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: 6/28/06	**Analysis Date:** 7/1/06

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:	**Raw LFG Constituent data:** ☐ Yes ☐ No
NMOC data: ☐ Yes ☐ No	**Sulfur Compound data:** ☐ Yes ☐ No
NMOC (ppm as hexane):	
NMOC Test Method:	**LFG Test Methods:**

Stack Testing data:
Device Tested (Flare, IC Engine, Turbine, Boiler):
Concentration (ppm)

NOx: 25.8 @3% O2	**SOx:**
CO: 5.0 @3%O2	**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

[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.

Allied Waste
Forward Inc. Landfill
Flare
2006 Source Test Results

Prepared For:
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Submitted To:
San Joaquin Valley Air Pollution Control District
Northern Region Office
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SCEC

Test Date: June 28, 2006

Issue Date: August 17, 2006

Report No.: 2060.1020.rpt1

Tested By: _____
Leslie A. Johnson

Reviewed By: _____
Michael W. Bell

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1.0 INTRODUCTION

On June 28, 2006 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 May 5, 2006.

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 8' 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 June 26, 2006. 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 June 28, 2006. The work was performed in accordance with the SJVAPCD approved plan.

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 1,463 scfm. The landfill gas BTU/scf values ranged between 312-372 for the flare. The flare combustion temperature controller (top temperature probe) was set and maintained at 1525 °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 0-100 ppm. The permitted limit would have been approximately 125 ppm. The measured CO levels were 1-4.7 ppm and are presented as measured. Defaulting to 30% of the selected range (30 ppm) would still demonstrate that the flare was in compliance. Four (4) runs were conducted for NO_x, CO, O_2, CO_2, and flows. Run #1 failed post NO_x system bias check and drift and was not used.

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 101.6%.

5.0 SUMMARY OF RESULTS

TABLE 5-1
SUMMARY OF TEST RESULTS
BAS/Forward/Austin
Stockton Flare
June 28, 2006

PARAMETER	INLET		EXHAUST	PERMIT LIMIT
O_2, %	5.98		11.87	
CO_2, %	25.98		7.91	
N_2, %	31.07		80.22	
H_20, %	3.57		9.01	
Flow Rate, wscfm	1463.0		12,504	
Flow Rate, dscfm	1410.8		11,455	
Temperature, °F	86		1,650.7	>1,400
Btu/scf	352.0			
MMBtu/Hr	30.88			48.0
NOx:				
ppm			13.0	
ppm @ 3% O_2			25.8	
lb/hr (as NO_2)			1.07	
lb/day (as NO_2)			25.6	
lb/MMBtu (as NO_2)			0.035	0.05
lb/MMCF (as NO_2)			12.62	
CO:				
ppm			2.5	
ppm @ 3% O_2			5.0	
lb/hr			0.13	
lb/day			3.0	
lb/MMBtu			0.004	0.2
lb/MMCF			1.48	
Hydrocarbons:				
CH_4, ppm	346,667		1.34	
TGNMO, ppm (as CH_4)	2,370	<	0.50	
TGNMO, lb/hr (as CH_4)	8.3	<	0.01	
TGNMO, lb/MM Btu (as CH_4)	-	<	0.000	0.0113
TGNMO, lb/day (as CH_4)	199.9	<	0.34	
TGNMO, ppm (as hexane)		<	0.08	
TGNMO, ppm @ 3% O_2 (as hexane)		<	0.17	<20 NSPS
TGNMO, lb/hr (as hexane)		<	0.01	
Destruction Eff. %		>	99.83	>98%
lb/MMCF		<	0.15	
Total Sulfur Compounds,				
Total Reduced Sulfur Inlet, ppm	21.73			
SOx Exhaust, lb/hr (as SO_2)			0.31	
SOx Exhaust, lb/day(as SO_2)			7.33	
SOx Exhaust, lb/MMBtu(as SO_2)			0.010	0.0215
lb/MMCF			3.61	

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

5.0 SUMMARY OF RESULTS (Continued)

TABLE 5-2
GENERAL RESULTS
BAS/Forward/Austin
Stockton Flare
June 28, 2006

	INLET				EXHAUST			
Parameter	First Run	Second Run	Third Run	Average	First Run	Second Run	Third Run	Average
O_2, %	5.31	5.30	7.33	5.98	11.62	12.15	11.84	11.87
CO_2, %	27.3	27.2	23.5	26.0	8.05	7.69	7.98	7.91
N_2, %	28.7	28.9	35.6	31.1	80.3	80.2	80.2	80.2
H_20, %	3.50	3.50	3.70	3.57	9.05	9.17	8.80	9.01
Flow Rate, wscfm	1,455.4	1,456.6	1,476.9	1,463.0	13,616	11,336	12,560	12,504
Flow Rate, dscfm	1,404.5	1,405.6	1,422.2	1411	11,685	12,384	10,296	11,455
Temperature, °F	84.0	86.0	88.0	86.0	1,638	1,666	1,648	1,651
Btu/scf	372	372	312	352				
MMBtu/Hr	32.49	32.51	27.65	30.88				
NOx:								
ppm					13.50	12.48	13.12	13.03
ppm @ 3% O_2					26.1	25.5	25.9	25.8
lb/hr (as NO_2)					1.13	1.11	0.97	1.07
lb/MM Btu (as NO_2)					0.035	0.034	0.035	0.035
CO:								
ppm					4.7	0.7	2.2	2.5
ppm @ 3% O_2					9.0	1.5	4.4	5.0
lb/hr					0.237	0.040	0.100	0.126
lb/MM Btu					0.007	0.001	0.004	0.004
Hydrocarbons:								
CH_4, ppm	367,000	366,000	307,000	346,667	1.50	1.26	1.26	1.34
TGNMO, ppm (as CH_4)	2,345	2,431	2,333	2,370	< 0.5	< 0.5	< 0.5	< 0.50
TGNMO, lb/hr (as CH_4)	8.20	8.51	8.27	8.33	< 0.01	< 0.02	< 0.01	< 0.01
TGNMO, ppm (as hexane)	390.8	405.1	388.8	394.9	< 0.08	< 0.08	< 0.08	< 0.08
TGNMO, ppm @ 3% O_2 (as hexane)	448.7	464.8	512.9	475.5	< 0.16	< 0.17	< 0.16	< 0.17
TGNMO, lb/hr (as hexane)	7.35	7.62	7.40	7.46	< 0.01	< 0.01	< 0.01	< 0.01
Destruction Eff. %					> 99.82	> 99.82	> 99.85	> 99.83
Sulfur Compounds:								
H_2S, ppm	20	19.60	17.20	18.93				
Carbonyl Sulfide, ppm	0.11	0.13	0.11	0.12				
Methyl Mercaptan, ppm	0.82	0.88	0.83	0.84				
Ethyl Mercaptan, ppm	< 0.1	< 0.1	< 0.1	< 0.1				
Dimethyl Sulfide, ppm	1.78	1.92	1.83	1.84				
Carbon Disulfide, ppm	< 0.1	< 0.1	< 0.1	< 0.1				
isoprpyl mercaptan, ppm	< 0.1	< 0.1	< 0.1	< 0.1				
n-propyl mercaptan, ppm	< 0.1	< 0.1	< 0.1	< 0.1				
Dimethyl Disulfide,ppm	< 0.1	< 0.1	< 0.1	< 0.1				
Total Sulfur Compounds,								
Total Reduced Sulfur Inlet, ppm	22.70	22.50	20.00	21.73				
SOx Exhaust, lb/hr (as SO_2)[1]					0.318	0.315	0.283	0.305

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

6.0 SAMPLING AND ANALYTICAL PROCEDURES

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

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

$MW_W = MW_D\ (1\text{-}BW_S) + (BW_S)$

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

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

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

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

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 Johnson Yokogawa HR240. 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

CONTINUOUS MONITORING LAB - TVIV

O_2 ANALYZER, PARAMAGNETIC	SERVOMEX SERIES 1400/1420B Serial No.: 01420/B664
Response Time (0-90%)	< 15 seconds
Accuracy	Better than 0.1% O_2 under constant conditions
Temperature	0.005% O_2, 0.04% of reading per degree C change
Output	4-20 mA (isolated), 0-IV (unisolated)
Ranges	0-5%, 10, 25, 50, and 100%
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 ppm, 0-20 ppm, 0-100 ppm, 0-200 ppm, 0-500 ppm, 0-1000 ppm, 0-2000 ppm, 0-5000 ppm

CONTINUOUS MONITORING LAB - TVIV

CO GAS FILTER CORRELATION Non-Dispersive Infrared	THERMO ELECTRON MODEL 48H S/N 48H-35546-250
Response Time (0-95%)	10 seconds
Span Drift	+/- 1% full scale in 24 hours
Zero Drift	+/- 0.2 ppm in 24 hours
Linearity	+/- 1% full scale, all ranges
Accuracy	+/- 0.1 ppm
Output	0-10mV, 0-100mV, 0-1V, 0-5V, 0-10V
Range	1, 2, 5, 10, 20, 50, 100, 200, 500, 1000, 2500, 5000, 10000, 20000, and 50000 ppm
CO_2 NON-DISPERSIVE INFRARED	HORIBA MODEL PIR 2000 S/N 107014
Span Drift	+/- 1% per 24 hours at full scale
Zero Drift	+/- 1% per 24 hours at full scale
Response Time	Selectable 0.5 - 1.2 seconds
Repeatability	+/- 0.5% of full scale
Output	0-10mV, 0-100mV, 0-1V, 0-5V
Range	20 ppm minimum to 100%

CONTINUOUS MONITORING LAB - TVIV

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

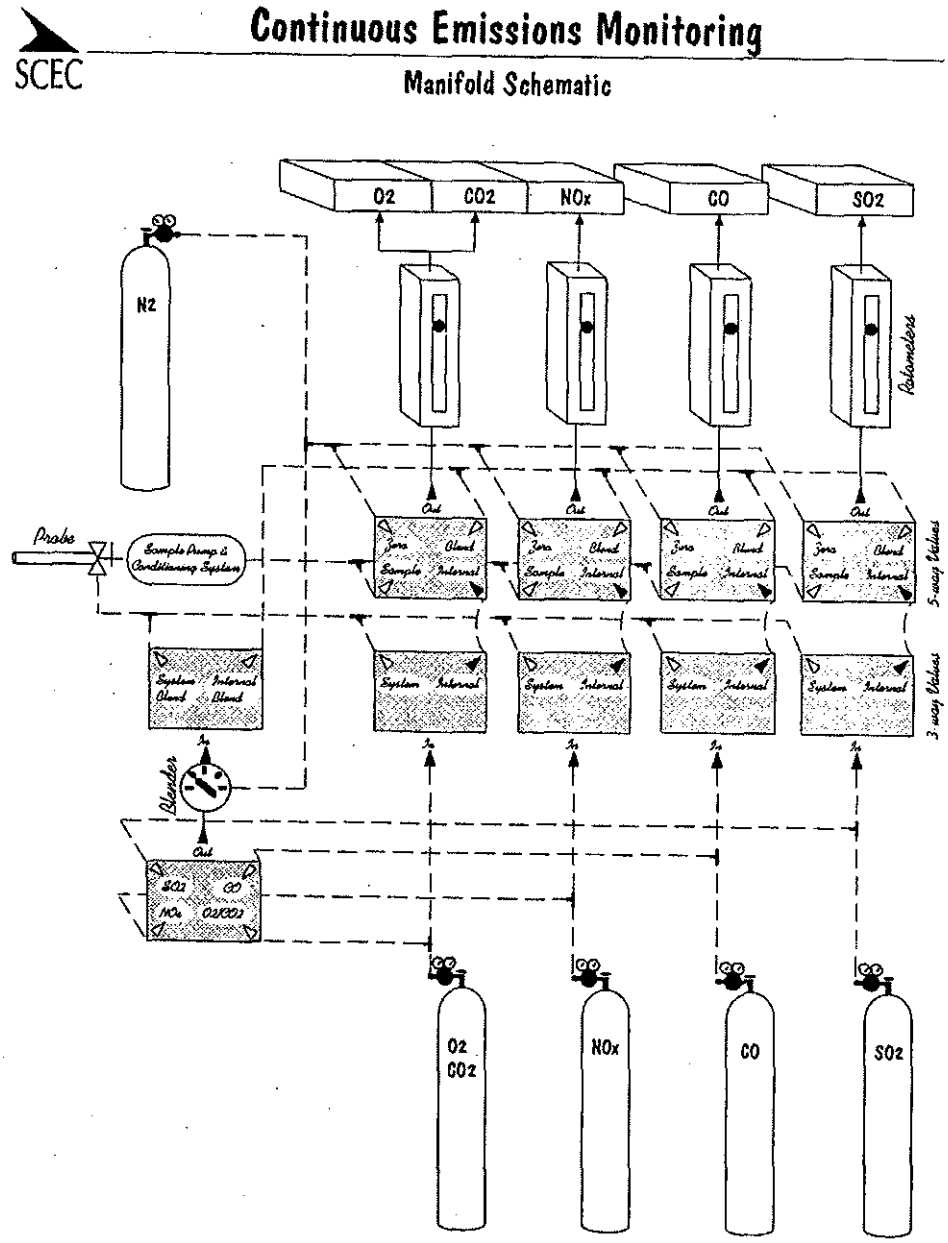
MOBILE EMISSIONS LABORATORY

Fully Insulated

Air Conditioned

On-Board Computer System

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
Bleeder
O2
CO2
NOx
CO
SO2

List of Appendices

Appendix A - NO_x, CO, CO_2, O_2 Data and Strip Charts

Appendix B – Lab Results

Appendix C - Exhaust Volume Flow Data and Field Data Sheets

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Appendix E - Quality Assurance / Quality Control Data

Appendix F - Calculations

Appendix G - Sample Port Diagram

Appendix H – SJVAPCD Permit

Appendix A

NO_x, CO, CO_2, O_2 Data and Strip Charts

SUMMARY OF CONTINUOUS MONITORING DATA

FACILITY:	BAS/Forward/Austin	DATA FOR SAMPLING RUN:		COMPLIANCE RUN 1	
SOURCE ID/CONDITION:	Stockton Flare	DATE:	06/28/06	TIME:	1034-1116
OPERATOR:	TRT	PROJECT No.:	2060-1020		
PARAMETER UNITS	O_2 % VOL DRY	CO_2 % VOL DRY	NO_x PPMV,D	CO PPMV,D	SO_2 PPMV,D
INITIAL ZERO BIAS	0.09	0.04	0.05	-1.20	NA
INITIAL SPAN BIAS	12.96	7.97	46.06	42.30	NA
FINAL ZERO BIAS	0.08	0.07	0.10	0.09	NA
FINAL SPAN BIAS	13.03	7.92	46.00	43.90	NA
AVERAGE ZERO BIAS	0.09	0.06	0.08	-0.56	NA
AVERAGE SPAN BIAS	13.00	7.95	46.03	43.10	NA
BIAS GAS CONCENTRATION	12.85	8.08	46.17	42.74	NA
FULL SCALE RANGE	25	20	50	100	NA
UNCORRECTED CONC.	11.76	7.92	13.52	4.20	NA
CORRECTED CONC.	**11.62**	**8.05**	**13.50**	**4.66**	NA
PPMV @ 3 % O2			26.06	8.99	NA
LB/mmBTU BASED ON HEAT INPUT (MMBTU/HR)	32.49		0.035	0.007	NA
LB/HR BASED ON VOL FLOW (DSCFM)	11,685		1.13	0.24	NA

