AP-42 Test Data - Submission Checklist

FACILITY INFORMATION

Landfill Name:
Forward Landfill

Location:
9999 South Austin Rd., Manteca, CA

Owner: Forward, Inc.	**LFG Operator:** Forward, Inc.	
Contact Person: Michael O'Connor	**Address:** 3843 Brickway Blvd., Ste 208, Santa Rosa, CA	
Email: moconnor@scsengineers.com	**Phone:** 707-546-9461	**Fax:**
Year Opened:	**Year Gas Collection Started:**	

Gas Collection Control Device Description:
Enclosed LFG Flare

Co disposal: ☐ Yes ☐ No ☒ Unknown

ADMINISTRATIVE INFORMATION
Complete test reports must be submitted (see footnote[1]))

Sampling Date: 5/3/07	**Analysis Date:** 5/4/07

Description of sampling site:
Enclosed LFG Flare

Description of sampling method:
Continuous emissions monitoring

QA/QC data included: ☒ Yes ☐ No

Chain of Custody included: ☐ Yes ☒ No

DATA SUMMARY

Type of Data:
- ☐ Header Draw
- ☐ Punch Probe (this data does not presently meet EPA requirements)
- ☒ Stack Test
- ☐ Other:

Header Draw data:

NMOC data:
- ☐ Yes
- ☐ No

NMOC (ppm as hexane):

Raw LFG Constituent data:
- ☐ Yes
- ☐ No

Sulfur Compound data:
- ☐ Yes
- ☐ No

NMOC Test Method:	**LFG Test Methods:**

Stack Testing data:
Device Tested (Flare, IC Engine, Turbine, Boiler):
Concentration (ppm)
NOx: 28.8 @3% O2 **SOx:**
CO: 180.5 @3%O2 (Dft to 20% of analyzer rng) **Dioxin/furans: NS**
PM: NS **Aldehydes/metals: NS**

Was sampling conducted after the control device? (Y/N): Y

Test Methods: CARB 100.1, SCAQMD 307-91

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[1] According to USEPA, complete test reports should contain, at a minimum: Landfill name; physical description of the landfill, gas collection system and control device; description of sampling site and methods used to take samples; a sample matrix showing date of test and methods used for analysis; data results tables and discussion of results, identifying any data qualifiers or unusual circumstances affecting results; and QA/QC items such as field notes, laboratory notes, and a test QAPP or documentation of field and laboratory QA/QC procedures, including equipment calibrations and blank or spiked sample results.

COMPLIANCE SOURCE TEST REPORT
AUSTIN ROAD LANDFILL, STOCKTON

PREPARED FOR:
Bryan A. Stirrat & Associates
1360 Valley Vista Drive
Diamond Bar, CA 91765

EQUIPMENT LOCATION:
Forward Inc. (Austin Road Landfill)
9060 S. Austin Rd.
Stockton, CA 95206

TEST DATES:
May 3, 2007

SUBMITTAL DATE:
June 4, 2007

TESTED BY:
Mr. Tom Taylor
SCEC
1582-1 N. Batavia Street
Orange, California 92867

Report No: 2060.1069 rpt.1

Written By: Leslie A. Johnson

Reviewed By: Michael W. Bell

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1.0 INTRODUCTION

On May 3, 2007 SCEC conducted an emissions test program on one landfill gas-fired flare at the Austin Road Landfill in Stockton, California. Testing was done as specified in the Source Test Plan which was submitted to San Joaquin Valley Air Pollution Control District (SJVAPCD) on April 3, 2007.

The purpose of the source test was to quantify emissions from the flare system for comparison with SJVAPCD permit requirements and to assess the combustion efficiency of the flare. The source test described herein complies with the SJVAPCD requirements as delineated in the Permit No. N-339-17-7.

2.0 BACKGROUND

2.1 Design and Operation

The flare has an 88 inch internal diameter and is 38' in height. Actual design capacity is 2000 scfm and it's permitted capacity is up to 804 MMSCF/YR and 48 MMBTU/HR. The flare is equipped with a propane gas pilot and a control system to retain combusted landfill gas for 0.6 seconds at a temperature of 1,400 °F. A flame arrester is provided between the flare and the landfill gas supply piping. A safety control system shuts down the supply landfill gas valve and blower power in cases of flameout or other alarm conditions. A filter is used for removing moisture and particulates from the landfill gas. One blower is used and induces a vacuum to pull landfill gas through piping from the landfill's gas extraction system and an identical blower is available for backup.

2.2 Authority to Construct

The permit No. N-339-17-7 was issued by the SJVAPCD March 15, 2005. Among other parameters, the permit requires that criteria pollutants, nitrogen oxides (NO_x), carbon monoxide (CO), methane (CH_4), and volatile organic compounds (VOC) be evaluated from the flare's exhaust. In addition, CH_4, VOC, volume flow and heating value were evaluated from the flare inlet.

3.0 TEST SUMMARY

3.1 Source Test Requirements

The Source Test Plan submitted to SJVAPCD was approved on May 2, 2007. The plan proposed testing the flare to quantify criteria pollutant emissions and destruction efficiencies for non-methane hydrocarbons.

The Source Test Plan described specific measurement, sampling and analytical methods to be used during the testing. In addition, it specified the number of samples to be collected as well as their sampling locations (flare system inlet and flare exhaust).

3.0 TEST SUMMARY (continued)

3.2 Source Test Overview

SCEC conducted the compliance source test of the flare systems on May 3, 2007. The work was performed in accordance with the SJVAPCD approved plan. Testing was observed by Ms. Lisa Middleton of SJVAPCD.

Prior to performing the source test, SCEC performed CARB Method 1 at both the flare inlet and exhaust to identify the optimum sampling traverse locations and number of sampling points per traverse. SCEC then obtained measurements of the average exhaust gas velocity, volumetric flow rate, temperature, dry molecular weight and moisture content using CARB Methods 2, 3 and 4, respectively. NO_x, CO, O_2, and CO_2 data were collected on a data acquisition system (DAS) for all tests.

Exhaust samples from the flare were collected and analyzed to quantify emissions of NO_x, CO, O_2, CH_4 and VOC. All exhaust samples were collected while traversing the stack to minimize gaseous stratification bias. Inlet and exhaust samples were tested for CH_4 and VOC. In addition, sulfur compounds were analyzed in the inlet samples.

SCEC also evaluated the flare for VOC destruction efficiency. SCEC collected landfill gas samples at the inlet of the flare station and flare exhaust samples and analyzed them for VOC. Comparison of the inlet and exhaust sample results allowed the flare destruction efficiency to be calculated.

TABLE 3-1
Test Program Overview
Compliance Program

Parameter	Reference Method	Measurement Principle	Inlet	Outlet
Methane and Total Gaseous Non- Methane Organics	EPA Method 18 EPA Method 18	GC/FID	- 3	3 -
BTU, C1-C6, O_2, CO_2 and N_2	ASTM D-1945/3588	GC/TCD	3	-
O_2, CO_2, CO, NO_x	CARB 100.1	Micro Fuel Cell, NDIR, Chemiluminescence	-	3
Total Reduced Sulfur & H_2S	SCAQMD 307-91	Gas Chromatography	3	-
Flow Rate	CARB Method 2	Pitot Traverse	3	3
Moisture	CARB 4	Gravimetric Wet Bulb/dry bulb	- 3	3

3.0 TEST SUMMARY (Continued)

3.3 Flare Performance

During the source test the flare was operated with a landfill gas flow rate of 1,552 scfm. The landfill gas BTU/scf values ranged between 362-399 for the flare. The flare combustion temperature controller (top temperature probe) was set and maintained at 1550 °F.

3.4 Criteria Pollutant Results

The results of the criteria pollutant testing are shown in Table 5-1 and contained in Appendix A through D of this report. As indicated in Table 5-1 and 5-2 (Summary of Results), CO and NO_x emissions were below the prescribed permit conditions. The select CO range was 0-500 ppm. The measured CO levels were 8-10 ppm and are presented in Appendix A as measured. Defaulting to 20% of the selected range (100 ppm) still demonstrate that the flare was in compliance. The data presented in Tables 5-1 and 5-2 are set to the default value. Four (4) runs were conducted for NO_x, CO, O_2, CO_2, and flows. During Run #1 the CO concentration spiked off scale. The test run was not used. The analyzer was reset to a higher range (0-500 ppm).

3.5 VOC (NMOC) Results

VOC and NMOC are considered the same constituents. As shown in Table 5-1, emissions of VOC were in compliance with all permit conditions. The NMOC emissions demonstrated compliance with the 20 ppm (as hexane) corrected to 3% O_2 and 98% destruction efficiency. The VOC results presented in Table 5.1 are the average of three samples.

4.0 CONCLUSIONS

Based on the results of this test program, the Austin Road Landfill flare system is in compliance with all requirements of the permit. All exhaust emission rates (lb/hr and lbs/mmscf) values were calculated using EPA Method 19 (Appendix E). All quality assurance requirements specified by the utilized test methods were met. The on-site NO_2 converter check was found to be 93.9%.

5.0 SUMMARY OF RESULTS

TABLE 5-1
SUMMARY OF TEST RESULTS
BAS Stockton Forward
Austin Road LF Flare
May 3, 2007

PARAMETER	INLET	EXHAUST	PERMIT LIMIT
O_2, %	5.20	10.98	
CO_2, %	28.47	8.83	
N_2, %	27.47	80.19	
H_20, %	2.00	6.52	
Flow Rate, wscfm	1552.1	13,070	
Flow Rate, dscfm	1521.1	12,083	
Temperature, °F	71	1,491.8	>1,400
Btu/scf	379.7		
MMBtu/Hr	35.36		48.0
NOx:			
ppm		16.0	
ppm @ 3% O_2		28.8	
lb/hr (as NO_2)		1.38	
lb/day (as NO_2)		33.2	
lb/MMBtu (as NO_2)		0.039	0.05
lb/MMCF (as NO_2)		15.15	
CO: (defaulted to 20% of analyzer range)			
ppm		100	
ppm @ 3% O_2		180.5	
lb/hr		5.27	
lb/day		126.4	
lb/MMBtu		0.149	0.2
lb/MMCF		57.72	
Hydrocarbons:			
CH_4, ppm	371,667	0.91	
TGNMO, ppm (as CH_4)	5,717	0.50	
TGNMO, ppm @ 3% O_2 (as methane)		0.90	20
TGNMO, lb/hr (as CH_4)	21.7	0.02	
TGNMO, lb/MM Btu (as CH_4)	-	0.000	0.0113
TGNMO, lb/day (as CH_4)	519.8	0.36	
TGNMO, ppm (as hexane)		0.08	
TGNMO, ppm @ 3% O_2 (as hexane)		0.15	<20 NSPS
TGNMO, lb/hr (as hexane)		0.01	
Destruction Eff. %		99.93	>98%
lb/MMCF		0.15	
Total Sulfur Compounds,			
Total Reduced Sulfur Inlet, ppm	29.37		
SOx Exhaust, lb/hr (as SO_2)		0.45	
SOx Exhaust, lb/day(as SO_2)		10.68	
SOx Exhaust, lb/MMBtu(as SO_2)		0.013	0.0215
lb/MMCF		4.88	

Notes:
The results in this table are the averages of all measurements.

5.0 SUMMARY OF RESULTS (Continued)

TABLE 5-2
GENERAL RESULTS
BAS Stockton Forward
Austin Road LF Flare
May 3, 2007

Parameter	INLET First Run	Second Run	Third Run	Average	EXHAUST First Run	Second Run	Third Run	Average
O_2, %	5.72	5.21	4.66	5.20	11.08	11.11	10.74	10.98
CO_2, %	27.4	28.2	29.8	28.5	8.77	8.69	9.03	8.83
N_2, %	29.6	27.5	25.3	27.5	80.1	80.2	80.2	80.2
H_20, %	1.90	1.95	2.15	2.00	7.15	6.74	5.68	6.52
Flow Rate, wscfm	1,551.2	1,554.6	1,550.4	1,552.1	13,202	13,198	12,811	13,070
Flow Rate, dscfm	1,521.8	1,524.3	1,517.1	1521	11,683	12,259	12,308	12,083
Temperature, °F	66.0	70.0	76.0	70.7	1,502	1,485	1,488	1,492
Btu/scf	362	378	399	380				
MMBtu/Hr	33.69	35.26	37.12	35.36				
NOx:								
ppm					15.54	15.70	16.68	15.97
ppm @ 3% O_2					28.3	28.7	29.4	28.8
lb/hr (as NO_2)					1.30	1.38	1.47	1.38
lb/MM Btu (as NO_2)					0.039	0.039	0.040	0.039
CO: (defaulted to 20% of analyzer range)								
ppm					100	100	100	100
ppm @ 3% O_2					182.3	182.8	176.2	180.5
lb/hr					5.093	5.344	5.366	5.268
lb/MM Btu					0.151	0.152	0.145	0.149
Hydrocarbons:								
CH_4, ppm	355,000	370,000	390,000	371,667	0.69	0.99	1.05	0.91
EthanE, ppm	< 10	< 10	< 10	< 10	< 0.07	< 0.07	< 0.07	< 0.07
TGNMO, ppm (as CH_4)	4,920	5,830	6,400	5,717	< 0.5	< 0.5	< 0.5	< 0.5
TGNMO, lb/hr (as CH_4)	18.65	22.14	24.19	21.66	0.01	0.02	0.02	0.02
TGNMO, ppm (as hexane)	820.0	971.7	1,066.7	952.8	0.08	0.08	0.08	0.08
TGNMO, ppm @ 3% O_2 (as hexane)	966.9	1,108.5	1,175.7	1,083.7	0.15	0.15	0.15	0.15
TGNMO, lb/hr (as hexane)	16.71	19.83	21.67	19.40	0.01	0.01	0.01	0.01
Destruction Eff. %					99.92	99.93	99.93	99.93
Sulfur Compounds:								
H_2S, ppm	20.0	21.7	19.8	20.5				
Carbonyl Sulfide, ppm	< 0.2	< 0.2	< 0.2	< 0.2				
Methyl Mercaptan, ppm	1.88	2.0	2.1	2.0				
Ethyl Mercaptan, ppm	< 0.2	< 0.2	< 0.2	< 0.2				
Dimethyl Sulfide, ppm	5.96	6.07	6.86	6.30				
Carbon Disulfide, ppm	0.10	0.11	0.12	0.11				
isoprpyl mercaptan, ppm	0.16	0.18	0.20	0.17				
n-propyl mercaptan, ppm	< 0.1	< 0.1	< 0.1	< 0.1				
Dimethyl Disulfide,ppm	0.11	0.10	0.11	0.11				
Total Sulfur Compounds,								
Total Reduced Sulfur Inlet, ppm	28.4	30.3	29.4	29.4				
SOx Exhaust, lb/hr (as SO_2)[1]					0.431	0.460	0.444	0.445

The exhaust volume flow values are based on EPA Method 19.

CARB METHOD 1 - SAMPLING AND VELOCITY TRAVERSE FOR STATIONARY SOURCES

A preliminary source test site assessment was performed prior to the source test in order to determine applicable testing port locations and sample point traverse locations. The stack diameter, and the distance upstream and downstream from sample ports to disturbances, (i.e. bends, flanges, etc.,) were measured. This information was utilized to determine the minimum number of sampling points per traverse, and the distance from the inner stack wall to each sample point location.

CARB METHOD 2 - VELOCITY AND VOLUMETRIC FLOW RATE

The velocity of the flare exhaust gas stream was determined using an "S" type pitot tube, a magnehelic differential pressure gauge or inclined manometer, and type "K" thermocouple with a digital temperature measuring device. A standard pitot tube was used to measure the inlet velocity. The calibrated pitot tube was connected to the calibrated magnehelic gauge or inclined manometer and leak checked at 80-100% of full scale. A temperature and delta P was obtained at each traverse point, and a duct static pressure was measured and recorded. The dry standard volumetric flow rate was determined from the gas velocity data, stack pressure, stack gas moisture content, stack gas molecular weight, and cross-sectional area of duct.

CALCULATIONS

$MW_D = 0.44\ (\%CO_2) + 0.32\ (\%O_2) + 0.28\ (\%N_2 + \%CO)$
$MW_W = MW_D\ (1-BW_S) + (BW_S)$

Where:
MW_D = Dry Molecular Weight of Exhaust Gas, lb/lb mole
MW_W = Wet Molecular Weight of Exhaust Gas, lb/lb mole
BW_S = Exhaust Gas Moisture Content
$\%CO_2$ = Percent CO_2 by Volume (dry basis)
$\%O_2$ = Percent O_2 by Volume (dry basis)
$\%N_2$ = Percent N_2 by Volume (dry basis) Calculated by Differences
%CO = Percent CO by Volume (dry basis)

CARB METHOD 3 - GAS ANALYSIS FOR DRY MOLECULAR WEIGHT AND EXCESS AIR SAMPLING AND ANALYTICAL PROCEDURES

An inlet gas sample was extracted from the stack using a Tedlar bag and Teflon line, and analyzed by GC/TCD. The exhaust gas sample was analyzed for CO_2 and O_2 using CARB Method 100.

CARB METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

Moisture content was determined using a sampling train consisting of a stainless steel probe, teflon line, four impingers in an ice water bath, leak free pump, vacuum gauge, and temperature compensated dry gas meter. Prior to sampling a leak check of the sampling train was performed to insure system integrity. After the initial check, the initial meter reading, inlet meter temperature, and outlet meter temperature were recorded and the sample pump started. The sample rate was adjusted to approximately 1 cubic foot per minute and sampled for approximately 30 minutes or until a minimum of 20 corrected cubic feet of sample gas was obtained. Additionally, tare weights of the charged individual impingers were recorded using an electronic balance capable of weighing to the nearest 0.1 grams or less.

After sampling, the final meter readings and the final weights of each impinger were determined and recorded. Percent moisture content was calculated from the weight of water collected and the dry gas volume sampled.

Inlet moisture was measured using a wet bulb/dry bulb and calculated with a psychometric chart.

CALCULATIONS

$$\text{Moisture } (B_w) = \frac{Vwstd}{Vmstd + Vwstd} \times 100$$

$$\text{Where: } Vwstd = \frac{0.0464\ ft^3}{ml} * \text{Vol } H_2O \text{ Collected (ml)}$$

$$Vmstd = Y \text{ Meter} * \frac{528^\circ R}{29.92 \text{ in Hg}} * \frac{\text{Vol Metered}}{\text{Temp. Meter}} * \text{Pres. Meter.}$$

6.0 SAMPLING AND ANALYTICAL PROCEDURES (Continued)

CARB Method 100 – Continuous Monitoring

A continuous sample was extracted from the stack through a stainless steel probe, coarse filter, sample conditioner (condensate train) and then drawn via 3/8" Teflon line to the Mobile Emissions Laboratory (MEL). The sample was filtered again through a fine Balston filter and finally delivered to the analyzers through the sample manifold and dedicated flow meters.

Prior to beginning the compliance test, a system leak check and calibration check were performed. The leak check was accomplished by plugging the probe tip and drawing to a minimum of 25" Hg of vacuum on the entire sampling system. When all flow meters indicate 0.0 scfh flow, the system was proven to be free of all leaks. A system calibration check was performed by injecting calibration gas to the probe tip and drawing sample. The bias check did not exceed 5%.

After zeroing all analyzers, EPA Protocol 1 gases were used to calibrate each analyzer within 80-90% and 40-60% full scale of the selected range.

All concentrations from the NO_x, CO, CO_2, and O_2 analyzers were recorded on a Yokogawa DR240. The data was interpreted from the strip charts and reduced via computer in SCEC's Laboratory.

