

196

HORIZON

AIR MEASUREMENT SERVICES, INC.

W07-014-FR

**RESULTS OF THE
BIENNIAL CRITERIA AND AB 2588 AIR TOXICS
SOURCE TEST ON THE SIMI VALLEY LANDFILL FLARE**

VCAPCD Permit to Operate #1395-012

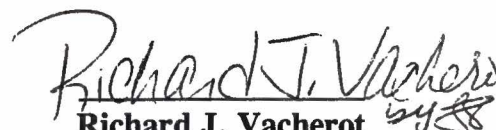
April 1997

Prepared for:

Simi Valley Landfill and Recycling Center
2801 Madera Road
Simi Valley, California 93065

Prepared by:

Horizon Air Measurement Services, Inc.
996 Lawrence Drive, Suite 108
Newbury Park, California 91320


Richard J. Vacherot
Technical Director

Simi Valley Landfill and Recycling Center
2801 Madera Road
Simi Valley, California 93065
805/522-7023



A Waste Management Company

May 8, 1997

Mr. Nadar Aghdaie
Air Pollution Control District
County of Ventura
669 County Square Drive
Ventura, CA 93003

**Subject: SUBMITTAL OF BIENNIAL CRITERIA POLLUTANTS AND AB 2588
AIR TOXICS HOT SPOTS SOURCE TEST FOR THE LANDFILL GAS
FIRED FLARE, PERMIT TO OPERATE 1395, SIMI VALLEY
LANDFILL AND RECYCLING CENTER, VENTURA COUNTY,
CALIFORNIA**

Dear Mr. Aghdaie,

Attached is a copy of the 1993 Biennial Criteria and AB 2588 Air Toxics Hot Spots source test results for the Simi Valley Landfill and Recycling Center (SVLRC) gas fired flare. These results are submitted in accordance with Permit to Operate 1395, Conditions 16 and 17.

All of the criteria pollutants meet the requirements of the Permit to Operate and Ventura County Air Pollution Control District (VCAPCD) Rule 74.17 for Solid Waste Disposal Sites.

If you have questions or comments about the test, please do not hesitate to contact me at (805) 579-7478.

Sincerely,

John Burns
Environmental Project Manager

Attachment

cc: Becky Linder - VCPD (w/o Test Report)
Lyle Olsen - VCAPCD (w/o Test Report)
Rich Vacherot - Horizon (w/o Test Report)

HORIZON

AIR MEASUREMENT SERVICES, INC.

May 7, 1997

Mr. John Burns
Simi Valley Landfill and Recycling Center
2801 Madera Road
Simi Valley, California 93065

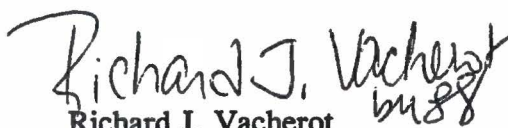
Dear Mr. Burns:

Please find enclosed three copies of the final report entitled "Results of the Biennial Criteria and AB 2588 Air Toxics Source Test on the Simi Valley Landfill Flare" for your submittal to the Ventura County Air Pollution Control District (VCAPCD).

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

Sincerely,

HORIZON AIR MEASUREMENT SERVICES, INC.


Richard J. Vacherot
Technical Director

RV:lmg

Enclosures

TABLE OF CONTENTS

1. INTRODUCTION	Page 1
2. SUMMARY OF RESULTS	Page 5
2.1 Criteria Pollutants	Page 5
3. PROCESS DESCRIPTION	Page 7
4. SAMPLING/ANALYSES	Page 8
4.1 Criteria Pollutants	Page 8
4.1.1 Sampling Location	Page 8
4.1.1.1 Flare Exhaust	Page 8
4.1.1.2 Flare Inlet - Landfill Gas	Page 10
4.1.2 Methane and Reactive Organic Compounds (ROC)	Page 10
4.1.3 Moisture	Page 11
4.1.3.1 Inlet	Page 11
4.1.3.2 Outlet	Page 11
4.1.4 Flow Rate	Page 11
4.1.4.1 Inlet	Page 11
4.1.4.2 Outlet	Page 11
4.1.5 Particulate Matter (Outlet Only)	Page 11
4.1.6 Sulfur Dioxide - Calculated	Page 12
4.1.7 Oxides of Nitrogen, Carbon Monoxide, Carbon Dioxide, Oxygen (Continuous Emissions Monitoring) - CARB Method 100	Page 12
4.1.8 Hydrogen Sulfide (H ₂ S), and C ₁ - C ₃ Sulfur Compounds	Page 12
4.2 Air Toxics Pollutants	Page 12
4.2.1 Sampling Location	Page 14
4.2.1.1 Flare Exhaust	Page 14
4.2.1.2 Flare Inlet - Landfill Gas	Page 14
4.2.2 Polycyclic Aromatic Hydrocarbons (PAH's) and Hexachlorobenzene-CARB Method 429	Page 14
4.2.3 Multimetals - CARB Draft Method 436	Page 16
4.2.4 Aldehydes - CARB Method 430	Page 18
4.2.5 Hexavalent and Total Chromium-CARB Method 425	Page 19
4.2.6 Hydrogen Chloride/Hydrogen Fluoride - CARB Method 421	Page 20
4.2.7 Speciated VOC's (SCAQMD Rule 1150.1 List) Including Acrylonitrile, 1,4-Dioxane, and Ethylene Dibromide	Page 21
4.2.8 1,3-Butadiene	Page 21
5. RESULTS DISCUSSION	Page 22
5.1 Criteria Pollutants	Page 22
5.2 Air Toxic Compounds	Page 22
5.2.1 Speciated Volatile Organic Compounds (VOC's) Including 1,3 Butadiene	Page 22

TABLE OF CONTENTS (Cont'd.)

5.2.2	Polycyclic Aromatic Hydrocarbons, Including Hexachlorobenzene . . .	Page 28
5.2.3	Aldehydes (Formaldehyde, Acetaldehyde and Acrolein)	Page 28
5.2.4	Hydrochloric and Hydrofluoric Acid (HCl/HF)	Page 28
5.2.5	Multimetals	Page 28
5.2.6	Total/Hexavalent Chromium	Page 33
6.	QA/QC SUMMARY	Page 35
6.1	Continuous Emission Monitoring (CEM) - EPA Method 7E/10/3A . .	Page 35
6.2	Particulate Matter	Page 35
6.3	Total Reduced Sulfur Compounds	Page 35
6.4	1,3 Butadiene	Page 35
6.5	Speciated Volatile Organic (VOC) Compounds	Page 36
6.6	Polycyclic Aromatic Hydrocarbons (PAH's) Including Hexachlorobenzene	Page 36
6.7	Aldehydes	Page 36
6.8	HCl/HF	Page 38
6.9	Multimetals	Page 38
6.10	Total/Hexavalent Chromium	Page 38
	APPENDIX A - Test Method Descriptions	
	APPENDIX B - Computer Printout of Results	
	APPENDIX C - Laboratory Results	
	APPENDIX D - Field Data Sheets	
	APPENDIX E - Operating Data - Strip Charts	
	APPENDIX F - Correspondences	
	APPENDIX G - Calibration Data	

1. INTRODUCTION

Under the requirements of Ventura County Air Pollution Control District (VCAPCD) Permit to Operate #1395-012, Simi Valley Landfill and Recycling Center (SVLRC) is required to conduct a biennial source test on the landfill gas flare 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) has been retained for this purpose.

All testing/analytical procedures conformed to the Source Test Protocol (Horizon # W07-014-TP) of March 1997 and the amendment letter (Horizon W07-014-C1) dated March 14, 1997. 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 March 18, 1997; the air toxics test program was completed from March 19 to March 21, 1997. At the request of SVLRC, Reactive Organic Compound (ROC) destruction efficiency testing was repeated on April 29, 1997. Testing was coordinated by Mr. Richard Vacherot of Horizon and Mr. John Burns of SVLRC.

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, with the exception of ROC's for which six test runs were completed.

The air toxic target compounds are identical to those quantified during the most recent flare emissions test conducted in 1993 (Horizon Report #W07-005-FR). All target air toxic compounds (Table 1-2) were sampled at the flare exhaust with the exception of metals (including hexavalent chromium) which were sampled at the flare inlet.

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 air toxics are provided in Section 5. Results of the QA/QC procedures are discussed in Section 6.

During testing, the flare was operating under normal operating conditions. Landfill gas flow rate was at approximately 750 to 850 standard cubic feet per minute (scfm), based upon the facility's continuous flow monitor/recorder (see Appendix E). Flare temperature was set at 1700°F Fahrenheit (°F). Stack temperature thermocouple readings were verified throughout the initial portion of the testing program. 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
March 1997

<u>Parameter</u>	<u>Permit Limit</u>
Reactive Organic Compounds (ROC)	1.09 lb/hr
Oxides of Nitrogen	0.06 lb/MMBtu 2.64 lb/hour
Carbon Monoxide	0.20 lb/MMBtu
Particulate Matter	3.11 lb/hr
Oxides of Sulfur, as SO ₂	1.47 lb/hr
ROC Destruction Efficiency	98%
Fuel Consumption	83.3 MSCF/hour 730 MMSCF/year

TABLE 1-2

**Air Toxic Compounds of Interest
Simi Valley Landfill Flare
March 1997**

PARAMETER	SAMPLING LOCATION
Speciated VOC's (SCAQMD Rule 1150.1 List) including: ethylene dibromide acrylonitrile 1,4 dioxane	Inlet and Outlet
1,3 butadiene	Outlet
Formaldehyde	Outlet
PAH's	Outlet
Hexachlorobenzene	Outlet
Metals	Inlet
Hexavalent Chromium	Inlet
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, SO_x, CO and particulate matter were within the allowable emission limits under the Permit to Operate #1395-012.

Emission rate of NO_x averaged 0.041 lb/MMBtu which is well below the VCAPCD Rule 74.17 limit of 0.06 lb/MMBtu. Emissions of CO averaged 0.12 lb/MMBtu which is below the VCAPCD Rule 74.17 limit of 0.2 lb/MMBtu.

During the initial source test, the flare ROC destruction efficiency averaged 97.2 percent. At the request of SVLRC, the destruction efficiency testing was repeated on April 29, 1997. Destruction efficiency averaged 99.3 percent on April 29, 1997. The reported destruction efficiency average in Table 2-1 is the average of all six test runs completed on the two test dates. The resulting destruction efficiency average of 98.3% is within the Rule 74.17 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
March 1997

	Emission Rate								Allowable Emissions	
	Run 1		Run 2		Run 3		Average			
	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)	(lb/hr)	(tons/yr)		
Reactive Organic Compounds (ROC), as CH ₄	0.477	2.09	0.231	1.01	0.125	0.548	0.278	1.22	1.09	4.77
Oxides of Nitrogen, as NO ₂	0.788	3.45	0.926	4.06	0.923	4.04	0.879	3.85	2.64	11.56
Particulate Matter	0.66	2.89	0.46	2.01	0.44	1.93	0.52	2.28	3.11	7.72
Oxides of Sulfur, as SO ₂	0.143	0.626	0.148	0.648	0.149	0.653	0.147	0.642	1.47	2.19
Carbon Monoxide	1.61	7.05	2.55	11.2	3.68	16.1	2.61	11.5	9.30	38.95
Destruction Efficiency (%)										
	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Average			
Reactive Organic Compounds	95.4	97.6	98.7	98.4	>99.8	>99.8	98.3	98.0		

Note: ROC Runs 1, 2 and 3 were conducted on 3/14/97; Runs 4, 5 and 6 were conducted on 4/29/97.

3. PROCESS 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 landfill gas flare 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 was supplied to the flare burners at a rate of approximately 750 cubic feet per minute (cfm). Flare combustion temperature was 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 permanent thermocouple temperature readings were verified with a second, calibrated thermocouple. The flare was equipped with automatic air control louvers and a temperature controller to maintain the pre-set flare temperature. A flame failure detector automatically shuts off gas flow from the blower in the event of a flame out.

4. SAMPLING/ANALYSES

The sampling/analyses program has been divided into criteria pollutant testing and air toxics testing. All testing was completed within four days.

4.1 Criteria Pollutants

The target compounds quantified as part of the criteria pollutant testing and the associated sampling method are provided in Table 4-1. Three, replicate test runs were conducted for each parameter of interest (with the exception of ROC) using the procedures detailed in subsequent subsections.

All methods followed the applicable EPA testing procedure without modification with the exception of EPA Method 25 as detailed in Sections 4.1.2. Also, SCAQMD Method 5.1 was used for particulate matter collection; reduced sulfur compounds was collected in a Tedlar bag at the landfill gas inlet as in all previous test programs conducted on the flare. From the reduced sulfur compound concentration and flow rate measured at the landfill gas flare inlet, the SO₂ emissions was calculated, assuming all sulfur compounds are oxidized to SO₂.

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. Four sample ports were utilized. Twenty-four traverse points (12 per port) were utilized for particulate, velocity, oxides of nitrogen, carbon monoxide and ROC sampling.

Table 4-1

**Criteria Pollutants - Test Methods
Simi Valley Landfill Flare
March 1997**

PARAMETER	TEST METHOD
Inlet and Outlet	
Flow Rate	Continuous, On-Line Monitor (Inlet) SCAQMD Method 5.1 (Outlet)
Fixed Gases (O ₂ , CO ₂ , N ₂)	CARB Method 100/EPA Method 3A (Outlet) CARB Method 3/EPA Method 3 (Inlet)
Moisture	CARB Method 4 (Inlet) CARB Method 5.1 (Outlet)
ROC	EPA Method 25 - <u>Modified</u>
Methane	EPA Method 25 - <u>Modified</u>
Outlet Only	
Carbon Monoxide	CARB Method 100/EPA Method 10
Sulfur Dioxide	Calculated (based on inlet reduced sulfur compounds concentration & flow rate)
Oxides of Nitrogen	CARB Method 100/EPA Method 7E
Particulate Matter	SCAQMD Method 5.1
Inlet Only	
C ₁ -C ₃ Sulfur Compounds (with H ₂ S)	Tedlar Bag/GC-Hall Detection & GC/MS
Heating Value	ASTM D1826-77

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 were 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. Calibration of the flow measuring instruments was completed in March 1997 by a third party calibration company.

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 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 was collected using the SUMMA canister Method outlined in SCAQMD Method 25.2 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 (CH₄), and carbon dioxide (CO₂) from each other and from the total gaseous non-methane organics (TGNMO) which are eluted as backflush. All eluted components are first oxidized to CO₂ 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, CH₄, CO₂ and propane, prepared by Scott Specialty Gases, traceable to NBS, is used to calibrate the FID/TCA analysis system.

4.1.3 Moisture

4.1.3.1 Inlet

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.

4.1.3.2 Outlet

Outlet moisture were determined in conjunction with the Method 5.1 particulate testing.

4.1.4 Flow Rate

4.1.4.1 Inlet

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

4.1.4.2 Outlet

The flare exhaust flow rate was determined in conjunction with SCAQMD Method 5.1 particulate testing detailed in Section 4.1.5.

4.1.5 Particulate Matter (Outlet Only)

Horizon conducted three test runs on the flare for particulate matter in accordance with SCAQMD Method 5.1 protocol as detailed in Appendix A. Twelve points per each of two traverses were utilized for the collection of particulate matter.

4.1.6 Sulfur Dioxide - Calculated

Sulfur dioxide emission rate was calculated based upon the mass flow rate of reduced sulfur compounds measured at the inlet (landfill gas). All reduced sulfur compounds were assumed to be oxidized to SO₂ in the landfill flare.

4.1.7 Oxides of Nitrogen, Carbon Monoxide, Carbon Dioxide, Oxygen (Continuous Emissions Monitoring) - CARB Method 100

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, O₂, CO₂ and CO concentrations. A description of Horizon's CEMS and the applicable EPA Methods, are detailed in Appendix A.

4.1.8 Hydrogen Sulfide (H₂S), and C₁ - C₃ Sulfur Compounds

Hydrogen sulfide and C₁ - C₃ sulfur compounds samples were collected at the inlet of the flare using the Tedlar bag collection system. All samples were analyzed within 8 hours of collection using SCAQMD Method 307.94 as described in Appendix A.

4.2 Air Toxics Pollutants

The target compounds quantified as part of the air toxics testing, associated sampling methods and anticipated detection limits are provided in Table 3-2. Detection limit calculations for all compounds were requested by SVLRC to target a 1 ppb detection where possible.

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 some slight modifications were made to the formaldehyde (CARB Method 430) sample train as noted in Section 4.2.4; the PAH (Method 429) sample filter and reagents as noted

Table 4-2

**Air Toxic Pollutants - Test Methods
Simi Valley Landfill Flare
March 1997**

COMPOUND	TEST METHOD	ANTICIPATED QUANTIFIABLE LIMITS	NOMINAL TEST RUN DURATION (MINUTES)
Speciated VOC's (SCAQMD 1150.1 Compounds)	SCAQMD 1150.1 Compounds Tedlar Bag/GC-MS Analyses	1 ppb	60
Ethylene Dibromide	Tedlar Bag/GC-MS Analyses	0.5 ppb	60
Acrylonitrile	Tedlar Bag/GC-MS Analyses	5 ppb	60
1,4-Dioxane	Tedlar Bag/GC-MS Analyses	70 ppb	60
1,3 Butadiene	Tedlar Bag/GC-MS Analyses (see Section 2-3.8)	1 ppb	15
Formaldehyde	CARB Method 430	10 ppb	480
PAH's	CARB Method 429	5 ng/m ³	180
Naphthalene	CARB Method 429	60 ng/m ³	180
Hexachlorobenzene	CARB Method 429	7 ng/m ³	180
Metals (arsenic, cadmium, copper, manganese, nickel, zinc)	CARB Draft Method 436	0.04-0.10 ug/ft ³	90
Chromium, hexavalent	CARB Method 425	0.002 ug/ft ³	240
HCl/HF	CARB Method 421	2 ug/ft ³	60

in Section 4.2.1; and 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 a nitrogen/phosphorus detector (NPD) (Section 4.2.6).

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 PAH and hexachlorobenzene sampling. A single point in the flare was used for the collection of formaldehyde and HCl/HF.

4.2.1.2 Flare Inlet - Landfill Gas

Metals, including total/hexavalent chromium 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 SVLRC. The flow meter is corrected to standard temperature/pressure and gas density.

4.2.2 Polycyclic Aromatic Hydrocarbons (PAH's) and Hexachlorobenzene-CARB Method 429

Horizon utilized CARB Method 429 as described in Appendix A for PAH/hexachlorobenzene with one minor alteration: methanol, hexane and methylene chloride were used for sample recovery/rinsing instead of methanol, acetone and methylene chloride. 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, hexane, 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, hexane, 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, hexane 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 will be archived. The resulting extracts from each sample portion (ie. container #1, #2, #3, #4 and XAD cartridge) will be combined, as allowed, and analyzed using high resolution mass spectrometry (HRGC/HRMS). All analyses will be completed by Alta Analytical of El Dorado Hills, California.

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 was also be obtained and analyzed in the same manner as the samples.

4.2.3 Multimetals - CARB Draft Method 436

Three, replicate 90 minute (nominal) test runs (a minimum of 45 cubic feet of sample) were conducted at the inlet to the flare. The metal (concentration) measured at the inlet were considered representative of the flare exhaust metal emissions. Emissions of the metal species of interest were determined in accordance with CARB Draft 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 atomic absorption spectroscopy (AAS).

The sampling train consists of a glass buttonhook nozzle followed by a heated, glass lined 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 are 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 either graphite furnace or direct aspiration atomic absorption spectroscopy as described in the CARB 436 Multimetals Method. 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.

Aldehydes (formaldehyde, acetaldehyde and acrolein) emissions were determined in accordance with CARB Method 430 "Determination of Formaldehyde Emissions from Stationary Sources" as described in Appendix A. Sample volume was determined using a dry gas meter as in Method 5. In this method stack gas is withdrawn from the stack through a series of midjet impingers containing an 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 midjet 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, a needle valve, dry gas meter and calibrated orifice as per Method 5. The sample flow will be maintained at approximately 1000 cubic centimeters (cc) per minute throughout the test run as indicated on the rotometer. Dry gas meter readings are recorded at 10-minute intervals over each test run. 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 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 leaktight septum vial which is weighed and refrigerated pending analysis.

Prior to field sampling, four reagent blanks of the impinger solution was analyzed to verify anticipated reagent blank levels (reagent blank levels will be expected to be 0.8 μ g formaldehyde per 10 ml of solution). 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 matrix spike was also conducted as specified in Method 430. All reported emission values were field blank-corrected.

4.2.5 Hexavalent and Total Chromium-CARB Method 425

Horizon determined hexavalent and total chromium in accordance with CARB Method 425 procedures as described in Appendix A at the inlet to the landfill flare. The hexavalent/total chromium emissions measured at the flare inlet were considered representative of flare exhaust emissions. 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 glass buttonhook nozzle and borosilicate glass 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 will be 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. A pretest blank was obtained on each sample probe/nozzle prior to testing to confirm its cleanliness. All pretest probe blanks were below the analytical quantifiable limit. 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 - CARB Method 421

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 Acrylonitrile, 1,4-Dioxane, and Ethylene Dibromide

Speciated VOC emissions were determined from the SUMMA canister samples which were used for total non-methane hydrocarbon determination.

All samples were analyzed within 48 hours using GC/MS techniques for each compound of interest with the exception of acrylonitrile which was analyzed using a nitrogen phosphorus detector. A blank sample was also collected and analyzed for each compounds 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 consecutive, 15-minute 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 with the exception of ROC's in which six test runs were completed. The results of the criteria testing program are provided in Table 5-1.

During the initial source test, the flare ROC destruction efficiency averaged 97.2 percent. At the request of SVLRC, the destruction efficiency testing was repeated on April 29, 1997. Destruction efficiency averaged 99.3 percent on April 29, 1997. The reported destruction efficiency average in Table 2-1 is the average of all six test runs completed on the two test dates. The resulting destruction efficiency average of 98.3% is within the Rule 74.17 limit of 98%.

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. No sampling or analytical problems were encountered during the VOC testing.

One VOC field blank was analyzed with the sample set. Section 6, QA/QC Summary provides a detailed discussion of subsequent QA/QC sample results.

Table 5-1
Summary of Results
Criteria Pollutants
Simi Valley Landfill
March 1997

	LANDFILL GAS			FLARE EXHAUST		
	Run #1	Run #2	Run #3	Run #1	Run #2	Run #3
STACK GAS CHARACTERISTICS						
Temperature (°F)*	---	---	---	1589	1538	1584
Moisture (%)	3.2	3.2	2.3	7.6	9.5	9.2
Flow Rate (acfm)	---	---	---	44069	47561	50063
(dscfm)**	726	726	733	10366	11228	11595
Fixed Gases						
Methane (%)	47.3	48.4	47.0	0	0	0
Oxygen (%)	0.6	0.5	0.9	12.3	12.0	12.0
Carbon Dioxide (%)	38.5	39.0	37.8	7.1	6.9	7.5
Nitrogen	13.6	12.1	14.3	80.6	81.2	80.5
Heating Value, Btu/dscf	491	502	487	---	---	---
MMBtu/hr	21.4	21.9	21.4	---	---	---
EMISSIONS						
Oxides of Nitrogen						
ppm	---	---	---	10.6	11.5	11.1
ppm @ 3% O ₂	---	---	---	22.1	23.0	22.3
lb/hr	---	---	---	0.788	0.926	0.923
lb/MMBtu	---	---	---	0.0368	0.0423	0.0431
Carbon Monoxide						
ppm	---	---	---	35.6	52.0	72.7
ppm @ 3% O ₂	---	---	---	74.4	104.1	146.1
lb/hr	---	---	---	1.61	2.55	3.68
lb/MMBtu	---	---	---	0.0752	0.116	0.172
Particulate Matter						
gr/dscf	---	---	---	0.0075	0.0048	0.0044
gr/dscf @ 12% CO ₂	---	---	---	0.013	0.0083	0.0070
lb/hr	---	---	---	0.66	0.46	0.44

* Landfill gas flare exhaust temperature was obtained from sample ports 8' higher than facility's recording thermocouple.

** Value is the average 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 1997

	LANDFILL GAS			FLARE EXHAUST		
	Run #1	Run #2	Run #3	Run #1	Run #2	Run #3
Reactive Organic Compounds (Test 1)						
ppm (as CH ₄)	5650	5240	5010	18.2	8.14	4.27
lb/hr (as CH ₄)	10.4	9.62	9.29	0.477	0.231	0.125
destruction efficiency (%)	---	---	---	95.4	97.6	98.7
Reactive Organic Compounds (Test 2)***						
ppm (as CH ₄)	5400	4990	4810	9.44	<1	<1
lb/hr (as CH ₄)	11.4	10.5	10.0	0.178	<0.02	<0.02
destruction efficiency (%)	---	---	---	98.4	>99.8	>99.8
Sulfur Compounds						
hydrogen sulfide (ppm)	12.3	12.3	12.2	---	---	---
grains/100 ft ³	0.77	0.77	0.77			
methyl mercaptan (ppm)	0.67	1.07	1.16	---	---	---
grains/100ft ³	0.055	0.088	0.095			
ethyl mercaptan (ppm)	0.05	0.05	0.06	---	---	---
grains/100ft ³	0.006	0.006	0.008			
dimethyl sulfide (ppm)	5.82	6.16	6.08	---	---	---
grains/100ft ³	0.675	0.713	0.704			
carbonyl sulfide (ppm)	0.17	0.16	0.14	---	---	---
grains/100ft ³	0.019	0.018	0.016			
carbon disulfide (ppm)	0.12	0.12	0.12	---	---	---
grains/100ft ³	0.013	0.013	0.013			
dimethyl disulfide (ppm)	0.11	0.10	0.12	---	---	---
grains/100ft ³	0.020	0.018	0.022			
Total Sulfur Compounds (ppm, as H ₂ S)	19.6	20.4	20.4			
grains/100 ft ³	1.23	1.28	1.28			

*** Test #2 was conducted on 4/29/97.

Table 5-2
Trace Organic Species
Destruction Efficiency Results
Simi Valley Landfill
March 18, 1997
Run # 1

Species	Inlet		Outlet		Destruction Efficiency (%)
	Concentration (ppb)	Emission Rate (lb/hr)	Concentration (ppb)	Emission Rate (lb/hr)	
Acetonitrile	402	1.89E-03	88.90	5.97E-03	*
Benzene	1060	9.49E-03	5.04	6.44E-04	93.21
Benzylchloride	< 20	< 2.92E-04	< 2.00	4.16E-04	NA
Chlorobenzene	138	1.79E-03	3.52	6.52E-04	63.58
Dichlorobenzenes	1400	2.36E-02	3.74	9.01E-04	96.19
1,1-dichloroethane	2030	2.31E-02	2.02	3.28E-04	98.58
1,2-dichloroethane	122	1.39E-03	6.24	1.01E-03	26.97
1,1-dichloroethylene	165	1.84E-03	< 0.40	6.36E-05	> 96.54
Dichloromethane	8520	8.31E-02	2.31	3.22E-04	99.61
Perchloroethene	1950	5.30E-02	42.70	1.66E-02	68.73
Carbon tetrachloride	< 6	< 1.06E-04	< 0.10	2.52E-05	NA
Toluene	25700	2.71E-01	541.00	8.16E-02	69.94
1,1,1-trichloroethane	180	2.75E-03	0.23	5.01E-05	98.18
Trichloroethene	1040	1.56E-02	3.94	8.46E-04	94.59
Chloroform	114	1.56E-03	< 0.10	1.95E-05	> 98.75
Vinyl Chloride	1400	1.00E-02	< 0.50	5.12E-05	> 99.49
m xylenes	11200	1.36E-01	206.00	3.58E-02	73.74
o+p xylene	2840	3.46E-02	67.80	1.18E-02	65.91
TNMHC	5650000	1.04E+01	18200	4.77E-01	95.40
Acrylonitrile	< 4	2.44E-05	< 18.5	1.61E-03	NA
Ethylene dibromide	< 7	1.51E-04	< 0.3	9.24E-05	NA
1,4-dioxane	< 17	1.72E-04	< 0.5	7.22E-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
March 18, 1997
Run #2

Species	Inlet		Outlet		Destruction Efficiency (%)
	Concentration (ppb)	Emission Rate (lb/hr)	Concentration (ppb)	Emission Rate (lb/hr)	
Acetonitrile	440	2.07E-03	48.10	3.50E-03	*
Benzene	1070	9.58E-03	1.17	1.62E-04	98.31
Benzylchloride	< 20	< 2.92E-04	< 2.00	4.51E-04	NA
Chlorobenzene	160	2.08E-03	0.98	1.97E-04	90.53
Dichlorobenzenes	2060	3.48E-02	2.00	5.22E-04	98.50
1,1-dichloroethane	1950	2.22E-02	0.50	8.79E-05	99.60
1,2-dichloroethane	119	1.35E-03	2.29	4.02E-04	70.24
1,1-dichloroethylene	161	1.79E-03	< 0.40	6.89E-05	> 96.16
Dichloromethane	8440	8.23E-02	1.10	1.66E-04	99.80
Perchloroethene	2110	5.74E-02	15.80	6.65E-03	88.42
Carbon tetrachloride	< 6	< 1.06E-04	< 0.10	2.73E-05	NA
Toluene	27200	2.87E-01	171.00	2.79E-02	90.28
1,1,1-trichloroethane	183	2.79E-03	< 0.10	2.36E-05	99.15
Trichloroethene	1070	1.61E-02	1.35	3.14E-04	98.05
Chloroform	113	1.54E-03	< 0.10	2.11E-05	> 98.63
Vinyl Chloride	1340	9.61E-03	< 0.50	5.55E-05	> 99.42
m xylenes	12700	1.55E-01	70.40	1.32E-02	91.43
o+p xylene	3180	3.87E-02	27.20	5.12E-03	86.77
TNMHC	5240000	9.62E+00	8140	2.31E-01	97.60
Acrylonitrile	< 4	2.44E-05	< 6.4	6.06E-04	NA
Ethylene dibromide	< 7	1.51E-04	< 0.3	1.00E-04	> NA
1,4-dioxane	< 17	1.72E-04	< 0.5	7.82E-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
March 18, 1997
Run # 3

Species	Inlet		Outlet		Destruction Efficiency (%)
	Concentration (ppb)	Emission Rate (lb/hr)	Concentration (ppb)	Emission Rate (lb/hr)	
Acetonitrile	388	1.84E-03	26.20	1.97E-03	*
Benzene	917	8.29E-03	0.66	9.44E-05	98.86
Benzylchloride	< 20	< 2.94E-04	< 2.00	4.66E-04	N.A.
Chlorobenzene	128	1.68E-03	0.50	1.04E-04	93.82
Dichlorobenzenes	1520	2.59E-02	2.00	5.39E-04	> 97.92
1,1-dichloroethane	1830	2.10E-02	0.43	7.80E-05	99.63
1,2-dichloroethane	107	1.23E-03	1.36	2.47E-04	79.89
1,1-dichloroethylene	151	1.70E-03	< 0.40	7.11E-05	> 95.81
Dichloromethane	8060	7.94E-02	0.83	1.29E-04	99.84
Perchloroethene	1810	4.97E-02	8.00	3.48E-03	93.01
Carbon tetrachloride	< 6	< 1.07E-04	< 0.10	2.82E-05	NA
Toluene	23300	2.48E-01	77.10	1.30E-02	94.77
1,1,1-trichloroethane	168	2.59E-03	< 0.10	2.44E-05	> 99.06
Trichloroethene	943	1.43E-02	0.73	1.75E-04	98.78
Chloroform	104	1.43E-03	< 0.10	2.18E-05	> 98.48
Vinyl Chloride	1280	9.27E-03	< 0.50	5.73E-05	> 99.38
m xylenes	10300	1.27E-01	29.10	5.65E-03	95.53
o+p xylene	2600	3.19E-02	10.10	1.96E-03	93.86
TNMHC	5010000	9.29E+00	4270	1.25E-01	98.65
Acrylonitrile	< 4	2.46E-05	< 2.0	1.95E-04	NA
Ethylene dibromide	< 7	1.52E-04	< 0.3	1.03E-04	NA
1,4-dioxane	< 17	1.74E-04	< 0.5	8.07E-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.

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

5.2.3 Aldehydes (Formaldehyde, Acetaldehyde and Acrolein)

The results of each of the three, 8-hour aldehyde test runs are provided in Table 5-6. Run 1 formaldehyde results were extremely low compared to test Runs 2 and 3 and appears to be an anomaly. Thus, this value should be considered suspect.

Although measurable amounts of acetaldehyde and acrolein were observed in Run 1 and 2, these observed concentrations were not five times the amount observed in the field blanks. Therefore, according to the requirements of CARB Method 430, the value used to calculate the resulting acetaldehyde and acrolein emission ration is five times the average field blank concentration of the respective compounds. Thus, the resulting emission values are reported as "less than" values. 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 conducted on the landfill gas are reported in Table 5-8. Reported values are not blank corrected. No sampling or analytical problems were encountered during the testing program with the exception that the runs were slightly less than 90% isokinetic (subisokinetic). However, the subisokinetic sampling is worse case and would bias results high if large particulate matter was present.

Table 5-5
PAH Emission Results
Simi Valley Landfill Flare
March 1997

	<u>Run #1</u>	<u>Run #2</u>	<u>Run #3</u>
Stack Gas Characteristics			
Temperature, F	1570	1587	1562
Moisture, %	6.7	7.1	7.4
Fixed Gases,			
CO ₂ , %	7.8	7.4	7.8
O ₂ , %	12.2	12.6	12.2
N ₂ , %	80.0	80.0	80.0
Flow rate			
dscfm	10032	10437	11601
acfm	42078	44498	48974

	<u>Run #1</u>		<u>Run #2</u>		<u>Run #3</u>	
	<u>Conc.</u>	<u>Emission</u>	<u>Conc.</u>	<u>Emission</u>	<u>Conc.</u>	<u>Emission</u>
	<u>@ 12 % CO₂</u>	<u>Rate</u>	<u>@ 12 % CO₂</u>	<u>Rate</u>	<u>@ 12 % CO₂</u>	<u>Rate</u>
PAH Emissions	(ug/dscfm)	(lb/hr)	(ug/dscfm)	(lb/hr)	(ug/dscfm)	(lb/hr)
Napthalene	< 0.8444	< 2.06E-05	< 1.1061	< 2.67E-05	< 0.9539	< 2.69E-05
2-Methylnapthalene	< 0.3870	< 9.45E-06	< 0.5070	< 1.22E-05	< 0.4372	< 1.23E-05
Acenaphthalene	< 0.0246	< 6.02E-07	< 0.0323	< 7.78E-07	< 0.0278	< 7.86E-07
Acenaphthene	< 0.0281	< 6.88E-07	< 0.0369	< 8.89E-07	< 0.0318	< 8.98E-07
Fluorene	< 0.1161	< 2.84E-06	< 0.1521	< 3.67E-06	< 0.1312	< 3.70E-06
Phenanthrene	< 0.2990	< 7.31E-06	< 0.3917	< 9.45E-06	< 0.3378	< 9.54E-06
Anthracene	< 0.0457	< 1.12E-06	< 0.0599	< 1.44E-06	< 0.0517	< 1.46E-06
Fluoranthene	0.0668	1.63E-06	0.1152	2.78E-06	< 0.0596	< 1.68E-06
Pyrene	< 0.0528	< 1.29E-06	< 0.0691	< 1.67E-06	< 0.0596	< 1.68E-06
Benz(a)anthracene*	0.0053	1.29E-07	0.0143	3.44E-07	< 0.0020	< 5.61E-08
Chrysene*	0.0060	1.46E-07	0.0184	4.45E-07	0.0064	1.80E-07
Benzo(b)fluoranthene*	0.0019	4.73E-08	0.0051	1.22E-07	< 0.0020	< 5.61E-08
Benzo(k)fluoranthene*	< 0.0018	< 4.30E-08	< 0.0023	< 5.56E-08	< 0.0020	< 5.61E-08
Benzo(e)pyrene*	< 0.0018	< 4.30E-08	< 0.0023	< 5.56E-08	< 0.0020	< 5.61E-08
Benzo(a)pyrene*	< 0.0018	< 4.30E-08	< 0.0023	< 5.56E-08	< 0.0020	< 5.61E-08
Pyryloene*	< 0.0018	< 4.30E-08	< 0.0023	< 5.56E-08	< 0.0020	< 5.61E-08
Benzo(g,h,i)perylene*	< 0.0018	< 4.30E-08	< 0.0023	< 5.56E-08	< 0.0020	< 5.61E-08
Dibenz(a,h)anthracene*	< 0.0018	< 4.30E-08	< 0.0023	< 5.56E-08	< 0.0020	< 5.61E-08
Indeno[1,2,3-cd]pyrene*	< 0.0018	< 4.30E-08	< 0.0023	< 5.56E-08	< 0.0020	< 5.61E-08
Hexachlorobenzene	< 0.0007	< 1.72E-08	< 0.0009	< 2.22E-08	< 0.0008	< 2.25E-08
Total PAH	< 1.8908	< 4.62E-05	< 2.5251	< 6.09E-05	< 2.1156	< 5.98E-05
Total PAH w/o Napthalene	< 1.0465	< 2.56E-05	< 1.4190	< 3.42E-05	< 1.1617	< 3.28E-05
Total Carcinogenic PAH	< 0.0262	< 6.40E-07	< 0.0548	< 1.32E-06	< 0.0250	< 7.07E-07

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

* denotes carcinogenic species.

Table 5-6

Aldehyde Emissions
Simi Valley Landfill Flare
March 1997

	<u>Run 1</u>	<u>Run 2</u>	<u>Run 3</u>
Stack Gas Characteristics			
Temperature (°F)	1570	1587	1562
Moisture (%)	6.7	7.1	7.4
Flow Rate			
(dscfm)	10,032	10,437	11,601
(acfm)	42,078	44,498	48,974
Fixed Gases			
O ₂ (%)	12.2	12.6	12.2
CO ₂ (%)	7.8	7.4	7.8
N ₂ (%)	80.0	80.0	80.0
Aldehyde Emissions			
Formaldehyde (ppb)	1.4	376	797
(lb/hr)	0.0001	0.0178	0.0417
Acetaldehyde (ppb)	<1	<0.5	6.4
(lb/hr)	<0.00005	<0.00004	0.00049
Acrolein (ppb)	<0.7	<0.8	<0.7
(lb/hr)	<0.00005	<0.00007	<0.00007

**** Stack gas characteristics taken from concurrent PAH sampling.**

Note: All values preceded by "<" are below the detection limit. Reported results are based upon five times the field blank values. Variability in detection limit values is due to the variability in sample size and flare flow rate.

Table 5-7

**Hydrochloric and Hydrofluoric Acid Emissions
Simi Valley Landfill
March 1997**

	Run 1	Run 2	Run 3
Stack Gas Characteristics			
Temperature (°F)	1570	1587	1562
Moisture (%)	6.7	7.1	7.4
Flow Rate			
(dscfm)	10,032	10,437	11,601
(acfm)	42,078	44,498	48,974
Fixed Gases**			
O ₂ (%)	12.2	12.6	12.2
CO ₂ (%)	7.8	7.4	7.8
N ₂ (%)	80.0	80.0	80.0
Acid Gas Emissions			
Hydrochloric Acid, (mg/dscf)	0.180	0.108	0.114
(lb/hr)	0.238	0.148	0.175
Hydrofluoric Acid, (mg/dscf)	0.050	0.082	0.091
(lb/hr)	0.067	0.11	0.14

* Stack gas characteristics taken from concurrent PAH sampling. Stack gas sampling temperatures taken 8' above facility's recording thermocouple. Recording thermocouple maintained a constant temperature of 1700°F.

Table 5-8
Summary of Results
Metals Emissions
March-97

Run Number	*****	1	2	3
Date	*****	3/19/97	03/20/97	3/21/97
Run Start Time	*****	1521	1419	1417
Run End Time	*****	1651	1555	1547

					Average
Metals Emissions					
ANTIMONY	lb/hr	3.03E-06	4.06E-06	2.31E-06	3.13E-06
ARSENIC	lb/hr	1.21E-06	1.79E-06	1.62E-06	1.54E-06
BARIUM	lb/hr	< 6.72E-06	< 6.77E-06	< 6.59E-06	6.70E-06
BERYLLIUM	lb/hr	< 3.36E-07	< 3.39E-07	< 3.30E-07	3.35E-07
CADMIUM	lb/hr	4.20E-07	4.23E-07	< 3.30E-07	3.91E-07
CHROMIUM	lb/hr	1.85E-06	2.03E-06	2.31E-06	2.06E-06
COPPER	lb/hr	< 1.68E-05	< 1.69E-05	< 1.65E-05	1.67E-05
LEAD	lb/hr	3.03E-06	2.03E-06	< 1.65E-06	2.24E-06
MANGANESE	lb/hr	< 3.36E-06	< 3.39E-06	2.06E-05	9.12E-06
MERCURY	lb/hr	< 1.68E-07	< 1.69E-07	< 1.65E-07	1.67E-07
NICKEL	lb/hr	< 1.34E-05	< 1.35E-05	< 1.32E-05	1.34E-05
PHOSPHORUS	lb/hr	< 4.71E-05	< 4.74E-05	< 4.61E-05	4.69E-05
SELENIUM	lb/hr	3.36E-06	3.86E-06	3.96E-06	3.73E-06
SILVER	lb/hr	< 6.72E-06	< 6.77E-06	< 6.59E-06	6.70E-06
THALLIUM	lb/hr	< 1.01E-06	< 1.02E-06	< 9.89E-07	1.00E-06
ZINC	lb/hr	2.00E-05	< 1.02E-05	1.81E-05	1.61E-05

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

One field blank and 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

The results of the chromium testing are provided in Table 5-9. No sampling or analytical problems were encountered during any phase of the testing.

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

Table 5-9

**Total/Hexavalent Chromium Emissions
Landfill Gas
Simi Valley Landfill
March 1997**

Run Number	1	2	3
Date	3/19/97	3/20/97	3/21/97
Run Start Time	1053	930	915.
Run End Time	1453	1330	1315
Hexavalent Chromium, ($\mu\text{g}/\text{dscf}$)	8.8×10^{-4}	1.06×10^{-3}	8.66×10^{-4}
(lb/hr)	1.34×10^{-7}	1.62×10^{-7}	1.29×10^{-7}

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 Particulate Matter

All field QA/QC procedures associated with particulate matter determination were adhered to throughout testing. All laboratory procedures adhered to Method requirements: all field blank values were within acceptable limits.

6.3 Total Reduced Sulfur Compounds

As requested by VCAPCD, all reduced sulfur analyses were completed within 8 hours of sample collection.

6.4 1,3 Butadiene

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

Along with the three samples, a field blank was processed. The field blank value was below the detection limit.

6.5 Speciated Volatile Organic (VOC) Compounds

The Tedlar bag samples were analyzed for speciated VOC's within 48 hours of collection. In addition to the samples, a field blank sample was also submitted for analyses. All speciated VOC compounds in the field blank were below the detection limit with the exception of dichloromethane (0.15 ppb).

All report sample values are not blank corrected. Replicate analyses were performed for all VOC species. All replicate analyses agreed to within 10 percent of the mean concentration (Appendix B) with the exception of the benzene outlet sample S12, which was 28%.

6.6 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 detectable limit. Also 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 field blank and one blank train were processed with the sample set for PAH analyses. All PAH concentrations were below the detectable limit for the field blank sample. All PAH species were below the detectable limit for the blank train with the exception of acenaphthylene (14ng/sample), acenophthlene (16 ng/sample), anthracene (26g/sample), phenanthane (170 ng/sample, pyrene (30 ng/sample) and flourene (66 ng/sample).

All sample isotopic spike recovery was within $\pm 50\%$ as required in the Method.

6.7 Aldehydes

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

- Pre-testing (4 samples) of DNPH solution.
- Use of DNPH solution with 48 hours of analyses.

- 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.
- The sample vial weight was checked upon receipt at the laboratory to verify against sample loss.
- Replicate sample analyses.

All field blanks were within anticipated concentration ranges as used in the preliminary Test Plan calculations. The matrix spike yielded the following results:

	Theoretical (μg)	Measured (μg)	Recovery (%)
Formaldehyde	5.64	6.64	84.9
Acetaldehyde	5.12	4.71	109
Acrolein	5.00	4.49	111

The field spike yielded the following results:

	Theoretical (μg)	Measured (μg)	Recovery (%)
Formaldehyde	5.0	6.2	124
Acetaldehyde	5.0	4.25	85
Acrolein	5.0	3.04	61

The agreement between replicate analyses was 5.0% from the mean for formaldehyde, 4.6% for acetaldehyde and 0% for acrolein.

6.8 HCl/HF

One field blank was processed for HCl/HF analyses. The field blank value was 0.03 ng for HF which is approximately 0.8% of the average sample value. The field blank value of HCl was 0.04 mg, which is on average, approximately 0.7% of the average sample concentrations.

6.9 Multimetals

In addition to all laboratory QA/QC samples, a field blank and blank train were analyzed with the set of multimetals samples as required by CARB draft Method 436. All field blanks were below the detection limit for all metal species. Two metal species were above the detection limit in the blank train. These compounds are as follows:

Chromium	1.1 μg
Zinc	11.8 μg

6.10 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 slightly above the detection limit for hexavalent chromium (Appendix B). The matrix spike and laboratory control spike recoveries were 93.3% and 94.9%, respectively, for hexavalent chromium. The matrix spike recovery was 93.5% for total chromium. Both pre-test probe blanks were below the detection limit for hexavalent total chromium.

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:

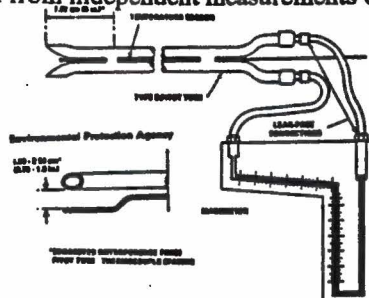
To aid in the representative measurements of pollutant emissions and/or total volumetric flow rate from a stationary source, a measurement site where the effluent stream is flowing in a known direction is selected, and the cross section of the stack is divided into a number of equal areas. A traverse 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
 T_s = gas/temperature, degrees R
 P_s = absolute static pressure

M_{wd} = dry molecular weight
 M_w = molecular weight
 C_p = pitot flow coefficient

Dry molecular weight of stack gas

$$M_{wd} = 0.44 (\%CO_2) + 0.32 (\%O_2) + 0.28 (\%N_2 + \%CO)$$

Molecular weight of stack gas, wet basis

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

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

Stack gas velocity

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

Method:

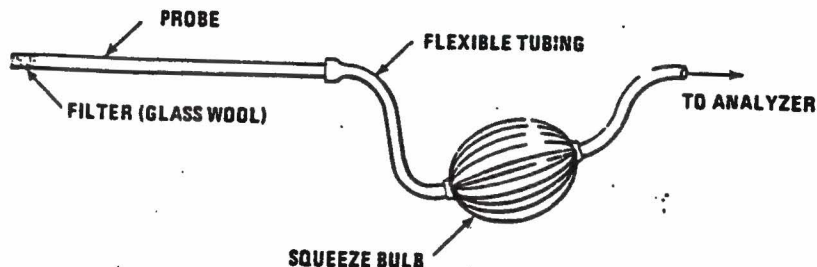
Gas Analysis for Dry Molecular Weight and Excess Air

**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 CO₂ & O₂



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 N₂ and CO by subtracting the sum of the percent CO₂ and percent O₂ from 100.

* Dry molecular weight calculation of stack gases:

$$M_d = 0.440 (\% \text{ CO}_2) + 0.320 (\% \text{ O}_2) + 0.280 (\% \text{ N}_2 + \% \text{ CO})$$

To Remember:

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:

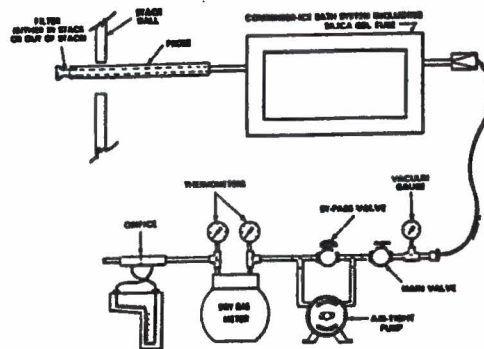
EPA Method 4, ARB 1-4, SCAQMD Method 4.1

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:

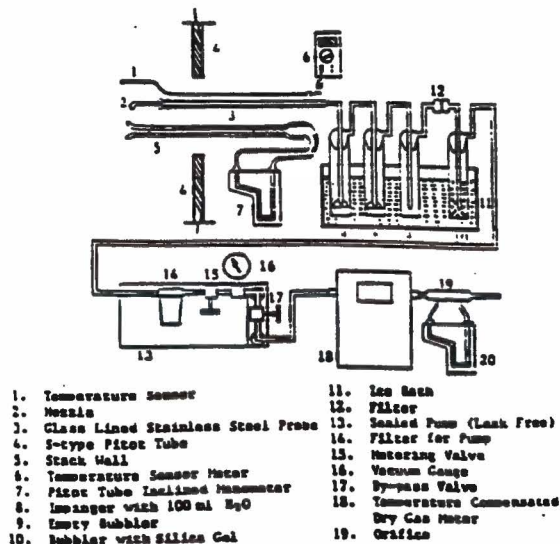
Following testing, moisture content is determined gravimetrically or volumetrically from initial and final impinger contents weights or volume.

Method: Determination of Particulate Matter Emissions From Stationary Sources Using a Wet Impingement Train

Reference: SCAQMD Method 5.1

Principle: Stack gas is withdrawn isokinetically from the source through a sample train. Particulate matter is collected in impingers containing deionized water and on a back-up filter. The impingers are contained in an ice bath to maintain a sampled gas temperature of approximately 15° C (60° F). The filter is not heated.

Sampling Procedure: The sampling train is shown in the figure below. The sample is drawn isokinetically through a glass or quartz probe (hi-temp). The probe is connected to an impinger train by Teflon tubing. The train consists of two Greenburg-Smith impingers which contain 100 ml of DI water; an empty impinger as a knock-out; and an impinger containing silica gel to protect the pump from moisture. Sample is withdrawn isokinetically from each predetermined sample point (determined using SCAQMD Method 1.1) through the sample train, which is followed by a vacuum line, a pump, a dry gas meter and a calibrated orifice.



Sample Recovery: The moisture content is determined either gravimetrically or volumetrically from initial and final impinger weights or volume. Then the filter, probe/impinger rinse (including nozzle rinse, liner rinse, impinger contents and rinses) and silica gel are recovered into Containers #1, #2 and #3, respectively.

Analytical Procedure: The aqueous sample is filtered through a tared fiberglass filter. An organic extraction is performed on the resulting solution using methylene chloride. Both the extraction filter and sample train filter are desiccated then measured gravimetrically. The organic extract and aqueous catch are evaporated, desiccated and measured gravimetrically.

If significant levels of sulfur compounds are present in the stack, each sample fraction is analyzed by acid-base titration for acid sulfate content and by barium-thorin titration for sulfate content.

Method: Measurement of Gaseous Organic Compound Emissions by Gas Chromatography

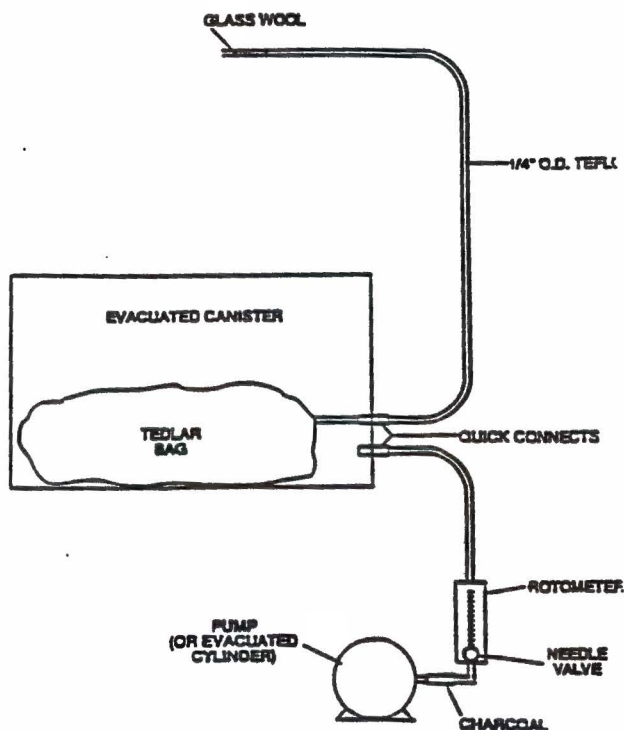
Reference: EPA Method 18 (Tedlar Bag)

Principle: A Tedlar bag is filled with flue gas at a constant rate. The gas contents are analyzed by gas chromatography for speciated organic compounds.

Sampling Procedure: Exhaust samples are collected in Tedlar bags using the evacuated container sampling system which is capable of collecting an integrated, representative sample while ensuring sample integrity (diagram is included on the following page). The system consists of a 1/4" stainless steel probe followed by a 1/4" Teflon sample line and a non-reactive 10-liter Tedlar bag contained within a leak-free evacuation container. All system components coming in contact with the sample are constructed of Teflon or stainless steel. The probe is maintained at the stack temperature, while the sample line is maintained at 250 °F.

Samples are collected by evacuating the canister 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 inches Hg vacuum. At the conclusion of each test run, each Tedlar bag sample is sealed and stored in an opaque container pending analysis.

Analytical Procedure: Samples are analyzed for speciated organic compounds using the appropriate gas chromatograph column and detector configurations.



CONTINUOUS EMISSIONS MONITORING SYSTEM - TRUCK

EPA Methods 3A, 7E, 10

The continuous emissions monitoring system consists of a Thermo Electron Model 10AR chemiluminescence NO/NO_x analyzer, a Teledyne electro chemical O₂ analyzer, a Thermo Electron Model 48H CO gas filter correlation analyzer and a Fuji PIR 2000 non dispersive infrared CO₂ analyzer. All analyzer specifications are provided in Table 1. All concentrations are determined on a dry basis. Concentrations of NO_x, CO, O₂ and CO₂ are continuously recorded on a Linseis 10-inch strip chart recorder and a Strawberry Tree Data Acquisition System (DAS). The extractive monitoring system conforms with the requirements of SCAQMD Method 100.1.

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, O₂ monitor, CO monitor, CO₂ 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 $\pm 1\%$ 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 EPA Methods 3A/7E/10 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.

Linearity Check:

NO_x, CO, O₂ and CO analyzer linearity check is performed by introducing, at a minimum, zero gas, mid range calibration gas (40-60% scale) and high range calibration gas (80-100% scale). Instrument span value is set on each instrument with the mid range gas. Linearity is confirmed, if all values agree with the calibration gas value to within 2% of the range.

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 $\pm 5\%$ of the analyzer range.

Response Time:

Response time (upscale and downscale) for each analyzer is recorded during the system bias check. Upscale response time is defined as the time it takes the subject analyzer gas to reach 95% of the calibration gas value after introducing the upscale gas to the sample bias calibration system. Downscale response time is defined as the time it takes the subject analyzer to return to zero after the zero gas is introduced into the sample system bias calibration system.

NO_x Conversion Efficiency

The NO_x analyzer NO₂ conversion efficiency is determined by injecting a NO₂ gas standard directly into the NO_x analyzer (after initial calibration). The analyzer response must be a least 90% of the NO₂ standard gas value.

NO_x Converter Efficiency (alternate method)

The mid level NO gas standard is directly injected into a clean leak-free Tedlar bag. The bag is then diluted 1:1 with air (20.9 % O₂). The bag is immediately attached to the NO_x sample line. The initial NO_x concentration is recorded on the strip chart. After at least 30 minutes the Tedlar bag is reattached to the NO_x sample line. Analyzer response must be at 98% of the initial Tedlar bag NO_x value to be acceptable.

In between each sampling run the following procedures are conducted:

Zero and Calibration Drift Check:

Upon the completion of each test run, the zero and calibration drift check is performed by introducing zero and mid 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 $\pm 3\%$ of the actual calibration gas value.

Analyzer Calibration:

Upon completion of the drift test, the analyzer calibration is performed by introducing the zero and mid range gases to each analyzer prior to the upcoming test run and adjusting the instrument calibration as necessary.

System Bias Check

(same as above)

A schematic of the sample system and specific information of 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	$\pm 1\%$ of full scale
Accuracy	Derived from the NO or NO ₂ calibration gas, $\pm 1\%$ of full scale
Operating Ranges (ppm)	2.5, 10, 25, 100, 250, 1000, 2500, 10000
Output	0-1 volt

O₂ ANALYZER, FUEL TYPE -- TELEDYNE MODEL 326RA

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

O₂ ANALYZER, PARAMAGNETIC -- SERVOMEX MODEL 1400B

Response Time (0-90%)	15 seconds
Accuracy	0.1% oxygen
Linearity	$\pm 1\%$ 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	$\pm 1\%$ 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

TABLE 1 (Cont.)