SUMMARY OF CONTINUOUS MONITORING DATA

FACILITY:	BAS/Forward/Austin	DATA FOR SAMPLING RUN:		COMPLIANCE RUN 2	
SOURCE ID/CONDITION:	Stockton Flare	DATE:	06/28/06	TIME:	1143-1225
OPERATOR:	TRT	PROJECT No.:	2060-1020		
PARAMETER UNITS	O_2 % VOL DRY	CO_2 % VOL DRY	NO_x PPMV,D	CO PPMV,D	SO_2 PPMV,D
INITIAL ZERO BIAS	0.08	0.07	0.10	0.09	NA
INITIAL SPAN BIAS	13.03	7.92	46.00	43.90	NA
FINAL ZERO BIAS	0.06	0.05	0.11	-0.20	NA
FINAL SPAN BIAS	12.90	7.88	45.60	44.90	NA
AVERAGE ZERO BIAS	0.07	0.06	0.11	-0.06	NA
AVERAGE SPAN BIAS	12.97	7.90	45.80	44.40	NA
BIAS GAS CONCENTRATION	12.85	8.08	46.17	42.74	NA
FULL SCALE RANGE	25	20	50	100	NA
UNCORRECTED CONC.	12.26	7.52	12.46	0.71	NA
CORRECTED CONC.	**12.15**	**7.69**	**12.48**	**0.74**	NA
PPMV @ 3 % O2			25.53	1.50	NA
LB/mmBTU BASED ON HEAT INPUT (MMBTU/HR)	32.51		0.034	0.001	NA
LB/HR BASED ON VOL FLOW (DSCFM)	12,384		1.11	0.04	NA

SUMMARY OF CONTINUOUS MONITORING DATA

FACILITY:	BAS/Forward/Austin	DATA FOR SAMPLING RUN:		COMPLIANCE RUN 3	
SOURCE ID/CONDITION:	Stockton Flare	DATE:	06/28/06	TIME:	1254-1348
OPERATOR:	TRT	PROJECT No.:	2060-1020		
PARAMETER UNITS	O_2 % VOL DRY	CO_2 % VOL DRY	NO_x PPMV,D	CO PPMV,D	SO_2 PPMV,D
INITIAL ZERO BIAS	0.06	0.05	0.11	-0.20	NA
INITIAL SPAN BIAS	12.90	7.88	45.60	44.90	NA
FINAL ZERO BIAS	0.07	0.04	0.10	-0.80	NA
FINAL SPAN BIAS	12.84	7.78	45.40	44.60	NA
AVERAGE ZERO BIAS	0.07	0.05	0.11	-0.50	NA
AVERAGE SPAN BIAS	12.87	7.83	45.50	44.75	NA
BIAS GAS CONCENTRATION	12.85	8.08	46.17	42.74	NA
FULL SCALE RANGE	25	20	50	100	NA
UNCORRECTED CONC.	11.86	7.73	13.00	1.85	NA
CORRECTED CONC.	**11.84**	**7.98**	**13.12**	**2.22**	NA
PPMV @ 3 % O2			25.91	4.39	NA
LB/mmBTU BASED ON HEAT INPUT (MMBTU/HR)	27.65		0.035	0.004	NA
LB/HR BASED ON VOL FLOW (DSCFM)	10,296		0.97	0.10	NA

BAS/Forward/Austin
Stockton Flare
June 28, 2006
RAW DAS DATA - COMPLIANCE RUN 1
TIME: 1034-1116

DATA PT	DATE	TIME	O2 % VD	CO2 % VD	NOx PPMVD	CO PPMVD
1	06/28	10:34:33	11.84	7.79	13.15	-1.1
2	06/28	10:35:33	11.61	8.04	12.70	4.6
3	06/28	10:36:33	11.49	8.06	13.99	7.8
4	06/28	10:37:33	11.40	8.27	14.15	6.8
5	06/28	10:38:33	11.60	8.02	14.20	8.8
6	06/28	10:39:33	11.56	8.11	13.85	8.7
7	06/28	10:40:33	12.01	7.70	13.34	9.1
8	06/28	10:41:33	11.79	7.91	13.30	8.5
9	06/28	10:42:33	11.86	7.80	13.59	7.0
10	06/28	10:43:33	11.98	7.73	13.15	6.4
11	06/28	10:44:33	11.69	7.99	13.85	6.0
12	06/28	10:45:33	11.90	7.92	12.95	3.4
13	06/28	10:46:33	11.98	7.68	13.40	1.9
14	06/28	10:47:33	12.04	7.82	12.85	1.1
15	06/28	10:48:33	11.81	7.95	13.15	0.9
16	06/28	10:49:33	11.92	7.79	13.25	0.5
17	06/28	10:50:33	11.64	7.89	14.30	0.4
18	06/28	10:51:33	11.88	7.87	13.45	-0.5
19	06/28	10:52:33	11.78	7.93	13.45	-0.6
20	06/28	10:53:33	11.89	7.88	13.30	-1.3
21	06/28	10:54:33	12.21	7.57	12.65	-1.1
22	06/28	10:55:33	12.51	7.24	12.25	-1.2
23	06/28	10:59:33	11.56	8.20	13.30	3.9
24	06/28	11:00:33	10.90	8.70	14.39	6.6
25	06/28	11:01:33	11.30	8.21	14.83	9.4
26	06/28	11:02:33	11.61	8.13	14.35	5.4
27	06/28	11:03:33	11.03	8.50	15.13	6.4
28	06/28	11:04:33	11.06	8.61	14.89	7.5
29	06/28	11:05:33	11.16	8.37	15.24	7.4
30	06/28	11:06:33	11.33	8.32	14.45	7.5
31	06/28	11:07:33	11.20	8.41	14.45	7.1
32	06/28	11:08:33	11.15	8.49	14.60	6.8
33	06/28	11:09:33	11.07	8.43	14.98	6.7
34	06/28	11:10:33	11.23	8.42	14.40	6.3
35	06/28	11:11:33	12.09	7.60	12.80	5.3
36	06/28	11:12:33	11.95	7.78	13.00	3.0
37	06/28	11:13:33	11.92	7.74	13.11	1.9
38	06/28	11:14:33	13.08	6.66	11.75	1.0
39	06/28	11:15:33	13.21	6.69	10.37	0.1
40	06/28	11:16:33	13.33	6.53	10.37	-0.3
AVERAGES			**11.76**	**7.92**	**13.52**	**4.20**

BAS/Forward/Austin
Stockton Flare
June 28, 2006
RAW DAS DATA - COMPLIANCE RUN 2
TIME: 1143-1225

DATA PT	DATE	TIME	O2 % VD	CO2 % VD	NOx PPMVD	CO PPMVD
1	06/28	11:43:43	10.58	9.05	16.39	1.1
2	06/28	11:44:43	10.91	8.72	16.05	1.2
3	06/28	11:45:43	10.86	8.74	16.04	1.2
4	06/28	11:46:43	10.53	9.16	16.24	1.2
5	06/28	11:47:43	10.88	8.65	15.79	1.4
6	06/28	11:48:43	10.96	8.62	15.09	1.5
7	06/28	11:49:43	10.91	8.69	15.64	1.2
8	06/28	11:50:43	10.92	8.69	15.34	1.2
9	06/28	11:51:43	11.06	8.55	14.80	1.1
10	06/28	11:52:43	11.35	8.38	14.26	1.1
11	06/28	11:53:43	10.94	8.89	14.70	1.2
12	06/28	11:54:43	10.82	8.90	15.49	0.9
13	06/28	11:55:43	12.12	7.61	12.81	0.9
14	06/28	11:56:43	12.89	7.16	10.29	0.6
15	06/28	11:57:43	13.22	6.64	10.18	0.2
16	06/28	11:58:43	13.10	6.74	10.53	-0.1
17	06/28	11:59:43	12.89	7.11	10.08	-0.1
18	06/28	12:00:43	13.25	6.54	10.23	0.1
19	06/28	12:01:43	13.24	6.78	9.64	-0.1
20	06/28	12:02:43	13.23	6.69	10.03	0.1
21	06/28	12:03:43	13.47	6.57	9.79	-0.1
22	06/28	12:04:43	13.33	6.65	10.33	-0.2
23	06/28	12:05:43	13.75	6.26	9.84	0.1
24	06/28	12:06:43	13.64	6.40	9.09	-0.1
25	06/28	12:07:43	13.66	6.24	9.44	-0.1
26	06/28	12:08:43	14.85	5.06	8.53	0.6
27	06/28	12:09:43	15.17	5.01	7.30	0.4
28	06/28	12:10:43	13.60	6.46	8.78	0.3
29	06/28	12:11:43	14.69	5.56	7.95	0.3
30	06/28	12:12:43	13.64	6.35	9.34	-0.2
31	06/28	12:16:43	12.19	7.61	12.91	1.8
32	06/28	12:17:43	11.18	8.50	13.95	1.0
33	06/28	12:18:43	11.50	8.13	14.46	0.7
34	06/28	12:19:43	11.48	8.09	14.26	0.9
35	06/28	12:20:43	11.36	8.05	14.90	0.9
36	06/28	12:21:43	11.57	8.02	13.60	1.2
37	06/28	12:22:43	11.38	8.17	13.35	1.2
38	06/28	12:23:43	11.69	7.86	13.60	1.2
39	06/28	12:24:43	11.87	7.86	14.06	1.4
40	06/28	12:25:43	11.67	7.82	13.35	1.2
AVERAGES			**12.26**	**7.52**	**12.46**	**0.71**

BAS/Forward/Austin
Stockton Flare
June 28, 2006
RAW DAS DATA - COMPLIANCE RUN 3
TIME: 1302-1350

DATA PT	DATE	TIME	O2 % VD	CO2 % VD	NOx PPMVD	CO PPMVD
1	06/28	12:54:31	12.03	7.66	12.11	-0.5
2	06/28	12:55:31	12.19	7.54	12.46	-0.5
3	06/28	12:56:31	11.96	7.79	12.80	0.1
4	06/28	12:57:31	11.67	7.90	13.51	-0.4
5	06/28	12:58:31	12.08	7.70	12.51	-0.5
6	06/28	12:59:31	11.87	7.87	13.11	-0.2
7	06/28	13:00:31	11.60	7.95	13.90	1.6
8	06/28	13:01:31	11.41	7.99	14.66	2.3
9	06/28	13:02:31	11.70	7.84	13.85	1.6
10	06/28	13:03:31	11.61	8.13	13.86	1.9
11	06/28	13:04:31	11.55	8.14	13.85	2.4
12	06/28	13:05:31	11.60	7.95	14.00	3.4
13	06/28	13:06:31	11.63	7.91	13.75	4.0
14	06/28	13:07:31	11.70	8.03	13.55	4.1
15	06/28	13:08:31	11.18	8.39	15.13	4.6
16	06/28	13:09:31	11.73	7.97	13.11	4.6
17	06/28	13:10:31	11.74	7.87	13.45	3.4
18	06/28	13:11:31	11.62	8.02	13.75	2.7
19	06/28	13:12:31	11.57	8.06	13.75	2.0
20	06/28	13:13:31	11.54	8.09	13.95	1.6
21	06/28	13:14:31	11.08	8.50	15.29	1.3
22	06/28	13:15:31	11.51	8.12	14.51	1.0
23	06/28	13:16:31	11.44	8.32	14.26	0.8
24	06/28	13:17:31	11.76	7.74	14.26	0.5
25	06/28	13:18:31	11.79	7.86	13.25	0.2
26	06/28	13:19:31	11.95	7.63	13.31	-0.1
27	06/28	13:20:31	12.03	7.80	12.51	-0.1
28	06/28	13:21:31	11.96	7.71	13.11	-0.4
29	06/28	13:22:31	12.22	7.44	12.66	-0.4
30	06/28	13:38:42	11.69	5.50	7.94	0.1
31	06/28	13:39:42	11.96	7.67	6.50	3.2
32	06/28	13:40:42	11.91	7.76	13.70	4.1
33	06/28	13:41:42	12.19	7.39	13.35	4.8
34	06/28	13:42:42	12.14	7.41	13.55	5.2
35	06/28	13:43:42	11.67	7.99	13.60	5.6
36	06/28	13:44:42	11.86	7.78	13.06	3.3
37	06/28	13:45:42	12.82	6.93	11.58	2.9
38	06/28	13:46:42	12.89	6.96	10.63	1.7
39	06/28	13:47:42	12.76	7.07	10.98	1.1
40	06/28	13:48:42	12.94	6.88	10.89	1.1
AVERAGES			**11.86**	**7.73**	**13.00**	**1.85**

SCEC
CONTINUOUS EMISSIONS MONITORING SYSTEM TEST DATA

Test Number: CEMS-2 | Date: 6-28-06
Client: BAS | Condition: AS FOUND
Location: STOCKTON | Operator: MLT
Unit: FLARE | Barometric: 30.00

Gas Temperatures

Stack: SET POINT 1525°F @ TOP T/C | Stack Knockout: 36
Probe: HOT | Ambient: 85
Heated Line: NA | Chiller: 36

RESET NO_x

	Analyzer Values				
	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Analyzer Span Range	25	20	50	100	
Mid Span Cal Gas Value	12.85	8.078	17.32	42.74	
High Span Cal Gas Value	TMT ~~21.38~~ 21.10	16.07	46.17	82.95	
	As Found Analyzer Readings				
Zero	0.07	0.05	-0.01	1.0	
Mid Span	12.98	8.08	16.58	43.7	
High Span	20.80	16.08	46.55	82.8	
	Pre-Test Analyzer System Bias				
System Bias Zero	0.09	0.04	0.05	-1.2	
System Bias Span	12.96	7.97	TMT ~~0.05~~ 46.06	42.3	

Sample Point	Time		Raw Test Data				
	Start	Stop	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
	~~1033~~	~~1120~~					
	1034	1116					
			Post-Test Analyzer System Bias				
System Bias Zero			0.08	0.07	0.10	0.09	
System Bias Span			13.03	7.92	46.00	43.9	
			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			11.76	7.92	13.52	4.20	
Corrected Average			11.62	8.05	13.50	4.66	

SCEC
CONTINUOUS EMISSIONS MONITORING SYSTEM TEST DATA

Test Number:	CEMS - 3	Date:	6-28-06
Client:	BAS	Condition:	AS FOUND
Location:	STOCKTON	Operator:	TRT
Unit:		Barometric:	30.00

Gas Temperatures

Stack:	S.P. 1525 @ TOP T.C.	Stack Knockout:	36
Probe:	HOT	Ambient:	88
Heated Line:	NA	Chiller:	NA

	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Analyzer Values					
Analyzer Span Range	25	20	50	100	
Mid Span Cal Gas Value	12.85	8.078	17.32 / 17.9	42.74	
High Span Cal Gas Value	~~21.38 TRT~~ 21.10	16.07	46.17 / 46.6	82.95	
As Found Analyzer Readings					
Zero					
Mid Span					
High Span					
Pre-Test Analyzer System Bias					
System Bias Zero	SEE CEM #2 POST BIAS				
System Bias Span					

Sample Point	Time Start	Time Stop	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Raw Test Data							
	1143	1225					
Post-Test Analyzer System Bias −0.2							
System Bias Zero			0.06	0.05	0.18	~~0.44~~ 0.14	
System Bias Span			12.90	7.88	45.60	44.9	
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			12.26	7.52	12.46	0.71	
Corrected Average			12.15	7.69	12.48	0.74	

SCEC
CONTINUOUS EMISSIONS MONITORING SYSTEM TEST DATA

Test Number:	CEMS- 4	Date:	6-28-06
Client:	BAS	Condition:	AS FOUND
Location:	STOCKTON	Operator:	TRT
Unit:	FLARE	Barometric:	30.00

Gas Temperatures

Stack:	S.P. 1525 @ TOP TC.	Stack Knockout:	36
Probe:	HOT	Ambient:	92
Heated Line:	NA	Chiller:	NA

	Analyzer Values				
	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Analyzer Span Range	SEE CEM #3				
Mid Span Cal Gas Value					
High Span Cal Gas Value					
	As Found Analyzer Readings				
Zero					
Mid Span					
High Span					
	Pre-Test Analyzer System Bias				
System Bias Zero	SEE CEM #3			POST BIAS	
System Bias Span					

Sample Point	Time Start	Time Stop	Raw Test Data O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
	~~1302~~ 1254	~~1350~~ 1348					

	Post-Test Analyzer System Bias				NO2 CONV
System Bias Zero	0.09	~~TRT~~ 0.04	0.10	-0.8	CYL = 17.34
System Bias Span	12.84	7.78	45.40	44.6	NO = 0.32
	Post-Test Analyzer Calibration				NO_X = 17.93
Zero	0.06	0.04	-0.01	1.5	
Mid Span	12.92	7.94	16.43	44.0	
High Span	21.46	15.98	46.20	83.8	
	Test Results Summary				
	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Raw Average	11.86	7.73	13.60	1.85	
Corrected Average	11.84	7.98	13.12	2.22	

SCEC
CONTINUOUS EMISSIONS MONITORING SYSTEM TEST DATA

Test Number: CEMS - 1
Client: BAS
Location: STOCKTON
Unit: FLARE

Date: 6-28-06
Condition: NORM
Operator: TRT
Barometric:

Gas Temperatures

Stack: ~~HOT~~
Probe: HOT
Heated Line: NA

Stack Knockout: 36
Ambient: 80
Chiller: NA

1525°F set point Top T/C.