EQUATIONS:

$$\text{COppm} = (\text{CO\%FS} - \text{Average CO Zero}) \times \frac{\text{CO Cal Gas Value}}{\text{Average CO Span} - \text{Average CO Zero}}$$

ppm @ 3% O_2 = ppm obsv. x 17.95/(20.95-%O_2 obsv.)
ppm @ 15% O_2 = ppm obsv. x 5.95/(20.95-%O_2 obsv.)

lb/hr (NO_x/CO/NMHC) = ppm obsv. x 1.551×10^{-7} x DSCFM calc. x MW (@ 70°F)

Grams/Bhp-Hr = (lb/hr x 453.6)/Bhp

Molecular Weight (MW)
NO_x = 46
CO = 28
NMHC as CH_4 = 16

6.0 SAMPLING AND ANALYTICAL PROCEDURES (Continued)

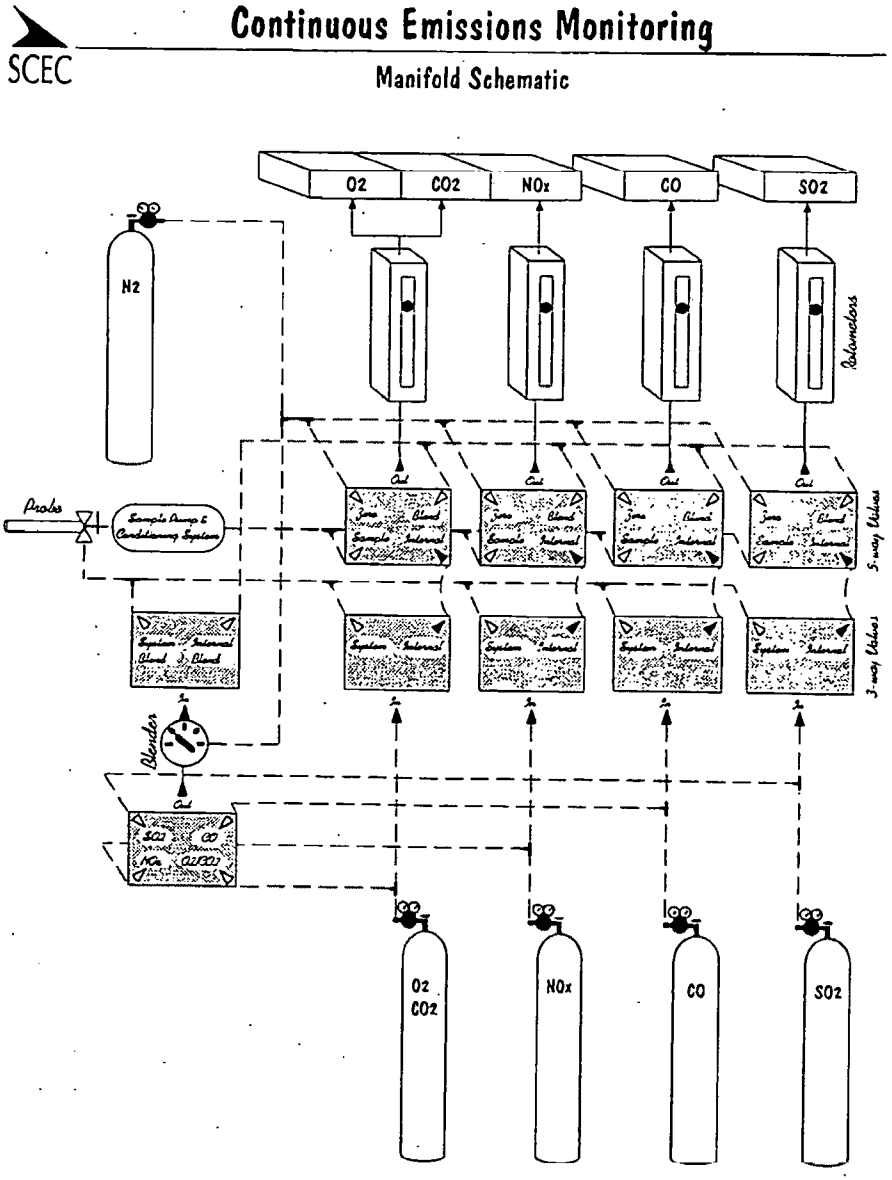
CONTINUOUS MONITORING LAB - TVV

O2/CO2 ANALYZER, PARAMAGNETIC / NDIR TYPE	CALIFORNIA ANALYTICAL INSTRUMENTS MODEL 601P S/N T08042-M
Response Time	<2 seconds to 60 seconds NDIR <2 seconds paramagnetic
Output	0-10 volts / 4-20 mA
Range	From 0-50 ppm up to 0-100% full scale
NO_x CHEMILUMINESCENT ANALYZER	THERMO ELECTRON MODEL 42H S/N 42H-49814-284
Response Time (0-90%)	2.5 seconds in NO mode 5.0 seconds in NO_x mode
Noise	25 PPB
Zero Drift (24 hrs)	50 PPB
Detection Limit	50 PPB
Span Drift (24 hrs)	1% of full scale
Linearity	+/- 1% of full scale
Sample Flow Rate	25 cc/min.
Bypass Flow Rate	250 to 1100 cc/min.
Output	NO, NO_2, NO_x, 0-10V, Selectable Voltage 4-20 mA, RS-232
Ranges	0-10, 0-20, 0-100, 0-200, 0-500, 0-1000, 0-2000, 0-5000 ppm

CONTINUOUS MONITORING LAB - TVV

CO NON-DISPERSIVE INFRARED (NDIR)	CALIFORNIA ANALYTICAL INST. MODEL 602 CO/CO S/N T08043-M
Response Time	< 2 seconds to 60 seconds adjustable
Zero and Span Drift	< 1% Full Scale per 24 Hours
Linearity	< 0.5% of Full Scale
Output	0-10 Volts / 4-20 mA
Range	Low Level- any selected range 0-1000 ppm High Level- any selected range 0-10,000 ppm
STRIP CHART RECORDER	YOKOGAWA MODEL DR240
Scan Cycle Time	1-60 seconds
Scanning Rate	60ms/Channel
Input Impedance	More than 10 M ohms for 2V or lower ranges, approximately 1 M ohms on 6V or higher ranges
Input Bias	Less than 10mA
Temperature Spread on Terminals	0.3% among input terminals
Temperature Coefficient	Zero drift 0.01% of range/°C Full span 0.01% of range/°C
Max. Allowable Input Voltage	60 VDC
Chart Speed	1-15,000 mm/hr
Recording Accuracy	+/- 0.1% of effective
Chart Speed Accuracy	+/- 0.1% for recordings greater than 1m

Figure 6-2


SCEC
Continuous Emissions Monitoring
Manifold Schematic
O2
CO2
NOx
CO
SO2
N2
Rotameters
Probe
Sample Pump & Conditioning System
5-way Valves
3-way Valves
Blender
O2
CO2
NOx
CO
SO2

List of Appendices

Appendix A

NO_x, CO, CO_2, O_2 Data and Strip Charts

SUMMARY OF CONTINUOUS MONITORING DATA

FACILITY:	BAS Stockton Forward	DATA FOR SAMPLING RUN:		COMPLIANCE RUN 1	
SOURCE ID/CONDITION:	Austin Road LF Flare	DATE:	05/03/07	TIME:	0923-1006
OPERATOR:	TRT	PROJECT No.:	2060.1069		
PARAMETER UNITS	O_2 % VOL DRY	CO_2 % VOL DRY	NO_x PPMV,D	CO PPMV,D	CO PPMV,D
INITIAL ZERO BIAS	0.00	0.03	0.10	0.00	NA
INITIAL SPAN BIAS	12.44	7.79	16.75	165.30	NA
FINAL ZERO BIAS	0.00	0.05	0.10	0.00	NA
FINAL SPAN BIAS	12.44	7.82	16.70	165.00	NA
AVERAGE ZERO BIAS	0.00	0.04	0.10	0.00	NA
AVERAGE SPAN BIAS	12.44	7.81	16.73	165.15	NA
BIAS GAS CONCENTRATION	12.55	7.81	17.02	168.90	NA
FULL SCALE RANGE	25	20	50	500	500
UNCORRECTED CONC.	10.99	8.76	15.28	10.38	NA
CORRECTED CONC.	**11.08**	**8.77**	**15.54**	**10.61**	100
PPMV @ 3 % O2			28.33	19.35	182.3
LB/mmBTU BASED ON HEAT INPUT (MMBTU/HR)	33.69		0.039	0.016	0.151
LB/HR BASED ON VOL FLOW (DSCFM)	11,683		1.30	0.54	5.09

SUMMARY OF CONTINUOUS MONITORING DATA

FACILITY:	BAS Stockton Forward	DATA FOR SAMPLING RUN:		COMPLIANCE RUN 2	
SOURCE ID/CONDITION:	Austin Road LF Flare	DATE:	05/03/07	TIME:	1030-1111
OPERATOR:	TRT	PROJECT No.:	2060.1069		
PARAMETER UNITS	O_2 % VOL DRY	CO_2 % VOL DRY	NO_x PPMV,D	CO PPMV,D	CO PPMV,D
INITIAL ZERO BIAS	0.00	0.05	0.10	0.00	NA
INITIAL SPAN BIAS	12.44	7.82	16.70	165.00	NA
FINAL ZERO BIAS	0.00	0.01	0.10	0.00	NA
FINAL SPAN BIAS	12.45	7.78	16.75	166.00	NA
AVERAGE ZERO BIAS	0.00	0.03	0.10	0.00	NA
AVERAGE SPAN BIAS	12.45	7.80	16.73	165.50	NA
BIAS GAS CONCENTRATION	12.55	7.81	17.02	168.90	NA
FULL SCALE RANGE	25	20	50	500	500
UNCORRECTED CONC.	11.01	8.68	15.43	8.00	NA
CORRECTED CONC.	**11.11**	**8.69**	**15.70**	**8.16**	100
PPMV @ 3 % O2			28.69	14.92	182.8
LB/mmBTU BASED ON HEAT INPUT (MMBTU/HR)	35.26		0.039	0.012	0.152
LB/HR BASED ON VOL FLOW (DSCFM)	12,259		1.38	0.44	5.34

SUMMARY OF CONTINUOUS MONITORING DATA

FACILITY:	BAS Stockton Forward	DATA FOR SAMPLING RUN:		COMPLIANCE RUN 3	
SOURCE ID/CONDITION:	Austin Road LF Flare	DATE:	05/03/07	TIME:	1146-1228
OPERATOR:	TRT	PROJECT No.:	2060.1069		
PARAMETER UNITS	O_2 % VOL DRY	CO_2 % VOL DRY	NO_x PPMV,D	CO PPMV,D	CO PPMV,D
INITIAL ZERO BIAS	0.00	0.01	0.10	0.00	NA
INITIAL SPAN BIAS	12.45	7.78	16.75	166.00	NA
FINAL ZERO BIAS	0.00	0.05	0.10	0.10	NA
FINAL SPAN BIAS	12.43	7.83	16.75	163.90	NA
AVERAGE ZERO BIAS	0.00	0.03	0.10	0.05	NA
AVERAGE SPAN BIAS	12.44	7.81	16.75	164.95	NA
BIAS GAS CONCENTRATION	12.55	7.81	17.02	168.90	NA
FULL SCALE RANGE	25	20	50	500	500
UNCORRECTED CONC.	10.65	9.02	16.41	8.68	NA
CORRECTED CONC.	**10.74**	**9.03**	**16.68**	**8.84**	100
PPMV @ 3 % O2			29.39	15.58	176.2
LB/mmBTU BASED ON HEAT INPUT (MMBTU/HR)	37.12		0.040	0.013	0.145
LB/HR BASED ON VOL FLOW (DSCFM)	12,308		1.47	0.47	5.37

BAS Stockton Forward
Austin Road LF Flare
May 3, 2007
RAW DAS DATA - COMPLIANCE RUN 1
TIME: 0923-1006

DATA PT	DATE	TIME	O2 % VD	CO2 % VD	NOx PPMVD	CO PPMVD
1	05/03	09:23:38	9.06	10.56	17.74	27.1
2	05/03	09:24:38	9.39	10.08	17.45	22.2
3	05/03	09:25:38	9.10	10.37	19.10	20.4
4	05/03	09:26:38	9.46	9.90	17.69	18.8
5	05/03	09:27:38	8.68	10.66	20.20	21.0
6	05/03	09:28:38	9.01	10.57	18.59	19.3
7	05/03	09:29:38	9.26	10.07	18.19	16.5
8	05/03	09:30:38	9.82	10.13	15.95	13.2
9	05/03	09:31:38	9.18	10.34	17.84	13.4
10	05/03	09:32:38	9.38	10.07	18.04	12.6
11	05/03	09:33:38	9.29	10.24	17.89	11.6
12	05/03	09:34:38	9.17	10.28	18.29	11.9
13	05/03	09:35:38	9.30	10.49	17.60	11.2
14	05/03	09:36:38	9.37	10.13	17.84	12.0
15	05/03	09:37:38	8.85	10.46	19.89	12.6
16	05/03	09:38:38	8.98	10.65	18.89	11.5
17	05/03	09:39:38	9.29	10.00	18.34	12.0
18	05/03	09:40:38	8.94	10.49	19.49	9.7
19	05/03	09:41:38	9.16	10.43	18.44	10.3
20	05/03	09:42:38	9.17	10.38	18.79	10.5
21	05/03	09:43:38	8.93	10.38	20.19	9.2
22	05/03	09:44:38	9.23	10.02	19.55	8.7
23	05/03	09:45:38	8.74	10.89	20.09	8.7
24	05/03	09:46:38	9.39	10.28	18.10	9.7
25	05/03	09:47:38	8.43	10.92	20.89	8.5
26	05/03	09:52:38	12.89	6.93	12.05	11.0
27	05/03	09:53:38	12.63	7.44	12.29	0.0
28	05/03	09:54:38	13.10	7.00	10.94	8.0
29	05/03	09:55:38	12.96	6.92	11.75	0.0
30	05/03	09:56:38	13.07	6.94	11.45	0.7
31	05/03	09:57:38	12.96	7.14	10.85	22.1
32	05/03	09:58:38	13.05	6.94	11.00	5.1
33	05/03	09:59:38	12.89	7.11	11.44	3.7
34	05/03	10:00:38	13.22	6.91	10.60	6.1
35	05/03	10:01:38	12.81	7.27	11.35	4.6
36	05/03	10:02:38	12.90	7.00	11.20	2.2
37	05/03	10:03:38	16.68	3.59	6.15	0.8
38	05/03	10:04:38	16.61	4.07	5.85	0.3
39	05/03	10:05:38	17.74	2.62	4.50	1.2
40	05/03	10:06:38	17.33	3.66	4.55	0.0
AVERAGES			**10.99**	**8.76**	**15.28**	**10.38**

BAS Stockton Forward
Austin Road LF Flare
May 3, 2007
RAW DAS DATA - COMPLIANCE RUN 2
TIME: 1030-1111

DATA PT	DATE	TIME	O2 % VD	CO2 % VD	NOx PPMVD	CO PPMVD
1	05/03	10:30:44	9.27	10.30	19.40	3.0
2	05/03	10:31:44	9.72	9.86	18.49	3.5
3	05/03	10:32:44	8.96	10.07	20.34	3.2
4	05/03	10:33:44	9.40	10.37	18.80	4.3
5	05/03	10:34:44	9.78	9.68	18.15	5.7
6	05/03	10:35:44	9.46	9.87	19.05	6.1
7	05/03	10:36:44	9.62	10.04	18.30	7.0
8	05/03	10:37:44	9.75	9.76	17.80	8.1
9	05/03	10:38:44	9.33	10.24	18.45	7.3
10	05/03	10:39:44	9.91	9.99	17.75	8.8
11	05/03	10:40:44	9.27	9.93	19.74	8.9
12	05/03	10:41:44	9.91	9.83	17.35	7.8
13	05/03	10:42:44	9.48	9.76	18.55	8.4
14	05/03	10:43:44	9.58	10.28	17.80	8.4
15	05/03	10:44:44	9.53	9.70	18.34	7.3
16	05/03	10:45:44	9.49	10.13	18.05	7.0
17	05/03	10:46:44	10.03	9.58	17.10	8.4
18	05/03	10:47:44	9.58	9.69	18.35	7.3
19	05/03	10:48:44	9.02	10.76	19.29	6.9
20	05/03	10:49:44	10.01	9.34	17.70	7.8
21	05/03	10:50:44	9.03	10.43	19.89	6.2
22	05/03	10:51:44	10.79	9.08	16.80	2.7
23	05/03	10:54:44	13.67	6.78	9.60	19.4
24	05/03	10:55:44	13.05	6.94	11.45	6.4
25	05/03	10:56:44	12.98	7.07	11.70	5.9
26	05/03	10:57:44	12.74	7.17	12.05	3.2
27	05/03	10:58:44	12.72	7.04	11.85	12.4
28	05/03	10:59:44	12.76	6.97	12.30	1.5
29	05/03	11:00:44	12.96	6.81	11.45	1.9
30	05/03	11:01:44	13.13	6.96	10.40	36.7
31	05/03	11:02:44	12.44	7.19	12.55	6.5
32	05/03	11:03:44	12.63	7.15	11.80	1.2
33	05/03	11:04:44	12.97	6.98	11.15	35.5
34	05/03	11:05:44	12.64	6.95	12.00	11.6
35	05/03	11:06:44	12.20	7.53	12.55	0.0
36	05/03	11:07:44	12.72	7.40	11.75	10.7
37	05/03	11:08:44	12.59	7.20	12.10	17.1
38	05/03	11:09:44	12.46	7.56	12.95	0.4
39	05/03	11:10:44	12.63	7.34	11.80	1.6
40	05/03	11:11:44	12.39	7.40	12.35	3.9
AVERAGES			**11.01**	**8.68**	**15.43**	**8.00**

DAS Stockton Forward

Austin Road LF Flare
May 3, 2007
RAW DAS DATA - COMPLIANCE RUN 3
TIME: 1146-1228

DATA PT	DATE	TIME	O2 % VD	CO2 % VD	NOx PPMVD	CO PPMVD
1	05/03	11:46:28	8.76	10.61	20.29	7.0
2	05/03	11:47:28	9.48	10.46	18.29	7.1
3	05/03	11:48:28	9.51	9.90	19.00	9.5
4	05/03	11:49:28	8.59	10.71	20.69	9.6
5	05/03	11:50:28	9.10	10.58	18.54	10.5
6	05/03	11:51:28	8.64	10.37	21.29	11.3
7	05/03	11:52:28	8.35	10.91	19.84	11.5
8	05/03	11:53:28	9.32	10.51	18.74	12.8
9	05/03	11:54:28	8.75	10.42	20.10	11.2
10	05/03	11:55:28	8.73	10.87	19.10	11.7
11	05/03	11:56:28	8.25	11.00	21.29	11.6
12	05/03	11:57:28	8.69	10.84	19.74	10.8
13	05/03	11:58:28	8.29	10.93	21.19	11.0
14	05/03	11:59:28	8.79	10.85	19.89	10.4
15	05/03	12:00:28	8.40	10.96	20.65	10.3
16	05/03	12:01:28	8.71	10.59	20.44	9.8
17	05/03	12:02:28	8.67	10.92	20.10	8.7
18	05/03	12:03:28	7.99	11.43	22.60	9.6
19	05/03	12:04:28	8.75	10.33	21.55	6.1
20	05/03	12:05:28	8.45	11.21	22.35	5.4
21	05/03	12:06:28	9.09	10.40	20.15	5.2
22	05/03	12:07:28	9.55	9.90	18.84	4.1
23	05/03	12:11:28	13.01	6.96	11.84	8.1
24	05/03	12:12:28	12.87	7.11	12.29	5.7
25	05/03	12:13:28	12.85	7.08	12.25	2.2
26	05/03	12:14:28	12.63	7.25	12.74	3.4
27	05/03	12:15:28	12.39	7.30	13.35	1.0
28	05/03	12:16:28	12.90	6.90	11.90	5.7
29	05/03	12:17:28	12.87	7.13	12.20	1.6
30	05/03	12:18:28	13.30	6.88	10.75	18.7
31	05/03	12:19:28	12.65	7.45	12.05	1.8
32	05/03	12:20:28	13.32	6.53	10.79	20.5
33	05/03	12:21:28	12.94	7.07	11.70	6.9
34	05/03	12:22:28	13.23	6.83	10.65	13.0
35	05/03	12:23:28	13.11	6.72	11.69	8.4
36	05/03	12:24:28	12.81	7.28	12.05	0.6
37	05/03	12:25:28	12.86	7.20	11.64	15.4
38	05/03	12:26:28	12.91	6.79	12.40	1.6
39	05/03	12:27:28	13.16	6.74	11.19	11.7
40	05/03	12:28:28	13.32	6.77	10.40	15.8
AVERAGES			**10.65**	**9.02**	**16.41**	**8.68**

SCEC
CONTINUOUS EMISSIONS MONITORING SYSTEM TEST DATA

Test Number: CEMS (2) 1
Client: BAS
Location: AUSTIN
Unit: FLARE

Date: 5-3-07
Condition: AS FOUND
Operator: TRT
Barometric: 30.10

Gas Temperatures

Stack: S.P. 1550 @ TOP T.C.
Probe: HOT
Heated Line: NA

Stack Knockout: 37 °F
Ambient: 60 °F
Chiller: 34°F

	Analyzer Values				NO2
	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	~~SO_2~~ (ppm)
Analyzer Span Range	25	20	50	500	
Mid Span Cal Gas Value	12.55	7.812	17.02	168.9	
High Span Cal Gas Value	21.03	16.69	42.06	425.1	18.71
	As Found Analyzer Readings				
Zero	0.01	0.00	0.00	0.0	
Mid Span	12.51	7.79	16.94	165.1	NO= 0.40
High Span	21.05	16.70	42.13	425.9	NOx=17.97
	Pre-Test Analyzer System Bias				
System Bias Zero	0.00	0.03	0.10	0.0	
System Bias Span	12.44	7.79	16.75	165.3	

Sample Point	Time		Raw Test Data				
	Start	Stop	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
	0923	1006					
	FACILITY	METERS	TIME	SCFM	STACK T		
			0923	1337	1554		
			0940	1338	1551		
			1003	1335	1548		

	Post-Test Analyzer System Bias				
System Bias Zero	0.00	0.05	0.10	0.00	
System Bias Span	12.44	7.82	16.70	165.0	
	Post-Test Analyzer Calibration				
Zero					
Mid Span					
High Span					

	Test Results Summary				
	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Raw Average	10.99	8.76	15.28	10.38	
Corrected Average	11.08	8.77	15.54	10.61	

SCEC
CONTINUOUS EMISSIONS MONITORING SYSTEM TEST DATA

Test Number: CEMS-(3) 2 | Date: 5-3-07
Client: BAS | Condition: AS FOUND
Location: AUSTIN | Operator: TRT
Unit: FLARE | Barometric: 30.10

Gas Temperatures

Stack: S.P. 1550 @ TOP T.C. | Stack Knockout: 37 °F
Probe: HOT | Ambient: 65 °F
Heated Line: NA | Chiller: 34 °F

	Analyzer Values				
	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Analyzer Span Range	25	20	50	500	
Mid Span Cal Gas Value	12.55	7.812	17.02	168.9	
High Span Cal Gas Value	21.03	16.69	42.06	425.1	
	As Found Analyzer Readings				
Zero					
Mid Span					
High Span					
FROM CEM2	**Pre-Test Analyzer System Bias**				
System Bias Zero POST	0.00	0.05	0.10	0.00	
System Bias Span	12.44	7.82	16.70	165.0	

