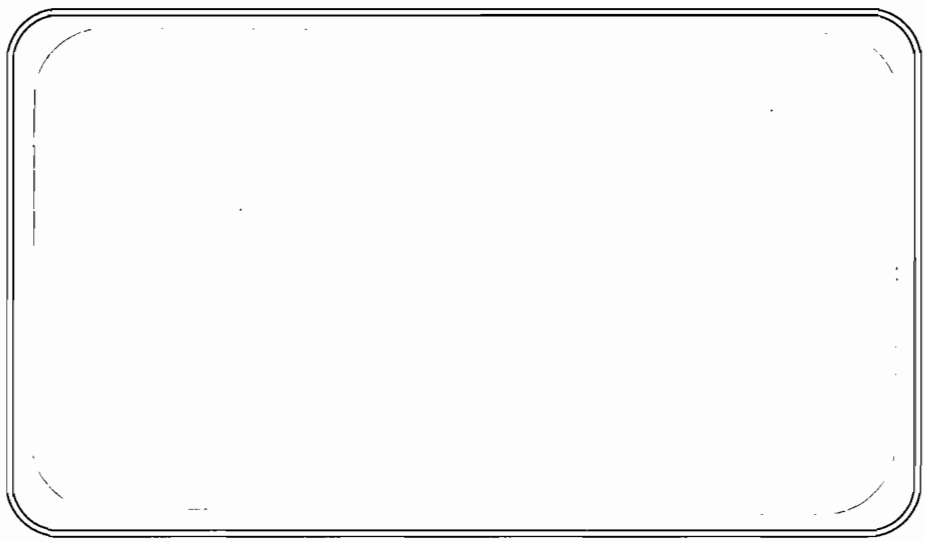

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EMISSIONS TESTING SERVICES

COMPLIANCE TEST REPORT
FOR
H_2SO4 and CO EMISSIONS
AT
ST. JOHNS RIVER POWER PARK
UNIT #1
October 17 and 18, 2000

CT&E Project No. 00-205MO

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November 5, 2000

I, Richard Howes, hereby certify the emission tests conducted for Jacksonville Electric Authority at St. Johns River Power Park, Units #1 are in accordance with procedures established by the USEPA. This report accurately and faithfully presents the data obtained from the tests and the results determined from analysis of this data.

Richard Howes

Richard Howes
Midwest Region Manager

I, John Ellis, hereby attest that all work on this project was completed under my supervision and this report accurately presents the results of the emissions testing.

John C Ellis

John Ellis
Chief Test Engineer

TABLE OF CONTENTS

INTRODUCTION

INTRODUCTION

This report presents the results of the Compliance emissions tests performed for Jacksonville Electric at St. Johns River Power Park, Unit #1. The purpose of the tests was to determine the Sulfuric Acid Mist (H_2SO4) and Carbon Monoxide (CO) emissions of the unit for compliance. The results of the tests can be found in the Summary of Test Results section of this report.

Commercial Testing and Engineering, Midwest Division, whose office is located at 599 James Rollo Court, Grain Valley, Missouri 64029 performed the testing. The CT&E test crew consisted of Rick Howes, Dan Daniels and Russ Arnott. Mr. Mark Loechelt, St. Johns River Power Park, coordinated the testing.

The tests were performed on October 17 and 18, 2000. The testing was performed in accordance with EPA reference methods as published in the July 1, 2000 Federal Register, "Standards of Performance for Stationary Sources and subsequent revisions.

The testing equipment and sampling procedures are described in the Sampling and Analytical Procedures section of this report. The raw field data and equations used in determining final results are presented in the Appendix section of this report.

SUMMARY OF TEST RESULTS

SUMMARY OF TEST RESULTS

The following table presents the results of the H_2SO_4 and CO Compliance emissions testing performed on October 17 and 18, 2000 for Jacksonville Electric at St. Johns River Power Park, Unit #1.

H_2SO_4 EMISSIONS

Run #	Test Date	H_2SO_4 PPM (dry)	H_2SO_4 Lb/DSCF
1	10-17-00	6.39	1.628E-06
2	10-17-00	6.87	1.749E-06
3	10-17-00	7.50	1.911E-06
Average		6.92	1.763E-06

CARBON MONOXIDE (CO) EMISSIONS

Run #	Test Date	CO PPM Dry Bias Corrected	CO Lb/mBtu CO_2 Basis	% CO_2 Dry
1	10-18-00	161.59	.155	13.63
2	10-18-00	168.62	.161	13.66
3	10-18-00	122.08	.117	13.65
4	10-18-00	68.48	.066	13.57
5	10-18-00	57.74	.056	13.59
6	10-18-00	68.02	.065	13.61
7	10-18-00	60.26	.057	13.81
8	10-18-00	29.40	.029	13.43
9	10-18-00	24.54	.024	13.34
10	10-18-00	25.99	.025	13.37
11	10-18-00	29.37	.029	13.38
12	10-18-00	29.70	.029	13.40

The complete results can be found on the computer printouts following this page.

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Commercial Testing and Engineering
H_2SO_4 – Sulfur Analysis

Run Number		1	2	3
Data set		(01)	(02)	(03)
Date		10-17-00	10-17-00	10-17-00
Location		UNIT 1 STACK	UNIT 1 STACK	UNIT 1 STACK
Start time		08:10	09:30	10:50
End time		09:15	10:35	11:55
Barometric Pressure	In/Hg	29.59	29.59	29.59
Volume of Sample	Cu. Ft.	42.976	42.823	42.128
Meter Correction Factor		0.971	0.971	0.971
Meter Temperature	Deg. F	94	95	96
Percent O2	%	6.2	6.5	6.2
Moisture	%	10.9	11.5	11.6
Volume of Solution	ML	200	200	200
Volume of Aliquot	ML	25	25	25
Normality of Barium	N	0.0096	0.0096	0.0096
Volume to Titrate Blank	ML	0.00	0.00	0.00
Volume to Titrate Sample	ML	7.70	8.23	8.83
Volume of Flue Gas	DSCFM	1568051	1552979	1522748
F Factor	DSCF/MBtu	9780	9780	9780
Volume of Metered Gas	DSCF	39.317	39.106	38.402
Concent of H2SO4	LBS/DSCF	1.628E-06	1.749E-06	1.911E-06
Parts Per Million H2SO4	PPM	6.39	6.87	7.50
Emissions of H2SO4	Lbs/Hour	153.20	163.04	174.67
Emissions of H2SO4	Lbs/MBtu	2.26E-02	2.48E-02	2.65E-02
Parts Per Mil - WET	PPM	5.69	6.08	6.63
Percent O2 - WET	%	5.5	5.8	5.5

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Commercial Testing and Engineering
H_2SO_4 Flow and Moisture Calculations

Run Number		1	2	3
Data set		(04)	(05)	(06)
Date		10-17-00	10-17-00	10-17-00
Location		UNIT 1 STACK	UNIT 1 STACK	UNIT 1 STACK
Start time		08:10	09:30	10:50
End time		09:15	10:35	11:55
Barometric Pressure	In. Hg	29.59	29.59	29.59
Static Pressure	In. H2O	-0.52	-0.52	-0.52
Volume of Condensate	Mls	102	108	108
Volume Sampled	DCF	42.976	42.823	42.128
Meter Correction Factor		0.97	0.97	0.97
Square Root of Delta P		1.177	1.173	1.161
Orifice Pressure	In. H2O	1.43	1.42	1.38
Meter Temperature	Deg. F	94	95	96
Flue Temperature	Deg. F	133	133	142
Percent CO2	%	12.50	12.70	12.90
Percent O2	%	6.20	6.50	6.20
Diameter of Nozzle	In	0.192	0.192	0.192
Area of Flue	Sq Ft	471.43	471.43	471.43
Sample Time	Min	60	60	60
Weight Gain	Grams	0.0000	0.0000	0.0000
F Factor	DSCF/MBtu	9780	9780	9780
Absolute Flue Pressure	In. Hg	29.55	29.55	29.55
Corrected Sample Volume	DSCF	39.46	39.24	38.53
Moisture in Flue Gas	%	10.9	11.5	11.6
Molecular Weight	Lb/LbMole	28.92	28.88	28.88
Velocity of Flue Gas	FpS	70.74	70.55	70.36
Volume of Flue Gas	ACFM	2,001,032	1,995,468	1,990,087
Volume of Flue Gas	DSCFM	1,568,051	1,552,979	1,522,748
Dust Concentration	Lb/DSCF	0	0	0
Dust Concentration	Lbs/Hour	0	0	0
Dust Concentration	Grs/ACF	0	0	0
Dust Concentration	Grs/DSCF	0	0	0
Isokinetic Rate	%	98.2	98.6	98.7
Particulate Emissions	Lb/MBtu	0.000	0.000	0.000

Averages:

Stack Temperature		136.0	Percent O2		6.3
Vol Flue Gas	ACFM	1,995,529		DSCFM	1,547,926
Part Emis	Lb/DSCF	0		Lb/Hour	0
	Grs/ACF	0		Grs/DSCF	0
	Lbs/MBtu	0			

Commercial Testing and Engineering

Sampling System Bias Check and Measured Value Correction

JEA-SJRPP
JACKSONVILLE,FL. - Unit 1
Normal

Date: 10/18/00
Pollutant: CO2
Monitor Span: 20

Run Number	Average Measured Percent	Initial Zero Gas Bias	Final Zero Gas Bias	Zero Gas Drift	Initial Upscale Gas Bias	Final Upscale Gas Bias	Upscale Gas Drift	Calibration Gas Percent	Percent Moisture	Corrected Percent, Dry Basis	Corrected Percent, Wet Basis
1	13.55	0.02	0.05	0.15	11.08	11.07	-0.05	11.13	12.07	13.63	11.981
2	13.58	0.05	0.05	0.00	11.07	11.08	0.05	11.13	10.21	13.66	12.264
3	13.58	0.05	0.05	0.00	11.08	11.08	0.00	11.13	11.23	13.65	12.120
4	13.50	0.05	0.04	-0.05	11.08	11.08	0.00	11.13	11.06	13.57	12.070
5	13.52	0.04	0.04	0.00	11.08	11.08	0.00	11.13	11.24	13.59	12.063
6	13.53	0.04	0.05	0.05	11.08	11.07	-0.05	11.13	11.21	13.61	12.082
7	13.73	0.05	0.05	0.00	11.07	11.08	0.05	11.13	11.97	13.81	12.157
8	13.35	0.05	0.05	0.00	11.08	11.07	-0.05	11.13	12.14	13.43	11.796
9	13.27	0.05	0.06	0.05	11.07	11.09	0.10	11.13	11.27	13.34	11.837
10	13.31	0.06	0.06	0.00	11.09	11.09	0.00	11.13	11.49	13.37	11.833
11	13.32	0.06	0.06	0.00	11.09	11.09	0.00	11.13	11.76	13.38	11.807
12	13.34	0.06	0.06	0.00	11.09	11.09	0.00	11.13	11.52	13.40	11.856

S4

$$Cgas = (Cavg - Co) * Cma / (Cm - Co) \qquad \text{Eq. 6C-1}$$

where:
Cgas = Effluent gas concentration, dry basis, ppm
Cavg = Average gas concentraiton indicated by gas analyzer, dry basis, ppm
Co = Average of initial and final system calibration bias check responses for the zero gas, ppm
Cm = Average of initial and final system calibration bias check responses for the upscale calibration gas, ppm
Cma = Actual concentration of the upscale calibration gas, ppm

Commercial Testing and Engineering

Sampling System Bias Check and Measured Value Correction

JEA-SJRPP
JACKSONVILLE,FL. - Unit 1
Normal

Date: 10/18/00
Pollutant: CO
Monitor Span: 1000

Run Number	Average Measured Value	Initial Zero Gas Bias	Final Zero Gas Bias	Zero Gas Drift	Initial Upscale Gas Bias	Final Upscale Gas Bias	Upscale Gas Drift	Calibration Gas PPM	Percent Moisture	Corrected Value, Dry Basis	Corrected Value, Wet Basis
1	161.59	0.00	1.00	0.10	321.00	322.00	0.10	322.00	12.07	161.59	142.092
2	169.26	1.00	0.60	-0.04	322.00	323.00	0.10	322.00	10.21	168.62	151.394
3	123.08	0.60	0.80	0.02	323.00	324.00	0.10	322.00	11.23	122.08	108.372
4	69.53	0.80	0.79	0.00	324.00	324.00	0.00	322.00	11.06	68.48	60.906
5	58.64	0.79	0.76	0.00	324.00	323.00	-0.10	322.00	11.24	57.74	51.246
6	68.87	0.76	0.87	0.01	323.00	323.00	0.00	322.00	11.21	68.02	60.389
7	61.21	0.87	1.00	0.01	323.00	323.00	0.00	322.00	11.97	60.26	53.047
8	30.17	1.00	0.59	-0.04	323.00	322.00	-0.10	322.00	12.14	29.40	25.832
9	25.13	0.59	0.68	0.01	322.00	322.00	0.00	322.00	11.27	24.54	21.778
10	26.60	0.68	0.56	-0.01	322.00	323.00	0.10	322.00	11.49	25.99	23.002
11	29.88	0.56	0.46	-0.01	323.00	322.00	-0.10	322.00	11.76	29.37	25.917
12	30.15	0.46	0.54	0.01	322.00	322.00	0.00	322.00	11.52	29.70	26.274

$$C_{gas} = (C_{avg} - C_o) * C_{ma} / (C_m - C_o) \qquad \text{Eq. 6C-1}$$

where:
Cgas = Effluent gas concentration, dry basis, ppm
Cavg = Average gas concentraiton indicated by gas analyzer, dry basis, ppm
Co = Average of initial and final system calibration bias check responses for the zero gas, ppm
Cm = Average of initial and final system calibration bias check responses for the upscale calibration gas, ppm
Cma = Actual concentration of the upscale calibration gas, ppm

SAMPLING AND ANALYTICAL PROCEDURES

TESTING EQUIPMENT EPA TEST METHOD 3A (O2, CO2)
(Instrumental Analyzer Procedures

Principle: A gas sample is continuously extracted from a stack, and a portion of the sample is conveyed to an instrumental analyzer for determination of either O2 or CO2, or both which ever is applicable.

1. Sample Train

    1. The CO2 Monitor is a Milton Roy, Model #3300A Infrared analyzer. The O2 Monitor is a Servomex instrument series 1400 Paramagnetic Sensor Analyzer. Either one of these analyzers or both, whichever is applicable, coupled together with a Strip Chart, or Data Recorder, together with sample probe, teflon sample line, calibration valve assembly, moisture removal system, particulate filter, sample pump, sample flow rate control and sample gas manifold make up the sampling system.

2. Measurement System Performance Specifications

    1. Analyzer Calibration Error: Less than +/- 2 percent of the span for zero, mid-range and high-range calibration gases.

    2. Sampling System Bias: Less than +/- 5 percent of the span for the zero, and mid or high-range calibration gases.

    3. Zero Drift: Less than +/- 3 percent of the span over the period of each run.

    4. Calibration Drift: Less than +/- 3 percent of the span over the period of each run.

3. Calibration Gases: The calibration gases for the CO2 analyzer are CO2 in nitrogen. The O2 calibration gases for the O2 analyzer are O2 in nitrogen.

    1. High-Range Gas: O2 Monitor - Ambient Air/or 20-25% by volume. CO2 Monitor - 16-20 percent by volume.

    2. Mid-Range Gas: O2 Monitor - 10-15 percent by volume CO2 Monitor - 8-12 percent by volume.

    3. Zero Gas: O2 Monitor - any of the CO2 in nitrogen gases. CO2 Monitor - Purified Ambient Air/or zero gas.

4. Calibration Gas Concentration Verification:
The calibration gases are analyzed following the Environmental Protection Agency Traceability Protocol Number One. A certification from the gas manufacturer that Protocol Number One was followed are included in the test report and available in the field during the test.

5. Measurement System Preparation
The measurement system was assembled by following the manufacturer's written instructions for preparing and preconditioning the gas analyzer and, as applicable, the other system components. The calibration gases were introduced and all necessary adjustments to calibrate the analyzer and the data recorded were performed.