	Analyzer Values (0.5 / 0.4 / 1.0 / 2.0)				
	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Analyzer Span Range	25	20	50	100	
Mid Span Cal Gas Value	12.85	~~16.07~~ 8.08	17.32 / 17.9	42.74	
High Span Cal Gas Value	~~21.38~~ 21.10	16.07	46.17 / 46.6	82.95	
	As Found Analyzer Readings				
Zero	0.07	0.05	0.10	1.0	
Mid Span	12.98	8.08	17.8	43.7	
High Span	20.80	16.08	46.75	82.8	
	Pre-Test Analyzer System Bias				
System Bias Zero	0.07	0.03	0.19	0.7	
System Bias Span	12.87	7.95	47.7	43.7	

Sample Point	Time		**Raw Test Data**				
	Start	Stop	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
	843						
		RUN 1	NOT				
		USED					
		NOX FAILED SPS		BIAS CAL			
		DUE TO TEMP		DRIFT			

	Post-Test Analyzer System Bias				
System Bias Zero	0.09	0.04	~~-1.2~~ 0.19	-1.2	
System Bias Span	12.96	7.97	49.38	~~47.72~~ 42.3	
	Post-Test Analyzer Calibration				
Zero		RESET	-0.01		
Mid Span		NOX	16.58		
High Span			46.55		

	Test Results Summary				
	O_2 (%)	CO_2 (%)	NO_x (ppm)	CO (ppm)	SO_2 (ppm)
Raw Average					
Corrected Average	A = 11				

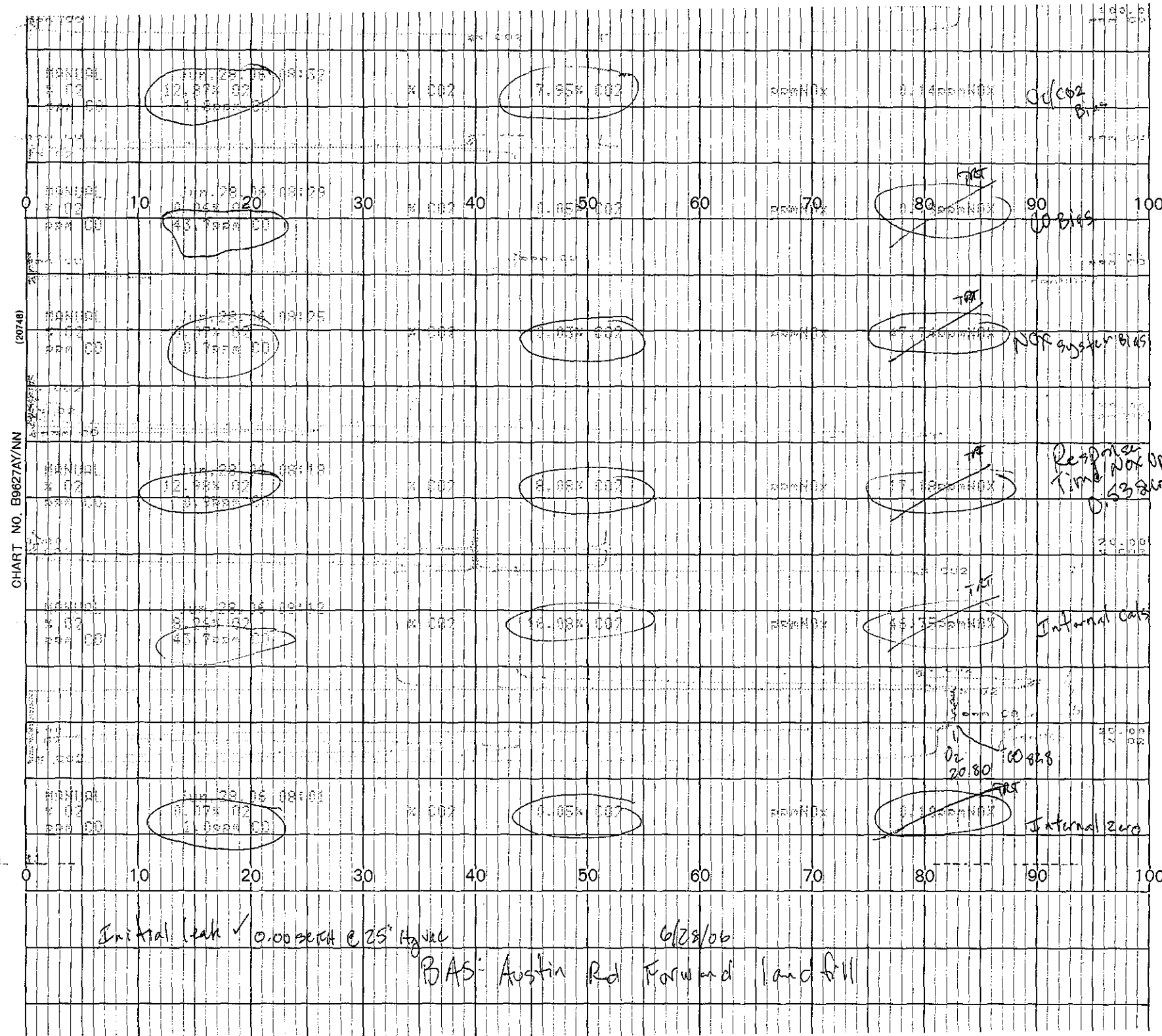


CHART NO. B9627AY/NN
(20748)
0
10
20
30
40
50
60
70
80
90
100
Initial leak ✓ 0.00 sec/cc @ 25" Hg vac
6/28/06
BAS- Austin Rd Forward landfill

A - 12

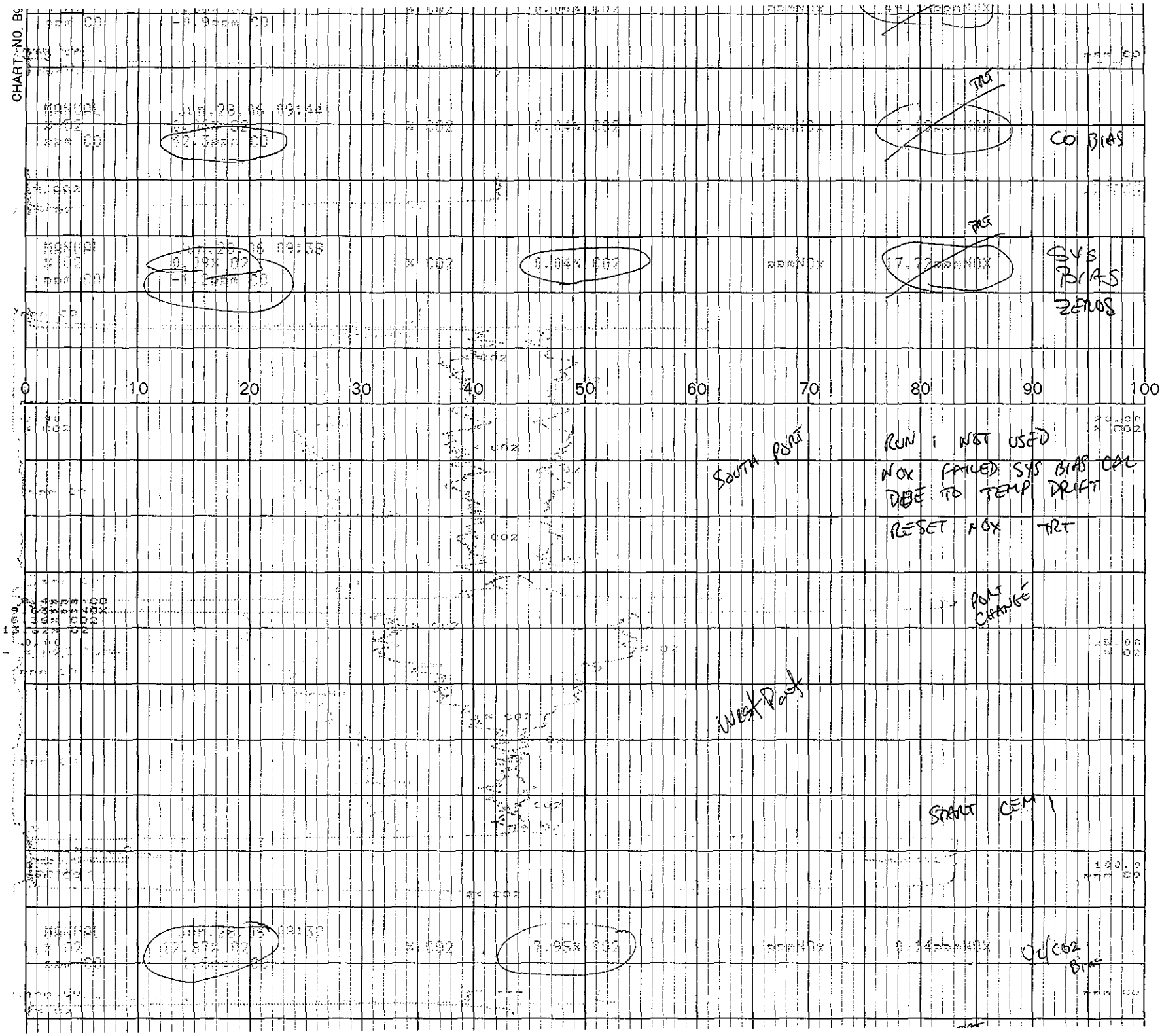
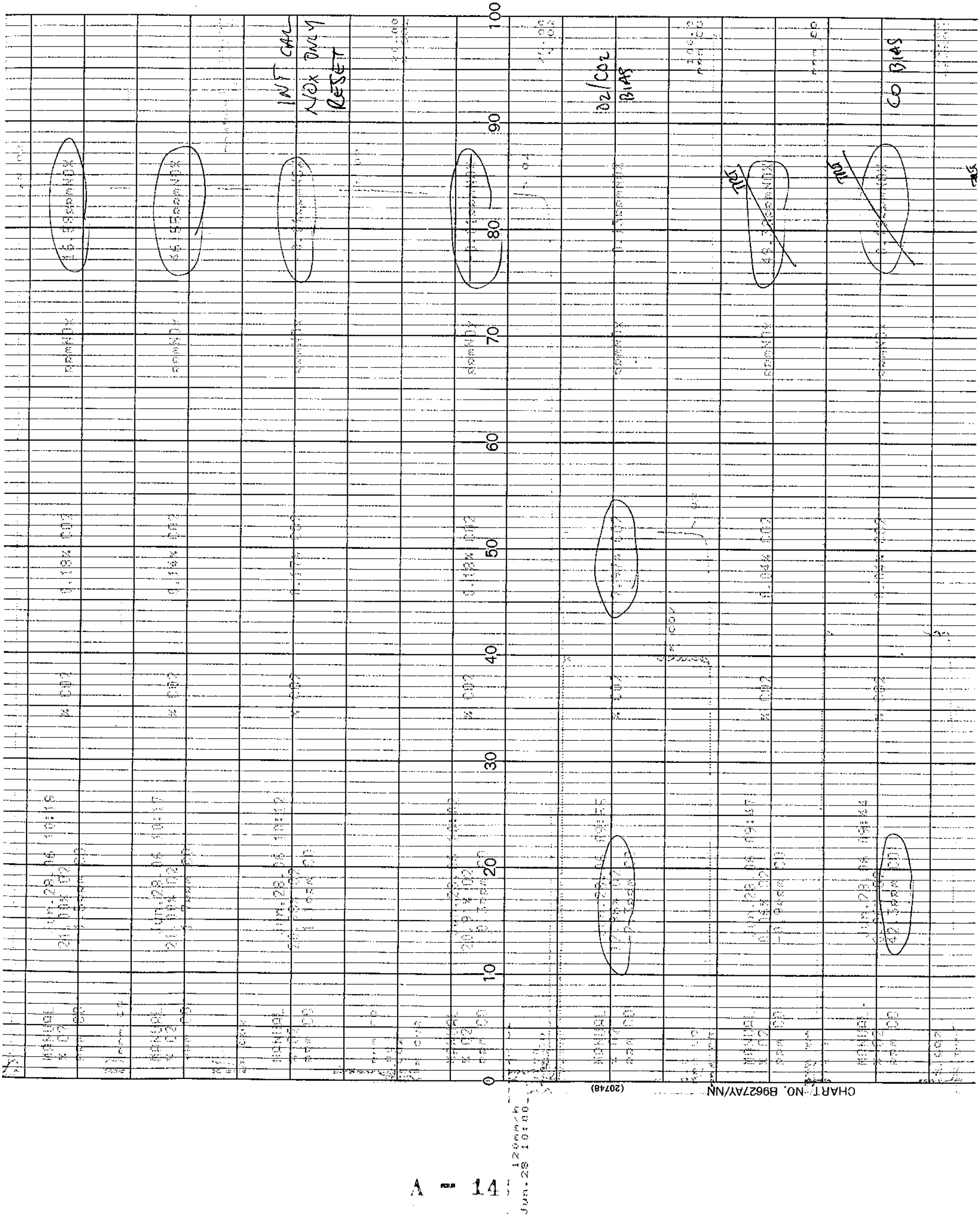
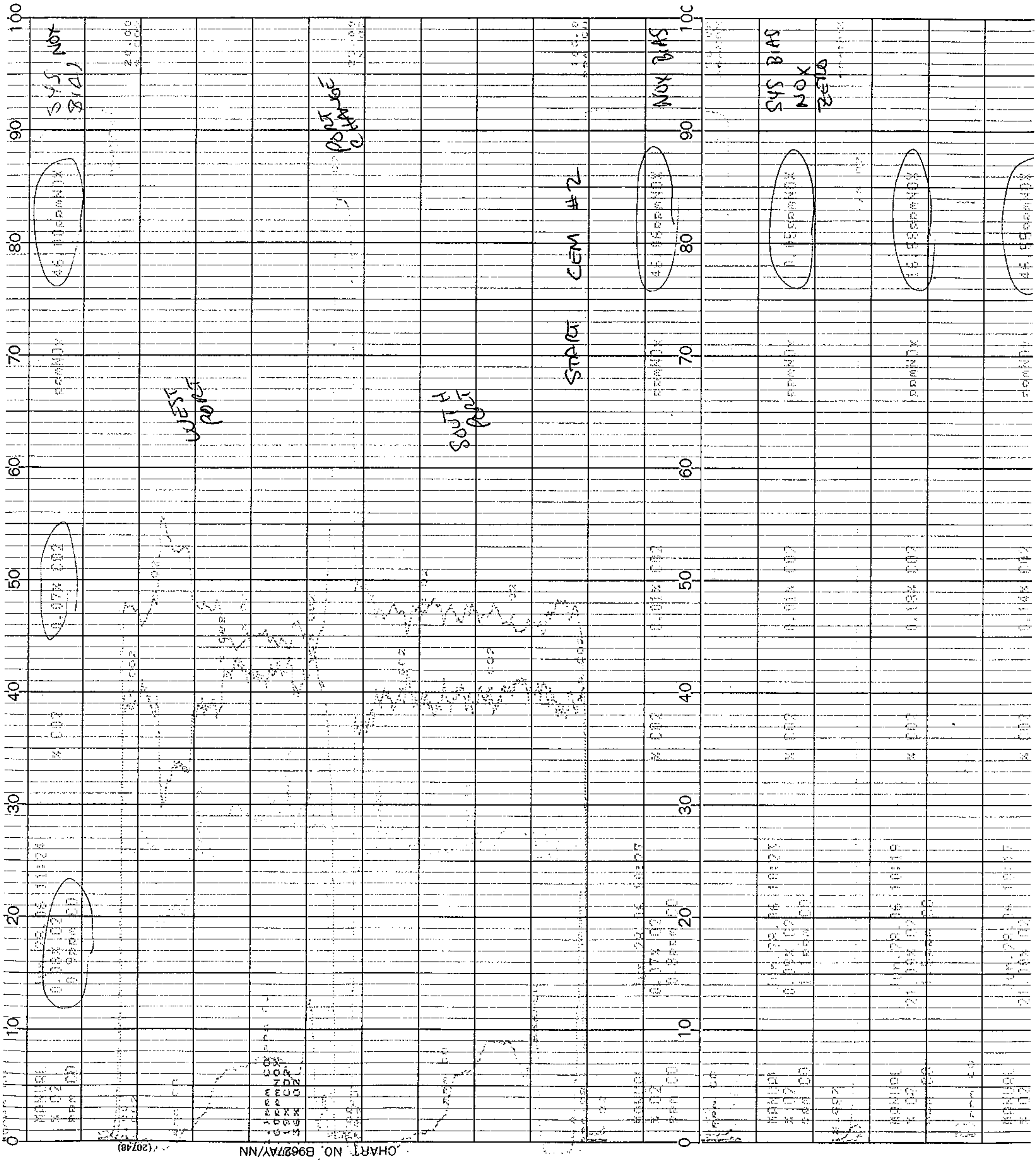
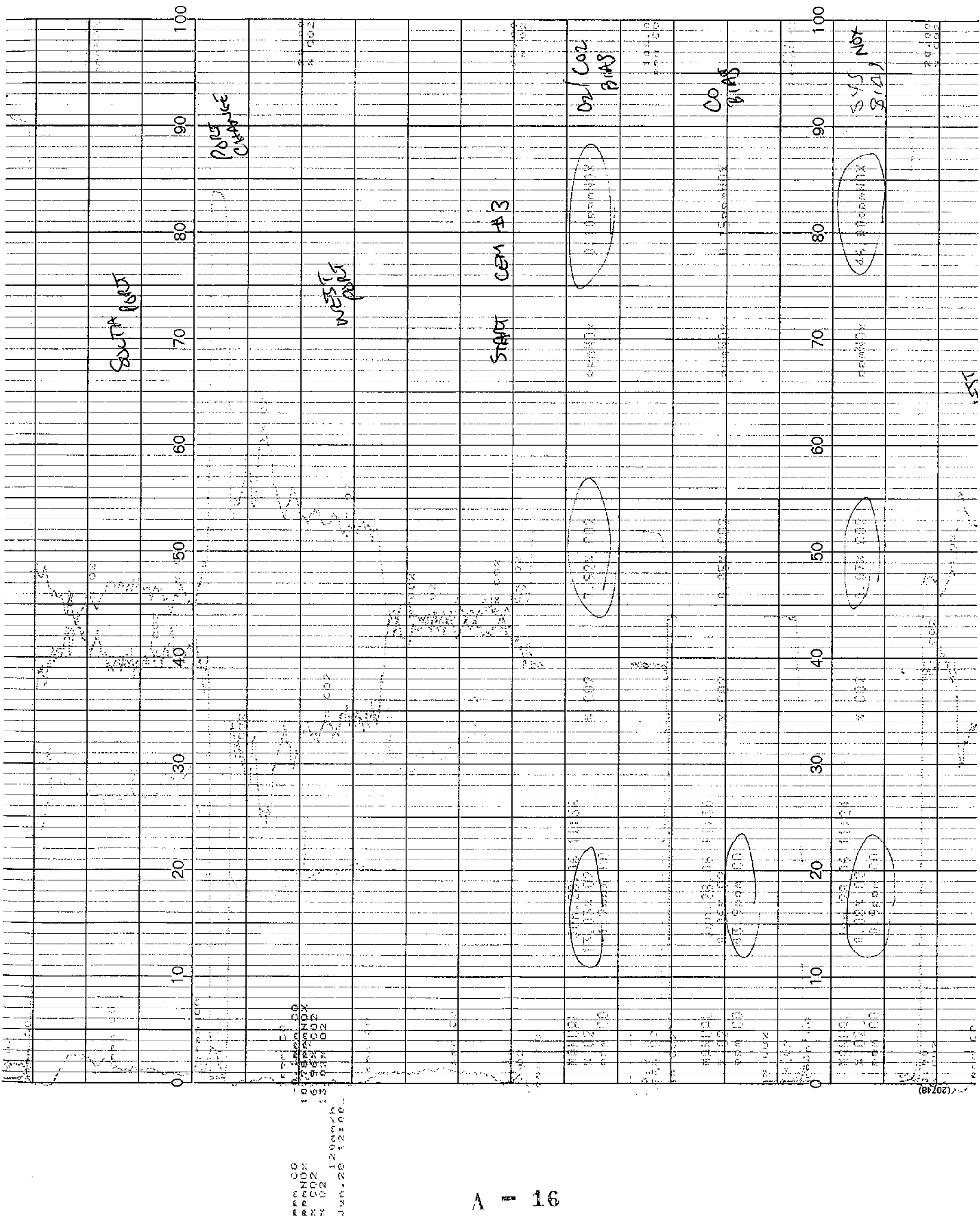