Sample Point	Time		**Raw Test Data**				
	Start	Stop	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
	1030	1111					
	FACILITY	METERS	TIME	SCFM	STACK TEMP		
			1030	1337	1552		
			1050	1335	1550		
			1110	1336	1556		
	Post-Test Analyzer System Bias						
System Bias Zero	0.00	0.01	0.10	0.0			
System Bias Span	12.45	7.78	16.75	166.0			
	Post-Test Analyzer Calibration						
Zero							
Mid Span							
High Span							

	Test Results Summary				
	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Raw Average	11.01	8.68	15.43	8.06	
Corrected Average	11.11 Δ	− 8.69	15.70	8.16	

SCEC
CONTINUOUS EMISSIONS MONITORING SYSTEM TEST DATA

Test Number:	CEMS (4) 3	Date:	5-3-07
Client:	BAS	Condition:	AS FOUND
Location:	AUSTIN	Operator:	TRT
Unit:	FLARE	Barometric:	30.10
	Gas Temperatures		
Stack:	S.P. 1550 @ TOP T.C.	Stack Knockout:	37 °F
Probe:	HOT	Ambient:	68 °F
Heated Line:	NA	Chiller:	34 °F

	Analyzer Values				
	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Analyzer Span Range	25	20	50	500	
Mid Span Cal Gas Value	12.55	7.812	17.02	168.9	
High Span Cal Gas Value	21.03	16.69	42.06	425.1	
	As Found Analyzer Readings				
Zero					
Mid Span					
High Span					
	Pre-Test Analyzer System Bias				
System Bias Zero (FROM CEMS-3)	0.00	0.01	0.10	0.0	
System Bias Span (POST)	12.45	7.78	16.75	166.0	

Sample Point	Time		**Raw Test Data**				
	Start	Stop	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
	1146	~~1304~~					
		1228					
	FACILITY	METERS	TIME	SCFM	STACK TEMP		
			1146	1336	1550		
			1200	1338	1555		
			1220	1335	1552		
	Post-Test Analyzer System Bias						
System Bias Zero	0.00	0.05	0.10	0.1			
System Bias Span	12.43	7.83	16.75	163.9			
	Post-Test Analyzer Calibration						
Zero	0.00	0.02	-0.01	0.0			
Mid Span	12.50	7.84	16.89	166.2			
High Span	21.05	16.73	41.98	425.6			
	Test Results Summary						
	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)		
Raw Average	10.65	9.02	16.41	8.68			
Corrected Average	10.74	9.03	16.68	8.84			

MANUAL May.03.07 07:41
001 0.00 O2 % 002 0.08 CO2 % 003 8.16 NOx 004 0.0 CO BIAS NOx

MANUAL May.03.07 07:37
001 12.45 O2 % 002 7.83 CO2 % 003 0.04 NOx 004 0.0 CO BIAS O2 CO2

MANUAL May.03.07 07:34
001 0.01 O2 % 002 0.08 CO2 % 003 0.06 NOx 004 90.3 CO BIAS CO

MANUAL May.03.07 07:30
001 0.00 O2 % 002 0.02 CO2 % 003 17.97 NOx 004 1.0 CO NO2 CONV CHECK
NO=0.40

MANUAL May.03.07 07:26
001 12.50 O2 % 002 7.82 CO2 % 003 8.34 NOx 004 92.3 CO INT MIDS

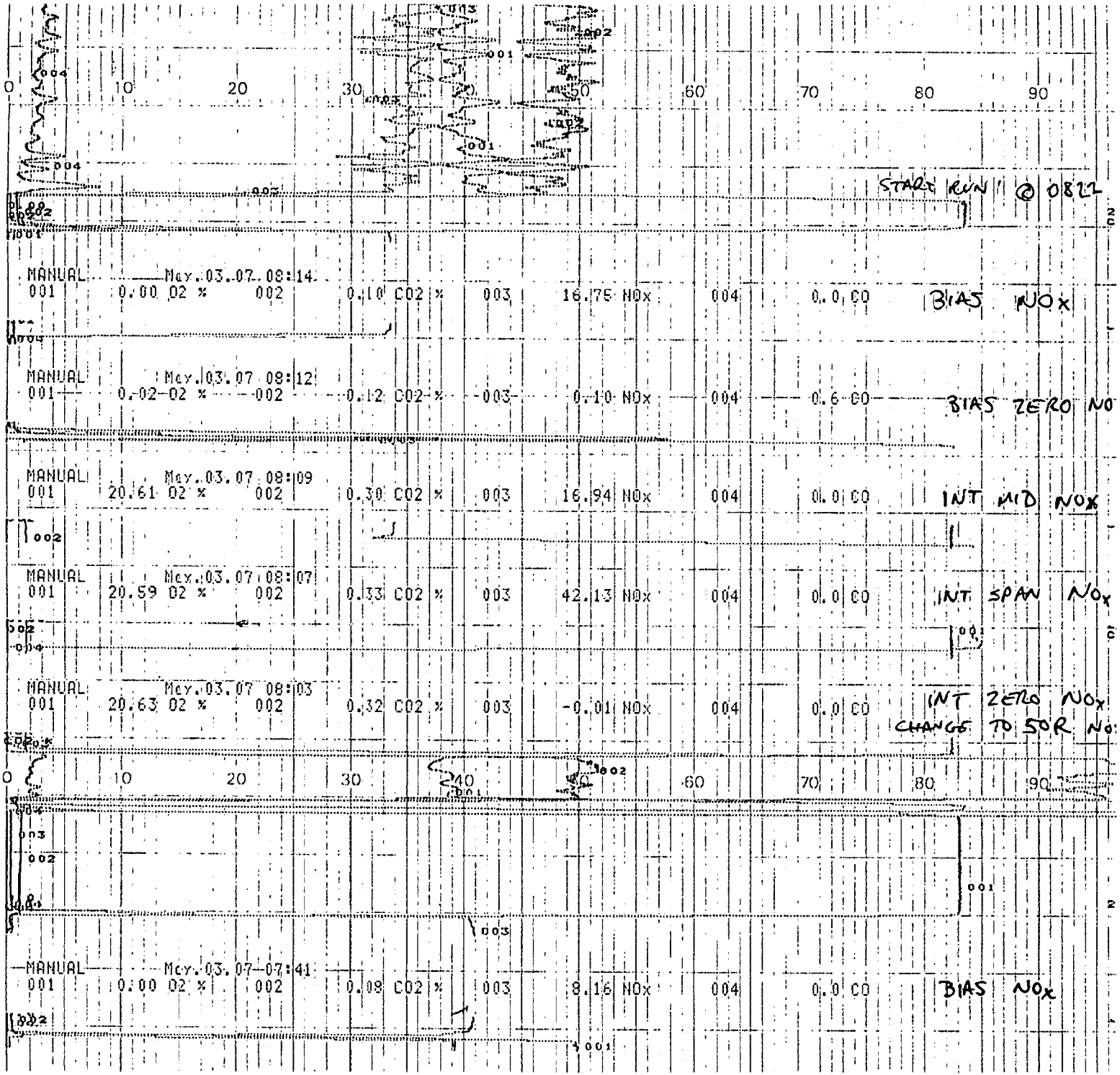
0 10 20 30 40 50 60 70 80 90

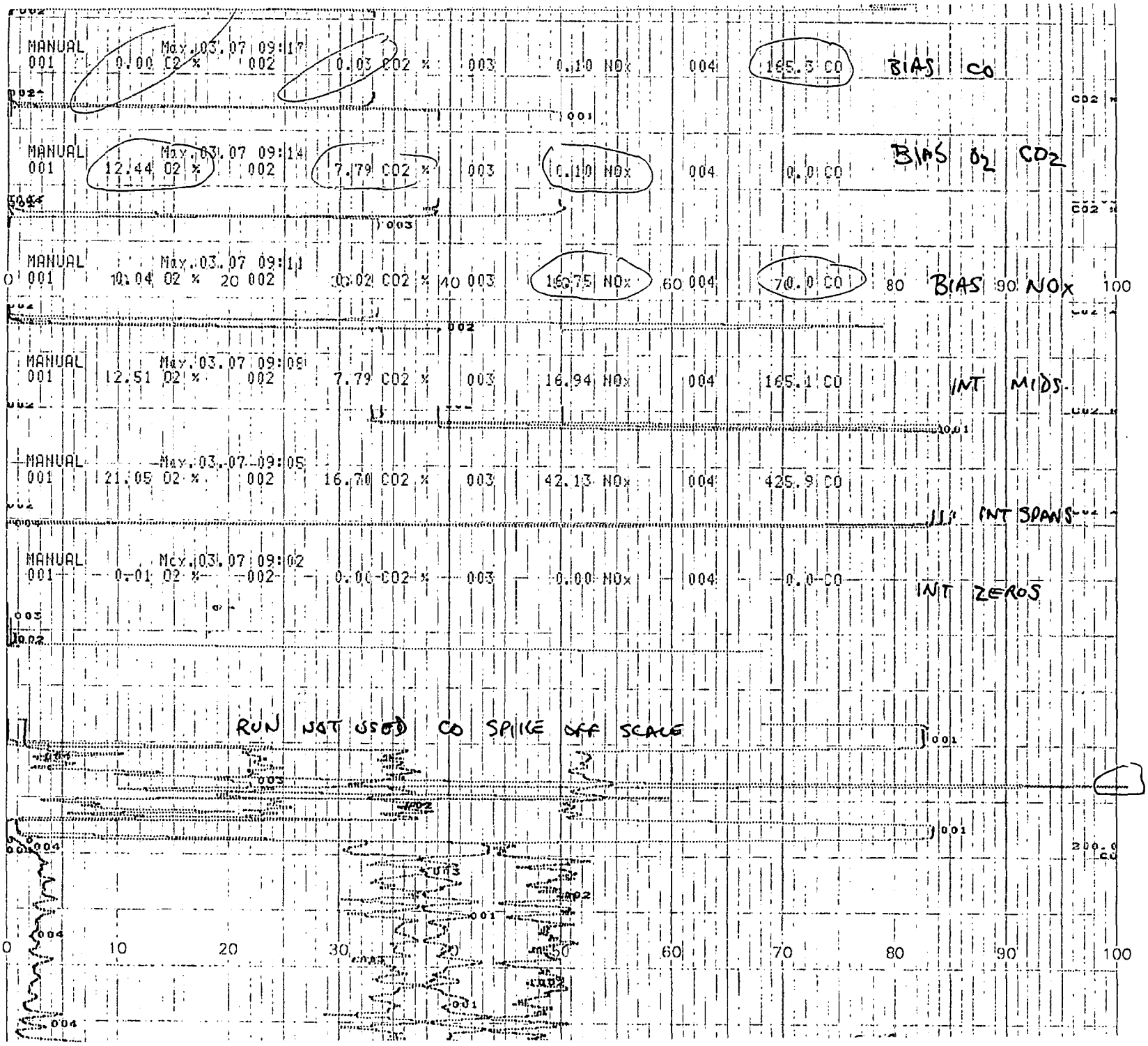
MANUAL May.03.07 07:23
001 21.07 O2 % 002 16.72 CO2 % 003 17.01 NOx 004 169.7 CO INT SPANS

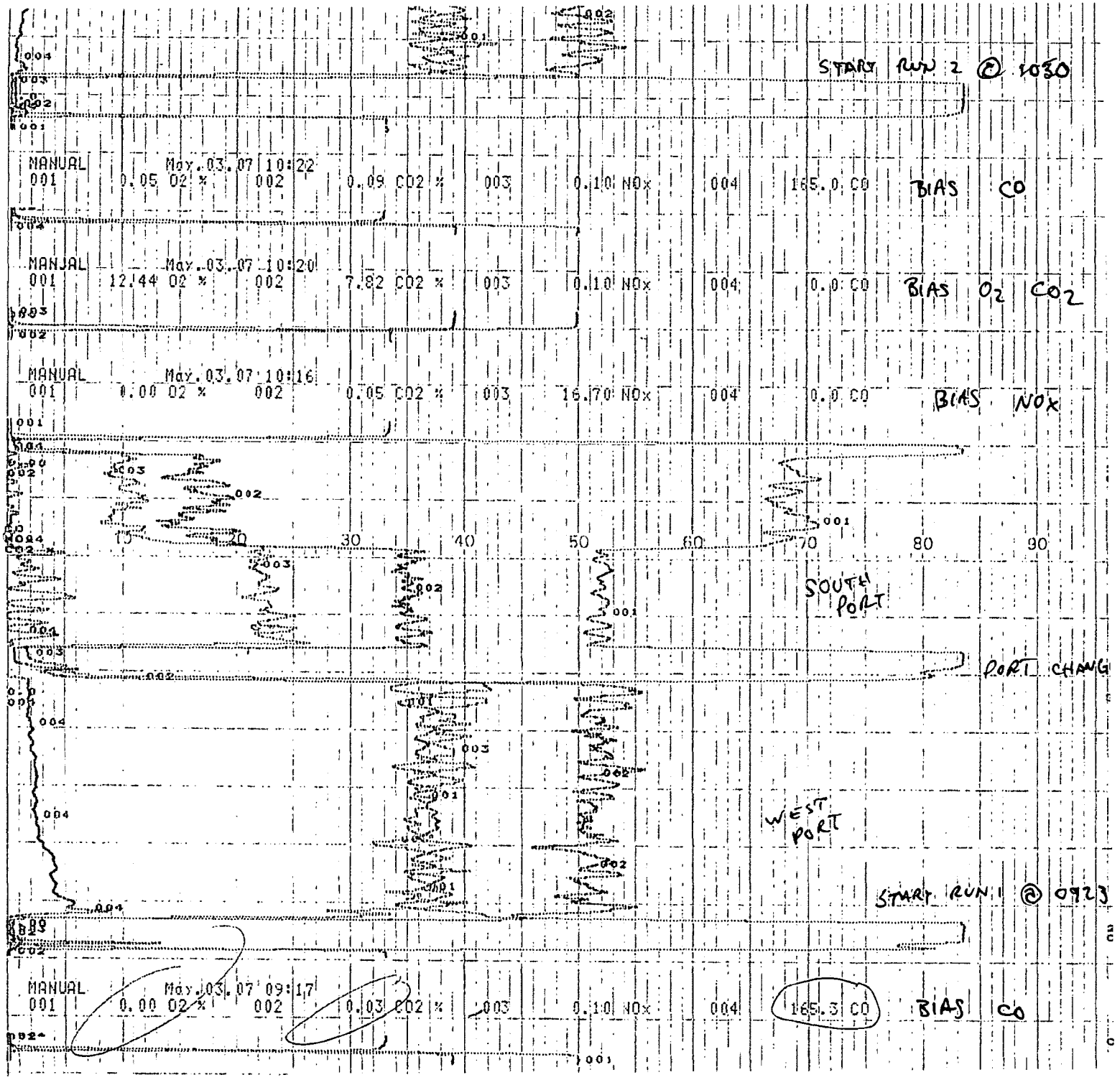
MANUAL May.03.07 07:19
001 0.00 O2 % 002 0.00 CO2 % 003 0.00 NOx 004 0.1 CO INT ZEROS

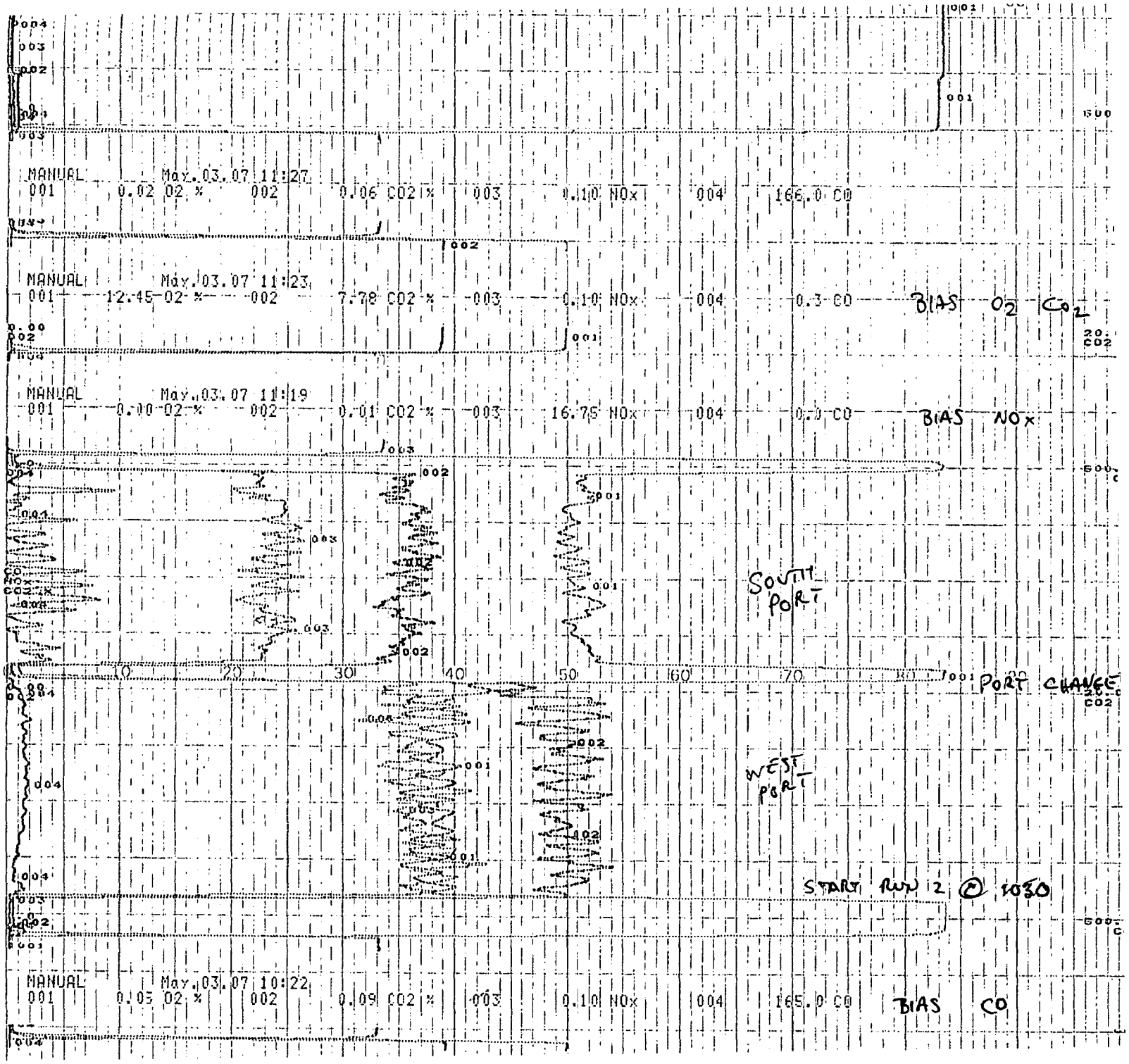
LEAK CHECK 0.0 SCFH @ 26" Hg

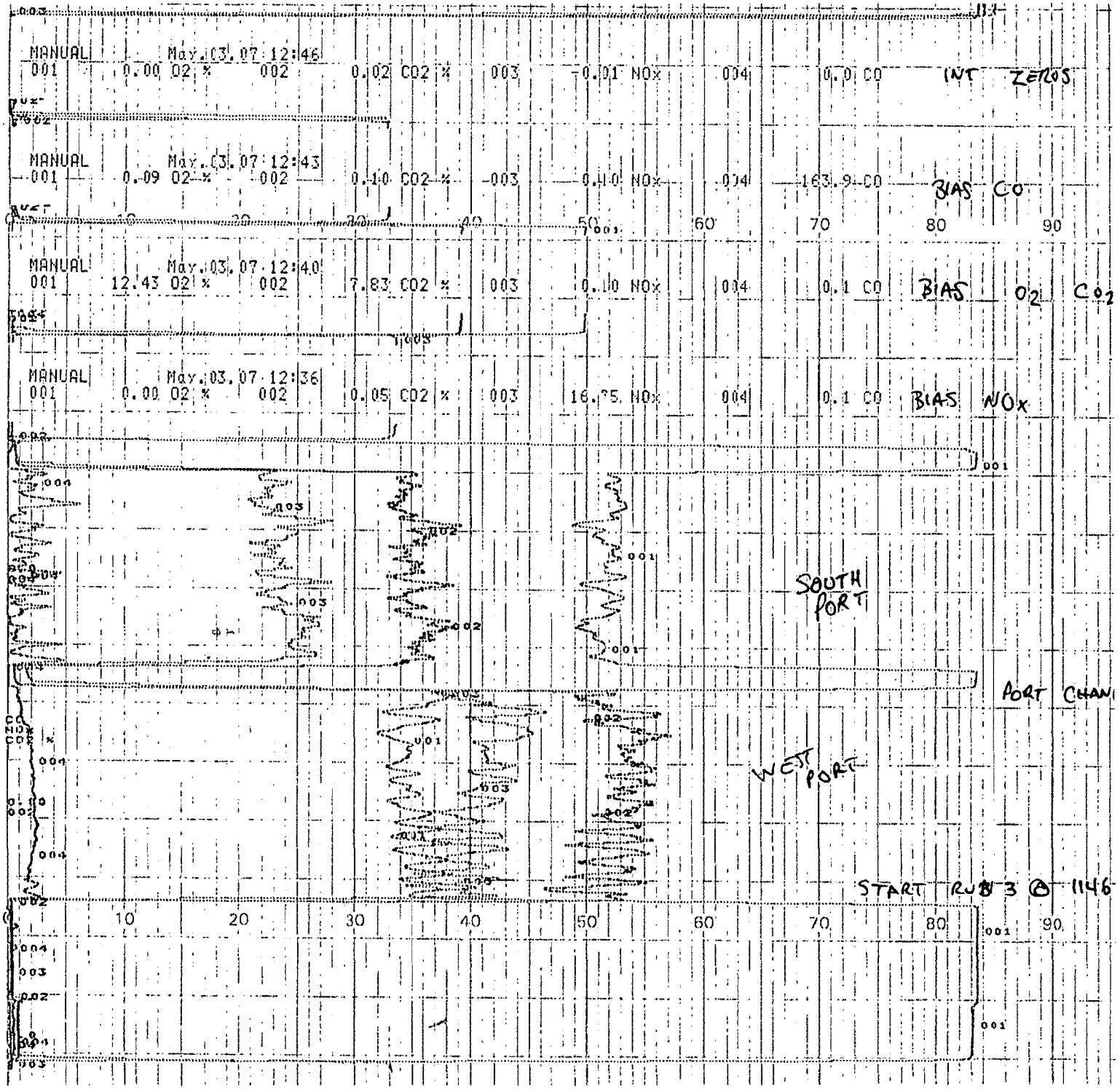
5-3-07 BAS - STOCKTON - FORWARD - AUSTIN LF FLARE