CO₂ INFRARED GAS ANALYZER -- HORIBA - MODEL PIR 2000

Response Time (0-90%)	5 seconds
Zero Drift	$\pm 1\%$ of full scale in 24 hours
Span Drift	$\pm 1\%$ of full scale in 24 hours
Linearity	$\pm 2\%$ 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

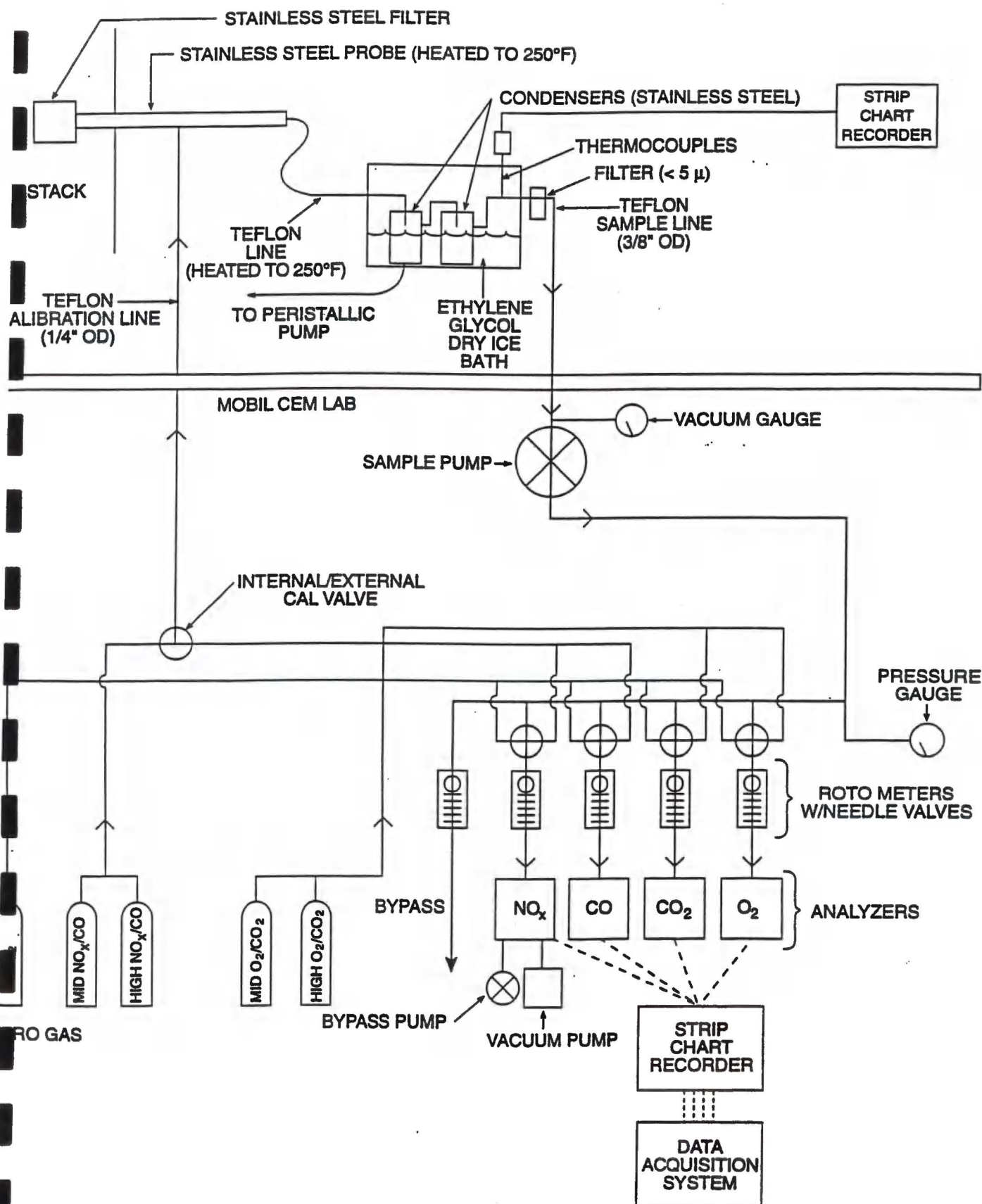
Response Time (0-90%)	5 seconds
Zero Drift	$\pm 1\%$ full scale in 24 hours
Span Drift	$\pm 1\%$ full scale in 24 hours
Linearity	$\pm 1\%$ full scale - constant
Accuracy	$\pm 1\%$ full scale at constant temp.
Operating Ranges (ppm)	10, 100, 1000, 10,000
Output	0 - 10 volts

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 $\pm 0.5\%$



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 (O₃) to form NO₂ 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 NO₂ 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 NO₂. Since NO₂ is highly soluble in water, "freezing out" the water will allow the NO₂ 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 NO₂ to NO and a total NO_x measurement is obtained. NO₂ is determined as the difference between NO and NO_x. Use of a moly converter instead of a stainless steel converter eliminates NH₃ interference; NH₃ is converted to NO with a stainless converter, but not with a moly converter.

Method:	Oxygen (O ₂) by Continuous Analyzer
Applicable Reference Methods:	EPA 3A, EPA 20, CARB 100, BAAQMD ST-14, SCAQMD 100.1
Principle:	A sample is continuously withdrawn from the flue gas stream, conditioned and conveyed to the instrument for direct readout of O ₂ concentration.
Analyzer:	Teledyne Model 326R
Measurement Principle:	Electrochemical cell
Ranges:	0-5, 0-25% 0-100%
Accuracy:	1% of full scale
Output:	0-1 V
Interferences:	halogens and halogenated compounds will cause a positive interference. Acid gases will consume the fuel cell and cause a slow calibration drift.
Response Time:	90% < 60 seconds
Sampling Procedure:	A representative flue gas sample is collected and conditioned using the CEM system described previously. If Method 20 is used, that method's specific procedures for selecting sample points are used. Otherwise, stratification checks are performed at the start of a test program to select single or multiple-point sample locations.
Analytical Procedure:	An electrochemical cell is used to measure O ₂ concentration. Oxygen in the flue gas diffuses through a Teflon membrane and is reduced on the surface of the cathode. A corresponding oxidation occurs at the anode internally and an electric current is produced that is proportional to the concentration of oxygen. This current is measured and conditioned by the instrument's electronic circuitry to give an output in percent O ₂ by volume.

Method:	Carbon Dioxide (CO ₂) by Continuous Analyzer
Applicable Reference	EPA 3A, CARB 100, BAAQMD ST-5, SCAQMD 100.1
Principle:	A sample is continuously drawn from the flue gas stream, conditioned and conveyed to the instrument for direct readout of CO ₂ concentration.
Analyzer:	Automatic Custon Systems Model 3300
Measurement Principle:	Non-dispersive infrared (NDIR)
Accuracy:	1% of full scale
Ranges:	0-5, 0-20%
Output:	0-10 V
Interferences:	A possible interference includes water. Since the instrument receives dried sample gas, this interference is not significant.
Response Time:	5 seconds
Sampling Procedure:	A representative flue gas sample is collected and conditioned using the CEM system described previously.
Analytical Procedure:	Carbon dioxide concentrations are measured by short path length non-dispersive infrared analyzers. These instruments measure the differential in infrared energy absorbed from energy beams passed through a reference cell (containing a gas selected to have minimal absorption of infrared energy in the wavelength absorbed by the gas component of interest) and a sample cell through which the sample gas flows continuously. The differential absorption appears as a reading on a scale of 0-100%.

Method:	Carbon Monoxide (CO) by NDIR/Gas Filter Correlation
Applicable Reference Methods:	EPA 10; CARB 1-100; BAAQMD ST-6, SCAQMD 100.1
Principle:	A sample is continuously drawn from the flue gas stream, conditioned and conveyed to the instrument for direct readout of CO concentration.
Analyzer:	TECO, Model 48H
Measurement Principle:	NDIR/Gas Filter Correlation
Precision:	0.1% ppm
Ranges: ppm	0-50, 0-100, 0-250, 0-500, 0-1000, 0-2500, 0-5000, 0-10000, 0-2500, 0-3,000
Output:	0-1 V
Interferences:	Negligible interference from water and CO ₂
Rise/Fall times (0-95%)	1 minute @ 1 lpm flow, 30 second integration time
Sampling Procedure:	A representative flue gas sample is collected and conditioned using the CEM system described previously. Sample point selection has been described previously.
Analytical Procedure:	Radiation from an infrared source is chopped and then passed through a gas filter which alternates between CO and N ₂ due to rotation of a filter wheel. The radiation then passes through a narrow band-pass filter and a multiple optical pass sample cell where absorption by the sample gas occurs. The IR radiation exits the sample cell and falls on a solid state IR detector.



AtmAA Inc.

23917 Craftsman Rd., Calabasas, CA 91302 • (818) 223-3277 • FAX (818) 223-8250

environmental consultants
laboratory services

**Tandem Gas Chromatographic/Mass Spectroscopic-Electrolytic
Conductivity Detector (GC/MS-ELCD) Method for
Determination of Total Sulfur in Gas Samples**

AtmAA, Inc.
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 H₂S from other sulfur components. A fixed volume loop injection is used in the analysis for H₂S.

Lower Detection Limits (LDL's):

Using a 1 ml injection volume for H₂S 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)

Carbonyl sulfide	15.2 ppmv
Ethyl mercaptan	13.4 ppmv
Carbon disulfide	16.1 ppmv

Cylinder B (CAL3563)

Hydrogen sulfide	12.3 ppmv
Methyl mercaptan	22.6 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:

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

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:

$$rf = \text{std. amt.} / \text{std. area}$$

Sample concentration is calculated using the response factor:

$$\text{conc.} = rf \times \text{sample area}$$

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 received as possible, preferably same day and within four hours of collection. Data is being gathered to determine stability of sulfur compounds in Tedlar^a 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.

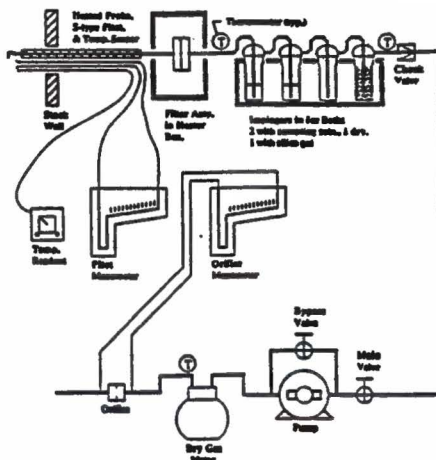


Method: Determination of Gaseous Chloride and Fluoride in Emissions From Stationary Sources

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 Polycyclic Aromatic Hydrocarbon (PAH) Emissions From Stationary Sources****Reference:**

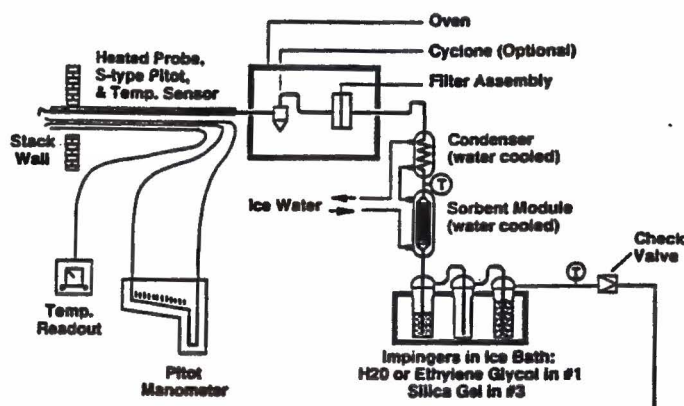
CARB Method 429 (DRAFT Amendment March 1992)

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

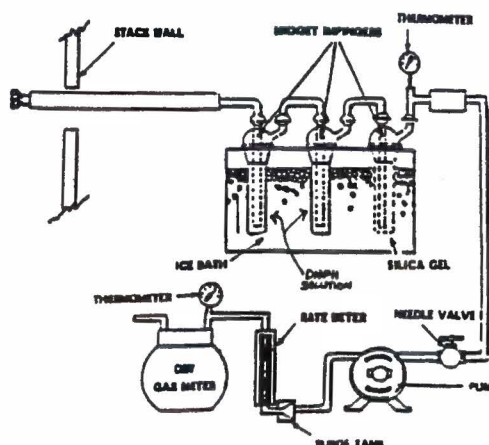
Principle: A sample of the source effluent is withdrawn from the stack through a series of two midjet impingers containing 0.05 percent 2,4-dinitrophenol-hydrazine (DNPH). Aldehydes react with the DNPH solution by nucleophilic addition on the carbonyl followed by 1,2-elimination of water and the formulation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

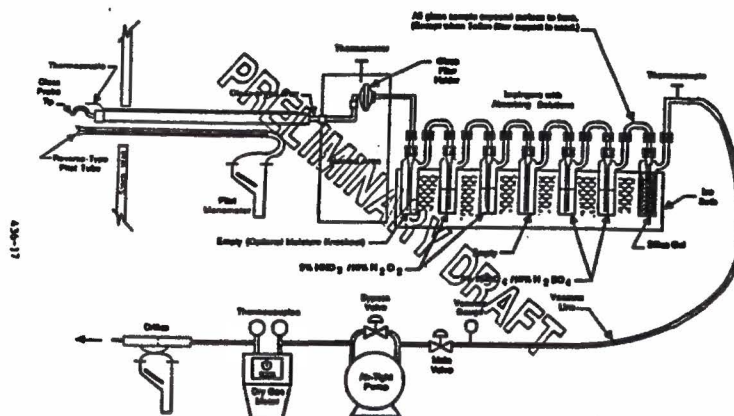


Method: Determination of Multiple Metals Emissions From Stationary Sources

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 permanganate 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.

**State of California
Air Resources Board**

Method 422.101

**Standard Operating Procedure for the Gas
Chromatographic Analysis of Volatile Halogenated
Organic Compounds from Stationary Source Samples
Collected in Tedlar Bags**

Method: 422.101

VOLATILE HALOGENATED ORGANIC COMPOUNDS

SAMPLING

SAMPLING: Tedlar bag; evacuated carton
ARB method 422.1

SHIPMENT: Opaque shipping carton,
surface shipment recommended

SAMPLE STABILITY: 72 hrs.

MEASUREMENT

TECHNIQUE: Gas Chromatography, Electron Capture
Detector.

ANALYTE: Volatile Halogenated Organic Compounds

INJECTION: 10 ul to 500 ul (gas tight syringe)
1/12 split (split/splitless injector)

TEMPERATURE -INJECTION: 200 C
-DETECTOR: 250 C
-COLUMN: see below

CARRIER GAS: helium (99.999%),
linear velocity 35 cm/sec,
N₂ makeup at 15 cc/min

COLUMNS: fused silica, 30m x 0.32-mm ID
DB-624; 55 C for 5 min., 5 C/min to 100 C,
hold for 5 min., 15 C/min to 180 C for 8 min

CALIBRATION: compressed gas cylinder standard,
refer to method 422.199

ESTIMATED LOD: see Table 2

PRECISION: see Table 2

PRINCIPLE: A Tedlar bag sample of source gas containing one or more halogenated organics is subjected to gas chromatographic (GC) analysis, using an electron capture detector.

APPLICABILITY: The method is applicable to the measurement of the following halogenated organics; chloroform, carbon tetrachloride, 1,2-dichloroethane, tetrachloroethene, 1,2-dibromoethane, trichloroethene, 1,1,1-trichloroethane, trichlorofluoromethane and dichloromethane.

LIMITATIONS: This method is not applicable where the gases are occluded in particulate matter. Entrainment of gases, from the particulate trap in the sampling probe, into the sample gas stream has not been investigated. Also, sampling efficiencies and sample stability in actual source gas matrices have not been evaluated. Losses of ethylene dibromide may occur within 72 hours even in "clean" sample matrices.

INTERFERENCES: In sources where there is high moisture content a large peak elutes before chloroform. The tail of the peak can interfere with chloroform analysis. Methylene chloride and trichlorofluoromethane have short retention times. Because of the short retention times the analyst should especially note potential interferences for these two compounds.

REFERENCED METHODS: This method is based on sample collection in Tedlar bags; ARB method 422.1.

**State of California
Air Resources Board**

Method 422.102

**Standard Operating Procedure for the
Gas Chromatographic Analysis of 1,3-Butadiene
in Emissions from Stationary Sources**

REAGENTS:*

1. Halogenated organics, @ 1000 ppb, 100, and 10 ppb in compressed gas cylinders.
2. Helium, 99.999%
3. Air, purified, to be used for dilutions, blank preparation, and standard preparation.

EQUIPMENT:*

1. Gas chromatograph, electron capture detector, integrator, and columns.
2. Syringes, gas tight, 100-, 250-, 500- uL
3. Flow meters; rotometer type, 0 to 100 ml/min.
4. Gas regulators, stainless steel, dual stage with metal or teflon diaphragms.

* Refer to ARB method 422.1 for reagents and equipment used in Tedlar bag sampling.

SAMPLING:

Refer to ARB method 422.1 for procedures used in Tedlar bag sampling.

CALIBRATION AND QUALITY CONTROL:

Refer to ARB method 442.199 for multipoint and daily calibration and quality control procedures.

Table 2

ACCURACY
Average Audit Bias

COMPOUND	ACCURACY ¹	PRECISION ²	LOD (PPB) ³
TRICHLOROFLUOROMETHANE	4.3%	10.1%	0.050
DICHLOROMETHANE	NA ⁴	NA ⁴	NA ⁴
CHLOROFORM	3.9%	8.8%	0.54
1,1,1-TRICHLOROETHANE	4.7%	5.4%	0.15
CARBON TETRACHLORIDE	6.3%	12.9%	0.055
1,2-DICHLOROETHANE	NA ⁴	NA ⁴	NA ⁴
TRICHLOROETHENE	5.6%	9.1%	0.92
1,2-DIBROMOETHANE	7.3%	9.7%	0.40
TETRACHLOROETHENE	5.4%	13.8%	0.075

1. Seven audits were performed between February 1987 and March 1989. The average results are listed in Table 1. The levels of the audits ranged from 4-120 ppb (v/v). The source of the audit cylinders were Research Triangle Institute and the National Bureau of Standards. The accuracy values represent averages of absolute values (bias) as determined from the seven audits. Note that the accuracy values reflect only the analytical process.
2. Precision values derived from multipoint analysis conducted in August, 1989.
3. Refer to Section 4.1.6. of method 422.199 for the equation used to calculate the LOD's. The values listed were calculated from multipoint analyses conducted in August, 1989.
4. Standards were not available at the time the multipoint analyses were performed.

Method 422.102

1,3 BUTADIENE

PROPERTIES: gas

M.W.: 54.09 B.P.: -4.4 C; V.P.: 280 kPa (26 psig) @ 25 C;
vapor density: 1.9 (air = 1); explosive range: 2.0 to 11.5 % v/v in air

SAMPLING

MEASUREMENT

SAMPLER: Field (portable) GC; Method 422 impinger train precedes the GC when conditions warrant. Refer to Appendix B and method 422.1 for details of use of the impinger train.

NOTE: see Appendix C for the Tedlar bag sampling alternative.

TECHNIQUE: Field gas chromatography, flame ionization detector (PID optional).
(see Appendix B for details of field GC)
(see Appendix C for recommended analysis of Tedlar bag samples)

ANALYTE: 1,3 butadiene

INJECTION: 10 ul to 1000 ul; gas tight syringe or sampling loop.

TEMPERATURE -INJECTION: 100 C (suggested)
-DETECTOR: 150 C (suggested)
-COLUMN: isothermal 50 C

CARRIER GAS: ultrazero air,
15 cc/minute

COLUMNS: fused silica, 10m x 0.52-mm ID
A1203/KC1 PLOT with a 4" x 1/8", 6.6% CSP
20M on Carbopack B, packed, backflushable
precolum.

CALIBRATION: compressed gas cylinder standard,
refer to method 422.199

ANALYTICAL RANGE: .005 to 100 ppm (PID)

ANALYTICAL LOQ: .005 ppm (PID)

PRINCIPLE: A portable gas chromatograph is used at the emission site to perform a multi-dimensional GC analysis, using a flame ionization (FID) or photoionization detector (PID)

APPLICABILITY: This method is applicable to the measurement of 1,3-butadiene from source emissions and source impacted ambient air.

LIMITATIONS: The Tedlar bag sampling and analysis method described in Appendix C is not suitable for monitoring of 1,3-butadiene in combustion source emissions.

INTERFERENCES: Pentane, methyl acetylene, or vinylidene chloride may chromatographically interfere at high levels.

REFERENCED METHODS: This method is based on NIOSH method 1024 (GC analysis).

REAGENTS:

1. 1,3-Butadiene** @ 100 ppm and .10 ppm in compressed gas cylinders
2. Helium, 99.999%
3. Air, purified, to be used for dilutions, blank preparation, and standard preparation.

EQUIPMENT:

1. Gas chromatograph, flame ionization detector, integrator, and columns (see Appendices B & C).
2. Syringes, gas tight, 10-, 100-, 250-, and 500 ul.

** SPECIAL PRECAUTIONS: 1,3-Butadiene is a potential carcinogen, teratogen, and reproductive hazard. Work should be performed in a well ventilated fume hood.

CALIBRATION AND QUALITY CONTROL:

Refer to ARB method 442.199 for multipoint and daily calibration and quality control procedures.

APPENDIX B: DESCRIPTION OF FIELD GAS CHROMATOGRAPHY SYSTEM

The following discussion describes the Photovac 10S70 analytical system and chromatographic operating conditions. Program events as listed below are specific to the Photovac system. However, mention of trade names or specific products does not constitute endorsement by the California Air Resources Board. Other portable or field gas chromatographic systems are commercially available and may be substituted for the Photovac. However, the chromatographic system used must have backflushable precolumn capability to avoid contamination and degradation of the AL_2O_3 -KCl PLOT analytical column. NIOSH method 1024 provides a detailed description and diagram of a pre-column backflush system.

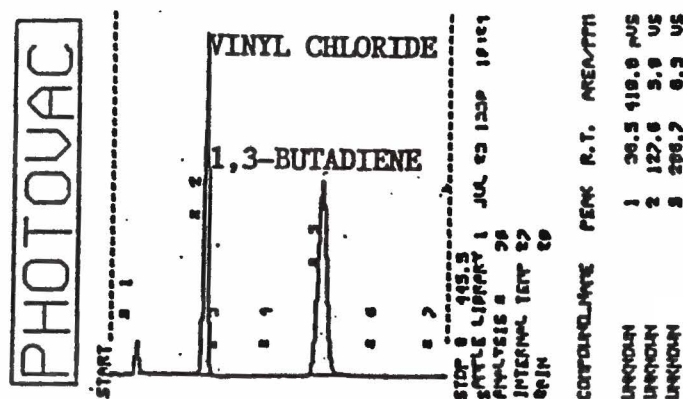
Analytical system:

Figure 422.102.A shows the diagrams of the Photovac analytical system in the standby/backflush, sample loop fill, precolumn foreflush, and sample loop bypass configurations. These diagrams are provided as a guide for laboratories using equipment other than Photovac. The following table lists programmed events.

AUTOMATED (PROBE) EVENTS sec.			
Event	ON	OFF	Description
1	0	10	sample pump switch
2	0	0	
3	10	30	sample loop inject (ON), backflush start (OFF)
4	0	10	probe and sample loop purge
5	20	30	end sample loop inject (ON), backflush start (OFF)

Chromatogram:

The chromatogram below was generated using the following conditions: 4" x 1/8", 6.6% CSP 20M on Carbowack B precolumn; 10m x 0.52mm ID Al₂O₃/KCl fused silica PLOT analytical column; ultrazero air carrier gas at 15 cc/min.; 50 C isothermal; approximately 1cc (10 second sample loop flush) of 100 ppb 1,3-butadiene compressed gas standard; gain = 20; chart speed = .5 cm/sec.



Field Calibration and Quality Control:

Refer to Method 422.199., "Calibration and Quality Control Procedures for Analysis Methods", for a detailed description of initial performance evaluation and routine calibration procedures. Due to the nature of direct sampling though, routine calibration procedures are somewhat different. The sequence of calibration, QC, and sample runs as listed below is recommended when performing on-site GC analyses.

1. 3 point multipoint calibration bracketing the expected sample concentration.
2. blank run using ultrazero air.
3. field samples.
4. calibrate every 5th run (using the standard closest to sample concentrations).
5. blank run using ultrazero air at end of sampling.

Sample probe and method 422.1. impinger train:

When acid and moisture knockout is required (refer to method 422.1, section 5), the impinger train and probe as described in method 422.1 will be used. In this case the 1/8" teflon sample inlet probe from the GC should be "Tee'd" into the 1/4" telon impinger train line (after knockouts). A sample pump (fitted with a carbon trap) and rotameter are used to maintain a source gas flow of at least 100 200 cc/minute through the impinger train and 1/4" transfer lines. The pump would be located downstream of the GC sample inlet probe "Tee". Alternatively, as diagrammed in Figure 422.102.B, an evacuated container/Tedlar bag set-up may be used to maintain source gas flow through the impinger train. Thus, the source emission sample collected in the bag may be used for the analysis of other VOC's.

When moisture and acid knockouts are not required, a 1/8" teflon line is used as the sample probe. If using the Photovac 10S70, the probe line should not exceed 8 feet.

FIGURE 422.102.A
PHOTOVAC ANALYTICAL SYSTEM

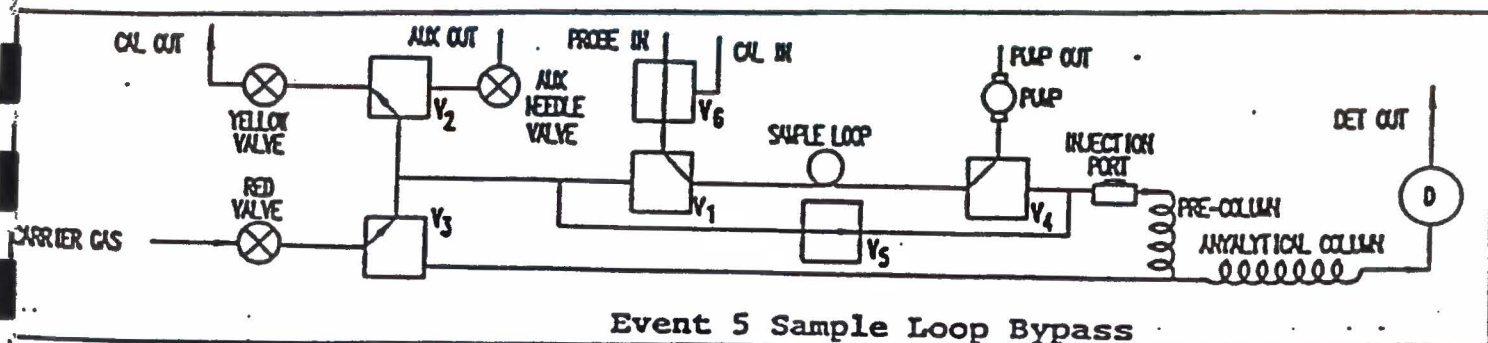
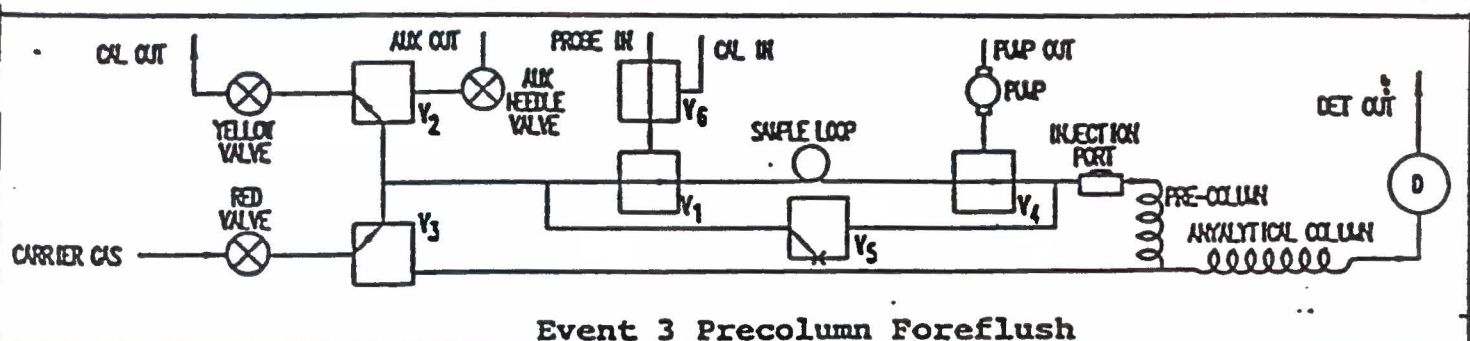
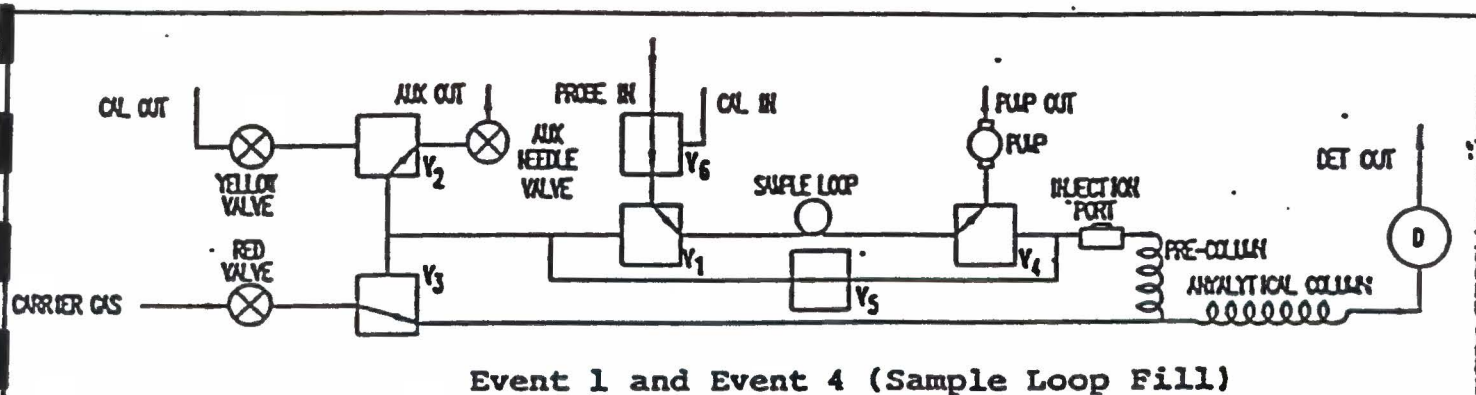
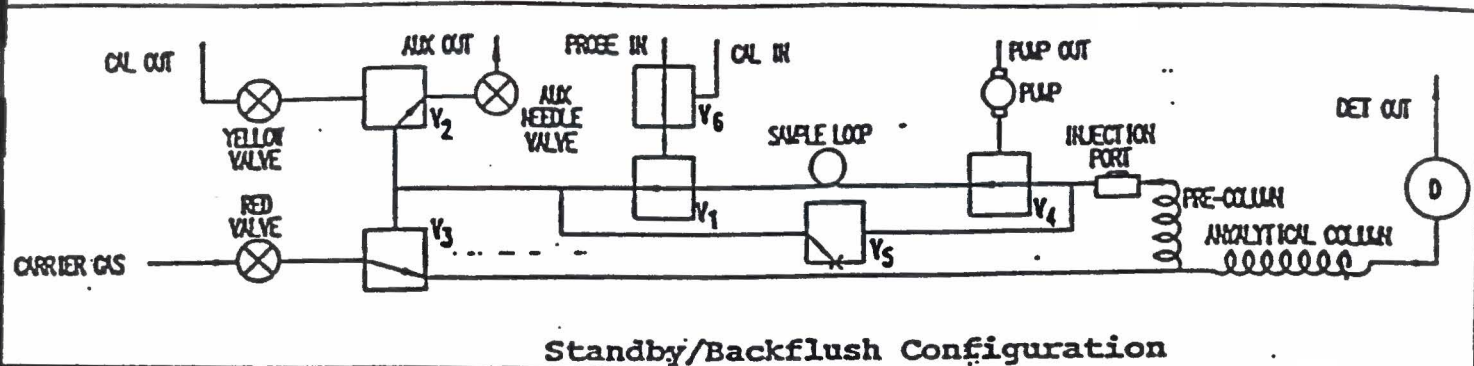
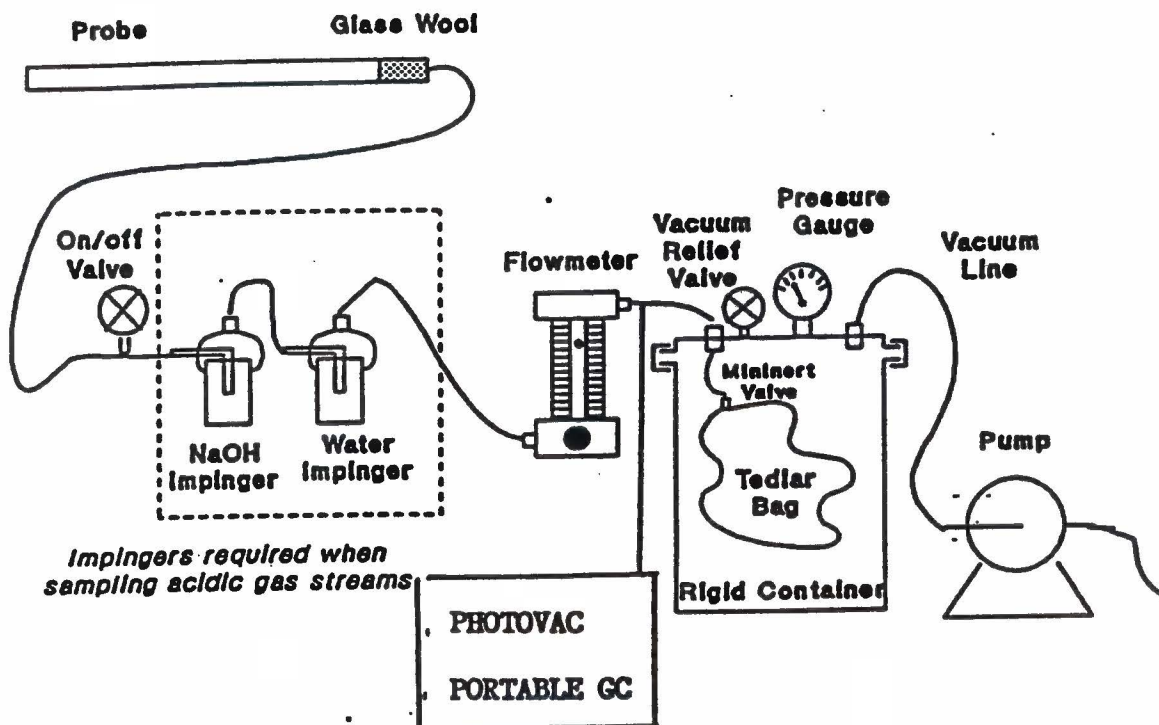


FIGURE 422.102.B
METHOD 422 IMPINGER TRAIN/FIELD GC SET-UP



APPENDIX C: TEDLAR BAG SAMPLING (METHOD 422.1) AND ANALYSIS ALTERNATIVE

Emissions from sources other than the combustion type (i.e., waste incineration, internal combustion engines, etc.) may be sampled using CARB method 422.1, which is an evacuated container/Tedlar bag procedure. If the tester is unsure of the sample stability, the tester should conduct a stability test. Validation tests performed by ARB staff have shown that 1,3-butadiene is not stable in bag samples collected from waste incinerators and IC engines. Decomposition of 1,3-butadiene in these type of samples tends to be too fast to allow even for a strict time requirement on bag analysis. Thus, for combustion type sources, the direct sampling/analysis described in Appendix B is necessary.

Recommended Analytical Procedure:

NIOSH method 1024 describes a method of GC analysis for 1,3-butadiene using a 50-m x 0.32-mm ID fused-silica porous-layer open-tubular (PLOT) analytical column coated with Al_2O_3/KCl (Cat. #7515, Chrompack, Bridgewater, NJ) along with a 10-m x 0.5-mm ID fused silica CP Wax 57 CB precolumn (Cat. # 7648, Chrompack, Bridgewater, NJ). The Al_2O_3 column provides a very efficient separation of 1,3-butadiene from other C_4 to C_6 hydrocarbons at temperatures above ambient. The backflushable precolumn allows light hydrocarbons to pass through, but water, and polar or high boiling compounds are retained and can be backflushed. The precolumn is especially necessary when using the Al_2O_3/KCl column because water from the samples would deactivate the aluminum oxide, reducing the retention times, and high boiling or polar substances could accumulate on the column and irreversibly degrade the separation.

The chromatography in NIOSH method 1024 is set up for syringe injection of solvent extracted samples. In order to accommodate whole air samples, some modification of the system may be required. For source samples with relatively high levels of 1,3-butadiene (i.e., 1 ppm and above), gas tight syringes or sample loops would be appropriate for sample transfer to the GC. However, to achieve detection limits in the low ppb range, some means of sample preconcentration is required. A modified version of the NIOSH method has been used by ARB and is presented below. The only significant changes are the addition of a cryogenic preconcentrator (to handle whole air samples and get adequate detection limits) and the use of a poraplot Q precolumn. Refer to Figures 422.102.C & D for a diagram of the analytical system, list of programmed events and chromatogram.

Technique: gas chromatography, PID; column pressure switching system

Preconcentration: 18 cc, 9cc/min for 2 minutes, controlled by mass flow controller; cryotrapped on a 5" x 0.32-mm ID GSQ capillary column (Cat. # 115-3432, J&W Scientific, Folsom, CA) with liquid CO_2 .

Injection: trap is thermally desorbed by the column oven at 80 C.

Columns: 50-m X 0.32-mm I.D. Al_2O_3/KCl PLOT analytical column;
10-m X 0.32-mm I.D. Poraplot Q precolumn.

Carrier gas: 99.999% helium at 35 cm/sec.

Makeup gas: nitrogen at 30 cc/min.

Temperature program: 80 C for 8 minutes, 4 C/min to 120 C, 50 C to 200 C, hold 15 minutes.

NOTE: longer column bake-out times may be necessary to stabilize retention times.

APPENDIX B - Computer Printout of Results

Filer Standard Flow Rate Calculations
(3/8/97)

Run #1

$$750 \text{ scfm} \times 0.9680 = 726 \text{ dscfm}$$

Run #2

$$750 \text{ scfm} \times 0.9680 = 726 \text{ dscfm}$$

Run #3

$$750 \text{ scfm} \times 0.9770 = 733 \text{ dscfm}$$

Facility: Simi Valley Landfill
 Source: Flare
 Job No.: w07-014
 Test Date: 3/18/97

SCAQMD Method 4 Flowrate Determination

STD TEMP: 68

		RUN 1	RUN 2	RUN 3
RUN NUMBER	*****	1	2	3
DATE OF RUN	*****	03/18/97	03/18/97	03/18/97
CLOCK TIME: INITIAL	*****	1000	1320	1530
CLOCK TIME: FINAL	*****	1100	1420	1630
AVG. STACK TEMPERATURE	Degrees F	NA	NA	NA
AVG. SQUARE DELTA P	Inches H2O	NA	NA	NA
NOZZLE DIAMETER	Inches	NA	NA	NA
BAROMETRIC PRESSURE	Inches HG	29.55	29.55	29.55
SAMPLING TIME	Minutes	60	60	60
SAMPLE VOLUME	Cubic Feet	48.200	47.825	48.635
AVG. METER TEMP.	Degrees F	106	102	97
AVG. DELTA H	Inches H2O	1.90	1.90	1.90
DGM CALIB. FACTOR [Y]	*****	1.0092	1.0092	1.0092
WATER COLLECTED	Milliliters	32	32	23
CO 2	Percent	38.5	39.0	37.8
O 2	Percent	0.6	0.5	0.9
CO	Percent	0.0	0.0	0.0
CH4	Percent	47.3	48.4	47.0
N 2	Percent	13.6	12.1	14.3
STACK AREA	Square Inches	NA	NA	NA
STATIC PRESSURE	Inches WG	NA	NA	NA
PITOT COEFFICIENT	*****	NA	NA	NA
SAMPLE VOLUME DRY	DSCF	45.04	44.99	46.17
WATER AT STD.	SCF	1.5	1.5	1.1
MOISTURE	Percent	3.2	3.2	2.3
MOLE FRACTION DRY GAS	*****	0.97	0.97	0.98
MOLECULAR WT.DRY	lb/lb Mole	28.51	28.45	28.44
EXCESS AIR	Percent	18	18	30
MOLECULAR WT. WET	lb/lb Mole	28.17	28.11	28.20
STACK GAS PRESSURE	Inches HG	29.55	29.55	29.55
STACK VELOCITY	AFPM	0	0	0
VOLUMETRIC FLOWRATE, DRY STD.	DSCFM	0	0	0
VOLUMETRIC FLOWRATE, ACTUAL	ACFM	0	0	0

Facility: Simi Valley Landfill
Source: Flare Inlet
Job No.: W07-014
Test Date: 3/18/97

SCAQMD Method 307

Sulfur Compounds

Run #1

Species	Concentration ppm	# S	Total # S	SO2 Conc. mg/dscf	Flowrate dscfm	SO2 Rate lb/hr
Hydrogen Sulfide	12.30	1	12.30	0.93	726	0.089
Carbonyl Sulfide	0.17	1	0.17	0.01	726	0.001
Methyl mercaptan	0.67	1	0.67	0.05	726	0.005
Ethyl mercaptan	0.05	1	0.05	0.00	726	0.000
Dimethyl sulfide	5.82	1	5.82	0.44	726	0.042
Sulfur dioxide		1	0.00	0.00	726	0.000
Carbon disulfide	0.12	2	0.24	0.02	726	0.002
Dimethyl disulfide	0.11	2	0.22	0.02	726	0.002
iso-propyl mercaptan	0.07	1	0.07	0.01	726	0.001
n-propyl mercaptan	0.13	1	0.13	0.01	726	0.001
Total						0.143

Run #2

Species	Concentration ppm	# S	Total # S	SO2 Conc. mg/dscf	Flowrate dscfm	SO2 Rate lb/hr
Hydrogen Sulfide	12.30	1	12.30	0.93	726	0.089
Carbonyl Sulfide	0.16	1	0.16	0.01	726	0.001
Methyl mercaptan	1.07	1	1.07	0.08	726	0.008
Ethyl mercaptan	0.05	1	0.05	0.00	726	0.000
Dimethyl sulfide	6.16	1	6.16	0.46	726	0.045
Sulfur dioxide		1	0.00	0.00	726	0.000
Carbon disulfide	0.12	2	0.24	0.02	726	0.002
Dimethyl disulfide	0.10	2	0.19	0.01	726	0.001
iso-propyl mercaptan	0.12	1	0.12	0.01	726	0.001
n-propyl mercaptan	0.13	1	0.13	0.01	726	0.001
Total						0.148

Run #3

Species	Concentration ppm	# S	Total # S	SO2 Conc. mg/dscf	Flowrate dscfm	SO2 Rate lb/hr
Hydrogen Sulfide	12.20	1	12.20	0.92	733	0.089
Carbonyl Sulfide	0.14	1	0.14	0.01	733	0.001
Methyl mercaptan	1.16	1	1.16	0.09	733	0.008
Ethyl mercaptan	0.06	1	0.06	0.00	733	0.000
Dimethyl sulfide	6.08	1	6.08	0.46	733	0.044
Sulfur dioxide		1	0.00	0.00	733	0.000
Carbon disulfide	0.12	2	0.24	0.02	733	0.002
Dimethyl disulfide	0.12	2	0.24	0.02	733	0.002
iso-propyl mercaptan	0.13	1	0.13	0.01	733	0.001
n-propyl mercaptan	0.13	1	0.13	0.01	733	0.001
Total						0.149

Fuelana1

Fuel Analysis

Client: Simi Valley Landfill
 Location: Simi Valley, CA
 Unit: Flare

Date: 3/18/97
 Job #: WO7-014
 Bomb#: Tedlar bag

The fuel sample collected on 3/18/97 has been analyzed for composition by the use of gas chromatography.

The fuel sample is corrected to a Standard temperature of 68 degrees F.

COMPONENTS		MOLE %	HHV btu/cf	LLV btu/cf
Oxygen		0.56		
Nitrogen		13.07		
Carbon Dioxide		38.5		
Methane		47.87	483.487	435.330
Ethane	C2	0	0.000	0.000
Propane	C3	0	0.000	0.000
Iso-Butane	C4	0	0.000	0.000
N-Butane		0	0.000	0.000
Iso-Pentane	C5	0	0.000	0.000
N-Pentane		0	0.000	0.000
Hexane	C6	0	0.000	0.000
Heptane	C7	0	0.000	0.000
Octane	C8	0	0.000	0.000
Nonane	C9	0	0.000	0.000
Total		100.00	483.49	435.33

HEATING VALUES CORRECTED TO STANDARD TEMPERATURE

HIGHER HEATING VALUE (hhv) 490.9 btu/scf

LOWER HEATING VALUE (lhv) 442.0 bu/scf

Fuel Analysis

Client: Simi Valley Landfill
 Location: Simi Valley, CA
 Unit: Flare

Date: 3/18/97
 Job #: WO7-014
 Bomb#: Tedlar bag

The fuel sample collected on 3/18/97 has been analyzed for composition by the use of gas chromatography.

The fuel sample is corrected to a Standard temperature of 68 degrees F.

COMPONENTS		MOLE %	HHV btu/cf	LLV btu/cf
Oxygen		0.48		
Nitrogen		12.6		
Carbon Dioxide		38.00		
Methane		48.92	494.092	444.878
Ethane	C2	0	0.000	0.000
Propane	C3	0	0.000	0.000
Iso-Butane	C4	0	0.000	0.000
N-Butane		0	0.000	0.000
Iso-Pentane	C5	0	0.000	0.000
N-Pentane		0	0.000	0.000
Hexane	C6	0	0.000	0.000
Heptane	C7	0	0.000	0.000
Octane	C8	0	0.000	0.000
Nonane	C9	0	0.000	0.000
Total		100.00	494.09	444.88

HEATING VALUES CORRECTED TO STANDARD TEMPERATURE

HIGHER HEATING VALUE (hhv) 501.7 btu/scf
 LOWER HEATING VALUE (lhv) 451.7 bu/scf

Fuel Analysis

Client: Simi Valley Landfill
 Location: Simi Valley, CA
 Unit: Flare

Date: 3/18/97
 Job #: WO7-014
 Bomb#: Tedlar bag

The fuel sample collected on 3/18/97 has been analyzed for composition by the use of gas chromatography.

The fuel sample is corrected to a Standard temperature of 68 degrees F.

COMPONENTS		MOLE %	HHV btu/cf	LLV btu/cf
Oxygen		0.87		
Nitrogen		13.83		
Carbon Dioxide		37.80		
Methane		47.5	479.750	431.965
Ethane	C2	0	0.000	0.000
Propane	C3	0	0.000	0.000
Iso-Butane	C4	0	0.000	0.000
N-Butane		0	0.000	0.000
Iso-Pentane	C5	0	0.000	0.000
N-Pentane		0	0.000	0.000
Hexane	C6	0	0.000	0.000
Heptane	C7	0	0.000	0.000
Octane	C8	0	0.000	0.000
Nonane	C9	0	0.000	0.000
Total		100.00	479.75	431.97

HEATING VALUES CORRECTED TO STANDARD TEMPERATURE

HIGHER HEATING VALUE (hhv) 487.1 btu/scf

LOWER HEATING VALUE (hvv) 438.6 bu/scf

Facility: Simi Valley Landfill

SCAQMD Method 5.1 Particulate Emissions

Source: Flare

Job No.: WO7-014

Test Date: 3/18/97

RUN NUMBER	*****	1	2	3
DATE OF RUN	*****	3/18/97	3/18/97	3/18/97
CLOCK TIME: INITIAL	*****	1005	1235	1445
CLOCK TIME: FINAL	*****	1150	1406	1411
AVG. STACK TEMPERATURE	Degrees F	1589	1538	1584
AVG. SQUARE DELTA P	Inches H2O	0.1428	0.1553	0.1620
NOZZLE DIAMETER	Inches	0.841	0.841	0.841
BAROMETRIC PRESSURE	Inches HG	29.55	29.55	29.55
SAMPLING TIME	Minutes	60	60	60
SAMPLE VOLUME	Cubic Feet	52.580	56.255	58.225
AVG. METER TEMP.	Degrees F	100	99	88
AVG. DELTA H	Inches H2O	2.27	2.55	2.82
DGM CALIB. FACTOR [Y]	*****	0.9924	0.9924	0.9924
WATER COLLECTED	Milliliters	85	117	119
CO 2	Percent	7.1	6.9	7.5
O 2	Percent	12.3	12.0	12.0
CO	Percent	0.0	0.0	0.0
CH4	Percent	0	0	0
N 2	Percent	80.6	81.2	80.5
STACK AREA	Square Inches	6648.0	6648.0	6648.0
STATIC PRESSURE	Inches WG.	-0.06	-0.06	-0.06
PITOT COEFFICIENT	*****	0.84	0.84	0.84
SAMPLE VOLUME DRY	DSCF	48.86	52.40	55.41
WATER AT STD.	SCF	4.0	5.5	5.6
MOISTURE	Percent	7.6	9.5	9.2
MOLE FRACTION DRY GAS	*****	0.92	0.90	0.91
MOLECULAR WT.DRY	lb/lb Mole	29.63	29.58	29.68
EXCESS AIR	Percent	138	126	130
MOLECULAR WT. WET	lb/lb Mole	28.75	28.48	28.61
STACK GAS PRESSURE	Inches HG	29.55	29.55	29.55
STACK VELOCITY	AFPM	955	1030	1084
VOLUMETRIC FLOWRATE, DRY STD	DSCFM	10366	11228	11595
VOLUMETRIC FLOWRATE, ACTUAL	ACFM	44069	47561	50063
ISOKINETIC RATIO	Percent	94	93	95

STD TEMP: 68

CALCULATIONS FOR GRAIN LOADING AND EMISSION RATES

TOTAL PARTICULATE	mg	23.7	16.3	16.0
PARTICULATE CONCENTRATION	gr/dscf	0.0075	0.0048	0.0044
PARTICULATE EMISSION RATE	lb/hr	0.66	0.46	0.44

Facility: Simi Valley Landfill

SCAQMD Method 100.1 Emission Rates

Source: Flare

Job No.: w07-014

Test Date: 3/18/97

RUN NUMBER	*****	1	2	3
DATE OF RUN	*****	3/18/97	3/18/97	3/18/97
LOAD CONDITION	*****	NA	NA	NA

OXIDES OF NITROGEN

POLLUTANT CONCENTRATION	ppm	10.6	11.5	11.1
CONCENTRATION @ 3 %O2	ppm	22.1	23.0	22.3
POLLUTANT CONCENTRATION	lb/dscf	1.27E-06	1.37E-06	1.33E-06
STACK FLOWRATE	dscfm	10366	11228	11595
OXYGEN CONTENT	percent	12.3	12.0	12.0
EMISSION RATE	lb/hr	0.788	0.926	0.923

CARBON MONOXIDE

POLLUTANT CONCENTRATION	ppm	35.6	52.0	72.7
CONCENTRATION @ 3 %O2	ppm	74.4	104.1	146.1
POLLUTANT CONCENTRATION	lb/dscf	2.59E-06	3.78E-06	5.29E-06
STACK FLOWRATE	dscfm	10366	11228	11595
OXYGEN CONTENT	percent	12.3	12.0	12.0
EMISSION RATE	lb/hr	1.610	2.548	3.678

Client: Waste Management
 Job No: W07-014
 Site : Simi Valley Landfill
 Unit : Flare Outlet

Date: 3/18/97
 Run #: 1
 Fuel: L.F.G.
 Std O2: 3

	O2 % %	CO2 % %	NOx ppm ppm	CO ppm ppm
Range:	25.00	15.00	25.0	100.0
Span:	12.01	7.00	10.5	50.0
Low:				
High:	20.90	11.83	21.3	83.8

**** POST-TEST DRIFT ****

Values	O2	CO2	NOx	CO
Zero:	0.00	0.00	0.00	0.50
Span:	12.05	7.08	10.60	50.00

Percent Drift	O2	CO2	NOx	CO
Zero:	0.00	0.00	0.00	0.50
Span:	0.16	0.53	0.40	0.00

**** AVERAGE CONCENTRATION ****

Average:	12.33	7.11	10.6	35.6
O2 adjust: 3.0			22.1	74.3

O2 %	CO2 %	NOx ppm	CO ppm
---------	----------	------------	-----------

w714r1

Date	Time	MT25 O2	MT18 CO	MT4 NO	MT19 CO
18-Mar-97	10:04:58	12.64	7.35	10.5	28.2
18-Mar-97	10:05:56	12.60	7.28	10.4	30.1
18-Mar-97	10:06:56	12.92	7.31	9.1	25.2
18-Mar-97	10:07:56	12.30	7.42	12.0	26.0
18-Mar-97	10:08:56	12.50	7.30	10.4	40.9
18-Mar-97	10:09:56	12.54	7.52	11.6	30.5
18-Mar-97	10:10:56	12.75	7.42	10.5	3.7
18-Mar-97	10:11:56	13.22	7.34	9.6	13.9
18-Mar-97	10:12:56	12.17	7.00	11.8	45.1
18-Mar-97	10:13:56	12.13	7.15	11.0	54.2
18-Mar-97	10:14:56	13.99	7.47	7.9	44.9
18-Mar-97	10:15:56	12.54	7.60	10.1	56.8
18-Mar-97	10:16:56	12.82	7.31	9.7	47.6
18-Mar-97	10:17:56	14.59	6.50	5.2	21.7
18-Mar-97	10:18:56	14.57	5.89	6.7	19.6

18-Mar-97	10:19:56	12.43	6.68	11.2	35.0
18-Mar-97	10:33:56	13.85	3.04	7.0	49.3
18-Mar-97	10:34:54	14.63	5.78	7.0	79.6
18-Mar-97	10:35:54	14.51	5.91	7.0	93.2
18-Mar-97	10:36:54	14.36	5.75	7.1	77.2
18-Mar-97	10:37:54	13.86	5.66	9.0	90.5
18-Mar-97	10:38:54	13.87	5.77	8.9	96.5
18-Mar-97	10:39:54	13.60	5.45	7.1	91.1
18-Mar-97	10:40:54	13.99	5.64	6.4	89.8
18-Mar-97	10:41:54	14.17	5.87	7.4	89.1
18-Mar-97	10:42:54	14.80	5.92	5.5	94.8
18-Mar-97	10:43:54	14.63	5.36	5.7	98.0
18-Mar-97	10:44:54	14.21	5.45	6.9	98.0
18-Mar-97	10:45:54	14.28	5.59	7.4	94.5
18-Mar-97	10:46:54	13.69	6.37	9.7	77.3
18-Mar-97	10:47:54	12.99	6.06	9.2	65.1
18-Mar-97	10:48:54	13.67	5.81	8.7	82.5
18-Mar-97	11:02:54	12.67	4.30	12.2	4.1
18-Mar-97	11:03:52	11.91	7.91	14.1	19.2
18-Mar-97	11:04:52	11.83	7.87	12.6	7.5
18-Mar-97	11:05:52	11.62	8.13	13.7	5.7
18-Mar-97	11:06:52	11.93	7.98	13.3	12.1
18-Mar-97	11:07:52	12.09	7.97	12.3	17.4
18-Mar-97	11:08:52	11.80	8.04	13.5	6.9
18-Mar-97	11:09:52	-0.22	8.00	12.1	16.2
18-Mar-97	11:10:52	1.27	7.62	12.9	11.9
18-Mar-97	11:11:52	10.10	7.35	12.5	7.3
18-Mar-97	11:12:52	7.74	7.77	11.9	13.2
18-Mar-97	11:13:52	5.88	7.95	12.8	8.2
18-Mar-97	11:14:52	11.75	7.96	13.0	11.2
18-Mar-97	11:15:52	11.37	8.15	13.9	6.6
18-Mar-97	11:16:52	12.21	8.10	13.1	5.8
18-Mar-97	11:17:52	12.44	7.75	11.9	4.2
18-Mar-97	11:44:30	11.10	8.92	15.9	5.1
18-Mar-97	11:45:28	10.64	9.28	16.5	1.4
18-Mar-97	11:46:28	10.40	8.97	15.0	1.5
18-Mar-97	11:47:28	10.84	9.05	16.1	4.8
18-Mar-97	11:48:28	11.07	9.32	17.6	2.0
18-Mar-97	11:49:28	10.09	9.41	16.8	0.0
18-Mar-97	11:50:28	10.86	9.51	16.4	0.5
18-Mar-97	11:51:28	11.13	8.80	13.8	0.0
18-Mar-97	11:52:28	20.31	8.72	1.6	0.0
18-Mar-97	11:53:28	20.30	3.37	1.3	0.0

Client: Waste Management
 Job No: W07-014
 Site : Simi Valley Landfill
 Unit : Flare Outlet

Date: 3/18/97
 Run #: 2
 Fuel: L.F.G.
 Std O2: 3

	O2 % %	CO2 % %	NOx ppm ppm	CO ppm ppm
Range:	25.00	15.00	25.0	100.0
Span:	12.01	7.00	10.5	50.0
Low:				
High:	20.90	11.83	21.3	83.8