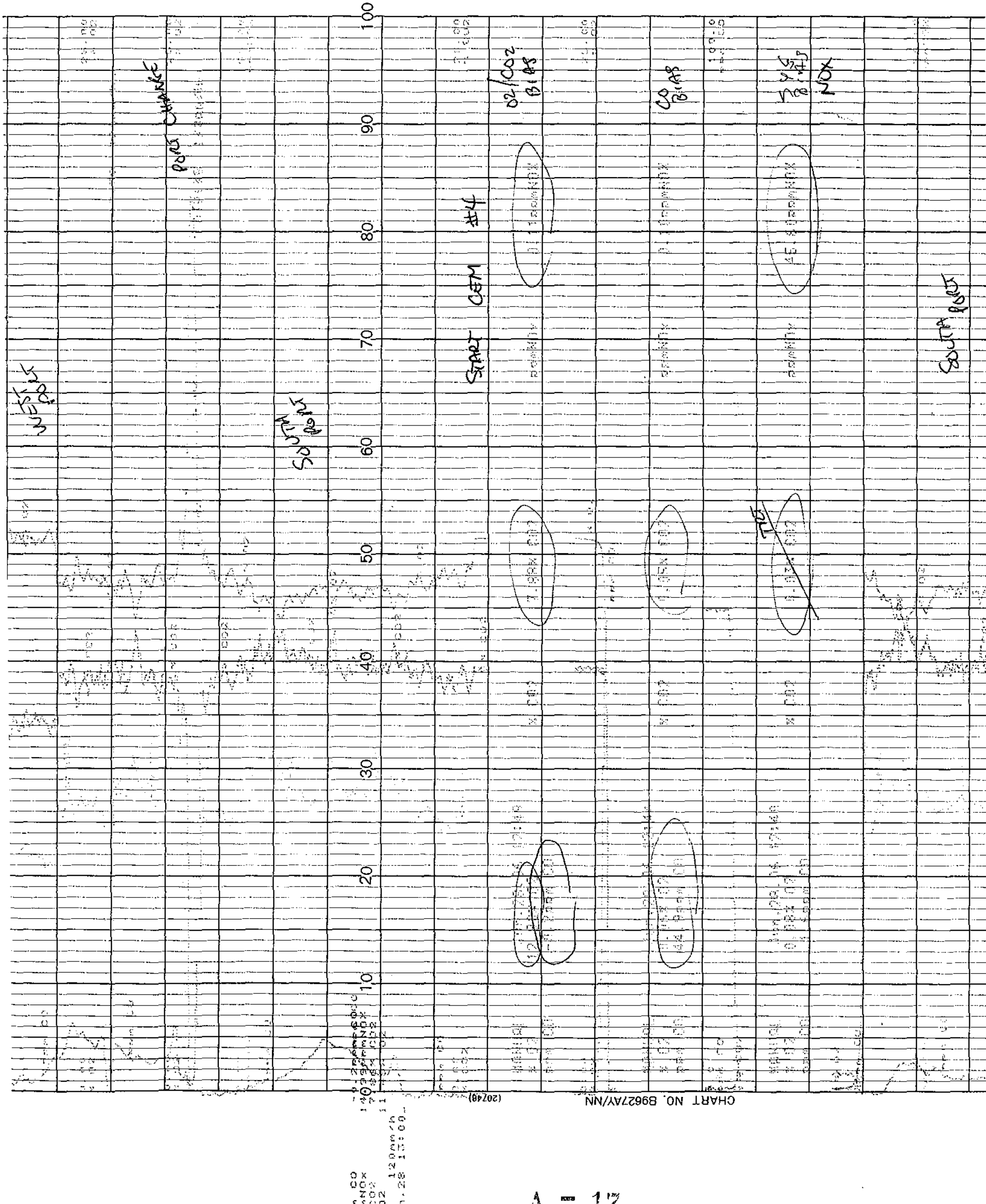
CHART NO. BC
TRS
CO BIAS
TRS
SYS
GAS
BIAS
ZEROS
0
10
20
30
40
50
60
70
80
90
100
SOUTH PORT
RUN 1 NOT USED
NOX FAILED SYS BIAS CAL
DUE TO TEMP DRIFT
RESET NOX HRT
FULL CHANGE
WEST PORT
START CEM
O2/CO2 BIAS


INT CAL
NOx ONLY
RESET
O2/CO2
BIAS
CO BIAS
CHART NO. B9627AV/NN
(20748)


SYS NOT BIAS
PORT CHANGE
START CEM #2
NOX BIAS
SYS BIAS NOX ZERO
WEST PORT
SOUTH PORT
CHART NO. B9627AY/NN



SOUTH PORT
PORT CHANGE
WEST PORT
START CEM #3
O2/CO2 BIAS
CO BIAS
SYS NOT BIAS
ppm CO
ppm NOx
ppm CO2
% O2
Jun.28 12:00
120mm/h



START CEM #4
WEST POINT
SOUTH POINT
PORT CHANGE
O2/CO2 BIAS
CO BIAS
SYS BIAS NOX
CHART NO. B9627AY/NN

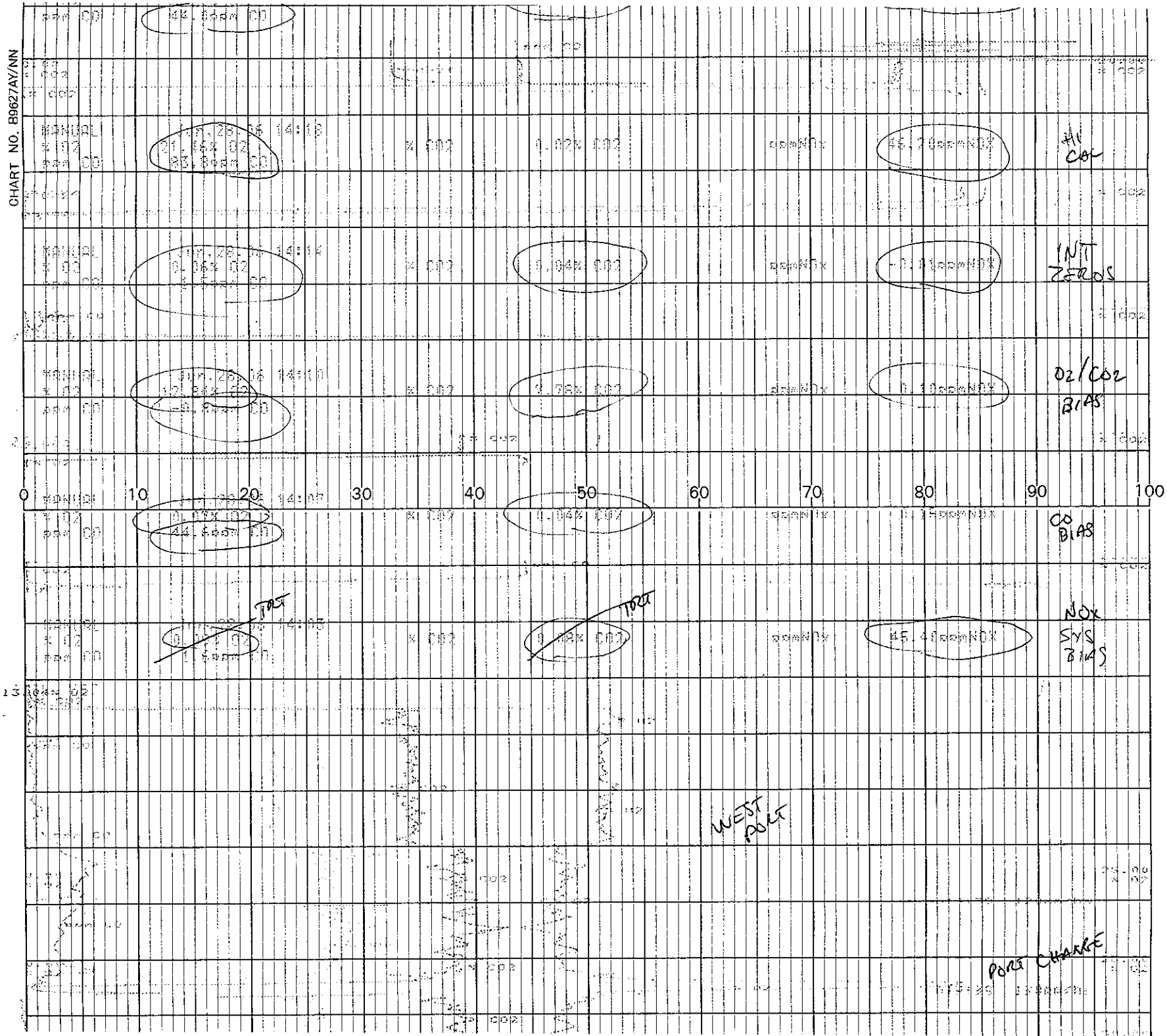
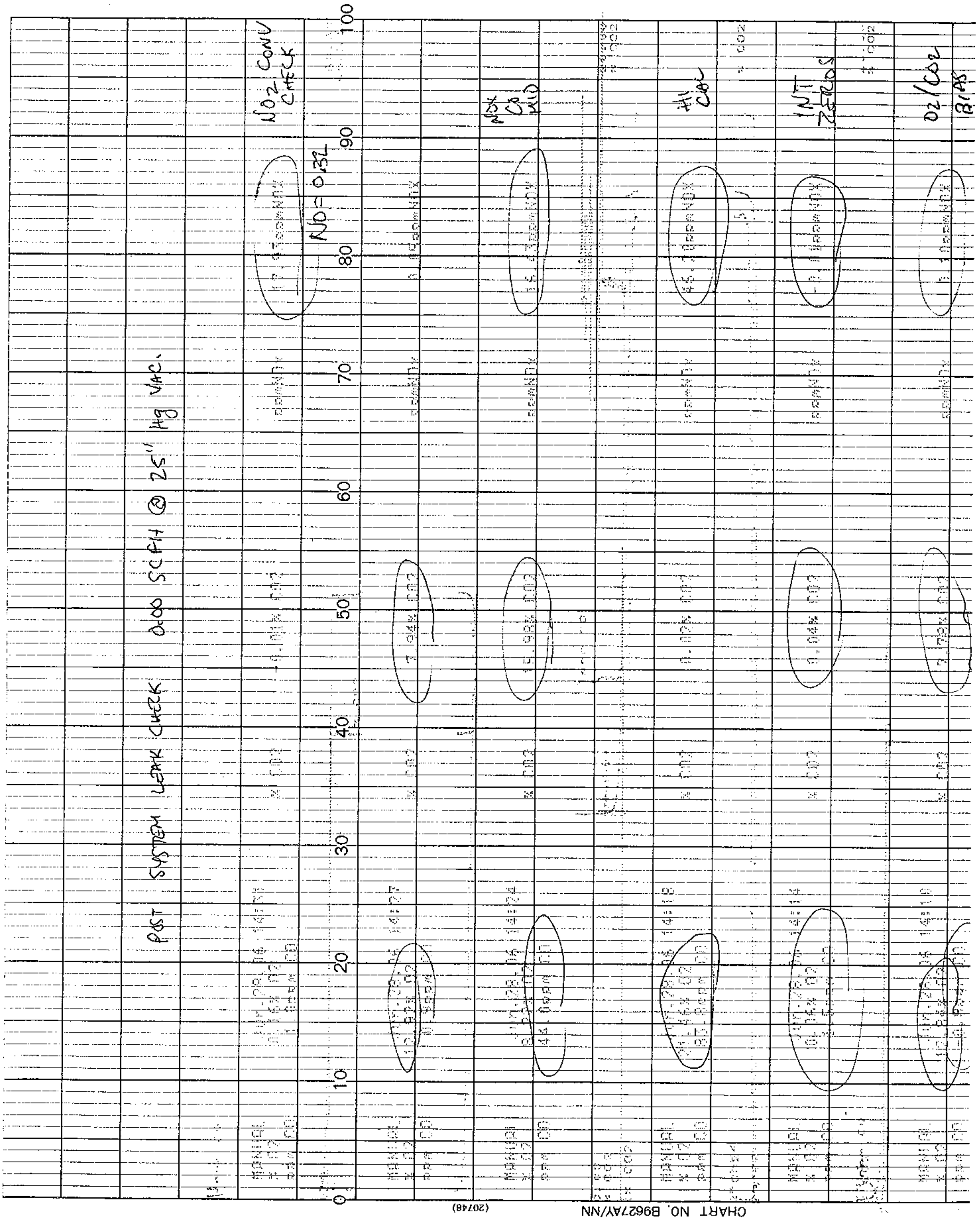


