-R3-C2	182803-012	520	1.0	10/20/05
W07043421 S.B.	182803-013	250	1.0	10/18/05
W07043421-FB-C1	182803-014	110	1.0	10/18/05
W07043421-FB-C2	182803-015	310	1.0	10/18/05

L= Reporting Limit

Curtis & Tompkins, Ltd.

Fluoride

Lab #:	182803	Location:	Simi Valley L.F.
Client:	Horizon Air Measurement Services	Prep:	METHOD
Project#:	STANDARD	Analysis:	EPA 300.0
Analyte:	Fluoride	Diln Fac:	1.000
Matrix:	Water	Received:	10/24/05
Units:	mg/L		

Field ID	Type	Lab ID	Result	RL	Batch#	Sampled	Analyzed
W07043421-F1-R1-C1	SAMPLE	182803-001	0.43	0.10	107343	10/14/05	11/01/05 16:22
W07043421-F1-R1-C2	SAMPLE	182803-002	1.2	0.10	107343	10/14/05	11/01/05 16:39
W07043421-F1-R2-C1	SAMPLE	182803-003	5.1	0.10	107343	10/18/05	11/01/05 16:57
W07043421-F1-R2-C2	SAMPLE	182803-004	6.9	0.10	107343	10/18/05	11/01/05 17:14
W07043421-F1-R3-C1	SAMPLE	182803-005	1.9	0.10	107343	10/18/05	11/01/05 17:32
W07043421-F1-R3-C2	SAMPLE	182803-006	6.5	0.10	107394	10/18/05	11/02/05 16:44
W07043421-F2-R1-C1	SAMPLE	182803-007	4.8	0.10	107343	10/19/05	11/01/05 18:07
W07043421-F2-R1-C2	SAMPLE	182803-008	5.0	0.10	107343	10/19/05	11/01/05 19:35
W07043421-F2-R2-C1	SAMPLE	182803-009	2.8	0.10	107343	10/19/05	11/01/05 19:52
W07043421-F2-R2-C2	SAMPLE	182803-010	6.2	0.10	107394	10/19/05	11/02/05 17:02
W07043421-F2-R3-C1	SAMPLE	182803-011	1.8	0.10	107343	10/20/05	11/01/05 20:27
W07043421-F2-R3-C2	SAMPLE	182803-012	5.2	0.10	107394	10/20/05	11/02/05 19:22
W07043421 S.B.	SAMPLE	182803-013	ND	0.10	107343	10/18/05	11/01/05 16:04
W07043421-FB-C1	SAMPLE	182803-014	ND	0.10	107343	10/18/05	11/01/05 15:47
W07043421-FB-C2	SAMPLE	182803-015	ND	0.10	107343	10/18/05	11/01/05 15:29
	BLANK	QC315431	ND	0.10	107343		11/01/05 11:54
	BLANK	QC315655	ND	0.10	107394		11/02/05 15:52

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Chloride

Lab #:	182803	Location:	Simi Valley L.F.
Client:	Horizon Air Measurement Services	Prep:	METHOD
Project#:	STANDARD	Analysis:	EPA 300.0
Analyte:	Chloride	Diln Fac:	1.000
Matrix:	Water	Received:	10/24/05
Units:	mg/L		

Field ID	Type	Lab ID	Result	RL	Batch#	Sampled	Analyzed
W07043421-F1-R1-C1	SAMPLE	182803-001	1.9	0.20	107343	10/14/05	11/01/05 16:22
W07043421-F1-R1-C2	SAMPLE	182803-002	2.5	0.20	107343	10/14/05	11/01/05 16:39
W07043421-F1-R2-C1	SAMPLE	182803-003	8.9	0.20	107343	10/18/05	11/01/05 16:57
W07043421-F1-R2-C2	SAMPLE	182803-004	12	0.20	107343	10/18/05	11/01/05 17:14
W07043421-F1-R3-C1	SAMPLE	182803-005	2.1	0.20	107343	10/18/05	11/01/05 17:32
W07043421-F1-R3-C2	SAMPLE	182803-006	15	0.20	107394	10/18/05	11/02/05 16:44
W07043421-F2-R1-C1	SAMPLE	182803-007	5.8	0.20	107343	10/19/05	11/01/05 18:07
W07043421-F2-R1-C2	SAMPLE	182803-008	11	0.20	107343	10/19/05	11/01/05 19:35
W07043421-F2-R2-C1	SAMPLE	182803-009	6.3	0.20	107343	10/19/05	11/01/05 19:52
W07043421-F2-R2-C2	SAMPLE	182803-010	13	0.20	107394	10/19/05	11/02/05 17:02
W07043421-F2-R3-C1	SAMPLE	182803-011	5.8	0.20	107343	10/20/05	11/01/05 20:27
W07043421-F2-R3-C2	SAMPLE	182803-012	10	0.20	107394	10/20/05	11/02/05 19:22
W07043421 S.B.	SAMPLE	182803-013	ND	0.20	107343	10/18/05	11/01/05 16:04
W07043421-FB-C1	SAMPLE	182803-014	ND	0.20	107343	10/18/05	11/01/05 15:47
W07043421-FB-C2	SAMPLE	182803-015	ND	0.20	107343	10/18/05	11/01/05 15:29
	BLANK	QC315431	ND	0.20	107343		11/01/05 11:54
	BLANK	QC315655	ND	0.20	107394		11/02/05 15:52

"D= Not Detected
L= Reporting Limit

097
2.0

Batch QC Report

Fluoride

Lab #:	182803	Location:	Simi Valley L.F.
Client:	Horizon Air Measurement Services	Prep:	METHOD
Project#:	STANDARD	Analysis:	EPA 300.0
Analyte:	Fluoride	Units:	mg/L
Matrix:	Water		

Field ID	Type	MSS Lab ID	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Batch#	Sampled	Received	Analyzed
	BS		QC315432		2.000	1.974	99	80-120			1.000	107343			11/01/05 12:11
	BSD		QC315433		2.000	1.798	90	80-120	9	20	1.000	107343			11/01/05 12:29
ZZZZZZZZZZ	MS	182[illegible]008	QC315434	4.757	20.00	22.34	88	80-120			20.00	107343	10/26/05	10/28/05	11/01/05 13:09
ZZZZZZZZZZ	MSD	182[illegible]008	QC315435		20.00	22.00	86	80-120	2	20	20.00	107343	10/26/05	10/28/05	11/01/05 13:26
	BS		QC315656		2.000	1.852	93	80-120			1.000	107394			11/02/05 16:09
	BSD		QC315657		2.000	1.821	91	80-120	2	20	1.000	107394			11/02/05 16:27
W07043421-F2 R3 C2	MS	182[illegible]012	QC315658	5.168	2.000	6.896	86	80-120			2.000	107394	10/20/05	10/24/05	11/02/05 20:50
W07043421-F2 R3 C2	MSD	182[illegible]012	QC315659		2.000	6.976	90	80-120	1	20	2.000	107394	10/20/05	10/24/05	11/02/05 22:00

RPD= Relative Percent Difference

Batch QC Report

Chloride

Lab #:	182803	Location:	Simi Valley L.F.
Client:	Horizon Air Measurement Services	Prep:	METHOD
Project#:	STANDARD	Analysis:	EPA 300.0
Analyte:	Chloride	Units:	mg/L
Matrix:	Water		