**** POST-TEST DRIFT ****

Values				
Zero:	0.00	0.00	0.00	0.50
Span:	12.25	7.00	10.50	50.00

Percent Drift				
Zero:	0.00	0.00	0.00	0.50
Span:	0.96	0.00	0.00	0.00

**** AVERAGE CONCENTRATION ****

Average:		11.96	6.88	11.5	52.0
O2 adjust:	3.0			22.9	104.1

	O2 %	CO2 %	NOx ppm	CO ppm
--	---------	----------	------------	-----------

w714r2

Date	Time	MT25	O2	MT18	CO	MT4	NO	MT19	CO
18-Mar-97	12:36:24	10.71		5.03		14.4		16.5	
18-Mar-97	12:37:22	10.43		8.17		14.9		6.5	
18-Mar-97	12:38:22	10.44		8.40		15.6		0.0	
18-Mar-97	12:39:22	10.96		8.56		15.1		0.0	
18-Mar-97	12:40:22	10.45		8.56		15.7		0.0	
18-Mar-97	12:41:22	10.85		8.23		14.5		5.4	
18-Mar-97	12:42:22	10.55		8.18		15.9		3.9	
18-Mar-97	12:43:22	10.15		8.32		15.6		0.0	
18-Mar-97	12:44:22	10.09		8.54		15.9		2.2	
18-Mar-97	12:45:22	10.21		8.68		16.6		2.7	
18-Mar-97	12:46:22	10.35		8.68		16.9		0.0	
18-Mar-97	12:47:22	10.37		8.53		15.6		0.0	
18-Mar-97	12:48:22	9.94		8.41		16.5		1.5	
18-Mar-97	12:49:22	10.14		8.70		16.9		0.6	
18-Mar-97	12:50:22	10.94		8.35		15.0		0.0	
18-Mar-97	12:51:22	9.91		8.67		15.6		0.0	
18-Mar-97	12:59:48	12.16		6.78		12.1		23.9	

18-Mar-97	13:00:45	12.09	6.76	12.7	15.6
18-Mar-97	13:01:45	12.37	6.68	11.3	29.6
18-Mar-97	13:02:45	12.06	6.70	12.4	35.6
18-Mar-97	13:03:45	12.09	6.91	11.3	29.9
18-Mar-97	13:04:45	11.64	7.00	12.2	15.5
18-Mar-97	13:05:45	11.73	7.27	11.6	8.2
18-Mar-97	13:06:45	11.94	7.40	12.1	2.0
18-Mar-97	13:07:45	11.44	7.43	12.2	2.1
18-Mar-97	13:08:45	11.46	7.33	12.4	2.3
18-Mar-97	13:09:45	12.55	6.57	9.8	14.4
18-Mar-97	13:10:45	12.97	6.37	9.6	35.6
18-Mar-97	13:11:45	14.04	5.65	7.2	35.3
18-Mar-97	13:12:45	13.23	5.70	9.0	34.7
18-Mar-97	13:13:45	13.86	5.59	7.4	25.2
18-Mar-97	13:14:45	12.27	5.71	10.5	31.6
18-Mar-97	13:25:38	12.28	2.34	11.4	102.0
18-Mar-97	13:26:36	13.99	5.17	6.6	89.9
18-Mar-97	13:27:36	14.09	5.40	6.1	253.0
18-Mar-97	13:28:36	13.69	5.39	7.0	233.2
18-Mar-97	13:29:36	13.04	6.20	9.5	391.5
18-Mar-97	13:30:36	12.83	5.96	9.0	227.6
18-Mar-97	13:31:36	12.91	6.25	9.1	210.6
18-Mar-97	13:32:36	12.52	5.97	9.3	133.0
18-Mar-97	13:33:36	12.27	6.41	10.8	100.9
18-Mar-97	13:34:36	12.97	6.11	8.9	124.7
18-Mar-97	13:35:36	12.80	6.32	7.5	85.2
18-Mar-97	13:36:36	12.85	6.42	8.3	125.9
18-Mar-97	13:37:36	13.79	6.31	6.3	97.7
18-Mar-97	13:38:36	12.65	6.50	8.8	207.8
18-Mar-97	13:39:36	12.24	6.64	9.6	113.1
18-Mar-97	13:40:36	11.87	6.21	9.9	159.9
18-Mar-97	13:51:58	11.18	3.97	12.5	0.0
18-Mar-97	13:52:55	11.39	7.48	11.5	6.0
18-Mar-97	13:53:55	11.35	7.36	12.3	24.4
18-Mar-97	13:54:55	12.94	7.14	8.3	36.4
18-Mar-97	13:55:55	12.31	6.85	10.4	65.8
18-Mar-97	13:56:55	11.85	6.69	9.2	19.3
18-Mar-97	13:57:55	11.68	7.33	12.2	34.1
18-Mar-97	13:58:55	13.19	6.86	8.2	4.7
18-Mar-97	13:59:55	11.80	7.33	11.8	6.1
18-Mar-97	14:00:55	11.51	7.25	12.1	9.7
18-Mar-97	14:01:55	12.12	7.35	10.6	21.3
18-Mar-97	14:02:55	11.77	7.16	11.6	7.0
18-Mar-97	14:03:55	11.73	6.90	11.8	31.5
18-Mar-97	14:04:55	11.54	6.99	11.3	25.5
18-Mar-97	14:05:55	13.76	6.53	8.6	0.8
18-Mar-97	14:06:55	13.96	5.51	8.2	0.0

Client: Waste Managemanet
 Job No: W07-014
 Site : Simi Valley Landfill
 Unit : Flare Outlet

Date: 3/18/97
 Run #: 3
 Fuel: L.F.G.
 Std O2: 3

	O2 % %	CO2 % %	NOx ppm ppm	CO ppm ppm
Range:	25.00	15.00	25.0	100.0
Span:	12.01	7.00	10.5	50.0
Low:				
High:	20.90	11.83	21.3	83.8

**** POST-TEST DRIFT ****

Values	O2	CO2	NOx	CO
Zero:	0.00	0.00	0.00	0.50
Span:	12.25	7.00	10.50	50.00

Percent Drift	O2	CO2	NOx	CO
Zero:	0.00	0.00	0.00	0.50
Span:	0.96	0.00	0.00	0.00

**** AVERAGE CONCENTRATION ****

Average:	11.99	7.53	11.1	72.7
O2 adjust: 3.0			22.3	146.0

		O2 %	CO2 %	NOx ppm	CO ppm
w714r2					
Date	Time	MT25 O2	MT18 CO	MT4 NO	MT19 CO
18-Mar-97	14:44:38	11.41	7.79	12.2	34.5
18-Mar-97	14:45:36	12.27	7.81	9.4	26.0
18-Mar-97	14:46:36	11.70	7.96	12.0	8.7
18-Mar-97	14:47:36	11.28	7.86	12.3	7.0
18-Mar-97	14:48:36	11.54	7.80	12.3	12.8
18-Mar-97	14:49:36	11.32	8.01	12.4	13.7
18-Mar-97	14:50:36	11.80	7.75	11.2	20.9
18-Mar-97	14:51:36	11.84	7.88	11.0	22.2
18-Mar-97	14:52:36	11.47	7.59	12.1	32.0
18-Mar-97	14:53:36	11.83	7.83	11.7	26.7
18-Mar-97	14:54:36	12.06	8.17	10.7	5.0
18-Mar-97	14:55:36	11.88	8.09	11.1	2.2
18-Mar-97	14:56:36	11.87	8.09	11.2	7.1
18-Mar-97	14:57:36	12.31	7.93	10.6	7.0
18-Mar-97	14:58:36	11.50	7.83	11.9	16.1
18-Mar-97	14:59:36	12.12	7.77	10.1	24.5
18-Mar-97	15:07:53	12.71	4.73	10.4	266.8

18-Mar-97	15:08:51	13.37	6.15	9.2	293.0
18-Mar-97	15:09:51	13.68	6.55	8.1	140.8
18-Mar-97	15:10:51	12.66	6.77	10.4	110.9
18-Mar-97	15:11:51	13.40	7.17	8.3	48.5
18-Mar-97	15:12:51	12.72	6.58	9.5	121.2
18-Mar-97	15:13:51	12.74	6.48	10.1	133.6
18-Mar-97	15:14:51	13.34	6.75	8.6	151.6
18-Mar-97	15:15:51	12.82	7.01	9.7	82.7
18-Mar-97	15:16:51	14.02	6.58	6.6	101.8
18-Mar-97	15:17:51	13.91	6.16	6.4	226.4
18-Mar-97	15:18:51	14.24	6.04	6.5	306.6
18-Mar-97	15:19:51	13.12	6.03	9.3	514.4
18-Mar-97	15:20:51	13.64	6.02	8.0	378.3
18-Mar-97	15:21:51	13.76	6.00	7.1	241.3
18-Mar-97	15:22:51	13.73	6.08	7.8	168.9
18-Mar-97	15:33:02	13.13	5.81	9.7	280.0
18-Mar-97	15:34:00	12.75	7.05	10.1	70.4
18-Mar-97	15:35:00	12.82	7.13	10.8	74.0
18-Mar-97	15:36:00	12.65	7.24	10.4	142.8
18-Mar-97	15:37:00	12.56	7.36	10.9	49.6
18-Mar-97	15:38:00	12.34	7.61	11.3	36.1
18-Mar-97	15:39:00	12.36	7.33	10.8	27.4
18-Mar-97	15:40:00	12.28	7.06	11.0	31.4
18-Mar-97	15:41:00	12.72	6.91	10.3	24.1
18-Mar-97	15:42:00	13.09	6.97	9.3	56.2
18-Mar-97	15:43:00	12.30	6.74	10.4	66.9
18-Mar-97	15:44:00	12.57	6.91	10.1	49.7
18-Mar-97	15:45:00	12.41	7.09	9.6	47.4
18-Mar-97	15:46:00	13.33	7.11	8.5	30.0
18-Mar-97	15:47:00	12.76	6.97	9.5	42.2
18-Mar-97	15:48:00	12.93	6.77	9.0	45.0
18-Mar-97	15:56:47	10.56	5.49	14.4	0.4
18-Mar-97	15:57:44	10.49	5.54	14.9	5.2
18-Mar-97	15:58:44	11.14	8.88	12.5	9.5
18-Mar-97	15:59:44	10.71	9.06	14.6	6.9
18-Mar-97	16:00:44	10.65	9.26	14.3	4.5
18-Mar-97	16:01:44	9.72	9.36	15.5	1.0
18-Mar-97	16:02:44	10.88	9.35	13.7	0.0
18-Mar-97	16:03:44	10.35	9.37	14.9	0.0
18-Mar-97	16:04:44	10.68	9.25	13.2	0.0
18-Mar-97	16:05:44	9.73	9.48	15.6	0.0
18-Mar-97	16:06:44	10.14	9.64	14.9	0.0
18-Mar-97	16:07:44	10.05	9.59	14.8	0.0
18-Mar-97	16:08:44	9.61	9.57	15.8	0.0
18-Mar-97	16:09:44	10.04	9.62	15.3	0.0
18-Mar-97	16:10:44	6.51	9.51	13.8	0.0
18-Mar-97	16:11:44	10.77	9.31	13.5	0.0

Table 5-2
Trace Organic Species
Destruction Efficiency Results
Simi Valley Landfill
March 18, 1997
Run # 1

Species	Conc. (ppb)	INLET		dscfm	OUTLET			DEST. EFF. (%)
		Flow rate	726		Flow rate	10366	dscfm	
		Conc. (mg/dscf)	Em. Rate (lb/hr)		Conc. (ppb)	Conc. (mg/dscf)	Em. Rate (lb/hr)	
Acetonitrile	402	1.97E-02	1.89E-03		88.9	4.36E-03	5.97E-03	*
Benzene	1060	9.88E-02	9.49E-03		5.04	4.70E-04	6.44E-04	93.211
Benzylchloride	< 20	3.04E-03	2.92E-04		< 2	3.04E-04	4.16E-04	NA
Chlorobenzene	138	1.86E-02	1.79E-03		3.52	4.75E-04	6.52E-04	> 63.580
Dichlorobenzenes	1400	2.46E-01	2.36E-02		3.74	6.57E-04	9.01E-04	> 96.186
1,1-dichloroethane	2030	2.40E-01	2.31E-02		2.02	2.39E-04	3.28E-04	> 98.579
1,2-dichloroethane	122	1.44E-02	1.39E-03		6.24	7.38E-04	1.01E-03	> 26.970
1,1-dichloroethylene	165	1.91E-02	1.84E-03		< 0.4	4.64E-05	6.36E-05	> 96.539
Dichloromethane	8520	8.66E-01	8.31E-02		2.31	2.35E-04	3.22E-04	99.613
Perchloroethane	1950	5.52E-01	5.30E-02		42.7	1.21E-02	1.66E-02	68.734
Carbon tetrachloride	< 6	1.10E-03	1.06E-04		< 0.1	1.84E-05	2.52E-05	NA
Toluene	25700	2.83E+00	2.71E-01		541	5.95E-02	8.16E-02	69.943
1,1,1-trichloroethane	180	2.86E-02	2.75E-03		0.23	3.66E-05	5.01E-05	98.176
Trichloroethane	1040	1.63E-01	1.58E-02		3.94	6.17E-04	8.46E-04	94.591
Chloroform	114	1.62E-02	1.56E-03		< 0.1	1.42E-05	1.95E-05	> 98.748
Vinyl Chloride	1400	1.05E-01	1.00E-02		< 0.5	3.73E-05	5.12E-05	> 99.490
m+p-xylenes	11200	1.42E+00	1.36E-01		206	2.61E-02	3.58E-02	73.738
o-xylene	2840	3.60E-01	3.46E-02		67.8	8.59E-03	1.18E-02	65.913
TNMHC	5650000	1.08E+02	1.04E+01		18200	3.48E-01	4.77E-01	95.401
Acrylonitrile	< 4	2.54E-04	2.44E-05		18.5	1.17E-03	1.61E-03	NA
Ethylene dibromide	< 7	1.57E-03	1.51E-04		< 0.3	6.74E-05	9.24E-05	NA
1,4-dioxane	< 17	1.79E-03	1.72E-04		< 0.5	5.26E-05	7.22E-05	NA

Table 5-3
Trace Organic Species
Destruction Efficiency Results
Simi Valley Landfill
March 18, 1997
Run #2

Species	INLET			OUTLET			DEST. EFF. (%)
	Conc. (ppb)	Flow rate (mg/dscf)	Em. Rate (lb/hr)	Conc. (ppb)	Flow rate (mg/dscf)	Em. Rate (lb/hr)	
Acetonitrile	440	2.16E-02	2.07E-03	48.1	2.36E-03	3.50E-03	*
Benzene	1070	9.97E-02	9.58E-03	1.17	1.09E-04	1.62E-04	98.309
Benzylchloride	< 20	3.04E-03	2.92E-04	< 2	3.04E-04	4.51E-04	NA
Chlorobenzene	160	2.16E-02	2.08E-03	0.98	1.32E-04	1.97E-04	90.527
Dichlorobenzenes	2060	3.62E-01	3.48E-02	< 2	3.51E-04	5.22E-04	> 98.498
1,1-dichloroethane	1950	2.31E-01	2.22E-02	0.50	5.92E-05	8.79E-05	99.603
1,2-dichloroethane	119	1.41E-02	1.35E-03	2.29	2.71E-04	4.02E-04	70.239
1,1-dichloroethylene	161	1.87E-02	1.79E-03	< 0.4	4.64E-05	6.89E-05	> 96.158
Dichloromethane	8440	8.57E-01	8.23E-02	1.10	1.12E-04	1.66E-04	99.798
Perchloroethene	2110	5.98E-01	5.74E-02	15.8	4.48E-03	6.65E-03	88.419
Carbon tetrachloride	< 6	1.10E-03	1.06E-04	< 0.1	1.84E-05	2.73E-05	NA
Toluene	27200	2.99E+00	2.87E-01	171	1.88E-02	2.79E-02	90.277
1,1,1-trichloroethane	183	2.91E-02	2.79E-03	< 0.10	1.59E-05	2.36E-05	99.155
Trichloroethene	1070	1.68E-01	1.61E-02	1.35	2.11E-04	3.14E-04	98.049
Chloroform	113	1.61E-02	1.54E-03	< 0.1	1.42E-05	2.11E-05	> 98.631
Vinyl Chloride	1340	1.00E-01	9.61E-03	< 0.5	3.73E-05	5.55E-05	> 99.423
m + p-xylenes	12700	1.61E+00	1.55E-01	70.4	8.92E-03	1.32E-02	91.427
o-xylene	3180	4.03E-01	3.87E-02	27.2	3.45E-03	5.12E-03	86.772
TNMHC	5240000	1.00E+02	9.62E+00	8140	1.56E-01	2.31E-01	97.598
Acrylonitrile	< 4	2.54E-04	2.44E-05	6.4	4.08E-04	6.06E-04	NA
Ethylene dibromide	< 7	1.57E-03	1.51E-04	< 0.3	6.74E-05	1.00E-04	NA
1,4-dioxene	< 17	1.79E-03	1.72E-04	< 0.5	5.26E-05	7.82E-05	NA

Table 5-4
Trace Organic Species
Destruction Efficiency Results
Simi Valley Landfill
March 18, 1997
Run # 3

Species	Conc. (ppb)	INLET		dscfm	OUTLET		dscfm DEST. EFF. (%)
		Flow rate	733		Flow rate	11595	
		Conc. (mg/dscf)	Em. Rate (lb/hr)		Conc. (ppb)	Conc. (mg/dscf)	Em. Rate (lb/hr)
Acetonitrile	388	1.90E-02	1.84E-03		26.2	1.28E-03	1.97E-03
Benzene	917	8.55E-02	8.29E-03		0.66	6.15E-05	9.44E-05
Benzylchloride	< 20	3.04E-03	2.94E-04		< 2	3.04E-04	4.66E-04
Chlorobenzene	128	1.73E-02	1.68E-03		0.50	6.75E-05	1.04E-04
Dichlorobenzenes	1520	2.67E-01	2.59E-02		< 2	3.51E-04	5.39E-04
1,1-dichloroethane	1830	2.17E-01	2.10E-02		0.43	5.09E-05	7.80E-05
1,2-dichloroethane	107	1.27E-02	1.23E-03		1.36	1.61E-04	2.47E-04
1,1-dichloroethylene	151	1.75E-02	1.70E-03		< 0.4	4.64E-05	7.11E-05
Dichloromethane	8060	8.19E-01	7.94E-02		0.83	8.43E-05	1.29E-04
Perchloroethene	1810	5.13E-01	4.97E-02		8.0	2.27E-03	3.48E-03
Carbon tetrachloride	< 6	1.10E-03	1.07E-04		< 0.1	1.84E-05	2.82E-05
Toluene	23300	2.56E+00	2.48E-01		77	8.48E-03	1.30E-02
1,1,1-trichloroethane	168	2.67E-02	2.59E-03		< 0.10	1.59E-05	2.44E-05
Trichloroethene	943	1.48E-01	1.43E-02		0.73	1.14E-04	1.76E-04
Chloroform	104	1.48E-02	1.43E-03		< 0.1	1.42E-05	2.18E-05
Vinyl Chloride	1280	9.56E-02	9.27E-03		< 0.5	3.73E-05	5.73E-05
m + p-xylenes	10300	1.30E+00	1.27E-01		29.1	3.69E-03	5.65E-03
o-xylene	2600	3.29E-01	3.19E-02		10.1	1.28E-03	1.96E-03
TNMHC	5010000	9.58E+01	9.29E+00		4270	8.17E-02	1.25E-01
Acrylonitrile	< 4	2.54E-04	2.46E-05		< 2.0	1.27E-04	1.95E-04
Ethylene dibromide	< 7	1.57E-03	1.52E-04		< 0.3	6.74E-05	1.03E-04
1,4-dioxane	< 17	1.79E-03	1.74E-04		< 0.5	5.26E-05	8.07E-05

Inlet Flow RATE Calculations (4/29/97)

Run #1

$$875 \text{ scfm} \times 0.97 = 849 \text{ dscfm}$$

Run #2

$$875 \text{ scfm} \times 0.968 = 847 \text{ dscfm}$$

Run #3

$$875 \text{ scfm} \times 0.953 = 834 \text{ dscfm}$$

ROC Destruction Efficiency
Simi Valley Landfill
April 29, 1997

Run #1		INLET			OUTLET			DEST. EFF.
		Flow rate	849	dscfm	Flow rate	7586	dscfm	
Species	Conc. (ppb)	Conc. (mg/dscf)	Em. Rate (lb/hr)		Conc. (ppb)	Conc. (mg/dscf)	Em. Rate (lb/hr)	(%)
TNMHC	5400000	1.02E+02	1.14E+01		9430	1.78E-01	1.78E-01	98.440
Run #2		INLET			OUTLET			DEST. EFF.
		Flow rate	847	dscfm	Flow rate	8517	dscfm	
Species	Conc. (ppb)	Conc. (mg/dscf)	Em. Rate (lb/hr)		Conc. (ppb)	Conc. (mg/dscf)	Em. Rate (lb/hr)	(%)
TNMHC	4990000	9.41E+01	1.05E+01		1000	1.89E-02	2.12E-02	99.798
Run #3		INLET			OUTLET			DEST. EFF.
		Flow rate	834	dscfm	Flow rate	8943	dscfm	
Species	Conc. (ppb)	Conc. (mg/dscf)	Em. Rate (lb/hr)		Conc. (ppb)	Conc. (mg/dscf)	Em. Rate (lb/hr)	(%)
TNMHC	4810000	9.07E+01	1.00E+01		1000	1.89E-02	2.23E-02	99.777

Facility: Simi Valley Landfill

SCAQMD Method 4 Flowrate

Source: Flare

Job No.: w07-014

Test Date: 4/29/97

	STD TEMP:	68		
		RUN	RUN	RUN
		1	2	3
RUN NUMBER	*****	1	2	3
DATE OF RUN	*****	04/29/97	04/29/97	04/29/97
CLOCK TIME: INITIAL	*****	1110	1250	1400
CLOCK TIME: FINAL	*****	1210	1350	1500
AVG. STACK TEMPERATURE	Degrees F	NA	NA	NA
AVG. SQUARE DELTA P	Inches H2O	NA	NA	NA
NOZZLE DIAMETER	Inches	NA	NA	NA
BAROMETRIC PRESSURE	Inches HG	29.25	29.25	29.25
SAMPLING TIME	Minutes	60	60	60
SAMPLE VOLUME	Cubic Feet	39.019	45.894	45.410
AVG. METER TEMP.	Degrees F	81	86	86
AVG. DELTA H	Inches H2O	1.90	1.90	1.90
DGM CALIB. FACTOR [Y]	*****	0.9901	0.9901	0.9901
WATER COLLECTED	Milliliters	24	30	45
CO 2	Percent	38.5	39.0	37.8
O 2	Percent	0.6	0.5	0.9
CO	Percent	0.0	0.0	0.0
CH4	Percent	47.3	47.0	46.6
N 2	Percent	13.6	13.5	14.7
STACK AREA	Square Inches	NA	NA	NA
STATIC PRESSURE	Inches WG	NA	NA	NA
PITOT COEFFICIENT	*****	NA	NA	NA
SAMPLE VOLUME DRY	DSCF	37.04	43.18	42.69
WATER AT STD.	SCF	1.1	1.4	2.1
MOISTURE	Percent	3.0	3.2	4.7
MOLE FRACTION DRY GAS	*****	0.97	0.97	0.95
MOLECULAR WT.DRY	lb/lb Mole	28.51	28.62	28.49
EXCESS AIR	Percent	18	16	29
MOLECULAR WT. WET	lb/lb Mole	28.19	28.28	27.99
STACK GAS PRESSURE	Inches HG	29.25	29.25	29.25
STACK VELOCITY	AFPM	0	0	0
VOLUMETRIC FLOWRATE, DRY STD.	DSCFM	0	0	0
VOLUMETRIC FLOWRATE, ACTUAL	ACFM	0	0	0

Facility: Simi Valley Landfill

EPA Methods 1-4

Source: Flare

Job No.: WO7-014

Test Date: 4/29/97

RUN NUMBER	*****	1	2	3
DATE OF RUN	*****	4/29/97	4/29/97	4/29/97
CLOCK TIME: INITIAL	*****	1110	1250	1400
CLOCK TIME: FINAL	*****	1210	1350	1500
AVG. STACK TEMPERATURE	Degrees F	1625	1645	1610
AVG. SQUARE DELTA P	Inches H2O	0.1246	0.1408	0.1465
NOZZLE DIAMETER	Inches	na	na	na
BAROMETRIC PRESSURE	Inches HG	29.25	29.25	29.25
SAMPLING TIME	Minutes	60	60	60
SAMPLE VOLUME	Cubic Feet	44.667	47.544	44.862
AVG. METER TEMP.	Degrees F	84	85	84
AVG. DELTA H	Inches H2O	1.60	1.60	1.60
DGM CALIB. FACTOR [Y]	*****	0.9924	0.9924	0.9924
WATER COLLECTED	Milliliters	76	83	78
CO 2	Percent	13.5	13.6	13.0
O 2	Percent	7.0	6.2	7.8
CO	Percent	0.0	0.0	0.0
CH4	Percent	0	0	0
N 2	Percent	79.5	80.2	79.2
STACK AREA	Square Inches	6648.0	6648.0	6648.0
STATIC PRESSURE	Inches WG.	-0.03	-0.03	-0.09
PITOT COEFFICIENT	*****	0.84	0.84	0.84
SAMPLE VOLUME DRY	DSCF	36.80	39.10	36.99
WATER AT STD.	SCF	3.6	3.9	3.7
MOISTURE	Percent	8.9	9.1	9.0
MOLE FRACTION DRY GAS	*****	0.91	0.91	0.91
MOLECULAR WT.DRY	lb/lb Mole	30.44	30.42	30.39
EXCESS AIR	Percent	50	41	60
MOLECULAR WT. WET	lb/lb Mole	29.34	29.29	29.27
STACK GAS PRESSURE	Inches HG	29.25	29.25	29.24
STACK VELOCITY	AFPM	836	950	981
VOLUMETRIC FLOWRATE, DRY STD	DSCFM	7586	8517	8943
VOLUMETRIC FLOWRATE, ACTUAL	ACFM	38599	43857	45272

Facility: Simi Valley Landfill
 Source: Flare
 Job No.: W07-014
 Test Date: 3/97

CARB Method 421 HCl/HF Emissions

HCl/HF Emissions

		Outlet RUN	Outlet RUN	Outlet RUN
RUN NUMBER	*****	1	2	3
DATE OF RUN	*****	03/19/97	03/19/97	03/19/97
CLOCK TIME: INITIAL	*****	1533	1425	1340
CLOCK TIME: FINAL	*****	1633	1525	1440
AVG. STACK TEMPERATURE	DEGREES F	NA	NA	NA
AVG. SQUARE DELTA P	INCHES H2O	NA	NA	NA
NOZZLE DIAMETER	INCHES	NA	NA	NA
BAROMETRIC PRESSURE	IN. HG.	29.40	29.30	29.30
SAMPLING TIME	MIN.	60	60	60
SAMPLE VOLUME	CUBIC FEET	46.570	46.268	45.312
AVG. METER TEMP.	DEGREES F	98	99	88
AVG. DELTA H	IN. H2O	1.85	1.85	1.85
DGM CALIB. FACTOR [Y]	*****	1.007	1.007	1.007
WATER COLLECTED	MILLILITERS	85	56	65
CO 2	PERCENT	7.8	7.4	7.8
O 2	PERCENT	12.2	12.6	12.2
CO	PERCENT	0.0	0.0	0.0
N 2	PERCENT	80.0	80.0	80.0
STACK AREA	QUARE INCHE	6648.0	6648.0	6648.0
STATIC PRESSURE	INCHES WG.			
PITOT COEFFICIENT	*****			
SAMPLE VOLUME DRY	DSCF	43.80	43.27	43.21
WATER AT STD.	SCF	4.0	2.6	3.1
MOISTURE	PERCENT	8.4	5.8	6.6
MOLE FRACTION DRY GAS	*****	0.92	0.94	0.93
MOLECULAR WT.DRY	LB/LB MOLE	29.74	29.69	29.74
EXCESS AIR	PERCENT	136.77	147.89	136.77
MOLECULAR WT. WET	LB/LB MOLE	28.75	29.02	28.96
STACK GAS PRESSURE	INCHES HG.	29.40	29.30	29.30
STACK VELOCITY	AFPM	911	964	1061
VOLUMETRIC FLOWRATE, DRY STD	DSCFM	10032	10437	11601
VOLUMETRIC FLOWRATE, ACTUAL	ACFM	42078	44498	48974
IOSOKINETIC RATIO	%	NA	NA	NA

STD. TEMP: 68

CALCULATIONS FOR GRAIN LOADING AND EMISSION RATES

Total HCl	mg	7.862	4.653	4.918
HCl Concentration	mg/dscf	0.1795	0.1075	0.1138
HCl Emissions Rate	lb/hr	0.238	0.148	0.175
Total HF	mg	2.201	3.530	3.951
HF Concentration	mg/dscf	0.0502	0.0816	0.0914
HF Emissions Rate	lb/hr	0.067	0.113	0.140

Facility: Simi Valley Landfill
Source: Flare
Job No.: W07-014
Test Date: 3/97

CARB Method 425 Chromium Emissions

Total Chromium Emissions

STD TEMP: 68

		RUN 1	RUN 2	RUN 3
RUN NUMBER	*****	1	2	3
DATE OF RUN	*****	03/19/97	03/20/97	03/21/97
CLOCK TIME: INITIAL	*****	1053	930	915
CLOCK TIME: FINAL	*****	1453	1330	1315
AVG. STACK TEMPERATURE	Degrees F	104	103	101
AVG. SQUARE DELTA P	Inches H2O	0.6458	0.6512	0.6344
NOZZLE DIAMETER	Inches	0.312	0.312	0.312
BAROMETRIC PRESSURE	In. HG.	29.40	29.30	29.30
SAMPLING TIME	Minutes	240	240	240
SAMPLE VOLUME	Cubic Feet	282.452	288.875	265.986
AVG. METER TEMP.	Degrees F	107	111	95
AVG. DELTA H	In. H2O	3.71	3.84	3.60
DGM CALIB. FACTOR [Y]	*****	0.9924	0.9924	0.9924
WATER COLLECTED	Milliliters	93	108	92
CO 2	Percent	38.4	38.4	38.4
O 2	Percent	0.7	0.7	0.7
CH4	Percent	47.6	47.6	47.6
N 2	Percent	13.3	13.3	13.3
STACK AREA	Square Inches	78.5	78.5	78.5
STATIC PRESSURE	Inches WG.	7.00	6.80	7.00
PITOT COEFFICIENT	*****	0.84	0.84	0.84
SAMPLE VOLUME DRY	DSCF	259.05	262.28	248.32
WATER AT STD.	SCF	4.4	5.1	4.3
MOISTURE	Percent	1.7	1.9	1.7
MOLE FRACTION DRY GAS	*****	0.98	0.98	0.98
MOLECULAR WT.DRY	lb/lb Mole	28.46	28.46	28.46
EXCESS AIR	Percent	-5357	-5357	-5357
MOLECULAR WT. WET	lb/lb Mole	28.29	28.26	28.28
STACK GAS PRESSURE	Inches HG.	29.91	29.80	29.81
STACK VELOCITY	AFPM	2288	2312	2247
VOLUMETRIC FLOWRATE, DRY STD.	DSCFM	1149	1154	1129
VOLUMETRIC FLOWRATE, ACTUAL	ACFM	1247	1260	1225
ISOKINETIC RATIO	Percent	96	97	94
CR+6 PROBE	ug	0.0340	0.0270	0.0150
CR+6 IMPINGER 1	ug	0.1320	0.1250	0.1180
CR+6 IMPINGER 2	ug	0.0620	0.1260	0.0820
CR+6 TOTAL	ug	0.2280	0.2780	0.2150
CR+6 CONCENTRATION	ug/dscf	8.80E-04	1.06E-03	8.66E-04
CR+6 EMISSION RATE	ug/hr	60.68878	73.40553	58.66111
CHROMIUM PROBE	ug			
CHROMIUM IMPINGER 1	ug			
CHROMIUM IMPINGER 2	ug	0.0000	0.0000	0.0000
TOTAL CHROMIUM	ug	0.15200	0.19600	0.18600
CHROMIUM CONCENTRATION	ug/dscf	0.00059	0.00075	0.00075
CHROMIUM EMISSION RATE	ug/hr	40.45918	51.75354	50.74868

NOTE: All reported analytical values are detection limit values with the exception of Run 3 Probe Rinse Total chromium.

PAH Emissions

STD.TEMP.: 68

		RUN	RUN	RUN
RUN NUMBER	*****	1	2	3
DATE OF RUN	*****	03/19/97	03/20/97	03/21/97
CLOCK TIME: INITIAL	*****	1017	943	920
CLOCK TIME: FINAL	*****	1435	1318	1348
AVG. STACK TEMPERATURE	Degrees F	1570	1587	1562
AVG. SQUARE DELTA P	Inches H2O	0.1371	0.1439	0.1594
NOZZLE DIAMETER	Inches	0.875	0.749	0.749
BAROMETRIC PRESSURE	Inches HG	29.40	29.30	29.30
SAMPLING TIME	Minutes	180	180	180
SAMPLE VOLUME	Cubic Feet	163.922	132.422	142.491
AVG. METER TEMP.	Degrees F	97	97	86
AVG. DELTA H	Inches H2O	1.85	1.83	2.05
DGM CALIB. FACTOR [Y]	*****	1.0068	1.0068	1.0068
WATER COLLECTED	Milliliters	235	202	230
CO 2	Percent	7.8	7.4	7.8
O 2	Percent	12.2	12.6	12.2
CO	Percent	0.0	0.0	0.0
N 2	Percent	80.0	80.0	80.0
STACK AREA	Square Inches	6648.0	6648.0	6648.0
STATIC PRESSURE	Inches WG.	-0.07	-0.08	-0.07
PITOT COEFFICIENT	*****	0.84	0.84	0.84
SAMPLE VOLUME DRY	DSCF	154.41	124.24	136.68
WATER AT STD.	SCF	11.1	9.5	10.8
MOISTURE	Percent	6.7	7.1	7.4
MOLE FRACTION DRY GAS	*****	0.93	0.93	0.93
MOLECULAR WT.DRY	lb/lb Mole	29.74	29.69	29.74
EXCESS AIR	Percent	137	148	137
MOLECULAR WT. WET	lb/lb Mole	28.95	28.86	28.87
STACK GAS PRESSURE	Inches HG	29.39	29.29	29.29
STACK VELOCITY	AFPM	911	964	1061
VOLUMETRIC FLOWRATE, DRY STD.	DSCFM	10032	10437	11601
VOLUMETRIC FLOWRATE, ACT.	ACFM	42078	44498	48974
ISOKINETIC RATIO	Percent	95	100	99

CALCULATIONS FOR GRAIN LOADING AND EMISSION RATES

	RUN			RUN			RUN		
RUN NUMBER	1			2			3		
DATE OF RUN	03/19/97			03/20/97			03/21/97		
CLOCK TIME: INITIAL	1017			943			920		
CLOCK TIME: FINAL	1435			1318			1348		
PAH EMISSION RATES	CONC.			CONC.			CONC.		
	WEIGHT	12 % CO2	EMISSION RATE	WEIGHT	12 % CO2	EMISSION RATE	WEIGHT	12 % CO2	EMISSION RATE
	(ug)	(ug/dscm)	(lb/hr)	(ug)	(ug/dscm)	(lb/hr)	(ug)	(ug/dscm)	(lb/hr)
NAPHTHALENE	2.400	0.8444	2.06E-05	2.400	1.1061	2.67E-05	2.400	0.9539	2.69E-05
2-METHYLNAPHTHALENE	1.100	0.3870	9.45E-06	1.100	0.5070	1.22E-05	1.100	0.4372	1.23E-05
ACENAPHTHYLENE	0.070	0.0246	6.02E-07	0.070	0.0323	7.78E-07	0.070	0.0278	7.86E-07
ACENAPHTHENE	0.080	0.0281	6.88E-07	0.080	0.0369	8.89E-07	0.080	0.0318	8.98E-07
FLUORENE	0.330	0.1161	2.84E-06	0.330	0.1521	3.67E-06	0.330	0.1312	3.70E-06
PHENANTHRENE	0.850	0.2990	7.31E-06	0.850	0.3917	9.45E-06	0.850	0.3378	9.54E-06
ANTHRACENE	0.130	0.0457	1.12E-06	0.130	0.0599	1.44E-06	0.130	0.0517	1.46E-06
FLUORANTHENE	0.190	0.0668	1.63E-06	0.250	0.1152	2.78E-06	0.150	0.0596	1.68E-06
PYRENE	0.150	0.0528	1.29E-06	0.150	0.0691	1.67E-06	0.150	0.0596	1.68E-06
BENZ(A)ANTHRACENE	0.015	0.0053	1.29E-07	0.031	0.0143	3.44E-07	0.005	0.0020	5.61E-08
CHRYSENE	0.017	0.0060	1.46E-07	0.040	0.0184	4.45E-07	0.016	0.0064	1.80E-07
BENZO(B)FLUORANTHENE	0.006	0.0019	4.73E-08	0.011	0.0051	1.22E-07	0.005	0.0020	5.61E-08
BENZO(K)FLUORANTHENE	0.005	0.0018	4.30E-08	0.005	0.0023	5.56E-08	0.005	0.0020	5.61E-08
BENZO(E)PYRENE	0.005	0.0018	4.30E-08	0.005	0.0023	5.56E-08	0.005	0.0020	5.61E-08
BENZO(A)PYRENE	0.005	0.0018	4.30E-08	0.005	0.0023	5.56E-08	0.005	0.0020	5.61E-08
PYRYLENE	0.005	0.0018	4.30E-08	0.005	0.0023	5.56E-08	0.005	0.0020	5.61E-08
BENZO(G,H,I)PERYLENE	0.005	0.0018	4.30E-08	0.005	0.0023	5.56E-08	0.005	0.0020	5.61E-08
DIBENZ(A,H)ANTHRACENE	0.005	0.0018	4.30E-08	0.005	0.0023	5.56E-08	0.005	0.0020	5.61E-08
INDENO(1,2,3-cd)PYRENE	0.005	0.0018	4.30E-08	0.005	0.0023	5.56E-08	0.005	0.0020	5.61E-08
HEXACHLOROBENZENE	0.002	0.0007	1.72E-08	0.002	0.0009	2.22E-08	0.002	0.0008	2.25E-08
Total PAH		1.8908	0.0000		2.5251	0.0001		2.1156	0.0001
Total PAH w/o Napthalene		1.0465	2.56E-05		1.4190	3.42E-05		1.1617	3.28E-05
Total Carcinogenic PAH		0.0262	6.40E-07		0.0548	1.32E-06		0.0250	7.07E-07

ALDEHYDES

		RUN 1	RUN 2	RUN 3
RUN NUMBER	*****	1	2	3
DATE OF RUN	*****	3/19/97	3/20/97	4/23/93
CLOCK TIME: INITIAL	*****	906	846	843
CLOCK TIME: FINAL	*****	1706	1646	1643
AVG. STACK TEMPERATURE	Degrees F	NA	NA	NA
AVG. SQUARE DELTA P	Inches H2O	NA	NA	NA
NOZZLE DIAMETER	Inches	NA	NA	NA
BAROMETRIC PRESSURE	IN. HG.	29.40	29.30	29.30
SAMPLING TIME	MIN.	480	480	480
SAMPLE VOLUME	Cubic Feet	10.276	9.140	9.773
AVG. METER TEMP.	Degrees F	95	92	80
AVG. DELTA H	Inches H2O	0.00	0.00	0.00
DGM CALIB. FACTOR (Y)	*****	1.0082	1.0082	1.0082
WATER COLLECTED	Milliliters	NA	NA	NA
CO 2	Percent	7.8	7.4	7.8
O 2	Percent	12.2	12.6	12.2
CO	Percent			
N 2	Percent	80.0	80.0	80.0
STACK AREA	Square Inches	6648.0	6648.0	6648.0
STATIC PRESSURE	Inches WG.	NA	NA	NA
PITOT COEFFICIENT	*****	NA	NA	NA
SAMPLE VOLUME DRY	DSCF	9.68	8.63	9.43
WATER AT STD.	SCF	0.0	0.0	0.0
MOISTURE	Percent	NA	7.0	6.9
MOLE FRACTION DRY GAS	*****	1.00	0.93	0.93
MOLECULAR WT.DRY	lb/lb Mole	29.74	29.69	29.74
EXCESS AIR	Percent	137	148	137
MOLECULAR WT. WET	lb/lb Mole	29.74	28.87	28.93
STACK GAS PRESSURE	Inches HG.	29.40	29.30	29.30
STACK VELOCITY	AFPM	911	964	1061
VOLUMETRIC FLOWRATE, DRY STD.	DSCFM	10032	10437	11601
VOLUMETRIC FLOWRATE, ACTUAL	ACFM	42078	44498	48974

STD.TEMP.: 68

CALCULATIONS FOR EMISSION RATES:

FORMALDEHYDE

AVERAGE BLANK CONC.	ug/ml	0.0310	0.1040	0.0300
SAMPLE CONC.	ug/ml	0.0418	2.6251	5.9396
BLANK-CORRECTED SAMPLE CONC.	ug/ml	0.0108	2.521	5.910
SAMPLE VOLUME	ml	42.8	43.9	43.4
TOTAL WEIGHT	ug/sample	0.46	110.68	256.48
CONCENTRATION	ug/dscf	0.04774	12.82447	27.18989
CONCENTRATION	ppb	1.4	375.7	796.5
EMISSION RATE	mg/hr	28.7	8030.9	18925.8
EMISSION RATE	lb/hr	0.0001	0.0177	0.0417

ACETALDEHYDE

AVERAGE BLANK CONC.	ug/ml	0*	0*	0.0030
SAMPLE CONC.	ug/ml	0.0080	0.0050	0.0726
BLANK-CORRECTED SAMPLE CONC.	ug/ml	0.0080	0.005	0.070
SAMPLE VOLUME	ml	10.0	10.0	43.4
TOTAL SAMPLE WEIGHT	ug/sample	0.08	0.05	3.02
CONCENTRATION	ug/dscf	0.00826	0.00579	0.32023
CONCENTRATION	ppb	0.2	0.1	6.4
EMISSION RATE	mg/hr	5.0	3.6	222.9
EMISSION RATE	lb/hr	0.000011	0.000008	0.00049

ACROLEIN

AVERAGE BLANK CONC.	ug/ml	0*	0*	0*
SAMPLE CONC.	ug/ml	0.0080	0.0080	0.0080
BLANK-CORRECTED SAMPLE CONC.	ug/ml	0.0080	0.008	0.008
SAMPLE VOLUME	ml	10.0	10.0	10.0
TOTAL SAMPLE WEIGHT	ug/sample	0.080	0.080	0.080
CONCENTRATION	ug/dscf	0.00826	0.00827	0.00848
CONCENTRATION	ppb	0.13	0.15	0.13
EMISSION RATE	mg/hr	5.0	5.8	5.9
EMISSION RATE	lb/hr	0.000011	0.000013	0.000013

* Blank values were used to calculate emission rate since the sample concentration was less than five times the field blank concentration.

MULTI-METALS
PLANT:

STD. TEMP

68

RUN NUMBER	*****	1	2	3
DATE OF RUN	*****	03/19/97	03/20/97	03/21/97
CLOCK TIME: INITIAL	*****	1521	1419	1417
CLOCK TIME: FINAL	*****	1651	1555	1547
AVG. STACK TEMPERATURE	Degrees F	104	104	101
AVG. SQUARE DELTA P	Inches H2O	0.6433	0.6480	0.6602
NOZZLE DIAMETER	Inches	0.310	0.310	0.310
BAROMETRIC PRESSURE	Inches HG	29.40	29.30	29.30
SAMPLING TIME	Minutes	96	96	96
SAMPLE VOLUME	Cubic Feet	110.395	112.675	115.650
AVG. METER TEMP.	Degrees F	105	109	98
AVG. DELTA H	Inches H2O	3.63	3.71	3.96
DGM CALIB. FACTOR [Y]	*****	0.9924	0.9924	0.9924
WATER COLLECTED	Milliliters	99	73	79
CO 2	Percent	38.4	38.4	38.4
O 2	Percent	0.7	0.7	0.7
CO	Percent	0.0	0.0	0.0
CH4	Percent	47.6	47.6	47.6
N 2	Percent	13.3	13.3	13.3
STACK AREA	Square Inches	78.5	78.5	78.5
STATIC PRESSURE	Inches WG.	7.00	7.00	6.80
PITOT COEFFICIENT	*****	0.84	0.84	0.84
SAMPLE VOLUME DRY	DSCF	101.52	102.52	107.41
WATER AT STD.	SCF	4.7	3.4	3.7
MOISTURE	Percent	4.4	3.2	3.4
MOLE FRACTION DRY GAS	*****	0.96	0.97	0.97
MOLECULAR WT.DRY	lb/lb Mole	20.84	20.84	20.84
EXCESS AIR	Percent			
MOLECULAR WT. WET	lb/lb Mole	20.72	20.75	20.75
STACK GAS PRESSURE	Inches HG	29.91	29.81	29.80
STACK VELOCITY	AFPM	2644	2666	2710
VOLUMETRIC FLOWRATE, DRY STD.	DSCFM	1290	1312	1338
VOLUMETRIC FLOWRATE, ACTUAL	ACFM	1441	1453	1477
ISOKINETIC RATIO	Percent	86	85	87

CALCULATIONS FOR EMISSION RATES

RUN NUMBER	*****	RUN 1	RUN 2	RUN 3
DATE OF RUN	*****	03/19/97	03/20/97	03/21/97
CLOCK TIME: INITIAL	*****	1521	1419	1417
CLOCK TIME: FINAL	*****	1651	1555	1547

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)
ANTIMONY	1.8	1.77E-05	3.03E-06	2.4	2.34E-05	4.06E-06	1.4	1.30E-05	2.31E-06
ARSENIC	0.7	7.09E-06	1.21E-06	1.1	1.03E-05	1.79E-06	1.0	9.12E-06	1.62E-06
BARIUM	< 4.0	3.94E-05	6.72E-06	< 4.0	3.90E-05	6.77E-06	< 4.0	3.72E-05	6.59E-06
BERYLLIUM	< 0.2	1.97E-06	3.36E-07	< 0.2	1.95E-06	3.39E-07	< 0.2	1.86E-06	3.30E-07
CADMIUM	0.3	2.46E-06	4.20E-07	0.3	2.44E-06	4.23E-07	0.2	1.86E-06	3.30E-07
CHROMIUM	1.1	1.08E-05	1.85E-06	1.2	1.17E-05	2.03E-06	1.4	1.30E-05	2.31E-06
COPPER	< 10.0	9.85E-05	1.68E-05	< 10.0	9.75E-05	1.69E-05	< 10.0	9.31E-05	1.65E-05
LEAD	1.8	1.77E-05	3.03E-06	1.2	1.17E-05	2.03E-06	1.0	9.31E-06	1.65E-06
MANGANESE	< 2.0	1.97E-05	3.36E-06	< 2.0	1.95E-05	3.39E-06	12.5	1.16E-04	2.06E-05
MERCURY	< 0.1	9.85E-07	1.68E-07	< 0.1	9.75E-07	1.69E-07	0.1	9.31E-07	1.65E-07
NICKEL	< 8.0	7.88E-05	1.34E-05	< 8.0	7.80E-05	1.35E-05	8.0	7.45E-05	1.32E-05
PHOSPHORUS	< 28.0	2.76E-04	4.71E-05	< 28.0	2.73E-04	4.74E-05	28.0	2.61E-04	4.61E-05
SELENIUM	2.0	1.97E-05	3.36E-06	2.3	2.22E-05	3.86E-06	2.4	2.23E-05	3.96E-06
SILVER	< 4.0	3.94E-05	6.72E-06	< 4.0	3.90E-05	6.77E-06	4.0	3.72E-05	6.59E-06
THALLIUM	< 0.6	5.91E-06	1.01E-06	< 0.6	5.85E-06	1.02E-06	0.6	5.59E-06	9.89E-07
ZINC	11.9	1.17E-04	2.00E-05	< 6.0	5.85E-05	1.02E-05	11.0	1.02E-04	1.81E-05
TOTAL			1.29E-04			1.21E-04			1.41E-04

" < "-Denotes the use of reportable limit values.

APPENDIX C - Laboratory Results



AtmAA Inc.

23917 Craftsman Rd., Calabasas, CA 91302 • (818) 223-3277 • FAX (818) 223-8250

environmental consultants
laboratory services

LABORATORY ANALYSIS REPORT

Hydrogen Sulfide and Reduced Sulfur Compounds Analysis in Tedlar Bag Samples

Report Date: March 19, 1997
Client: Horizon / Simi Valley Landfill
P.O. No.: Verbal
Client Project No.: W07-014
Source Location : Simi Valley, CA
Source ID: None Given

Date Received: March 18, 1997
Date Analyzed: March 18, 1997

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.:	90787-31	90787-32	90787-33
Sample I.D.:	W714-TRS-I-1	W714-TRS-I-2	W714-TRS-I-3
Components	(Concentration in ppmv)		
Hydrogen sulfide	12.3	12.3	12.2
Carbonyl sulfide	0.17	0.16	0.14
Methyl mercaptan	0.67	1.07	1.16
Ethyl mercaptan	<0.045	0.053	0.058
Dimethyl sulfide	5.82	6.16	6.08
Carbon disulfide	0.12	0.12	0.12
isopropyl mercaptan	0.069	0.12	0.13
n-propyl mercaptan	0.13	0.13	0.13
Dimethyl disulfide	0.11	0.096	0.12
TRS	19.6	20.4	20.4

iso-propyl and n-propyl-mercaptans are calculated based on ethyl mercaptan standard.
TRS - total reduced sulfur

Michael L. Porter
Laboratory Director

QUALITY ASSURANCE SUMMARY
(Repeat Analysis)

Client Project No.: W07-014
Date Received: March 18, 1997
Date Analyzed: March 18, 1997

Components	Sample ID	Repeat		Analysis	Mean	% Diff.
		Run #1	Run #2	Run #2	Conc.	From Mean
		(Concentration in ppmv)				
Hydrogen sulfide	W714-TRS-I-1	12.9	11.7	12.3	4.9	
	W714-TRS-I-2	12.0	12.6	12.3	2.4	
	W714-TRS-I-3	12.4	12.1	12.2	1.2	
Carbonyl sulfide	W714-TRS-I-3	0.13	0.15	0.14	7.1	
Methyl mercaptan	W714-TRS-I-3	1.04	1.28	1.16	10	
Ethyl mercaptan	W714-TRS-I-3	0.048	0.069	0.058	18	
Dimethyl sulfide	W714-TRS-I-3	6.11	6.06	6.08	0.41	
Carbon disulfide	W714-TRS-I-3	0.12	0.12	0.12	0.0	
iso-propyl mercaptan	W714-TRS-I-3	0.11	0.15	0.13	15	
n-propyl mercaptan	W714-TRS-I-3	0.13	0.13	0.13	0.0	
Dimethyl disulfide	W714-TRS-I-3	0.11	0.12	0.12	4.3	

Three Tedlar bag samples, laboratory numbers 90777-(31-33), were analyzed for hydrogen sulfide and 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 11 repeat measurements from the three Tedlar bag samples is 5.8%.



Client/Project Name <i>Simi Valley Landfill</i>			Project Location <i>Simi Valley</i>			ANALYSES <i>Specified sub-fractions</i>					
Project No. <i>W07-014</i>			Field Logbook No.								
Sampler: (Signature) <i>[Signature]</i>			Chain of Custody Tape No.								
Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	REMARKS						
W714-TRS-I-1	3/18/97		90777-31	Feeder Bag - Dried	✓						Rm1
W714-TRS-I-2	↓		32	"	✓						2
W714-TRS-I-3	↓		33	"	✓						3
Relinquished by: (Signature) <i>[Signature]</i>				Date <i>3/18/97</i>	Time <i>1740</i>	Received by: (Signature) <i>[Signature]</i>				Date <i>3/18/97</i>	Time <i>1740</i>
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						N° 3838	



AtmAA Inc.

23917 Craftsman Rd., Calabasas, CA 91302 • (818) 223-3277 • FAX (818) 223-8250

environmental consultants
laboratory services

LABORATORY ANALYSIS REPORT

SCAQMD Rule 1150.1 Components Analysis in Flare Inlet SUMMA Canister Samples

Report Date: March 26, 1997
Client: Horizon / Simi Valley Landfill
Project Location: Simi Valley, CA
Client Project No.: W07-014
Date Received: March 18, 1997
Date Analyzed: March 19 & 20, 1997

AtmAA Lab No.: 90777-34 90777-35 90777-36
Sample I.D.: Run #1 Run #2 Run #3

Components	S2	S7	S6
(Concentration in %,v)			
Oxygen	0.56	0.48	0.87
Methane	47.3	48.4	47.0
Carbon dioxide	38.5	39.0	37.8
(Concentration in ppmv)			
TGNMO	5650	5240	5010
(Concentration in ppbv)			
Acetonitrile	402	440	388
Benzene	1060	1070	917
Benzylchloride	<20	<20	<20
Chlorobenzene	138	160	128
Dichlorobenzenes*	1400	2060	1520
1,1-dichloroethane	2030	1950	1830
1,2-dichloroethane	122	119	107
1,1-dichloroethylene	165	161	151
Dichloromethane	8520	8440	8060
Perchloroethene	1950	2110	1810
Carbon tetrachloride	<6	<6	<6
Toluene	25700	27200	23300
1,1,1-trichloroethane	180	183	168
Trichloroethene	1040	1070	943
Chloroform	114	113	104
Vinyl chloride	1400	1340	1280
m + p-xylenes	11200	12700	10300
o-xylene	2840	3180	2600
Acrylonitrile	<4	<4	<4
Ethylene dibromide	<7	<7	<7
1,4-dioxane	<17	<17	<17

The reported oxygen concentration includes any argon present in the sample, calibration is based on a standard atmosphere containing 20.95% oxygen and 0.93% argon.

TGNMO is total gaseous non-methane organics measured and reported as ppm methane.

* total amount containing meta, para, and ortho isomers


Michael L. Porter
Laboratory Director



AtmAA Inc.

23917 Craftsman Rd., Calabasas, CA 91302 • (818) 223-3277 • FAX (818) 223-8250

environmental consultants
laboratory services

LABORATORY ANALYSIS REPORT

SCAQMD Rule 1150.1 Components Analysis in Flare Outlet and Blank SUMMA Canister Samples

Report Date: March 21, 1997

Client: Horizon / Simi Valley Landfill

Project Location: Simi Valley, CA

Client Project No.: W07-014

Date Received: March 18, 1997

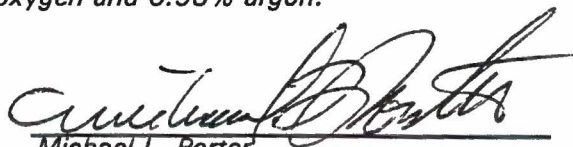
Date Analyzed: March 19 & 20, 1997

AtmAA Lab No.:	90777-37	90777-38	90777-39	90777-40
Sample I.D.:	Run #1	Run #2	Run #3	Blank
	S12	S4	S8	S10
Components	(Concentration in %,v)			
Oxygen	15.3	15.0	15.0	---
	(Concentration in ppmv)			
Methane	<1	<1	1.35	<1
TGNMO	18.2	8.14	4.27	<1
	(Concentration in ppbv)			
Acetonitrile	88.9	48.1	26.2	<1
Benzene	5.04	1.17	0.66	<0.1
Benzylchloride	<2	<2	<2	<0.8
Chlorobenzene	3.52	0.98	<0.5	<0.1
Dichlorobenzenes*	3.74	<2	<2	<1.1
-1,1-dichloroethane	2.02	0.50	0.43	<0.4
1,2-dichloroethane	6.24	2.29	1.36	<0.2
-1,1-dichloroethylene	<0.4	<0.4	<0.4	<0.1
Dichloromethane	2.31	1.10	0.83	0.15
Perchloroethene	42.7	15.8	8.00	<0.1
Carbon tetrachloride	<0.1	<0.1	<0.1	<0.06
Toluene	541	171	77.1	<0.4
-1,1,1-trichloroethane	0.23	<0.1	<0.1	<0.1
Trichloroethene	3.94	1.35	0.73	<0.1
Chloroform	<0.1	<0.1	<0.1	<0.08
Vinyl chloride	<0.5	<0.5	<0.5	<0.1
m + p-xylenes	206	70.4	29.1	<0.2
o-xylene	67.8	27.2	10.1	<0.1
Acrylonitrile	18.5	6.43	<2	<2
Ethylene dibromide	<0.3	<0.3	<0.3	<0.1
1,4-dioxane	<0.5	<0.5	<0.5	<0.1

TGNMO is total gaseous non-methane organics measured and reported as ppm methane.

* total amount containing meta, para, and ortho isomers

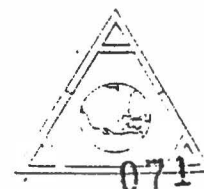
The reported oxygen concentration includes any argon present in the sample, calibration is based on a standard atmosphere containing 20.95% oxygen and 0.93% argon.