CHART NO. B9627AY/NN
0
10
20
30
40
50
60
70
80
90
100
HI CO
INT ZEROS
O2/CO2 BIAS
CO BIAS
NOx SYS BIAS
TRS
TRS
WEST POLE
PORT CHANGE


POST SYSTEM LEAK CHECK 0.00 SCFH @ 25" Hg VAC.
NO2 CONV CHECK
NO = 0.32
NOx CO MID
HI CAL
INT ZEROS
O2/CO2 BIAS
CHART NO. B9627AY/NN
(20748)

Appendix B

Lab Results

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

environmental consultants
laboratory services

July 7, 2006 LTR/239/06

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

re: BAS / Forward / Austin

Dear Tom:

Please find enclosed the laboratory analysis reports, quality assurance summary, and the chain of custody form for a total of six Tedlar bag samples received June 29, 2006.

The Tedlar bag samples were analyzed for SCAQMD 309.71 components, permanent gases, speciated hydrocarbons, and calculated for BTU as requested on the chain of custody form.

Sincerely,

AtmAA, Inc.

Michael L. Porter
Laboratory Director

Encl.
MLP/krm

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LABORATORY ANALYSIS REPORT

Speciated Hydrocarbons Analysis in Tedlar Bag Samples

Report Date: July 3, 2006
Client: SCEC
Site: BAS / Forward
Project No.: 2060.1020

Date Received: June 29, 2006
Date Analyzed: July 1, 2006

ANALYSIS DESCRIPTION

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

AtmAA Lab No.:	01806-9	01806-10	(repeat)	01806-11
Sample ID:	Inlet #1	Inlet #2	Inlet #2	Inlet #3
	(Concentration in ppmv, component)			
Methane	367000	366000	---	307000
non-methane hydrocarbons analysis by carbon number grouping	(Concentration in ppmv, component)			
C2	2.41	2.41	2.43	2.41
C3	24.44	24.31	24.30	24.51
C4	15.18	15.58	15.09	15.06
C5	69.02	69.51	70.58	69.09
C6	62.35	63.13	64.34	60.80
C7	46.70	47.76	49.78	46.64
C8	33.80	34.89	36.28	33.85
C9	44.62	45.79	46.42	44.22
C10	34.33	35.53	35.86	33.29
C11	9.15	9.39	9.81	9.88
C12	3.31	3.85	4.10	3.54
C13	0.31	0.57	0.59	0.41
TNMHC	2345	2404	2457	2333

TNMHC - total non-methane hydrocarbons as ppmv methane.

Michael L. Porter
Laboratory Director

LABORATORY ANALYSIS REPORT

Speciated Hydrocarbons Analysis in Tedlar Bag Samples

Report Date: July 3, 2006
Client: SCEC
Site: BAS / Forward
Project No.: 2060.1020

Date Received: June 29, 2006
Date Analyzed: July 1, 2006

ANALYSIS DESCRIPTION

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

AtmAA Lab No.:	01806-12	01806-13	(repeat)	01806-14
Sample ID:	Exhaust #1	Exhaust #2	Exhaust #2	Exhaust #3
	(Concentration in ppmv, component)			
Methane	1.50	1.24	1.27	1.26
non-methane hydrocarbons analysis by carbon number grouping	(Concentration in ppmv, component)			
C2	<0.1	<0.1	<0.1	<0.1
C3	<0.05	<0.05	<0.05	<0.05
C4	<0.05	<0.05	<0.05	<0.05
C5	<0.05	<0.05	<0.05	<0.05
C6	<0.04	<0.04	<0.04	<0.04
C7	<0.04	<0.04	<0.04	<0.04
C8	<0.04	<0.04	<0.04	<0.04
C9	<0.04	<0.04	<0.04	<0.04
C10	<0.03	<0.03	<0.03	<0.03
C11	<0.03	<0.03	<0.03	<0.03
C12	<0.03	<0.03	<0.03	<0.03
C13	<0.02	<0.02	<0.02	<0.02
TNMHC	<0.5	<0.5	<0.5	<0.5

TNMHC - total non-methane hydrocarbons as ppmv methane.

Michael L. Porter
Laboratory Director

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

Report Date: July 6, 2006
Client: SCEC
Project Location: BAS / Forward
Date Received: June 29, 2006
Date Analyzed: June 29, 2006
AtmAA Lab No.: 01806-9 / Inlet #1

Specific volume, BTU, and F factor are calculated using labortatory analysis results for methane, carbon dioxide, nitrogen, oxygen, total gaseous non-methane organics (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 68° F and 1 atm. The F factor is calculated according to the equation in ASTM D-3588.

Component	Mole %	Wt %	C,H,O,N,S,	Wt.%
Methane	36.65	21.15	Carbon	27.78
Carbon dioxide	27.25	43.25	Hydrogen	5.31
Nitrogen	28.70	28.99	Oxygen	37.58
Oxygen	5.31	6.13	Nitrogen	28.99
Argon	0.235	0.340	Argon	0.34
$(CH_2)_n$	0.288	0.145	Sulfur	0.00

Specific Volume	13.624
BTU/ft^3	372
BTU/ lb.	5075
F (factor)	9578

dry gas at 68° F, 1 atm, where CH4-1010, TGNMO-802 BTU/cu.ft.

Component	Specific volume reference values *	
Methane	23.35	(ft^3/lb)
Carbon dioxide	8.59	
Nitrogen	13.54	
Oxygen	11.87	
Argon	9.52	
(CH2)n	21	

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

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

Report Date: July 6, 2006
Client: SCEC
Project Location: BAS / Forward
Date Received: June 29, 2006
Date Analyzed: June 29, 2006
AtmAA Lab No.: 01806-10 / Inlet #2

Specific volume, BTU, and F factor are calculated using labortatory analysis results for methane, carbon dioxide, nitrogen, oxygen, total gaseous non-methane organics (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 68° F and 1 atm. The F factor is calculated according to the equation in ASTM D-3588.

Component	Mole %	Wt %	C,H,O,N,S, Wt.%	
Methane	36.60	21.10	Carbon	27.72
Carbon dioxide	27.20	43.13	Hydrogen	5.30
Nitrogen	28.90	29.16	Oxygen	37.48
Oxygen	5.30	6.12	Nitrogen	29.16
Argon	0.235	0.339	Argon	0.34
$(CH_2)_n$	0.312	0.157	Sulfur	0.00

Specific Volume	13.626
BTU/ft^3	372
BTU/ lb.	5071
F (factor)	9572

dry gas at 68° F, 1 atm, where CH4-1010, TGNMO-802 BTU/cu.ft.

Component	Specific volume reference values *	
Methane	23.35	(ft^3/lb)
Carbon dioxide	8.59	
Nitrogen	13.54	
Oxygen	11.87	
Argon	9.52	
(CH2)n	21	

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

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

Report Date: July 6, 2006
Client: SCEC
Project Location: BAS / Forward
Date Received: June 29, 2006
Date Analyzed: June 29, 2006
AtmAA Lab No.: 01806-11 / Inlet #3

Specific volume, BTU, and F factor are calculated using labortatory analysis results for methane, carbon dioxide, nitrogen, oxygen, total gaseous non-methane organics (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 68° F and 1 atm. The F factor is calculated according to the equation in ASTM D-3588.

Component	Mole %	Wt %	C,H,O,N,S,	Wt.%
Methane	30.70	17.71	Carbon	23.57
Carbon dioxide	23.50	37.28	Hydrogen	4.45
Nitrogen	35.60	35.94	Oxygen	35.58
Oxygen	7.33	8.46	Nitrogen	35.94
Argon	0.325	0.469	Argon	0.47
$(CH_2)_n$	0.267	0.135	Sulfur	0.00

Specific Volume	13.528
BTU/ft^3	312
BTU/ lb.	4223
F (factor)	9686

dry gas at 68° F, 1 atm, where CH4-1010, TGNMO-802 BTU/cu.ft.

Component	Specific volume reference values *	
Methane	23.35	(ft^3/lb)
Carbon dioxide	8.59	
Nitrogen	13.54	
Oxygen	11.87	
Argon	9.52	
(CH2)n	21	

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

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LABORATORY ANALYSIS REPORT

Hydrogen Sulfide and Reduced Sulfur Compounds
Analysis in Tedlar Bag Samples

Report Date: July 6, 2006
Client: SCEC
Project Location: BAS / Forward / Austin
Client Project No.: 2060.1020
Date Received: June 29, 2006
Date Analyzed: June 29, 2006

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.:	01806-9	01806-10	01806-11
Sample I.D.:	Inlet #1	Inlet #2	Inlet #3
Components	*(Concentration in ppmv)*		
Hydrogen sulfide	20.0	19.6	17.2
Carbonyl sulfide	0.11	0.13	0.11
Methyl mercaptan	0.82	0.88	0.83
Ethyl mercaptan	<0.1	<0.1	<0.1
Dimethyl sulfide	1.78	1.92	1.83
Carbon disulfide	<0.1	<0.1	<0.1
isopropyl mercaptan	<0.1	<0.1	<0.1
n-propyl mercaptan	<0.1	<0.1	<0.1
Dimethyl disulfide	<0.1	<0.1	<0.1
TRS	22.7	22.5	20.0

TRS - total reduced sulfur

Michael L. Potter
Laboratory Director

B 8

QUALITY ASSURANCE SUMMARY
(Repeat Analyses)

Project Location: BAS / Forward / Austin
Date Received: June 29, 2006
Date Analyzed: June 29, 2006

Components	Sample ID	Repeat Analysis Run #1	Repeat Analysis Run #2	Mean Conc.	% Diff. From Mean
		(Concentration in ppmv)			
Hydrogen sulfide	Inlet #1	20.5	19.6	20.0	2.2
	Inlet #2	19.7	19.6	19.6	0.25
	Inlet #3	17.2	17.3	17.2	0.29
Carbonyl sulfide	Inlet #1	0.10	0.12	0.11	9.1
Methyl mercaptan	Inlet #1	0.77	0.86	0.82	5.5
Ethyl mercaptan	Inlet #1	<0.1	<0.1	---	---
Dimethyl sulfide	Inlet #1	1.68	1.88	1.78	5.6
Carbon disulfide	Inlet #1	<0.1	<0.1	---	---
iso-propyl mercaptan	Inlet #1	<0.1	<0.1	---	---
n-propyl mercaptan	Inlet #1	<0.1	<0.1	---	---
Dimethyl disulfide	Inlet #1	<0.1	<0.1	---	---

Three Tedlar bag samples, laboratory numbers 01806-(9-11), 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 6 repeat measurements from the three Tedlar bag samples is 3.8%.

SCEC

1582-1 N. Batavia
Orange, CA. 92667
714-282-8240
714-282-8247 (Fax)

TO: AtmAA
23917 CRAFTSMAN RD.
CALABASAS, CA 91302

Chain of Custody Record
Analytical Services Request

Client/Project Name	Address/Phone	Project No.
BAS / FORWARD / AUSTIN		2060.1020
Project Location	**Client Project No.**	
STOCKTON FLARE		
Contact	**Sampler (Signature)**	**P.O. No.**
TOM R. TAYLOR	Tom R. Taylor	

ANALYSES

Sample Identification No.	Date	Time	Lab Sample No.	Type of Sample	EPA F-Factor BTU/CF / Fixed Gases	EPA M-18	SCAQMD 307-91				Expected Turnaround Time	Remarks
INLET #1	6-28-06	1030	01806-9	TEDLAR BAG	X	X	X				NTAT	
#2		1200	-10		X	X	X					
#3		1330	-11		X	X	X					
EXHAUST #1		1030	-12			X						
#2		1200	-13			X						
#3		1330	-14			X						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	6/28/06	5:04	FedEx		
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
				6/29/06	10:30
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Disposal Method

Disposed by: (Signature) | Date | Time

White Copy : Accompanies Samples

Yellow Copy : Sampler

B - 10

Appendix C

Exhaust Volume Flow Data and Field Data Sheets

BAS/Forward/Austin
Stockton Flare
June 28, 2006

SUMMARY OF EPA METHOD 19 SOURCE TEST DATA AND CALCULATIONS

PARAMETER	UNITS	RUN 1	RUN 2	RUN 3
DATE		6/28/2006	6/28/2006	6/28/2006
FUEL FLOW - @ 68 DEG F	SCFM	1455.4	1456.6	1476.9
CALORIFIC VALUE - @ 68 DEG F	BTU/CF	372.0	372.0	312.0
F FACTOR (Fd) - @ 68 DEG F	DSCF/MMBTU	9,578	9,572	9,686
EXHAUST O2 CONCENTRATION	%VD	11.62	12.15	11.84
HEAT INPUT - NATURAL GAS	MMBTU/MIN	0.5414	0.5419	0.4608
EXHAUST VOLUME FLOW RATE @ 68 DEG F	DSCFM	**11,685**	**12,384**	**10,296**

SUMMARY OF VOLUME FLOW TEST DATA AND CALCULATIONS

Date:	June 28, 2006
Facility:	BAS/Forward/Austin
Source I.D./Condition	Stockton Flare

