H_2SO_4 AND CO EMISSIONS
TEST REPORT
FOR
ST. JOHNS RIVER POWER PARK
UNIT 2
JACKSONVILLE, FL
December 18 & 19, 2000

Job # 00-131

Test Report Date: 1-15-01

GRACE CONSULTING, INC.
EMISSIONS TESTING SERVICES

January 15, 2001

I, Hal Stiles, hereby certify that the data obtained for St. Johns River Power Park, Unit 2 in Jacksonville, FL are in accordance with procedures set forth by the USEPA. This report accurately represents the data obtained from the testing procedures and analysis of this data.

Hal Stiles
Crew Chief

I, Carl Vineyard, hereby certify that I have reviewed this report and to the best of my knowledge, the data presented herein is complete and accurate.

Carl Vineyard, P.E.
Test Engineer

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INTRODUCTION

This report presents the results of the H_2SO_4 and CO emissions tests performed for St. Johns River Power Park, Unit 2 in Jacksonville, FL.

The purpose of the tests was to determine the emissions of the unit for compliance. The results can be found in the Summary of Test Results section of this report.

The testing was performed by Grace Consulting, Inc., located at 510 Dickson Street - Wellington, OH 44090. Present during the testing were Hal Stiles, Scott Teague, Josh Nichols and Dennis Haynes from Grace Consulting, Inc. Mark Loechelt and Al Castro were present from St. Johns River Power Park.

The tests were performed on December 18 & 19, 2000. The testing was completed in accordance with USEPA test methods as published in the July 1, 2000 Federal Register, - "Standards of Performance for New Stationary Sources" and subsequent revisions.

The sampling and analytical procedures can be found in the Sampling and Analytical Procedures section of this report. The raw field data and the equations used to determine the final results are presented in the Appendix section.

SUMMARY OF TEST RESULTS

The following presents the results of the H_2SO_4 and CO emissions tests performed for St. Johns River Power Park, Unit 2 in Jacksonville, FL.

H_2SO_4 EMISSIONS

Run #	Description	Test Date	ppm	lb/dscf.
1	Unit 2	12-18-00	15.17	3.85E-06
2	Unit 2	12-18-00	10.16	2.58E-06
3	Unit 2	12-18-00	11.38	2.89E-06
AVG.			**12.24**	**3.11E-06**

CARBON MONOXIDE EMISSIONS

Dry Basis

Run #	Description	Test Date	CO PPM	CO lb/mmBtu	CO_2 %
1	Unit 2	12-19-00	459.43	.434	13.83
2	Unit 2	12-19-00	427.13	.410	13.62
3	Unit 2	12-19-00	330.00	.317	13.61
4	Unit 2	12-19-00	311.52	.295	13.80
5	Unit 2	12-19-00	244.21	.236	13.53
6	Unit 2	12-19-00	252.06	.239	13.81
7	Unit 2	12-19-00	266.18	.255	13.66
8	Unit 2	12-19-00	284.63	.266	13.97
9	Unit 2	12-19-00	272.38	.256	13.90
10	Unit 2	12-19-00	246.30	.234	13.78
11	Unit 2	12-19-00	287.76	.272	13.81
12	Unit 2	12-19-00	288.37	.273	13.80
AVG.			**305.83**	**.291**	**13.76**

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

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H2SO4 Analysis

St. Johns River Power Park
Jacksonville, FL
Unit 2 Stack
00-131

Run Number			1	2	3
Date			12/18/00	12/18/00	12/18/00
Location			Unit 2 Stack	Unit 2 Stack	Unit 2 Stack
Comment					
Start Time			9:06	11:24	13:17
End Time			10:23	12:38	14:34
Barometric Pressure	In. Hg.	Pb	29.36	29.36	29.36
Static Pressure	In. H2O	Pf	-0.6	-0.6	-0.6
Volume of Condensate	mls.	Vlc	87.9	100	96.1
Volume Sampled	dcf	Vm	36.48	36.433	36.803
Meter Correction Factor		Y	0.988	0.988	0.988
Square Root of Delta P			1.072	1.069	1.078
Orifice Pressure	In. H2O		1.18	1.19	1.2
Meter Temperature	Degree F		87	87	88
Flue Temperature	Degree F		138	141	142
Percent CO2	%		13.8	13.8	13.6
Percent O2	%		5.8	5.6	6
Diameter of Nozzle	In.		0.187	0.187	0.187
Area of Flue	Sq. ft.		471.435	471.435	471.435
Sample Time	min.		60	60	60
Volume of Solution	ml		295	360	385
Volume of Aliquot	ml		25	25	25
Normality of Barium	N		0.0105	0.0105	0.0105
Volume of Titrate Blank	ml		0	0	0
Volume of Titrate sample	ml		9.85	5.40	5.70
F-Factor			9,780	9,780	9,780
Absolute Flue Pressure	in. Hg	Ps	29.32	29.32	29.32
Corrected Sample Volume	dscf	Vms	34.24	34.20	34.48
Moisture of Flue Gas	%	Bws	10.79%	12.10%	11.60%
Molecular Weight	lb/lb-mole	Ms	29.10	28.93	28.98
Velocity of Flue Gas	fps	Vs	64.45	64.63	65.17
Volume of Flue Gas	ACFM	Vo	1,823,174	1,828,002	1,843,391
Volume of Flue Gas	DSCFM	Qsd	1,407,137	1,383,094	1,400,361
H2SO4 Concentration	lb/dscf		3.85E-06	2.58E-06	2.89E-06
H2SO4 Concentration	ppm dry		15.17	10.16	11.38
H2SO4 Emissions	lb/hr		325.30	214.18	242.78
Isokinetic Rate	%	%I	100.3	101.9	101.5
H2SO4 Emissions	lb/mmBtu		0.052	0.034	0.040

Averages:			H2SO4 Emissions:		
	Flue Temp.:	140.3333		lb/dscf	3.11E-06
	ACFM:	1,831,523		ppm dry	12.24
	DSCFM:	1,396,864		lb/hr	260.76
	Percent O2:	5.80%		lb/mmBtu	0.042

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Sampling System Bias Check and Measured Value Correction

St. Johns River Power Park
Jacksonville, FL - Unit 2

Date: 12/19/00
Pollutant: CO
Monitor Span: 2000

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	Percent Moisture	Corrected Value, Dry Basis	Corrected Value, Wet Basis
1	454.31	3.10	4.00	0.05	501.90	503.20	0.07	508.60	12.77	459.43	400.78
2	421.91	4.00	4.20	0.01	503.20	500.00	-0.16	508.60	12.77	427.13	372.60
3	324.86	4.20	3.10	-0.06	500.00	497.40	-0.13	508.60	12.89	330.00	287.47
4	306.42	3.10	4.70	0.08	497.40	498.20	0.04	508.60	12.89	311.52	271.37
5	241.67	4.70	2.90	-0.09	498.20	500.20	0.10	508.60	11.94	244.21	215.05
6	249.35	2.90	1.70	-0.06	500.20	501.40	0.06	508.60	11.94	252.06	221.96
7	265.24	1.70	3.80	0.11	501.40	507.20	0.29	508.60	12.54	266.18	232.79
8	284.30	3.80	4.00	0.01	507.20	502.70	-0.23	508.60	12.54	284.63	248.92
9	272.73	4.00	4.90	0.05	502.70	508.10	0.27	508.60	12.68	272.38	237.84
10	247.68	4.90	4.20	-0.04	508.10	505.10	-0.15	508.60	11.79	246.30	217.26
11	286.64	4.20	3.00	-0.06	505.10	502.61	-0.12	508.60	12.44	287.76	251.95
12	285.64	3.00	2.60	-0.02	502.61	500.70	-0.10	508.60	12.44	288.37	252.48

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

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

Grace Consulting, Inc.