Field ID	Type	MSS Lab ID	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Batch#	Sampled	Received	Analyzed
	BS		QC315432		4.000	4.210	105	80-120			1.000	107343			11/01/05 12:11
	BSD		QC315433		4.000	3.758	94	80 120	11	20	1.000	107343			11/01/05 12:29
ZZZZZZZZZZ	MS	182845 008	QC315434	92.25	40.00	130.5	96	80 120			20.00	107343	10/26/05	10/28/05	11/01/05 13:09
ZZZZZZZZZZ	MSD	182845 008	QC315435		40.00	129.6	93	80-120	1	20	20.00	107343	10/26/05	10/28/05	11/01/05 13:26
	BS		QC315656		4.000	4.010	100	80-120			1.000	107394			11/02/05 16:09
	BSD		QC315657		4.000	3.902	98	80-120	3	20	1.000	107394			11/02/05 16:27
W07043421 F2-R3 C2	MS	182803-012	QC315658	9.961	4.000	13.66	93	80 120			2.000	107394	10/20/05	10/24/05	11/02/05 20:50
W07043421 F2-R3 C2	MSD	182803-012	QC315659		4.000	13.59	98	80-120	2	20	2.000	107394	10/20/05	10/24/05	11/02/05 22:00

RPD= Relative Percent Difference

10000V

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Simi Valley L.F.	Simi Valley CA

Project No.	Field Logbook No.
W07-043	

Sampler: (*Signature*)	Chain of Custody Tape No.

ANALYSES: M421 CH4 & methods | HCl | HF | 421

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample							REMARKS
0703 421-F1-R1 C1	10/14/05			DI RINSE	X						Flare #1 Run #1
0703 421-F1-R1 C2	10/14/05			DI RINSE	X						
0703 421 F1-R2 C1	10/18/05			DI Rinse	X						Flare #1 Run #2
0703 421 F1 R2 C2	10/18/05			↓	X						
0703 421 F1 R3 C1	10/18/05			DI Rinse	X						Flare #1 R-3
0703 421 F1 R3 C2	10/18/05			↓							↓

Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
	10/22/05	1000		10/22/05	1000
Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
	10/24/05	1840	Lavenna Cupio	10/24/05	6:45
Relinquished by: (*Signature*)	Date	Time	Received for Laboratory: (*Signature*)	Date	Time

Sample Disposal Method:	Disposed of by: (*Signature*)	Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

ambient ; intact IL

Nº 8402

100

order 7

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Simi Valley L.F.	Simi Valley CA
Project No.	**Field Logbook No.**
W07-043	
Sampler: (Signature)	**Chain of Custody Tape No.**
T. Wilson	

ANALYSES: M421 CARB METHOD 421 / HCl / HF

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample							REMARKS
07043-421-F2 R1 C1	10/19/05				✓						Flare 2 R-1
07043-421-F2-R1 C2	10/19/05				✓						↓
07043-421-F2-R2 C1	10/19/05				✓						Flare 2 R2
07043 421 F2 R2 C2	10/19/05				✓						↓
07043-421-F2-R3 C1	10/20/05				✓						Flare 2 R3
07043 421-F2-R3 C2	10/20/05				✓						↓

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
T. Wilson	10/22/05	1000		10/22/05	1000
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	10/24/05	1840		10/24/05	6:45 pm
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
Sample Disposal Method:	Disposed of by: (Signature)			Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

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Nº 8469

182805

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSES
Simi Valley L.F	Simi Valley, CA	

Project No.	Field Logbook No.
W07-043	

Sampler: (Signature)	Chain of Custody Tape No.
[signature]	

Analyses column: (CARB M421) CARB METHOD 421 HCL/HF

	Sample No./Identification	Date	Time	Lab Sample Number	Type of Sample	(CARB M421) CARB METHOD 421 HCL/HF						REMARKS
13 7043	421 S.B.	10/18/05				X						250ml Solution Blank
14 7043	421-FB-C1	10/18/05				X						Probe/Nozzle Rinse
15 7043	421 FB C2	10/18/05				X						Train (Rinse)

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	10/22/05	1000	[signature] .NC	10/22/05	1000
[signature] .NC	10/24/05	1640	Lavanna Curtis	10/24/05	6:45
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time

Sample Disposal Method:	Disposed of by: (Signature)	Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

ambient; intact; JL

№ 8461

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Horizon Air Measurement Services
996 Lawrence Drive
Suite 108
Newbury Park, CA 91320

Date: 23-NOV-05
Lab Job Number: 182975
Project ID: STANDARD
Location: Simi Valley, L.F.

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by: _____
Project Manager

Reviewed by: _____
Operations Manager

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**182975**
Client:	**Horizon Air Measurement Services**
Location:	**Simi Valley, L.F.**
Request Date:	**11/04/05**
Samples Received:	**10/24/05**

This hardcopy data package contains sample and QC results for eight air samples, requested for the above referenced project on 11/04/05. The samples were received cold and intact.

Metals (EPA 6010B and EPA 7470A):
Zinc was detected above the RL in the method blank for batch 107767. No other analytical problems were encountered.

CHAIN OF CUSTODY RECORD

18273

Client/Project Name	Project Location
Simi Valley, L.F.	Simi Valley, CA
Project No.	**Field Logbook No.**
W07-043	
Sampler: (Signature)	**Chain of Custody Tape No.**
Jim Williams	

ANALYSES: CARB 436, As, Cd, Mn, Zn, Hg, Ni, Cr

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	REMARKS
W07043-436-FI-C1 RI	10/11/05			front ½ rinse	Flare #1, R-1
W07043-436-FI C2 RI				Filter	
W07043-436-FI C3 RI				Impinger 1,2&3	
W07043-436-FI C4 RI				Impinger #4	
W07043-436-FI C5 RI				Impingers #5&6	

	Date	Time		Date	Time
Relinquished by: (Signature) Jim Williams	10/22/05	1000	Received by: (Signature)	10/22/05	1000
Relinquished by: (Signature)	10/24/05	1540	Received by: (Signature) Lawanna Lofton	10/24/05	6:45
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
Sample Disposal Method:	Disposed of by: (Signature)			Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

ambient; intact Le

Nº 8292

C1

182975

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Simi Valley L.F.	Simi Valley, CA

Project No.	Field Logbook No.
W07-043	

Sampler: (*Signature*)	Chain of Custody Tape No.
T. Williams	

ANALYSES: CARB M436 As, Cd, Mn, Zn, Hg, Ni, Cu

Sample No./Identification	Date	Time	Lab Sample Number	Type of Sample	CARB M436 As, Cd, Mn, Zn, Hg, Ni, Cu						REMARKS
W07 043-436-F1-R2 C1	10/11/05			Front ½ rinse	✓						Flare #1, R-2
W07 043-436-F1 R2 C2	↓			Filter	✓						↓
W07 043-436-F1-R2 C3	↓			Impingers 1, 2 & 3	✓						↓
W07 043-436-F1 R2 C4	↓			Impinger 4	✓						↓
W07 043-436-F1 R2 C5	↓			Impinger 5 & 6	✓						↓

Relinquished by: (*Signature*)	Date	Time	Received by: (*Signature*)	Date	Time
T. Williams	10/22/05	1000	[signature]	10/22/05	1000
[signature]	10/24/05	1840	[signature]	10/24	0045 p
Relinquished by: (*Signature*)	Date	Time	Received for Laboratory: (*Signature*)	Date	Time