6. Analyzer Calibration Error:

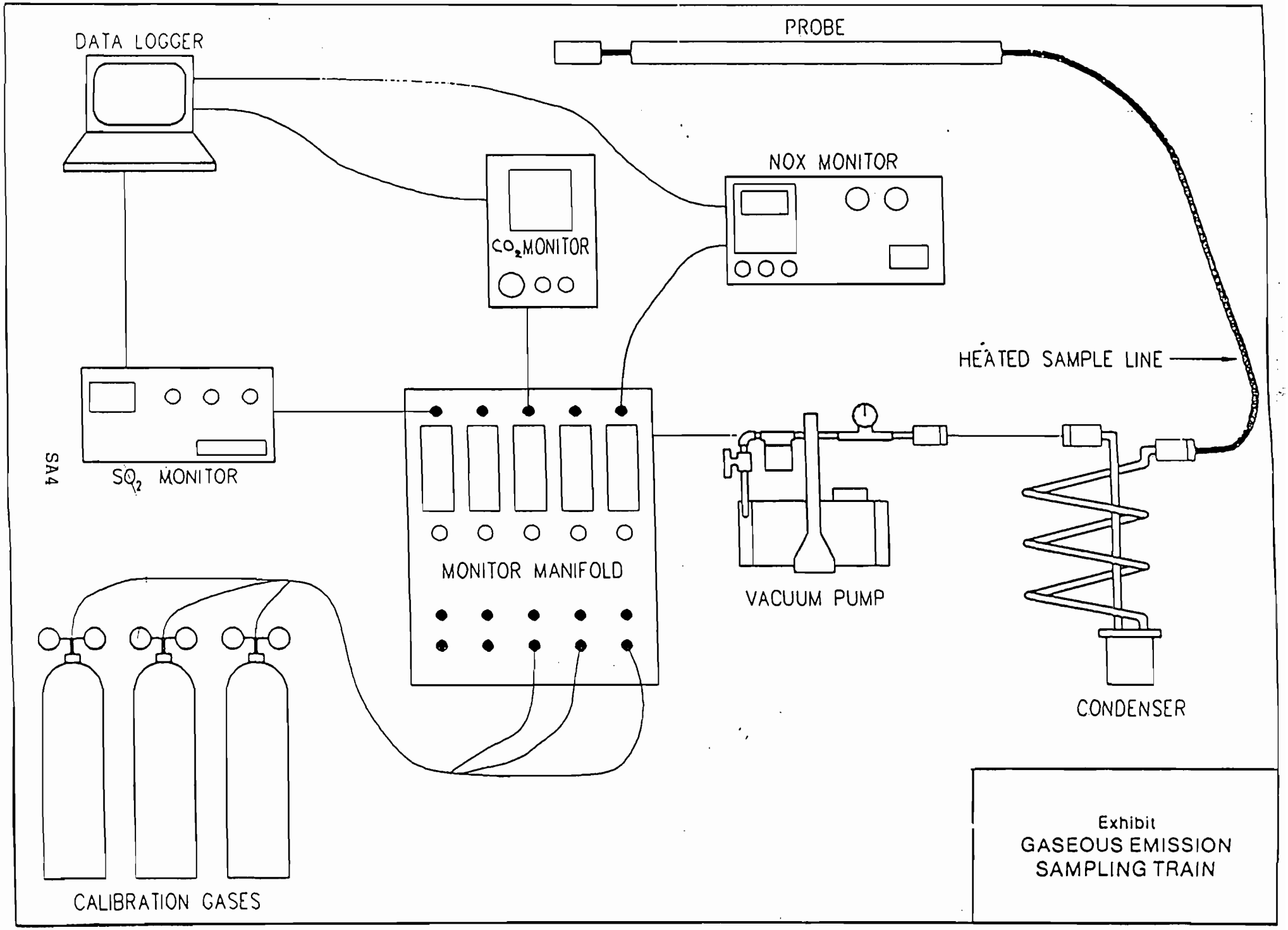
1. The analyzer calibration error check is conducted by introducing calibration gases to the measurement system at any point upstream of the gas analyzer as follows: After the measurement system is prepared for use, the zero, mid-range and the high-range gases are introduced to the analyzer. During this check, no adjustments to the system are made except those necessary to achieve the correct calibration. Error check is considered invalid if the gas concentration displayed by the analyzer exceeds +/- 2 percent of the span for any of the calibration gases.

2. Sampling Systems Bias Check:
The sampling system bias check was performed by introducing calibration gases at the calibration valve installed at the outlet of the sampling probe. A zero gas and either the mid-range or high-range gas, whichever most closely approximates the effluent concentration, is used for this check as follows:

The upscale calibration gas is introduced and the gas concentration recorded. The zero gas is introduced and recorded. During the sampling system bias check, the system is operated at the normal sampling rate, no adjustments to the measurement system, other than those necessary to achieve proper calibration gas flow rates at the analyzer, are made. Alternately, introduce the zero and upscale gases until a stable response is achieved. The tester determined the measurement system response time by observing the times required to achieve a stable response for both the zero and upscale gases. Note the longer of the two times as the response time. The sampling system bias check shall be considered invalid if the difference between the gas concentrations displayed by the measurement system for analyzer calibration error check and for the sampling system bias check exceeds +/- 5 percent of the span for either the zero or upscale calibration gases.

7. Sample Collection:

1. The sampling probe was positioned at the first measurement point, and the sampling began at the same rate as used during the system calibration drift test. A constant sampling rate was maintained (i.e., +/- 10 percent) during the entire run. Nine to twelve 21 minute sampling periods were performed to complete the Relative Accuracy (RATA) tests. Prior to the start of the test, the complete monitor system was leak checked. The systems response time was measured prior to the start of the test and recorded on a field Test Form. At the conclusion of each run the monitor was checked for calibration drift and the values were recorded on calibration forms included in this report.


DATA LOGGER
PROBE
NOX MONITOR
CO_2 MONITOR
HEATED SAMPLE LINE
SA4
SO_2 MONITOR
MONITOR MANIFOLD
VACUUM PUMP
CONDENSER
CALIBRATION GASES
Exhibit
GASEOUS EMISSION
SAMPLING TRAIN

TESTING EQUIPMENT - EPA MODIFIED METHOD 8 (MULTIPLE ACIDS) SAMPLING TRAIN

HCL, HNO_3, HPO_3 AND H_2SO_4

A Nutech Corporation, Stack Sampler (Model 2010) was used at the sampling location(s). The sampling train consisted basically of an effective length stainless-steel probe, a standard glass impinger assembly with a calibrated Type K (Chromel/Alumel) thermocouple located at the impinger outlet; a control unit with a 1/4-hp shaft sealed oil vane vacuum pump assembly with a vacuum gauge; an elapse time indicator, a temperature selector switch, a temperature indicator (potentiometer), temperature controllers, 0-10" WC inclined draft gauge, a calibrated dry gas meter, and a calibrated orifice; and an umbilical and various interconnecting hoses, fitting and valves. An appropriately sized borosillicate glass nozzle, a calibrated Type K temperature sensor, a static pressure tube, a calibrated S-type pitot tube and a variable-heat-controlled borosillicate glass liner with a calibrated Type K (Chromel/Alumel) thermocouple are integral parts of the probe assembly.

The vacuum pump was used to control gas sampling rates. The control unit was used to control probe temperatures and to monitor elapsed sampling times, temperatures, velocities, static pressure, gas sampling rates and sampled gas volumes.

Integrated Gas Sampling Train

Flue gas was collected at the sampling location(s) for analysis with an integrated gas sampling train. The sampling train consisted basically of a Mann-made polystyrene gas filter drying tube; a Thomas 1/20 hp. sealed-head diaphragm vacuum pump, a Dwyer flowmeter; a Calibrated Instruments plastic bag housed in a protective case, and tygon tubing with various interconnecting fittings and valves.

Gas Analyzer (Orsat)

Flue gas concentrations were determined with a Burrell, Model B, Industro Gas Analyzer (Orsat) which measures the percent by volume of carbon dioxide, oxygen and carbon monoxide to the nearest tenth of a percent.

Barometer

The barometric pressure (actual station pressure) was determined from a calibrated Taylor aneroid barometer located near the test site which read directly in inches of mercury to the nearest hundredth of an inch.

Programmable Calculator

A Hewlett-Packard, Model 32S, programmable calculator was used to determine the isokinetic sampling rate at each traverse point in the flue.

SAMPLING PROCEDURES - EPA MODIFIED METHOD 8 (MULTIPLE ACIDS)

The number of sampling points and positions of the points in the flue at the sampling location(s) and the sampling time at each point were determined prior to the acids testing. The sampling procedures were performed inpart in accordance with the Environmental Protection Agency's Reference Method 8, "Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions from Stationary Sources" in the July 1, 1990, Federal Register, "Standards of Performance for New Stationary Sources" and subsequent revisions.

A sampling train was prepared inpart at the sampling location(s), before each test run, in the following manner: An appropriately sized sampling nozzle was installed onto the inlet of the sampling probe and capped. The probe was then dimensioned and marked with glass cloth tape at increments that corresponded with the predetermined sampling point positions in the flue. The impinger assembly was prepared by adding 100 milliliters of .1N sodium hydroxide (NaOH) to each of the first three impingers. The fourth impinger was left dry and the fifth impinger was filled with approximately 250 grams of 6-16 mesh indicating silica gel. The first, third, fourth and fifth impingers were of the Modified Greenburg-Smith design and the second impinger was of the Greenburg-Smith design.

The entire impinger assembly was then placed into an icebath. Next, a multiple line umbilical was connected to the sampling probe, impinger unit, vacuum pump and control unit, accordingly. The probe was then heated to and held at approximately 248° Fahrenheit. The inclined draft gauge was leveled and zeroed and the pitot tube leak-checked.

The entire sampling train assembly was then leak-checked at 15 inches of mercury vacuum for one minute and the leakage rate recorded. A leakage rate of less than .02 cfm and no vacuum loss was considered acceptable.

Prior to the acids sampling, a preliminary temperature/velocity traverse, orsat analysis and calculations were performed to determine a correct nozzle size and the factors that would be used in calculating isokinetic sampling rates.

A total of 60 minutes, minimum, was sampled at the sampling location(s) for each test run.

After the completion of a test run, a final leak-check was performed on the sampling train at the highest vacuum incurred during the testing for one minute and the leakage rate recorded. A final leak-check was also performed on the pitot tube.

SAMPLE RECOVERY PROCEDURES

Probe and Impinger Catches - Using a graduated cylinder, the impinger volume was measured to the nearest milliliter and recorded. The impinger catch was then transferred to a 500 ml leak-free glass container with a Teflon screw cap. The probe and nozzle and impinger glassware were cleaned and rinsed with .1N NaOH which was captured in the same container. A .1N NaOH reagent blank equal to the total initial impinger volume used for each test run was collected in a precleaned polyethylene container. The spent silica gel in the fifth impinger was collected in a polyethylene container and later weighed to the nearest 0.1 gram and recorded. An orsat analysis was performed on the integrated gas sample taken during the testing and the values recorded.

The sample analysis was performed inpart in accordance with the procedures outlined in EPA Proposed Test Method 26 using ion chromatography by a qualified analytical laboratory.

EPA METHOD 10

DETERMINATION OF CARBON MONOXIDE EMISSIONS FROM STATIONARY SOURCES

1. Principle

1.1 Principle- An integrate or continuous gas sample is extracted from a sampling point and analyzed for carbon monoxide (CO) content using a nondispersive infrared analyzer (NDIR).

2. Range and Sensitivity

2.1 Range - 0 to 1,000 ppm.

2.2 Sensitivity - Minimum detectable concentration is .1 ppm for a 0 to 1,000 ppm span.

3. Precision and Accuracy

3.1 Precision - The precision of most NDIR analyzers is approximately +2 percent of span.

3.2 Accuracy - The accuracy of most NDIR analyzers is approximately +5 percent of span after calibration.

4. Apparatus

4.1 Probe - Stainless steel or sheathed Pyrex glass, equipped with a filter to remove particulate matter.

4.2 Air-cooled Condenser or Equivalent - To remove any excess moisture.

4.3 Valve - Needle valve, or equivalent, to adjust flow rate.

4.4 Pump - Leak-free diaphragm type, or equivalent, to transport gas.

4.5 Rate Meter - Rotometer, or equivalent, to measure a flow range from 0 to 1.0 liter per minute (0.035 cfm).

4.6 Flexible Bag - Tedlar, or equivalent, with a capacity of 60 to 90 liters (2 to 3 feet). The bag was leak tested in the laboratory before using by evacuating the bag with a pump followed by a dry gas meter. When evacuation was complete, there was no flow through the meter.

5. Analysis

5.1 Carbon Monoxide Analyzer - A Thermo Electron Model 48. Gas filter correlation analyzer is used. The instrument was demonstrated by the manufacture to meet or exceed manufacture's specifications and those described in this method.

6. Calibration Gases

6.1 Calibration Gases - Known concentration of CO in nitrogen for instrument span, prepurified grade of nitrogen for zero, and two additional concentrations corresponding approximately to 60 percent and 30 percent span. The span concentration shall not exceed 1.5 times the applicable source performance standard. The calibration gases are certified by the

manufacturer to be within +2 percent of the specified concentration.

6.2 Silica Gel - Indicating type, 6 to 16 mesh, dried at 175 degrees C (347 degrees F) for two hours.

6.3 Ascarite

7. Procedure

7.1 Continuous Sampling - Set up the equipment as shown in Figure 10-1 making sure all connections are leak free. Place the probe in the stack at a sampling point and purge the sampling line. Connect the analyzer and begin drawing sample into the analyzer. Allow 5 minutes for the system to stabilize, then record the analyzer reading as required by the test procedure. CO_2 content of the gas may be determined by using the Method 3 integrated sample procedure (36 FR 24006), or by weighing the ascarite CO_2 concentration from the gas volume sampled and the weigh gain of the tube.

7.1.1 Integrated Sampling - Evacuate the flexible bag. Set up the equipment as shown in Figure 10-2 with the bag disconnected. Place the probe in the stack and purge the sampling line. Connect the bag, making sure that all connections are leak free. Sample at a rate proportional to the stack velocity. CO_2 content of the gas may be determined by using the Method 3 integrated sample procedures (36 FR 24886), or by weighing the ascarite CO_2 removal tube and computing CO_2 concentration from the gas volume sampled and the weight gain of the tube.