Sampling System Bias Check and Measured Value Correction

St. Johns River Power Park
Jacksonville, FL - Unit 2

Date: 12/19/00
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 Moisture	Corrected Percent, Dry Basis	Corrected Percent, Wet Basis
1	13.71	0.09	0.07	-0.10	11.00	11.10	0.50	11.13	12.77	13.83	12.06
2	13.53	0.07	0.08	0.05	11.10	11.04	-0.30	11.13	12.77	13.62	11.88
3	13.51	0.08	0.09	0.05	11.04	11.08	0.20	11.13	12.89	13.61	11.86
4	13.73	0.09	0.12	0.15	11.08	11.10	0.10	11.13	12.89	13.80	12.03
5	13.44	0.12	0.09	-0.15	11.10	11.05	-0.25	11.13	11.94	13.53	11.91
6	13.71	0.09	0.12	0.15	11.05	11.09	0.20	11.13	11.94	13.81	12.16
7	13.55	0.12	0.13	0.05	11.09	11.04	-0.25	11.13	12.54	13.66	11.94
8	13.85	0.13	0.14	0.05	11.04	11.09	0.25	11.13	12.54	13.97	12.21
9	13.85	0.14	0.12	-0.10	11.09	11.14	0.25	11.13	12.68	13.90	12.14
10	13.78	0.12	0.10	-0.10	11.14	11.16	0.10	11.13	11.79	13.78	12.16
11	13.75	0.10	0.10	0.00	11.16	11.04	-0.60	11.13	12.44	13.81	12.09
12	13.65	0.10	0.11	0.05	11.04	11.02	-0.10	11.13	12.44	13.80	12.08

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

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

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Method 3A - Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure)

1. APPLICABILITY AND PRINCIPLE

1.1 Applicability. This method is applicable to the determination of oxygen (O_2) and carbon dioxide (CO_2) concentrations in emissions from stationary sources only when specified within the regulations.

1.2 Principle. A sample is continuously extracted from the effluent stream: a portion of the sample stream is conveyed to an instrumental analyzer(s) for determination of O_2 and CO_2 concentration(s). Performance specifications and test procedures are provided to ensure reliable data.

2. RANGE AND SENSITIVITY

Same as in Method 6C, Sections 2.1 and 2.2, except that the span of the monitoring system shall be selected such that the average O_2 or CO_2 concentration is not less than 20 percent of the span.

3. DEFINITIONS

3.1 Measurement System. The total equipment required for the determination of the O_2 or CO_2 concentration. The measurement system consists of the same major subsystems as defined in Method 6C, Sections 3.1.1, 3.1.2, and 3.1.3.

3.2 Span, Calibration Gas, Analyzer Calibration Error, Sampling System Bias, Zero Drift, Calibration Drift, Response Time, and Calibration Curve. Same as in Method 6C, Sections 3.2 through 3.8, and 3.10.

3.3 Interference Response. The output response of the measurement system to a component in the sample gas, other than the gas component being measured.

4. MEASUREMENT SYSTEM PERFORMANCE SPECIFICATIONS

Same as in Method 6C, Sections 4.1 through 4.4.

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5. APPARATUS AND REAGENTS

5.1 Measurement System. Any measurement system for O_2 or CO_2 that meets the specifications of this method. A schematic of an acceptable measurement system is shown in Figure 6C-1 of Method 6C. The essential components of the measurement system are described below:

5.1.1 Sample Probe. A leak-free probe of sufficient length to traverse the sample points.

5.1.2 Sample Line. Tubing to transport the sample gas from the probe to the moisture removal system. A heated sample line is not required for systems that measure the O_2 or CO_2 concentration on a dry basis, or transport dry gases.

5.1.3 Sample Transport Line, Calibration Valve Assembly, Moisture Removal System, Particulate Filter, Sample Pump, Sample Flow Rate Control, Sample Gas Manifold, and Data Recorder. Same as in Method 6C, Sections 5.1.3 through 5.1.9, and 5.1.11, except that the requirements to use stainless steel, Teflon, and nonreactive glass filters do not apply.

5.1.4 Gas Analyzer. An analyzer to determine continuously the O_2 or CO_2 concentration in the sample gas stream. The analyzer must meet the applicable performance specifications of Section 4. A means of controlling the analyzer flow rate and a device for determining proper sample flow rate (e.g., precision rotameter, pressure gauge downstream of all flow controls, etc.) shall be provided at the analyzer. The requirements for measuring and controlling the analyzer for measuring and controlling the analyzer flow rate are not applicable if data are presented that demonstrate the analyzer is insensitive to flow variations over the range encountered during the test.

5.2 Calibration Gases. The calibration gases for CO_2 analyzers shall be CO_2 in N_2 or CO_2 in air. Alternatively, CO_2/SO_2, O_2/SO_2, or $O_2/CO_2/SO_2$ gas mixtures in N_2 may be used. Three calibration gases, as specified in Sections 5.3.1 through 5.3.4 of Method 6C, shall be used. For O_2 monitors that cannot analyze zero gas, a calibration gas concentration equivalent to less than 10 percent of the span may be used in place of zero gas.

6. MEASUREMENT SYSTEM PERFORMANCE TEST PROCEDURES

Perform the following procedures before measurement of emissions (Section 7).

6.1 Calibration Concentration Verification. Follow Section 6.1 of Method 6C, except if calibration gas analysis is required, use Method 3 and change the acceptance criteria for agreement among Method 3 results to 5 percent (or 0.2 percent by volume, whichever is greater).

6.2 Interference Response. Conduct an interference response test of the analyzer prior to its initial use in the field. Thereafter, recheck the measurement system if changes are made in the instrumentation that could alter

the interference response (e.g., changes in the type of gas detector). Conduct the interference response in accordance with Section 5.4 of Method 20.

6.3 Measurement System Preparation, Analyzer Calibration Error, Response Time, and Sampling System Bias Check. Follow Sections 6.2 through 6.4 of Method 6C.

7. EMISSION TEST PROCEDURE

7.1 Selection of Sampling Site and Sampling Points. Select a measurement site and sampling points using the same criteria that are applicable to tests performed using Method 3.

7.2 Sample Collection. Position the sampling probe at the first measurement point, and begin sampling at the same rate as that used during the response time test. Maintain constant rate sampling (i.e., ±10 percent) during the entire run. The sampling time per run shall be the same as for tests conducted using Method 3 plus twice the average system response time. For each run, use only those measurements obtained after twice the response time of the measurement system has elapsed to determine the average effluent concentration.