Sample Disposal Method:	Disposed of by: (*Signature*)	Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

ambient & intact

Nº 8192

901

CHAIN OF CUSTODY RECORD

10215

Client/Project Name	Project Location
Simi Valley, L.F.	Simi Valley, CA
Project No.	**Field Logbook No.**
1107-043	
Sampler: (Signature)	**Chain of Custody Tape No.**
T. Hinton	

ANALYSES: CARB 436 As, Cd, Mn, Zn, Hg, Ni, Cu

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample		REMARKS
1107-043-436-FI-R3 C1	10/11/05			Front 1/2 rinse	✓	Flare #1, R-3
1107-043-436-FI-R3 C2				Filter	✓	
1107-043-436-FI-R3 C3				Impingers 1, 2 & 3	✓	
1107-043-436-FI-R3 C4				Impingers 4	✓	
1107-043-436-FI-R3 C5				Impingers 5 & 6	✓	

Relinquished by: (Signature) T. Hinton	Date 10/22/05	Time 1000	Received by: (Signature)	Date 10/22/05	Time 1000
Relinquished by: (Signature)	Date 10/24/05	Time 1040	Received by: (Signature) Savanna Curtis	Date 10/24/05	Time 6:40
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
Sample Disposal Method:	Disposed of by: (Signature)			Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

ambient; intact

Nº 8193

182975

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Simi Valley, CA	Simi Valley, CA
Project No.	**Field Logbook No.**
107-043	
Sampler: (Signature)	**Chain of Custody Tape No.**

ANALYSES: Cr, Ni, Cu, As, Cd, Mn, Zn, Hg, Pb, Cu

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample							REMARKS
07043-436-F2-R1C1	10/12/05			Front ½ rinse	✓						Flare #2, R-1
07043-436-F2-R1C2				Filter	✓						
07043-436-F2-R1C3				Impingers 1, 2 & 3	✓						
07043-436-F2-R1C4				Impinger 4	✓						
07043-436-F2-R1C5				Impingers 5 & 6	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	10/22/05	1000		10/22/05	1000
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	10/24/05	1040	Savanna Curto	10/24/05	6:45
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
Sample Disposal Method:	Disposed of by: (Signature)			Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

ambient, intact IL

Nº 8194

8

CHAIN OF CUSTODY RECORD

10217

Client/Project Name	Project Location
Simi Valley L.F.	Simi Valley, CA
Project No.	**Field Logbook No.**
W07-043	
Sampler: (Signature)	**Chain of Custody Tape No.**

ANALYSES: CaNO3 MnSO4 As Cd Cu Mn Ni Zn Hg

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample							REMARKS
W07043-436-F2-R2-C1	10/12/05			front ½ rinse	✓						Flask #2, R-2
W07043-436-F2-R2-C2				Filter	✓						
W07043-436-F2-R2-C3				Impingers 1, 2 & 3	✓						
W07043-436-F2-R2-C4				Impinger 4	✓						
W07043-436-F2-R2-C5				Impingers 5 & 6	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	10/22/05	1000		10/22/05	1000
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	10/24/05	1040		10/24/05	10:45 AM
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
Sample Disposal Method:	Disposed of by: (Signature)			Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

AMTAST

Nº 8191

109

182975

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Simi Valley L.F.	Simi Valley, CA
Project No. W07-043	**Field Logbook No.**
Sampler: (Signature) [signature]	**Chain of Custody Tape No.**

ANALYSES: CARB M436 As, Cu, Cd, Mn, Ni, Zn, Pb

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	CARB M436 As, Cu, Cd, Mn, Ni, Zn, Pb						REMARKS
W07-043-436-F2-R3 C1	10/13/05			front ½ rinse	✓						Flare #2, R-3
W07-043-436-F2-R3 C2	↓			Filter	✓						↓
W07-043-436-F2-R3 C3	↓			Impingers 1, 2 & 3	✓						↓
W07-043-436-F2-R3 C4	↓			Impinger #4	✓						↓
W07-043-436-F2-R3 C5	↓			Impingers 5 & 6	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	10/22/05	1000	[signature]	10/22/05	1000
[signature]	10/24/05	1840	Lavenne Cuf[illegible]	10/24/05	6:45
Relinquished by: (Signature)	**Date**	**Time**	**Received for Laboratory: (Signature)**	**Date**	**Time**

Sample Disposal Method:	Disposed of by: (Signature)	Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

ambient; intact [initials]

№ 8400

182975

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Simi Valley L.F	Simi Valley, CA
Project No.	**Field Logbook No.**
W07-043	
Sampler: (Signature)	**Chain of Custody Tape No.**

ANALYSES: CARB M436 As, Cd, Cu, Mn, Ni, Zn, Hg

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample		REMARKS
W07043-436-BIK-C1	10/13/05	-1		5% HNO_3 / 10% H_2O_2	✓	BLANK
W07043-436-BIK C2				Filter	✓	
W07043-436-BIK C3				0.1N RINSE HNO_3	✓	
W07043-436-BIK C4				4% $KMnO_4$ / 10% H_2SO_4	✓	
W07043-436-BIK C5				↓ ↓	✓	

	Date	Time		Date	Time
Relinquished by: (Signature)	10/14/05	1800	Received by: (Signature)	10/27/05	1000
Relinquished by: (Signature)	10/24/05	1010	Received by: (Signature)	10/24/05	7:45
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
Sample Disposal Method:	Disposed of by: (Signature)			Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

ambient

Nº 8290

CHAIN OF CUSTODY RECORD

182975

Client/Project Name	Project Location
Simi Valley L.F.	Simi Valley, CA
Project No.	**Field Logbook No.**
W07-043	
Sampler: (Signature)	**Chain of Custody Tape No.**
T. Williams	

ANALYSES: Cd, Cr, Cu, Mn, Ni, Zn, Hg

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample		REMARKS
W07043-436-SB C1	10/13/05			QUARTZ P.F. 47mm Q5015	✓	Solution Blank
W07-043-436-SB C2				0.1N HNO_3	✓	
W07-043-436-SB C3				4% $KMnO_4$ / 10% H_2SO_4	✓	
W07-043-436-SB C4				5% HNO_3 / 10% H_2O_2	✓	
W07-043-436-SB C5				8N HCL	✓	(100 mL)

2 sets

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
T. Williams	10/22/05	1000		10/22/05	1000
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	10/24/05	1810	Lavanna Curtis	10/24/05	6:45
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time
Sample Disposal Method:	Disposed of by: (Signature)			Date	Time

SAMPLE COLLECTOR

HORIZON AIR MEASUREMENT SERVICES, INC
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
(805) 498-8781 Fax (805) 498-3173

ANALYTICAL LABORATORY

ambient; 4L intact 4L

Nº 8291

2 of 2

Curtis & Tompkins, Ltd.