Michael L. Porter
Laboratory Director

QUALITY ASSURANCE SUMMARY
(Repeat Analysis)

Client Project No.: W07-014
Date Received: March 18, 1997
Date Analyzed: March 19 & 20, 1997

Components	Sample ID	Repeat		Analysis	Mean Conc.	% Diff. From Mean
		Run #1	Run #2			
		(Concentration in %,v)				
Oxygen	S2	0.59	0.53	0.56	5.4	
	S8	15.1	14.9	15.0	0.67	
Methane	S7	48.4	48.5	48.4	0.10	
Carbon dioxide	S7	39.1	38.9	39.0	0.26	
(Concentration in ppmv)						
Methane	S12	<1	<1	---	---	
TGNMO	S2	5240	6060	5650	7.2	
	S12	17.0	19.3	18.2	6.3	
(Concentration in ppbv)						
Acetonitrile	S2	402	403	402	0.12	
	S12	89.7	88.1	88.9	0.90	
Benzene	S2	1100	1020	1060	3.8	
	S12	6.47	3.62	5.04	28	
Benzylchloride	S2	<20	<20	---	---	
Chlorobenzene	S2	139	136	138	1.1	
Dichlorobenzenes	S2	1410	1380	1400	1.1	
1,1-dichloroethane	S2	2130	1930	2030	4.9	
	S12	2.05	1.98	2.02	1.7	
1,2-dichloroethane	S2	127	117	122	4.1	
	S12	6.27	6.20	6.24	0.56	
1,1-dichloroethylene	S2	170	160	165	3.0	
Dichloromethane	S2	8640	8410	8520	1.3	
	S12	2.09	2.53	2.31	9.5	



QUALITY ASSURANCE SUMMARY
(Repeat Analysis)
(continued)

Components	Sample ID	Repeat		Analysis	Mean	% Diff.
		Run #1	Run #2	Run #2	Conc.	From Mean
		(Concentration in ppbv)				
Perchloroethene	S2	2000	1900	1950	2.6	
	S12	42.1	43.3	42.7	1.4	
Carbon tetrachloride	S2	<6	<6	---	---	
	S12	<0.1	<0.1	---	---	
Toluene	S2	26600	24800	25700	3.5	
	S12	536	546	541	0.92	
1,1,1-trichloroethane	S2	182	177	180	1.4	
	S12	0.26	0.20	0.23	13	
Trichloroethene	S2	1060	1010	1040	2.4	
	S12	3.95	3.93	3.94	0.25	
Chloroform	S2	114	114	114	0.0	
	S12	<0.1	<0.1	---	---	
Vinyl chloride	S2	1450	1350	1400	3.6	
	S12	<0.5	<0.5	---	---	
m + p-xylenes	S2	11700	10700	11200	4.5	
	S12	207	204	206	0.73	
o-xylene	S2	2910	2770	2840	2.5	
	S12	69.3	66.2	67.8	2.3	
Acrylonitrile	S2	<4	<4	---	---	
	S12	18.3	18.7	18.5	1.1	
Ethylene dibromide	S2	<7	<7	---	---	
1,4-dioxane	S2	<17	<17	---	---	

A set of seven SUMMA canister samples, laboratory numbers 90777-(34-40), was analyzed for SCAQMD Rule 1150.1 components, permanent gases, and total gaseous non-methane organics (TGNMO). 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 34 repeat measurements from the sample set of seven SUMMA canister samples is 3.5%.



CHAIN OF CUSTODY RECORD

Client/Project Name <i>Simi Valley Landfill</i>			Project Location <i>Simi Valley</i>		
Project No. <i>W07-014</i>			Field Logbook No.		
Sampler: (Signature) <i>[Signature]</i>			Chain of Custody Tape No.		

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	ANALYSIS						REMARKS	
<i>Summa S2</i>	<i>3/18/97</i>		<i>90777-34</i>	<i>Inlet Run 1</i>	☒	☒	☒	☒	☒	☒	☒	<i>Detection limits as low as possible</i>
<i>S7</i>			<i>35</i>	<i>Inlet 2</i>	☒	☒	☒	☒	☒	☒	☒	
<i>S6</i>			<i>36</i>	<i>Inlet 3</i>	☒	☒	☒	☒	☒	☒	☒	
<i>S12</i>			<i>37</i>	<i>Outlet Run 1</i>	☒	☒	☒	☒	☒	☒	☒	
<i>S4</i>			<i>38</i>	<i>Outlet 2</i>	☒	☒	☒	☒	☒	☒	☒	
<i>S8</i>			<i>39</i>	<i>Outlet 3</i>	☒	☒	☒	☒	☒	☒	☒	
<i>S10</i>			<i>40</i>	<i>blank</i>	☒	☒	☒	☒	☒	☒	☒	

Relinquished by: (Signature) <i>[Signature]</i>		Date <i>3/18/97</i>	Time <i>1740</i>	Received by: (Signature) <i>[Signature]</i>		Date <i>3/18/97</i>	Time <i>1740</i>
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	Nº 3886
--	------------------------------	----------------

SPECIFIED hydrocarbons
 (C10 to C20) was analyzed
 C10 - 76-11-10
 O2 - ~~76-11-10~~
 CO - ~~76-11-10~~
 ANALYZE with 1st 2nd 3rd 4th 5th 6th 7th 8th 9th 10th 11th 12th 13th 14th 15th 16th 17th 18th 19th 20th 21st 22nd 23rd 24th 25th 26th 27th 28th 29th 30th 31st 32nd 33rd 34th 35th 36th 37th 38th 39th 40th 41st 42nd 43rd 44th 45th 46th 47th 48th 49th 50th 51st 52nd 53rd 54th 55th 56th 57th 58th 59th 60th 61st 62nd 63rd 64th 65th 66th 67th 68th 69th 70th 71st 72nd 73rd 74th 75th 76th 77th 78th 79th 80th 81st 82nd 83rd 84th 85th 86th 87th 88th 89th 90th 91st 92nd 93rd 94th 95th 96th 97th 98th 99th 100th



AtmAA Inc.

23917 Craftsman Rd., Calabasas, CA 91302 • (818) 223-3277 • FAX (818) 223-8250

environmental consultants
laboratory services

LABORATORY ANALYSIS REPORT

Analysis for 1,3-butadiene in Tedlar Bag Samples

Report Date: March 26, 1997
Client: Horizon / Simi Valley Landfill
P.O. No.: Verbal
Client Project No.: W07-014
Source Location: Simi Valley, CA
Source ID: Landfill

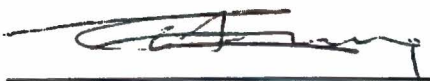
Date Received: March 18, 1997
Date Analyzed: March 18, 1997

ANALYSIS DESCRIPTION

1,3-butadiene was measured by flame ionization detection/gas chromatography (FID/GC).

AtmAA Lab No.:	90777-27	90777-28	90777-29	90777-30
Sample I.D.:	W714-13B-	W714-13B-	W714-13B-	W714-13B-
	O-1	O-2	O-3	FB

Component	(Concentration in ppbv)			
1,3-butadiene	<0.25	<0.25	<0.25	<0.25


Kochy Fung, PhD.

CHAIN OF CUSTODY RECORD

Client/Project Name <i>Simi Valley landfill</i>			Project Location <i>Simi Valley</i>			1/3 Butadiene ANALYSES					
Project No. <i>W07-014</i>			Field Logbook No.								
Sampler: (Signature) <i>[Signature]</i>			Chain of Custody Tape No.								
Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	REMARKS						
<i>W714-13B-0-1</i>	<i>3/18/97</i>	<i>9:07</i>	<i>77-27</i>	<i>Tedden bag - outst</i>	✓						<i>Row 1</i>
<i>W714-13B-0-2</i>			<i>-28</i>		✓						<i>2</i>
<i>W714-13B-0-3</i>			<i>-29</i>		✓						<i>3</i>
<i>W714-13B-FB</i>			<i>-30</i>		✓						<i>field blank</i>
Relinquished by: (Signature) <i>[Signature]</i>				Date <i>3/18/97</i>	Time <i>1540</i>	Received by: (Signature) <i>[Signature]</i>				Date <i>3/18/97</i>	Time <i>1740</i>
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						Nº 3839	

DATA SHEET FOR PARTICULATE MATTER ANALYSES

ent: WASTE MANAGEMENT

Date Sampled: 3/18/97

Job Number: W07 014

Date Extracted: 4/8/97

[illegible]



LABORATORY ANALYSIS REPORT

Methane, Total Gaseous Non- Methane Organics (TGNMO),
and Oxygen Analysis in SUMMA Canister Samples

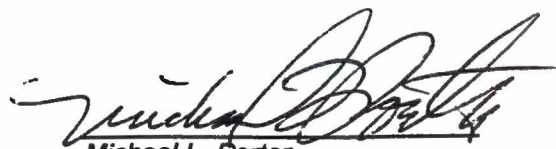
Report Date: May 1, 1997
Client: Horizon / WMNA / Simi Valley Landfill
P.O. No.: Verbal
Client Project No.: W07-014
Source Location : Simi Valley, CA
Date Received: April 29, 1997
Date Analyzed: April 29 & 30, 1997

ANALYSIS DESCRIPTION

Total gaseous non-methane organics and low level methane were measured by flame ionization detection/total combustion analysis (FID/TCA). Oxygen and high level methane were measured by thermal conductivity detection/gas chromatography (TCD/GC).

AtmAA Lab No.	Sample ID	Methane (ppmv)	TGNMO (ppmv)	Oxygen (%,v)
91197-7	SUMMA #6	473000	5400	—
91197-8	SUMMA #9	470000	4990	—
91197-9	SUMMA #7	466000	4800	—
91197-10	SUMMA #3	<1	9.44	14.1
91197-11	SUMMA #4	<1	<1	14.2
91197-12	SUMMA #5	<1	<1	13.6

TGNMO is total gaseous non-methane organics measured and reported as ppm methane. The reported oxygen concentration includes any argon present in the sample, calibration is based on a standard atmosphere containing 20.95% oxygen and 0.93% argon.


Michael L. Porter
Laboratory Director

QUALITY ASSURANCE SUMMARY
(Repeat Analysis)

Client Project No.: W07-014
Date Received: April 29, 1997
Date Analyzed: April 29 & 30, 1997

Components	Sample ID	Repeat	Analysis	Mean	% Diff.
		Run #1	Run #2	Conc.	From Mean
(Concentration in ppmv)					
Methane	SUMMA #6	473000	473000	473000	0.0
	SUMMA #7	465000	466000	466000	0.11
TGNMO	SUMMA #7	5240	4370	4800	9.0
	SUMMA #3	9.56	9.31	9.44	1.3
Oxygen	SUMMA #5	13.5	13.8	13.6	1.1

A set of 6 SUMMA canister samples, laboratory numbers 91197-(7-12), was analyzed for methane, total gaseous non-methane organics (TGNMO), and oxygen. Agreement between repeat analysis is a measure of precision and is shown above in the column "% Difference from Mean".

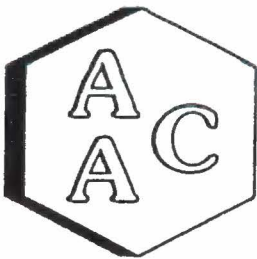
Repeat analyses are an important part of AtmAA's quality assurance program. The average % Difference from Mean for 5 repeat measurements from the sample set of 6 SUMMA canister samples is 2.3%.



Client/Project Name WASTE MANAGEMENT SERVICES Smo Valley Landfill			Project Location Smo Valley, CA			ANALYSES					
Project No. W07-014			Field Logbook No.			TUMHC+CH4 O2 Pi ToC P P5					
Sampler: (Signature) [Signature]			Chain of Custody Tape No.								
Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample							REMARKS
Summa #6	4/29/97		91197-7	6L Summa	X			9.5			LFG Flare Inlet Run #1
" 9			8	S	X			9.5			" 2
" 7			9		X			9.5			" 3
" 3			10		X	X		3.6			LFG Flare Outlet Run #1
" 4			11		X	X		3.6			" 2
" 5			12		X	X		3.6			" 3
Relinquished by: (Signature) [Signature]				Date 4/29/97	Time 1630	Received by: (Signature)				Date	Time
Relinquished by: (Signature)				Date	Time	Received by: (Signature)				Date	Time
Relinquished by: (Signature)				Date	Time	Received for Laboratory: (Signature) [Signature]				Date 4/29/97	Time 1650
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. A.A. Calabasas, CA						Nº 4226	

079

Client/Project Name Waste Mng.			Project Location Simi Landfill Ca			ANALYSES					
Project No. W07-014			Field Logbook No.								
Sampler: (Signature) <i>[Signature]</i>			Chain of Custody Tape No.								
Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	SCHEMATIC S.1. H ₂ O						
W7-14-S.1-H ₂ O-1	3/18/97		S.1 H ₂ O	X							
W7-14-S.1-PF-1			S.1 Partic. filt	X							
W7-14-S.1-H ₂ O-2			S.1 H ₂ O	X							
W7-14-S.1-PF-2			S.1 Partic. filt	X							
W7-14-S.1-H ₂ O-3			S.1 H ₂ O	X							
W7-14-S.1-PF-3			S.1 Partic. filt	X							
Relinquished by: (Signature) <i>[Signature]</i>				Date 3/18/97	Time 1800	Received by: (Signature)				Date	Time
Relinquished by: (Signature)				Date	Time	Received by: (Signature)				Date	Time
Relinquished by: (Signature)				Date	Time	Received for Laboratory: (Signature) <i>[Signature]</i>				Date 3/28/97	Time 1800
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 <i>Horizon In House</i>				No 4073			



Atmospheric Analysis & Consulting, Inc.

CLIENT: HORIZON
PROJECT NO.: 300-01-479 / W07-074
PROJECT DATE: March 19-21, 1997
RECEIVING DATE: March 25, 1997
ANALYSIS DATE: March 25, 1997
REPORT DATE: April 1, 1997

LABORATORY ANALYSIS REPORT

CLIENT ID:	Sample	HF	HCL
	Vol, ml	ug/sample	ug/sample
HCL-1	515.0	2200.88	7861.89
HCL-2	390.0	3530.42	4652.68
HCL-3	510.0	3951.04	4917.75
HCL-3-R	510.0	4031.56	5069.79
HCL-FB	100.0	26.32	41.74

R: Replicate Analysis


Dr. Sucha Parmar
President



Client/Project Name WASTE MANAGEMENT / SVLE			Project Location SIMES VALLEY, CA			ANALYSES Carb 421 (HCL/HF)					
Project No. W07-014			Field Logbook No.								
Sampler: (Signature) 			Chain of Custody Tape No.								
Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	REMARKS						
HCL-1	3/19/97			Super Rinsed Imp	X						LFG FLARE OUT R1
HCL-2	3/20/97			↓	X						" R2
HCL-3	3/21/97			↓	X						" R3
HCL-FB	3/21/97			BLANK	X						Solution Blank
Relinquished by: (Signature) 				Date 3/25/97	Time 1830	Received by: (Signature) A.M. K. HO				Date 3/25/97	Time 18.30
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 AAC VENTURA, CA						Nº 3907	

Job No.: 7069
Revision: 00
Report Date: 03/19/97
Page: 1 of 4
Replaces: 00

PYRAMID Laboratories, Inc.

LABORATORY REPORT

Released From:

PYRAMID Laboratories, Inc.
3505 Cadillac Avenue, Bldg. C
Costa Mesa, CA 92626

Submitted To:

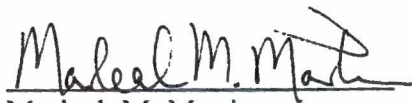
Horizon Air Measurement Services, Inc.
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320

Client Ref.: WO7-014

On:

March 19, 1997

Reviewed and Approved By:


Marleah M. Martin
Quality Assurance Manager

3.19.97
Date


Medhat Gorgy
Laboratory Director

3.19.97
Date

Job No.: 7069
Revision: 00
Report Date: 03/19/97
Page: 2 of 4
Replaces: 00

PYRAMID Laboratories, Inc.

ANALYTICAL RESULTS

Date Sampled: 03-11-97

Date Received: 03-12-97

Date Analyzed: 03-17-97

Anal. Batch I.D.: LCR020

Parameter: CARB 425

Detection Limit: 0.005 ppb

Lab Sample No.	Client Sample No.	Matrix	Dilution Factor	Final Results
7069-01	Cr ⁶⁺ -PR-PTA, Probe "A"	Aqueous	1	ND
7069-02	Cr ⁶⁺ -PR-PTB, Probe "B"	Aqueous	1	ND

Job No.: 7069
Revision: 00
Report Date: 03/19/97
Page: 3 of 4
Replaces: 00

PYRAMID Laboratories, Inc.

QUALITY CONTROL RESULTS

Date Analyzed: 03-17-97

Anal. Batch I.D.: LCR020

Parameter: CARB 425

Detection Limit: 0.005 ppb

Lab Sample No.	Amount Spiked (ppm)	LCS % Recovery	LCSD % Recovery	RPD
LCS	5	94.4	94.1	0.3

MB (ppb)
ND

Job No.: 7069
Revision: 00
Report Date: 03/19/97
Page: 4 of 4
Replaces: 00

PYRAMID Laboratories, Inc.

LEGEND KEY

ND:	Not Detected	MB:	Method Blank
N/A:	Not Applicable	DUP:	Duplicate
D.F.:	Dilution Factor	MI:	Matrix Interference
MS:	Matrix Spike	LCS:	Laboratory Control Sample
MSD:	Matrix Spike Dup	LCSD:	Laboratory Control Sample Dup
RPD:	Relative Percent Difference	NCR:	Nonconformance Report
MDL:	Method Detection Limit	PQL:	Practical Quantitation Limit

**ADDITIONAL
REPORT NOTES**

Client/Project Name <i>WASTE MANAGEMENT / HAZ. WASTE</i>			Project Location <i>4141 DELICIA, CA</i>			ANALYSES					
Project No. <i>1004-014</i>			Field Logbook No.								
Sampler: (Signature) <i>[Signature]</i>			Chain of Custody Tape No.								
Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	CF 6+	Total CF	HOLD PENDING	FOR ANALYSIS	REMARKS		
<i>CF-PR-PIA</i>	<i>3/11/92</i>		<i>7061-1A</i>		X	X				<i>PROBE "A"</i>	
<i>CF-PR-PTB</i>			<i>7061-2A</i>		X	X				<i>PROBE "B"</i>	
<i>CF-SB</i>			<i>7061-10A</i>				X			<i>Solution blank</i>	
Relinquished by: (Signature) <i>[Signature]</i>					Date <i>3/11/92</i>	Time <i>1200</i>	Received by: (Signature) <i>GRATICE = 12 EXSES 0302301234</i>			Date <i>3/11</i>	Time <i>1200</i>
Relinquished by: (Signature) <i>[Signature]</i>					Date <i>3/11</i>	Time <i>1210</i>	Received by: (Signature) <i>[Signature]</i>			Date <i>3/11/92</i>	Time <i>1210</i>
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 <i>Pyramick</i> <i>labs</i> <i>attn. RETAINT (805) 498-3173</i>					NO 3464	

087

LABORATORY REPORT

Released From:

PYRAMID Laboratories, Inc.
3505 Cadillac Avenue, Bldg. C
Costa Mesa, CA 92626

Submitted To:

Horizon Air Measurement Services, Inc.
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320
Attn: Rich Vacherot

Client Project No.: W07-074

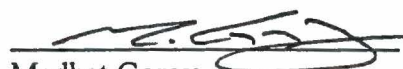
On:

April 4, 1997

Reviewed and Approved By:


Marleah M. Martin
Quality Assurance Manager

4.4.97
Date


Medhat Gorgy
Laboratory Director

4.4.97
Date

Job No.: 7082
Revision: 00
Report Date: 04/04/97
Page: 2 of 6
Replaces:

PYRAMID Laboratories, Inc.

ANALYTICAL RESULTS

Date Sampled: 03-19/20/21-97

Date Received: 03-25-97

Date Analyzed: 03-28-97

Anal. Batch I.D.: LCR021

Parameter: CR(VI)/CARB 425

Detection Limit: 0.005 µg/L

Lab Sample No.	Client Sample No.	Matrix	Dilution Factor	Final Results (µg/sample)	Sample Vol. (mL)
7082-01	Cr-PR-2	Aqueous	1	0.027	140
7082-02	Cr-I1-2	Aqueous	1	0.125	200
7082-03	Cr-I2-2	Aqueous	1	0.126	195
7082-04	Cr-PR-3	Aqueous	1	0.015	113
7082-05	Cr-I1-3	Aqueous	1	0.118	236
7082-06	Cr-I2-3	Aqueous	1	0.082	175
7082-07/08	Cr-FIL-BLK/Cr-SB	Aqueous	1	0.022	100
7082-09	Cr-PR-BT	Aqueous	1	0.017	155
7082-10	Cr-I1-BT	Aqueous	1	0.020	165
7082-11	Cr-I2-BT	Aqueous	1	0.025	135
7082-12	Cr-PR-1	Aqueous	1	0.034	195
7082-13	Cr-I1-1	Aqueous	1	0.132	215
6923-14	Cr-I2-1	Aqueous	1	0.062	165

Job No.: 7082
Revision: 00
Report Date: 04/04/97
Page: 3 of 6
Replaces:

PYRAMID Laboratories, Inc.

QUALITY CONTROL RESULTS

Date Analyzed: 03-28-97

Anal. Batch I.D.: LCR021

Parameter: CR(VI)/CARB 425

Detection Limit: 0.005 µg/L

Lab Sample No.	Amount Spiked (ppb)	MS Result % Recovery	MSD Result % Recovery	RPD
7082-13	5	92.8	93.7	1.0

Lab Sample No.	Amount Spiked (ppb)	LCS % Recovery
LCS	5	94.9

MB (µg/L)
ND

ANALYTICAL RESULTS

Date Sampled: 03-19/20/21-97

Date Received: 03-25-97

Date Analyzed: 03-31-97

Anal. Batch I.D.: N/A

Parameter: TOTAL CR/CARB 425

Reportable Limit: 1.5

Lab Sample No.	Client Sample No.	Matrix	Dilution Factor	Final Results ($\mu\text{g}/\text{sample}$)	Sample Vol. (mL)
7082-01	Cr-PR-2	Aqueous	1	ND	140
7082-02	Cr-I1-2	Aqueous	1	ND	200
7082-03	Cr-I2-2	Aqueous	1	ND	195
7082-04	Cr-PR-3	Aqueous	1	ND	113
7082-05	Cr-I1-3	Aqueous	1	ND	236
7082-06	Cr-I2-3	Aqueous	1	ND	175
7082-07/08	Cr-FIL-BLK/Cr-SB	Aqueous	1	ND	100
7082-09	Cr-PR-BT	Aqueous	1	ND	155
7082-10	Cr-I1-BT	Aqueous	1	ND	165
7082-11	Cr-I2-BT	Aqueous	1	ND	135
7082-12	Cr-PR-1	Aqueous	1	ND	195
7082-13	Cr-I1-1	Aqueous	1	ND	215
6923-14	Cr-I2-1	Aqueous	1	ND	165

Job No.: 7082
Revision: 00
Report Date: 04/04/97
Page: 5 of 6
Replaces:

PYRAMID Laboratories, Inc.

QUALITY CONTROL RESULTS

Date Analyzed: 03-31-97

Anal. Batch I.D.: N/A

Parameter: TOTAL CR/CARB 425

Reportable Limit: 1.5

Lab Sample No.	MS Result % Recovery	MSD Result % Recovery	RPD
7082-01	93	94	2

MB
ND

PYRAMID Laboratories, Inc.

LEGEND KEY

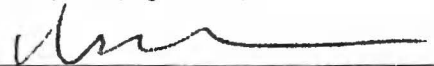
ND:	Not Detected	MB:	Method Blank
N/A:	Not Applicable	DUP:	Duplicate
D.F.:	Dilution Factor	MI:	Matrix Interference
MS:	Matrix Spike	LCS:	Laboratory Control Sample
MSD:	Matrix Spike Dup	LCSD:	Laboratory Control Sample Dup
RPD:	Relative Percent Difference	NCR:	Nonconformance Report
MDL:	Method Detection Limit	PQL:	Practical Quantitation Limit

**ADDITIONAL
REPORT NOTES**

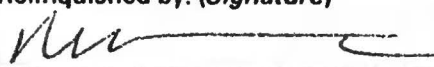
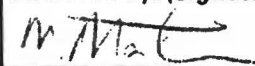
The Total Chromium analyses were subcontracted to Calscience Laboratories, Inc.

Client/Project Name WASTE MANAGEMENT / SVLF			Project Location SIERRA VALLEY, CA			ANALYSES C6+ TOTAL CR Per CARB 425					
Project No. W017-014			Field Logbook No.								
Sampler: (Signature) <i>[Signature]</i>			Chain of Custody Tape No.								
Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	REMARKS						
CF-PR-2	3/20/98			Probe Rinse	X						LFO FLARE IN RZ ↓
CF-TH-2				Imp 1 + FILTER	X						
CF-I2-2				Imp 2	X						
CF-PR-3	3/21/98			Probe Rinse	X						
CF-I1-3				Imp 1 + FILTER	X						
CF-I2-3				Imp 2	X						
CF-FIL-BLK				FILTER BLANK	X						
CF-SB				SOLUTION BLANK							
Relinquished by: (Signature) <i>[Signature]</i>				Date 3/24/98	Time 1500	Received by: (Signature) # EB35 EBZ 03 0130 1898 SHIPPED VIA UPS				Date	Time
Relinquished by: (Signature)				Date	Time	Received by: (Signature) <i>[Signature]</i>				Date 7/5/97	Time 12:00
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 Pyramical Labs. Attn. MEDHAT GURGI						Nº 3908	

CHAIN OF CUSTODY RECORD

Client/Project Name WASTE MANAGEMENT / SVLF			Project Location SEMI VALLEY, CA			ANALYSES					
Project No. W07-014			Field Logbook No.								
Sampler: (Signature) 			Chain of Custody Tape No.								

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	X						REMARKS
Cr-PR-BT	3/14/97			Probe Range	X						BEAD TIE
Cr-II-BT				Imp 1 + FILTER	X						
Cr-IZ-BT				Imp 2	X						
Cr-PR-1				Probe Range	X						LEAKAGE IN R1
Cr-II-1				Imp 1 + FILTER	X						
Cr-IZ-1				Imp 2	X						

Relinquished by: (Signature) 		Date 3/24/97	Time 1500	Received by: (Signature) #12835 EBZ 03 00301898	Date	Time
Relinquished by: (Signature)		Date	Time	Received by: (Signature) 	Date 3/25/97	Time 12:00
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 Pyramical Labs Mr. METRAT GONBY	Nº 3905
--	--	----------------

 CR 64 TOTAL CR 201
 CARS 425



AtmAA Inc.

23917 Craftsman Rd., Calabasas, CA 91302 • (818) 223-3277 • FAX (818) 223-8250

environmental consultants
laboratory services

LABORATORY ANALYSIS REPORT

DNPH impinger solutions were extracted and analyzed for formaldehyde acetaldehyde and acrolein by high performance liquid chromatography.

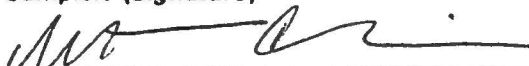
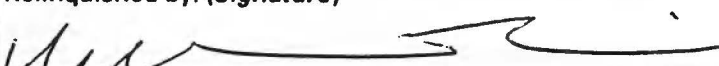
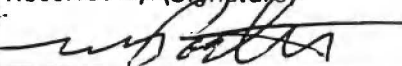
Report Date : 4/7/97
Date Received : 3/21 & 24/1997
Date Extracted : 3/21 & 24/1997
Date Analyzed : 3/25/97
P.O. No. : 10-2018
Client Proj. # : 302108

AtmAA Lab. No.	Sample ID	ug/sample			Vol. ml.
		Formal.	Acetal.	AcroIn.	
90807-1	FORM-R1-1	1.15	0.21	<0.08	28.0
90807-2	FORM-R1-2	0.64	0.12	<0.08	14.8
90807-3	FORM-FB-1	0.31	0.08	<0.08	10.0
90807-4	FORM-R2-1	113.94	0.49	0.54	27.4
90807-5	FORM-R2-2	1.30	0.28	<0.08	16.5
90807-6	FORM-FB-2	1.04	0.05	<0.08	10.0
90807-7	FORM-spike	6.20	4.25	3.04	10.0
90837-27	FORM-R3-1	256.52	2.33	0.32	30.8
90837-28	FORM-R3-2	1.26	0.82	<0.08	12.6
90837-29	FORM-FB-3	0.30	0.03	<0.08	10.0
REPEATS:					
90807-1	FORM-R1-1	1.27	0.23	<0.08	
MATRIX SPIKE*:					
90807-2	FORM-R1-2	6.64	4.71	4.49	
Detection Limits: Det. Limit		0.02	0.03	0.08	

* All spikes: 5ug of each compound per sample.
Spikes have an estimated precision of approximately +/- 5% of target.


Dr. Kochy Fung
Director

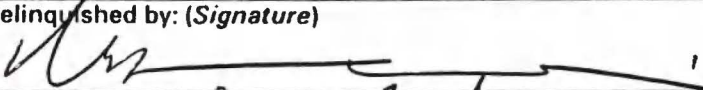
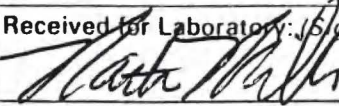
CHAIN OF CUSTODY RECORD

Client/Project Name WASTE MANAGEMENT / SVLF			Project Location SEMI VALLEY, CA			ANALYSES CARB 430 HC=0, CH₄=0, AEROLIN=0					
Project No. W07-014			Field Logbook No.								
Sampler: (Signature) 			Chain of Custody Tape No.								
Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	REMARKS						
FORM-R1-1	3/19/97		90807 -1	RUN1, Imp 1	X					28.0	LEO FLAME OUT R1
FORM-R1-2	↓		-2	" , Imp 2	X					14.8	" "
FORM-FB-1	↓		-3	FIELD BLANK, 1/19	X					10.0	FIELD BLANK
FORM-R2-1	3/20/97		-4	RUN1, Imp 1	X					27.4	LEO FLAME OUT R2
FORM-R2-2	↓		-5	" Imp 2	X					16.5	" "
FORM-FB-2	↓		-6	FIELD BLANK 1/20	X					10.0	FIELD BLANK
FORM-SPIKE	↓		-7	SPIKE	X					10.0	SPIKE
Relinquished by: (Signature) 				Date 3/21/97	Time 0730	Received by: (Signature) 				Date 3/21/97	Time 0730
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 Atm AA Calabasas, CA						N° 3906	

CHAIN OF CUSTODY RECORD

Client/Project Name WASTE MANAGEMENT / SVLF			Project Location SIMI VALLEY, CA			ANALYSES					
Project No. W07-014			Field Logbook No.								
Sampler: (Signature) 			Chain of Custody Tape No.								

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	REMARKS
FORM-R3-1	3/21/97		90837-27	X	30.8 ml
FORM-R3-2	↓		28	X	12.6 ml
FORM-FB	↓		29	X	10.0 ml

Relinquished by: (Signature) 		Date 3/24/97	Time 1535	Received by: (Signature) 		Date 3/24/97	Time 1535
Relinquished by: (Signature) 		Date 3/25/97	Time 1620	Received by: (Signature)		Date	Time
Relinquished by: (Signature)		Date	Time	Received for Laboratory: (Signature) 		Date 3/24/97	Time 16:10

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 D. L. M. A. Calabasas, CA	Nº 4075
--	--	----------------

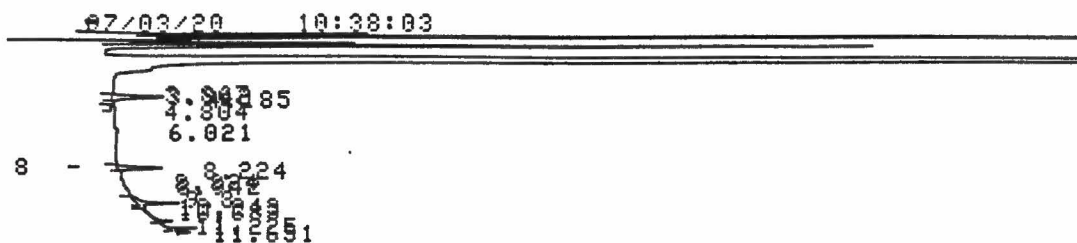
XDU

Horizon DNPH BLANK RECORD
March 20, 1997

HCHO: ~0.04 ug/ml
CH3CHO: <0.01 ug/ml

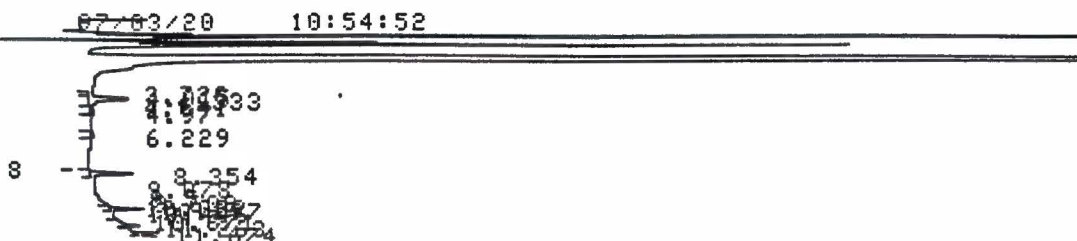
Horizon DNPH Blank

Shimadzu



CHROMATOGRAM 1 MEMORIZED

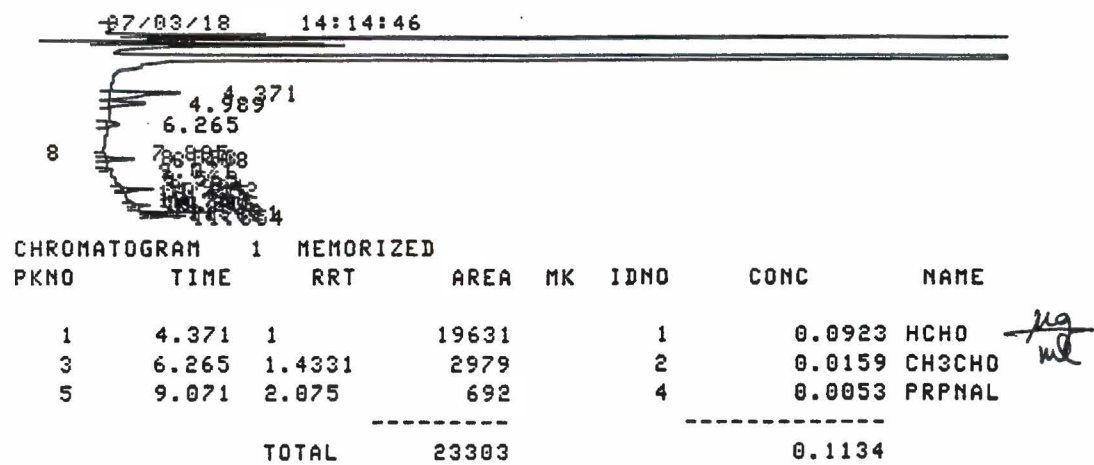
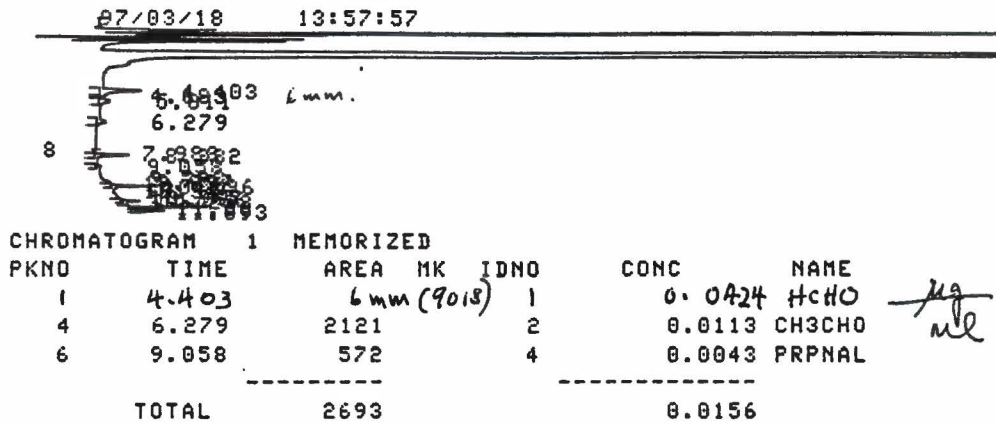
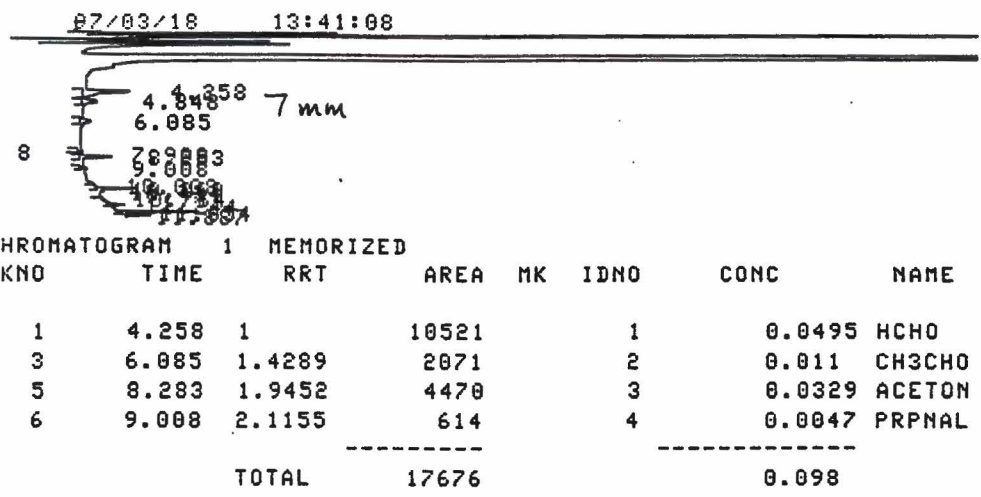
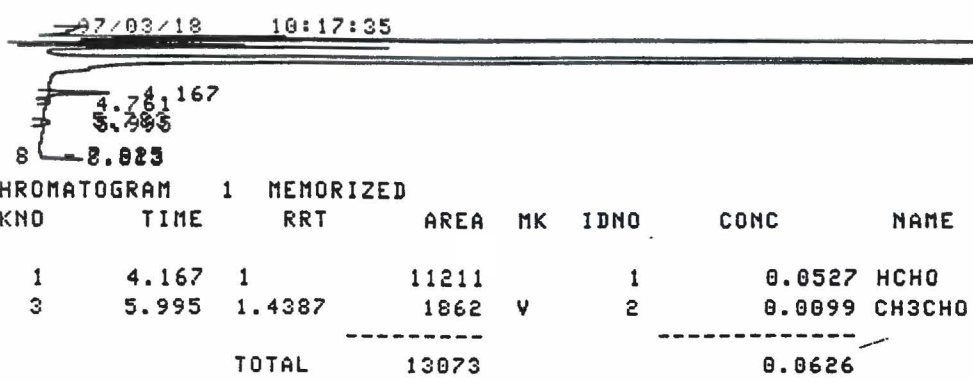
PKNO	TIME	RRT	AREA	MK	IDNO	CONC	NAME
1	4.185	1	8291	V	1	0.039	HCHO
3	8.224	1.9651	5958		3	0.0439	ACETON
TOTAL			14249			0.0828	



CHROMATOGRAM 1 MEMORIZED

PKNO	TIME	RRT	AREA	MK	IDNO	CONC	NAME
1	4.015	0.9267	453	V			
2	4.333	1	7990	SV	1	0.0376	HCHO
4	6.229	1.4376	827		2	0.0044	CH3CHO
TOTAL			9270			0.0441	

zon
JPH Blank
age
0 = 0.059
10 = 0.012



Shimadzu

223-02037-01



April 21, 1997

Alta Batch I.D.: 3481

Mr. Rich Vacherot
Horizon Air Measurement Services
996 Lawrence Drive Unit 108
Newbury Park, CA 91320

Dear Mr. Vacherot,

Enclosed are the results for the five MM5 trains received at Alta Analytical Laboratory on March 25, and April 1, 1997. This work was authorized under your Project #W07-074. These trains were extracted and analyzed using CARB Method 429 for polycyclic aromatic hydrocarbons (PAH) using High Resolution Mass Spectrometry (HRMS) and Modified EPA Method 8270 for hexachlorobenzene. An extract was sent to Air Toxics, LTD. for the hexachlorobenzene analysis. Routine turnaround time was requested for this work.

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

If you have any questions regarding this report please feel free to contact me.

Sincerely,

Robert S. Mitzel
Director of Air Toxics

Alta Analytical Laboratory Inc.

5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762

FAX (916) 933-0940
(916) 933-1640

Sample Inventory Report

Project No.: 3481
Date Rec.: 4/ 1/97

Project Name: General Analytical AIR

Lab. Sample ID	Client Sample ID	SGI Component Type
0001	PAH-1	BHR
0001	PAH-1	FHR
0001	PAH-1	Filter
0001	PAH-1	IMP CONTENTS
0001	PAH-1	IMP RINSE
0001	PAH-1	Xad
0002	PAH-2	BHR
0002	PAH-2	FHR
0002	PAH-2	Filter
0002	PAH-2	IMP CONTENTS
0002	PAH-2	IMP RINSE
0002	PAH-2	Xad
0003	PAH-3	BHR
0003	PAH-3	FHR
0003	PAH-3	Filter
0003	PAH-3	IMP CONTENTS
0003	PAH-3	IMP RINSE
0003	PAH-3	Xad
0004	PAH-BT	BHR
0004	PAH-BT	FHR
0004	PAH-BT	Filter
0004	PAH-BT	IMP CONTENTS
0004	PAH-BT	IMP RINSE
0004	PAH-BT	Xad
0005	PAH-SB	HEXANE BLANK
0005	PAH-SB	IMP SOLN. BLANK
0005	PAH-SB	MECL2 BLANK
0005	PAH-SB	MEOH BLANK

SECTION II.

PAH RESULTS

CALIFORNIA AIR RESOURCES BOARD METHOD 429

PAH RESULTS

Method Blank
Lab ID: 3481-MB
Matrix: MM5 Train

Date Received: NA
Date Extracted: 4/4/97
Sample Amount: Sample

ICAL ID: I429
QC Lot: LC0404M
Units: ng/sample

<u>Compound</u>	<u>Conc.</u>	<u>R.L.</u>	<u>Qualifier</u>
Naphthalene	ND	1500	
2-Methylnaphthalene	ND	330	
Acenaphthylene	ND	5.0	
Acenaphthene	ND	5.0	
Fluorene	ND	5.0	
Phenanthrene	ND	12.5	
Anthracene	ND	5.0	
Fluoranthene	ND	5.0	
Pyrene	ND	5.0	
Benz(a)anthracene	ND	5.0	
Chrysene	ND	5.0	
Benzo(b)fluoranthene	ND	5.0	
Benzo(k)fluoranthene	ND	5.0	
Benzo(e)pyrene	ND	5.0	
Benzo(a)pyrene	ND	5.0	
Perylene	ND	5.0	
Indeno(1,2,3-c,d)pyrene	ND	5.0	
Dibenz(a,h)anthracene	ND	5.0	
Benzo(g,h,i)perylene	ND	5.0	

Analyst: RLG

Page 1 of 2

Reviewer: [Signature]

**CALIFORNIA AIR RESOURCES BOARD METHOD 429
PAH RESULTS**

Method Blank

Lab ID: 3481-MB

Isotopic Recovery Results

<u>Internal Standard:</u>	<u>% Rec.</u>	<u>Qualifier</u>
d ₈ -Naphthalene	65	
d ₈ -Acenaphthylene	70	
d ₁₀ -Acenaphthene	68	
d ₁₀ -Fluorene	67	
d ₁₀ -Phenanthrene	71	
d ₁₀ -Fluoranthene	85	
d ₁₂ -Benz(a)anthracene	73	
d ₁₂ -Chrysene	71	
d ₁₂ -Benzo(b)fluoranthene	100	
d ₁₂ -Benzo(k)fluoranthene	114	
d ₁₂ -Benzo(a)pyrene	92	
d ₁₂ -Indeno(1,2,3-c,d)pyrene	116	
d ₁₄ -Dibenz(a,h)anthracene	113	
d ₁₂ -Benzo(g,h,i)perylene	103	

Alternate Recovery Standard:

d ₁₀ -Anthracene	65
-----------------------------	----

Pre-spike Recovery Standard:

d ₁₄ -Terphenyl	NA
d ₁₂ -Benzo(e)pyrene	NA

Date Analyzed: 4/14/97

Analyst: RM

Page 2 of 2

Reviewer: JM

CALIFORNIA AIR RESOURCES BOARD METHOD 429

PAH RESULTS

LCS1/LCS2 RESULTS
Lab ID: 3481-LCS1/LCS2
Matrix: MM5

Date Received: NA
Date Extracted: 4/4/97
Sample Amount: Sample

ICAL ID: I429
QC Lot: LC0404M
Units: NA

<u>Compound</u>	<u>LCS1</u> <u>%R</u>	<u>LCS2</u> <u>%R</u>	<u>RPD %</u>
Naphthalene	103	108	4.7
2-Methylnaphthalene	149	127	16
Acenaphthylene	118	117	0.85
Acenaphthene	118	104	13
Fluorene	131	100	27
Phenanthrene	135	97	33
Anthracene	136	89	42
Fluoranthene	122	92	28
Pyrene	142	95	40
Benz(a)anthracene	140	97	36
Chrysene	150	102	38
Benzo(b)fluoranthene	122	87	33
Benzo(k)fluoranthene	128	81	45
Benzo(e)pyrene	126	82	42
Benzo(a)pyrene	143	92	43
Perylene	142	90	45
Indeno(1,2,3-c,d)pyrene	132	86	42
Dibenz(a,h)anthracene	122	95	25
Benzo(g,h,i)perylene	148	99	40

Analyst: SPK

Page 1 of 2

Reviewer: JH

CALIFORNIA AIR RESOURCES BOARD METHOD 429

PAH RESULTS

LCS1/LCS2 RESULTS
Lab ID: 3481-LCS1/LCS2

Isotopic Recovery Results

<u>Internal Standard:</u>	<u>LCS1</u> <u>%R</u>	<u>LCS2</u> <u>%R</u>
d ₈ -Naphthalene	76	75
d ₈ -Acenaphthylene	56	60
d ₁₀ -Acenaphthene	55	65
d ₁₀ -Fluorene	47	62
d ₁₀ -Phenanthrene	44	61
d ₁₀ -Fluoranthene	43	81
d ₁₂ -Benz(a)anthracene	40	71
d ₁₂ -Chrysene	42	69
d ₁₂ -Benzo(b)fluoranthene	57	99
d ₁₂ -Benzo(k)fluoranthene	58	102
d ₁₂ -Benzo(a)pyrene	51	88
d ₁₂ -Indeno(1,2,3-c,d)pyrene	54	107
d ₁₄ -Dibenz(a,h)anthracene	51	104
d ₁₂ -Benzo(g,h,i)perylene	51	94

Alternate Recovery Standard:

d ₁₀ -Anthracene	70	54
-----------------------------	----	----

Date Analyzed: 4/14/97

Analyst: BK

Page 2 of 2

Reviewer: [Signature]

CALIFORNIA AIR RESOURCES BOARD METHOD 429

PAH RESULTS

Sample ID: PAH-1
 Lab ID: 3481-0001-SA
 Matrix: MM5 Train

Date Received: 4/1/97
 Date Extracted: 4/4/97
 Sample Amount: Sample

ICAL ID: I429
 QC Lot: LC0404M
 Units: ng/sample

<u>Compound</u>	<u>Conc.</u>	<u>R.L.</u>	<u>Qualifier</u>
Naphthalene	ND	2400	
2-Methylnaphthalene	ND	1100	
Acenaphthylene	ND	70	
Acenaphthene	ND	80	
Fluorene	ND	330	
Phenanthrene	ND	850	
Anthracene	ND	130	
Fluoranthene	190	150	
Pyrene	ND	150	
Benz(a)anthracene	15	5.0	
Chrysene	17	5.0	
Benzo(b)fluoranthene	5.5	5.0	
Benzo(k)fluoranthene	ND	5.0	
Benzo(e)pyrene	ND	5.0	
Benzo(a)pyrene	ND	5.0	
Perylene	ND	5.0	
Indeno(1,2,3-c,d)pyrene	ND	5.0	
Dibenz(a,h)anthracene	ND	5.0	
Benzo(g,h,i)perylene	ND	5.0	

Analyst: BJ

Page 1 of 2

Reviewer: JS

CALIFORNIA AIR RESOURCES BOARD METHOD 429

PAH RESULTS

Sample ID: PAH-1
 Lab ID: 3481-0001-SA

Isotopic Recovery Results

<u>Internal Standard:</u>	<u>% Rec.</u>	<u>Qualifier</u>
d ₈ -Naphthalene	82	
d ₈ -Acenaphthylene	98	
d ₁₀ -Acenaphthene	106	
d ₁₀ -Fluorene	125	
d ₁₀ -Phenanthrene	85	
d ₁₀ -Fluoranthene	89	
d ₁₂ -Benz(a)anthracene	108	
d ₁₂ -Chrysene	130	
d ₁₂ -Benzo(b)fluoranthene	107	
d ₁₂ -Benzo(k)fluoranthene	78	
d ₁₂ -Benzo(a)pyrene	96	
d ₁₂ -Indeno(1,2,3-c,d)pyrene	124	
d ₁₄ -Dibenz(a,h)anthracene	139	
d ₁₂ -Benzo(g,h,i)perylene	98	

Alternate Recovery Standard:

d ₁₀ -Anthracene	87
-----------------------------	----

Pre-spike Recovery Standard:

d ₁₄ -Terphenyl	NA
d ₁₂ -Benzo(e)pyrene	86

Date Analyzed: 4/19/97

Analyst: Bly

Reviewer: [Signature]

CALIFORNIA AIR RESOURCES BOARD METHOD 429

PAH RESULTS

Sample ID: PAH-2
Lab ID: 3481-0002-SA
Matrix: MM5 Train

Date Received: 4/1/97
Date Extracted: 4/4/97
Sample Amount: Sample

ICAL ID: I429
QC Lot: LC0404M
Units: ng/sample

<u>Compound</u>	<u>Conc.</u>	<u>R.L.</u>	<u>Qualifier</u>
Naphthalene	ND	2400	
2-Methylnaphthalene	ND	1100	
Acenaphthylene	ND	70	
Acenaphthene	ND	80	
Fluorene	ND	330	
Phenanthrene	ND	850	
Anthracene	ND	130	
Fluoranthene	250	150	
Pyrene	ND	150	
Benz(a)anthracene	31	5.0	
Chrysene	40	5.0	
Benzo(b)fluoranthene	11	5.0	
Benzo(k)fluoranthene	ND	5.0	
Benzo(e)pyrene	ND	5.0	
Benzo(a)pyrene	ND	5.0	
Perylene	ND	5.0	
Indeno(1,2,3-c,d)pyrene	ND	5.0	
Dibenz(a,h)anthracene	ND	5.0	
Benzo(g,h,i)perylene	ND	5.0	

Analyst: Stz

Page 1 of 2

Reviewer: Stz

CALIFORNIA AIR RESOURCES BOARD METHOD 429

PAH RESULTS

Sample ID: PAH-2
 Lab ID: 3481-0002-SA

Isotopic Recovery Results

<u>Internal Standard:</u>	<u>% Rec.</u>	<u>Qualifier</u>
d ₈ -Naphthalene	75	
d ₈ -Acenaphthylene	76	
d ₁₀ -Acenaphthene	79	
d ₁₀ -Fluorene	89	
d ₁₀ -Phenanthrene	138	
d ₁₀ -Fluoranthene	97	
d ₁₂ -Benz(a)anthracene	127	
d ₁₂ -Chrysene	132	
d ₁₂ -Benzo(b)fluoranthene	100	
d ₁₂ -Benzo(k)fluoranthene	79	
d ₁₂ -Benzo(a)pyrene	96	
d ₁₂ -Indeno(1,2,3-c,d)pyrene	117	
d ₁₄ -Dibenz(a,h)anthracene	127	
d ₁₂ -Benzo(g,h,i)perylene	97	

Alternate Recovery Standard:

d ₁₀ -Anthracene	81
-----------------------------	----

Pre-spike Recovery Standard:

d ₁₄ -Terphenyl	NA
d ₁₂ -Benzo(e)pyrene	84

Date Analyzed: 4/19/97

Analyst: SKY

Reviewer: [Signature]

CALIFORNIA AIR RESOURCES BOARD METHOD 429

PAH RESULTS

Sample ID: PAH-3
Lab ID: 3481-0003-SA
Matrix: MM5 Train

Date Received: 4/1/97
Date Extracted: 4/4/97
Sample Amount: Sample

ICAL ID: I429
QC Lot: LC0404M
Units: ng/sample

<u>Compound</u>	<u>Conc.</u>	<u>R.L.</u>	<u>Qualifier</u>
Naphthalene	ND	2400	
2-Methylnaphthalene	ND	1100	
Acenaphthylene	ND	70	
Acenaphthene	ND	80	
Fluorene	ND	330	
Phenanthrene	ND	850	
Anthracene	ND	130	
Fluoranthene	ND	150	
Pyrene	ND	150	
Benz(a)anthracene	ND	5.0	
Chrysene	16	5.0	
Benzo(b)fluoranthene	ND	5.0	
Benzo(k)fluoranthene	ND	5.0	
Benzo(e)pyrene	ND	5.0	
Benzo(a)pyrene	ND	5.0	
Perylene	ND	5.0	
Indeno(1,2,3-c,d)pyrene	ND	5.0	
Dibenz(a,h)anthracene	ND	5.0	
Benzo(g,h,i)perylene	ND	5.0	

Analyst: BT

Page 1 of 2

Reviewer: JM

CALIFORNIA AIR RESOURCES BOARD METHOD 429

PAH RESULTS

Sample ID: PAH-3
 Lab ID: 3481-0003-SA

Isotopic Recovery Results

<u>Internal Standard:</u>	<u>% Rec.</u>	<u>Qualifier</u>
d ₈ -Naphthalene	75	
d ₈ -Acenaphthylene	62	
d ₁₀ -Acenaphthene	62	
d ₁₀ -Fluorene	75	
d ₁₀ -Phenanthrene	116	
d ₁₀ -Fluoranthene	87	
d ₁₂ -Benz(a)anthracene	142	
d ₁₂ -Chrysene	121	
d ₁₂ -Benzo(b)fluoranthene	98	
d ₁₂ -Benzo(k)fluoranthene	79	
d ₁₂ -Benzo(a)pyrene	92	
d ₁₂ -Indeno(1,2,3-c,d)pyrene	107	
d ₁₄ -Dibenz(a,h)anthracene	112	
d ₁₂ -Benzo(g,h,i)perylene	81	
 <u>Alternate Recovery Standard:</u>		
d ₁₀ -Anthracene	145	
 <u>Pre-spike Recovery Standard:</u>		
d ₁₄ -Terphenyl	NA	
d ₁₂ -Benzo(e)pyrene	82	

Date Analyzed: 4/19/97

Analyst: SLH

Page 2 of 2

Reviewer: SLH

CALIFORNIA AIR RESOURCES BOARD METHOD 429

PAH RESULTS

Sample ID: PAH-BT
Lab ID: 3481-0004-SA
Matrix: MM5 Train

Date Received: 4/1/97
Date Extracted: 4/4/97
Sample Amount: Sample

ICAL ID: I429
QC Lot: LC0404M
Units: ng/sample

<u>Compound</u>	<u>Conc.</u>	<u>R.L.</u>	<u>Qualifier</u>
Naphthalene	ND	1500	
2-Methylnaphthalene	ND	330	
Acenaphthylene	14	5.0	
Acenaphthene	16	5.0	
Fluorene	66	5.0	
Phenanthrene	170	12.5	
Anthracene	26	5.0	
Fluoranthene	30	5.0	
Pyrene	30	5.0	
Benz(a)anthracene	ND	5.0	
Chrysene	ND	5.0	
Benzo(b)fluoranthene	ND	5.0	
Benzo(k)fluoranthene	ND	5.0	
Benzo(e)pyrene	ND	5.0	
Benzo(a)pyrene	ND	5.0	
Perylene	ND	5.0	
Indeno(1,2,3-c,d)pyrene	ND	5.0	
Dibenz(a,h)anthracene	ND	5.0	
Benzo(g,h,i)perylene	ND	5.0	

Analyst: SLY

Page 1 of 2

Reviewer: [Signature]

CALIFORNIA AIR RESOURCES BOARD METHOD 429

PAH RESULTS

Sample ID: PAH-BT
 Lab ID: 3481-0004-SA

Isotopic Recovery Results

<u>Internal Standard:</u>	<u>% Rec.</u>	<u>Qualifier</u>
d ₈ -Naphthalene	77	
d ₈ -Acenaphthylene	73	
d ₁₀ -Acenaphthene	76	
d ₁₀ -Fluorene	75	
d ₁₀ -Phenanthrene	94	
d ₁₀ -Fluoranthene	88	
d ₁₂ -Benz(a)anthracene	119	
d ₁₂ -Chrysene	108	
d ₁₂ -Benzo(b)fluoranthene	103	
d ₁₂ -Benzo(k)fluoranthene	89	
d ₁₂ -Benzo(a)pyrene	89	
d ₁₂ -Indeno(1,2,3-c,d)pyrene	127	
d ₁₄ -Dibenz(a,h)anthracene	133	
d ₁₂ -Benzo(g,h,i)perylene	115	
 <u>Alternate Recovery Standard:</u>		
d ₁₀ -Anthracene	103	
 <u>Pre-spike Recovery Standard:</u>		
d ₁₄ -Terphenyl	NA	
d ₁₂ -Benzo(e)pyrene	85	

Date Analyzed: 4/14/97

Analyst: SM

Page 2 of 2

Reviewer: 

CALIFORNIA AIR RESOURCES BOARD METHOD 429

PAH RESULTS

Sample ID: PAH-SB
Lab ID: 3481-0005-SA
Matrix: MM5 Train

Date Received: 4/1/97
Date Extracted: 4/4/97
Sample Amount: Sample

ICAL ID: I429
QC Lot: LC0404M
Units: ng/sample

<u>Compound</u>	<u>Conc.</u>	<u>R.L.</u>	<u>Qualifier</u>
Naphthalene	ND	1500	
2-Methylnaphthalene	ND	330	
Acenaphthylene	ND	5.0	
Acenaphthene	ND	5.0	
Fluorene	ND	5.0	
Phenanthrene	ND	12.5	
Anthracene	ND	5.0	
Fluoranthene	ND	5.0	
Pyrene	ND	5.0	
Benz(a)anthracene	ND	5.0	
Chrysene	ND	5.0	
Benzo(b)fluoranthene	ND	5.0	
Benzo(k)fluoranthene	ND	5.0	
Benzo(e)pyrene	ND	5.0	
Benzo(a)pyrene	ND	5.0	
Perylene	ND	5.0	
Indeno(1,2,3-c,d)pyrene	ND	5.0	
Dibenz(a,h)anthracene	ND	5.0	
Benzo(g,h,i)perylene	ND	5.0	

Analyst: SH

Page 1 of 2

Reviewer: JA

CALIFORNIA AIR RESOURCES BOARD METHOD 429

PAH RESULTS

Sample ID: PAH-SB
 Lab ID: 3481-0005-SA

Isotopic Recovery Results

<u>Internal Standard:</u>	<u>% Rec.</u>	<u>Qualifier</u>
d ₈ -Naphthalene	82	
d ₈ -Acenaphthylene	78	
d ₁₀ -Acenaphthene	79	
d ₁₀ -Fluorene	78	
d ₁₀ -Phenanthrene	83	
d ₁₀ -Fluoranthene	93	
d ₁₂ -Benz(a)anthracene	79	
d ₁₂ -Chrysene	70	
d ₁₂ -Benzo(b)fluoranthene	120	
d ₁₂ -Benzo(k)fluoranthene	110	
d ₁₂ -Benzo(a)pyrene	98	
d ₁₂ -Indeno(1,2,3-c,d)pyrene	125	
d ₁₄ -Dibenz(a,h)anthracene	121	
d ₁₂ -Benzo(g,h,i)perylene	115	

Alternate Recovery Standard:

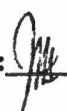
d ₁₀ -Anthracene	88
-----------------------------	----

Pre-spike Recovery Standard:

d ₁₄ -Terphenyl	NA
d ₁₂ -Benzo(e)pyrene	NA

Date Analyzed: 4/14/97

Analyst: SKY

Reviewer: 

**HEXACHLOROBENZENE
RESULTS**

AIR TOXICS LTD.