7.3 Zero and Calibration Drift Test. Follow Section 7.4 of Method 6C.

8. QUALITY CONTROL PROCEDURES

The following quality control procedures are recommended when the results of this method are used for an emission rate correction factor, or excess air determination. The tester should select one of the following options for validating measurement results:

8.1 If both O_2 and CO_2 are measured using Method 3A, the procedures described in Section 4.4 of Method 3 should be followed to validate the O_2 and CO_2 measurement results.

8.2 If only O_2 is measured using Method 3A, measurements of the sample stream CO_2 concentration should be obtained at the sample by-pass vent discharge using an Orsat or Fyrite analyzer, or equivalent. Duplicate samples should be obtained concurrent with at least one run. Average the duplicate Orsat or Fyrite analysis results for each run. Use the average CO_2 values for comparison with the O_2 measurements in accordance with the procedures described in Section 4.4 of Method 3.

8.3 If only CO_2 is measured using Method 3A, concurrent measurements of the sample stream CO_2 concentration should be obtained using an Orsat or Fyrite analyzer as described in Section 8.2. For each run, differences greater than 0.5 percent between the Method 3A results and the average of

the duplicate Fyrite analysis should be investigated.

9. EMISSION CALCULATION

9.1 For all CO_2 analyzers, and for O_2 analyzers that can be calibrated with zero gas, follow Section 8 of Method 6C, except express all concentrations as percent, rather than ppm.

9.2 For O_2 analyzers that use a low-level calibration gas in place of a zero gas, calculate the effluent gas concentration using Equation 3A-1.

$$C_{gas} = \frac{C_{ma} - C_{oa}}{C_m - C_o} (C - C_m) + C_{ma} \qquad \text{Eq. 3A-1}$$

Where:

C_{gas} = Effluent gas concentration, dry basis, percent.

C_{ma} = Actual concentration of the upscale calibration gas, percent.

C_{oa} = Actual concentration of the low-level calibration gas, percent.

C_m = Average of initial and final system calibration bias check responses for the upscale calibration gas, percent.

C_o = Average of initial and final system calibration bias check responses for the low level gas, percent.

C = Average gas concentration indicated by the gas analyzer, dry basis, percent.

10. BIBLIOGRAPHY

Same as in Bibliography of Method 6C.

METHOD 8 - DETERMINATION OF SULFURIC ACID AND SULFUR DIOXIDE EMISSIONS FROM STATIONARY SOURCES

NOTE: This method does not include all of the specifications (*e.g.*, equipment and supplies) and procedures (*e.g.*, sampling and analytical) essential to its performance. Some material is incorporated by reference from other methods in this part. Therefore, to obtain reliable results, persons using this method should have a thorough knowledge of at least the following additional test methods: Method 1, Method 2, Method 3, Method 5, and Method 6.

1.0 Scope and Application.

1.1 Analytes.

Analyte	CAS No.	Sensitivity
Sulfuric acid, including:		0.05 mg/m^3
Sulfuric acid (H_2SO_4) mist	7664-93-9	(0.03×10^{-7}
Sulfur trioxide (SO_3)	7449-11-9	lb/ft^3)
Sulfur dioxide (SO_2)	7449-09-5	1.2 mg/m^3 (3×10^{-9} lb/ft^3)

1.2 Applicability. This method is applicable for the determination of H_2SO_4 (including H_2SO_4 mist and SO_3) and gaseous SO_2 emissions from stationary sources.

NOTE: Filterable particulate matter may be determined along with H_2SO_4 and SO_2 (subject to the approval of the Administrator) by inserting a heated glass fiber filter

between the probe and isopropanol impinger (see Section 6.1.1 of Method 6). If this option is chosen, particulate analysis is gravimetric only; sulfuric acid is not determined separately.

1.3 Data Quality Objectives. Adherence to the requirements of this method will enhance the quality of the data obtained from air pollutant sampling methods.

2.0 Summary of Method.

A gas sample is extracted isokinetically from the stack. The H_2SO_4 and the SO_2 are separated, and both fractions are measured separately by the barium-thorin titration method.

3.0 Definitions. [Reserved]

4.0 Interferences.

4.1 Possible interfering agents of this method are fluorides, free ammonia, and dimethyl aniline. If any of these interfering agents is present (this can be determined by knowledge of the process), alternative methods, subject to the approval of the Administrator, are required.

5.0 Safety.

5.1 Disclaimer. This method may involve hazardous materials, operations, and equipment. This test method may not address all of the safety problems associated with its use. It is the responsibility of the user of this test

method to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to performing this test method.

5.2 Corrosive reagents. Same as Method 6, Section 5.2.

6.0 Equipment and Supplies.

6.1 Sample Collection. Same as Method 5, Section 6.1, with the following additions and exceptions:

6.1.1 Sampling Train. A schematic of the sampling train used in this method is shown in Figure 8-1; it is similar to the Method 5 sampling train, except that the filter position is different, and the filter holder does not have to be heated. See Method 5, Section 6.1.1, for details and guidelines on operation and maintenance.

6.1.1.1 Probe Liner. Borosilicate or quartz glass, with a heating system to prevent visible condensation during sampling. Do not use metal probe liners.

6.1.1.2 Filter Holder. Borosilicate glass, with a glass frit filter support and a silicone rubber gasket. Other gasket materials (*e.g.*, Teflon or Viton) may be used, subject to the approval of the Administrator. The holder design shall provide a positive seal against leakage from the outside or around the filter. The filter holder shall

be placed between the first and second impingers. Do not heat the filter holder.

6.1.1.3 Impingers. Four, of the Greenburg-Smith design, as shown in Figure 8-1. The first and third impingers must have standard tips. The second and fourth impingers must be modified by replacing the insert with an approximately 13-mm (½-in.) ID glass tube, having an unconstricted tip located 13 mm (½ in.) from the bottom of the impinger. Similar collection systems, subject to the approval of the Administrator, may be used.

6.1.1.4 Temperature Sensor. Thermometer, or equivalent, to measure the temperature of the gas leaving the impinger train to within 1 °C (2 °F).

6.2 Sample Recovery. The following items are required for sample recovery:

6.2.1 Wash Bottles. Two polyethylene or glass bottles, 500-ml.

6.2.2 Graduated Cylinders. Two graduated cylinders (volumetric flasks may be used), 250-ml, 1-liter.

6.2.3 Storage Bottles. Leak-free polyethylene bottles, 1-liter size (two for each sampling run).

6.2.4 Trip Balance. 500-g capacity, to measure to ± 0.5 g (necessary only if a moisture content analysis is to be done).

6.3 Analysis. The following items are required for sample analysis:

6.3.1 Pipettes. Volumetric 10-ml, 100-ml.

6.3.2 Burette. 50-ml.

6.3.3 Erlenmeyer Flask. 250-ml (one for each sample, blank, and standard).

6.3.4 Graduated Cylinder. 100-ml.

6.3.5 Dropping Bottle. To add indicator solution, 125-ml size.

7.0 Reagents and Standards.

NOTE: Unless otherwise indicated, all reagents are to conform to the specifications established by the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. Otherwise, use the best available grade.