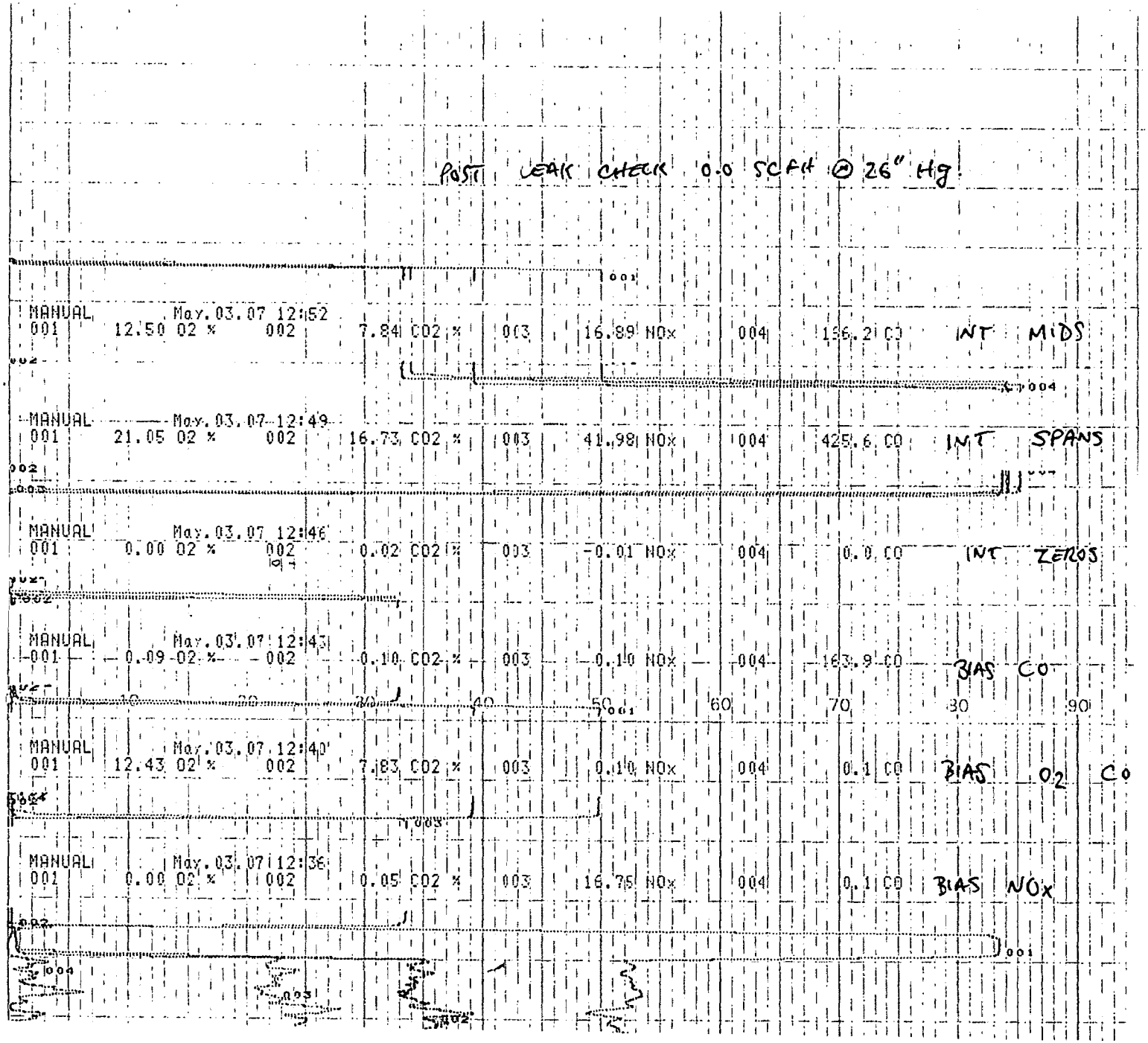

START RUN 1 @ 0822
MANUAL May.03.07 08:14
001 0.00 O2 % 002 0.10 CO2 % 003 16.75 NOx 004 0.0 CO
BIAS NOx
MANUAL May.03.07 08:12
001 0.02 O2 % 002 0.12 CO2 % 003 0.10 NOx 004 0.6 CO
BIAS ZERO NO
MANUAL May.03.07 08:09
001 20.61 O2 % 002 0.30 CO2 % 003 16.94 NOx 004 0.0 CO
INT MID NOx
MANUAL May.03.07 08:07
001 20.59 O2 % 002 0.33 CO2 % 003 42.13 NOx 004 0.0 CO
INT SPAN NOx
MANUAL May.03.07 08:03
001 20.63 O2 % 002 0.32 CO2 % 003 -0.01 NOx 004 0.0 CO
INT ZERO NOx
CHANGE TO 50R NO
MANUAL May.03.07 07:41
001 0.00 O2 % 002 0.08 CO2 % 003 8.16 NOx 004 0.0 CO
BIAS NOx


MANUAL May.03.07 09:17
001 0.00 O2 % 002 0.03 CO2 % 003 0.10 NOx 004 165.3 CO
BIAS CO
MANUAL May.03.07 09:14
001 12.44 O2 % 002 7.79 CO2 % 003 0.10 NOx 004 0.0 CO
BIAS O2 CO2
MANUAL May.03.07 09:11
001 10.04 O2 % 002 0.02 CO2 % 003 160.75 NOx 004 70.0 CO
BIAS NOx
MANUAL May.03.07 09:08
001 12.51 O2 % 002 7.79 CO2 % 003 16.94 NOx 004 165.1 CO
INT MIDS
MANUAL May.03.07 09:05
001 21.05 O2 % 002 16.70 CO2 % 003 42.13 NOx 004 425.9 CO
INT SPANS
MANUAL May.03.07 09:02
001 0.01 O2 % 002 0.00 CO2 % 003 0.00 NOx 004 0.0 CO
INT ZEROS
120mm/h
May.03 09:00
RUN NOT USED CO SPIKE OFF SCALE
0 10 20 30 40 50 60 70 80 90 100


START RUN 2 @ 1030
MANUAL May.03.07 10:22
001 0.05 O2 % 002 0.09 CO2 % 003 0.10 NOx 004 165.0 CO BIAS CO
MANUAL May.03.07 10:20
001 12.44 O2 % 002 7.82 CO2 % 003 0.10 NOx 004 0.0 CO BIAS O2 CO2
MANUAL May.03.07 10:16
001 0.00 O2 % 002 0.05 CO2 % 003 16.70 NOx 004 0.0 CO BIAS NOx
10 20 30 40 50 60 70 80 90
SOUTH PORT
PORT CHANG
WEST PORT
START RUN 1 @ 0923
MANUAL May.03.07 09:17
001 0.00 O2 % 002 0.03 CO2 % 003 0.10 NOx 004 165.3 CO BIAS CO


MANUAL May.03.07 11:27
001 0.02 02 % 002 0.06 CO2 % 003 0.10 NOx 004 166.0 CO
MANUAL May.03.07 11:23
001 12.45 02 % 002 7.78 CO2 % 003 0.10 NOx 004 0.3 CO
BIAS O2 CO2
MANUAL May.03.07 11:19
001 0.00 02 % 002 0.01 CO2 % 003 16.75 NOx 004 0.0 CO
BIAS NOx
SOUTH PORT
PORT CHANGE
WEST PORT
START RUN 2 @ 1030
MANUAL May.03.07 10:22
001 0.05 02 % 002 0.09 CO2 % 003 0.10 NOx 004 165.0 CO
BIAS CO


MANUAL May.03.07 12:46
001 0.00 O2 % 002 0.02 CO2 % 003 -0.01 NOx 004 0.0 CO
INT ZEROS
MANUAL May.03.07 12:43
001 0.09 O2 % 002 0.10 CO2 % 003 0.10 NOx 004 163.9 CO
BIAS CO
MANUAL May.03.07 12:40
001 12.43 O2 % 002 7.83 CO2 % 003 0.10 NOx 004 0.1 CO
BIAS O2 CO2
MANUAL May.03.07 12:36
001 0.00 O2 % 002 0.05 CO2 % 003 16.75 NOx 004 0.1 CO
BIAS NOx
SOUTH PORT
PORT CHAN
WEST PORT
START RUN 3 @ 1146
004 10.0 CO
003 21.69 NOx
002 11.17 CO2 %
120m³/h
May.03 12:00
10 20 30 40 50 60 70 80 90


POST LEAK CHECK 0.0 SCFH @ 26" Hg
MANUAL May.03.07 12:52
001 12.50 O2 % 002 7.84 CO2 % 003 16.89 NOx 004 136.2 CO INT MIDS
MANUAL May.03.07 12:49
001 21.05 O2 % 002 16.73 CO2 % 003 41.98 NOx 004 425.6 CO INT SPANS
MANUAL May.03.07 12:46
001 0.00 O2 % 002 0.02 CO2 % 003 -0.01 NOx 004 0.0 CO INT ZEROS
MANUAL May.03.07 12:43
001 0.09 O2 % 002 0.10 CO2 % 003 0.10 NOx 004 163.9 CO BIAS CO
MANUAL May.03.07 12:40
001 12.43 O2 % 002 7.83 CO2 % 003 0.10 NOx 004 0.1 CO BIAS O2 Co
MANUAL May.03.07 12:36
001 0.00 O2 % 002 0.05 CO2 % 003 16.75 NOx 004 0.1 CO BIAS NOx

Appendix B

Lab Results

AtmAA Inc.
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environmental consultants
laboratory services

May 18, 2007 LTR/107m/07

Tom Taylor
SCEC
1582-1 N. Batavia
Orange, CA 92867

re: BAS-Forward

Dear Tom:

Please find enclosed the laboratory analysis reports, quality assurance summaries, and the original chain of custody form for six Tedlar bag samples received May 4, 2007.

The Tedlar bag samples were analyzed for reduced sulfur components permanent gases, TGNMO, and hydrocarbon speciation, as requested. BTU reports were prepared from the permanent gases and TGNMO analysis results.

Sincerely,

AtmAA, Inc.

Michael L. Porter
Laboratory Director

Encl.
MLP/krm

AtmAA Inc.
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laboratory services

LABORATORY ANALYSIS REPORT

Permanent Gases and TGNMO Analysis in Tedlar Bag Samples

Report Date: May 18, 2007
Client: SCEC
Site: BAS-Forward-Austin Landfill
Client Project No.: 2060.1069

Date Received: May 4, 2007
Date Analyzed: May 4, 2007

ANALYSIS DESCRIPTION

Permanent gases are measured by thermal conductivity detection/gas chromatography (TCD/GC), EPA 3C. TGNMO is measured by Method 25 analysis, FID/TCA, total combustion analysis.

AtmAA Lab No.:	01247-19	01247-20	01247-21
Sample ID:	Inlet 1 Bag A	Inlet 2 Bag B	Inlet 3 Bag C
	(Concentration in %v)		
Methane	35.5	37.0	39.0
Carbon Dioxide	27.4	28.2	29.6
Nitrogen	29.6	27.5	25.3
Oxygen	5.72	5.21	4.66
	(Concentration in ppmv)		
Ethane	<10	<10	<10
TGNMO	4920	5830	6400

TGNMO is total gaseous non-methane organics (excluding ethane), reported as ppmv methane.
Ethane is reported as ppmv methane.

Michael L. Porter
Laboratory Director

QUALITY ASSURANCE SUMMARY
(Repeat Analyses)

Site: BAS-Forward-Austin Landfill
Date Received: May 4, 2007
Date Analyzed: May 4, 2007

Components	Sample ID	Repeat Analysis Run #1	Repeat Analysis Run #2	Mean Conc	% Diff. From Mean
		(Concentration in %v)			
Methane	Inlet 1	35.5	35.5	35.5	0.0
Carbon Dioxide	Inlet 1	27.4	27.4	27.4	0.0
Nitrogen	Inlet 1	29.5	29.7	29.6	0.34
Oxygen	Inlet 1	5.70	5.73	5.72	0.26
		(Concentration in ppmv)			
Ethane	Inlet 1	no repeat			
TGNMO	Inlet 1	no repeat			

Three Tedlar bag samples, laboratory numbers 01247-(19-21), were analyzed for permanent gases, and TGNMO. Agreement between repeat analyses is a measure of precision and is shown in the column "% Difference from Mean". The average % Difference from Mean for 4 repeat measurements from three Tedlar bag samples is 0.15%.

Calculated values for Specific Volume, BTU and F (factor)

Report Date: May 18, 2007
Client: SCEC
Project Location: BAS-Forward-Austin Landfill
Date Received: May 4, 2007
Date Analyzed: May 4, 2007
AtmAA Lab No.: 01247-19

Specific volume, BTU, and F factor are calculated using laboratory analysis results for methane, carbon dioxide, nitrogen, oxygen, TGNMO, and sulfur compounds in equations that include assumed values for the specific volume of gases (CH4, CO2, N2, O2, Ar, and (CH2)n). The specific volume of gases were taken from the Scott Speciality Gases catalogue, 2001, and represents as is gas at 60° F and 1 atm. The F factor is calculated according to the equation in ASTM D-3588.569

Component	Mole %	Wt %	C,H,O,N,S, Wt.%	
Methane	35.49	20.31	Carbon	27.23
Carbon dioxide	27.45	43.20	Hydrogen	5.11
Nitrogen	29.58	29.63	Oxygen	37.66
Oxygen	5.47	6.26	Nitrogen	29.63
Argon	0.243	0.347	Argon	0.35
$(CH_2)_n$	0.492	0.247	Sulfur	0.00

Specific Volume	13.296
BTU/ft³	362
BTU/ lb.	4818
F (factor)	9773

"as is" gas at 60° F, 1 atm. where CH4-1010, TGNMO-604 BTU/cu.ft.

Component	Specific volume reference values *	
Methane	23.35	(ft³/lb)
Carbon dioxide	8.59	
Nitrogen	13.54	
Oxygen	11.87	
Argon	9.52	
(CH2)n	21	

* reference, Scott Specialty Gases Catalogue, 2001 adjusted to 60°F

Calculated values for Specific Volume, BTU and F (factor)

Report Date: May 18, 2007
Client: SCEC
Project Location: BAS-Forward-Austin Landfill
Date Received: May 4, 2007
Date Analyzed: May 4, 2007
AtmAA Lab No.: 01247-20

Specific volume, BTU, and F factor are calculated using laboratory analysis results for methane, carbon dioxide, nitrogen, oxygen, TGNMO, and sulfur compounds in equations that include assumed values for the specific volume of gases (CH_4, CO_2, N_2, O_2, Ar, and $(CH_2)_n$). The specific volume of gases were taken from the Scott Speciality Gases catalogue, 2001, and represents as is gas at 60° F and 1 atm. The F factor is calculated according to the equation in ASTM D-3588.89

Component	Mole %	Wt %	C.H.O.N.S.	Wt %
Methane	36.98	21.30	Carbon	28.40
Carbon dioxide	28.16	44.61	Hydrogen	5.37
Nitrogen	27.50	27.72	Oxygen	38.19
Oxygen	4.99	5.75	Nitrogen	27.72
Argon	0.221	0.319	Argon	0.32
$(CH_2)_n$	0.583	0.294	Sulfur	0.00

Specific Volume	13.337
BTU/ft³	378
BTU/ lb.	5044
F (factor)	9774

"as is" gas at 60° F, 1 atm, where CH4-1010, TGNMO-604 BTU/cu.ft.

Component	Specific volume reference values *	
Methane	23.35	(ft³/lb)
Carbon dioxide	8.59	
Nitrogen	13.54	
Oxygen	11.87	
Argon	9.52	
(CH2)n	21	

* reference, Scott Speciality Gases Catalogue, 2001 adjusted to 60°F

Calculated values for Specific Volume, BTU and F (factor)

Report Date: May 18, 2007
Client: SCEC
Project Location: BAS-Forward-Austin Landfill
Date Received: May 4, 2007
Date Analyzed: May 4, 2007
AtmAA Lab No.: 01247-21

Specific volume, BTU, and F factor are calculated using laboratory analysis results for methane, carbon dioxide, nitrogen, oxygen, TGNMO, and sulfur compounds in equations that include assumed values for the specific volume of gases (CH4, CO2, N2, O2, Ar, and (CH2)n). The specific volume of gases were taken from the Scott Speciality Gases catalogue, 2001, and represents as is gas at 60° F and 1 atm. The F factor is calculated according to the equation in ASTM D-3588.89

Component	Mole %	Wt %	C,H,O,N,S	Wt %
Methane	39.01	22.27	Carbon	29.74
Carbon dioxide	29.79	46.78	Hydrogen	5.61
Nitrogen	25.27	25.25	Oxygen	39.12
Oxygen	4.46	5.10	Nitrogen	25.25
Argon	0.198	0.282	Argon	0.28
$(CH_2)_n$	0.640	0.320	Sulfur	0.00

Specific Volume	13.339
BTU/ft³	399
BTU/ lb.	5324
F (factor)	9668

"as is" gas at 60° F, 1 atm, where CH4-1010, TGNMO-804 BTU/cu.ft.

Component	Specific volume reference values *	
Methane	23.35	(ft³/lb)
Carbon dioxide	8.59	
Nitrogen	13.54	
Oxygen	11.87	
Argon	9.52	
(CH2)n	21	

* reference, Scott Specialty Gases Catalogue, 2001 adjusted to 60°F

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LABORATORY ANALYSIS REPORT

Speciated Hydrocarbons Analysis in Tedlar Bag Samples

Report Date: May 18, 2007
Client: SCEC
Site: BAS-Forward-Austin LF
Project No.: 2060.1069

Date Received: May 4, 2007
Date Analyzed: May 9. & 10, 2007

ANALYSIS DESCRIPTION

Hydrocarbon Speciation analysis was performed by flame ionization detection/gas chromatography (FID/GC), modified EPA-18.

AtmAA Lab No.:	01247-19	(repeat)	01247-20	01247-21
Sample ID:	Bag A in 1	Bag A In 1	Bag B In 2	Bag C In 3
	(Concentration in ppmv, component)			
Methane	355000	355000	370000	390000
Non-methane hydrocarbons analysis by carbon number grouping				
C2	12.45	11.37	11.90	12.8
C3	54.22	51.50	51.76	56.2
C4	34.58	33.74	33.78	36.2
C5	125.49	125.45	133.44	146.05
C6	140.35	131.65	149.90	158.08
>C6	433.75	461.04	472.30	499.40
TNMNE	4807	4934	5163	5488
TNMHC	4632	4957	5167	5513

TNMNE - total non-methane, non-ethane, hydrocarbons as ppmv methane.
TNMHC - total non-methane hydrocarbons as ppmv methane.

Michael I. Poriel
Laboratory Director

LABORATORY ANALYSIS REPORT

Speciated Hydrocarbons Analysis in Tedlar Bag Samples

Report Date: May 18, 2007
Client: SCEC
Site: BAS-Forward-Austin LF
Project No.: 2060.1069

Date Received: May 4, 2007
Date Analyzed: May 9, & 10, 2007

ANALYSIS DESCRIPTION

Hydrocarbon Speciation analysis was performed by flame ionization detection/gas chromatography (FID/GC), modified EPA-18.

AtmAA Lab No.:	01247-22	(repeat)	01247-23	(repeat)	01247-24
Sample ID:	Bag D out 1	Bag D out 1	Bag E out 2	Bag E out 2	Bag F out 3
	(Concentration in ppmv, component)				
Methane	0.67	0.71	0.88	1.09	1.05
	0.69		0.985		
non-methane hydrocarbons analysis by carbon number grouping					
C2	<0.07	<0.07	<0.07	<0.07	<0.07
C3	<0.05	<0.05	<0.05	<0.05	<0.05
C4	<0.04	<0.04	<0.04	<0.04	<0.04
C5	<0.04	<0.04	<0.04	<0.04	<0.04
C6	<0.03	<0.03	<0.03	<0.03	<0.03
>C6	<0.03	<0.03	<0.03	<0.03	<0.03
TNMNE	<0.5	<0.5	<0.5	<0.5	<0.5
TNMHC	<0.5	<0.5	<0.5	<0.5	<0.5

TNMNE - total non-methane, non-ethane, hydrocarbons as ppmv methane.
TNMHC - total non-methane hydrocarbons as ppmv methane.

Michael L. Porter
Laboratory Director

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LABORATORY ANALYSIS REPORT

Hydrogen Sulfide and Reduced Sulfur Compounds
Analysis in Tedlar Bag Samples

Report Date: May 14, 2007
Client: SCEC
Project Location: BAS / Forward-Austin LF
Client Project No.: 2060.1069
Date Received: May 4, 2007
Date Analyzed: May 4, 2007

ANALYSIS DESCRIPTION

Hydrogen sulfide was analyzed by gas chromatography with a Hall electrolytic conductivity detector operated in the oxidative sulfur mode. All other components were measured by GC/ Mass Spec.