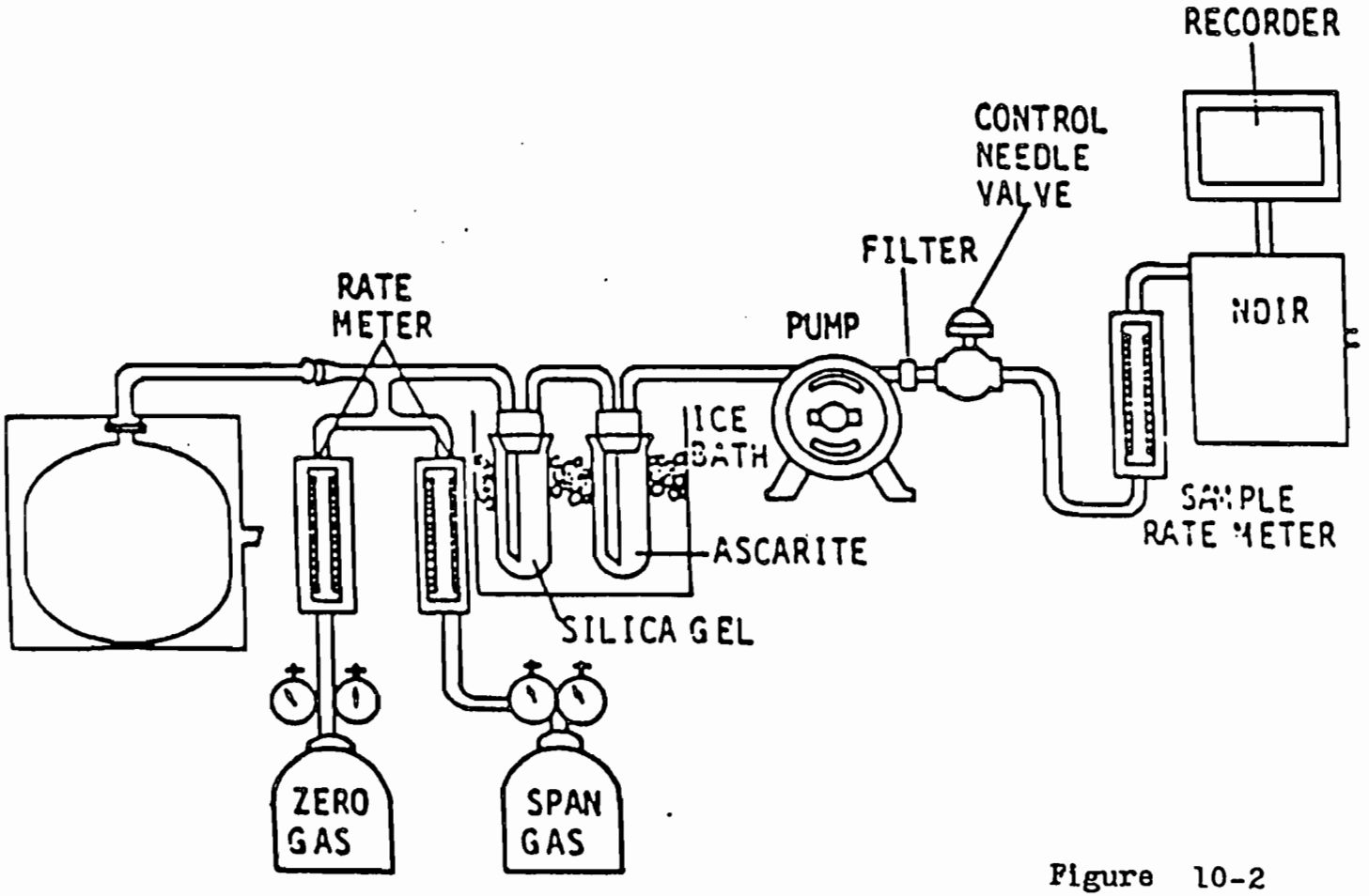

RECORDER
CONTROL NEEDLE VALVE
FILTER
RATE METER
PUMP
NDIR
ICE BATH
ASCARITE
SILICA GEL
SAMPLE RATE METER
ZERO GAS
SPAN GAS

Figure 10-2

APPENDIX

EPA Formulas

H_2SO_4 FORMULAS

1. $$N_t = \frac{(ml_S) \times (N_S)}{Ml_t}$$

2. $$V_{mstd} = 17.64 \left[\frac{(Y)\ (V_m)\ (P_{bar})}{T_m} \right]$$

3. $$CH_2SO_4 = 1.081 \times 10^{-4} \left[\frac{(V_t - V_{tb})\ N \left(\frac{Vsoln}{V_a} \right)}{V_{mstd}} \right]$$

4. $$PPM_{SO3} = C_{SO3} \times 4.822 \times 10^6$$

5. $$Lb/hr = CH_2SO_4 \times DSCFM \times 60$$

CO CALCULATION

$.726 \times 10^{-7} \times PPM = Lb/dscf$

$Lb/dscf \times dscfm \times 60 = Lb/hr$

$(100/\%\ CO_2) * 1800 * (CO\ PPM\ Dry) \times 7.267E\text{-}8 = Lb/mBtu\ CO_2\ Basis$

$$Lb/dscf \times F\ Factor \times \frac{20.9}{20.9 - \%O_2} = Lb/mmBtu\ (O_2\ Basis)$$

1800 = F Factor Carbon based

CO corrected for CO_2

$$C_{co} = CO\ (measured) \times \left(1 - \frac{\%\ CO_2}{100}\right)$$

Test Data Sheets

STACK RATA

MOLYTECH RATA TIME RECORDS

Client: JEA / SJRPP Project #: 00-205 Date: 10-18-00
Sample Location: Unit I Run #: 1-ALL
Bp (in):
Initial Leak Check: ok Final Leak Check: ok
Operator: Rick Howes

RUN NUMBER	START TIME	STOP TIME	MOLYTECH FILE #
1	08:55	09:16	A831018 - A
2	09:30	9:51	B
3	10:02	10:23	C
4	10:37	10:58	D
5	11:11	11:32	E
6	11:45	12:06	F
VOID → 7	~~12:19~~	12:40	G
7	12:47	13:08	H
8	13:19	13:40	I
9	13:52	14:13	J
10	14:26	14:47	K
11	15:00	15:21	L
12	15:30	15:51	M

Lost power to trailer during Run 7 transformer got wet from rain on stack

Channels 1, 2, 3, 4, 5

STACK
RATA

ANALYZER CALIBRATION DATA

CLIENT JEA/SJRPP PROJECT # 00-205 TEST DATE 10-18-00
SOURCE IDENTIFICATION UNIT 1 STACK OPERATOR Rick Howes

CALIBRATION DATA FOR SAMPLING RUNS: 1-ALL GAS TYPE: NOX SPAN: 0-1000	CYLINDER NUMBER	CYLINDER VALUE % OR PPM	ANALYZER RESPONSE	ABSOLUTE DIFFERENCE % OR PPM	DIFFERENCE % OF SPAN
ZERO GAS		0	0	0	0
LOW-RANGE GAS					
MID-RANGE GAS	ALM046485	558	558	0	0
HIGH-RANGE GAS	AAL9543	876	875	-1	-.10

CALIBRATION DATA FOR SAMPLING RUNS: 1-ALL GAS TYPE: SO2 SPAN: 0-300	CYLINDER NUMBER	CYLINDER VALUE % OR PPM	ANALYZER RESPONSE	ABSOLUTE DIFFERENCE % OR PPM	DIFFERENCE % OF SPAN
ZERO GAS		0	0	0	0
LOW-RANGE GAS					
MID-RANGE GAS	AAL021741	166.1	166.1	0	0
HIGH-RANGE GAS	SG9114792	247	247	0	0

CALIBRATION DATA FOR SAMPLING RUNS: 1-ALL GAS TYPE: CO2 SPAN: 0-20%	CYLINDER NUMBER	CYLINDER VALUE % OR PPM	ANALYZER RESPONSE	ABSOLUTE DIFFERENCE % OR PPM	DIFFERENCE % OF SPAN
ZERO GAS		0	0	0	0
LOW-RANGE GAS					
MID-RANGE GAS	ALM046485	11.13	11.11	-.02	-.10
HIGH-RANGE GAS	AAL9543	18.06	18.12	+.06	.30

CALIBRATION DATA FOR SAMPLING RUNS: 1-ALL GAS TYPE: O2 SPAN: 0-25%	CYLINDER NUMBER	CYLINDER VALUE % OR PPM	ANALYZER RESPONSE	ABSOLUTE DIFFERENCE % OR PPM	DIFFERENCE % OF SPAN
ZERO GAS		0	0	0	0
LOW-RANGE GAS					
MID-RANGE GAS	SG900075	12.0	12.0	0	0
HIGH-RANGE GAS	X9173770	22.1	22.2	+.1	+.40

CALIBRATION DATA FOR SAMPLING RUNS: 1-ALL GAS TYPE: CO SPAN: 0-1000	CYLINDER NUMBER	CYLINDER VALUE % OR PPM	ANALYZER RESPONSE	ABSOLUTE DIFFERENCE % OR PPM	DIFFERENCE % OF SPAN
ZERO GAS		0	0	0	0
LOW-RANGE GAS	SG9163578	322	323	0	0
MID-RANGE GAS	SG1813NB	608	610	+2	+.20
HIGH-RANGE GAS					

DIFFERENCE = (ABSOLUTE DIFFERENCE / SPAN) X 100

SPACE RATA

MONITOR SYSTEM RESPONSE TIME

CLIENT: JEA/SJRPP
LOCATION: STACK
UNIT: 1
DATE: 10-18-00
BY: R. Howes

ANALYZER TYPE:	SO_2	NO_X	CO_2	O_2	CO
ANALYZER SPAN:	0-300	0-1000	0-20%	0-25%	0-1000

UPSCALE GAS	SPAN GAS CONCENTRATION	95% OF SPAN GAS VALUE	MONITOR SYSTEM RESPONSE	TIME (SECONDS)
SO_2	166.1	157.795	162	120sec.
NO_X	558	530.1	555	70sec
CO_2	11.13	10.574	11.0	75sec.
O_2	12.0	11.4	11.95	75sec
CO	322	305.9	319	70sec

DOWN SCALE GAS	SPAN GAS CONCENTRATION	5% OF SPAN GAS VALUE	MONITOR SYSTEM RESPONSE	TIME (SECONDS)
SO_2	166.1	8.305	4.1	120sec.
NO_X	558	27.9	1.2	65sec.
CO_2	11.13	0.556	.20	60sec.
O_2	12.0	0.60	.10	60sec
CO	322	16.1	1.0	65sec.

SLOWEST RESPONSE TIME = 120sec. = 2min

TWICE SYSTEM RESPONSE TIME = 4min

Client :JEA/SJRPP
Site :JACKSONVILLE,FL.
Unit :1
Project :00-205
Comment :RUN 1 LOAD Hgl
Test Date :10/18/00 Time :08:55 thru 09:16

Time	1032 NOX PPM	1031 SO2 PPM	1030 O2 %	1029 CO2 %	1028 CO PPM
08:55:59	289.89	219.26	5.53	13.76	322.58
08:56:59	289.31	213.87	5.57	13.67	255.21
08:57:59	291.19	204.16	5.88	13.47	92.86
08:58:59	287.19	204.39	5.87	13.53	111.89
08:59:59	283.24	207.40	5.79	13.57	113.27
09:00:59	285.21	209.69	5.72	13.56	96.93
09:01:59	286.78	206.42	5.77	13.59	125.13
09:02:59	285.49	209.22	5.65	13.71	236.83
09:03:59	285.80	209.59	5.65	13.63	281.85
09:04:59	286.29	206.34	5.85	13.48	113.66
09:05:59	289.94	204.72	6.00	13.38	135.03
09:06:59	285.13	202.84	5.88	13.49	121.86
09:07:59	278.84	205.19	5.69	13.62	239.46
09:08:59	280.83	205.06	5.85	13.48	159.64
09:09:59	286.10	205.64	5.84	13.50	171.76
09:10:59	287.90	205.15	5.87	13.50	93.62
09:11:59	284.09	209.43	5.76	13.56	167.39
09:12:59	285.62	211.48	5.76	13.54	169.22
09:13:59	289.06	210.62	5.82	13.47	132.87
09:14:59	288.62	212.23	5.84	13.51	89.23
09:15:59	286.86	213.15	5.69	13.64	163.26
Averages for 21 Points	286.35	208.37	5.77	13.55	161.59

Client :JEA/SJRPP
Site :JACKSONVILLE,FL.
Unit :1
Project :00-205
Comment :RUN 2 LOAD High
Test Date :10/18/00 Time :09:30 thru 09:51 Pa

Time	1032 NOX PPM	1031 SO2 PPM	1030 O2 %	1029 CO2 %	1028 CO PPM
09:30:01	284.51	219.21	5.74	13.54	133.72
09:31:01	286.39	218.81	5.81	14.14	223.76
09:32:01	282.02	209.94	5.62	13.59	297.44
09:33:01	281.10	206.83	5.65	13.60	259.01
09:34:01	280.37	205.58	5.65	13.59	168.84
09:35:01	285.38	204.63	5.73	13.54	179.81
09:36:01	285.25	204.21	5.79	13.50	142.52
09:37:01	290.46	196.92	6.04	13.35	65.36
09:38:01	284.01	198.45	5.84	13.51	96.87
09:39:01	282.34	200.98	5.77	13.56	224.35
09:40:01	281.46	202.53	5.74	13.53	200.52
09:41:01	283.73	204.38	5.88	13.46	88.49
09:42:01	282.12	202.23	5.92	13.45	152.74
09:43:01	283.95	210.73	5.64	13.65	226.19
09:44:01	283.34	212.90	5.63	13.65	195.63
09:45:01	286.47	209.23	5.84	13.55	140.71
09:46:01	287.08	208.31	5.71	13.58	186.21
09:47:01	289.51	203.40	5.77	13.54	150.36
09:48:01	289.57	198.98	5.79	13.55	168.38
09:49:01	283.79	202.65	5.63	13.72	142.02
09:50:01	283.64	202.80	5.72	13.60	111.61
Averages for 21 Points	284.59	205.89	5.75	13.58	169.26

Client :JEA/SJRPP
Site :JACKSONVILLE,FL.
Unit :1
Project :00-205
Comment :RUN 3 LOAD High
Test Date :10/18/~~02~~ Time :10:02 thru 10:23

Time	1032 NOX PPM	1031 SO2 PPM	1030 O2 %	1029 CO2 %	1028 CO PPM
10:02:01	282.34	225.72	5.71	13.58	119.82
10:03:01	282.77	220.88	5.66	13.58	208.27
10:04:01	288.71	221.50	5.51	13.73	312.55
10:05:01	287.19	215.24	5.77	13.52	107.96
10:06:01	287.77	214.47	5.59	13.71	176.01
10:07:01	287.38	207.78	5.67	13.58	108.40
10:08:01	293.37	202.20	5.75	13.54	67.45
10:09:01	292.95	199.69	5.83	13.53	69.59
10:10:01	297.30	200.80	5.80	13.55	111.72
10:11:01	298.29	204.91	5.73	13.60	86.38
10:12:01	296.18	209.65	5.69	13.60	103.99
10:13:01	298.40	212.83	5.67	13.66	64.65
10:14:01	294.25	215.45	5.58	13.74	160.08
10:15:01	297.20	217.45	5.52	13.74	161.22
10:16:01	303.01	210.55	5.84	13.49	60.08
10:17:01	304.88	204.09	5.90	13.47	71.09
10:18:01	299.80	201.69	5.86	13.51	192.11
10:19:01	301.78	202.67	5.82	13.55	111.87
10:20:01	304.19	208.32	5.77	13.57	142.67
10:21:01	303.83	210.18	5.82	13.53	64.44
10:22:01	304.85	212.46	5.82	13.54	84.44
Averages for 21 Points	295.54	210.40	5.72	13.58	123.08

Client :JEA/SJRPP
Site :JACKSONVILLE,FL.
Unit :1
Project :00-205
Comment :RUN 4 LOAD High
Test Date :10/18/00 Time :10:37 thru 10:58

Time	1032 NOX PPM	1031 SO2 PPM	1030 O2 %	1029 CO2 %	1028 CO PPM
10:37:00	306.90	226.33	5.68	13.62	106.35
10:38:00	306.29	222.78	5.79	13.58	129.99
10:39:00	306.29	226.52	5.68	13.64	107.17
10:40:00	311.21	221.54	5.90	13.46	35.44
10:41:00	308.33	218.35	6.04	13.37	21.36
10:42:00	295.36	219.56	5.90	13.50	68.49
10:43:00	298.39	219.29	6.00	13.41	57.26
10:44:00	306.38	214.43	6.04	13.32	19.06
10:45:00	306.10	214.80	6.11	13.31	19.71
10:46:00	304.19	213.31	6.01	13.39	24.73
10:47:00	304.03	210.14	5.83	13.56	81.45
10:48:00	302.54	211.94	5.65	13.68	175.30
10:49:00	297.07	215.83	5.53	13.70	144.85
10:50:00	305.05	210.96	5.97	13.38	36.18
10:51:00	308.33	210.14	5.93	13.47	50.71
10:52:00	304.14	213.50	5.89	13.51	71.71
10:53:00	307.89	214.36	5.84	13.51	83.22
10:54:00	305.19	217.20	5.83	13.53	59.58
10:55:00	297.37	220.94	5.70	13.55	40.11
10:56:00	302.92	214.88	5.88	13.51	70.39
10:57:00	301.65	214.57	5.74	13.57	57.09
Averages for 21 Points	304.07	216.73	5.85	13.50	69.53