MEASURED SOURCE PARAMETERS	SYMBOL	UNITS	RUN 1	RUN 2	RUN 3	AVERAGE
STACK DIAMETER	Ds	IN	96.00	96.00	96.00	96.00
STACK AREA	Ds	FT^2	50.27	50.27	50.27	50.27
BAROMETERIC PRESSURE	Pbar	IN. Hg	30.01	30.01	30.01	30.01
STATIC PRESSURE	Pstat	IN. H2O	-0.01	-0.01	-0.01	-0.01
STACK PRESSURE	Ps	IN. Hg	30.01	30.01	30.01	30.01
AVERAGE STACK TEMPERATURE	Ts	DEG. F	1638.0	1666.0	1648.0	1650.7
AVERAGE SQ. ROOT VELOCITY PRESSURE	dP	IN. H2O	0.1000	0.1000	0.1000	0.1000
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	%	8.05	7.69	7.98	7.91
PERCENT OXYGEN	O2	%	11.62	12.15	11.84	11.87
PITOT CORRECTION FACTOR	Cp		0.852	0.852	0.852	0.852
SAMPLING TIME	t	MIN.	40.0	40.0	40.0	40.0
GAS VOLUME SAMPLED	Vm	DCF	24.085	25.088	24.974	24.716
WATER VAPOR COLLECTED	Vlc	GRAMS	47.2	49.7	47.0	48.0
DRY GAS METER CORRECTION FACTOR	Y		0.9790	0.9790	0.9790	0.9790
DRY GAS METER TEMPERATURE	Tm	DEG. F	100.4	102.7	106.0	103.0
ORIFICE PRESSURE	dH	IN. H2O	2.000	2.000	2.000	2.000
CALCULATED RESULTS						
CORRECTED GAS VOLUME SAMPLED	Vmstd	DSCF	22.392	23.229	22.989	22.870
VOLUME OF WATER CONDENSED	Vwstd	SCF	2.23	2.35	2.22	2.26
MOISTURE CONTENT OF FLUE GAS	Bws	%	9.05	9.17	8.80	9.01
DRY MOLECULAR WEIGHT OF FLUE GAS	MWdry	lb/lb-mol	29.75	29.72	29.75	29.74
WET MOLECULAR WEIGHT OF FLUE GAS	MWwet	lb/lb-mol	28.69	28.64	28.72	28.68
FLUE GAS VELOCITY	Vs	ft/sec	11.37	11.46	11.39	11.41
FLUE GAS FLOW RATE (ACTUAL CONDITIONS)	ACFM	ACFM	34,292	34,549	34,358	34,399
FLUE GAS FLOW RATE (STD WET CONDITIONS)	SCFM	SCFM	8,656	8,606	8,631	8,631
FLUE GAS FLOW RATE (STD DRY CONDITIONS)	SDCFM	SDCFM	7,873	7,816	7,872	7,854
PERCENT EXCESS AIR	% EA	%	121.3	134.7	126.9	127.7

Note: NA = Not Applicable for the test program.

SAMPLE TRAIN DATA SHEET

Page of

Test Number: H_2O-2	Date: 6-28-06	**IMPINGER DATA**					**SAMPLE TRAIN LEAK CHECK**			
Client: BAS- AUSTIN	Barometric: 30.01	Imp #	Mat'l	Weights				CFM	Vac	By:
Test Location: STOCKTON	Meter ID: CB6			Final	Initial	Net	Meter Pre-Test	0.016	15	CAS
Test Condition: FLARE	Meter Yd: 0.979	1	DI H_2O	606.1	569.2		Meter Post-Test	0.010	5	CAS
Test Method: CARB 1-4	Meter ΔH @: 1.724	2	DI H_2O	595.1	590.3			Check	Press.	By:
Stack Diameter: 8'	Pitot ID: 34	3	KO	480.1	479.4		Pitot Pre-Test	✓	0.1	CAS
Number of Points: SINGLE	Pitot Cp: 0.852	4	SG	672.5	667.7		Pitot Post-Test	✓	0.1	CAS
Sample Time: 30 MIN	Probe Length/Mat'l: 8S 9'	5					**SAMPLE TRAIN PRE-TEST CHECK**			
Per Point: Vol 2.5 H_2O 5	Nozzle Dia/Mat'l: -	6						Time	ΔH	Meter Reading	Temp
Isokinetic Factor: -	Assumed Stack T: -	Total:					Initial				
	Assumed Meter T: -	Filter Number:					Final				

TEST DATA

Sample Point	Time	METER CONDITIONS			TEMPERATURES °F							Vac	Static Press.	**SAMPLE TRAIN OPERATION**
		ΔP	ΔH	Meter Reading	Stack	METER Inlet	METER Outlet	Imp. Out	Probe	Oven	Other			Operator: CAS
S8	1033	0.01	2.0	281.542	1670	98	97	65				2		Assistant: -
7	1038	0.01	2.0	285.7	1669	101	97	62				2		Imp. Setup/Rec:
6	1043	0.01	2.0	289.3	1670	101	97	57				2		
5	1048	0.01	2.0	293.5	1670	104	99	56				2	Ø	Comments:
4	1053	0.01	2.0	297.4	1667	105	99	56				2		
3	1058	0.01	2.0	300.9	1661	105	102	57				2		
2	1103	0.01	2.0	305.627	1660							2		
1		0.01	[illegible]		1661									
W8		0.01			1655									
7		0.01			1661									**TEST SUMMARY**
6		0.01			1608									Calc. By: TRT
5		0.01			1591									Time: 30 MIN
4		0.01			1590									Static Press: Ø
3		0.01			1589									Stack Temp: 1638
2		0.01			1591									ΔP (in. Hg): $\sqrt{\Delta P}$ = 0.1000
1		0.01			1591									O_2/CO_2:
														Meter Vol (acf): 24.085
														Meter Temp: 100.4
														Meter Press: 2.0
														Liquid Vol: 47.2

SAMPLE TRAIN DATA SHEET

Page of

Test Number: H20-3	Date: 6-28-06	**IMPINGER DATA**					**SAMPLE TRAIN LEAK CHECK**			
Client: BBS - AUSTIN	Barometric: 30.01	Imp #	Mat'l	Weights				CFM	Vac	By:
Test Location: STOCKTON	Meter ID: CB6			Final	Initial	Net	Meter Pre-Test	0.00	15	CAS
Test Condition: FLARE	Meter Yd: 0.979	1	DI H_2O	677.2	637.6		Meter Post-Test	0.00	6	CAS
Test Method: CARB 1-4	Meter ΔH @: 1.724	2	DI H_2O	599.4	594.7			Check	Press.	By:
Stack Diameter: 8'	Pitot ID: PT 34	3	KO	539.1	538.9		Pitot Pre-Test			
Number of Points: SINGLE	Pitot Cp: 0.852	4	SG	822.5	817.3		Pitot Post-Test			
Sample Time: 30 MIN	Probe Length/Mat'l: H20	5					**SAMPLE TRAIN PRE-TEST CHECK**			
Per Point: 40mins	Nozzle Dia/Mat'l:	6						Time	ΔH	Meter Reading	Temp
Isokinetic Factor: 2.5	Assumed Stack T:	Total:					Initial				
	Assumed Meter T:	Filter Number:					Final				

TEST DATA

Sample Point	Time	METER CONDITIONS			TEMPERATURES °F						Vac	Static Press.	**SAMPLE TRAIN OPERATION**
		ΔP	ΔH	Meter Reading	Stack	METER Inlet	METER Outlet	Imp. Out	Probe	Oven	Other			
W 8	1153	0.01	2.0	305.820	1700	101	100	62				2		Operator: CAS
7	1158	0.01	2.0	310.9	1707	104	100	55				2	-0.01	Assistant:
6	1203	0.01	2.0	314.1	1694	104	100	55				2		Imp. Setup/Rec:
5	1208	0.01	2.0	318.3	1659	105	101	56				2		
4	1213	0.01	2.0	322.0	1638	105	102	56				2		Comments:
3	1218	0.01	2.0	326.7	1628	107	103	56				2		CEMS Began 1143
2		0.01		330.908	16.13									
1		0.01			1572									
S 8	~~1224~~	0.01			1671									
7		0.01			1670									**TEST SUMMARY**
6		0.01			1699									Calc. By: CAS
5		0.01			1702									Time: 40mins
4		0.01			1686									Static Press: -0.01
3		0.01			1686									Stack Temp: 1,686.5
2		0.01			1682									ΔP (in. Hg): 0.100
1		0.01			16.76									O_2/CO_2:
														Meter Vol (acf): 25.088
														Meter Temp: 102.7
														Meter Press: 20
														Liquid Vol: 49.7

SAMPLE TRAIN DATA SHEET

Test Number: H2O - 4	Date: 6-28-06	**IMPINGER DATA**					**SAMPLE TRAIN LEAK CHECK**						
Client: BAS	Barometric: 30.61	Imp #	Mat'l	Weights					CFM	Vac	By:		
Test Location: STOCKTON-F	Meter ID: C36			Final	Initial	Net	Meter Pre-Test		0.00	15	CAS		
Test Condition: As Found	Meter Yd: 0.979	1	H2O	716.6	677.2		Meter Post-Test		0.00	6	CAS		
Test Method: CARB 1-4	Meter ΔH @: 1.724	2	H2O	603.0	599.4				Check	Press.	By:		
Stack Diameter: 84"	Pitot ID: PT 34	3	ICE	540.5	539.1		Pitot Pre-Test						
Number of Points: 16	Pitot Cp: 0.85	4	SG	825.1	822.5		Pitot Post-Test						
Sample Time: 40 mins	Probe Length/Mat'l:	5					**SAMPLE TRAIN PRE-TEST CHECK**						
Per Point: 2.5 min	Nozzle Dia/Mat'l:	6						Time	ΔH	Meter Reading		Temp	
Isokinetic Factor: —	Assumed Stack T:	Total:					Initial						
5 for H2O	Assumed Meter T:	Filter Number:					Final						

TEST DATA

Sample Point	Time	METER CONDITIONS			TEMPERATURES °F							Vac	Static Press.	SAMPLE TRAIN OPERATION
		ΔP	ΔH	Meter Reading	Stack	METER Inlet	METER Outlet	Imp. Out	Probe	Oven	Other			
S8	1302	0.01	2.0	331.002	1670	107	107	96				2		Operator: CAS
7	1307	0.01	2.0	335.1	1696	107	106	56				2		Assistant:
6	1312	0.01	2.0	339.2	1674	108	105	58				2	-0.01	Imp. Setup/Rec:
5	1317	0.01	2.0	343.7	1677	108	105	59				2		
4	1322	0.01	2.0	351.	1684	107	104	59				2		Comments:
3	1327	0.01	2.0	351.9	1662	105	102	59				2		
2	1332	0.01	—	355.976	1630	—	—	—						
1		0.01			1630									
W8		0.01			1645									
7		0.01			1692									**TEST SUMMARY**
6		0.01			1670									Calc. By: CAS
5		0.01			1638									Time: 40 mins
4		0.01			1613									Static Press: -0.01
3		0.01			1600									Stack Temp: 1648
2		0.01			1602									ΔP (in. Hg): 0.100
1		0.01			1598									O_2/CO_2:
														Meter Vol (acf): 24.974
														Meter Temp: 106
														Meter Press: 2.0
														Liquid Vol: 47.0

Appendix D

Inlet Volume Flow Data and Field Data Sheets

SUMMARY OF INLET FLOW RATE SOURCE TEST DATA AND CALCULATIONS

Date:	June 28, 2006						
Facility:	BAS/Forward/Austin						
Source I.D./Condition	Stockton 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		30.01	30.01	30.01	30.01
STATIC PRESSURE	Pstat	IN. H2O		-16.00	-17.00	-16.00	-16.33
STACK PRESSURE	Ps	IN. Hg		28.83	28.76	28.83	28.81
AVERAGE STACK TEMPERATURE	Ts	DEG. F		84.0	86.0	88.0	86.0
AVERAGE SQ. ROOT VELOCITY PRESSURE	dP	IN. H2O		0.7613	0.7646	0.7630	0.7630
SAMPLING PARAMETERS							
STANDARD TEMPERATURE	Tstd	DEG. F		60.0	60.0	68.0	62.7
STANDARD PRESSURE	Pstd	IN. Hg		29.92	29.92	29.92	29.92
PERCENT CARBON DIOXIDE	CO2	%		27.25	27.20	23.50	25.98
PERCENT OXYGEN	O2	%		5.31	5.30	7.33	5.98
PERCENT NITROGEN	N2	%		28.70	28.90	35.60	31.07
PERCENT METHANE	CH4	%		36.65	36.60	30.70	34.65
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		81.0	82.0	83.0	82.0
DRY BULB TEMPERATURE	Ts	DEG. F		84.0	86.0	88.0	86.0
CALCULATED RESULTS							
MOISTURE CONTENT OF FLUE GAS (Psychometeric)	Bws	%		3.50	3.50	3.70	3.57
DRY MOLECULAR WEIGHT OF FLUE GAS	MWdry	lb/lb-mol		27.59	27.61	27.57	27.59
WET MOLECULAR WEIGHT OF FLUE GAS	MWwet	lb/lb-mol		27.25	27.28	27.21	27.25
FLUE GAS VELOCITY	Vs	ft/sec		53.61	53.99	53.97	53.86
FLUE GAS FLOW RATE (ACTUAL CONDITIONS)	ACFM	ACFM		1,580.0	1,591.1	1,590.6	1,587.2
FLUE GAS FLOW RATE (STD (WET) CONDITIONS)	SCFM	SCFM		1,455.4	1,456.6	1,476.9	1,463.0
FLUE GAS FLOW RATE (STD DRY CONDITIONS)	SDCFM	SDCFM		1,404.5	1,405.6	1,422.2	1,410.8

SCEC

METHOD 2: VELOCITY AND TEMP. TRAVERSE DATA

CLIENT/FACILITY: BAS
SAMPLE LOCATION: Stockton Austin LF
UNIT NO.:
TEST CONDITION: As Found
BAROMETRIC (in. Hg): 30.01

DATE: 6/28/06
DATA TAKEN BY: CAJ / TT
PITOT ID: Std
PITOT Cp: 0.99
PITOT LEAK CHECK: ✓ @ 0.50 "H2O

WB/DB = 74/78

WB/DB = 81/84 = 3.5%

Test No. Inlet #1			Static Press. (in. H_2O) -17		Test No. Inlet #2			Static Press. (in. H_2O) -16	
Time	Traverse Point Port	Point	ΔP in. H_2O	Temperature °F	Time	Traverse Point Port	Point	ΔP in. H_2O	Temperature °F
907	Side	1	0.60	78	1045	SIDE	1	.52	84
		2	0.62				2	.56	
		3	0.66				3	.60	
		4	0.68				4	.60	
		5	0.66				5	.62	
		6	0.62				6	.60	
		7					7	.58	
		8					8	.58	
		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.	0.6847	78°F			Avg.		

1302 SCFM
1526°F

√ΔP = ~~0.7498~~ 0.7978

√ΔP = 0.7613 – 84
SCFM = 1461

SCEC

METHOD 2; VELOCITY AND TEMP. TRAVERSE DATA

CLIENT/FACILITY: BAS
SAMPLE LOCATION: STOCKTON
UNIT NO.: PLANT
TEST CONDITION: AS FOUND
BAROMETRIC (in. Hg): 30.00

DATE: 6-28-06
DATA TAKEN BY: TRT
PITOT ID: STD
PITOT Cp: 0.99
PITOT LEAK CHECK: GOOD

WB/DB 82/86 = 3.5%

WB/DB 83/88 = 3.7%

Test No. INLET #3			Static Press. (in. H_2O) −17		Test No. INLET #4			Static Press. (in. H_2O) −16	
Time	Traverse Point Port	Point	ΔP in. H_2O	Temperature °F	Time	Traverse Point Port	Point	ΔP in. H_2O	Temperature °F
1155	SIDE	1	.54	86	1315	SIDE	1	.52	88
		2	.56				2	.58	
		3	.58				3	.60	
		4	.60				4	.60	
		5	.62				5	.60	
		6	.62				6	.60	
		7	.60				7	.58	
		8	.56				8	.58	
		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.		