7.1 Sample Collection. The following reagents are required for sample collection:

7.1.1 Filters and Silica Gel. Same as in Method 5, Sections 7.1.1 and 7.1.2, respectively.

7.1.2 Water. Same as in Method 6, Section 7.1.1.

7.1.3 Isopropanol, 80 Percent by Volume. Mix 800 ml of isopropanol with 200 ml of water.

NOTE: Check for peroxide impurities using the procedure outlined in Method 6, Section 7.1.2.1.

7.1.4 Hydrogen Peroxide (H_2O_2), 3 Percent by Volume. Dilute 100 ml of 30 percent H_2O_2 to 1 liter with water. Prepare fresh daily.

7.1.5 Crushed Ice.

7.2 Sample Recovery. The reagents and standards required for sample recovery are:

7.2.1 Water. Same as in Section 7.1.2.

7.2.2 Isopropanol, 80 Percent. Same as in Section 7.1.3.

7.3 Sample Analysis. Same as Method 6, Section 7.3.

7.3.1 Quality Assurance Audit Samples. When making compliance determinations, and upon availability, audit samples may be obtained from the appropriate EPA Regional Office or from the responsible enforcement authority.

NOTE: The responsible enforcement authority should be notified at least 30 days prior to the test date to allow sufficient time for sample delivery.

8.0 Sample Collection, Preservation, Storage, and Transport.

8.1 Pretest Preparation. Same as Method 5, Section 8.1, except that filters should be inspected but need not be desiccated, weighed, or identified. If the effluent gas can be considered dry (*i.e.*, moisture-free), the silica gel need not be weighed.

8.2 Preliminary Determinations. Same as Method 5, Section 8.2.

8.3 Preparation of Sampling Train. Same as Method 5, Section 8.3, with the following exceptions:

8.3.1 Use Figure 8-1 instead of Figure 5-1.

8.3.2 Replace the second sentence of Method 5, Section 8.3.1 with: Place 100 ml of 80 percent isopropanol in the first impinger, 100 ml of 3 percent H_2O_2 in both the second and third impingers; retain a portion of each reagent for use as a blank solution. Place about 200 g of silica gel in the fourth impinger.

8.3.3 Ignore any other statements in Section 8.3 of Method 5 that are obviously not applicable to the performance of Method 8.

NOTE: If moisture content is to be determined by impinger analysis, weigh each of the first three impingers (plus absorbing solution) to the nearest 0.5 g, and record these weights. Weigh also the silica gel (or silica gel plus container) to the nearest 0.5 g, and record.)

8.4 Metering System Leak-Check Procedure. Same as Method 5, Section 8.4.1.

8.5 / Pretest Leak-Check Procedure. Follow the basic procedure in Method 5, Section 8.4.2, noting that the probe heater shall be adjusted to the minimum temperature required

to prevent condensation, and also that verbage such as "...plugging the inlet to the filter holder..." found in Section 8.4.2.2 of Method 5 shall be replaced by "...plugging the inlet to the first impinger...". The pretest leak-check is recommended, but is not required.

8.6 Sampling Train Operation. Follow the basic procedures in Method 5, Section 8.5, in conjunction with the following special instructions:

8.6.1 Record the data on a sheet similar to that shown in Figure 8-2 (alternatively, Figure 5-2 in Method 5 may be used). The sampling rate shall not exceed 0.030 m^3/min (1.0 cfm) during the run. Periodically during the test, observe the connecting line between the probe and first impinger for signs of condensation. If condensation does occur, adjust the probe heater setting upward to the minimum temperature required to prevent condensation. If component changes become necessary during a run, a leak-check shall be performed immediately before each change, according to the procedure outlined in Section 8.4.3 of Method 5 (with appropriate modifications, as mentioned in Section 8.5 of this method); record all leak rates. If the leakage rate(s) exceeds the specified rate, the tester shall either void the run or plan to correct the sample volume as outlined in Section 12.3 of Method 5. Leak-checks

immediately after component changes are recommended, but not required. If these leak-checks are performed, the procedure in Section 8.4.2 of Method 5 (with appropriate modifications) shall be used.

8.6.2 After turning off the pump and recording the final readings at the conclusion of each run, remove the probe from the stack. Conduct a post-test (mandatory) leak-check as outlined in Section 8.4.4 of Method 5 (with appropriate modifications), and record the leak rate. If the post-test leakage rate exceeds the specified acceptable rate, either correct the sample volume, as outlined in Section 12.3 of Method 5, or void the run.

8.6.3 Drain the ice bath and, with the probe disconnected, purge the remaining part of the train by drawing clean ambient air through the system for 15 minutes at the average flow rate used for sampling.

NOTE: Clean ambient air can be provided by passing air through a charcoal filter. Alternatively, ambient air (without cleaning) may be used.

8.7 Calculation of Percent Isokinetic. Same as Method 5, Section 8.6.

8.8 Sample Recovery. Proper cleanup procedure begins as soon as the probe is removed from the stack at the end of

the sampling period. Allow the probe to cool. Treat the samples as follows:

8.8.1 Container No. 1.

8.8.1.1 If a moisture content analysis is to be performed, clean and weigh the first impinger (plus contents) to the nearest 0.5 g, and record this weight.

8.8.1.2 Transfer the contents of the first impinger to a 250-ml graduated cylinder. Rinse the probe, first impinger, all connecting glassware before the filter, and the front half of the filter holder with 80 percent isopropanol. Add the isopropanol rinse solution to the cylinder. Dilute the contents of the cylinder to 225 ml with 80 percent isopropanol, and transfer the cylinder contents to the storage container. Rinse the cylinder with 25 ml of 80 percent isopropanol, and transfer the rinse to the storage container. Add the filter to the solution in the storage container and mix. Seal the container to protect the solution against evaporation. Mark the level of liquid on the container, and identify the sample container.

8.8.2 Container No. 2.

8.8.2.1 If a moisture content analysis is to be performed, clean and weigh the second and third impingers (plus contents) to the nearest 0.5 g, and record the

weights. Also, weigh the spent silica gel (or silica gel plus impinger) to the nearest 0.5 g, and record the weight.

8.8.2.2 Transfer the solutions from the second and third impingers to a 1-liter graduated cylinder. Rinse all connecting glassware (including back half of filter holder) between the filter and silica gel impinger with water, and add this rinse water to the cylinder. Dilute the contents of the cylinder to 950 ml with water. Transfer the solution to a storage container. Rinse the cylinder with 50 ml of water, and transfer the rinse to the storage container. Mark the level of liquid on the container. Seal and identify the sample container.