Lab #:	182975	Project#:	STANDARD
Client:	Horizon Air Measurement Services	Location:	Simi Valley, L.F.
Field ID:	W07043-436-F1-R1	Diln Fac:	1.000
Lab ID:	182975-001	Sampled:	10/11/05
Matrix:	Air	Received:	10/24/05
Units:	ug/s		

Analyte		Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Arsenic		1.9	0.28	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Cadmium		0.88	0.28	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Copper		7.1	0.56	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Manganese		4.0	0.56	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Mercury (Combined)	ND		0.67	108032	11/22/05	11/22/05	METHOD	EPA 7470A
Mercury (KMnO4)		4.8	0.26	108030	11/22/05	11/22/05	METHOD	EPA 7470A
Nickel	ND		1.1	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Zinc		30 b	1.1	107767	11/15/05	11/15/05	CARB 436	EPA 6010B

b= See narrative
ND= Not Detected
RL= Reporting Limit
KMnO4= KMnO4
ombined= Combined

Curtis & Tompkins, Ltd.

Lab #: 182975		Project#:	STANDARD
Client: Horizon Air Measurement Services		Location:	Simi Valley, L.F.
Field ID:	W07043-436-F1-R2	Diln Fac:	1.000
Lab ID:	182975-002	Sampled:	10/11/05
Matrix:	Air	Received:	10/24/05
Units:	ug/s		

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Arsenic	2.4	0.28	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Cadmium	0.62	0.28	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Copper	3.5	0.56	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Manganese	1.4	0.56	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Mercury (Combined)	ND	0.58	108032	11/22/05	11/22/05	METHOD	EPA 7470A
Mercury (KMnO4)	5.8	0.27	108030	11/22/05	11/22/05	METHOD	EPA 7470A
Nickel	ND	1.1	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Zinc	14 b	1.1	107767	11/15/05	11/15/05	CARB 436	EPA 6010B

b= See narrative
ND= Not Detected
RL= Reporting Limit
KMnO4= KMnO4
Combined= Combined

Curtis & Tompkins, Ltd.

Lab #: 182975		Project#:	STANDARD
Client: Horizon Air Measurement Services		Location:	Simi Valley, L.F.
Field ID:	W07043-436-F1-R3	Diln Fac:	1.000
Lab ID:	182975-003	Sampled:	10/11/05
Matrix:	Air	Received:	10/24/05
Units:	ug/s		

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Arsenic	2.5	0.28	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Cadmium	0.61	0.28	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Copper	2.5	0.56	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Manganese	2.1	0.56	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Mercury (Combined)	ND	0.68	108032	11/22/05	11/22/05	METHOD	EPA 7470A
Mercury (KMnO4)	2.2	0.088	108030	11/22/05	11/22/05	METHOD	EPA 7470A
Nickel	ND	1.1	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Zinc	10 b	1.1	107767	11/15/05	11/15/05	CARB 436	EPA 6010B

b= See narrative
ND= Not Detected
RL= Reporting Limit
KMnO4= KMnO4
ombined= Combined

Curtis & Tompkins, Ltd.

Lab #: 182975		Project#:	STANDARD
Client: Horizon Air Measurement Services		Location:	Simi Valley, L.F.
Field ID:	W07043-436-F2-R1	Diln Fac:	1.000
Lab ID:	182975-004	Sampled:	10/12/05
Matrix:	Air	Received:	10/24/05
Units:	ug/s		

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Arsenic	0.77	0.28	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Cadmium	0.63	0.28	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Copper	32	0.56	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Manganese	1.3	0.56	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Mercury (Combined)	ND	0.64	108032	11/22/05	11/22/05	METHOD	EPA 7470A
Mercury (KMnO4)	1.3	0.088	108030	11/22/05	11/22/05	METHOD	EPA 7470A
Nickel	ND	1.1	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Zinc	5.5 b	1.1	107767	11/15/05	11/15/05	CARB 436	EPA 6010B

b= See narrative
ND= Not Detected
RL= Reporting Limit
KMnO4= KMnO4
Combined= Combined

Curtis & Tompkins, Ltd.

Lab #:	182975	Project#:	STANDARD
Client:	Horizon Air Measurement Services	Location:	Simi Valley, L.F.
Field ID:	W07043-436-F2-R2	Diln Fac:	1.000
Lab ID:	182975-005	Sampled:	10/12/05
Matrix:	Air	Received:	10/24/05
Units:	ug/s		

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Arsenic	1.0	0.28	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Cadmium	0.57	0.28	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Copper	2.2	0.56	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Manganese	3.0	0.56	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Mercury (Combined)	ND	0.67	108032	11/22/05	11/22/05	METHOD	EPA 7470A
Mercury (KMnO4)	1.2	0.088	108030	11/22/05	11/22/05	METHOD	EPA 7470A
Nickel	ND	1.1	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Zinc	13 b	1.1	107767	11/15/05	11/15/05	CARB 436	EPA 6010B

b= See narrative
ND= Not Detected
RL= Reporting Limit
KMnO4= KMnO4
ombined= Combined

Curtis & Tompkins, Ltd.

Lab #:	182975	Project#:	STANDARD
Client:	Horizon Air Measurement Services	Location:	Simi Valley, L.F.
Field ID:	W07043-436-F2-R3	Diln Fac:	1.000
Lab ID:	182975-006	Sampled:	10/13/05
Matrix:	Air	Received:	10/24/05
Units:	ug/s		

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Arsenic	1.1	0.28	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Cadmium	0.51	0.28	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Copper	1.8	0.56	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Manganese	6.7	0.56	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Mercury (Combined)	ND	0.66	108032	11/22/05	11/22/05	METHOD	EPA 7470A
Mercury (KMnO4)	0.86	0.096	108030	11/22/05	11/22/05	METHOD	EPA 7470A
Nickel	3.1	1.1	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Zinc	11 b	1.1	107767	11/15/05	11/15/05	CARB 436	EPA 6010B

b= See narrative
ND= Not Detected
RL= Reporting Limit
KMnO4= KMnO4
'ombined= Combined

7.3

Curtis & Tompkins, Ltd.

Lab #:	182975	Project#:	STANDARD
Client:	Horizon Air Measurement Services	Location:	Simi Valley, L.F.
Field ID:	W07043-436-BLK	Diln Fac:	1.000
Lab ID:	182975-007	Sampled:	10/13/05
Matrix:	Air	Received:	10/24/05
Units:	ug/s		

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Arsenic	ND	0.28	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Cadmium	0.59	0.28	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Copper	1.2	0.56	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Manganese	0.70	0.56	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Mercury (Combined)	ND	0.10	108032	11/22/05	11/22/05	METHOD	EPA 7470A
Mercury (KMnO4)	ND	0.060	108030	11/22/05	11/22/05	METHOD	EPA 7470A
Nickel	ND	1.1	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Zinc	ND	1.1	107767	11/15/05	11/15/05	CARB 436	EPA 6010B

ND= Not Detected
RL= Reporting Limit
KMnO4= KMnO4
ombined= Combined

Curtis & Tompkins, Ltd.

Lab #: 182975		Project#:	STANDARD
Client: Horizon Air Measurement Services		Location:	Simi Valley, L.F.
Field ID:	W07043-436-SB	Diln Fac:	1.000
Lab ID:	182975-008	Sampled:	10/13/05
Matrix:	Air	Received:	10/24/05
Units:	ug/s		

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Arsenic	ND	0.28	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Cadmium	0.50	0.28	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Copper	3.5	0.56	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Manganese	0.95	0.56	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Mercury (Combined)	ND	0.12	108032	11/22/05	11/22/05	METHOD	EPA 7470A
Mercury (KMnO4)	ND	0.096	108030	11/22/05	11/22/05	METHOD	EPA 7470A
Nickel	ND	1.1	107767	11/15/05	11/15/05	CARB 436	EPA 6010B
Zinc	23 b	1.1	107767	11/15/05	11/15/05	CARB 436	EPA 6010B

b= See narrative
ND= Not Detected
RL= Reporting Limit
KMnO4= KMnO4
Combined= Combined

Curtis & Tompkins, Ltd.