AtmAA Lab No.:	01247-19	01247-20	01247-21
Sample I.D.:	Bag A	Bag B	Bag C
	In 1	In 2	In 3
Components	(Concentration in ppmv)		
Hydrogen sulfide	20.0	21.7	19.8
Carbonyl sulfide	<0.2	<0.2	<0.2
Methyl mercaptan	1.88	1.95	2.10
Ethyl mercaptan	<0.2	<0.2	<0.2
Dimethyl sulfide	5.96	6.07	6.86
Carbon disulfide	0.10	0.11	0.12
Isopropyl mercaptan	0.16	0.18	0.20
n-propyl mercaptan	<0.1	<0.1	<0.1
Dimethyl disulfide	0.11	0.10	0.11
TRS	28.4	30.3	29.4

TRS - total reduced sulfur

Michael L. Porter
Laboratory Director

QUALITY ASSURANCE SUMMARY
(Repeat Analyses)

Project Location: BAS / Forward-Austin LF
Date Received: May 4, 2007
Date Analyzed: May 4, 2007

Components	Sample ID	Repeat Analysis Run #1	Repeat Analysis Run #2	Mean Conc.	% Diff. From Mean
		(Concentration in ppmv)			
Hydrogen sulfide	Bag A In 1	19.1	20.8	20.0	0.0
	Bag B In 2	21.8	21.6	21.7	0.46
	Bag C In 3	18.8	20.8	19.8	0.0
Carbonyl sulfide	Bag A In 1	<0.2	<0.2	---	---
	Bag C In 3	<0.2	<0.2	---	---
Methyl mercaptan	Bag A In 1	1.87	1.88	1.88	0.27
	Bag C In 3	2.09	2.10	2.10	0.24
Ethyl mercaptan	Bag A In 1	<0.2	<0.2	---	---
	Bag C In 3	<0.2	<0.2	---	---
Dimethyl sulfide	Bag A In 1	5.79	6.12	5.96	2.8
	Bag C In 3	6.85	6.86	6.86	0.07
Carbon disulfide	Bag A In 1	0.10	0.10	0.10	0.0
	Bag C In 3	0.11	0.12	0.12	4.3
iso-propyl mercaptan	Bag A In 1	0.15	0.17	0.16	6.2
	Bag C In 3	0.19	0.20	0.20	2.6
n-propyl mercaptan	Bag A In 1	<0.1	<0.1	---	---
	Bag C In 3	<0.1	<0.1	---	---
Dimethyl disulfide	Bag A In 1	0.11	0.11	0.11	0.0
	Bag C In 3	0.11	0.11	0.11	0.0

Three Tedlar bag samples, laboratory numbers 01247-(19-21), were analyzed for hydrogen sulfide and reduced sulfur compounds. Agreement between repeat analyses is a measure of precision and is shown above in the column "% Difference from Mean". Repeat analyses are an important part of AtmAA's quality assurance program. The average % Difference from Mean for 13 repeat measurements from three Tedlar bag samples is 1.3%.

SCEC
1582-1 NORTH BATAVIA
ORANGE, CA 92667

TEDLAR BAG SAMPLE DATA SHEET

CLIENT	BBS - STOCKTON	PARAMETER	MANY
FACILITY	AUSTIN	REF. METHOD	MANY
SOURCE	FLARE	PROJECT NO.	2060.1069
DATE	5-3-07	OPERATOR	TRE / DE

BAG ID	RUN NO.	SAMPLING LOCATION	SAMPLING RATE	TEST TIME START	TEST TIME STOP
A	IN 1	INLET		0945	1000
B	2	↓		1045	1100
C	3	↓		1200	1215
D	OUT 1	OUTLET		0945	1000
E	2	↓		1045	1100
F	3	↓		1200	1215

Appendix C

Exhaust Volume Flow Data and Field Data Sheets

BAS Stockton Forward
Austin Road LF Flare
May 3, 2007

SUMMARY OF EPA METHOD 19 SOURCE TEST DATA AND CALCULATIONS

PARAMETER	UNITS	RUN 1	RUN 2	RUN 3
DATE		5/3/2007	5/3/2007	5/3/2007
FUEL FLOW - @ 68 DEG F	SCFM	1551.2	1554.6	1550.4
CALORIFIC VALUE - @ 68 DEG F	BTU/CF	362.0	378.0	399.0
F FACTOR (Fd) - @ 68 DEG F	DSCF/MMBTU	9,773	9,774	9,668
EXHAUST O2 CONCENTRATION	%VD	11.08	11.11	10.74
HEAT INPUT - NATURAL GAS	MMBTU/MIN	0.5616	0.5876	0.6186
EXHAUST VOLUME FLOW RATE @ 68 DEG F	DSCFM	**11,683**	**12,259**	**12,308**

SUMMARY OF VOLUME FLOW TEST DATA AND CALCULATIONS

Date:	May 3, 2007					
Facility:	BAS Stockton Forward					
Source I.D./Condition	Austin Road LF Flare					
MEASURED SOURCE PARAMETERS	**SYMBOL**	**UNITS**	**RUN 1**	**RUN 2**	**RUN 3**	**AVERAGE**
STACK DIAMETER	Ds	IN	88.00	88.00	88.00	88.00
STACK AREA	Ds	FT^2	42.24	42.24	42.24	42.24
BAROMETERIC PRESSURE	Pbar	IN. Hg	29.40	29.40	29.40	29.40
STATIC PRESSURE	Pstat	IN. H2O	-0.03	-0.03	-0.02	-0.03
STACK PRESSURE	Ps	IN. Hg	29.40	29.40	29.40	29.40
AVERAGE STACK TEMPERATURE	Ts	DEG. F	1502.0	1484.9	1488.4	1491.8
AVERAGE SQ. ROOT VELOCITY PRESSURE	dP	IN. H2O	0.2005	0.1940	0.1988	0.1978
SAMPLING PARAMETERS						
STANDARD TEMPERATURE	Tstd	DEG. F	68.0	68.0	68.0	68.0
STANDARD PRESSURE	Pstd	IN. Hg	29.92	29.92	29.92	29.92
PERCENT CARBON DIOXIDE	CO2	%	8.77	8.69	9.03	8.83
PERCENT OXYGEN	O2	%	11.08	11.11	10.74	10.98
PITOT CORRECTION FACTOR	Cp		0.816	0.816	0.816	0.816
SAMPLING TIME	t	MIN.	40.0	40.0	40.0	40.0
GAS VOLUME SAMPLED	Vm	DCF	36.017	32.835	32.523	33.792
WATER VAPOR COLLECTED	Vlc	GRAMS	57.5	47.8	38.9	48.1
DRY GAS METER CORRECTION FACTOR	Y		0.9790	0.9790	0.9790	0.9790
DRY GAS METER TEMPERATURE	Tm	DEG. F	61.6	77.5	84.8	74.6
ORIFICE PRESSURE	dH	IN. H2O	2.200	2.200	2.200	2.200
CALCULATED RESULTS						
CORRECTED GAS VOLUME SAMPLED	Vmstd	DSCF	35.266	31.199	30.491	32.319
VOLUME OF WATER CONDENSED	Vwstd	SCF	2.71	2.26	1.84	2.27
MOISTURE CONTENT OF FLUE GAS	Bws	%	7.15	6.74	5.68	6.52
DRY MOLECULAR WEIGHT OF FLUE GAS	MWdry	lb/lb-mol	29.85	29.84	29.87	29.85
WET MOLECULAR WEIGHT OF FLUE GAS	MWwet	lb/lb-mol	29.00	29.04	29.20	29.08
FLUE GAS VELOCITY	Vs	ft/sec	21.22	20.43	20.89	20.85
FLUE GAS FLOW RATE (ACTUAL CONDITIONS)	ACFM	ACFM	53,777	51,772	52,935	52,828
FLUE GAS FLOW RATE (STD WET CONDITIONS)	SCFM	SCFM	14,220	13,810	14,095	14,042
FLUE GAS FLOW RATE (STD DRY CONDITIONS)	SDCFM	SDCFM	13,203	12,879	13,295	13,126
PERCENT EXCESS AIR	% EA	%	110.0	110.4	103.0	107.8

Note: NA = Not Applicable for the test program.

SCEC

SAMPLE [illegible] DATA SHEET

Test No.:	1-H2O-Out	Date:	5/3/07
Client:	BAS	Barometric:	30.10
Test Location:	Forward Flare	Meter ID:	CB 8
Test Condition:	As Found	Meter Yd:	0.979
Test Method:	Carb 2-4	Meter ^H @:	60/1.818 68/1.843
Stack Diameter:	96"	Pitot ID:	34
No. of Points:	16	Pitot Coef.:	0.816
Sample Time:	40	Probe Length/Mat'l:	H2O = 8 ft/SS
Per-Point:	2.5	Nozzle Diameter/Mat'l:	
Isokinetic Factor:	—	Assumed Stack Temp.:	
		Assumed Meter Temp.:	

IMPINGER DATA

Imp. #	Mat'l	Final Wt.	Int. Wt.	Net Wt.
1	H2O	685.2	636.6	
2	H2O	624.5	621.7	
3	KO	467.5	466.8	
4	Silica	663.9	658.3	
5				
6				
7				
Total				

Filter No.:

SAMPLE TRAIN LEAK CHECK

	CFM	Vac	By:
Meter Pre-Test	0.01	16	DE
Meter Post-Test	0.01	15	DE

	Check	Press.	By:
Pitot Pre-Test	✓	3.0	DE
Pitot Post-Test	✓	3.0	DE

SAMPLE TRAIN PRE-TEST CHECK

	Time	^H	Meter Reading	Temp
Initial				
Final				

TEST DATA

SAMPLE POINT	TIME	^P (Meter Conditions)	^H	METER READING	STACK	METER INLET	METER OUTLET	IMP. OUT	PROBE	CEMS TIME (~~OVEN~~)	VAC	O_2	STATIC PRESS.
W 8	0	0.04	2.2	155.818	1558	55	57	46		0	6		
7	10	0.04	|	167.2	1525	75	72	42		2.5	6		
6	20	0.04	|	175.5	1565	76	76	43		5	6		
5	30	0.05	↓	183.6	1560	77	75	42		7.5	6		
4	40	0.05		191.835	1535					10			
3		0.06			1531					12.5			-0.03
2		0.05			1495					15			
1		0.04			1434					17.5			
S 8		0.02			1538					20			
7		0.035			1502					22.5			
6		0.038			1481					25			
5		0.04			1491					27.5			
4		0.035			1456					30			
3		0.035			1451					32.5			
2		0.038			1460					35			
1		0.04			1449					37.5			
										40			

SAMPLE TRAIN OPERATION

Operator: DE

Assistant:

Imp. Setup/Recovery: DE

Comments: Low flow mini helic

TEST SUMMARY

Calculated by: GAJ

Time: 40 mins

Static: -0.03

Stack Temp.: 1502

^P In. H_2O: 0.201

O_2/CO_2:

Meter Vol. (acf): 36.017

Meter Temp.: 61.6

Meter Press: 2.2

Liquid Vol: 57.5

SCEC

SAMPLE ... DATA SHEET

Page ___ of ___

Test No.: 2-H_2O-Out	Date: 4/3/07		
Client: BAS	Barometric:		
Test Location: Stockton Forward	Meter ID: CB 8		
Test Condition: Norm	Meter Yd: 0.979		
Test Method: CARB-2-4	Meter ^H @: 60/1.818 68/1.843		
Stack Diameter: 96"	Pitot ID: 34		
No. of Points: 16	Pitot Coef.: 0.816		
Sample Time: 40	Probe Length/Mat'l: 9'		
Per-Point: 2.2	Nozzle Diameter/Mat'l: —		
Isokinetic Factor:	Assumed Stack Temp.: —		
	Assumed Meter Temp.: —		

IMPINGER DATA

Imp. #	Mat'l	Final Wt.	Int. Wt.	Net Wt.
1	H_2O	647.9	608.0	
2	H_2O	627.5	624.5	
3	H_2O	467.9	467.5	
4	Silica	668.4	663.9	
5				
6				
7				
Total				
Filter No.:				

SAMPLE TRAIN LEAK CHECK

	CFM	Vac	By:
Meter Pre-Test	0.008	15	DE
Meter Post-Test	0.006	12	DE
	Check	**Press.**	**By:**
Pitot Pre-Test	✓	3.0	DE
Pitot Post-Test	✓	3.0	DE

SAMPLE TRAIN PRE-TEST CHECK

	Time	^H	Meter Reading	Temp.
Initial				
Final				

TEST DATA

SAMPLE POINT	TIME	METER CONDITIONS ^P	^H	METER READING	TEMPERATURES, °F STACK	METER INLET	METER OUTLET	IMP. OUT	PROBE	CEMS TIME (OVEN)	VAC	O_2	STATIC PRESS.
W 8	0	0.035	2.2	191.975	1475	74	74	59		0	6		
7	10	0.04		200.5	1466	78	77	55		2.5	6		
6	20	0.04		208.3	1459	79	79	50		5	6		
5	30	0.05		215.5	1465	80	79	50		7.5	6		
4	40	0.05		224.810	1491					10			
3		0.04			1505					12.5			-0.03
2		0.045			1495					15			
1		0.035			1460					17.5			
S 8		0.03			1501					20			
7		0.035			1492					22.5			
6		0.035			1516					25			
5		0.038			1531					27.5			
4		0.038			1478					30			
3		0.035			1479					32.5			
2		0.03			1501					35			
1		0.03			1450					37.5			
										40			

SAMPLE TRAIN OPERATION

Operator: DE

Assistant:

Imp. Setup/Recovery: DE

Comments:

TEST SUMMARY

Calculated by: LAS

Time: 40 min

Static: -0.03

Stack Temp.: 1484.88

^P in. H_2O: 0.194

O_2/CO_2:

Meter Vol. (acf): 32.835

Meter Temp.: 77.5

Meter Press: 2.2

Liquid Vol: 47.8

SAMPLE ... DATA SHEET

Page ... of

Test No.: 3-H2O-OUT	Date: 4/3/07					
Client: BAS	Barometric: 30.10					
Test Location: Forward Flare	Meter ID: CB 8					
Test Condition: Norm	Meter Yd: 0.979					
Test Method: CARB 2-4	Meter ^H @: 1.818 / 1.843					
Stack Diameter: 96"	Pitot ID:					
No. of Points: 16	Pitot Coef.: 0.816					
Sample Time: 40	Probe Length/Mat'l: 9'					
Per-Point: 2.5	Nozzle Diameter/Mat'l:					
Isokinetic Factor: —	Assumed Stack Temp.: —					
	Assumed Meter Temp.: —					

IMPINGER DATA

Imp. #	Mat'l	Final Wt.	Int. Wt.	Net Wt.
1	H2O	679.8	647.9	
2	H2O	629.1	627.5	
3	H2O	468.7	467.9	
4	Silica	673.0	668.4	
5				
6				
7				
Total				
Filter No.:				

SAMPLE TRAIN LEAK CHECK

	CFM	Vac	By:
Meter Pre-Test	0.01	14	DE
Meter Post-Test	0.01	12	DE
	Check	Press.	By:
Pitot Pre-Test	✓		DE
Pitot Post-Test	✓		DE

SAMPLE TRAIN PRE-TEST CHECK

	Time	^H	Meter Reading	Temp.
Initial				
Final				

TEST DATA

SAMPLE POINT	TIME	METER CONDITIONS ^P	^H	METER READING	TEMPERATURES, °F STACK	METER INLET	METER OUTLET	IMP. OUT	PROBE	CEMS TIME OVEN	VAC	O_2	STATIC PRESS.
8	0	0.04	2.2	224.885	1525	80	80	59		0	6		
7	10	0.04		233.6	1516	86	84	46		2.5	6		
6	20	0.045		242.1	1495	87	85	43		5	6		
5	30	0.05		250.0	1492	89	87	42		7.5	6		
4	40	0.035	↓	257.408	1485					10			
3		0.05			1498					12.5			
2		0.05			1461					15			
1		0.05			1465					17.5			
8		0.025			1502					20			
7		0.03			1510					22.5			
6		0.03			1521					25			
5		0.04			1485					27.5			
4		0.035			1486					30			
3		0.035			1471					32.5			
2		0.035			1451					35			
1		0.03			1461					37.5			

40

SAMPLE TRAIN OPERATION

Operator: DE
Assistant:
Imp. Setup/Recovery: DE
Comments:

TEST SUMMARY

Calculated by: CMS
Time: 40min
Static: -0.02
Stack Temp.: 1488.38
^P In. H_2O: 0.199
O_2/CO_2:
Meter Vol. (acf): ~~38~~ 32.523
Meter Temp.: 84.75
Meter Press: 2.2
Liquid Vol: 38.9

C-6

Appendix D

Inlet Volume Flow Data and Field Data Sheets

SUMMARY OF INLET FLOW RATE SOURCE TEST DATA AND CALCULATIONS

Date:	May 3, 2007						
Facility:	BAS Stockton Forward						
Source I.D./Condition	Austin Road LF Flare						
MEASURED SOURCE PARAMETERS	**SYMBOL**	**UNITS**		**RUN 1**	**RUN 2**	**RUN 3**	**AVERAGE**
STACK DIAMETER	Ds	IN		9.49	9.49	9.49	9.49
STACK AREA	Ds	FT^2		0.49	0.49	0.49	0.49
BAROMETERIC PRESSURE	Pbar	IN. Hg		30.10	30.10	30.10	30.10
STATIC PRESSURE	Pstat	IN. H2O		-12.00	-12.00	-13.00	-12.33
STACK PRESSURE	Ps	IN. Hg		29.22	29.22	29.14	29.19
AVERAGE STACK TEMPERATURE	Ts	DEG. F		66.0	70.0	76.0	70.7
AVERAGE SQ. ROOT VELOCITY PRESSURE	dP	IN. H2O		0.7865	0.7889	0.7952	0.7902
SAMPLING PARAMETERS							
STANDARD TEMPERATURE	Tstd	DEG. F		68.0	68.0	68.0	68.0
STANDARD PRESSURE	Pstd	IN. Hg		29.92	29.92	29.92	29.92
PERCENT CARBON DIOXIDE	CO2	%		27.40	28.20	29.80	28.47
PERCENT OXYGEN	O2	%		5.72	5.21	4.66	5.20
PERCENT NITROGEN	N2	%		29.60	27.50	25.30	27.47
PERCENT METHANE	CH4	%		35.50	37.00	39.00	37.17
PITOT CORRECTION FACTOR	Cp			0.990	0.990	0.990	0.990
SAMPLING TIME	t	MIN.		30.0	30.0	30.0	30.0
WET BULB TEMPERATURE	Tw	DEG. F		62	65	70	65.7
DRY BULB TEMPERATURE	Ts	DEG. F		66	70	76	70.7
CALCULATED RESULTS							
MOISTURE CONTENT OF FLUE GAS (Psychometeric)	Bws	%		1.90	1.95	2.15	2.00
DRY MOLECULAR WEIGHT OF FLUE GAS	MWdry	lb/lb-mol		27.85	27.70	27.93	27.83
WET MOLECULAR WEIGHT OF FLUE GAS	MWwet	lb/lb-mol		27.67	27.51	27.71	27.63
FLUE GAS VELOCITY	Vs	ft/sec		53.70	54.22	54.83	54.25
FLUE GAS FLOW RATE (ACTUAL CONDITIONS)	ACFM	ACFM		1,582.5	1,598.0	1,615.8	1,598.8
FLUE GAS FLOW RATE (STD (WET) CONDITIONS)	SCFM	SCFM		1,551.2	1,554.6	1,550.4	1,552.1
FLUE GAS FLOW RATE (STD DRY CONDITIONS)	SDCFM	SDCFM		1,521.8	1,524.3	1,517.1	1,521.1

SCEC

METHOD 2: VELOCITY AND TEMP. TRAVERSE DATA

CLIENT/FACILITY: BAS - STOCKTON DATE: 5-3-07

SAMPLE LOCATION: AUSTIN DATA TAKEN BY: TRT

UNIT NO.: FLARE INLET PITOT ID: STD

TEST CONDITION: AS FOUND PITOT Cp: 0.99

BAROMETRIC (in. Hg): 30.10 PITOT LEAK CHECK: Good @ 1"

WB 58
DB 62

DUCT ID = 9.494"

WB 62
DB 66 } 1.9%

Test No. 1 NOT USED			Static Press. (in. H_2O) −12		Test No. 2			Static Press. (in. H_2O) −12	
Time	Traverse Point Port	Traverse Point Point	ΔP in. H_2O	Temperature °F	Time	Traverse Point Port	Traverse Point Point	ΔP in. H_2O	Temperature °F
0825	58	1	.60	62	0925	58	1	.62	66
	7	2	.62			7	2	.62	
	6	3	.62			6	3	.64	
	5	4	.64			5	4	.64	
	4	5	.64			4	5	.62	
	3	6	.62			3	6	.62	
	2	7	.60			2	7	.60	
0830	1	8	.60		0930	1	8	.59	
		9					9		
		10					10		
		11					11		
		12					12		
		1					1		
		2					2		
		3					3		
		4					4		
		5					5		
		6					6		
		7					7		
		8					8		
		9					9		
		10					10		
		11					11		
		12					12		
		Avg.					Avg.		