9.0 Quality Control.

9.1 Miscellaneous Quality Control Measures.

Section	Quality Control Measure	Effect
7.1.3	Isopropanol check	Ensure acceptable level of peroxide impurities in isopropanol
8.4, 8.5, 10.1	Sampling equipment leak-check and calibration	Ensure accurate measurement of stack gas flow rate, sample volume
10.2	Barium standard solution standardization	Ensure normality determination
11.2	Replicate titrations	Ensure precision of titration determinations
11.3	Audit sample analysis	Evaluate analyst's technique and standards preparation

9.2 Volume Metering System Checks. Same as Method 5, Section 9.2.

10.0 Calibration and Standardization.

10.1 Sampling Equipment. Same as Method 5, Section 10.0.

10.2 Barium Standard Solution. Same as Method 6, Section 10.5.

11.0 Analytical Procedure.

11.1. Sample Loss. Same as Method 6, Section 11.1.

11.2. Sample Analysis.

11.2.1 Container No. 1. Shake the container holding the isopropanol solution and the filter. If the filter

breaks up, allow the fragments to settle for a few minutes before removing a sample aliquot. Pipette a 100-ml aliquot of this solution into a 250-ml Erlenmeyer flask, add 2 to 4 drops of thorin indicator, and titrate to a pink endpoint using 0.0100 N barium standard solution. Repeat the titration with a second aliquot of sample, and average the titration values. Replicate titrations must agree within 1 percent or 0.2 ml, whichever is greater.

11.2.2 Container No. 2. Thoroughly mix the solution in the container holding the contents of the second and third impingers. Pipette a 10-ml aliquot of sample into a 250-ml Erlenmeyer flask. Add 40 ml of isopropanol, 2 to 4 drops of thorin indicator, and titrate to a pink endpoint using 0.0100 N barium standard solution. Repeat the titration with a second aliquot of sample, and average the titration values. Replicate titrations must agree within 1 percent or 0.2 ml, whichever is greater.

11.2.3 Blanks. Prepare blanks by adding 2 to 4 drops of thorin indicator to 100 ml of 80 percent isopropanol. Titrate the blanks in the same manner as the samples.

11.3 Audit Sample Analysis.

11.3.1 When the method is used to analyze samples to demonstrate compliance with a source emission regulation, EPA audit samples must be analyzed, subject to availability.

11.3.2 Concurrently analyze audit samples and the compliance samples in the same manner to evaluate the technique of the analyst and the standards preparation.

NOTE: It is recommended that known quality control samples be analyzed prior to the compliance and audit sample analyses to optimize the system accuracy and precision. These quality control samples may be obtained by contacting the appropriate EPA regional Office or the responsible enforcement authority.

11.3.3 The same analyst, analytical reagents, and analytical system shall be used for the compliance samples and the EPA audit samples. If this condition is met, duplicate auditing of subsequent compliance analyses for the same enforcement agency within a 30-day period is waived. Audit samples may not be used to validate different compliance samples under the jurisdiction of separate enforcement agencies, unless prior arrangements have been made with both enforcement agencies.

11.4 Audit Sample Results.

11.4.1 Calculate the audit sample concentrations in mg/dscm and submit results using the instructions provided with the audit samples.

11.4.2 Report the results of the audit samples and the compliance determination samples along with their

identification numbers, and the analyst's name to the responsible enforcement authority. Include this information with reports of any subsequent compliance analyses for the same enforcement authority during the 30-day period.

11.4.3 The concentrations of the audit samples obtained by the analyst shall agree within 5 percent of the actual concentrations. If the 5 percent specification is not met, reanalyze the compliance and audit samples, and include initial and reanalysis values in the test report.

11.4.4 Failure to meet the 5 percent specification may require retests until the audit problems are resolved. However, if the audit results do not affect the compliance or noncompliance status of the affected facility, the Administrator may waive the reanalysis requirement, further audits, or retests and accept the results of the compliance test. While steps are being taken to resolve audit analysis problems, the Administrator may also choose to use the data to determine the compliance or noncompliance status of the affected facility.

12.0 Data Analysis and Calculations.

Carry out calculations retaining at least one extra significant figure beyond that of the acquired data. Round off figures after final calculation.

12.1 Nomenclature. Same as Method 5, Section 12.1, with the following additions and exceptions:

C_a = Actual concentration of SO_2 in audit sample, mg/dscm.

C_d = Determined concentration of SO_2 in audit sample, mg/dscm.

$C_{H_2SO_4}$ = Sulfuric acid (including SO_3) concentration, g/dscm (lb/dscf).

C_{SO_2} = Sulfur dioxide concentration, g/dscm (lb/dscf).

N = Normality of barium perchlorate titrant, meq/ml.

RE = Relative error of QA audit sample analysis, percent

V_a = Volume of sample aliquot titrated, 100 ml for H_2SO_4 and 10 ml for SO_2.

V_{soln} = Total volume of solution in which the sample is contained, 250 ml for the SO_2 sample and 1000 ml for the H_2SO_4 sample.

V_t = Volume of barium standard solution titrant used for the sample, ml.

V_{tb} = Volume of barium standard solution titrant used for the blank, ml.

12.2 Average Dry Gas Meter Temperature and Average Orifice Pressure Drop. See data sheet (Figure 8-2).

12.3 Dry Gas Volume. Same as Method 5, Section 12.3.

12.4 Volume of Water Vapor Condensed and Moisture Content. Calculate the volume of water vapor using Equation 5-2 of Method 5; the weight of water collected in the impingers and silica gel can be converted directly to milliliters (the specific gravity of water is 1 g/ml). Calculate the moisture content of the stack gas (B_{ws}) using Equation 5-3 of Method 5. The **NOTE** in Section 12.5 of Method 5 also applies to this method. Note that if the effluent gas stream can be considered dry, the volume of water vapor and moisture content need not be calculated.

12.5 Sulfuric Acid Mist (Including SO_3) Concentration.

$$C_{H2SO4} = K_3 [N (V_t - V_{tb}) (V_{soln}/V_a)]/V_{m(std)} \quad \textbf{Eq. 8-1}$$

where:

K_3 = 0.04904 g/meq for metric units,

= 1.081×10^{-4} lb/meq for English units.

12.6 Sulfur Dioxide Concentration.

$$C_{SO2} = K_4 [N (V_t - V_{tb}) (V_{soln}/V_a)]/V_{m(std)} \quad \textbf{Eq. 8-2}$$

where:

K_4 = 0.03203 g/meq for metric units,

= 7.061×10^{-5} lb/meq for English units.

12.7 Isokinetic Variation. Same as Method 5, Section 12.11.

12.8 Stack Gas Velocity and Volumetric Flow Rate. Calculate the average stack gas velocity and volumetric flow rate, if needed, using data obtained in this method and the equations in Sections 12.6 and 12.7 of Method 2.

12.9 Relative Error (RE) for QA Audit Samples. Same as Method 6, Section 12.4.

13.0 Method Performance.

13.1 Analytical Range. Collaborative tests have shown that the minimum detectable limits of the method are 0.06 mg/m^3 (4×10^{-9} lb/ft^3) for H_2SO_4 and 1.2 mg/m^3 (74×10^{-9} lb/ft^3) for SO_2. No upper limits have been established. Based on theoretical calculations for 200 ml of 3 percent H_2O_2 solution, the upper concentration limit for SO_2 in a 1.0 m^3 (35.3 ft^3) gas sample is about 12,000 mg/m^3 (7.7×10^{-4} lb/ft^3). The upper limit can be extended by increasing the quantity of peroxide solution in the impingers.

14.0 Pollution Prevention. [Reserved]

15.0 Waste Management. [Reserved]

16.0 References.

Same as Section 17.0 of Methods 5 and 6.