Batch QC Report

Lab #:	182975	Location:	Simi Valley, L.F.
Client:	Horizon Air Measurement Services	Prep:	METHOD
Project#:	STANDARD	Analysis:	EPA 7470A
Analyte:	Mercury (KMnO4)	Diln Fac:	1.000
Type:	BLANK	Batch#:	108030
Lab ID:	QC318263	Prepared:	11/22/05
Matrix:	Air	Analyzed:	11/22/05
Units:	ug/s		

Result	RL
ND	0.010

ND= Not Detected
RL= Reporting Limit
MnO4= KMnO4

Curtis & Tompkins, Ltd.

Batch QC Report

Lab #:	182975	Location:	Simi Valley, L.F.
Client:	Horizon Air Measurement Services	Prep:	METHOD
Project#:	STANDARD	Analysis:	EPA 7470A
Analyte:	Mercury (KMnO4)	Batch#:	108030
Matrix:	Air	Prepared:	11/22/05
Units:	ug/s	Analyzed:	11/22/05
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC318264	0.2500	0.2465	99	80-120		
BSD	QC318265	0.2500	0.2400	96	80-120	3	20

RPD= Relative Percent Difference
KMnO4= KMnO4

Curtis & Tompkins, Ltd.

Batch QC Report

Lab #:	182975	Location:	Simi Valley, L.F.
Client:	Horizon Air Measurement Services	Prep:	METHOD
Project#:	STANDARD	Analysis:	EPA 7470A
Analyte:	Mercury (KMnO4)	Diln Fac:	1.000
Field ID:	W07043-436-F2-R1	Batch#:	108030
Type:	SDUP	Sampled:	10/12/05
MSS Lab ID:	182975-004	Received:	10/24/05
Lab ID:	QC318266	Prepared:	11/22/05
Matrix:	Air	Analyzed:	11/22/05
Units:	ug/s		

MSS Result	Result	RL	RPD	Lim
1.294	1.241	0.08803	4	20

RL= Reporting Limit
RPD= Relative Percent Difference
inO4= KMnO4

Curtis & Tompkins, Ltd.

Batch QC Report

Lab #:	182975	Location:	Simi Valley, L.F.
Client:	Horizon Air Measurement Services	Prep:	METHOD
Project#:	STANDARD	Analysis:	EPA 7470A
Analyte:	Mercury (KMnO4)	Diln Fac:	1.000
Field ID:	W07[illegible]43-436-F2-R1	Batch#:	108030
Type:	SSPIKE	Sampled:	10/12/05
MSS Lab ID:	182975-004	Received:	10/24/05
Lab ID:	QC318267	Prepared:	11/22/05
Matrix:	Air	Analyzed:	11/22/05
Units:	ug/s		

MSS Result		Result	%REC	Limits
1	2	3.297	91	77-121

124

KMnO4 = KMnO4

Curtis & Tompkins, Ltd.

Batch QC Report

Lab #:	182975	Location:	Simi Valley, L.F.
Client:	Horizon Air Measurement Services	Prep:	METHOD
Project#:	STANDARD	Analysis:	EPA 7470A
Analyte:	Mercury (Combined)	Diln Fac:	1.000
Type:	BLANK	Batch#:	108032
Lab ID:	QC318274	Prepared:	11/22/05
Matrix:	Air	Analyzed:	11/22/05
Units:	ug/s		

Result	RL
ND	0.010

ND= Not Detected
RL= Reporting Limit
mbined= Combined

Curtis & Tompkins, Ltd.

Batch QC Report

Lab #:	182975	Location:	Simi Valley, L.F.
Client:	Horizon Air Measurement Services	Prep:	METHOD
Project#:	STANDARD	Analysis:	EPA 7470A
Analyte:	Mercury (Combined)	Diln Fac:	1.000
Type:	BLANK	Batch#:	108032
Lab ID:	QC318275	Prepared:	11/22/05
Matrix:	Air	Analyzed:	11/22/05
Units:	ug/s		

Result	RL
ND	0.10

ND= Not Detected
RL= Reporting Limit
Combined= Combined

Curtis & Tompkins, Ltd.

Batch QC Report

Lab #:	182975	Location:	Simi Valley, L.F.
Client:	Horizon Air Measurement Services	Prep:	METHOD
Project#:	STANDARD	Analysis:	EPA 7470A
Analyte:	Mercury (Combined)	Batch#:	108032
Matrix:	Air	Prepared:	11/22/05
Units:	ug/s	Analyzed:	11/22/05
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC318276	0.2500	0.2460	98	80-120		
BSD	QC318277	0.2500	0.2480	99	80-120	1	20

RPD= Relative Percent Difference
Combined= Combined

Curtis & Tompkins, Ltd.

Batch QC Report

Lab #:	182975	Location:	Simi Valley, L.F.
Client:	Horizon Air Measurement Services	Prep:	METHOD
Project#:	STANDARD	Analysis:	EPA 7470A
Analyte:	Mercury (Combined)	Diln Fac:	1.000
Field ID:	W07043-436-F1-R3	Batch#:	108032
Type:	SDUP	Sampled:	10/11/05
MSS Lab ID:	182975-003	Received:	10/24/05
Lab ID:	QC318278	Prepared:	11/22/05
Matrix:	Air	Analyzed:	11/22/05
Units:	ug/s		

MSS Result	Result	RL	RPD	Lim
<0.6803	ND	0.6803	NC	20

NC= Not Calculated
ND= Not Detected
RL= Reporting Limit
RPD= Relative Percent Difference
Combined= Combined

Curtis & Tompkins, Ltd.

Batch QC Report

Lab #:	182975	Location:	Simi Valley, L.F.
Client:	Horizon Air Measurement Services	Prep:	METHOD
Project#:	STANDARD	Analysis:	EPA 7470A
Analyte:	Mercury (Combined)	Diln Fac:	1.000
Field ID:	W07043-436-F1-R3	Batch#:	108032
Type:	SSPIKE	Sampled:	10/11/05
MSS Lab ID:	182975-003	Received:	10/24/05
Lab ID:	QC318279	Prepared:	11/22/05
Matrix:	Air	Analyzed:	11/22/05
Units:	ug/s		

MSS Result	Spiked	Result	%REC	Limits
ND	17.01	15.34	90	77-121

ND= Not Detected
Combined= Combined

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Horizon Air Measurement Services
996 Lawrence Drive
Suite 108
Newbury Park, CA 91320

Date: 14-DEC-05
Lab Job Number: 183452
Project ID: W07.043
Location: Waste Management

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by: _____
Project Manager

Reviewed by: _____
Operations Manager

Data List [X1109180.DEV]