SCFM - 1463 $\sqrt{\Delta P}$ = 0.7646 / 86 D = 4 $\sqrt{\Delta P}$ = 0.7630 88°F

Appendix E

Quality Assurance / Quality Control Data

CALIBRATION ERROR

FACILITY:	BAS/Forward/Austin	DATA FOR SAMPLING RUNS:	COMPLIANCE RUNS 1,2,3 (INITIAL)
SOURCE ID/CONDITION:	Stockton Flare	DATE:	6/28/2006
OPERATOR:	TRT	PROJECT No.:	2060-1020

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	0.07	-0.07	**-0.28**
O_2 - MID CAL	12.85	12.98	-0.13	**-0.52**
O_2 -HIGH CAL	21.10	20.80	0.30	**1.20**
CO_2 - FULL SCALE	20			
CO_2 - ZERO	0.00	0.05	-0.05	**-0.25**
CO_2 - MID CAL	8.078	8.08	0.00	**-0.01**
CO_2 -HIGH CAL	16.07	16.08	-0.01	**-0.05**
NO_x - FULL SCALE	50			
NO_x - ZERO	0.00	-0.01	0.01	**0.02**
NO_x - MID CAL	17.32	16.58	0.74	**1.48**
NO_x -HIGH CAL	46.17	46.55	-0.38	**-0.76**
CO - FULL SCALE	100			
CO - ZERO	0.00	1.00	-1.00	**-1.00**
CO - MID CAL	42.74	43.70	-0.96	**-0.96**
CO -HIGH CAL	82.95	82.80	0.15	**0.15**

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

CALIBRATION ERROR

FACILITY:	BAS/Forward/Austin	DATA FOR SAMPLING RUNS:		COMPLIANCE RUNS 1,2,3 (FINAL)
SOURCE ID/CONDITION:	Stockton Flare	DATE:		6/28/2006
OPERATOR:	TRT	PROJECT No.:		2060-1020

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	0.06	-0.06	**-0.24**
O_2 - MID CAL	12.85	12.92	-0.07	**-0.28**
O_2 -HIGH CAL	21.10	21.46	-0.36	**-1.44**
CO_2 - FULL SCALE	20			
CO_2 - ZERO	0.00	0.04	-0.04	**-0.20**
CO_2 - MID CAL	8.078	7.94	0.14	**0.69**
CO_2 -HIGH CAL	16.07	15.98	0.09	**0.45**
NO_x - FULL SCALE	50.0			
NO_x - ZERO	0.00	-0.01	0.01	**0.02**
NO_x - MID CAL	17.32	16.43	0.89	**1.78**
NO_x -HIGH CAL	46.17	46.20	-0.03	**-0.06**
CO - FULL SCALE	100			
CO - ZERO	0.00	1.50	-1.50	**-1.50**
CO - MID CAL	42.74	44.00	-1.26	**-1.26**
CO -HIGH CAL	82.95	83.80	-0.85	**-0.85**

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

SYSTEM CALIBRATION BIAS AND DRIFT DATA

FACILITY:	BAS/Forward/Austin	DATA FOR SAMPLING RUN:		COMPLIANCE RUN 1		
SOURCE ID/CONDITION:	Stockton Flare	DATE:			06/28/06	
OPERATOR:	TRT	PROJECT No.:			2060-1020	
		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	0.07	0.09	**-0.08**	0.08	**-0.04**	**0.04**
O_2 - SPAN	12.98	12.96	**0.08**	13.03	**-0.20**	**-0.28**
CO_2 - ZERO	0.05	0.04	**0.05**	0.07	**-0.10**	**-0.15**
CO_2 - SPAN	8.08	7.97	**0.55**	7.92	**0.80**	**0.25**
NO_x - ZERO	-0.01	0.05	**-0.12**	0.10	**-0.22**	**-0.10**
NO_x - SPAN	46.55	46.06	**0.98**	46.00	**1.10**	**0.12**
CO - ZERO	1.00	-1.20	**2.20**	0.09	**0.91**	**-1.29**
CO - SPAN	43.7	42.3	**1.40**	43.9	**-0.20**	**-1.60**

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

SYSTEM CALIBRATION BIAS AND DRIFT DATA

FACILITY:	BAS/Forward/Austin	DATA FOR SAMPLING RUN:		COMPLIANCE RUN 2		
SOURCE ID/CONDITION:	Stockton Flare	DATE:			06/28/06	
OPERATOR:	TRT	PROJECT No.:			2060-1020	
		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	0.07	0.08	**-0.04**	0.06	**0.04**	**0.08**
O_2 - SPAN	12.98	13.03	**-0.20**	12.90	**0.32**	**0.52**
CO_2 - ZERO	0.05	0.07	**-0.10**	0.05	**0.00**	**0.10**
CO_2 - SPAN	8.08	7.92	**0.80**	7.88	**1.00**	**0.20**
NO_x - ZERO	-0.01	0.10	**-0.22**	0.11	**-0.24**	**-0.02**
NO_x - SPAN	46.55	46.00	**1.10**	45.60	**1.90**	**0.80**
CO - ZERO	1.00	0.09	**0.91**	-0.20	**1.20**	**0.29**
CO - SPAN	43.7	43.9	**-0.20**	44.9	**-1.20**	**-1.00**

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

SYSTEM CALIBRATION BIAS AND DRIFT DATA

FACILITY:	BAS/Forward/Austin	DATA FOR SAMPLING RUN:		COMPLIANCE RUN 3		
SOURCE ID/CONDITION:	Stockton Flare	DATE:			06/28/06	
OPERATOR:	TRT	PROJECT No.:			2060-1020	
		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	0.07	0.06	**0.04**	0.07	**0.00**	**-0.04**
O2 - SPAN	12.98	12.90	**0.32**	12.84	**0.56**	**0.24**
CO2 - ZERO	0.05	0.05	**0.00**	0.04	**0.05**	**0.05**
CO2 - SPAN	8.08	7.88	**1.00**	7.78	**1.50**	**0.50**
NOx - ZERO	-0.01	0.11	**-0.24**	0.10	**-0.22**	**0.02**
NOx - SPAN	46.55	45.60	**1.90**	45.40	**2.30**	**0.40**
CO - ZERO	1.00	-0.20	**1.20**	-0.80	**1.80**	**0.60**
CO - SPAN	43.7	44.9	**-1.20**	44.6	**-0.90**	**0.30**

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

BAS/Forward/Austin
Stockton Flare
June 28, 2006

NO_2 Converter Check

NO_2 Gas Concentration, ppm (C_0)	17.34 ppm
NO_2 Gas Concentration in NO mode, ppm (C_1)	0.32 ppm
NO_2 Gas Concentration in NOx mode, ppm (C_2)	17.93 ppm

%CE = **101.6% PASS**

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

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

Orifice Method - Triplicate Runs/Four Calibration Points
English Meter Box Units, English K' Factor
Filename: CB-6
File Modified From: APEX 522 Series Meter box Calibration
Revised: 4/7/2004

Model #: Nutech
ID #: CB-6
Date: ##########
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)
0.27	18.00	267.47	273.09	5.62	73.00	71.00	72.00	71.00	40	0.232	23.00	68.00	68.00	68.00
0.27	18.00	273.09	278.72	5.63	72.00	71.00	72.00	71.00	40	0.232	23.00	68.00	69.00	68.50
0.27	18.00	278.72	284.36	5.65	72.00	72.00	73.00	72.00	40	0.232	23.00	69.00	69.00	69.00
0.61	13.00	284.36	290.38	6.02	73.00	72.00	74.00	73.00	48	0.345	22.00	69.00	70.00	69.50
0.61	13.00	290.38	296.40	6.02	74.00	73.00	74.00	73.00	48	0.345	22.00	70.00	70.00	70.00
0.61	13.00	296.40	302.42	6.01	74.00	73.00	75.00	73.00	48	0.345	22.00	70.00	71.00	70.50
2.00	8.00	302.42	308.80	6.38	75.00	73.00	76.00	74.00	63	0.600	18.00	71.00	71.00	71.00
2.00	8.00	308.92	315.30	6.39	75.00	75.00	75.00	74.00	63	0.600	18.00	72.00	73.00	72.50
2.00	8.00	315.30	321.71	6.40	75.00	74.00	76.00	75.00	63	0.600	18.00	73.00	73.00	73.00
3.40	6.00	321.71	327.99	6.28	76.00	75.00	78.00	75.00	73	0.788	16.00	73.00	73.00	73.00
3.40	6.00	327.99	334.26	6.27	78.00	75.00	80.00	76.00	73	0.788	16.00	73.00	73.00	73.00
3.40	6.00	334.26	340.55	6.29	80.00	76.00	80.00	78.00	73	0.788	16.00	73.00	74.00	73.50

DRY GAS METER		ORIFICE			DRY GAS METER CALIBRATION FACTOR	ORIFICE CALIBRATION FACTOR				
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)	Individual Run 0.95 < Y < 1.05?	Individual Orifice Ymax - Ymin < 0.010?	Orifice Average 0.98 < Y/Yd < 1.02?	Orifice Average dH@ - dH@ av < 0.155?
5.574	157.9	5.434	153.9	5.521	0.975	1.633	Pass			
5.563	158.4	5.431	153.8	5.524	0.971	1.634	Pass			
5.569	158.6	5.429	153.7	5.526	0.970	1.633	Pass			
				Average	0.972	1.633		Pass	Pass	Pass
5.984	166.9	5.828	165.0	5.938	0.977	1.668	Pass			
5.982	168.9	5.825	165.0	5.941	0.977	1.668	Pass			
5.950	168.5	5.822	164.9	5.944	0.979	1.670	Pass			
				Average	0.978	1.669		Pass	Pass	Pass
6.327	179.2	6.228	176.4	6.364	0.984	1.810	Pass			
6.332	179.3	6.219	176.1	6.373	0.982	1.812	Pass			
6.343	179.6	6.217	176.1	6.378	0.980	1.813	Pass			
				Average	0.982	1.812		Pass	Pass	Pass
6.239	176.7	6.123	173.4	6.280	0.981	1.786	Pass			
6.207	175.8	6.123	173.4	6.280	0.987	1.784	Pass			
6.215	176.0	6.120	173.3	6.283	0.985	1.784	Pass			
				Average	0.984	1.784		Pass	Pass	Pass

Average Yd:	0.979	dH@:	1.724
		Q @ dH = 1:	0.571

SIGNED: _____ Date: _____

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)).

S-TYPE PITOT TUBE CALIBRATION

DATE:	February 1, 2006
PITOT TUBE ID:	PT-34
CALIBRATED BY:	JQ/TT
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	0.65	0.89	0.855	0.000
2	0.65	0.89	0.855	0.000
3	0.65	0.89	0.855	0.000

Side "A" average, Cp(A) = 0.855
Average deviation, d = 0.000
Is d $\leq$ 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	0.65	0.90	0.850	0.000
2	0.65	0.90	0.850	0.000
3	0.65	0.90	0.850	0.000

Side "B" average, Cp(B) = 0.850
Average deviation, d = 0.000
Is d $\leq$ 0.01? Yes

Amb. Temp. (degrees F)	70
Barometric Pressure	29.96
Actual Calculated Pitot Coef.	**0.852**

Difference between sides "A" and "B", D = |Cp(A) - Cp(B)| = 0.005
Is D $\leq$ 0.01? Yes

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: CC210192 Reference Number: 48-124043537-1
Cylinder Pressure: 1999.6 PSIG Expiration Date: 8/22/2008
Certification Date: 8/22/2005 Laboratory: ASG - Los Angeles - CA

Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
OXYGEN	21.10 %	+/- 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 000403		OXYGEN	CC48549	20.01 %

Analytical Results

1st Component OXYGEN

1st Analysis Date: 08/22/2005

R 20.01	S 21.10	Z 0.000	Conc 21.10 %
S 21.10	Z 0.000	R 20.01	Conc 21.10 %
Z 0.000	R 20.01	S 21.10	Conc 21.10 %
			AVG: 21.10 %

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: CC206432 Reference Number: 48-124030239-19
Cylinder Pressure: 1999.6 PSIG Expiration Date: 2/23/2008
Certification Date: 2/23/2005 Laboratory: ASG - Los Angeles - CA

Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
OXYGEN	8.128 %	+/- 1%	NDIR	G1
CARBON DIOXIDE	16.07 %	+/- 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 82745		CARBON DIOXIDE	CC55225	22.06 %
NTRM 10212		OXYGEN	CC100004	10 %

Analytical Results

1st Component OXYGEN **2nd Component** CARBON DIOXIDE

1st Analysis Date:		02/23/2005		1st Analysis Date:		02/23/2005	
R 10.15	S 8.250	Z 0.000	Conc 8.128 %	R 93.55	S 68.15	Z 0.000	Conc 16.07 %
S 8.250	Z 0.000	R 10.15	Conc 8.128 %	S 68.15	Z 0.000	R 93.55	Conc 16.07 %
Z 0.000	R 10.15	S 8.250	Conc 8.128 %	Z 0.000	R 93.55	S 68.15	Conc 16.07 %
			AVG: 8.128 %				AVG: 16.07 %

Airgas

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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: CC198005 Reference Number: 48-124058721-4
Cylinder Pressure: 2000.6 PSIG Expiration Date: 2/28/2009
Certification Date: 2/28/2006 Laboratory: ASG - Los Angeles - CA

Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
CARBON DIOXIDE	8.078 %	+/- 1%	NDIR	G1
OXYGEN	12.85 %	+/- 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	18.04 %
NTRM 81674X		CARBON DIOXIDE	SG9168852	8.918 %

Analytical Results

1st Component CARBON DIOXIDE

1st Analysis Date: 02/28/2006

R 57.85	S 52.40	Z 0.000	Conc 8.078 %
S 52.40	Z 0.000	R 57.85	Conc 8.078 %
Z 0.000	R 57.85	S 52.40	Conc 8.078 %
			AVG: 8.078 %

2nd Component OXYGEN

1st Analysis Date: 02/28/2006

R 16.04	S 12.85	Z 0.000	Conc 12.85 %
S 12.85	Z 0.000	R 16.04	Conc 12.85 %
Z 0.000	R 16.04	S 12.85	Conc 12.85 %
			AVG: 12.85 %

Airgas

Certificate of Analysis: EPA Protocol Gas Mixture

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

Cylinder Number: CC14773922@ Reference Number: 48-124037621-5
Cylinder Pressure: 1999.6 PSIG Expiration Date: 6/19/2007
Certification Date: 6/19/2005 Laboratory: ASG - Los Angeles - CA

Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
NITRIC OXIDE	46.17 PPM	+/- 1%	CHEMI	G1
NITROGEN	Balance			

Total oxides of nitrogen 46.60 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 50920		NITRIC OXIDE	SG9198942	46.94 PPM

Analytical Results

1st Component NITRIC OXIDE

1st Analysis Date: 06/19/2005

R 46.90	S 46.01	Z 0.0	Conc 46.05 PPM
S 46.01	Z 0.0	R 46.90	Conc 46.05 PPM
Z 0.0	R 46.90	S 46.01	Conc 46.05 PPM
			AVG: 46.05 PPM

2nd Analysis Date: 06/19/2005

R 46.90	S 46.26	Z 0.0	Conc 46.30 PPM
S 46.26	Z 0.0	R 46.90	Conc 46.30 PPM
Z 0.0	R 46.90	S 46.26	Conc 46.30 PPM
			AVG: 46.30 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: SG9120872 Reference Number: 48-124044794-5
Cylinder Pressure: 2000.6 PSIG Expiration Date: 9/12/2007
Certification Date: 9/12/2005 Laboratory: ASG - Los Angeles - CA

Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
NITRIC OXIDE	17.32 PPM	+/- 1%	CHEMI	G1
NITROGEN	Balance			

Total oxides of nitrogen 17.92 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 51403		NITRIC OXIDE	SG9162508	18.14 PPM

Analytical Results

1st Component NITRIC OXIDE

1st Analysis Date: 09/02/2005

R 18.10	S 17.31	Z 0.000	Conc 17.35 PPM
S 17.31	Z 0.00	R 18.10	Conc 17.35 PPM
Z 0.000	R 18.10	S 17.31	Conc 17.35 PPM
			AVG: 17.35 PPM