Semi-Volatiles By EPA METHOD 8270 GC/MS Full Scan

Field Sample I.D.	Lab Sample I.D.	File Name	Sample Date	Analyzed For	Dilution Factor	Det. Limit (uG)	Amount (uG)
3481-MB	9704078-01A	H041403	NA	Hexachlorobenzene	1.0	2.0	Not Detected
3481-1	9704078-02A	H041404	3/19/97	Hexachlorobenzene	1.0	2.0	Not Detected
3481-2	9704078-03A	H041510	3/20/97	Hexachlorobenzene	1.0	2.0	Not Detected
3481-3	9704078-04A	H041507	3/21/97	Hexachlorobenzene	1.0	2.0	Not Detected
3481-4	9704078-05A	H041508	3/19/97	Hexachlorobenzene	1.0	2.0	Not Detected
3481-5	9704078-06A	H041509	3/21/97	Hexachlorobenzene	1.0	2.0	Not Detected

Extraction Date: 4/4/97

Analysis Date: 4/14/97, 4/15/97

COMMENTS: NA = Not Applicable

APPENDIX

DATA QUALIFIERS & ABBREVIATIONS

A	The amount detected is below the Method Calibration Limit.
B	This compound was also detected in the blank.
C	The amount detected is less than five times the Method Quantitation Limit.
D	The amount reported is the maximum possible concentration.
E	The detection limit was raised above the Method Quantitation Limit due to chemical interferences.
F	This result has been confirmed on a DB-225 column.
G	This result has been confirmed on a SP-2331 column.
H	The signal-to-noise ratio is greater than 10:1.
I	Chemical Interference

Conc.	Concentration
D.L.	Detection Limit
NA	Not applicable
S/N	Signal-to-noise
*	See Cover Letter
ND	Not Detected
MPC	Maximum Possible Concentration

CURRENT CERTIFICATIONS



Bureau of Reclamation - Mid-Pacific Region — (MP-470, Res-1.10)

Commonwealth of Kentucky — (Certificate No. 90063)

Commonwealth of Virginia

State of Alaska — (Certificate No. OS-00197)

State of Arizona Department of Health Services — (Certificate No. AZ0058)

State of Arkansas Department of Health — (Approval granted through CA certification)

State of Arkansas Department of Pollution Control

State of California — (Certificate No. 1640)

State of Connecticut — (Certificate No. PH-0182)

State of Florida — (Certificate No. 87456)

State of Nevada — (Certificate No. CA413)

State of New York Department of Health — (Certificate No. 11411)

State of North Carolina — (Certification No. 06700)

State of North Dakota Department of Health — (Certificate No. R-078)

State of Oregon

State of Pennsylvania — (Certificate No. 68-490)

State of South Carolina — (Certificate No. 87002001)

State of Tennessee — (Certificate No. 02996)

State of Utah — (Certificate No. E-201)

State of Wisconsin — (Certificate No. 998036160)

State of Wyoming — (Ref: 8ES-LB)

U.S. Army Corps of Engineers

U.S. EPA Region 5

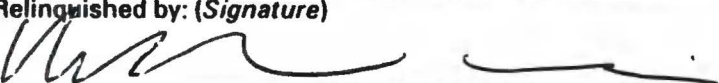
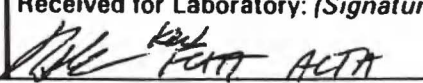
Washington Department of Ecology — (Certification No. C091)

1-17-97

CHAIN OF CUSTODY RECORD

Client/Project Name WASTE MANAGEMENT / SULE			Project Location SIERRA VALLEY, CA			PAH PC-CANB 429 Hexachlorobenzene Recd. 3-25-97 MK Recd. 4-1-97 MK					
Project No. W07-014			Field Logbook No.								
Sampler: (Signature) 			Chain of Custody Tape No.								

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	PAH	PC	CANB	429	Hexachlorobenzene	Recd. 3-25-97 MK	Recd. 4-1-97 MK	REMARKS
PAH-FH-BT	3/19/97			FRONT 1/2 RANGE	X	X				X	X	BLANK TRACEN
PAH-FIL-BT				10Z - FILTER	X	X				X		↓
PAH-BH-BT				BACK 1/2 RANGE	X	X				X		
PAH-XAD-BT				XAD sorbent module	X	X				X		
PAH-IC-BT				Impinger Cartridges	X	X				X		
PAH-IR-BT				Impinger Rings	X	X				X		

Relinquished by: (Signature) 		Date 3/31/97	Time 0800	Received by: (Signature) SHIPPED VIA FEDEX		Date	Time
Relinquished by: (Signature)		Date	Time	Received by: (Signature)		Date	Time
Relinquished by: (Signature)		Date	Time	Received for Laboratory: (Signature)  PAH ACTA		Date 4-1-97	Time 1000
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 ALTA ANALYTICAL EL DORADO HILLS, CA	Nº 3901
--	--	----------------

CHAIN OF CUSTODY RECORD

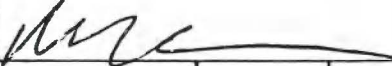
Client/Project Name WASTE MANAGEMENT / SVLF			Project Location SEME VALLEY, CA			ANALYSES PAH Per CARB 429 Hexachlorobenzene Recd: 3-25-97 PM Recd: 4-1-97 PM 3 Not Received. PMF 4-4-97					
Project No. W017-014			Field Logbook No.								
Sampler: (Signature) 			Chain of Custody Tape No.								

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	PAH	CARB	Hexachlorobenzene	Recd: 3-25-97 PM	Recd: 4-1-97 PM	REMARKS
PAH - EL - BLK	3/21/97			PETER BLANK	X	X		X		SOLUTION BLENDS
PAH - BLF - SB				Emp. Soln. BLANK	X	X		X		
PAH - MeCl - SB				Methanol SB	X	X			X	
PAH - MeCl ₂ - SB				Methylene Chloride SB	X	X			X	
PAH - HEX - SB				HEXANE SOLN. BLK	X	X			X	

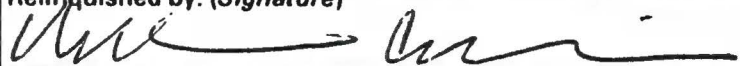
Relinquished by: (Signature) 		Date 3/31/97	Time 0800	Received by: (Signature) SHIPPED VIA FEDEX		Date	Time
Relinquished by: (Signature)		Date	Time	Received by: (Signature)		Date	Time
Relinquished by: (Signature)		Date	Time	Received for Laboratory: (Signature) ACTA		Date 4-1-97	Time 1000
Sample Disposal 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 ALTA ANALYTICAL EL DORADO HILLS, CA	Nº 3834
--	--	----------------

CHAIN OF CUSTODY RECORD

Client/Project Name WASTE MANAGEMENT/SULF			Project Location SIMI VALLEY, CA			ANALYSES PAN Per CARB 429 Hewlett-Packard Recd: 3-25-97 PM Recd: 4-1-97 PM					
Project No. W07-004			Field Logbook No.								
Sampler: (Signature) 			Chain of Custody Tape No.								

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	PAN	Per	CARB	Hewlett-Packard	Recd: 3-25-97 PM	Recd: 4-1-97 PM	REMARKS
PAH-FH-1	3/19/97			FLARE 1/2 CASE	X	X			X		LEG FLARE AT R1 
PAH-FIL-1				102mm FILTER	X	X		X			
PAH-BH-1				BACK 1/2 CASE	X	X			X		
PAH-KAD-1				XAD Subst Mod	X	X		X			
PAH-IC-1				Ininger Contents	X	X		X			
PAH-IR-1				Ininger Liner	X	X		X			

Relinquished by: (Signature) 		Date 3/31/97	Time 0800	Received by: (Signature) SHIPPED VIA FEDEX		Date	Time
Relinquished by: (Signature)		Date	Time	Received by: (Signature)		Date	Time
Relinquished by: (Signature)		Date	Time	Received for Laboratory: (Signature)  KONTERT ALTA		Date 4-1-97	Time 1000
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 ALTA ANALYTICAL EL DORADO HILLS, CA	Nº 3902
--	--	----------------

CHAIN OF CUSTODY RECORD

Client/Project Name WASTE MANAGEMENT/SVLF			Project Location SIMI VALLEY, CA			ANALYSES PAH Per CARB 429 Hexachlorobenzene Recd: 3-25-97 <i>pk</i> Recd: 4-1-97 <i>pk</i>		
Project No. W07-014			Field Logbook No.					
Sampler: (Signature) <i>[Signature]</i>			Chain of Custody Tape No.					

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	X	X	X	X	X	X	REMARKS
PAH-EH-2	3/20/97			FRONT 1/2 RINSE	X	X				X	LEG FLARE OUT 122
PAH-FIL-2	↓			102mm FILTER	X	X			X		↓
PAH-BH-2				BACK 1/2 RINSE	X	X				X	
PAH-XAD-2				XAD Sorbent Mat.	X	X			X		
PAH-IC-2				Impinger Contents	X	X			X		
PAH-IP-2				Impinger Rinses	X	X			X		

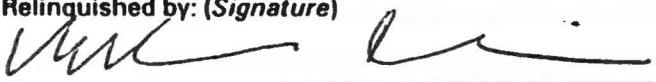
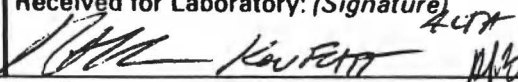
Relinquished by: (Signature) <i>[Signature]</i>		Date 3/31/97	Time 0800	Received by: (Signature) SHIPPED VIA FED-EX		Date	Time
Relinquished by: (Signature)		Date	Time	Received by: (Signature)		Date	Time
Relinquished by: (Signature)		Date	Time	Received for Laboratory: (Signature) <i>[Signature]</i> KEN FERTT ALTA		Date 4-1-97	Time 1000
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 ALTA ANALYTICAL EL DORADO HILLS, CA	Nº 3903
--	--	----------------

CHAIN OF CUSTODY RECORD

Client/Project Name WASTE MANAGEMENT / SVLF			Project Location SEMI VALLEY, CA			ANALYSES PAH Per CARB 429 HEXACHLOROBENZENE Recd: 3-25-97 Recd: 4-1-97					
Project No. W07-014			Field Logbook No.								
Sampler: (Signature) 			Chain of Custody Tape No.								

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	PAH	Per	CARB	429	HEXACHLOROBENZENE	REMARKS
PAH-FH-3	3/21/97			FRONT 1/2 RINSE	X	X				X Recd: 4-1-97
PAH-FH-3				10Z mm FILTER	X	X			X	Recd: 3-25-97
PAH-BH-3				BACK 1/2 RINSE	X	X				X Recd: 4-1-97
PAH-XAD-3				XAD SORBENT MOD.	X	X			X	Recd: 3-25-97
PAH-IC-3				IMP. CONTENTS	X	X			X	Recd: 3-25-97
PAH-IB-3				IMP. RINGS	X	X			X	Recd: 3-25-97

Relinquished by: (Signature) 		Date 3/31/97	Time 080	Received by: (Signature) SHEPPED VIA FEDEX		Date	Time
Relinquished by: (Signature)		Date	Time	Received by: (Signature)		Date	Time
Relinquished by: (Signature)		Date	Time	Received for Laboratory: (Signature) 		Date 4-1-97	Time 1000
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 ALTA ANALYTICAL EL DORADO HILLS, CA
Nº 3985	

ALTA CHAIN OF CUSTODY RECORD

Laboratory Project ID: _____

Storage ID: _____

Storage Secured:
Yes ☐ No ☐

Project I.D.: 3481 (Horizon Air Measurement Study) P.O. #: _____

Sampler: _____

(Printed Name)

(Signature)

Relinquished by: (Signature and Printed Name)

Date:

Time:

Received by: (Signature and Printed Name)

Date:

Time:

Relinquished by: (Signature and Printed Name)

Date:

Time:

Received by: (Signature and Printed Name)

Date:

Time:

Relinquished by: (Signature and Printed Name)

Date:

Time:

Received by: (Signature and Printed Name)

Date:

Time:

See "Sample Log-in Checklist" for additional sample information

SHIP TO: Alta Analytical Laboratory
5070 Robert J. Matthews Parkway
El Dorado Hills, CA 95762
(916) 933-1640 • Fax (916) 933-0940

DN 4/17/97
Air Toxics LTD
180 Blue Ravine Rd.
Folsom, CA
95630

Method of Shipment:
Courier

Circle or Add
Analysis(es)
Requested

Shipment ID:
N/A

ATTN: Ms. Chelsea Engles

STANDARD TAT = 21 DAYS.
Surcharge may be applied
for less than 21 days.

TAT (Analytical Turnaround Times): 1 = 7 days,
2 = 14 days, 3 = 21 days, 4 = 28 days

Sample ID	Date	Time	Sample Description									Container(s)		Matrix	BPT*		
				EPA 1613A	EPA 8290	NCASI-551	EPA 8280	CARB 428	CARB 429	EPA METHOD 23	Hexachlorobenzene by EPA 8270	TAT	#			Type	
3481-MB	N/A	N/A	Method Blank									✓	2	1	0	0	0
-1	3/12/97	Not provided	PAH-1									✓		1	0	0	0
-2	3/26/97		PAH-2									✓		1	0	0	0
-3	3/21/97		PAH-3									✓		1	0	0	0
-4	3/19/97		PAH-BT									✓		1	0	0	0
✓ -5	3/21/97	✓	PAH-SB									✓		1	0	0	0

Special Instructions/Comments: Results due to client on 4-22-97.

SEND
DOCUMENTATION
AND RESULTS TO:

Name: Robert S. Mitzel
Company: Alta Analytical
Address: 5070 Robert J. Matthews Pkwy
City: El Dorado Hills State: CA Zip: 95762
Phone: 916-933-1640 Fax: 916-933-0940

Container Types: A = 1 Liter Amber, G = Glass Jar
P = PUF, T = MM5 Train, O = Other 4.5m clear screwcup vial

*Bottle Preservative Type: T = Thiosulfate,
O = Other Extracts in 0.5ml of MeCl2

Matrix Types: DW = Drinking Water, EF = Effluent, PP = Pulp/Paper,
SD = Sediment, SL = Sludge, SO = Soil, WW = Wastewater,
O = Other MM5 Air Train

Condition when received good

WHITE - ORIGINAL

YELLOW - ARCHIVE

PINK - COPY

Custody Seal intact? Y N None

Temp. on ice

Na - Hand delivered

ALTA Analytical Laboratory

Project No.: 3481

Sample Log-In Checklist		Yes	No
1. Date Samples Arrived: <u>3-25-97</u> Initials: <u>RJL</u>			
2. <u>Samples Arrived By:</u> (circle one) Airborne Express <u>Federal Express</u> UPS Emery Freezer Truck Company Courier Other _____			
3. Shipping Documentation Present? (circle one) Shipping Label <u>Airbill</u> Tracking Number <u>3313573351</u>		X	
4. Shipping Container(s) Intact? If no, describe condition below.		X	
5. Custody Seals Present and Intact? If not intact, describe condition below. No. of Seals <u>2</u> or Seal No. _____ Type:(circle) Bottle or <u>Container</u>		X	
6. Sample Container Intact? If no, indicate sample condition below.		X	
7. Shipping Preservation: (circle) Ice / <u>Blue Ice</u> / Dry Ice / Ambient / None Temp(°C) <u>1</u>			
8. Chain of Custody (COC) or other Sample Documentation Present?		X	
9. COC/Documentation Acceptable? If no, complete COC Anomaly Form.		X	
10. Shipping Container: (circle) <u>ALTA</u> or Client / Return or <u>Retain</u>			
11. Container and/or Bottles Requested?			X
12. Sample Control Check In/Out Log Completed?		X	
*13. Drinking Water Sample? If yes, Acceptable Preservation? (circle) Y or N			X

*Required for HRMS

Name: _____ Date Samples Reconciled: _____

(Signature Required for LCMS Only)

Comments: NO solvents Received with this Shipment.

Did NOT receive sample PAH-FIL-BLK RJL
⑦ 4-4-97

ALTA Analytical Laboratory

Project No.: 3481

Sample Log-In Checklist		Yes	No
1. Date Samples Arrived: <u>4-1-97</u> Initials: <u>JK</u>			
2. Samples Arrived By: (circle one) Airborne Express <u>Federal Express</u> UPS Emery Freezer Truck Company Courier Other _____			
3. Shipping Documentation Present? (circle one) Shipping Label <u>Airbill</u> Tracking Number <u>see below</u>		X	
4. Shipping Container(s) Intact? If no, describe condition below.		X	
5. Custody Seals Present and Intact? If not intact, describe condition below. No. of Seals _____ or Seal No. _____ Type:(circle) Bottle or Container			X
6. Sample Container Intact? If no, indicate sample condition below.		X	
7. Shipping Preservation: (circle) Ice / Blue Ice / Dry Ice / Ambient / <u>None</u> Temp(°C) <u>see below</u>			
8. Chain of Custody (COC) or other Sample Documentation Present?		X	
9. COC/Documentation Acceptable? If no, complete COC Anomaly Form.		X	
10. Shipping Container: (circle) ALTA or <u>Client</u> / <u>Return</u> or Retain			
11. Container and/or Bottles Requested?			X
12. Sample Control Check In/Out Log Completed?		X	
*13. Drinking Water Sample? If yes, Acceptable Preservation? (circle) Y or N			X

*Required for HRMS

Name: _____ Date Samples Reconciled: _____

(Signature Required for LCMS Only)

Comments: **MPS**
MPS
MPS

945	6750	274
945	6750	256
945	6750	265

SOP# CH10B_R8 Page 5 of 7

1532011460

TEMP
13°C

↓
Solvents only

**Calscience
Environmental
Laboratories, Inc.**



April 8, 1997
PM08697

Andrew Pecaut
Horizon Air Measurement Services
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320

Subject: **Calscience Work Order Number: 97-03-390**
Client Reference: **Waste Management/SVLF/W07-014**

Dear Mr. Pecaut:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 03/26/97 and analyzed in accordance with attached chain of custody with the following exception:

Samples MM-HCI-SB and MM-H2O-SB were received but were not on the original chain-of-custody. Sample MM-HCI-SB was analyzed and sample MM-H2O-SB was held per your instructions received 03/28/97.

The results in this analytical report are limited to the samples tested, and any reproduction of this report must be made in its entirety.

If you have any questions regarding this report, require sampling supplies or field services, or information on our analytical services, please feel free to call me at (714) 895-5494.

Sincerely,


Calscience
Laboratories, Inc
Jody McInerney
Project Manager


William H. Christensen
Deliverables Manager

JRM

ANALYTICAL REPORT



Horizon Measurement Services
 996 Lawrence Drive, Suite 108
 Newbury Park, CA 91320

Date Sampled: 03/19-21/97
 Date Received: 03/26/97
 Date Digested: 03/31-04/01/97
 Date Analyzed: 04/01-04/97
 Work Order No.: 97-03-390

Attn: Andrew Pecaut

RE: Waste Management/SVLF/W07-014

Page 1 of 7

All concentrations are reported in µg/sample. Analyses for metals were conducted on a total digestion.

<u>Analyte</u>	<u>Method</u>	<u>Concentration</u>	<u>Reportable Limit</u>
Sample Number: MM-0.1NHNO₃-SB		Sample Volume: 100 ml	
Antimony	EPA 7041	ND	0.125
Arsenic	EPA 7060A	ND	0.075
Barium	EPA 6010A	ND	0.5
Beryllium	EPA 7091	ND	0.025
Cadmium	EPA 7131A	ND	0.025
Chromium	EPA 7191	ND	0.1
Copper	EPA 6010A	ND	1.25
Lead	EPA 7421	ND	0.125
Mercury	EPA 7471A	ND	0.05
Nickel	EPA 6010A	ND	1.0
Selenium	EPA 7740	ND	0.075
Silver	EPA 6010A	ND	0.5
Thallium	EPA 7841	ND	0.075
Zinc	EPA 6010A	ND	0.75
Manganese	EPA 6010A	ND	0.25
Phosphorus	EPA 6010A	ND	3.8

Horizon Measurement Services
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320

Date Sampled: 03/19-21/97
Date Received: 03/26/97
Date Digested: 03/31-04/01/97
Date Analyzed: 04/01-04/97
Work Order No.: 97-03-390

Attn: Andrew Pecaut

RE: Waste Management/SVLF/W07-014

Page 2 of 7

All concentrations are reported in µg/sample. Analyses for metals were conducted on a total digestion.

<u>Analyte</u>	<u>Method</u>	<u>Concentration</u>	<u>Reportable Limit</u>
Sample Number: MM-H₂O₂-SB		Sample Volume: 90 ml	
Antimony	EPA 7041	ND	0.125
Arsenic	EPA 7060A	ND	0.075
Barium	EPA 6010A	ND	0.5
Beryllium	EPA 7091	ND	0.025
Cadmium	EPA 7131A	ND	0.025
Chromium	EPA 7191	ND	0.1
Copper	EPA 6010A	ND	1.25
Lead	EPA 7421	ND	0.125
Mercury	EPA 7471A	ND	0.05
Nickel	EPA 6010A	ND	1.0
Selenium	EPA 7740	ND	0.075
Silver	EPA 6010A	ND	0.5
Thallium	EPA 7841	ND	0.075
Zinc	EPA 6010A	ND	0.75
Manganese	EPA 6010A	ND	0.25
Phosphorus	EPA 6010A	ND	3.8

ANALYTICAL REPORT



Horizon Measurement Services
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320

Date Sampled: 03/19-21/97
Date Received: 03/26/97
Date Digested: 03/31-04/01/97
Date Analyzed: 04/01-04/97
Work Order No.: 97-03-390

Attn: Andrew Pecaut
RE: Waste Management/SVLF/W07-014

Page 3 of 7

All concentrations are reported in µg/sample. Analyses for metals were conducted on a total digestion.

<u>Analyte</u>	<u>Method</u>	<u>Concentration</u>	<u>Reportable Limit</u>
Sample Number: MM-FILT-2, MM-PR-2, MM-I1,2,3-2		Sample Volume: 520 ml	
Antimony	EPA 7041	2.4	1.0
Arsenic	EPA 7060A	1.06	0.6
Barium	EPA 6010A	ND	4.0
Beryllium	EPA 7091	ND	0.2
Cadmium	EPA 7131A	0.25	0.2
Chromium	EPA 7191	1.2	0.8
Copper	EPA 6010A	ND	10.0
Lead	EPA 7421	1.2	1.0
Mercury	EPA 7471A	ND	0.10
Nickel	EPA 6010A	ND	8.0
Selenium	EPA 7740	2.28	0.60
Silver	EPA 6010A	ND	4.0
Thallium	EPA 7841	ND	0.6
Zinc	EPA 6010A	ND	6.0
Manganese	EPA 6010A	ND	2.0
Phosphorus	EPA 6010A	ND	28.0

Horizon Measurement Services
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320

Date Sampled: 03/19-21/97
Date Received: 03/26/97
Date Digested: 03/31-04/01/97
Date Analyzed: 04/01-04/97
Work Order No.: 97-03-390

Attn: Andrew Pecaut

RE: Waste Management/SVLF/W07-014

Page 4 of 7

All concentrations are reported in µg/sample. Analyses for metals were conducted on a total digestion.

<u>Analyte</u>	<u>Method</u>	<u>Concentration</u>	<u>Reportable Limit</u>
Sample Number: MM-FILT-3, MM-PR-3, MM-I1,2,3-3		Sample Volume: 540 ml	
Antimony	EPA 7041	1.4	1.0
Arsenic	EPA 7060A	0.98	0.6
Barium	EPA 6010A	ND	4.0
Beryllium	EPA 7091	ND	0.2
Cadmium	EPA 7131A	ND	0.2
Chromium	EPA 7191	1.4	0.8
Copper	EPA 6010A	ND	10.0
Lead	EPA 7421	ND	1.0
Mercury	EPA 7471A	ND	0.10
Nickel	EPA 6010A	ND	8.0
Selenium	EPA 7740	2.4	0.60
Silver	EPA 6010A	ND	4.0
Thallium	EPA 7841	ND	0.6
Zinc	EPA 6010A	11.0	6.0
Manganese	EPA 6010A	12.5	2.0
Phosphorus	EPA 6010A	ND	28.0

Horizon Measurement Services
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320

Date Sampled: 03/19-21/97
Date Received: 03/26/97
Date Digested: 03/31-04/01/97
Date Analyzed: 04/01-04/97
Work Order No.: 97-03-390

Attn: Andrew Pecaut

RE: Waste Management/SVLF/W07-014

Page 5 of 7

All concentrations are reported in µg/sample. Analyses for metals were conducted on a total digestion.

<u>Analyte</u>	<u>Method</u>	<u>Concentration</u>	<u>Reportable Limit</u>
Sample Number: MM-FILT-BT, MM-PR-BT, MM-I1,2,3-BT Sample Volume: 395 ml			
Antimony	EPA 7041	ND	1.0
Arsenic	EPA 7060A	ND	0.6
Barium	EPA 6010A	ND	4.0
Beryllium	EPA 7091	ND	0.2
Cadmium	EPA 7131A	ND	0.2
Chromium	EPA 7191	1.10	0.8
Copper	EPA 6010A	ND	10.0
Lead	EPA 7421	ND	1.0
Mercury	EPA 7471A	ND	0.10
Nickel	EPA 6010A	ND	8.0
Selenium	EPA 7740	ND	0.6
Silver	EPA 6010A	ND	4.0
Thallium	EPA 7841	ND	0.6
Zinc	EPA 6010A	11.8	6.0
Manganese	EPA 6010A	ND	2.0
Phosphorus	EPA 6010A	ND	28.0

ANALYTICAL REPORT



Horizon Measurement Services
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320

Date Sampled: 03/19-21/97
Date Received: 03/26/97
Date Digested: 03/31-04/01/97
Date Analyzed: 04/01-04/97
Work Order No.: 97-03-390

Attn: Andrew Pecaut
RE: Waste Management/SVLF/W07-014

Page 6 of 7

All concentrations are reported in µg/sample. Analyses for metals were conducted on a total digestion.

<u>Analyte</u>	<u>Method</u>	<u>Concentration</u>	<u>Reportable Limit</u>
Sample Number: MM-FILT-1, MM-PR-1, MM-I1,2,3-1		Sample Volume: 575 ml	
Antimony	EPA 7041	1.8	1.0
Arsenic	EPA 7060A	0.72	0.6
Barium	EPA 6010A	ND	4.0
Beryllium	EPA 7091	ND	0.2
Cadmium	EPA 7131A	0.25	0.2
Chromium	EPA 7191	1.1	0.8
Copper	EPA 6010A	ND	10.0
Lead	EPA 7421	1.8	1.0
Mercury	EPA 7471A	ND	0.10
Nickel	EPA 6010A	ND	8.0
Selenium	EPA 7740	2.0	0.60
Silver	EPA 6010A	ND	4.0
Thallium	EPA 7841	ND	0.6
Zinc	EPA 6010A	11.9	6.0
Manganese	EPA 6010A	ND	2.0
Phosphorus	EPA 6010A	ND	28

ANALYTICAL REPORT



Horizon Measurement Services
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320

Date Sampled: 03/19-21/97
Date Received: 03/26/97
Date Digested: 03/31-04/01/97
Date Analyzed: 04/01-04/97
Work Order No.: 97-03-390

Attn: Andrew Pecaut

RE: Waste Management/SVLF/W07-014

Page 7 of 7

All concentrations are reported in µg/sample. Analyses for metals were conducted on a total digestion.

<u>Analyte</u>	<u>Method</u>	<u>Concentration</u>	<u>Reportable Limit</u>
Sample Number: Method Blank			
Antimony	EPA 7041	ND	1.0
Arsenic	EPA 7060A	ND	0.15
Barium	EPA 6010A	ND	0.5
Beryllium	EPA 7091	ND	0.2
Cadmium	EPA 7131A	ND	0.05
Chromium	EPA 7191	ND	0.2
Copper	EPA 6010A	ND	1.25
Lead	EPA 7421	ND	0.25
Mercury	EPA 7471A	ND	0.0125
Nickel	EPA 6010A	ND	1.0
Selenium	EPA 7740	ND	0.075
Silver	EPA 6010A	ND	0.5
Thallium	EPA 7841	ND	0.15
Zinc	EPA 6010A	ND	0.75
Manganese	EPA 6010A	ND	0.25
Phosphorus	EPA 6010A	ND	3.8

ND denotes not detected at indicated reportable limit.

Each sample was received by CEL chilled, intact, and with chain-of-custody attached.

ANALYTICAL REPORT



Horizon Measurement Services
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320

Date Sampled: 03/19-21/97
Date Received: 03/26/97
Date Digested: 04/01/97
Date Analyzed: 04/01/97
Work Order No.: 97-03-390

Attn: Andrew Pecaut
RE: Waste Management/SVLF/W07-014

Page 1 of 2

All concentrations are reported in µg/sample. Analyses for mercury were conducted on a total digestion.

<u>Analyte</u>	<u>Method</u>	<u>Concentration</u>	<u>Reportable Limit</u>
Sample Number: MM-I4,5-2		Sample Volume: 350 ml	
Mercury	EPA 7471A	ND	0.18
Sample Number: MM-I4,5-3		Sample Volume: 325 ml	
Mercury	EPA 7471A	ND	0.17
Sample Number: MM-I4,5-BT		Sample Volume: 245 ml	
Mercury	EPA 7471A	ND	0.13
Sample Number: MM-I4,5-1		Sample Volume: 375 ml	
Mercury	EPA 7471A	ND	0.19
Sample Number: MM-KMNO₂-SB		Sample Volume: 100 ml	
Mercury	EPA 7471A	ND	0.050

Horizon Measurement Services
996 Lawrence Drive, Suite 108
Newbury Park, CA 91320

Date Sampled: 03/19-21/97
Date Received: 03/26/97
Date Digested: 04/01/97
Date Analyzed: 04/01/97
Work Order No.: 97-03-390

Attn: Andrew Pecaut
RE: Waste Management/SVLF/W07-014

Page 2 of 2

All concentrations are reported in µg/sample. Analyses for mercury were conducted on a total digestion.

<u>Analyte</u>	<u>Method</u>	<u>Concentration</u>	<u>Reportable Limit</u>
Sample Number: MM-HCL-SB		Sample Volume: 95 ml	
Mercury	EPA 7471A	ND	0.048
Sample Number: Method Blank			
Mercury	EPA 7471A	ND	0.0125

ND denotes not detected at indicated reportable limit.

Each sample was received by CEL chilled, intact, and with chain-of-custody attached.

QUALITY ASSURANCE SUMMARY
ICP / GF Metals (Air)

Horizon Measurement Services
Page 1 of 2

Work Order No.: 97-03-390
Date Analyzed: 04/01-04/97

Post Digestion Spike/Post Digestion Spike Duplicate

Sample Spiked: MM-FILT-3, MM-PR-3, MM-I1,2,3-3

<u>Analyte</u>	<u>Method</u>	<u>MS%REC</u>	<u>MSD%REC</u>	<u>Control Limits</u>	<u>%RPD</u>	<u>Control Limits</u>
Phosphorus	EPA 6010A	105	110	80 - 120	4	0 - 20

Post Digestion Spike/Post Digestion Spike Duplicate

Sample Spiked: MM-FILT-2, MM-PR-2, MM-I1,2,3-2

<u>Analyte</u>	<u>Method</u>	<u>MS%REC</u>	<u>MSD%REC</u>	<u>Control Limits</u>	<u>%RPD</u>	<u>Control Limits</u>
Barium	EPA 6010A	83	81	80 - 120	2	0 - 20
Copper	EPA 6010A	100	101	80 - 120	1	0 - 20
Nickel	EPA 6010A	94	94	80 - 120	0	0 - 20
Silver	EPA 6010A	92	95	80 - 120	3	0 - 20
Zinc	EPA 6010A	97	106	80 - 120	9	0 - 20
Manganese	EPA 6010A	93	96	80 - 120	4	0 - 20

Post Digestion Spike/Post Digestion Spike Duplicate

Sample Spiked: MM-FILT-1, MM-PR-1, MM-I1,2,3-1

<u>Analyte</u>	<u>Method</u>	<u>PDS%REC</u>	<u>PDSD%REC</u>	<u>Control Limits</u>	<u>%RPD</u>	<u>Control Limits</u>
Antimony	EPA 7041	102	128	50 - 130	20	0 - 30
Arsenic	EPA 7060A	76	78	50 - 130	3	0 - 30
Beryllium	EPA 7091	62	63	50 - 130	1	0 - 30
Cadmium	EPA 7131A	56	57	50 - 130	1	0 - 30
Chromium	EPA 7191	84	90	50 - 130	5	0 - 30
Lead	EPA 7421	102	98	50 - 130	3	0 - 30
Selenium	EPA 7740	71	75	50 - 130	3	0 - 30
Thallium	EPA 7841	97	100	50 - 130	3	0 - 30

QUALITY ASSURANCE SUMMARY
ICP / GF Metals (Air)

Horizon Measurement Services
Page 2 of 2

Work Order No.: 97-03-390
Date Analyzed: 04/01-04/97

Post Digestion Spike/Post Digestion Spike Duplicate

Sample Spiked: MM-HCL-SB

<u>Analyte</u>	<u>Method</u>	<u>PDS%REC</u>	<u>PDSD%REC</u>	<u>Control Limits</u>	<u>%RPD</u>	<u>Control Limits</u>
Mercury	EPA 7471A	90	92	50 - 130	2	0 - 30

CHAIN OF CUSTODY RECORD

Client/Project Name WASTE MANAGEMENT / SULF			Project Location SWINE VALLEY, CA		
Project No. W07-014			Field Logbook No.		
Sampler: (Signature) <i>[Signature]</i>			Chain of Custody Tape No.		

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	ANALYSES	REMARKS
9 MM-FILT-BT	3/14/97			47mm FILTER	X X	BLANK TRADJ
10 MM-PR-BT	↓			PROBE RINSE	X X	
11 MM-I1,2,3-BT	↓			IMPS 1,2,3	X X	
12 MM-I4,5-BT	↓			IMPS 4,5	X	
13 MM-FILT-BT				47mm FILTER	X X	LFG FLARE IN R1
14 MM-PR-1				PROBE RINSE	X X	
15 MM-I1,2,3-1				IMPS 1,2,3	X X	
16 MM-I4,5-1				IMPS 4,5	X	

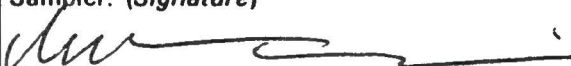
Relinquished by: (Signature) <i>[Signature]</i>		Date 3/25/97	Time 1100	Received by: (Signature) # 12835 EBL 03 0230 190 5 SHIPPED VIA UPS		Date	Time
Relinquished by: (Signature)		Date	Time	Received by: (Signature)		Date	Time
Relinquished by: (Signature)		Date	Time	Received for Laboratory: (Signature) V. Proukman		Date 3/26/97	Time 1100
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 <i>Calscience</i>	Nº
--	---	-----------

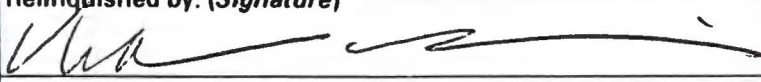
CAPS mm (M436)
 H₂ (M436)
 GF/AAS
 QUASS

104

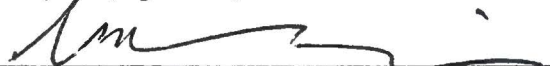
CHAIN OF CUSTODY RECORD

Client/Project Name WASTE MANAGEMENT / SVLF			Project Location SIMI VALLEY, CA			ANALYSES					
Project No. WO7-014			Field Logbook No.								
Sampler: (Signature) 			Chain of Custody Tape No.								

Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample	CAB W (436)	Hg (436)	GF/AAS	REMARKS
1 MM-FILT-2	3/20/97			47mm FILTER	X	X		LFG FLARE IN RZ
2 MM-PR-2				PROBE RINSE	X	X		
3 MM-I1,2,3-2				Imps 1,2,3	X	X		
4 MM-I4,5-2				Imp 4,5		X		
5 MM-FILT-3	3/21/97			47mm FILTER	X	X		LFG FLARE IN RZ
6 MM-PR-3				PROBE RINSE	X	X		
7 MM-I1,2,3-3				Imps 1,2,3	X	X		
8 MM-I4,5-3				Imp 4,5		X		

Relinquished by: (Signature) 		Date 3/25/97	Time 1100	Received by: (Signature) IE 855 E62 03 0230 190 5 SHIPPED VIA UPS	Date	Time
Relinquished by: (Signature)		Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)		Date	Time	Received for Laboratory: (Signature) V. Boukman	Date 3/26/96	Time 1100
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 CALSCIENCE	Nº 3904
--	--	----------------

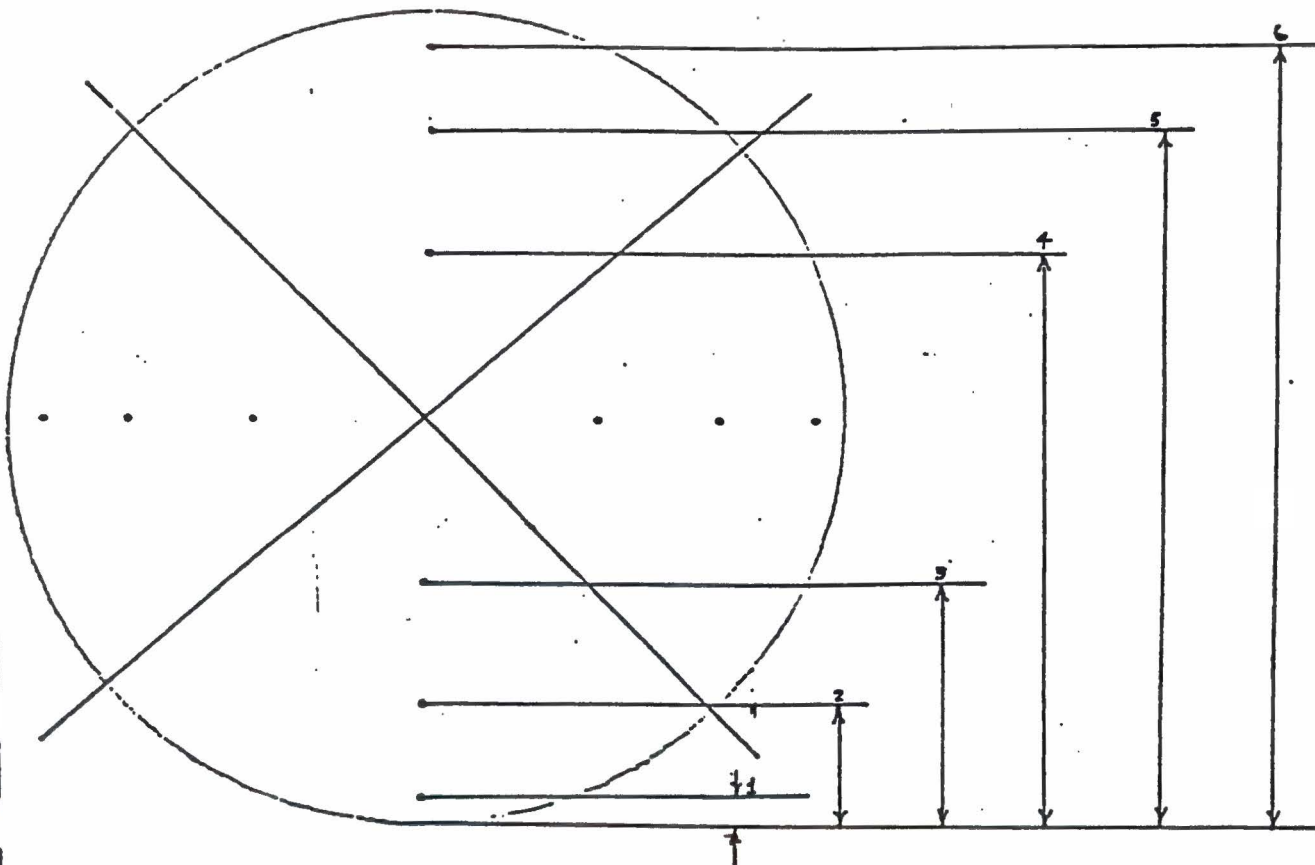
Client/Project Name WASTE MANAGEMENT / SU LIFE			Project Location SUNNY VALLEY, CA			ANALYSES CARB AM (M436) GFMA5 Hg (M436) CVAAS					
Project No. W07-014			Field Logbook No.								
Sampler: (Signature) 			Chain of Custody Tape No.								

Sample No. / Identification	Date	Time	Lab Sample Number	Type of Sample	ANALYSES	ANALYSES	ANALYSES	ANALYSES	ANALYSES	REMARKS
7 MM-0121122-SB	3/24/97				X	X				
8 MM-H ₂ O ₂ -SB					X	X				
9 MM-K ₂ H ₂ O ₄ -SB					X	X				
20 MM-FEL-SB						X				

Relinquished by: (Signature) 			Date 3/25/97	Time 1100	Received by: (Signature) # 12 835 E82 03 0230			Date	Time
Relinquished by: (Signature)			Date	Time	Received by: (Signature)			Date	Time
Relinquished by: (Signature)			Date	Time	Received for Laboratory: (Signature) V. Brunkman			Date 3/26/97	Time 1100
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 CALSITENCE alt. BOB STENKES	N° 4076
---	--	---------

APPENDIX D - Field Data Sheets

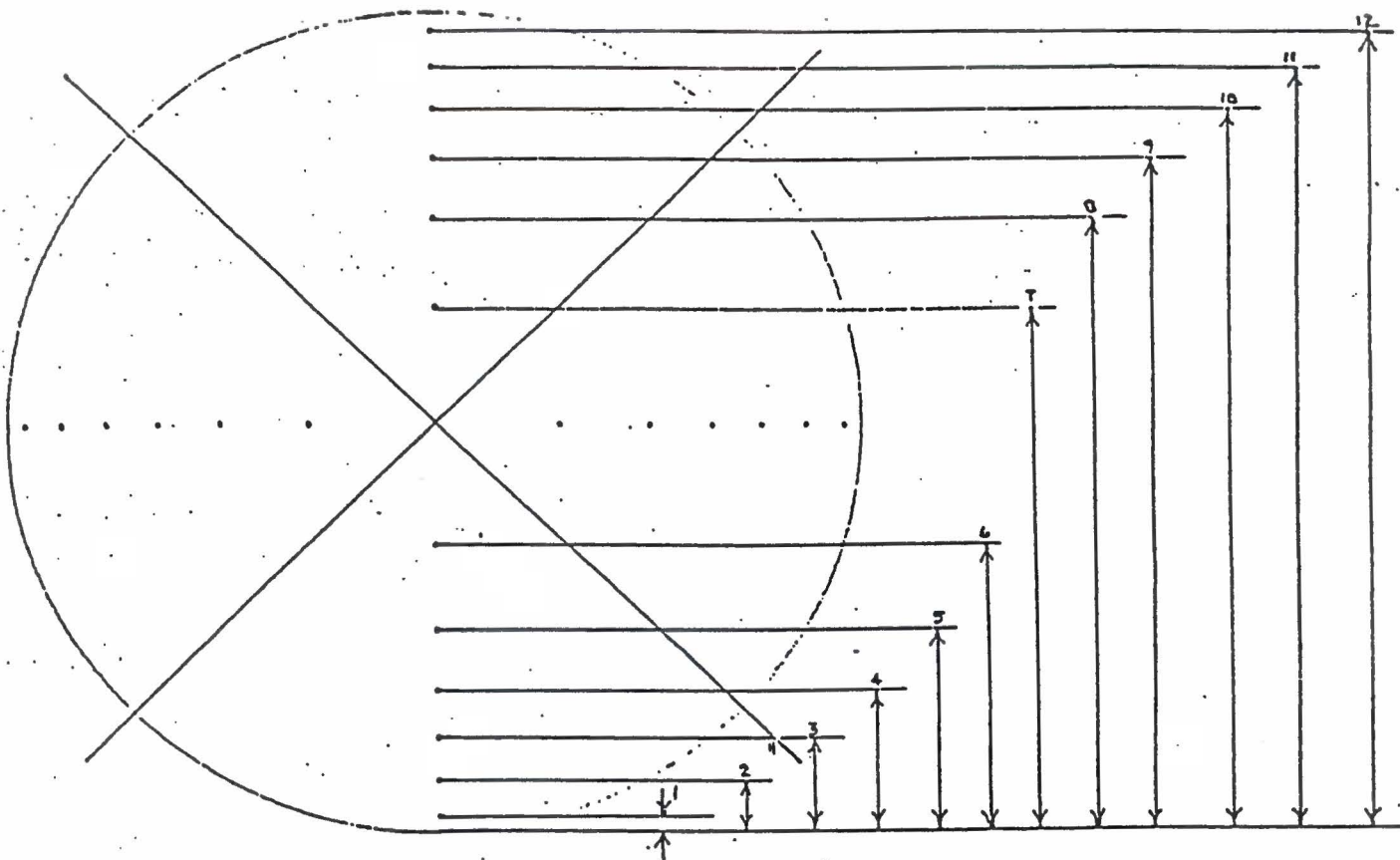


Traverse Point	Distance % of Diameter	Actual Distance	Traverse Point	Distance % of Diameter	Actual Distance
1	4.4	<u>0.5</u>	4	70.4	<u>7.04</u>
2	14.6	<u>1.46</u>	5	85.4	<u>8.54</u>
3	29.6	<u>2.96</u>	6	95.6	<u>9.56</u>

Stack I.D. 10

Facility Simi Valley Landfill

Location Landfill gas line



Traverse Point	Distance % of Diameter	Actual Distance	Traverse Point	Diameter % of Diameter	Actual Distance
1	2.1	<u>19 + 6</u>	7	64.4	_____
2	6.7	<u>62 + 6</u>	8	75.0	_____
3	11.8	<u>109 + 6</u>	9	82.3	_____
4	17.7	<u>163 + 6</u>	10	88.2	_____
5	25.0	<u>23 + 6</u>	11	93.3	_____
6	35.6	<u>328 + 6</u>	12	97.9	_____

Stack I.D. 92 6" OFFSET

Facility Simi Valley FARE

Location (4 PORTS) FARE

AMBIENT TEMPERATURE

BARO. PRESS. 7.55

ASSUMED MOISTURE, %

PROBE LENGTH, in.

NOZZLE DIAMETER, in. —

STACK DIAMETER, in. 4

PROBE HEATER SETTING $\rightarrow$

HEATER BOX SETTING

A Cp FACTOR

FILTER NO. _____

FILTER NO. _____
STATIC PRESSURE _____

PRE TEST LEAK CHECKS

METER 0.005 @ 15 in. Hg

PITOTS @ in. Hg

ORSAT

[illegible]

END = 1100

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	5
Final	110	104	2		245
Initial	100	100	0		229
Liquid Collected	10	4	2		16
Total Vol. Collected					32

POST TEST LEAK CHECKS

Meter 0.005 @ 10 in. Hg

Pitots @ _____ in.Hg

Orsat _____

Orsat Meas.	Time	CO ₂	O ₂	CO	N ₂
1					
2					
3					
4					

AMBIENT TEMPERATURE

ASSUMED MOISTURE, %

FREEZE DRYING, 70.

PROBE LENGTH, in.

NOZZLE DIAMETER, in.

STACK DIAMETER, in.

PROBE HEATER SETTING

HEATER BOX SETTING

ΔC_p FACTOR

FILTER NO.

STATIC PRESSURE

PRE TEST LEAK CHECKS

METER 0.000 @ 15 in. Hg

PITOTS @ _____ in. Hg

ORSAT

ND = 1420

POST TEST LEAK CHECKS

Meter 0.000 @ 10 in.Hg

Pitots @ _____ in. Hg

Orsat

ON AIR MEASUREMENT SERVICES, INC.