Flare #1

Absolute[No.]	CH04 [F]	CH32 [SCFM]
2005/10/11 10:18:00.000[00000000]	-0.2	0
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2005/10/11 10:24:00.000[00000003]	-0.2	0
2005/10/11 10:26:00.000[00000004]	-0.2	0
2005/10/11 10:28:00.000[00000005]	-0.2	792
2005/10/11 10:30:00.000[00000006]	0.0	777
2005/10/11 10:32:00.000[00000007]	0.0	790
2005/10/11 10:34:00.000[00000008]	-0.2	769
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2005/10/11 10:40:00.000[00000011]	-0.2	1246
2005/10/11 10:42:00.000[00000012]	-0.2	1268
2005/10/11 10:44:00.000[00000013]	-0.2	1351
2005/10/11 10:46:00.000[00000014]	-0.2	1360
2005/10/11 10:48:00.000[00000015]	-0.2	1374
2005/10/11 10:50:00.000[00000016]	0.0	1373
2005/10/11 10:52:00.000[00000017]	-0.2	1374
2005/10/11 10:54:00.000[00000018]	-0.2	1368
2005/10/11 10:56:00.000[00000019]	-0.3	1372
2005/10/11 10:58:00.000[00000020]	0.0	1365
2005/10/11 11:00:00.000[00000021]	0.0	1354
2005/10/11 11:02:00.000[00000022]	0.0	1367
2005/10/11 11:04:00.000[00000023]	-0.2	1382
2005/10/11 11:06:00.000[00000024]	-0.2	1259
2005/10/11 11:08:00.000[00000025]	-0.2	1336
2005/10/11 11:10:00.000[00000026]	-0.2	1353
2005/10/11 11:12:00.000[00000027]	-0.2	1374
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2005/10/11 11:16:00.000[00000029]	-0.3	1375
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2005/10/11 11:24:00.000[00000033]	-0.2	1366
2005/10/11 11:26:00.000[00000034]	-0.2	1402
2005/10/11 11:28:00.000[00000035]	-0.3	1367
2005/10/11 11:30:00.000[00000036]	-0.2	1359
2005/10/11 11:32:00.000[00000037]	-0.3	1357
2005/10/11 11:34:00.000[00000038]	-0.2	1387
2005/10/11 11:36:00.000[00000039]	0.0	1352
2005/10/11 11:38:00.000[00000040]	-0.2	1371
2005/10/11 11:40:00.000[00000041]	-0.3	1371
2005/10/11 11:42:00.000[00000042]	-0.2	1397
2005/10/11 11:44:00.000[00000043]	0.0	1349
2005/10/11 11:46:00.000[00000044]	-0.2	1402
2005/10/11 11:48:00.000[00000045]	-0.2	1363
2005/10/11 11:50:00.000[00000046]	-0.2	1395
2005/10/11 11:52:00.000[00000047]	-0.2	1372
2005/10/11 11:54:00.000[00000048]	-0.2	1370
2005/10/11 11:56:00.000[00000049]	-0.2	1382
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Absolute[No.]	CH04 [F]	CH32 [SCFM]
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2005/10/11 12:32:00.000[00000067]	-0.2	1382
2005/10/11 12:34:00.000[00000068]	-0.2	1374
2005/10/11 12:36:00.000[00000069]	-0.2	1358
2005/10/11 12:38:00.000[00000070]	-0.2	1336
2005/10/11 12:40:00.000[00000071]	-0.2	1369
2005/10/11 12:42:00.000[00000072]	-0.2	1352
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2005/10/11 12:52:00.000[00000077]	-0.2	0
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2005/10/11 12:56:00.000[00000079]	-0.2	0
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2005/10/11 14:20:00.000[00000121]	-0.2	1297
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2005/10/11 14:32:00.000[00000127]	-0.2	1293

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2005/10/11 14:38:00.000[00000130]	0.0	1295
2005/10/11 14:40:00.000[00000131]	0.2	1294
2005/10/11 14:42:00.000[00000132]	0.2	1321
2005/10/11 14:44:00.000[00000133]	0.2	1318
2005/10/11 14:46:00.000[00000134]	0.0	1314
2005/10/11 14:48:00.000[00000135]	0.0	1294
2005/10/11 14:50:00.000[00000136]	0.0	1303
2005/10/11 14:52:00.000[00000137]	0.0	1295
2005/10/11 14:54:00.000[00000138]	0.0	1307
2005/10/11 14:56:00.000[00000139]	0.0	1310
2005/10/11 14:58:00.000[00000140]	0.0	1300
2005/10/11 15:00:00.000[00000141]	0.0	1304
2005/10/11 15:02:00.000[00000142]	0.0	1289
2005/10/11 15:04:00.000[00000143]	0.0	1317
2005/10/11 15:06:00.000[00000144]	0.0	1315
2005/10/11 15:08:00.000[00000145]	0.0	1298
2005/10/11 15:10:00.000[00000146]	0.0	1329
2005/10/11 15:12:00.000[00000147]	0.2	1315
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2005/10/11 15:16:00.000[00000149]	0.0	1303
2005/10/11 15:18:00.000[00000150]	0.0	1315
2005/10/11 15:20:00.000[00000151]	0.0	1306
2005/10/11 15:22:00.000[00000152]	0.0	1310
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2005/10/11 15:42:00.000[00000162]	-0.2	1331
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2005/10/11 15:58:00.000[00000170]	-0.3	1318
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2005/10/11 16:02:00.000[00000172]	-0.3	1328
2005/10/11 16:04:00.000[00000173]	-0.3	1364
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2005/10/11 16:08:00.000[00000175]	-0.3	1366
2005/10/11 16:10:00.000[00000176]	-0.3	1366
2005/10/11 16:12:00.000[00000177]	-0.3	1369
2005/10/11 16:14:00.000[00000178]	-0.5	1362
2005/10/11 16:16:00.000[00000179]	-0.5	1313
2005/10/11 16:18:00.000[00000180]	-0.3	1304
2005/10/11 16:20:00.000[00000181]	-0.5	1307
2005/10/11 16:22:00.000[00000182]	-0.5	1338
2005/10/11 16:24:00.000[00000183]	-0.3	1315
2005/10/11 16:26:00.000[00000184]	-0.3	1371
2005/10/11 16:28:00.000[00000185]	-0.5	1356
2005/10/11 16:30:00.000[00000186]	-0.3	1352
2005/10/11 16:32:00.000[00000187]	-0.5	1374
2005/10/11 16:34:00.000[00000188]	-0.5	1333
2005/10/11 16:36:00.000[00000189]	-0.3	1330
2005/10/11 16:38:00.000[00000190]	-0.5	1330
2005/10/11 16:40:00.000[00000191]	-0.5	1339