Client :JEA/SJRPP
Site :JACKSONVILLE,FL.
Unit :1
Project :00-205
Comment :RUN 5 LOAD High
Test Date :10/18/00 Time :11:11 thru 11:32

Time	1032 NOX PPM	1031 SO2 PPM	1030 O2 %	1029 CO2 %	1028 CO PPM
11:11:00	299.50	221.49	5.87	13.46	62.67
11:12:00	301.04	219.35	5.83	13.52	57.68
11:13:00	299.16	218.38	5.81	13.54	44.27
11:14:00	301.76	215.61	5.91	13.46	65.14
11:15:00	300.24	218.59	5.73	13.58	60.05
11:16:00	298.53	214.13	5.88	13.52	54.31
11:17:00	300.52	210.82	5.70	13.66	54.52
11:18:00	302.81	206.87	5.78	13.58	57.78
11:19:00	297.45	209.75	5.71	13.60	73.66
11:20:00	300.27	207.22	5.85	13.54	50.19
11:21:00	298.39	211.57	5.80	13.61	79.14
11:22:00	302.12	209.97	5.82	13.50	41.82
11:23:00	297.48	209.77	5.86	13.51	52.06
11:24:00	304.08	211.51	5.95	13.45	46.57
11:25:00	302.23	211.32	5.96	13.46	43.47
11:26:00	298.55	208.23	5.93	13.45	35.15
11:27:00	294.77	209.31	5.71	13.61	120.58
11:28:00	293.56	205.82	5.81	13.53	81.02
11:29:00	302.42	204.24	5.92	13.50	55.16
11:29:59	298.03	207.57	5.65	13.66	89.31
11:30:59	296.79	202.10	5.94	13.38	32.33
11:31:59	297.01	198.36	5.91	13.44	33.31
Averages for 22 Points	299.39	210.54	5.83	13.52	58.64

Client :JEA/SJRPP
Site :JACKSONVILLE,FL.
Unit :1
Project :00-205
Comment :RUN 6 LOAD High
Test Date :10/18/~~88~~ Time :11:45 thru 12:06

Time	1032 NOX PPM	1031 SO2 PPM	1030 O2 %	1029 CO2 %	1028 CO PPM
11:45:01	297.21	220.34	5.96	13.41	23.82
11:46:01	300.57	214.66	5.89	13.51	39.86
11:47:01	294.58	206.66	5.68	13.67	48.10
11:48:01	296.82	206.21	5.60	13.66	73.28
11:49:01	300.27	200.29	5.82	13.53	77.24
11:50:01	301.35	197.68	5.92	13.46	25.32
11:51:01	293.06	199.36	5.79	13.56	129.48
11:52:01	292.68	197.79	5.90	13.46	46.12
11:53:01	297.65	200.48	5.89	13.51	55.01
11:54:01	296.88	204.14	5.84	13.53	39.38
11:55:01	296.04	206.12	5.66	13.66	218.60
11:56:01	292.82	206.62	5.66	13.61	94.01
11:57:01	297.49	204.11	5.80	13.49	67.54
11:58:01	297.21	201.66	5.71	13.65	71.82
11:59:01	293.16	203.40	5.67	13.64	86.32
12:00:01	297.32	200.04	5.88	13.44	42.77
12:01:01	299.48	197.95	5.98	13.43	28.55
12:02:01	295.67	196.58	5.91	13.49	26.86
12:03:01	294.42	195.90	5.87	13.51	46.90
12:04:01	289.37	199.40	5.69	13.61	160.98
12:05:01	298.98	194.83	5.88	13.39	44.51
Averages for 21 Points	296.33	202.58	5.80	13.53	68.87

Client :JEA/SJRPP
Site :JACKSONVILLE,FL.
Unit :1
Project :00-205
Comment :RUN 7 LOAD High
Test Date :10/18/00 Time :12:47 thru 13:08 Pag

Time	1032 NOX PPM	1031 SO2 PPM	1030 O2 %	1029 CO2 %	1028 CO PPM
12:47:02	292.32	191.41	5.64	13.78	89.93
12:48:02	304.14	194.32	5.51	13.87	129.86
12:49:02	302.26	191.23	5.68	13.73	45.73
12:50:02	312.55	192.48	5.75	13.66	41.75
12:51:02	313.45	190.99	5.90	13.59	35.58
12:52:02	305.43	193.98	5.67	13.77	81.17
12:53:02	306.56	195.98	5.66	13.74	41.05
12:54:02	309.56	196.94	5.76	13.68	45.55
12:55:02	311.68	198.93	5.75	13.75	22.43
12:56:02	307.38	199.78	5.63	13.81	35.48
12:57:02	306.66	196.39	5.76	13.66	62.12
12:58:02	310.91	194.57	5.74	13.71	93.01
12:59:02	312.26	196.37	5.66	13.77	91.52
13:00:02	311.93	196.72	5.56	13.86	137.95
13:01:02	313.23	193.88	5.66	13.72	63.87
13:02:02	311.30	191.81	5.67	13.71	36.71
13:03:02	311.30	192.20	5.72	13.72	51.48
13:04:02	311.71	195.10	5.65	13.77	74.51
13:05:02	313.04	195.62	5.69	14.00	60.97
13:06:02	305.09	193.48	5.78	13.62	21.16
13:07:02	311.77	190.52	5.83	13.57	23.69
Averages for 21 Points	308.78	194.41	5.69	13.73	61.21

Client :JEA/SJRPP
Site :JACKSONVILLE,FL.
Unit :1
Project :00-205
Comment :RUN 8 LOAD Hgh
Test Date :10/18/88 Time :13:19 thru 13:40

Time	1032 NOX PPM	1031 SO2 PPM	1030 O2 %	1029 CO2 %	1028 CO PPM
13:19:02	316.62	203.80	5.93	13.55	54.74
13:20:02	315.77	196.93	5.92	13.44	24.22
13:21:02	313.04	194.72	5.88	13.51	50.49
13:22:02	315.52	194.85	5.79	13.56	36.79
13:23:02	317.84	194.29	5.90	13.47	21.77
13:24:02	316.49	194.45	5.97	13.42	13.40
13:25:02	316.71	193.83	6.04	13.41	35.31
13:26:02	312.85	197.64	5.80	13.57	38.50
13:27:01	309.89	199.45	5.73	13.59	29.59
13:28:01	306.11	197.64	5.85	13.53	23.26
13:29:01	307.02	199.60	5.90	13.45	21.06
13:30:01	319.94	195.54	6.05	13.40	78.23
13:31:01	329.01	195.40	6.13	13.26	29.13
13:32:01	320.16	193.01	6.22	13.20	23.18
13:33:01	330.06	194.02	6.17	13.25	20.88
13:34:01	330.81	193.42	6.22	13.21	37.61
13:35:01	331.50	193.99	6.36	13.08	12.27
13:36:01	327.00	195.42	6.30	13.12	38.43
13:37:01	328.63	192.85	6.30	13.17	20.21
13:38:01	325.98	191.57	6.29	13.17	9.37
13:39:01	323.44	193.17	6.26	13.16	15.15
Averages for 21 Points	319.73	195.50	6.04	13.35	30.17

Client :JEA/SJRPP
Site :JACKSONVILLE,FL.
Unit :1
Project :00-205
Comment :RUN 9 LOAD High
Test Date :10/18/00 Time :13:52 thru 14:13

Time	1032 NOX PPM	1031 SO2 PPM	1030 O2 %	1029 CO2 %	1028 CO PPM
13:52:02	319.02	200.75	6.30	13.11	17.73
13:53:02	315.44	196.04	6.26	13.16	19.96
13:54:02	314.72	194.13	6.25	13.20	11.44
13:55:02	305.40	196.45	6.11	13.29	39.39
13:56:02	300.07	193.61	6.05	13.32	24.18
13:57:02	301.37	189.03	6.29	13.14	17.48
13:58:01	304.71	189.94	6.09	13.32	56.33
13:59:01	310.94	190.21	6.14	13.29	16.79
14:00:01	307.91	191.77	6.03	13.34	33.53
14:01:01	311.05	189.86	6.14	13.23	15.53
14:02:01	313.73	187.04	6.33	13.15	11.44
14:03:01	312.76	185.64	6.22	13.22	16.24
14:04:01	307.69	190.32	5.97	13.37	38.63
14:05:01	312.10	189.19	6.14	13.27	23.70
14:06:01	312.57	192.33	5.93	13.41	30.41
14:07:01	317.89	187.31	6.19	13.26	21.00
14:08:01	316.49	186.24	6.19	13.22	20.67
14:09:01	314.14	192.04	6.05	13.31	14.56
14:10:01	298.97	193.60	6.01	13.43	30.66
14:11:01	304.65	191.62	6.10	13.28	39.39
14:12:01	315.49	190.89	6.04	13.37	28.83
Averages for 21 Points	310.33	191.33	6.13	13.27	25.13

Client :JEA/SJRPP
Site :JACKSONVILLE,FL.
Unit :1
Project :00-205
Comment :RUN 10 LOAD High
Test Date :10/18/00 Time :14:26 thru 14:47

Time	1032 NOX PPM	1031 SO2 PPM	1030 O2 %	1029 CO2 %	1028 CO PPM
14:26:01	302.09	199.69	6.04	13.28	29.97
14:27:01	301.98	196.73	6.14	13.22	23.63
14:28:01	303.02	191.89	6.17	13.24	13.19
14:29:01	297.83	191.67	6.17	13.23	22.94
14:30:01	310.17	188.70	6.34	13.08	11.30
14:31:01	311.27	183.64	6.39	13.08	7.77
14:32:00	303.38	185.67	6.05	13.39	64.83
14:33:00	313.87	186.81	6.16	13.26	14.81
14:34:00	311.22	184.16	6.26	13.14	14.68
14:35:00	307.85	186.83	6.18	13.27	16.17
14:36:00	299.11	189.70	6.10	13.30	30.15
14:37:00	293.83	187.45	6.01	13.41	40.26
14:38:00	300.65	184.82	6.06	13.34	36.70
14:39:00	302.77	184.20	6.26	13.19	36.97
14:40:00	302.88	185.84	6.07	13.39	23.47
14:41:00	305.73	184.87	6.10	13.32	28.63
14:42:00	304.21	185.97	6.07	14.01	35.49
14:43:00	297.09	184.34	6.10	13.32	15.78
14:44:00	302.53	184.89	6.18	13.30	13.11
14:45:00	302.16	185.43	6.07	13.43	44.22
14:46:00	304.07	185.26	5.98	13.44	34.64
Averages for 21 Points	303.70	187.55	6.13	13.31	26.60

Client :JEA/SJRPP
Site :JACKSONVILLE,FL.
Unit :1
Project :00-205
Comment :RUN 11 LOAD High
Test Date :10/18/00 Time :15:00 thru 15:21

Time	1032 NOX PPM	1030 O2 %	1029 CO2 %	1028 CO PPM
15:00:02	301.50	6.15	13.27	18.62
15:01:02	302.25	6.13	13.33	14.08
15:02:02	300.57	6.05	13.38	23.07
15:03:02	299.91	6.07	13.31	47.13
15:04:02	302.70	6.13	13.24	35.52
15:05:02	305.56	6.22	13.24	13.81
15:06:02	299.33	5.98	13.41	51.60
15:07:01	303.63	6.11	13.27	33.27
15:08:01	299.09	6.09	13.34	32.02
15:09:01	301.12	6.08	13.36	22.55
15:10:01	303.77	6.25	13.24	18.68
15:11:01	305.03	6.20	13.25	14.74
15:12:01	305.75	6.14	13.29	21.90
15:13:01	300.21	6.09	13.36	33.66
15:14:01	303.82	6.05	13.36	52.59
15:15:01	304.59	6.01	13.38	35.24
15:16:01	306.63	6.00	13.39	24.11
15:17:01	300.20	6.04	13.39	41.54
15:18:01	305.70	6.16	13.30	35.43
15:19:01	295.79	5.95	13.50	35.72
15:20:01	303.23	6.19	13.28	22.32
Averages for 21 Points	302.39	6.09	13.32	29.88

Client :JEA/SJRPP
Site :JACKSONVILLE,FL.
Unit :1
Project :00-205
Comment :RUN 12 LOAD High
Test Date :10/18/00 Time :15:30 thru 15:51

Time	1032 NOX PPM	1030 O2 %	1029 CO2 %	1028 CO PPM
15:30:01	307.52	6.13	13.31	30.63
15:31:01	304.65	6.13	13.31	25.38
15:32:01	307.41	6.02	13.37	48.19
15:33:01	305.56	6.04	13.40	34.59
15:34:01	291.59	6.01	13.40	17.81
15:35:01	289.13	6.16	13.26	20.26
15:36:01	305.26	6.29	13.16	11.50
15:37:01	305.28	6.25	13.23	18.75
15:38:00	306.44	6.10	13.34	23.10
15:39:00	303.18	6.00	13.43	41.73
15:40:00	305.48	5.97	13.37	30.91
15:41:00	295.32	6.05	13.35	14.67
15:42:00	296.73	6.28	13.22	22.76
15:43:00	302.05	6.20	13.29	33.56
15:44:00	292.53	6.01	13.41	25.63
15:45:00	293.39	5.95	13.43	30.62
15:46:00	291.26	5.87	13.56	74.15
15:47:00	291.78	5.93	13.45	48.19
15:48:00	294.37	6.10	13.28	34.23
15:49:00	305.50	6.13	13.28	16.33
15:50:00	294.92	6.02	13.38	30.30
Averages for 21 Points	299.49	6.07	13.34	30.15

STACK RATA

SYSTEM CALIBRATION BIAS AND DRIFT DATA

CLIENT JEA/SJRPP PROJECT # 00-205 TEST DATE 10-18-00
SOURCE IDENTIFICATION Unit I OPERATOR B. Howes

RUN NO. 1 GAS TYPE: NOX SPAN: 0-1000	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.10	.01	.1	.01	0
UPSCALE GAS 558	558	557	.10	558	0	.10

RUN NO. 1 GAS TYPE: SO2 SPAN: 0-300	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	0	0	0	0	0
UPSCALE GAS 166.1	166.1	166.1	0	166	.03	.03

RUN NO. 1 GAS TYPE: CO2 SPAN: 0-20%	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.02	.10	.05	.25	.15
UPSCALE GAS 11.13	11.11	11.08	-.15	11.07	-.20	-.05

RUN NO. 1 GAS TYPE: O2 SPAN: 0-25%	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.01	.04	.01	.04	0
UPSCALE GAS 12.0	12.0	12.0	0	11.99	-.04	-.04

RUN NO. 1 GAS TYPE: CO SPAN: 0-1000	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	0	0	1.0	.10	.10
UPSCALE GAS 322	322	321	.10	322	0	.10

SYSTEM CALIBRATION BIAS = (SYSTEMCAL RESPONSE - ANALYZER CAL RESPONSE / SPAN) X 100

DRIFT = (FINAL SYSTEM CAL RESPONSE - INITIAL CAL RESPONSE / SPAN) X 100

STACK RATA

SYSTEM CALIBRATION BIAS AND DRIFT DATA

CLIENT SEA/SJRPP PROJECT # 00-205 TEST DATE 10-18-00
SOURCE IDENTIFICATION Unit 1 OPERATOR B. Howes

RUN NO. 2 GAS TYPE: NOX SPAN: 0-1000	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.10	.01	.30	.03	.02
UPSCALE GAS 558	558	558	0	557	.01	.01

RUN NO. 2 GAS TYPE: SO2 SPAN: 0-300	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	0	0	.2	.06	.06
UPSCALE GAS 166.1	166.1	166	.03	165	-.36	-.33

RUN NO. 2 GAS TYPE: CO2 SPAN: 0-20%	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.05	.25	.05	.25	0
UPSCALE GAS 11.13	11.11	11.07	-.20	11.08	-.15	.05