17.0 Tables, Diagrams, Flowcharts, and Validation Data.

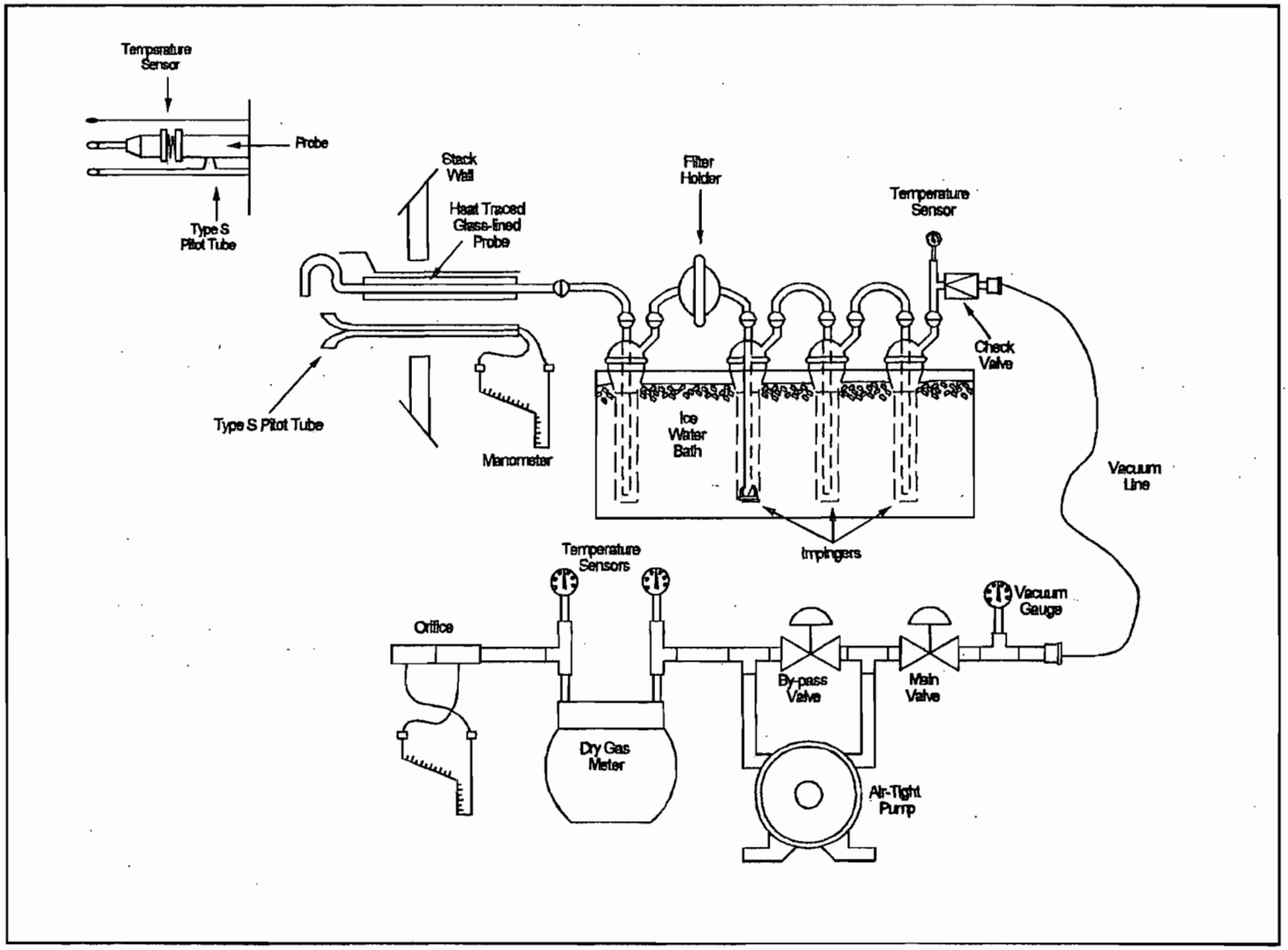

Figure 8-1. Sulfuric Acid Sampling Train.

Figure 8-2. Field Data Sheet.

Plant _____
Location _____
Operator _____
Date _____
Run No. _____
Sample box No. _____
Meter box No. _____
Meter $\Delta H@$ _____
C factor _____
Pitot tube coefficient, C_p _____

SCHEMATIC OF STACK CROSS SECTION

Ambient temperature _____
Barometric pressure _____
Assumed moisture, % _____
Probe length, (ft.) _____
Nozzle identification No. _____
Average calibrated nozzle diameter, (in.) _____
Probe heater setting _____
Leak rate, (cfm) _____
Static pressure, (in. H_g) _____
Probe liner material _____
Filter No. _____

Traverse point number	Sampling time	Vacuum	Stack temperature	Velocity head	Pressure differential across orifice meter	Gas meter reading	Gas sample temperature at dry gas meter		Filter temperature	Temperature of gas leaving condenser or last impinger
							Inlet	Outlet		
	min.	(in.-H_g)	(T_s) (°F)	(ΔP) (in. H_2O)	(in. H_2O)	(ft^3)	(°F)	(°F)	(°F)	(°F)
Total							Avg.	Avg.		
Average							Avg.			

EMISSION MEASUREMENT TECHNICAL INFORMATION CENTER
NSPS TEST METHOD

Method 10 - Determination of Carbon Monoxide Emissions from Stationary Sources

1. PRINCIPLE AND APPLICABILITY

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

1.2 Applicability. This method is applicable for the determination of carbon monoxide emissions from stationary sources only when specified by the test procedures for determining compliance with new source performance standards. The test procedure will indicate whether a continuous or an integrated sample is to be used.

2. RANGE AND SENSITIVITY

2.1 Range. 0 to 1000 ppm.

2.2 Sensitivity. Minimum detectable concentration is 20 ppm for a 0- to 1000-ppm span.

3. INTERFERENCES

Any substance having a strong absorption of infrared energy will interfere to some extent. For example, discrimination ratios for water (H_2O) and carbon dioxide (CO_2) are 3.5 percent H_2O per 7 ppm CO and 10 percent CO_2 per 10 ppm CO, respectively, for devices measuring in the 1500- to 3000-ppm range. For devices measuring in the 0- to 100-ppm range, interference ratios can be as high as 3.5 percent H_2O per 25 ppm CO and 10 percent CO_2 per 50 ppm CO. The use of silica gel and ascarite traps will alleviate the major interference problems. The measured gas volume must be corrected if these traps are used.

4. PRECISION AND ACCURACY

4.1 Precision. The precision of most NDIR analyzers is approximately ±2 percent of span.

4.2 Accuracy. The accuracy of most NDIR analyzers is approximately ±5 percent of span after calibration.

5. APPARATUS

Note: Mention of trade names or specific products does not constitute endorsement by the Environmental Protection Agency.