Absolute[No.]	CH04 [F]	CH32 [SCFM]
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2005/10/11 16:46:00.000[00000194]	-0.3	1361
2005/10/11 16:48:00.000[00000195]	-0.5	1378
2005/10/11 16:50:00.000[00000196]	-0.5	1329
2005/10/11 16:52:00.000[00000197]	-0.7	1342
2005/10/11 16:54:00.000[00000198]	-0.5	1339
2005/10/11 16:56:00.000[00000199]	-0.5	1357
2005/10/11 16:58:00.000[00000200]	-0.3	1339
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2005/10/11 17:06:00.000[00000204]	-0.5	1327
2005/10/11 17:08:00.000[00000205]	-0.5	1345
2005/10/11 17:10:00.000[00000206]	-0.7	1350
2005/10/11 17:12:00.000[00000207]	-0.5	1340
2005/10/11 17:14:00.000[00000208]	-0.5	1377
2005/10/11 17:16:00.000[00000209]	-0.5	1341
2005/10/11 17:18:00.000[00000210]	-0.5	1351
2005/10/11 17:20:00.000[00000211]	-0.7	1346
2005/10/11 17:22:00.000[00000212]	-0.5	1364
2005/10/11 17:24:00.000[00000213]	-0.7	1363
2005/10/11 17:26:00.000[00000214]	-0.5	1396
2005/10/11 17:28:00.000[00000215]	-0.7	1328
2005/10/11 17:30:00.000[00000216]	-0.5	1305
2005/10/11 17:32:00.000[00000217]	-0.5	1346
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2005/10/11 17:42:00.000[00000222]	-0.5	793
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2005/10/11 17:46:00.000[00000224]	-0.7	805
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2005/10/11 18:06:00.000[00000234]	-0.5	802
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2005/10/11 18:12:00.000[00000237]	-0.7	812
2005/10/11 18:14:00.000[00000238]	-0.7	811
2005/10/11 18:16:00.000[00000239]	-0.7	822
2005/10/11 18:18:00.000[00000240]	-0.7	786
2005/10/11 18:20:00.000[00000241]	-0.7	814
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2005/10/11 18:30:00.000[00000246]	-0.5	789
2005/10/11 18:32:00.000[00000247]	-0.7	789
2005/10/11 18:34:00.000[00000248]	-0.5	812
2005/10/11 18:36:00.000[00000249]	-0.5	820
2005/10/11 18:38:00.000[00000250]	-0.7	784
2005/10/11 18:40:00.000[00000251]	-0.7	787
2005/10/11 18:42:00.000[00000252]	-0.5	798
2005/10/11 18:44:00.000[00000253]	-0.7	801
2005/10/11 18:46:00.000[00000254]	-0.7	799
2005/10/11 18:48:00.000[00000255]	-0.7	813

Absolute[No.]	CH04 [F]	CH32 [SCFM]
2005/10/11 18:50:00.000[00000256]	-0.7	789
2005/10/11 18:52:00.000[00000257]	-0.5	802
2005/10/11 18:54:00.000[00000258]	-0.5	813
2005/10/11 18:56:00.000[00000259]	-0.5	792
2005/10/11 18:58:00.000[00000260]	-0.7	804
2005/10/11 19:00:00.000[00000261]	-0.5	804
2005/10/11 19:02:00.000[00000262]	-0.5	794
2005/10/11 19:04:00.000[00000263]	-0.7	802
2005/10/11 19:06:00.000[00000264]	-0.5	788
2005/10/11 19:08:00.000[00000265]	-0.7	791
2005/10/11 19:10:00.000[00000266]	-0.5	789
2005/10/11 19:12:00.000[00000267]	-0.7	790
2005/10/11 19:14:00.000[00000268]	-0.7	797
2005/10/11 19:16:00.000[00000269]	-0.7	782
2005/10/11 19:18:00.000[00000270]	-0.7	804
2005/10/11 19:20:00.000[00000271]	-0.7	801
2005/10/11 19:22:00.000[00000272]	-0.7	805
2005/10/11 19:24:00.000[00000273]	-0.7	746
2005/10/11 19:26:00.000[00000274]	-0.7	804
2005/10/11 19:28:00.000[00000275]	-0.7	789
2005/10/11 19:30:00.000[00000276]	-0.5	820
2005/10/11 19:32:00.000[00000277]	-0.7	807
2005/10/11 19:34:00.000[00000278]	-0.5	820
2005/10/11 19:36:00.000[00000279]	-0.5	798
2005/10/11 19:38:00.000[00000280]	-0.5	804
2005/10/11 19:40:00.000[00000281]	-0.7	790
2005/10/11 19:42:00.000[00000282]	-0.5	792
2005/10/11 19:44:00.000[00000283]	-0.7	801
2005/10/11 19:46:00.000[00000284]	-0.5	791
2005/10/11 19:48:00.000[00000285]	-0.5	796
2005/10/11 19:50:00.000[00000286]	-0.5	786
2005/10/11 19:52:00.000[00000287]	-0.7	802
2005/10/11 19:54:00.000[00000288]	-0.5	786
2005/10/11 19:56:00.000[00000289]	-0.5	802
2005/10/11 19:58:00.000[00000290]	-0.7	796
2005/10/11 20:00:00.000[00000291]	-0.7	803
2005/10/11 20:02:00.000[00000292]	-0.7	806
2005/10/11 20:04:00.000[00000293]	-0.7	783
2005/10/11 20:06:00.000[00000294]	-0.7	799
2005/10/11 20:08:00.000[00000295]	-0.7	795
2005/10/11 20:10:00.000[00000296]	-0.7	801
2005/10/11 20:12:00.000[00000297]	-0.7	776
2005/10/11 20:14:00.000[00000298]	-0.7	803
2005/10/11 20:16:00.000[00000299]	-0.7	818
2005/10/11 20:18:00.000[00000300]	-0.7	797
2005/10/11 20:20:00.000[00000301]	-0.7	800
2005/10/11 20:22:00.000[00000302]	-0.7	779
2005/10/11 20:24:00.000[00000303]	-0.7	789
2005/10/11 20:26:00.000[00000304]	-0.7	805
2005/10/11 20:28:00.000[00000305]	-0.7	791
2005/10/11 20:30:00.000[00000306]	-0.7	802
2005/10/11 20:32:00.000[00000307]	-0.7	803
2005/10/11 20:34:00.000[00000308]	-0.7	810
2005/10/11 20:36:00.000[00000309]	-0.7	785
2005/10/11 20:38:00.000[00000310]	-0.7	791
2005/10/11 20:40:00.000[00000311]	-0.5	785
2005/10/11 20:42:00.000[00000312]	-0.7	785
2005/10/11 20:44:00.000[00000313]	-0.7	794
2005/10/11 20:46:00.000[00000314]	-0.7	795
2005/10/11 20:48:00.000[00000315]	-0.7	786
2005/10/11 20:50:00.000[00000316]	-0.7	799
2005/10/11 20:52:00.000[00000317]	-0.7	794
2005/10/11 20:54:00.000[00000318]	-0.5	790
2005/10/11 20:56:00.000[00000319]	-0.5	804