RUN NO. 2 GAS TYPE: O2 SPAN: 0-25%	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.01	.04	.01	.04	0
UPSCALE GAS 12.0	12.0	11.99	-.04	12.0	0	+.04

RUN NO. 2 GAS TYPE: CO SPAN: 0-1000	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	1.0	.10	.60	.06	-.04
UPSCALE GAS 322	322	322	0	323	+.1	+.10

SYSTEM CALIBRATION BIAS = (SYSTEMCAL RESPONSE - ANALYZER CAL. RESPONSE / SPAN) X 100

DRIFT = (FINAL SYSTEM CAL. RESPONSE - INITIAL CAL. RESPONSE / SPAN) X 100

STACK RATA

SYSTEM CALIBRATION BIAS AND DRIFT DATA

CLIENT SEA/SJRPP PROJECT # 00-205 TEST DATE 10-18-00
SOURCE IDENTIFICATION unit I OPERATOR B. Howes

RUN NO. 3 GAS TYPE: NOX SPAN: 0-1000		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.30	.03	.62	.062	.032
UPSCALE GAS	558	558	557	.01	555	-.30	-.20

RUN NO. 3 GAS TYPE: SO2 SPAN: 0-300		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.2	.06	.3	.10	.033
UPSCALE GAS	166.1	166.1	165	-.36	166	.033	.333

RUN NO. 3 GAS TYPE: CO2 SPAN: 0-20%		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.05	.25	.05	.25	0
UPSCALE GAS	11.13	11.11	11.08	-.15	11.08	-.15	0

RUN NO. 3 GAS TYPE: O2 SPAN: 0-25%		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.01	.04	.01	.04	0
UPSCALE GAS	12.0	12.0	12.0	0	12.0	0	0

RUN NO. 3 GAS TYPE: CO SPAN: 0-1000		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.60	.06	.80	.08	.02
UPSCALE GAS	322	322	323	+.1	324	.20	.10

SYSTEM CALIBRATION BIAS = (SYSTEMCAL RESPONSE - ANALYZER CAL. RESPONSE / SPAN) X 100

DRIFT = (FINAL SYSTEM CAL. RESPONSE - INITIAL CAL. RESPONSE / SPAN) X 100

STACK
RATA

SYSTEM CALIBRATION BIAS AND DRIFT DATA

CLIENT SEA/SJRPP PROJECT # 00-205 TEST DATE 10-18-00
SOURCE IDENTIFICATION Unit I OPERATOR B. Howes

RUN NO. 4 GAS TYPE: NOx SPAN: 0-1000	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.62	.062	.36	.036	-.026
UPSCALE GAS 558	558	555	-.30	559	.10	.40

RUN NO. 4 GAS TYPE: SO2 SPAN: 0-300	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.30	.10	0	0	-.10
UPSCALE GAS 166.1	166.1	166	.033	166	-.033	0

RUN NO. 4 GAS TYPE: CO2 SPAN: 0-20%	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.05	.25	.04	.20	-.05
UPSCALE GAS 11.13	11.11	11.08	-.15	11.08	-.15	0

RUN NO. 4 GAS TYPE: O2 SPAN: 0-25%	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.01	.04	.02	.08	.04
UPSCALE GAS 12.0	12.0	12.0	0	12.0	0	0

RUN NO. 4 GAS TYPE: CO SPAN: 0-1000	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.80	.08	.79	-.080	-.001
UPSCALE GAS 322	322	324	.20	324	.20	0

SYSTEM CALIBRATION BIAS = (SYSTEMCAL RESPONSE - ANALYZER CAL RESPONSE / SPAN) X 100

DRIFT = (FINAL SYSTEM CAL RESPONSE - INITIAL CAL RESPONSE / SPAN) X 100

STACK
RATA

SYSTEM CALIBRATION BIAS AND DRIFT DATA

CLIENT SEA/SJRPP PROJECT # 00-205 TEST DATE 10-18-00
SOURCE IDENTIFICATION Unit I OPERATOR B. Howes

RUN NO. 5 GAS TYPE: NOX SPAN: 0-1000		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.36	.036	.48	.048	.012
UPSCALE GAS	558	558	559	.10	559	.10	0

RUN NO. 5 GAS TYPE: SO2 SPAN: 0-300		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	0	0	.29	.096	.096
UPSCALE GAS	166.1	166.1	166	-.033	167	.30	.333

RUN NO. 5 GAS TYPE: CO2 SPAN: 0-20%		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.04	.20	.04	.20	0
UPSCALE GAS	11.13	11.11	11.08	-.15	11.08	.15	0

RUN NO. 5 GAS TYPE: O2 SPAN: 0-25%		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.02	.08	.04	.04	-.04
UPSCALE GAS	12.0	12.0	12.0	0	12.0	0	0

RUN NO. 5 GAS TYPE: CO SPAN: 0-1000		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.79	-.079	.76	.076	-.003
UPSCALE GAS	322	322	324	.20	323	.10	-.10

SYSTEM CALIBRATION BIAS = (SYSTEMCAL RESPONSE - ANALYZER CAL. RESPONSE / SPAN) X 100

DRIFT = (FINAL SYSTEM CAL. RESPONSE - INITIAL CAL. RESPONSE / SPAN) X 100

STACK RATA

SYSTEM CALIBRATION BIAS AND DRIFT DATA

CLIENT JEA/SJRPP PROJECT # 00-205 TEST DATE 10-18-00
SOURCE IDENTIFICATION Unit I OPERATOR B. Howes

RUN NO. 6 GAS TYPE: NOX SPAN: 0-1000	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.48	.048	.30	.03	-.018
UPSCALE GAS 558	558	559	.10	557	-.10	-.20

RUN NO. 6 GAS TYPE: SO2 SPAN: 0-300	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.29	.096	.47	.157	.06
UPSCALE GAS 166.1	166.1	167	.30	167	.30	0

RUN NO. 6 GAS TYPE: CO2 SPAN: 0-20%	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.04	.20	.05	.25	.05
UPSCALE GAS 11.13	11.11	11.08	.15	11.07	-.20	-.05

RUN NO. 6 GAS TYPE: O2 SPAN: 0-25%	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.01	.04	.02	.08	.04
UPSCALE GAS 12.0	12.0	12.0	0	12.01	.04	.04

RUN NO. 6 GAS TYPE: CO SPAN: 0-1000	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.76	.076	.87	.087	.011
UPSCALE GAS 322	322	323	.10	323	.10	0

SYSTEM CALIBRATION BIAS = (SYSTEMCAL RESPONSE - ANALYZER CAL RESPONSE / SPAN) X 100

DRIFT = (FINAL SYSTEM CAL RESPONSE - INITIAL CAL RESPONSE / SPAN) X 100

STACK
RATA

SYSTEM CALIBRATION BIAS AND DRIFT DATA

CLIENT SEA/SJRPP PROJECT # 00-205 TEST DATE 10-18-00
SOURCE IDENTIFICATION Unit I OPERATOR B. Howes

RUN NO. 7 GAS TYPE: NOX SPAN: 0-1000	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.30	.03	.35	.035	.005
UPSCALE GAS 558	558	557	-.10	559	.10	.20

RUN NO. 7 GAS TYPE: SO2 SPAN: 0-300	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.47	.157	.57	.19	.033
UPSCALE GAS 166.1	166.1	167	.30	165	.367	-.667

RUN NO. 7 GAS TYPE: CO2 SPAN: 0-20%	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.05	.25	.05	.25	0
UPSCALE GAS 11.13	11.11	11.07	-.20	11.08	-.15	.05

RUN NO. 7 GAS TYPE: O2 SPAN: 0-25%	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.02	.08	.02	.08	0
UPSCALE GAS 12.0	12.0	12.01	.04	12.0	0	-.04

RUN NO. 7 GAS TYPE: CO SPAN: 0-1000	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.87	.087	1.0	.10	.013
UPSCALE GAS 322	322	323	.10	323	.10	0

SYSTEM CALIBRATION BIAS = (SYSTEMCAL RESPONSE - ANALYZER CAL RESPONSE / SPAN) X 100

DRIFT = (FINAL SYSTEM CAL RESPONSE - INITIAL CAL RESPONSE / SPAN) X 100

STACK RATA

SYSTEM CALIBRATION BIAS AND DRIFT DATA

CLIENT JEA/SJRPP PROJECT # 00-205 TEST DATE 10-18-00
SOURCE IDENTIFICATION Unit I OPERATOR B. Howes

RUN NO. 8 GAS TYPE: NOX SPAN: 0-1000		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.35	.035	.12	.012	-.023
UPSCALE GAS	558	558	559	.10	558	0	-.10

RUN NO. 8 GAS TYPE: SO2 SPAN: 0-300		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.57	.19	.50	.167	-.023
UPSCALE GAS	166.1	166.1	165	.317	166	-.033	.333

RUN NO. 8 GAS TYPE: CO2 SPAN: 0-20%		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.05	.25	.05	.25	0
UPSCALE GAS	11.13	11.11	11.08	-.15	11.07	-.20	-.05

RUN NO. 8 GAS TYPE: O2 SPAN: 0-25%		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.02	.08	.02	.08	0
UPSCALE GAS	12.0	12.0	12.0	0	12.0	0	0

RUN NO. 8 GAS TYPE: CO SPAN: 0-1000		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	1.0	.10	.59	.059	-.041
UPSCALE GAS	322	322	323	+.10	322	0	-.10

SYSTEM CALIBRATION BIAS = (SYSTEMCAL RESPONSE - ANALYZER CAL RESPONSE / SPAN) X 100

DRIFT = (FINAL SYSTEM CAL RESPONSE - INITIAL CAL RESPONSE / SPAN) X 100

STACK DATA

SYSTEM CALIBRATION BIAS AND DRIFT DATA

CLIENT SEA/SJRPP PROJECT # 00-205 TEST DATE 10-18-00
SOURCE IDENTIFICATION Unit I OPERATOR B. Howes

RUN NO. 9 GAS TYPE: NOX SPAN: 0-1000	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.12	.012	.11	.011	-.001
UPSCALE GAS 558	558	558	0	556	-.20	-.20

RUN NO. 9 GAS TYPE: SO2 SPAN: 0-300	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.50	.167	.33	.11	.056
UPSCALE GAS 166.1	166.1	166	-.033	166	-.033	0

RUN NO. 9 GAS TYPE: CO2 SPAN: 0-20%	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.05	.25	.06	.30	.05
UPSCALE GAS 11.13	11.11	11.07	-.20	11.09	-.10	.10

RUN NO. 9 GAS TYPE: O2 SPAN: 0-25%	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.02	.08	.02	.08	0
UPSCALE GAS 12.0	12.0	12.0	0	12.0	0	0

RUN NO. 9 GAS TYPE: CO SPAN: 0-1000	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.59	.059	.68	.068	.009
UPSCALE GAS 322	322	322	0	322	0	0

SYSTEM CALIBRATION BIAS = (SYSTEMCAL RESPONSE - ANALYZER CAL. RESPONSE / SPAN) X 100

DRIFT = (FINAL SYSTEM CAL. RESPONSE - INITIAL CAL. RESPONSE / SPAN) X 100

STACK DATA

SYSTEM CALIBRATION BIAS AND DRIFT DATA

CLIENT JEA/SJRPP PROJECT # 00-205 TEST DATE 10-18-00
SOURCE IDENTIFICATION unit 1 OPERATOR B. Howes

RUN NO. 10 GAS TYPE: NOX SPAN: 0-1000		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.11	.011	.41	.041	.03
UPSCALE GAS	558	558	556	-.20	556	-.20	0

RUN NO. 10 GAS TYPE: SO2 SPAN: 0-300		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.33	.11	.37	.123	.013
UPSCALE GAS	166.1	166.1	166	-.033	167	.30	.333

RUN NO. 10 GAS TYPE: CO2 SPAN: 0-20%		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.06	.30	.06	.30	0
UPSCALE GAS	11.13	11.11	11.09	-.10	11.09	-.10	0

RUN NO. 10 GAS TYPE: O2 SPAN: 0-25%		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.02	.08	.02	.08	0
UPSCALE GAS	12.0	12.0	12.0	0	11.99	-.04	-.04

RUN NO. 10 GAS TYPE: CO SPAN: 0-1000		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.68	.068	.56	.056	-.012
UPSCALE GAS	322	322	322	0	323	.10	.10

SYSTEM CALIBRATION BIAS = (SYSTEMCAL RESPONSE - ANALYZER CAL RESPONSE / SPAN) X 100

DRIFT = (FINAL SYSTEM CAL RESPONSE - INITIAL CAL RESPONSE / SPAN) X 100

STACK RATA

SYSTEM CALIBRATION BIAS AND DRIFT DATA

CLIENT SEA/SJRPP PROJECT # 00-205 TEST DATE 10-18-00
SOURCE IDENTIFICATION unit I OPERATOR B. Howes

RUN NO. 11 GAS TYPE: NOX SPAN: 0-1000	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.41	.041	.10	.01	-.031
UPSCALE GAS 558	558	556	-.20	556	-.20	0

STOP →

RUN NO. 11 GAS TYPE: SO2 SPAN: 0-300	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.37	.123			
UPSCALE GAS 166.1	166.1	167	.30			

RUN NO. 11 GAS TYPE: CO2 SPAN: 0-20%	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.06	.30	.06	.30	0
UPSCALE GAS 11.13	11.11	11.09	-.10	11.09	-.10	0

RUN NO. 11 GAS TYPE: O2 SPAN: 0-25%	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.02	.08	.02	.08	0
UPSCALE GAS 12.0	12.0	11.99	-.04	11.99	-.04	0

RUN NO. 11 GAS TYPE: CO SPAN: 0-1000	ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
		SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS 0	0	.56	.056	.46	.046	-.01
UPSCALE GAS 322	322	323	.10	322	0	-.10

SYSTEM CALIBRATION BIAS = (SYSTEMCAL RESPONSE - ANALYZER CAL. RESPONSE / SPAN) X 100

DRIFT = (FINAL SYSTEM CAL. RESPONSE - INITIAL CAL. RESPONSE / SPAN) X 100

STACK RATA

SYSTEM CALIBRATION BIAS AND DRIFT DATA

CLIENT JEA/SJRPP PROJECT # 00-205 TEST DATE 10-18-00
SOURCE IDENTIFICATION unit 1 OPERATOR B. Howes

RUN NO. 12 GAS TYPE: NOX SPAN: 0-1000		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.10	.01	.32	.032	.022
UPSCALE GAS	558	558	556	-.20	556	-.20	0

RUN NO. 12 GAS TYPE: SO2 SPAN: 0-300		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0					
UPSCALE GAS	166.1	166.1					

RUN NO. 12 GAS TYPE: CO2 SPAN: 0-22%		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.06	.30	.06	.30	0
UPSCALE GAS	11.13	11.11	11.09	-.10	11.09	-.10	0

RUN NO. 12 GAS TYPE: O2 SPAN: 0-25%		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.02	.08	.02	.08	0
UPSCALE GAS	12.0	12.0	11.99	-.04	11.99	-.04	0

RUN NO. 12 GAS TYPE: CO SPAN: 0-1000		ANALYZER RESPONSE	INITIAL VALUE		FINAL VALUE		DRIFT % OF SPAN
			SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	SYSTEM RESPONSE	SYSTEM CAL BIAS % OF SPAN	
ZERO GAS	0	0	.46	.046	.54	.054	.008
UPSCALE GAS	322	322	322	0	322	0	0

SYSTEM CALIBRATION BIAS = (SYSTEMCAL RESPONSE - ANALYZER CAL RESPONSE / SPAN) X 100

DRIFT = (FINAL SYSTEM CAL RESPONSE - INITIAL CAL RESPONSE / SPAN) X 100

DS#4

Commercial Testing Engineering Co.