$\sqrt{\Delta P}$ = 0.7857 62 °F D = 3 $\sqrt{\Delta P}$ = 0.7865 66 °F 1536 SCFM

SCEC

METHOD 2; VELOCITY AND TEMP. TRAVERSE DATA

CLIENT/FACILITY: BAS - STOCKTON DATE: 5-3-07

SAMPLE LOCATION: AUSTIN DATA TAKEN BY: TRT

UNIT NO.: FLARE INLET PITOT ID: STD

TEST CONDITION: AS FOUND PITOT Cp: 0.99

BAROMETRIC (in. Hg): 30.10 PITOT LEAK CHECK: GOOD @ 1"

WB - 65 / DB - 70 > 1.95%

WB - 70 / DB - 76 > 2.15

Test No. 3			Static Press. (in. H_2O) -12		Test No. 4			Static Press. (in. H_2O) -13	
Time	Traverse Point Port	Point	ΔP in. H_2O	Temperature °F	Time	Traverse Point Port	Point	ΔP in. H_2O	Temperature °F
1035	S 8	1	.60	70		58	1	.62	76
	7	2	.62			7	2	.62	
	6	3	.64			6	3	.64	
	5	4	.66			5	4	.66	
	4	5	.64			4	5	.66	
	3	6	.62			3	6	.64	
	2	7	.60			2	7	.62	
1040	1	8	.60			1	8	.60	
		9					9		
		10					10		
		11					11		
		12					12		
		1					1		
		2					2		
		3					3		
		4					4		
		5					5		
		6					6		
		7					7		
		8					8		
		9					9		
		10					10		
		11					11		
		12					12		
		Avg.					Avg.		

$\sqrt{\Delta P} = 0.7889$ 70 °F D - 4 $\sqrt{\Delta P} = 0.7952$ 76 1537

1535SCFM

Appendix E

Quality Assurance / Quality Control Data

CALIBRATION ERROR

FACILITY:	BAS Stockton Forward	DATA FOR SAMPLING RUNS:		COMPLIANCE RUNS 1,2,3 (INITIAL)
SOURCE ID/CONDITION:	Austin Road LF Flare	DATE:		5/3/2007
OPERATOR:	TRT	PROJECT No.:		2060.1069

PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25			
O_2 - ZERO	0.00	0.01	-0.01	**-0.04**
O_2 - MID CAL	12.55	12.51	0.04	**0.16**
O_2 -HIGH CAL	21.03	21.05	-0.02	**-0.08**
CO_2 - FULL SCALE	20			
CO_2 - ZERO	0.00	0.00	0.00	**0.00**
CO_2 - MID CAL	7.812	7.79	0.02	**0.11**
CO_2 -HIGH CAL	15.69	16.70	-0.01	**-0.05**
NO_x - FULL SCALE	50			
NO_x - ZERO	0.00	0.00	0.00	**0.00**
NO_x - MID CAL	17.02	16.94	0.08	**0.16**
NO_x -HIGH CAL	42.06	42.13	-0.07	**-0.14**
CO - FULL SCALE	500			
CO - ZERO	0.00	0.00	0.00	**0.00**
CO - MID CAL	168.9	165.1	3.80	**0.76**
CO -HIGH CAL	425.1	425.9	-0.80	**-0.16**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

CALIBRATION ERROR

FACILITY:	BAS Stockton Forward	DATA FOR SAMPLING RUNS:		COMPLIANCE RUNS 1,2,3 (FINAL)
SOURCE ID/CONDITION:	Austin Road LF Flare	DATE:		5/3/2007
OPERATOR:	TRT	PROJECT No.:		2060.1069
PARAMETER	CYLINDER VALUE	ANALYZER CALIBRATION RESPONSE	ABSOLUTE DIFFERENCE	DIFFERENCE
UNITS	PPMV or % VOL	PPMV or % VOL	PPMV or % VOL	% OF SPAN
O_2 - FULL SCALE	25			
O_2 - ZERO	0.00	0.00	0.00	**0.00**
O_2 - MID CAL	12.55	12.50	0.05	**0.20**
O_2 -HIGH CAL	21.03	21.05	-0.02	**-0.08**
CO_2 - FULL SCALE	20			
CO_2 - ZERO	0.00	0.02	-0.02	**-0.10**
CO_2 - MID CAL	7.812	7.84	-0.03	**-0.14**
CO_2 -HIGH CAL	16.69	16.73	-0.04	**-0.20**
NO_x - FULL SCALE	50.0			
NO_x - ZERO	0.00	-0.01	0.01	**0.02**
NO_x - MID CAL	17.02	16.89	0.13	**0.26**
NO_x -HIGH CAL	42.06	41.98	0.08	**0.16**
CO - FULL SCALE	500			
CO - ZERO	0.00	0.00	0.00	**0.00**
CO - MID CAL	168.9	166.2	2.70	**0.54**
CO -HIGH CAL	425.1	425.6	-0.50	**-0.10**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

SYSTEM CALIBRATION BIAS AND DRIFT DATA

FACILITY:	BAS Stockton Forward	DATA FOR SAMPLING RUN:		COMPLIANCE RUN 1		
SOURCE ID/CONDITION:	Austin Road LF Flare	DATE:			05/03/07	
OPERATOR:	TRT	PROJECT No.:			2060.1069	
		INITIAL VALUES		FINAL VALUES		
PARAMETER	ANALYZER CALIBRATION RESPONSE	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	CALIBRATION DRIFT
UNITS	PPMV or % VOL	PPMV or % VOL	% OF SPAN	PPMV or % VOL	% OF SPAN	% OF SPAN
O_2 - ZERO	0.01	0.00	**0.04**	0.00	**0.04**	**0.00**
O_2 - SPAN	12.51	12.44	**0.28**	12.44	**0.28**	**0.00**
CO_2 - ZERO	0.00	0.03	**-0.15**	0.05	**-0.25**	**-0.10**
CO_2 - SPAN	7.79	7.79	**0.00**	7.82	**-0.15**	**-0.15**
NO_x - ZERO	0.00	0.10	**-0.20**	0.10	**-0.20**	**0.00**
NO_x - SPAN	16.94	16.75	**0.38**	16.70	**0.48**	**0.10**
CO - ZERO	0.00	0.00	**0.00**	0.00	**0.00**	**0.00**
CO - SPAN	165.1	165.3	**-0.04**	165.0	**0.02**	**0.06**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

SYSTEM CALIBRATION BIAS AND DRIFT DATA

FACILITY:	BAS Stockton Forward	DATA FOR SAMPLING RUN:		COMPLIANCE RUN 2		
SOURCE ID/CONDITION:	Austin Road LF Flare	DATE:			05/03/07	
OPERATOR:	TRT	PROJECT No.:			2060.1069	
		INITIAL VALUES		FINAL VALUES		
PARAMETER	ANALYZER CALIBRATION RESPONSE	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	CALIBRATION DRIFT
UNITS	PPMV or % VOL	PPMV or % VOL	% OF SPAN	PPMV or % VOL	% OF SPAN	% OF SPAN
O_2 - ZERO	0.01	0.00	**0.04**	0.00	**0.04**	**0.00**
O_2 - SPAN	12.51	12.44	**0.28**	12.45	**0.24**	**-0.04**
CO_2 - ZERO	0.00	0.05	**-0.25**	0.01	**-0.05**	**0.20**
CO_2 - SPAN	7.79	7.82	**-0.15**	7.78	**0.05**	**0.20**
NO_x - ZERO	0.00	0.10	**-0.20**	0.10	**-0.20**	**0.00**
NO_x - SPAN	16.94	16.70	**0.48**	16.75	**0.38**	**-0.10**
CO - ZERO	0.00	0.00	**0.00**	0.00	**0.00**	**0.00**
CO - SPAN	165.1	165.0	**0.02**	166.0	**-0.18**	**-0.20**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

SYSTEM CALIBRATION BIAS AND DRIFT DATA

FACILITY:	BAS Stockton Forward	DATA FOR SAMPLING RUN:		COMPLIANCE RUN 3		
SOURCE ID/CONDITION:	Austin Road LF Flare	DATE:			05/03/07	
OPERATOR:	TRT	PROJECT No.:			2060.1069	
		INITIAL VALUES		FINAL VALUES		
PARAMETER	ANALYZER CALIBRATION RESPONSE	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	SYSTEM CALIBRATION RESPONSE	SYSTEM CALIBRATION BIAS	CALIBRATION DRIFT
UNITS	PPMV or % VOL	PPMV or % VOL	% OF SPAN	PPMV or % VOL	% OF SPAN	% OF SPAN
O2 - ZERO	0.01	0.00	**0.04**	0.00	**0.04**	**0.00**
O2 - SPAN	12.51	12.45	**0.24**	12.43	**0.32**	**0.08**
CO2 - ZERO	0.00	0.01	**-0.05**	0.05	**-0.25**	**-0.20**
CO2 - SPAN	7.79	7.78	**0.05**	7.83	**-0.20**	**-0.25**
NOx - ZERO	0.00	0.10	**-0.20**	0.10	**-0.20**	**0.00**
NOx - SPAN	16.94	16.75	**0.38**	16.75	**0.38**	**0.00**
CO - ZERO	0.00	0.00	**0.00**	0.10	**-0.02**	**-0.02**
CO - SPAN	165.1	166.0	**-0.18**	163.9	**0.24**	**0.42**

NOTE: CO2/O2 - % VOL AND NOx/CO - PPMV; ALL ON A DRY BASIS

BAS Stockton Forward
Austin Road LF Flare
May 3, 2007

NO_2 Converter Check

NO_2 Gas Concentration, ppm (C_0)	18.71 ppm
NO_2 Gas Concentration in NO mode, ppm (C_1)	0.40 ppm
NO_2 Gas Concentration in NOx mode, ppm (C_2)	17.97 ppm

%CE = **93.9% PASS**

$C_1 < 5\%$ of C_0 **PASS**

SCEC
Calibration Gas Data Sheet

Date: 5-3-07
Location/Project: BAS - STOCKTON - FORWARD - AUSTIN
Analyst: TRT

	Calibration Gas	Concentration	Cylinder No.
CAI	O_2 CO_2	21.03 - 16.69	CC92384
	O_2 CO_2	12.55 - 7.812	SG9168226 BAL
THCO 42C	NO	42.06 42.22	CC26631
	NO	17.02 17.06	XC028800 BAL
~~—~~	~~NO~~	~~8.151 8.208~~	~~CC103486~~
	NO_2	18.71	CC7332
CAI	CO	425.1	CC222321
	CO	168.9	CC215550
~~—~~	~~CO~~	~~91.90~~	~~CC122809~~
~~—~~	~~CO~~	42.78	CC65121

Airgas

Certificate of Analysis: EPA Protocol Gas Mixture

Airgas Specialty Gases
11711 Alameda Street
Los Angeles, CA 90059-2130
(323) 357-3891
FAX: (323) 567-3686
www.airgas.com

Cylinder Number: CC92384L
Cylinder Pressure: 2000.6 PSIG
Certification Date: 7/28/2006
Reference Number: 48-124071175-2
Expiration Date: 7/28/2009
Laboratory: ASG - Los Angeles - CA

Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
CARBON DIOXIDE	16.69 %	+/- 1%	NDIR	G1
OXYGEN	21.03 %	+/- 1%	PARAMAGNETIC	G1
NITROGEN	Balance			

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences.

Notes:

Do not use cylinder below 150 psig.

Approval Signature

Reference Standard Information

Type	Balance Gas	Component	Cyl.Number	Concentration
NTRM 060608		OXYGEN	CC207981	22.51 %
NTRM 81675	NITROGEN	CARBON DIOXIDE	XC034335B	19.84 %

Analytical Results

1st Component CARBON DIOXIDE

1st Analysis Date: 07/28/2006

R 64.20	S 54.00	Z 0.000	Conc 16.69 %
S 54.00	Z 0.000	R 64.20	Conc 16.69 %
Z 0.000	R 64.20	S 54.00	Conc 16.69 %
			AVG: 16.69 %

2nd Component OXYGEN

1st Analysis Date: 07/28/2006

R 22.51	S 21.03	Z 0.000	Conc 21.03 %
S 21.03	Z 0.000	R 22.51	Conc 21.03 %
Z 0.000	R 22.51	S 21.03	Conc 21.03 %
			AVG: 21.03 %

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

Certificate of Analysis: EPA Protocol Gas Mixture

Cylinder Number: SG9168226BAL Reference Number: 48-124076101-2
Cylinder Pressure: 2000.6 PSIG Expiration Date: 10/4/2009
Certification Date: 10/4/2006 Laboratory: ASG - Los Angeles - CA

Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
CARBON DIOXIDE	7.812 %	+/- 1%	NDIR	G1
OXYGEN	12.55 %	+/- 1%	PARAMAGNETIC	G1
NITROGEN	Balance			

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences.

Notes:

Do not use cylinder below 150 psig. Approval Signature _____

Reference Standard Information

Type	Balance Gas	Component	Cyl.Number	Concentration
NTRM 82658x		OXYGEN	SG9168290	16.04 %
NTRM 81674X		CARBON DIOXIDE	SG9168852	8.954 %

Analytical Results

1st Component CARBON DIOXIDE

1st Analysis Date: 10/04/2006

R 57.95	S 50.56	Z 0.000	Conc 7.812 %
S 50.56	Z 0.000	R 57.95	Conc 7.812 %
Z 0.000	R 57.95	S 50.56	Conc 7.812 %
			AVG: 7.812 %

2nd Component OXYGEN

1st Analysis Date: 10/04/2006

R 16.04	S 12.55	Z 0.000	Conc 12.55 %
S 12.55	Z 0.000	R 16.04	Conc 12.55 %
Z 0.000	R 16.04	S 12.55	Conc 12.55 %
			AVG: 12.55 %

Airgas

Airgas Specialty Gases
600 Union Landing Road
Riverton, NJ 08077
(856) 829-7878
Fax (856) 829-0571
www.airgas.com

Certificate of Analysis: EPA Protocol Gas Mixture

Cylinder Number: XC028800B Reference Number: 82-124071113-1
Cylinder Pressure: 2000.6 PSIG Expiration Date: 8/1/2008
Certification Date: 8/1/2006 Laboratory: ASG - Riverton - NJ

Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
NITRIC OXIDE	17.02 PPM	+/- 1%	Chemiluminescence	G1
NITROGEN	Balance			
Total oxides of nitrogen	17.06 PPM			

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences.

Notes:NOx - 1st analysis = 17.06 ppm – 7/25/2006
NOx - 2nd analysis = 17.07 ppm – 8/1/2006
Analytical accuracy = +/- 1% Relative
Analytical principle = Chemiluminescence
Standard = NTRM, XC019210B = 20.18ppm NOx/N2

Do not use cylinder below 150 psig. Approval Signature

Reference Standard Information

Type	Balance Gas	Component	Cyl.Number	Concentration
NTRM 82629	NITROGEN	NITRIC OXIDE	XC019210B	20.13 PPM

Analytical Results

1st Component NITRIC OXIDE

1st Analysis Date:	07/25/2006		
R 2.011	S 1.701	Z -0.005	Conc 17.05 PPM
S 1.702	Z -0.001	R 2.015	Conc 17.02 PPM
Z -0.001	R 2.015	S 1.703	Conc 17.03 PPM
			AVG: 17.03 PPM
2nd Analysis Date:	08/01/2006		
R 2.016	S 1.703	Z -0.004	Conc 17.02 PPM
S 1.702	Z -0.002	R 2.018	Conc 17.00 PPM
Z -0.003	R 2.017	S 1.704	Conc 17.01 PPM
			AVG: 17.01 PPM

Airgas

Certificate of Analysis: EPA Protocol Gas Mixture

Airgas Specialty Gases
11711 S. Alameda Street
Los Angeles, CA 90059-2130
323.357.6891 fax: 323.567.3686
www.airgas.com

Cylinder Number: CC26631 Reference Number: 48-124066724-2
Cylinder Pressure: 2000.6 PSIG Expiration Date: 6/13/2008
Certification Date: 6/13/2006 Laboratory: ASG - Los Angeles - CA

Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
NITRIC OXIDE	42.06 PPM	+/- 1%	INTERSCAN	G1
NITROGEN	Balance			

Total oxides of nitrogen 42.22 PPM

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences.

Notes:

Do not use cylinder below 150 psig. Approval Signature

Reference Standard Information

Type	Balance Gas	Component	Cyl.Number	Concentration
NTRM 060604	NITROGEN	NITRIC OXIDE	CC208185	93.2 PPM

Analytical Results

1st Component NITRIC OXIDE

1st Analysis Date: 06/05/2006

R 93.37	S 42.20	Z -0.106	Conc 42.18 PPM
S 42.19	Z -0.186	R 93.50	Conc 42.15 PPM
Z 0.029	R 92.76	S 41.97	Conc 42.15 PPM
			AVG: 42.16 PPM

2nd Analysis Date: 06/13/2006

R 93.68	S 42.32	Z 0.024	Conc 42.09 PPM
S 41.97	Z 0.042	R 93.74	Conc 41.70 PPM
Z 0.043	R 93.76	S 42.40	Conc 42.13 PPM
			AVG: 41.97 PPM

Airgas

Airgas Specialty Gases
11711 South Alameda Street
Los Angeles, CA 90059-2130
323.357.6891 Fax: 323.567.3686
www.airgas.com

Certificate of Analysis: EPA Protocol Gas Mixture

Cylinder Number: CC222321 Reference Number: 48-124043644-4
Cylinder Pressure: 1999.6 PSIG Expiration Date: 9/20/2008
Certification Date: 9/20/2005 Laboratory: ASG - Los Angeles - CA

Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
CARBON MONOXIDE	425.1 PPM	+/- 1%	NDIR	G1
NITROGEN	Balance			

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences.

Notes:

Do not use cylinder below 150 psig. Approval Signature

Reference Standard Information

Type	Balance Gas	Component	Cyl Number	Concentration
NTRM 980505		CARBON MONOXIDE	SG916877	488.7 PPM
NTRM 980505	NITROGEN	CARBON MONOXIDE	SG9168776BAL	488.7 PPM

Analytical Results

1st Component CARBON MONOXIDE

1st Analysis Date:	08/29/2005		
R 488.7	S 426.0	Z 0.000	Conc 426.0 PPM
S 426.0	Z 0.000	R 488.7	Conc 426.0 PPM
Z 0.000	R 488.7	S 426.0	Conc 426.0 PPM
			AVG: 426.0 PPM
2nd Analysis Date:	09/20/2005		
R 488.7	S 424.3	Z 0.000	Conc 424.3 PPM
S 424.3	Z 0.000	R 488.7	Conc 424.3 PPM
Z 0.000	R 488.7	S 424.3	Conc 424.3 PPM
			AVG: 424.3 PPM

Airgas

Certificate of Analysis: EPA Protocol Gas Mixture

Airgas Specialty Gases
11711 S. Alameda Street
Los Angeles, CA 90059-2130
323.357.6891 fax: 323.567.3686
www.airgas.com

Cylinder Number: CC215550 Reference Number: 48-124063854-2
Cylinder Pressure: 2000.6 PSIG Expiration Date: 5/9/2009
Certification Date: 5/9/2006 Laboratory: ASG - Los Angeles - CA

Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
CARBON MONOXIDE	168.9 PPM	+/- 1%	FTIR	G1
NITROGEN	Balance			

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences.

Notes:

Do not use cylinder below 150 psig. Approval Signature _____

Reference Standard Information

Type	Balance Gas	Component	Cyl.Number	Concentration
NTRM 81639		CARBON MONOXIDE	SG9198935B	244.7 PPM

Analytical Results

1st Component **CARBON MONOXIDE**

1st Analysis Date: 04/28/2006

R 246.2	S 169.9	Z -0.027	Conc 168.9 PPM
S 170.4	Z -0.039	R 247.9	Conc 168.2 PPM
Z -0.042	R 246.4	S 170.4	Conc 169.2 PPM
			AVG: 168.7 PPM

2nd Analysis Date: 05/09/2006

R 243.3	S 167.9	Z -0.070	Conc 168.9 PPM
S 168.3	Z -0.062	R 244.2	Conc 168.7 PPM
Z -0.057	R 243.2	S 168.7	Conc 169.8 PPM
			AVG: 169.1 PPM

SCOTT-MARRIN, INC.
6531 BOX SPRINGS BLVD. • RIVERSIDE, CA 92507
TELEPHONE (951) 653-6780 • FAX (951) 653-2430

Report Of Analysis
NIST-Traceable Gas Mixtures

SCEC01
TO: SCEC - Air Quality Specialists
Attn: Mark Ake
1582-1 North Batavia Street
Orange, CA 92867
(714) 282-8240

REPORT NO: 51197-01
REPORT DATE: January 24, 2007
CUSTOMER PO NO: 3978

CYLINDER NUMBER: **CC7332**

COMPONENT	CONCENTRATION (v/v)	NIST TRACEABLE REFERENCE STANDARD
Nitrogen dioxide	18.71 ± 0.37 ppmv	SRM 2629a
Nitrogen	Balance	

Cylinder Size: 150A (43 std cu ft)
Cylinder Pressure: 600 psig
Shelf Life: 6 months

ppm = umole/mole % = mole-%

The above analyses are traceable to the National Institute of Standards and Technology by intercomparison with the reference standard listed herein. Where indicated, volumetric and gravimetric reference standards are traceable thru use of our analytical balance.. NIST Report Number MMAP 232.09/202491.

ANALYST: D.C. Marrin APPROVED: J. T. Marrin

The only liability of this company for gas which fails to comply with this analysis shall be replacement or reanalysis thereof by the company without extra cost.

