TOTAL AIR ANALYSIS, INC.

SOURCE TEST FOR EMISSION FACTORS

ONE FLARE
CITY OF SANTA MARIA LANDFILL

Prepared For:

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Test Date: September 9 - 11, 2010

Report Identification No: JA-100887

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1.0 SUMMARY OF RESULTS

Facility: Santa Maria Landfill
Source: Flare
Load: Normal
Start Date: 9/9/2010

Parameter	Units	Run 1	Run 2	Run 3	Average
NO_x	ppmv	14.19	13.74	14.01	13.98
Emission Rate	lb/hr	0.32	0.31	0.30	0.31
Emission Rate	lb/MMBtu	**0.050**	**0.048**	**0.049**	**0.049**
CO	ppmv	0.82	0.38	0.001	0.40
Emission Rate	lb/hr	0.01	0.01	0.00001	0.01
Emission Rate	lb/MMBtu	**0.002**	**0.002**	**0.00001**	**0.001**
VOCs, Acrylonitrile*	ppbv	2.3	2.3	2.3	2.3
Emission Rate	lb/hr	6.41E-05	6.26E-05	6.35E-05	6.34E-05
Emission Rate	lb/MMBtu	**9.87E-06**	**9.79E-06**	**1.04E-05**	**1.00E-05**
VOCs, 1,4-Dioxane*	ppbv	1.4	1.4	1.4	1.4
Emission Rate	lb/hr	6.48E-05	6.32E-05	6.42E-05	6.41E-05
Emission Rate	lb/MMBtu	**9.98E-06**	**9.90E-06**	**1.05E-05**	**1.01E-05**
O_2	%	14.08	14.08	14.12	14.09
CO_2	%	5.65	5.65	5.61	5.64
Heat Input	MMBtu/Hr	6.50	6.39	6.12	6.33
Flow (measured)	dscfm	**3,320**	**3,238**	**3,288**	**3,282**
Flow (calculated)	dscfm	3,180	3,126	3,008	3,105

Note: All emission rates were computed using measured flow rate, calculated flow (fuel usage) is shown for cc

* Laboratory analysis was Non-Detect, Reporting limits used for emissions shown.

1.1 SUMMARY OF RESULTS, PAHs

Source: Flare
Load: Normal
Start Date: 9/9/10
End Date: 9/10/10

City of Santa Maria, Landfill Gas Flare #1

Target Compounds	Lab result ug/sample	Emissions ug/cu ft	MW lb/lb-mole	Emissions mg/dscm	Emissions ppm	Flow Rate dscfm	Emissions lbs/hr
Naphthalene	0.406	0.0054	128.2	0.000189	3.60E-05	3,282	2.36E-06
2-methylnapthalene	0.22176667	0.0029	142.0	0.000103	1.78E-05	3,282	1.29E-06
Acenaphthylene	0.2532	0.0033	154.2	0.000118	1.87E-05	3,282	1.47E-06
Acenaphthene	0.01633333	0.0002	152.0	0.000008	1.22E-06	3,282	9.51E-08
Fluorene	0.65736667	0.0087	166.2	0.000306	4.50E-05	3,282	3.83E-06
Phenanthrene	2.281	0.0301	178.2	0.001062	1.46E-04	3,282	1.33E-05
Anthracene	0.02563333	0.0003	178.2	0.000012	1.64E-06	3,282	1.49E-07
Fluoranthene	0.03253333	0.0004	202.0	0.000015	1.83E-06	3,282	1.89E-07
Pyrene	0.07053333	0.0009	202.2	0.000033	3.97E-06	3,282	4.11E-07
Chrysene	0.0151	0.0002	228.3	0.000007	7.53E-07	3,282	8.79E-08

Lab Result is average of three samples

The Detection Limit is used for ND Laboratory results.

1.2 SUMMARY OF RESULTS, Metals

Facility: **Santa Maria Landfill**
Source: **Flare**
Load: **Normal**
Start Date: **9/9/2010**

Parameter	Units	Run 1	Run 2	Run 3	Average
Arsenic	ug/sample	150.8	129.8	148.6	143.1
Arsenic	gr/dscf	3.31E-05	2.61E-05	6.81E-07	2.00E-05
Emission Rate	lb/hr	9.32E-04	7.39E-04	8.26E-04	8.32E-04
Emission Rate	lb/MMBtu	**1.43E-04**	**1.16E-04**	**1.35E-04**	**1.31E-04**
Cadmium	ug/sample	3.4200	3.4600	3.4800	3.4533
Cadmium	gr/dscf	7.50E-07	6.96E-07	6.81E-07	7.09E-07
Emission Rate	lb/hr	2.11E-05	1.97E-05	1.94E-05	2.01E-05
Emission Rate	lb/MMBtu	**3.25E-06**	**3.08E-06**	**3.17E-06**	**3.17E-06**
Chromium(Total)	ug/sample	0.0407	0.0244	0.0321	0.0324
Chromium(Total)	gr/dscf	3.05E-06	1.70E-06	2.19E-06	2.31E-06
Emission Rate	lb/hr	8.60E-05	4.81E-05	6.21E-05	6.54E-05
Emission Rate	lb/MMBtu	**1.32E-05**	**7.52E-06**	**1.02E-05**	**1.03E-05**
Nickel	ug/sample	3.4200	3.4600	3.4800	3.4533
Nickel	gr/dscf	7.50E-07	6.96E-07	6.81E-07	7.09E-07
Emission Rate	lb/hr	2.11E-05	1.97E-05	1.94E-05	2.01E-05
Emission Rate	lb/MMBtu	**3.25E-06**	**3.08E-06**	**3.17E-06**	**3.17E-06**
Manganese	ug/sample	3.4200	14.5666	3.4800	7.1555
Manganese	gr/dscf	7.50E-07	2.93E-06	6.81E-07	1.45E-06
Emission Rate	lb/hr	2.11E-05	8.29E-05	1.94E-05	4.11E-05
Emission Rate	lb/MMBtu	**3.25E-06**	**1.30E-05**	**3.17E-06**	**6.47E-06**
O_2	%	14.08	14.08	14.12	14.09
CO_2	%	5.65	5.65	5.61	5.64
Heat Input	MMBtu/Hr	6.50	6.39	6.12	6.33
Flow (measured)	dscfm	3320.35	3237.89	3287.61	3,282
Flow (calculated)	dscfm	3179.95	3126.21	3008.31	3,105

1.3 SUMMARY OF RESULTS

Facility: **Santa Maria Landfill**
Source: **Flare**
Load: **Normal**
Start Date: **9/10/10**
End Date: **9/11/10**

Parameter	Units	Run 4	Run 5	Run 6	Average
Formaldehyde	ppmv	0.17	0.20	0.08	0.15
Emission Rate	lb/hr	2.66E-03	3.12E-03	1.40E-03	2.39E-03
Emission Rate	lb/MMBtu	**3.94E-04**	**4.62E-04**	**2.23E-04**	**3.60E-04**
Hydrogen Fluoride (HF)	ppmv	0.430	0.233	0.207	0.29
Emission Rate	lb/hr	4.36E-03	2.38E-03	1.97E-03	2.90E-03
Emission Rate	lb/MMBtu	**6.46E-04**	**9.81E-04**	**8.12E-04**	**8.13E-04**
Hydrochloric Acid (HCL)	ppmv	0.002	0.003	0.003	0.003
Emission Rate	lb/hr	2.13E-05	2.27E-05	2.12E-05	2.18E-05
Emission Rate	lb/MMBtu	**3.16E-06**	**3.37E-06**	**3.38E-06**	**3.30E-06**
Hexavalent Chrome	ug/Sample	0.0647	0.0820	0.0527	0.0665
Hexavalent Chrome	gr/dscf	1.26E-08	2.44E-09	2.30E-09	5.79E-09
Emission Rate	lb/hr	3.59E-07	6.86E-08	6.47E-08	1.64E-07
Emission Rate	lb/MMBtu	**5.32E-08**	**1.02E-08**	**1.03E-08**	**2.45E-08**
O_2	%	13.84	13.88	13.89	13.87
CO_2	%	5.71	5.57	5.52	5.60
Heat Input	MMBtu/Hr	6.75	6.75	6.29	6.60
Flow (measured)	dscfm	**3,312**	**3,282**	**3,286**	**3,293**
Flow (calculated)	dscfm	3,199	3,220	3,004	3,141

All emission rates computed using measured flow, calculated flow (fuel) is shown for comparison.

2.0 Introduction

Total Air Analysis, Inc. was contracted by Janechek & Associates to perform an emissions factor source test program on a Flare at the City of Santa Maria Landfill. The objective of the source test was to determine concentrations and emission rates of specific compounds from the exhaust of the Flare. The Flare was tested for Poly-Aromatic Hydrocarbons (PAHs), multiple metals including Hexavalent Chrome (Cr6), Formaldehyde, Hydrogen Chloride (HCL) and Hydrogen Fluoride (HF) Acids, and VOCs; Acrylonitrile, and 1.4-Dioxane. NOX/CO/CO_2 and O_2 were also measured during the test program.

Source testing was performed by Russ P. Logan and Jerry D. Grissom of Total Air Analysis.

3.0 Equipment and Process Description

The Flare System consists of numerous collection wells pulling landfill gas into the flare. Following is a description of the subject landfill gas collection and flare system:

1. Landfill gas extraction wells.

2. Condensate water separator, vertical, 30 inches in diameter by five feet high, stainless steel construction, used to remove and collect condensate (water vapor) from incoming landfill gas.

3. Condensate water holding tank, 1,050 gallon capacity, five feet one inch in diameter by eight feet one inch high. Condensate water collected in the taken is disposed of by injection into the flare. A 5 hp air compressor drives the pneumatic pump needed to send the condensate water from the tank to the flare.

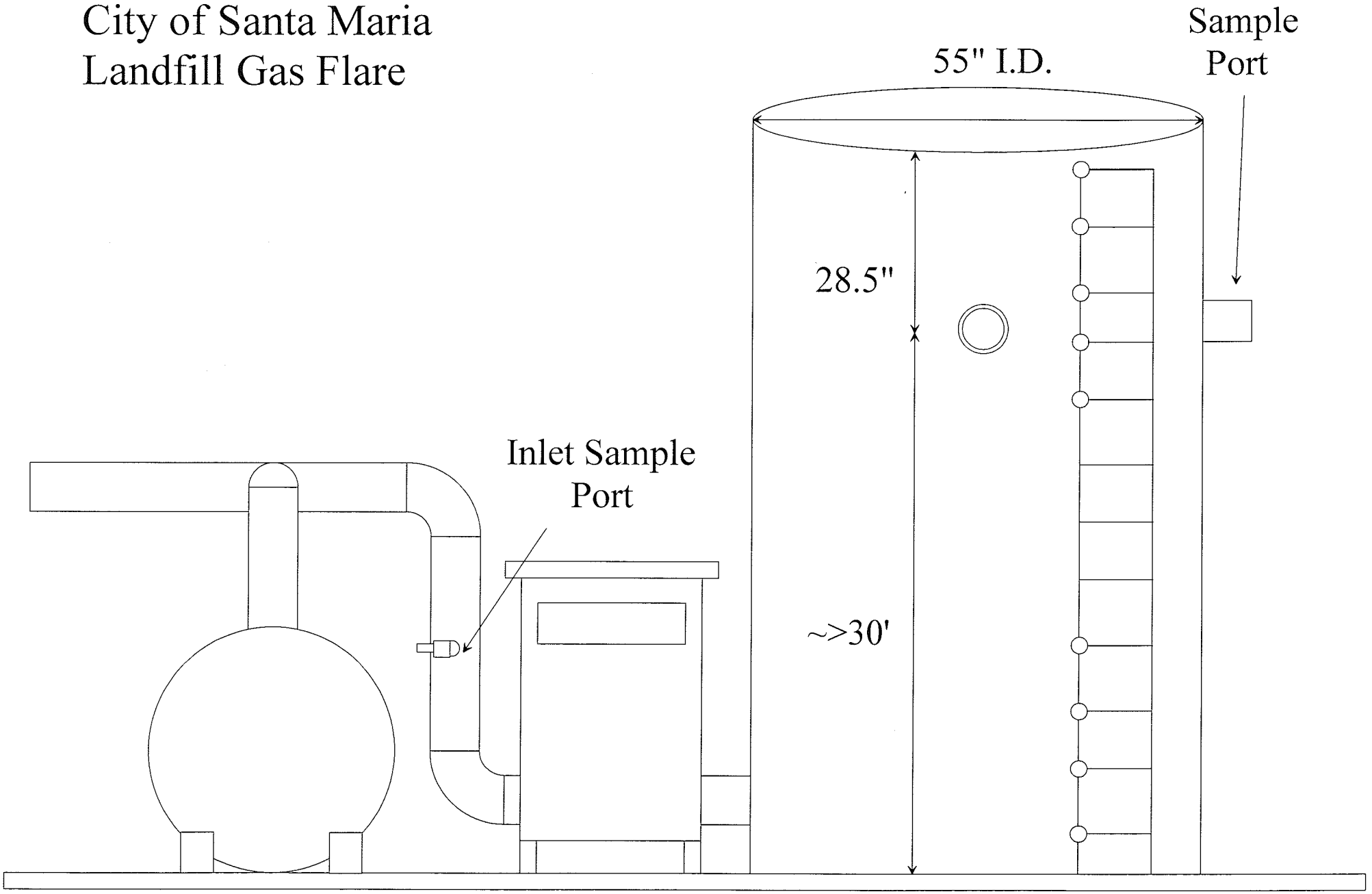
4. Gas blower, 500 scfm capacity, used to draw gas from the collection system and deliver it to the flare burner manifold. A standby blower is provided in case of failure of the primary blower.

5. Gas flow measurement station, sued to measure and record gas flow rates.

6. Propane system, two propane tanks equipped with regulators set at different pressures. The pressure in the piping indicates which tank is in operation (primary/high pressure or secondary/low pressure).

7. Enclosed ground flare, rated at 13.5 MMBtu/hour, manufactured by Perennial Energy, Inc., model EF4-10.50-14303233-Z-00-10 (or equivalent), used for the continuous flaring of landfill gas. The flare is approximately six feet in diameter by 24 feet high, equipped with an automatic ignition system, three thermocouples, a propane fired pilot, an automatic temperature control system, a flame arrester, and a safety shutdown system.

City of Santa Maria
Landfill Gas Flare



4.0 Rule/Compliance Requirements

The objective of the source testing was to determine concentrations and emission rates of selected compounds from the exhaust of the flare. **Table 1** summarizes the target compounds and sampling performed. **Table 2** summarizes the run times and dates of each test method.

Table 1 – Summary of Target Compounds, Test Methods, and Sampling Duration

Toxic Compounds		Test Method	Number of Tests	Sampling Duration
Formaldehyde		CARB 430	Three	Two hours
Total Chrome		CARB 436	Three	Two hours
Nickel		CARB 436	Three	Two hours
Manganese		CARB 436	Three	Two hours
Arsenic		CARB 436	Three	Two hours
Cadmium		CARB 436	Three	Two hours
Hexavalent Chrome		CARB 425	Three	Two hours
Hydrogen Chloride (HCL)		EPA 26	Three	Two hours
Hydrogen Fluoride (HF)		EPA 26	Three	Two hours
Acrylonitrile		EPA 18	Three	Two hours
1, 4 – Dioxane		EPA 18	Three	Two hours
PAHs	Naththalene	CARB 429	Three	Two hours
	Benzo(b)fluoranthene	CARB 429	Three	Two hours
	Benzo(k)fluoranthene	CARB 429	Three	Two hours
	Benzo(a)pyrene	CARB 429	Three	Two hours
	Indeno(1,2,3-cd)pyrene	CARB 429	Three	Two hours
	Dibenz(a,h)anthracene	CARB 429	Three	Two hours

Table 2 – Summary of Sampling Time

Compounds	Run #	Sample Date	Sampling Time
PAHs	1	Sept 9, 2010	14:30 – 16:35
Multiple Metals	2	Sept 9, 2010	18:50 -20:55
VOCs	3	Sept 10, 2010	15:25-17:30
Formaldehyde	4	Sept 10, 2010	19:50-21:55
Hexavalent Chrome	5	Sept 11, 2010	10:30-12:35
Acids	6	Sept 11, 2010	14:00-16:05

Note: NOx/CO/CO_2/O_2 were continuously recorded during all six runs to show any changes in Flare operation.

5.0 Test Description

The Flare was tested under normal operating conditions. Process operating data (Flare temp, and fuel usage) was logged continuously throughout the test program and is shown in Appendix I – Facility Flare process data. Table 3 shows the average operating data during each run.

Table 3 – Process Conditions

Test date	Run #	Flare Temp	Fuel Usage
Sept 9, 2010	1	1438°F	239 SCFM
Sept 9, 2010	2	1438°F	235 SCFM
Sept 10, 2010	3	1438°F	225 SCFM
Sept 10, 2010	4	1439°F	250 SCFM
Sept 11, 2010	5	1438°F	251 SCFM
Sept 11, 2010	6	1438°F	233 SCFM

6.0 Sampling and Analytical Procedures

6.1 CARB Method 100 - Continuous Gaseous Emissions Sampling

A continuous gas sample was extracted from the stack through a coarse filter, heated stainless steel probe, and Teflon line attached to our iced sample conditioner followed by an electronic thermal cooler. The sample was then drawn via 3/8" Teflon line into the climate controlled Mobile Emission Laboratory and delivered to the analyzers through the manifold, dedicated valves, and pressure indicators.

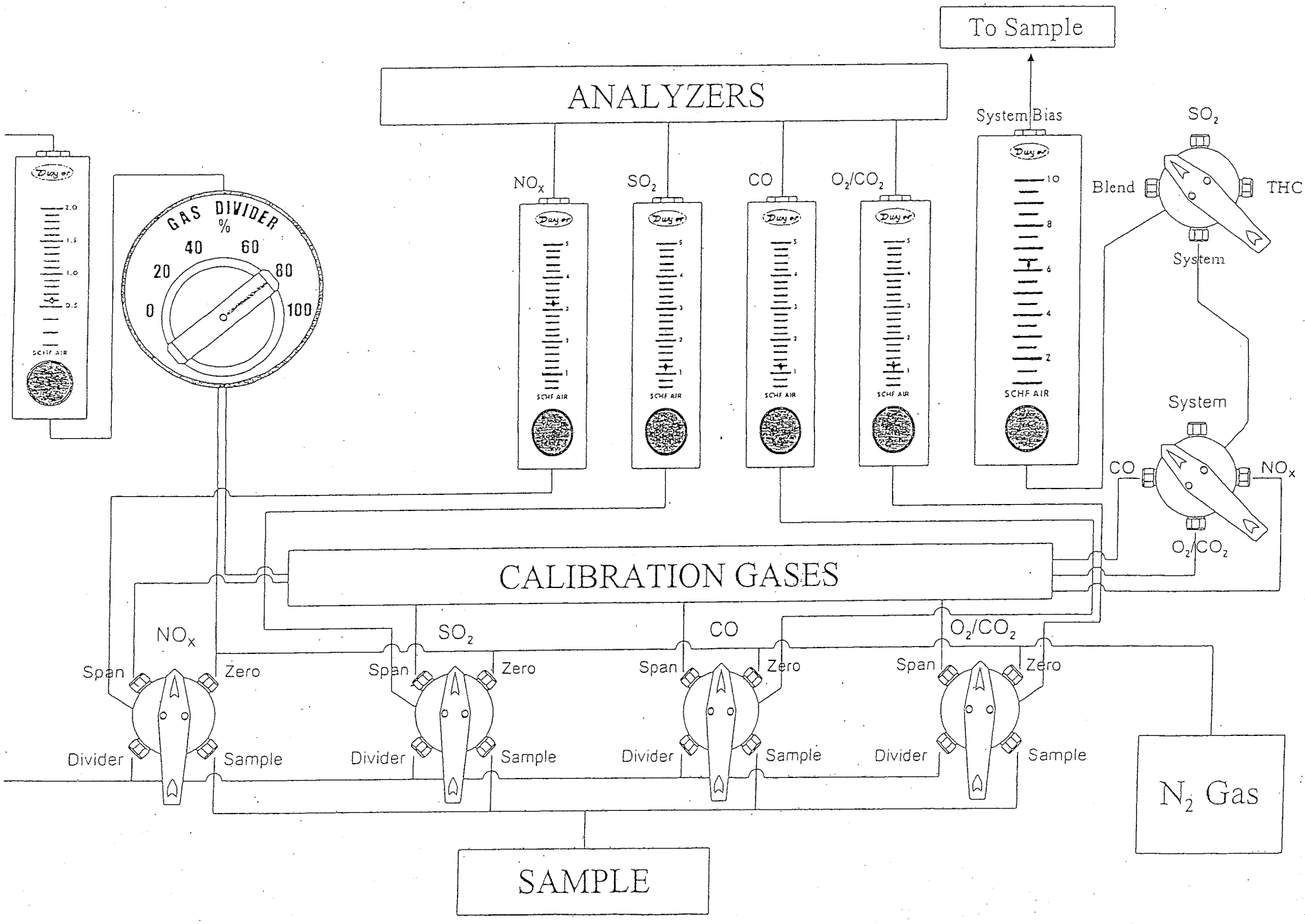
Prior to beginning of testing, a system leak check, calibration error, and system bias check was performed. The leak check was accomplished by plugging the probe tip and drawing at least 20" Hg vacuum on the entire sampling system. When all flow meters indicate 0.0 SCFH flow, the system was proven to be free of any leaks.

The calibration error check was performed as follows: After zeroing all analyzers, EPA Report No. 1 gases were used to calibrate each analyzer within 80-100% of full scale of the selected range. Then a 40%-60% of the selected range gas was introduced to each analyzer. Additionally, a system bias calibration check is performed by passing EPA Report I zero and calibration gases through the entire sampling system using a three-way valve located at the probe tip. Sampling system bias checks are determined by comparing the external calibration values to that of the values when introduced directly to each instrument.

To verify the latest sample conditioning requirements for CARB Method 100.1, two type-k thermocouples were used to measure the exit temperatures from the sample conditioner and electronic chiller. The gas temperature at the outlet of the sample conditioner was kept below 60°F and the temperature from the chiller will maintain below 37°F. A NO_2 conversion efficiency (CE) test was performed as required by CARB on-site. Additionally, a 3-point divider linearity check was performed on-site with the gas divider. The specifications of the instruments used for the CARB 100.1 sampling are as follows:

NO_x CHEMILUMINESCENT ANALYZER, California Analytical Instruments (CAI)	***MODEL 600 Serial No. U09024***
Ranges	0-3 ppm, up to 0-3,000 ppm
Output	0-10V / 4-20mA
Linearity	Better than 0.5% of full scale
Operating Temperature	5-40 °C
Converter (Vitreous Carbon) Temp	205 °C > 95% efficiency
Detection Limit	0.1 ppm
Response Time (0%-90%)	Typically < 2 Seconds in NO_x mode
Repeatability	Better than 0.5% of full scale
Zero + Spam Drift	< 1% full scale
Sample Flow rate	Typically 1.5-2.5 LPM

MANIFOLD SCHEMATIC



CO_2 ANALYZER, NON-DISPERSIVE INFRARED (NDIR)	*SERVOMEX, MODEL 1400 B Serial No. 4363*
Ranges	0%-25%, single range
Output	0-1 V or 4-20 mA (isolated)
Linearity	+/- 1% of full scale
Operating Temperature	0 to 40°C
Detection Limit	0.1%
Response Time (0%-90%)	<30 Seconds
Accuracy	+/- 1% of full scale
Repeatability	+/- 1% of full scale
Drift	<1% of full scale per 24 hours
Sample Flow Rate	0.5 – 1 li./min

O_2 ANALYZER, PARAMAGNETIC	*SERVOMEX, MODEL 1400*
Ranges	Selectable from 0%-1% up to 0%-100%
Output	0-1 V
Linearity	+/- 1% of full scale
Operating Temperature	5 to 50°C
Detection Limit	0.1%
Response Time (0%-90%)	<15 Seconds
Accuracy	+/- 0.1%
Repeatability	+/- 0.1%
Drift	<0.1%
Sample Flow Rate	1-2 li./min

CO, California Analytical Instruments (CAI) Non-Dispersive Infrared (NDIR)	*Model 602 Serial No. 512011*
Ranges	0-25 ppm, 0-10,000 ppm
Output	0-10V
Linearity	+/- 0.5%
Operating Temperature	5-45°C
Detection Limit	1.0 ppm
Response Time (0%-90%)	20 seconds
Accuracy	+/- 0.1%
Repeatability	< 1.0% of full scale
Noise	< 1.0% of full scale
Drift	<+/- 1% of full scale per 24 hours
Sample Flow Rate	0.5 – 2.0 l pm

THERMAL ELECTRIC SAMPLE COOLER	*BALDWIN TESTER CHOICE MODEL NO. 5210*
Maximum Inlet Gas Temperature	+ 450 °F
Maximum Inlet Gas Dewpoint	+138 °F
Maximum Inlet Water Concentration	30% by volume
Maximum Ambient Temperature	+104 °F
Maximum Inlet Pressure	50 psig
Maximum Sample Gas Flow Rate	8 li/min (12.9 scfh)
Ambient Temperature Range	+40 to 104 °F
Outlet Sample Gas Dewpoint	<36 °F +/- 1 °F
Power	740 Watts
Water Removal	Peristaltic Drain Pump

STRIP CHART RECORDER	*YOKOGAWA MODEL HR 2400*
Scan Cycle Time	1-60 Seconds
Scanning Rate	60 ms/Channel
Input Bias	Less than 10mA
Chart Speed	1-15,000 mm/hr
Maximum Allowable Input Voltage	60 VDC
Recording Accuracy	+/- 0.1 of effective range
Chart Speed Accuracy	+/- 0.1% recordings greater than 1 m
Data Acquisition System	Varilink Digital Software

MOBILE EMISSIONS LABORATORY	*GMC 15' BOX VAN*
Insulation	Fully Insulated
Air Conditioning	1 Full-size Coleman Air Conditioner
Computer	IBM Compatible System

Calculations

Corrected Concentrations = (Raw Conc. – Avg. Zero) x Cal. Gas Value/(Avg. Span – Avg. Zero)

ppm NO_x @ 15% O_2 = Corrected Concentrations x 5.95/(20.95 - %O_2 drift corr.)

LB/hr, Emission Rate = Corrected Concentrations x 1.558 x 10^{-7} @ 68 °F x DSCFM x M_d

M_d = Dry Molecular Weight of NO_x and CO= 46 and 28

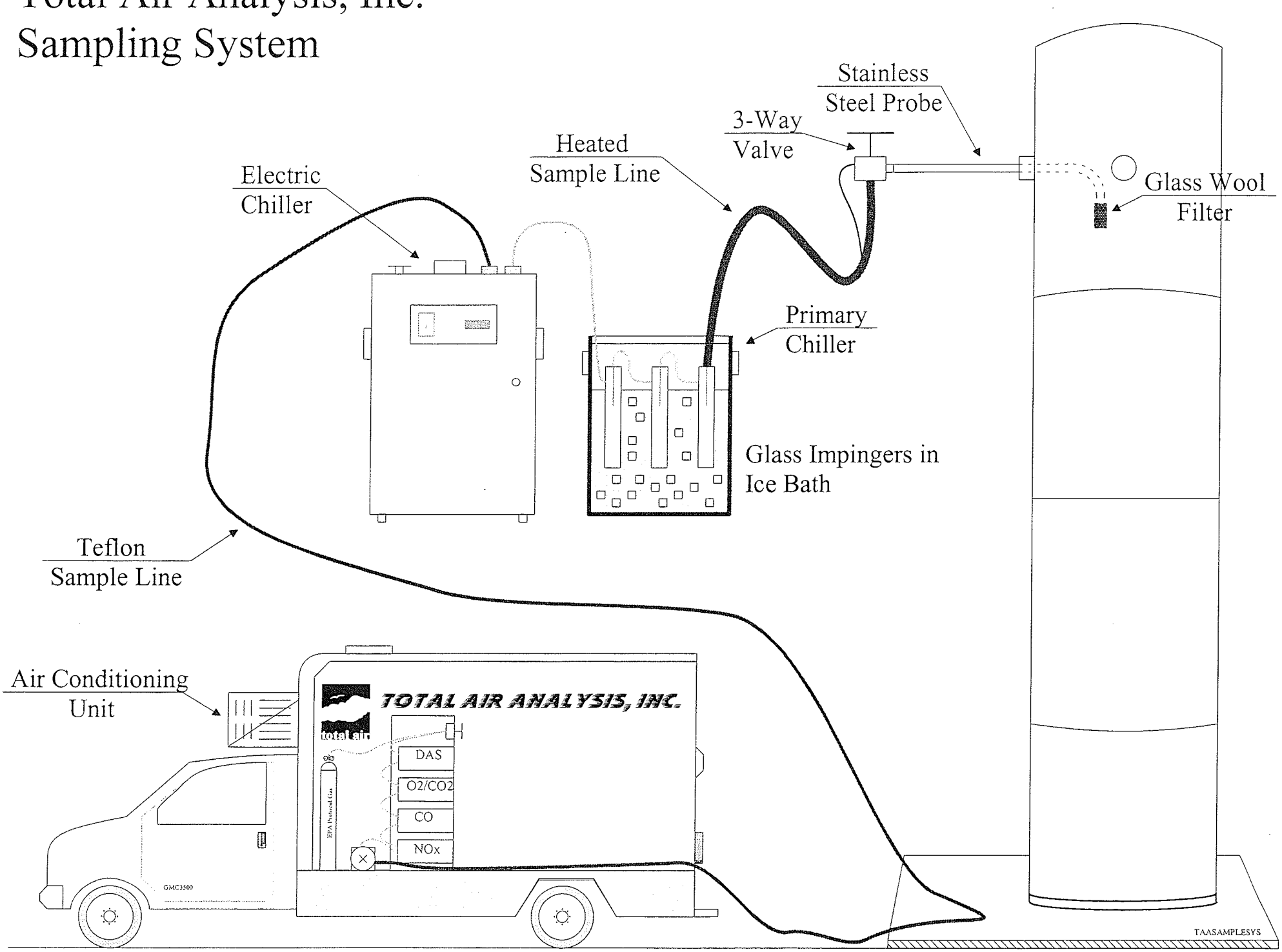
NO_2 Conversion Efficiency, % CE = $(D_3 - D_2/D_1) \times 100$

Where: D_1 = ppmv, NO_2 (cylinder)

D_2 = ppmv, reading NO mode

D_3 = ppmv, NO_2, NO_x mode

Total Air Analysis, Inc.
Sampling System



6.2 *CARB Method 425 - Hexavalent Chromium Emissions*

This method determines Hexavalent chromium emission. The sampling equipment that came in contact with the sample was quartz/glass, glass, or Teflon and was put to an extremely stringent cleaning procedure and soaked in 1:1 Nitric Acid solution for at least six hours. A sample of stack gasses was withdrawn isokinetically from the source through the sample train. Hexavalent chromium was collected in impingers containing 0.1 NaOH and on the heated filter. The impingers were contained in an ice bath to maintain a sampled gas temperature of approximately 60°F. Samples were analyzed by Quantum Analytical for Hexavalent chromium using Ion Chromatograph (IC).

6.3 *CARB Method 429 - Determination of Polycyclic Aromatic Hydrocarbons (PAH) in Emissions from Stationary Sources*

This method applies to the determination of nineteen polycyclic aromatic hydrocarbons (PAH) in emissions from stationary sources. Particulates and gaseous phase PAH were extracted from the stack and collected on XAD-2 resin and impingers. The analytical method was isotope dilution mass spectrometry combined with high-resolution gas chromatography.

The sampling train consisted of nozzle, probe, heated particulate filter, condenser, and sorbent module followed by three impingers and a silica gel drying cartridge.

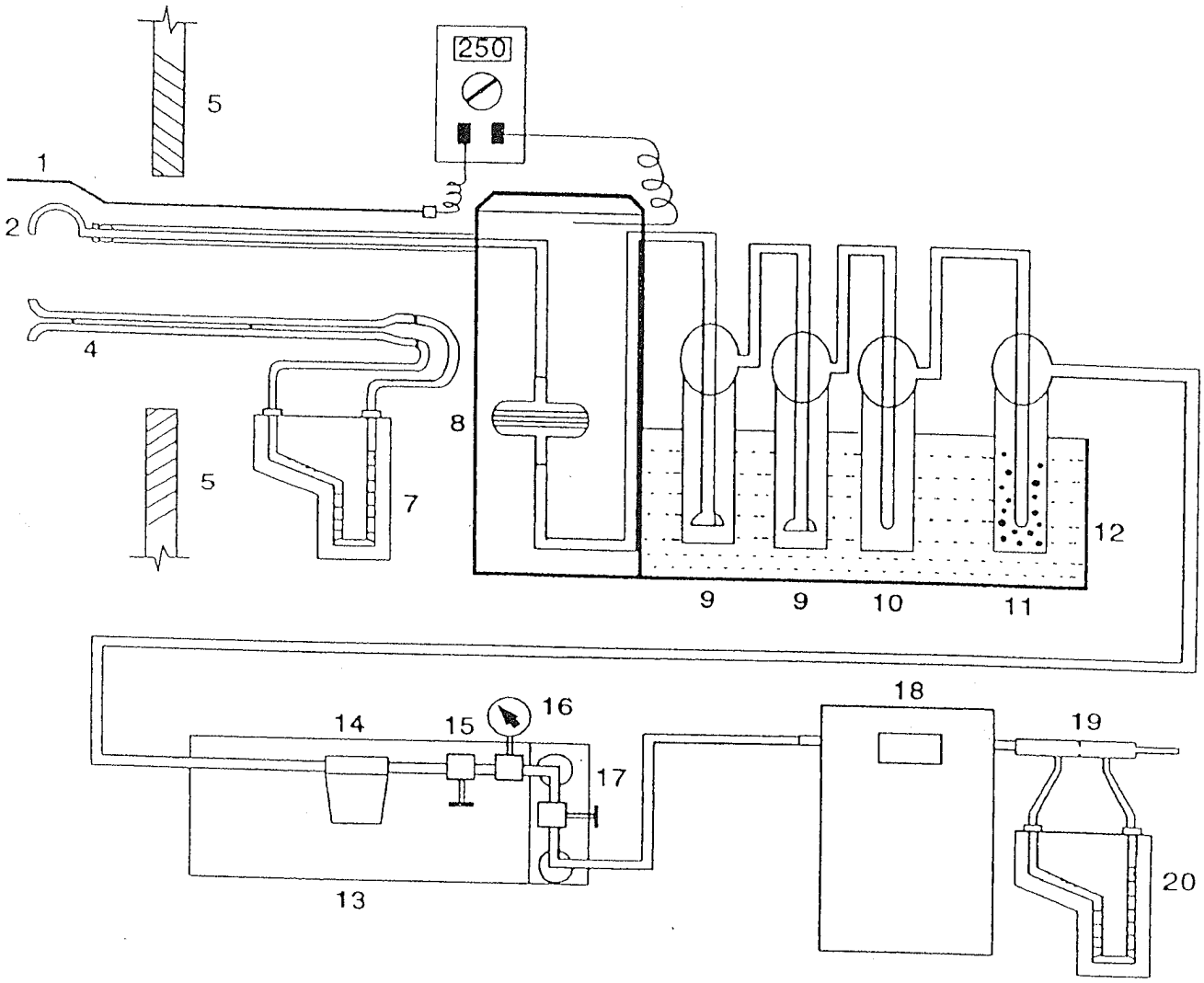
The sample transfer line used was Teflon (1/4 in. O.D. x 1/32 in. wall) with connecting fittings that were capable of forming leak-free, vacuum tight connections without using sealing greases.

The sorbent module used was made of glass with o-ring fittings. A coil-type condenser, with circulating cold water, preceded the vertical resin trap. Gas entering the sorbent module was cooled to 20°C (68°F) or less. The gas temperature was monitored by a thermocouple placed either at the inlet or exit of the sorbent trap. The sorbent bed was firmly packed and secured in place to prevent settling or channeling during sample collection. Ground glass caps (or equivalent) were used to seal the sorbent-filled trap both prior to and following sampling. All sorbent modules were maintained in the vertical position during sampling.

Four impingers in series with ground glass fittings able to form leak-free, vacuum tight seals without sealant greases were connected. The impingers are Greenburg-Smith design modified by replacing the tip with a 1.3 cm (1/2 in.) I.D. glass tube extending to 1.3 cm (1/2 in.) from the bottom of the flask.

The first and second impingers contained 100 mL of 3 mM sodium bicarbonate ($NaHCO_3$) and 2.4 mM sodium carbonate Na_2CO_3). This was intended to neutralize any acids that might form in the impingers. The third impinger was empty. Silica gel was added to the fourth impinger.

CARB Method 425 – Hexavalent Chrome



1. Temperature Sensor
2. Nozzle
3. Glass lined Stainless Steel Probe-Heated
4. S-type Pitot Tube
5. Stack Wall
6. Temperature Sensor Meter
7. Pitot Tube Inclined Manometer
8. Heated Box with Filter
9. Impinger with 100 ml
10. Empty Bubbler
11. Bubbler with Silica Gel
12. Ice Bath
13. Sealed Pump (Leak Free)
14. Filter for Pump
15. Metering Valve
16. Vacuum Gauge
17. By-pass Valve
18. Temperature Compensated Dry Gas Meter
19. Orifice
20. Orifice Inclined Manometer

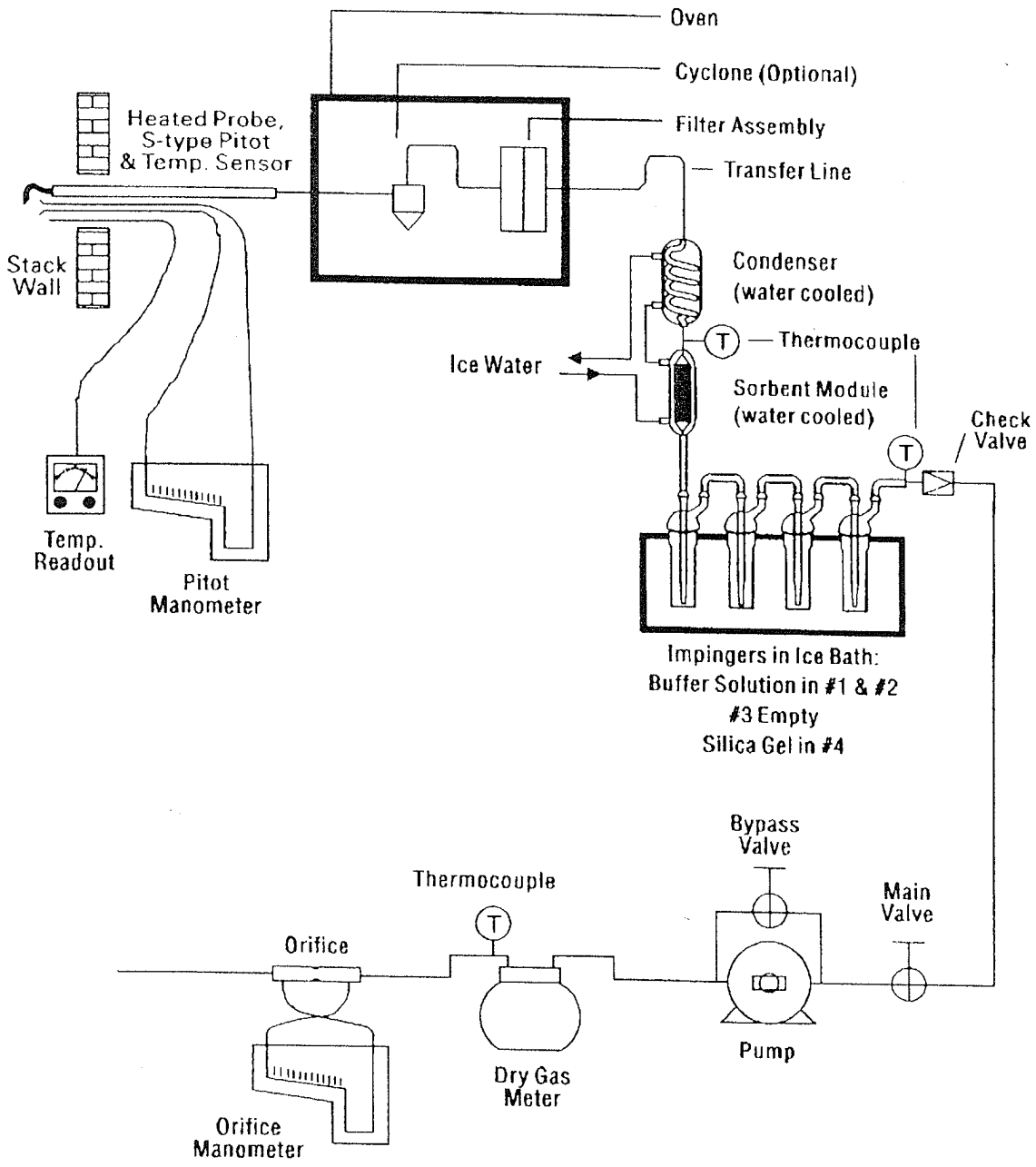


Figure 2
PAH Sampling Train

Vista Analytical Laboratory, in El Dorado Hills, California, prepared the XAD resin traps and conducted all analytical procedures in accordance with CARB method 429 for PAHs. Front half (probe rinse and filter) and back half (condenser rinse and resin trap) samples were combined and analyzed using high resolution GC/MS. As part of the method QA/QC, all of the resin traps were pre-spiked with isotopically labeled PAH's, and a sampling train blank (consisting of all sampling materials and reagents) were prepared and submitted along with the samples for identical analysis.

6.4 CARB Method 430 - Determination of Formaldehyde Emissions from Stationary Sources

Formaldehyde was sampled and analyzed using CARB Method 430 by Air Toxics, Ltd. located in Folsom, California. The method is based on the use of HPLC.

Gaseous emissions were drawn through a Teflon sample line and two impingers in series, each impinger containing an aqueous acidic solution of 2,4-dinitrophenyl-hydrazine (DNPH). The sample line was rinsed with another aliquot of the same solution. An aldehyde reacts with DNPH by nucleophilic addition on the carbonyl followed by 1,2-elimination of water and the formation of a 2,4-dinitrophenylhydrazone. Acid is required to promote protonation of the carbonyl because DNPH is a weak nucleophile.

After organic solvent extraction, the sample was analyzed using reverse phase HPLC with an UV absorption detector. Impingers were analyzed separately.

Formaldehyde in the sample was identified and quantified by comparison of retention times and area counts of sample extracts with those of standards.

Sampling was performed at a constant rate of approximately 1.0 liters per minute for 20 minutes, using a low volume sampling pump. The sampling rate was determined before and after each test run using a mini-flow meter. As part of the method QA/QC, sampling material blanks (reagents) were submitted along with the samples for analysis. The DNPH solution was prepared in the laboratory 48 hours prior to sampling.

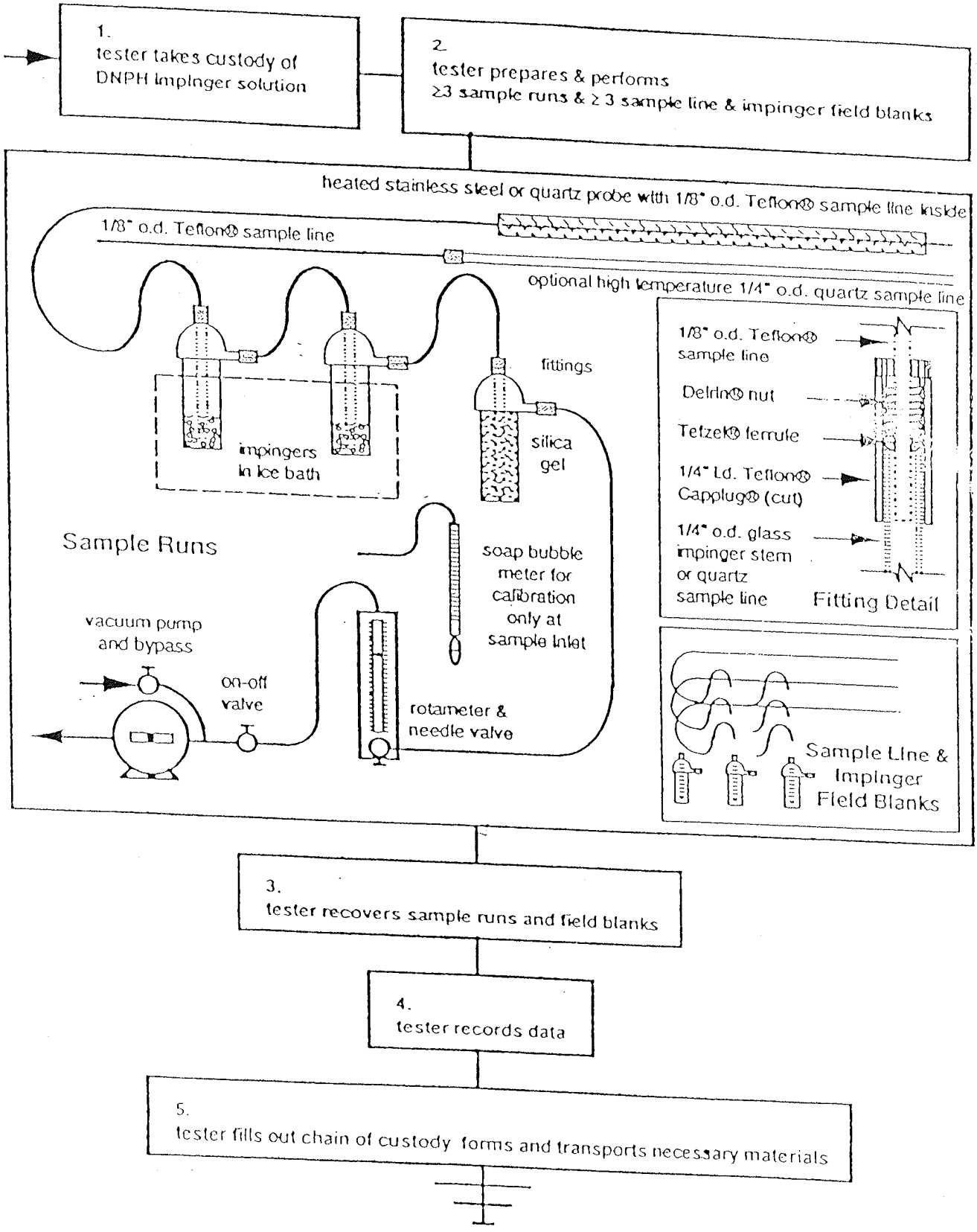
6.5 CARB Method 436 - Multiple Metals Emission Determination

The sampling equipment that came in contact with the sample was glass or Teflon and put to an extremely stringent cleaning procedure. All sampling equipment was pre-washed with hot soapy water, soaked in 1:1 HNO_3 for at least 6 hours, rinsed with Type II water, and finally allowed to air-dry then sealed with TFE tape.

A series of preliminary measurements were conducted prior to conducting the test. CARB Methods 1, 2 and 3 were performed to determine location and number of traverse points. Percent moisture was estimated and the nozzle size was determined for isokinetic sampling.

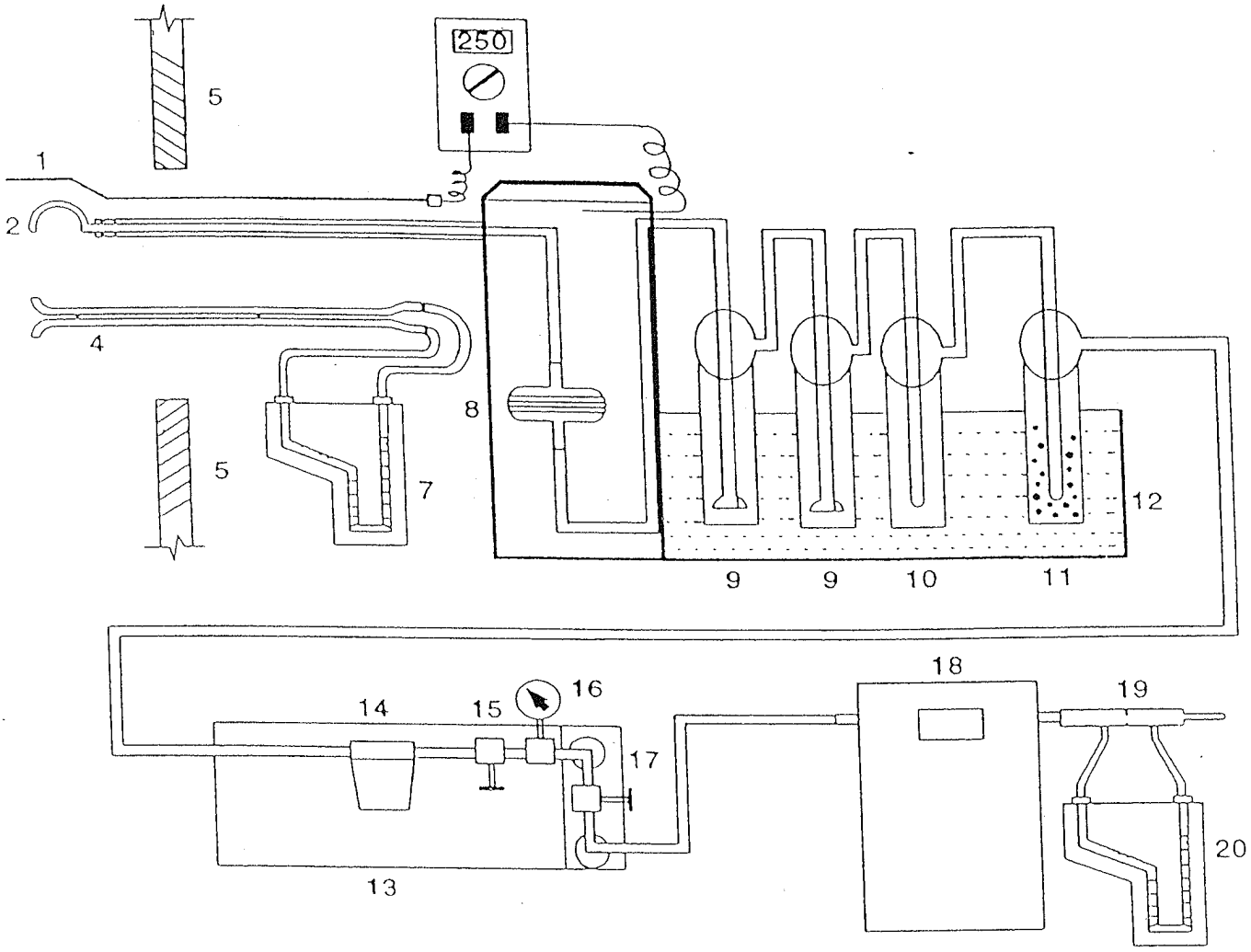
The sampling train was prepared on-site in our mobile emissions laboratory. The first two impingers were charged with 100 ml of 5% HNO_3/10% H_2O_2 solution, the third impinger was empty, and the fourth impinger contained approximately 300 gram of silica gel. The quartz

CARB Method 430



CARB Method 436

Multiple Metals



1. Temperature Sensor
2. Nozzle
3. Glass lined Stainless Steel Probe-Heated
4. S-type Pitot Tube
5. Stack Wall
6. Temperature Sensor Meter
7. Pitot Tube Inclined Manometer
8. Heated Box with Filter
9. Impinger with 100 ml 5% HNO_3/10%H_2O_2
10. Empty Bubbler
11. Bubbler with Silica Gel
12. Ice Bath
13. Sealed Pump (Leak Free)
14. Filter for Pump
15. Metering Valve
16. Vacuum Gauge
17. By-pass Valve
18. Temperature Compensated Dry Gas Meter
19. Orifice
20. Orifice Inclined Manometer

fiber filter was placed in the filter holder. The sampling apparatus was sealed and transported to the sampling locations where it was assembled and leak checked at 15-in. mercury vacuum.

The test was started when the nozzle is positioned into the gas flow, the vacuum pump started and the dH adjusted to obtain an isokinetic-sampling rate. A complete traverse was performed while sampling at seven and a half (7.5) minutes per sample point. Upon completion of the sampling run, the apparatus was leak checked at a vacuum greater than the highest observed vacuum during the test. The probe and the filter was cooled off and removed from the train and sealed with Teflon tape, and then the entire train component was transported to the mobile laboratory for recovery.

The filter and the loose particulate was carefully removed from the filter holder with TFE coated tweezers and placed into a labeled glass petri dish. The nozzle and probe was rinsed and brushed at least three times using 0.1 N HNO_3 and placed into a sample bottle labeled "Probe and Nozzle rinse". The impingers' solution was measured and placed into a sample bottle labeled "Impinger Catch". A 200-ml of the impinger solution, rinsing solution and a filter was placed in sample bottles and a petri dish and labeled as "Reagent Blank." The samples were transported to Cal Tech Environmental Laboratories for analysis, where the filter were combined with the "Probe and Nozzle rinse" and analyzed.

The samples and the blanks were analyzed for multiple metals using inductively coupled plasma (ICP).

6.6 EPA Method 18 - *Measurement of Gaseous Organic Emissions by Gas Chromatography*

Acrylonitrile and 1,4-Dioxane were sampled using EPA Method 18 – Measurement of Gaseous Organic Emissions.

Columbia Analytical Services analyzed the samples by gas chromatograph/mass spectrometer (GC/MS).

The organic components of a gas mixture are separated by gas chromatography and individually quantified by flame ionization, photoionization, electron capture, or other appropriate detection principles. The retention times of each separated component are compared with those of known compounds under identical conditions.

Tedlar sampling bags were used to sample the gas stream. Tedlar bags are a convenient and accurate means of collecting and measuring the concentration of chemicals in a gas stream. Tedlar film resists gas permeation both into and out of the bag. This assures sample integrity and valid data for analysis for most applications. A vacuum chamber (lung sampler) was used to allow the direct filling of the tedlar bag using negative pressure provided by the sampling pump. This eliminated the risk of contamination of the pump or the sample. Sample analyses were performed within 24 hours of collection.

6.7 EPA Method 19 - Volume Flow Determination by Fuel

A new three-liter Tedlar bag fitted with polypropylene valves or the equivalent was used for sample transportation and storage. The bag was leak checked and purged with ultra pure nitrogen and stored in a safe area. Prior to sampling, the bag was conditioned to the fuel gas by filling and emptying the bags at least three times before the actual sample was taken.

The fuel sample was collected in a dark container to prevent the sun light from modifying the sample metrics.

The sample was analyzed for heat content (BTU) using ASTM Method 3588, and the ultimate analysis for the determination of Hydrogen, Carbon, Sulfur, Nitrogen, Oxygen, and Water from fuel by percent weight.

Calculations:

Stack Gas Flow rate = Fuel Flow rate x Heat Content x F Factor x $(20.9/(20.9-O_2)$

6.8 EPA Method 26 - Hydrochloric Acid (HCL) Emissions Determination

A series of preliminary measurements were conducted prior to conducting the test. CARB Methods 1, 2 and 3 were performed to determine location and number of traverse points.

The sampling train was prepared on-site in our mobile emissions laboratory. The first two impingers were charged with 100 ml of 0.1 N H_2SO_4, the third impinger was empty, and the fourth impinger contained approximately 300 grams of silica gel. The probe was brushed and rinsed with DI H_20. The heated filter was placed in the filter holder and connected to the sample train. The sampling apparatus was sealed and transported to the sampling location where it was assembled and leak checked.

The test will started and the dH was set to approximately 1.5 or a 0.7 cfm sampling rate. Each sample was taken for 120 minutes.

Upon completion of the sampling run, the apparatus was leak checked at a vacuum greater than the highest observed vacuum during the test. The probe and filter was removed from the train and sealed, then transported to the mobile laboratory for recovery.

The impinger's solution was measured and recovered. The samples was then transported to Quantum Analytical Laboratory for HCL analysis.

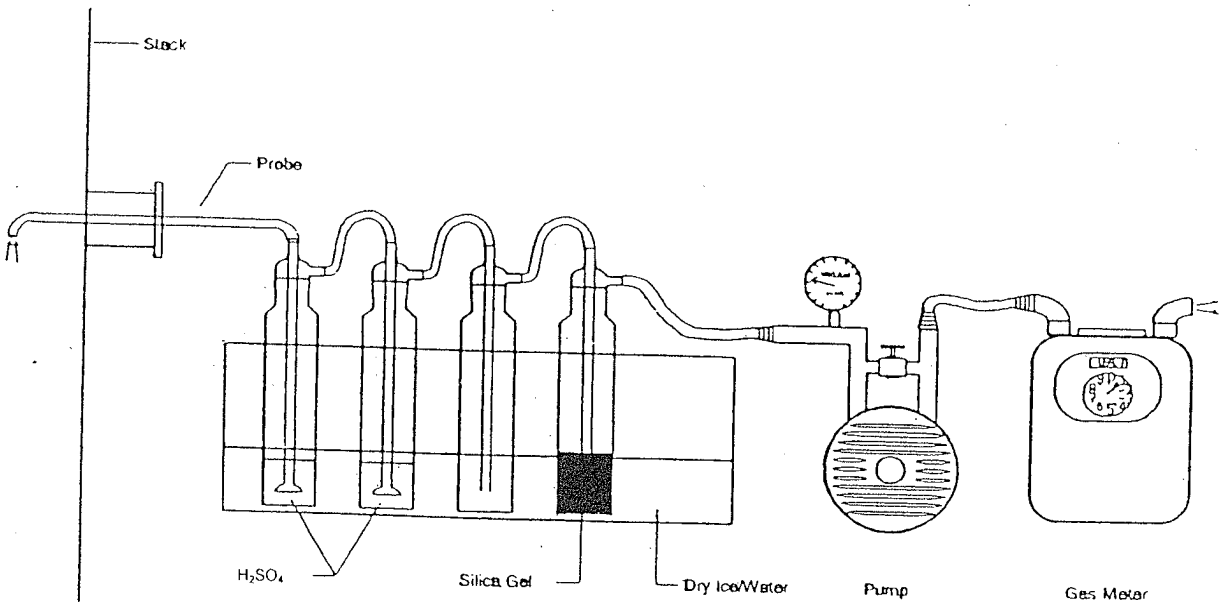
7.0 Quality Assurance and Quality Control

Total Air Analysis applies stringent quality control and quality assurance procedures to ensure the validity of measurements for all projects. Total Air Analysis QA/QC procedures are documented in detailed Quality Assurance Project Plans similar to those used by the EPA, CARB, SCAQMD, and SDAPCD.