H_2SO_4

Field Data Sheet

Client: SJRPP				Date 10-17-00	Page 1 Of 2
Project No. 00-205		Operator: DANIELS		Orsat Analysis	
Sampling Location UNIT 1 STACK		Run No. 1 (H_2SO_4)		CO2 / +O2 / O2 / CO	
Filter No. N/A	Acetone No. N/A	Condensate 95 ml	Silica Gel 7.1 gr	12.5 / 18.7 / 6.2 / ___	
Barometric Pressure 29.59	Static Pressure -.52	Probe No. N-8-1		___ / ___ / ___ / ___	
Ambient Temp. 90°	Pitot Coefficient .844	Pitot No. N/A		___ / ___ / ___ / ___	
Nozzle Diameter .192	Nozzle No. 4-22	Meter No. AQEX7		___ / ___ / ___ / ___	
Meter Corr. Factor .971	Area of Flue 471.43	Meter-Orifice 2.791		___ / ___ / ___ / ___	
Sample Pt. Time 5 min	Assumed % Moisture 13 %	Leak Test	Before .006 @ 14 [mmHG]	After .004 @ 8 [mmHG]	

Sample Point	ΔP	√ΔP	ΔH	Temperature F: Stack	Probe	Imp. Out	Oven	Meter In	Meter Out	Vac. Pr (in. HG)	Dry Gas Meter Reading in Cu. Ft.
START	0810										551.390
						<168	N/A	N/A			
D 1	1.4	1.183	1.45	134	247				94	2.0	554.99
2	1.35	1.162	1.39	133	245				94	2.0	558.53
3	1.20	1.095	1.24	133	247				93	2.0	561.86
B 1	1.50	1.225	1.55	133	249				93	2.0	565.59
2	1.60	1.265	1.65	133	246				94	3.0	569.44
3	1.20	1.095	1.24	133	244				93	3.0	572.77
B 1	1.50	1.225	1.55	132	245				93	3.0	576.50
2	1.50	1.225	1.55	133	245				94	3.0	580.23
3	1.30	1.140	1.34	133	246				94	3.0	583.70
D 1	1.50	1.225	1.55	133	247				94	3.0	587.43
2	1.40	1.183	1.45	132	248				95	3.0	591.03
3	1.20	1.095	1.24	132	249				95	3.0	594.366
AVG		1.177	1.43	133					94		42.976
STOP	0915	✓	✓	(132.833)					(93.833)		

Pitot Tube Leak Check: Before OK After OK

Integrated Bag Leak Check Before OK After OK

H_2SO_4 = 6.39 ppm

H_2SO_4 Field Data Sheet

DSET 5

Client: SJRPP				Date 10-17-00	Page 1 Of 2
Project No. 00-205	Operator: DANIELS			Orsat Analysis	
Sampling Location UNIT #1 STACK	Run No. 2 (H_2SO_4)			CO2 / +O2 / O2 / CO	
Filter No. N/A	Acetone No. N/A	Condensate 100 ml	Silica Gel 8.0 gr	12.7 / 19.2 / 6.5 / ____	
Barometric Pressure 29.59	Static Pressure -.52		Probe No. N-8-1	____ / ____ / ____ / ____	
Ambient Temp. 90°	Pitot Coefficient .844		Pitot No. N/A	____ / ____ / ____ / ____	
Nozzle Diameter .192	Nozzle No. 4-22		Meter No. APEX 7	____ / ____ / ____ / ____	
Meter Corr. Factor .971	Area of Flue 471.43		Meter-Orifice 2.791		
Sample Pt. Time 5 min	Assumed % Moisture 13 %		Leak Test	Before .004 @ 12 HG	After .002 @ 8 HG

Sample Point	ΔP	√ΔP	ΔH	Temperature F: Stack	Probe	Imp. Out	Oven	Meter In	Meter Out	Vac. Pr (in. HG)	Dry Gas Meter Reading In Cu. Ft
START	0930										595.125
						<68	N/A	N/A			
C1	1.50	1.225	1.55	133	245				94	3.0	598.85
2	1.45	1.204	1.50	133	244				94	3.0	602.51
3	1.15	1.072	1.19	132	247				94	3.0	605.77
B1	1.50	1.225	1.55	133	247				94	3.0	609.50
2	1.45	1.204	1.50	133	248				95	3.0	613.16
3	1.25	1.118	1.29	133	249				95	3.0	616.56
A1	1.55	1.245	1.60	133	247				95	3.0	620.35
2	1.60	1.265	1.65	133	245				96	3.0	624.20
3	1.20	1.095	1.24	132	244				96	3.0	627.53
D1	1.35	1.162	1.39	134	248				96	3.0	631.07
2	1.35	1.162	1.39	134	245				96	3.0	634.61
3	1.20	1.095	1.24	133	246				97	3.0	637.948
AVG:		1.173	1.42	133					95		42.823
STOP:	1035		(1.424)						(95.167)		

Pitot Tube Leak Check: Before OK After OK

Integrated Bag Leak Check: Before OK After OK

H_2SO_4 = 6.87 ppm

BEST AVAILABLE COPY

H2SO4 — Field Data Sheet — DS#6

Client: SJRPP		Date: 10/17/00	Page:
Project No.: 00-205	Operator: DANIELS		
Sampling Location: UNIT 1 STACK	Run No.: 3 (H2SO4)		
Filter No.: N/A	Acetone No.: N/A	Condensate: 100 ml	Silica Gel: 7.8 gr
Barometric Pressure: 29.59	Static Pressure: -.52	Probe No.: N-8-1	
Ambient Temp.: 92°	Pitot Coefficient: .844	Pitot No.: N/A	
Nozzle Diameter: .192	Nozzle No.: 4-22	Meter No.: AP&T	
Meter Corr. Factor: .971	Area of Flue: 471.43	Meter-Orifice: 2.791	
Sample Pt. Time: 5 Min	Assumed % Moisture: 13 %	Leak Test	Before .007 @ 12 HS; After .002 @ 8 HS

Orsat Analysis

CO_2	$+O_2$	O_2	CO
12.9	19.1	6.2	

Sample Point	ΔP	√ΔP	ΔH	Temperature F° Stack	Probe	Imp. Out	Oven	Meter In	Meter Out	Vac. Pr (in. HG)	Dry Gas Meter Reading in Cu. F.
START	1050										638.280
						<68	N/A	N/A			
C1	1.50	1.225	1.53	142	244				96	3.0	641.99
2	1.40	1.183	1.43	142	244				96	3.0	645.57
3	1.20	1.095	1.22	141	243				96	3.0	648.88
B1	1.55	1.245	1.58	142	245				97	3.0	652.65
2	1.45	1.204	1.48	142	246				97	3.0	656.29
3	1.20	1.095	1.22	142	245				96	3.0	659.60
A1	1.40	1.183	1.43	142	243				96	3.0	663.18
2	1.35	1.162	1.38	141	244				96	3.0	666.69
3	1.20	1.095	1.22	142	245				96	3.0	670.00
D1	1.40	1.183	1.43	142	246				96	3.0	673.58
2	1.35	1.162	1.38	142	247				97	3.0	677.09
3	1.20	1.095	1.22	141	247				97	3.0	680.408
AVG.	1155	1.161	1.38	142					96		42.128
STOP	1.1555		(1.377)	(141.750)					(96.333)		

Pitot Tube Leak Check: Before OK; After OK

Integrated Bag Leak Check: Before OK; After OK

RUN 3 (SOOT BLOWING)

CTE SINCE 1906

T30

H2SO4 = 7.5 ppm

H_2SO_4 Analysis Sheet

Client SJRPP Analysis Run By DAN DANIELS Date 10-17-00

Project No. 00-205 Plant Site JACKSONVILLE, FL.

Barium Perchlorate Normality .010 / .0096 = Mls H_2SO_4 X Normality / Mls Barium Titrated = 25 x .02 / 52 = .0096

Sampling Location	Run No.	Sample #	Volume of Solution	Volume of Aliquot	Volume to Titrate
UNIT 1 STACK					
BLANK	BLANK	D	100	25	.001 / .001
RUN 1	1	A	200	25	7.7 / 7.7 — H_2SO_4 6.39 ppm
RUN 2	2	B	200	25	8.1 / 8.5 / 8.1 — H_2SO_4 6.67 ppm
RUN 3	3	C	200	25	9.0 / 8.7 / 8.8 — H_2SO_4 7.5 ppm

T31

TSA

Total Source Analysis, Inc.

Environmental Samplers

Plant Data Sheets

ST. JOHNS RIVER POWER PARK
BOILER CONTROL ROOM DATA

UNIT # ONE DATE: 10-17-00

PARAMETER	UNITS	Readings (30 minute intervals)					
Person Recording Data		J.W	J.W	J.W	J.W	J.W	J.W.
Time		0800	0830	0900	0930	1000	1030
Steam Flow	Lb/Hr x 10^6	4.6	4.5	4.5	4.5	4.5	4.4
Air Flow	%	76.3	75.4	76.2	76.0	75.5	74.7
Generator Load (Gross)	Megawatts	670	676	667	674	673	663
Boiler Themal Demand	Megawatts	675	674	670	672	674	663
O2 Flue gas	%	3.0	3.0	2.9	3.0	3.0	3.2
Fuel Flow	%	99.1	98.9	98.9	98.9	98.5	98.5
Coal Totalizer	Tons						
A		44	44	44	44	44	44
B		39	39	39	39	39	39
C		43	43	43	43	43	43
D		—	—	—	—	—	—
E		44	44	44	44	44	44
F		35	35	35	35	35	35
G		44	44	44	44	44	44

Unit in Manual / TF
No soot blowing

ST. JOHNS RIVER POWER PARK
BOILER CONTROL ROOM DATA

UNIT # ONE DATE: 10-17-00

PARAMETER	UNITS	Readings (30 minute intervals)					
Person Recording Data		J.W	J.W	J.W	J.W.	J.W	J.W
Time		1100	1130	1200	1230	1300	1330
Steam Flow	Lb/Hr x 10^6	4.5	4.4	4.4	4.4	4.3	4.4
Air Flow	%	76.1	75.4	76.1	75.0	75.8	74.5
Generator Load (Gross)	Megawatts	660	654	649	653	646	647
Boiler Themal Demand	Megawatts	662	658	654	654	646	650
O2 Flue gas	%	3.1	2.9	2.9	2.9	2.9	2.8
Fuel Flow	%	98.5	98.5	98.5	98.5	98.5	98.5
Coal Totalizer	Tons						
A		44	44	44	44	44	44
B		39	39	39	39	39	39
C		43	43	43	43	43	43
D		—	—	—	—	—	—
E		44	44	44	44	44	44
F		35	35	35	35	35	35
G		44	44	44	44	44	44

Unit in Manual / TF
Blowing soot

stop blowing soot

ST. JOHNS RIVER POWER PARK
BOILER CONTROL ROOM DATA

UNIT # ONE DATE: 10-17-00

PARAMETER	UNITS	Readings (30 minute intervals)					
Person Recording Data		J.W	J.W	J.W	J.W	J.W	
Time		1400	1430	1500	1530	1600	
Steam Flow	Lb/Hr x 10	4.4	4.4	4.4	4.4	4.4	
Air Flow	%	75.0	75.0	75.5	74.9	75.1	
Generator Load (Gross)	Megawatts	645	647	651	648	646	
Boiler Themal Demand	Megawatts	648	650	652	650	649	
O2 Flue gas	%	2.9	2.8	2.8	2.8	2.9	
Fuel Flow	%	98.5	98.5	98.5	98.5	98.5	
Coal Totalizer	Tons						
A		44	44	44	44	44	
B		39	39	39	39	39	
C		43	43	43	43	43	
D		-	-	-	-	-	
E		44	44	44	44	44	
F		35	35	35	35	35	
G		44	44	44	44	44	

Unit Manual / TF
not blowing soot.

ST. JOHNS RIVER POWER PARK
BOILER CONTROL ROOM DATA

UNIT # I DATE: 10-18-00

PARAMETER	UNITS	Readings (30 minute intervals)					
Person Recording Data		DS	DS	DS	DS	DS	DS
Time		0800	0830	0900	0930	1000	1030
Steam Flow	Lb/Hr x 10^6	4.4	4.4	4.6	4.7	4.6	4.6
Air Flow	%	71	72	73	73	73	74
Generator Load (Gross)	Megawatts	648	660	674	673	673	673
Boiler Themal Demand	Megawatts	652	660	675	676	675	674
O2 Flue gas	%	2.8	2.8	2.7	2.75	2.65	2.7
Fuel Flow	%	103	104	104	104	104	104
Coal Totalizer	Tons						
A		45	45	45	45	45	45
B		42	42	42	42	42	42
C		45	45	45	45	45	45
D		[illegible]	—	—	—	—	—
E		47	47	47	47	47	47
F		37	37	37	37	37	37
G		45	47	47	47	47	47

ST. JOHNS RIVER POWER PARK
BOILER CONTROL ROOM DATA
UNIT # I DATE: 10 · 18 · 00

PARAMETER	UNITS	Readings (30 minute intervals)					
Person Recording Data		DS	DS	DS	DS	DS	DS
Time		1100	1130	1200	1230	1300	1330
Steam Flow	Lb/Hr x 10⁶	4.6	4.6	4.6	4.6	4.6	4.6
Air Flow	%	74	74	74	74	74	75
Generator Load (Gross)	Megawatts	674	672	675	673	671	673
Boiler Themal Demand	Megawatts	680	680	682	680	678	682
O2 Flue gas	%	2.65	2.68	2.72	2.65	2.5	2.6
Fuel Flow	%	104	104	104	104	104	104
Coal Totalizer	Tons						
A		45	45	45	45	45	45
B		42	42	42	42	42	42
C		45	45	45	45	45	45
D		—	—	—	—	—	—
E		47	47	47	47	47	47
F		37	37	37	37	37	37
G		47	47	47	47	47	47

ST. JOHNS RIVER POWER PARK
BOILER CONTROL ROOM DATA

UNIT # I DATE: 10·18·00

PARAMETER	UNITS	Readings (30 minute intervals)					
Person Recording Data		DS	DS	DS	DS	DS	
Time		1400	1430	1500	1530	1600	1630
Steam Flow	Lb/Hr x 10⁶	4.6	4.6	4.6	47	4.7	T
Air Flow	%	76	76	76	77	77	E
Generator Load (Gross)	Megawatts	679	678	674	675	680	S T
Boiler Themal Demand	Megawatts	685	688	681	688	692	i
O2 Flue gas	%	2.8	2.8	2.9	2.8	2.8	S
Fuel Flow	%	104	104	104	2.8	2.8	
Coal Totalizer	Tons						
A		45	45	45	45	45	C
B		42	42	42	42	42	M
C		45	45	45	45	45	P
D		—	—	—	—	—	/
E		47	47	47	47	41	C T
F		37	37	37	37	37	E
G		47	47	47	41	41	

ST. JOHNS RIVER POWER PARK
FLUE GAS DESULFURIZATION
OPERATIONAL PARAMETERS

Date: 10 / 18 / 00

UNIT # 1

Initials: LJA

HOUR	PACKING DIFFERENTIAL PRESSURE (inches H2O column) A	B	C
0000			
0100			
0200			
0300			
0400			
0500			
0600			
0700			
0800	5.2		5.4
0900	5.1		5.7
1000	5.1		5.6
1100	5.2		5.7
1200	5.1		5.6
1300	5.2		5.6
1400	5.2		5.7
1500	5.3		5.8
1600	5.3		5.8
1700			
1800			
1900			
2000			
2100			
2200			
2300			

7

Daily Water System Use: _____ (Total Gallons) / 1440 (min/day) = _____ GPM

COMMENTS: In = 1463 out 1552 0800

In = 1463 out 1586 1649

Run #1 H_2SO_4 Plant Data

Enertec NTDAHS®
Average Values Report
10/17/00 16:05

Company: St. Johns River Power Park U#1
Plant: 11201 New Berlin Road
City/St: Jacksonville, FL 32226
Source: Unit 1