STANDARD CALIBRATION GASES IN ALUMINUM CYLINDERS

SEMI-ANNUAL METER EOX CALIBRATION DATA AT STANDARD TEMPERATURE OF 60 DEG F

Orifice Method - Triplicate Runs/Four Calibration Points
English Meter Box Units, English K' Factor
Filename:
File Modified From: APEX 522 Series Meterbox Calibration
Revised: 4/7/2004

Model #: Nutech
ID #: C6 8
Date: January 10, 2007
Bar. Pressure: 29.30 (in. Hg)
Performed By: MA

Theoretical Critical Vacuum = 14.11

DRY GAS METER READINGS									CRITICAL ORIFICE READINGS					
					Initial Temps.		Final Temps.					Ambient Temperature		
dH (in H2O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Inlet (deg F)	Outlet (deg F)	Inlet (deg F)	Outlet (deg F)	Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	Initial (deg F)	Final (deg F)	Average (deg F)
0.29	18.00	500.86	506.52	5.66	68.00	68.00	68.00	68.00	40	0.235	23.00	61.00	61.00	61.00
0.29	18.00	506.52	512.17	5.65	68.00	68.00	68.00	68.00	40	0.235	23.00	61.00	62.00	61.50
0.29	18.00	512.17	517.82	5.64	68.00	68.00	68.00	68.00	40	0.235	23.00	62.00	62.00	62.00
0.66	13.00	517.82	523.84	6.02	68.00	67.00	69.00	68.00	48	0.348	21.00	62.00	63.00	62.50
0.66	14.00	523.84	530.34	6.50	69.00	68.00	70.00	68.00	48	0.348	21.00	63.00	63.00	63.00
0.66	13.00	530.34	536.38	6.04	71.00	68.00	71.00	69.00	48	0.348	21.00	63.00	64.00	63.50
1.90	8.00	544.21	550.28	6.07	69.00	69.00	70.00	69.00	63	0.567	19.00	64.00	65.00	64.50
1.90	8.00	550.28	556.34	6.06	70.00	69.00	71.00	69.00	63	0.567	19.00	65.00	65.00	65.00
1.90	8.00	556.34	562.40	6.07	71.00	69.00	72.00	69.00	63	0.567	19.00	65.00	65.00	65.00
3.60	6.00	562.40	568.70	6.30	71.00	69.00	76.00	70.00	73	0.787	16.00	65.00	66.00	65.50
3.60	6.00	568.70	575.01	6.31	76.00	70.00	77.00	71.00	73	0.787	16.00	66.00	66.00	66.00
3.60	7.00	575.01	582.38	7.37	77.00	71.00	78.00	71.00	73	0.787	16.00	66.00	66.00	66.00

DRY GAS METER		ORIFICE			DRY GAS METER CALIBRATION FACTOR	ORIFICE CALIBRATION FACTOR	Individual Run	Individual Orifice	Orifice Average	Orifice Average
VOLUME CORRECTED Vm(std) (cu ft)	VOLUME CORRECTED Vm(std) (liters)	VOLUME CORRECTED Vcr(std) (cu ft)	VOLUME CORRECTED Vcr(std) (liters)	VOLUME NOMINAL Vcr (cu ft)	Y Value (number)	dH@ Value (in H2O)	0.95 < Y < 1.05?	Ymax - Ymin < 0.010?	0.98 < Y/Yd < 1.02?	dH@ - dH@ av < 0.15?
5.663	160.4	5.541	156.9	5.555	0.978	1.696	Pass			
5.649	160.0	5.538	156.8	5.558	0.980	1.698	Pass			
5.642	159.8	5.536	156.8	5.561	0.981	1.699	Pass			
				Average	0.980	1.698		Pass	Pass	Pass
6.025	170.6	5.918	167.6	5.950	0.982	1.767	Pass			
6.494	183.9	6.370	180.4	6.411	0.981	1.767	Pass			
6.026	170.7	5.912	167.4	5.956	0.981	1.767	Pass			
				Average	0.981	1.767		Pass	Pass	Pass
6.075	172.1	5.922	167.7	5.977	0.975	1.918	Pass			
6.058	171.6	5.919	167.6	5.980	0.977	1.920	Pass			
6.063	171.7	5.919	167.6	5.980	0.976	1.920	Pass			
				Average	0.976	1.919		Pass	Pass	Pass
6.304	178.5	6.159	174.4	6.228	0.977	1.888	Pass			
6.294	178.2	6.156	174.3	6.231	0.978	1.886	Pass			
7.339	207.9	7.182	203.4	7.270	0.979	1.885	Pass			
				Average	0.978	1.886		Pass	Pass	Pass

Average Yd: 0.979 dH@: 1.818

Q @ dH = 1: 0.556

SIGNED: Mark Hall Date: 1/10/07

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

SCAQMD at 60Deg dH

SEMI-ANNUAL METER BOX CALIBRATION DATA AT STANDARD TEMPERATURE OF 68 DEG F

Orifice Method - Triplicate Runs/Four Calibration Points
English Meter Box Units, English K' Factor
Filename: CB 8
File Modified From: APEX 522 Series Meter box Calibration
Revised: 4/7/2004

Model #: Nutech
ID #: CB 8
Date: January 10, 2007
Bar. Pressure: 29.90 (in. Hg)
Performed By: MA

Theoretical Critical Vacuum = 14.11

DRY GAS METER READINGS									CRITICAL ORIFICE READINGS					
					Initial Temps.		Final Temps.					Ambient Temperature		
dH (in H2O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Inlet (deg F)	Outlet (deg F)	Inlet (deg F)	Outlet (deg F)	Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	Initial (deg F)	Final (deg F)	Average (deg F)
0.29	18.00	500.855	506.520	5.665	68.0	68.0	68.0	68.0	40	0.235	23.0	61.0	61.0	61.0
0.29	18.00	506.520	512.171	5.651	68.0	68.0	68.0	68.0	40	0.235	23.0	61.0	62.0	61.5
0.29	18.00	512.171	517.815	5.644	68.0	68.0	68.0	68.0	40	0.235	23.0	62.0	62.0	62.0
0.66	13.00	517.815	523.837	6.022	68.0	67.0	69.0	68.0	48	0.348	21.0	62.0	63.0	62.5
0.66	14.00	523.837	530.337	6.500	69.0	68.0	70.0	68.0	48	0.348	21.0	63.0	63.0	63.0
0.66	13.00	530.337	536.377	6.040	70.0	68.0	71.0	69.0	48	0.348	21.0	63.0	64.0	63.5
1.90	8.00	544.213	550.281	6.068	69.0	69.0	70.0	69.0	63	0.567	19.0	64.0	65.0	64.5
1.90	8.00	550.281	556.337	6.056	70.0	69.0	71.0	69.0	63	0.567	19.0	65.0	65.0	65.0
1.90	8.00	556.337	562.404	6.067	71.0	69.0	72.0	69.0	63	0.567	19.0	65.0	65.0	65.0
3.60	6.00	562.404	568.704	6.300	72.0	69.0	76.0	70.0	73	0.787	16.0	65.0	66.0	65.5
3.60	6.00	568.704	575.014	6.310	76.0	70.0	77.0	71.0	73	0.787	16.0	66.0	66.0	66.0
3.60	7.00	575.014	582.383	7.369	77.0	71.0	78.0	71.0	73	0.787	16.0	66.0	66.0	66.0

DRY GAS METER		ORIFICE			DRY GAS METER CALIBRATION FACTOR		ORIFICE CALIBRATION FACTOR	Individual Run	Individual Orifice	Orifice Average	Orifice Average
VOLUME CORRECTED Vm(std) (cu ft)	VOLUME CORRECTED Vm(std) (liters)	VOLUME CORRECTED Vcr(std) (cu ft)	VOLUME CORRECTED Vcr(std) (liters)	VOLUME NOMINAL Vcr (cu ft)		Y Value (number)	dH@ Value (in H2O)	0.95 < Y < 1.05?	Ymax - Ymin < 0.010?	0.98 < Y/Yd < 1.02?	dH@ - dH@ av < 0.155?
5.663	160.4	5.541	156.9	5.473		0.978	1.720	Pass			
5.649	160.0	5.536	156.8	5.476		0.980	1.722	Pass			
5.642	159.8	5.536	156.8	5.479		0.981	1.724	Pass			
					Average	0.980	1.722		Pass	Pass	Pass
6.025	170.6	5.918	167.6	5.862		0.982	1.792	Pass			
6.494	183.9	6.370	180.4	6.316		0.981	1.792	Pass			
6.026	170.7	5.912	167.4	5.868		0.981	1.792	Pass			
					Average	0.981	1.792		Pass	Pass	Pass
6.075	172.1	5.922	167.7	5.889		0.975	1.945	Pass			
6.058	171.6	5.919	167.6	5.892		0.977	1.947	Pass			
6.063	171.7	5.919	167.6	5.892		0.976	1.947	Pass			
					Average	0.976	1.947		Pass	Pass	Pass
6.304	178.5	6.159	174.4	6.136		0.977	1.915	Pass			
6.294	178.2	6.156	174.3	6.139		0.973	1.913	Pass			
7.339	207.9	7.182	203.4	7.163		0.973	1.911	Pass			
					Average	0.973	1.913		Pass	Pass	Pass

Average Yd: 0.979 dH@: 1.843

Q @ dH = 1: 0.552

SIGNED: _____ Date: 1/10/09

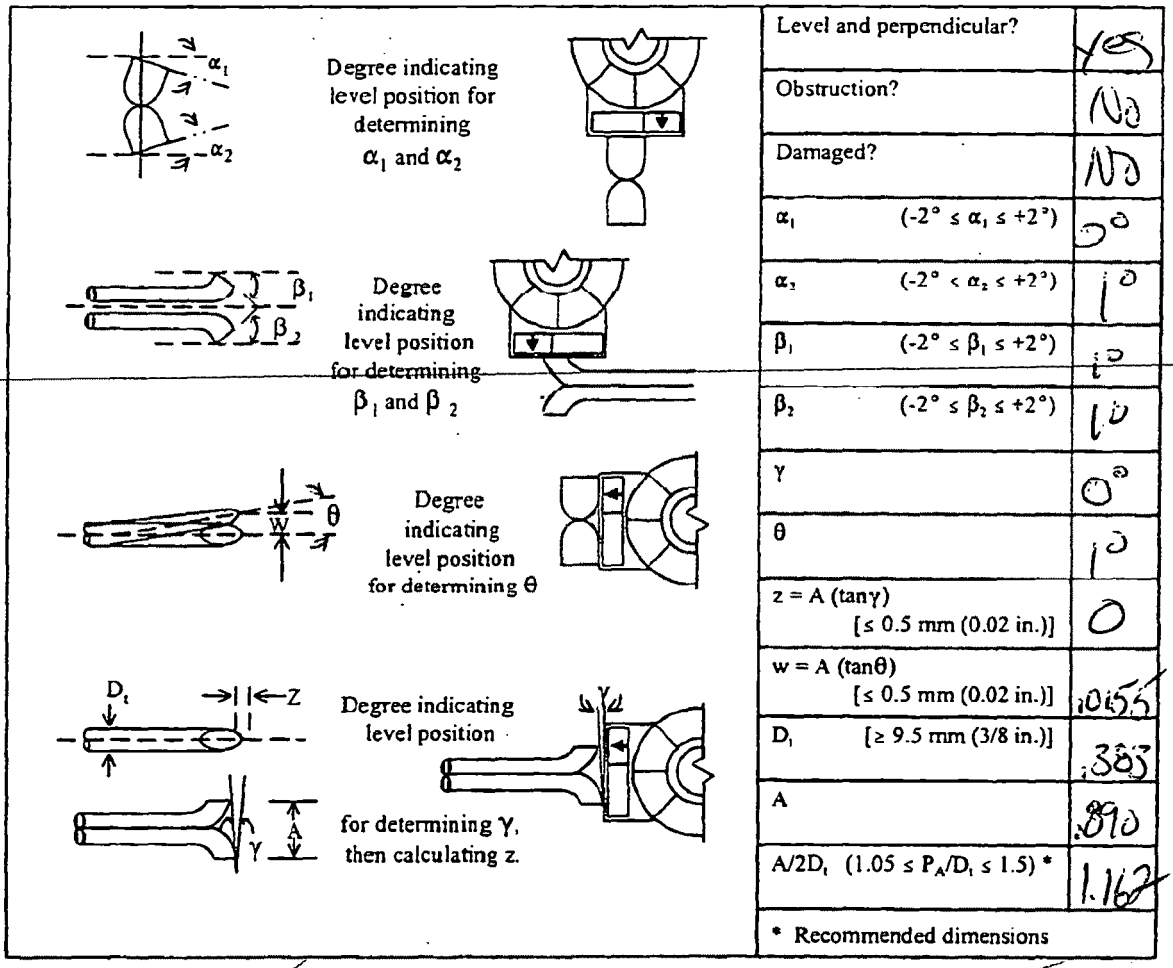
IMPORTANT For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.
IMPORTANT The Critical Orifice Coefficient, K', must be entered in English units, (ft)^3* deg R)^0.5/((in.Hg)*(min)).

EPA at 68 Deg dH

Table 2G-1. Type S Probe Inspection Sheet

Note: Method 2 provides the criteria for an acceptably constructed Type S pitot tube. However, the procedure for making the necessary measurements is not specified. One approach is given below.

1. Use a vise with parallel and perpendicular faces. Use an angle-measuring device (analog or digital) for this check.
2. Place the pitot tube in the vise, and level the pitot tube horizontally using the angle-measuring device.
3. Place the angle-measuring device as shown below.
4. Measure distance A, which is P_A plus P_B. Method 2 specifies that $P_A = P_B$, but provides no tolerance for this measurement. Because this measurement is very difficult, it is suggested that $P_A = P_B = A/2$.
5. Measure the external tube diameter (D_t) with a micrometer, machinist's rule, or internal caliper.
6. Record all data as shown on the form below.
7. Calculate dimensions w and z as shown below.



Level and perpendicular?		Yes
Obstruction?		No
Damaged?		No
α_1	$(-2° \le \alpha_1 \le +2°)$	0°
α_2	$(-2° \le \alpha_2 \le +2°)$	1°
β_1	$(-2° \le \beta_1 \le +2°)$	1°
β_2	$(-2° \le \beta_2 \le +2°)$	1°
γ		0°
θ		1°
$z = A (\tan\gamma)$	[≤ 0.5 mm (0.02 in.)]	0
$w = A (\tan\theta)$	[≤ 0.5 mm (0.02 in.)]	.0155
D_t	[≥ 9.5 mm (3/8 in.)]	.383
A		.890
$A/2D_t$	$(1.05 \le P_A/D_t \le 1.5)$ *	1.162
* Recommended dimensions		

QA/QC Check

Completeness ✓ Legibility ✓ Accuracy ✓

Specifications ✓ Reasonableness ✓

Certification

I certify that the Type S probe ID #34 meets or exceeds all specifications, criteria, and applicable design features.

Certified by: _____ Date: 2-21-07

9" Flare probe

S-TYPE PITOT TUBE CALIBRATION

DATE:	February 20, 2007
PITOT TUBE ID:	PT-34
CALIBRATED BY:	DE
PHYSICAL DESCRIPTION:	9' Flare Probe Method 5.1

SIDE "A" CALIBRATION

Run No.	Std. Pitot dP (in H2O)	S-Type dP (in H2O)	Cp(S)	Deviation Cp(S) - Cp(A)
1	0.64	0.98	0.808	-0.003
2	0.64	0.98	0.808	-0.003
3	0.65	0.97	0.819	0.007

Side "A" average, Cp(A) = 0.812
Average deviation, d = 0.005
Is d ≤ 0.01? Yes

SIDE "B" CALIBRATION

Run No.	Std. Pitot dP (in H2O)	S-Type dP (in H2O)	Cp(S)	Deviation Cp(S) - Cp(B)
1	0.66	0.97	0.825	0.005
2	0.66	0.98	0.821	0.001
3	0.65	0.98	0.814	-0.006

Side "B" average, Cp(B) = 0.820
Average deviation, d = 0.004
Is d ≤ 0.01? Yes

Amb. Temp. (degrees F)	60
Barometric Pressure	29.9
Actual Calculated Pitot Coef.	**0.816**

Difference between sides "A" and "B", D = |Cp(A) - Cp(B)| = 0.008
Is D ≤ 0.01? Yes

Appendix F

Calculations

SCEC

EXAMPLE CALCULATIONS

CONTINUOUS MONITORING

Client : BAS - Forward Landfill

Facility : _____ Date : 5/03/07

Sample Location : Stockton Flare Exhaust Run No : 1

EFFLUENT GAS CONCENTRATION NOx

$$Cgas = \frac{(Cavg -- Co)}{(Cm -- Co)} * Cma$$

$$Cgas = \frac{(15.28 - 0.10)}{(16.73 - 0.10)} * (17.02)$$

Cgas = 15.54 ppmvd

EFFLUENT GAS CONCENTRATION - OXYGEN CORRECTION

$$Cgas(Corr) = Cgas * \frac{(20.9-\%O2corr)}{(20.9-\%O2stk)}$$

$$Cgas(Corr) = (15.54) * \frac{(20.9 - 3)}{(20.9 - 11.08)}$$

Cgas(Corr) = 28.33 ppmvd

EFFLUENT GAS MASS EMISSION RATE

E1 = Cgas * MW * Qsd * K1

E1 = (15.54) * (46.01) * (11,683) * (1.557E-07)

E1 = 1.301 LB/Hr

E2 = E1 lb/hr / mmBtu/hr

E2 = 1.301 / 37.12

E2 = 0.035 LB/mmBtu

NOMENCLATURE

		Units
Cavg	Average gas concentration of analyzer	ppmvd
Cgas	Effluent gas concentration	ppmvd
Cgas(Corr)	Effluent gas concentration, oxygen corrected	ppmvd
Co	Average of initial and final system bias checks for the zero gas	ppmvd
Cm	Average of initial and final system bias checks for the upscale gas	ppmvd
Cma	Actual concentration of the upscale calibration gas	ppmvd
E1	Mass Emission Rate based on volume flow rate	lb/hr
E2	Mass Emission Rate based on Fd Factor	lb/mmBtu
Fd	Dry Based F-Factor (8710-Gas, 9190-Oil, 9240-Wood)	---------
K1	Conversion Factor (1.583 E-07, 1.557 E-07, 1.553 E-07 @ 60,68,70 deg F Std Temp	lb-mole*min/mg*dscf*Hr
K2	Conversion Factor (2.59 E-09 @ 68 deg F)	lb-mole/dscf*E-06
MW	Molecular Weight (Nox = 46.01, SO2 = 64.06, CO = 28)	lb/lb-mole
O2corr	Oxygen value to be corrected to	%
O2stk	Oxygen value of effluent	%

Appendix G

Sample Port Diagram

SCEC

METHOD 1: SAMPLE POINT LOCTION DATA

FACILITY: BAS- Allied Waste DATE: 6/28/06

TEST LOCATION: Austin Landfill DATA BY: CAS

UNIT: Flare Inlet PROJECT No.:

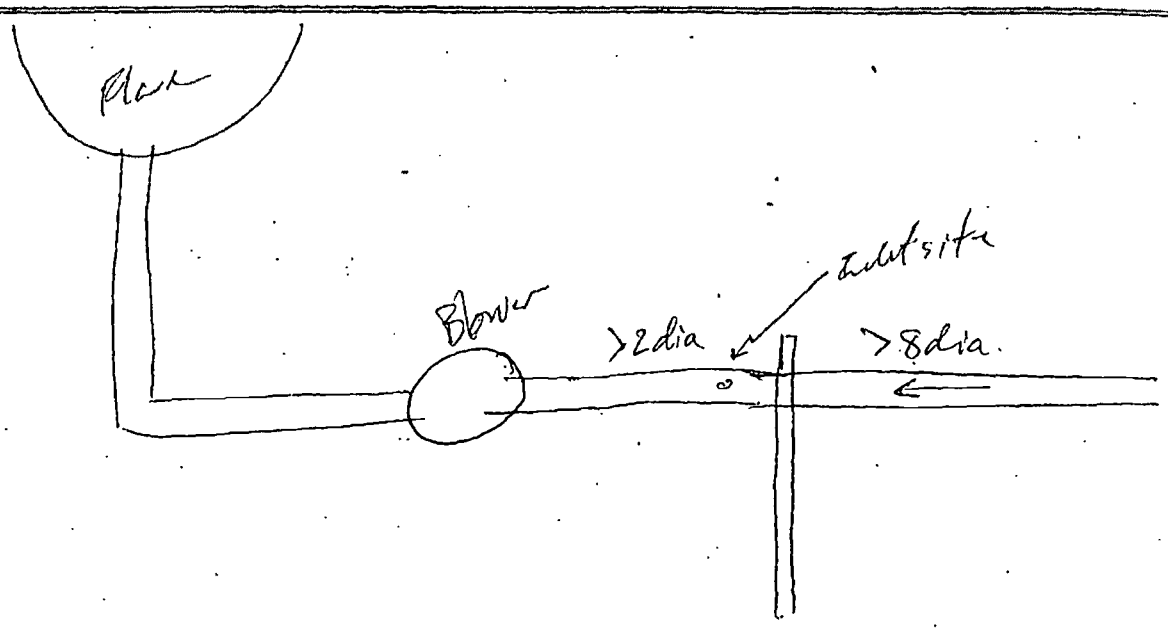


Diagram of Sample Location

DUCT DIMENSION: 94.9" ID

DUCT AREA (ft²):

UPSTREAM DST/DIA.:(1) +20

DOWNSTREAM DIS/DIA.:(2) +8

PORT LENGTH:(3) ½"

PORT DIAMETER: ½"

NUMBER OF POINTS: 8

NUMBER OF POINTS PER PORT: 8

1) From sample point to disturbance in direction of flow.

2) From disturbance to sample point in direction of flow.

3) Measurement from inner stack wall to end of port.