REFERENCE METHOD (RM)

SAMPLING AND LABORATORY ANALYTICAL PROCEDURES

EPA Method 26
Equipment/Setup



7.1 QA/QC Overview

Generally, Total Air Analysis QA/QC procedures follow guidelines in *Quality Assurance Handbook for Air Pollution Measurement Systems*, Volumes I through III. These procedures outline pretest preparation and calibrations of sampling equipment, post-test sample handling, and post-test calibrations. Standardized, written procedures, calculator programs, and spreadsheets are used for test planning, pre-surveys, equipment checklists, preliminary calculations, data and sample collection, sample tracking, data analysis, and reporting. Pre-test preparations and maintenance include organization of the following equipment:

- Calibrated pitots, balances, TCs, control boxes, sampling train specific for moisture, sample probes suitable for type of sampling to be done, and support equipment such as tools, safety gear, radios, and spares.

Test procedures follow applicable SCAQMD or other approved test methods. For non-continuous sampling systems (moisture train, etc.), these procedures specify the following:

- Pre-test and post-test leak checks on both pitot connections and moisture trains.
- Maintenance of pitot tube in a horizontal attitude by employment of special rail systems or jigs.
- Proper configuration of moisture train.
- Sample and velocity traverses, number and location of sampling points, check for cyclonic flow; stratification checks.
- Minimum sample time and volume for moisture determination.
- Required temperature limitations.
- Other test method-specific procedures.

7.2 QA/QC Equipment Calibration Procedures

Table 4 contains the specific QA/QC equipment calibration requirements that are strictly followed by Total Air Analysis personnel.

Table 4
Quality Assurance / Quality Control Calibration Table

Component	Frequency of Calibration	Requirements of Calibration	Limits of Calibration
Pitots	Prior to each source testing program and semiannually	Visual inspection and measurements of angles and distances	C_p is assumed to be 0.84 if all measurements are within specification
Stack Temperature and Sensors, Thermocouple, and Potentiometer System	Bimonthly	Ice water, boiling water, and boiling oil	$\pm$ 1.5% deviation from referenced mercury in-glass thermometer
Barometer	Semiannual	Comparison to mercury in-glass barometer	$\pm$ 0.1 inches from deviation from referenced mercury in-glass thermometer
Reference Wet Test Meter	Semiannual	Calibrated against an NBS traceable orifice or NBS laminar flow element	$Y_{rm} = 1.00 \pm 0.05$
Analyzer Linearity Checks	Quarterly	6 points – 0.%, 20%, 40%, 60%, 80%, and 100% of full scale	Analyzer linearity = $\pm$ 2% from actual value
Gas Divider Verification	Quarterly	6 point linearity check followed by internal calibration	Gas divider = $\pm$ 2% from verification cylinder value
NO_2 Conversion Efficiency	Project Monthly	NO_2 calibration gas direct to NO_x analyzer	Greater than 90% conversion efficiency

Appendix A

CARB Method 100 - NOx, CO, O_2, CO_2
Calculation Spreadsheets, DAS, and Strip Charts

Calibration Error, Bias, Drift & Drift-Corrected Concentrations

Run Number: 1

CEM Operator: RPL

Facility: Santa Maria Landfill
Source: Flare
Load: Normal
Start Date: 9/9/2010

Start Time: 14:42
End Time: 16:09

Species		NOx	CO	O2	CO2
Concentration Unit		%, dry	%, dry	ppmv, dry	ppmv, dry
High-Range Gas Fraction of Span		0.83	0.87	0.89	0.73
Span		50	100	25	25
Span Gas Concentration, Cma	HIGH	41.60	87.40	22.21	18.35
	MID	23.64	34.96	9.06	9.117
	ZERO	0.00	0.00	0.00	0.00
Initial Analyzer Calibration Check, Cai	HIGH	41.60	87.72	22.21	18.27
	MID	22.80	35.02	9.05	9.15
	ZERO	0.10	0.02	0.02	0.01
Response Time (seconds)		22.00	23.00	20.00	21.00
Initial Analyzer Calibration Error, Ei	HIGH	0.00	0.32	0.00	-0.32
Ei = ((Cma - Cai)/Span)x100%	MID	-1.68	0.06	-0.04	0.13
	ZERO	0.20	0.02	0.08	0.04
Initial Bias Check, Cbi	Upscale High (H) or Mid (M)?	M	H	M	M
	UPSCALE	22.50	85.22	9.00	9.07
(Select Upscale Calibration Gas Closest to Stack Gas Concentration)	ZERO	0.00	3.42	0.05	0.02
Initial System Calibration Bias, Bi	UPSCALE	-0.60	-2.50	-0.20	-0.32
Bi = ((Cbi-Cai)/Span)x100%	ZERO	-0.20	3.40	0.12	0.04
Final Bias Check, Cbf	UPSCALE	22.70	84.82	9.05	9.07
(Select Upscale Calibration Gas Closest to Stack Gas Concentration)	ZERO	0.10	3.72	0.11	0.03
Final System Calibration Bias, Bf	UPSCALE	-0.20	-2.90	0.00	-0.32
Bf = ((Cbf - Cai)/(Span))x100%	ZERO	0.00	3.70	0.36	0.08
Drift Check, D	UPSCALE	0.40	-0.40	0.20	0.00
D = ((Cbf - Cbi)/(Span))x100%	ZERO	0.20	0.30	0.24	0.04
Average Bias Response for zero Gas, Co=(Cbi,zero+Cbf,zero)/2		0.05	3.57	0.08	0.03
Average Bias Response for Upscale Gas, Cm=(Cbi,upscale+Cbf,upscale)/2		22.60	85.02	9.03	9.07
Average Measured Concentration, Cavg		13.58	4.34	13.98	5.63
Drift Corrected Concentration, Cgas=(Cavg-Co)xCma/(Cm-Co)		**14.19**	**0.82**	**14.08**	**5.65**
Drift Corrected Concentration, Cgas=(Cavg-Co)xCma/(Cm-Co) @ 15% O2		**12.29**	**0.71**	-	-

Calibration Error, Bias, Drift & Drift-Corrected Concentrations

Run Number: 2

CEM Operator: RPL

Facility: Santa Maria Landfill
Source: Flare
Load: Normal
Start Date: 9/9/2010

Start Time: 18:54
End Time: 20:48

Species		NOx	CO	O2	CO2
Concentration Unit		%, dry	%, dry	ppmv, dry	ppmv, dry
High-Range Gas Fraction of Span		0.83	0.87	0.89	0.73
Span		50	100	25	25
Span Gas Concentration, Cma	HIGH	41.60	87.40	22.21	18.35
	MID	23.64	34.96	9.06	9.12
	ZERO	0.00	0.00	0.00	0.00
Drift Check from Previous Run less than 3 %?	UPSCALE	Yes	Yes	Yes	Yes
Yes (Y) or No (N)	ZERO	Yes	Yes	Yes	Yes
Initial Analyzer Calibration Check, Cai	HIGH	41.60	87.72	22.21	18.27
(Must repeat if drift from previous test >=3%	MID	22.80	35.02	9.05	9.15
Otherwise, copy calibration check from most recent cal. error determ	ZERO	0.10	0.02	0.02	0.01
Initial Analyzer Calibration Error, Ei	HIGH	0.00	0.32	0.00	-0.32
Ei = ((Cma - Cai)/Span)x100%	MID	-1.68	0.06	-0.04	0.13
	ZERO	0.20	0.02	0.08	0.04
Initial Bias Check, Cbi	Upscale High (H) or Mid (M)?	M	H	M	M
	UPSCALE	22.50	85.82	9.06	9.07
(Select Upscale Calibration Gas Closest to Stack Gas Concentration	ZERO	0.00	2.12	0.07	0.02
Initial System Calibration Bias, Bi	UPSCALE	-0.60	-1.90	0.04	-0.32
Bi = ((Cbi-Cai)/Span)x100%	ZERO	-0.20	2.10	0.20	0.04
Final Bias Check, Cbf	UPSCALE	22.20	85.02	9.05	9.11
(Select Upscale Calibration Gas Closest to Stack Gas Concentration	ZERO	0.20	1.62	0.08	0.05
Final System Calibration Bias, Bf	UPSCALE	-1.20	-2.70	0.00	-0.16
Bf = ((Cbf - Cai)/(Span))x100%	ZERO	0.20	1.60	0.24	0.16
Drift Check, D	UPSCALE	-0.60	-0.80	-0.04	0.16
D = ((Cbf - Cbi)/(Span))x100%	ZERO	0.40	-0.50	0.04	0.12
Average Bias Response for zero Gas, Co=(Cbi,zero+Cbf,zero)/2		0.10	1.87	0.08	0.04
Average Bias Response for Upscale Gas, Cm=(Cbi,upscale+Cbf,upscale)/2		22.35	85.42	9.06	9.09
Average Measured Concentration, Cavg		13.03	2.23	14.03	5.65
Drift Corrected Concentration, Cgas=(Cavg-Co)xCma/(Cm-Co)		**13.74**	**0.38**	**14.08**	**5.65**
Drift Corrected Concentration, Cgas=(Cavg-Co)xCma/(Cm-Co) @ 15% O2		**11.90**	**0.33**	-	-

RM-CEMS Calibration Check

Facility: Santa Maria Landfill
Source: Flare
Load: Normal
Start Date: 9/9/2010

	Parameter		NOx	CO	O_2	CO_2
A	**Span Gas Concentration**	**HIGH**	**41.60**	**87.40**	**22.21**	**18.35**
B		**MID**	**23.64**	**34.96**	**9.06**	**9.12**
C	**Initial Analyzer Response**	**ZERO**	**0.10**	**0.02**	**0.02**	**0.01**
D		**HIGH**	**41.60**	**87.72**	**22.21**	**18.27**
E		**MID**	**22.80**	**35.02**	**9.05**	**9.15**
F	**Final Analyzer Response**	**ZERO**	**0.00**	**0.02**	**0.06**	**0.03**
G		**HIGH**	**41.20**	**86.72**	**22.19**	**18.23**
H		**MID**	**22.60**	**32.92**	**9.07**	**9.14**
I	Analyzer Range		50	100	25	25
J	***Linearity = {[B - ((E-C)(A/(D-C)))]/I} x 100***		***1.8***	***0.1***	***0.1***	***-0.3***
K	***Cal Error, Zero (%F.S.) = [(F-C)/I] x 100***		***-0.2***	***0.0***	***0.2***	***0.1***
L	***Cal Error, Mid (%F.S.) = [{(H-F)-(E-C)}/I] x 100***		***-0.2***	***-2.1***	***-0.1***	***-0.1***
M	***Cal Error, High (%F.S.) = [{(G-F)-(D-C)}/I] x 100***		***-0.6***	***-1.0***	***-0.2***	***-0.2***
N	***Average NOx Converter Test, (%) - (from stripchart)***		***91.5***			

Calibration Error, Bias, Drift & Drift-Corrected Concentrations

Run Number: 3

CEM Operator: RPL

Facility: Santa Maria Landfill Start Time: 15:37

Source: Flare End Time: 17:23

Load: Normal

Start Date: 9/10/2010

Species		NOx	CO	O2	CO2
Concentration Unit		%, dry	%, dry	ppmv, dry	ppmv, dry
High-Range Gas Fraction of Span		0.83	0.87	0.89	0.73
Span		50	100	25	25
Span Gas Concentration, Cma	HIGH	41.60	87.40	22.21	18.35
	MID	23.64	34.96	9.06	9.12
	ZERO	0.00	0.00	0.00	0.00
Initial Analyzer Calibration Check, Cai	HIGH	41.60	87.62	22.16	18.26
(Must repeat if drift from previous test >=3%	MID	23.30	33.72	9.03	9.15
Otherwise, copy calibration check from most recent cal. error determ	ZERO	0.00	0.02	0.01	0.00
Initial Analyzer Calibration Error, Ei	HIGH	0.00	0.22	-0.20	-0.36
Ei = ((Cma - Cai)/Span)x100%	MID	-0.68	-1.24	-0.12	0.13
	ZERO	0.00	0.02	0.04	0.00
Initial Bias Check, Cbi	Upscale High (H) or Mid (M)?	M	H	M	M
	UPSCALE	22.60	86.82	8.99	9.10
(Select Upscale Calibration Gas Closest to Stack Gas Concentration	ZERO	0.00	3.12	0.03	0.02
Initial System Calibration Bias, Bi	UPSCALE	-1.40	-0.80	-0.16	-0.20
Bi = ((Cbi-Cai)/Span)x100%	ZERO	0.00	3.10	0.08	0.08
Final Bias Check, Cbf	UPSCALE	22.90	85.92	8.97	9.09
(Select Upscale Calibration Gas Closest to Stack Gas Concentration	ZERO	0.20	2.52	0.00	0.00
Final System Calibration Bias, Bf	UPSCALE	-0.80	-1.70	-0.24	-0.24
Bf = ((Cbf - Cai)/(Span))x100%	ZERO	0.40	2.50	-0.04	0.00
Drift Check, D	UPSCALE	0.60	-0.90	-0.08	-0.04
D = ((Cbf - Cbi)/(Span))x100%	ZERO	0.40	-0.60	-0.12	-0.08
Average Bias Response for zero Gas, Co=(Cbi,zero+Cbf,zero)/2		0.10	2.82	0.02	0.01
Average Bias Response for Upscale Gas, Cm=(Cbi,upscale+Cbf,upscale)/2		22.75	86.37	8.98	9.10
Average Measured Concentration, Cavg		13.53	2.77	13.98	5.60
Drift Corrected Concentration, Cgas=(Cavg-Co)xCma/(Cm-Co)		**14.01**	**-0.05**	**14.12**	**5.61**
Drift Corrected Concentration, Cgas=(Cavg-Co)xCma/(Cm-Co) @ 15% O2		**12.20**	**-0.04**	-	-

Calibration Error, Bias, Drift & Drift-Corrected Concentrations

Run Number: 4

Facility: Santa Maria Landfill
Source: Flare
Load: Normal
Start Date: 9/10/2010

Start Time: 20:10
End Time: 21:30

Concentration Unit		NOx	CO	O2	CO2
High-Range Gas Fraction of Span		%, dry	%, dry	ppmv, dry	ppmv, dry
High-Range Gas Fraction of Span		0.83	0.87	0.89	0.73
Span		50	100	25	25
Span Gas Concentration, Cma	HIGH	41.60	87.40	22.21	18.35
	MID	23.64	34.96	9.06	9.12
	ZERO	0.00	0.00	0.00	0.00
Drift Check from Previous Run less than 3 %?	UPSCALE	Yes	Yes	Yes	Yes
Yes (Y) or No (N)	ZERO	Yes	Yes	Yes	Yes
Initial Analyzer Calibration Check, Cai	HIGH	41.60	87.62	22.16	18.26
(Must repeat if drift from previous test >=3%	MID	23.30	33.72	9.03	9.15
Otherwise, copy calibration check from most recent cal. error determ	ZERO	0.00	0.02	0.01	0.00
Initial Analyzer Calibration Error, Ei	HIGH	0.00	0.22	-0.20	-0.36
Ei = ((Cma - Cai)/Span)x100%	MID	-0.68	-1.24	-0.12	0.13
	ZERO	0.00	0.02	0.04	0.00
Initial Bias Check, Cbi	Upscale High (H) or Mid (M)?	M	H	M	M
	UPSCALE	22.20	85.72	8.98	9.07
(Select Upscale Calibration Gas Closest to Stack Gas Concentration	ZERO	0.10	2.22	0.04	0.01
Initial System Calibration Bias, Bi	UPSCALE	-2.20	-1.90	-0.20	-0.32
Bi = ((Cbi-Cai)/Span)x100%	ZERO	0.20	2.20	0.12	0.04
Final Bias Check, Cbf	UPSCALE	22.00	85.62	8.99	9.11
(Select Upscale Calibration Gas Closest to Stack Gas Concentration	ZERO	0.20	0.02	0.02	0.02
Final System Calibration Bias, Bf	UPSCALE	-2.60	-2.00	-0.16	-0.16
Bf = ((Cbf - Cai)/(Span))x100%	ZERO	0.40	0.00	0.04	0.08
Drift Check, D	UPSCALE	-0.40	-0.10	0.04	0.16
D = ((Cbf - Cbi)/(Span))x100%	ZERO	0.20	-2.20	-0.08	0.04
Average Bias Response for zero Gas, Co=(Cbi,zero+Cbf,zero)/2		0.15	1.12	0.03	0.02
Average Bias Response for Upscale Gas, Cm=(Cbi,upscale+Cbf,upscale)/2		22.10	85.67	8.99	9.09
Average Measured Concentration, Cavg	*	13.20	2.20	13.71	5.70
Drift Corrected Concentration, Cgas=(Cavg-Co)xCma/(Cm-Co)		**14.05**	**1.12**	**13.84**	**5.71**
Drift Corrected Concentration, Cgas=(Cavg-Co)xCma/(Cm-Co) @ 15% O2		**12.24**	**0.97**	-	-

* Note: Das data lost, Values are average from strip chart.

RM-CEMS Calibration Check

Facility: Santa Maria Landfill
Source: Flare
Load: Normal
Start Date: 9/10/2010

	Parameter		NOx	CO	O_2	CO_2
A	**Span Gas Concentration**	**HIGH**	**41.60**	**87.40**	**22.21**	**18.35**
B		**MID**	**23.64**	**34.96**	**9.06**	**9.12**
C	**Initial Analyzer Response**	**ZERO**	**0.00**	**0.02**	**0.01**	**0.00**
D		**HIGH**	**41.60**	**87.62**	**22.16**	**18.27**
E		**MID**	**23.30**	**33.72**	**9.03**	**9.15**
F	**Final Analyzer Response**	**ZERO**	**0.01**	**0.02**	**-0.01**	**0.01**
G		**HIGH**	**40.80**	**87.02**	**22.14**	**18.30**
H		**MID**	**22.20**	**34.62**	**9.01**	**9.16**
I	Analyzer Range		50	100	25	25
J	***Linearity = {[B - ((E-C)(A/(D-C)))]/I} x 100***		***0.7***	***1.3***	***0.1***	***-0.3***
K	***Cal Error, Zero (%F.S.) = [(F-C)/I] x 100***		***0.0***	***0.0***	***-0.1***	***0.0***
L	***Cal Error, Mid (%F.S.) = [{(H-F)-(E-C)}/I] x 100***		***-2.2***	***0.9***	***0.0***	***0.0***
M	***Cal Error, High (%F.S.) = [{(G-F)-(D-C)}/I] x 100***		***-1.6***	***-0.6***	***0.0***	***0.1***
N	***Average NOx Converter Test, (%) - (from stripchart)***		***91.5***			

Calibration Error, Bias, Drift & Drift-Corrected Concentrations

Run Number: 5

Facility: Santa Maria Landfill
Source: Flare
Load: Normal
Start Date: 9/11/2010

Start Time: 11:17
End Time: 12:29

High-Range Gas Fraction of Span		NOx	CO	O2	CO2
High-Range Gas Fraction of Span		%, dry	%, dry	ppmv, dry	ppmv, dry
High-Range Gas Fraction of Span		0.83	0.87	0.89	0.73
Span		50	100	25	25
Span Gas Concentration, Cma	HIGH	41.60	87.40	22.21	18.35
	MID	23.64	34.96	9.06	9.12
	ZERO	0.00	0.00	0.00	0.00
Initial Analyzer Calibration Check, Cai	HIGH	40.80	87.42	22.22	18.30
(Must repeat if drift from previous test >=3%	MID	22.90	34.72	9.06	9.16
Otherwise, copy calibration check from most recent cal. error determ	ZERO	0.00	0.02	0.02	0.00
Initial Analyzer Calibration Error, Ei	HIGH	-1.60	0.02	0.04	-0.20
Ei = ((Cma - Cai)/Span)x100%	MID	-1.48	-0.24	0.00	0.17
	ZERO	0.00	0.02	0.08	0.00
Initial Bias Check, Cbi	Upscale High (H) or Mid (M)?	M	H	M	M
	UPSCALE	22.50	85.72	9.03	9.10
(Select Upscale Calibration Gas Closest to Stack Gas Concentration	ZERO	0.00	2.32	0.05	0.00
Initial System Calibration Bias, Bi	UPSCALE	-0.80	-1.70	-0.12	-0.24
Bi = ((Cbi-Cai)/Span)x100%	ZERO	0.00	2.30	0.12	0.00
Final Bias Check, Cbf	UPSCALE	23.20	86.02	9.02	9.09
(Select Upscale Calibration Gas Closest to Stack Gas Concentration	ZERO	0.30	2.82	0.06	0.01
Final System Calibration Bias, Bf	UPSCALE	0.60	-1.40	-0.16	-0.28
Bf = ((Cbf - Cai)/(Span))x100%	ZERO	0.60	2.80	0.16	0.04
Drift Check, D	UPSCALE	1.40	0.30	-0.04	-0.04
D = ((Cbf - Cbi)/(Span))x100%	ZERO	0.60	0.50	0.04	0.04
Average Bias Response for zero Gas, Co=(Cbi,zero+Cbf,zero)/2		0.15	2.57	0.06	0.01
Average Bias Response for Upscale Gas, Cm=(Cbi,upscale+Cbf,upscale)/2		22.85	85.87	9.03	9.10
Average Measured Concentration, Cavg		13.57	2.54	13.79	5.56
Drift Corrected Concentration, Cgas=(Cavg-Co)xCma/(Cm-Co)		**13.98**	**-0.03**	**13.88**	**5.57**
Drift Corrected Concentration, Cgas=(Cavg-Co)xCma/(Cm-Co) @ 15% O2		**12.17**	**-0.03**	-	-

Calibration Error, Bias, Drift & Drift-Corrected Concentrations

Run Number: 6

Facility:	**Santa Maria Landfill**	Start Time:	14:44
Source:	**Flare**	End Time:	15:45
Load:	**Normal**		
Start Date:	**9/11/2010**		

High-Range Gas Fraction of Span		NOx	CO	O2	CO2
High-Range Gas Fraction of Span		%, dry	%, dry	ppmv, dry	ppmv, dry
High-Range Gas Fraction of Span		0.83	0.87	0.89	0.73
Span		50	100	25	25
Span Gas Concentration, Cma	HIGH	41.60	87.40	22.21	18.35
	MID	23.64	34.96	9.06	9.12
	ZERO	0.00	0.00	0.00	0.00
Drift Check from Previous Run less than 3 %?	UPSCALE	Yes	Yes	Yes	Yes
Yes (Y) or No (N)	ZERO	Yes	Yes	Yes	Yes
Initial Analyzer Calibration Check, Cai	HIGH	40.80	87.42	22.22	18.30
(Must repeat if drift from previous test >=3%	MID	22.90	34.72	9.06	9.16
Otherwise, copy calibration check from most recent cal. error determ	ZERO	0.00	0.02	0.02	0.00
Initial Analyzer Calibration Error, Ei	HIGH	-1.60	0.02	0.04	-0.20
Ei = ((Cma - Cai)/Span)x100%	MID	-1.48	-0.24	0.00	0.17
	ZERO	0.00	0.02	0.08	0.00
Initial Bias Check, Cbi	Upscale High (H) or Mid (M)?	M	H	M	M
	UPSCALE	23.00	86.62	9.10	9.08
(Select Upscale Calibration Gas Closest to Stack Gas Concentration	ZERO	0.10	2.32	0.12	-0.01
Initial System Calibration Bias, Bi	UPSCALE	0.20	-0.80	0.16	-0.32
Bi = ((Cbi-Cai)/Span)x100%	ZERO	0.20	2.30	0.40	-0.04
Final Bias Check, Cbf	UPSCALE	23.30	86.02	9.02	9.04
(Select Upscale Calibration Gas Closest to Stack Gas Concentration	ZERO	0.30	2.62	0.07	0.00
Final System Calibration Bias, Bf	UPSCALE	0.80	-1.40	-0.16	-0.48
Bf = ((Cbf - Cai)/(Span))x100%	ZERO	0.60	2.60	0.20	0.00
Drift Check, D	UPSCALE	0.60	-0.60	-0.32	-0.16
D = ((Cbf - Cbi)/(Span))x100%	ZERO	0.40	0.30	-0.20	0.04
Average Bias Response for zero Gas, Co=(Cbi,zero+Cbf,zero)/2		0.20	2.47	0.10	-0.01
Average Bias Response for Upscale Gas, Cm=(Cbi,upscale+Cbf,upscale)/2		23.15	86.32	9.06	9.06
Average Measured Concentration, Cavg		13.64	2.59	13.84	5.48
Drift Corrected Concentration, Cgas=(Cavg-Co)xCma/(Cm-Co)		**13.85**	**0.13**	**13.89**	**5.52**
Drift Corrected Concentration, Cgas=(Cavg-Co)xCma/(Cm-Co) @ 15% O2		**12.06**	**0.11**	-	-

RM-CEMS Calibration Check

Facility: Santa Maria Landfill
Source: Flare
Load: Normal
Start Date: 9/11/2010

	Parameter		NOx	CO	O_2	CO_2
A	**Span Gas Concentration**	**HIGH**	**41.60**	**87.40**	**22.21**	**18.35**
B		**MID**	**23.64**	**34.96**	**9.06**	**9.12**
C	**Initial Analyzer Response**	**ZERO**	**0.00**	**0.02**	**0.02**	**0.00**
D		**HIGH**	**40.80**	**87.42**	**22.22**	**18.30**
E		**MID**	**22.90**	**34.72**	**9.06**	**9.16**
F	**Final Analyzer Response**	**ZERO**	**0.00**	**0.62**	**0.04**	**0.00**
G		**HIGH**	**42.20**	**87.32**	**22.17**	**18.23**
H		**MID**	**23.10**	**34.72**	**9.05**	**9.12**
I	Analyzer Range		50	100	25	25
J	***Linearity = {[B - ((E-C)(A/(D-C)))]/I} x 100***		***0.6***	***0.3***	***0.1***	***-0.3***
K	***Cal Error, Zero (%F.S.) = [(F-C)/I] x 100***		***0.0***	***0.6***	***0.1***	***0.0***
L	***Cal Error, Mid (%F.S.) = [{(H-F)-(E-C)}/I] x 100***		***0.4***	***-0.6***	***-0.1***	***-0.2***
M	***Cal Error, High (%F.S.) = [{(G-F)-(D-C)}/I] x 100***		***2.8***	***-0.7***	***-0.3***	***-0.3***
N	***Average NOx Converter Test, (%) - (from stripchart)***		***91.5***			

MASS FLOW DILUTER CHECK

Facility:	Santa Maria Landfill	**Analyt:**	N0x
Source:	Flare	**Range:**	50
Test Date:	9/9/2010 - 9/11/2010	**Dilution Gas Conc.:**	41.6

Dilution (%)	**100**	**60**	**40**	**Challenge Gas**
Expected Value	**41.60**	**24.96**	**16.64**	**23.64**
Run 1 Actual Value	41.80	25.10	16.50	23.00
Run 1 % Error	**0.48**	**0.56**	**0.84**	**2.71**

PASS

Total Air Analysis Data Acquisition

Santa Maria Flare Run #6

Date	Time	RM O_2	RM CO_2	RM NOx	RM CO
		(%)	(%)	(ppm)	(ppm)
		0.02	CO2 %	NOx	C0 #2
09/11/10	14:44:25	14.03	5.35	13.1	2.6
09/11/10	14:45:25	13.81	5.52	13.6	2.5
09/11/10	14:46:25	13.76	5.56	13.8	2.7
09/11/10	14:47:25	13.77	5.56	13.8	2.5
09/11/10	14:48:25	13.89	5.46	13.6	2.7
09/11/10	14:49:25	13.85	5.49	13.6	2.7
09/11/10	14:50:25	13.9	5.44	13.4	2.6
09/11/10	14:51:25	13.88	5.48	13.6	2.6
09/11/10	14:52:25	13.78	5.54	13.7	2.6
09/11/10	14:53:25	13.87	5.46	13.4	2.5
09/11/10	14:54:25	14.09	5.29	12.9	2.6
09/11/10	14:55:25	13.98	5.39	13.4	2.7
09/11/10	14:56:25	14.02	5.35	13.2	2.6
09/11/10	14:57:25	13.9	5.45	13.5	2.6
09/11/10	14:58:25	13.88	5.45	13.5	2.7
09/11/10	14:59:25	13.87	5.47	13.6	2.6
09/11/10	15:00:25	13.9	5.45	13.6	2.6
09/11/10	15:01:25	13.66	5.63	14	2.6
09/11/10	15:02:25	13.99	5.38	13.4	2.6
09/11/10	15:03:25	13.89	5.43	13.5	2.6
09/11/10	15:04:25	13.97	5.38	13.3	2.5
09/11/10	15:05:25	13.93	5.42	13.5	2.6
09/11/10	15:06:25	13.95	5.38	13.4	2.7
09/11/10	15:07:25	13.89	5.44	13.6	2.7
09/11/10	15:08:25	13.61	5.68	14.2	2.6
09/11/10	15:09:25	13.98	5.37	13.3	2.6

09/11/10	15:10:25	13.64	5.65	14.2	2.6
09/11/10	15:11:25	13.81	5.51	13.7	2.6
09/11/10	15:12:25	13.83	5.5	13.8	2.7
09/11/10	15:13:25	14.1	5.28	13.1	2.6
09/11/10	15:14:25	13.89	5.45	13.6	2.7
09/11/10	15:15:25	14.02	5.33	13.3	2.5
09/11/10	15:16:25	13.69	5.62	14.2	2.5
09/11/10	15:17:25	13.71	5.6	14	2.8
09/11/10	15:18:25	13.82	5.5	13.8	2.5
09/11/10	15:19:25	13.72	5.56	13.9	2.6
09/11/10	15:20:25	13.78	5.53	13.8	2.6
09/11/10	15:21:25	13.68	5.61	14.1	2.6
09/11/10	15:22:25	13.82	5.5	13.7	2.7
09/11/10	15:23:25	13.72	5.59	14	2.5
09/11/10	15:24:25	13.81	5.5	13.7	2.5
09/11/10	15:25:25	13.94	5.4	13.4	2.6
09/11/10	15:26:25	13.85	5.47	13.6	2.5
09/11/10	15:27:25	13.78	5.54	13.9	2.6
09/11/10	15:28:25	13.79	5.54	13.8	2.6
09/11/10	15:29:25	13.84	5.48	13.6	2.6
09/11/10	15:30:25	13.92	5.41	13.4	2.7
09/11/10	15:31:25	13.72	5.57	13.9	2.6
09/11/10	15:32:25	13.88	5.43	13.5	2.6
09/11/10	15:33:25	13.91	5.42	13.5	2.6
09/11/10	15:34:25	13.9	5.43	13.5	2.6
09/11/10	15:35:25	13.66	5.62	14	2.5
09/11/10	15:36:25	13.96	5.38	13.3	2.5
09/11/10	15:37:25	13.67	5.61	13.9	2.5
09/11/10	15:38:25	13.88	5.45	13.6	2.5
09/11/10	15:39:25	14.03	5.32	13.1	2.6
09/11/10	15:40:25	13.87	5.45	13.6	2.5
09/11/10	15:41:25	13.7	5.6	14.1	2.6
09/11/10	15:42:25	13.69	5.6	14	2.6
09/11/10	15:43:25	13.67	5.63	14.1	2.6
09/11/10	15:44:25	13.7	5.59	13.9	2.6
09/11/10	15:45:25	13.74	5.55	13.8	2.4
	Average	**13.84**	**5.48**	**13.64**	**2.59**

09/11/10	15:47:25	0.33	0.06	23	2.6	Cals.
09/11/10	15:48:25	0.09	0.01	23.3	2.6	
09/11/10	15:49:25	4.67	3.61	14.9	2.5	
09/11/10	15:50:25	9	9	0.6	2.4	
09/11/10	15:51:25	8.98	8.95	0.8	2.4	
09/11/10	15:52:25	9.44	8.17	1.4	3.7	
09/11/10	15:53:25	8.14	8.53	0.7	2.7	
09/11/10	15:54:25	0.1	0.07	0.3	83.9	
09/11/10	15:55:25	0.07	0.01	0.3	85.7	
09/11/10	15:56:25	0.06	0	0.3	85.7	
09/11/10	15:57:25	0.09	0	0.3	47.6	
09/11/10	15:58:25	0	0	0	0.3	
09/11/10	15:59:25	8.98	8.98	5.8	86.8	

Total Air Analysis Data Acquisition

Santa Maria Flare Run #5

Date	Time	RM O_2 (%) 0.02	RM CO_2 (%) CO2 %	RM NOx (ppm) NOx	RM CO (ppm) C0 #2
09/11/10	11:17:02	13.66	5.69	13.8	2.4
09/11/10	11:18:02	13.84	5.53	13.3	2.3
09/11/10	11:19:02	13.75	5.61	13.6	2.3
09/11/10	11:20:02	13.8	5.56	13.5	2.4
09/11/10	11:21:02	13.68	5.66	13.8	2.4
09/11/10	11:22:02	13.76	5.59	13.5	2.4
09/11/10	11:23:02	13.74	5.64	13.8	2.4
09/11/10	11:24:02	13.72	5.62	13.6	2.4
09/11/10	11:25:02	13.8	5.57	13.5	2.4
09/11/10	11:26:02	13.72	5.62	13.6	2.4
09/11/10	11:27:02	13.99	5.39	12.8	2.5
09/11/10	11:28:02	13.85	5.53	13.5	2.4
09/11/10	11:29:02	14.08	5.33	12.7	2.8
09/11/10	11:30:02	13.86	5.51	13.4	2.4
09/11/10	11:31:02	14.05	5.36	12.9	2.4
09/11/10	11:32:02	14.07	5.37	13.1	2.4
09/11/10	11:33:02	13.82	5.54	13.5	2.5
09/11/10	11:34:02	13.73	5.62	13.7	2.4
09/11/10	11:35:02	13.7	5.64	13.8	2.4
09/11/10	11:36:02	13.82	5.54	13.4	2.5
09/11/10	11:37:02	13.94	5.45	13.3	2.4
09/11/10	11:38:02	13.81	5.54	13.4	2.4
09/11/10	11:39:02	13.8	5.57	13.6	2.5
09/11/10	11:40:02	13.62	5.71	13.9	2.5
09/11/10	11:41:02	13.72	5.64	13.8	2.5
09/11/10	11:42:02	13.83	5.55	13.5	2.5
09/11/10	11:43:02	13.74	5.62	13.7	2.5
09/11/10	11:44:02	13.74	5.6	13.6	2.5
09/11/10	11:45:02	13.81	5.56	13.6	2.4

09/11/10	11:46:02	13.8	5.56	13.5	2.5
09/11/10	11:47:02	13.61	5.7	14	2.5
09/11/10	11:48:02	13.71	5.63	13.8	2.5
09/11/10	11:49:02	13.87	5.51	13.4	2.5
09/11/10	11:50:02	13.76	5.58	13.6	2.5
09/11/10	11:51:02	13.74	5.63	13.8	2.5
09/11/10	11:52:02	13.77	5.58	13.5	2.5
09/11/10	11:53:02	13.73	5.62	13.8	2.6
09/11/10	11:54:02	13.96	5.44	13.3	2.5
09/11/10	11:55:02	13.87	5.47	13.4	2.5
09/11/10	11:56:02	13.76	5.57	13.6	2.5
09/11/10	11:57:02	13.8	5.56	13.6	2.5
09/11/10	11:58:02	13.73	5.6	13.8	2.5
09/11/10	11:59:02	13.87	5.49	13.5	2.5
09/11/10	12:00:02	13.87	5.48	13.3	2.6
09/11/10	12:01:02	13.67	5.67	14	2.5
09/11/10	12:02:02	13.75	5.6	13.7	2.6
09/11/10	12:03:02	13.77	5.58	13.7	2.6
09/11/10	12:04:02	14.19	5.23	12.5	3.3
09/11/10	12:05:02	13.63	5.7	14.1	2.5
09/11/10	12:06:02	13.71	5.64	13.9	2.6
09/11/10	12:07:02	13.86	5.51	13.5	2.6
09/11/10	12:08:02	13.7	5.64	13.9	2.6
09/11/10	12:09:02	13.71	5.63	13.8	2.6
09/11/10	12:10:02	13.71	5.62	13.9	2.6
09/11/10	12:11:02	13.81	5.56	13.7	2.6
09/11/10	12:12:02	13.89	5.46	13.4	2.6
09/11/10	12:13:02	13.64	5.68	13.9	2.6
09/11/10	12:14:02	13.78	5.56	13.7	2.6
09/11/10	12:15:02	13.75	5.61	13.9	2.6
09/11/10	12:16:02	13.79	5.57	13.6	2.5
09/11/10	12:17:02	14.03	5.36	13	2.6
09/11/10	12:18:02	13.82	5.53	13.6	2.7
09/11/10	12:19:02	13.77	5.6	13.8	2.6
09/11/10	12:20:02	13.76	5.59	13.8	2.7

09/11/10	12:21:02	14.01	5.38	13.1	2.7	
09/11/10	12:22:02	13.76	5.58	13.8	2.7	
09/11/10	12:23:02	13.86	5.52	13.7	2.6	
09/11/10	12:24:02	13.66	5.67	14.1	2.8	
09/11/10	12:25:02	13.73	5.61	13.8	2.7	
09/11/10	12:26:02	13.85	5.5	13.6	2.8	
09/11/10	12:27:02	13.68	5.56	13.8	2.7	
09/11/10	12:28:02	13.68	5.55	13.3	2.6	
09/11/10	12:29:02	13.71	5.53	13.1	2.7	
	Average	**13.79**	**5.56**	**13.57**	**2.54**	
09/11/10	12:30:02	13.73	5.58	12.7	3.1	Cals.
09/11/10	12:31:02	1.92	0.49	20.6	2.8	
09/11/10	12:32:02	0.07	0.01	23.2	2.8	
09/11/10	12:33:02	0.07	0.01	23.2	2.9	
09/11/10	12:34:02	8.7	8.63	1.7	3	
09/11/10	12:35:02	9.01	9.06	0.5	2.9	
09/11/10	12:36:02	9.02	9.08	0.5	3	
09/11/10	12:37:02	9.02	9.09	0.5	2.9	
09/11/10	12:38:02	9.02	9.09	0.4	2.9	
09/11/10	12:39:02	5.98	6.34	0.4	2.8	
09/11/10	12:40:02	0.09	0.07	0.3	84.4	
09/11/10	12:41:02	0.05	0.01	0.3	85.9	
09/11/10	12:42:02	19.21	0.03	0.2	3.1	
09/11/10	12:43:02	20.67	0.04	0.2	4	
09/11/10	12:44:02	20.67	0.04	0.2	4.4	
09/11/10	12:45:02	20.66	0.03	0.2	4.5	
09/11/10	12:46:02	20.67	0.04	0.1	1.4	

Total Air Analysis Data Acquisition

Santa Maria Flare Run #3

Date	Time	RM O2 (%) 0.02	RM CO2 (%) CO2 %	RM NOx (ppm) NOx	RM CO (ppm) C0 #2
09/10/10	15:37:55	13.88	5.69	13.5	2.8
09/10/10	15:38:55	14.29	5.34	12.7	4.4
09/10/10	15:39:55	14.05	5.54	13.2	2.7
09/10/10	15:40:55	14.10	5.52	13.2	2.8
09/10/10	15:41:55	13.87	5.73	13.8	2.7
09/10/10	15:42:55	14.02	5.56	13.3	2.7
09/10/10	15:43:55	13.88	5.73	13.7	2.8
09/10/10	15:44:55	14.04	5.56	13.3	2.7
09/10/10	15:45:55	13.84	5.72	13.6	2.7
09/10/10	15:46:55	14.15	5.46	12.9	2.7
09/10/10	15:47:55	14.15	5.45	12.8	2.8
09/10/10	15:48:55	13.81	5.76	13.8	2.7
09/10/10	15:49:55	14.05	5.57	13.2	2.7
09/10/10	15:50:55	14.09	5.52	13	2.7
09/10/10	15:51:55	14.08	5.53	13.1	2.6
09/10/10	15:52:55	14.03	5.57	13.1	2.7
09/10/10	15:53:55	14.04	5.54	13.1	4.4
09/10/10	15:54:55	14.07	5.54	13.2	2.7
09/10/10	15:55:55	14.10	5.49	13.1	2.7
09/10/10	15:56:55	13.81	5.75	13.8	2.8
09/10/10	15:57:55	13.96	5.61	13.5	2.6
09/10/10	15:58:55	13.93	5.66	13.6	2.7
09/10/10	15:59:55	14.18	5.45	13.1	2.6
09/10/10	16:00:55	14.00	5.60	13.3	2.6
09/10/10	16:01:55	14.15	5.52	13.3	2.6
09/10/10	16:02:55	13.81	5.74	13.8	2.6
09/10/10	16:03:55	13.83	5.73	13.8	2.6

09/10/10	16:04:55	13.99	5.60	13.5	2.6
09/10/10	16:05:55	13.86	5.72	13.7	2.7
09/10/10	16:06:55	13.87	5.70	13.8	2.7
09/10/10	16:07:55	13.80	5.80	14.1	2.8
09/10/10	16:08:55	14.00	5.60	13.5	2.7
09/10/10	16:09:55	14.03	5.58	13.5	2.7
09/10/10	16:10:55	14.15	5.47	13.1	2.6
09/10/10	16:11:55	14.01	5.57	13.5	2.8
09/10/10	16:12:55	13.78	5.78	14	2.7
09/10/10	16:13:55	14.12	5.49	13.1	3.2
09/10/10	16:14:55	14.04	5.56	13.4	2.6
09/10/10	16:15:55	13.90	5.68	13.7	2.6
09/10/10	16:16:55	14.02	5.55	13.3	2.7
09/10/10	16:17:55	13.94	5.61	13.6	2.7
09/10/10	16:18:55	14.07	5.53	13.3	2.7
09/10/10	16:19:55	13.82	5.76	14	2.8
09/10/10	16:20:55	13.98	5.60	13.5	2.7
09/10/10	16:21:55	14.01	5.55	13.4	2.7
09/10/10	16:22:55	13.79	5.75	14	2.9
09/10/10	16:23:55	14.05	5.53	13.3	3.0
09/10/10	16:24:55	13.91	5.68	13.8	2.6
09/10/10	16:25:55	13.91	5.65	13.7	2.7
09/10/10	16:26:55	13.90	5.69	13.9	2.6
09/10/10	16:27:55	13.90	5.68	13.8	2.7
09/10/10	16:28:55	14.00	5.57	13.6	2.7
09/10/10	16:29:55	13.96	5.62	13.8	2.6
09/10/10	16:30:55	13.96	5.62	13.7	2.7
09/10/10	16:31:55	13.82	5.74	14.2	2.6
09/10/10	16:32:55	14.05	5.56	13.5	2.7
09/10/10	16:33:55	13.99	5.62	13.7	2.7
09/10/10	16:34:55	14.10	5.43	13.1	2.6
09/10/10	16:35:55	14.21	5.40	12.9	4.6
09/10/10	16:36:55	13.82	5.74	13.8	2.7

09/10/10	16:37:55	13.89	5.70	13.8	2.7
09/10/10	16:38:55	13.92	5.67	13.8	2.7
09/10/10	16:39:55	14.03	5.56	13.3	2.7
09/10/10	16:40:55	14.05	5.56	13.5	2.7
09/10/10	16:41:55	14.07	5.53	13.4	2.6
09/10/10	16:42:55	13.92	5.68	13.8	2.6
09/10/10	16:43:55	13.95	5.64	13.7	2.7
09/10/10	16:44:55	13.78	5.81	14.2	2.7
09/10/10	16:45:55	14.17	5.46	13.2	2.8
09/10/10	16:46:55	14.13	5.49	13.3	2.6
09/10/10	16:47:55	14.06	5.53	13.3	2.7
09/10/10	16:48:55	13.82	5.74	14	2.8
09/10/10	16:49:55	14.05	5.52	13.3	2.8
09/10/10	16:50:55	14.00	5.59	13.4	2.7
09/10/10	16:51:55	13.90	5.66	13.6	2.6
09/10/10	16:52:55	14.00	5.58	13.5	2.7
09/10/10	16:53:55	14.17	5.42	12.9	3.8
09/10/10	16:54:55	14.00	5.57	13.5	2.6
09/10/10	16:55:55	13.72	5.81	14.1	2.7
09/10/10	16:56:55	13.78	5.77	14.1	2.8
09/10/10	16:57:55	14.09	5.51	13.2	2.8
09/10/10	16:58:55	13.88	5.68	13.7	2.7
09/10/10	16:59:55	14.17	5.42	13.1	3.5
09/10/10	17:00:55	14.11	5.48	13.3	2.8
09/10/10	17:01:55	14.06	5.52	13.5	2.7
09/10/10	17:02:55	13.94	5.63	13.8	2.6
09/10/10	17:03:55	13.83	5.71	13.9	2.7
09/10/10	17:04:55	13.97	5.62	13.8	2.7
09/10/10	17:05:55	13.87	5.72	13.9	2.7
09/10/10	17:06:55	14.03	5.55	13.4	2.8
09/10/10	17:07:55	13.95	5.64	13.8	2.7
09/10/10	17:08:55	14.00	5.59	13.6	2.8
09/10/10	17:09:55	14.03	5.55	13.5	2.7

09/10/10	17:10:55	13.94	5.64	13.8	2.7
09/10/10	17:11:55	13.86	5.68	13.9	2.7
09/10/10	17:12:55	13.91	5.64	13.7	2.7
09/10/10	17:13:55	14.14	5.45	13.2	3.0
09/10/10	17:14:55	14.01	5.59	13.7	2.6
09/10/10	17:15:55	13.85	5.71	13.8	2.7
09/10/10	17:16:55	13.99	5.58	13.5	2.7
09/10/10	17:17:55	14.14	5.47	13.3	2.7
09/10/10	17:18:55	14.02	5.56	13.5	2.8
09/10/10	17:20:04	14.01	5.52	13.4	2.6
09/10/10	17:20:55	13.75	5.79	14.3	2.7
09/10/10	17:21:55	13.97	5.62	13.7	2.8
09/10/10	17:22:55	13.90	5.67	13.7	2.6
09/10/10	17:23:55	14.33	5.44	13.2	2.8
	Average	**13.98**	**5.60**	**13.5**	**2.77**

Total Air Analysis Data Acquisition

Santa Maria Flare Run #2

Date	Time	RM O2 (%) 02 %	RM CO2 (%) CO2 %	RM NOx (ppm) NOX	RM CO (ppm) C0 #2
09/09/10	18:54:09	13.97	5.67	13.40	2.2
09/09/10	18:55:09	13.94	5.67	13.30	2.2
09/09/10	18:56:17	13.94	5.67	13.40	2.2
09/09/10	18:57:09	13.91	5.72	13.60	2.2
09/09/10	18:58:17	14.10	5.55	13.10	2.2
09/09/10	18:59:09	13.86	5.76	13.60	2.2
09/09/10	19:00:17	13.64	5.94	14.30	2.2
09/09/10	19:01:09	13.85	5.78	13.70	2.2
09/09/10	19:02:17	14.79	5.03	11.70	2.1
09/09/10	19:03:09	14.42	5.28	12.10	4.7
09/09/10	19:04:17	13.63	5.94	14.10	2.3
09/09/10	19:05:09	12.82	6.61	16.20	2.2
09/09/10	19:06:17	13.36	6.22	12.20	2.5
09/09/10	19:07:09	15.36	4.62	10.60	3.3
09/09/10	19:08:17	14.51	5.17	11.60	3.2
09/09/10	19:09:09	13.58	5.99	14.30	2.2
09/09/10	19:10:17	13.58	6.03	13.70	2.7
09/09/10	19:11:09	13.83	5.78	13.60	2.2
09/09/10	19:12:17	13.82	5.65	13.20	2.3
09/09/10	19:13:09	13.85	5.77	13.50	2.2
09/09/10	19:14:17	13.88	5.67	13.20	2.1
09/09/10	19:15:09	13.92	5.71	13.40	2.2
09/09/10	19:16:09	13.91	5.71	13.40	2.2
09/09/10	19:17:09	14.04	5.63	13.10	2.2
09/09/10	19:18:09	13.97	5.67	13.30	2.2
09/09/10	19:19:09	14.12	5.56	12.90	2.2

09/09/10	19:20:17	14.25	5.62	12.80	2.1
09/09/10	19:21:09	13.85	5.78	13.50	2.1
09/09/10	19:22:17	13.88	5.74	13.50	2.2
09/09/10	19:23:09	13.89	5.75	13.50	2.2
09/09/10	19:24:17	13.64	5.74	13.50	2.1
09/09/10	19:25:09	13.87	5.76	13.50	2.1
09/09/10	19:26:17	13.87	5.77	13.50	2.2
09/09/10	19:27:09	14.02	5.63	13.10	2.2
09/09/10	19:28:17	13.90	5.72	13.30	2.2
09/09/10	19:29:09	13.98	5.67	13.20	2.1
09/09/10	19:30:09	13.93	5.72	13.40	2.1
09/09/10	19:31:09	14.01	5.64	13.10	2.0
09/09/10	19:32:09	14.01	5.65	13.20	2.1
09/09/10	19:33:09	14.12	5.54	12.90	2.1
09/09/10	19:34:09	14.07	5.59	12.90	2.1
09/09/10	19:35:09	14.02	5.64	13.20	2.1
09/09/10	19:36:09	13.97	5.69	13.30	2.1
09/09/10	19:37:09	14.02	5.65	13.20	2.1
09/09/10	19:38:09	13.96	5.69	13.20	2.1
09/09/10	19:39:09	14.04	5.62	13.00	2.1
09/09/10	19:40:09	13.96	5.65	13.10	2.1
09/09/10	19:41:09	13.97	5.67	13.10	2.2
09/09/10	19:42:16	13.95	5.55	13.12	2.1
09/09/10	19:43:09	13.94	5.71	13.30	2.1
09/09/10	19:44:09	14.15	5.54	12.80	2.1
09/09/10	19:45:09	14.04	5.63	13.10	2.1
09/09/10	19:46:16	14.08	5.73	13.00	2.1
09/09/10	19:47:09	14.09	5.57	12.90	2.1
09/09/10	19:48:16	14.05	5.55	13.02	2.2
09/09/10	19:49:09	13.92	5.74	13.30	2.1
09/09/10	19:50:16	13.85	7.70	12.40	2.3
09/09/10	19:51:09	14.09	5.59	12.90	2.1

09/09/10	19:52:16	14.04	5.35	12.99	2.2
09/09/10	19:53:09	14.14	5.52	12.80	2.1
09/09/10	19:54:16	14.25	5.35	12.78	2.2
09/09/10	19:55:09	14.18	5.51	12.80	2.1
09/09/10	19:56:09	14.03	5.64	13.10	2.1
09/09/10	19:57:09	14.10	5.59	13.00	2.1
09/09/10	19:58:09	14.06	5.62	13.00	2.2
09/09/10	19:59:09	14.09	5.59	12.80	1.9
09/09/10	20:00:09	14.10	5.57	12.80	1.9
09/09/10	20:01:09	14.04	5.63	13.10	1.9
09/09/10	20:02:09	14.09	5.57	12.80	2.0
09/09/10	20:03:09	14.03	5.65	13.10	2.0
09/09/10	20:04:09	14.00	5.67	13.10	1.9
09/09/10	20:05:09	14.13	5.55	12.80	1.9
09/09/10	20:06:09	14.02	5.65	13.10	2.0
09/09/10	20:07:09	14.04	5.64	13.10	2.0
09/09/10	20:08:09	14.06	5.63	13.00	1.9
09/09/10	20:09:09	14.08	5.60	12.90	1.8
09/09/10	20:10:16	13.98	5.70	13.20	1.7
09/09/10	20:11:09	14.01	5.67	13.10	1.8
09/09/10	20:12:16	14.19	5.53	12.70	1.8
09/09/10	20:13:09	14.00	5.67	13.10	1.9
09/09/10	20:14:09	13.99	5.67	13.10	1.7
09/09/10	20:15:09	14.15	5.54	12.60	2.3
09/09/10	20:16:16	13.97	5.70	13.20	1.8
09/09/10	20:17:09	13.98	5.69	13.10	1.8
09/09/10	20:18:16	14.05	5.63	12.90	1.8
09/09/10	20:19:09	14.05	5.63	12.90	1.8
09/09/10	20:20:16	13.75	5.91	13.90	0.6
09/09/10	20:21:09	13.89	5.78	13.40	1.7
09/09/10	20:22:09	14.36	5.41	12.60	1.7
09/09/10	20:23:09	14.61	5.19	11.60	7.0

09/09/10	20:24:16	14.31	5.40	12.20	4.3
09/09/10	20:25:09	14.12	5.57	12.80	1.8
09/09/10	20:26:16	14.03	5.65	12.90	1.7
09/09/10	20:27:09	13.09	6.46	15.60	1.6
09/09/10	20:28:16	14.22	5.55	13.10	1.7
09/09/10	20:29:09	14.45	5.30	12.00	4.4
09/09/10	20:30:16	14.30	5.43	12.40	2.5
09/09/10	20:31:09	14.22	5.48	12.40	3.5
09/09/10	20:32:16	14.20	5.50	12.60	2.0
09/09/10	20:33:09	14.07	5.62	12.80	1.8
09/09/10	20:34:16	14.00	5.68	13.00	2.1
09/09/10	20:35:09	14.12	5.58	12.80	1.7
09/09/10	20:36:16	14.11	5.59	12.80	2.2
09/09/10	20:37:09	13.70	5.92	13.70	1.7
09/09/10	20:38:16	13.65	5.99	13.35	2.1
09/09/10	20:39:09	13.91	5.79	13.40	1.7
09/09/10	20:40:16	14.80	5.07	11.50	1.8
09/09/10	20:41:09	14.73	5.06	11.00	3.9
09/09/10	20:42:16	14.66	5.51	12.40	2.1
09/09/10	20:43:09	13.68	5.97	13.80	1.7
09/09/10	20:44:16	13.81	5.35	13.35	2.2
09/09/10	20:45:09	14.49	5.27	11.70	5.5
09/09/10	20:46:09	14.25	5.46	12.20	2.9
09/09/10	20:47:09	14.18	5.52	12.40	1.6
09/09/10	20:48:09	14.12	5.57	12.40	1.6
	Average	14.03	5.65	13.03	2.2

Total Air Analysis Data Acquisition

Santa Maria Flare Run #1

Date	Time	RM O2 (%) 02 %	RM CO2 (%) CO2 %	RM NOx (ppm) NOX	RM CO (ppm) C0 #2
09/09/10	14:42:19	14.47	5.24	12.3	6.4
09/09/10	14:43:12	14.13	5.54	13.2	4
09/09/10	14:44:19	14.08	5.55	13.3	4
09/09/10	14:45:12	13.8	5.82	14	4
09/09/10	14:46:19	13.9	5.71	13.8	4
09/09/10	14:47:12	13.9	5.72	13.8	4.1
09/09/10	14:48:19	13.98	5.67	13.8	4.1
09/09/10	14:49:12	13.67	5.94	14.5	4.2
09/09/10	14:50:18	13.97	5.65	13.7	4.1
09/09/10	14:51:12	13.88	5.73	13.9	4.2
09/09/10	14:52:19	13.95	5.67	13.7	4.1
09/09/10	14:53:12	13.89	5.73	13.9	4.1
09/09/10	14:54:19	13.85	5.72	13.8	4.2
09/09/10	14:55:12	13.83	5.78	14	4.2
09/09/10	14:56:18	13.9	5.72	13.8	4.2
09/09/10	14:57:12	13.85	5.76	14	4.2
09/09/10	14:58:18	13.74	5.86	14.2	4.1
09/09/10	14:59:12	13.94	5.67	13.7	4.2
09/09/10	15:00:12	13.98	5.61	13.5	4.2
09/09/10	15:01:12	13.76	5.91	14.9	4.3
09/09/10	15:02:18	14.14	5.51	13.2	4.2
09/09/10	15:03:12	14.43	5.26	12.4	4.3
09/09/10	15:04:18	14.51	5.19	12.2	4.1
09/09/10	15:05:12	14.59	5.14	12.2	4.2
09/09/10	15:06:12	14.37	5.31	12.6	4.3
09/09/10	15:07:12	13.82	5.66	13.4	4.3
09/09/10	15:08:12	13.99	5.68	14	4.4
09/09/10	15:09:12	14.56	5.17	12.5	4.4

09/09/10	15:10:12	14.38	5.28	12.6	4.4
09/09/10	15:11:12	13.11	6.49	16.3	4.4
09/09/10	15:12:12	14.35	5.34	12.7	4.2
09/09/10	15:13:12	14.91	4.87	11.3	4.3
09/09/10	15:14:18	11.98	7.33	18.1	4.4
09/09/10	15:15:12	14.4	5.3	12.6	4.3
09/09/10	15:16:18	14.26	5.38	12.8	4.4
09/09/10	15:17:12	14	5.59	13.3	4.4
09/09/10	15:18:12	13.88	5.73	13.8	4.4
09/09/10	15:19:12	13.84	5.77	13.9	4.3
09/09/10	15:20:12	14	5.66	13.6	4.4
09/09/10	15:21:12	13.88	5.72	13.8	4.4
09/09/10	15:22:12	14.01	5.64	13.7	4.4
09/09/10	15:23:12	13.84	5.76	14	4.4
09/09/10	15:24:12	13.98	5.62	13.6	4.3
09/09/10	15:25:12	14.07	5.57	13.5	4.3
09/09/10	15:26:12	13.76	5.83	14.2	4.3
09/09/10	15:27:12	13.88	5.75	14	4.3
09/09/10	15:28:12	13.79	5.78	14.1	4.3
09/09/10	15:29:12	13.8	5.81	14.1	4.4
09/09/10	15:30:12	14.1	5.54	13.3	4.3
09/09/10	15:31:12	14.24	5.4	12.9	4.3
09/09/10	15:32:12	14.01	5.6	13.6	4.4
09/09/10	15:33:12	13.74	5.86	14.3	4.4
09/09/10	15:34:18	13.96	5.65	13.6	4.4
09/09/10	15:35:12	13.77	5.84	14.2	4.3
09/09/10	15:36:18	13.88	5.75	13.9	4.3
09/09/10	15:37:12	13.9	5.68	13.7	4.4
09/09/10	15:38:12	13.28	6.28	15.7	4.3
09/09/10	15:39:12	14.29	5.38	13.1	4.3
09/09/10	15:40:12	14.4	5.31	12.7	4.3
09/09/10	15:41:12	14.11	5.53	13.2	4.4
09/09/10	15:42:12	14	5.62	13.6	4.3
09/09/10	15:43:12	13.99	5.64	13.6	4.4
09/09/10	15:44:18	13.91	5.72	13.9	4.3

09/09/10	15:45:12	13.7	5.91	14.5	4.3
09/09/10	15:46:12	12.27	7.01	17.2	4.4
09/09/10	15:47:12	14.15	5.55	13.7	4.4
09/09/10	15:48:12	14.78	4.97	11.8	4.9
09/09/10	15:49:12	14.5	5.2	12.3	4.3
09/09/10	15:50:18	13.25	5.32	12.9	4.3
09/09/10	15:51:12	14.22	5.42	13.2	4.3
09/09/10	15:52:12	14.29	5.35	12.8	4.4
09/09/10	15:53:12	14.14	5.51	13.2	4.4
09/09/10	15:54:12	14.03	5.59	13.4	4.4
09/09/10	15:55:12	14.27	5.37	12.8	4.4
09/09/10	15:56:18	13.89	5.86	13.5	4.3
09/09/10	15:57:12	13.66	5.92	14.5	4.4
09/09/10	15:58:18	13.89	5.72	13.9	4.4
09/09/10	15:59:12	13.74	5.84	14.3	4.2
09/09/10	16:00:18	13.91	5.7	13.9	4.4
09/09/10	16:01:12	13.85	5.75	13.9	4.3
09/09/10	16:02:18	13.71	5.82	14	4.4
09/09/10	16:03:12	13.98	5.69	14.3	4.3
09/09/10	16:04:18	14.56	5.14	12.3	5.4
09/09/10	16:05:12	14.08	5.55	13.3	4.5
09/09/10	16:06:18	14.04	5.6	13.6	4.4
09/09/10	16:07:12	14.09	5.46	12.8	4.4
09/09/10	16:08:12	14.09	5.47	12	4.2
09/09/10	16:09:12	14.89	5.02	11.6	4.4
	Average	**13.98**	**5.63**	**13.58**	**4.34**
09/09/10	16:10:12	1.16	0.15	21.3	4.4
09/09/10	16:11:12	0.14	0.04	22.8	4.5
09/09/10	16:12:18	0.13	0	0	0
09/09/10	16:13:12	0.14	0.03	22.7	4.3
09/09/10	16:14:18	0.11	0.03	22.7	4.3
09/09/10	16:15:12	0.11	0.03	22.7	4.1
09/09/10	16:16:18	1.87	0.8	21.2	4.1

Cals.