PARTICULATE FIELD DATA

ANT Simi Valley Lindell
TE 3/12/97
LOCATION Simi Valley
ERATOR RV
OURCE Lindell Gas
NO. Signature
IPLE BOX NO. 5
TER BOX NO. 1.0092
ETER A H @ 1.8658
E START 1530

AMBIENT TEMPERATURE _____
 BARO. PRESS. 29.55
 ASSUMED MOISTURE. % _____
 PROBE LENGTH. in. _____
 NOZZLE DIAMETER. in. _____
 STACK DIAMETER. in. _____
 PROBE HEATER SETTING _____
 HEATER BOX SETTING _____
 Δ Cp FACTOR _____
 FILTER NO. _____
 STATIC PRESSURE _____

PRE TEST LEAK CHECKS

METER 2000 @ 15 in. Hg
PITOTS _____ @ _____ in. Hg
ORSAT _____

[illegible]

END = 1630

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	5
Final	112	103	2		270
Initial	100	100	0		264
Liquid Collected	12	5	2		6
Total Vol. Collected					23

POST TEST LEAK CHECKS

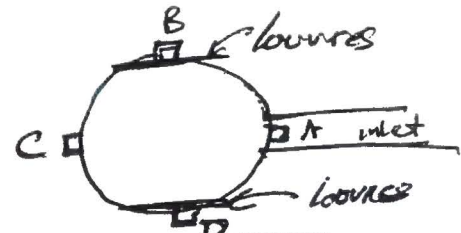
Meter 6000 @ 10 in.Hg
Pitots _____ @ _____ in.Hg
Orsat _____

Orsat Meas.	Time	CO ₂	O ₂	CO	N ₂
1					
2					
3					
4					

PARTICULATE FIELD DATA

NT Semi Valley Rural Rd
 DATE 3/19/87
 LOCATION Semi Valley
 OPERATOR RV
 TRACE FLARE
 NO. 1-PM
 SAMPLE BOX NO. 6
 TEST BOX NO. 6
 TESTER Δ H @ 1.6046
0.5924
 START 1005

AMBIENT TEMPERATURE 85°F
 BARO. PRESS. 29.85
 ASSUMED MOISTURE, % 12
 PROBE LENGTH, in. 10-1
 NOZZLE DIAMETER, in. 0.841
 STACK DIAMETER, in. 92
 PROBE HEATER SETTING NA
 HEATER BOX SETTING NA
 Δ Cp FACTOR 0.84
 FILTER NO. 256
 STATIC PRESSURE -0.06



PRE TEST LEAK CHECKS
 METER 0.00 @ 15 in. Hg
 PITOTS 0/0 @ 2.54 in. Hg
 ORSAT

#	TIME	T _s °F	Δ P in H ₂ O	√ Δ P	Δ H in H ₂ O	V _m ft ³	T _m IN °F	T _m OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
6	1005	1593	0.015		1.6	230.230	90	89	—	76	2
5	25	1601	0.020		2.1	232.5	103	89		55	2
4	5	1560	0.015		1.6	234.5	105	90		57	2
3	2.5	1696	0.020		2.1	236.4	107	90		61	2
2	10	1599	0.040		4.4	238.6	108	91		65	4
1	12.5	1565	0.015		1.6	240.9	107	92		69	1
6	1032	1535	0.020		2.1	243.163	98	92		59	1
5	2.5	1658	0.020		2.1	245.5	106	92		63	1
4	5	1570	0.020		2.1	248.2	107	93		67	1
3	2.5	1531	0.020		2.1	249.4	107	93		69	1
2	10	1431	0.015		1.6	251.6	108	93		68	1
1	12.5	1433	0.010		1.1	253.5	108	94		70	1
6	150-1102	1643	0.05		5.4	255.320	101	94		65	5
5	2.5	1880	0.025		2.7	258.8	108	94		67	3
4	5	1580	0.03		3.2	261.2	110	95		63	3
3	2.5	1581	0.02		2.1	264.0	110	95		64	2
2	10	1509	0.010		1.1	266.1	109	96		66	1
1	12.5	1572	0.010		1.1	267.7	108	96		66	1
6	1135	1572	0.015		1.6	269.300	105	95		59	2
5	2.5	1571	0.020		2.1	271.1	109	95		61	2
4	5	1543	0.030		3.2	273.2	110	96		62	3
3	2.5	1576	0.030		3.2	275.6	112	96		63	3
2	10	1679	0.020		2.1	278.6	112	97		64	2
1	12.5	1648	0.020		2.1	281.0	112	97		64	2
P	150	1588.6		0.1428	2.267	282.810		28.2	W		

END = 1100

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	
Final	136	128	3		232
Initial	100	100	0		214
Liquid Collected	36	28	3		18
Total Vol. Collected					85

POST TEST LEAK CHECKS

Meter 0.000 @ 10 in. Hg
 Pitots 0/0 @ 2.1/1.1 in. Hg
 Orsat

Orsat Meas.	Time	CO ₂	O ₂	CO	N ₂
1					
2					
3					
Nozzle 0.840 0.840 0.840 Wt - 0.841					

PARTICULATE FIELD DATA

NT Simi Valley Landfill
 E 3/12/87
 STATION Simi Valley
 ERATOR RV
 ERCE Flare
 NO. 2-PIM
 MPLE BOX NO. A
 TER BOX NO. 6
 TER Δ H @ 16046
0.9924
 E START 1235

AMBIENT TEMPERATURE 80
 BARO. PRESS. 29.55
 ASSUMED MOISTURE, % 12
 PROBE LENGTH, in. 10-1
 NOZZLE DIAMETER, in. 0.841
 STACK DIAMETER, in. 42
 PROBE HEATER SETTING NA
 HEATER BOX SETTING NA
 Δ Cp FACTOR 0.87
 FILTER NO. NA
 STATIC PRESSURE -0.06

PRE TEST LEAK CHECKS
 METER 0.000 @ 15 in. Hg
 PITOTS 0.0 @ 241.2 in. Hg
 ORSAT _____

#	TIME	T _s °F	Δ P in H ₂ O	√ Δ P	Δ H in H ₂ O	V _m ft ³	T _{m IN} °F	T _{m OUT} °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
6	1235	1587	0.04	(3.6)	4.4	283.000	97	95	—	79	10
5	2.5	1673	0.025		2.7	285.7	111	96		62	10
4	5	1635	0.03		3.2	288.7	111	97		63	8
3	7.5	1634	0.03		3.2	291.2	111	97		62	8
2	10	1653	0.02		2.05	293.9	111	98		64	5
1	12.5	1664	0.02		2.05	295.9	111	98		61	5
6	15.0	1570	0.015		1.6	298.050	99	97		73	4
5	2.5	1613	0.01		1.05	300.1	107	97		63	4
4	5	1666	0.02		2.05	301.6	110	97		66	5
3	7.5	1603	0.025		2.6	303.5	112	97		67	7
2	10	1563	0.025		2.6	306.0	112	97		65	7
1	12.5	1548	0.025		2.6	308.6	111	97		66	7
6	1325	1291*	0.03		3.05	310.510	97	95		70	2
5	2.5	1300*	0.03		3.05	313.5	95	102		67	8
4	5	1298*	0.03		3.05	316.0	103	94		69	8
3	7.5	1275*	0.02		2.05	318.0	103	94		69	5
2	10	1267*	0.02		2.05	321.0	103	94		68	5
1	12.5	1168*	0.02		2.05	323.1	103	94		70	5
6	1351	1620/1344	0.03		3.05	325.3	94	90		61	8
5	2.5	1624	0.03		3.05	327.9	96	90		60	8
4	5	1643	0.03		3.05	330. -	96	90		61	8
3	7.5	1622	0.02		2.05	333.1	96	90		62	5
2	10	1626	0.03		3.05	335.0	96	89		62	5
1	12.5	1613	0.025		1.5	337.6	95	89		62	4
avg.	15.0	1538.3		0.1553	2.5479	332.255		94.8	91		

END = 1406

R Temperatures Fluctuating ± 100°F

-WIND Blowing directly into louvers
 POST TEST LEAK CHECKS
 Meter 0.005 @ 15 in. Hg
 Pitots v/v @ 2.5/2.6 in. Hg
 Orsat _____
 on row B side
 MAY HAVE
 BEEN
 FAULTY
 Hummer-Apple

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	5
Final	172	125	5		267
Initial	100	100	0		252
Liquid Collected	72	25	5		15
Total Vol. Collected					117

Orsat Meas.	Time	CO ₂	O ₂	CO	N ₂
1					
2					
3					
4					

PARTICULATE FIELD DATA

PLANT Sinai Valley huml 6/11
 DATE 3/18/97
 LOCATION Sinai Valley
 OPERATOR EV
 SOURCE Flare
 RUNNO. 3-PM
 SAMPLE BOX NO. 6
 METER BOX NO. 6
 METER Δ H @ 1.6046
 Y = 0.9929
 TIME START 1445

AMBIENT TEMPERATURE 90
 BARO. PRESS. 29.53
 ASSUMED MOISTURE, % 12
 PROBE LENGTH, in. 16-1
 NOZZLE DIAMETER, in. 0.841
 STACK DIAMETER, in. 92
 PROBE HEATER SETTING NA
 HEATER BOX SETTING NA
 Δ Cp FACTOR 0.84
 FILTER NO.
 STATIC PRESSURE -0.060

PRE TEST LEAK CHECKS
 METER 0.000 @ 15 in. Hg
 PITOTS 4.1 @ 2.9/2.6 in. Hg
 ORSAT

PH	TIME	T _s °F	Δ P in H ₂ O	✓ Δ P	Δ H in H ₂ O	Vm ft ³	T _{in} °F	T _{out} °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
A-6	1445	1581	0.03		3.1	339.145	83	83	—	70	4
5	2.5	1626	0.03		3.1	342.2	70	83		66	4
4	5	1631	0.03		3.1	344.9	93	85		64	4
3	7.5	1606	0.03		3.1	347.6	93	84		64	4
2	10	1633	0.03		3.1	349.9	93	84		67	9
1	12.5	1639	0.02		2.1	352.5	93	84		68	2
B-6	1507	1491	0.05		1.6	354.685	84	83		71	2
5	2.5	1548	0.02		2.1	356.5	91	83		59	3
4	5	1511	0.015		1.6	359.0	92	83		62	2
3	7.5	1501	0.015		1.6	360.5	92	83		63	2
2	10	1420	0.010		1.1	362.8	92	83		63	1
1	12.5	1445	0.010		1.1	364.0	92	83		64	1
C-6	1532	1604	0.03		3.1	365.600	84	82		67	3
5	2.5	1597	0.03		3.1	368.6	84	82		62	3
4	5	1609	0.04		4.2	370.7	94	83		66	5
3	7.5	1580	0.03		3.1	373.8	94	84		69	3
2	10	1571	0.03		3.1	376.2	94	84		67	3
1	12.5	1555	0.035		3.6	378.1	95	84		67	4
D-6	1356	1618	0.04		4.2	381.545	87	84		66	5
5	2.5	1625	0.03		3.1	385. —	93	84		66	4
4	5	1639	0.04		4.2	387.4	94	84		67	5
3	7.5	1661	0.03		3.1	390.0	94	84		64	4
2	10	1656	0.03		3.1	392.5	95	85		64	4
1	12.5	1669	0.03		3.1	395.2	95	85		64	4
STOP AVE.	15.0	1584.3	AV	0.1620	2.82	397.670		87.6			

TIME END = 1411

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	
Final	165	130	5		243
Initial	100	100	0		224
Liquid Collected	65	30	5		19
Total Vol. Collected					119

POST TEST LEAK CHECKS
 Meter 0.000 @ 10 in. Hg
 Pitots 4.1 @ 2.8/2.6 in. Hg
 Orsat

Orsat Meas.	Time	CO ₂	O ₂	CO	N ₂
1					
2					
3					
4					

**TOTAL COMBUSTION ANALYSIS
SCAQMD METHOD 25
FIELD SAMPLING DATA SHEET**

Job #: _____
 Facility: Simi Valley Landfill
 Location: Simi Valley
 Date: 3/18/97
 Operator: RV

Control Device: Flare
 Sample Location: Tilet
 Ambient Temp.: ~80
 Baro. Pressure: 29.55

N SAMPLE A
 Tank #: S9 S2 Trap #: NA
 Initial Vacuum: 1.3 torr
 Final Vacuum: _____

SAMPLE B
 Tank #: S7 Trap #: NA
 Initial Vacuum: 6 torr
 Final Vacuum: _____

Run #1

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
1100 00	29	
05	27	
10	25	
15	23	
20	21	
25	19	
30	17	
35	15	
40	13	
45	11	
50	9	
55	7	
1200 60	5	

Run #2

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
1240 00	29	
05	27	
10	25	
15	23	
20	21	
25	28	
30	16	
35	14	
40	11	
45	9	
50	7	
55	5	
1340 60	3	

LEAK RATE

Pre Test : V/V
 Post Test: V/V

**TOTAL COMBUSTION ANALYSIS
SCAQMD METHOD 25
FIELD SAMPLING DATA SHEET**

Job #: W07-014
 Facility: Simi Valley Landfill
 Location: Simi Valley
 Date: 3/18/97
 Operator: N

Control Device: Flare
 Sample Location: Inlet
 Ambient Temp.: 28.5
 Baro. Pressure: 29.55

SAMPLE A

Tank #: 56 Trap #: NA
 Initial Vacuum: 3.0 torr
 Final Vacuum: _____

SAMPLE B

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

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
144500	29	
05	27	
10	25	
15	23	
20	21	
25	19	
30	17	
35	15	
40	13	
45	11	
50	9	
55	7	
154560	5	

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

LEAK RATE

Pre Test : r/v
 Post Test: r

**TOTAL COMBUSTION ANALYSIS
SCAQMD METHOD 25
FIELD SAMPLING DATA SHEET**

Job #: W07-014
 Facility: SILVER VALLEY LF
 Location: SILVER VALLEY, CA
 Date: 3/18/97
 Operator: RLC

Control Device: LFG FLARE
 Sample Location: OUTLET
 Ambient Temp.: 80°F
 Baro. Pressure: 29.55" Hg

SAMPLE A

Tank #: SE Trap #: NA
 Initial Vacuum: 1.0 torr
 Final Vacuum: _____

SAMPLE B

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

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	30	75
05	28	75
10	26	75
15	24	75
20	22	75
25	20	75
30	18	75
35	16	75
40	14	75
45	12	75
50	10	75
55	9	75
60	8	

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

LEAK RATE

Leak Test : nk/k
 Tight Test: _____

**TOTAL COMBUSTION ANALYSIS
SCAQMD METHOD 25
FIELD SAMPLING DATA SHEET**

#: W07-074
 Locality: SEMI VALLEY LF
 Location: SEMI VALLEY LF
 Date: 3/18/97
 Operator: RC

Control Device: LFG PLANTS
 Sample Location: OUTLET
 Ambient Temp.: 85°F
 Baro. Pressure: 29.55" Hg

SAMPLE A

Tank #: 54 Trap #: UA
 Initial Vacuum: 1.0 torr
 Final Vacuum: _____

SAMPLE B

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

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
3500	30	75
05	28	75
10	26	75
1300	24.5	75
20	22	75
25	20	75
3025	18	75
35	16	75
40	14	75
1345	12	75
50	11	75
55	10	75
60	8	75

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

AK RATE

Test : ak
 Nit Test: ak

**TOTAL COMBUSTION ANALYSIS
SCAQMD METHOD 25
FIELD SAMPLING DATA SHEET**

Job #: 007-014
 Facility: SEMT VALLEY LF
 Location: SEMT VALLEY, CA
 Date: 3/18/97
 Operator: RL

Control Device: LC FLARE
 Sample Location: OUTLET
 Ambient Temp.: 80°F
 Baro. Pressure: 747 mm Hg ^{nc}
29.55" Hg

SAMPLE A

Tank #: 512 Trap #: 1A
 Initial Vacuum: 1.0 torr
 Final Vacuum: _____

SAMPLE B

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

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	30	75
05	28	75
10	26	75
15	24	75
20	22	75
25	20	75
30	18	75
35	16	75
40	15	75
45	13	75
50	12	75
55	10	75
60	8	

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

WAK RATE

Test : RL
 Test: RL

PARTICULATE FIELD DATA

ANT Simi Valley
 DATE 4/24/97
 LOCATION Simi Valley
 OPERATOR TW/AP
 SOURCE FIARE INLET
 RUN NO. 1
 SAMPLE BOX NO. _____

METER BOX NO. 1
 METER ΔH @ 1.965
 Y = 0.9201
 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 _____
 BARO. PRESS. 29.25 in. Hg
 STATIC PRESS. _____
 NOMOGRAPH INDEX _____

TIME START 11:10

PRE TEST LEAK CHECKS
 METER 0.017 @ 12 in. Hg
 PITOTS - @ - in. Hg
 ORSAT -

PF	TIME	T _s °F	ΔP in. H ₂ O	√ΔP	ΔH in. H ₂ O	V _m ft ³	T _{amb} °F	T _{OUT} °F	OVEN °F	IMP. OUT °F	VAC. (in. Hg)
Sample	00	NA	NA	NA	<u>1.96</u>	<u>904.196</u>	<u>75</u>	<u>75</u>	NA	<u>52</u>	<u>0</u>
	05:40				<u>1.9</u>	<u>908.4</u>	<u>77</u>	<u>76</u>		<u>56</u>	<u>0</u>
	10:20				<u>1.9</u>	<u>911.9</u>	<u>79</u>	<u>77</u>		<u>54</u>	<u>0</u>
	15:30				<u>1.9</u>	<u>916.1</u>	<u>80</u>	<u>77</u>		<u>53</u>	<u>0</u>
	20:40				<u>1.9</u>	<u>920.2</u>	<u>80</u>	<u>78</u>		<u>52</u>	<u>0</u>
	25:50				<u>1.9</u>	<u>919.8</u>	<u>83</u>	<u>79</u>		<u>52</u>	<u>0</u>
	30:10				<u>1.9</u>	<u>920.6</u>	<u>85</u>	<u>80</u>		<u>53</u>	<u>0</u>
	35				<u>1.9</u>	<u>924.4</u>	<u>86</u>	<u>80</u>		<u>53</u>	<u>0</u>
	40				<u>1.9</u>	<u>928.4</u>	<u>86</u>	<u>81</u>		<u>52</u>	<u>0</u>
	45				<u>1.9</u>	<u>932.0</u>	<u>87</u>	<u>81</u>		<u>53</u>	<u>0</u>
	50				<u>1.9</u>	<u>935.6</u>	<u>88</u>	<u>81</u>		<u>53</u>	<u>0</u>
	55				<u>1.9</u>	<u>939.5</u>	<u>88</u>	<u>82</u>		<u>54</u>	<u>0</u>
SOP	60				<u>1.96</u>	<u>943.215</u>					
Avg.					<u>1.9</u>	<u>39.019</u>		<u>80.9</u>			

TIME END = _____

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	
Final	<u>110mL</u>	<u>110mL</u>	<u>1</u>		<u>152</u>
Initial	<u>100</u>	<u>100</u>	<u>0</u>		<u>149</u>
Liquid Collected	<u>10</u>	<u>10</u>	<u>1</u>		<u>3</u>
Total Vol. Collected					<u>24</u>

POST TEST LEAK CHECKS

Meter _____ @ _____ in. Hg
 Pitots _____ @ _____ in. Hg
 Orsat _____

Orsat Meas.	Time	CO ₂	O ₂	CO	N ₂
1					
2					
3					
Nozzle Cal	D.	D.	D.	Average	

PARTICULATE FIELD DATA

PLANT SVLF
 DATE 4/29/97
 LOCATION Simi Valley
 OPERATOR TM
 SOURCE FLUE (INLET)
 RUN NO. 2
 SAMPLE BOX NO. 1

METER BOX NO. 1
 METER ΔH @ 1.965
 Y = 0.5801
 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 _____
 BARO. PRESS. 29.25 in. Hg
 STATIC PRESS. _____
 NOMOGRAPH INDEX _____

TIME START 1250 pm

PRE TEST LEAK CHECKS
 METER 0.010 @ 15 in. Hg
 PITOTS @ in. Hg
 ORSAT _____

PF	TIME	T _s °F	ΔP in. H ₂ O	√ΔP	ΔH in. H ₂ O	Vm ft ³	T _{in} °F	T _{out} °F	OVEN °F	IMP. OUT °F	VAC. (in. Hg)
Style	00	NA	NA	NA	1.96	943.306	80	80	NA	52	0
	05				1.9	947.4	82	81		54	0
	10				1.9	951.2	84	82		53	0
	15				1.9	955.1	85	83		53	0
	20				1.9	958.8	86	85		53	0
	25				1.9	962.9	87	85		53	0
	30				1.9	966.6	89	86		52	0
	35				1.9	969.9	89	86		53	0
	40				1.9	974.0	89	87		53	0
	45				1.9	977.9	90	87		53	0
	50				1.9	981.5	90	88		54	0
	55				1.9	985.6	90	88		54	0
STOP	60				1.96	989.200					
Avg.					1.9	95.894	85.8				

TIME END = _____

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	
Final	110	109	Z	NA	199
Initial	110	110	0		190
Liquid Collected	10	99	2		9
Total Vol. Collected					1030

POST TEST LEAK CHECKS

Meter _____ @ _____ 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	
				1.62	

PARTICULATE FIELD DATA

PLANT SVLF
DATE 4/29/97
LOCATION Smy Valley
OPERATOR TJ/AP
SOURCE FIRE INLET
RUN NO. 3
SAMPLE BOX NO. _____

METER BOX NO. 1
METER ΔH @ 1.965
Y = 0.944
PROBE I.D. NO. _____
NOZZLE DIAMETER, in. _____
STACK DIAMETER, in. _____
PROBE HEATER SETTING _____
HEATER BOX SETTING _____
 ΔC_p FACTOR _____
FILTER NO. _____

ASSUMED MOISTURE, % _____
 AMBIENT TEMPERATURE _____
 BARO. PRESS. _____
 STATIC PRESS. _____
 NOMOGRAPH INDEX _____

PRE TEST LEAK CHECKS

METER 0.95 @ 10 in. Hg
PITOTS - @ - in. Hg
ORSAT -

TIME START ~~12:50~~ 2:00
TW

[illegible]

TIME END -

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	130 1	113 2	3	4	
Final <i>tw</i>	113	130	1	NA	193
Initial	100	109	3	S	192
Liquid Collected	30	13	1		1
Total Vol. Collected					

POST TEST LEAK CHECKS

Meter 0.015 @ 10 in. Hg
Pitots — @ — in. Hg
Orsat _____

Orsat Meas.	Time	CO ₂	O ₂	CO	N ₂
1					
2					
3					
Nozzle Cal	D.	D.	D.	Average	

163

PARTICULATE FIELD DATA

PLANT Smo Valley Landfill
 DATE 4/29/97
 LOCATION Smo Valley, CA
 OPERATOR AP
 SOURCE LEG FLARE EXHAUST
 RUN NO. 1 SECOND 3.1
 SAMPLE BOX NO. -

TIME START 1110

METER BOX NO. 6
 METER ΔH @ 1.6046
 Y = 0.9424
 PROBE I.D. NO. 71
 NOZZLE DIAMETER, in. -
 STACK DIAMETER, in. 92
 PROBE HEATER SETTING -
 HEATER BOX SETTING -
 ΔC_p FACTOR 0.84
 FILTER NO. -

ASSUMED MOISTURE, % -
 AMBIENT TEMPERATURE -
 BARO. PRESS. -
 STATIC PRESS. -0.03
 NOMOGRAPH INDEX -

PRE TEST LEAK CHECKS
 METER 0.015 @ 10 in. Hg
 PITOTS 7/7 @ 10 in. Hg
 ORSAT ✓

PF	TIME	T _s °F	ΔP in H ₂ O	$\sqrt{\Delta P}$	ΔH in H ₂ O	V _m ft ³	T _{in} °F	T _{out} °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
24/24	00	1630	0.010		1.60	942.864	77	76	NA	56	8
	2.5 05	1670	0.010		1.60	944.7	79	77		53	8
	5.0 10	1655	<0.010		1.60	946.5	81	77		52	8
	7.5 15	1649	0.015		1.60	948.4	83	78		52	8
	10.0 20	1668	0.010		1.60	950.3	87	79		52	8
	12.5 25	1650	<0.010		1.60	952.1	88	80		52	8
	15.0 30	1695	0.045		1.60	954.008	80	78		59	8
	17.5 35	1715	0.050		1.60	955.8	84	79		56	8
	20.0 40	1683	0.010		1.60	957.6	85	80		53	8
	22.5 45	1675	0.030		1.60	959.5	89	81		52	8
	25.0 50	1650	<0.010		1.60	961.4	90	81		51	8
	27.5 55	1665	0.010		1.60	963.2	91	82		52	8
30/30	30.0 60	1608	0.030		1.60	965.157	85	80		59	8
5	32.5	1615	0.010		1.60	967.0	87	81		52	8
4	35.0	1620	0.015		1.60	968.8	90	82		55	8
3	37.5	1613	0.020		1.60	970.5	92	83		53	8
2	40.0	1605	0.015		1.60	972.4	93	83		52	8
1	42.5	1587	0.010		1.60	974.3	94	84		53	8
10-6	45.0	1563	<0.010		1.60	976.195	83	80		56	8
5	47.5	1575	<0.010		1.60	978.0	87	81		53	8
4	50.0	1604	<0.010		1.60	980.0	90	82		54	8
3	52.5	1560	<0.010		1.60	981.8	91	83		53	8
2	55.0	1530	<0.010		1.60	983.7	93	84		54	8
1	57.5	1520	<0.010		1.60	985.6	94	85		54	8
52/52	60.0				-	987.531					X
Avg.	60	1625	0.1246		1.60	44.667		83.9			

TIME END = -

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	
Final	148	119	3	NA	193
Initial	100	100	0	✓	187
Liquid Collected	48	19	3	✓	6
Total Vol. Collected					76

POST TEST LEAK CHECKS

Meter 0.015 @ 15 in. Hg
 Pitots 2/2 @ 3/3 in. Hg
 Orsat ✓

Orsat Meas.	Time	CO ₂	O ₂	CO	N ₂
1					
2					
3					
Nozzle Cal	D.	D.	D.	Average	
				11.64	

PARTICULATE FIELD DATA

PLANT Simi Valley Landfill
 DATE 4/25/97
 LOCATION Simi Valley, CA
 OPERATOR AP
 SOURCE LEF Flare Exhaust
 RUN NO. 2 screws 31
 SAMPLE BOX NO. -

METER BOX NO. 6
 METER AH @ 1.6046
 Y= 0.5924
 PROBE I.D. NO. 71
 NOZZLE DIAMETER, in. -
 STACK DIAMETER, in. 92"
 PROBE HEATER SETTING -
 HEATER BOX SETTING -
 Δ Cp FACTOR 0.84
 FILTER NO. -

ASSUMED MOISTURE, % -
 AMBIENT TEMPERATURE -
 BARO. PRESS. -
 STATIC PRESS. -0.03
 NOMOGRAPH INDEX -

TIME START 1250

PRE TEST LEAK CHECKS
 METER 0.054 @ 15 in. Hg
 PITOTS 0/0 @ 3/3 in. Hg
 ORSAT -

PF	TIME	T _s °F	ΔP in H ₂ O	√ΔP	ΔH in H ₂ O	V _m ft ³	T _{amb} °F	T _{OUT} °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
D-6	00	1594	40.010		1.60	987.869	80	79	NA	58	6
S	05	1598	40.010		1.60	989.8	83	80		52	6
4	50	1650	40.010		1.60	991.4	87	82		53	6
3	75	1675	40.010		1.60	993.8	89	83		52	6
2	100	1630	40.010		1.60	995.7	90	84		52	6
1	125	1608	40.010		1.60	997.7	91	83		55	6
C-6	150	1650	0.030		1.60	999.802	82	80		54	6
S	175	1635	0.030		1.60	1001.7	85	81		51	6
4	200	1668	0.025		1.60	1003.7	90	81		50	6
3	225	1675	0.020		1.60	1005.7	91	82		49	6
2	250	1659	0.015		1.60	1007.6	92	83		48	6
1	275	1631	0.010		1.60	1009.7	93	84		49	6
B-6	300	1629	0.045		1.60	1011.509	81	80		53	6
S	325	1653	0.020	0.050	1.60	1013.6	84	81		52	6
4	350	1682	0.045		1.60	1015.6	87	82		50	6
3	375	1695	0.040		1.60	1017.5	89	83		51	6
2	400	1684	0.030		1.60	1019.6	90	83		51	6
1	425	1675	0.010		1.60	1021.5	92	84		52	6
A-6	450	1652	0.015		1.60	1023.540	81	80		54	6
S	475	1645	0.015		1.60	1025.5	85	81		57	6
4	500	1635	0.015		1.60	1027.6	89	82		56	6
3	525	1627	0.020		1.60	1029.4	91	83		53	6
2	550	1608	0.025		1.60	1031.4	92	84		54	6
1	575	1615	0.015		1.60	1033.3	93	85		53	6
ORP	600					1035.413					
Avg.	60.0	1644.9	6.1408		1.60	47.5440	84.9				

TIME END =

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Weht.
	1	2	3	4	
Final	150	122	3	NA	191
Initial	100	100	0		183
Liquid Collected	50	22	3		8
Total Vol. Collected					83

POST TEST LEAK CHECKS

Meter 0.017 @ 15 in. Hg
 Pitots 0/0 @ 3/3 in. Hg
 Orsat OK

Orsat Mens.	Time	CO ₂	O ₂	CO	N ₂
1					
2					
3					
Nozzle Cal	D ₁	D ₂	D ₃	Average	
				1.00	

PARTICULATE FIELD DATA

PLANT Simi Valley Landfill
 DATE 4/29/77
 LOCATION Simi Valley, CA
 OPERATOR AP
 SOURCE FFG Flare Exhaust
 RUN NO. 3 SEPTEMBER 4.1
 SAMPLE BOX NO. —

METER BOX NO. 6
 METER ΔH @ 1.6046
 Y = 0.5724
 PROBE I.D. NO. 7-1
 NOZZLE DIAMETER, in. —
 STACK DIAMETER, in. 12"
 PROBE HEATER SETTING —
 HEATER BOX SETTING —
 Δ Cp FACTOR 0.84
 FILTER NO. —

ASSUMED MOISTURE, % —
 AMBIENT TEMPERATURE —
 BARO. PRESS. —
 STATIC PRESS. -0.83
 NOMOGRAPH INDEX —

PRE TEST LEAK CHECKS
 METER 0.011 @ 15 in. Hg
 PITOTS 25/28 @ 3/3 in. Hg
 ORSAT OK

TIME START 1400

PF	TIME	T _s °F	ΔP in. H ₂ O	√ΔP	ΔH in. H ₂ O	Vm ft ³	T _{amb} °F	T _{out} °F	OVEN °F	IMP. OUT °F	VAC. (in. Hg)
A-6	00	1589	0.030		1.60	35.725	82	81	NA	59	5
5	25	1590	0.025		1.60	37.6	84	81		57	5
4	50	1560	0.030		1.60	39.5	85	81		54	5
3	75	1547	0.010		1.60	41.4	86	81		54	5
2	100	1529	0.015		1.60	43.3	87	82		53	5
1	125	1507	0.010		1.60	45.1	88	82		53	5
B-6	150	1657	0.045		1.60	47.095	80	80		56	5
5	175	1699	0.050		1.60	48.0	87	81		53	5
4	200	1716	0.035	0.040	1.60	50.9	85	81		52	5
3	225	1749	0.045		1.60	52.7	87	82		51	5
2	250	1731	0.040		1.60	54.6	88	82		51	5
1	275	1685	0.030		1.60	56.6	88	82		52	5
C-6	300	1650	0.030		1.60	58.500	80	80		58	5
5	325	1624	0.030		1.60	60.3	82	80		56	5
4	350	1630	0.025		1.60	62.2	82	81		55	5
3	375	1615	0.020		1.60	64.1	88	82		53	5
2	400	1580	0.015		1.60	66.0	89	82		53	5
1	425	1550	0.010		1.60	68.0	89	82		53	5
D-6	450	1582	<0.010		1.60	69.851	80	80		57	5
5	475	1575	<0.010		1.60	71.7	83	81		54	5
4	500	1569	<0.010		1.60	73.6	82	81		52	5
3	525	1558	<0.010		1.60	75.5	88	82		53	5
2	550	1562	<0.010		1.60	77.4	89	83		53	5
1	575	1591	<0.010		1.60	79.3	91	83		54	5
avg	60.0					80.587					
Avg.		160.2	0.1465		1.6	44.862	83.5				

TIME END = 1400

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	
Final	148	121	3	NA	171
Initial	100	100	2		165
Liquid Collected	48	21	3		6
Total Vol. Collected					70

POST TEST LEAK CHECKS
 Meter 0.012 @ 15 in. Hg
 Pitots 25/28 @ 3/3 in. Hg
 Orsat OK

Orsat Meas.	Time	CO ₂	O ₂	CO	N ₂
1					
2					
3					
Nozzle Cal	D.	D.	D.	Average	
				1.50	

**TOTAL COMBUSTION ANALYSIS
SCAQMD METHOD 25
FIELD SAMPLING DATA SHEET**

ID #: W07-014
 Facility: Simi Valley Land Fill
 Location: Simi Valley
 Date: 4/29/97
 Operator: PL

Run # 1
SAMPLE A

Blank #: 5-6 Trap #: _____
 Initial Vacuum: 9.5 Torr
 Final Vacuum: _____

Control Device: FLARE
 Sample Location: Inlet -1
 Ambient Temp.: _____
 Baro. Pressure: 29.25 in/Hg

SAMPLE B

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

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	28	83
05	26	83
10	24	83
15	22	83
20	20	83
25	18	83
30	16	83
35	14	83
40	12	83
45	10	83
50	8	83
55	6	83
60	4	83

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

TEST RATE

Test : PL
 Test: PL

**TOTAL COMBUSTION ANALYSIS
SCAQMD METHOD 25
FIELD SAMPLING DATA SHEET**

Job #: 407-014
 Facility: Simi Valley Land Fill
 Location: FLARE Simi Valley
 Date: 4/29/97
 Operator: TH

Run #2
SAMPLE A

Tank #: 5-9 Trap #:
 Initial Vacuum: 9.5 torr
 Final Vacuum:

Control Device: FLARE
 Sample Location: Inlet - 2
 Ambient Temp.:
 Baro. Pressure: 29.25

SAMPLE B

Tank #: Trap #:
 Initial Vacuum:
 Final Vacuum:

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	27	83
05	25	83
10	23	83
15	21	83
20	19	83
25	17	83
30	15	83
35	13	83
40	11	83
45	9	83
50	7	83
55	5	83
60	3.5 4	83

TH

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

AK RATE

Test: TH
 Test: TH

**TOTAL COMBUSTION ANALYSIS
SCAQMD METHOD 25
FIELD SAMPLING DATA SHEET**

ID #: W07-014
 Facility: Simi Valley Landfill
 Location: Simi Valley
 Date: 9/28/97
 Operator: TH

Run #3
SAMPLE A

Tank #: 5-7 Trap #:
 Initial Vacuum: 9.5 torr
 Final Vacuum:

Control Device: FLARE
 Sample Location: Inlet - 3
 Ambient Temp.:
 Baro. Pressure: 29.25 in/Hg

SAMPLE B

Tank #: Trap #:
 Initial Vacuum:
 Final Vacuum:

TIME (min.)	VACUUM (inHg)	FLOW (cc/min)
0000	27	83
05	25	83
10	23	83
15	21	83
20	19	83
25	17	83
30	15	83
35	13	83
40	11	83
45	9	83
50	8	83
55	6	83
60	5	83

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

WATER RATE

Test : TH
 Test: TH

**TOTAL COMBUSTION ANALYSIS
SCAQMD METHOD 25
FIELD SAMPLING DATA SHEET**

Job #: W07-014
 Facility: San Valles Landfill
 Location: San Valles, CA
 Date: 4/29/97
 Operator: AP

Control Device: LFG Flare
 Sample Location: Exhaust
 Ambient Temp.: _____
 Baro. Pressure: _____

Run #1
SAMPLE A

~~SAMPLE B~~ NA

Blank #: S3 Trap #: NA
 Initial Vacuum: 3.6 Torr
 Final Vacuum: _____

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

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	29.5	83
05	27.6	83
10	25.8	83
15	23.9	83
20	22.0	83
25	20.1	83
30	18.2	83
35	16.4	83
40	14.5	83
45	12.6	83
50	10.8	83
55	8.9	83
60	7.0	800

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

TEST RATE

Test : ✓
 Test: ✓

**TOTAL COMBUSTION ANALYSIS
SCAQMD METHOD 25
FIELD SAMPLING DATA SHEET**

Job #: U07-014
 Facility: Simi Valley Landfill
 Location: Simi Valley, CA
 Date: 4/29/97
 Operator: AP

Control Device: LFG Flare
 Sample Location: Exhaust
 Ambient Temp.: _____
 Baro. Pressure: _____

Run #2
SAMPLE A

Tank #: S4 Trap #: _____
 Initial Vacuum: 3.6 Torr
 Final Vacuum: _____

SAMPLE B

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

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	29.5	83
05	27.6	83
10	25.8	83
15	23.9	83
20	22.0	83
25	20.1	83
30	18.2	83
35	16.4	83
40	14.5	83
45	12.6	83
50	10.8	83
55	8.9	83
60	7	Stop

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

PAK RATE

Leak Test: ✓
 Post Test: ✓

**TOTAL COMBUSTION ANALYSIS
SCAQMD METHOD 25
FIELD SAMPLING DATA SHEET**

ID #: 1407-014
 Facility: San. Valley Landfill
 Location: San. Valley CA
 Date: 4/29/97
 Operator: AP

Run #3
SAMPLE A

Tank #: SS Trap #: _____
 Initial Vacuum: 3.6 Torr
 Final Vacuum: _____

Control Device: _____
 Sample Location: _____
 Ambient Temp.: _____
 Baro. Pressure: _____

SAMPLE B

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

TIME (min.)	VACUUM ("Hg)	FLOW (cc/min)
00	29.5	83
05	27.6	83
10	25.8	83
15	23.9	83
20	22.0	83
25	20.1	83
30	18.2	83
35	16.4	83
40	14.5	83
45	12.6	83
50	10.8	83
55	8.9	83
60	7	stop

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

WATER RATE

Test : ✓
 Test: ✓

ORSAT DATA SHEET METHOD 3

Facility: SVLF

Job #: W07-014

Source: Flare Outlet

Date: 5/1/97

Run #: 2

By: Tw

Gas	Run	1		2		3		Average Net Volume
		Actual Reading	Net	Actual Reading	Net	Actual Reading	Net	
CO ₂		6.2 6.2	6.2	6.4 6.4	6.4	6.2 6.2	6.2	6.3
O ₂ (Net is Actual O ₂ minus Actual CO ₂ Reading)								
CO (Net is Actual CO minus Actual O ₂ reading)								
N ₂ (Net is 100 minus Actual CO reading)								

ORSAT DATA SHEET METHOD 3

Facility: SVLF

Job #: W07-014

Source: FLARE Outlet

Date: 5/1/97

Run #: 3

By: TW

Gas	Run	1		2		3		Average Net Volume
		Actual Reading	Net	Actual Reading	Net	Actual Reading	Net	
CO ₂		7.8 7.8	7.8	7.8 7.8	7.8	7.8 7.8	7.8	7.8
O ₂ (Net is Actual O ₂ minus Actual CO ₂ Reading)								
CO (Net is Actual CO minus Actual O ₂ reading)								
N ₂ (Net is 100 minus Actual CO reading)								

PARTICULATE FIELD DATA

INDEX = 110

NT 4th VALLEY LF
E 3/19/97
LOCATION 4th Valley, CA
ERATOR 12, 13, 14
RCE 12, 13, 14
NO. 1-17H
MPLEBOXNO.

METERBOXNO. 7
METER ΔH @ 1.8473
Y = 1.0008
PROBE LENGTH, in. 8'
NOZZLE DIAMETER, in. 0.455 / 0.747
STACK DIAMETER, in. 96.4
PROBE HEATER SETTING 25 VA
HEATER BOX SETTING 250
Δ Cp FACTOR 0.84
FILTER NO.

ASSUMED MOISTURE, % 10%
AMBIENT TEMPERATURE 65°F
BARO. PRESS. 29.40
STATIC PRESS. -0.07

PRE TEST LEAK CHECKS
METER 0.070 @ 1.3 in. Hg
PITOTS 1/4" @ 3613.2 in. Hg
ORSAT

(2.4) = Actual ΔH RETAINED

PH	TIME	T _s °F	Δ P in. H ₂ O	√ Δ P	Δ H in. H ₂ O	V _m ft ³	T _{m IN} °F	T _{m OUT} °F	OVEN °F	IMP. OUT °F	VAC. (in. Hg)
-6	00	1548	0.02		2.2	621.293	89	90	192	52	7
5	7.5	1560	0.02		2.2	626.9	92	91	224	60	7.5
4	15.0	1552	0.03	(2.4)	3.2	632.5	95	92	258	62	10
3	22.5	1564	0.03	(3.0)	3.2	639.3	97	94	263	63	10
2	30.0	1602	0.02		2.2	646.4	98	95	260	64	8
1	37.5	1626	0.01		1.1	653.0	100	96	250	65	5
TRP	45.0					657.332	98	94			2.30
FRP	45.0	1531	0.01		2.2	657.332	98	97	240	58	8
5	7.5	1525	0.02	0.15	3.2	663.8	99	99	254	60	10
4	15.0	1515	0.015		3.2	670.4	98	99	255	61	10
3	22.5	1475	0.015		3.2	677.4	97	97	258	60	10
2	30.0	1527	0.015		3.2	686.3	97	95	265	57	10
1	37.5	1510	0.015		3.2	692.4	97	95	268	58	10
TRP	45.0					699.970					
5	12.49	1577	0.03		3.8	6970.300	98	94	227	65	10
5	7.5	1555	0.025		3.1	7080	101	96	248	66	10
4	15.0	1570	0.02		2.2	715.1	103	98	253	67	10
3	22.5	1588	0.02		2.2	721.0	103	98	260	67	10
2	30.0	1595	0.02		2.2	727.9	104	100	268	68	10
1	37.5	1567	0.02		2.2	732.7	103	100	265	66	10
500	45.0					743.660					

continued next page

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	
Final	325	96	3	-	275
Initial	100	100	0	-	264
Liquid Collected	225	-4	3		11
Total Vol. Collected					235

* Leak Check Occurs
POST TEST LEAK CHECKS

Meter @ 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	
				175	

PARTICULATE FIELD DATA

Pg 2/2

Site Valley Road Mill
3/15/77
Station
ATOR
ICE
D.
EBOXNO.

METERBOXNO.
METER ΔH @
Y=
PROBELLENGTH, in.
NOZZLEDIAMETER, in.
STACK DIAMETER, in.
PROBE HEATER SETTING
HEATERBOX SETTING
Δ Cp FACTOR
FILTERNO.

ASSUMED MOISTURE, %
AMBIENT TEMPERATURE
BARO. PRESS.
STATIC PRESS.

PRE TEST LEAK CHECKS

METER @ in. Hg
PITOTS @ in. Hg
ORSAT

TIME	T _s °F	Δ P in. H ₂ O	√ Δ P	Δ H in. H ₂ O	V _m ft ³	T _{m IN} °F	T _{m OUT} °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
1350	1634	0.015		1.9	743.660	97	97	242	60	8
7.5	1634	0.02		2.5	750.0	99	97	239	63	10
15.0	1627	0.02		2.5	757.1	98	96	243	64	10
22.5	1628	0.02		2.5	763.8	98	96	248	67	10
30.0	1587	0.02		2.5	771.1	98	95	268	69	10
37.5	1615	0.015		1.9	778.4	98	95	273	68	
45					785.215					

1570 0.1371 0.4481 2.58 163.592 47.1

END =

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	
Final					
Initial					
Liquid Collected					
Total Vol. Collected					

163.922

POST TEST LEAK CHECKS
Meter 0.000 @ 15 in. Hg
Pitots 1/1 @ 2.0/2.6 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

Site: Valley Handfill
 3/24/97
 IN: Syri Valley
 OR: RV 103
 Flare
 2 - PAH
 BOX NO. 7
 BOX NO. 7
 H @ 1.273
 1.0066
 ART 943

AMBIENT TEMPERATURE 90
 BARO. PRESS. 29.30
 ASSUMED MOISTURE, % 12
 PROBE LENGTH, in. 10.1
 NOZZLE DIAMETER, in. 0.749
 STACK DIAMETER, in. 90
 PROBE HEATER SETTING 250 WA
 HEATER BOX SETTING 250
 Δ Cp FACTOR 0.84
 FILTER NO.
 STATIC PRESSURE -0.06

PRE TEST LEAK CHECKS
 METER 0.005 @ 15 in. Hg
 PITOTS 0/0 @ 30/2.2 in. Hg
 ORSAT

TIME	T _s °F	Δ P in H ₂ O	√ Δ P	Δ H in H ₂ O	V _m ft ³	T _{min} °F	T _{min} OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)	COND TEMP
943	1103.2	0.025		2.0	832.448	77	80	246	66	4	58
7.5	1101.8	0.03		2.4	838.3	91	82	250	57	6	55
15	1104.5	0.03		2.4	844.3	43	84	248	59	6	54
22.5	1104.6	0.03		2.4	850.1	95	87	261	59	6	54
30	1106.6	0.03		2.4	858.7	96	90	268	60	6	55
37.5	1108.8	0.025		2.0	864.5	98	91	248	64	5	54
15	1040 1564	0.02		1.6	869.120	94	94	266	65	5	58
7.5	1563	0.025		2.0	874.5	101	95	260	61	5	53
15	1595	0.025		2.0	880.1	103	96	252	61	5	55
22.5	1598	0.03		2.4	886.0	103	97	248	60	6	56
30.0	1558	0.025		2.0	893.1	104	98	237	62	5	58
37.5	1583	0.02		1.6	898.9	104	99	242	69	4	58
15	1443 1536	0.015		1.2	903.830	98	99	240	69	4	60
7.5	1533	0.015		1.2	908.1	104	99	251	67	4	61
15	1576	0.015		1.2	912.7	104	99	260	70	4	53
22.5	1496	0.01		0.8	917.5	104	99	261	62	4	59
30.0	1527	0.01		0.8	921.2	104	98	260	68	4	59
37.5	1488	0.01		0.8	925.0	104	98	249	70	4	60
15	1240 1506	0.02		1.6	929.008	98	99	251	70	4	60
7.5	1621	0.025		2.0	943.2	104	99	249	64	6	59
15	1612	0.03		2.4	940.4	103	99	250	63	6	59
22.5	1610	0.03		2.4	946.4	104	99	249	63	6	60
30.0	1614	0.025		2.0	953.0	105	99	250	65	6	60
37.5	1635	0.03		2.4	958.8	105	99	250	66	6	59
	1584	0.1439	0.1493	1.83	964.870		97.4				

D = 1588

88 132.422

88

Time of Liquid Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	
Final	288	95	1	-	190
Initial	100	100	0	-	208
Liquid Collected	188	-5	1		18
Vol. Collected					202

POST TEST LEAK CHECKS
 Meter 0.005 @ 15 in. Hg
 Pitots 0/0 @ 34/3.2 in. Hg
 Orsat

Orsat Meas.	Time	CO ₂	O ₂	CO	N ₂
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					
61					
62					
63					
64					
65					
66					
67					
68					
69					
70					
71					
72					
73					
74					
75					
76					
77					
78					
79					
80					
81					
82					
83					
84					
85					
86					
87					
88					
89					
90					
91					
92					
93					
94					
95					
96					
97					
98					
99					
100					
101					
102					
103					
104					
105					
106					
107					
108					
109					
110					
111					
112					
113					
114					
115					
116					
117					
118					
119					
120					
121					
122					
123					
124					
125					
126					
127					
128					
129					
130					
131					
132					
133					
134					
135					
136					
137					
138					
139					
140					
141					
142					
143					
144					
145					
146					
147					
148					
149					
150					
151					
152					
153					
154					
155					
156					
157					
158					
159					
160					
161					
162					
163					
164					
165					
166					
167					
168					
169					
170					
171					
172					
173					
174					
175					
176					
177					
178					
179					
180					
181					
182					
183					
184					
185					
186					
187					
188					
189					
190					
191					
192					
193					
194					
195					
196					
197					
198					
199					
200					
201					
202					
203					
204					
205					
206					
207					
208					
209					
210					
211					
212					
213					
214					
215					
216					
217					
218					
219					
220					
221					
222					
223					
224					
225					
226					
227					
228					
229					
230					
231					
232					
233					
234					
235					
236					
237					
238					
239					
240					
241					
242					
243					
244					
245					
246					
247					
248					
249					
250					
251					
252					
253					
254					
255					
256					
257					
258					
259					
260					
261					
262					
263					
264					
265					

PARTICULATE FIELD DATA

Site: Valley Landfill
 DATE: 3/2/87
 LOCATION: Valley
 OPERATOR: R/L
 CE: 116.2
 O.: 3-PH5
 METERBOXNO.:
 START: 0920

METERBOXNO. 7
 METER ΔH @ 1.8473
 Y= 1.0068
 PROBE LENGTH, in. 10-1
 NOZZLE DIAMETER, in. 0.747
 STACK DIAMETER, in. 96
 PROBE HEATER SETTING NA
 HEATER BOX SETTING 350
 Δ Cp FACTOR 0.84
 FILTER NO.

ASSUMED MOISTURE, % 12
 AMBIENT TEMPERATURE 60
 BARO. PRESS. 29.30
 STATIC PRESS. -0.05

PRE TEST LEAK CHECKS
 METER 0.015 @ 15 in. Hg
 PITOTS 17K @ 92/3.1 in. Hg
 ORSAT

	TIME	T _s °F	Δ P in. H ₂ O	√ Δ P	Δ H in. H ₂ O	V _m ft ³	T _{m IN} °F	T _{m OUT} °F	OVEN °F	IMP. OUT °F	VAC. (in. Hg)	CO ₂ TEA
6	0920	1646	0.03		2.4	11.915	64	64	245	67	6	52
5	7.5	1638	0.03		2.4	18.2	76	66	236	68	6	53
4	15	1666	0.025		2.0	24.6	79	69	239	65	5	58
3	22.5	1623	0.025		2.0	31.0	81	72	247	66	5	57
2	30	1646	0.03		2.4	35.8	82	73	247	64	6	57
1	37.5	1634	0.03		2.4	42.1	84	75	251	63	6	56
6	45	1504	0.025		2.0	48.693	79	78	249	62	5	54
5	7.5	1518	0.03		2.4	54.3	87	78	226	60	6	55
4	15	1513	0.03		2.4	58.8	88	79	230	59	6	56
3	22.5	1555	0.025		2.0	66.3	90	81	238	60	5	56
2	30	1537	0.025		2.0	70.9	91	82	239	61	5	58
1	37.5	1518	0.02		1.6	78.0	92	84	240	62	5	56
6	45	1471	0.025		1.2	84.110	86	86	251	71	7	59
5	7.5	1482	0.02		1.6	89.1	93	87	250	56	5	59
4	15.0	1459	0.02		1.6	94.3	94	88	248	55	5	60
3	22.5	1531	0.025		2.0	100.000	95	89	251	55	5	58
2	30.0	1498	0.02		1.6	105.4	95	89	234	56	5	59
1	37.0	1541	0.02		1.6	111.6	95	91	238	56	5	59
6	45	1608	0.03		2.4	116.410	89	89	250	61	6	56
5	7.5	1614	0.03		2.4	122.8	96	89	250	52	6	56
4	15.0	1582	0.02		1.6	129.0	98	91	248	52	5	60
3	22.5	1628	0.03		2.4	135.0	99	91	253	53	5	56
2	30.0	1635	0.03		2.4	141.4	98	92	235	55	5	59
1	37.5	1626	0.03		2.4	146.0	98	91	248	56	5	59
Avg.		1561.6			2.05	142.491		85.5				

Volume of Liquid Water Collected	Impinger Volume					Silica Gel Wght.
	1	2	3	4	5	
Final	315	104	3			184
Initial	100	100	0			142
Liquid Collected	215	4	3			128
Total Vol. Collected						230

POST TEST LEAK CHECKS
 Meter 0.000 @ 10 in. Hg
 Pitots 17K @ 26/2.2 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
				178

AMBIENT TEMPERATURE

PRE TEST LEAK CHECKS

Simi Valley Landfill
8/19/87
FROM Simi Valley
R/R
RE Landfill Gas
P. 1-metals
RE BOX NO. metals-A
R BOX NO. Co
R A H @ 16046
0.9924
TART 1521

END = 1651 ~~88~~ ~~88~~ ~~88~~ ~~88~~ ~~88~~ $\sqrt{1651}$

POST TEST LEAK CHECKS

Orsat Meas.	Time	CO ₂	O ₂	CO	N ₂
1					
2					
3					
4					

PARTICULATE FIELD DATA

PLANT Smi Valley Landfill
DATE 3/20/97
LOCATION Smi Valley
OPERATOR RV
SOURCE landfill GAS
UNNO. 2-metals
SAMPLE BOX NO. A

TIME START 1419

METERBOXNO. #6
METER ΔH @ 1.6946
Y = 0.9924
PROBELENGTH, in. 4-1
NOZZLEDIAMETER, in. 0.340
STACK DIAMETER, in. 10
PROBE HEATER SETTING 0.50
HEATERBOX SETTING 250
 ΔC_p FACTOR 0.84
FILTERNO. _____

ASSUMED MOISTURE, % 3
 AMBIENT TEMPERATURE 70
 BARO. PRESS. 29.30
 STATIC PRESS. 12.5

PRE TEST LEAK CHECKS

METER 0.05 @ 15 in. Hg
PITOTS ✓✓ @ 343.1 in. Hg
ORSAT _____

P#	TIME	T _s °F	Δ P in H ₂ O	✓ Δ P	Δ H in H ₂ O	Vm ft ³	T _{MIN} °F	T _{MAX OUT} °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
A6	1419	104	0.42		3.7	83.125	99	78	238	67	4
5	8	104	0.42		3.7	92.5	119	100	267	66	4
4	16	104	0.42		3.7	103.4	119	102	245	62	4
3	24	104	0.40		3.5	111.4	117	102	245	62	4
2	32	104	0.42		3.7	120.7	117	103	247	64	4
1	40	104	0.42 ✓		3.7	130.1	118	103	246	62	4
SND	48	104	0.42			139.4	#				
A1	1507	104	0.42		3.7	139.4	118	103	244	62	4
2	8	104	0.43		3.8	148.8	117	102	249	62	4
3	16	104	0.43		3.8	158.0	117	102	246	62	4
4	24	103	0.42		3.7	167.5	117	102	244	62	4
5	32	104	0.43		3.8	176.9	119	102	246	61	4
6	40	104	0.41		3.7	186.7	120	104	247	61	
SMP	48					195.800					
AVG.	.	103.9		0.6480	3.700	112.675		109.2			

TIME END = 1555 ~~00~~

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	5
Final	111	126	8	$\frac{100}{103}$	187
Initial	100	100	0	$\frac{100}{100}$	168
Liquid Collected	11	26	8	$\frac{6}{3}$	19
Total Vol. Collected					73

POST TEST LEAK CHECKS

Meter 0.000 @ 10 in.Hg
Pitots ✓ 12 @ 2.7/1.9 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
				1.20

PARTICULATE FIELD DATA

Site: Valley Junction, GA
 DATE: 3/21/97
 LOCATION: Valley
 OPERATOR: RV/CC
 CE: Landeril & MS
 O: 3 - meters
 METER BOX NO.:
 START: 1417

METER BOX NO. #6
 METER ΔH @ 1.6046
 Y = 0.924
 PROBE LENGTH, in. 4.1
 NOZZLE DIAMETER, in. 0.310
 STACK DIAMETER, in. 10
 PROBE HEATER SETTING 250
 HEATER BOX SETTING 250
 Δ Cp FACTOR 0.84
 FILTER NO.

ASSUMED MOISTURE, % 3
 AMBIENT TEMPERATURE 22.50
 BARO. PRESS.
 STATIC PRESS. +6.8

PRE TEST LEAK CHECKS
 METER 0.015 @ 15 in. Hg
 PITOTS 1/4 @ 3.12 in. Hg
 ORSAT

	TIME	T _s °F	Δ P in. H ₂ O	√ Δ P	Δ H in. H ₂ O	V _m ft ³	T _{m IN} °F	T _{m OUT} °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
10	1417	102	0.44		4.0	464.000	94	84	246	66	2
5	8	101	0.44		4.0	473.6	108	86	240	65	2
4	16	101	0.44		4.0	483.1	108	87	240	63	2
3	24	101	0.43		3.9	492.8	108	88	239	61	2
2	32	101	0.43		3.9	502.4	108	89	239	61	2
1	40	101	0.44		4.0	512.2	108	89	239	60	2
4	48	101	0.44		4.0	521.7	109	90	240	60	2
8	56	101	0.44		4.0	531.2	109	90	243	60	2
3	64	101	0.44		4.0	540.8	109	90	236	60	2
4	72	101	0.43		3.9	550.7	109	91	240	60	2
5	80	101	0.43		3.9	560.3	109	90	240	60	2
6	88	101	0.43		3.9	570.0	109	90	238	60	2
STOP	96					579.656					
Avg. . 101.1 0.602 3.96 115.650 98											

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	
Final	113	124	7	105/105	234
Initial	100	100	0	100/100	209
Liquid Collected	13	24	7	5/5	25
Total Vol. Collected					79

POST TEST LEAK CHECKS
 Meter 0.0024 @ 4 in. Hg
 Pitots 1/4 @ 3.3/3.0 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
				1.81

PARTICULATE FIELD DATA

75

Site Valley Handfill
 5/19/97
 LOCATION: Valley
 METHOD: CV
 E: Handfill gds
 L-CARD
 LE BOX NO. A
 R BOX NO. +6
 Δ H @ 1.60+6
 8.9724
 TART 1053

AMBIENT TEMPERATURE
 BARO. PRESS. 29.40
 ASSUMED MOISTURE, % 3%
 PROBE LENGTH, in. 4.2
 NOZZLE DIAMETER, in. 0.312
 STACK DIAMETER, in. 10
 PROBE HEATER SETTING -
 HEATER BOX SETTING -
 Δ Cp FACTOR 0.84
 FILTER NO.
 STATIC PRESSURE +7.0

PRE TEST LEAK CHECKS
 METER 0.000 @ 12 in. Hg
 PITOTS 4V @ 3.0/2.9 in. Hg
 ORSAT

	TIME	T _s °F	Δ P in H ₂ O	√ Δ P	Δ H in H ₂ O	V _m ft ³	T _m IN °F	T _m OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
1	1053	102	0.40		3.7	298.648	82	82	NA	63	12
2	20	103	0.38		3.4	422.9	112	95		63	10
3	40	103	0.40		3.5	444.6	120	102		62	10
4	60	104	0.37		3.3	466.9	122	105		63	10
5	80	104	0.44		4.0	489.5	123	107		67	12
6	100	104	0.44		4.0	514.7	120	108		66	12
7	120		0			539.470					
8	1305	103	0.45		4.0	539.470	105	104		63	12
9	20	103	0.44		4.0	563.8	114	105		62	12
10	40	104	0.45		4.0	588.2	112	104		55	12
11	60	104	0.42		3.6	613.2	110	102		57	10
12	80	104	0.41		3.5	635.7	111	101		58	9
13	100	104	0.41		3.5	652.0	112	101		60	9
14	120					681.100					
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											
31											
32											
33											
34											
35											
36											
37											
38											
39											
40											
41											
42											
43											
44											
45											
46											
47											
48											
49											
50											
51											
52											
53											
54											
55											
56											
57											
58											
59											
60											
61											
62											
63											
64											
65											
66											
67											
68											
69											
70											
71											
72											
73											
74											
75											
76											
77											
78											
79											
80											
81											
82											
83											
84											
85											
86											
87											
88											
89											
90											
91											
92											
93											
94											
95											
96											
97											
98											
99											
100											
101											
102											
103											
104											
105											
106											
107											
108											
109											
110											
111											
112											
113											
114											
115											
116											
117											
118											
119											
120											
121											
122											
123											
124											
125											
126											
127											
128											
129											
130											
131											
132											
133											
134											
135											
136											
137											
138											
139											
140											
141											
142											
143											
144											
145											
146											
147											
148											
149											
150											

ND = 88 88 88 88 88

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	
Final	150	112	4		261
Initial	100	100	0		234
Liquid Collected	50	12	4		27
Vol. Collected					93

POST TEST LEAK CHECKS
 Meter 0.010 @ 15 in. Hg
 Pitots 4V @ 1.8/1.5 in. Hg
 Orsat

Orsat Meas.	Time	CO ₂	O ₂	CO	N ₂
1					
2					
3					
4					

Simi Valley landfill

PRE TEST LEAK CHECKS
METER 0.00 @ 15 in. Hg
PITOTS ✓✓ @ 3.428 in. Hg
ORSAT

[illegible]

IND =

Volume of Liquid Water Collected	Impinging Volume				Silica Gel Wght.
	1	2	3	4	5
Final	171	102	12		190
Initial	100	100	0		167
Liquid Collected	71	2	12		23
Vol. Collected					10800

Meter 0.000 @ 10 in.Hg
Pitots 1/1 @ 3.6/2.6 in.Hg
Orsat _____

Orsat Meas.	Time	CO ₂	O ₂	CO	N ₂
1					
2					
3					
4					

METERBOXNO. 6
METER ΔH @ 1.6046
Y = 0.5974
PROBELENGTH, in. 4-2
NOZZLEDIAMETER, in. 0.312
STACK DIAMETER, in. 10
PROBE HEATER SETTING NA
HEATERBOXSETTING 114
Δ Cp FACTOR 0.84
FILTERNO. _____

PRE TEST LEAK CHECKS
METER 0.00 @ 15 in. Hg
PITOTS ✓ @ 30/30 in. Hg
ORSAT _____

WE START 0915

TIME END =					
Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	5
Final	152	116	3		284
Initial	100	100	0		263
Liquid Collected	52	16	3		21
Total Vol. Collected					92

Meter _____ @ _____ 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
------------	----------------	----------------	----------------	---------

BARO. PRESS.	29.40
ASSUMED MOISTURE, %	NA
PROBE LENGTH, in.	24.02
NOZZLE DIAMETER, in.	1.4
STACK DIAMETER, in.	96
PROBE HEATER SETTING	NA
HEATER BOX SETTING	NA
Δ Cp FACTOR	NA
FILTER NO.	NA
STATIC PRESSURE	NA

METER 0.000 @ 15 in. Hg
PITOTS _____ @ _____ in. Hg
ORSAT _____

[illegible]

D =

Volume of Liquid Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	5
Final	158	116	3	-	250
Initial	100	100	0	-	242
Liquid Collected	58	16	3		8
Vol. Collected					85.00

ON AIR MEASUREMENT SERVICES, INC.