2nd Analysis Date: 09/12/2005

R 18.10	S 17.26	Z 0.000	Conc 17.30 PPM
S 17.26	Z 0.000	R 18.10	Conc 17.30 PPM
Z 0.000	R 18.10	S 17.26	Conc 17.30 PPM
			AVG: 17.30 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: Bipul Saraf
1582-1 North Batavia Street
Orange, CA 92867
(714) 282-8240

REPORT NO: 49142-03
REPORT DATE: January 5, 2006
CUSTOMER PO NO: 3321

CYLINDER NUMBER: CC7332

COMPONENT	CONCENTRATION (v/v)	NIST TRACEABLE REFERENCE STANDARD
Nitrogen dioxide	17.34 ± 0.35 ppmv	SRM 2629a
Nitrogen	Balance	

Cylinder Size: 150A (71 std cu ft)
Cylinder Pressure: 1000 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: B.M.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

Airgas

Certificate of Analysis: EPA Protocol Gas Mixture

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

Cylinder Number: SG9164960BAL
Reference Number: 48-124058721-1
Cylinder Pressure: 2000.6 PSIG
Expiration Date: 3/6/2009
Certification Date: 3/6/2006
Laboratory: ASG - Los Angeles - CA

Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
CARBON MONOXIDE	82.95 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 81679		CARBON MONOXIDE	SG9198959	99.9 PPM

Analytical Results

1st Component **CARBON MONOXIDE**

1st Analysis Date: 02/27/2006

R 99.90	S 83.00	Z 0.000	Conc 83.00 PPM
S 83.00	Z 0.000	R 99.90	Conc 83.00 PPM
Z 0.000	R 99.90	S 83.00	Conc 83.00 PPM
			AVG: 83.00 PPM

2nd Analysis Date: 03/06/2006

R 99.90	S 82.90	Z 0.000	Conc 82.90 PPM
S 82.90	Z 0.000	R 99.90	Conc 82.90 PPM
Z 0.000	R 99.90	S 82.90	Conc 82.90 PPM
			AVG: 82.90 PPM

Airgas

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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:	CC-196078	Reference Number:	48-124046989-1
Cylinder Pressure:	2000.6 PSIG	Expiration Date:	10/12/2008
Certification Date:	10/12/2005	Laboratory:	ASG - Los Angeles - CA

Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
CARBON MONOXIDE	42.74 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 81678		CARBON MONOXIDE	XC013308B	49.59 PPM

Analytical Results

1st Component CARBON MONOXIDE

1st Analysis Date:	10/05/2005		
R 49.50	S 42.65	Z 0.000	Conc 42.73 PPM
S 42.65	Z 0.000	R 49.50	Conc 42.73 PPM
Z 0.000	R 49.50	S 42.65	Conc 42.73 PPM
			AVG: 42.73 PPM
2nd Analysis Date:	10/12/2005		
R 49.59	S 42.75	Z 0.000	Conc 42.75 PPM
S 42.75	Z 0.000	R 49.59	Conc 42.75 PPM
Z 0.000	R 49.59	S 42.75	Conc 42.75 PPM
			AVG: 42.75 PPM

Appendix F

Calculations

EMISSION CALCULATIONS

1. Sample Volume and Isokinetics

a. Sample gas volume, dscf

$$V_{m\,std} = 0.03342\ V_m \left(P_{bar} + \frac{H}{13.6}\right)\left(\frac{T_{ref}}{T_m}\right)(Y)$$

b. Water vapor volume, scf

$$V_{w\,std} = 0.0472\ V_{lc}\left(\frac{T_{ref}}{528\ ^\circ R}\right)$$

c. Moisture content, nondimensional

$$B_{wo} = \frac{V_{w\,std}}{V_{m\,std} + V_{w\,std}}$$

d. Stack gas molecular weight, lb/lb mole

$$MW_{dry} = 0.44\ (\%CO_2) + 0.32\ (\%O_2) + 0.28\ (\%N_2)$$

$$MW_{wet} = MW_{dry}\ (1 - B_{wo}) + 18\ (B_{wo})$$

e. Absolute stack pressure, in Hg

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

f. Stack velocity, ft/sec

$$V_s = 2.90\ C_p \sqrt{\Delta P T_s}\ \sqrt{\left(\frac{29.92}{p_s}\right)\left(\frac{28.95}{MW_{wet}}\right)}$$

g. Actual stack flow rate, wacfm

$$Q = (V_s)(A_s)(60)$$

h. Standard stack gas flow rate, dscfm

$$Q_{sd} = Q\ (1 - B_{wo})\left(\frac{T_{ref}}{T_s}\right)\left(\frac{P_s}{29.92}\right)$$

i. Percent isokinetic

$$I = \left(\frac{17.32(T_s)(V_{m\,std})}{(1 - B_{wo})(\Theta)(V_s)(P_s)(D_n^2)}\right)\left(\frac{528\ ^\circ R}{T_{ref}}\right)$$

2. Particulate Emissions

a. Grain loading, gr/dscf

$$C = 0.01543 \left(\frac{M_n}{V_{m\ std}} \right)$$

b. Grain loading at 12% CO_2, gr/dscf

$$C_{12\%\,CO_2} = C \left(\frac{12}{\%\,CO_2} \right)$$

c. Mass emissions, lb/hr

$$M = C(Q_{sd}) \frac{(60\ min/hr)}{(7000\ gr/lb)}$$

3. Gaseous Emissions, lb/hr

$$M = (ppm)(10^{-6}) \left(\frac{MW_i\ lb/lb\ mole}{SV} \right) (Q_{sd})(60\ min/hr)$$

where,

SV = *specific molar volume of an ideal gas*:

$SV = 385.3\ ft^3/lb\ mole \quad for\ T_{ref} = 528\ ^\circ R$

$SV = 379.5\ ft^3/lb\ mole \quad for\ T_{ref} = 520\ ^\circ R$

4. Emissions Rates, lb/10^6 Btu

a. Fuel factor at 68 °F, dscf/10^6 Btu at 0% O_2

$$F_{68} = \frac{10^6 [3.64(\%H) + 1.53(\%C) + 0.14\ (\%N) + 0.57(\%S) + 0.46(\%O_2 fuel)]}{HHV,\ Btu/lb}$$

b. Fuel factor at 60 °F

$$F_{60} = F_{68} \left(\frac{520\ ^\circ R}{528\ ^\circ R} \right)$$

c. Gaseous Emissions factor

$$\left(\frac{lb}{10^6\ Btu} \right)_i = (ppm)_i\ (10^{-6}) \left(\frac{MW_i\ lb}{lb\ mole} \right) \left(\frac{1}{SV} \right) (F) \left(\frac{20.9}{20.9 - \%O_2} \right)$$

d. Particulate emission factor

$$\left(\frac{lb}{10^6\ Btu}\right) = C\left(\frac{1\ lb}{7000\ gr}\right)(F)\left(\frac{20.9}{20.9\ -\ \%O_2}\right)$$

Nomenclature:

A_s = stack area, ft^2

B_{wo} = flue gas moisture content

$C_{12\%\ CO_2}$ = particulate grain loading, gr/dscf corrected to 12% CO_2

C = particulate grain loading, gr/dscf

C_p = pitot calibration factor, dimensionless

Dn = nozzle diameter, in.

F = fuel F factor, dscf/10^6 Btu at 0% O_2

H = orifice pressure differential, iwg

I = % isokinetics

M_n = mass of collected particulate, mg

M_i = mass emissions of species i, lb/hr

MW = molecular weight of flue gas

MW_i = molecular weight of species i:

NO_x	:	46
CO	:	28
SO_x	:	64
HC	:	16

Nomenclature (Continued):

θ = sample time, min.

ΔP = average velocity head, iwg = $\left(\overline{\sqrt{\Delta P}}\right)^2$

P_{bar} = barometric pressure, in.Hg

P_s = stack absolute pressure, in.Hg

P_{sg} = stack static pressure, iwg

Q = wet stack gas flow rate at actual conditions, wacfm

Qsd = dry stack gas flow rate at standard conditions, dscfm

SV = specific molar volume of an ideal gas at standard conditions, ft^3/lb mole

Tm = meter temperature, °R

T_{ref} = reference temperature, °R

Ts = stack temperature, °R

V_s = stack velocity, ft/sec

V_{lc} = volume of liquid collected in impingers, ml

Vm = dry meter volume uncorrected, dcf

$V_{m\ std}$ = dry meter volume at standard conditions, dscf

$V_{w\ std}$ = volume of water vapor at standard conditions, scf

Y = meter calibration coefficient

Appendix G

Sample Port Diagram

SCEC

METHOD 1: SAMPLE POINT LOCTION DATA

FACILITY: BFI - Allied Waste | DATE: 6/20/06

TEST LOCATION: Austin Landfill | DATA BY: CAS

UNIT: Flare Inlet | PROJECT No.:

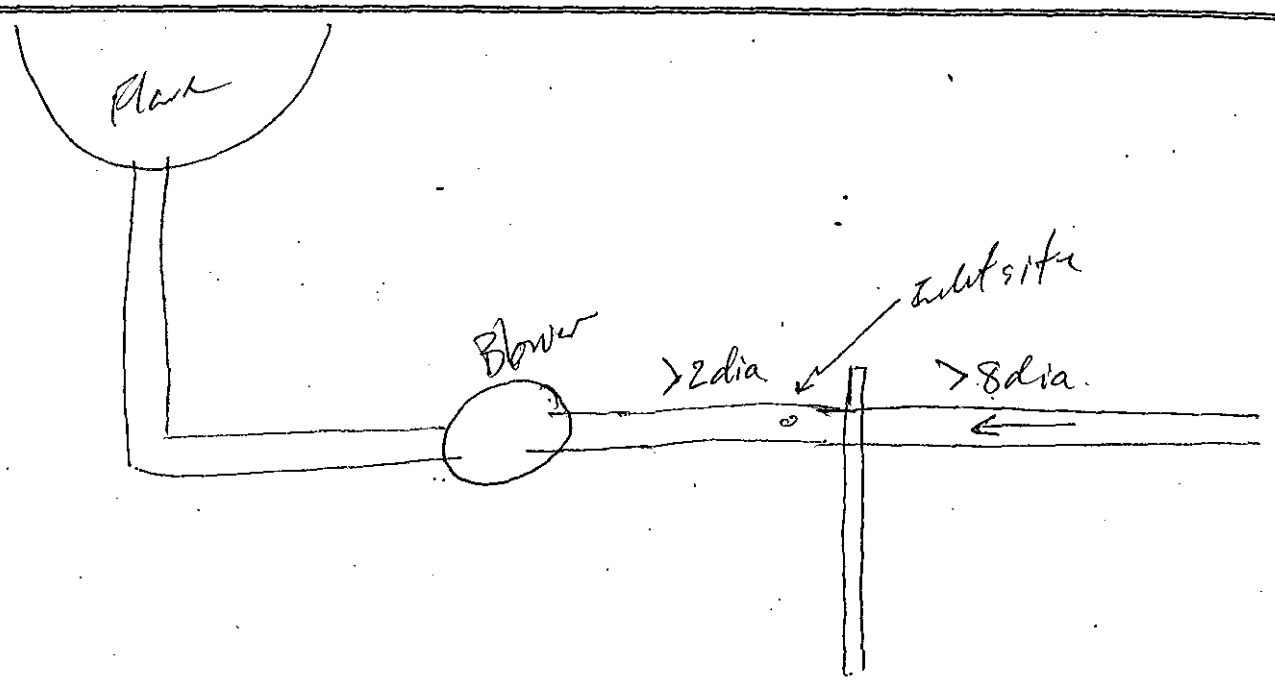

Diagram of Sample Location

DUCT DIMENSION: 949" ID

DUCT AREA (ft²):

UPSTREAM DST/DIA.:(1) +2.0

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~~ 0.5	
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~~ 9.9	
9			
10			
11			
12			

SAMPLING POINT LOCATION DATA - EPA METHOD 1

PLANT: STOCKTON FLARE DATA BY: TT

DATE: 12/23/03

TEST LOCATION: FLARE #1

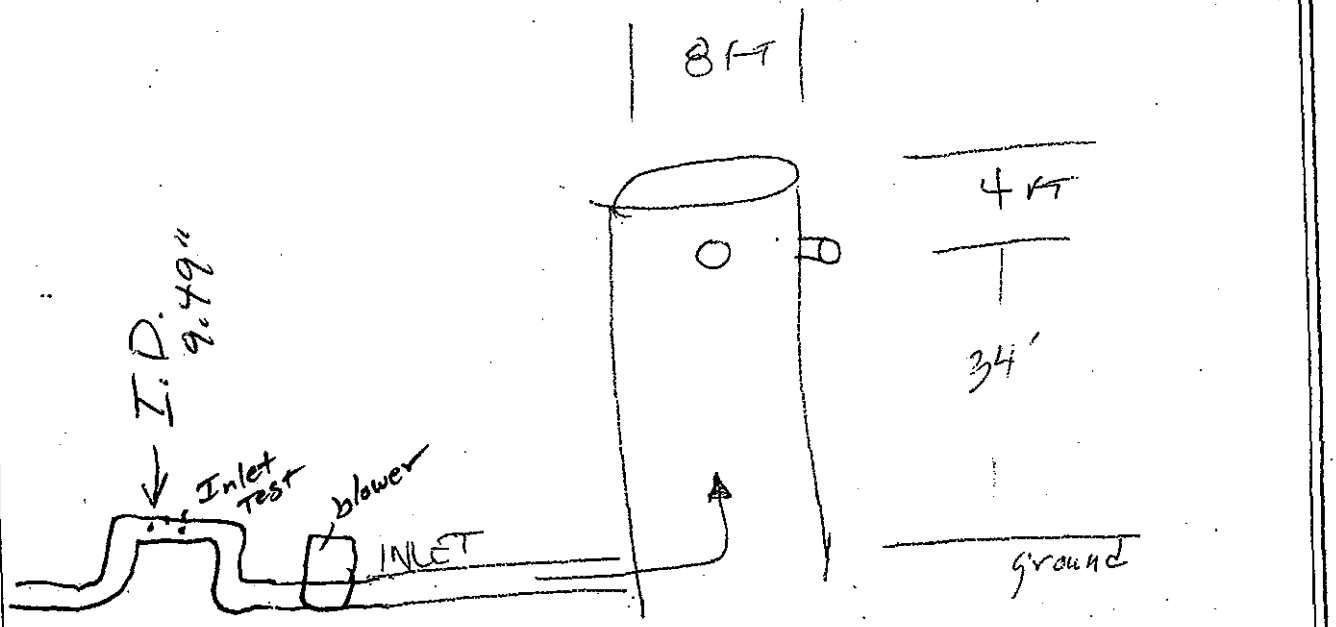

Diagram of Sampling Location

UPSTREAM DIST./DIA.: 4' / 1/2

DOWNSTREAM DIST./DIA.: 3' / 7.5

COUPLING LENGTH: 8 IN

NO. OF SAMPLING PTS.: 24

STACK DIMENSION: 8' dia / 50.2655 sq. ft.

STACK AREA, FT²:

*INCHES FROM WALL PLUS COUPLING LENGTH

SAMPLE POINT	% OF DIAMETER	IN. FROM NEAR WALL	IN. FROM NOZZLE*
1	2.1 3.2	3.07	11.07
2	6.7 10.5	10.08	18.08
3	14.8 19.4	18.6	26.6
4	17.7 32.3	31.2	39.2
5	25 67.7	64.99	72.99
6	85 80.6	77.37	85.37
7	64.4 89.5	85.92	93.92
8	85 96.8	92.92	100.92
	82.3		
	88.2		
	93.3		
	97.9		

SCEC

Appendix H

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

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

Northern Regional Office • 4230 Kiernan 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

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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

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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

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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

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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