Absolute[No.]	CH04 [F]	CH32 [SCFM]
2005/10/11 20:58:00.000[00000320]	-0.5	807
2005/10/11 21:00:00.000[00000321]	-0.5	799
2005/10/11 21:02:00.000[00000322]	-0.5	808
2005/10/11 21:04:00.000[00000323]	-0.5	806
2005/10/11 21:06:00.000[00000324]	-0.5	793
2005/10/11 21:08:00.000[00000325]	-0.5	798
2005/10/11 21:10:00.000[00000326]	-0.5	798
2005/10/11 21:12:00.000[00000327]	-0.7	807
2005/10/11 21:14:00.000[00000328]	-0.5	803
2005/10/11 21:16:00.000[00000329]	-0.5	801
2005/10/11 21:18:00.000[00000330]	-0.5	794
2005/10/11 21:20:00.000[00000331]	-0.5	820
2005/10/11 21:22:00.000[00000332]	-0.7	798
2005/10/11 21:24:00.000[00000333]	-0.5	808
2005/10/11 21:26:00.000[00000334]	-0.5	795
2005/10/11 21:28:00.000[00000335]	-0.7	789
2005/10/11 21:30:00.000[00000336]	-0.5	803
2005/10/11 21:32:00.000[00000337]	-0.7	800
2005/10/11 21:34:00.000[00000338]	-0.7	804
2005/10/11 21:36:00.000[00000339]	-0.7	788
2005/10/11 21:38:00.000[00000340]	-0.7	801
2005/10/11 21:40:00.000[00000341]	-0.7	804
2005/10/11 21:42:00.000[00000342]	-0.7	802
2005/10/11 21:44:00.000[00000343]	-0.7	787
2005/10/11 21:46:00.000[00000344]	-0.7	780
2005/10/11 21:48:00.000[00000345]	-0.7	808
2005/10/11 21:50:00.000[00000346]	-0.7	787
2005/10/11 21:52:00.000[00000347]	-0.7	798
2005/10/11 21:54:00.000[00000348]	-0.7	777
2005/10/11 21:56:00.000[00000349]	-0.7	814
2005/10/11 21:58:00.000[00000350]	-0.7	807
2005/10/11 22:00:00.000[00000351]	-0.5	823
2005/10/11 22:02:00.000[00000352]	-0.7	796
2005/10/11 22:04:00.000[00000353]	-0.5	797
2005/10/11 22:06:00.000[00000354]	-0.7	774
2005/10/11 22:08:00.000[00000355]	-0.5	795
2005/10/11 22:10:00.000[00000356]	-0.5	808
2005/10/11 22:12:00.000[00000357]	-0.7	794
2005/10/11 22:14:00.000[00000358]	-0.5	809
2005/10/11 22:16:00.000[00000359]	-0.7	784
2005/10/11 22:18:00.000[00000360]	-0.5	805
2005/10/11 22:20:00.000[00000361]	-0.7	813
2005/10/11 22:22:00.000[00000362]	-0.5	795
2005/10/11 22:24:00.000[00000363]	-0.7	811
2005/10/11 22:26:00.000[00000364]	-0.7	785
2005/10/11 22:28:00.000[00000365]	-0.7	798
2005/10/11 22:30:00.000[00000366]	-0.7	804
2005/10/11 22:32:00.000[00000367]	-0.7	787
2005/10/11 22:34:00.000[00000368]	-0.7	798
2005/10/11 22:36:00.000[00000369]	-0.7	794
2005/10/11 22:38:00.000[00000370]	-0.7	807
2005/10/11 22:40:00.000[00000371]	-0.7	786
2005/10/11 22:42:00.000[00000372]	-0.7	794
2005/10/11 22:44:00.000[00000373]	-0.7	817
2005/10/11 22:46:00.000[00000374]	-0.5	786
2005/10/11 22:48:00.000[00000375]	-0.7	810
2005/10/11 22:50:00.000[00000376]	-0.5	787
2005/10/11 22:52:00.000[00000377]	-0.5	802
2005/10/11 22:54:00.000[00000378]	-0.5	808
2005/10/11 22:56:00.000[00000379]	-0.5	786
2005/10/11 22:58:00.000[00000380]	-0.7	789
2005/10/11 23:00:00.000[00000381]	-0.5	804
2005/10/11 23:02:00.000[00000382]	-0.5	787
2005/10/11 23:04:00.000[00000383]	-0.5	791

Absolute[No.]	CH04 [F]	CH32 [SCFM]
2005/10/11 23:06:00.000[00000384]	-0.5	803
2005/10/11 23:08:00.000[00000385]	-0.5	781
2005/10/11 23:10:00.000[00000386]	-0.5	797
2005/10/11 23:12:00.000[00000387]	-0.7	799
2005/10/11 23:14:00.000[00000388]	-0.5	805
2005/10/11 23:16:00.000[00000389]	-0.7	786
2005/10/11 23:18:00.000[00000390]	-0.5	793
2005/10/11 23:20:00.000[00000391]	-0.5	796
2005/10/11 23:22:00.000[00000392]	-0.5	799
2005/10/11 23:24:00.000[00000393]	-0.7	796
2005/10/11 23:26:00.000[00000394]	-0.7	803
2005/10/11 23:28:00.000[00000395]	-0.7	802
2005/10/11 23:30:00.000[00000396]	-0.7	782
2005/10/11 23:32:00.000[00000397]	-0.5	788
2005/10/11 23:34:00.000[00000398]	-0.7	787
2005/10/11 23:36:00.000[00000399]	-0.5	799
2005/10/11 23:38:00.000[00000400]	-0.5	788
2005/10/11 23:40:00.000[00000401]	-0.5	789
2005/10/11 23:42:00.000[00000402]	-0.5	795
2005/10/11 23:44:00.000[00000403]	-0.5	798
2005/10/11 23:46:00.000[00000404]	-0.3	794
2005/10/11 23:48:00.000[00000405]	-0.3	797
2005/10/11 23:50:00.000[00000406]	-0.5	794
2005/10/11 23:52:00.000[00000407]	-0.5	800
2005/10/11 23:54:00.000[00000408]	-0.3	793
2005/10/11 23:56:00.000[00000409]	-0.3	808
2005/10/11 23:58:00.000[00000410]	-0.3	796
2005/10/12 00:00:00.000[00000411]	-0.5	789
2005/10/12 00:02:00.000[00000412]	-0.5	809
2005/10/12 00:04:00.000[00000413]	-0.3	792
2005/10/12 00:06:00.000[00000414]	-0.5	790
2005/10/12 00:08:00.000[00000415]	-0.3	801
2005/10/12 00:10:00.000[00000416]	-0.5	804
2005/10/12 00:12:00.000[00000417]	-0.3	804
2005/10/12 00:14:00.000[00000418]	-0.3	793
2005/10/12 00:16:00.000[00000419]	-0.5	785
2005/10/12 00:18:00.000[00000420]	-0.5	798
2005/10/12 00:20:00.000[00000421]	-0.5	803
2005/10/12 00:22:00.000[00000422]	-0.5	809
2005/10/12 00:24:00.000[00000423]	-0.5	795
2005/10/12 00:26:00.000[00000424]	-0.5	784
2005/10/12 00:28:00.000[00000425]	-0.5	800
2005/10/12 00:30:00.000[00000426]	-0.7	805
2005/10/12 00:32:00.000[00000427]	-0.5	789
2005/10/12 00:34:00.000[00000428]	-0.7	800
2005/10/12 00:36:00.000[00000429]	-0.5	801
2005/10/12 00:38:00.000[00000430]	-0.5	806
2005/10/12 00:40:00.000[00000431]	-0.3	795
2005/10/12 00:42:00.000[00000432]	-0.7	802
2005/10/12 00:44:00.000[00000433]	-0.5	812
2005/10/12 00:46:00.000[00000434]	-0.7	801
2005/10/12 00:48:00.000[00000435]	-0.3	796
2005/10/12 00:50:00.000[00000436]	-0.3	787
2005/10/12 00:52:00.000[00000437]	-0.5	797
2005/10/12 00:54:00.000[00000438]	-0.3	813
2005/10/12 00:56:00.000[00000439]	-0.5	796
2005/10/12 00:58:00.000[00000440]	-0.3	795
2005/10/12 01:00:00.000[00000441]	-0.5	799