09/09/10	16:17:12	9.02	9.04	0.2	4
09/09/10	16:18:12	9.03	9.07	0.1	3.8
09/09/10	16:19:12	9.03	9.07	0.1	3.8
09/09/10	16:21:54	7.2	7.38	0.1	3.7
09/09/10	16:21:54	0.1	0.05	0.1	84.2
09/09/10	16:22:12	0.11	0.04	0.1	84.7
09/09/10	16:23:12	0.1	0.04	0.1	84.4
09/09/10	16:25:54	0.09	0.03	0.1	84.7
09/09/10	16:25:54	0.08	0.05	0.4	84.8
09/09/10	16:27:53	0.08	0.05	0.5	85
09/09/10	16:27:54	2.82	0.06	0.8	70.9

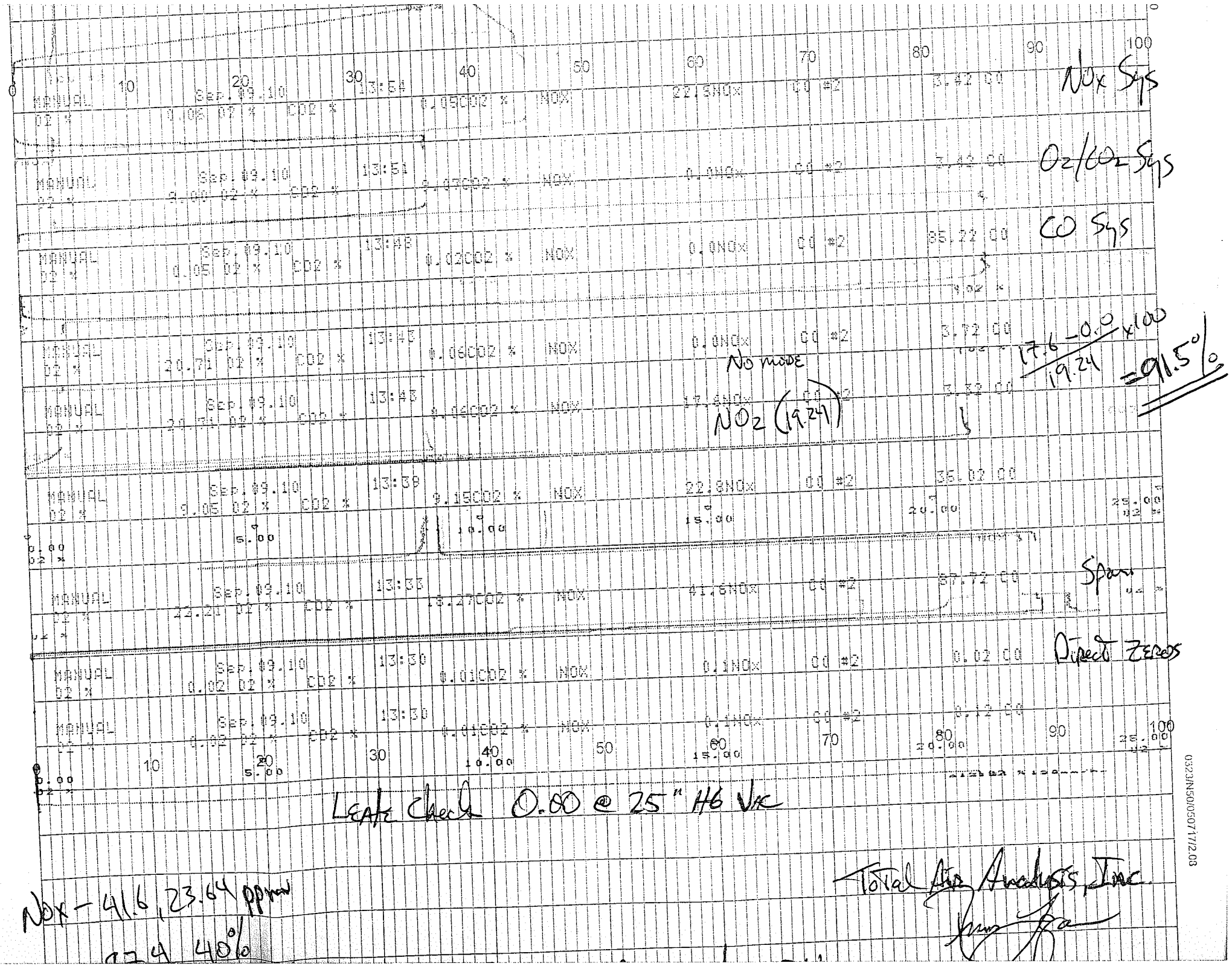
Leak Check 0.00 @ 25" Hg Vac

Total Air Analysis, Inc.

SANTA MARIA LANDFILL
FLARE

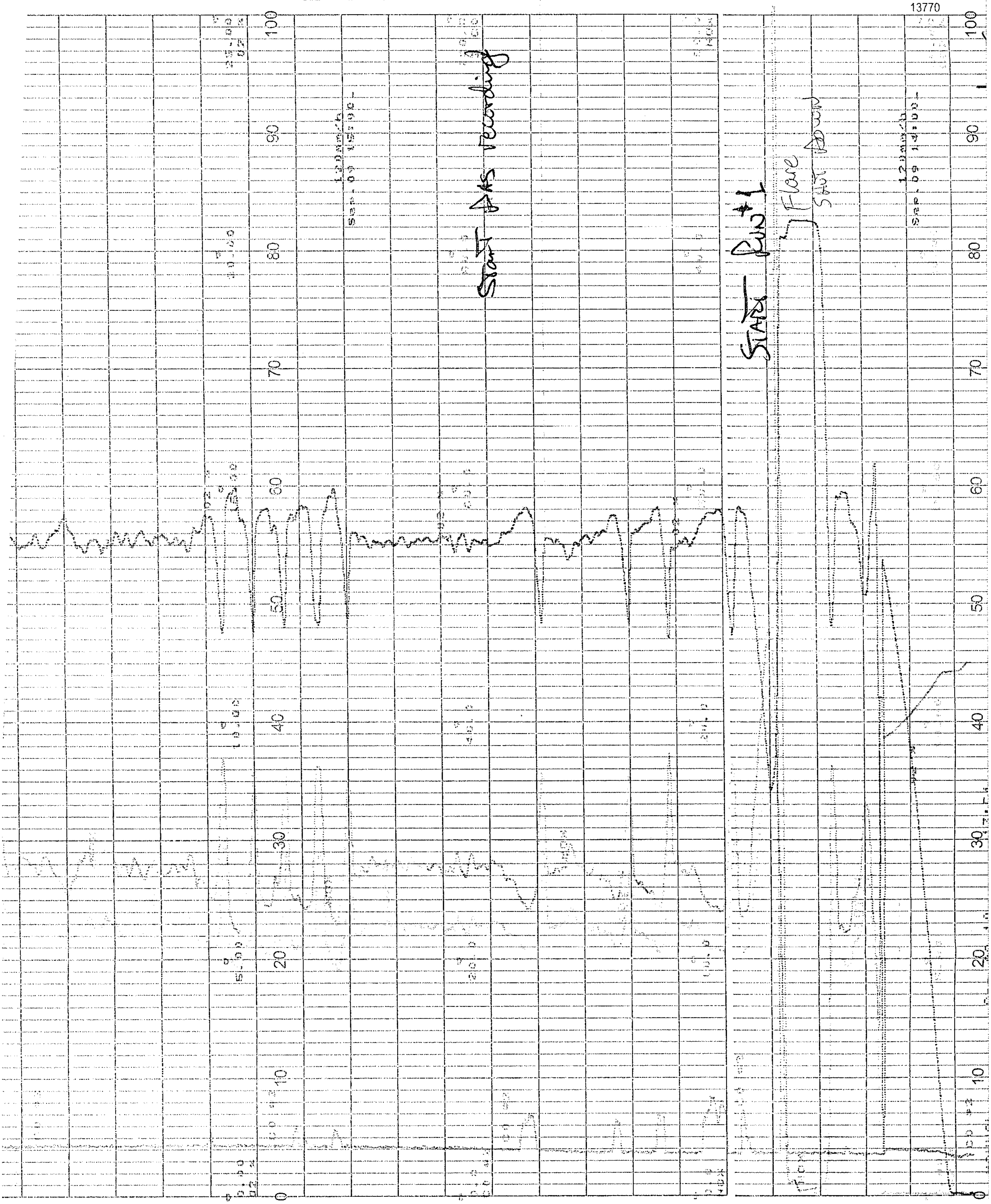
Ox - 41.6, 23.64 ppmv
O - 87.4, 40%
H_2/O_2 - 22.21 / 18.35%
H_2/O_2 - 9.06 / 9.117 %
H_2/O_2
NO_2 - 19.24 ppmv

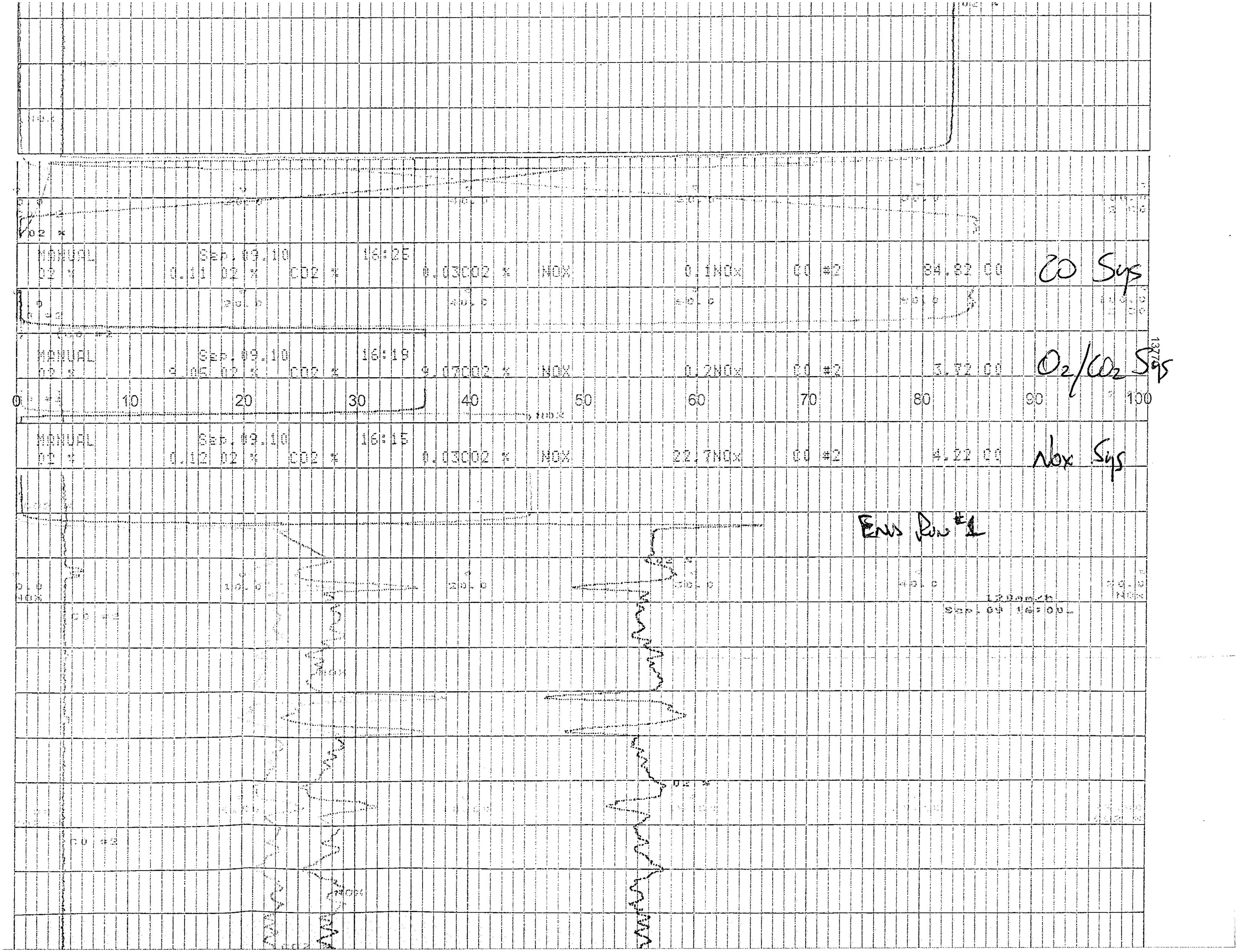
0323N50050717/2.03



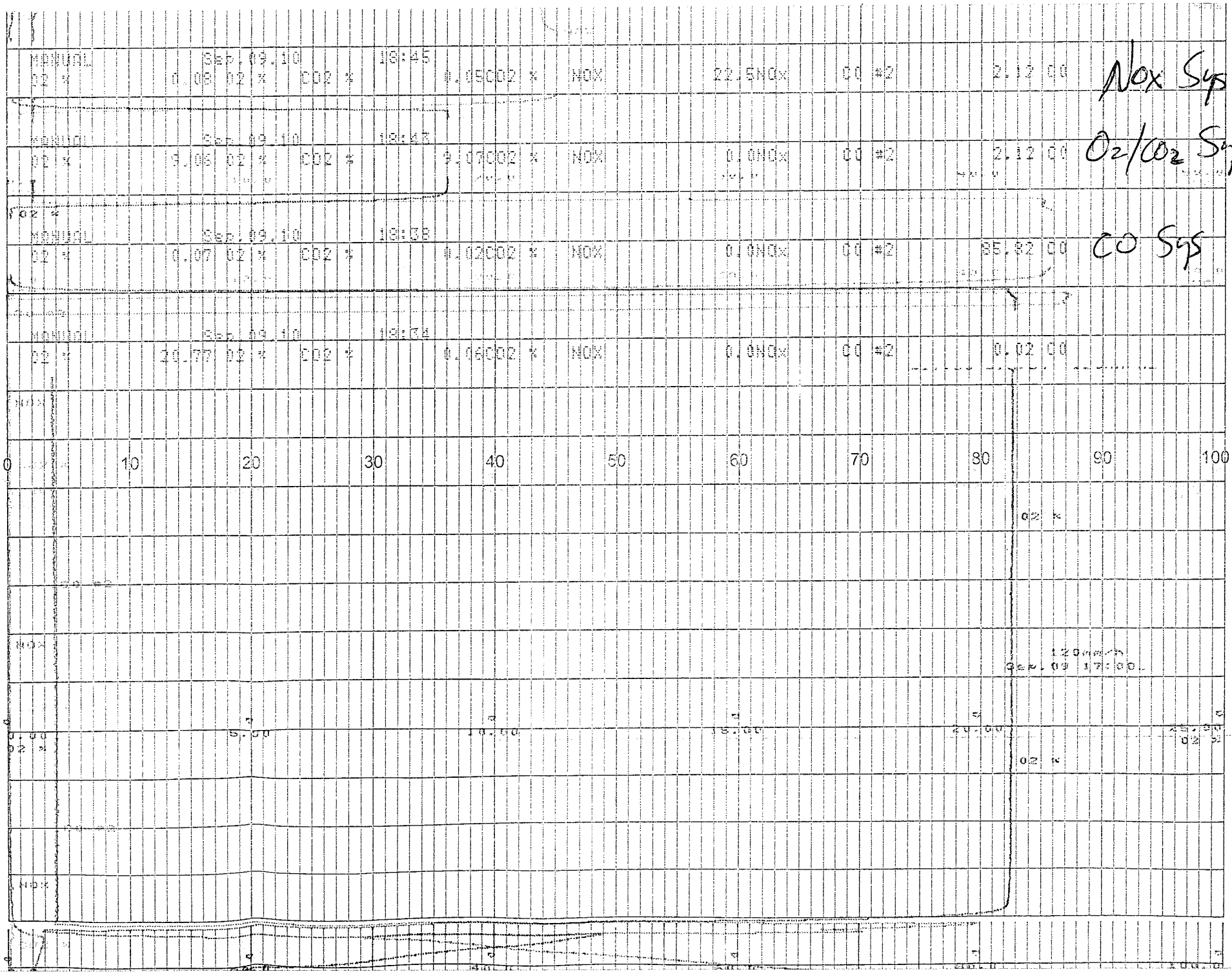
0323/N60/050717/2.08

13770



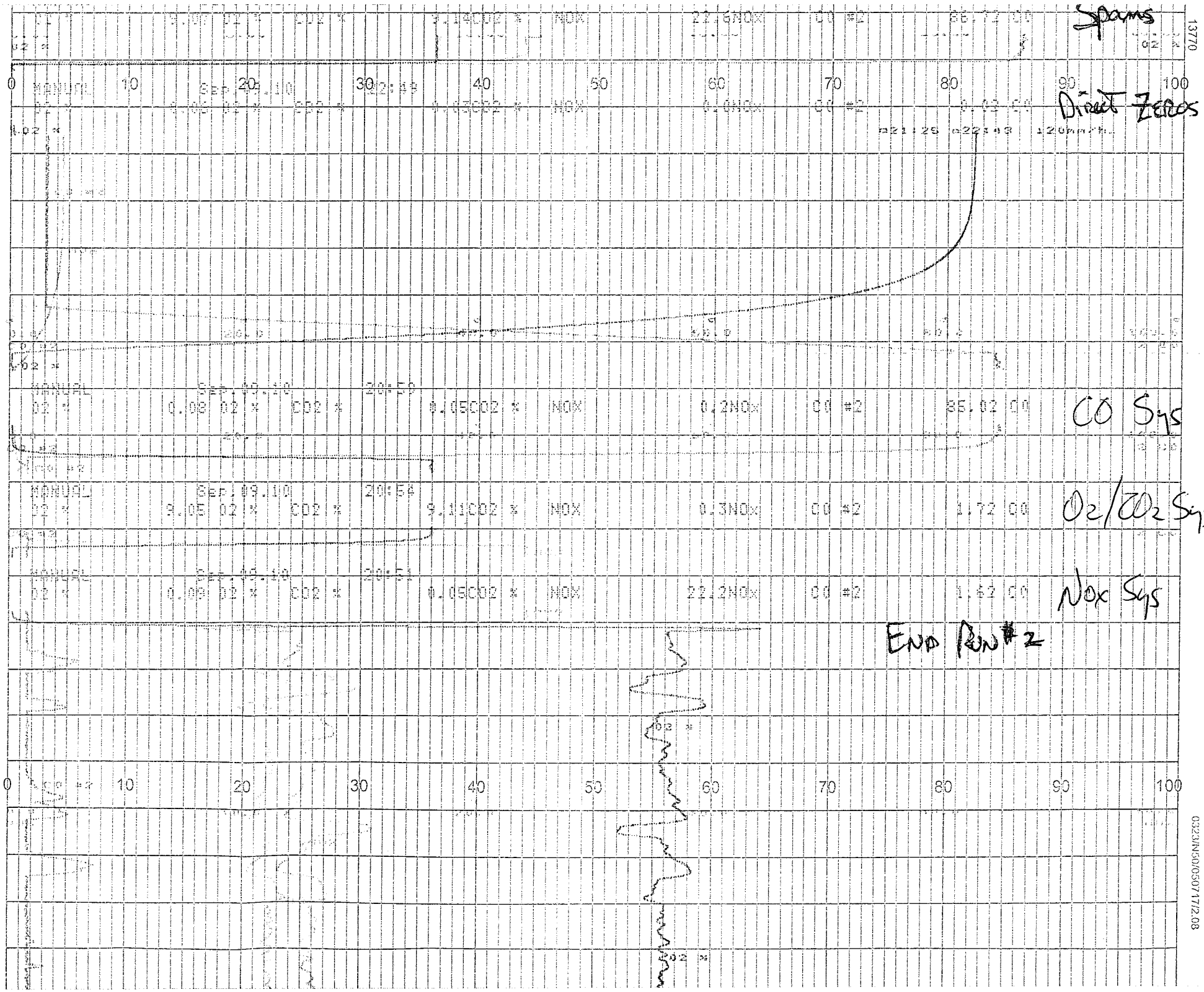

MANUAL Sep.09.10 16:25
O2 % 0.11 O2 % CO2 % 0.03CO2 % NOX 0.1NOx CO #2 84.82 CO
CO Sys
MANUAL Sep.09.10 16:19
O2 % 0.05 O2 % CO2 % 0.03CO2 % NOX 0.2NOx CO #2 3.72 CO
O2/CO2 Sys
0 10 20 30 40 50 60 70 80 90 100
MANUAL Sep.09.10 16:15
O2 % 0.12 O2 % CO2 % 0.03CO2 % NOX 22.7NOx CO #2 4.22 CO
Nox Sys
Ems Run #1
Sep.09 16:00L

13779


NOx Sys
O2/CO2 Sys
CO Sys
0
10
20
30
40
50
60
70
80
90
100
0323/N50/050717/2.08

0323/N50/050717/2.03

13770


Spans
Direct Zeros
CO Sys
O2/CO2 Sys
Nox Sys
End Run #2
13770
0323WN50/050717Z.03

0323/N50/050717/2.08

13770

MANUAL Sep. 10.10 15:13
O2 % 20.64 O2 % CO2 % 0.05CO2 % NOX 0.1NOX CO #2 4.12 CO

NO 17.7−0.1 / 19.24 × 100 = 91.5

MANUAL Sep. 10.10 15:12
O2 % 20.64 O2 % CO2 % 0.05CO2 % NOX 17.7NOX CO #2 3.72 CO

NO2

MANUAL Sep. 10.10 15:10
O2 % 3.03 O2 % CO2 % 8.15CO2 % NOX 18.7NOX CO #2 55.72 CO

MIDS

MANUAL Sep. 10.10 15:08
O2 % 22.16 O2 % CO2 % 18.26CO2 % NOX 41.6NOX CO #2 87.62 CO

Spans

MANUAL Sep. 10.10 15:08
O2 % 22.16 O2 % CO2 % 18.27CO2 % NOX 42.7NOX CO #2 87.72 CO

MANUAL Sep. 10.10 15:02
O2 % 0.01 O2 % CO2 % 0.10CO2 % NOX 0.0NOX CO #2 0.02 CO

Direct Zeros

120mm/h Sep. 10 15:00

0.00 5.00 10.00 15.00 20.00 25.00 O2 %

Leak Check 0.00 @ 25" HG VAC

0.00 5.00 10.00 15.00 20.00 25.00 O2 %

120mm/h Sep. 09 23:00

MANUAL Sep. 09.10 22:59
O2 % 22.10 O2 % CO2 % 9.23CO2 % NOX 41.2NOX CO #2 82.92 CO

MIDS

0.00 5.00 10.00 15.00 20.00 25.00 O2 %

MANUAL Sep. 09.10 22:53
O2 % 9.00 O2 % CO2 % 9.14CO2 % NOX 22.6NOX CO #2 86.72 CO

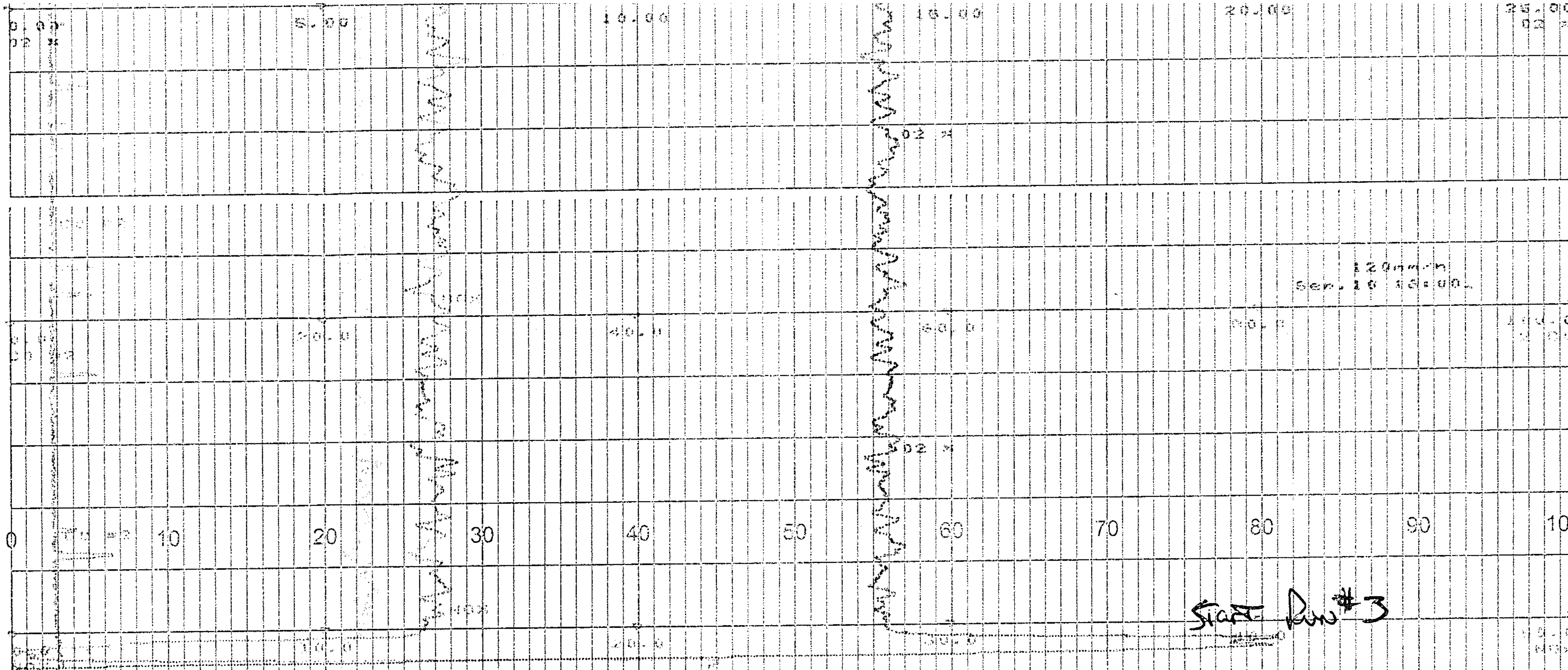
Spans

MANUAL Sep. 09.10 22:49
O2 % 0.00 O2 % CO2 % 0.03CO2 % NOX 0.0NOX CO #2 0.02 CO

Direct Zeros

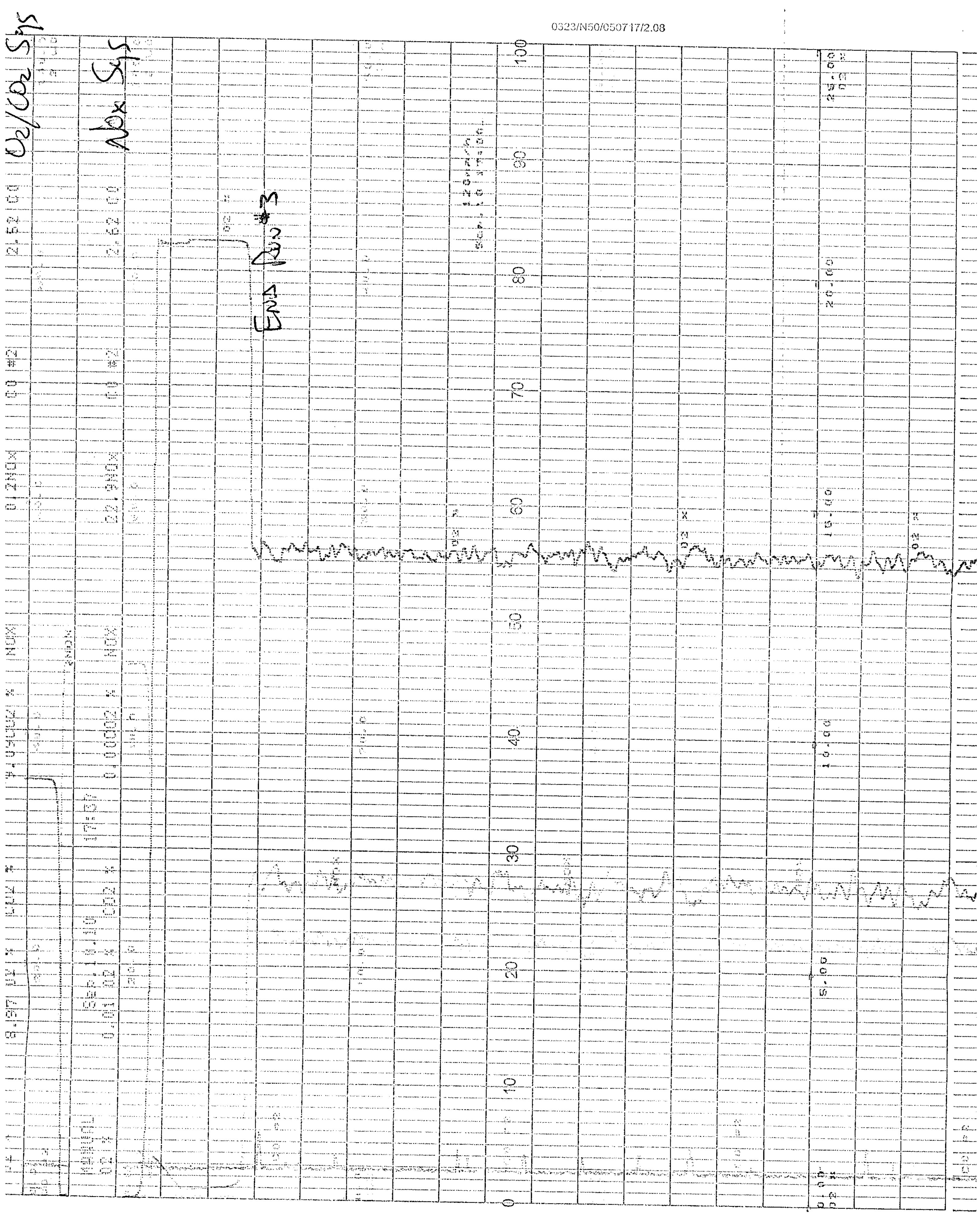
21:25 22:43 120mm/h

13770



MANUAL O2 %	Sep.10.10 0.03 O2 %	CO2 %	15:28 0.02CO2 %	NOX 22.6NOx	CO #2	3.12 CO	NOx Sys
MANUAL O2 %	Sep.10.10 8.99 O2 %	CO2 %	15:24 9.10CO2 %	NOX 0.0NOx	CO #2	3.12 CO	O_2/CO_2 Sys
MANUAL O2 %	Sep.10.10 0.05 O2 %	CO2 %	15:19 0.00CO2 %	NOX 0.0NOx	CO #2	86.82 CO	CO Sys
MANUAL O2 %	Sep.10.10 20.60 O2 %	CO2 %	15:16 0.08CO2 %	NOX 23.3NOx	CO #2	4.52 CO	NOx Main
MANUAL O2 %	Sep.10.10 20.64 O2 %	CO2 %	15:13 0.05CO2 %	NOX 0.1NOx NO	CO #2	4.12 CO	
MANUAL O2 %	Sep.10.10 20.64 O2 %	CO2 %	15:12 0.05CO2 %	NOX 17.7NOx	CO #2	3.72 CO	NO $\frac{17.7-0.1}{19.24}\times 100$ = 91.5

0323/N50/050717/2.08



0323/N50/050717/2.08

13770

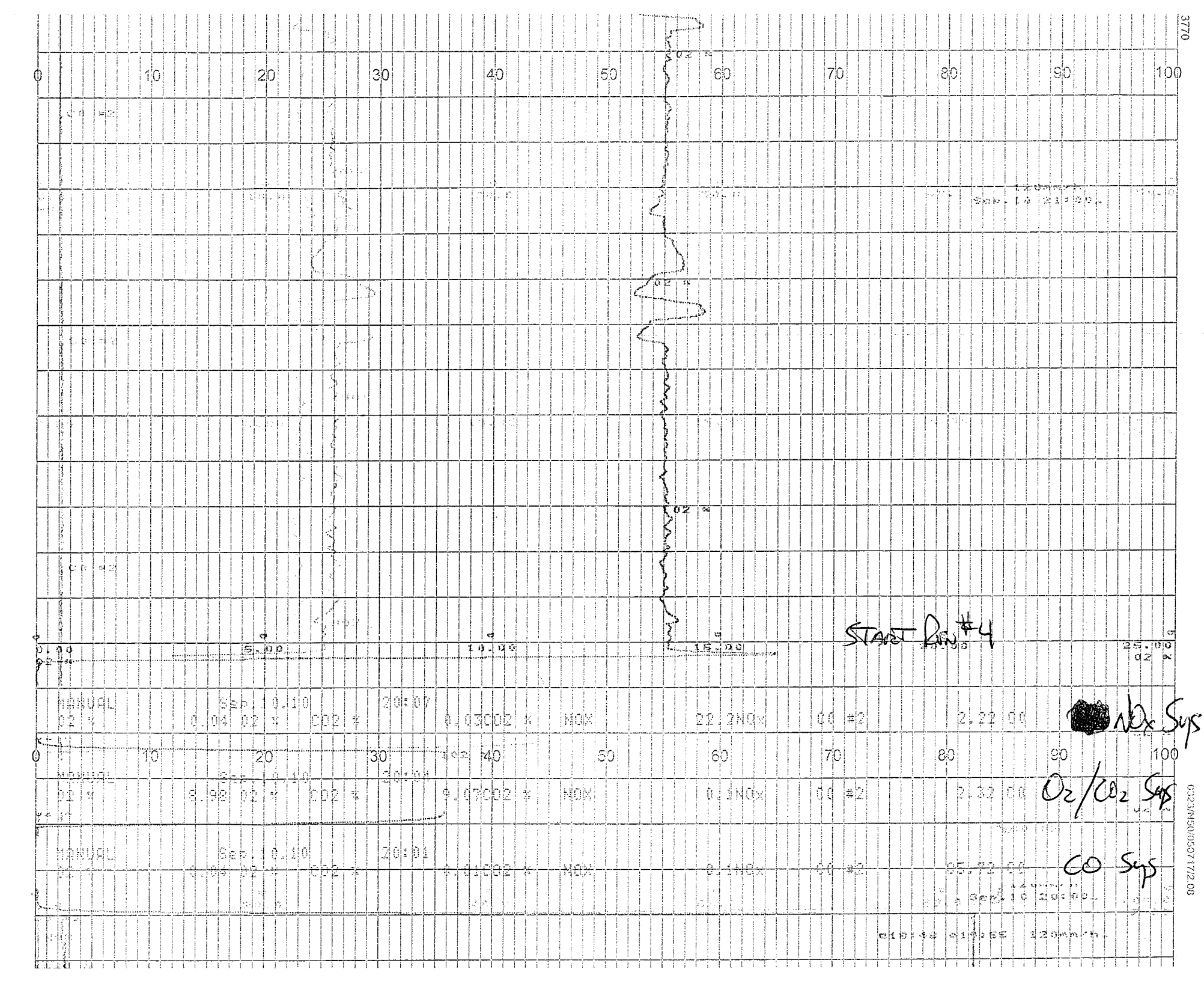
O2/CO2 Sys

CO Sys

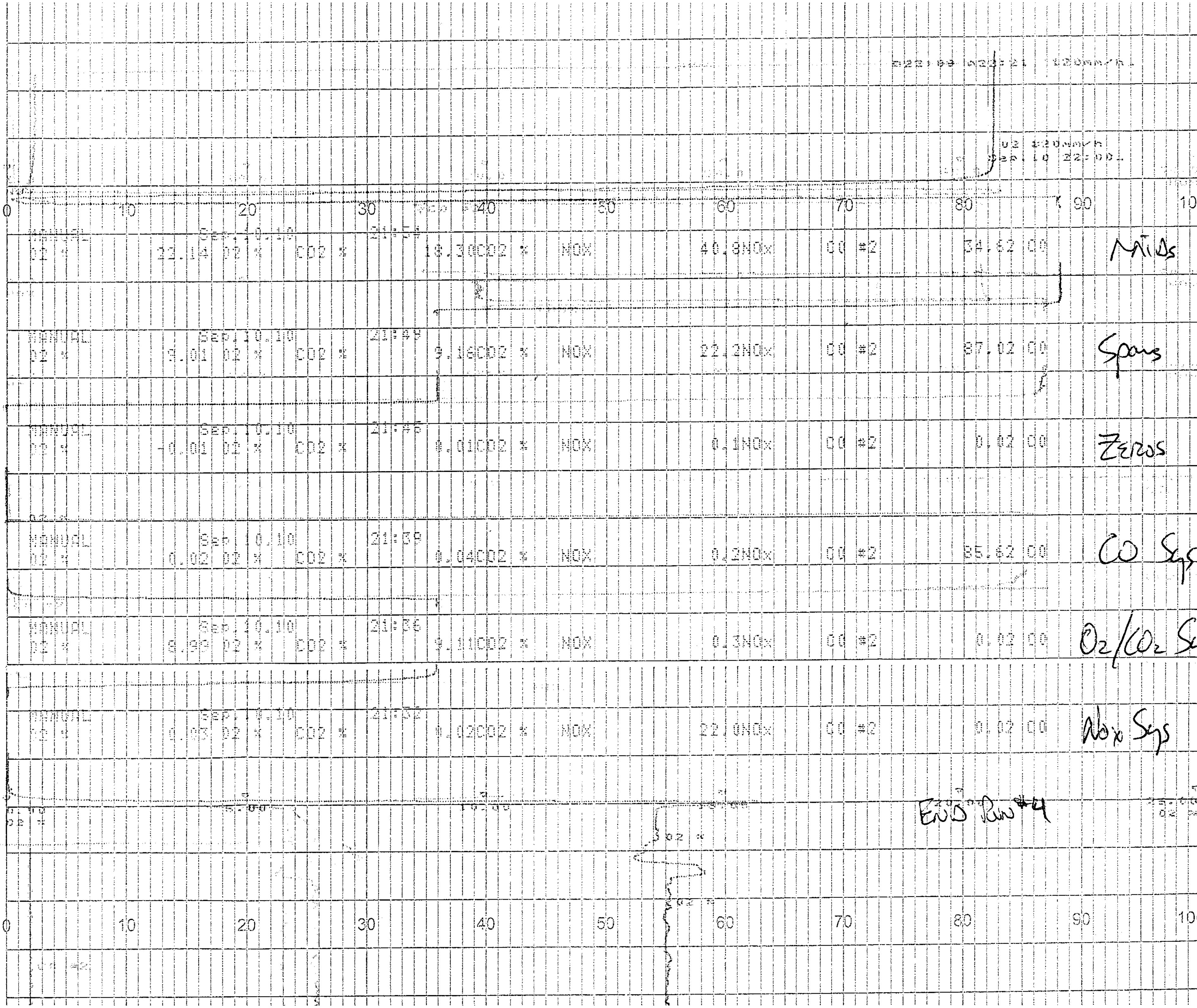
CO Sys

O2/CO2 Sys

NOx Sys


3770
0 10 20 30 40 50 60 70 80 90 100
Start Run #4
NOx Sys
O2/CO2 Sys
CO Sys
0323/N50/050571772.03

0323/N50/050717/2.08



13770

MANUAL Sep. 13,10 10:06
O2 % 9.03 O2 % CO2 % 9.10CO2 % NOx 0.0NOx 00 #2 2.32 00

MANUAL Sep. 13,10 10:00
O2 % 0.05 O2 % CO2 % 0.00CO2 % NOx 0.0NOx 00 #2 86.72 00

MANUAL Sep. 13,10 10:00
O2 % 20.75 O2 % CO2 % 0.31CO2 % NOx 0.0NOx 00 #2 0.32 00

MANUAL Sep. 13,10 10:58
O2 % 20.77 O2 % CO2 % 0.30CO2 % NOx 17.8NOx 00 #2 0.32 00

0 10 20 30 40 50 60 70 80 90 100

MANUAL Sep. 13,10 10:54
O2 % 9.06 O2 % CO2 % 9.16CO2 % NOx 22.9NOx 00 #2 54.72 00

MANUAL Sep. 13,10 10:52
O2 % 22.22 O2 % CO2 % 0.30CO2 % NOx 40.8NOx 00 #2 87.42 00

MANUAL Sep. 13,10 10:47
O2 % 0.02 O2 % CO2 % 0.00CO2 % NOx 0.0NOx 00 #2 0.02 00

O_2/CO_2 Sys

CO Sys

$\frac{17.6 - 0.0}{19.24} \times 100 = 91.5\%$

NO_2

Mids

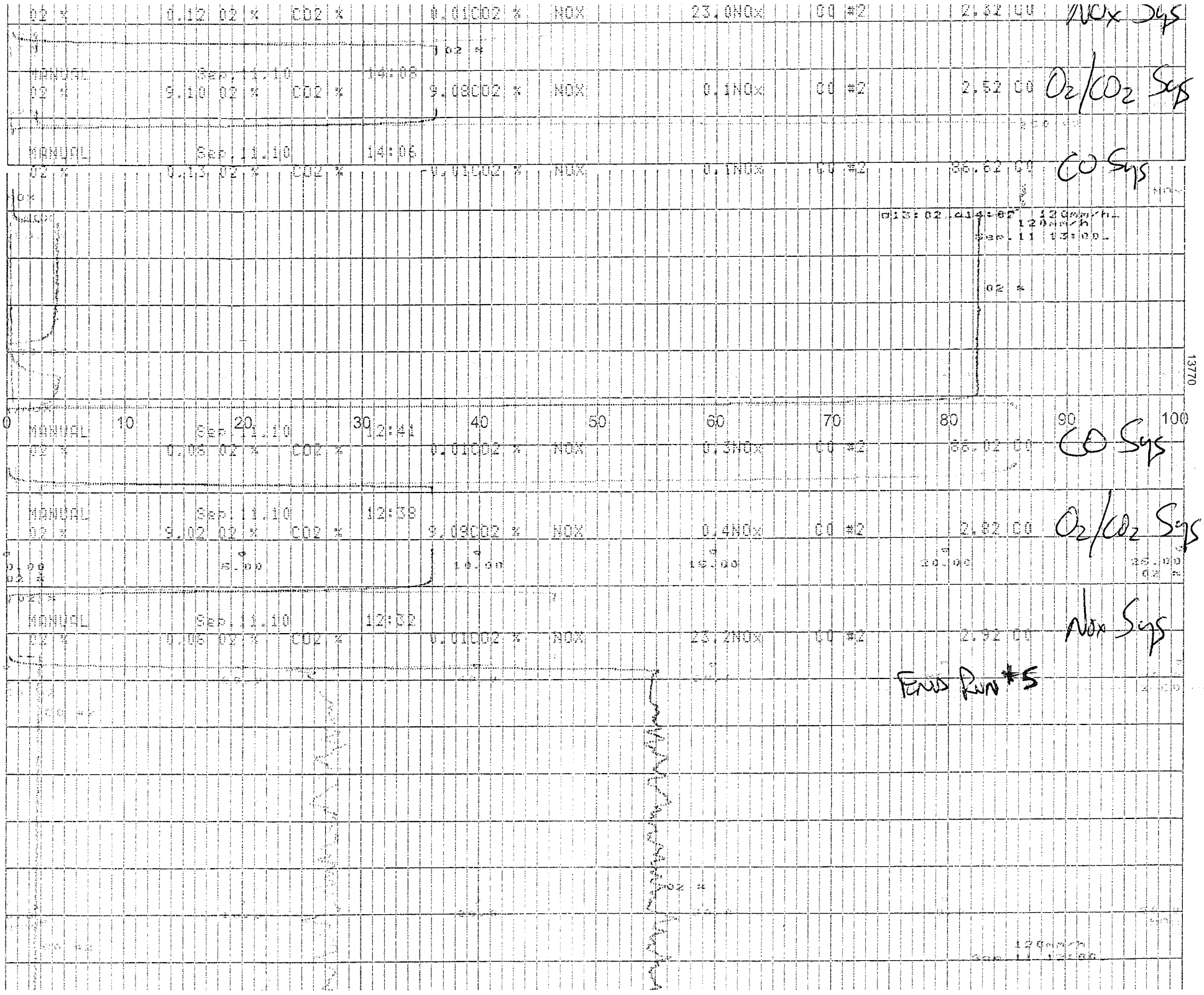
Spans

Zeros

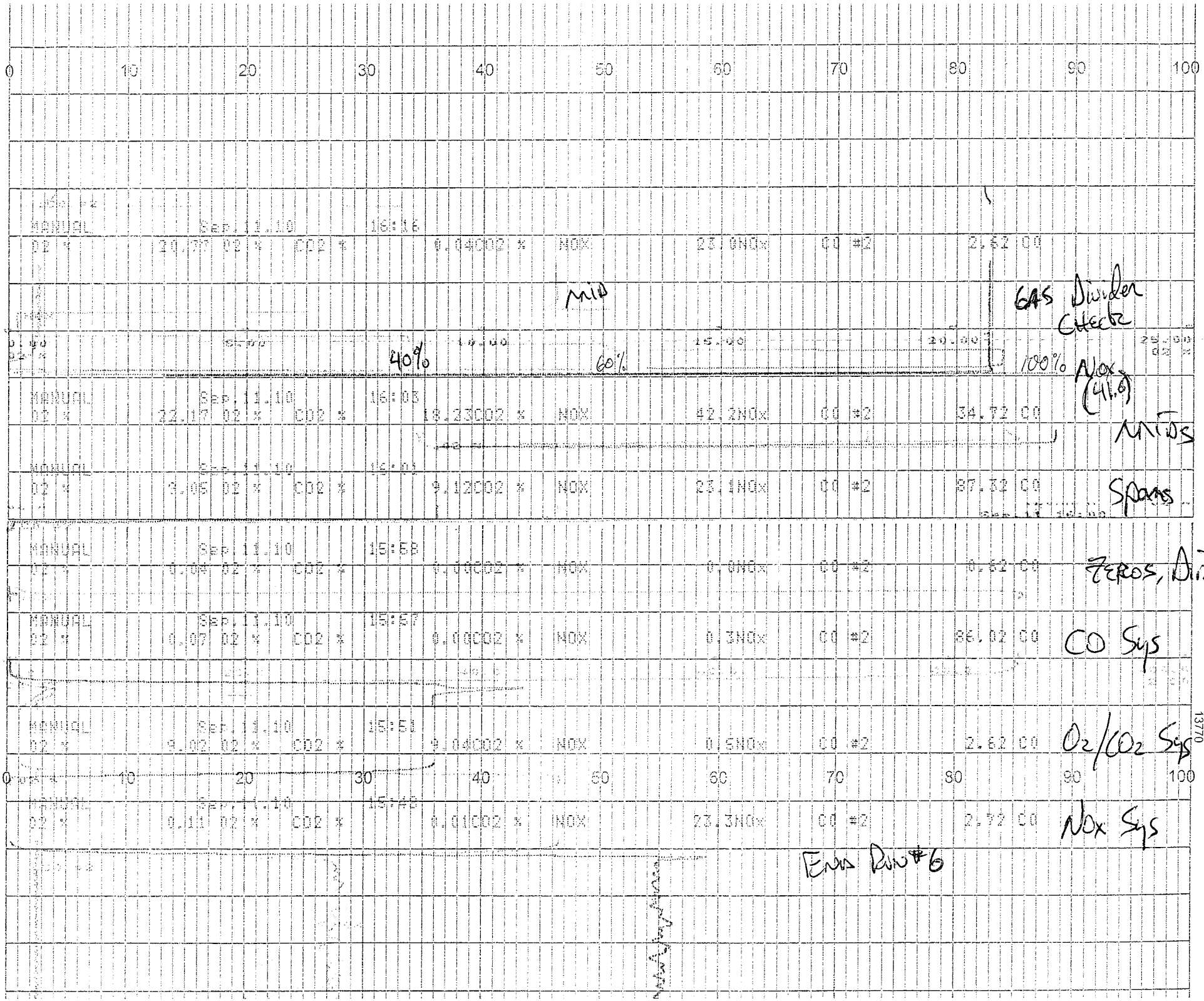
Leak Check 0.00 @ 25" Hg Vac.

Saturday - Santa Maria Flare

0333/N50/650717/2.00


NOx Sys
O2/CO2 Sys
CO Sys
CO Sys
O2/CO2 Sys
NOx Sys
END RUN #5
MANUAL
Sep.11.10
13770

NOx Sys
O2/CO2 Sys
Start Run #6


0
10
20
30
40
50
60
70
80
90
100
MANUAL
Sep 11,10
16:18
O2 %
10.07 O2 %
CO2 %
0.04002 %
NOX
23.0NOx
00 #2
2.62 00
Mid
Gas Divider
Effects
40%
60%
100% Nox (41.6)
MANUAL
Sep 11,10
16:08
O2 %
22.10 O2 %
CO2 %
19.23002 %
NOX
42.2NOx
00 #2
34.72 00
MANUAL
Sep 11,10
16:03
O2 %
9.05 O2 %
CO2 %
9.12002 %
NOX
25.1NOx
00 #2
87.32 00
Spans
MANUAL
Sep 11,10
15:58
O2 %
0.08 O2 %
CO2 %
0.00002 %
NOX
0.0NOx
00 #2
0.62 00
Zeros, Direct
MANUAL
Sep 11,10
15:53
O2 %
0.07 O2 %
CO2 %
0.00002 %
NOX
0.3NOx
00 #2
88.02 00
CO Sys
MANUAL
Sep 11,10
15:50
O2 %
9.02 O2 %
CO2 %
9.04002 %
NOX
0.5NOx
00 #2
2.62 00
O2/CO2 Sys
13770
0
10
20
30
40
50
60
70
80
90
100
MANUAL
Sep 11,10
15:48
O2 %
0.11 O2 %
CO2 %
0.01002 %
NOX
23.3NOx
00 #2
2.72 00
NOx Sys
Ems Run #6

Appendix B

CARB Method 425 – Hexavalent Chrome
Calculation Spreadsheets, Analytical Results, and Field Data Sheets

CARB METHOD 425 - Hexavalent Chrome

Facility:	Santa Maria Landfill	End Date:	9/11/2010
Source:	Flare	Operator:	JDG
Load:	Normal		
Start Date:	9/10/2010		

Data Entry	Symbol	Units	Run 1	Run 2	Run 3
Round Stack, Diameter	D	inches	55.0	55.0	55.0
Rectangular Stack, Length	L	inches			
Width	W	inches			
Nozzle Diameter	Dn	inches	0.750	0.750	0.750
Stack Temperature	Ts	degrees F	1335.0	1356.0	1349.1
Meter Temperature	Tm	degrees F	63.9	74.2	75.6
Barometric Pressure	Pbar	in. Hg	29.97	29.98	29.98
Stack Static Pressure	Pg	in. H_20	-0.01	-0.01	-0.01
Delta H	dH	in. H_20	1.500	1.500	1.488
Velocity Head (Delta P)	dP	in. H_20	0.010	0.010	0.010
Pitot Coefficient	Cp	-	0.99	0.99	0.99
Sample Volume	Vm	cubic ft.	78.24	79.04	80.10
Meter Factor	Y	-	0.9969	0.9969	0.9969
Sampling Time	min	minutes	120	120	120
Oxygen Content	%O2,m	%	13.84	13.88	13.89
Carbon Dioxide Content	%CO2,m	%	5.71	5.57	5.52
Impinger Gain	Ww	grams	129.6	135.1	138.1

Hex. Chrome, Impingers	ug	ug/Sample	0.0507	0.0698	0.0411
Hex. Chrome, Rinse	ug	ug/Sample	0.0140	0.0122	0.0116
Hex. Chrome, Total	ug	ug/Sample	0.0647	0.0820	0.0527

CARB METHOD 425 - Hexavalent Chrome

Facility: Santa Maria Landfill
Source: Flare

Calculated Data	Symbol	Units	Run 1	Run 2	Run 3
Nozzle Area, An=3.14(dn)**2/4	An	sq. in.	0.44179	0.44179	0.44179
Stack Area, As = 3.14*(ds)**2/576 (Round) = L * W/144 (Rectangular)	As	sq. feet	16.50	16.50	16.50
Stack Temperature, Ts = Fs + 460	Ts,r	degrees R	1795	1816	1809
Meter Temperature, Tm = Fm + 460	Tm,r	degrees R	524	534	536
Sample Volume @ Standard Conditions VmStd = 17.6471 Y (Vm/Tm) (Pbar + dH/13.6)	VmStd	dscf	79.03	77.14	77.96
Water Vapor Volum, VwStd = 0.04707*Ww	VwStd	dscf	6.10	6.36	6.50
Moisture Fraction, Bws = VwStd/(VmStd + VwStd)	Bws	none	0.07	0.08	0.08
Dry Molecular Weight, Md = 0.32(%O2,m)+ 0.44(%CO2,m)+0.28{100-(%02,m)-(%CO2,m)]	Md	Ib/Ib-mol	29.47	29.45	29.44
Wet Molecular Weight, Mw = Md(1-Bws)+18.0(Bws)	Mw	Ib/Ib-mol	28.6	28.6	28.6
Absolute Stack Pressure, Ps = Pbar + Pg/13.6	Ps	in. Hg	29.97	29.98	29.98
Gas Velocity vs = 85.49 Cp { sqrt[(dP*Ts) /(Ps*Mw)] }	Vs	ft/s	12.2	12.3	12.3
Actual Stack Gas Flowrate, Q = 60*vs*As	Qa	acf/min	12,115	12,199	12,179
Dry Stack Gas Flowrate Qsd = 17.64*Q*(1-Bws)*(Ps/Ts) Qsdm = Qsd/35.32	 Qsd Qsdm	 dscf/min dscm/min	 3,312 94	 3,282 93	 3,286 93
Isokinetic Rate, I=13.81*Ts*VmStd/[Ps*vs*An*min*(1-Bws)]	I	%	108.5	106.9	107.9

Concentration					
Hex. Chrome		**ug/dscm**	**0.0289**	**0.0056**	**0.0053**
Hex. Chrome		**gr/dscf**	**1.26E-08**	**2.44E-09**	**2.30E-09**
Emission Rate					
Hex. Chrome		**g/Hr**	**0.006**	**0.001**	**0.001**
Hex. Chrome		**lb/hr**	**3.59E-07**	**6.86E-08**	**6.47E-08**

IMPINGER	FINAL WT.	INITIAL WT	NET
1	781	685.2	95.8
2	700.1	678.3	21.8
3	605.7	601.1	4.6
4	913.7	906.3	7.4

CARB 425, RUN 1

129.6

	dH	dP	sqrt (dP)	Vm	Ts	Tm, in	Tm, out
1	1.5	0.01	0.1	668.26	1335	66	
2	1.5	0.01	0.1	746.50	1342	65	
3	1.5	0.01	0.1		1329	65	
4	1.5	0.01	0.1		1333	64	
5	1.5	0.01	0.1		1313	64	
6	1.5	0.01	0.1		1340	63	
7	1.5	0.01	0.1		1336	63	
8	1.5	0.01	0.1		1334	63	
9	1.5	0.01	0.1		1339	63	
10	1.5	0.01	0.1		1342	63	
11	1.5	0.01	0.1		1331	63	
12	1.5	0.01	0.1		1343	63	
13	1.5	0.01	0.1		1344	64	
14	1.5	0.01	0.1		1329	65	
15	1.5	0.01	0.1		1324	64	
16	1.5	0.01	0.1		1346	64	
17							
18							
19							
20							
21							
22							
23							
24							
AVERAGE	**1.50**	**0.010**	**0.1**	**78.24**	**1335**		**63.9**
			0.01				

1	785.3	685.1	100.2
2	685.6	671	14.6
3	605.2	602.7	2.5
4	880	862.2	17.8

RUN 2

135.1

	dH	dP	sqrt (dP)	Vm	Ts	Tm, in	Tm, out
1	1.5	0.01	0.1	750.16	1321	74	
2	1.5	0.01	0.1	829.2	1313	74	
3	1.5	0.01	0.1		1322	74	
4	1.5	0.01	0.1		1298	74	
5	1.5	0.01	0.1		1301	74	
6	1.5	0.01	0.1		1336	74	
7	1.5	0.01	0.1		1349	74	
8	1.5	0.01	0.1		1341	74	
9	1.5	0.01	0.1		1399	74	
10	1.5	0.01	0.1		1406	74	
11	1.5	0.01	0.1		1406	74	
12	1.5	0.01	0.1		1409	74	
13	1.5	0.01	0.1		1379	74	
14	1.5	0.01	0.1		1386	75	
15	1.5	0.01	0.1		1396	75	
16	1.5	0.01	0.1		1334	75	
17							
18							
19							
20							
21							
22							
23							
24							

AVERAGI	**1.50**	**0.010**	**0.1**	**79.04**	**1356**		**74.2**
			0.01				

IMPINGE	FINAL WT	INITIAL W	NET
1	793.8	683.5	110.3
2	681.8	671.2	10.6
3	607.7	605.2	2.5
4	894.7	880	14.7

CARB 425, RUN 3

138.1

	dH	dP	sqrt (dP)	Vm	Ts	Tm, in	Tm, out
1	1.4	0.01	0.1	830.4	1386	75	
2	1.4	0.01	0.1	910.5	1402	75	
3	1.5	0.01	0.1		1389	75	
4	1.5	0.01	0.1		1406	75	
5	1.5	0.01	0.1		1369	75	
6	1.5	0.01	0.1		1346	75	
7	1.5	0.01	0.1		1348	76	
8	1.5	0.01	0.1		1289	76	
9	1.5	0.01	0.1		1331	76	
10	1.5	0.01	0.1		1341	76	
11	1.5	0.01	0.1		1351	76	
12	1.5	0.01	0.1		1342	76	
13	1.5	0.01	0.1		1340	76	
14	1.5	0.01	0.1		1329	76	
15	1.5	0.01	0.1		1313	76	
16	1.5	0.01	0.1		1303	76	
17							
18							
19							
20							
21							
22							
23							
24							

AVERAG	1.49	0.01	0.1	80.10	1349.06		75.6
			0.01				

Quantum
Analytical Services Inc.
www.quantumairlab.com
1210 E. 223rd Street, Suite #314 • Carson, California 90745 • 310/830-2226 • Fax 310/830-2227

CLIENT	**Total Air Analysis, Inc.**
CLIENT PROJ NO:	**JA-100887**
LABORATORY NO:	**10-744**
SAMPLING DATE:	September 10 & 11, 2010
RECEIVING DATE:	September 16, 2010
ANALYSIS DATE:	September 20, 2010
REPORT DATE:	September 22, 2010

Laboratory Results

Analysis Method	**CARB 425**		
Detection Limits	**0.2 ng/ml**		
Sample ID Description	**Volume (ml)**	**Cr6+ ng/ml**	**Cr6+ ng/Sample**
Run 1 - Imp	286	0.18	**50.7**
Run 1 - Rinse	75	0.19	**14.0**
Run 2 - Imp	281	0.25	**69.8**
Run 2 - Rinse	75	0.16	**12.2**
Run 3 - Imp	288	0.14	**41.1**
Run 3 - Rinse	75	0.15	**11.6**
Field Blank - Imp	152	0.14	**21.0**
Field Blank - Rinse	75	0.16	**11.7**
Reagent Blank	75	0.13	**9.6**

Dr. Andrew Kitto
President

Quantum Analytical Services Inc.
www.quantumairlab.com
1210 E. 223rd Street, Suite #314 • Carson, California 90745 • 310/830-2226 • Fax 310/830-2227

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CLIENT PROJ NO: **JA-100887**
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ANALYSIS DATE: September 20, 2010
REPORT DATE: September 22, 2010

Quality Assurance Report

Analysis Method	**CARB 039**	
Detection Limit	**0.5 ng/ml**	
Sample ID	**Analyte**	**ng/ml**
Initial Blank (IB)	Cr6+	<0.5
Final Blank (FB)	Cr6+	<0.5

Duplicate Analysis

Sample ID	**Analyte**	**Analysis # 1 ng/ml**	**Analysis # 2 ng/ml**	**Mean ng/ml**	**% Difference from the Mean**
Run 3 - Rinse	Cr6+	0.15	0.15	0.15	0.1%

Dr. Andrew Kitto
President

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CLIENT: **Total Air Analysis, Inc.**
CLIENT PROJ NO: **JA-100887**
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SAMPLING DATE: September 10 & 11, 2010
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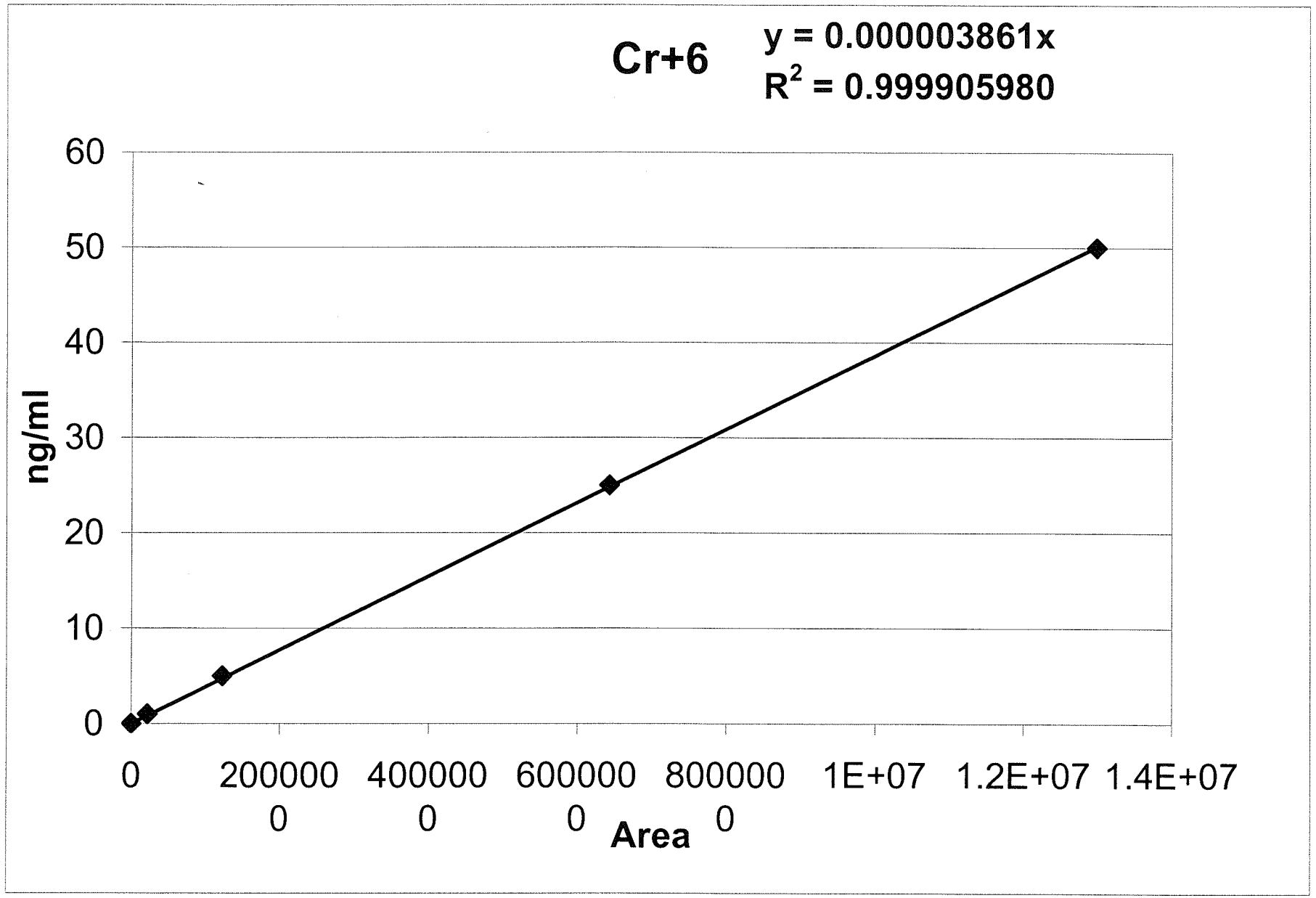
Quality Assurance Report

Standard Verification

Sample ID	Theoretical Value ng/ml	Tested Value ng/ml	% RPD	% Recovery*
CCV 5.0 ng/ml	5.0	4.63	7.4	93%
CCV 50 ng/ml	50	50.71	1.4	101%

*: Must be between 85-115%

Dr. Andrew Kitto
President


Cr+6
y = 0.000003861x
R² = 0.999905980
60
50
40
30
20
10
0
ng/ml
0
200000
400000
600000
800000
1E+07
1.2E+07
1.4E+07
Area

Laboratory: Quanterra

10-744

TOTAL AIR ANALYSIS, INC.