Period Start: 10/17/00 08:10
Period End: 10/17/00 09:16
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start	Average 1Unit_Load MW	Average 1Stk_kscfh kscfh
10/17/00 08:10	674.3	103848.0
10/17/00 08:11	672.8	103758.0
10/17/00 08:12	672.2	103662.0
10/17/00 08:13	668.4	103638.0
10/17/00 08:14	664.3	103650.0
10/17/00 08:15	663.5	103440.0
10/17/00 08:16	662.6	103470.0
10/17/00 08:17	665.7	103446.0
10/17/00 08:18	668.0	103914.0
10/17/00 08:19	667.4	104100.0
10/17/00 08:20	665.6	104076.0
10/17/00 08:21	666.8	104088.0
10/17/00 08:22	666.5	104142.0
10/17/00 08:23	667.1	104166.0
10/17/00 08:24	667.2	104166.0
10/17/00 08:25	666.1	104208.0
10/17/00 08:26	666.1	104208.0
10/17/00 08:27	664.5	104208.0
10/17/00 08:28	666.0	104010.0
10/17/00 08:29	666.4	103836.0
10/17/00 08:30	668.9	103848.0
10/17/00 08:31	672.1	103734.0
10/17/00 08:32	671.6	103428.0
10/17/00 08:33	670.4	103428.0
10/17/00 08:34	673.5	103428.0
10/17/00 08:35	673.1	103614.0
10/17/00 08:36	670.2	103680.0
10/17/00 08:37	667.3	103674.0
10/17/00 08:38	664.8	103758.0
10/17/00 08:39	667.0	103806.0
10/17/00 08:40	669.4	103812.0
10/17/00 08:41	673.2	103818.0
10/17/00 08:42	672.0	103878.0
10/17/00 08:43	669.8	103890.0
10/17/00 08:44	667.3	103902.0
10/17/00 08:45	669.9	103782.0
10/17/00 08:46	671.5	103782.0
10/17/00 08:47	672.5	103734.0
10/17/00 08:48	670.1	103626.0
10/17/00 08:49	665.8	103518.0
10/17/00 08:50	665.1	103494.0
10/17/00 08:51	668.2	103506.0
10/17/00 08:52	667.3	103548.0
10/17/00 08:53	665.1	103542.0
10/17/00 08:54	663.5	103548.0
10/17/00 08:55	663.0	103338.0
10/17/00 08:56	666.7	103320.0

10/17/00	08:57	664.4	103296.0
10/17/00	08:58	664.7	103326.0
10/17/00	08:59	664.9	103128.0
10/17/00	09:00	669.0	103020.0
10/17/00	09:01	672.2	102990.0
10/17/00	09:02	673.7	103014.0
10/17/00	09:03	668.7	102978.0
10/17/00	09:04	663.3	102948.0
10/17/00	09:05	664.7	102978.0
10/17/00	09:06	668.0	103002.0
10/17/00	09:07	669.0	102990.0
10/17/00	09:08	669.2	102978.0
10/17/00	09:09	665.1	102990.0
10/17/00	09:10	666.0	102990.0
10/17/00	09:11	666.1	102966.0
10/17/00	09:12	664.0	102936.0
10/17/00	09:13	664.0	102936.0
10/17/00	09:14	664.4	102948.0
10/17/00	09:15	660.6	103518.0
Final Average*		**667.6**	**103551.5**
Maximum*		**674.3**	**104208.0**
Minimum*		**660.6**	**102936.0**

*Does not include Invalid Averaging Periods ("N/A")

Run #2 H2SO4

Enertec NTDAHS®
Average Values Report
10/17/00 16:07

Company: St. Johns River Power Park U#1
Plant: 11201 New Berlin Road
City/St: Jacksonville, FL 32226
Source: Unit 1

Period Start: 10/17/00 09:30
Period End: 10/17/00 10:36
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start	Average 1Unit_Load MW	Average 1Stk_kscfh kscfh
10/17/00 09:30	666.0	103110.0
10/17/00 09:31	670.1	103122.0
10/17/00 09:32	672.9	103098.0
10/17/00 09:33	670.8	103152.0
10/17/00 09:34	664.5	103164.0
10/17/00 09:35	662.0	103164.0
10/17/00 09:36	659.8	102900.0
10/17/00 09:37	664.6	102948.0
10/17/00 09:38	661.9	102948.0
10/17/00 09:39	661.5	102924.0
10/17/00 09:40	666.3	103002.0
10/17/00 09:41	666.4	103044.0
10/17/00 09:42	662.6	103020.0
10/17/00 09:43	659.8	103086.0
10/17/00 09:44	661.0	103152.0
10/17/00 09:45	659.8	103152.0
10/17/00 09:46	657.4	103152.0
10/17/00 09:47	656.5	103134.0
10/17/00 09:48	659.0	103122.0
10/17/00 09:49	656.5	103098.0
10/17/00 09:50	660.0	103110.0
10/17/00 09:51	666.4	102888.0
10/17/00 09:52	666.9	102882.0
10/17/00 09:53	662.1	102870.0
10/17/00 09:54	661.0	102804.0
10/17/00 09:55	658.3	102804.0
10/17/00 09:56	657.2	102792.0
10/17/00 09:57	661.4	102828.0
10/17/00 09:58	667.0	102990.0
10/17/00 09:59	663.7	103002.0
10/17/00 10:00	656.6	102834.0
10/17/00 10:01	655.3	102648.0
10/17/00 10:02	654.1	102672.0
10/17/00 10:03	656.6	102684.0
10/17/00 10:04	661.8	102750.0
10/17/00 10:05	668.7	102816.0
10/17/00 10:06	667.5	102804.0
10/17/00 10:07	660.6	102816.0
10/17/00 10:08	659.5	102816.0
10/17/00 10:09	661.5	102804.0
10/17/00 10:10	660.9	102792.0
10/17/00 10:11	658.8	102816.0
10/17/00 10:12	653.1	102486.0
10/17/00 10:13	652.4	102120.0
10/17/00 10:14	658.3	102144.0
10/17/00 10:15	661.8	102024.0
10/17/00 10:16	661.9	101700.0

10/17/00 10:17	661.6	101700.0
10/17/00 10:18	661.5	101700.0
10/17/00 10:19	661.3	101220.0
10/17/00 10:20	659.0	101184.0
10/17/00 10:21	660.6	101208.0
10/17/00 10:22	666.1	100998.0
10/17/00 10:23	665.0	100374.0
10/17/00 10:24	657.6	100398.0
10/17/00 10:25	657.8	100386.0
10/17/00 10:26	658.6	99570.0
10/17/00 10:27	656.0	99558.0
10/17/00 10:28	655.9	99570.0
10/17/00 10:29	656.0	98592.0
10/17/00 10:30	659.9	98256.0
10/17/00 10:31	659.4	98244.0
10/17/00 10:32	660.5	98232.0
10/17/00 10:33	659.8	98364.0
10/17/00 10:34	654.5	98394.0
10/17/00 10:35	649.6	98388.0
Final Average*	**660.8**	**101977.6**
Maximum*	**672.9**	**103164.0**
Minimum*	**649.6**	**98232.0**

*Does not include Invalid Averaging Periods ("N/A")

Run #3 H_2SO_4

Enertec NTDAHS®
Average Values Report
10/17/00 16:07

Company: St. Johns River Power Park U#1
Plant: 11201 New Berlin Road
City/St: Jacksonville, FL 32226
Source: Unit 1

Period Start: 10/17/00 10:50
Period End: 10/17/00 11:56
Validation Type: 1/1 min
Averaging Period: 1 min
Type: Block Avg

Period Start	Average 1Unit_Load MW	Average 1Stk_kscfh kscfh
10/17/00 10:50	661.1	99570.0
10/17/00 10:51	663.0	99150.0
10/17/00 10:52	658.9	99144.0
10/17/00 10:53	652.1	99144.0
10/17/00 10:54	649.6	99042.0
10/17/00 10:55	642.4	99018.0
10/17/00 10:56	643.1	99024.0
10/17/00 10:57	653.3	99120.0
10/17/00 10:58	661.0	99162.0
10/17/00 10:59	658.5	99162.0
10/17/00 11:00	647.8	99360.0
10/17/00 11:01	642.2	99540.0
10/17/00 11:02	650.8	99540.0
10/17/00 11:03	658.2	99534.0
10/17/00 11:04	657.9	99276.0
10/17/00 11:05	660.3	99186.0
10/17/00 11:06	659.5	99162.0
10/17/00 11:07	657.0	99174.0
10/17/00 11:08	650.8	99174.0
10/17/00 11:09	647.1	99174.0
10/17/00 11:10	648.6	99186.0
10/17/00 11:11	639.0	99546.0
10/17/00 11:12	638.6	99690.0
10/17/00 11:13	647.0	99678.0
10/17/00 11:14	650.9	99672.0
10/17/00 11:15	648.8	99504.0
10/17/00 11:16	643.7	99462.0
10/17/00 11:17	637.5	99486.0
10/17/00 11:18	642.0	99690.0
10/17/00 11:19	651.7	99672.0
10/17/00 11:20	653.7	99690.0
10/17/00 11:21	652.7	99528.0
10/17/00 11:22	650.8	99162.0
10/17/00 11:23	646.6	99174.0
10/17/00 11:24	643.5	99186.0
10/17/00 11:25	644.2	99372.0
10/17/00 11:26	651.6	99366.0
10/17/00 11:27	655.2	99384.0
10/17/00 11:28	654.3	99408.0
10/17/00 11:29	650.5	99384.0
10/17/00 11:30	646.7	99414.0
10/17/00 11:31	647.0	99396.0
10/17/00 11:32	650.1	99366.0
10/17/00 11:33	651.7	99372.0
10/17/00 11:34	643.7	99384.0
10/17/00 11:35	640.6	99372.0
10/17/00 11:36	640.5	99426.0

10/17/00 11:37	646.7	99408.0
10/17/00 11:38	650.1	99384.0
10/17/00 11:39	648.5	99546.0
10/17/00 11:40	646.3	99528.0
10/17/00 11:41	644.6	99540.0
10/17/00 11:42	643.5	99408.0
10/17/00 11:43	645.4	99372.0
10/17/00 11:44	648.8	99366.0
10/17/00 11:45	647.8	99012.0
10/17/00 11:46	645.1	98928.0
10/17/00 11:47	642.5	98892.0
10/17/00 11:48	644.4	98682.0
10/17/00 11:49	646.7	98034.0
10/17/00 11:50	644.4	98034.0
10/17/00 11:51	640.8	97974.0
10/17/00 11:52	642.7	97782.0
10/17/00 11:53	646.6	97746.0
10/17/00 11:54	647.1	97776.0
10/17/00 11:55	648.7	97944.0
Final Average*	**648.7**	**99181.6**
Maximum*	**663.0**	**99690.0**
Minimum*	**637.5**	**97746.0**

*Does not include Invalid Averaging Periods ("N/A")

Gas Certification Sheets

RATA CLASS

Dual-Analyzed Calibration Standard

Scott Specialty Gases INSTALLED 8/17/00

1750 EAST CLUB BLVD,DURHAM,NC 27704 Phone: 919-220-0803 Fax: 919-220-0808

CERTIFICATE OF ACCURACY: Interference Free™ Multi-Component EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
1750 EAST CLUB BLVD
DURHAM,NC 27704

P.O. No.: 17556
Project No.: 12-38356-001

Customer
JEA 11201 NEW BERLIN ROAD

ATTEN OP DEPT BLDG1
ST JOHNS RIVER POWER PARK
PO BOX 4910
JACKSONVILLE FL 32201-4910

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure #G1; September, ~~1997~~.

Cylinder Number: ALM046485 Certification Date: 5/17/00 Exp. Date: 5/17/2002
Cylinder Pressure***: 2015 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ACCURACY**	TRACEABILITY
CARBON DIOXIDE	11.13	%	+/- 1%	Direct NIST and NMi
CARBON MONOXIDE	1,079.4	PPM	+/- 1%	Direct NIST and NMi
NITRIC OXIDE	558.0	PPM	+/- 1%	Direct NIST and NMi
SULFUR DIOXIDE *	1,978	PPM	+/- 1%	Direct NIST and NMi
NITROGEN - OXYGEN FREE		BALANCE		
TOTAL OXIDES OF NITROGEN	559.0	PPM		Reference Value Only

*** Do not use when cylinder pressure is below 150 psig.
** Analytical accuracy is based on the requirements of EPA Protocal procedure G1, September 1997. Product certified as +/- 1% analytical accuracy is directly traceable to NIST or NMI standards.
* This Protocol has been certified using corrected NIST SO2 standard values, per EPA guidance dated 7/24/96 and will not correlate with uncorrected Protocols.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1800	1/01/04	A9806	18.05 %	CARBON DIOXIDE
NTRM 2637	4/03/03	ALM023773	2547. PPM	CARBON MONOXIDE
NTRM1687	3/01/03	ALM009632	1000. PPM	NO/N2
NTRM1696	8/01/02	ALM057905	3131. PPM	SO2/N2

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
VARIAN GC/3400/0160-CO2	05/17/00	GC / TCD
VARIAN/3400/16804-CO	05/02/00	GC
FTIR System/8220/AAB9400252	04/18/00	Scott Enhanced FTIR
FTIR System/8220/AAB9400252	04/18/00	Scott Enhanced FTIR

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

CARBON DIOXIDE

First Triad Analysis — Date:05/17/00 Response Unit:PCT

Z1 = 0.0000	R1 = 941429	T1 = 580923
R2 = 943276	Z2 = 0.0000	T2 = 579935
Z3 = 0.0000	T3 = 582550	R3 = 942253

Avg. Concentration: 11.13 %

Calibration Curve: Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999990 1800
Constants: A = 0.000000
B = 1.000000 C = 0.000000
D = 0.000000 E = 0.000000

CARBON MONOXIDE

First Triad Analysis — Date:05/09/00 Response Unit:PPM

Z1 = 0.0000	R1 = 68819.	T1 = 28974.
R2 = 68525.	Z2 = 0.0000	T2 = 28804.
Z3 = 0.0000	T3 = 28857.	R3 = 68462.

Avg. Concentration: 1072. PPM

Second Triad Analysis — Date:05/17/00 Response Unit: PPM

Z1 = 0.0000	R1 = 68252.	T1 = 29099.
R2 = 68287.	Z2 = 0.0000	T2 = 29169.
Z3 = 0.0000	T3 = 29159.	R3 = 68399.

Avg. Concentration: 1087. PPM

Calibration Curve: Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999990 2637
Constants: A = 0.000000
B = 1.000000 C = 0.000000
D = 0.000000 E = 0.000000

NITRIC OXIDE

First Triad Analysis — Date:05/09/00 Response Unit:PPM

Z1 = 0.2318	R1 = 1000.4	T1 = 558.96
R2 = 1000.3	Z2 = 0.4172	T2 = 558.30
Z3 = 0.3187	T3 = 558.31	R3 = 999.27

Avg. Concentration: 558.5 PPM

Second Triad Analysis — Date:05/16/00 Response Unit: PPM

Z1 = 0.1548	R1 = 1000.5	T1 = 557.85
R2 = 997.39	Z2 = 0.3364	T2 = 556.90
Z3 = 0.5171	T3 = 557.93	R3 = 1002.1

Avg. Concentration: 557.6 PPM

Calibration Curve: Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999990
Constants: A = 0.000000
B = 1.000000 C = 0.000000
D = 0.000000 E = 0.000000

RATA CLASS

Dual-Analyzed Calibration Standard

Scott Specialty Gases

1750 EAST CLUB BLVD,DURHAM,NC 27704 Phone: 919-220-0803 Fax: 919-220-0808

CERTIFICATE OF ACCURACY: Interference Free™ Multi-Component EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
1750 EAST CLUB BLVD
DURHAM,NC 27704

P.O. No.: 17556
Project No.: 12-38356-001

Customer
JEA 11201 NEW BERLIN ROAD

ATTEN OP DEPT BLDG1
ST JOHNS RIVER POWER PARK
PO BOX 4910
JACKSONVILLE FL 32201-4910

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure #G1; September, 1997.