Meter 8.010 @ 10 in.Hg
Pitots _____ @ _____ in.Hg
Orsat _____

Orsat Meas.	Time	CO ₂	O ₂	CO	N ₂
1					
2					
3					
4					

PARTICULATE FIELD DATA

SMI Valley Inc 12/11
 DATE 12/11
 LOCATION SMI Valley
 RATOR RV
 PCE Flare
 NO. 2 - HCL/HF
 LEBOXNO.
 START 1925

METERBOXNO. #57
 METER ΔH @ 1.2473
 Y= 1.0062
 PROBELLENGTH, in. 9.125
 NOZZLEDIAMETER, in. N/A
 STACK DIAMETER, in. 9.6
 PROBE HEATER SETTING N/A
 HEATERBOXSETTING N/A
 Δ Cp FACTOR N/A
 FILTERNO. N/A

ASSUMEDMOISTURE, % N/A
 AMBIENTTEMPERATURE 76
 BARO.PRESS. 29.30
 STATICPRESS. N/A

PRE TEST LEAK CHECKS
 METER C.C.C. @ 15 in. Hg
 PITOTS N/A @ in. Hg
 ORSAT

TIME	Ts °F	Δ P in. H ₂ O	√ Δ P	Δ H in. H ₂ O	Vm ft ³	T _{in} IN °F	T _{in} OUT °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
1925	N/A	N/A	N/A	1.85	965.282	93	95	N/A	67	2
10				1.85	973.3	103	96		66	2
20				1.85	980.8	103	97		66	2
40				1.85	996.0	104	98		64	2
50				1.85	1003.3	103	97		62	2
60				1.85	1019.9	102	97		64	2
61					1011.550					

Avg. 1.85 46.268 97.7

END = 1526

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	
Final	145	101	1	-	172
Initial	100	100	0	-	163
Liquid Collected	45	1	1		9
Total Vol. Collected					56

88
 POST TEST LEAK CHECKS
 Meter 0.000 @ 10 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

METERBOXNO. 7
METER ΔH @ 1.847
Y= 10068
PROBELENGTH, in. 4.4072
NOZZLEDIAMETER, in. N/A
STACK DIAMETER, in. 90
PROBE HEATER SETTING 1M
HEATERBOX SETTING N/A
Δ Cp FACTOR N/A
FILTER NO. N/A

ASSUMED MOISTURE, % 13
 AMBIENT TEMPERATURE 29.30
 BARO. PRESS. 2
 STATIC PRESS. NA

METER 0.000 @ 15 in. Hg
PITOTS _____ @ _____ in. Hg
ORSAT _____

NT Sumi Valley Landfill
 DATE 3/24/97
 LOCATION Sumi Valley
 RATOR CY/GR
 RCE PLATE
 NO. 3-HF/HCE
 LEBOXNO. _____

E START 1340

[illegible]

Avg.

END =

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	5
Final	159	111	3		233
Initial	100	100	0		221
Liquid Collected	39	11	3		12
Total Vol. Collected					65

Meter 0.000 @ 10 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
				1.87

PARTICULATE FIELD DATA

791/2

STATION STEIN VALLEY LE
3/19/97
STEIN VALLEY, CA
PL. ES. RV
CE LF 16 FLARE
NO. 1 - FURN
PLEBOXNO. A - FORM
START 0906

METERBOXNO. 5
METER ΔH @ NA
Y = 1.0082 @ 0.5 lpm
PROBE LENGTH, in. 48"
NOZZLE DIAMETER, in. NA
STACK DIAMETER, in. 96"
PROBE HEATER SETTING NA
HEATER BOX SETTING NA
Δ Cp FACTOR NA
FILTER NO. NA

ASSUMED MOISTURE, % NA
AMBIENT TEMPERATURE ~80°C
BARO. PRESS. 745 mm Hg
STATIC PRESS. 2.05 in. H₂O

PRE TEST LEAK CHECKS
METER AK @ 10 in. Hg
PITOTS NA @ NA in. Hg
ORSAT NA

#	TIME	T _s °F	Δ P in. H ₂ O	Δ P in. H ₂ O	FLOW Δ H in. H ₂ O RATE	V _m ft ³	T _{m IN} °F	T _{m OUT} °F	OVEN °F	IMP. OUT °F	VAC. (in. Hg)
A	00	NA	NA	NA	0.5 lpm	696.944	82	83	NA	NA	<2
	10				0.5 lpm	697.1	84	84		<60	<2
	20				0.5	697.3	86	86			<2
	30				0.5	697.5	88	88			<2
	40				0.5	697.7	89	86			<2
	50				0.5	697.9	91	91			<2
	60				0.5	698.1	92	93			<2
	70				0.5	698.3	93	94			<2
	80				0.5	698.6	94	94			<2
	90				0.5	698.8	95	95			<2
	100				0.5	698.0	90	96			<2
	110				0.5	699.2	97	97			<2
	120				0.5	699.5	98	99			<2
	130				0.5	699.7	99	99			<2
	140				0.5	700.99	99	100			<2
	150				0.5	700.27	100	101			<2
	160				0.5	700.555	101	102			<2
	170				0.5	700.800	102	103			<2
	180				0.5	701.050	102	103			<2
	190				0.5	701.27	102	103			<2
	200				0.5	701.50	102	102			<2
	210				0.5	701.710	102	101			<2
	220				0.5	701.99	103	101			<2
	230				0.5	702.25	104	103			<2
	240					702.470					<2
Avg.											
END =											

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	5
Final					
Initial					
Liquid Collected					
Total Vol. Collected					

POST TEST LEAK CHECKS

Meter _____ @ _____ 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

Page 2 of 2

Site Valley landfill
3/19/82
LOCATION Sim Valley
ANALYST ELIANTIS
E PLAD
1-Form 430
LE BOX NO. _____
R BOX NO. _____
A H @ _____
START _____

AMBIENT TEMPERATURE _____
BARO. PRESS. _____
ASSUMED MOISTURE, % _____
PROBE LENGTH, in. _____
NOZZLE DIAMETER, in. _____
STACK DIAMETER, in. _____
PROBE HEATER SETTING _____
HEATER BOX SETTING _____
Δ Cp FACTOR _____
FILTER NO. _____
STATIC PRESSURE _____

PRE TEST LEAK CHECKS
METER _____ @ _____ in. Hg
PITOTS _____ @ _____ in. Hg
ORSAT _____

TIME	T _s °F	Δ P in H ₂ O	√ Δ P	Flow in H ₂ O Rate	Vm ft ³	T _{amb} °F	T _{out} °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
260				5.4pm	702.80	97	100	NA	260	22
270				0.5	703.115	99	100			22
280				0.5	703.445	99	100			22
290				0.5	703.166	97	97			22
300				0.5	703.86	97	97			22
310				0.5	704.07	96	96			22
320				0.5	704.28	96	96			22
330				0.5	704.48	96	96			22
340				0.5	704.716	96	96			22
350				0.5	704.91	95	95			22
360				0.5	705.12	95	95			22
370				0.5	705.32	95	95			22
380				0.5	705.54	95	95			22
390				0.5	705.72	95	95			22
400				0.5	705.895	95	95			22
410				0.5	706.06	95	95			22
420				0.5	706.23	94	95			22
430				0.5	706.38	94	95			22
440				0.5	706.54	94	95			22
450				0.5	706.72	90	90			22
460				0.5	706.908	85	85			22
470				0.5	707.1	84	84			22
480					707.220	81	81			22
				0.5	10.276	95.1				

END = _____

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	5
Final					
Initial					
Liquid Collected					
Vol. Collected					

POST TEST LEAK CHECKS

Meter _____ @ _____ in. Hg
Pitots _____ @ _____ in. Hg
Orsat _____

Orsat Meas.	Time	CO ₂	O ₂	CO	N ₂
1					
2					
3					
4					

PARTICULATE FIELD DATA

1 of 2

Simi Valley Handmill

AMBIENT TEMPERATURE NA
 BARO. PRESS. 29.30
 ASSUMED MOISTURE, % NA
 PROBE LENGTH, in. NA
 NOZZLE DIAMETER, in. NA
 STACK DIAMETER, in. 96
 PROBE HEATER SETTING NA
 HEATER BOX SETTING NA
 Δ Cp FACTOR NA
 FILTER NO. NA
 STATIC PRESSURE NA

PRE TEST LEAK CHECKS
 METER 6.000 @ 7 in. Hg
 PITOTS NA @ NA in. Hg
 ORSAT NA

LOCATION Simi Valley
 OPERATOR EV
 DATE 3/20/97
 TIME 0846
 TEST BOX NO. 2- Hulsberg
 R BOX NO. 5
 R Δ H @ 1.886
 START 0846

TIME	T _s °F	Δ P in H ₂ O	√ Δ P	Δ H in H ₂ O	V _m ft ³	T _{in} °F	T _{out} °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
0846	NA	NA	NA	0.02	707.600	70	70	NA	<60	<1
20				0.02	707.81	75	75		<60	<1
20				0.02	708.02	78	79		<60	<1
30				0.02	708.23	80	80		<60	<1
40				0.02	708.44	81	82		<60	<1
50				0.02	708.65	85	85		<60	<1
60				0.02	708.85	87	87		<60	<1
70				0.02	709.063	87	88		<60	<1
80				0.02	709.286	90	90		<60	<1
90				0.02	709.48	91	91		<60	<1
100				0.02	709.68	92	92		<60	<1
110				0.02	709.865	92	92		<60	<1
120				0.02	710.06	93	93		<60	<1
130				0.02	710.255	94	94		<60	<1
140				0.02	710.45	95	95		<60	<1
150				0.02	710.64	95	95		<60	<1
160				0.02	710.831	95	95		<60	<1
170				0.02	711.02	96	96		<60	<1
180				0.02	711.213	96	96		<60	<1
190				0.02	711.41	97	97		<60	<1
200				0.02	711.61	97	97		<60	<1
210				0.02	711.803	97	98		<60	<1
220				0.02	712.040	97	98		<60	<1
230				0.02	712.209	97	98		<60	<1

ND =

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	
Final					
Initial					
Liquid Collected					
Vol. Collected					

POST TEST LEAK CHECKS

Meter _____ @ _____ in. Hg
 Pitots _____ @ _____ in. Hg
 Orsat _____

Orsat Meas.	Time	CO ₂	O ₂	CO	N ₂
1					
2					
3					
4					

PARTICULATE FIELD DATA

2052

San Valley Road, IL
N
OR
2-Aldehydes (cont)
BOX NO.
BOX NO.
H @
ART

AMBIENT TEMPERATURE
BARO. PRESS.
ASSUMED MOISTURE, %
PROBE LENGTH, in.
NOZZLE DIAMETER, in.
STACK DIAMETER, in.
PROBE HEATER SETTING
HEATER BOX SETTING
Δ Cp FACTOR
FILTER NO.
STATIC PRESSURE

PRE TEST LEAK CHECKS
METER @ in. Hg
PITOTS @ in. Hg
ORSAT

TIME	T _s °F	Δ P in H ₂ O	√ Δ P	Δ H in H ₂ O <i>2.00</i>	V _m ft ³	T _{m IN} °F	T _{m OUT} °F	OVEN °F	IMP. OUT °F	VAC. (in Hg)
240				0.5	712.451	98	100		260	< 1
250				0.5	712.568	99	100		260	< 1
260				0.5	712.798	99	100		260	< 1
270				0.5	712.950	99	100		260	< 1
280				0.5	713.146	99	100		260	< 1
290				0.5	713.341	99	100		260	< 1
300				0.5	713.51	99	100		266	< 1
310				0.5	713.66	98	99		266	< 1
320				0.5	713.83	98	98		260	< 1
330				0.5	713.97	96	96		260	< 1
340				0.5	714.15	95	96		260	< 1
350				0.5	714.280	95	97		260	< 1
360				0.5	714.42	95	96		260	< 1
370				0.5	714.57	95	96		260	< 1
380				0.5	714.705	95	96		260	< 1
390				0.5	714.91	95	95		260	< 1
400				0.5	715.11	94	94		260	< 1
410				0.5	715.31	95	94		261	< 1
420				0.5	715.51	95	94		260	< 1
430				0.5	715.72	95	94		260	< 1
440				0.5	715.92	95	95		260	< 1
450				0.5	716.14	94	93		260	< 1
460				0.5	716.34	91	92		260	< 1
470				0.5	716.54	91	91		260	< 1
480				0.26	716.740		92.1	KN		

D =

9.140
0.5377

Name of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	5
Final					
Initial					
Liquid Collected					
Vol. Collected					

POST TEST LEAK CHECKS

Meter 0.000 @ 10 in. Hg
Pitots @ in. Hg
Orsat

Orsat Meas.	Time	CO ₂	O ₂	CO	N ₂
1					
2					
3					
4					

PARTICULATE FIELD DATA

Simi Valley landfill
 3/21/97
 LOCATION: Simi Valley
 OPERATOR: RV/RL
 CE: Flare
 NO.: 3 - Alachyngals
 METERBOXNO.:
 START: 0843

METERBOXNO. 45
 METER ΔH @ 1.885B
 Y=
 PROBE LENGTH, in. QUARTZ
 NOZZLE DIAMETER, in. 1/4
 STACK DIAMETER, in. 96
 PROBE HEATER SETTING 1/4
 HEATER BOX SETTING 1/4
 Δ Cp FACTOR 1/4
 FILTER NO. 1/4

ASSUMED MOISTURE, % 1/4
 AMBIENT TEMPERATURE 1/4
 BARO. PRESS. 34.30
 STATIC PRESS. 1/4

PRE TEST LEAK CHECKS
 METER 0.000 @ 10 in. Hg
 PITOTS @ in. Hg
 ORSAT

TIME	Ts °F	Δ P in. H ₂ O	√ Δ P	Δ H in. H ₂ O	Vm ft ³	T _{in} °F	T _{out} °F	OVEN °F	IMP. OUT °F	VAC. (in. Hg)
0843	NA	NA	NA	0.02	716.900	57	57	NA	<60	<1
10				0.02	717.20	65	65		<60	<1
20				0.02	717.505	67	67		<60	<1
30				0.02	717.76	68	69		<60	<1
40				0.02	718.00	71	71		<60	<1
50				0.02	718.24	73	74		<60	<1
60				0.02	718.500	74	74		<60	<1
70				0.02	718.76	75	75		<60	<1
80				0.02	718.06	75	75		<60	<1
90				0.02	719.20	76	76		<60	<1
100				0.02	719.327	76	76		<60	<1
110				0.02	719.535	76	77		<60	<1
120				0.02	719.74	77	77		<60	<1
130				0.02	719.94	78	78		<60	<1
140				0.02	720.135	79	80		<60	<1
150				0.02	720.321	80	81		<60	<1
160				0.02	720.576	81	81		<60	<1
170				0.02	720.715	82	82		<60	<1
180				0.02	720.714	84	85		<60	<1
190				0.02	721.178	84	85		<60	<1
200				0.02	721.310	85	86		<60	<1
210				0.02	721.504	86	87		<60	<1
220				0.02	721.710	87	88		<60	<1
230				0.02	721.980	87	89		<60	<1
240				0.02	722.088	88	89		<60	<1

VE.

END =

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	5
Final					
Initial					
Liquid Collected					
Total Vol. Collected					

POST TEST LEAK CHECKS

Meter @ 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

SITE: SEINE VALLEY LANDFILL
 DATE: 3/21/97
 LOCATION: _____
 OPERATOR: _____
 PROBE: 0.3-FOUR-WAY-PORT CONT.
 METER BOX NO.: _____
 START: _____

METER BOX NO. _____
 METER ΔH @ _____
 Y = _____
 PROBE LENGTH, in. _____
 NOZZLE DIAMETER, in. _____
 STACK DIAMETER, in. _____
 PROBE HEATER SETTING _____
 HEATER BOX SETTING _____
 ΔC_p FACTOR _____
 FILTER NO. _____

ASSUMED MOISTURE, % _____
 AMBIENT TEMPERATURE _____
 BARO. PRESS. _____
 STATIC PRESS. _____

PRE TEST LEAK CHECKS

METER _____ @ _____ in. Hg
 PITOTS _____ @ _____ in. Hg
 ORSAT _____

TIME	T _s °F	ΔP in. H ₂ O	$\sqrt{\Delta P}$	ΔH in. H ₂ O	V _m ft ³	T _{in} °F	T _{out} °F	OVEN °F	IMP. OUT °F	VAC. (in. Hg)
250				0.02	722.248	88	89		460	<1
260				0.02	722.455	88	89		460	<1
270				0.02	722.66	87	87		460	<1
280				0.02	722.87	86	86		460	<1
290				0.02	723.08	86	86		460	<1
300				0.02	723.25	84	84		460	<1
310				0.02	723.42	84	83		460	<1
320				0.02	723.59	82	82		460	<1
330				0.02	723.76	81	82		460	<1
340				0.02	723.85	81	82		460	<1
350				0.02	724.07	82	82		460	<1
360				0.02	724.29	82	82		460	<1
370				0.02	724.51	82	82		460	<1
380				0.02	724.735	82	82		460	<1
390				0.02	725.02	82	82		460	<1
400				0.02	725.200	82	82		460	<1
410				0.02	725.38	82	81		460	<1
420				0.02	725.56	81	81		460	<1
430				0.02	725.74	81	81		460	<1
440				0.02	725.92	81	81		460	<1
450				0.02	726.08	80	81		460	<1
460				0.02	726.29	80	80		460	<1
470				0.02	726.40	80	80		460	<1
480					726.673					
avg.				0.02	9.773		80.1			

Volume of Liquid Water Collected	Impinger Volume				Silica Gel Wght.
	1	2	3	4	
Final					
Initial					
Liquid Collected					
Total Vol. Collected					

POST TEST LEAK CHECKS

Meter 6.000 @ 10 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	

ORSAT DATA SHEET METHOD 3

Facility: WI 7014 -

Job #: W07-014

Source: FLARE

Date: 3/20/97

Run #: 1

By: RL

Gas	Run	1		2		3		Average Net Volume
		Actual Reading	Net	Actual Reading	Net	Actual Reading	Net	
CO ₂		7.4 7.4	7.4	7.8 7.8	7.8	7.8 7.8	7.8	7.8
O ₂ (Net is Actual O ₂ minus Actual CO ₂ Reading)		20.0 20.0	12.2	20.0 20.0	12.2	20.0 20.0	12.2	12.2
CO (Net is Actual CO minus Actual O ₂ reading)								
N ₂ (Net is 100 minus Actual CO reading)								

ORSAT DATA SHEET METHOD 3

Facility: Waste Management

Job #: W07-014

Source: FLARE

Date: 4/1/87

Run #: 2

By: TV

Run	1		2		3		Average Net Volume
	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net	
CO ₂	7.4 7.4	7.4	7.4 7.4	7.4	7.4 7.4	7.4	7.4
O ₂ (Net is Actual O ₂ minus Actual CO ₂ Reading)	20.0 20.0	12.6	20.0 20.0	12.6	20.0 20.0	12.6	12.6
CO (Net is Actual CO minus Actual O ₂ reading)							
N ₂ (Net is 100 minus Actual CO reading)							

ORSAT DATA SHEET METHOD 3

Facility: Waste Management

Source: CEG FLAME OUT

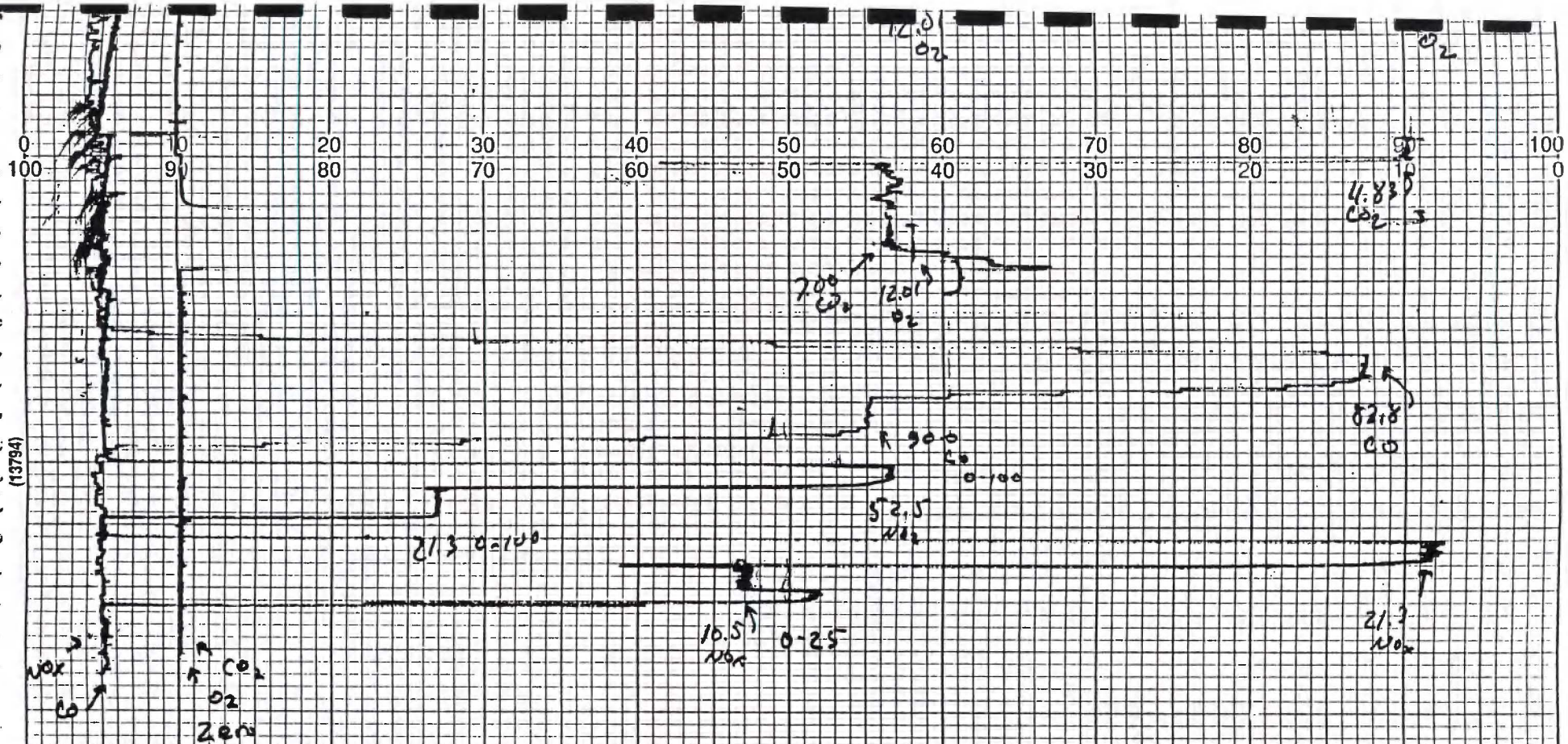
Run #: 3

Job #: W07-014

Date: 4/1/97

By: TW

Run Gas	1		2		3		Average Net Volume
	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net	
CO ₂	7.6 7.6	7.6	7.6 7.6	7.6	7.6 7.6	7.6	7.6
O ₂ (Net is Actual O ₂ minus Actual CO ₂ Reading)	19.8 19.8	12.2	19.8 19.8	12.2	19.8 19.8	12.2	12.2
CO (Net is Actual CO minus Actual O ₂ reading)							
N ₂ (Net is 100 minus Actual CO reading)							



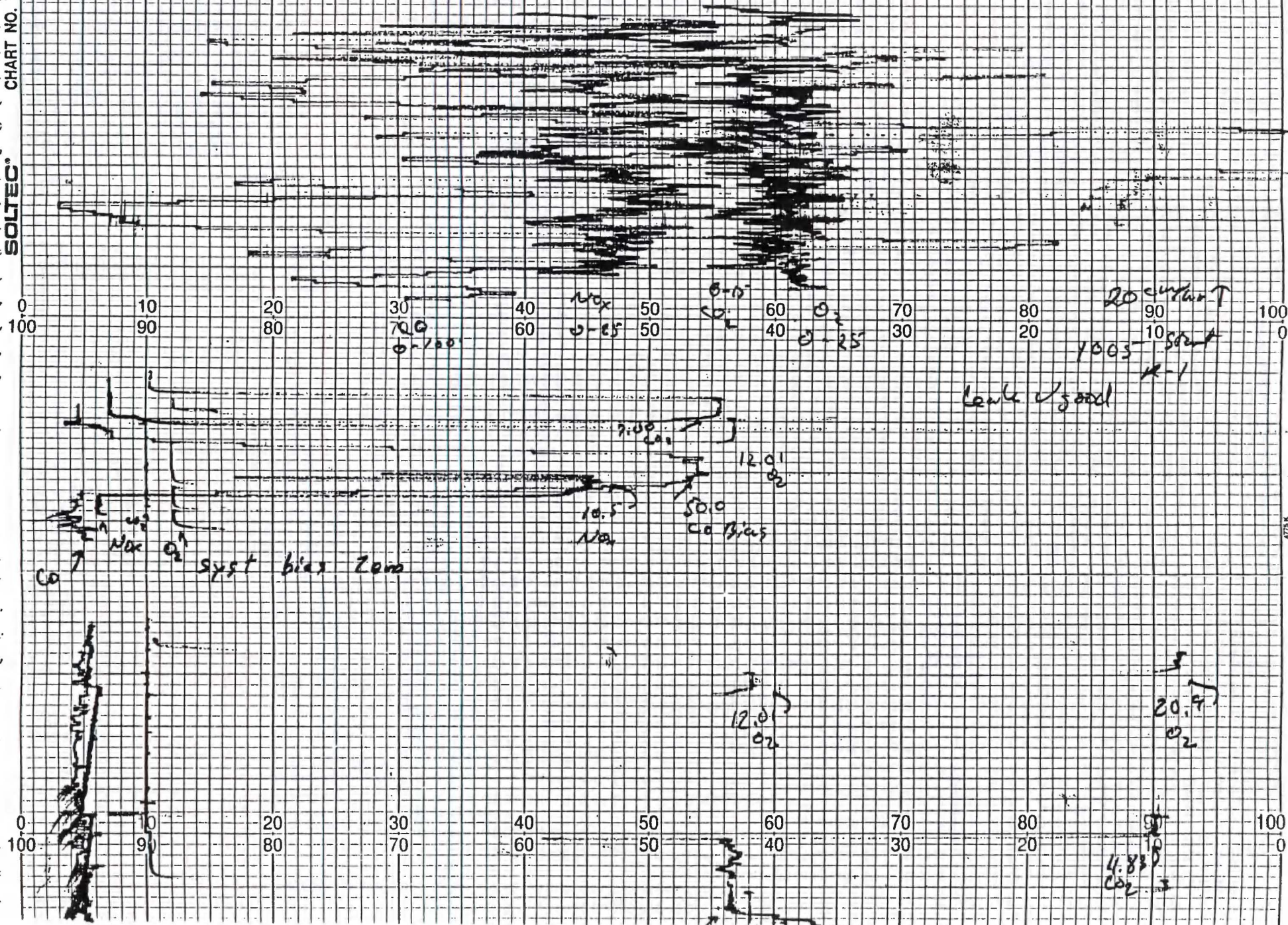
W07-0105 3/18/87 Simi Valley Landfill

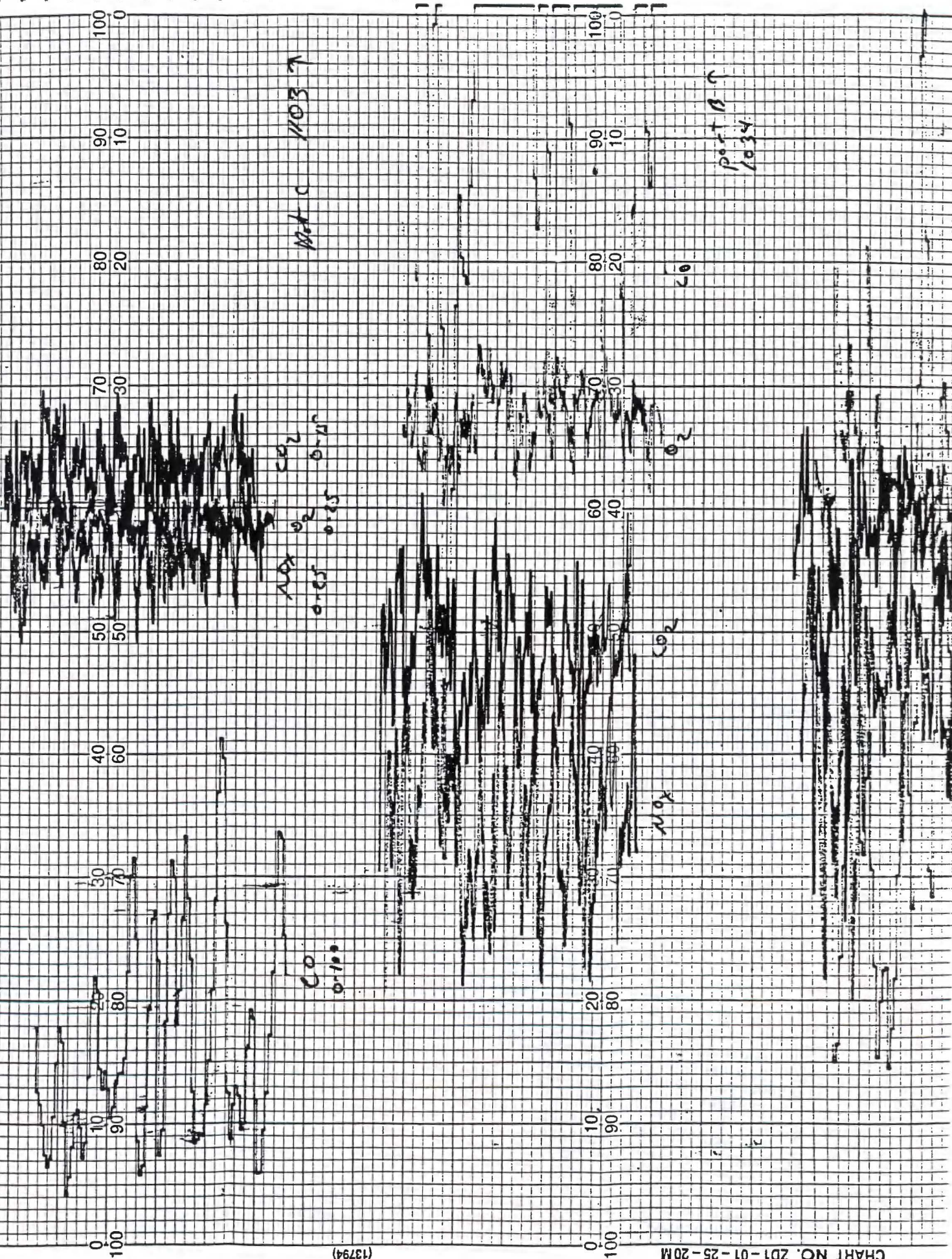
- SA12668 7.00 CO₂ 12.01 O₂
- SA43624 11.83 CO
- SA5230 83.8 CO/NO_x
- SA3523 50.0 NO_x/CO
- SA1000 10.5 NO_x
- SA13908 21.3 NO_x

CHART NO. ZD1-01-25-20M

261

Port B ↑
1034





Port C 1103

Port B 1034

CO2
NO2
0-05 0-10 0-15

CO2

NO2

CO
0-10

UUC SOLTEC CHART NO. ZD1-01-2

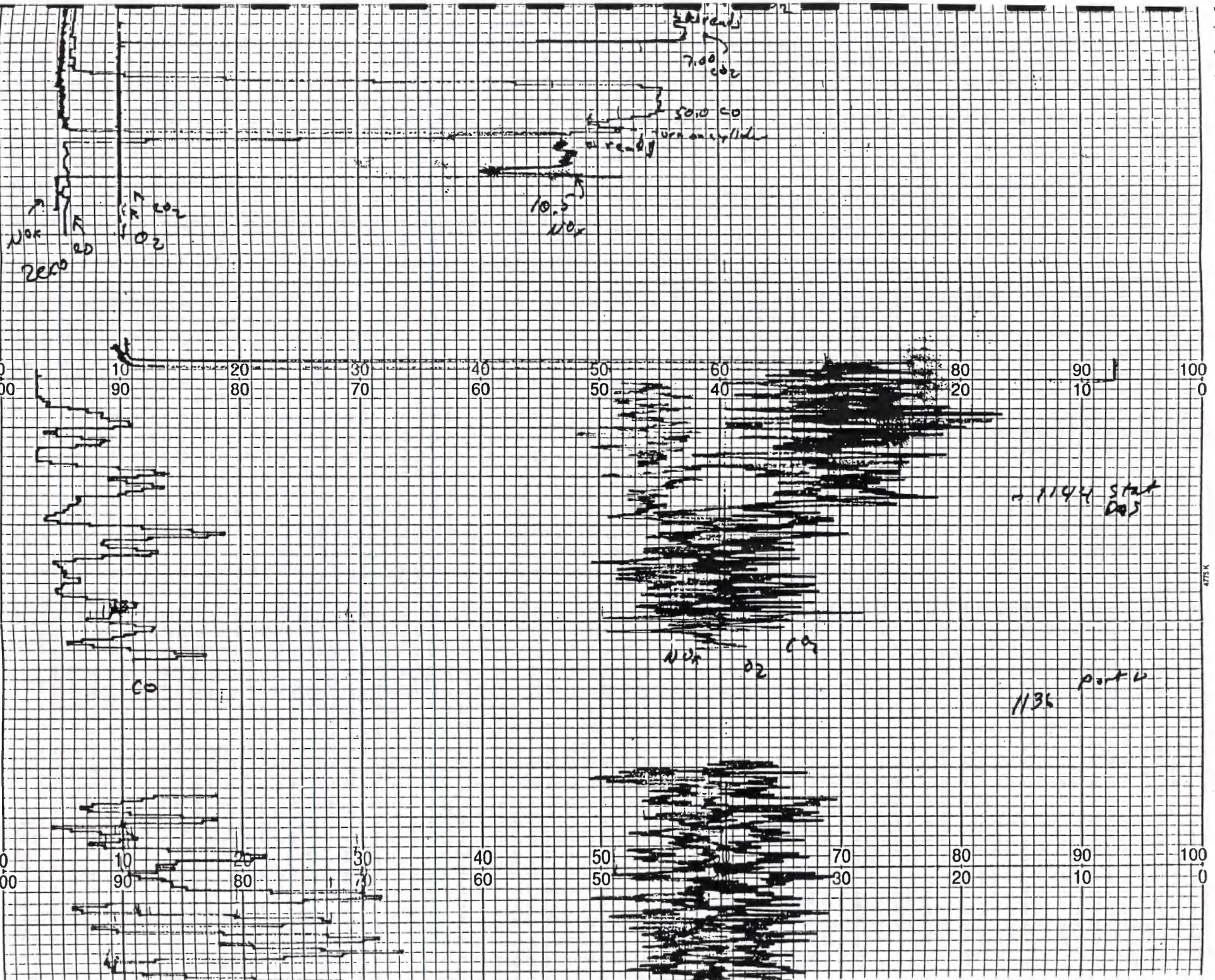
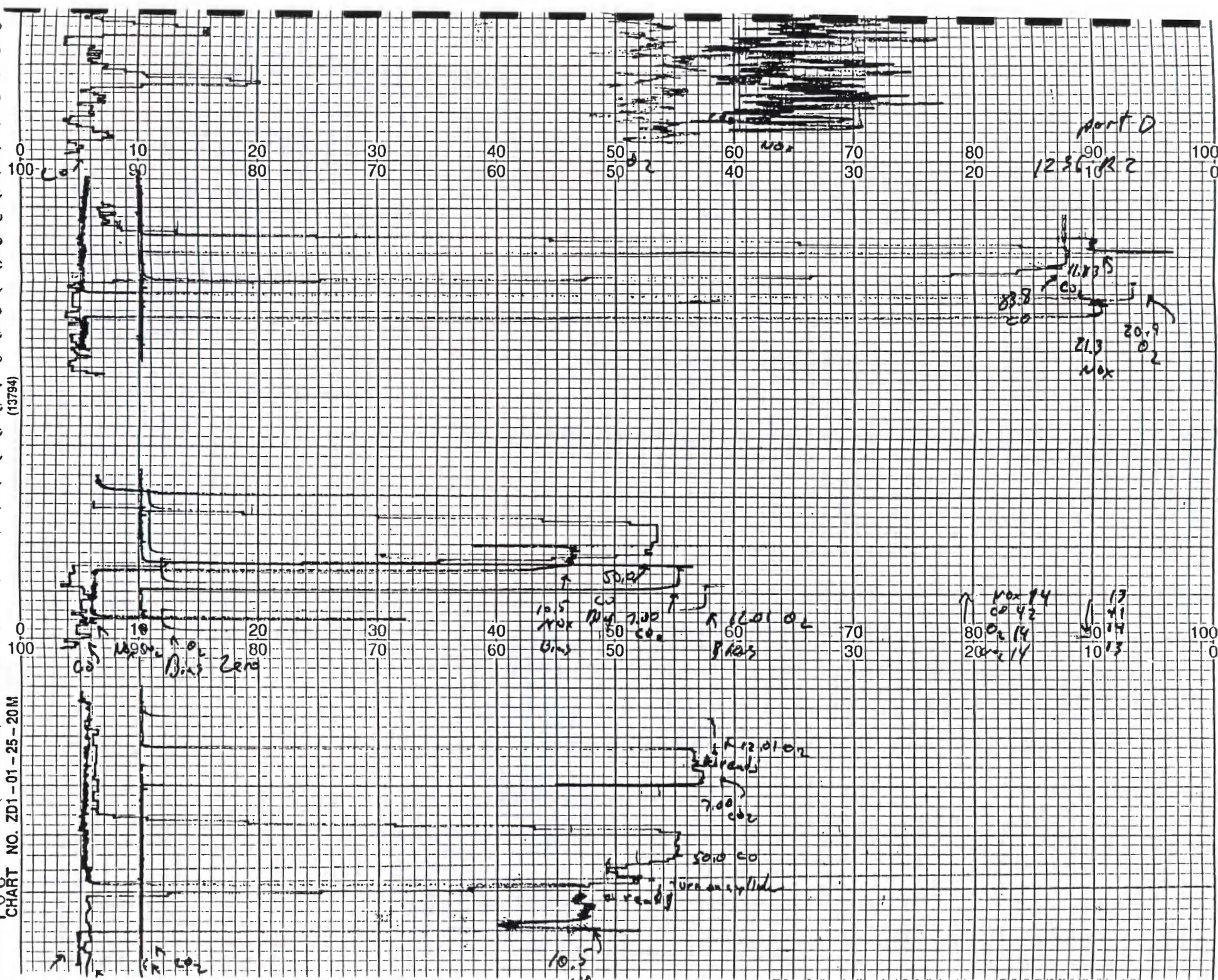


CHART NO. ZD1-01-25-20M

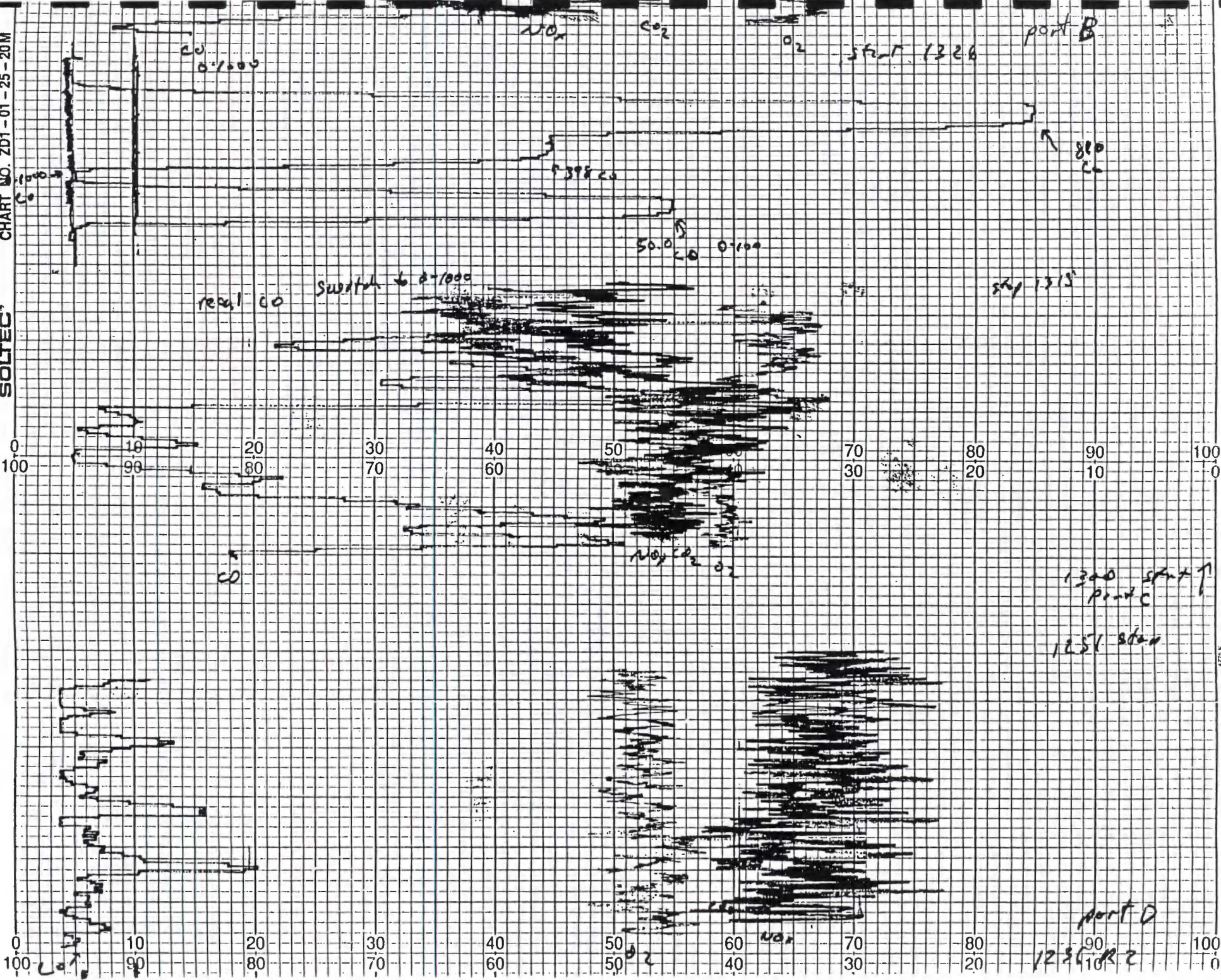
(13794)



202

SOLTEC

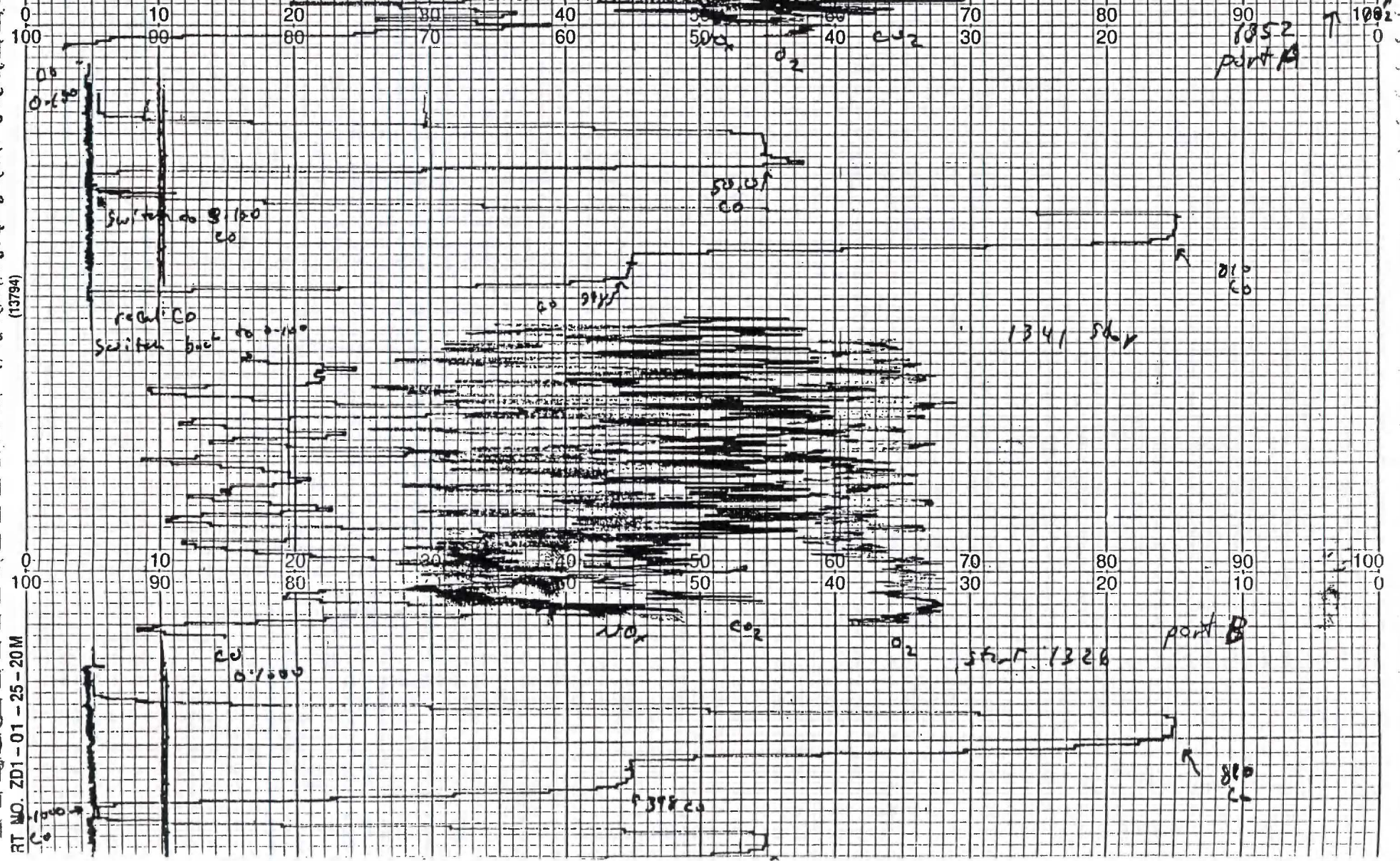
CHART NO. ZD1-01-25-20M

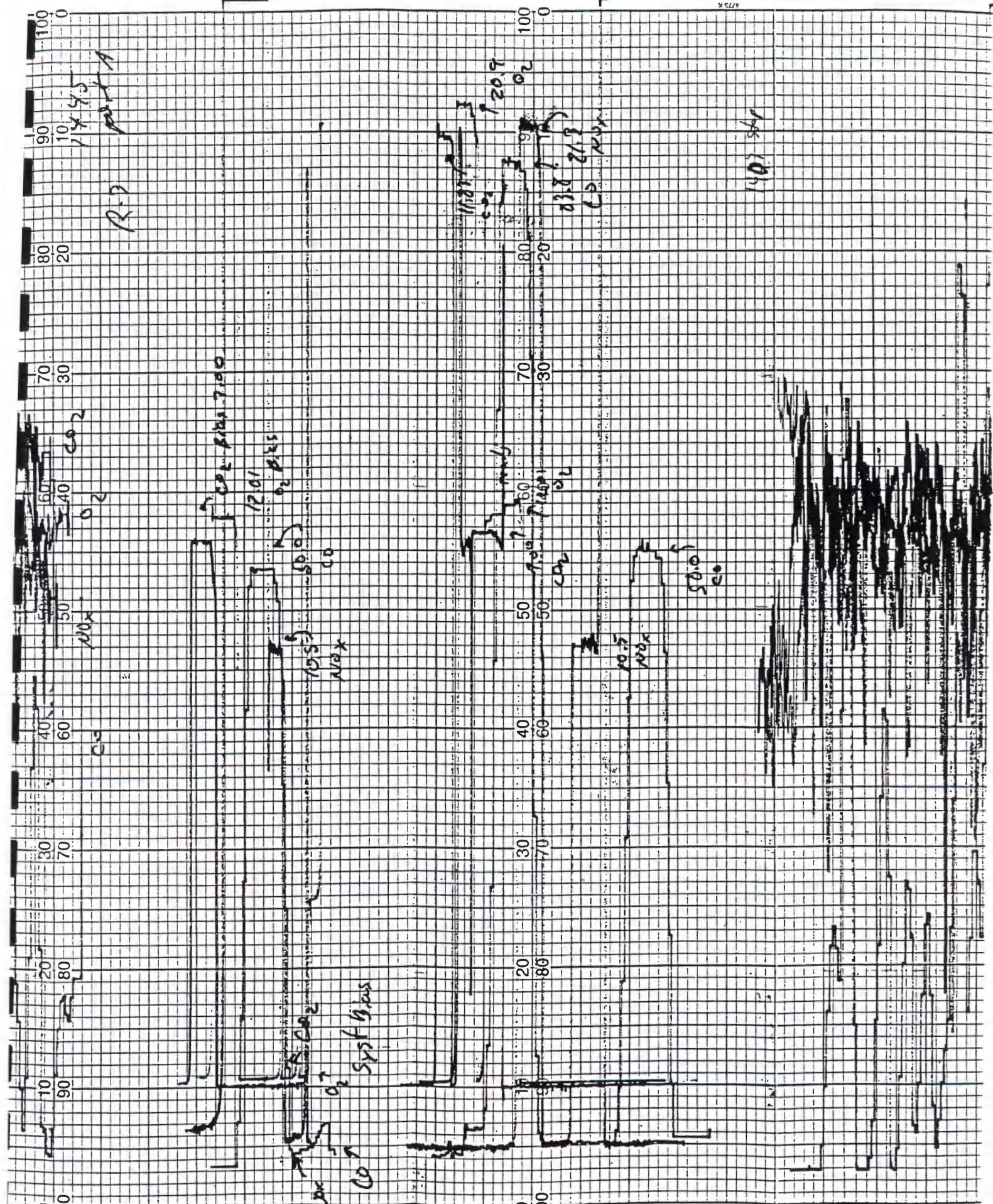


CUZ

RT MO. ZD1-01-25-20M

(13794)





rec'd Co 0-1000

R 398 Co

9601 1523

0 10 20 30 40 50 60 70 80 90 100
100 90 80 70 60 50 40 30 20 10 0

1508 T R-3 part 2

NOx
CO
O₂
CO₂

398
Co
0-1000
50.0 Co 0-1000

1500

0 10 20 30 40 50 60 70 80 90 100
100 90 80 70 60 50 40 30 20 10 0

CO
NOx
O₂
CO₂

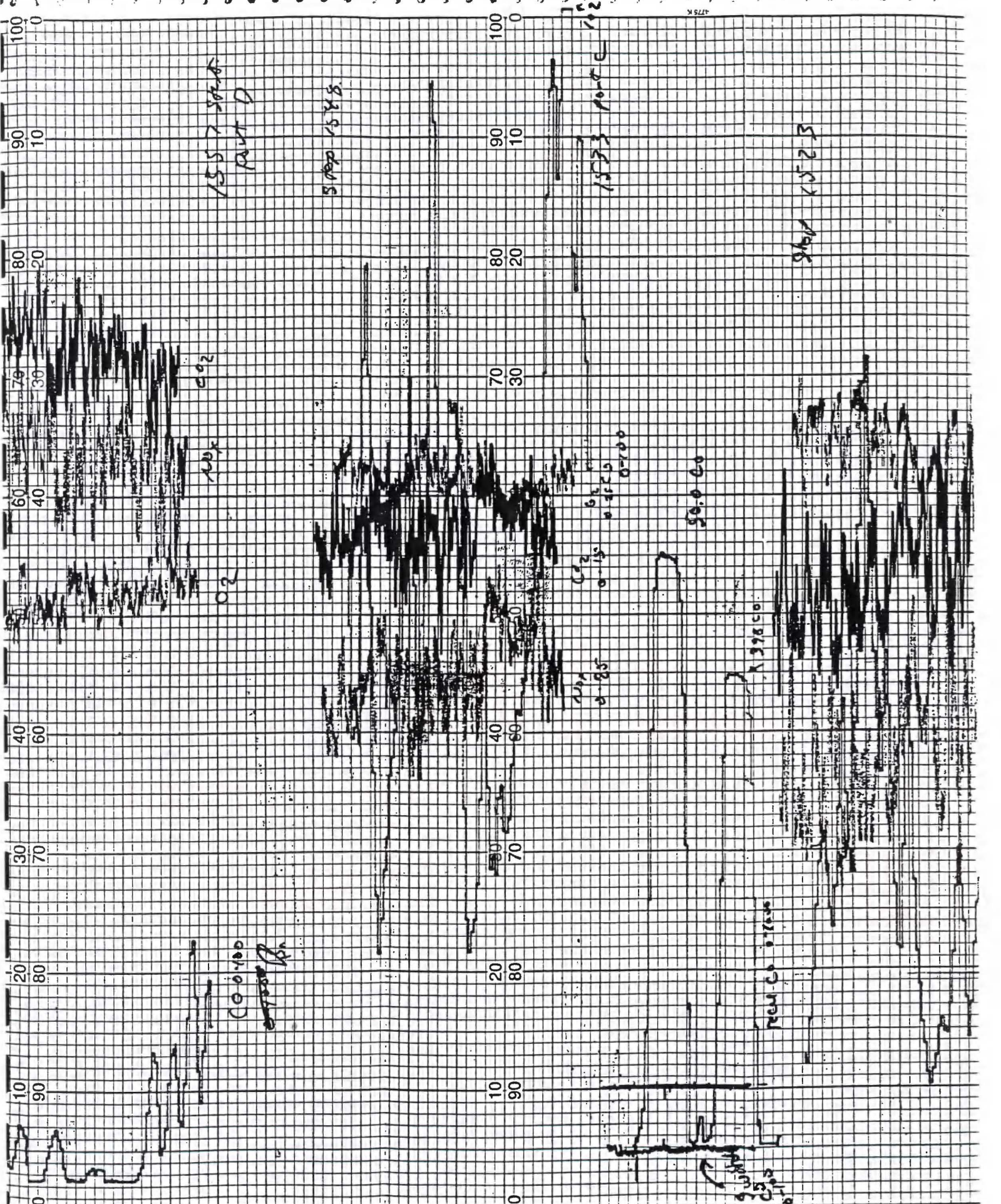
R-3
1445
part 1

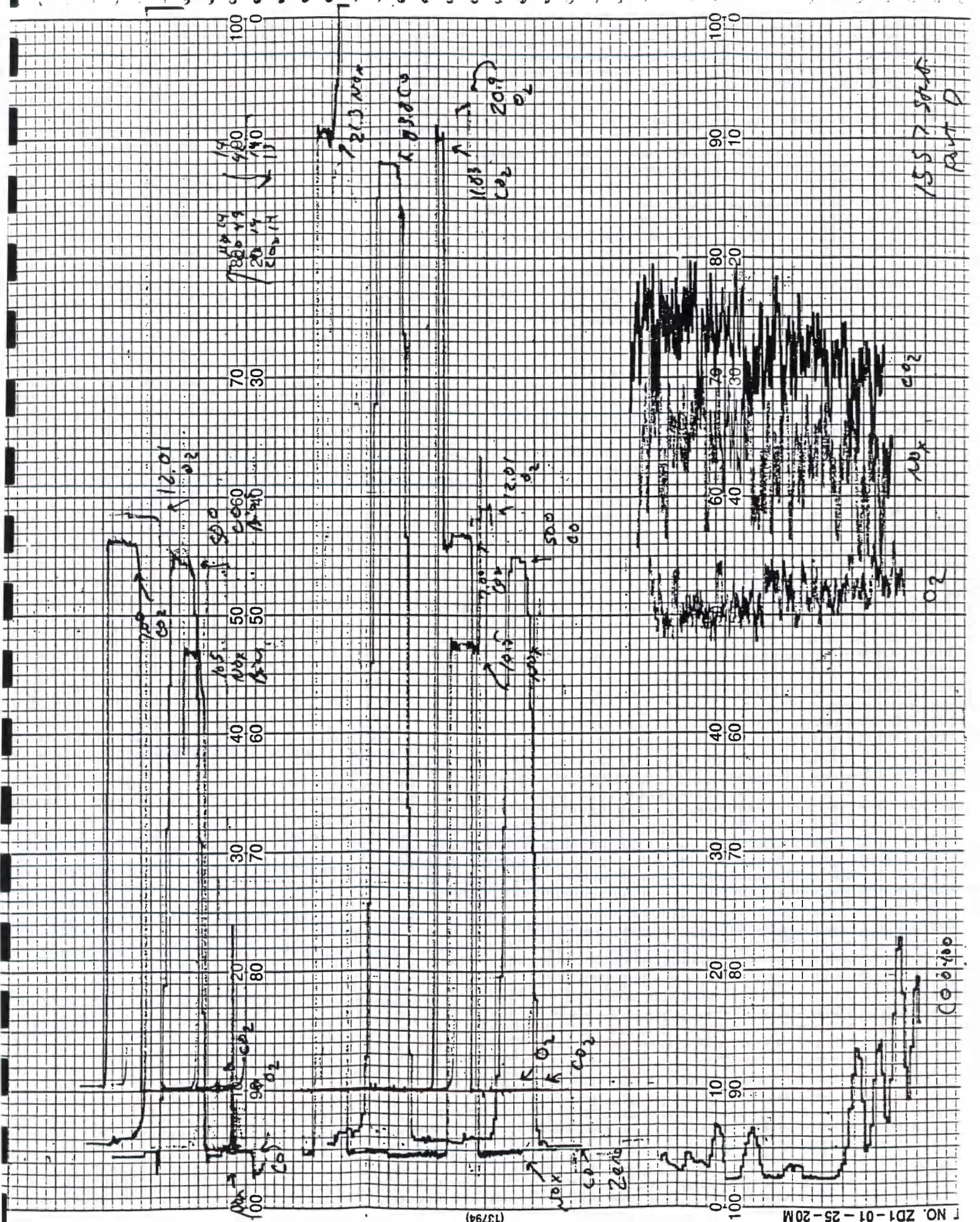
CO₂ plus 7.00

12.01

502
ZD1-01-25-20M

(13794)