1210 East 223 rd Street, # 314 Carson, CA 90745 (310) 518 5133 Fax: (310) 518 5107

CHAIN OF CUSTODY

Page: 1 of: 1

Client: Santa Maria

Contact Person: Russ Logan

tel:

fax:

Project No.: JA-100887

Project Name: Flare

Project Manager: RAL

P.O. Number:

Analysis: Cr^{+6} — CARB 425 Hex Chrome

Turnaround Time:

- ☐ Same Day
- ☐ 24 Hours
- ☐ 48 Hours
- ☑ Normal

Total Air ID #	Client Sample ID	Summa Canister #	Date	Type of Sample	Lab ID Number	Remarks
	Run #1-Imp. Cr^6	—	9/10/10	Liquid		0.1 N. NaOH 75 mls
	" 1-Rinse Cr^6	—	"			
	Run #2-Imp. Cr^6	—	9/11/10			
	" 2 Rinse Cr^6	—				
	Run 3-Imp Cr^6	—				
	" 3-Rinse Cr^6	—				
	Field Blank-Imp Cr^6	—				
	" " Rinse Cr^6	—				
	Reagent Blank (NaOH)	—				

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/time
	9/13/10 @ 11:05		9/16/10 12:25
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/time

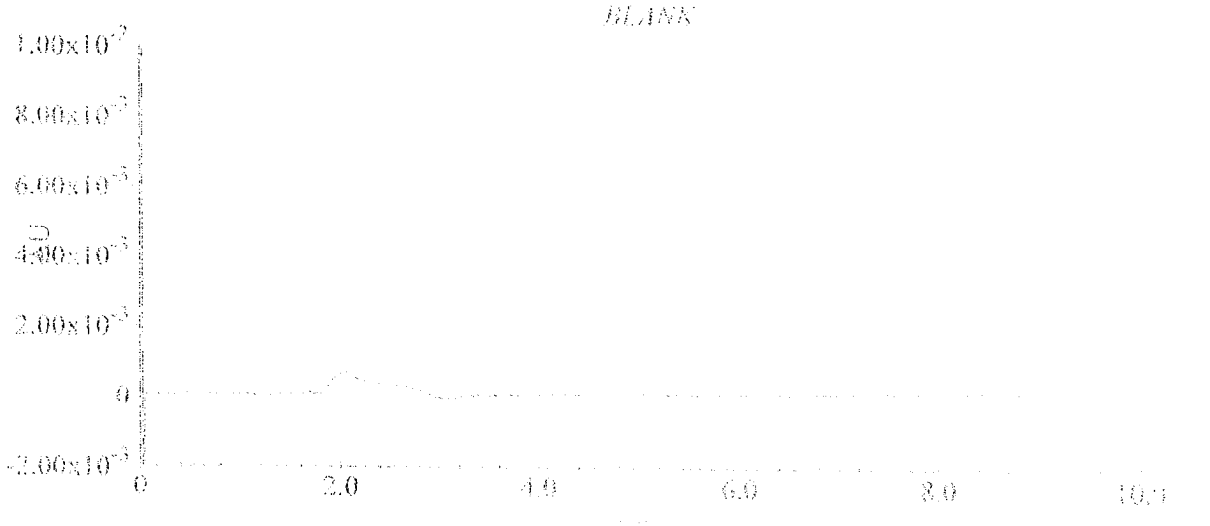
Sample Analysis Report

Sample Name : BLANK
Data File Name : C:\PEAKNET\DATA\SEP2010\26310-81_001.05D

Method File Name : c:\peaknet\method\cr6as708.met
Date Time Collected : 9/20/2010 1:22:07 PM
System Operator :

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height



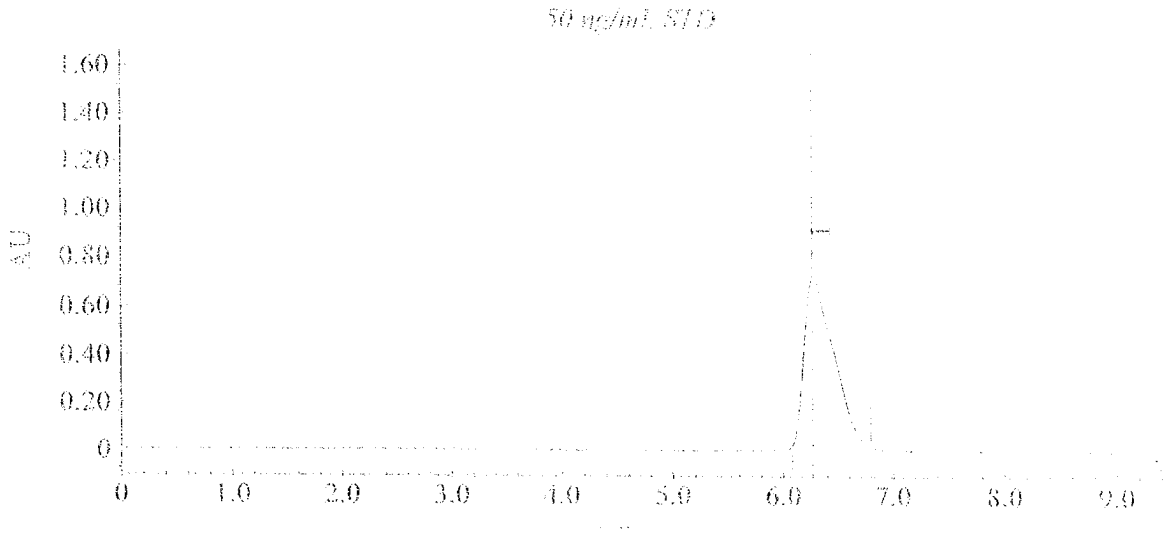
Sample Analysis Report

Sample Name : 50 ng/mL STD
Data File Name : C:\PEAKNET\DATA\SEP2010\26310-04_004.DXD

Method File Name : c:\peaknet\method\cr6as708.met
Date Time Collected : 9/20/2010 2:07:01 PM
System Operator :

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Hex Chrome	6.27	[illegible]	1313468i	704291



Sample Analysis Report

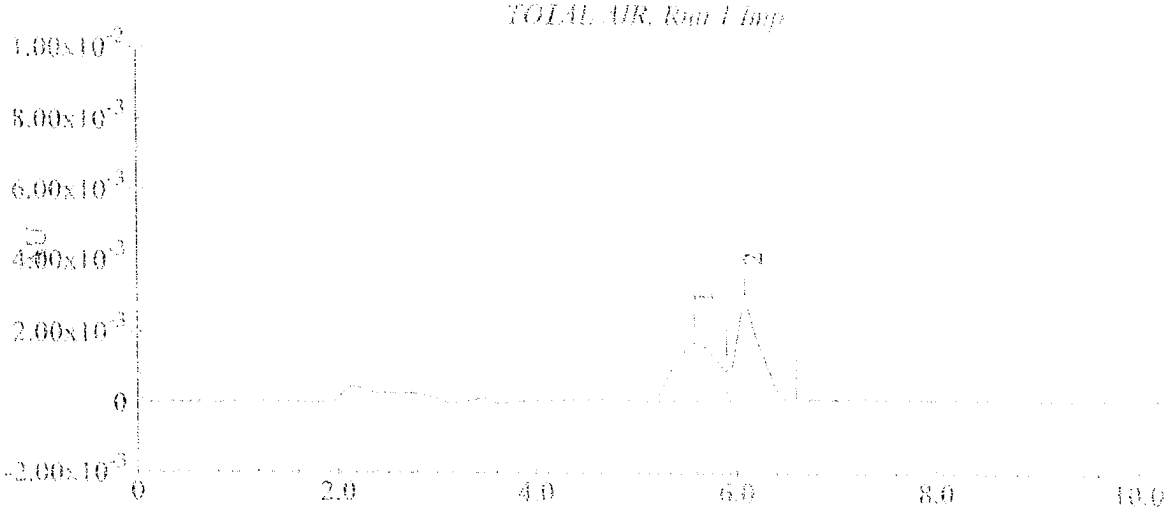
Sample Name : TOTAL AIR, Run 1 Imp
Data File Name : C:\PEAKNET\DATA\SEP2010\26310-05_005.DXD

Method File Name : c:\peaknet\method\cr6as708.met
Date Time Collected : 9/20/2010 2:19:44 PM
System Operator :

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Unknown 1	5.58	0.00	42320	3644
2	Hex Chrome	6.08	1.61	158869	26779

TOTAL AIR, Run 1 Imp



Sample Analysis Report

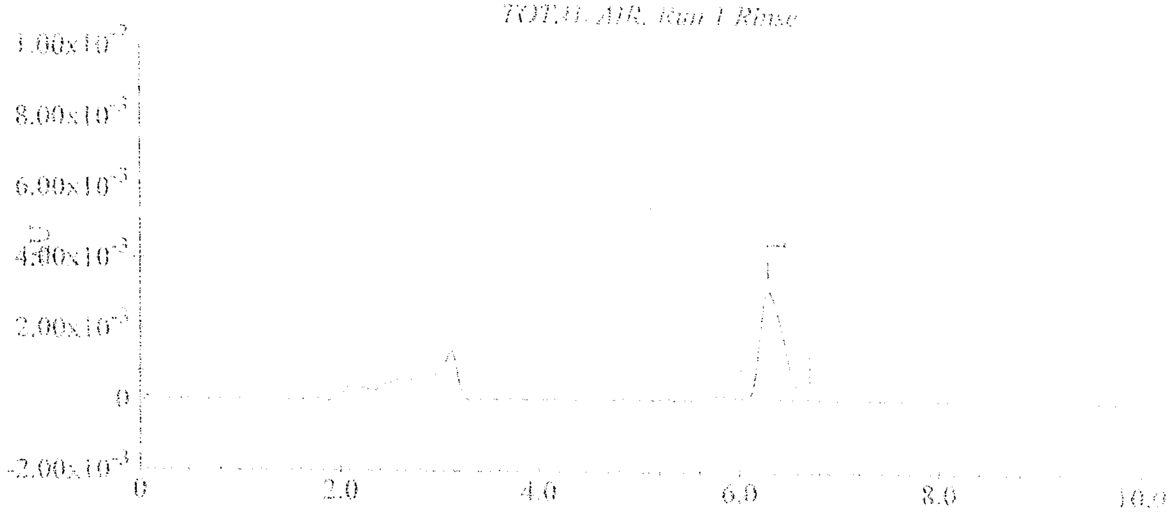
Sample Name : TOTAL AIR, Run 1 Rinse
Data File Name : C:\PEAKNET\DATA\SEP2010\26310-06_006.DXD

Method File Name : c:\peaknet\method\cr6as708.met
Date Time Collected : 9/20/2010 2:31:54 PM
System Operator :

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Hex Chrome	6.28	[illegible]	[illegible]	[illegible]

TOTAL AIR, Run 1 Rinse



Sample Analysis Report

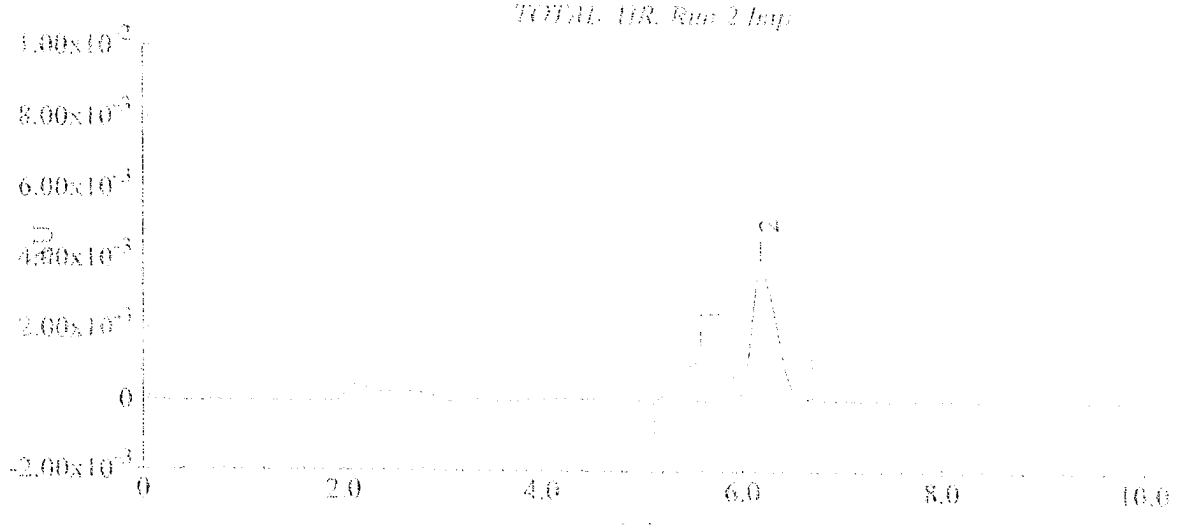
Sample Name : TOTAL AIR, Run 2 Imp
Data File Name : C:\PEAKNET\DATA\SEP2010\26\310-07_007.DXD

Method File Name : c:\peaknet\method\cr6as708.met
Date Time Collected : 9/20/2010 2:44:06 PM
System Operator :

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Unknown 1	5.58	0.00	39450	1153
2	Hex Chrome	6.18	[illegible]	64520	1701

TOTAL AIR, Run 2 Imp



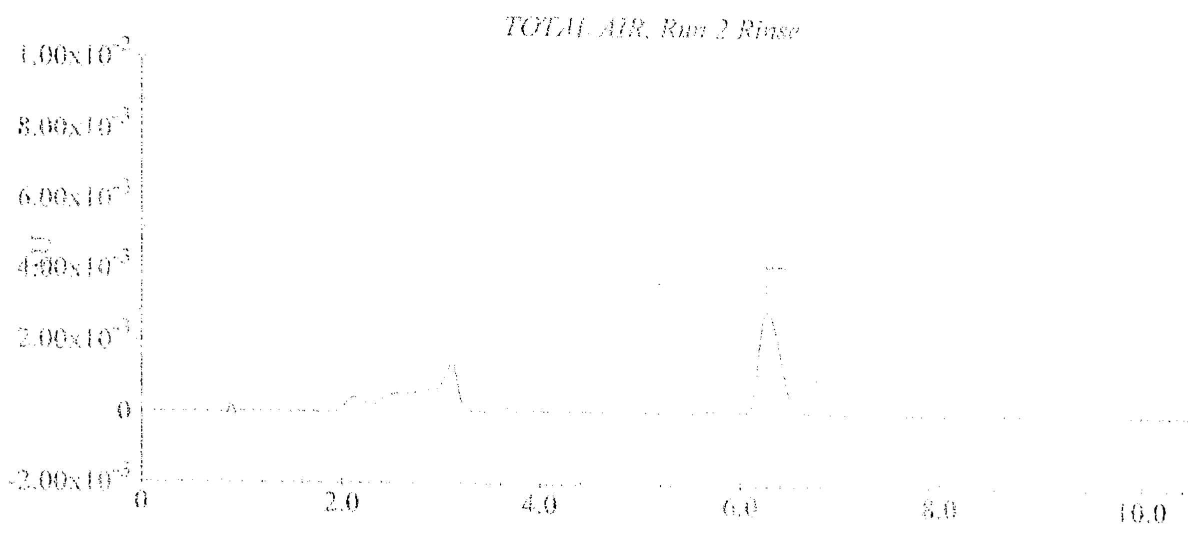
Sample Analysis Report

Sample Name : TOTAL AIR, Run 2 Rinse
Data File Name : C:\PEAKNET\DATA\SEP2010\[illegible]

Method File Name : c:\peaknet\method\cr6as708.met
Date Time Collected : 9/20/2010 2:58:18 PM
System Operator :

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Hex Chrome	6.27	[illegible]	41970	[illegible]



Sample Analysis Report

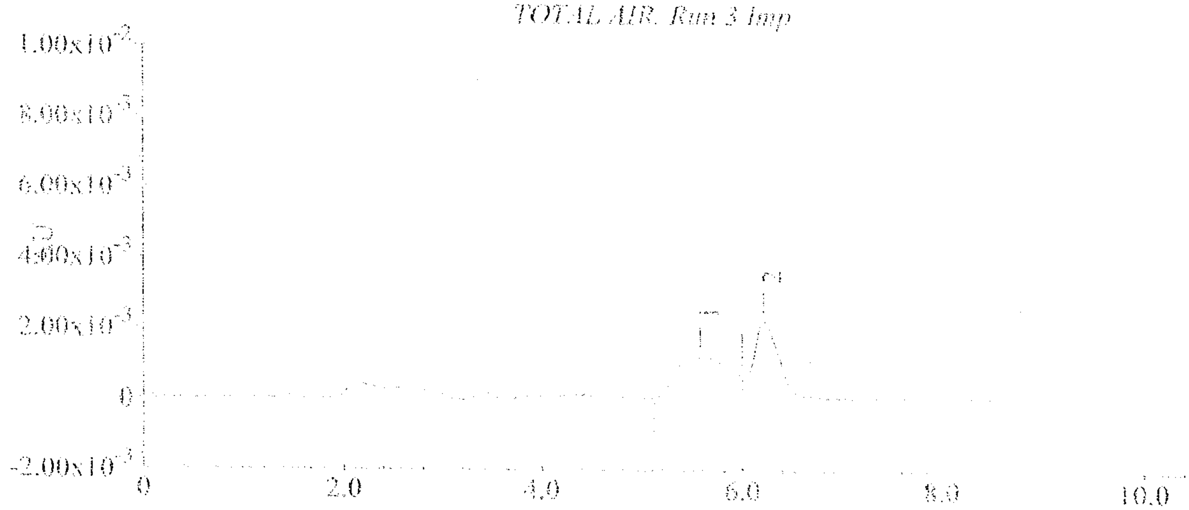
Sample Name : TOTAL AIR, Run 3 Imp
Data File Name : C:\PEAKNET\DATA\SEP2010\263\10-40_009.DXD

Method File Name : c:\peaknet\method\cr6as708.met
Date Time Collected : 9/20/2010 3:09:53 PM
System Operator :

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Unknown 1	5.58	0.00	42220	1151
2	Hex Chrome	6.22	[illegible]	36973	[illegible]

TOTAL AIR, Run 3 Imp



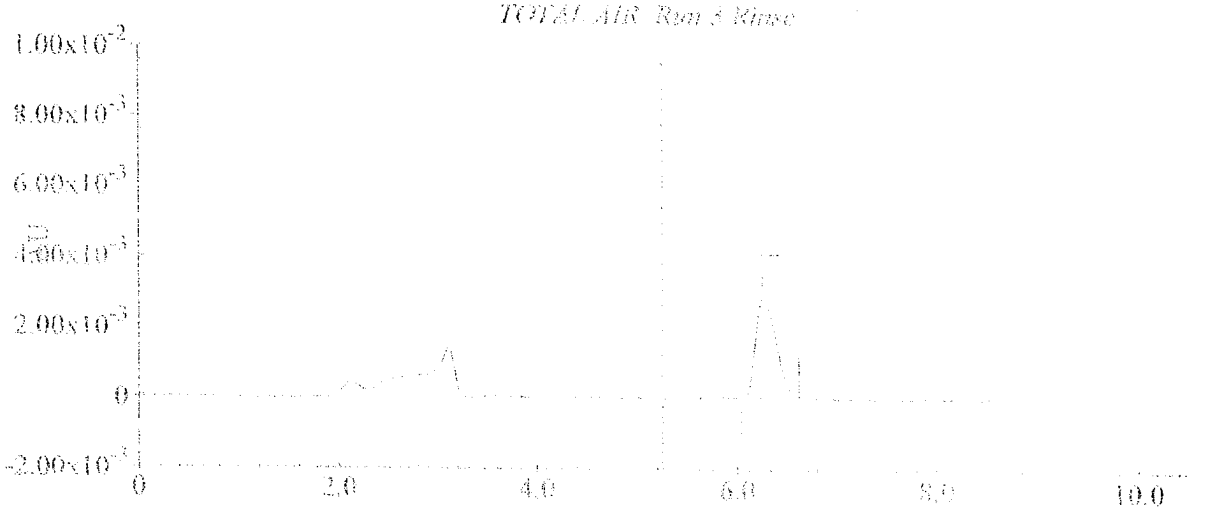
Sample Analysis Report

Sample Name : TOTAL AIR, Run 3 Rinse
Data File Name : C:\PEAKNETDATA\SEP2010\26510-10_010.DXD

Method File Name : c:\peaknet\method\cr6as708.met
Date Time Collected : 9/20/2010 3:19:20 PM
System Operator :

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Hex Chrome	6.25	[illegible]	39033	2789



Sample Analysis Report

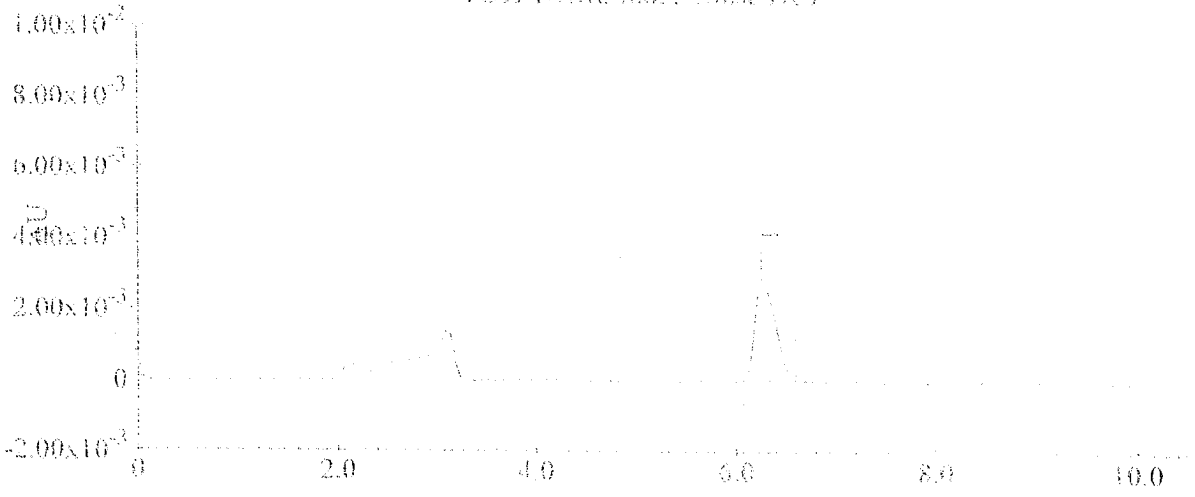
Sample Name : TOTAL AIR, Run 3 Rinse DUP
Data File Name : C:\PEAKNET\DATA\SEP2010\26410-1003_011.RSD

Method File Name : c:\peaknet\methods\cr6as708.met
Date Time Collected : 9/20/2010 3:30:14 PM
System Operator :

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Hex Chrome	6.25		400[illegible]	[illegible]

TOTAL AIR, Run 3 Rinse DUP



Sample Analysis Report

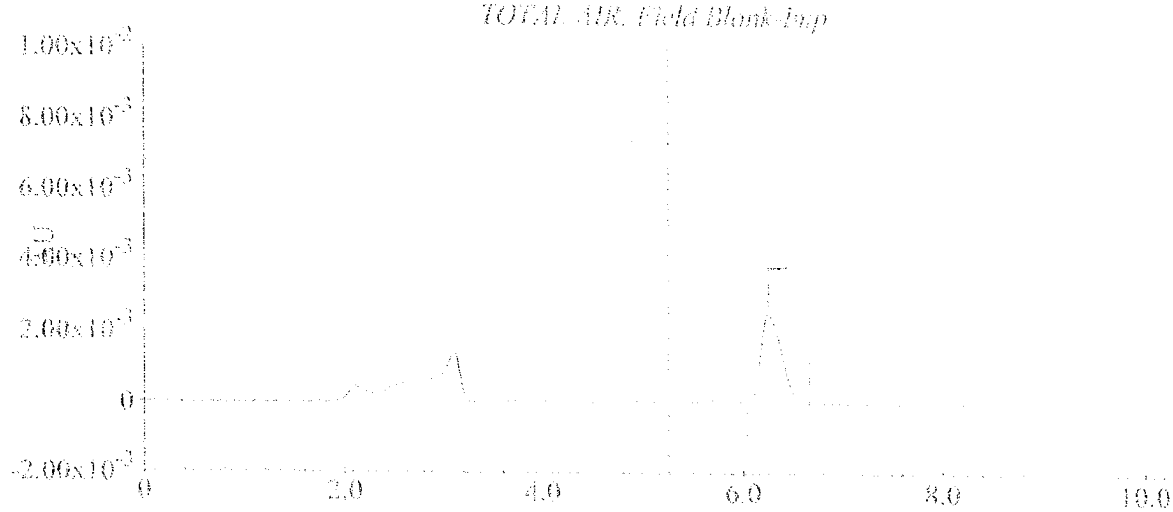
Sample Name : TOTAL AIR, Field Blank-Imp
Data File Name : C:\PEAKNET\DATA\SEP2010\26310-11_612.DXD

Method File Name : c:\peaknet\method\cr6as708.met
Date Time Collected : 9/20/2010 3:42:35 PM
System Operator :

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Unknown 1	6.25	0.00	35813	2493

TOTAL AIR, Field Blank-Imp



Sample Analysis Report

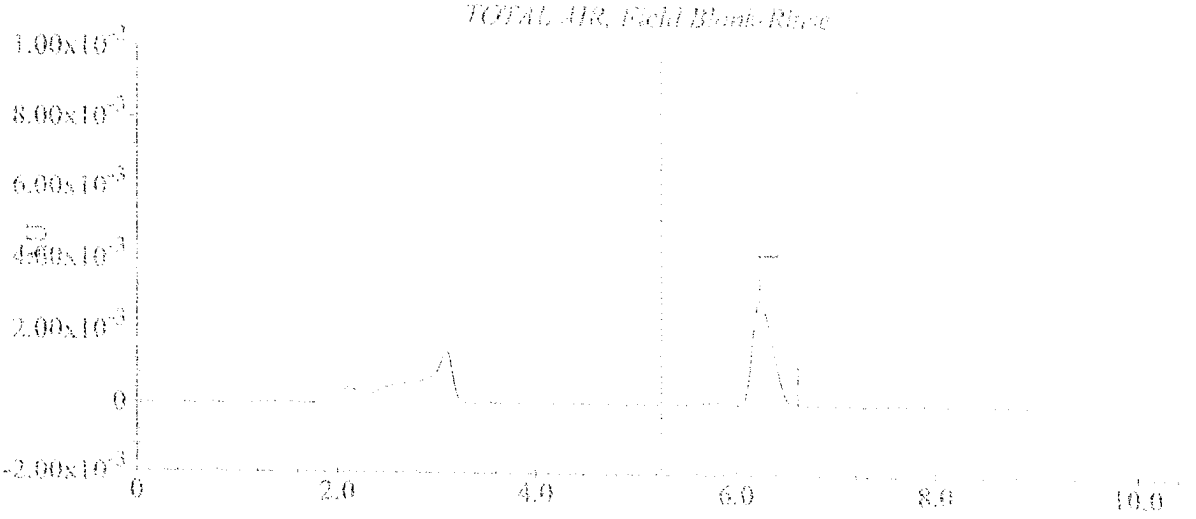
Sample Name : TOTAL AIR, Field Blank-Rinse
Data File Name : C:\PEAKNET\DATA\SEP2010\26310-12_013.0XD

Method File Name : c:\peaknet\methods\er6as708.met
Date Time Collected : 9/20/2010 3:52:24 PM
System Operator :

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Unknown 1	6.23	0.00	405.70	28.75

TOTAL AIR, Field Blank-Rinse



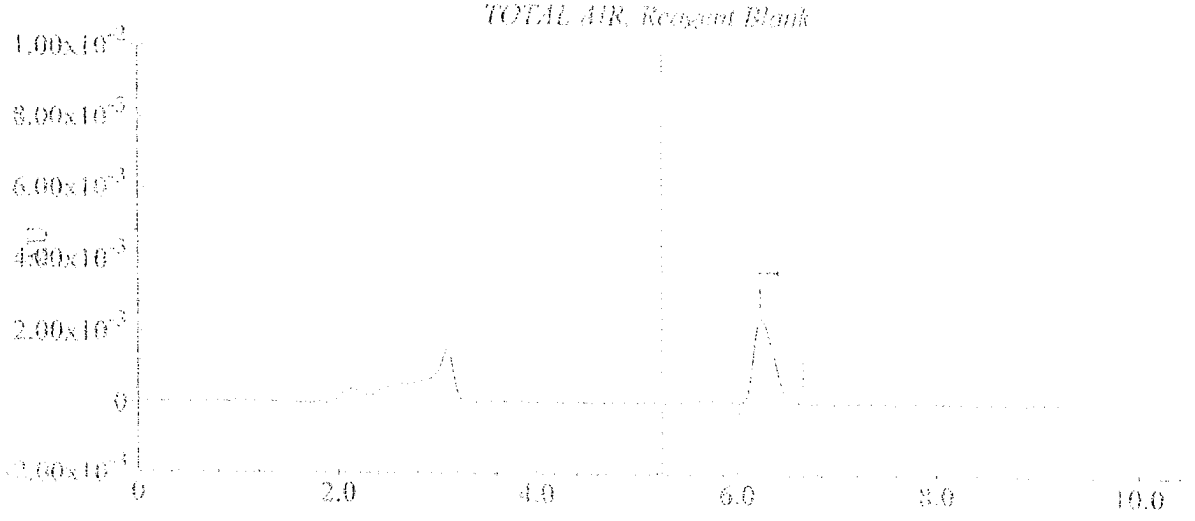
Sample Analysis Report

Sample Name : TOTAL AIR, Reagent Blank
Data File Name : C:\PEAKNET\DATA\SEP2010\263\10-15_014.DXD

Method File Name : c:\peaknet\method\ertsac708.met
Date Time Collected : 9/20/2010 4:02:47 PM
System Operator :

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Unknown 1	6.23	0.00	33299	2371



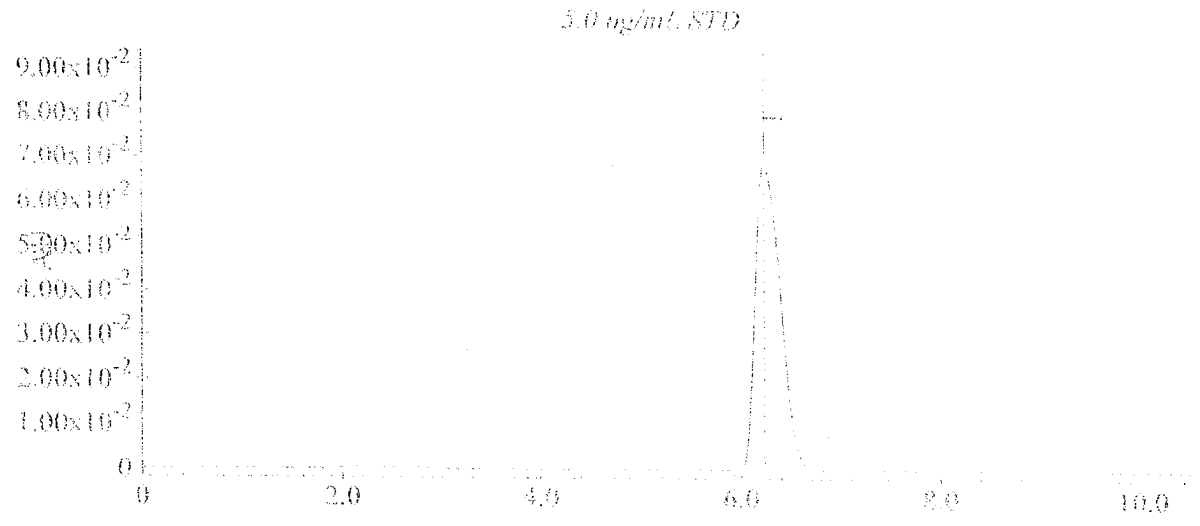
Sample Analysis Report

Sample Name : 5.0 ng/mL STD
Data File Name : C:\PEAKNET\DATA\SEP2010\26510-14_001.DXD

Method File Name : c:\peaknet\metho\Acrbas708.met
Date Time Collected : 9/20/2010 4:14:40 PM
System Operator :

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Unknown 1	6.23	0.00	1198982	69169



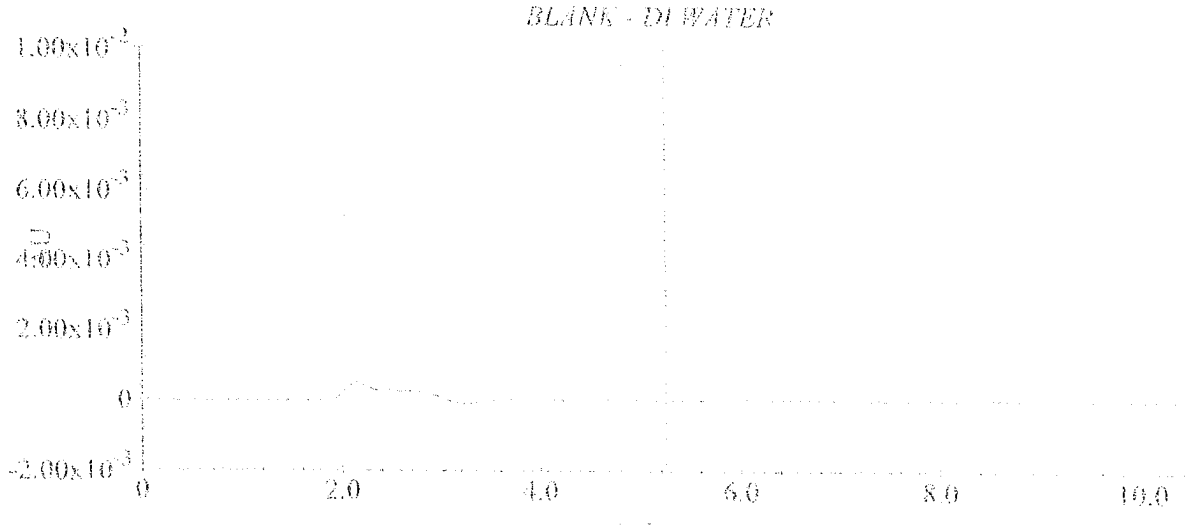
Sample Analysis Report

Sample Name : BLANK - DI WATER
Data File Name : C:\PEAKNET\DATA\SEP2010\26310-15_016.RSD

Method File Name : c:\peaknet\method\er6as708.met
Date Time Collected : 9/20/2010 4:27:29 PM
System Operator :

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height



TOTAL AIR ANALYSIS, INC.

Method 5 Field Data Sheet

Facility:	SANTA MARIA	Stack Dia.:	55"	Meter No.:	AEX 2	Pitot Tube Leak Test:	
Source:	FLARE	Nozzle Size:	0.750	dH@:	-	Before: 0.00	After: 0.00
Test Date:	09/10/2010	Pbar:	29.97	Y:	0.9969	Assumed Moisture:	~~7.5~~ %
Run No.:	1	Static P:	-0.01	Sampling Train Leak Test:		Assumed O_2:	14.0 %
Project No.:		Probe Type:	QUARTZ	Before:	0.00 @ 20"	Assumed CO_2:	~~5~~ %
Method:	CARB 425 - CH6	Pitot Coef./No.:	0.99 (STD)	After:	0.00 @ 10"	Ambient Temp.:	~~75~~ °F

Time	Sample Point	Delta P	Delta H	DGM Reading	Temperature: Stack	DGM In	DGM Out	Probe	Filter	Pump Vacuum	Imp. Out Temp.	Comments
0 (19:50)	12	0.01	1.5	668.26	1335	66			252	-6		
7.5	11	0.01	1.5	677.15	1342	65			250	-6		
15	10	0.01	1.5	685.50	1329	61			257	-6		
22.50	9	0.01	1.5	692.92	1333	64			249	-6		
30	8	0.01	1.5	697.92	1313	64			258	-6		
37.5	7	0.01	1.5	702.71	1340	63			251	-6		
45	6	0.01	1.5	697.60	1336	63			245	-6		
52.5	5	0.01	1.5	707.49	1334	63			245	-6		
60	4			707.38	1335							
	3											
	2											
	1											
0	12	0.01	1.5	707.38	1338	63			240	-6		
7.5	11	0.01	1.5	712.27	1342	63			248	-6		
15.0	10	0.01	1.5	717.16	1338	63			249	-6		
22.5	9	0.01	1.5	721.96	1348	63			250	-6		
30	8	0.01	1.5	726.85	1344	64			254	-6		
37.5	7	0.01	1.5	731.74	1329	65			250	-6		
45	6	0.01	1.5	736.63	1324	64			248	-6		
52.5	5	0.01	1.5	741.52	1346	64			244	-6		
60	4			746.50								
	3											
	2											
	1											

TOTAL AIR ANALYSIS, INC.

Method 5 Field Data Sheet

Facility:	SANTA MARIA	Stack Dia.:	55"	Meter No.:	ADE X 2	Pitot Tube Leak Test:	
Source:	FLARE	Nozzle Size:	0.75	dH@:		Before: 0.0	After: 0.0
Test Date:	09/11/2010	Pbar:	29.98	Y:	0.9969	Assumed Moisture:	-
Run No.:	2	Static P:	-0.01	Sampling Train Leak Test:		Assumed O_2:	-
Project No.:		Probe Type:	QUARTZ	Before:	0.01 @ 25"	Assumed CO_2:	-
Method:	~~EPA~~ CARB	Pitot Coef./No.:	0.99 (STD)	After:	0.01 @ 22"	Ambient Temp.:	-

Time	Sample Point	Delta P	Delta H	DGM Reading	Temperature: Stack	DGM In	DGM Out	Probe	Filter	Pump Vacuum	Imp. Out Temp	Comments
0	12	0.01	1.5	770.16	1321	74			250	-10		
7.5	11	0.01	1.5	775.10	1313	74			250	-10		
15	10	0.01	1.5	780.00	1322	74			251	-10		
22.5	9	0.01	1.5	784.99	1298	74			251	-10		
30	8	0.01	1.5	789.95	1301	74			249	-10		
37.5	7	0.01	1.5	794.85	1336	74			250	-10		
45	6	0.01	1.5	799.80	1349	74			249	-10		
52.5	5	0.01	1.5	804.75	1341	74			250	-10		
60	4			809.70								
	3											
	2											
	1											
0	12	0.01	1.5	809.70	1359	74			251	-10		
7.5	11	0.01	1.5	814.62	1406	74			249	-10		
15	10	0.01	1.5	819.60	1406	74			250	-10		
22.5	9	0.01	1.5	824.50	1409	74			250	-10		
30	8	0.01	1.5	829.45	1379	74			249	-10		
37.5	7	0.01	1.5	834.40	1386	75			251	-10		
45	6	0.01	1.5	839.32	1396	75			251	-10		
52.5	5	001	1.5	844.26	1334	75			250	-10		
60	4			849.20								
	3											
	2											
	1											

TOTAL AIR ANALYSIS, INC.

Method 5 Field Data Sheet

Facility:	SANTA MARIA	Stack Dia.:	55"	Meter No.:	ARC #2	Pitot Tube Leak Test:	
Source:	FLARE	Nozzle Size:	0.750	dH@:		Before: 0	After: 0
Test Date:	04/11/2010	Pbar:	29.98	Y:	0.9969	Assumed Moisture:	
Run No.:	3	Static P:	-0.01	Sampling Train Leak Test:		Assumed O_2:	
Project No.:		Probe Type:	QUARTZ	Before:	0.000-25"	Assumed CO_2:	
Method:	HEX CHROME	Pitot Coef./No.:	0.99	After:	0.000-22"	Ambient Temp.:	

Time	Sample Point	Delta P	Delta H	DGM Reading	Temperature: Stack	DGM In	DGM Out	Probe	Filter	Pump Vacuum	Imp. Out Temp.	Comments
0	12	0.01	1.4	830.40	1386	75			251	-10		
7.5	11	0.01	1.4	831.38	1402	75			250	-10		
15	10	0.01	1.5	840.42	1359	75			251	-10		
22.5	9	0.01	1.5	841.47	1406	75			251	-10		
30	8	0.01	1.5	850.53	1369	75			250	-10		
37.5	7	0.01	1.5	851.50	1346	75			251	-10		
45	6	001	1.1	860.40	1348	76			251	-10		
52.5	5	001	1.5	861.35	1259	76			250	-10		
60	4			870.30								
	3											
	2											
	1											
0	12	0.01	1.5	870.30	1331	76			250	-10		
7.5	11	0.01	1.5	871.31	1341	76			251	-10		
15	10	0.01	1.5	880.43	1351	76			251	-10		
22.5	9	0.01	1.5	881.45	1342	76			250	-10		
30	8	0.01	1.5	890.33	1340	76			251	-10		
37.5	7	0.01	1.5	891.41	1325	76			251	-10		
45	6	0.01	1.5	900.29	1313	76			249	-10		
52.5	5	0.01	1.5	901.36	1303	76			250	-10		
60	4	0.01	1.5	910.50								
	3											
	2											
	1											

HEX CHROME

Total Air Analysis, Inc.
Impingers Weight Sheet

Facility: Santa Maria
Source: Flare
Run No.: 1
Test Date: 9/10/10
Operator: RPL

Filter No.: YES CARB 425

Impinger No.	Impinger Solution	Amount (mL)	Impinger Type	Weight (g)	Comments
1	0.1 Normal NaOH	~75	6/S	Final: [redacted] 781.0 Init.: 685.2 Net:	Clear
2	0.1 Normal NaOH	~75	6/S	Final: [redacted] 700.1 Init.: 679.3 Net:	Clear pH ≈ 9.0
3	KO	—	6/S	Final: 605.7 Init.: 601.1 Net:	—
4	SILICA	~300 gms	MOD 6/S	Final: 913.7 Init.: 906.3 Net:	—
5				Final: Init.: Net:	
6				Final: Init.: Net:	
7				Final: Init.: Net:	

Probe Rinse = 100 mls Sample clean

Total Gain:

Preparation Date: 9/10/10
Prepared By: RPL

Recovery Date: 9/10/10
Recovered By: RPL

Total Air Analysis, Inc.
Impingers Weight Sheet

Facility: Santa Maria
Source: Flare
Run No.: 2
Test Date: 9/11/10
Operator: SDG

Filter No.: Yes

CARB 425 - Hex. Chrome

Impinger No.	Impinger Solution	Amount (g) (ml)	Impinger Type	Weight	Comments
1	0.1 N NaOH	~75 mls	6/S	Final: 785.3 Init.: 685.1 Net:	Clear
2	0.1 N NaOH	~75 mls	6/S	Final: 685.6 Init.: 671.0 Net:	Clear pH ≈ 8.5
3	KO	—	6/S	Final: 605.2 Init.: 602.7 Net:	—
4	Silica	~300	Mod. 6/S	Final: 880.0 Init.: 862.2 Net:	—
5				Final: Init.: Net:	
6				Final: Init.: Net:	
7				Final: Init.: Net:	

Probe Rinse = 100 mls, clear

Total Gain:

Preparation Date: 9/11/10
Prepared By: RPL

Recovery Date: 9/11/10
Recovered By: RPL

Total Air Analysis, Inc.
Impingers Weight Sheet

Facility: Santa Maria Plant
Source:
Run No.: 3
Test Date: 9/11/10
Operator: JDG

Filter No.: Yes

Hex.