5.1 Continuous Sample (Figure 10-1).

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

5.1.2 Air-Cooled Condenser or Equivalent. To remove any excess moisture.

5.2 Integrated Sample (Figure 10-2).

5.2.1 Probe. Same as in Section 5.1.1.

5.2.2 Air-Cooled Condenser or Equivalent. Same as in Section 5.1.2.

5.2.3 Valve. Needle valve, or equivalent, to adjust flow rate.

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

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

5.2.6 Flexible Bag. Tedlar, or equivalent, with a capacity of 60 to 90 liters (2 to 3 ft^3). Leak-test the bag in the laboratory before using by evacuating bag with a pump followed by a dry gas meter. When evacuation is complete, there should be no flow through the meter.

5.2.7 Pitot Tube. Type S, or equivalent, attached to the probe so that the sampling rate can be regulated proportional to the stack gas velocity when velocity is varying with time or a sample traverse is conducted.

5.3 Analysis (Figure 10-3).

5.3.1 Carbon Monoxide Analyzer. Nondispersive infrared spectrometer, or equivalent. This instrument should be demonstrated, preferably by the manufacturer, to meet or exceed manufacturer's specifications and those described in this method.

5.3.2 Drying Tube. To contain approximately 200 g of silica gel.

5.3.3 Calibration Gas. Refer to Section 6.1.

5.3.4 Filter. As recommended by NDIR manufacturer.

5.3.5 CO_2 Removal Tube. To contain approximately 500 g of ascarite.

5.3.6 Ice Water Bath. For ascarite and silica gel tubes.

5.3.7 Valve. Needle valve, or equivalent, to adjust flow rate.

5.3.8 Rate Meter. Rotameter, or equivalent, to measure gas flow rate of 0 to 1.0 liter/min (0 to 0.035 cfm) through NDIR.

5.3.9 Recorder (Optional). To provide permanent record of NDIR readings.

6. REAGENTS

6.1 Calibration Gases. Known concentration of CO in nitrogen (N_2) for instrument span, prepurified grade of N_2 for zero, and two additional concentrations corresponding approximately to 60 percent and 30 percent of span. The span concentration shall not exceed 1.5 times the applicable source performance standard. The calibration gases shall be 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°C (347°F) for 2 hours.

6.3 Ascarite. Commercially available.

7. PROCEDURE

7.1 Sampling.

7.1.1 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. (See Sections 7.2 and 8). CO_2 content of the gas may be determined by using the Method 3 integrated sampling procedure, 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.

7.1.2 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, or by weighing the ascarite CO_2 concentration from the gas volume sampled and the weight gain of the tube.

7.2 CO Analysis. Assemble the apparatus as shown in Figure 10-3, calibrate the instrument, and perform other required operations as described in Section 8. Purge analyzer with N_2 prior to introduction of each sample. Direct the sample stream through the instrument for the test period, recording the readings. Check the zero and the span again after the test to assure that any drift or malfunction is detected. Record the sample data on Table 10-1.

8. CALIBRATION

Assemble the apparatus according to Figure 10-3. Generally an

instrument requires a warm-up period before stability is obtained. Follow the manufacturer's instructions for specific procedure. Allow a minimum time of 1 hour for warmup. During this time check the sample conditioning apparatus, i.e., filter, condenser, drying tube, and CO_2 removal tube, to ensure that each component is in good operating condition. Zero and calibrate the instrument according to the manufacturer's procedures using, respectively, N_2 and the calibration gases.

TABLE 10-1 - FIELD DATA

Location: Date:

Test: Operator:

Clock Time	Rotameter Reading liters/min (cfm)	Comments

9. CALCULATION--CONCENTRATION OF CARBON MONOXIDE

Calculate the concentration of carbon monoxide in the stack using Equation 10—1.

$$C_{CO(stack)} = C_{CO(NDIR)} (1 - F_{CO2}) \qquad \text{Eq. 10-1}$$

where:

$C_{CO(stack)}$ = Concentration of CO in stack, ppm by volume, dry basis.

$C_{CO(NDIR)}$ = Concentration of CO measured by NDIR analyzer, ppm by volume, dry basis.

F_{CO_2} = Volume fraction of CO_2 in sample, i.e., percent CO_2 from Orsat analysis divided by 100.

10. ALTERNATIVE PROCEDURE--INTERFERENCE TRAP

The sample conditioning system described in Method 101A, Sections 2.1.2 and 4.2, may be used as an alternative to the silica gel and ascarite traps.

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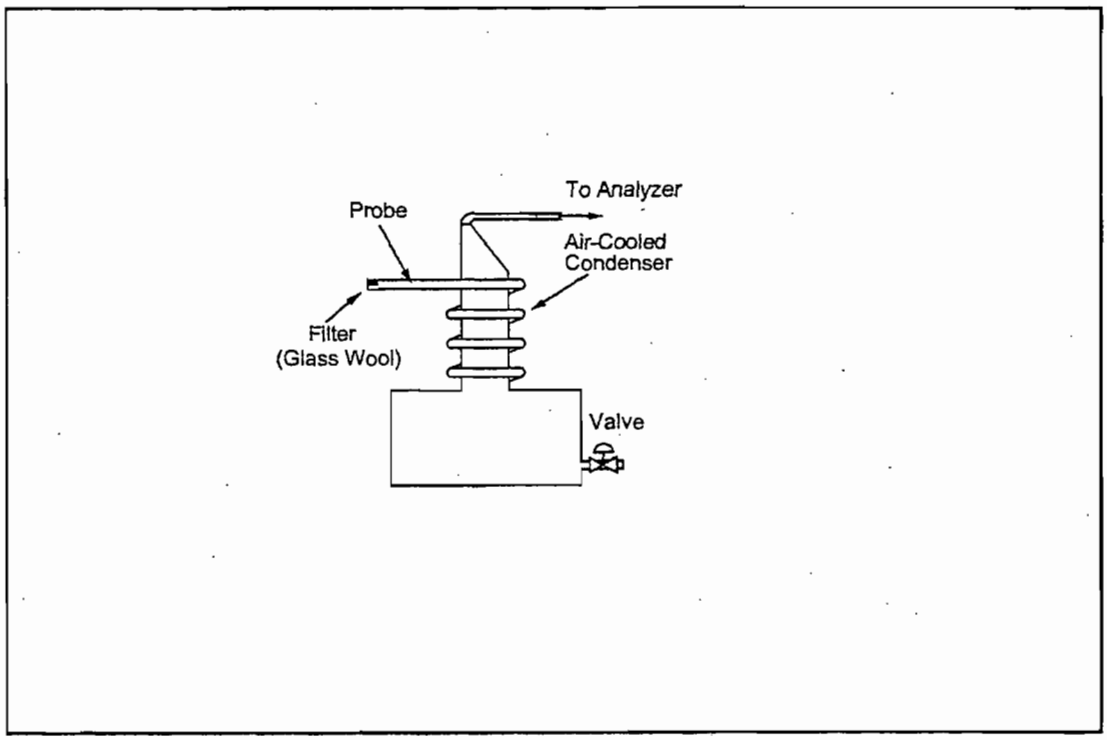


Figure 10-1. Continuous Sampling Train.