SAMPLE POINT	% OF STACK DIAMETER	POSITION IN STACK, INCHES	INCHES FROM OUTSIDE OF PORT
1	3.2	~~0.3~~ 0.8	
2	10.5	1.0	
3	19.4	1.8	
4	32.3	3.1	
5	62.7	6.0	
6	80.6	7.6	
7	89.6	8.5	
8	96.8	~~9.2~~ 0.9	
9			
10			
11			
12			

SCEC

METHOD 1; SAMPLE POINT LOCTION DATA

FACILITY: BOS- STOCKTON - forward DATE: 5-3-07

TEST LOCATION: AUSTIN LF DATA BY: TRT

UNIT: FLARE PROJECT No.: 2060.1069

STACK OD = 96"

STACK ID = 88"

PORTS USED FOR TEST →

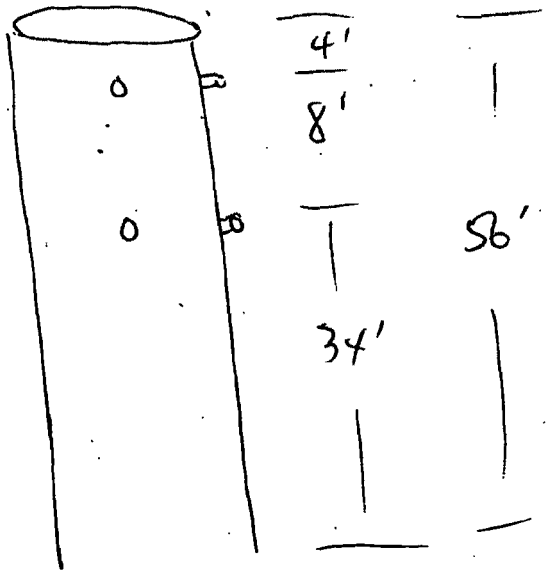


Diagram of Sample Location

DUCT DIMENSION: 88"

DUCT AREA (ft²):

UPSTREAM DST/DIA.:(1)

DOWNSTREAM DIS/DIA.:(2)

PORT LENGTH:(3) 4+4 = 8

PORT DIAMETER: 4

NUMBER OF POINTS: 16

NUMBER OF POINTS PER PORT: 8

1) From sample point to disturbance in direction of flow.

2) From disturbance to sample point in direction of flow.

3) Measurement from inner stack wall to end of port.

SAMPLE POINT	% OF STACK DIAMETER	POSITION IN STACK INCHES (88)	INCHES FROM OUTSIDE OF PORT (8)
1	3.2	2.8	10.8
2	10.5	9.2	17.2
3	19.4	17.1	25.1
4	32.3	28.4	36.4
5	67.7	59.6	67.6
6	80.6	70.9	78.9
7	89.5	78.8	86.8
8	96.8	85.2	93.2
9			
10			
11			
12			

SJVAPCD Permit

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: N-339-17-7 **ISSUANCE DATE:** 03/15/2005

LEGAL OWNER OR OPERATOR: FORWARD, INC. LANDFILL
MAILING ADDRESS: P O BOX 6336
STOCKTON, CA 95206

LOCATION: 9999 S. AUSTIN ROAD
MANTECA, CA 95336

EQUIPMENT DESCRIPTION:
MODIFICATION OF 12.2 MILLION CUBIC METER CAPACITY (51 ACRE) MUNICIPAL SOLID WASTE LANDFILL WITH GAS COLLECTION SYSTEM SERVED BY A 48 MMBTU/HR FLARE LISTED ON PERMIT N-3057-3: TO INCORPORATE ADJACENT FACILITY (PERMIT UNIT N-3057-3), A MUNICIPAL SOLID WASTE LANDFILL, 13.8 MILLION CUBIC YARDS CAPACITY (218 ACRES) WITH LANDFILL GAS COLLECTION SYSTEM CONTROLLED BY A 48 MMBTU/HR ENCLOSED FLARE

CONDITIONS

1. This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
2. Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Authority to Construct (ATC) permit N-339-17-6 shall be implemented prior to or simultaneously with ATC permit N-339-17-7. [District NSR Rule] Federally Enforceable Through Title V Permit
4. Permit to Operate N-3057-3 shall be deleted upon implementation of ATC permit N-339-17-7. [District NSR Rule] Federally Enforceable Through Title V Permit
5. All equipment shall be constructed, maintained and operated according to the specifications and plans contained in the permit application except as otherwise specified herein. [District NSR Rule] Federally Enforceable Through Title V Permit
6. All landfill gas collected shall be controlled by the flare. [District NSR Rule] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

DAVID L. CROW, Executive Director / APCO

for DAVID WARNER, Director of Permit Services
N-339-17-7 : Mar 15 2005 2:41PM – CLEMENTS : Joint Inspection NOT Required

Northern Regional Office • 4230 Kieman Avenue, Suite 130 • Modesto, CA 95356-9322 • (209) 557-6400 • Fax (209) 557-6475

7. VOC (NMOC) emissions from the landfill shall not exceed 302.0 lb per day (50 Mg/year). [District NSR Rule] Federally Enforceable Through Title V Permit
8. The VOC destruction efficiency for the flare shall be at least 98% by weight. [District NSR Rule] Federally Enforceable Through Title V Permit
9. The flare shall maintain a temperature of at least 1,400 degrees F during operation. [District NSR Rule] Federally Enforceable Through Title V Permit
10. The landfill gas consumption rate for the flare shall not exceed 48.0 MMBtu per hour. [District NSR Rule] Federally Enforceable Through Title V Permit
11. Landfill gas consumption rate for the flare shall not exceed 804 MMSCF per year. [District NSR Rule] Federally Enforceable Through Title V Permit
12. Emissions from the flare shall not exceed any of the following emission limits: 0.05 lb NOx/MMbtu, 0.0215 lb SOx/MMbtu, 0.2 lb CO/MMbtu, 0.0113 lb VOC/MMbtu (20 ppmv), or 0.034 lb PM10/MMbtu. [District NSR Rule] Federally Enforceable Through Title V Permit
13. The facility shall install and maintain in proper operating condition a gas flow meter with a continuous recording device which measures the amount of landfill gas consumed per day. [District NSR Rule] Federally Enforceable Through Title V Permit
14. The flare shall be equipped with a temperature indicator and recorder that measures and records the operating temperature. The temperature indicator and recorder must operate continuously. [District NSR Rule] Federally Enforceable Through Title V Permit
15. The enclosed flare shall be equipped with automatic dampers, an automatic shutdown device, and a flame arrester. [District NSR Rule] Federally Enforceable Through Title V Permit
16. The enclosed flare shall be equipped with an LPG or natural gas fired pilot. [District NSR Rule] Federally Enforceable Through Title V Permit
17. Source testing on the flare shall be performed to demonstrate compliance with the NOx and CO limits, and the VOC destruction efficiency of 98% as required by this permit shall be conducted annually. [District NSR Rule] Federally Enforceable Through Title V Permit
18. Source testing for NOx shall be conducted using CARB Method 7 or Method 20. [District Rule 1081] Federally Enforceable Through Title V Permit
19. Source testing for CO shall be conducted using EPA Method 10 or 10B, CARB Methods 1 through 5 with 10, or CARB Method 100. [District Rule 1081] Federally Enforceable Through Title V Permit
20. VOC emissions shall be measured by EPA Method 18 or 25. [District Rule 1081] Federally Enforceable Through Title V Permit
21. H2S concentration of the influent landfill gas to the flare shall not exceed 46.9 ppmv. [District NSR Rule] Federally Enforceable Through Title V Permit
22. Gas combusted in the flare shall be tested for H2S content on a quarterly basis using dragger tubes. If compliance is shown for two consecutive quarters, the testing frequency may be changed to annual. Quarterly testing shall resume if any annual test shows noncompliance. [District Rule 1081] Federally Enforceable Through Title V Permit
23. Carbon canister on condensate storage tank vent shall be inspected monthly for breakthrough with a District-approved portable analyzer. [District NSR Rule] Federally Enforceable Through Title V Permit
24. Upon receiving an approved plan for closure, or partial closure, the operator shall modify this operating permit to comply with the requirements of District Rule 4642. [District Rule 4642, 3.2 and 4.1.1] Federally Enforceable Through Title V Permit
25. The gas collection system shall be operated in such a manner that the surface emissions testing of the landfill shows the concentrations of total organic compounds (measured as methane) do not exceed 1,000 ppmv at any point on the surface of the solid waste disposal site or along the gas transfer path of the gas collection system. Sampling ports shall be installed on each well head. [District NSR Rule] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

26. Gas collection system shall be operated in a manner which maximizes the amount of landfill gas extracted while preventing overdraw that can cause fires or damage the gas collection system. [District NSR Rule] Federally Enforceable Through Title V Permit

27. During maintenance of the gas collection system or incineration device, emissions of landfill gas shall be minimized during shutdown. [District NSR Rule] Federally Enforceable Through Title V Permit

28. Maintenance is defined as work performed on a gas collection system and/or control device in order to ensure continued compliance with District rules, regulations, and/or Permits to Operate, and to prevent its failure or malfunction. [District NSR Rule] Federally Enforceable Through Title V Permit

29. The gas collection system shall be operated such that the concentration of total organic compounds (as CH4) shall not exceed 1,000 ppmv at any point along the gas transfer path of the gas collection system. [District NSR Rule] Federally Enforceable Through Title V Permit

30. The entire gas collection system shall be inspected for leaks with a portable analyzer in accordance with EPA Method 21 at least quarterly. After four successful inspections, the frequency shall be annually. If a leak is detected, quarterly inspections shall resume. A leak is defined as a measurement in excess of 1,000 ppm (measured as methane) above background when measured at a distance of one (1) centimeter from the potential source. Leaks shall be repaired within 15 calendar days after it is detected. [District NSR Rule] Federally Enforceable Through Title V Permit

31. The permittee shall notify the APCO by telephone at least 24 hours before performing any maintenance work that requires the system to be shutdown. The notification shall include a description of work, the date work will be performed and the amount of time needed to complete the maintenance work. [District NSR Rule] Federally Enforceable Through Title V Permit

32. Permittee shall maintain records of system inspections including: date, time and inspection results. [District Rule 1070] Federally Enforceable Through Title V Permit

33. Permittee shall maintain records of maintenance related or other collection system and control device downtime, including individual well shutdown. [District Rule 1070] Federally Enforceable Through Title V Permit

34. The operator shall record emission control device source tests (emissions of CO, NOx, and VOC) in pounds per MMbtu heat input. Operator shall also record VOC destruction/treatment efficiency. [District Rule 1081] Federally Enforceable Through Title V Permit

35. Permittee shall maintain daily records of landfill gas flow rate to the flare. [District Rule 1070] Federally Enforceable Through Title V Permit

36. Permittee shall maintain annual records of landfill gas flow rate to the flare. [District NSR Rule] Federally Enforceable Through Title V Permit

37. All records shall be retained for a period of at least 5 years and shall be made available for District inspection upon request. [District Rule 1070] Federally Enforceable Through Title V Permit

38. The NMOC emission rate shall be calculated using the equation in 40CFR60.754(a)(1)(i), if the actual year-to-year solid waste acceptance rate is known or the equation in 40CFR60.754(a)(1)(ii), if the actual year-to-year solid waste acceptance rate is unknown. The values for k, Lo, and CNMOC for both equations shall be taken from 40CFR60.754(a)(1), as appropriate. Both equations may be used if the actual year-to-year acceptance rate is known for a part of the landfill life, but unknown for another part of the landfill life. The mass of nondegradable solid waste may be subtracted from the average annual acceptance rate when calculating R, if documentation of the nature and amount of such wastes is maintained. (Tier 1 specifications) [40 CFR 60.754(a)(1)] Federally Enforceable Through Title V Permit

39. If the calculated NMOC emission rate is equal to or greater than 50 megagrams/year, then the landfill owner or operator shall either comply with the requirements of this permit to submit a collection and control design plan and install the system, or determine a site-specific NMOC concentration and recalculate the NMOC emission rate using Tier 2 specifications. [40 CFR 60.754(a)(2)(ii)] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

40. Tier 2 specifications to determine the site-specific NMOC concentration shall include the following: 1) For sampling, at least 2 sample probes shall be installed per hectare of landfill surface that has retained waste for at least 2 years, up to a maximum of 50 required probes. One sample of landfill gas shall be collected from each probe to determine the NMOC concentration, using EPA Method 25, 25C, another method approved by the EPA, or 18, in accordance with 40 CFR 60.754(a)(3). If EPA Method 18 is used, the minimum list of compounds to be tested shall be those published in the most recent Compilation of AP-42. If composite sampling is used, equal sample volumes are required. All samples taken shall be used in the analysis. The NMOC concentration from Method 25 or 25C shall be divided by 6 to convert from C-NMOC, as carbon to as hexane. 2) For landfills equipped with active collection systems, samples may be collected from the common header pipe before gas moving or condensate removal equipment; a minimum of 3 samples must be collected. [40 CFR 60.754(a)(3), (a)(5)] Federally Enforceable Through Title V Permit

41. Tier 2 specifications to determine the site-specific NMOC concentration shall include the following: 1)The NMOC mass emission rate shall be recalculated using the average site-specific concentration, instead of the default value, 2) If the resulting calculated mass emission rate is equal to or greater than 50 megagrams/year, the landfill owner or operator shall either comply with 60.752(b)(2), or determine a site-specific methane generation rate constant and recalculate the NMOC emission rate using Tier 3 specifications. [40 CFR 60.754(a)(3)(i)&(ii)] Federally Enforceable Through Title V Permit

42. If the calculated NMOC mass emission rate, using the site-specific NMOC concentration, is less than 50 megagrams/year, then a periodic estimate of the emission rate report, pursuant to 60.757(b)(1) shall be submitted to the Administrator. The site-specific NMOC concentration shall be retested every 5 years, using Tier 2 specifications. [40 CFR 60.754(a)(3)(iii)] Federally Enforceable Through Title V Permit

43. Tier 3 specifications to determine the site-specific methane generation rate constant shall include the following: 1) EPA Method 2E or another method approved by the EPA shall be used, 2) The NMOC mass emission rate shall be recalculated using the average site-specific NMOC concentration and the site-specific methane generation rate constant k, instead of the default values in 40 CFR 60(a)(1), and 3) If the resulting calculated NMOC mass emission rate is equal to or greater than 50 megagrams/year, the landfill owner or operator shall comply with 60.752(b)(2). [40 CFR 60.754(a)(4), (a)(5) and (i)] Federally Enforceable Through Title V Permit

44. If Tier 3 specifications are used to determine the site-specific methane generation rate and the calculated NMOC mass emission rate is less than 50 megagrams/year, then a periodic emission rate report shall be submitted to the Administrator, pursuant to 60.757(b)(1) and the NMOC concentration shall be recalculated annually, pursuant to 60.757(b)(1), using the site-specific methane generation rate constant and the NMOC concentration obtained using Tier 2 specifications. Determination of the site-specific methane generation rate constant is performed once and used in all subsequent annual NMOC emission rate calculations. [40 CFR 60.754(a)(4)(ii)] Federally Enforceable Through Title V Permit

45. For PSD purposes, the NMOC emission rate shall be estimated and compared to the PSD major source and significance levels in 40 CFR 51.166 or 52.21, using AP-42 or EPA-approved procedures. [40 CFR 60.754(c)] Federally Enforceable Through Title V Permit

46. The NMOC emission rate shall be recalculated and reported to the APCO annually, except as otherwise provided in this permit, until such time as the calculated NMOC emission rate is equal to or greater than 50 megagrams/year and a collection and control system is installed or until the landfill is closed. [40 CFR 60.752(b)(1), 60.754(a), and 60.757(b)] Federally Enforceable Through Title V Permit

47. If the NMOC emission rate, as reported in the annual report is less than 50 megagrams/year in each of the next 5 consecutive years, the owner or operator may elect to submit an estimate of the NMOC emission rate for the next 5-year period in lieu of the annual reports for those 5 years. This estimate shall include the current amount of solid waste-in-place and the estimated waste acceptance rate for each year of the 5 years. All data and calculations upon which this estimate is based shall be provided to the APCO. This estimate shall be revised at least once every 5 years. [40 CFR 60.757(b)(1)(ii)] Federally Enforceable Through Title V Permit

48. If the actual waste acceptance rate exceeds the estimated rate used in any year reported in a 5-year estimate of the NMOC emission rate, then a revised 5-year estimate shall be submitted to the APCO. The revised estimate shall cover the 5-year period beginning with the year in which the actual waste acceptance rate exceeded the estimated acceptance rate. [40 CFR 60.757(b)(1)(ii)] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

49. The NMOC emission rate report shall include all the data, calculations, sample reports and measurements used to estimate the annual or 5-year emissions. [40 CFR 60.757(b)(2)] Federally Enforceable Through Title V Permit

50. If the owner or operator elects to recalculate the NMOC emission rate using Tier 2 specifications and the resulting NMOC emission rate is less than 50 megagrams/year, annual periodic reporting shall resume. The revised NMOC emission rate report, with the recalculated NMOC emission rate using Tier 2 specifications, shall be submitted within 180 days of the first Tier 1 calculated exceedance of 50 megagrams/year. [40 CFR 60.757(c)(1)] Federally Enforceable Through Title V Permit

51. If the owner or operator elects to recalculate the NMOC emission rate using Tier 3 specifications and the resulting NMOC emission rate is less than 50 megagrams/year, annual periodic reporting shall resume. The revised NMOC emission rate report, with the recalculated NMOC emission rate using Tier 3 specifications, shall be submitted within 1 year of the first Tier 1 calculated exceedance of 50 megagrams/year. [40 CFR 60.757(c)(2)] Federally Enforceable Through Title V Permit

52. Each owner or operator shall keep for at least 5 years up-to-date, readily accessible, on-site records of the maximum design capacity, the current amount of solid waste in-place, and the year-by-year waste acceptance rate. Off-site records may be maintained if they are retrievable within 4 hours. [40 CFR 60.758(a) and District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

53. This operating permit may be cancelled with APCO approval when the landfill is closed, pursuant to the requirements of this permit, if the landfill is not otherwise subject to the requirements of either 40 CFR part 70 or part 71 and if either 1) it was never subject to the requirement for a control system under 40 CFR 60.752(b)(2); or 2) the owner or operator meets the conditions for control system removal specified in 40 CFR 60.752(b)(2)(v). [40 CFR 60.752(d)] Federally Enforceable Through Title V Permit

54. If the landfill is permanently closed, a closure notification shall be submitted to the APCO within 30 days of waste disposal cessation. A permanent closure must take place in accordance with 40 CFR 258.60. If a closure report has been submitted, no additional waste may be placed in the landfill without filing a notification of modification to the APCO, pursuant to 40 CFR 60.7(a)(4). [40 CFR 60.752(b)(1)(ii)(B) and 60.757(d)] Federally Enforceable Through Title V Permit

55. If the calculated NMOC is equal to or greater than 50 megagrams/year, the owner or operator shall install a collection and control system, that effectively captures the gas generated within the landfill, within 30 months of that determination. This operating permit must be modified accordingly to show compliance with 40 CFR 62, Subpart GGG requirements applicable to a MSWL with a collection and control system. [40 CFR 60.752(b)(2)(ii), 60.753, 60.755, and 60.756] Federally Enforceable Through Title V Permit

56. If a gas collection and control system is installed, it shall comply with the operational standards of 40 CFR 60.753, the compliance provisions of 40 CFR 60.755, the monitoring provisions of 40 CFR 60.756, the reporting and record keeping requirements of 40 CFR 60.757 and 60.758, and the requirements of 40 CFR 60.759 (for active collection systems). [40 CFR 60.752(b)(2)(ii), 60.753, 60.755, 60.756, 60.757, 60.758, and 60.759] Federally Enforceable Through Title V Permit

57. A record of continuous flare combustion temperature, continuous volumetric gas flow rate, net heating value of landfill gas being combusted, daily average fuel consumption, daily average heat input, and carbon canister inspection shall be maintained, retained on the premises for a period of at least two years and made available for District inspection upon request. [District NSR Rule] Federally Enforceable Through Title V Permit

58. Permittee shall comply with the Increments of Progress as defined in Table 3 of 40 CFR 62, Subpart GGG, unless a site specific schedule is approved by EPA, which includes notification of EPA no later than 10 business days after completing each increment of progress. [40 CFR 62.14355(b)] Federally Enforceable Through Title V Permit

59. Permittee shall submit the Final Control Plan (as defined in 40 CFR 62.14351) one year after the first annual emission rate report showing NMOC emissions > 50 megagrams/year, unless a site-specific schedule is approved by EPA. (Increment 1) [40 CFR 62.14356(a)(1)] Federally Enforceable Through Title V Permit

60. Permittee shall Award Contract(s) (as defined in 40 CFR 62.14351) on or before December 6, 2001, or 20 months after the first annual emission rate report showing NMOC emissions > 50 megagrams/year, unless a site-specific schedule is approved by EPA. (Increment 2) [40 CFR 62.14356(a)(2)] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

61. Permittee shall Initiate On-Site Construction (as defined in 40 CFR 62.14351) on or before April 6, 2002, or 24 months after the first annual emission rate report showing NMOC emissions > 50 megagrams/year, unless a site-specific schedule is approved by EPA. (Increment 3) [40 CFR 62.14356(a)(3)] Federally Enforceable Through Title V Permit

62. Permittee shall Complete On-Site Construction (as defined in 40 CFR 62.14351) on or before October 6, 2002, or 30 months after the first annual emission rate report showing NMOC emissions > 50 megagrams/year, unless a site-specific schedule is approved by EPA. (Increment 4) [40 CFR 62.14356(a)(4)] Federally Enforceable Through Title V Permit

63. Permittee shall Achieve Final Compliance (as defined in 40 CFR 62.14351) on or before October 6, 2002, or 30 months after the first annual emission rate report showing NMOC emissions > 50 megagrams/year, unless a site-specific schedule is approved by EPA. (Increment 5) [40 CFR 62.14356(a)(5)] Federally Enforceable Through Title V Permit

64. Permittee must conduct initial performance tests of the landfill gas collection system and air pollution control equipment on or before April 4, 2003, or 30 months and 180 days after the first annual emission rate report showing NMOC emissions > 50 megagrams/year, unless a site-specific schedule is approved by EPA. [40 CFR 62.14356(a)(5)] Federally Enforceable Through Title V Permit