Impinger No.	Impinger Solution	Amount (ml)	Impinger Type	Weights	Comments
1	0.1 N NaOH	~75 ml	G/S	Final: 793.8 Init.: 683.5 Net:	Clear
2	0.1 N NaOH	~75 ml	G/S	Final: 681.8 Init.: 671.2 Net:	Clear PH ≥ 9.5
3	KO	—	G/S	Final: 607.7 Init.: 605.2 Net:	—
4	Silica	~300	Mod. G/S	Final: 894.7 Init.: 880.0 Net:	—
5				Final: Init.: Net:	
6				Final: Init.: Net:	
7				Final: Init.: Net:	

100 mls - Clear

Total Gain:

Preparation Date: 9/11/10
Prepared By: RPL

Recovery Date: 9/11/10
Recovered By: RPL

Appendix C

CARB Method 429 – PAHs Emissions
Calculation Spreadsheets, Analytical Results, and Field Data Sheets

CARB Method 429 PAH Emissions

Facility:	**Santa Maria Landfill**		
Source:	**Flare**	**Operator:**	JDG
Load:	**Normal**	**Entered By:**	RPL
Start Date:	**9/9/10**	**Checked By:**	RPL
End Date:	**9/10/10**		

Data Entry	Symbol	Units	Data	Data	Data
Run Number	-	-	1	2	3
Round Stack, Diameter	ds	inches	55.00	55.00	55.00
Rectangular Stack, Length	L	inches			
Wdth	W	inches			
Nozzle Diameter	dn	inches	0.750	0.750	0.750
Average Stack Temperature	Fs	degrees F	1323.38	1375.00	1375.00
Average Meter Temperature	Fm	degrees F	70.56	64.38	64.00
Barometric Pressure	Pbar	in. Hg	29.94	29.94	29.97
Stack Static Pressure	Pg	in. H20	-0.01	-0.01	-0.01
Avg. Velocity Head	dP	in. H20	0.01	0.01	0.01
Avg. Delta H	dH	in. H20	1.60	1.60	1.60
Pitot Coefficient	Cp	-	0.99	0.99	0.99
Gas Sample Volume	Vm	cubic ft.	78.66	72.67	74.77
Meter Calibration Factor	Y	-	0.9986	0.9986	0.9986
Total Sampling Time	min	minutes	120	120	120
Stack Gas Oxygen Content	Co2,m	%	14.08	14.08	14.12
Stack Gas Carbon Dioxide Content	Cco2,m	%	5.65	5.65	5.61
Total Impinger Gain	Ww	grams	130.4	144.5	117.6

PAH Catch	Mi						
Naphthalene		µg		0.306		0.247	0.665
2-Methylnaphthalene		µg		0.142		0.0933	0.43
Acenaphthene		µg		0.561		0.0266	0.172
Acenapthylene		µg		0.0125	ND	0.01	0.0265
Fluorene		µg		1.71		0.0511	0.211
Phenanthrene		µg		6.26		0.139	0.444
Anthracene		µg		0.0463	ND	0.01	0.0206
Fluoranthene		µg		0.0349		0.0111	0.0516
Pyrene		µg		0.0513		0.0163	0.144
Benzo (a) anthracene		µg	ND	0.01	ND	0.01	ND 0.01
Chrysene		µg		0.0253	ND	0.01	ND 0.01
Benzo (b) fluoranthene		µg	ND	0.01	ND	0.01	ND 0.01
Benzo (k) fluoranthene		µg	ND	0.01	ND	0.01	ND 0.01
Benzo (e) pyrene		µg	ND	0.01	ND	0.01	ND 0.01
Benzo (a) pyrene		µg	ND	0.01	ND	0.01	ND 0.01
Perylene		µg	ND	0.01	ND	0.01	ND 0.01
Indeno (1,2,3-cd) pyrene		µg	ND	0.01	ND	0.01	ND 0.01
Dibenz (a,h) anthracene		µg	ND	0.01	ND	0.01	ND 0.01
Benzo (g,h,i) perylene		µg	ND	0.01	ND	0.01	ND 0.01
Total PAH		µg		9.2		0.7	2.3

CARB Method 429 PAH Emissions

PAH Molecular Weight	MW				
Naphthalene		lb/lb-mole	128.2	128.2	128.2
2-Methylnaphthalene		lb/lb-mole	142.0	142.0	142.0
Acenapthene		lb/lb-mole	154.2	154.2	154.2
Acenapthylene		lb/lb-mole	152.0	152.0	152.0
Fluorene		lb/lb-mole	166.2	166.2	166.2
Phenanthrene		lb/lb-mole	178.2	178.2	178.2
Anthracene		lb/lb-mole	178.2	178.2	178.2
Fluoranthene		lb/lb-mole	202.0	202.0	202.0
Pyrene		lb/lb-mole	202.2	202.2	202.2
Benzo (a) anthracene		lb/lb-mole	228.3	228.3	228.3
Chrysene		lb/lb-mole	228.3	228.3	228.3
Benzo (b) fluoranthene		lb/lb-mole	252.0	252.0	252.0
Benzo (k) fluoranthene		lb/lb-mole	252.0	252.0	252.0
Benzo (e) pyrene		lb/lb-mole	252.3	252.3	252.3
Benzo (a) pyrene		lb/lb-mole	252.3	252.3	252.3
Perylene		lb/lb-mole	252.0	252.0	252.0
Indeno (1,2,3-cd) pyrene		lb/lb-mole	276.0	276.0	276.0
Dibenz (a,h) anthracene		lb/lb-mole	278.3	278.3	278.3
Benzo (g,h,i) perylene		lb/lb-mole	276.0	276.0	276.0

Calculated Data	Symbol	Units	Data	Data	Data
Run Number	-	-	1	2	3
Nozzle Area, An = 3.14(dn)**2/4	An	sq. in.	0.44	0.44	0.44
Stack Area, As = 3.14*(ds)**2/4 = L * W/144 (Rectangular)	As	sq. feet	16.499	16.499	16.499
Avg. Stack Temperature, Ts = Fs + 460	Ts	degrees R	1783.38	1835.00	1835.00
Avg. Meter Temperature, Tm = Fm + 460	Tm	degrees R	530.56	524.38	524.00
Gas Sample Volume @ Standard Conditions, VmStd = 17.64 Y (Vm/Tm) (Pbar + dH/13.6)	VmStd	cubic ft.	78.53	73.41	75.66
Volume of Water Vapor, VwStd = 0.04707*Ww	VwStd	cubic ft.	6.14	6.80	5.54
Moist. Fraction, Bws = VwStd/(VmStd + VwStd)	Bws	-	0.072	0.085	0.068
Dry Stack Gas Mol. Weight, Md = 0.32(Co2,m)+ 0.44(Cco2,m)+0.28{100-(Co2,m)-(Cco2,m)]	Md	g/g-mole	29.47	29.47	29.46
Wet Stack Gas Molecular Weight, Mw = Md(1-Bws)+18.0(Bws)	Mw	g/g-mole	28.64	28.49	28.68
Absolute Stack Pressure, Ps = Pbar + Pg/13.6	Ps	in. Hg	29.94	29.94	29.97
Stack Gas Velocity Vs = 85.49 Cp { sqrt[(dP*Ts) /(Ps*Mw)] } Vsm = 0.3048 * vs	Vs Vsm	ft/s m/s	12.21 3.72	12.41 3.78	12.37 3.77
Actual Stack Gas Flow Rate, Q = 60*vs*As	Q	acf/min	12,084	12,288	12,242
Dry Gas Stack Flowrate (Dry,STD) Qsd = 17.64*Q*(1-Bws)*(Ps/Ts)	Qsd	dscf/min	3,320	3,238	3,288
Qsdm = Qsd/35.32	Qsdm	dscm/min	94	92	93
Isokinetic Rate, I=13.61*Ts*VmStd/[Ps*vs*An*min*(1-Bws)]	I	%	106.07	101.67	103.21

CARB Method 429 PAH Emissions

PAH Concentration Ci = Mi/VmStd *35.31e-3	Ci							
Naphthalene		mg/dscm	0	1.38E-04	0	1.19E-04	0	3.10E-04
2-Methylnaphthalene		mg/dscm	0	6.38E-05	0	4.49E-05	0	2.01E-04
Acenapthene		mg/dscm	0	2.52E-04	0	1.28E-05	0	8.03E-05
Acenapthylene		mg/dscm	0	5.62E-06	ND	4.81E-06	0	1.24E-05
Fluorene		mg/dscm	0	7.69E-04	0	2.46E-05	0	9.85E-05
Phenanthrene		mg/dscm	0	2.81E-03	0	6.69E-05	0	2.07E-04
Anthracene		mg/dscm	0	2.08E-05	ND	4.81E-06	0	9.61E-06
Fluoranthene		mg/dscm	0	1.57E-05	0	5.34E-06	0	2.41E-05
Pyrene		mg/dscm	0	2.31E-05	0	7.84E-06	0	6.72E-05
Benzo (a) anthracene		mg/dscm	ND	4.50E-06	ND	4.81E-06	ND	4.67E-06
Chrysene		mg/dscm	0	1.14E-05	ND	4.81E-06	ND	4.67E-06
Benzo (b) fluoranthene		mg/dscm	ND	4.50E-06	ND	4.81E-06	ND	4.67E-06
Benzo (k) fluoranthene		mg/dscm	ND	4.50E-06	ND	4.81E-06	ND	4.67E-06
Benzo (e) pyrene		mg/dscm	ND	4.50E-06	ND	4.81E-06	ND	4.67E-06
Benzo (a) pyrene		mg/dscm	ND	4.50E-06	ND	4.81E-06	ND	4.67E-06
Perylene		mg/dscm	ND	4.50E-06	ND	4.81E-06	ND	4.67E-06
Indeno (1,2,3-cd) pyrene		mg/dscm	ND	4.50E-06	ND	4.81E-06	ND	4.67E-06
Dibenz (a,h) anthracene		mg/dscm	ND	4.50E-06	ND	4.81E-06	ND	4.67E-06
Benzo (g,h,i) perylene		mg/dscm	ND	4.50E-06	ND	4.81E-06	ND	4.67E-06
Total PAH		mg/dscm	0	4.15E-03	0	3.39E-04	0	1.06E-03

PAH Mass Flow Rate Ei = Ci*Qsdm*60/454000	Ei							
Naphthalene		lb/hr	0	1.71E-06	0	1.44E-06	0	3.82E-06
2-Methylnaphthalene		lb/hr	0	7.93E-07	0	5.44E-07	0	2.47E-06
Acenapthene		lb/hr	0	3.13E-06	0	1.55E-07	0	9.87E-07
Acenapthylene		lb/hr	0	6.98E-08	ND	5.83E-08	0	1.52E-07
Fluorene		lb/hr	0	9.55E-06	0	2.98E-07	0	1.21E-06
Phenanthrene		lb/hr	0	3.50E-05	0	8.10E-07	0	2.55E-06
Anthracene		lb/hr	0	2.59E-07	ND	5.83E-08	0	1.18E-07
Fluoranthene		lb/hr	0	1.95E-07	0	6.47E-08	0	2.96E-07
Pyrene		lb/hr	0	2.87E-07	0	9.50E-08	0	8.27E-07
Benzo (a) anthracene		lb/hr	ND	5.59E-08	ND	5.83E-08	ND	5.74E-08
Chrysene		lb/hr	0	1.41E-07	ND	5.83E-08	ND	5.74E-08
Benzo (b) fluoranthene		lb/hr	ND	5.59E-08	ND	5.83E-08	ND	5.74E-08
Benzo (k) fluoranthene		lb/hr	ND	5.59E-08	ND	5.83E-08	ND	5.74E-08
Benzo (e) pyrene		lb/hr	ND	5.59E-08	ND	5.83E-08	ND	5.74E-08
Benzo (a) pyrene		lb/hr	ND	5.59E-08	ND	5.83E-08	ND	5.74E-08
Perylene		lb/hr	ND	5.59E-08	ND	5.83E-08	ND	5.74E-08
Indeno (1,2,3-cd) pyrene		lb/hr	ND	5.59E-08	ND	5.83E-08	ND	5.74E-08
Dibenz (a,h) anthracene		lb/hr	ND	5.59E-08	ND	5.83E-08	ND	5.74E-08
Benzo (g,h,i) perylene		lb/hr	ND	5.59E-08	ND	5.83E-08	ND	5.74E-08
Total PAH		lb/hr	0	5.16E-05	0	4.11E-06	0	1.30E-05

CARB Method 429 PAH Emissions

PAH Concentration C,ppm = Mi/VmStd *22.4/MW	C,ppm							
Naphthalene		ppm	0	2.54E-05	0	2.19E-05	0	5.73E-05
2-Methylnaphthalene		ppm	0	1.06E-05	0	7.48E-06	0	3.35E-05
Acenaphthene		ppm	0	3.87E-05	0	1.96E-06	0	1.23E-05
Acenapthylene		ppm	0	8.75E-07	ND	7.49E-07	0	1.93E-06
Fluorene		ppm	0	1.10E-04	0	3.50E-06	0	1.40E-05
Phenanthrene		ppm	0	3.74E-04	0	8.88E-06	0	2.75E-05
Anthracene		ppm	0	2.77E-06	ND	6.39E-07	0	1.28E-06
Fluoranthene		ppm	0	1.84E-06	0	6.26E-07	0	2.82E-06
Pyrene		ppm	0	2.70E-06	0	9.18E-07	0	7.87E-06
Benzo (a) anthracene		ppm	ND	4.66E-07	ND	4.99E-07	ND	4.84E-07
Chrysene		ppm	0	1.18E-06	ND	4.99E-07	ND	4.84E-07
Benzo (b) fluoranthene		ppm	ND	4.22E-07	ND	4.52E-07	ND	4.39E-07
Benzo (k) fluoranthene		ppm	ND	4.22E-07	ND	4.52E-07	ND	4.39E-07
Benzo (e) pyrene		ppm	ND	4.22E-07	ND	4.51E-07	ND	4.38E-07
Benzo (a) pyrene		ppm	ND	4.22E-07	ND	4.51E-07	ND	4.38E-07
Perylene		ppm	ND	4.22E-07	ND	4.52E-07	ND	4.39E-07
Indeno (1,2,3-cd) pyrene		ppm	ND	3.86E-07	ND	4.13E-07	ND	4.00E-07
Dibenz (a,h) anthracene		ppm	ND	3.82E-07	ND	4.09E-07	ND	3.97E-07
Benzo (g,h,i) perylene		ppm	ND	3.86E-07	ND	4.13E-07	ND	4.00E-07

IMPINGER	FINAL WT.	ITIAL W	NET
1	775.2	676.3	98.9
2	698.5	697.7	0.8
3	621.5	619.3	2.2
4	876.5	848	28.5
		TOTAL	130.4
	Run	1	

	dH	dP	sqrt (dP)	Vm	Ts	Tm, i
1	1.60	0.01	0.1	286.00	1335	71
2	1.60	0.01	0.1		1341	70
3	1.60	0.01	0.1		1305	72
4	1.60	0.01	0.1		1322	71
5	1.60	0.01	0.1		1299	70
6	1.60	0.01	0.1		1288	71
7	1.60	0.01	0.1		1265	70
8	1.60	0.01	0.1		1350	70
9	1.60	0.01	0.1		1336	71
10	1.60	0.01	0.1		1315	71
11	1.60	0.01	0.1		1326	70
12	1.60	0.01	0.1		1352	70
13	1.60	0.01	0.1		1317	71
14	1.60	0.01	0.1		1346	70
15	1.60	0.01	0.1		1335	71
16	1.60	0.01	0.1		1342	70
17						
18						
19						
20						
21						
22						
23						
24				364.66		
AVERAGE	**1.6**	**0.01**	**0.1**	**78.66**	**1323.375**	**71**
			0.01			

PAHs

IMPINGER	FINAL WT.	NITIAL WT	NET
1	766.4	649.4	117
2	678	680	-2
3	621.6	621.5	0.1
4	898.5	869.1	29.4
		TOTAL	144.5
	Run	2	

	dH	dP	sqrt (dP)	Vm	Ts	Tm, in	Tm, out
1	1.60	0.01	0.1	368.56	1362	67	
2	1.60	0.01	0.1		1369	66	
3	1.60	0.01	0.1		1372	66	
4	1.60	0.01	0.1		1359	66	
5	1.60	0.01	0.1		1364	66	
6	1.60	0.01	0.1		1372	67	
7	1.60	0.01	0.1		1388	64	
8	1.60	0.01	0.1		1345	64	
9	1.60	0.01	0.1		1386	65	
10	1.60	0.01	0.1		1379	63	
11	1.60	0.01	0.1		1392	63	
12	1.60	0.01	0.1		1401	63	
13	1.60	0.01	0.1		1394	63	
14	1.60	0.01	0.1		1382	63	
15	1.60	0.01	0.1		1366	62	
16	1.60	0.01	0.1		1369	62	
17							
18							
19							
20							
21							
22							
23							
24				441.23			
AVERAGE	**1.6**	**0.01**	**0.1**	**72.67**	**1375**		**64**
			0.01				

PAHs

IMPINGER	FINAL WT.	NITIAL WT	NET
1	768.8	669.4	99.4
2	675.9	675.5	0.4
3	620.8	621.6	-0.8
4	892.7	874.1	18.6
		TOTAL	117.6
	Run	3	

	dH	dP	sqrt (dP)	Vm	Ts	Tm, in	Tm, out
1	1.60	0.01	0.1	445	1358	72	
2	1.60	0.01	0.1		1351	73	
3	1.60	0.01	0.1		1356	73	
4	1.60	0.01	0.1		1365	73	
5	1.60	0.01	0.1		1372	74	
6	1.60	0.01	0.1		1364	73	
7	1.60	0.01	0.1		1359	74	
8	1.60	0.01	0.1		1342	73	
9	1.60	0.01	0.1		1393	73	
10	1.60	0.01	0.1		1399	73	
11	1.60	0.01	0.1		1389	72	
12	1.60	0.01	0.1		1374	72	
13	1.60	0.01	0.1		1383	72	
14	1.60	0.01	0.1		1394	72	
15	1.60	0.01	0.1		1405	72	
16	1.60	0.01	0.1		1396	71	
17							
18							
19							
20							
21							
22							
23							
24				519.77			
AVERAGE	**1.6**	**0.01**	**0.1**	**74.77**	**1375**		**73**
			0.01				

Vista
Analytical Laboratory

October 04, 2010

Vista Project I.D.: 32806

Mr. Russ Logan
Total Air Analysis
1210 East 223rd Street Suite 314
Carson, CA 90745

Dear Mr. Logan,

Enclosed are the results for the four MM5 samples received at Vista Analytical Laboratory on September 14 and Septemeber 17, 2010 under your Project Name "Santa Maria Flare". These samples were extracted and analyzed using CARB Method 429 for PAHs. A standard turnaround time was provided for this work. The reagent sample was placed on hold.

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

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com. Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha M. Maier
Laboratory Director

Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAC for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista Analytical Laboratory.

Section I: Sample Inventory Report

Date Received: 9/14/2010
Project No.: 32806
Project Name: Santa Maria Flare

Lab. Sample ID	Client Sample ID	Component ID
001	FLARE RUN 1	BH RINSE
		FH RINSE
		FILTER
		IMP
		XAD
002	FLARE RUN 2	BH RINSE
		FH RINSE
		FILTER
		IMP
		XAD
003	FLARE RUN 3	BH RINSE
		FH RINSE
		FILTER
		IMP
		XAD
004	FIELD BLANK	BH RINSE
		FH RINSE
		FILTER
		IMP
		XAD
005	REAGENT	ACETONE
		HEXANE
		MeCl2
		WATER

Smpinvgnmm5.rpt

SECTION II

Method Blank — **CARB Method 429**

Matrix:	MM5	QC Batch No.:	3305	Lab Sample:	0-MB001
Sample Size:	Sample	Date Extracted:	21-Sep-10	Date Analyzed DB-5:	

Analyte	Conc. (ng/Sample)	RL [a]	Qualifiers
Naphthalene	43.3	25.0	
2-Methylnaphthalene	ND	10.0	
Acenaphthylene	ND	10.0	
Acenaphthene	ND	10.0	
Fluorene	ND	10.0	
Phenanthrene	ND	25.0	
Anthracene	ND	10.0	
Fluoranthene	ND	10.0	
Pyrene	ND	10.0	
Benz(a)anthracene	ND	10.0	
Chrysene	ND	10.0	
Benzo(b)fluoranthene	ND	10.0	
Benzo(k)fluoranthene	ND	10.0	
Benzo(e)pyrene	ND	10.0	
Benzo(a)pyrene	ND	10.0	
Perylene	ND	10.0	
Indeno(1,2,3-c,d)pyrene	ND	10.0	
Dibenz(a,h)anthracene	ND	10.0	
Benzo(g,h,i)perylene	ND	10.0	

	Labeled Standard [b]	%R	LCL-UCL [c]	Qualifiers
IS	d8-Naphthalene	90.5	50 - 150	
	d8-Acenaphthylene	82.5	50 - 150	
	d10-Acenaphthene	84.2	50 - 150	
	d10-Fluorene	82.4	50 - 150	
	d10-Phenanthrene	86.1	50 - 150	
	d10-Fluoranthene	93.3	50 - 150	
	d12-Benz(a)anthracene	90.7	50 - 150	
	d12-Chrysene	88.5	50 - 150	
	d12-Benzo(b)fluoranthene	100	50 - 150	
	d12-Benzo(k)fluoranthene	97.7	50 - 150	
	d12-Benzo(a)pyrene	89.1	50 - 150	
	d12-Indeno(1,2,3-c,d)pyrene	91.4	50 - 150	
	d14-Dibenz(a,h)anthracene	90.0	50 - 150	
	d12-Benzo(g,h,i)perylene	92.8	50 - 150	
PS	d14-Terphenyl	111	50 - 150	
	d12-Benzo(e)pyrene	112	50 - 150	
AS	d10-Anthracene	85.1	50 - 150	

a. Reporting limit.

b. IS, Internal Standards; PS, Pre-Spike Surrogates; AS, Alternate Spike

c. Lower control limit - upper control limit.

Analyst: MAS

Approved By: Martha M. Maier 04-Oct-2010 12:47

Vista

LCS Results — CARB Method 429

Matrix:	MM5	QC Batch No.:	3305	Lab Sample: 0-001LCS1/LCS2	Date Analyzed DB-5:
Sample Size:	Sample	Date Extracted:	21-Sep-10		

Analyte	LCS1-%R	LCS2-%R	RPD
Naphthalene	124	127	2.39
2-Methylnaphthalene	119	124	4.12
Acenaphthylene	129	130	0.772
Acenaphthene	112	121	7.73
Fluorene	119	118	0.844
Phenanthrene	113	116	2.62
Anthracene	106	123	14.8
Fluoranthene	118	118	0
Pyrene	121	117	3.36
Benz(a)anthracene	122	120	1.65
Chrysene	121	118	2.51
Benzo(b)fluoranthene	119	124	4.12
Benzo(k)fluoranthene	124	117	5.81
Benzo(e)pyrene	119	113	5.17
Benzo(a)pyrene	125	133	6.20
Perylene	121	128	5.62
Indeno(1,2,3-c,d)pyrene	123	125	1.61
Dibenz(a,h)anthracene	125	127	1.59
Benzo(g,h,i)perylene	121	121	0

IS Type	Internal Standard	LCS1-%R	LCS2-%R
IS	d8-Naphthalene	88.3	85.3
	d8-Acenaphthylene	85.2	85.1
	d10-Acenaphthene	89.6	86.7
	d10-Fluorene	89.6	92.1
	d10-Phenanthrene	95.2	97.9
	d10-Fluoranthene	92.9	94.1
	d12-Benz(a)anthracene	94.7	95.1
	d12-Chrysene	94.9	95.6
	d12-Benzo(b)fluoranthene	96.6	97.7
	d12-Benzo(k)fluoranthene	94.3	103
	d12-Benzo(a)pyrene	87.6	87.6
	d12-Indeno(1,2,3-c,d)pyrene	93.3	97.5
	d14-Dibenz(a,h)anthracene	92.2	96.2
	d12-Benzo(g,h,i)perylene	91.6	98.3
PS	d14-Terphenyl	NA	NA
	d12-Benzo(e)pyrene	NA	NA
AS	d10-Anthracene	102	100

Chemist: MAS

Approved By: Martha M. Maier 04-Oct-2010 12:47

Vista

Sample ID: **FLARE RUN 1** **CARB Method 429**

Client Data		Sample Data		Laboratory Data			
Name:	Total Air Analysis	Matrix:	MM5	Lab Sample:	32806-001	Date Received:	14-Sep-10
Project:	Santa Maria Flare	Sample Size:	Sample	QC Batch No.:	3305	Date Extracted:	21-Sep-10
Date Collected:	9-Sep-10			Date Analyzed DB-5:			
Time Collected:	NA						

Analyte	Conc. (ng/Sample)	RL [a]	Qualifiers
Naphthalene	306	217	B
2-Methylnaphthalene	142	10.0	
Acenaphthylene	12.5	10.0	
Acenaphthene	561	10.0	
Fluorene	1710	10.0	
Phenanthrene	6260	25.0	
Anthracene	46.3	10.0	
Fluoranthene	34.9	10.0	
Pyrene	51.3	10.0	
Benz(a)anthracene	ND	10.0	
Chrysene	25.3	10.0	
Benzo(b)fluoranthene	ND	10.0	
Benzo(k)fluoranthene	ND	10.0	
Benzo(e)pyrene	ND	10.0	
Benzo(a)pyrene	ND	10.0	
Perylene	ND	10.0	
Indeno(1,2,3-c,d)pyrene	ND	10.0	
Dibenz(a,h)anthracene	ND	10.0	
Benzo(g,h,i)perylene	ND	10.0	

	Labeled Standard [b]	%R	LCL-UCL [c]	Qualifiers
IS	d8-Naphthalene	87.6	50 - 150	
	d8-Acenaphthylene	96.8	50 - 150	
	d10-Acenaphthene	91.3	50 - 150	
	d10-Fluorene	101	50 - 150	
	d10-Phenanthrene	120	50 - 150	
	d10-Fluoranthene	97.7	50 - 150	
	d12-Benz(a)anthracene	104	50 - 150	
	d12-Chrysene	100	50 - 150	
	d12-Benzo(b)fluoranthene	107	50 - 150	
	d12-Benzo(k)fluoranthene	98.7	50 - 150	
	d12-Benzo(a)pyrene	96.5	50 - 150	
	d12-Indeno(1,2,3-c,d)pyrene	92.1	50 - 150	
	d14-Dibenz(a,h)anthracene	95.0	50 - 150	
	d12-Benzo(g,h,i)perylene	86.1	50 - 150	
PS	d14-Terphenyl	119	50 - 150	
	d12-Benzo(e)pyrene	106	50 - 150	
AS	d10-Anthracene	122	50 - 150	

a. Reporting limit.
b. IS, Internal Standards; PS, Pre-Spike Surrogates; AS, Alternate Spike
c. Lower control limit - upper control limit.

Analyst: MAS

Approved By: Martha M. Maier 04-Oct-2010 12:47

Vista

Sample ID: **FLARE RUN 2** **CARB Method 429**

Client Data		Sample Data		Laboratory Data			
Name:	Total Air Analysis	Matrix:	MM5	Lab Sample:	32806-002	Date Received:	14-Sep-10
Project:	Santa Maria Flare	Sample Size:	Sample	QC Batch No.:	3305	Date Extracted:	21-Sep-10
Date Collected:	9-Sep-10			Date Analyzed DB-5:			
Time Collected:	NA						

Analyte	Conc. (ng/Sample)	RL [a]	Qualifiers
Naphthalene	247	217	B
2-Methylnaphthalene	93.3	10.0	
Acenaphthylene	ND	10.0	
Acenaphthene	26.6	10.0	
Fluorene	51.1	10.0	
Phenanthrene	139	25.0	
Anthracene	ND	10.0	
Fluoranthene	11.1	10.0	
Pyrene	16.3	10.0	
Benz(a)anthracene	ND	10.0	
Chrysene	ND	10.0	
Benzo(b)fluoranthene	ND	10.0	
Benzo(k)fluoranthene	ND	10.0	
Benzo(e)pyrene	ND	10.0	
Benzo(a)pyrene	ND	10.0	
Perylene	ND	10.0	
Indeno(1,2,3-c,d)pyrene	ND	10.0	
Dibenz(a,h)anthracene	ND	10.0	
Benzo(g,h,i)perylene	ND	10.0	

	Labeled Standard [b]	%R	LCL-UCL [c]	Qualifiers
IS	d8-Naphthalene	86.1	50 - 150	
	d8-Acenaphthylene	87.3	50 - 150	
	d10-Acenaphthene	95.6	50 - 150	
	d10-Fluorene	91.1	50 - 150	
	d10-Phenanthrene	102	50 - 150	
	d10-Fluoranthene	95.5	50 - 150	
	d12-Benz(a)anthracene	99.9	50 - 150	
	d12-Chrysene	95.8	50 - 150	
	d12-Benzo(b)fluoranthene	100	50 - 150	
	d12-Benzo(k)fluoranthene	99.3	50 - 150	
	d12-Benzo(a)pyrene	93.7	50 - 150	
	d12-Indeno(1,2,3-c,d)pyrene	89.9	50 - 150	
	d14-Dibenz(a,h)anthracene	91.6	50 - 150	
	d12-Benzo(g,h,i)perylene	85.1	50 - 150	
PS	d14-Terphenyl	119	50 - 150	
	d12-Benzo(e)pyrene	105	50 - 150	
AS	d10-Anthracene	113	50 - 150	

a. Reporting limit.
b. IS, Internal Standards; PS, Pre-Spike Surrogates; AS, Alternate Spike
c. Lower control limit - upper control limit.

Analyst: MAS

Approved By: Martha M. Maier 04-Oct-2010 12:47

Vista

Sample ID: FLARE RUN 3 **CARB Method 429**

Client Data
Name: Total Air Analysis
Project: Santa Maria Flare
Date Collected: 10-Sep-10
Time Collected: NA

Sample Data
Matrix: MM5
Sample Size: Sample

Laboratory Data
Lab Sample: 32806-003 Date Received: 14-Sep-10
QC Batch No.: 3305 Date Extracted: 21-Sep-10
Date Analyzed DB-5:

Analyte	Conc. (ng/Sample)	RL [a]	Qualifiers
Naphthalene	665	217	B
2-Methylnaphthalene	430	10.0	
Acenaphthylene	26.5	10.0	
Acenaphthene	172	10.0	
Fluorene	211	10.0	
Phenanthrene	444	25.0	
Anthracene	20.6	10.0	
Fluoranthene	51.6	10.0	
Pyrene	144	10.0	
Benz(a)anthracene	ND	10.0	
Chrysene	ND	10.0	
Benzo(b)fluoranthene	ND	10.0	
Benzo(k)fluoranthene	ND	10.0	
Benzo(e)pyrene	ND	10.0	
Benzo(a)pyrene	ND	10.0	
Perylene	ND	10.0	
Indeno(1,2,3-c,d)pyrene	ND	10.0	
Dibenz(a,h)anthracene	ND	10.0	
Benzo(g,h,i)perylene	ND	10.0	

	Labeled Standard [b]	%R	LCL-UCL [c]	Qualifiers
IS	d8-Naphthalene	83.3	50 - 150	
	d8-Acenaphthylene	88.5	50 - 150	
	d10-Acenaphthene	88.7	50 - 150	
	d10-Fluorene	97.0	50 - 150	
	d10-Phenanthrene	106	50 - 150	
	d10-Fluoranthene	97.2	50 - 150	
	d12-Benz(a)anthracene	100	50 - 150	
	d12-Chrysene	97.1	50 - 150	
	d12-Benzo(b)fluoranthene	102	50 - 150	
	d12-Benzo(k)fluoranthene	100	50 - 150	
	d12-Benzo(a)pyrene	92.0	50 - 150	
	d12-Indeno(1,2,3-c,d)pyrene	92.2	50 - 150	
	d14-Dibenz(a,h)anthracene	94.6	50 - 150	
	d12-Benzo(g,h,i)perylene	83.3	50 - 150	
PS	d14-Terphenyl	115	50 - 150	
	d12-Benzo(e)pyrene	98.2	50 - 150	
AS	d10-Anthracene	107	50 - 150	

a. Reporting limit.
b. IS, Internal Standards; PS, Pre-Spike Surrogates; AS, Alternate Spike
c. Lower control limit - upper control limit.

Analyst: MAS

Approved By: Martha M. Maier 04-Oct-2010 12:47

Vista

Sample ID: **FIELD BLANK** **CARB Method 429**

Client Data		Sample Data		Laboratory Data			
Name:	Total Air Analysis	Matrix:	MM5	Lab Sample:	32806-004	Date Received:	17-Sep-10
Project:	Santa Maria Flare	Sample Size:	Sample	QC Batch No.:	3305	Date Extracted:	21-Sep-10
Date Collected:	10-Sep-10			Date Analyzed DB-5:			
Time Collected:	NA						

Analyte	Conc. (ng/Sample)	RL [a]	Qualifiers
Naphthalene	335	217	B
2-Methylnaphthalene	364	10.0	
Acenaphthylene	16.3	10.0	
Acenaphthene	78.2	10.0	
Fluorene	137	10.0	
Phenanthrene	239	25.0	
Anthracene	11.0	10.0	
Fluoranthene	13.2	10.0	
Pyrene	10.7	10.0	
Benz(a)anthracene	ND	10.0	
Chrysene	ND	10.0	
Benzo(b)fluoranthene	ND	10.0	
Benzo(k)fluoranthene	ND	10.0	
Benzo(e)pyrene	ND	10.0	
Benzo(a)pyrene	ND	10.0	
Perylene	ND	10.0	
Indeno(1,2,3-c,d)pyrene	ND	10.0	
Dibenz(a,h)anthracene	ND	10.0	
Benzo(g,h,i)perylene	ND	10.0	

	Labeled Standard [b]	%R	LCL-UCL [c]	Qualifiers
IS	d8-Naphthalene	86.0	50 - 150	
	d8-Acenaphthylene	88.0	50 - 150	
	d10-Acenaphthene	74.9	50 - 150	
	d10-Fluorene	92.5	50 - 150	
	d10-Phenanthrene	111	50 - 150	
	d10-Fluoranthene	99.2	50 - 150	
	d12-Benz(a)anthracene	99.2	50 - 150	
	d12-Chrysene	98.7	50 - 150	
	d12-Benzo(b)fluoranthene	111	50 - 150	
	d12-Benzo(k)fluoranthene	101	50 - 150	
	d12-Benzo(a)pyrene	97.7	50 - 150	
	d12-Indeno(1,2,3-c,d)pyrene	94.9	50 - 150	
	d14-Dibenz(a,h)anthracene	97.3	50 - 150	
	d12-Benzo(g,h,i)perylene	86.9	50 - 150	
PS	d14-Terphenyl	114	50 - 150	
	d12-Benzo(e)pyrene	106	50 - 150	
AS	d10-Anthracene	114	50 - 150	

a. Reporting limit.
b. IS, Internal Standards; PS, Pre-Spike Surrogates; AS, Alternate Spike
c. Lower control limit - upper control limit.

Analyst: MAS

Approved By: Martha M. Maier 04-Oct-2010 12:47

APPENDIX

Vista

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank.
D	Dilution
E	The amount detected is above the High Calibration Limit.
P	The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference.
H	Recovery was outside laboratory acceptance limits.
I	Chemical Interference
J	The amount detected is below the Low Calibration Limit.
*	See Cover Letter
Conc.	Concentration
DL	Sample-specific estimated detection limit
MDL	The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested.
EMPC	Estimated Maximum Possible Concentration
NA	Not applicable
RL	Reporting Limit – concentrations that correspond to low calibration point
ND	Not Detected
TEQ	Toxic Equivalency

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

CERTIFICATIONS

Accrediting Authority	Certificate Number
State of Alaska, DEC	CA413-2008
State of Arizona	AZ0639
State of Arkansas, DEQ	08-043-0
State of Arkansas, DOH	Reciprocity through CA
State of California – NELAP Primary AA	02102CA
State of Colorado	N/A
State of Connecticut	PH-0182
State of Florida, DEP	E87777
State of Indiana Department of Health	C-CA-02
Commonwealth of Kentucky	90063
State of Louisiana, Health and Hospitals	LA08000
State of Louisiana, DEQ	01977
State of Maine	2008024
State of Michigan	9932
State of Mississippi	Reciprocity through CA
Naval Facilities Engineering Service Center	NFESC413
State of Nevada	CA004132007A
State of New Jersey	CA003
State of New Mexico	Reciprocity through CA
State of New York, DOH	11411
State of North Carolina	06700
State of North Dakota, DOH	R-078
State of Oklahoma	D9919
State of Oregon	CA200001-006
State of Pennsylvania	68-00490
State of South Carolina	87002001
State of Tennessee	TN02996
State of Texas	T104704189-08-TX
U.S. Army Corps of Engineers	N/A
State of Utah	CA16400
Commonwealth of Virginia	00013
State of Washington	C1285
State of Wisconsin	998036160
State of Wyoming	8TMS-Q

Laboratory: Vista

TOTAL AIR ANALYSIS, INC.

32806, 2.0°C

1210 East 223 rd Street, # 314 Carson, CA 90745 (310) 518 5133 Fax: (310) 518 5107

CHAIN OF CUSTODY

Page: 1 of: 2

Client: Santa Maria Flare

Contact Person: Russ Logan

tel:

fax:

Project No.: JA-100887

Project Name: Flare

Project Manager: RPL

P.O. Number:

Analysis: CARB 429, PAHs

Turnaround Time:

- ☐ Same Day
- ☐ 24 Hours
- ☐ 48 Hours
- ☑ Normal

Total Air ID #	Client Sample ID	Summa Canister #	Date	Type of Sample	Lab ID Number	Analysis	Remarks
	Flare Run #1 - Front ½	—	9/9/10	Liquid		✓	Solvent Rinses
	" Run #1 - Back ½	—		"		✓	Imp. + Rinses
	Flare Run 1 - Filter	—		Solid		✓	
	" Run 1 - XAD	—		"		✓	
	Flare Run 2 - Front ½	—	9/9/10	Liquid		✓	
	" Run 2 - Back ½	—		"		✓	
	Flare Run 2 - Filter	—		Solid		✓	
	" Run 2 - XAD	—		"		✓	
	Hexane - Reagent	—	9/10/10	Liquid		✓	50 mls
	Methylene Chloride	—	"	"		✓	"

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/time
	9/13/10 @ 18:00	Randa Burrell	9/14/10 1515
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/time

Laboratory: Vista

TOTAL AIR ANALYSIS, INC. 32806

1210 East 223 rd Street, # 314 Carson, CA 90745 (310) 518 5133 Fax: (310) 518 5107

CHAIN OF CUSTODY

Client: Santa Maria Flare

Contact Person: Russ Logan

tel:

fax:

Project No.: JA-100887

Project Name: Flare

Project Manager: RSL

P.O. Number:

Analysis: CARB 429 PAHs

Turnaround Time:

- ☐ Same Day
- ☐ 24 Hours
- ☐ 48 Hours
- ☑ Normal

Total Air ID #	Client Sample ID	Summa Canister #	Date	Type of Sample	Lab ID Number	Remarks
	Flare Run 3 - Front 1/2	—	9/10/10	Liquid		
	" Run 3 - Back 1/2	—		"		
	Flare Run 3 - Filter	—		Solid		
	" Run 3 - XAD	—		"		
X	Field Blank - Front 1/2	—	9/10/10	Liquid		
X	" " - Back 1/2	—		"		
	Field Blank - Filter	—		Solid		
	" Blank - XAD	—		"		
	Reagent Water	—	9/10/10	Liquid		50 mls
	Acetone	—	"	"		"

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/time
	9/13/10 @ 18:00	Ronda Burnell	9/14/10 1515
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/time
		* Ronda Burnell	9/17/10 1002

SAMPLE LOG-IN CHECKLIST

Vista Analytical Laboratory

Vista Project #: 32806 **TAT** Standard

Samples Arrival:	**Date/Time** 9/14/10 0839	**Initials:** YBB	**Location:** WR-2 **Shelf/Rack:** N/A
Logged In:	**Date/Time** 9/14/10 1528	**Initials:** RB	**Location:** R-1 **Shelf/Rack:** N/A

Delivered By:	(FedEx)	UPS	Cal	DHL	Hand Delivered	Other
Preservation:	Ice	(Blue Ice)	Dry Ice	None		
Temp °C 2.0°C	**Time:** 0951		**Thermometer ID:** IR-2			

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?			✓
Shipping Documentation Present?	✓		
Airbill / Trk # 7939 0916 8800	✓		
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Chain of Custody / Sample Documentation Present?	✓		
COC Anomaly/Sample Acceptance Form completed?	✓		
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			✓

$Na_2S_2O_3$ Preservation Documented?	COC	Sample Container	(None)	
Shipping Container	(Vista)	Client	Retain	(Return) Dispose

Comments:

FLARE RUN 1 + RUN 2 + RUN 3 | FH RINSE | IMP BACK ½ | FILTER | XAD

REAGENT H_2O HEXANE MeCl ACETONE

FIELD BLANK XAD

EMPTY PETRI DISH

SAMPLE LOG-IN CHECKLIST

Vista Analytical Laboratory

Vista Project #: 32806 TAT Standard

Samples Arrival:	**Date/Time** 9/17/10 0859	**Initials:** RB	**Location:** WR-2 **Shelf/Rack:** N/A
Logged In:	**Date/Time** 9/17/10 0957	**Initials:** RB	**Location:** R-1 **Shelf/Rack:** N/A

Delivered By:	(FedEx)	UPS	Cal	DHL	Hand Delivered	Other
Preservation:	Ice	(Blue Ice)	Dry Ice	None		
Temp °C 6.9	**Time:** 0920	**Thermometer ID:** IR-1				

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?			✓
Shipping Documentation Present?	✓		
Airbill Trk # 7939 2255 7579	✓		
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Chain of Custody / Sample Documentation Present?	✓		
COC Anomaly/Sample Acceptance Form completed?	✓		

If Chlorinated or Drinking Water Samples, Acceptable Preservation?					✓
$Na_2S_2O_3$ Preservation Documented?	COC	Sample Container	(None)		
Shipping Container	Vista	(Client)	Retain	(Return)	Dispose

Comments:

Field Blank + Front ½ Rinses Back ½

Chain of Custody Anomaly/Sample Acceptance Form

Client: Total Air Analysis
Contact: Russ Logan
Fax Number: 310-5185107

Project Number 32806
Date Received: Sep 14 2010
Documented by/date: RB 9/14/10
XX RB 9/17/10

Please review the following information and complete the Client Authorization section. To comply with NELAC regulations, we must receive authorization before proceeding with sample analysis.
Thank You. (Fax # 916-673-0106)

The following information or item is needed to proceed with analysis:

☐ Complete Chain-of-Custody	☐ Preservative	☐ Collector's Name
☐ Test Method Requested	☐ Sample Identification	☐ Sample Type
☐ Analyte List Requested	☐ Sample Collection Date / Time	☐ Sample Location

The following anomalies were noted. Authorization is needed to proceed with the analysis.

Temperature outside ±2°C range Samples Affected: Field Blank Front 1/2, Back 1/2
XX Temperature outside 6.9 °C Ice present? Yes No
Sample ID Discrepancy Samples Affected
Sample holding time missed Samples Affected
Custody seals broken Samples Affected
Insufficient Sample Size Samples Affected
Sample Container(s) Broken Samples Affected
Incorrect Container Type Samples Affected
* Other COC and sample label list Back 1/2 Rinse and Impinger as one component for M429.

* COC lists Field Blank Run components: Front 1/2, Back 1/2, Filter, XAD { Post it Note request using a teflon filter for Field Blank

The XAD was the only compment received

Client Authorization

Proceed With Analysis: YES NO Signature and Date

Client Comments/Instructions:

Vista Analytical Laboratory
El Dorado Hills, CA 95762
Phone: (916) 673-1520 Fax:(916) 673-0106

TOTAL AIR ANALYSIS, INC.

Method 5 Field Data Sheet

Facility:	Santa Maria	Stack Dia.:	55"	Meter No.:	Apex #1	Pitot Tube Leak Test:	
Source:	Flare	Nozzle Size:	0.750	dH@:	-	Before: 0.0	After: 0.0
Test Date:	9/9/10	Pbar:	29.94	Y:	0.9986	Assumed Moisture:	7.5%
Run No.:	1	Static P:	-.01	Sampling Train Leak Test:		Assumed O_2:	14.0%
Project No.:		Probe Type:	Quartz	Before:	0.01 @ 25"	Assumed CO_2:	5.5%
Method:	CARB-429	Pitot Coef./No.:	0.99 (STD)	After:	0.01 @ 22"	Ambient Temp.:	70° F

Time	Sample Point	Delta P	Delta H	DGM Reading	Temperature: Stack	DGM In	DGM Out	Probe	Filter	Pump Vacuum	Imp. Out Temp.	Comments
0	12	0.01	1.6	286.0	1335	71			250	-10	55	
7.5	11	0.01	1.6	290.91	1341	70			250	-10	55	
15	10	0.01	1.6	295.86	1305	72			252	-10	55	
22.5	9	0.01	1.6	300.77	1322	71			252	-10	56	
30	8	0.01	1.6	305.64	1259	70			252	-10	56	
37.5	7	0.01	1.6	310.55	1286	71			248	-10	56	
45	6	0.01	1.6	315.42	1265	70			250	-10	57	
52.5	5	0.01	1.6	320.33	1350	70			250	-10	57	
60	4	0.01	1.6	325.28	1336							
	3											
	2											
	1											
0	12	0.01	1.6	325.28	1336	70			251	-10	57	
7.5	11	0.01	1.6	330.20	1315	71			251	-10	57	
15	10	0.01	1.6	335.11	1326	76			250	-10	57	
22.5	9	0.01	1.6	340.00	1352	70			248	-10	58	
30	8	0.01	1.6	344.91	1317	70			246	-10	58	
37.5	7	0.01	1.6	349.81	1346	71			250	-10	58	
45.0	6	0.01	1.6	354.74	1335	70			250	-10	58	
52.5	5	0.01	1.6	359.69	1342	70			251	-10	58	
60	4			364.66		70						
	3											
	2											
	1											

TOTAL AIR ANALYSIS, INC.

Method 5 Field Data Sheet

Facility:	Santa Maria	Stack Dia.:	55"	Meter No.:	Apex #1	Pitot Tube Leak Test:	
Source:	Flare	Nozzle Size:	0.750	dH@:	-	Before: 0.0	After: 0.0
Test Date:	9/9/10	Pbar:	29.94	Y:	0.9986	Assumed Moisture:	
Run No.:	2	Static P:	-0.01	Sampling Train Leak Test:		Assumed O_2:	
Project No.:		Probe Type:	Quartz	Before:	0.01 @ 25'	Assumed CO_2:	
Method:	PAHs - CARB 429	Pitot Coef./No.:	0.99 (S70)	After:	0.005 @ 20"	Ambient Temp.:	

Time	Sample Point	Delta P	Delta H	DGM Reading	Temperature: Stack	DGM In	DGM Out	Probe	Filter	Pump Vacuum	Imp. Out Temp.	Comments
0	12	.01	1.2	368.56	1362	67			250	-18	56	
7.5	11	.01	1.0	373.14	1365	66			250	-18	55	
15	10	.01	1.0	377.65	1372	66			251	-18	55	
22.5	9	.01	1.0	382.18	1376	66			250	-18	55	
30	8	.01	1.0	386.75	1361	66			245	-18	55	
37.5	7	.01	1.0	391.26	1372	67			251	-18	55	
45	6	.01	1.0	395.80	1388	69			250	-16	55	
52.5	5	.01	1.0	400.35	1341	64			252	-16	55	
60	4			404.90								
	3											
	2											
	1											
0	12	.01	1.0	404.9	1356	65			251	-16	55	
7.5	11	.01	1.0	409.42	1376	63			250	-16	55	
15	10	.01	1.0	413.99	1392	63			252	-16	54	
22.5	9	.01	1.0	418.55	1401	63			250	-16	52	
30	8	.01	1.0	423.10	1394	63			251	-16	56	
37.5	7	.01	1.0	427.60	1382	63			251	-16	57	
45	6	.01	1.0	432.15	1366	63			250	-16	57	
52.5	5	.01	1.0	436.70	1369	62			251	-16	57	
60	4			441.23								
	3											
	2											
	1											

TOTAL AIR ANALYSIS, INC.

Method 5 Field Data Sheet

Facility: Santa Maria | Stack Dia.: 55" | Meter No.: Apex #1 | Pitot Tube Leak Test:
Source: Flare | Nozzle Size: 0.750 | dH@: - | Before: 0.0 | After: 0.0
Test Date: 9/10/10 | Pbar: 29.97 | Y: 0.9986 | Assumed Moisture:
Run No.: 3 | Static P: -0.01 | Sampling Train Leak Test: | Assumed O_2:
Project No.: | Probe Type: Quartz | Before: 0.01 @ 25" | Assumed CO_2:
Method: PAHs - CARB 429 | Pitot Coef./No.: 0.99 (STD) | After: 0.01 @ 20" | Ambient Temp.:

Time	Sample Point	Delta P	Delta H	DGM Reading	Temperature: Stack	DGM In	DGM Out	Probe	Filter	Pump Vacuum	Imp. Out Temp.	Comments
0	12	0.01	1.6	441.0	1358	72			250	-6		
7.5	11	0.01	1.6	449.70	1351	73			250	-6		
15	10	0.01	1.6	459.35	1356	73			251	-6		
22.5	9	0.01	1.6	459.00	1365	73			250	-6		
30	8	0.01	1.6	463.70	1372	74			250	-6		
37.5	7	0.01	1.6	468.35	1364	73			251	-6		
45	6	0.01	1.6	473.00	1359	74			252	-6		
52.5	5	0.01	1.6	477.70	1372	73			251	-6		
60	4	0.01	1.6	482.36	1393	73			250	-6		
	3											
	2											
	1											
0	12	0.01	1.6	482.36	1393	73			250	-6		
7.5	11	0.01	1.6	487.05	1394	73	(1395)		251	-6		
15	10	0.01	1.6	491.70	1389	73	(1389)		251	-6		
22.5	9	0.01	1.6	496.30	1394	72	(1371)		250	-6		
30	8	0.01	1.6	501.05	1393	72	(1393)		248	-6		
37.5	7	0.01	1.6	505.90	1394	72			249	-6		
45	6	0.01	1.6	510.90	MOT	72			250	-6		
52.5	5	0.01	1.6	515.0	1356	72			251	-6		
60	4			519.77		71						
	3											
	2											
	1											

PAH

Total Air Analysis, Inc.
Impingers Weight Sheet

Facility: Santa Maria
Source: Flare
Run No.: 1
Test Date: 9/9/10
Operator: JDG

Filter No.: PAH #1

Impinger No.	Impinger Solution	Amount (ml)	Impinger Type	Weights	Comments
1	Sodium Carb/Bi Carb	~75	6/S	Final: 775.2 Init.: 676.3 Net:	Clear
2	" "	~100	6/S	Final: 698.5 Init.: 697.7 Net:	Clear
3	KO	–	6/S	Final: ~~6~~ 621.5 Init.: 619.3 Net:	–
4	Silica	~300g	MOD 6/S	Final: ~~264~~ 387.5 Init.: 848.0 Net:	–
5				Final: Init.: Net:	
6				Final: Init.: Net:	
7				Final: Init.: Net:	

Total Gain:

Preparation Date: 9/9/10
Prepared By: DPL

Recovery Date: 9/9/10
Recovered By: DPL

PAMS

Total Air Analysis, Inc.
Impingers Weight Sheet

Facility: SANTA MARIA
Source: FLARE
Run No.: 2
Test Date: 05/05/2010
Operator: JDG

Filter No.: YE3 - PAH 2

Impinger No.	Impinger Solution	Amount (ml)	Impinger Type	Weight	Comments
1	SODIUM CARB BICARB	~75	G/S	Final: 766.4 Init.: 649.4 Net:	Clear
2	Sodium Carb / BICARB	~75	G/S	Final: 678.0 Init.: 480.0 Net:	Clear
3	KO	-	G/S	Final: 621.6 Init.: 621.5 Net:	-
4	SILICA	~300g	G/S	Final: 898.5 Init.: ~~856.5~~ 869.1 Net:	-
5				Final: Init.: Net:	
6				Final: Init.: Net:	
7				Final: Init.: Net:	

Total Gain: _____

Preparation Date: 9/9/10
Prepared By: JDP

Recovery Date: 9/9/10
Recovered By: JDP

PAH's

Total Air Analysis, Inc.
Impingers Weight Sheet

Facility: SANTA MARIA
Source: FLARE
Run No.: 3
Test Date: 09/10/2010
Operator: JDS

Filter No.: YES PAH #3

Impinger No.	Impinger Solution	Amount (ml)	Impinger Type	Weight	Comments
1	SODIUM CARB BI CARB	~75	GS	Final: 768.8 Init.: 669.4 Net:	Clear
2	SODIUM CARB BI CARB	~75	GS	Final: 675.9 Init.: 675.5 Net:	Clear
3	KD	-	GS	Final: 620.6 Init.: 621.6 Net:	-
4	SILICA	~300g	MOD. GS	Final: 897.7 Init.: 874.1 Net:	-
5				Final: Init.: Net:	
6				Final: Init.: Net:	
7				Final: Init.: Net:	

Total Gain:

Preparation Date: 9/10/10
Prepared By: RDL

Recovery Date: 9/10/10
Recovered By: RDL

Appendix D

CARB Method 430 – Formaldehyde
Calculation Spreadsheets, Analytical Results, and Field Data Sheets

Facility: Santa Maria Landfill
Source: Flare
Load: Normal
Start Date: 9/10/2010
End Date: 9/11/2010

SUMMARY OF RESULTS - FORMALDEHYDE

Analysis Method		CARB 430		
Field Sample ID #		Front Impinger PPMV	Back Impinger PPMV	Lb/hr
Formaldehyde				
Flare, Run # 1		0.160	0.009	2.66E-03
Flare, Run # 2		0.200	0.000	3.12E-03
Flare, Run # 3		0.082	0.008	1.40E-03
	Average	**0.147**	**0.006**	**2.39E-03**

Calculations: Lb/hr = PPMv * DSCFM * MW * Correction factor

Example Run #1- Formaldehyde
Where: PPMv = 0.16 Laboratory results
DSCFM 3,311 Exhaust Flow rate
MW = 30.03 Formaldehyde
Correction Factor = 1.583 x 10-7

Air Toxics LTD.
Laboratory Services Since 1989

9/28/2010
Mr. Russ Logan
Total Air Analysis
1210 East 223rd St.
Suite 314
Carson CA 90745

Project Name: Flare
Project #: JA-100887
Workorder #: 1009292

Dear Mr. Russ Logan

The following report includes the data for the above referenced project for sample(s) received on 9/15/2010 at Air Toxics Ltd.

The data and associated QC analyzed by Modified CARB 430 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kyle Vagadori at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kyle Vagadori
Project Manager

Air Toxics LTD.
Laboratory Services Since 1989

WORK ORDER #: 1009292

Work Order Summary

CLIENT:	Mr. Russ Logan Total Air Analysis 1210 East 223rd St. Suite 314 Carson, CA 90745	**BILL TO:**	Mr. Russ Logan Total Air Analysis 1210 East 223rd St. Suite 314 Carson, CA 90745
PHONE:	310-518-5133	**P.O. #**	
FAX:		**PROJECT #**	JA-100887 Flare
DATE RECEIVED:	09/15/2010	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	09/28/2010		

FRACTION #	NAME	TEST
01A	Flare Run 1-A	Modified CARB 430
01B	Flare Run 1-B	Modified CARB 430
01BB	Flare Run 1-B Lab Duplicate	Modified CARB 430
02AB	Flare Run 2-A/Flare Run 2-B	Modified CARB 430
03A	Flare Run 3-A	Modified CARB 430
03B	Flare Run 3-B	Modified CARB 430
03BMS	Flare Run 3-B MS	Modified CARB 430
04A	Field Blank - A	Modified CARB 430
05A	Field Blank - B	Modified CARB 430
06A	Reagent Blank	Modified CARB 430
07A	Trip Spike	Modified CARB 430
08A	Trip Blank	Modified CARB 430
09A	Lab Blank	Modified CARB 430
10A	LCS	Modified CARB 430

CERTIFIED BY: Linda D. Fruman DATE: 09/28/10

Laboratory Director

Certfication numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763,
NY NELAP - 11291, UT NELAP - 9166389892, AZ Licensure AZ0719
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/09, Expiration date: 06/30/11
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified CARB 430
Total Air Analysis
Workorder# 1009292

Nine DNPH Screw Cap Vial and two VOA Vial-40 mL samples were received on September 15, 2010. The laboratory performed analysis via modified Method CARB 430 using reverse phase High Pressure Liquid Chromatography (HPLC) with an Ultraviolet (UV) Detector. The method involves extracting the derivatized aldehydes and ketones from the impinger solution. See the data sheets for the reporting limits for each compound.

Requirement	*CARB 430*	*ATL Modifications*
Extraction	Serially extracted three times.	Single extraction is sufficient and minimizes further addition of background contamination.
Reagent Certification/Field Blank	4 Reagent Blanks will be prepared and flushed through the same length sample line and same type of impinger as will be used in the field. Field Blank criteria: < 10 % of sample values on a total sampling train.	Criteria are < RL for all analytes. 4 Reagent Blanks are prepared by taking four 10 mL aliquots and extracting them using the same procedure as is used to extract samples.
DNPH Certification	New crystals should be analyzed by acidifying with 1mL of 2N Hydrochloric Acid per 100mL DNPH	DNPH reagent is certified at the time of shipment to verify the purity of the crystals.
Sample Quantitation	Use daily RF.	Use ICAL RF.
Retention Time (RT) Precision	%RPD < 2 % for daily calibration standards	RT widths determined by bracketing standards analyzed before and after the sample.
Limit of Detection	The "limit of detection" is defined as the upper bound of the 95% confidence interval for the analysis of at least 4 Reagent Blanks.	Detection Limit is based on the current MDL study which is calculated from a minimum of 7 extracted spikes following 40 CFR Part 136 App. B.
Field Blank Subtraction	Subtract the average of the Field Blanks from the sample result.	Blank subtraction is not performed on sample results.
LCS	If the LCS is out it must be re-extracted until it is in or re-calibrate.	The LCS is only extracted once with out-of-control recoveries flagged.

Requirement	*CARB 430*	*ATL Modifications*
Weight Measurements	Measure the weight of each vial before and after sampling to establish no loss of contents.	Weight measurements are not taken.
Calibration Standard Precision	%RSD +- 10%.	Not measured; recovery of all Continuing Calibration standards must be 90 - 110%.

Receiving Notes

The number of samples received did not match the information on the Chain of Custody (COC). Samples Trip Spike and Trip Blank were added to the analytical request.

Sample collection date was not provided on the Chain of Custody (COC) for all samples. The sampling date was taken from the tag.

Analytical Notes

The field blanks and equipment blank samples Field Blank-A, Field Blank-B, and Reagent Blank have reportable levels of Formaldehyde. Reanalysis of the extract confirmed the initial results

Sampling volume was supplied by the client. A sample volume of 131 L was assumed for all QC samples.

A front and back impinger was received for each sample. Each impinger was analyzed separately. The results for each analyte were then additively combined and reported as a single concentration for sample Flare Run 2-A/Flare Run 2-B.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B- Compound present in laboratory blank greater than reporting limit.
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

Air Toxics LTD.
Laboratory Services Since 1989

Summary of Detected Compounds
MODIFIED CARB METHOD 430 HPLC

Client Sample ID: Flare Run 1-A

Lab ID#: 1009292-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ppmv)	Amount (ug)	Amount (ppmv)
Formaldehyde	0.50	0.0031	26	0.16

Client Sample ID: Flare Run 1-B

Lab ID#: 1009292-01B

Compound	Rpt. Limit (ug)	Rpt. Limit (ppmv)	Amount (ug)	Amount (ppmv)
Formaldehyde	1.1	0.0068	1.4	0.0089

Client Sample ID: Flare Run 1-B Lab Duplicate

Lab ID#: 1009292-01BB

Compound	Rpt. Limit (ug)	Rpt. Limit (ppmv)	Amount (ug)	Amount (ppmv)
Formaldehyde	0.92	0.0057	1.3	0.0083

Client Sample ID: Flare Run 2-A/Flare Run 2-B

Lab ID#: 1009292-02AB

Compound	Rpt. Limit (ug)	Rpt. Limit (ppmv)	Amount (ug)	Amount (ppmv)
Formaldehyde	0.50	0.0034	30	0.20
Acetaldehyde	0.50	0.0023	0.51	0.0024

Client Sample ID: Flare Run 3-A

Lab ID#: 1009292-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ppmv)	Amount (ug)	Amount (ppmv)
Formaldehyde	0.50	0.0033	12	0.082

Client Sample ID: Flare Run 3-B

Lab ID#: 1009292-03B

Air Toxics LTD.
Laboratory Services Since 1989

Summary of Detected Compounds
MODIFIED CARB METHOD 430 HPLC

Client Sample ID: Flare Run 3-B

Lab ID#: 1009292-03B

Compound	Rpt. Limit (ug)	Rpt. Limit (ppmv)	Amount (ug)	Amount (ppmv)
Formaldehyde	1.0	0.0066	1.2	0.0076

Client Sample ID: Field Blank - A

Lab ID#: 1009292-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ppmv)	Amount (ug)	Amount (ppmv)
Formaldehyde	0.50	0.0031	0.93	0.0058

Client Sample ID: Field Blank - B

Lab ID#: 1009292-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (ppmv)	Amount (ug)	Amount (ppmv)
Formaldehyde	0.50	0.0031	0.50	0.0031

Client Sample ID: Reagent Blank

Lab ID#: 1009292-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ppmv)	Amount (ug)	Amount (ppmv)
Formaldehyde	0.50	0.0031	0.58	0.0036

Client Sample ID: Trip Blank

Lab ID#: 1009292-08A

No Detections Were Found.

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Flare Run 1-A

Lab ID#: 1009292-01A

MODIFIED CARB METHOD 430 HPLC

File Name:	**f0917028**	**Date of Collection: 9/10/10**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/17/10 07:07 PM**	
		Date of Extraction: 9/17/10	

Compound	Rpt. Limit (ug)	Rpt. Limit (ppmv)	Amount (ug)	Amount (ppmv)
Formaldehyde	0.50	0.0031	26	0.16
Acetaldehyde	0.50	0.0021	Not Detected	Not Detected

Air Sample Volume(L): 131
Total Volume = 16.0 mL

Container Type: DNPH Screw Cap Vial

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Flare Run 1-B

Lab ID#: 1009292-01B

MODIFIED CARB METHOD 430 HPLC

File Name:	**f0917023**	**Date of Collection: 9/10/10**	
Dil. Factor:	**2.20**	**Date of Analysis: 9/17/10 05:23 PM**	
		Date of Extraction: 9/17/10	

Compound	Rpt. Limit (ug)	Rpt. Limit (ppmv)	Amount (ug)	Amount (ppmv)
Formaldehyde	1.1	0.0068	1.4	0.0089
Acetaldehyde	1.1	0.0047	Not Detected	Not Detected

Air Sample Volume(L): 131
Total Volume = 11.0 mL

Container Type: DNPH Screw Cap Vial

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Flare Run 1-B Lab Duplicate

Lab ID#: 1009292-01BB

MODIFIED CARB METHOD 430 HPLC

File Name:	**f0917024**	**Date of Collection: 9/10/10**	
Dil. Factor:	**1.83**	**Date of Analysis: 9/17/10 05:44 PM**	
		Date of Extraction: 9/17/10	

Compound	Rpt. Limit (ug)	Rpt. Limit (ppmv)	Amount (ug)	Amount (ppmv)
Formaldehyde	0.92	0.0057	1.3	0.0083
Acetaldehyde	0.92	0.0039	Not Detected	Not Detected

Air Sample Volume(L): 131
Total Volume = 11.0 mL

Container Type: DNPH Screw Cap Vial

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Flare Run 2-A/Flare Run 2-B

Lab ID#: 1009292-02AB

MODIFIED CARB METHOD 430 HPLC

File Name:	**f0917029**	**Date of Collection: 9/11/10**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/17/10 07:28 PM**	
		Date of Extraction: 9/17/10	

Compound	Rpt. Limit (ug)	Rpt. Limit (ppmv)	Amount (ug)	Amount (ppmv)
Formaldehyde	0.50	0.0034	30	0.20
Acetaldehyde	0.50	0.0023	0.51	0.0024

Air Sample Volume(L): 121
Total Volume = 27.0 mL

Container Type: DNPH Screw Cap Vial

Air Toxics LTD.
Laboratory Services Since 1969

Client Sample ID: Flare Run 3-A

Lab ID#: 1009292-03A

MODIFIED CARB METHOD 430 HPLC

File Name:	**f0917030**	**Date of Collection: 9/11/10**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/17/10 07:49 PM**	
		Date of Extraction: 9/17/10	

Compound	Rpt. Limit (ug)	Rpt. Limit (ppmv)	Amount (ug)	Amount (ppmv)
Formaldehyde	0.50	0.0033	12	0.082
Acetaldehyde	0.50	0.0023	Not Detected	Not Detected

Air Sample Volume(L): 122
Total Volume = 15.0 mL

Container Type: DNPH Screw Cap Vial

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Flare Run 3-B

Lab ID#: 1009292-03B

MODIFIED CARB METHOD 430 HPLC

File Name:	**f0917026**	**Date of Collection: 9/11/10**
Dil. Factor:	**2.00**	**Date of Analysis: 9/17/10 06:25 PM**
		Date of Extraction: 9/17/10

Compound	Rpt. Limit (ug)	Rpt. Limit (ppmv)	Amount (ug)	Amount (ppmv)
Formaldehyde	1.0	0.0066	1.2	0.0076
Acetaldehyde	1.0	0.0045	Not Detected	Not Detected

Air Sample Volume(L): 122
Total Volume = 12.0 mL

Container Type: DNPH Screw Cap Vial

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Flare Run 3-B MS

Lab ID#: 1009292-03BMS

MODIFIED CARB METHOD 430 HPLC

File Name:	**f0917027**	**Date of Collection: 9/11/10**
Dil. Factor:	**2.00**	**Date of Analysis: 9/17/10 06:46 PM**
		Date of Extraction: 9/17/10

Compound	%Recovery
Formaldehyde	95
Acetaldehyde	106

Air Sample Volume(L): 122

Total Volume = 12.0 mL

Container Type: DNPH Screw Cap Vial

Air TOXICS LTD.
Laboratory Services Since 1989

Client Sample ID: Field Blank - A

Lab ID#: 1009292-04A

MODIFIED CARB METHOD 430 HPLC

File Name:	**f0917020**	**Date of Collection: 9/11/10**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/17/10 04:20 PM**	
		Date of Extraction: 9/17/10	

Compound	Rpt. Limit (ug)	Rpt. Limit (ppmv)	Amount (ug)	Amount (ppmv)
Formaldehyde	0.50	0.0031	0.93	0.0058
Acetaldehyde	0.50	0.0021	Not Detected	Not Detected

Air Sample Volume(L): 131
Total Volume = 11.0 mL

Container Type: DNPH Screw Cap Vial

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Field Blank - B

Lab ID#: 1009292-05A

MODIFIED CARB METHOD 430 HPLC

File Name:	**f0917019**	**Date of Collection: 9/11/10**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/17/10 03:59 PM**	
		Date of Extraction: 9/17/10	

Compound	Rpt. Limit (ug)	Rpt. Limit (ppmv)	Amount (ug)	Amount (ppmv)
Formaldehyde	0.50	0.0031	0.50	0.0031
Acetaldehyde	0.50	0.0021	Not Detected	Not Detected

Air Sample Volume(L): 131
Total Volume = 11.0 mL

Container Type: DNPH Screw Cap Vial

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Reagent Blank

Lab ID#: 1009292-06A

MODIFIED CARB METHOD 430 HPLC

File Name:	**f0917018**	**Date of Collection: 9/11/10**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/17/10 03:38 PM**	
		Date of Extraction: 9/17/10	

Compound	Rpt. Limit (ug)	Rpt. Limit (ppmv)	Amount (ug)	Amount (ppmv)
Formaldehyde	0.50	0.0031	0.58	0.0036
Acetaldehyde	0.50	0.0021	Not Detected	Not Detected

Air Sample Volume(L): 131
Total Volume = 11.0 mL

Container Type: DNPH Screw Cap Vial

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Trip Spike

Lab ID#: 1009292-07A

MODIFIED CARB METHOD 430 HPLC

File Name:	**f0917016**	**Date of Collection: 9/7/10**
Dil. Factor:	**1.00**	**Date of Analysis: 9/17/10 02:56 PM**
		Date of Extraction: 9/17/10

Compound	%Recovery
Formaldehyde	94
Acetaldehyde	106

Air Sample Volume(L): 131

Total Volume = 10.0 mL

Container Type: VOA Vial-40 mL

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Trip Blank

Lab ID#: 1009292-08A

MODIFIED CARB METHOD 430 HPLC

File Name:	**f0917017**	**Date of Collection: 9/7/10**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/17/10 03:17 PM**	
		Date of Extraction: 9/17/10	

Compound	Rpt. Limit (ug)	Rpt. Limit (ppmv)	Amount (ug)	Amount (ppmv)
Formaldehyde	0.50	0.0031	Not Detected	Not Detected
Acetaldehyde	0.50	0.0021	Not Detected	Not Detected

Air Sample Volume(L): 131

Total Volume = 10.0 mL

Container Type: VOA Vial-40 mL

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Lab Blank

Lab ID#: 1009292-09A

MODIFIED CARB METHOD 430 HPLC

File Name:	**f0917011**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/17/10 01:12 PM**	
		Date of Extraction: 9/17/10	

Compound	Rpt. Limit (ug)	Rpt. Limit (ppmv)	Amount (ug)	Amount (ppmv)
Formaldehyde	0.50	0.0031	Not Detected	Not Detected
Acetaldehyde	0.50	0.0021	Not Detected	Not Detected

Air Sample Volume(L): 131
Total Volume = 10.0 mL

Container Type: NA - Not Applicable

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCS

Lab ID#: 1009292-10A

MODIFIED CARB METHOD 430 HPLC

File Name:	**f0917012**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 9/17/10 01:33 PM**
		Date of Extraction: 9/17/10

Compound	%Recovery
Formaldehyde	89
Acetaldehyde	111

Air Sample Volume(L): 131
Total Volume = 10.0 mL

Container Type: NA - Not Applicable

METHOD 430
FORMALDEHYDE SAMPLING RUN DATA RECORD

Run #: 1 ***Project #:*** JA - 100887

Location: SANTA MARIA ***Source Name:*** FLARE

Date Sampled: 09/10/2010 ***Operator:*** JDJ

Only one sampling run per data sheet.