Cylinder Number: ALM046485 **Certification Date:** 5/17/00 **Exp. Date:** 5/17/2002
Cylinder Pressure*:** 2015 PSIG

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

SULFUR DIOXIDE *

First Triad Analysis			Second Triad Analysis			Calibration Curve	
Date:05/09/00	Response Unit:PPM		Date:05/16/00	Response Unit: PPM		Concentration = A + Bx + Cx2 + Dx3 + Ex4	
Z1 = 0.4468	R1 = 3134.7	T1 = 1980.6	Z1 = -0.415	R1 = 3138.4	T1 = 1977.9	r = 0.999990	
R2 = 3128.7	Z2 = 0.5359	T2 = 1980.9	R2 = 3126.8	Z2 = 4.9264	T2 = 1974.4	Constants:	A = 0.000000
Z3 = 3.1523	T3 = 1981.4	R3 = 3129.6	Z3 = 4.6126	T3 = 1974.5	R3 = 3127.7	B = 1.000000	C = 0.000000
Avg. Concentration:	1981. PPM		Avg. Concentration:	1975. PPM		D = 0.000000	E = 0.000000

G2

APPROVED BY: _____
B. M. Becton

Scott Specialty Gases

RATA CLASS

Dual-Analyzed Calibration Standard

1750 EAST CLUB BLVD,DURHAM,NC 27704 Phone: 919-220-0803 Fax: 919-220-0808

CERTIFICATE OF ACCURACY: Interference Free™ Multi-Component EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
1750 EAST CLUB BLVD
DURHAM,NC 27704

P.O. No.: 17556
Project No.: 12-38356-002

Customer
JEA 11201 NEW BERLIN ROAD

ATTEN OP DEPT BLDG1
ST JOHNS RIVER POWER PARK
PO BOX 4910
JACKSONVILLE FL 32201-4910

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure #G1; September, 1997.

Cylinder Number: AAL9543 Certification Date: 5/17/00 Exp. Date: 5/17/2002
Cylinder Pressure***: 2015 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ACCURACY**	TRACEABILITY
CARBON DIOXIDE	18.06	%	+/- 1%	Direct NIST and NMi
CARBON MONOXIDE	1,687.00	PPM	+/- 1%	Direct NIST and NMi
NITRIC OXIDE	875.6	PPM	+/- 1%	Direct NIST and NMi
SULFUR DIOXIDE *	3,045	PPM	+/- 1%	Direct NIST and NMi
NITROGEN - OXYGEN FREE		BALANCE		
TOTAL OXIDES OF NITROGEN	876.0	PPM		Reference Value Only

*** Do not use when cylinder pressure is below 150 psig.
** Analytical accuracy is based on the requirements of EPA Protocal procedure G1, September 1997. Product certified as +/- 1% analytical accuracy is directly traceable to NIST or NMI standards.
* This Protocol has been certified using corrected NIST SO2 standard values, per EPA guidance dated 7/24/96 and will not correlate with uncorrected Protocols.

EFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1800	1/01/04	A9806	18.05 %	CARBON DIOXIDE
NTRM 2637	4/03/03	ALM023773	2547. PPM	CARBON MONOXIDE
NTRM1687	3/01/03	ALM009632	1000. PPM	NO/N2
NTRM1696	8/01/02	ALM057905	3131. PPM	SO2/N2

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
VARIAN GC/3400/0160-CO2	05/17/00	GC / TCD
VARIAN/3400/16804-CO	05/02/00	GC
FTIR System/8220/AAB9400252	04/18/00	Scott Enhanced FTIR
FTIR System/8220/AAB9400252	04/18/00	Scott Enhanced FTIR

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis | **Second Triad Analysis** | **Calibration Curve**

CARBON DIOXIDE

First Triad Analysis — Date:05/17/00 Response Unit:PCT
Z1 = 0.0000 R1 = 941429 T1 = 943564
R2 = 943276 Z2 = 0.0000 T2 = 940880
Z3 = 0.0000 T3 = 944719 R3 = 942253
Avg. Concentration: 18.06 %

Calibration Curve — Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999990 1800
Constants: A = 0.000000
B = 1.000000 C = 0.000000
D = 0.000000 E = 0.000000

CARBON MONOXIDE

First Triad Analysis — Date:05/09/00 Response Unit:PPM
Z1 = 0.0000 R1 = 68819. T1 = 45415.
R2 = 68525. Z2 = 0.0000 T2 = 45665.
Z3 = 0.0000 T3 = 45595. R3 = 68462.
Avg. Concentration: 1694. PPM

Second Triad Analysis — Date:05/16/00 Response Unit: PPM
Z1 = 0.0000 R1 = 68834. T1 = 45280.
R2 = 68675. Z2 = 0.0000 T2 = 45534.
Z3 = 0.0000 T3 = 45291. R3 = 68813.
Avg. Concentration: 1680. PPM

Calibration Curve — Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999990 2637
Constants: A = 0.000000
B = 1.000000 C = 0.000000
D = 0.000000 E = 0.000000

NITRIC OXIDE

First Triad Analysis — Date:05/09/00 Response Unit:PPM
Z1 = 0.2318 R1 = 1000.4 T1 = 876.59
R2 = 1000.3 Z2 = 0.4172 T2 = 875.64
Z3 = 0.3187 T3 = 875.49 R3 = 999.27
Avg. Concentration: 875.9 PPM

Second Triad Analysis — Date:05/16/00 Response Unit: PPM
Z1 = 0.1548 R1 = 1000.5 T1 = 874.04
R2 = 997.39 Z2 = 0.3364 T2 = 875.02
Z3 = 0.5171 T3 = 877.09 R3 = 1002.1
Avg. Concentration: 875.4 PPM

Calibration Curve — Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999990
Constants: A = 0.000000
B = 1.000000 C = 0.000000
D = 0.000000 E = 0.000000

RATA CLASS

Dual-Analyzed Calibration Standard

Scott Specialty Gases
1750 EAST CLUB BLVD,DURHAM,NC 27704 Phone: 919-220-0803 Fax: 919-220-0808

CERTIFICATE OF ACCURACY: Interference Free™ Multi-Component EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
1750 EAST CLUB BLVD
DURHAM,NC 27704

P.O. No.: 17556
Project No.: 12-38356-002

Customer
JEA 11201 NEW BERLIN ROAD

ATTEN OP DEPT BLDG1
ST JOHNS RIVER POWER PARK
PO BOX 4910
JACKSONVILLE FL 32201-4910

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure #G1; September, 1997.

Cylinder Number: AAL9543 **Certification Date:** 5/17/00 **Exp. Date:** 5/17/2002
Cylinder Pressure*:** 2015 PSIG

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis

SULFUR DIOXIDE *
Date:05/09/00 Response Unit:PPM
Z1 = 0.4468 R1 = 3134.7 T1 = 3043.8
R2 = 3128.7 Z2 = 0.5359 T2 = 3044.1
Z3 = 3.1523 T3 = 3042.9 R3 = 3129.6
Avg. Concentration: 3043. PPM

Second Triad Analysis

Date:05/16/00 Response Unit: PPM
Z1 = -0.415 R1 = 3138.4 T1 = 3047.4
R2 = 3126.8 Z2 = 4.9264 T2 = 3045.6
Z3 = 4.6126 T3 = 3048.2 R3 = 3127.7
Avg. Concentration: 3047. PPM

Calibration Curve

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999990
Constants: A = 0.000000
B = 1.000000 C = 0.000000
D = 0.000000 E = 0.000000

G4

APPROVED BY: B. M. Becton

For Technical Information Call
1-800-752-1597

AIR PRODUCTS

Air Products and Chemicals, Inc. *

ISO CERTIFICATION: 9002

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS STANDARD

PERFORMED ACCORDING TO EPA TRACEABILITY PROTOCOL FOR ASSAY AND CERTIFICATION OF GASEOUS CALIBRATION STANDARDS (PROCEDURE #G1)

Customer:
AIR PRODUCTS AND CHEMICALS
9725 ALDEN ROAD
LENEXA KS 66215

Order No: CSS-045204-01
Batch No: 861-49936
PO:
Release:

Cylinder No: SG9163576BAL
Bar Code No: DPV779
Cylinder Pressure*: 2000 psig
Certification Date: 10/06/1998
Expiration Date: 10/05/2001

5038

CERTIFIED CONCENTRATION		REFERENCE STANDARDS			ANALYTICAL INSTRUMENTATION			
Component	Certified Concentration	Cylinder Number	Standard Type	Standard Concentration	Instrument Make/Model	Serial Number	Last Calibration	Measurement Principal
CARBON MONOXIDE	322 ±8.60 PPM	SG9165503BAL	GMIS	991.7 PPM	HORIBA VIA-510	405079	10/03/98	NON DISPERSIVE INFRARED
NITROGEN	Balance Gas							

G5

* STANDARD SHOULD NOT BE USED BELOW 150 PSIG

Analyst: Chris Basile

Approved By: James Leas

(16921)

Pub. No. 320-9702

For Technical Information Call
1-800-752-1597

AIR PRODUCTS

Air Products and Chemicals, Inc. * 12722 S. Wentworth Avenue, Chicago, IL 60628

ISO CERTIFICATION: 9002

CERTIFICATE OF ANALYSIS: -EPA PROTOCOL GAS STANDARD

PERFORMED ACCORDING TO EPA TRACEABILITY PROTOCOL FOR ASSAY AND CERTIFICATION OF GASEOUS CALIBRATION STANDARDS (PROCEDURE #G1)

Customer:
AIR PRODUCTS AND CHEMICALS
9725 ALDEN ROAD
LENEXA KS 66215

Order No: CSS-191898-01
Batch No: 861-58104
PO:
Release:

Cylinder No: SG1813NB
Bar Code No: DPV633
Cylinder Pressure*: 2000 psig
Certification Date: 06/19/1999
Expiration Date: 06/19/2002

5054

CERTIFIED CONCENTRATION		REFERENCE STANDARDS			ANALYTICAL INSTRUMENTATION			
Component	Certified Concentration	Cylinder Number	Standard Type	Standard Concentration	Instrument Make/Model	Serial Number	Last Calibration	Measurement Principal
CARBON MONOXIDE	608 ±8 PPM	SG9165511BAL	GMIS	990.2 PPM	HORIBA VIA-510	405079	06/13/99	NON DISPERSIVE INFRARED
NITROGEN	Balance Gas							

G6

* STANDARD SHOULD NOT BE USED BELOW 150 PSIG

Analyst: James Laas

Approved By: Richard Fry

(16921)

Pub. No [redacted]9702

Calibration of Test Equipment

Client		Run By	A. Bradley
Project No		Date	09/07/00
Module	APEX 7	Baro. Press	29.6
Orifice	2.791		

Delta H in. H2O	Vw initial	Vw final	Vw cubic ft.	Vd initial	Vd final	Vd cubic ft.	Tw degrees F	Tdi degrees F	Tdo degrees F	Td avg	Time min
0.5	783.212	787.426	4.214	267.780	272.102	4.322	73	74	74	74	10
1.0	787.637	793.434	5.797	272.316	278.286	5.970	73	74	74	74	10
1.5	793.538	800.653	7.115	278.434	285.748	7.314	73	76	76	76	10
2.0	800.919	809.010	8.091	286.026	294.427	8.401	73	78	78	78	10
4.0	819.420	830.923	11.503	305.260	317.192	11.932	73	81	81	81	10

Delta H in. H2O	Mc[Y] $\frac{Vw * Pb(Td + 460)}{Vd(Pb + \Delta H / 13.6)(Tw + 460)}$	Yi	Delta H@ $\frac{0.0317 * \Delta H}{Pb(Td + 460)}\left[\frac{(Tw + 460)\theta}{Vw}\right]^{\wedge 2}$	Delta Hi
0.5	0.976	0.004	1.604	-0.046
1.0	0.970	-0.001	1.695	0.008
1.5	0.975	0.003	1.682	0.000
2.0	0.967	-0.004	1.728	0.027
4.0	0.969	-0.003	1.700	0.011
Average	0.971	<+-.02	1.682	<+-.20

Orifice Calculation

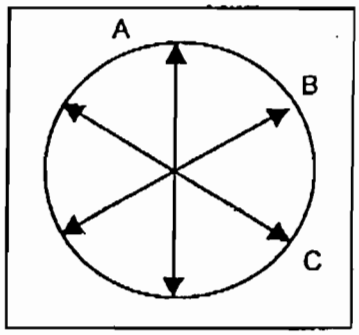
Delta H	CFM	CFM^2	H@1cfm	Avg Orifice Setting
0.5	0.432	0.187	2.677	
1.0	0.597	0.356	2.804	2.791
1.5	0.731	0.535	2.817	
2.0	0.840	0.706	2.841	
4.0	1.193	1.424	2.819	

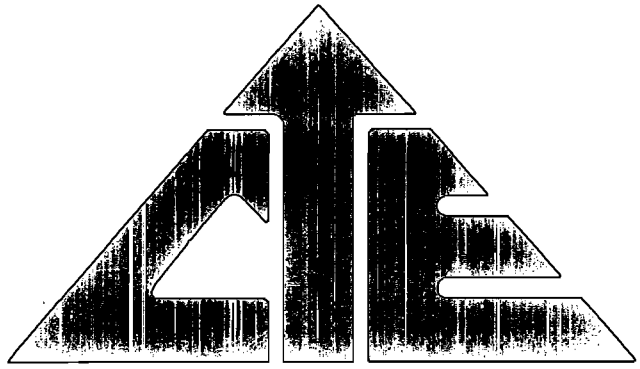
NOZZLE CALIBRATION
GLASS

Sized By D.DANIELS

Date	Nozzle	Dimension A	Dimension B	Dimension C	Difference	Avg. Diameter
02/12/99	4-1	0.131	0.131	0.130	0.001	0.131
	4-2	0.190	0.190	0.190	0.000	0.190
	4-3	0.273	0.272	0.273	0.001	0.273
	4-4	0.313	0.313	0.313	0.000	0.313
	4-5	0.377	0.377	0.377	0.000	0.377
	4-6	0.434	0.435	0.434	0.001	0.434
	4-7	0.499	0.499	0.499	0.000	0.499
	4-8	0.000	0.000	0.000	0.000	0.000
	4-9	0.000	0.000	0.000	0.000	0.000
	4-10	0.000	0.000	0.000	0.000	0.000
	4-11	0.218	0.218	0.218	0.000	0.218
	4-12	0.191	0.191	0.191	0.000	0.191
	4-13	0.220	0.220	0.220	0.000	0.220
	4-14	0.225	0.225	0.225	0.000	0.225
	4-15	0.157	0.157	0.157	0.000	0.157
	4-16	0.272	0.272	0.272	0.000	0.272
	4-17	0.229	0.228	0.229	0.001	0.229
	4-18	0.310	0.311	0.311	0.001	0.311
	4-19	0.000	0.000	0.000	0.000	0.000
	4-20	0.124	0.124	0.124	0.000	0.124
	4-21	0.156	0.156	0.156	0.000	0.156
*	4-22	0.236	0.236	0.236	0.000	0.236
	4-23	0.332	0.332	0.331	0.001	0.332
	4-24	0.374	0.375	0.375	0.001	0.375
	4-25	0.494	0.494	0.494	0.000	0.494
	4-26	0.565	0.565	0.565	0.000	0.565
	4-27	0.125	0.125	0.125	0.000	0.125
	4-28	0.215	0.215	0.215	0.000	0.215
	4-29	0.252	0.253	0.252	0.001	0.252
	4-30	0.305	0.305	0.305	0.000	0.305
	4-31	0.367	0.367	0.367	0.000	0.367
	4-32	0.495	0.495	0.495	0.000	0.495
	4-33	0.000	0.000	0.000	0.000	0.000
	4-34	0.000	0.000	0.000	0.000	0.000
	4-35	0.000	0.000	0.000	0.000	0.000
	4-36	0.186	0.186	0.186	0.000	0.186
	4-37	0.230	0.230	0.229	0.001	0.230
	4-38	0.305	0.305	0.305	0.000	0.305
	4-39	0.348	0.348	0.347	0.001	0.348
	4-40	0.380	0.380	0.380	0.000	0.380
	4-41	0.495	0.495	0.495	0.000	0.495
	4-42					0.000
	4-43					0.000
	4-44					0.000

All Dimensions are in inches.





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