1557 sand
Part D

O₂

N₂

O₂

O₂

O₂

O₂

O₂

O₂

APPENDIX E - Operating Data - Strip Charts

% Oxygen Inlet Gas
0-5%

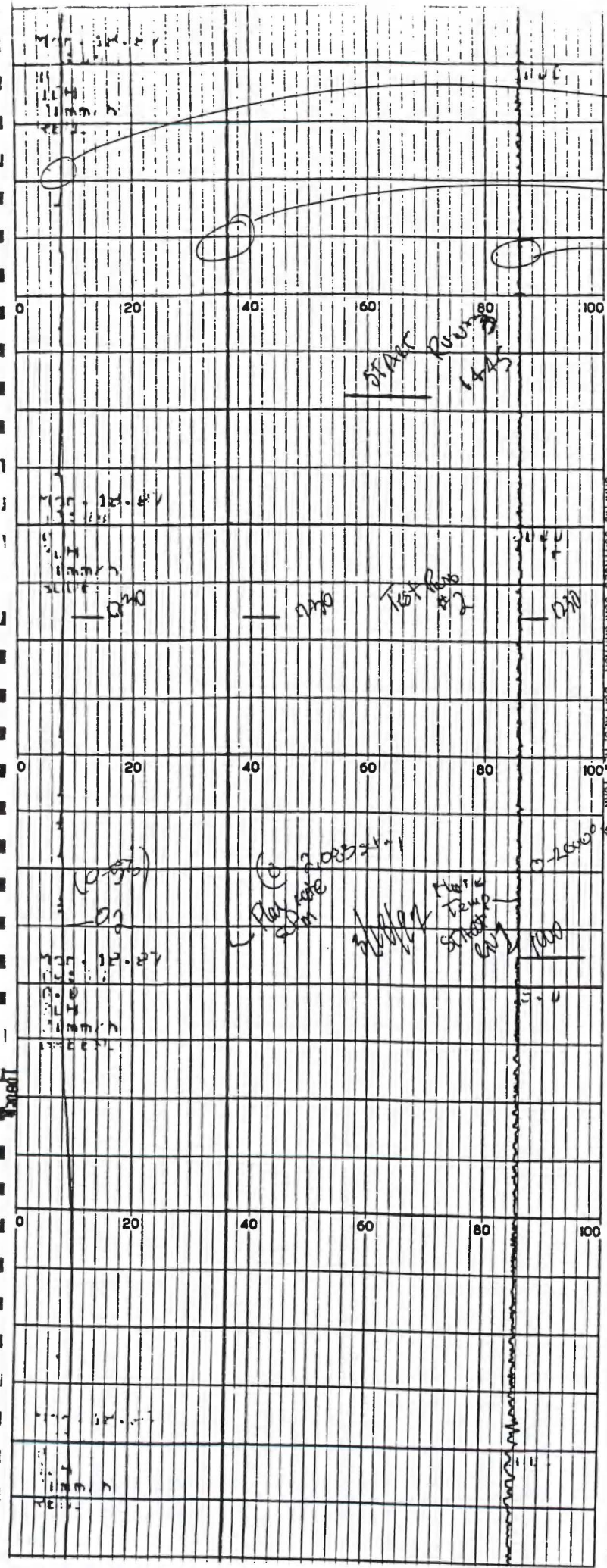
Calculated Flow Rate
0-2083 scfm

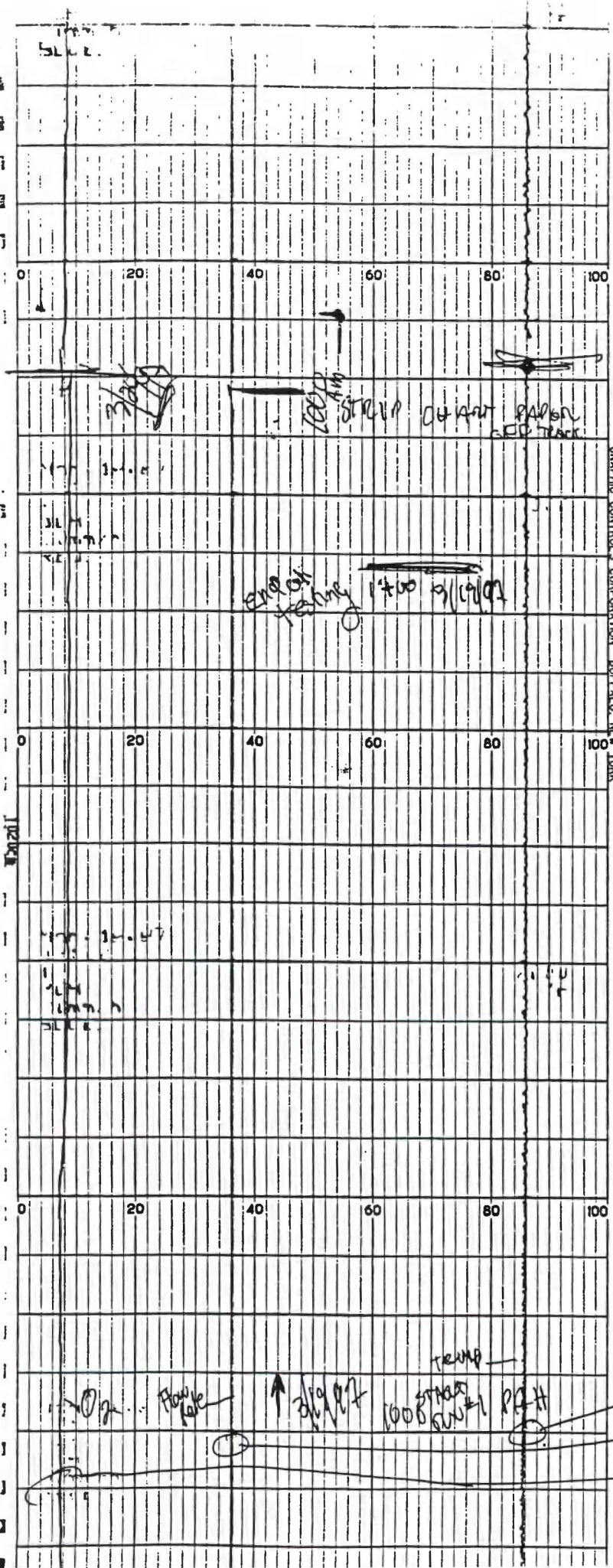
Flare Stack Temp
0-2000 °F

[Signature]

3/21/97

GRAPHIC CONTROL CORPORATION, BUFFALO, NEW YORK

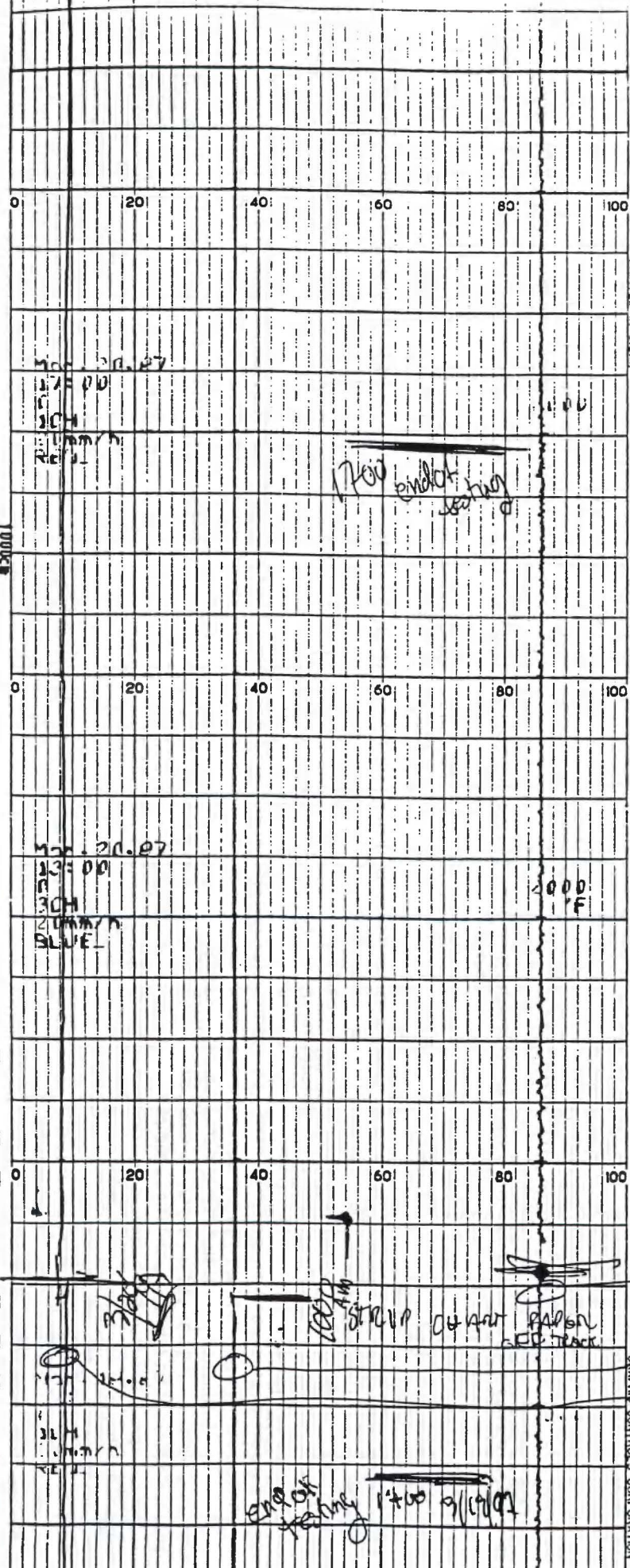




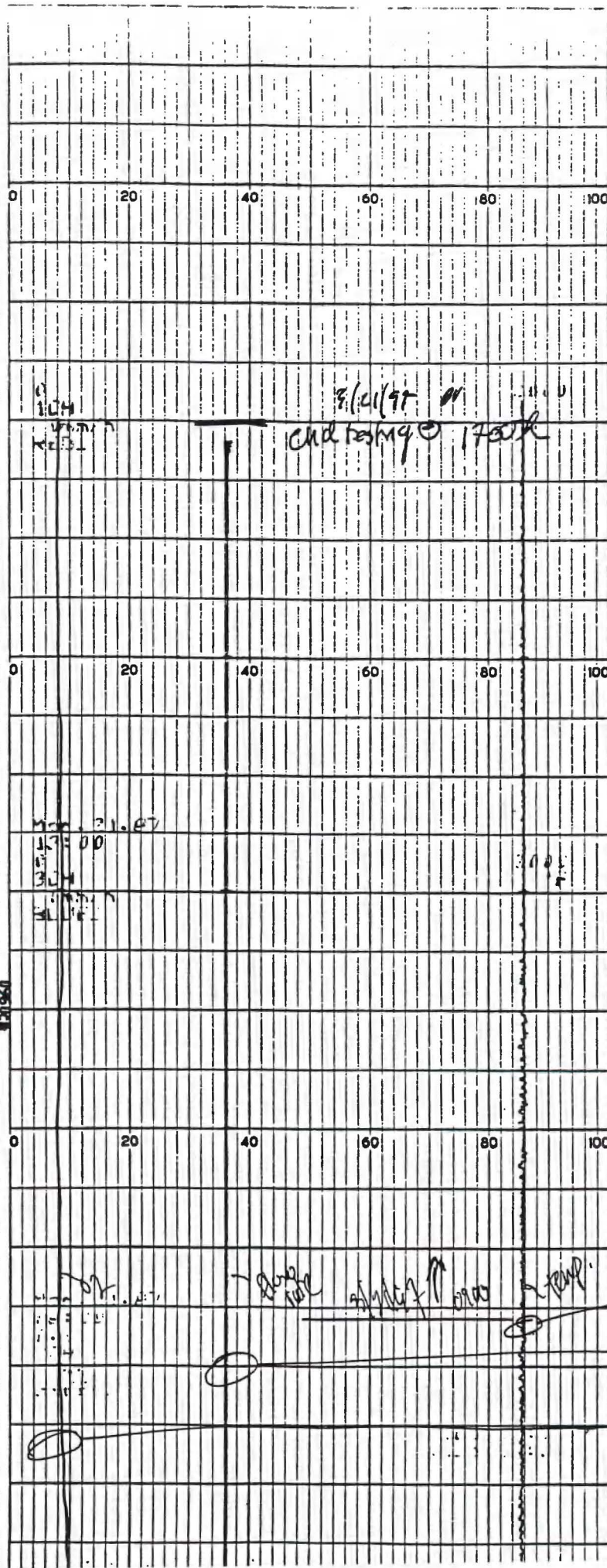
GRAPHIC CONTROL & CORPORATION BUFFALO, NEW YORK

Flare Stack Temp 0-2000°F
 Calculated Flow 0-2083 scfm
 Inlet Gas O₂ Content
 0-5%

[Signature] 210



3/2/97



GRAPHIC CONTROL'S CORPORATION BUFFALO, NEW YORK

Flare Stack
TEMP 0-2000°F

Calculated
Flow 0-20835 cfm

O₂ Content Inlet
Heater 0-5%

[Signature]
3/21/97 212

2PM

210 @ 900
3/21/97

1PM

0 20 40 60 80 100

12N

removed from 2000 scale
please change further in 200

0 2000

11AM

10AM

9AM

0 20 40 60 80 100

3/21/97 2000
0.04%

8AM

7AM

6AM

ADDITIONAL Temperature
Recorder @ 28' Above
Flame Deck on Friday
3/21/97 Scale 0-2000°F
Debeck

Apr. 28.07
05:00
1CH
20mm/h
RED

Apr. 28.07
01:00
3CH
20mm/h
BLUE

Apr. 27.07
21:00
2CH
20mm/h
GREEN

Apr. 28.07
02:00
2CH
20mm/h
GREEN

Apr. 28.07
21:00
2CH
20mm/h
GREEN

Apr. 28.07
07:00
1CH
20mm/h
RED

Apr. 28.07
13:00
3CH
20mm/h
BLUE

Apr. 28.07
02:00
2CH
20mm/h
GREEN

Flow (ATE)
(0-2000)
Flow Temp
(0-2000)

1750°F

2000

2000

2000

2000

5-0

GRAPHIC CONTROL & CORPORATION BUFFALO, NEW YORK

Apr. 29.97

11:00

3CH
20mm/h
BLUE

2000

7:11:1 08:59
7:11:1 08:58

Apr. 29.97

10:00

3CH
20mm/h
GREEN

Flow
Temp
(0-2000°F)

Apr. 29.97

09:00

3CH
20mm/h
RED

2000

02
(0-50%)

Flowrate
(0-20835cfm)

Apr. 29.97

01:00

3CH
20mm/h
BLUE

2000

TO: RICH VASERO

FROM: CAROLYN

498-3173

Apr. 29.97

23:00

3CH
20mm/h
BLUE

2000

Apr. 29.97

10:00

3CH
20mm/h
GREEN

Flowrate
(0-20835cfm)

02
(0-50%)

Flow
Temp
(0-2000°F)

Apr. 29.97

15:00

3CH
20mm/h
RED

2000

05/01/97

13:56

23805 579 7482

SIMI LANDFILL

001/002

97

Flow Rat
CFM

823.605 S

Flow Rat
CFM

841.892 S

Totalize
9 SCF

267196539.53

Totalize
7 SCF

267448615.95

04/29/97 22 PM Tue

04/29/97 22 PM Tue

Unit #52

Ready...

04/29/97 44 AM Tue

Unit #52

13:00:43 esday April 29, 19
97x
04/29/97 24 AM Tue

Unit #52

18:00:43 esday April 29, 19
97Flow Rat
CFM

829.881 S

08:03:07 esday April 29,
97Flow Rat
CFM

849.287 S

Totalize
8 SCF

267246851.78

Flow Rat
CFM 842.883Totalize
6 SCF

267499446.66

04/29/97 22 PM Tue

Totalize
3 SCF 266996111.

04/29/97 22 PM Tue

Unit #52

04/29/97 24 AM Tue

Unit #52

14:00:43 esday April 29, 19
97

Unit #52

19:00:43 esday April 29, 19
97Flow Rat
CFM

850.073 S

09:03:07 esday April 29, 19
97Flow Rat
CFM

851.395 S

Totalize
2 SCF

267297056.70

Flow Rat
CFM 856.256Totalize
9 SCF

267550415.47

04/29/97 22 PM Tue

Totalize
1 SCF 267046939.2

04/29/97 22 PM Tue

Unit #52

04/29/97 22 AM Tue

Unit #52

15:00:43 esday April 29, 19
97

Unit #52 ning ...

20:00:43 esday April 29, 19
97Flow Rat
CFM

841.333 S

10:00:42 Tuesday, April 29,
1997Flow Rat
CFM

868.399 S

Totalize
5 SCF

267347486.13

04/29/97 22 AM Tue

Totalize
0 SCF

267601458.00

04/29/97 22 PM Tue

Unit #52

04/29/97 22 PM Tue

Unit #52

11:00:43 esday April 29, 19
97

Unit #52

16:00:43 esday April 29, 19
97Flow Rat
CFM 825.702 S21:00:43 esday April 29, 19
97Flow Rat
CFM

835.933 S

Totalize
2 SCF 267146238.66Flow Rat
CFM

848.101 S

Totalize
6 SCF

267398020.04

04/29/97 22 AM Tue

Totalize
0 SCF

267652204.55

04/29/97 22 PM Tue

Unit #52

428-373 TO: RICH VASERO
 FROM: CAROLYN

04/29/97 22 PM Tue

Unit #52

22:00:43 esday April 29, 97

Flow Rat 836.240
CFMTotalize 267702857.
3 SCF

04/29/97 22 PM Tue

Unit #52

23:00:43 esday April 29, 1997

Flow Rat 841.948
CFMTotalize 267753492.
7 SCF

04/29/97 22 PM Tue

Unit #52

00:00:43 dnesday April 30, 97

Flow Rat 832.985
CFMTotalize 267804308.
4 SCF

04/30/97 22 AM Wed

Unit #52

01:00:43 dnesday April 30, 1997

Flow Rat 830.394 S
CFMTotalize 267854900.32
7 SCF

04/30/97 22 AM Wed

Unit #52

02:00:43 dnesday April 30, 1997

Flow Rat 844.803 S
CFM

APPENDIX F - Correspondences

W07-014-C1

March 14, 1997

Mr. John Burns
Simi Valley Landfill and Recycling Center
2801 Madera Road
Simi Valley, California 93065

Dear Mr. Burns:

I have received the Test Plan review comments from the Ventura County Air Pollution Control District (VCAPCD). Horizon will incorporate the following amendment, as requested:

- Acrolein and acetaldehyde will be added to the CARB 430 analyses.
- Horizon will use CARB Method 422.102 Appendix C. Tedlar Bag (Method 422.1) and Analyses Alternative for both sampling and analysis procedures for 1,3-butadiene.

Please call me at (805)498-8781 if you have any questions.

Sincerely,

HORIZON AIR MEASUREMENT SERVICES, INC.



Richard J. Vacherot
Technical Director

RV:lmg

**VENTURA COUNTY
AIR POLLUTION CONTROL DISTRICT**
Memorandum

TO: John Burns
Environmental Project Manager
Simi Valley Landfill and
Recycling Center

DATE: March 13, 1997

FROM: Lyle Olson *LO*
Air Pollution Engineer

SUBJECT: Test Plan For Flares

In addition to the compounds on the SCAQMD Rule 1150.1 list, i.e., toxic air contaminants -- core group, acrolein and acetaldehyde should be added. The test method should be CARB 430. We made this comment in our April 6, 1993 letter regarding the previous test plan.

CARB Method 422.1 contains the procedure for sampling in Tedlar bags, but there is no procedure for sample analysis. CARB Method 422.102 contains the sampling and analysis procedures for 1, 3 Butadiene.

I have no further comments or concerns regarding the plan.

1395

Post-It® Fax Note	7671	Date	3/13/97	# of pages	1
To	JOHN BURNS	From	LYLE OLSON		
Co./Dept.	SVLF	Co.	VCAPCD		
Phone #	579-7478	Phone #	645-1413		
Fax #	579-7482	Fax #	645-1444		

APPENDIX G - Calibration Data

Control Box Calibration Data

Date: 1/28/97

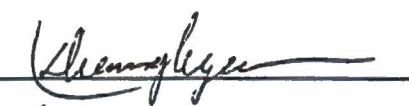
Calibrated by: KHANG NGUYEN

Meter Box Number: 1

Barometric Pressure: 29.45

Wet Test Meter Cf: 1.0001

Orifice setting (H)	Gas Volumes			Temperatures			Time (min)	Y	H@
	Wet Test (cu.ft)	Dry Gas Initial (cu.ft)	Dry Gas Final (cu.ft)	DGM Initial (°F)	DGM final (°F)	WTM (°F)			
0.5	5.973	842.902	849.009	67	74	73	15	0.9712	1.8209
1.0	6.550	849.243	855.930	70	78	73	12	0.9778	1.9255
1.5	10.391	856.630	867.347	78	85	73	16	0.9803	2.0119
2.0	11.202	867.769	879.210	83	89	73	15	0.9964	2.0129
3.0	11.907	879.959	892.060	87	93	73	13	1.0067	1.9917
4.0	10.486	892.711	903.323	87	93	73	10	1.0084	2.0261
AVERAGE								0.9901	1.9648

Calibrated by: 

Reviewed by: 

Control Box Calibration Data

Date: 12/5/96

Calibrated by: Khang Nguyen

Meter Box Number: 5

Barometric Pressure: 29.40

Wet Test Meter Cf: 1.0001

Orifice setting (H)	Gas Volumes			Temperatures			Time (min)	Y	H@
	Wet Test (cu.ft)	Dry Gas Initial (cu.ft)	Dry Gas Final (cu.ft)	DGM Initial (°F)	DGM final (°F)	WTM (°F)			
0.5	6.631	104.756	111.392	67	69	64	17	1.0057	1.8423
1.0	7.686	672.870	680.556	69	72	64	14	1.0100	1.8512
1.5	11.092	126.128	137.345	72	75	64	17	1.0031	1.9549
2.0	10.080	137.574	147.694	71	76	64	13	1.0092	1.8456
3.0	14.056	148.070	162.024	69	72	64	15	1.0123	1.9063
4.0	11.922	177.115	188.827	66	71	65	11	1.0147	1.9145
AVERAGE								1.0092	1.8858

Control Box Calibration Data

Date: 12/3/96

Calibrated by: R. CARRIER

Meter Box Number: 6

Barometric Pressure: 29.26

Wet Test Meter Cf: 1.0001

Orifice setting (H)	Gas Volumes			Temperatures			Time (min)	Y	H@
	Wet Test (cu.ft)	Dry Gas Initial (cu.ft)	Dry Gas Final (cu.ft)	DGM Initial (°F)	DGM final (°F)	WTM (°F)			
0.5	6.401	747.219	753.662	62	67	66	15	0.9895	1.5688
1.0	6.559	754.080	760.691	65	72	67	11	0.9926	1.6010
1.5	10.825	761.098	772.097	69	75	67	15	0.9899	1.6286
2.0	13.320	772.337	785.851	73	80	67	16	0.9985	1.6181
3.0	12.236	786.131	798.660	77	83	67	12	0.9933	1.6074
4.0	16.512	799.112	816.010	76	83	67	14	0.9905	1.6034
AVERAGE								0.9924	1.6046

Calibrated by: R. CARRIER

Reviewed by: [Signature]

Control Box Calibration Data

Date: 12/5/96

Calibrated by: Khang Nguyen

Meter Box Number: 7

Barometric Pressure: 29.40

Wet Test Meter Cf: 1.0001

Orifice setting (H)	Gas Volumes			Temperatures			Time (min)	Y	H@
	Wet Test (cu.ft)	Dry Gas Initial (cu.ft)	Dry Gas Final (cu.ft)	DGM Initial (°F)	DGM final (°F)	WTM (°F)			
0.5	5.181	498.102	503.168	55	62	66	13	1.0070	1.8108
1.0	5.627	503.524	509.055	62	65	65	10	1.0120	1.7926
1.5	11.499	745.876	757.375	65	69	65	17	1.0002	1.8484
2.0	11.596	520.985	532.521	67	70	65	15	1.0070	1.8815
3.0	10.424	532.985	543.370	70	72	65	11	1.0078	1.8693
4.0	10.903	543.815	554.667	71	72	65	10	1.0072	1.8811
AVERAGE								1.0068	1.8473

TYPE S PITOT TUBE INSPECTION DATA FORM

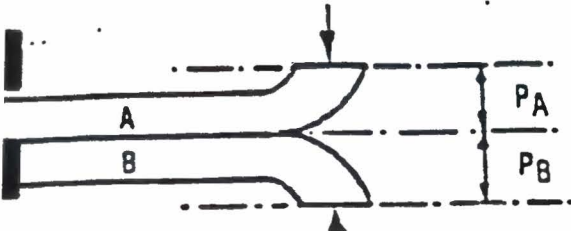
Apex 4-1

Tubing diameter, D_t 0.375 in.

Pitot Tube Assembly Level? Yes ☒ / No ☐

Pitot Tube Openings Damaged? Yes ☐ / No ☒

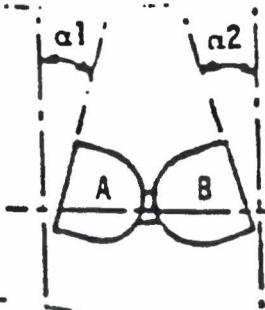
A-SIDE PLANE



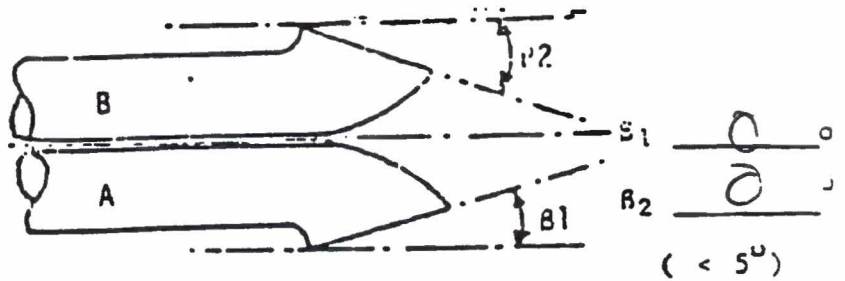
NOTE:

$$\begin{cases} 1.05 D_t < P < 1.50 D_t \\ P_A = P_B \end{cases} \quad \begin{matrix} P_A = \underline{0.478} \text{ in.} \\ P_B = \underline{\quad\quad\quad} \text{ in.} \end{matrix}$$

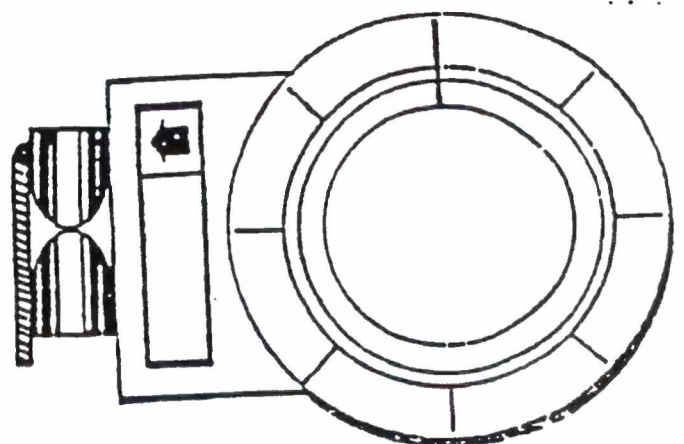
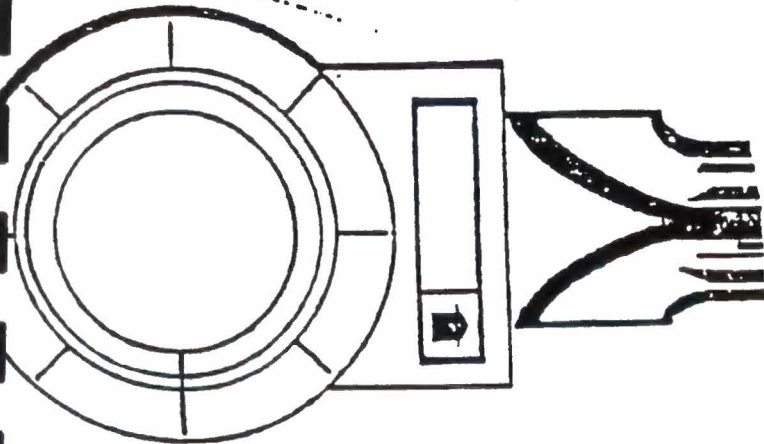
$P_A = P_B \quad \checkmark$



$$\begin{matrix} \alpha_1 = \underline{0}^\circ \\ \alpha_2 = \underline{0}^\circ \end{matrix} \quad (< 10^\circ)$$



$$\begin{matrix} \beta_1 = \underline{0}^\circ \\ \beta_2 = \underline{0}^\circ \end{matrix} \quad (< 5^\circ)$$



Level Position to Find $\gamma = \underline{0}$

$$Z = A \sin \gamma = \underline{0} \text{ in. } (< 1/8 \text{ in.})$$

Level Position to find $\theta = \underline{0}$

$$W = A \sin \theta = \underline{0} \text{ in. } (< 1/32 \text{ in.})$$

Comments _____

Checked by: Khang Nguyen

Date: 1/28/97

Calibration Required? _____

TYPE S PITOT TUBE INSPECTION DATA FORM

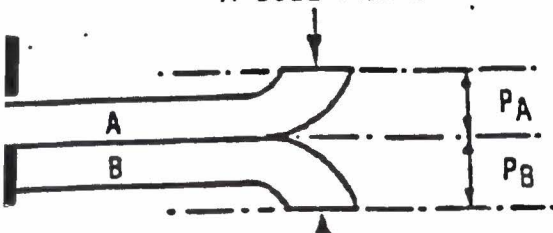
APEX # 4-2

Tubing diameter, D_t 0.374 in.

Pitot Tube Assembly Level? Yes ☒ No ☐

Pitot Tube Openings Damaged? Yes ☐ No ☒

A-SIDE PLANE

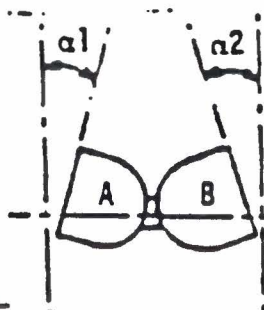


NOTE:

$$\begin{cases} 1.05 D_t < P < 1.50 D_t \\ P_A = P_B \end{cases} \checkmark$$

$P_A =$ 0.484 in.

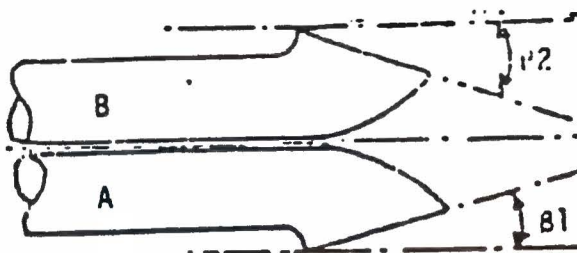
$P_B =$ _____ in.



$\alpha_1 =$ 0 °

$\alpha_2 =$ 0 °

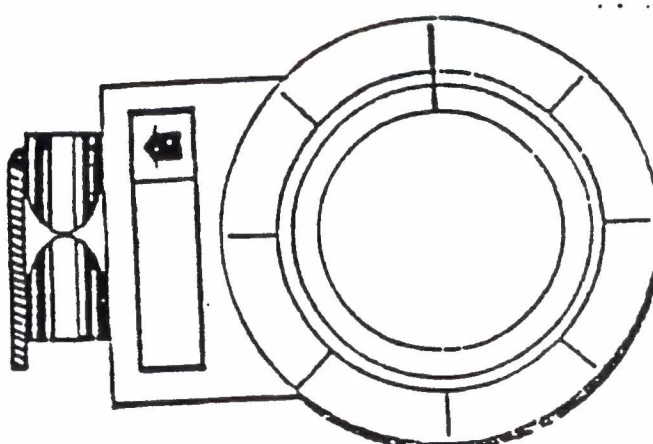
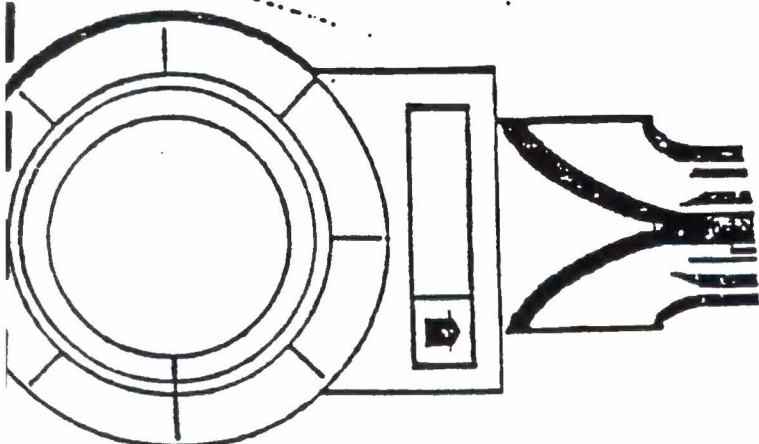
($< 10^\circ$)



$B_1 =$ 0 °

$B_2 =$ 0 °

($< 5^\circ$)



Level Position to Find $\gamma = 0$

$Z = A \sin \gamma =$ 0 in. ($< 1/8$ in.)

Level Position to find $\theta = 0$

$W = A \sin \theta =$ 0 in. ($< 1/32$ in.)

Comments _____

Checked by: Khang Nguyen

Date: 1/28/97

Calibration Required? _____

TYPE S PITOT TUBE INSPECTION DATA FORM

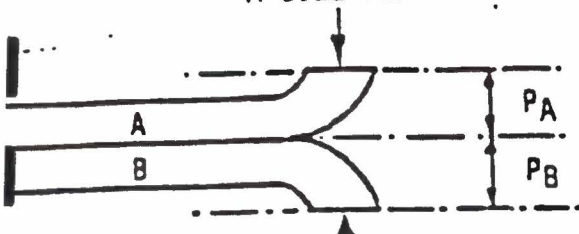
ID# 7-1

Tubing diameter, D_t 0.374 in.

Pitot Tube Assembly Level? Yes ☒ No ☐

Pitot Tube Openings Damaged? Yes ☐ No ☒

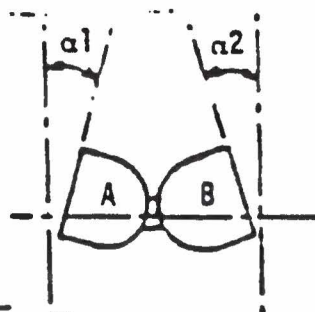
A-SIDE PLANE



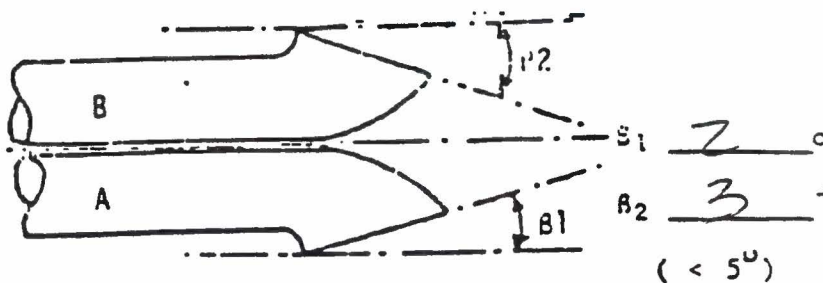
NOTE:

$P_A = 0.521$ in.

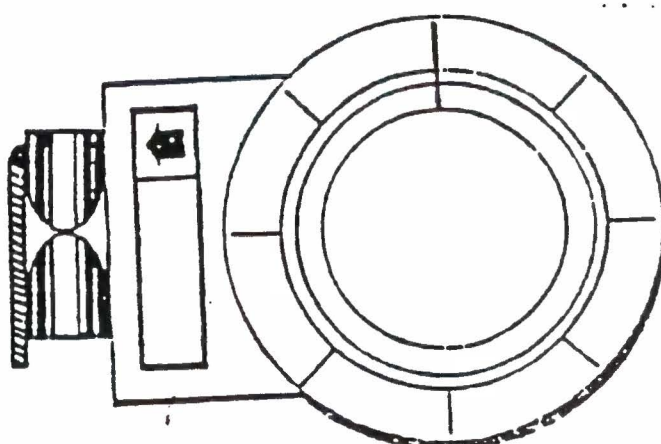
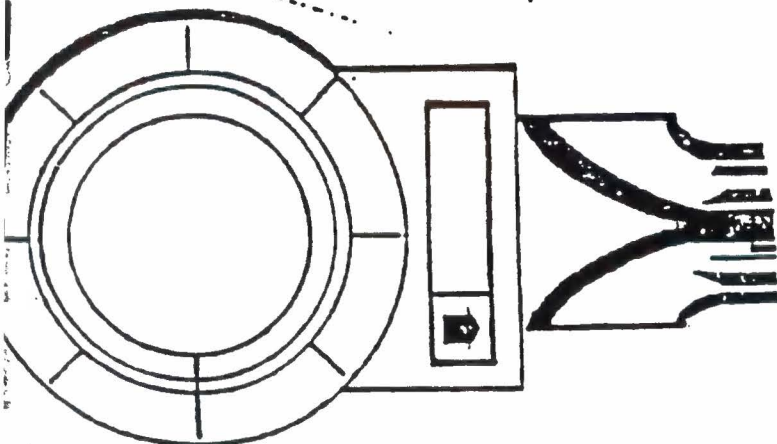
$\left\{ \begin{array}{l} 1.05 D_t < P < 1.50 D_t \\ P_A = P_B \end{array} \right.$ $P_B = 0.521$ in.



$\alpha_1 = 4^\circ$
 $\alpha_2 = 2^\circ$
($< 10^\circ$)



$\beta_1 = 2^\circ$
 $\beta_2 = 3^\circ$
($< 5^\circ$)



Level Position to Find $\gamma = 3^\circ$

$Z = A \sin \gamma = 0.0545$ in. ($< 1/8$ in.)

Level Position to find $\theta = 0$

$W = A \sin \theta = 0$ in. ($< 1/32$ in.)

Comments _____

Checked by: Khang Nguyen

Date: 2/10/97

Calibration Required? _____

TYPE S PITOT TUBE INSPECTION DATA FORM

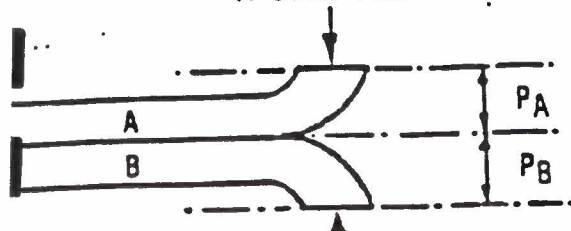
ID# 10-1

Tubing diameter, D_t 0.375 in.

Pitot Tube Assembly Level? Yes / No

Pitot Tube Openings Damaged? Yes / No

A-SIDE PLANE

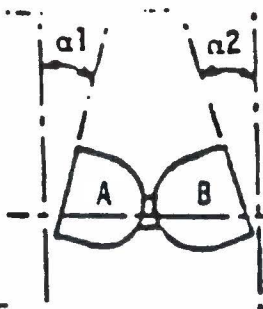


NOTE:

$$\begin{cases} 1.05 D_t < P < 1.50 D_t \\ P_A = P_B \end{cases} \checkmark$$

$P_A =$ 0.55 in.

$P_B =$ 0.55 in.

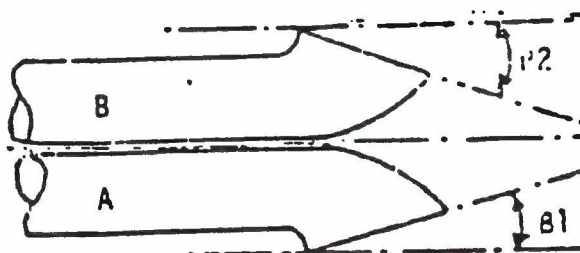


$\alpha_1 =$ 1.5°

$\alpha_2 =$ 2.5°

($< 10^\circ$)

$\checkmark$

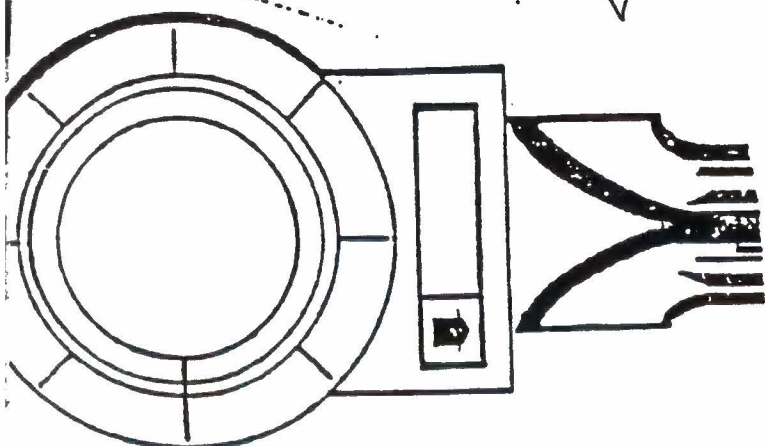


$\beta_1 =$ 2.5°

$\beta_2 =$ 2.5°

($< 5^\circ$)

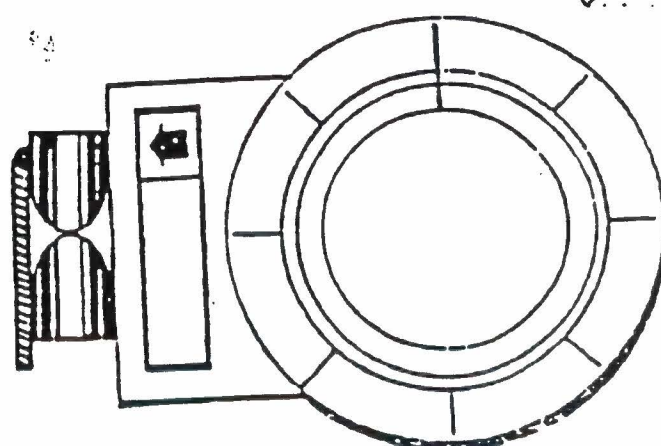
$\checkmark$



Level Position to Find $\gamma =$ 0.5

$Z = A \sin \gamma =$ 0.0096 in. ($< 1/8$ in.)

$\checkmark$



Level Position to find $\theta =$ 0

$W = A \sin \theta =$ 0 in. ($< 1/32$ in.)

$\checkmark$

Comments

Checked by: AP, KNX

Date: 2/10/97

Calibration Required?

No

STACK TEMPERTURE SENSOR CALIBRATION DATA- APEX PROBE ASSEMBLIES

Date: 02/12/97
Calibrated by: KHANG NGUYEN

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
4-1	32	32	32	28	28	28	1	1	1	210	210	210	209	209	209	0	0	0	300	300	300	298	298	298	0	0	0
4-2	32	32	32	32	32	32	0	0	0	210	210	210	208	209	208	0	0	0	300	300	300	300	299	300	0	0	0
4-3	32	32	32	31	31	31	0	0	0	210	210	210	210	210	210	0	0	0	300	300	300	300	300	300	0	0	0
6-2	32	32	32	32	32	32	0	0	0	210	210	210	210	210	210	0	0	0	300	300	300	299	299	299	0	0	0
8-3	32	32	32	36	36	36	-1	-1	-1	210	210	210	210	210	210	0	0	0	300	300	300	298	298	298	0	0	0
10-2	32	32	32	30	30	30	0	0	0	210	210	210	210	210	210	0	0	0	300	300	300	290	290	290	1	1	1

HEP 21111

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Telephone: (213) 585-2154
Facsimile: (714) 542-6689

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

CUSTOMER HORIZON AIR MEASUREMENT

P.O NUMBER 5952

REFERENCE STANDARD

COMPONENT	NIST SRM NO.	CYLINDER NO.	CONCENTRATION
NITRIC OXIDE GMIS	vs 2628a	CC48609	9.42 ppm

ANALYZER READINGS

R=REFERENCE STANDARD

Z=ZERO GAS

C=GAS CANDIDATE

COMPONENT	NITRIC OXIDE	GMIS	ANALYZER MAKE-MODEL-S/N	Thermo Env. 42H S/N 42H-44979-273
ANALYTICAL PRINCIPLE	Chemiluminescence		LAST CALIBRATION DATE	01/09/97
FIRST ANALYSIS DATE	3/13/96		SECOND ANALYSIS DATE	1/23/97
Z 0.00	R 24.68	C 9.74	CONC. 9.98 ppm	Z 0.00 R 8.82 C 9.41 CONC. 10.05 ppm
R 24.69	Z 0.00	C 9.72	CONC. 9.96 ppm	R 8.79 Z 0.00 C 9.40 CONC. 10.07 ppm
Z 0.00	C 9.70	R 24.68	CONC. 9.94 ppm	Z 0.00 C 9.41 R 8.81 CONC. 10.06 ppm
U/M ppm	MEAN TEST ASSAY		9.96 ppm	U/M ppm MEAN TEST ASSAY 10.06 ppm

First Analysis was done using 25.3 ppm GMIS

THIS CYLINDER NO.	SA10314	CERTIFIED CONCENTRATION
HAS BEEN CERTIFIED ACCORDING TO SECTION	EPA-600/R93/224	NITRIC OXIDE 10.0 ppm
OF TRACEABILITY PROTOCOL NO.	Rev. 9/93	NITROGEN BALANCE
PROCEDURE	G1	NOx 10.5 ppm
CERTIFIED ACCURACY	± 2 % NIST TRACEABLE	
CYLINDER PRESSURE	2000 PSIG	
CERTIFICATION DATE	01/23/97	
EXPIRATION DATE	01/23/99 TERM 24 MONTHS	

ANALYZED BY

VENAH ERVIN

CERTIFIED BY

KWAN T. YOUNG

IMPORTANT
Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any particular purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc., arising out of the use of the information contained herein exceed the fee established for providing such information.



213-585-2154
FAX# 213-585-0582

LIQUID CARBONIC

CYLINDER GAS PRODUCTS

5700 SOUTH ALAMEDA STREET • LOS ANGELES, CALIFORNIA 90058

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

CUSTOMER HORIZON AIR MEASUREMENT

P.O NUMBER 5514

REFERENCE STANDARD

COMPONENT	NIST SRM NO.	CYLINDER NO.	CONCENTRATION
NITRIC OXIDE GMIS	vs 2629a	CC 66694	25.3 ppm

ANALYZER READINGS

R=REFERENCE STANDARD

Z=ZERO GAS

C=GAS CANDIDATE

COMPONENT	NITRIC OXIDE	GMIS	ANALYZER MAKE-MODEL-S/N	Beckman 951A	S/N 0101354		
ANALYTICAL PRINCIPLE		Chemiluminescence		LAST CALIBRATION DATE	08/29/95		
FIRST ANALYSIS DATE		08/30/95		SECOND ANALYSIS DATE	09/06/95		
Z 0	R 936	C 771	CONC. 20.8 ppm	Z 0	R 953	C 790	CONC. 21.0 ppm
R 933	Z 0	C 771	CONC. 20.9 ppm	R 953	Z 0	C 790	CONC. 21.0 ppm
Z -2	C 771	R 933	CONC. 20.9 ppm	Z 0	C 790	R 953	CONC. 21.0 ppm
U/M mV		MEAN TEST ASSAY	20.9 ppm	U/M mV		MEAN TEST ASSAY	21.0 ppm

Values not valid below 150 psig
NOx values for reference only

THIS CYLINDER NO. SA 13968

HAS BEEN CERTIFIED ACCORDING TO SECTION
OF TRACEABILITY PROTOCOL NO. Rev. 9/93

PROCEDURE G1

CERTIFIED ACCURACY ± 2 % NIST TRACEABLE

CYLINDER PRESSURE 2000 PSIG

CERTIFICATION DATE 09/06/95

EXPIRATION DATE 09/06/97 TERM 24 MONTHS

CERTIFIED CONCENTRATION

NITRIC OXIDE	21.0 ppm
NITROGEN	BALANCE
NOx	21.3 ppm

ANALYZED BY

[Signature]
ELIZABETH LABALA

CERTIFIED BY

[Signature]
TY TRIPLETT



Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Tel: (213) 585-2154
Fax: (714) 542-6689

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

CUSTOMER HORIZON AIR MEASUREMENT

P.O NUMBER 05367400

REFERENCE STANDARD

COMPONENT	NIST SRM NO.	CYLINDER NO.	CONCENTRATION
CARBON MONOXIDE GMIS	vs 1679c	SA 5635	99.4 ppm
NITRIC OXIDE	1683b	SA 6309	51.9 ppm

ANALYZER READINGS

R=REFERENCE STANDARD

Z=ZERO GAS

C=GAS CANDIDATE

COMPONENT	CARBON MONOXIDE	GMIS	ANALYZER MAKE-MODEL-S/N	Siemens Ultramat 5E	S/N A12-729		
ANALYTICAL PRINCIPLE	NDIR			LAST CALIBRATION DATE	11/20/96		
FIRST ANALYSIS DATE	09/04/96			SECOND ANALYSIS DATE	12/26/96		
Z 0.0	R 99.4	C 49.8	CONC. 49.8 ppm	Z 0.0	R 99.4	C 50.2	CONC. 50.2 ppm
R 99.4	Z 0.0	C 49.8	CONC. 49.8 ppm	R 99.6	Z 0.0	C 50.2	CONC. 50.1 ppm
Z 0.0	C 49.8	R 99.4	CONC. 49.8 ppm	Z 0.0	C 50.2	R 99.4	CONC. 50.2 ppm
U/M ppm	MEAN TEST ASSAY	49.8 ppm	U/M ppm	MEAN TEST ASSAY	50.2 ppm		

COMPONENT	NITRIC OXIDE	ANALYZER MAKE-MODEL-S/N	Beckman 951A	S/N 0101354			
ANALYTICAL PRINCIPLE	Chemiluminescence		LAST CALIBRATION DATE	11/29/96			
FIRST ANALYSIS DATE	09/04/96		SECOND ANALYSIS DATE	12/26/96			
Z 0	R 463	C 436	CONC. 48.9 ppm	Z 0	R 462	C 436	CONC. 49.0 ppm
R 463	Z 0	C 436	CONC. 48.9 ppm	R 462	Z 0	C 436	CONC. 49.0 ppm
Z 0	C 437	R 463	CONC. 49.0 ppm	Z 0	C 436	R 462	CONC. 49.0 ppm
U/M mV	MEAN TEST ASSAY	48.9 ppm	U/M mV	MEAN TEST ASSAY	49.0 ppm		

Values not valid below 150 psig
NOx values for reference use only

THIS CYLINDER NO.	SA 3527	CERTIFIED CONCENTRATION	
HAS BEEN CERTIFIED ACCORDING TO SECTION	EPA-600/R93/224	CARBON MONOXIDE	50.0 ppm
OF TRACEABILITY PROTOCOL NO.	Rev. 9/93	NITRIC OXIDE	49.0 ppm
PROCEDURE	G1	NITROGEN	BALANCE
CERTIFIED ACCURACY	± 1 % NIST TRACEABLE	NOx	50.0 ppm
CYLINDER PRESSURE	2000 PSIG		
CERTIFICATION DATE	12/26/96		
EXPIRATION DATE	12/26/98	TERM	24 MONTHS

ANALYZED BY

T. TRIPLETT

CERTIFIED BY

VENAH ERVIN



213-585-2154

FAX 213-585-0582

LIQUID CARBONIC

CYLINDER GAS PRODUCTS

5700 SOUTH ALAMEDA STREET • LOS ANGELES, CA 90058

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

CUSTOMER HORIZON AIR MEASUREMENT

P.O NUMBER 5706

REFERENCE STANDARD

COMPONENT	NIST SRM NO.	CYLINDER NO.	CONCENTRATION
CARBON MONOXIDE GMIS	vs 1679c	SA 7519	101 ppm
NITRIC OXIDE GMIS	vs. 1684b	SA 13760	98.5 ppm

ANALYZER READINGS

R=REFERENCE STANDARD

Z=ZERO GAS

C=GAS CANDIDATE

COMPONENT	CARBON MONOXIDE	GMIS	ANALYZER MAKE-MODEL-S/N	Siemens Ultramat 5E	S/N A12-729
ANALYTICAL PRINCIPLE	NDIR			LAST CALIBRATION DATE	03/15/96
FIRST ANALYSIS DATE	09/25/95			SECOND ANALYSIS DATE	04/03/96
Z 0.0	R 101.0	C 83.6	CONC. 83.6 ppm	Z 0.0	R 101.0
R 100.8	Z 0.0	C 83.6	CONC. 83.8 ppm	R 101.0	Z 0.0
Z 0.0	C 83.6	R 100.8	CONC. 83.8 ppm	Z 0.0	C 83.8
U/M ppm	MEAN TEST ASSAY	83.7 ppm	U/M ppm	MEAN TEST ASSAY	83.8 ppm
COMPONENT	NITRIC OXIDE	GMIS	ANALYZER MAKE-MODEL-S/N	Beckman 951A	S/N 0101354
ANALYTICAL PRINCIPLE	Chemiluminescence			LAST CALIBRATION DATE	03/29/96
FIRST ANALYSIS DATE	09/25/95			SECOND ANALYSIS DATE	04/03/96
Z 0	R 771	C 753	CONC. 82.9 ppm	Z 0	R 874
R 771	Z 0	C 751	CONC. 82.7 ppm	R 877	Z 0
Z 0	C 751	R 772	CONC. 82.6 ppm	Z 0	C 741
U/M mv	MEAN TEST ASSAY	82.7 ppm	U/M mv	MEAN TEST ASSAY	83.2 ppm

Values not valid below 150 psig

NOx values for reference use only

FIRST ANALYSIS ON NITRIC OXIDE WAS DONE AGAINST GMIS CC67872(84.9 ppm)

THIS CYLINDER NO. SA 15230

HAS BEEN CERTIFIED ACCORDING TO SECTION

EPA-600/R93/224

OF TRACEABILITY PROTOCOL NO.

Rev. 9/93

PROCEDURE G1

CERTIFIED ACCURACY ± 1 % NIST TRACEABLE

CYLINDER PRESSURE 1650 PSIG

CERTIFICATION DATE 04/03/96

EXPIRATION DATE 04/03/98 TERM 24 MONTHS

CERTIFIED CONCENTRATION

CARBON MONOXIDE	83.8 ppm
NITRIC OXIDE	83.0 ppm
NITROGEN	BALANCE
NOx	83.8 ppm

ANALYZED BY

 ELIZA ZABALA

CERTIFIED BY

 KWAI T. YOUNG



Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Tel: (213) 585-2154
Fax: (714) 542-6689

CERTIFICATE OF ANALYSIS

CUSTOMER HORIZON AIR MEASUREMENT

DATE 05/03/96

P.O NUMBER

REF. NUMBER 162118

REQUESTED COMPOSITION

GAS	CONCENTRATION
CARBON DIOXIDE	7.0 %
OXYGEN	12.0 %
NITROGEN	BALANCE

ANALYTICAL METHOD

INSTRUMENT	ANALYTICAL PRINCIPLE
Siemens Ultramat 5E S/N A12-730	NDIR
Siemens Oxymat 5E S/N A12-839	Paramagnetic

THIS CYLINDER NO.	SA 12668
CYLINDER PRESSURE	2000 PSIG
EXPIRATION DATE	05/02/01
CLASSIFICATION	PRIMARY STANDARD
BATCH NUMBER	EZE026PN
LOT NUMBER	EZE02633
PART NUMBER	
CYLINDER SIZE	AH CGA 590 141 CFT

CERTIFIED CONCENTRATION	
CARBON DIOXIDE	7.00 %
OXYGEN	12.01 %
NITROGEN	BALANCE

ANALYZED BY

KWAN YOUNG

CERTIFIED BY

PHU TIEN NGUYEN



213-585-2154
FAX# 213-585-0582

LIQUID CARBONIC

CYLINDER GAS PRODUCTS

5700 SOUTH ALAMEDA STREET • LOS ANGELES, CALIFORNIA 90058

CERTIFICATE OF ANALYSIS

CUSTOMER HORIZONTAL AIR MEASURE

DATE 06/18/96

P.O NUMBER 5784

REF. NUMBER 47305100

REQUESTED COMPOSITION

GAS	CONCENTRATION
CARBON DIOXIDE	12 %
NITROGEN	BALANCE

ANALYTICAL METHOD

INSTRUMENT
METTLER ID5, S/N:1865166

ANALYTICAL PRINCIPLE
GRAVIMETRIC

THIS CYLINDER NO.	CC43624
CYLINDER PRESSURE	2000 PSIG
EXPIRATION DATE	09-16-98
CLASSIFICATION	PRIMARY STANDARD
BATCH NUMBER	EZF196PN
LOT NUMBER	EZF26500
PART NUMBER	N/A
CYLINDER SIZE	AH CGA 580 135 CFT

CERTIFIED CONCENTRATION	
CARBON DIOXIDE	11.83 %
NITROGEN	BALANCE

ANALYZED BY

[Signature]
TY TRIPPLET

CERTIFIED BY

[Signature]
PHU TIEN NGUYEN