	Clock Time	*Rotameter Reading*	*Flow Rate, Q ml/min.*	*Impinger Temp.°F*	*Stack Temp.°F*	*Comments*
0	0	1.0	4.778			
1	20	1.0	4.793			
2	40	1.0	4.813			
3	60	1.0	4.828			
4	80	1.0	4.848			
5	100	1.0	4.868			
6	120	1.0	4.908			131-Li sampled

METHOD 430
FORMALDEHYDE SAMPLING RUN DATA RECORD

Run #: 2 ***Project #:*** JA - 100887

Location: SANTA MARIA ***Source Name:*** FLARE

Date Sampled: 09/11/2010 ***Operator:*** JDS

Only one sampling run per data sheet.

	Clock Time	*Rotameter Reading*	*Flow Rate, Q ml/min.*	*Impinger Temp.°F*	*Stack Temp.°F*	*Comments*
0	0	1.0	4.912			
1	20	1.0	4.933			
2	40	1.0	4.953			
3	60	1.0	4.973			
4	80	1.0	4.993			
5	100	1.0	5.013			
6	120	1.0	5.033			121 - Li sampled

METHOD 430
FORMALDEHYDE SAMPLING RUN DATA RECORD

Run #:	3	***Project #:***	JA. 100887
Location:	SANTA MARIA	***Source Name:***	FLARE
Date Sampled:	09/10/2011	***Operator:***	JDG

Only one sampling run per data sheet.

	Clock Time	*Rotameter Reading*	*Flow Rate, Q ml/min.*	*Impinger Temp.°F*	*Stack Temp.°F*	*Comments*
0	0	1.0	5034 5			
1	20	1.0	5.054			
2	40	1.0	5.075			
3	60	1.0	5.095			
4	80	1.0	5.115			
5	100	1.0	5.135			
6	120	1.0	5.157			122.5 - Liters

Laboratory: Air Toxics

1009292

TOTAL AIR ANALYSIS, INC.

1210 East 223 rd Street, # 314 Carson, CA 90745 (310) 518 5133 Fax: (310) 518 5107

CHAIN OF CUSTODY

Page: 1 of: 1

Client: Santa Maria Flare

Contact Person: Ross Logan

tel:

fax:

Project No.: JA-100887

Project Name: Flare

Project Manager: Ross

P.O. Number:

Analysis: CARB 430 Formaldehyde

Turnaround Time:

- ☐ Same Day
- ☐ 24 Hours
- ☐ 48 Hours
- ☑ Normal

Results in ppm + 19

Total Air ID #	Client Sample ID	Summa Canister #	Date	Type of Sample	Lab ID Number	Analysis	Remarks
01AB	Flare Run 1-A	01A	—	Gas		✓	Sampling Volume (Liters)
02AB	" Run 1-B	01B	—			✓	Run #1 = 131 Liters
03A	Flare Run 2-A	02A	—			✓	Run 2 = 121 Liters
04A	" Run 2-B	02B	—			✓	Run 3 = 122.5 Liters
05A	Flare Run 3-A	03A	—			✓	
06A	" " 3-B	03B	—			✓	Fed Ex
07A	Field Blank-A	04A	—			✓	CUSTODY SEAL INTACT? Y N NONE TEMP 5°C
08A	" " -B	05A	—			✓	
09A	Reagent Blank	06A	—	Liquid		✓	

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/time
	9/14/10 @ 18:35	Monica Groesen	
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/time
		ATL 9/15/10 915	

Appendix E

CARB Method 436 – Multiple Metals
Calculation Spreadsheets, Analytical Results, and Field Data Sheets

CARB Method 436 - Multiple Metals

Facility:	**Santa Maria Landfill**		
Source:	**Flare**	**Operator:**	JDG
Load:	**Normal**	**Entered By:**	Russ L.
Start Date:	**9/9/2010**	**Checked By:**	Andrew K.

Data Entry	Symbol	Units	Data	Data	Data
Run Number	-	-	1	2	3
Date	-	-	9/9/2010	9/9/2010	9/10/2010
Round Stack, Diameter	ds	inches	55.00	55.00	55.00
Rectangular Stack, Length	L	inches			
Wdth	W	inches			
Nozzle Diameter	dn	inches	0.75	0.75	0.75
Average Stack Temperature	Fs	degrees F	1335.00	1351.00	1357.00
Average Meter Temperature	Fm	degrees F	70.50	64.13	68.56
Barometric Pressure	Pbar	in. Hg	29.94	29.94	29.97
Stack Static Pressure	Pg	in. H20	-0.01	-0.01	-0.01
Avg. Delta H	dH	in. H20	1.40	1.50	1.50
Avg. Velocity Head	dP	in. H20	0.010	0.010	0.010
Pitot Coefficient	Cp	-	0.99	0.99	0.99
Gas Sample Volume	Vm	cubic ft.	70.65	76.03	78.82
Meter Calibration Factor	Y	-	0.9969	0.9969	0.9969
TotalL Sampling Time	min	minutes	120	120	120
Stack Gas Oxygen Content	Co2,m	%	14.08	14.08	14.12
Stack Gas Carbon Dioxide Content	Cco2,m	%	5.65	5.65	5.61
Total Impinger Gain	Ww	grams	129.9	123.6	112.8

Total Metals Catch							
Arsenic	As	mg/l		0.441		0.375		0.427
Cadmium	Cd	mg/l	ND	0.01	ND	0.01	ND	0.01
Chromium(Total)	Cr	mg/l		0.0407		0.0244		0.0321
Nickel	Ni	mg/l	ND	0.01	ND	0.01	ND	0.01
Manganese	Mn	mg/l	ND	0.01		0.0421	ND	0.01

Total Metals Catch	Vol	mls/sample		342		346		348
Arsenic	As	ug/sample		150.822		129.75		148.596
Cadmium	Cd	ug/sample	ND	3.42	ND	3.46	ND	3.48
Chromium(Total)	Cr	ug/sample		13.9194		8.4424		11.1708
Nickel	Ni	ug/sample	ND	3.42	ND	3.46	ND	3.48
Manganese	Mn	ug/sample	ND	3.42		14.5666	ND	3.48

Calculated Data	Symbol	Units	Data	Data	Data
Run Number	-	-	1	2	3
Nozzle Area, An = 3.14(dn)**2/4	An	sq. in.	0.44	0.44	0.44
Stack Area, As = 3.14*(ds)**2/576 (Round)	As	sq. feet	16.50	16.50	16.50
= L * W/144 (Rectangular)			0.00	0.00	0.00
Avg. Stack Temperature, Ts = Fs + 460	Ts	degrees R	1795.00	1811.00	1817.00
Avg. Meter Temperature, Tm = Fm + 460	Tm	degrees R	530.50	524.13	528.56
Gas Sample Volume @ Standard Conditions, VmStd = 17.64 Y (Vm/Tm) (Pbar + dH/13.6)	VmStd	cubic ft.	70.36	76.66	78.88
Volume of Water Vapor, VwStd = 0.04707*Ww	VwStd	cubic ft.	6.11	5.82	5.31
Moist. Fraction, Bws = VwStd/(VmStd + VwStd)	Bws	-	0.080	0.071	0.063
Dry Stack Gas Mol. Weight, Md = 0.32(Co2,m)+ 0.44(Cco2,m)+0.28{100-(Co2,m)-(Cco2,m)]	Md	g/g-mole	29.47	29.47	29.46
Wet Stack Gas Molecular Weight, Mw = Md(1-Bws)+18.0(Bws)	Mw	g/g-mole	28.55	28.66	28.74
Absolute Stack Pressure, Ps = Pbar + Pg/13.6	Ps	in. Hg	29.94	29.94	29.97
Stack Gas Velocity					
vs = 85.49 Cp { sqrt|(dP*Ts) /(Ps*Mw)] }	vs	ft/s	12.26	12.30	12.29
vm = 0.3048 * vs	vsm	m/s	3.74	3.75	3.75
Actual Stack Gas Flow Rate, Q = 60*vs*As	Q	acf/min	12,141	12,172	12,169
Dry Gas Stack Flowrate (Dry,STD) Qsd = 17.64*Q*(1-Bws)*(Ps/Ts)	Qsd	dscf/min	3286.6	3299.3	3317.3
Qsdm = Qsd/35.32	Qsdm	dscm/min	93.05	93.41	93.92
Isokinetic Rate, I = 13.61*Ts*VmStd/[Ps*vs*An*min*(1-Bws)]	I	%	95.97	104.16	106.60

Metals Concentration					
Arsenic	As	gr/dscf	3.308E-05	2.6117E-05	2.9067E-05
Cadmium	Cd	gr/dscf	7.5E-07	6.9645E-07	6.8073E-07
Chromium(Total)	Cr	gr/dscf	3.053E-06	1.6993E-06	2.1851E-06
Nickel	Ni	gr/dscf	7.5E-07	6.9645E-07	6.8073E-07
Manganese	Mn	gr/dscf	7.5E-07	2.9321E-06	6.8073E-07

Metals Mass Flowrate					
Arsenic	As	lb/hr	9.32E-04	7.39E-04	8.26E-04
Cadmium	Cd	lb/hr	2.113E-05	1.9695E-05	1.9356E-05
Chromium(Total)	Cr	lb/hr	8.599E-05	4.8057E-05	6.2131E-05
Nickel	Ni	lb/hr	2.113E-05	1.9695E-05	1.9356E-05
Manganese	Zn	lb/hr	2.113E-05	8.2918E-05	1.9356E-05

CARB 436 #1

IMPINGER	FINAL WT.	IITIAL W	NET
1	759.3	694	65.3
2	726.7	700.8	25.9
3	600.3	591.3	9
4	884.3	854.6	29.7
		TOTAL	129.9
	Run	1	

	dH	dP	sqrt (dP)	Vm	Ts	Tm, i	Tm, out
1	1.40	0.01	0.1	424.00	1318	71	
2	1.40	0.01	0.1		1331	70	
3	1.40	0.01	0.1		1335	71	
4	1.40	0.01	0.1		1339	71	
5	1.40	0.01	0.1		1327	70	
6	1.40	0.01	0.1		1315	71	
7	1.40	0.01	0.1		1322	71	
8	1.40	0.01	0.1		1336	70	
9	1.40	0.01	0.1		1342	71	
10	1.40	0.01	0.1		1349	70	
11	1.40	0.01	0.1		1346	70	
12	1.40	0.01	0.1		1333	71	
13	1.40	0.01	0.1		1346	71	
14	1.40	0.01	0.1		1340	70	
15	1.40	0.01	0.1		1339	70	
16	1.40	0.01	0.1		1342	70	
17							
18							
19							
20							
21							
22							
23							
24				494.65			
AVERAGE	**1.4**	**0.01**	**0.1**	**70.65**	**1335**		**71**
			0.01				

CARB 436 - Metals

IMPINGER	FINAL WT.	INITIAL WT	NET
1	766.7	686.2	80.5
2	706.9	678.5	28.4
3	600.5	600.3	0.2
4	898.8	884.3	14.5
		TOTAL	123.6
	Run	2	

	dH	dP	sqrt (dP)	Vm	Ts	Tm, in
1	1.50	0.01	0.1	497.12	1343	68
2	1.50	0.01	0.1		1348	68
3	1.50	0.01	0.1		1341	67
4	1.50	0.01	0.1		1335	67
5	1.50	0.01	0.1		1339	66
6	1.50	0.01	0.1		1342	65
7	1.50	0.01	0.1		1349	65
8	1.50	0.01	0.1		1337	64
9	1.50	0.01	0.1		1363	64
10	1.50	0.01	0.1		1367	63
11	1.50	0.01	0.1		1359	63
12	1.50	0.01	0.1		1364	62
13	1.50	0.01	0.1		1355	62
14	1.50	0.01	0.1		1352	61
15	1.50	0.01	0.1		1354	61
16	1.50	0.01	0.1		1368	60
17						
18						
19						
20						
21						
22						
23						
24				573.15		
AVERAGE	**1.5**	**0.01**	**0.1**	**76.03**	**1351**	
			0.01			

CARB 436

IMPINGER	FINAL WT.	NITIAL WT	NET
1	757.8	685.9	71.9
2	707	680.4	26.6
3	601.1	594.3	6.8
4	906.3	898.8	7.5
		TOTAL	112.8
	Run	3	

	dH	dP	sqrt (dP)	Vm	Ts	Tm, in	Tm, out
1	1.50	0.01	0.1	586.5	1349	67	
2	1.50	0.01	0.1		1342	67	
3	1.50	0.01	0.1		1356	68	
4	1.50	0.01	0.1		1351	68	
5	1.50	0.01	0.1		1349	69	
6	1.50	0.01	0.1		1345	69	
7	1.50	0.01	0.1		1357	69	
8	1.50	0.01	0.1		1341	70	
9	1.50	0.01	0.1		1363	68	
10	1.50	0.01	0.1		1373	68	
11	1.50	0.01	0.1		1355	68	
12	1.50	0.01	0.1		1368	68	
13	1.50	0.01	0.1		1361	69	
14	1.50	0.01	0.1		1360	69	
15	1.50	0.01	0.1		1369	70	
16	1.50	0.01	0.1		1373	70	
17							
18							
19							
20							
21							
22							
23							
24				665.32			
AVERAGE	**1.5**	**0.01**	**0.1**	**78.82**	**1357**		**69**
			0.01				

CAL TECH Environmental Laboratories
6814 Rosecrans Avenue, Paramount, CA 90723-3146
Telephone: (562) 272-2700 Fax: (562) 272-2789

ANALYTICAL RESULTS*

CTEL Project No: CT172-1009161
Client Name: Total Air Analysis, Inc.
1210 E. 223rd Street, #314
Carson, CA 90745
Phone:(310) 830-2226
Fax: (310) 830-2227
Attention: Mr. Ross Logan

Project ID: JA-100887
Project Name: Santa Maria

Date Sampled: 09/09/10 – 09/10/10 @ 09:00 am
Matrix: Water
Date Received: 09/17/10 @ 09:30 am
Date Analyzed 09/21/10

Laboratory ID: / **Client Sample ID:**	1009-161-1 Run #1	1009-161-2 Run #2	1009-161-3 Run #3	**Method**	**Units**	**Detection Limit**
Arsenic (As)	0.441	0.375	0.427	SW846 6010B	mg/L	0.01
Cadmium (Cd)	ND	ND	ND	SW846 6010B	mg/L	0.01
Chromium (Cr)	0.0407	0.0244	0.0321	SW846 6010B	mg/L	0.01
Nickel (Ni)	ND	ND	ND	SW846 6010B	mg/L	0.01
Manganese (Mn)	ND	0.0421	ND	SW846 6010B	mg/L	0.01
Acid, Extraction	09/20/10	09/20/10	09/20/10	SW846 3050	Date	

ND = Not Detected at the indicated Detection Limit

CTEL Project No:	CT172-1009161
Client Name:	Total Air Analysis, Inc. 1210 E. 223rd Street, #314 Carson, CA 90745
Attention:	Mr. Ross Logan

Phone:(310) 830-2226
Fax: (310) 830-2227

Project ID:	JA-100887
Project Name:	Santa Maria
Date Sampled:	09/09/10 – 09/10/10 @ 09:00 am
Date Received:	09/17/10 @ 09:30 am
Date Analyzed	09/21/10

Matrix: Water

Laboratory ID: **Client Sample ID:**	1009-161-4 Field Blank	1009-161-5 Reagent Blank	1009-161-6 Reagent Blank	**Method**	**Units**	**Detection Limit**
Arsenic (As)	ND	ND	ND	SW846 6010B	mg/L	0.01
Cadmium (Cd)	ND	ND	ND	SW846 6010B	mg/L	0.01
Chromium (Cr)	ND	ND	ND	SW846 6010B	mg/L	0.01
Nickel (Ni)	ND	ND	ND	SW846 6010B	mg/L	0.01
Manganese (Mn)	ND	ND	ND	SW846 6010B	mg/L	0.01
Acid, Extraction	09/20/10	09/20/10	09/20/10	SW846 3050	Date	

ND = Not Detected at the indicated Detection Limit

Greg Tejirian
Laboratory Director

*The results are base upon the sample received. Soil samples are not homogeneous

Cal Tech Environmental Laboratories, Inc. ELAP ID #: 2424

Laboratory: Cal Tech

TOTAL AIR ANALYSIS, INC.

09-161

1210 East 223 rd Street, # 314 Carson, CA 90745 (310) 518 5133 Fax: (310) 518 5107

CHAIN OF CUSTODY

Page: 1 of: 1

Client: Santa Maria

Contact Person: Russ Logan

tel:

fax:

Project No.: JA-100887

Project Name: Flare

Project Manager: RSL

P.O. Number:

Analysis: CARB 436 - PM Metals; Total Chrome, Nickel, Manganese, Arsenic, Cadmium; Volume, ml

Turnaround Time:

- ☐ Same Day
- ☐ 24 Hours
- ☐ 48 Hours
- ☑ Normal

Lowest Detection Limits (.01 ug/ml)

Total Air ID #	Client Sample ID	Summa Canister #	Date	Type of Sample	Lab ID Number	CARB 436 - PM Metals	Total Chrome, Nickel, Manganese, Arsenic, Cadmium	Volume, ml	Remarks
	Run #1 - Rinse + filter	—	9/9/10	Liquid		✓		750	
	" 1 - Impinger	—				✓		267.0	Combine for 1 Analysis
	Run #2 - Rinse + filter	—				✓		750	
	" 2 - Impinger	—				✓		271.0	Combine "
	Run #3 - Rinse + filter	—	9/10/10			✓		750	
	" 3 - Impinger	—				✓		266.5	Combine "
	Field Blank - Rinse + filter	—				✓		150	
	" " - Impinger	—				✓			Combine "
	Reagent Blank (5% HNO_3/10% H_2O_2)					✓		75	
	Reagent " (0.1N HNO_3)					✓		75	

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/time
	9/13/10 @ 14:00		
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/time
		R. Yoshioka	9-17-10 / 9:30

TOTAL AIR ANALYSIS, INC.

Method 5 Field Data Sheet

Facility:	SANTA MARIA	Stack Dia.:	55"	Meter No.:	AQUA 62	Pitot Tube Leak Test:	
Source:	FLARE	Nozzle Size:	0.750	dH@:		Before: 0	After: 0
Test Date:	9/9/2010	Pbar:	29.94	Y:	0.9969	Assumed Moisture:	7.5%
Run No.:	1	Static P:	-0.01	Sampling Train Leak Test:		Assumed O_2:	14.0%
Project No.:	JA-100897	Probe Type:	QUARTZ	Before:	0.000 25"	Assumed CO_2:	5.5%
Method:	CARB 428 - METALS	Pitot Coef./No.:	0.84	After:	0.000 22"	Ambient Temp.:	71°F

Time	Sample Point	Delta P	Delta H	DGM Reading	Temperature: Stack	DGM In	DGM Out	Probe	Filter	Pump Vacuum	Imp. Out Temp	Comments
0	12	.01	1.4	424.0		71	1318		246	-6		
7.5	11	.01	1.4	428.40		70	1331		250	-6		
15	10	.01	1.4	432.65		71	1331		251	-6		
22.5	9	.01	1.4	437.25		71	1339		254	-6		
30	8	.01	1.4	441.70		70	1327		252	-6		
37.5	7	.01	1.4	446.10		71	1315		251	-6		
45	6	.01	1.4	450.50		71	1322		250	-6		
52.5	5	.01	1.4	454.95		71	1336		246	-6		
60	4	.01	1.4	459.40								
	3											
	2											
	1											
0	12	.01	1.4	459.40		70	1342		258	-6		
7.5	11	.01	1.4	463.80		71	1349		259	-6		
15	10	.01	1.4	468.20		70	1346		252	-6		
22.5	9	.01	1.4	472.61		70	1333		250	-6		
30	8	.01	1.4	477.05		71	1346		251	-6		
37.5	7	.01	1.4	481.50		71	1340		252	-6		
45	6	.01	1.4	485.90		70	1339		250	-6		
52.5	5	.01	1.4	490.31		70	1342		246	-6		
60	4	.01	1.4	494.65		70	1					
	3											
	2											
	1											

TOTAL AIR ANALYSIS, INC.

Method 5 Field Data Sheet

Facility:	Santa Maria	Stack Dia.:	55"	Meter No.:	Apex #2	Pitot Tube Leak Test:	
Source:	Flare	Nozzle Size:	0.750	dH@:	—	Before: 0.0	After: 0.0
Test Date:	9/9/10	Pbar:	29.94	Y:	0.9969	Assumed Moisture:	
Run No.:	2	Static P:	-0.01	Sampling Train Leak Test:		Assumed O_2:	
Project No.:		Probe Type:	Quartz	Before:	0.005@25"	Assumed CO_2:	
Method:	Metals - 436	Pitot Coef./No.:	0.99	After:	0.005@20"	Ambient Temp.:	

Time	Sample Point	Delta P	Delta H	DGM Reading	Temperature: Stack	DGM In	DGM Out	Probe	Filter	Pump Vacuum	Imp. Out Temp.	Comments
0	12	.01	1.5	497.12	1343	68			250	-16		
7.5	11	.01	1.5	501.99	1348	68			253	-16		
15	10	.01	1.5	506.60	1341	67			255	-16		
22.5	9	.01	1.5	511.35	1325	67			253	-16		
30	8	.01	1.5	516.10	1339	66			250	-16		
37.5	7	.01	1.5	520.90	1312	61			248	-16		
45	6	.01	1.5	525.60	1349	61			245	-16		
52.5	5	.01	1.5	530.40	1337	61				-16		
60	4	.01	1.5	535.15								
	3											
	2											
	1											
0	12	.01	1.5	535.15	1363	64			252	-16		
7.5	11	.01	1.5	539.90	1367	63			250	-16		
15	10	.01	1.5	544.61	1359	63			254	-16		
22.5	9	.01	1.5	549.31	1364	62			251	-16		
30	8	.01	1.5	554.10	1355	62			247	-16		
37.5	7	.01	1.5	558.91	1352	61			245	-16		
45	6	.01	1.5	563.68	1354	61			251	-16		
52.5	5	.01	1.5	568.39	1360	60				-16		
60	4	.01	1.5	573.15								
	3											
	2											
	1											

TOTAL AIR ANALYSIS, INC.

Method 5 Field Data Sheet

Facility:	Santa Maria	Stack Dia.:	55.0"	Meter No.:	Apex #2	Pitot Tube Leak Test:	
Source:	Flare	Nozzle Size:	0.750	dH@:	-	Before: 0.0	After: 0.0
Test Date:	9/10/10	Pbar:	29.97	Y:	0.9969	Assumed Moisture:	
Run No.:	3	Static P:	-0.01	Sampling Train Leak Test:		Assumed O_2:	
Project No.:	JA 100087	Probe Type:	Quartz	Before:	0.01 @ 25"	Assumed CO_2:	
Method:	Metals - 436	Pitot Coef./No.:	0.99	After:	0.005 @ 18"	Ambient Temp.:	

Time	Sample Point	Delta P	Delta H	DGM Reading	Temperature: Stack	DGM In	DGM Out	Probe	Filter	Pump Vacuum	Imp. Out Temp.	Comments
0	12	.01	1.5	586.50	1349	67			250	-6		
7.5	11	.01	1.5	591.42	1342	67			250	-6		
15	10	.01	1.5	596.35	1356	68			250	-6		
22.5	9	.01	1.5	601.20	1351	68			251	-6		
30	8	.01	1.5	606.20	1345	69			251	-6		
37.5	7	.01	1.5	611.20	1345	69			248	-6		
45	6	.01	1.5	616.20	1357	69			250	-6		
52.5	5	.01	1.5	620.95	1341	70			250	-6		
60	4	.01	1.5	625.96								
	3											
	2											
	1											
0	12	.01	1.5	625.50	1363	68			251	-6		
7.5	11	.01	1.5	630.80	1373	68			251	-6		
15	10	.01	1.5	635.70	1355	68			250	-6		
22.5	9	.01	1.5	640.65	1368	68			251	-6		
30	8	.01	1.5	641.55	1361	69			251	-6		
37.5	7	.01	1.5	650.46	1360	69			251	-6		
45	6	.01	1.5	655.36	1369	70			251	-6		
52.5	5	.01	1.5	660.30	1373	70			250	-6		
60	4	.01	1.5	665.32								
	3											
	2											
	1											

Metals

Total Air Analysis, Inc.
Impingers Weight Sheet

Facility: Santa Monica
Source: Flare
Run No.: 1
Test Date: 9/9/10
Operator: JSG

Filter No.: #5

Impinger No.	Impinger Solution	Amount (ml)	Impinger Type	Weight (g)	Comments
1	5% HNO_3 / 10% H_2O_2	~75	G/S	Final: 759.3 Init.: 694.0 Net:	Clear
2	5% HNO_3 10% H_2O_2	~100	G/S	Final: 726.7 Init.: 700.8 Net:	Clear
3	DI	—	G/S	Final: 600.3 Init.: 591.3 Net:	—
4	Silica	~300g	MOD. G/S	Final: 884.3 Init.: 854.6 Net:	✓
5				Final: Init.: Net:	
6				Final: Init.: Net:	
7				Final: Init.: Net:	

Total Gain:

Preparation Date: 9/9/10
Prepared By: RPL

Recovery Date: 9/9/10
Recovered By: RPL

METALS

Total Air Analysis, Inc.
Impingers Weight Sheet

Facility: SANTA MARIA
Source: FLARE
Run No.: 2
Test Date: 09/09/2010
Operator: JDL

Filter No.: Yes

Impinger No.	Impinger Solution	Amount (ml)	Impinger Type	Weight (g)	Comments
1	5% HNO_3 / 10% H_2O_2	~75	G/S	Final: 766.7 Init.: 686.2 Net:	Clear
2	5% HNO_3 / 10% H_2O_2	~~175~~	G/S	Final: 706.9 Init.: 678.5 Net:	Clear
3	KO	—	G/S	Final: 600.5 Init.: 600.3 Net:	—
4	SILICA	—	G/S	Final: 898.8 Init.: 884.3 Net:	—
5				Final: Init.: Net:	
6				Final: Init.: Net:	
7				Final: Init.: Net:	

Total Gain:

Preparation Date: 9/9/10
Prepared By: RPL

Recovery Date: 9/10/10
Recovered By: RPL

METALS

Total Air Analysis, Inc.
Impingers Weight Sheet

Facility: SANTA
Source: Flare
Run No.: 3
Test Date: 9/10/10
Operator: JDG

Filter No.: YES

Impinger No.	Impinger Solution	Amount (ml)	Impinger Type	Weight (g)	Comments
1	5% HNO_3 / 10% H_2O_2	~75	6/S	Final: 757.8 Init.: 685.9 Net:	Clear
2	5% HNO_3 / 10% H_2O_2	~100	6/S	Final: 707.0 Init.: 680.4 Net:	Clear
3	KO	—	6/S	Final: 601.1 Init.: 594.3 Net:	—
4	Silica	~300gms	Modified 6/S	Final: 906.3 Init.: 898.8 Net:	—
5				Final: Init.: Net:	
6				Final: Init.: Net:	
7				Final: Init.: Net:	

Total Gain:

Preparation Date: 9/10/10
Prepared By: RPL

Recovery Date: 9/10/10
Recovered By: RPL

Appendix F

EPA Method 18 – Acrylonitrile, 1,4-Dioxane
Calculations and Analytical Results

EPA Method 18 Data Calculation Sheet

Facility: Santa Maria Landfill
Source: Flare
Load: Normal
Start Date: 9/9/2010

Parameter/Run No.	Units		1		2		3	Average
Stack Gas Flowrate	dscfm		3,320		3,238		3,288	3,282
Oxygen Concentration	%		14.08		14.08		14.12	14.09
Acrylonitrile	ppbv	nd	2.3	nd	2.3	nd	2.3	2.30
Acrylonitrile, Emissions	lb/hr	nd	0.000064	nd	0.000063	nd	0.000064	0.000063
Acrylonitrile, Emissions								
1,4-Dioxane	ppbv	nd	1.4	nd	1.4	nd	1.4	1.40
1,4-Dioxane, Emissions	lb/hr	nd	0.000065	nd	0.000063	nd	0.000064	0.000064
1,4-Dioxane, Emissions								

All values are Non-Detect. Reporting limits used for calculation purposes.

LABORATORY REPORT

September 20, 2010

Russ Logan
Total Air Analysis, Inc.
1210 E. 223rd Street, Suite 314
Carson, CA 90745

RE: Flare at SM / JA-100887

Dear Russ:

Enclosed are the results of the samples submitted to our laboratory on September 10, 2010. For your reference, these analyses have been assigned our service request number P1003340.

All analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 10 pages.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L10-3; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-09-TX; Minnesota Department of Health, Certificate No. 11495AA; Washington State Department of Ecology, ELAP Lab ID: C946. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

Columbia Analytical Services, Inc.

Kelly M Horiuchi

Kelly Horiuchi
Laboratory Director

Client: Total Air Analysis, Inc. CAS Project No: P1003340
Project: Flare at SM / JA-100887

CASE NARRATIVE

The samples were received intact under chain of custody on September 10, 2010 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Volatile Organic Compound Analysis

The samples were analyzed for selected volatile organic compounds in accordance with EPA Method TO-15 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition (EPA/625/R-96/010b), January, 1999. The analytical system was comprised of a gas chromatograph/ mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator. According to the method, the use of Tedlar bags is considered a method modification.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

Client: Total Air Analysis, Inc.
Project: Flare at SM/100887

Service Request: P1003340

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
P1003340-001	SM-Flare #1	9/9/10	14:00
P1003340-002	SM-Flare #2	9/9/10	15:00
P1003340-003	SM-Flare #3	9/9/10	15:45

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Laboratory: Columbia Labs

TOTAL AIR ANALYSIS, INC.

1210 East 223 rd Street, # 314 Carson, CA 90745 (310) 518 5133 Fax: (310) 518 5107

P1003340

CHAIN OF CUSTODY

Page: 1 of: 1

Client: JAM c Santa Maria

Contact Person: Ross Logan

tel:

fax:

Project No.: JAM-100887

Project Name: Flare e SM

Project Manager: RPL

P.O. Number:

Analysis: TH-Propane Acceptable by GC/MS

Turnaround Time:

- ☐ Same Day
- ☐ 24 Hours
- ☐ 48 Hours
- ☑ Normal

Total Air ID #	Client Sample ID	Summa Canister #	Date	Type of Sample	Lab ID Number	TH-Propane Acceptable by GC/MS	Remarks
	SM-Flare #1-Bag	—	9/9/10	Gas		✓	Lowest possible detection limits!
	SM-Flare #2-Bag	—	"	"		✓	
	SM-Flare #3-Bag	—	↓	"		✓	

Relinquished by: (signature) — Date/Time: 9/9/10 @ 16:00 — Received by: (signature) — Date/time: 09/10/10 0930

Relinquished by: (signature) — Date/Time — Received by: (signature) — Date/time

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: Total Air Analysis, Inc. Work order: P1003340

Project: Flare at SM / 100887

Sample(s) received on: 9/10/2010 Date opened: 9/10/2010 by: SSTAPLES

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☐	☒	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Was a **chain-of-custody** provided?	☒	☐	☐
5	Was the **chain-of-custody** properly completed?	☒	☐	☐
6	Did **sample container labels** and/or tags agree with custody papers?	☐	☒	☐
7	Was **sample volume** received adequate for analysis?	☒	☐	☐
8	Are samples within specified holding times?	☒	☐	☐
9	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☐	☐	☒
	Cooler Temperature _____ °C Blank Temperature _____ °C			
10	Was a **trip blank** received?	☐	☐	☒
	Trip blank supplied by CAS: _____			
11	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
12	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☐	☐	☒
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
13	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
14	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1003340-001.01	1.0 L Tedlar Bag					
P1003340-002.01	1.0 L Tedlar Bag					
P1003340-003.01	1.0 L Tedlar Bag					

Explain any discrepancies: (include lab sample ID numbers):

The Sample IDs listed on the COC all end with the suffix "Rog." That suffix does not appear on the container labels

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

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COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Total Air Analysis, Inc.**
Client Sample ID: **SM-Flare #1 Rog**
Client Project ID: **Flare at SM / JA-100887**

CAS Project ID: P1003340
CAS Sample ID: P1003340-001

Test Code: EPA TO-15 Modified
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9
Analyst: Wida Ang
Sampling Media: 1.0 L Tedlar Bag
Test Notes:

Date Collected: 9/9/10
Date Received: 9/10/10
Date Analyzed: 9/10/10
Volume(s) Analyzed: 0.10 Liter(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
107-13-1	Acrylonitrile	ND	5.0	ND	2.3	
123-91-1	1,4-Dioxane	ND	5.0	ND	1.4	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Total Air Analysis, Inc.**
Client Sample ID: **SM-Flare #2 Rog**
Client Project ID: **Flare at SM / JA-100887**

CAS Project ID: P1003340
CAS Sample ID: P1003340-002

Test Code: EPA TO-15 Modified
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9
Analyst: Wida Ang
Sampling Media: 1.0 L Tedlar Bag
Test Notes:

Date Collected: 9/9/10
Date Received: 9/10/10
Date Analyzed: 9/10/10
Volume(s) Analyzed: 0.10 Liter(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
107-13-1	Acrylonitrile	ND	5.0	ND	2.3	
123-91-1	1,4-Dioxane	ND	5.0	ND	1.4	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: _____ Date: 9/15/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Total Air Analysis, Inc.**
Client Sample ID: **SM-Flare #3 Rog**
Client Project ID: **Flare at SM / JA-100887**

CAS Project ID: P1003340
CAS Sample ID: P1003340-003

Test Code: EPA TO-15 Modified
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9
Analyst: Wida Ang
Sampling Media: 1.0 L Tedlar Bag
Test Notes:

Date Collected: 9/9/10
Date Received: 9/10/10
Date Analyzed: 9/10/10
Volume(s) Analyzed: 0.10 Liter(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
107-13-1	Acrylonitrile	ND	5.0	ND	2.3	
123-91-1	1,4-Dioxane	ND	5.0	ND	1.4	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: _____ Date: 9/15/10

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Total Air Analysis, Inc.**
Client Sample ID: **Method Blank**
Client Project ID: **Flare at SM / JA-100887**

CAS Project ID: P1003340
CAS Sample ID: P100910-MB

Test Code: EPA TO-15 Modified
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9
Analyst: Wida Ang
Sampling Media: 1.0 L Tedlar Bag
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 9/10/10
Volume(s) Analyzed: 1.00 Liter(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
107-13-1	Acrylonitrile	ND	0.50	ND	0.23	
123-91-1	1,4-Dioxane	ND	0.50	ND	0.14	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

COLUMBIA ANALYTICAL SERVICES, INC.

SURROGATE SPIKE RECOVERY RESULTS

Client: **Total Air Analysis, Inc.**
Client Project ID: **Flare at SM / JA-100887**

CAS Project ID: P1003340

Test Code: EPA TO-15 Modified
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9
Analyst: Wida Ang
Sampling Media: 1.0 L Tedlar Bag(s)
Test Notes:

Date(s) Collected: 9/9/10
Date(s) Received: 9/10/10
Date(s) Analyzed: 9/10/10

Client Sample ID	CAS Sample ID	1,2-Dichloroethane-d4 Percent Recovered	Toluene-d8 Percent Recovered	Bromofluorobenzene Percent Recovered	Acceptance Limits	Data Qualifier
Method Blank	P100910-MB	**98**	**99**	**104**	70-130	
SM-Flare #1 Rog	P1003340-001	**104**	**92**	**97**	70-130	
SM-Flare #2 Rog	P1003340-002	**104**	**92**	**97**	70-130	
SM-Flare #3 Rog	P1003340-003	**106**	**92**	**97**	70-130	

Surrogate percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly from the on-column percent recovery.

Appendix G

EPA Method 19 - Volume Flow Calculation
Analytical Results and Fuel Meter Calibration

EPA Method 19, Stack Gas Flowrate Calculation

Facility: Santa Maria Landfill
Source: Flare
Load: Normal
Start Date: 9/9/2010

Run No.	Time		O_2	Fuel Flow	HHV	F Factor	System Flow	Heat Input
	Start	End	(%)	(scfm)	(btu/scf)	(sdcf/MMbtu)	(scfm)	(Mmbtu/hr)
1	14:42	16:09	14.08	239	453	9,581	3,180	6.50
2	18:54	20:48	14.08	235	453	9,581	3,126	6.39
3	15:37	17:23	14.12	225	453	9,581	3,008	6.12
4	20:10	21:30	13.84	250	449	9,611	3,199	6.75
5	11:17	12:29	13.88	251	449	9,611	3,220	6.75
6	14:44	15:45	13.89	233	449	9,611	3,004	6.29

Flow Rate = Fuel Flow Rate x F Factor x HHV/1000000 x 20.9/(20.9 - O2 conc)

Quantum Analytical Services Inc.
www.quantumairlab.com
1210 E. 223rd Street, Suite #314 • Carson, California 90745 • 310/830-2226 • Fax 310/830-2227

CLIENT: **Total Air Analysis, Inc.**
CLIENT PROJ NO: **JA-100887**
LABORATORY NO: **10-727**
SAMPLING DATE: September 10 & 11, 2010
RECEIVING DATE: September 13, 2010
ANALYSIS DATE: September 13, 2010
REPORT DATE: September 15, 2010

Laboratory Analysis Report

Analysis Method: ASTM-3588-98

Analyte, Units	Sample ID	Fuels Sample #1	Fuel Sample #2
	Sample Date	9/10/2010	9/11/2010
	Lab ID	25610-11	25610-12
	Units	Mole %	Mole %
Methane, %		45	44
Ethane, %		<0.1	<0.1
Ethylene, %		<0.1	<0.1
Propane, %		<0.1	<0.1
Propylene, %		<0.1	<0.1
i-Butane, %		<0.1	<0.1
n-Butane, %		<0.1	<0.1
1-Butene, %		<0.1	<0.1
i-Butylene, %		<0.1	<0.1
trans-2-Butene,%		<0.1	<0.1
cis-2-Butene,%		<0.1	<0.1
i-Pentane, %		<0.1	<0.1
n-Pentane, %		<0.1	<0.1
2,2-Dimethyl Butane, %		<0.1	<0.1
2,3-Dimethyl Butane, %		<0.1	<0.1
2-Methyl Pentane, %		<0.1	<0.1
3-Methyl Pentane, %		<0.1	<0.1
n-Hexane, %		<0.1	<0.1
C6+, %		<0.1	<0.1
CO2, %		32	27
CO, %		<0.1	<0.1
O2, %		1.9	1.9
N2 %		21	26
H2, %		<0.1	<0.1
H2S, %		<0.1	<0.1
Average Molecular Weight		**27.821**	**27.135**
Total Wt.% Adjusted Sp. Gravity		**0.9605**	**0.9369**
Compressibility Factor (14.696 Psi, 60 F)		**0.9979**	**0.9980**
NET BTU/Cub. Ft		**408**	**404**
GROSS BTU/Cub. Ft		**453**	**449**
CHONS		**%**	**%**
Carbon		33	32
Hydrogen		6.5	6.6
Oxygen		39	34
Nitrogen		21	27
Sulfur		<0.1	<0.1
Dry F Factor (60 F, 1 Atm); SDCF/MMBTU, ASTM 3588		**9581**	**9611**

Dr. Andrew Kitto
President

Laboratory: [signature] 10-724

TOTAL AIR ANALYSIS, INC.

1210 East 223 rd Street, # 314 Carson, CA 90745 (310) 518 5133 Fax: (310) 518 5107

CHAIN OF CUSTODY

Page: 1 of: 1

Client: Santa Maria Flare

Contact Person: Russ Logan

tel:

fax:

Project No.: TA-100887

Project Name: Flare

Project Manager: RL

P.O. Number:

Analysis: ASTM 3588 (BTU & F factor)

Turnaround Time:
- [ ] Same Day
- [ ] 24 Hours
- [ ] 48 Hours
- [x] Normal

Total Air ID #	Client Sample ID	Summa Canister #	Date	Type of Sample	Lab ID Number	ASTM 3588 (BTU & F factor)						Remarks	Time
	Flare Fuel Sample #1	—	9/10/10	GAS	25610-11	✓						Landfill GAS	21:00
	" Fuel Sample #2	—	9/11/10	"	-12	✓							17:30

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/time
[signature]	9/13/10 @ 10:00am	[signature]	9/13/10 @ 1045
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/time

CALIBRATION CERTIFICATION

We certify that the calibration accuracies listed below are obtained on equipment, and with methods, that can be traced directly to the US National Institute of Standards and Technology.

FLOWRATE READOUT ACCURACY: ± 1% Full Scale

PRESSURE TESTED AT:

METER SERIAL NUMBER: 2006153 MODEL NUMBER: 62-9/9500

The calibration listed above was performed under the following conditions:

0 to 1200 SCFM LANDFILL GAS
40 to 200° F
0 to 15 PSIG
6" SCH 10 SS Line → FLARE 1

Signature _____ Date: May 6, 2009

THERMAL INSTRUMENT COMPANY, INC.
217 Sterner Mill Road, Trevose, PA 19053
Phone: 215-355-8400 Fax: 215-355-1789
Web: www.thermalinstrument.com

Appendix H

EPA Method 26 – Acids, HCL, and HF
Calculation Spreadsheets, Analytical Results, and Field Data Sheets

EPA Method 26 - Acid Emissions Determination

Facility:	**Santa Maria Landfill**	**Operator:**	JDG
Source:	**Flare**		
Load:	**Normal**	**Review:**	R. Logan
Start Date:	**9/9/2010**		

Data Entry	Symbol	Units	Flare			
Run Number			1	2	3	
Average Meter Temperature	Tm	degrees F	63.3	71.8	76.5	
Barometric Pressure	Pbar	in. Hg	29.97	29.97	29.97	
Avg. Delta H	dH	in. H20	1.60	1.60	1.60	
Gas Sample Volume	Vm	cubic ft.	84.13	80.62	81.31	
Meter Calibration Factor	Y	-	0.9986	0.9986	0.9986	
Total Sampling Time	min	minutes	120	120	120	
Total Impinger Gain	Ww	grams	142.3	142.2	135.8	

Concentration

Total Sample Catch	sample	mls/sample	303	305	305	
Stack Gas HF Concentration	HF	mg/sample	0.86	0.44	0.39	
Stack Gas HCl Concentration	HCl	mg/sample	0.009	0.009	0.009	

Calculated Data	Symbol	Units	Flare			
Run Number	-	-	1	2	3	
Avg. Meter Temperature, Tm = Fm + 460	Tm,r	degrees R	523.3	531.8	536.5	
Gas Sample Volume @ Standard Conditions, VmStd = 17.647 Y (Vm/Tm) (Pbar + dH/13.6)	VmStd	dscf	85.25	80.39	80.36	
Volume of Water Vapor, VwStd = 0.04707*Ww	VwStd	dscf	6.70	6.69	6.39	
Moist. Fraction, Bws = VwStd/(VmStd + VwStd)	Bws	%	0.07	0.08	0.07	
HF conc = mgsample*386.94*1000/(453.6*20.006*Vmstd)	HF conc	ppm	**0.430**	**0.233**	**0.207**	
HCl conc = mgsample*386.94*1000/(453.6*36.45*Vmstd)	HCl conc	ppm	**0.002**	**0.003**	**0.003**	
Volume flow rate	Qsd	dscfm	3199	3220	3004	
Mass Emissions, lb/hr = ppm*dscfm*MW(20)*1.583*10-7	HF	lb/hr	**0.004**	**0.002**	**0.002**	
Mass Emissions, lb/hr = ppm*dscfm*MW(17)*1.583*10-7	HCl	lb/hr	**0.00002**	**0.00002**	**0.00002**	

Quantum
Analytical Services Inc.
www.quantumairlab.com
1210 E. 223rd Street, Suite #314 • Carson, California 90745 • 310/830-2226 • Fax 310/830-2227

CLIENT	**Total Air Analysis**
LABORATORY NO:	**10-743**
CLIENT PROJECT NO:	**Santa Maria Flare**
SAMPLING DATE:	September 10, 2010
RECEIVING DATE:	September 16, 2010
ANALYSIS DATE:	September 20, 2010
REPORT DATE:	September 22, 2010

Laboratory Analysis Report

Analysis Method	**EPA Method 26**		
Detection Limit	**0.4 ug/sample**		
Total Air Analysis Sample ID	**Sample Vol (ml)**	**ug/ml**	**HF mg/sample**
Run #1, Impinger	303	2.74	**0.86**
Run #2, Impinger	305	1.42	**0.44**
Run #3, Impinger	305	1.24	**0.39**
Field Blank	130	<0.02	**<0.002**
Reagent Blank	133	<0.02	**<0.002**

Analysis Method	**EPA Method 26**		
Detection Limit	**0.4 ug/sample**		
Total Air Analysis Sample ID	**Sample Vol (ml)**	**ug/ml**	**HCl mg/sample**
Run #1, Impinger	303	<0.03	**<0.009**
Run #2, Impinger	305	<0.03	**<0.009**
Run #3, Impinger	305	<0.03	**<0.009**
Field Blank	130	<0.03	**<0.004**
Reagent Blank	133	<0.03	**<0.004**

Dr. Andrew Kitto
President

Quantum Analytical Services Inc.
www.quantumairlab.com
1210 E. 223rd Street, Suite #314 • Carson, California 90745 • 310/830-2226 • Fax 310/830-2227

CLIENT **Total Air Analysis**
LABORATORY NO: **10-743**
CLIENT PROJECT NO: **Santa Maria Flare**
SAMPLING DATE: September 10, 2010
RECEIVING DATE: September 16, 2010
ANALYSIS DATE: September 20, 2010
REPORT DATE: September 22, 2010

DUPLICATE ANALYSES

Analysis Method / **Detection Limit**	**EPA Method 26** / **0.2 ug/sample**				
Total Air Analysis / **Sample ID**	**Analyte**	**Analysis #1** **mg/sample**	**Analysis #2** **mg/sample**	**Mean** **mg/sample**	**% Difference** **from the Mean**
Run #3, Impinger	HF	0.39	0.38	0.38	1.1%

N/A: Not Applicable

Dr. Andrew Kitto
President

Laboratory: Quanterra

10-743

TOTAL AIR ANALYSIS, INC.

1210 East 223 rd Street, # 314 Carson, CA 90745 (310) 518 5133 Fax: (310) 518 5107

CHAIN OF CUSTODY

Page: 1 of: 1

Client: Santa Maria Flare

Contact Person: Ross Logan

tel:

fax:

Project No.: JA-100887

Project Name: Flare

Project Manager: RPL

P.O. Number:

Analysis: EPA M. 26 HCL + HF

Turnaround Time:

- ☐ Same Day
- ☐ 24 Hours
- ☐ 48 Hours
- ☑ Normal

Lowest Detection Limit

Total Air ID #	Client Sample ID	Summa Canister #	Date	Type of Sample	Lab ID Number	Analysis	Remarks
	Run #1 - Impinger	—	9/10/10	Liquid		✓	Impinger Rinse - H_2O
	Run #2 - Impinger	—	9/11/10			✓	
	Run #3 - Impinger	—	9/11/10			✓	
	Field Blank	--	9/11/10			✓	
	Reagent Blank	—	9/11/10			✓	

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/time
	9/13/10 @ 10:30		9/16/10 12:23
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/time

TOTAL AIR ANALYSIS, INC.

Method 5 Field Data Sheet

Facility:	Santa Maria	Stack Dia.:	55"	Meter No.:	Apex 1	Pitot Tube Leak Test:	
Source:	Flare	Nozzle Size:	0.750	dH@:		Before:	After:
Test Date:	9/10/10	Pbar:	29.97	Y:	0.9986	Assumed Moisture:	
Run No.:		Static P:	-0.01	Sampling Train Leak Test:		Assumed O_2:	
Project No.:		Probe Type:	Quartz	Before:	0.010@25"	Assumed CO_2:	
Method:	EPA 26 - Acids	Pitot Coef./No.:		After:	0.01@20"	Ambient Temp.:	

Time	Sample Point	Delta P	Delta H	DGM Reading	Temperature: Stack	DGM In	DGM Out	Probe	Filter	Pump Vacuum	Imp. Out Temp.	Comments
0	12		1.6	525.15		66		—	250	-7	41	
10	11		1.6	537.50		66		—	250	-7	40	
20	10		1.60	549.18		66		—	250	-7	40	
30	9		1.6	550.12		65		—	250	-7	38	
40	8		1.6	556.25		65		—	249	-7	40	
50	7		1.6	561.11		64		—	250	-7	40	
60	6		1.6	567.50		64		—	250	-7	40	
	5											
	4											
	3											
	2											
	1											
0	12		1.6	527.50		62		—	250	-7	39	
10	11		1.6	542.13		61		—	250	-7	37	
20	10		1.6	548.23		60		—	250	-7	36	
30	9		1.6	555.12		60		—	248	-7	35	
40	8		1.6	572.33		67		—	250	-7	35	
50	7		1.6	589.62		60		—	250	-7	37	
60	6		1.6	609.21		60		—	250	-7	37	
	5											
	4											
	3											
	2											
	1											

TOTAL AIR ANALYSIS, INC.

Method 5 Field Data Sheet

Facility:	SANTA MARIA	Stack Dia.:	55"	Meter No.:	APEX 1	Pitot Tube Leak Test:	
Source:	FLARE	Nozzle Size:	0.750	dH@:		Before:	After:
Test Date:	09/16/2010	Pbar:	29.98	Y:	0.9986	Assumed Moisture:	
Run No.:	2	Static P:	-	Sampling Train Leak Test:		Assumed O_2:	
Project No.:		Probe Type:	QUARTZ	Before:	0.01 @ 25"	Assumed CO_2:	
Method:	EPA 26 - ACIDS	Pitot Coef./No.:	-	After:	0.01 @ 22"	Ambient Temp.:	

Time	Sample Point	Delta P	Delta H	DGM Reading	Temperature: Stack	DGM In	DGM Out	Probe	Filter	Pump Vacuum	Imp. Out Temp.	Comments
0	12		1.6	612.5	1308	69		-	251	-11	54	
10	11		1.6	618.15	1303	69		-	251	-11	53	
20	10		1.6	624.13	1352	69		-	250	-11	53	
30	9		1.6	631.50	1336	69		-	250	-11	57	
40	8		1.6	637.33	1340	70		-	251	-11	57	
50	7		1.6	643.0	1296	72		-	250	-11	60	
60	6		1.6	649.16	1373	72		-	250	-11	60	
	5											
	4											
	3											
	2											
	1											
0	12		1.6	649.16	1380	73		-	250	-11	61	
10	11		1.6	655.10	1305	74		-	251	-11	62	
20	10		1.6	663.33	1392	74		-	251	-11	62	
30	9		1.6	670.10	1396	75		-	250	-11	63	
40	8		1.6	677.18	1389	75		-	250	-11	64	
50	7		1.6	684.20	1402	76		-	251	-11	64	
60	6		1.6	693.12	1401	76		-	250	-11	64	
	5											
	4											
	3											
	2											
	1											

TOTAL AIR ANALYSIS, INC.

Method 5 Field Data Sheet

Facility:	SANTA MARIA	Stack Dia.:	55"	Meter No.:	Mx # 1	Pitot Tube Leak Test:	
Source:	FLARE	Nozzle Size:	0.750	dH@:		Before:	After:
Test Date:	09/11/2020	Pbar:	29.98	Y:	0.9986	Assumed Moisture:	
Run No.:	3	Static P:	-.001	Sampling Train Leak Test:		Assumed O_2:	
Project No.:		Probe Type:	QUARTZ	Before:	0.01@25"	Assumed CO_2:	
Method:	EPA 26 A/D	Pitot Coef./No.:	—	After:	0.01@22"	Ambient Temp.:	

Time	Sample Point	Delta P	Delta H	DGM Reading	Temperature: Stack	DGM In	DGM Out	Probe	Filter	Pump Vacuum	Imp. Out Temp.	Comments
0	12		1.6	693.86	1356	71		-	250	-6		
10	11		1.6	700.19	1402	75		-	250	-6		
20	10		1.6	706.52	1385	76			249	-6		
30	9		1.6	712.55	1406	76			249	-6		
40	8		1.6	719.15	1369	76			251	-6		
50	7		1.6	725.48	1286	75			250	-6		
60	6		1.6	738.50	1296	75			249	-6		
	5								~~270~~	gr		
	4								~~270~~	gr		
	3								~~25~~	gr		
	2											
	1											
0	12		1.6	738.50		77			251	-6		
10	11		1.6	744.18		77			251	-6		
20	10		1.6	750.51		77			250	-6		
30	9		1.6	756.81		77			250	-6		
40	8		1.6	763.11		77			251	-6		
50	7		1.6	769.44		77			250	-6		
60	6		1.6	775.17		77			250	-6		
	5											
	4											
	3											
	2											
	1											

Total Air Analysis, Inc.
Impingers Weight Sheet

Facility: Santa Maria
Source: Flare
Run No.: 1
Test Date: 9/10/10
Operator: JSG

Filter No.: Yes

ACWS - EPA 26

Impinger No.	Impinger Solution	Amount (ml)	Impinger Type	Weights	Comments
1	0.1 N H_2SO_4	~75mls	6/S	Final: 776.7 Init.: 670.3 Net:	Clear
2	0.1 N H_2SO_4	~75mls	6/S	Final: 698.5 Init.: 678.8 Net:	clear
3	KO	—	6/S	Final: 622.9 Init.: 620.8 Net:	—
4	Silica	~300	Mod. 6/S	Final: 906.8 Init.: 892.7 Net:	—
5				Final: Init.: Net:	
6				Final: Init.: Net:	
7				Final: Init.: Net:	

Total Gain:

Preparation Date: 9/10/10
Prepared By: JSPL

Recovery Date: 9/10/10
Recovered By: JSPL

Total Air Analysis, Inc.
Impingers Weight Sheet

Facility: Santa Maria
Source: Flare
Run No.: 2
Test Date: 9/11/10
Operator: JJG

Filter No.: yes

Acids - EPA 26

Impinger No.	Impinger Solutions	Amount (gm) (ml)	Impinger Type	Weight (gm)	Comments
1	0.1 N H_2SO_4	~75 mls	6/S	Final: 756.4 Init.: 667.8 Net:	Clear
2	0.1 N H_2SO_4	~75 mls	6/S	Final: 698.8 Init.: 672.2 Net:	clear
3	KO	–	6/S	Final: 629.2 Init.: 623.0 Net:	–
4	Silica	~300 gm	Mod 6/S	Final: 853.3 Init.: 832.5 Net:	–
5				Final: Init.: Net:	
6				Final: Init.: Net:	
7				Final: Init.: Net:	

Total Gain:

Preparation Date: 9/11/10
Prepared By: RPL

Recovery Date: 9/11/10
Recovered By: RPL

Total Air Analysis, Inc.
Impingers Weight Sheet

Facility: Santa Maria
Source: Flare
Run No.: 3
Test Date: 9/11/10
Operator: JDG

Filter No.: Yes

Acids - EPA 26

Impinger No.	Impinger Solution	Amount (ml)	Impinger Type	Weight	Comments
1	0.1N H_2SO_4	~75mls	6/S	*Final:* 771.0 *Init.:* 671.3 *Net:*	Clear
2	0.1N H_2SO_4	~75mls	6/S	*Final:* 699.4 *Init.:* 678.5 *Net:*	clear
3	KO	—	6/S	*Final:* 632.7 *Init.:* 629.2 *Net:*	—
4	Silica	~300gr	Modified 6/S	*Final:* 865.0 *Init.:* 853.3 *Net:*	—
5				*Final:* *Init.:* *Net:*	
6				*Final:* *Init.:* *Net:*	
7				*Final:* *Init.:* *Net:*	

Total Gain:

Preparation Date: 9/11/10
Prepared By: RPL

Recovery Date: 9/11/10
Recovered By: RPL

Appendix I

Facility Flare Process Data

		Ch.	CH001		CH003		CH005	
		Tag	FLARE 1 TEMP		FLARE 1 FLOW		LFG FLOW	
		Unit	°F		SCFM		SCFM	
Date	Time	sec	MIN	MAX	MIN	MAX	MIN	MAX
2010/09/09	14:30:00	0.000	1414	1422	225.3	229.5	605.3	653.5
2010/09/09	14:31:00	0.000	1414	1478	225.3	339.6	634.6	683.1
2010/09/09	14:32:00	0.000	1451	1480	235.1	239.2	624.9	692.9
2010/09/09	14:33:00	0.000	1422	1451	234.5	238.3	624.9	673.3
2010/09/09	14:34:00	0.000	1418	1422	233.6	238.3	626.5	655.2
2010/09/09	14:35:00	0.000	1418	1420	231.6	236.2	608.3	650.2
2010/09/09	14:36:00	0.000	1420	1428	231.8	236.7	624.1	663.3
2010/09/09	14:37:00	0.000	1428	1450	231.8	236.5	630.0	659.4
2010/09/09	14:38:00	0.000	1450	1461	233.1	236.5	619.3	664.3
2010/09/09	14:39:00	0.000	1446	1458	232.5	236.5	619.3	663.1
2010/09/09	14:40:00	0.000	1373	1451	232.5	340.0	611.6	684.5
2010/09/09	14:41:00	0.000	1385	1494	237.8	272.3	639.5	672.8
2010/09/09	14:42:00	0.000	1426	1472	238.0	240.9	643.1	681.6
2010/09/09	14:43:00	0.000	1414	1426	236.2	240.6	631.4	679.8
2010/09/09	14:44:00	0.000	1415	1416	236.0	239.9	624.1	672.5
2010/09/09	14:45:00	0.000	1416	1428	237.7	241.5	628.4	668.8
2010/09/09	14:46:00	0.000	1428	1433	235.7	239.2	620.5	670.9
2010/09/09	14:47:00	0.000	1433	1439	235.1	240.1	617.4	656.7
2010/09/09	14:48:00	0.000	1439	1447	235.6	238.9	625.8	652.3
2010/09/09	14:49:00	0.000	1440	1443	236.0	242.7	617.6	651.7
2010/09/09	14:50:00	0.000	1437	1443	236.2	242.7	619.1	644.5
2010/09/09	14:51:00	0.000	1435	1437	236.0	240.6	620.9	659.1
2010/09/09	14:52:00	0.000	1436	1439	235.6	240.6	620.6	663.4
2010/09/09	14:53:00	0.000	1436	1437	236.0	238.9	605.3	658.4
2010/09/09	14:54:00	0.000	1437	1441	235.7	239.2	616.7	656.1
2010/09/09	14:55:00	0.000	1438	1441	236.9	242.7	615.8	650.2
2010/09/09	14:56:00	0.000	1440	1442	235.1	239.7	623.8	659.0
2010/09/09	14:57:00	0.000	1439	1440	236.0	239.5	620.2	651.4
2010/09/09	14:58:00	0.000	1439	1444	235.3	240.9	610.6	649.9
2010/09/09	14:59:00	0.000	1439	1445	236.2	240.1	615.3	661.9
2010/09/09	15:00:00	0.000	1432	1439	236.2	300.9	613.9	650.8
2010/09/09	15:01:00	0.000	1432	1494	246.2	356.1	627.3	674.9
2010/09/09	15:02:00	0.000	1435	1493	216.0	248.6	620.5	656.1
2010/09/09	15:03:00	0.000	1394	1435	215.7	253.8	588.3	637.6
2010/09/09	15:04:00	0.000	1337	1488	237.8	316.7	621.1	660.4
2010/09/09	15:05:00	0.000	1463	1501	224.2	237.8	615.6	651.7
2010/09/09	15:06:00	0.000	1413	1463	223.4	227.1	598.0	642.6
2010/09/09	15:07:00	0.000	1396	1413	223.0	332.9	598.9	649.3
2010/09/09	15:08:00	0.000	1402	1473	243.6	319.0	601.2	658.9
2010/09/09	15:09:00	0.000	1438	1472	214.5	243.6	616.0	656.4
2010/09/09	15:10:00	0.000	1400	1438	213.4	216.0	586.6	634.9
2010/09/09	15:11:00	0.000	1400	1479	213.4	337.6	620.2	656.1
2010/09/09	15:12:00	0.000	1461	1484	209.0	238.3	609.0	653.5
2010/09/09	15:13:00	0.000	1403	1461	202.8	209.0	590.1	634.0
2010/09/09	15:14:00	0.000	1390	1446	203.0	292.7	593.3	664.2
2010/09/09	15:15:00	0.000	1446	1477	232.5	260.9	613.5	654.4
2010/09/09	15:16:00	0.000	1422	1460	230.7	232.7	621.4	656.3

2010/09/09	15:17:00	0.000	1414	1422	231.3	234.3	606.9	668.4
2010/09/09	15:18:00	0.000	1414	1426	231.0	237.1	635.8	668.4
2010/09/09	15:19:00	0.000	1426	1432	229.8	234.4	624.1	659.0
2010/09/09	15:20:00	0.000	1432	1435	232.9	236.0	623.2	657.9
2010/09/09	15:21:00	0.000	1435	1438	230.7	236.9	620.9	657.0
2010/09/09	15:22:00	0.000	1436	1440	232.5	237.1	620.9	651.7
2010/09/09	15:23:00	0.000	1433	1439	230.7	236.0	601.5	645.4
2010/09/09	15:24:00	0.000	1439	1443	231.8	235.1	608.3	651.9
2010/09/09	15:25:00	0.000	1437	1440	231.8	236.6	609.4	654.1
2010/09/09	15:26:00	0.000	1437	1441	231.3	236.0	609.4	661.9
2010/09/09	15:27:00	0.000	1441	1448	229.8	237.1	607.4	646.7
2010/09/09	15:28:00	0.000	1441	1447	229.8	235.3	600.0	660.5
2010/09/09	15:29:00	0.000	1443	1456	232.7	236.0	612.5	643.5
2010/09/09	15:30:00	0.000	1452	1461	233.9	237.9	602.1	632.6
2010/09/09	15:31:00	0.000	1424	1452	231.0	235.1	599.6	636.4
2010/09/09	15:32:00	0.000	1417	1424	230.4	236.8	601.2	638.5
2010/09/09	15:33:00	0.000	1417	1428	229.2	234.2	598.9	641.1
2010/09/09	15:34:00	0.000	1428	1432	229.8	234.8	616.5	641.1
2010/09/09	15:35:00	0.000	1432	1440	230.1	234.8	604.1	644.1
2010/09/09	15:36:00	0.000	1440	1446	230.7	234.5	593.9	640.5
2010/09/09	15:37:00	0.000	1436	1444	231.7	249.5	590.4	652.3
2010/09/09	15:38:00	0.000	1436	1471	249.5	270.1	626.7	657.9
2010/09/09	15:39:00	0.000	1465	1480	228.6	267.3	611.8	661.1
2010/09/09	15:40:00	0.000	1427	1465	227.1	230.7	619.1	658.4
2010/09/09	15:41:00	0.000	1411	1427	228.6	230.7	607.4	648.8
2010/09/09	15:42:00	0.000	1410	1415	229.2	232.2	593.3	640.8
2010/09/09	15:43:00	0.000	1415	1422	229.1	232.2	599.2	632.7
2010/09/09	15:44:00	0.000	1422	1431	227.7	233.0	596.0	637.5
2010/09/09	15:45:00	0.000	1431	1444	227.1	230.4	591.8	636.7
2010/09/09	15:46:00	0.000	1381	1460	226.0	313.8	591.8	660.7
2010/09/09	15:47:00	0.000	1389	1514	237.1	268.9	618.8	667.9
2010/09/09	15:48:00	0.000	1434	1501	214.8	238.9	620.2	663.2
2010/09/09	15:49:00	0.000	1399	1434	213.7	217.2	596.2	629.1
2010/09/09	15:50:00	0.000	1346	1477	214.2	308.5	611.4	651.4
2010/09/09	15:51:00	0.000	1477	1500	231.0	238.8	615.6	649.5
2010/09/09	15:52:00	0.000	1444	1482	229.5	233.0	616.7	658.5
2010/09/09	15:53:00	0.000	1425	1444	231.0	235.1	605.3	646.7
2010/09/09	15:54:00	0.000	1418	1425	231.0	235.1	605.3	641.7
2010/09/09	15:55:00	0.000	1412	1420	228.9	232.7	600.1	640.5
2010/09/09	15:56:00	0.000	1412	1422	228.9	233.4	600.1	646.1
2010/09/09	15:57:00	0.000	1422	1437	229.8	234.2	588.9	646.4
2010/09/09	15:58:00	0.000	1436	1439	228.0	236.2	610.0	639.1
2010/09/09	15:59:00	0.000	1436	1441	228.0	232.5	618.8	646.1
2010/09/09	16:00:00	0.000	1441	1443	228.6	234.2	607.0	658.7
2010/09/09	16:01:00	0.000	1442	1443	229.8	232.7	612.3	649.0
2010/09/09	16:02:00	0.000	1439	1450	230.9	309.1	614.1	658.4
2010/09/09	16:03:00	0.000	1378	1507	228.6	309.1	623.5	671.6
2010/09/09	16:04:00	0.000	1443	1501	226.0	229.2	623.9	656.2
2010/09/09	16:05:00	0.000	1418	1443	224.8	230.1	616.7	657.0
2010/09/09	16:06:00	0.000	1418	1420	226.0	230.7	615.0	655.8
2010/09/09	16:07:00	0.000	1416	1420	226.2	230.7	606.5	648.4
2010/09/09	16:08:00	0.000	1420	1431	225.3	229.5	609.1	648.4

2010/09/09	16:09:00	0.000	1383	1523	229.2	306.8	617.3	678.4
2010/09/09	16:10:00	0.000	1476	1527	226.0	233.8	603.9	656.4
2010/09/09	16:11:00	0.000	1422	1476	223.6	228.3	603.9	655.8
2010/09/09	16:12:00	0.000	1405	1422	223.6	226.5	595.6	642.0
2010/09/09	16:13:00	0.000	1404	1433	225.0	268.5	603.7	637.3
2010/09/09	16:14:00	0.000	1433	1504	234.2	272.4	610.3	654.3
2010/09/09	16:15:00	0.000	1460	1504	223.4	234.2	601.8	648.4
2010/09/09	16:16:00	0.000	1428	1460	223.6	226.9	613.5	654.0
2010/09/09	16:17:00	0.000	1406	1428	221.3	227.8	586.9	638.4
2010/09/09	16:18:00	0.000	1400	1409	222.7	227.4	598.0	636.4
2010/09/09	16:19:00	0.000	1348	1502	224.5	299.1	618.2	652.8
2010/09/09	16:20:00	0.000	1490	1525	227.1	252.4	607.6	657.0
2010/09/09	16:21:00	0.000	1430	1490	226.2	230.1	602.7	647.9
2010/09/09	16:22:00	0.000	1403	1430	225.7	229.2	614.6	653.5
2010/09/09	16:23:00	0.000	1399	1403	225.3	230.1	606.2	653.1
2010/09/09	16:24:00	0.000	1402	1409	226.9	228.3	614.4	643.5
2010/09/09	16:25:00	0.000	1409	1442	226.5	270.1	599.9	649.0
2010/09/09	16:26:00	0.000	1384	1532	236.9	298.2	628.5	668.1
2010/09/09	16:27:00	0.000	1489	1538	228.3	236.9	624.4	662.2
2010/09/09	16:28:00	0.000	1440	1489	227.1	230.7	613.9	652.8
2010/09/09	16:29:00	0.000	1418	1440	228.0	231.3	608.2	641.4
2010/09/09	16:30:00	0.000	1409	1418	229.5	233.1	611.8	648.1
2010/09/09	16:31:00	0.000	1406	1409	227.7	233.4	597.7	631.8
2010/09/09	16:32:00	0.000	1409	1414	227.1	229.5	597.4	629.7
2010/09/09	16:33:00	0.000	1414	1431	227.4	231.6	594.2	635.8
2010/09/09	16:34:00	0.000	1431	1455	226.9	279.7	593.6	660.2
2010/09/09	16:35:00	0.000	1455	1501	243.0	282.1	605.6	661.1
		Average	**1424**	**1452**	**229**	**248**		
		Average		**1438**		**239**		

		Ch.	CH001		CH003		CH005	
		Tag	FLARE 1 TEMP		FLARE 1 FLOW		LFG FLOW	
		Unit	°F		SCFM		SCFM	
Date	Time	sec	MIN	MAX	MIN	MAX	MIN	MAX
2010/09/09	18:50:00	0.000	1434	1438	232.7	237.7	596.8	612.3
2010/09/09	18:51:00	0.000	1435	1438	231.2	235.1	594.2	609.7
2010/09/09	18:52:00	0.000	1435	1438	232.1	236.5	589.8	618.2
2010/09/09	18:53:00	0.000	1434	1436	231.6	235.1	593.6	615.3
2010/09/09	18:54:00	0.000	1434	1439	231.8	234.4	584.8	613.9
2010/09/09	18:55:00	0.000	1437	1439	228.9	235.1	582.8	605.3
2010/09/09	18:56:00	0.000	1437	1438	231.0	235.3	591.5	605.3
2010/09/09	18:57:00	0.000	1437	1438	232.1	235.3	593.6	603.0
2010/09/09	18:58:00	0.000	1436	1438	230.7	234.8	585.4	607.3
2010/09/09	18:59:00	0.000	1436	1443	231.8	254.4	593.3	612.7
2010/09/09	19:00:00	0.000	1443	1461	248.6	253.2	595.7	615.8
2010/09/09	19:01:00	0.000	1461	1463	248.6	254.1	602.7	620.5
2010/09/09	19:02:00	0.000	1426	1461	209.8	254.4	591.8	617.9
2010/09/09	19:03:00	0.000	1389	1426	208.9	219.8	574.3	596.2
2010/09/09	19:04:00	0.000	1388	1418	219.8	232.5	576.9	588.7
2010/09/09	19:05:00	0.000	1418	1473	230.0	263.5	581.5	612.3
2010/09/09	19:06:00	0.000	1473	1500	246.0	268.6	610.0	631.1
2010/09/09	19:07:00	0.000	1433	1499	201.6	246.0	594.8	620.0
2010/09/09	19:08:00	0.000	1384	1433	201.2	235.3	581.6	613.0
2010/09/09	19:09:00	0.000	1385	1422	234.8	240.4	573.1	599.5
2010/09/09	19:10:00	0.000	1422	1449	234.8	238.8	584.8	599.7
2010/09/09	19:11:00	0.000	1446	1449	235.1	238.8	589.7	620.5
2010/09/09	19:12:00	0.000	1443	1446	235.3	238.8	596.5	618.5
2010/09/09	19:13:00	0.000	1439	1443	236.2	238.6	603.5	622.3
2010/09/09	19:14:00	0.000	1437	1440	236.8	243.0	591.3	618.2
2010/09/09	19:15:00	0.000	1437	1439	234.4	239.7	594.5	620.6
2010/09/09	19:16:00	0.000	1438	1439	234.4	239.7	596.2	611.2
2010/09/09	19:17:00	0.000	1437	1439	234.4	240.0	589.7	607.0
2010/09/09	19:18:00	0.000	1436	1439	234.7	238.8	586.6	613.2
2010/09/09	19:19:00	0.000	1433	1439	235.3	239.1	588.7	608.5
2010/09/09	19:20:00	0.000	1433	1435	232.5	237.9	592.3	613.0
2010/09/09	19:21:00	0.000	1433	1435	234.2	238.6	598.0	610.9
2010/09/09	19:22:00	0.000	1434	1436	234.4	239.4	595.1	612.3
2010/09/09	19:23:00	0.000	1435	1440	235.6	239.2	591.3	608.3
2010/09/09	19:24:00	0.000	1438	1439	235.6	238.8	582.7	602.1
2010/09/09	19:25:00	0.000	1438	1439	234.2	238.3	585.2	607.4
2010/09/09	19:26:00	0.000	1437	1439	233.9	237.4	578.0	604.1
2010/09/09	19:27:00	0.000	1435	1438	234.4	237.0	590.1	607.1
2010/09/09	19:28:00	0.000	1434	1437	234.7	237.9	584.4	606.5
2010/09/09	19:29:00	0.000	1437	1440	234.2	238.6	583.6	609.4
2010/09/09	19:30:00	0.000	1438	1440	233.6	237.7	583.3	593.6
2010/09/09	19:31:00	0.000	1438	1440	233.9	239.5	579.8	603.0
2010/09/09	19:32:00	0.000	1438	1440	233.3	239.5	583.6	603.0
2010/09/09	19:33:00	0.000	1439	1441	234.2	236.2	577.8	605.8
2010/09/09	19:34:00	0.000	1440	1442	231.2	235.9	586.2	613.2
2010/09/09	19:35:00	0.000	1437	1440	233.3	237.7	586.0	604.7
2010/09/09	19:36:00	0.000	1437	1438	232.5	237.7	589.2	602.3
2010/09/09	19:37:00	0.000	1436	1437	234.8	237.4	588.0	605.6

2010/09/09	19:38:00	0.000	1433	1436	233.9	237.7	585.7	609.4
2010/09/09	19:39:00	0.000	1434	1435	233.0	236.8	586.5	614.7
2010/09/09	19:40:00	0.000	1435	1438	233.0	236.0	593.0	614.4
2010/09/09	19:41:00	0.000	1437	1438	232.4	236.0	588.5	612.3
2010/09/09	19:42:00	0.000	1438	1440	233.3	237.9	586.8	609.4
2010/09/09	19:43:00	0.000	1439	1442	233.5	237.9	584.8	609.6
2010/09/09	19:44:00	0.000	1440	1441	233.0	235.9	584.9	607.9
2010/09/09	19:45:00	0.000	1439	1441	233.0	240.0	572.4	601.8
2010/09/09	19:46:00	0.000	1434	1439	232.7	236.5	579.2	601.1
2010/09/09	19:47:00	0.000	1432	1435	231.8	235.9	583.6	610.5
2010/09/09	19:48:00	0.000	1434	1436	231.2	235.9	583.0	602.7
2010/09/09	19:49:00	0.000	1435	1439	231.6	236.9	586.5	606.3
2010/09/09	19:50:00	0.000	1438	1439	232.4	239.7	573.4	593.0
2010/09/09	19:51:00	0.000	1439	1439	231.8	236.2	570.1	595.1
2010/09/09	19:52:00	0.000	1439	1440	231.8	236.5	573.6	595.1
2010/09/09	19:53:00	0.000	1437	1439	232.4	236.2	569.9	590.1
2010/09/09	19:54:00	0.000	1437	1438	230.3	235.9	574.4	589.2
2010/09/09	19:55:00	0.000	1435	1438	232.5	236.2	574.2	603.0
2010/09/09	19:56:00	0.000	1436	1437	231.2	234.4	576.9	597.7
2010/09/09	19:57:00	0.000	1436	1438	231.8	236.5	571.0	590.6
2010/09/09	19:58:00	0.000	1434	1437	232.4	236.2	569.8	589.7
2010/09/09	19:59:00	0.000	1435	1439	232.4	237.0	563.9	584.4
2010/09/09	20:00:00	0.000	1437	1439	231.6	236.5	561.4	578.3
2010/09/09	20:01:00	0.000	1436	1437	231.6	236.5	558.3	580.7
2010/09/09	20:02:00	0.000	1435	1436	230.9	234.4	567.4	587.8
2010/09/09	20:03:00	0.000	1436	1438	230.7	236.2	569.8	589.7
2010/09/09	20:04:00	0.000	1438	1439	230.9	234.7	569.9	588.8
2010/09/09	20:05:00	0.000	1435	1439	231.8	236.5	570.6	588.8
2010/09/09	20:06:00	0.000	1435	1438	231.2	235.9	564.2	590.4
2010/09/09	20:07:00	0.000	1438	1441	232.1	236.0	564.8	580.1
2010/09/09	20:08:00	0.000	1440	1442	232.1	235.6	567.8	590.4
2010/09/09	20:09:00	0.000	1436	1441	231.6	236.5	560.9	582.5
2010/09/09	20:10:00	0.000	1436	1437	230.7	234.7	563.9	591.8
2010/09/09	20:11:00	0.000	1436	1440	232.7	235.6	574.4	593.3
2010/09/09	20:12:00	0.000	1440	1442	231.8	234.7	573.0	592.7
2010/09/09	20:13:00	0.000	1439	1442	232.4	235.6	571.6	598.0
2010/09/09	20:14:00	0.000	1439	1440	231.8	236.3	572.7	598.0
2010/09/09	20:15:00	0.000	1437	1440	230.9	235.0	567.4	589.4
2010/09/09	20:16:00	0.000	1437	1438	230.9	235.6	568.1	589.4
2010/09/09	20:17:00	0.000	1436	1438	229.8	236.2	566.3	597.4
2010/09/09	20:18:00	0.000	1436	1438	230.9	235.1	573.1	587.1
2010/09/09	20:19:00	0.000	1438	1440	231.8	251.5	576.5	602.3
2010/09/09	20:20:00	0.000	1440	1460	249.5	253.5	578.7	602.1
2010/09/09	20:21:00	0.000	1460	1463	247.9	254.4	588.3	600.3
2010/09/09	20:22:00	0.000	1446	1460	225.1	253.5	586.5	603.0
2010/09/09	20:23:00	0.000	1411	1446	223.0	226.5	577.2	603.6
2010/09/09	20:24:00	0.000	1403	1411	223.0	227.7	568.1	587.1
2010/09/09	20:25:00	0.000	1404	1416	223.0	226.8	555.1	570.1
2010/09/09	20:26:00	0.000	1416	1432	221.8	254.4	546.9	570.4
2010/09/09	20:27:00	0.000	1432	1490	254.4	268.8	564.3	600.1
2010/09/09	20:28:00	0.000	1481	1504	230.0	266.7	586.9	603.9
2010/09/09	20:29:00	0.000	1431	1481	228.3	233.0	573.6	594.2

2010/09/09	20:30:00	0.000	1413	1431	229.5	233.5	563.6	594.5
2010/09/09	20:31:00	0.000	1410	1413	228.0	232.4	566.5	588.0
2010/09/09	20:32:00	0.000	1411	1419	228.6	232.8	558.4	579.5
2010/09/09	20:33:00	0.000	1419	1427	227.7	232.8	563.1	583.4
2010/09/09	20:34:00	0.000	1427	1440	229.1	232.1	557.2	575.1
2010/09/09	20:35:00	0.000	1440	1441	227.1	230.7	562.1	579.2
2010/09/09	20:36:00	0.000	1438	1441	226.9	230.7	559.5	580.4
2010/09/09	20:37:00	0.000	1438	1448	227.1	249.7	570.4	594.2
2010/09/09	20:38:00	0.000	1448	1464	247.7	252.7	581.6	607.0
2010/09/09	20:39:00	0.000	1460	1464	247.9	256.1	589.5	607.6
2010/09/09	20:40:00	0.000	1430	1460	204.5	256.1	562.2	611.4
2010/09/09	20:41:00	0.000	1391	1430	202.4	233.0	555.5	577.1
2010/09/09	20:42:00	0.000	1391	1441	233.0	259.4	561.3	587.7
2010/09/09	20:43:00	0.000	1441	1476	255.0	259.1	569.8	598.6
2010/09/09	20:44:00	0.000	1455	1480	229.5	255.0	572.5	600.3
2010/09/09	20:45:00	0.000	1419	1455	229.1	234.4	574.0	589.2
2010/09/09	20:46:00	0.000	1412	1419	230.4	233.9	561.8	587.9
2010/09/09	20:47:00	0.000	1414	1420	228.9	232.5	563.4	573.0
2010/09/09	20:48:00	0.000	1419	1430	228.6	231.5	558.8	576.8
2010/09/09	20:49:00	0.000	1430	1439	228.0	231.8	559.2	572.7
2010/09/09	20:50:00	0.000	1436	1439	228.6	233.9	553.7	575.3
2010/09/09	20:51:00	0.000	1437	1440	228.9	233.9	565.2	583.9
2010/09/09	20:52:00	0.000	1438	1440	227.4	230.7	566.0	587.9
2010/09/09	20:53:00	0.000	1438	1441	228.0	233.2	566.0	584.1
2010/09/09	20:54:00	0.000	1440	1457	233.2	252.6	576.2	587.9
2010/09/09	20:55:00	0.000	1457	1463	246.8	251.2	567.9	601.8
		Average	**1433**	**1443**	**232**	**239**		
		Average		**1438**		**235**		

		Ch.	CH001		CH003		CH005	
		Tag	FLARE 1 TEMP		FLARE 1 FLOW		LFG FLOW	
		Unit	°F		SCFM		SCFM	
Date	Time	sec	MIN	MAX	MIN	MAX	MIN	MAX
2010/09/10	15:25:00	0.000	1432	1441	223.4	225.7	622.9	642.9
2010/09/10	15:26:00	0.000	1441	1444	223.1	225.2	622.4	654.4
2010/09/10	15:27:00	0.000	1443	1446	223.4	227.4	628.6	649.6
2010/09/10	15:28:00	0.000	1444	1447	223.9	227.4	627.1	655.0
2010/09/10	15:29:00	0.000	1442	1450	223.7	227.1	636.3	658.5
2010/09/10	15:30:00	0.000	1449	1456	223.6	228.0	618.0	650.0
2010/09/10	15:31:00	0.000	1433	1449	223.9	228.0	618.0	641.8
2010/09/10	15:32:00	0.000	1423	1433	223.5	225.1	621.2	639.1
2010/09/10	15:33:00	0.000	1423	1425	222.5	227.5	616.3	638.9
2010/09/10	15:34:00	0.000	1423	1429	222.5	227.5	614.5	636.4
2010/09/10	15:35:00	0.000	1429	1435	222.5	225.4	616.6	639.1
2010/09/10	15:36:00	0.000	1433	1444	221.8	225.7	620.3	635.4
2010/09/10	15:37:00	0.000	1444	1450	222.7	225.1	620.0	638.8
2010/09/10	15:38:00	0.000	1449	1451	222.7	226.0	623.4	642.4
2010/09/10	15:39:00	0.000	1431	1451	222.5	226.5	616.7	643.5
2010/09/10	15:40:00	0.000	1429	1432	223.6	228.0	625.0	651.1
2010/09/10	15:41:00	0.000	1432	1437	224.5	227.1	631.8	653.5
2010/09/10	15:42:00	0.000	1431	1439	223.6	226.6	635.6	652.5
2010/09/10	15:43:00	0.000	1435	1439	224.0	227.5	619.5	651.7
2010/09/10	15:44:00	0.000	1433	1437	223.6	227.8	612.7	641.3
2010/09/10	15:45:00	0.000	1437	1440	222.5	226.0	608.3	632.9
2010/09/10	15:46:00	0.000	1440	1452	222.5	225.7	614.5	625.4
2010/09/10	15:47:00	0.000	1445	1457	222.5	226.3	612.7	629.3
2010/09/10	15:48:00	0.000	1430	1445	223.1	225.7	602.4	623.2
2010/09/10	15:49:00	0.000	1430	1445	222.2	225.7	614.2	634.1
2010/09/10	15:50:00	0.000	1445	1452	223.1	225.7	616.5	635.0
2010/09/10	15:51:00	0.000	1437	1451	223.9	226.3	616.3	636.2
2010/09/10	15:52:00	0.000	1437	1439	223.4	226.0	622.7	643.8
2010/09/10	15:53:00	0.000	1432	1438	223.4	226.6	616.6	636.4
2010/09/10	15:54:00	0.000	1425	1432	223.4	226.0	616.2	638.9
2010/09/10	15:55:00	0.000	1429	1437	221.9	226.0	616.5	647.8
2010/09/10	15:56:00	0.000	1429	1438	223.6	227.4	617.4	637.3
2010/09/10	15:57:00	0.000	1427	1436	222.7	225.7	621.6	636.2
2010/09/10	15:58:00	0.000	1435	1439	223.1	226.0	611.2	631.5
2010/09/10	15:59:00	0.000	1437	1447	222.7	225.7	614.8	640.0
2010/09/10	16:00:00	0.000	1436	1447	224.3	226.9	613.6	635.8
2010/09/10	16:01:00	0.000	1424	1436	222.5	226.6	611.8	630.9
2010/09/10	16:02:00	0.000	1424	1431	221.9	225.2	614.4	642.7
2010/09/10	16:03:00	0.000	1429	1434	223.6	225.4	624.1	644.4
2010/09/10	16:04:00	0.000	1434	1436	222.8	226.6	620.6	637.6
2010/09/10	16:05:00	0.000	1435	1437	223.1	225.7	616.8	635.2
2010/09/10	16:06:00	0.000	1434	1436	222.2	225.3	622.0	642.0
2010/09/10	16:07:00	0.000	1434	1440	223.4	226.0	619.6	651.1
2010/09/10	16:08:00	0.000	1440	1450	223.4	226.0	624.1	645.7
2010/09/10	16:09:00	0.000	1450	1455	223.4	226.6	623.8	644.4
2010/09/10	16:10:00	0.000	1449	1453	223.6	227.8	625.6	647.2
2010/09/10	16:11:00	0.000	1429	1449	222.7	227.4	617.4	633.4
2010/09/10	16:12:00	0.000	1423	1429	222.5	225.7	621.5	636.7

2010/09/10	16:13:00	0.000	1425	1440	224.3	226.6	620.1	637.1
2010/09/10	16:14:00	0.000	1431	1440	223.9	228.0	619.4	637.5
2010/09/10	16:15:00	0.000	1432	1436	223.9	226.6	615.9	637.5
2010/09/10	16:16:00	0.000	1435	1441	223.1	226.6	619.2	634.7
2010/09/10	16:17:00	0.000	1430	1439	223.1	226.6	619.2	632.0
2010/09/10	16:18:00	0.000	1430	1436	223.0	225.4	619.3	637.3
2010/09/10	16:19:00	0.000	1436	1446	224.3	226.6	618.5	638.4
2010/09/10	16:20:00	0.000	1439	1442	224.5	226.9	620.1	643.8
2010/09/10	16:21:00	0.000	1434	1442	223.6	227.4	622.3	639.1
2010/09/10	16:22:00	0.000	1432	1435	223.6	225.7	623.2	639.1
2010/09/10	16:23:00	0.000	1435	1443	223.6	226.9	627.6	640.0
2010/09/10	16:24:00	0.000	1436	1444	224.5	227.8	621.8	645.0
2010/09/10	16:25:00	0.000	1435	1436	224.1	227.8	618.0	647.8
2010/09/10	16:26:00	0.000	1434	1436	223.1	227.8	617.5	638.5
2010/09/10	16:27:00	0.000	1436	1438	224.0	227.1	615.6	636.7
2010/09/10	16:28:00	0.000	1436	1439	223.1	227.1	613.3	633.8
2010/09/10	16:29:00	0.000	1434	1439	224.3	228.3	610.3	629.4
2010/09/10	16:30:00	0.000	1434	1438	224.3	228.3	607.4	624.5
2010/09/10	16:31:00	0.000	1438	1441	222.7	226.6	608.3	627.1
2010/09/10	16:32:00	0.000	1441	1448	222.7	226.6	605.0	628.5
2010/09/10	16:33:00	0.000	1447	1449	223.9	226.9	612.4	628.5
2010/09/10	16:34:00	0.000	1449	1458	224.3	226.6	608.9	630.1
2010/09/10	16:35:00	0.000	1441	1456	224.3	227.8	611.2	637.4
2010/09/10	16:36:00	0.000	1421	1441	224.3	228.1	606.3	628.3
2010/09/10	16:37:00	0.000	1420	1426	223.6	228.7	616.3	645.5
2010/09/10	16:38:00	0.000	1426	1435	225.1	227.8	626.2	644.1
2010/09/10	16:39:00	0.000	1435	1451	225.0	229.2	621.8	645.5
2010/09/10	16:40:00	0.000	1438	1450	226.0	228.6	616.5	642.1
2010/09/10	16:41:00	0.000	1427	1438	224.5	228.3	617.0	638.8
2010/09/10	16:42:00	0.000	1424	1427	226.0	228.6	622.4	651.7
2010/09/10	16:43:00	0.000	1427	1435	225.4	228.9	612.8	645.0
2010/09/10	16:44:00	0.000	1435	1441	225.4	228.9	612.1	637.3
2010/09/10	16:45:00	0.000	1441	1460	225.4	228.9	613.9	624.7
2010/09/10	16:46:00	0.000	1446	1460	224.3	229.6	607.7	624.1
2010/09/10	16:47:00	0.000	1442	1449	225.4	229.2	605.0	626.7
2010/09/10	16:48:00	0.000	1430	1442	223.6	227.4	608.0	627.2
2010/09/10	16:49:00	0.000	1429	1439	224.6	226.6	597.7	618.8
2010/09/10	16:50:00	0.000	1439	1441	224.3	226.3	608.0	638.8
2010/09/10	16:51:00	0.000	1436	1443	224.5	227.1	604.1	630.1
2010/09/10	16:52:00	0.000	1436	1442	225.3	228.0	609.2	628.3
2010/09/10	16:53:00	0.000	1441	1444	224.8	228.6	612.1	628.3
2010/09/10	16:54:00	0.000	1424	1441	224.5	228.3	608.5	629.7
2010/09/10	16:55:00	0.000	1423	1424	225.4	228.7	607.6	629.2
2010/09/10	16:56:00	0.000	1424	1432	223.1	227.1	601.7	622.4
2010/09/10	16:57:00	0.000	1432	1449	223.4	227.4	603.6	626.5
2010/09/10	16:58:00	0.000	1439	1451	223.4	229.5	595.4	618.3
2010/09/10	16:59:00	0.000	1433	1439	223.6	227.1	595.4	626.7
2010/09/10	17:00:00	0.000	1433	1438	222.7	226.2	603.0	624.7
2010/09/10	17:01:00	0.000	1429	1433	223.1	226.0	601.2	624.1
2010/09/10	17:02:00	0.000	1429	1433	223.1	226.0	598.4	626.5
2010/09/10	17:03:00	0.000	1432	1434	223.4	226.9	602.4	625.3
2010/09/10	17:04:00	0.000	1434	1440	223.4	224.8	605.7	624.4

2010/09/10	17:05:00	0.000	1440	1443	221.9	226.2	603.9	631.9
2010/09/10	17:06:00	0.000	1441	1443	224.3	226.0	610.2	633.8
2010/09/10	17:07:00	0.000	1437	1443	224.3	226.5	596.3	624.0
2010/09/10	17:08:00	0.000	1437	1439	223.4	227.4	607.6	622.9
2010/09/10	17:09:00	0.000	1438	1439	223.1	227.5	608.2	625.6
2010/09/10	17:10:00	0.000	1437	1441	223.6	225.7	602.5	629.7
2010/09/10	17:11:00	0.000	1436	1437	223.9	226.0	605.0	617.9
2010/09/10	17:12:00	0.000	1436	1446	223.1	226.9	601.8	627.1
2010/09/10	17:13:00	0.000	1442	1448	224.5	226.2	610.3	627.4
2010/09/10	17:14:00	0.000	1431	1442	223.4	226.0	609.4	627.1
2010/09/10	17:15:00	0.000	1431	1433	223.6	227.1	605.7	640.9
2010/09/10	17:16:00	0.000	1431	1436	223.4	227.1	595.7	625.8
2010/09/10	17:17:00	0.000	1435	1437	223.3	226.9	597.5	620.1
2010/09/10	17:18:00	0.000	1437	1439	223.0	226.2	597.5	627.4
2010/09/10	17:19:00	0.000	1435	1437	221.2	225.9	581.0	618.0
2010/09/10	17:20:00	0.000	1433	1436	221.2	225.1	581.0	622.1
2010/09/10	17:21:00	0.000	1434	1445	223.6	228.9	601.5	622.9
2010/09/10	17:22:00	0.000	1444	1450	223.0	227.4	598.6	619.7
2010/09/10	17:23:00	0.000	1435	1444	222.2	225.4	587.5	617.7
2010/09/10	17:24:00	0.000	1436	1439	222.2	225.3	587.5	615.3
2010/09/10	17:25:00	0.000	1437	1444	222.5	225.4	588.0	614.1
2010/09/10	17:26:00	0.000	1434	1444	221.8	224.8	586.4	617.1
2010/09/10	17:27:00	0.000	1432	1434	221.0	224.8	586.4	619.2
2010/09/10	17:28:00	0.000	1434	1436	222.5	226.0	594.7	618.0
2010/09/10	17:29:00	0.000	1436	1438	223.0	226.0	596.0	628.3
2010/09/10	17:30:00	0.000	1435	1447	223.4	226.4	600.1	630.2
		Average	**1434**	**1441**	**223**	**227**		
				1438		**225**		

		Ch.	CH001		CH003		CH005	
		Tag	FLARE 1 TEMP		FLARE 1 FLOW		LFG FLOW	
		Unit	°F		SCFM		SCFM	
Date	Time	sec	MIN	MAX	MIN	MAX	MIN	MAX
2010/09/10	19:50:00	0.000	1460	1498	270.6	275.1	619.8	638.1
2010/09/10	19:51:00	0.000	1483	1501	250.0	275.7	629.4	643.2
2010/09/10	19:52:00	0.000	1450	1483	248.0	253.0	621.5	634.7
2010/09/10	19:53:00	0.000	1430	1450	249.2	253.6	610.9	635.5
2010/09/10	19:54:00	0.000	1423	1430	247.4	253.2	606.5	618.6
2010/09/10	19:55:00	0.000	1420	1423	247.1	251.5	598.7	623.3
2010/09/10	19:56:00	0.000	1421	1423	247.4	252.1	605.4	623.2
2010/09/10	19:57:00	0.000	1423	1429	247.1	251.3	601.3	618.9
2010/09/10	19:58:00	0.000	1429	1431	247.7	250.9	604.9	624.0
2010/09/10	19:59:00	0.000	1431	1438	248.6	252.2	611.8	622.4
2010/09/10	20:00:00	0.000	1438	1442	245.6	253.1	608.3	628.0
2010/09/10	20:01:00	0.000	1440	1442	248.6	253.6	607.7	621.8
2010/09/10	20:02:00	0.000	1439	1440	247.4	251.3	605.1	620.3
2010/09/10	20:03:00	0.000	1439	1440	249.5	252.7	597.1	618.3
2010/09/10	20:04:00	0.000	1438	1439	248.0	254.4	603.6	617.1
2010/09/10	20:05:00	0.000	1436	1438	246.9	252.4	593.6	615.6
2010/09/10	20:06:00	0.000	1435	1436	247.1	251.5	592.7	617.6
2010/09/10	20:07:00	0.000	1435	1437	246.5	251.8	596.0	615.3
2010/09/10	20:08:00	0.000	1437	1444	245.3	250.4	590.4	608.5
2010/09/10	20:09:00	0.000	1443	1446	248.0	251.5	586.6	604.0
2010/09/10	20:10:00	0.000	1441	1443	247.7	251.5	592.9	615.4
2010/09/10	20:11:00	0.000	1439	1442	246.8	250.4	596.6	618.5
2010/09/10	20:12:00	0.000	1435	1439	247.7	251.8	596.6	619.1
2010/09/10	20:13:00	0.000	1433	1435	247.9	253.2	603.0	620.6
2010/09/10	20:14:00	0.000	1432	1434	246.5	250.9	589.6	619.7
2010/09/10	20:15:00	0.000	1432	1434	246.2	251.5	604.9	619.7
2010/09/10	20:16:00	0.000	1434	1439	247.1	253.2	600.4	617.4
2010/09/10	20:17:00	0.000	1438	1439	247.1	253.2	593.6	623.2
2010/09/10	20:18:00	0.000	1437	1438	247.4	252.1	585.4	618.5
2010/09/10	20:19:00	0.000	1437	1438	246.8	250.4	592.3	613.0
2010/09/10	20:20:00	0.000	1437	1439	247.7	251.3	594.5	618.3
2010/09/10	20:21:00	0.000	1439	1441	244.4	249.5	595.4	609.2
2010/09/10	20:22:00	0.000	1439	1441	245.1	252.1	599.2	616.6
2010/09/10	20:23:00	0.000	1436	1442	246.5	252.1	598.0	613.9
2010/09/10	20:24:00	0.000	1436	1440	246.2	252.4	598.0	607.4
2010/09/10	20:25:00	0.000	1437	1440	246.2	248.8	584.3	608.3
2010/09/10	20:26:00	0.000	1433	1437	246.2	248.8	600.3	611.5
2010/09/10	20:27:00	0.000	1434	1435	246.2	253.9	601.5	617.4
2010/09/10	20:28:00	0.000	1434	1436	247.7	253.2	599.8	620.9
2010/09/10	20:29:00	0.000	1435	1437	247.7	255.9	601.8	625.8
2010/09/10	20:30:00	0.000	1435	1442	248.0	254.1	601.8	614.1
2010/09/10	20:31:00	0.000	1440	1442	247.4	252.7	586.6	616.7
2010/09/10	20:32:00	0.000	1439	1441	247.7	252.1	589.2	613.0
2010/09/10	20:33:00	0.000	1435	1439	244.8	250.0	582.5	600.6
2010/09/10	20:34:00	0.000	1432	1435	246.5	250.0	584.5	610.1
2010/09/10	20:35:00	0.000	1432	1434	244.8	249.5	590.9	615.6
2010/09/10	20:36:00	0.000	1433	1438	244.8	251.2	588.7	609.3
2010/09/10	20:37:00	0.000	1438	1442	247.4	250.9	588.7	613.6
2010/09/10	20:38:00	0.000	1442	1443	247.4	252.4	587.5	613.6
2010/09/10	20:39:00	0.000	1442	1444	247.4	255.0	583.9	603.6
2010/09/10	20:40:00	0.000	1438	1442	246.0	251.5	582.1	599.2
2010/09/10	20:41:00	0.000	1433	1438	245.1	250.0	587.8	605.7

2010/09/10	20:42:00	0.000	1433	1437	243.8	249.1	588.9	610.0
2010/09/10	20:43:00	0.000	1436	1437	245.6	249.1	590.2	611.5
2010/09/10	20:44:00	0.000	1436	1438	244.4	270.1	587.8	605.3
2010/09/10	20:45:00	0.000	1438	1468	265.9	271.5	598.9	620.0
2010/09/10	20:46:00	0.000	1468	1485	266.6	271.0	607.1	622.7
2010/09/10	20:47:00	0.000	1454	1485	222.7	267.6	592.4	622.3
2010/09/10	20:48:00	0.000	1401	1454	223.3	234.8	579.8	600.4
2010/09/10	20:49:00	0.000	1393	1409	234.8	267.4	580.6	598.9
2010/09/10	20:50:00	0.000	1409	1463	262.4	268.5	588.7	603.6
2010/09/10	20:51:00	0.000	1463	1481	265.0	267.9	599.2	619.7
2010/09/10	20:52:00	0.000	1464	1481	243.0	268.5	593.3	625.8
2010/09/10	20:53:00	0.000	1430	1464	241.5	246.5	593.3	613.5
2010/09/10	20:54:00	0.000	1412	1430	240.6	246.5	586.2	613.9
2010/09/10	20:55:00	0.000	1408	1412	240.6	246.9	577.8	600.1
2010/09/10	20:56:00	0.000	1408	1411	239.7	246.9	577.8	604.8
2010/09/10	20:57:00	0.000	1411	1423	239.7	243.6	579.8	596.9
2010/09/10	20:58:00	0.000	1423	1435	239.7	250.0	584.5	599.8
2010/09/10	20:59:00	0.000	1435	1454	250.0	254.7	576.3	601.3
2010/09/10	21:00:00	0.000	1454	1456	250.0	254.1	583.4	613.4
2010/09/10	21:01:00	0.000	1452	1456	252.1	255.3	591.7	608.8
2010/09/10	21:02:00	0.000	1447	1452	250.9	253.5	592.2	608.8
2010/09/10	21:03:00	0.000	1442	1447	250.4	253.9	596.5	608.5
2010/09/10	21:04:00	0.000	1438	1442	250.9	256.8	594.3	608.8
2010/09/10	21:05:00	0.000	1435	1438	248.8	253.9	588.3	606.5
2010/09/10	21:06:00	0.000	1432	1435	248.6	253.8	583.4	600.4
2010/09/10	21:07:00	0.000	1432	1435	250.4	254.1	585.6	599.2
2010/09/10	21:08:00	0.000	1435	1436	250.4	255.6	581.8	599.2
2010/09/10	21:09:00	0.000	1435	1438	250.6	253.8	583.6	604.8
2010/09/10	21:10:00	0.000	1438	1439	249.7	255.0	599.8	608.5
2010/09/10	21:11:00	0.000	1438	1440	248.6	255.3	590.8	602.7
2010/09/10	21:12:00	0.000	1439	1441	251.2	258.6	590.6	608.3
2010/09/10	21:13:00	0.000	1439	1442	250.5	257.4	585.1	599.8
2010/09/10	21:14:00	0.000	1438	1440	250.3	257.4	581.3	603.2
2010/09/10	21:15:00	0.000	1440	1444	251.5	256.5	581.3	597.9
2010/09/10	21:16:00	0.000	1438	1442	251.2	257.4	583.9	594.1
2010/09/10	21:17:00	0.000	1438	1439	249.1	255.0	585.3	600.2
2010/09/10	21:18:00	0.000	1435	1439	237.4	255.6	588.6	598.0
2010/09/10	21:19:00	0.000	1404	1435	215.9	237.4	572.2	593.9
2010/09/10	21:20:00	0.000	1392	1409	215.6	261.8	563.3	588.3
2010/09/10	21:21:00	0.000	1409	1460	259.5	262.4	578.6	591.5
2010/09/10	21:22:00	0.000	1460	1473	257.7	263.0	585.7	609.5
2010/09/10	21:23:00	0.000	1471	1473	259.7	262.7	591.5	614.9
2010/09/10	21:24:00	0.000	1445	1471	212.5	265.9	587.2	615.6
2010/09/10	21:25:00	0.000	1386	1445	210.0	256.8	571.6	593.1
2010/09/10	21:26:00	0.000	1386	1424	255.8	259.7	571.3	601.5
2010/09/10	21:27:00	0.000	1424	1456	255.3	259.7	581.1	601.2
2010/09/10	21:28:00	0.000	1456	1459	255.0	259.7	579.2	601.5
2010/09/10	21:29:00	0.000	1452	1457	254.4	261.2	586.0	602.1
2010/09/10	21:30:00	0.000	1447	1452	256.2	261.5	573.2	602.1
2010/09/10	21:31:00	0.000	1442	1447	237.0	261.5	583.5	605.9
2010/09/10	21:32:00	0.000	1412	1442	233.9	237.1	578.2	595.0
2010/09/10	21:33:00	0.000	1400	1412	233.3	237.1	566.0	583.0
2010/09/10	21:34:00	0.000	1400	1403	232.1	259.7	563.0	580.1
2010/09/10	21:35:00	0.000	1403	1458	259.7	269.7	573.0	595.1
2010/09/10	21:36:00	0.000	1458	1487	265.0	268.8	576.8	604.1
2010/09/10	21:37:00	0.000	1487	1491	239.1	269.7	599.7	611.2

2010/09/10	21:38:00	0.000	1441	1487	235.1	241.2	583.0	607.9
2010/09/10	21:39:00	0.000	1408	1441	234.7	239.2	578.1	592.7
2010/09/10	21:40:00	0.000	1396	1408	235.6	239.2	574.2	593.6
2010/09/10	21:41:00	0.000	1396	1414	235.3	263.6	570.7	591.5
2010/09/10	21:42:00	0.000	1414	1470	262.7	267.1	581.8	602.7
2010/09/10	21:43:00	0.000	1470	1482	263.9	268.0	589.2	610.1
2010/09/10	21:44:00	0.000	1473	1481	244.8	265.3	589.8	610.0
2010/09/10	21:45:00	0.000	1440	1473	245.0	248.8	581.9	601.2
2010/09/10	21:46:00	0.000	1423	1440	243.9	247.8	572.7	595.1
2010/09/10	21:47:00	0.000	1418	1423	244.4	249.7	568.4	589.5
2010/09/10	21:48:00	0.000	1416	1418	244.2	249.5	566.5	587.7
2010/09/10	21:49:00	0.000	1418	1420	244.4	249.1	563.8	588.6
2010/09/10	21:50:00	0.000	1419	1426	247.4	250.5	566.3	586.2
2010/09/10	21:51:00	0.000	1426	1432	243.9	250.3	571.3	584.1
2010/09/10	21:52:00	0.000	1432	1439	243.9	248.6	568.7	583.6
2010/09/10	21:53:00	0.000	1438	1440	244.7	250.3	571.4	588.6
2010/09/10	21:54:00	0.000	1439	1441	245.3	249.1	571.6	598.6
2010/09/10	21:55:00	0.000	1441	1443	245.1	248.8	568.6	591.8
		Average	**1433**	**1444**	**246**	**254**		
				1439		**250**		

		Ch.		CH001		CH003		CH005	
		Tag		FLARE 1 TEMP		FLARE 1 FLOW		LFG FLOW	
		Unit		°F		SCFM		SCFM	
Date	Time	sec		MIN	MAX	MIN	MAX	MIN	MAX
2010/09/11	10:30:00		0.000	1438	1439	246.8	251.3	279.3	297.2
2010/09/11	10:31:00		0.000	1437	1439	246.5	250.6	281.3	291.6
2010/09/11	10:32:00		0.000	1439	1443	247.7	252.4	280.2	289.5
2010/09/11	10:33:00		0.000	1435	1440	247.9	251.8	284.6	293.7
2010/09/11	10:34:00		0.000	1435	1436	247.7	251.5	278.1	300.7
2010/09/11	10:35:00		0.000	1436	1439	246.9	251.8	283.9	300.7
2010/09/11	10:36:00		0.000	1437	1439	246.0	249.7	281.6	295.1
2010/09/11	10:37:00		0.000	1439	1442	245.1	250.4	282.1	297.7
2010/09/11	10:38:00		0.000	1441	1445	248.4	251.3	275.4	295.4
2010/09/11	10:39:00		0.000	1434	1444	247.1	251.8	282.5	293.0
2010/09/11	10:40:00		0.000	1434	1437	247.9	252.1	280.4	293.7
2010/09/11	10:41:00		0.000	1437	1438	246.2	250.4	283.7	295.6
2010/09/11	10:42:00		0.000	1438	1441	246.9	250.9	279.5	296.9
2010/09/11	10:43:00		0.000	1436	1441	246.9	252.1	279.6	294.5
2010/09/11	10:44:00		0.000	1434	1436	248.0	251.5	276.8	297.7
2010/09/11	10:45:00		0.000	1432	1435	246.2	251.5	280.7	294.7
2010/09/11	10:46:00		0.000	1431	1435	247.7	251.2	281.0	294.5
2010/09/11	10:47:00		0.000	1435	1443	246.0	252.2	278.5	292.8
2010/09/11	10:48:00		0.000	1441	1443	246.9	253.2	279.8	292.4
2010/09/11	10:49:00		0.000	1440	1441	248.0	249.5	275.7	294.7
2010/09/11	10:50:00		0.000	1440	1444	246.2	252.4	277.7	291.9
2010/09/11	10:51:00		0.000	1439	1446	248.6	252.3	279.3	295.4
2010/09/11	10:52:00		0.000	1428	1439	247.9	250.6	281.9	292.3
2010/09/11	10:53:00		0.000	1428	1433	246.5	251.8	278.1	298.0
2010/09/11	10:54:00		0.000	1433	1437	247.1	249.8	274.4	290.9
2010/09/11	10:55:00		0.000	1436	1440	247.1	253.5	280.8	293.9
2010/09/11	10:56:00		0.000	1439	1440	247.1	251.3	282.8	294.2
2010/09/11	10:57:00		0.000	1437	1439	244.8	251.5	283.7	297.2
2010/09/11	10:58:00		0.000	1438	1447	247.4	252.2	274.2	292.5
2010/09/11	10:59:00		0.000	1439	1445	246.8	252.7	281.6	298.0
2010/09/11	11:00:00		0.000	1436	1439	248.3	252.4	280.7	298.9
2010/09/11	11:01:00		0.000	1437	1441	247.1	253.6	278.9	300.9
2010/09/11	11:02:00		0.000	1439	1440	247.1	251.5	281.9	295.1
2010/09/11	11:03:00		0.000	1439	1439	247.1	250.9	283.4	293.0
2010/09/11	11:04:00		0.000	1439	1440	248.9	251.8	285.6	295.1
2010/09/11	11:05:00		0.000	1438	1440	246.5	253.9	284.6	294.8
2010/09/11	11:06:00		0.000	1436	1439	248.8	253.9	277.5	297.7
2010/09/11	11:07:00		0.000	1433	1436	247.7	252.4	283.0	296.3
2010/09/11	11:08:00		0.000	1434	1435	247.3	252.2	281.0	296.8
2010/09/11	11:09:00		0.000	1434	1438	248.3	253.6	281.9	299.5
2010/09/11	11:10:00		0.000	1438	1440	248.8	253.6	279.6	296.4
2010/09/11	11:11:00		0.000	1435	1439	248.6	252.2	282.8	294.8
2010/09/11	11:12:00		0.000	1436	1444	247.1	251.8	282.5	301.4
2010/09/11	11:13:00		0.000	1440	1444	248.0	252.1	281.1	294.2
2010/09/11	11:14:00		0.000	1435	1440	247.1	251.5	282.8	295.4
2010/09/11	11:15:00		0.000	1436	1439	247.1	251.5	283.7	298.0
2010/09/11	11:16:00		0.000	1438	1439	248.3	252.4	287.0	299.2
2010/09/11	11:17:00		0.000	1438	1438	248.3	254.1	286.9	299.9
2010/09/11	11:18:00		0.000	1435	1438	248.6	252.1	280.3	300.4
2010/09/11	11:19:00		0.000	1434	1436	248.0	253.5	287.4	300.4
2010/09/11	11:20:00		0.000	1436	1438	248.6	252.7	282.2	297.7
2010/09/11	11:21:00		0.000	1437	1439	249.5	253.9	282.2	295.6

2010/09/11	11:22:00	0.000	1439	1441	248.0	251.5	283.9	296.3
2010/09/11	11:23:00	0.000	1437	1440	247.4	253.0	283.0	294.9
2010/09/11	11:24:00	0.000	1437	1441	248.3	254.4	281.1	293.9
2010/09/11	11:25:00	0.000	1441	1448	248.9	252.4	280.9	296.8
2010/09/11	11:26:00	0.000	1435	1444	247.4	253.0	284.5	296.0
2010/09/11	11:27:00	0.000	1434	1439	249.5	254.8	284.5	295.2
2010/09/11	11:28:00	0.000	1434	1439	248.8	253.0	280.6	294.4
2010/09/11	11:29:00	0.000	1435	1439	248.6	252.4	283.7	295.6
2010/09/11	11:30:00	0.000	1435	1438	248.1	253.2	283.7	294.7
2010/09/11	11:31:00	0.000	1435	1439	249.5	252.7	280.5	296.9
2010/09/11	11:32:00	0.000	1435	1441	248.8	252.7	285.9	300.0
2010/09/11	11:33:00	0.000	1438	1441	248.8	252.4	282.8	300.0
2010/09/11	11:34:00	0.000	1438	1441	249.2	254.1	280.7	294.2
2010/09/11	11:35:00	0.000	1438	1440	248.3	253.0	285.5	300.1
2010/09/11	11:36:00	0.000	1439	1443	248.3	251.8	285.4	296.3
2010/09/11	11:37:00	0.000	1436	1441	248.6	252.2	282.8	298.6
2010/09/11	11:38:00	0.000	1432	1436	247.1	253.0	283.7	298.1
2010/09/11	11:39:00	0.000	1434	1434	249.2	253.2	285.4	300.8
2010/09/11	11:40:00	0.000	1434	1441	248.6	252.7	283.7	298.9
2010/09/11	11:41:00	0.000	1440	1442	248.6	252.2	285.5	298.6
2010/09/11	11:42:00	0.000	1442	1443	248.6	253.6	281.3	295.4
2010/09/11	11:43:00	0.000	1434	1442	247.7	253.0	283.9	292.9
2010/09/11	11:44:00	0.000	1434	1436	247.7	254.4	274.8	299.2
2010/09/11	11:45:00	0.000	1434	1436	248.9	252.4	283.8	294.6
2010/09/11	11:46:00	0.000	1432	1434	249.5	253.2	285.1	304.5
2010/09/11	11:47:00	0.000	1433	1440	249.2	255.0	283.0	293.0
2010/09/11	11:48:00	0.000	1440	1442	248.9	253.6	285.7	297.9
2010/09/11	11:49:00	0.000	1441	1444	248.6	251.8	285.4	298.3
2010/09/11	11:50:00	0.000	1438	1443	248.6	252.1	281.9	297.4
2010/09/11	11:51:00	0.000	1439	1441	249.4	252.7	286.3	298.6
2010/09/11	11:52:00	0.000	1434	1439	250.1	254.4	284.2	296.9
2010/09/11	11:53:00	0.000	1435	1442	249.2	253.6	285.5	300.4
2010/09/11	11:54:00	0.000	1440	1442	250.1	253.6	285.1	300.4
2010/09/11	11:55:00	0.000	1439	1440	250.9	254.8	286.0	298.7
2010/09/11	11:56:00	0.000	1438	1440	248.9	253.9	286.0	302.7
2010/09/11	11:57:00	0.000	1437	1441	247.8	253.0	285.0	298.3
2010/09/11	11:58:00	0.000	1437	1438	248.6	253.9	285.1	296.5
2010/09/11	11:59:00	0.000	1438	1438	250.4	253.3	285.5	296.9
2010/09/11	12:00:00	0.000	1434	1438	250.4	252.7	288.7	296.6
2010/09/11	12:01:00	0.000	1436	1441	249.2	253.0	284.8	299.9
2010/09/11	12:02:00	0.000	1440	1447	249.1	253.3	282.5	295.4
2010/09/11	12:03:00	0.000	1441	1447	249.3	254.1	285.7	299.5
2010/09/11	12:04:00	0.000	1430	1442	250.6	253.0	283.8	296.5
2010/09/11	12:05:00	0.000	1429	1435	249.5	253.9	289.8	296.5
2010/09/11	12:06:00	0.000	1435	1441	250.1	253.9	287.0	305.1
2010/09/11	12:07:00	0.000	1439	1442	247.8	253.3	286.0	295.4
2010/09/11	12:08:00	0.000	1437	1442	250.4	252.2	283.0	298.1
2010/09/11	12:09:00	0.000	1435	1440	248.9	254.1	280.4	296.3
2010/09/11	12:10:00	0.000	1433	1437	250.1	253.6	286.0	304.8
2010/09/11	12:11:00	0.000	1435	1437	250.4	254.4	285.5	304.8
2010/09/11	12:12:00	0.000	1435	1436	249.5	253.0	283.9	296.3
2010/09/11	12:13:00	0.000	1436	1446	248.0	254.8	285.7	296.9
2010/09/11	12:14:00	0.000	1441	1446	248.9	253.9	281.0	297.7
2010/09/11	12:15:00	0.000	1440	1442	249.8	253.9	286.6	301.9
2010/09/11	12:16:00	0.000	1440	1444	250.9	254.1	288.6	303.0
2010/09/11	12:17:00	0.000	1431	1444	251.0	253.6	287.2	301.0

2010/09/11	12:18:00	0.000	1431	1434	249.6	252.4	283.0	299.4
2010/09/11	12:19:00	0.000	1434	1449	250.1	254.1	285.5	299.4
2010/09/11	12:20:00	0.000	1438	1448	250.4	254.8	282.0	297.6
2010/09/11	12:21:00	0.000	1429	1438	251.0	255.9	282.2	295.1
2010/09/11	12:22:00	0.000	1428	1435	250.1	253.9	284.8	295.1
2010/09/11	12:23:00	0.000	1434	1440	250.4	253.2	284.0	301.2
2010/09/11	12:24:00	0.000	1435	1439	249.8	253.9	285.5	293.9
2010/09/11	12:25:00	0.000	1435	1436	250.1	254.5	281.3	305.4
2010/09/11	12:26:00	0.000	1435	1437	248.6	253.0	282.5	303.6
2010/09/11	12:27:00	0.000	1437	1438	248.1	252.4	282.8	299.2
2010/09/11	12:28:00	0.000	1435	1446	250.1	252.7	282.0	301.0
2010/09/11	12:29:00	0.000	1445	1449	250.1	253.6	282.0	299.5
2010/09/11	12:30:00	0.000	1445	1447	250.5	254.4	284.0	299.2
2010/09/11	12:31:00	0.000	1437	1445	250.4	255.3	279.3	299.5
2010/09/11	12:32:00	0.000	1430	1437	252.2	255.7	279.4	294.8
2010/09/11	12:33:00	0.000	1431	1435	249.2	254.8	284.6	297.2
2010/09/11	12:34:00	0.000	1434	1436	249.2	255.4	283.4	303.1
2010/09/11	12:35:00	0.000	1433	1436	250.5	254.5	283.4	297.3
		Average	**1436**	**1440**	**249**	**253**		
				1438		**251**		

		Ch.		CH001		CH003		CH005	
		Tag		FLARE 1 TEMP		FLARE 1 FLOW		LFG FLOW	
		Unit		°F		SCFM		SCFM	
Date	Time	sec		MIN	MAX	MIN	MAX	MIN	MAX
2010/09/11	14:00:00		0.000	1434	1439	231.0	234.8	263.6	281.3
2010/09/11	14:01:00		0.000	1439	1442	231.0	234.8	261.1	287.8
2010/09/11	14:02:00		0.000	1441	1445	230.4	235.1	263.4	285.3
2010/09/11	14:03:00		0.000	1443	1446	232.2	235.4	264.9	277.2
2010/09/11	14:04:00		0.000	1439	1444	232.7	235.1	267.6	278.1
2010/09/11	14:05:00		0.000	1433	1439	231.6	235.4	263.4	278.1
2010/09/11	14:06:00		0.000	1434	1439	231.9	235.7	264.7	283.1
2010/09/11	14:07:00		0.000	1431	1435	231.9	236.0	264.0	280.4
2010/09/11	14:08:00		0.000	1431	1432	232.2	235.4	264.0	280.2
2010/09/11	14:09:00		0.000	1432	1440	231.3	234.5	263.5	280.8
2010/09/11	14:10:00		0.000	1437	1444	230.7	234.0	263.1	278.1
2010/09/11	14:11:00		0.000	1444	1445	231.9	234.3	262.6	275.2
2010/09/11	14:12:00		0.000	1436	1445	232.7	235.7	263.8	278.7
2010/09/11	14:13:00		0.000	1436	1442	232.2	237.1	258.2	276.6
2010/09/11	14:14:00		0.000	1440	1442	230.4	234.9	264.9	279.0
2010/09/11	14:15:00		0.000	1433	1440	229.8	235.4	266.2	279.0
2010/09/11	14:16:00		0.000	1432	1439	230.7	234.8	262.0	275.2
2010/09/11	14:17:00		0.000	1438	1440	233.6	236.2	262.0	276.9
2010/09/11	14:18:00		0.000	1438	1443	233.6	236.6	260.2	276.1
2010/09/11	14:19:00		0.000	1443	1452	232.2	235.7	262.8	276.9
2010/09/11	14:20:00		0.000	1445	1452	231.3	235.0	258.2	278.7
2010/09/11	14:21:00		0.000	1423	1445	231.3	235.4	261.7	275.2
2010/09/11	14:22:00		0.000	1418	1423	231.9	235.1	257.0	279.3
2010/09/11	14:23:00		0.000	1421	1430	230.7	235.1	260.4	281.3
2010/09/11	14:24:00		0.000	1430	1438	229.8	234.8	264.0	275.2
2010/09/11	14:25:00		0.000	1438	1441	230.1	235.1	264.3	276.4
2010/09/11	14:26:00		0.000	1440	1442	231.0	235.9	262.9	279.0
2010/09/11	14:27:00		0.000	1440	1442	232.2	235.9	264.5	272.6
2010/09/11	14:28:00		0.000	1438	1440	231.6	235.4	260.8	274.7
2010/09/11	14:29:00		0.000	1437	1441	232.2	234.8	266.4	276.6
2010/09/11	14:30:00		0.000	1433	1437	232.2	236.9	255.6	272.2
2010/09/11	14:31:00		0.000	1433	1436	232.2	235.4	263.8	275.5
2010/09/11	14:32:00		0.000	1436	1439	232.2	236.0	265.8	272.2
2010/09/11	14:33:00		0.000	1435	1436	231.9	234.5	258.7	273.4
2010/09/11	14:34:00		0.000	1436	1441	231.0	235.1	261.7	273.9
2010/09/11	14:35:00		0.000	1438	1439	231.6	234.0	254.3	274.3
2010/09/11	14:36:00		0.000	1439	1444	232.7	236.9	260.5	273.7
2010/09/11	14:37:00		0.000	1441	1444	230.1	235.7	259.0	274.6
2010/09/11	14:38:00		0.000	1439	1444	231.3	235.2	259.8	273.1
2010/09/11	14:39:00		0.000	1437	1440	231.6	235.4	260.5	273.1
2010/09/11	14:40:00		0.000	1436	1439	231.9	236.6	260.1	271.7
2010/09/11	14:41:00		0.000	1433	1439	231.9	235.2	263.1	275.3
2010/09/11	14:42:00		0.000	1432	1434	232.5	235.1	258.7	278.1
2010/09/11	14:43:00		0.000	1433	1435	231.6	235.7	264.3	277.0
2010/09/11	14:44:00		0.000	1433	1436	231.6	235.7	264.6	278.4
2010/09/11	14:45:00		0.000	1433	1436	231.3	235.1	259.9	272.6
2010/09/11	14:46:00		0.000	1433	1437	231.3	235.7	262.0	273.4
2010/09/11	14:47:00		0.000	1437	1444	231.6	234.8	261.3	272.9
2010/09/11	14:48:00		0.000	1444	1447	231.0	234.8	257.8	271.4
2010/09/11	14:49:00		0.000	1444	1447	232.2	235.7	261.3	271.7
2010/09/11	14:50:00		0.000	1441	1447	232.5	236.9	256.9	292.2
2010/09/11	14:51:00		0.000	1437	1441	232.2	235.7	259.3	274.6

2010/09/11	14:52:00	0.000	1435	1438	232.2	236.0	261.3	279.3
2010/09/11	14:53:00	0.000	1438	1445	231.0	235.2	259.4	279.9
2010/09/11	14:54:00	0.000	1434	1443	232.5	235.2	256.9	279.9
2010/09/11	14:55:00	0.000	1430	1442	231.9	237.1	254.1	273.1
2010/09/11	14:56:00	0.000	1438	1443	233.1	236.3	260.2	273.1
2010/09/11	14:57:00	0.000	1435	1439	232.5	236.6	260.2	274.6
2010/09/11	14:58:00	0.000	1435	1439	233.6	236.6	260.4	276.6
2010/09/11	14:59:00	0.000	1430	1435	230.4	234.5	262.6	273.4
2010/09/11	15:00:00	0.000	1431	1440	229.8	235.2	263.7	271.3
2010/09/11	15:01:00	0.000	1438	1440	231.6	235.2	255.0	269.3
2010/09/11	15:02:00	0.000	1438	1442	231.9	235.4	256.9	271.1
2010/09/11	15:03:00	0.000	1437	1442	229.8	234.3	256.9	270.3
2010/09/11	15:04:00	0.000	1437	1443	232.2	235.7	255.7	275.7
2010/09/11	15:05:00	0.000	1438	1442	230.7	234.5	261.1	269.6
2010/09/11	15:06:00	0.000	1430	1438	231.0	234.0	256.7	270.5
2010/09/11	15:07:00	0.000	1430	1439	232.5	235.2	257.5	271.1
2010/09/11	15:08:00	0.000	1439	1441	230.1	234.3	261.0	270.0
2010/09/11	15:09:00	0.000	1438	1444	231.9	235.7	254.1	269.6
2010/09/11	15:10:00	0.000	1433	1438	231.9	235.7	260.8	271.1
2010/09/11	15:11:00	0.000	1433	1442	231.9	234.8	258.5	271.1
2010/09/11	15:12:00	0.000	1437	1442	231.9	235.4	259.9	269.0
2010/09/11	15:13:00	0.000	1436	1438	232.2	236.0	258.7	270.5
2010/09/11	15:14:00	0.000	1432	1436	230.4	234.5	256.1	269.0
2010/09/11	15:15:00	0.000	1435	1437	231.9	234.8	258.7	274.3
2010/09/11	15:16:00	0.000	1437	1440	231.3	236.3	255.9	274.3
2010/09/11	15:17:00	0.000	1440	1444	231.0	235.1	256.0	274.0
2010/09/11	15:18:00	0.000	1440	1442	231.9	234.8	257.3	269.9
2010/09/11	15:19:00	0.000	1433	1440	230.7	235.1	257.3	267.8
2010/09/11	15:20:00	0.000	1433	1434	230.7	234.5	253.4	270.8
2010/09/11	15:21:00	0.000	1433	1436	230.2	234.8	255.8	270.8
2010/09/11	15:22:00	0.000	1436	1441	231.0	234.3	256.1	272.9
2010/09/11	15:23:00	0.000	1439	1440	232.5	235.1	250.2	274.9
2010/09/11	15:24:00	0.000	1440	1442	231.6	235.1	261.7	279.3
2010/09/11	15:25:00	0.000	1442	1444	231.3	236.2	257.6	268.1
2010/09/11	15:26:00	0.000	1432	1442	231.6	236.6	255.2	269.0
2010/09/11	15:27:00	0.000	1432	1438	231.3	233.9	255.0	271.4
2010/09/11	15:28:00	0.000	1438	1440	231.3	234.3	258.1	266.4
2010/09/11	15:29:00	0.000	1440	1443	230.7	235.1	254.6	268.4
2010/09/11	15:30:00	0.000	1435	1444	230.1	234.8	255.5	270.2
2010/09/11	15:31:00	0.000	1433	1435	229.2	235.1	255.8	266.1
2010/09/11	15:32:00	0.000	1435	1440	229.2	233.9	259.0	270.4
2010/09/11	15:33:00	0.000	1438	1440	231.9	235.4	259.3	272.1
2010/09/11	15:34:00	0.000	1438	1444	231.0	234.0	256.2	270.8
2010/09/11	15:35:00	0.000	1435	1443	232.7	235.1	257.9	269.0
2010/09/11	15:36:00	0.000	1435	1444	233.6	235.2	258.7	272.5
2010/09/11	15:37:00	0.000	1429	1441	230.7	234.5	251.1	276.5
2010/09/11	15:38:00	0.000	1429	1436	231.6	235.1	255.8	271.1
2010/09/11	15:39:00	0.000	1436	1438	232.7	236.9	255.5	269.9
2010/09/11	15:40:00	0.000	1435	1438	230.1	234.3	258.3	269.9
2010/09/11	15:41:00	0.000	1436	1438	231.0	234.5	258.0	275.5
2010/09/11	15:42:00	0.000	1438	1441	230.4	234.3	256.9	269.3
2010/09/11	15:43:00	0.000	1439	1441	231.0	234.8	258.1	270.8
2010/09/11	15:44:00	0.000	1439	1442	231.9	235.1	253.7	273.4
2010/09/11	15:45:00	0.000	1441	1449	231.9	235.1	257.0	274.6
2010/09/11	15:46:00	0.000	1439	1449	231.6	235.4	251.4	267.8
2010/09/11	15:47:00	0.000	1429	1439	231.6	235.1	254.4	271.3

2010/09/11	15:48:00	0.000	1427	1429	231.3	234.5	252.6	269.4
2010/09/11	15:49:00	0.000	1427	1438	232.2	235.1	252.6	274.0
2010/09/11	15:50:00	0.000	1434	1440	230.1	235.1	256.7	274.9
2010/09/11	15:51:00	0.000	1432	1434	231.9	235.3	256.7	267.2
2010/09/11	15:52:00	0.000	1432	1434	232.7	235.1	256.4	273.7
2010/09/11	15:53:00	0.000	1434	1448	231.6	235.4	252.6	267.7
2010/09/11	15:54:00	0.000	1448	1456	232.7	236.2	255.8	270.5
2010/09/11	15:55:00	0.000	1438	1455	231.9	236.1	255.2	266.3
2010/09/11	15:56:00	0.000	1435	1439	233.0	235.4	254.3	267.8
2010/09/11	15:57:00	0.000	1434	1438	230.7	235.4	254.3	267.2
2010/09/11	15:58:00	0.000	1430	1435	229.8	234.0	258.6	272.9
2010/09/11	15:59:00	0.000	1431	1438	231.6	235.7	249.4	275.1
2010/09/11	16:00:00	0.000	1438	1447	232.2	235.7	258.7	272.5
2010/09/11	16:01:00	0.000	1435	1445	231.0	235.1	249.4	264.9
2010/09/11	16:02:00	0.000	1431	1435	231.6	234.5	255.2	268.5
2010/09/11	16:03:00	0.000	1431	1443	231.0	236.2	255.8	269.0
2010/09/11	16:04:00	0.000	1435	1443	232.2	236.2	255.0	267.2
2010/09/11	16:05:00	0.000	1436	1442	231.8	235.1	256.0	271.7
		Average	**1435**	**1441**	**232**	**235**		
				1438		**233**		

Appendix J

Quality Assurance/Quality Control

AIR LIQUIDE Air Liquide America Specialty Gases LLC
Scott™

COMPLIANCE CLASS

Dual-Analyzed Calibration Standard

8832 DICE ROAD, SANTA FE SPRINGS, CA 90670-2516 Phone: 800-323-2212 Fax: 562-464-5262

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

AIR LIQUIDE AMERICA SPECIALTY GASES LLC
8832 DICE ROAD
SANTA FE SPRINGS, CA 90670-2516

P.O. No.: CORIS DOC# 37948219
Project No.: 02-71968-001

Customer
TOTAL AIR ANALYSIS

ANALYTICAL INFORMATION

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

Cylinder Number: CC70263
Cylinder Pressure*:** 1900 PSIG
Certification Date: 26Jul2010
Exp. Date: 25Jul2012
Batch No: SB00025087

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ACCURACY**	TRACEABILITY
NITRIC OXIDE	41.6	PPM	+/- 2%	NIST and VSL
NITROGEN - OXYGEN FREE		BALANCE		
TOTAL OXIDES OF NITROGEN	41.6	PPM		Reference Value Only

*** Do not use when cylinder pressure is below 150 psig.
** Analytical accuracy is based on the requirements of EPA Protocol procedures , September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1683	25Jul2012	KAL004267	50.96 PPM	NITRIC OXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//001785245	09Jul2010	FTIR

APPROVED BY: Thuan Tran

Airgas

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Airgas Specialty Gases
11711 S. Alameda Street
Los Angeles, CA 90059-2130
(323) 357-6891
Fax: (323) 567-3686
www.airgas.com

Part Number:	E02NI99E15AC1S8	Reference Number:	48-124203748-9
Cylinder Number:	CC14717	Cylinder Volume:	144 Cu.Ft.
Laboratory:	ASG - Los Angeles - CA	Cylinder Pressure:	2015 PSIG
Analysis Date:	Jan 21, 2010	Valve Outlet:	660

Expiration Date: Jan 21, 2012

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

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
NOx	23.00 PPM	23.64 PPM	G1	+/- 1% NIST Traceable
NITRIC OXIDE	23.00 PPM	23.37 PPM	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	080607	CC207823	17.25PPM NITRIC OXIDE/NITROGEN	Sep 01, 2011
NTRM	080608NOx	CC207823	17.38PPM NOx/NITROGEN	Sep 01, 2011

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
California Analytical NO	CLD NO	Dec 31, 2009
California Analitical NOx	CLD NOx	Dec 31, 2009

Triad Data Available Upon Request

Notes:

QA Approval

AIR LIQUIDE™

CERTIFICATION OF ANALYSIS

Interference Free Multi-Component EPA Protocol Gases

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

Cylinder S/N: CC259945

Customer: TOTAL AIR ANALYSIS INC.
Location: CARSON, CA

P.O. Number: VERBAL

Shipping Order Number: 30637554
Transfer Number:
Lot Number: SFS124497
Valve: CGA 350
Cylinder Pressure*: 2000 PSIG
*Cylinder should not be used when gas pressure is below 150 psig

Assay Date: 15-Sep-2008

Expiration Date: 15-Sep-2011

Components	Requested Concentration	Assay Concentration
Nitrogen	Balance	Balance
Carbon Monoxide	85-90 ppm	87.4 ± 0.9 ppm

Reference Standard(s) Employed For Analysis

Certified Concentration and Uncertainty			Component	Balance	Cyl. No.	SRM/PRM/Mix No.	Exp. Date	Sample No.	Type
99.75	± 0.42	ppm	Carbon Monoxide	Nitrogen	CC245791	SFS104998	26-Sep-2009	BT	GMIS

Analytical Data

Component:	Carbon Monoxide
Analyzer Information	
Analyzer Type:	Gas Chromatograph
Manufacturer:	Hewlett Packard
Model Number:	G1540A
Serial Number:	US00003390/Meth
MPR Last Calibrated:	15-Sep-2008
Analytical Principle:	FID & TCD

	FIRST TRIAD ANALYSIS 8-Sep-2008			
	Trial 1	Trial 2	Trial 3	Units
Zero	0.0000	0.0000	0.0000	Area
Reference	808.19	808.15	808.15	Area
Candidate	707.55	707.73	707.73	Area
Result	87.33	87.36	87.36	ppm
Evaluation	Valid	Valid	Valid	
Mean Analytical Result:			87.35	ppm

	SECOND TRIAD ANALYSIS 15-Sep-2008			
	Trial 1	Trial 2	Trial 3	Units
Zero	0.0000	0.0000	0.0000	Area
Reference	813.13	813.88	813.57	Area
Candidate	712.12	712.68	712.63	Area
Result	87.38	87.35	87.37	ppm
Evaluation	Valid	Valid	Valid	
Mean Analytical Result:			87.36	ppm

Analyst: _____ Tan Ngo

Approved by: _____ Thuan Tran

AIR LIQUIDE AMERICA, L.P. 8832 Dice Road, Santa Fe Springs, CA 90670-2516
Phone: (562) 945-1383 • Fax: (562) 693-1156

Airgas

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Airgas Specialty Gases
11711 S. Alameda Street
Los Angeles, CA 90059-2130
(323) 357-6891
Fax: (323) 567-3686
www.airgas.com

Part Number:	E03NI60E15A1069	Reference Number:	48-124226779-1
Cylinder Number:	CC281937	Cylinder Volume:	158 Cu.Ft.
Laboratory:	ASG - Los Angeles - CA	Cylinder Pressure:	2015 PSIG
Analysis Date:	Jul 27, 2010	Valve Outlet:	590

Expiration Date: Jul 27, 2013

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

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON DIOXIDE	18.00 %	18.35 %	G1	+/- 1% NIST Traceable
OXYGEN	22.00 %	22.21 %	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	060608	CC207972	22.51% OXYGEN/NITROGEN	May 01, 2016
NTRM	040604	XC034335B	19.84% CARBON DIOXIDE/NITROGEN	May 15, 2012

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
SIEMENS % CO2	NDIR	Jul 12, 2010
Siemens %O2	PARAMAGNETIC	Jul 12, 2010

Triad Data Available Upon Request

Notes:

Approved for Release

Airgas

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Airgas Specialty Gases
11711 S. Alameda Street
Los Angeles, CA 90059-2130
(323) 357-6891
Fax: (323) 567-3686
www.airgas.com

Part Number:	E03NI82E15A0220	Reference Number:	48-124226526-1
Cylinder Number:	CC197745	Cylinder Volume:	150 Cu.Ft.
Laboratory:	ASG - Los Angeles - CA	Cylinder Pressure:	2015 PSIG
Analysis Date:	Jul 16, 2010	Valve Outlet:	590

Expiration Date: Jul 16, 2013

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

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON DIOXIDE	9.000 %	9.117 %	G1	+/- 1% NIST Traceable
OXYGEN	9.000 %	9.060 %	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	82658	SG9162882	9.507% OXYGEN/	Dec 01, 2015
NTRM	81674	SG9198971	10.818% CARBON DIOXIDE/NITROGEN	May 15, 2012

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
SIEMENS % CO2	NDIR	Jul 12, 2010
Siemens %O2	PARAMAGNETIC	Jul 12, 2010

Triad Data Available Upon Request

Notes:

Approved for Release

DRY GAS METER CALIBRATION DATA SHEET

Control Console I.D.: Apex 1
Reference Meter Y: 0.9991
Date: 7/21/10
Pbar 29.91
Ambient Temp.: 71

Calibration Frequency: Annual
Standard Temp. 68

Rate (CFM)		dH	Field Dry Gas Meter		Time	Reference Wet gas Meter		Yfm	dH@
			Temp Out (0F)	Meter Reading (CF)		Temp. Out (0F)	Meter Reading (CF)		
0.25	start	0.25	70	310.000	0	70	835.000	1.0049	2.301
	end	0.25	70	317.450	30	71	842.500		
	avg/total	0.25	70.0	7.450	30	70.5	7.500		
0.25	start	0.25	71	317.450	0	70	842.500	1.0093	2.234
	end	0.25	70	324.980	30	70	850.100		
	avg/total	0.25	70.5	7.530	30	70.0	7.600		
0.25	start	0.25	71	324.980	0	71	850.100	1.0062	2.303
	end	0.25	70	332.420	30	71	857.600		
	avg/total	0.25	70.5	7.440	30	71.0	7.500		
0.5	start	1	71	333.000	0	71	858.000	0.9942	2.278
	end	1	71	343.100	20	71	868.050		
	avg/total	1	71	10.100	20	71	10.050		
0.5	start	1	71	343.100	0	71	868.050	0.9951	2.280
	end	1	72	353.190	20	71	878.090		
	avg/total	1	71.5	10.090	20	71	10.040		
0.5	start	1	72	353.190	0	71	878.090	0.9980	2.296
	end	1	72	363.220	20	72	888.100		
	avg/total	1	72	10.030	20	71.5	10.010		
0.75	start	1.95	72	364.000	0	72	890.000	0.9951	1.998
	end	1.95	72	371.530	10	72	897.500		
	avg/total	1.95	72	7.530	10	72	7.500		
0.75	start	1.95	71	371.530	0	72	897.500	0.9955	1.973
	end	1.95	72	379.100	10	72	905.050		
	avg/total	1.95	71.5	7.570	10	72	7.550		
0.75	start	1.95	72	379.100	0	72	905.050	0.9974	1.989
	end	1.95	72	386.630	10	71	912.560		
	avg/total	1.95	72	7.530	10	71.5	7.510		
1.00	start	3.5	71	388.000	0	71	914.000	0.9941	2.013
	end	3.5	71	398.050	10	71	924.000		
	avg/total	3.5	71	10.050	10	71	10.000		
1.00	start	3.5	71	398.050	0	70	924.000	0.9961	1.968
	end	3.5	70	408.190	10	70	934.100		
	avg/total	3.5	70.5	10.140	10	70	10.100		
1.00	start	3.5	71	408.190	0	70	934.100	0.9971	1.988
	end	3.5	70	418.270	10	70	944.150		
	avg/total	3.5	70.5	10.080	10	70	10.050		

Rate (CFM)	Run No.	Reference Wet gas Meter			Field Dry gas Meter			coefficient Y<(1+/- 0.05)	(Ymax-Ymin)<0.01	Average Y	Average dH@	dH@<dH@+/- 0.15)	0.98<(Y/Y')<1.02
		Rate Qrm (cfm)	Avg. Meter Temp.	Corr. Rate (scfm)	Rate Qrm (cfm)	Avg. Meter Temp.	Corr. Rate (scfm)						
0.25	1	0.2500	70.5	0.2488	0.2483	70.0	0.2473	1.0049	0.0045	1.0068	2.279	0.144	1.0082
	2	0.2533	70.0	0.2523	0.2510	70.5	0.2497	1.0093					
	3	0.2500	71.0	0.2485	0.2480	70.5	0.2468	1.0062					
0.5	1	0.5025	71	0.4986	0.5050	71	0.5011	0.9942	0.0039	0.9958	2.285	0.150	0.9972
	2	0.5020	71	0.4981	0.5045	71.5	0.5001	0.9951					
	3	0.5005	71.5	0.4962	0.5015	72	0.4967	0.9980					
0.75	1	0.75	72	0.7411	0.7530	72	0.7440	0.9951	0.0023	0.9960	1.987	0.149	0.9974
	2	0.755	72	0.7460	0.7570	71.5	0.7487	0.9955					
	3	0.751	71.5	0.7427	0.7530	72	0.7440	0.9974					
1.00	1	1	71	0.9862	1.0050	71	0.9911	0.9941	0.0029	0.9958	1.990	0.146	0.9972
	2	1.01	70	0.9979	1.014	70.5	1.0009	0.9961					
	3	1.01	70	0.9979	1.014	70.5	1.0009	0.9971					

Overall Averages

dH@ = 2.135 Y = 0.9986

HOMER R. DULIN CO.

729 EAST WILLOW STREET
SIGNAL HILL, CALIFORNIA 90755
(562) 424-8533 FAX (562) 426-7707

CERT. NO. 7-320-10

CALIBRATION CERTIFICATION

SUBMITTED BY: TOTAL AIR ANALYSIS, INC.

FLOWMETER SERIAL NO: 801003 MFG. SERIAL NO: 1036

MANUFACTURER: EQUIMETER MODEL: S-110

TUBE NO: N/A FLOAT NO: N/A

DATA IS: As Found/As Left ; In Tolerance

See Remarks ☑
Calibrated @ customer's facility ☐

REMARKS: CALIBRATED IN CFH AIR @ 14.7 PSIA & 70° F. METER CALIBRATED WITH CUSTOMER'S ORIFICE IN IN OUTLET.

ACCURACY ± 1% RATE

INDICATED		ACTUAL	
CFH		CFH	
130.3		129.2	
120.6		119.9	
108.3		107.7	
96.9		96.6	
85.3		84.9	
73.2		73.1	
61.5		61.3	
48.5		48.4	
36.0		35.9	
22.5		22.6	

Flowmeter Certified with HOMER R. DULIN CO.

Equip. No. 12400 Accuracy 0.20% Equip. Cal. Date: 4/23/09 Cal. Due: 4/23/12

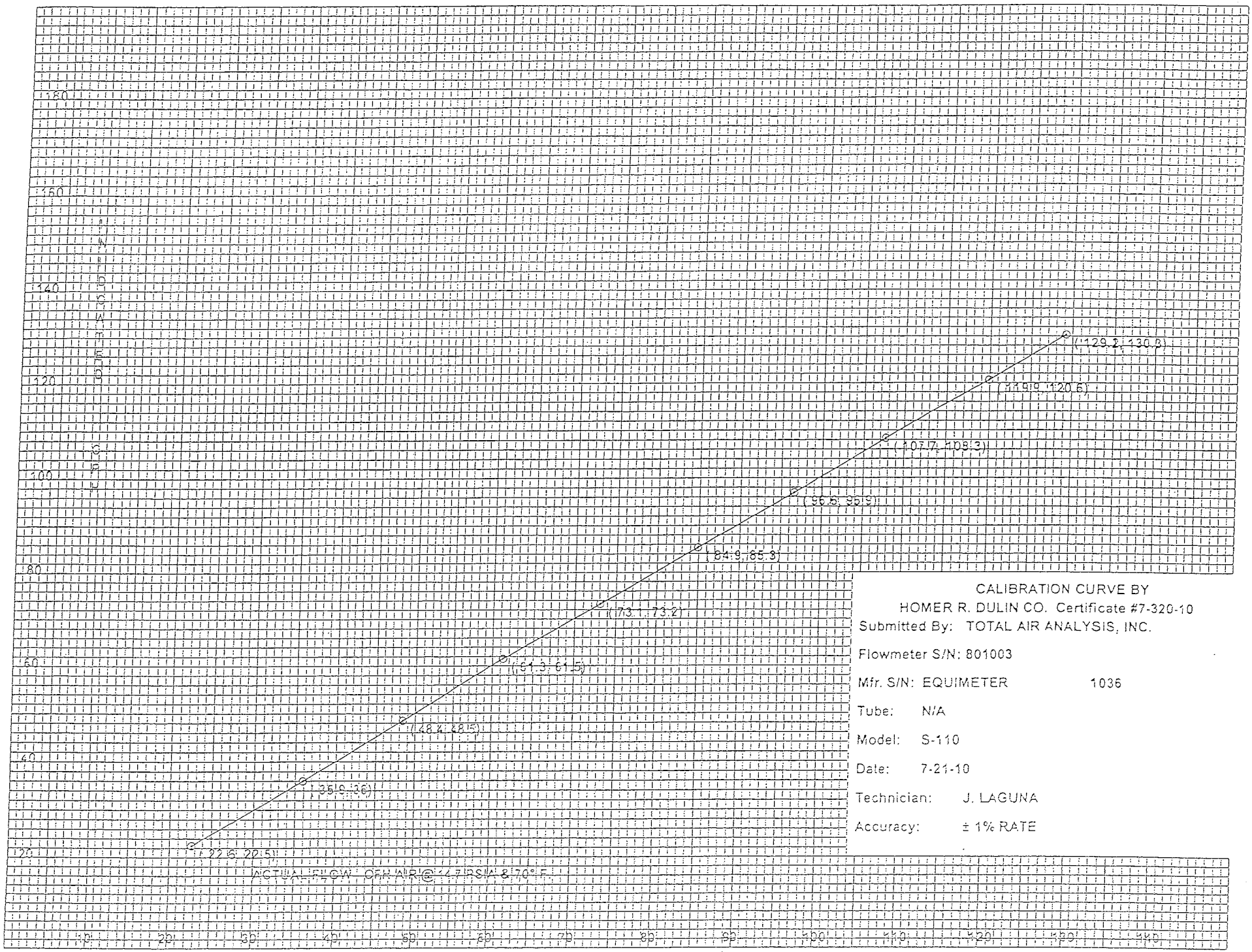
NIST Cert. No. 821/276270-08 Procedure No: 101G Rev 3

P.O. No Shipper No.

7-21-10 CALIBRATION DATE

7-21-11 RECALIBRATION DUE

J. LAGUNA CALIBRATION TECHNICIAN



CALIBRATION CURVE BY
HOMER R. DULIN CO. Certificate #7-320-10

Submitted By: TOTAL AIR ANALYSIS, INC.

Flowmeter S/N: 801003

Mfr. S/N: EQUIMETER 1036

Tube: N/A

Model: S-110

Date: 7-21-10

Technician: J. LAGUNA

Accuracy: ± 1% RATE

DRY GAS METER CALIBRATION DATA SHEET

Control Console I.D.: Apex 2
Reference Meter Y: 0.9991
Date: 7/23/2010
Pbar 29.95
Ambient Temp.: 73

Calibration Frequency: Annual
Standard Temp. 68

Rate (CFM)		dH	Field Dry Gas Meter		Time	Reference Dry gas Meter		Yfm	dH@
			Temp Out (0F)	Meter Reading (CF)		Temp. Out (0F)	Meter Reading (CF)		
0.25	start	0.25	72	525.000	0	72	950.000	0.9962	2.313
	end	0.25	72	532.505	30	73	957.490		
	avg/total	0.25	72	7.505	30	72.5	7.490		
0.25	start	0.25	72	532.505	0	72	957.490	0.9979	2.307
	end	0.25	73	540.010	30	72	964.979		
	avg/total	0.25	72.5	7.505	30	72	7.489		
0.25	start	0.25	73	540.010	0	73	964.979	0.9999	2.306
	end	0.25	73	547.505	30	73	972.480		
	avg/total	0.25	73	7.495	30	73	7.501		
0.5	start	1	73	550.000	0	73	975.000	0.9976	2.279
	end	1	73	560.075	20	73	985.060		
	avg/total	1	73	10.075	20	73	10.060		
0.5	start	1	73	560.075	0	72	985.060	0.9976	2.282
	end	1	72	570.140	20	72	995.100		
	avg/total	1	72.5	10.065	20	72	10.040		
0.5	start	1	72	570.140	0	72	995.100	0.9981	2.279
	end	1	72	580.200	20	72	1005.150		
	avg/total	1	72	10.060	20	72	10.050		
0.75	start	1.85	72	585.000	0	72	10.000	0.9942	1.870
	end	1.85	71	592.580	10	72	17.550		
	avg/total	1.85	71.5	7.580	10	72	7.550		
0.75	start	1.85	72	592.580	0	72	17.550	0.9965	1.843
	end	1.85	72	600.200	10	72	25.150		
	avg/total	1.85	72	7.620	10	72	7.600		
0.75	start	1.85	72	600.200	0	73	25.150	0.9946	1.865
	end	1.85	72	607.790	10	73	32.720		
	avg/total	1.85	72	7.590	10	73	7.570		
1.00	start	4	72	610.000	0	73	35.000	0.9962	2.263
	end	4	73	620.120	10	73	45.100		
	avg/total	4	72.5	10.120	10	73	10.100		
1.00	start	4	72	620.120	0	72	45.100	0.9975	2.298
	end	4	73	630.150	10	72	55.105		
	avg/total	4	72.5	10.030	10	72	10.005		
1.00	start	4	73	630.150	0	72	55.105	0.9966	2.293
	end	4	72	640.200	10	72	65.120		
	avg/total	4	72.5	10.050	10	72	10.015		

Rate (CFM)	Run No.	Reference Dry gas Meter			Field Dry gas Meter			coefficient Y<(1+/-0.05)	(Ymax-Ymin)<0.01	Average Y	Average dH@	dH@<dH@+/- 0.15)	0.98<(Y/Y)<1.02
		Rate Qrm (cfm)	Avg. Meter Temp.	Corr. Rate (scfm)	Rate Qrm (cfm)	Avg. Meter Temp.	Corr. Rate (scfm)						
0.25	1	0.2497	72.5	0.2472	0.2502	72.0	0.2479	0.9962	0.0037	0.9980	2.308	0.125	1.0011
	2	0.2496	72.0	0.2474	0.2502	72.5	0.2477	0.9979					
	3	0.2500	73.0	0.2473	0.2498	73.0	0.2471	0.9999					
0.5	1	0.5030	73	0.4966	0.5038	73	0.4973	0.9976	0.0006	0.9978	2.280	0.097	1.0009
	2	0.5020	72	0.4965	0.5032	72.5	0.4973	0.9976					
	3	0.5025	72	0.4970	0.5030	72	0.4975	0.9981					
0.75	1	0.755	72	0.7452	0.7580	71.5	0.7489	0.9942	0.0023	0.9951	1.859	0.324	0.9982
	2	0.76	72	0.7501	0.7620	72	0.7521	0.9965					
	3	0.757	73	0.7458	0.7590	72	0.7491	0.9946					
1.00	1	1.01	73	0.9898	1.0120	72.5	0.9927	0.9962	0.0014	0.9968	2.285	0.102	0.9999
	2	1.0005	72	0.9823	1.003	72.5	0.9839	0.9975					
	3	1.0005	72	0.9823	1.003	72.5	0.9839	0.9966					

Overall Averages

dH@ = 2.183 Y = 0.9969

HOMER R. DULIN CO.

729 EAST WILLOW STREET
SIGNAL HILL, CALIFORNIA 90755
(562) 424-8533 FAX (562) 426-7707

CERT. NO. 7-321-10

CALIBRATION CERTIFICATION

SUBMITTED BY: TOTAL AIR ANALYSIS, INC.

FLOWMETER SERIAL NO: . MFG. SERIAL NO: 967239

MANUFACTURER: ROCKWELL MODEL: S-110

TUBE NO: N/A FLOAT NO: N/A

DATA IS: As Found/As Left ; In Tolerance with curve

See Remarks ☑

Calibrated @ customer's facility ☐

REMARKS: CALIBRATED IN CFH AIR @ 14.7 PSIA & 70° F. METER CALIBRATED WITH CUSTOMER'S ORIFICE IN OUTLET -

ACCURACY ± 1% RATE W/ CURVE

INDICATED		ACTUAL	
CFH		CFH	
131.6		132.9	
120.8		121.9	
106.0		106.6	
95.3		95.8	
83.5		84.0	
71.9		72.1	
62.0		61.3	
48.2		47.8	
37.3		37.0	
22.4		22.4	

Flowmeter Certified with HOMER R. DULIN CO.

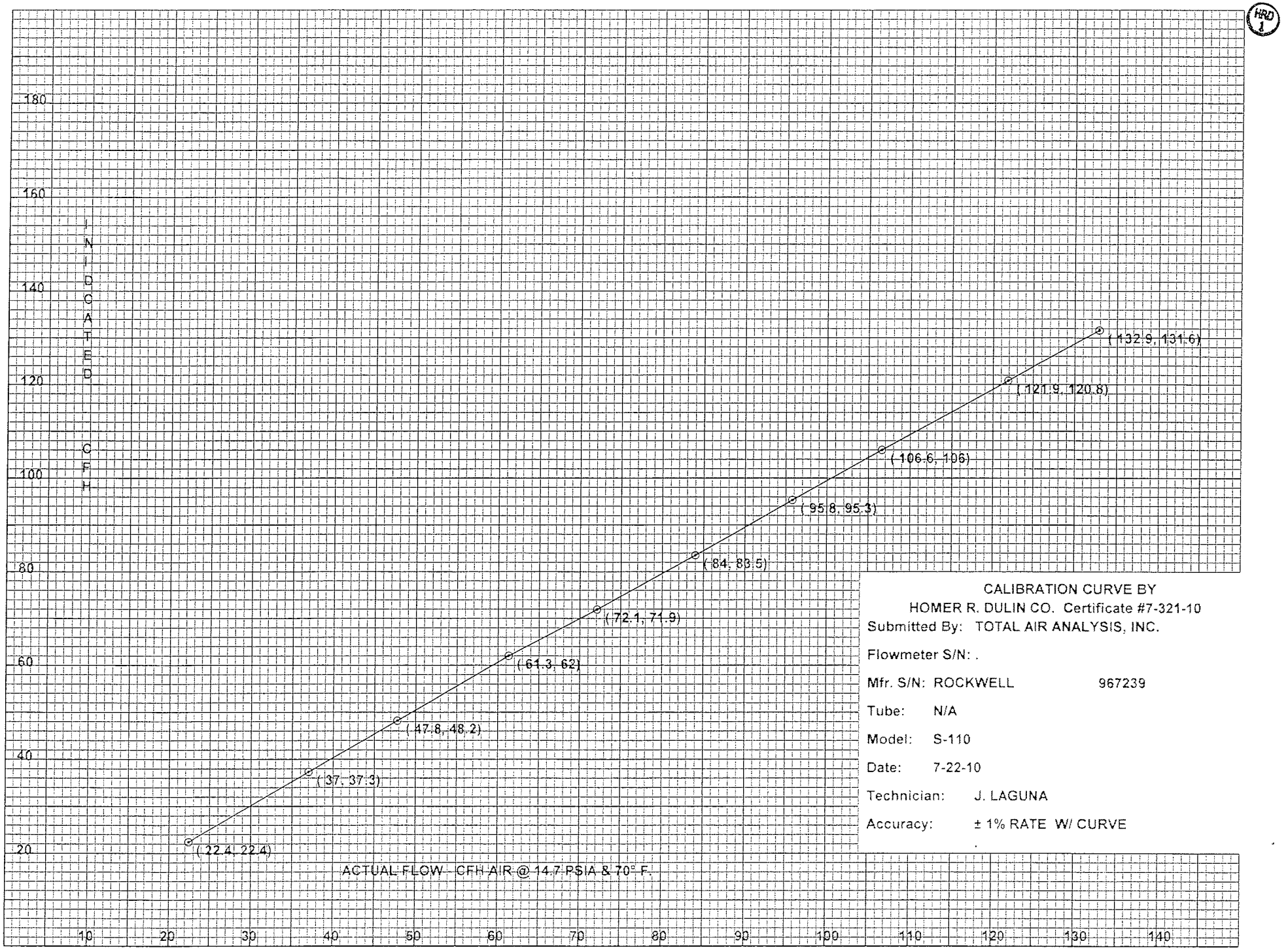
Equip. No. 12400 Accuracy 0.20% Equip. Cal. Date: 4/23/09 Cal. Due: 4/23/12

NIST Cert. No. 821/276270-08 Procedure No: 101G Rev 3

Our standards are certified by or are traceable to the National Institute of Standards and Technology and systems comply with MIL-STD 45662A, ANSI/NCSL Z540, ISO Guide 25, FDA/CGMP 820.72, and ISO 10012. The collective uncertainty of the standards used in this calibration does not exceed 25% of the certified accuracy of the instrument under test. This document may not be reproduced, except in full, without prior written approval of the Homer R. Dulin Co.

P.O. No . Shipper No. .

7-22-10	7-22-11	J. LAGUNA
CALIBRATION DATE	RECALIBRATION DUE	CALIBRATION TECHNICIAN



CALIBRATION CURVE BY
HOMER R. DULIN CO. Certificate #7-321-10

Submitted By: TOTAL AIR ANALYSIS, INC.

Flowmeter S/N: .

Mfr. S/N: ROCKWELL 967239

Tube: N/A

Model: S-110

Date: 7-22-10

Technician: J. LAGUNA

Accuracy: ± 1% RATE W/ CURVE

DRY GAS METER CALIBRATION DATA SHEET

Control Console I.D.: SK-25, Mini Meter
Reference Meter Y: 0.9989
Date: 9/15/10
Pbar 29.96
Ambient Temp.: 73

Calibration Frequency: Semiannual
Standard Temp. 68

Rate (CFM)		dH	Field Dry Gas Meter		Time	Reference Dry gas Meter		Yfm	dH@
			Temp Out (0F)	Meter Reading (CF)		Temp. Out (0F)	Meter Reading (CF)		
	start	0.25	71	210.780	0	72	153.514		
0.25	end	0.25	71.5	218.653	30	72	161.345	0.9922	2.114
	avg/total	0.25	71.3	7.873	30	72.0	7.831		
	start	0.25	71	218.653	0	72	161.345		
0.25	end	0.25	72	226.313	30	71	168.976	0.9951	2.221
	avg/total	0.25	71.5	7.660	30	71.5	7.631		
	start	0.25	72	226.313	0	72	168.976		
0.25	end	0.25	72	233.863	30	71	176.483	0.9941	2.293
	avg/total	0.25	72.0	7.550	30	71.5	7.507		
	start	1	72	235.500	0	73	177.534		
0.5	end	1	72	246.011	20	72.5	187.996	0.9928	2.109
	avg/total	1	72	10.511	20	72.75	10.462		
	start	1	71.5	246.011	0	72.5	187.996		
0.5	end	1	72	256.543	20	73	198.476	0.9921	2.102
	avg/total	1	71.75	10.532	20	72.75	10.480		
	start	1	72	256.543	0	73	198.476		
0.5	end	1	73	267.184	20	73	208.977	0.9848	2.093
	avg/total	1	72.5	10.641	20	73	10.501		
	start	1.95	73	270.000	0	73	210.750		
0.75	end	1.95	73	277.610	10	73	218.506	1.0181	1.868
	avg/total	1.95	73	7.610	10	73	7.756		
	start	1.95	73	277.610	0	74	218.506		
0.75	end	1.95	73.5	285.054	10	73	226.022	1.0081	1.993
	avg/total	1.95	73.25	7.444	10	73.5	7.516		
	start	1.95	73	285.054	0	74	226.022		
0.75	end	1.95	74	292.485	10	74	233.540	1.0096	1.994
	avg/total	1.95	73.5	7.431	10	74	7.518		
	start	4.25	74	293.500	0	74	235.000		
1.00	end	4.25	74	305.304	10	74	246.610	0.9825	1.821
	avg/total	4.25	74	11.804	10	74	11.610		
	start	4.25	73.5	305.304	0	74	246.610		
1.00	end	4.25	74	316.961	10	74.5	258.154	0.9883	1.844
	avg/total	4.25	73.75	11.657	10	74.25	11.544		
	start	4.25	74	316.961	0	73	258.154		
1.00	end	4.25	74	328.579	10	74	270.000	1.0195	1.746
	avg/total	4.25	74	11.618	10	73.5	11.846		

Rate (CFM)	Run No.	Reference Dry gas Meter			Field Dry gas Meter			coefficient Y<(1+/- 0.05)	(Ymax-Ymin)<0.01	Average Y	Average dH@	dH@<dH@+/- 0.15)	0.98<(Y/Y)<1.02
		Rate Qrm (cfm)	Avg. Meter Temp.	Corr. Rate (scfm)	Rate Qrm (cfm)	Avg. Meter Temp.	Corr. Rate (scfm)						
	1	0.2610	72.0	0.2586	0.2624	71.3	0.2603	0.9922					
0.25	2	0.2544	71.5	0.2522	0.2553	71.5	0.2532	0.9951	0.0029	0.9938	2.209	0.193	0.9957
	3	0.2502	71.5	0.2481	0.2517	72.0	0.2493	0.9941					
	1	0.5231	72.75	0.5165	0.5256	72	0.5196	0.9928					
0.5	2	0.5240	72.75	0.5174	0.5266	71.75	0.5209	0.9921	0.0080	0.9899	2.101	0.085	0.9918
	3	0.5251	73	0.5182	0.5321	72.5	0.5256	0.9848					
	1	0.7756	73	0.7636	0.7610	73	0.7493	1.0181					
0.75	2	0.7516	73.5	0.7393	0.7444	73.25	0.7326	1.0081	0.0100	1.0119	1.952	0.065	1.0139
	3	0.7518	74	0.7388	0.7431	73.5	0.7310	1.0096					
	1	1.161	74	1.1346	1.1804	74	1.1535	0.9825					
1.00	2	1.1544	74.25	1.1276	1.1657	73.75	1.1397	0.9883	0.0370	0.9967	1.804	0.213	0.9986
	3	1.1544	73.5	1.1292	1.1657	74	1.1392	1.0195					

Overall Averages

dH@ = 2.016 Y = 0.9981

TOTAL AIR ANALYSIS, INC.

Temperature Sensor Calibration

TC I.D #: TC-68
Date: 9/15/2010
Calibrator: Jofra 600S S/N 54005
Calibrated By: JD Grissom
Note: Calibrated with Extech 421305

100 ° F			
Ref. Thermometer, (° F)	*Field TC, (° F)*	*Absolute Difference*	*Difference, (° Rankin)*
96	96	**0.00**	**0.00**
96	96	**0.00**	**0.00**
96	96	**0.00**	**0.00**

300 ° F			
Ref. Thermometer, (° F)	*Field TC, (° F)*	*Absolute Difference*	*Difference, (° Rankin)*
300	303	**-1.00**	**-0.39**
300	303	**-1.00**	**-0.39**
300	303	**-1.00**	**-0.39**

800 ° F			
Ref. Thermometer, (° F)	*Field TC, (° F)*	*Absolute Difference*	*Difference, (° Rankin)*
800	801	**-0.13**	**-0.08**
800	801	**-0.13**	**-0.08**
800	801	**-0.13**	**-0.08**

TOTAL AIR ANALYSIS, INC.

Santa Maria, California

Local Time: **3:00 PM PDT** (GMT -07) — Set My Timezone Lat/Lon: **34.9° N 120.3° W** (Google Map)

Tropical Weather: Tropical Depression Igor (North Atlantic) Invest 92 (North Atlantic) Typhoon Meranti (Western Pacific) Invest 95 (Central Pacific) Invest 96 (Central Pacific)

Broadcast Network: Three Shows on the Broadcast Network today, beginning at 4 p.m. ET, 1 p.m PT. Listen here!

Current Conditions

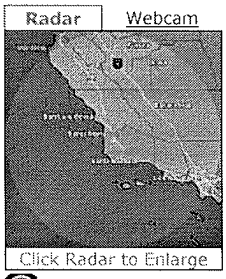
Santa Maria, California (PWS)
Updated: 2 sec ago

64.1 °F
Clear

Humidity:	**68%**
Dew Point:	**53 °F**
Wind:	20.0 mphfrom the **WNW**
Wind Gust:	22.0 mph
Pressure:	**29.94 in (Falling)**
Visibility:	**9.0 miles**
UV:	**2.4** out of 16
Pollen:	**8.10** out of 12 Pollen Forecast NEW!
Clouds:	**Clear** - (Above Ground Level)
Elevation:	**0** ft

Rapid Fire Updates:
Enable Disable

Source for Current Conditions:
PWS & Airport Airport Only



Local Radar
WunderMap
Regional Radar
Local Satellite
Marine Forecast
Snow Depth
Trip Planner
Weather Stations

» Weather History for This Location
Select a source for your current conditions:

Santa Maria, CA

Raw METAR	**Aviation**	Weather Radio
Flight Rule:	**VFR** (KSMX)	
Wind Speed:	**20.0** kts.	
Wind Dir:	**311°** (NW)	
Ceiling:	Unlimited	

Full Report — Pilot Maps

Nearby Airports

City:	Temp.:	Conditions:	Updated:
Santa Maria	**67** °F	Clear	2:51 PM PDT
Lompoc	**68** °F	Clear	2:55 PM PDT
Vandenberg AFB	**63** °F	Partly Cloudy	2:55 PM PDT

Flight Tracker Arrivals

Flight:	From:	To:	ETA:	Status:

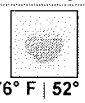
No flights were found.

United States Airport Delays and Flight Status

Flight Tracker by FlightAware

5-Day Forecast for ZIP Code 93454

Customize Your Icons!

Thursday	Friday	Saturday	Sunday	Monday
				
70° F | 49° F	77° F | 50° F	79° F | 52° F	76° F | 52° F	76° F | 52° F
Partly Cloudy	Clear	Partly Cloudy	Clear	Clear
Hourly	Hourly	Hourly	Hourly	Hourly

Today is forecast to be **nearly the same** temperature as yesterday.

Forecast for Santa Barbara County Central Coast

Updated: 2:30 PM PDT on September 9, 2010

No Active Advisories (US Severe Weather)

Tonight
Mostly clear except for patchy low clouds and fog after midnight. Lows in the mid 40s to lower 50s. Northwest winds 15 to 25 mph in the evening.

Friday
Sunny except for patchy morning low clouds and fog. Highs from the mid 60s to lower 70s at the beaches to the mid 70s to lower 80s inland.
» ZIP Code Detail

Friday Night
Clear except for patchy low clouds and fog after midnight. Lows in the mid 40s to lower 50s.

Saturday
Areas of low clouds and fog in the morning then sunny. Highs from the mid 60s to lower 70s at the beaches to the mid 70s to lower 80s inland.
» ZIP Code Detail

Saturday Night
Clear except for patchy low clouds and fog after midnight. Lows in the upper 40s to mid 50s.

Sunday through Tuesday
Areas of morning and night low clouds and fog...otherwise clear. Highs from the 60s at the beaches to the 70s to near 80 inland. Lows in the upper 40s to mid 50s.

Tuesday Night through Thursday
Clear except for patchy night through morning low clouds and fog. Lows in the upper 40s to mid 50s. Highs from the 60s at the beaches to the 70s to around 80 inland.

Alternate Computer Forecast: AVN MOS Weather Graph

Scientific Forecaster Discussion (NWS)

Air quality Forecast for Santa Maria

	Air quality:	AQ Index:	Pollutant:
Yesterday	Good		OZONE
Current	**Good**		**OZONE**
Thursday	Good		PM2.5
Thursday	Good		OZONE
Friday	Good		PM2.5
Friday	Good		OZONE

Want to learn more about air pollution? Visit our health section.

Pollen Forecast | Current Air Quality | Yesterday's Peak

Earthquake Activity

City:	Distance to Epicenter:	Magnitude:	Date:
Pinnacles, CA	**123** miles	3.1	11:59 PM PDT 2010-09-06

Minimum magnitude displayed is 2.5. For more information, visit USGS.

Sports Weather

Santa Maria, California

Local Time: **11:51 AM PDT** (GMT -07) — Set My Timezone

Lat/Lon: **34.9° N 120.3° W** (Google Map)

Tropical Weather: Tropical Storm Igor (North Atlantic) Invest 92 (North Atlantic) Invest 95 (Central Pacific)

Current Conditions

Santa Maria, California (PWS)
Updated: 48 sec ago

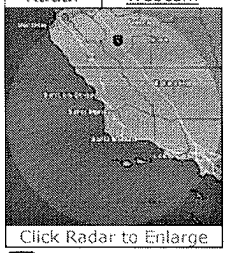
72.6 °F
Clear

Humidity:	**57%**
Dew Point:	**56 °F**
Wind:	**8.0 mph** from the **WNW**
Wind Gust:	**8.0 mph**
Pressure:	**29.97 in (Steady)**
Heat Index:	**77 °F**
Visibility:	**10.0 miles**
UV:	**3.2** out of 16
Pollen:	**8.00** out of 12 Pollen Forecast NEW!
Clouds:	**Clear** - (Above Ground Level)
Elevation:	**0** ft

Rapid Fire Updates:
Enable Disable

Source for Current Conditions:
PWS & Airport Airport Only

Radar | Webcam



Click Radar to Enlarge

- Local Radar
- WunderMap
- Regional Radar
- Local Satellite
- Marine Forecast
- Snow Depth
- Trip Planner
- Weather Stations

» Weather History for This Location

Select a source for your current conditions:

Santa Maria, CA

Raw METAR | **Aviation** | Weather Radio

Flight Rule:	**VFR** (KSMX)
Wind Speed:	**5.0** kts.
Wind Dir:	**289°** (WNW)
Ceiling:	Unlimited

Full Report — Pilot Maps

Nearby Airports

City:	Temp.:	Conditions:	Updated:
» Santa Maria	**73** °F	Clear	10:51 AM PDT
Lompoc	**72** °F	Clear	11:35 AM PDT
Vandenberg AFB	**66** °F	Clear	10:55 AM PDT

Flight Tracker Arrivals

Flight:	From:	To:	ETA:	Status:

No flights were found.

United States Airport Delays and Flight Status

Flight Tracker by FlightAware

5-Day Forecast for ZIP Code 93454

Customize Your Icons!

Friday	Saturday	Sunday	Monday	Tuesday
74° F | 50° F	76° F | 52° F	77° F | 52° F	72° F | 52° F	70° F | 52° F
Clear	Partly Cloudy	Partly Cloudy	Clear	Clear
Hourly	Hourly	Hourly	Hourly	Hourly

Today is forecast to be **Warmer** than yesterday.

Forecast for Santa Barbara County Central Coast

Updated: 3:18 am PDT on September 10, 2010

No Active Advisories (US Severe Weather)

Today
Sunny except for patchy morning low clouds and dense fog. Visibility one quarter mile or less in the morning. Highs from the 60s at the beaches to the mid 70s to lower 80s inland. West winds around 15 mph in the afternoon.
» ZIP Code Detail

Tonight
Clear except for patchy low clouds and fog after midnight. Lows in the lower to mid 50s. Northwest winds around 15 mph in the evening.

Saturday
Areas of low clouds and fog in the morning then sunny. Highs from the lower to mid 60s at the beaches to the upper 70s to mid 80s inland.
» ZIP Code Detail

Saturday Night
Clear except for patchy low clouds and fog after midnight. Lows in the lower to mid 50s.

Sunday
Areas of low clouds and fog in the morning then sunny. Highs from the 60s at the beaches to the mid 70s to lower 80s inland.
» ZIP Code Detail

Sunday Night
Clear except for patchy low clouds and fog after midnight. Lows in the lower to mid 50s.

Monday through Tuesday
Areas of morning and night low clouds and fog...otherwise clear. Highs from the upper 50s to mid 60s at the beaches to the mid 70s to lower 80s inland. Lows in the lower to mid 50s.

Tuesday Night through Thursday
Clear except for patchy night through morning low clouds and fog. Lows in the lower to mid 50s. Highs from the lower to mid 60s at the beaches to the upper 70s to mid 80s inland.

Alternate Computer Forecast: AVN MOS Weather Graph

Scientific Forecaster Discussion (NWS)

Air quality Forecast for Santa Maria

	Air quality:	AQ Index:	Pollutant:
Yesterday	Good		OZONE
Current	**Good**		**OZONE**
Friday	Good		PM2.5
Friday	Good		OZONE

Want to learn more about air pollution? Visit our health section.

Pollen Forecast | Current Air Quality | Yesterday's Peak

Sports Weather

NFL:	Date:	Forecast:
Dolphins vs. Bills	1:00 PM EDT on September 12, 2010	Chance of Rain, **67** °F
Lions vs. Bears	12:00 PM CDT on September 12, 2010	Clear, **74** °F

Appendix K

CARB Independent Source Test Contractor Certificate

State of California

Air Resources Board

Approved Independent Contractor

Total Air Analysis, Incorporated

This is to certify that the company listed above has been approved by the Air Resources Board to conduct compliance testing pursuant to California Code of Regulations, title 17, section 91207, until June 30, 2011, for those test methods listed below:

ARB Source Test Methods:

1, 2, 3, 4, 5, 6, 20, 100 (CO, CO_2, NO_x, O_2, SO_2, THC)

410A, 410B, 421, 422, 430

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

State of California

Air Resources Board

Approved Independent Contractor

Total Air Analysis, Incorporated

This is to certify that the company listed above has been approved by the Air Resources Board to conduct compliance testing pursuant to California Code of Regulations, title 17, section 91207, until June 30, 2011, for those test methods listed below:

Visible Emissions Evaluation
USEPA Test Method 18

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