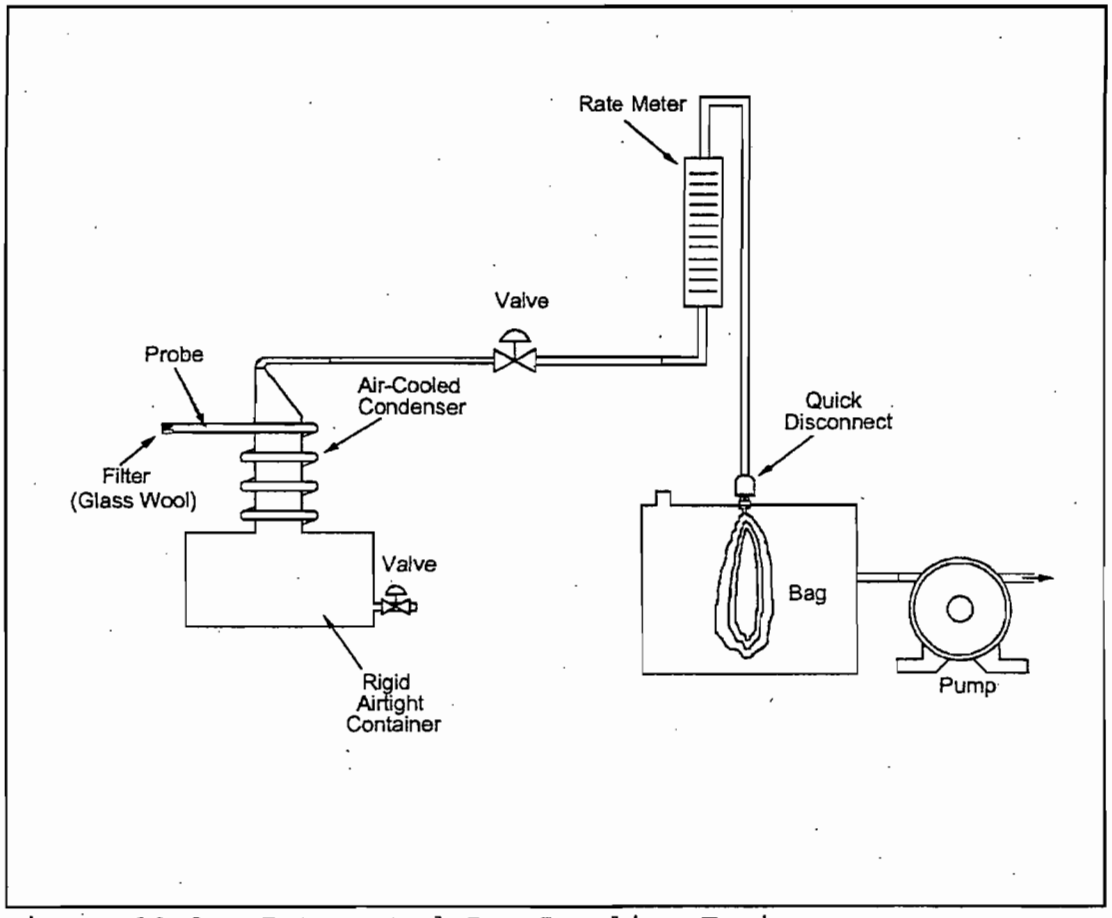


Figure 10-2. Integrated Gas Sampling Train.

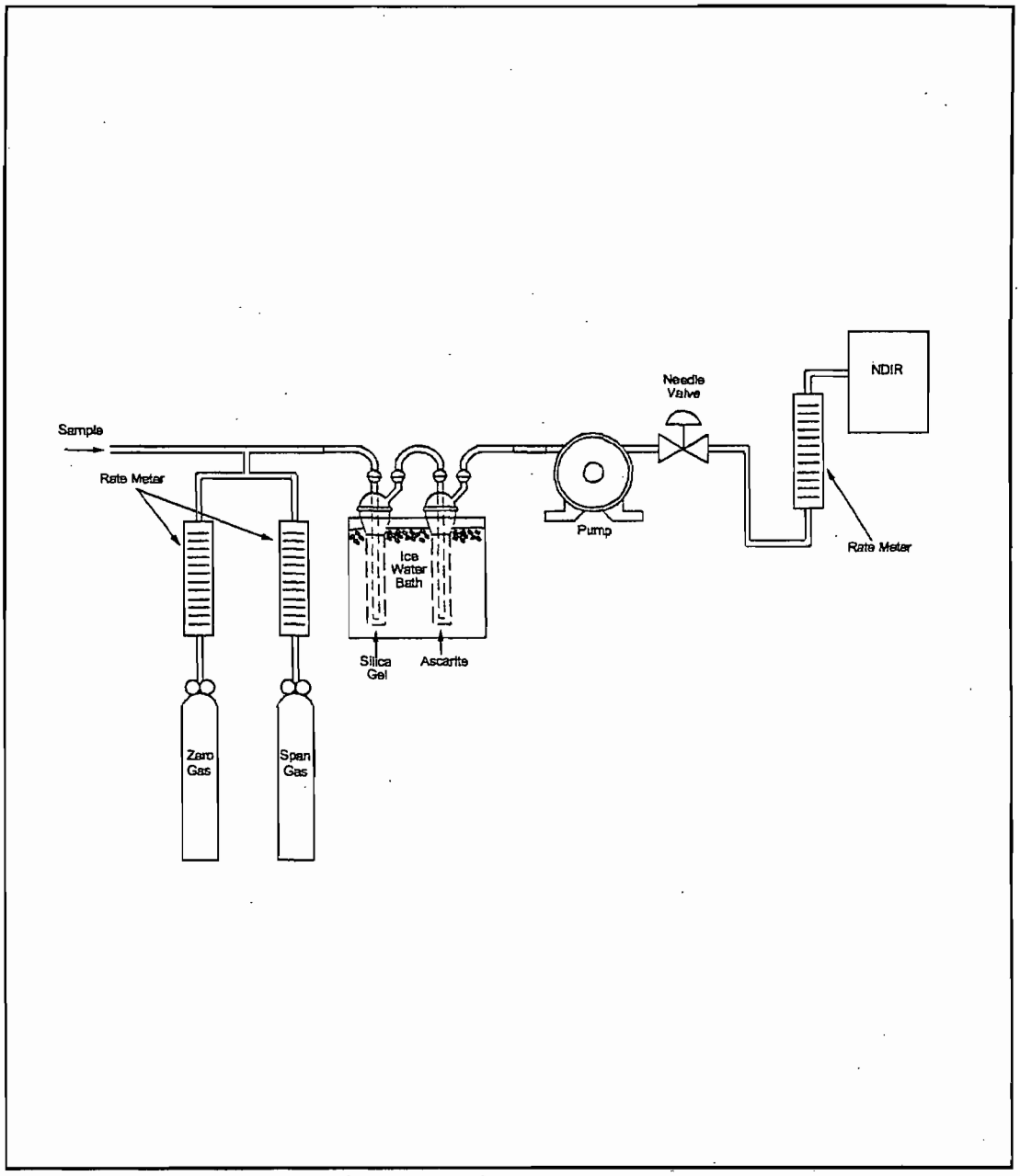


Figure 10-3. Analytical Equipment.

ADDENDA

A. Performance Specifications for NDIR Carbon Monoxide Analyzers.

TABLE A-1. Performance Specifications for NDIR CO Analyzers

Range (minimum)	0-1000 ppm
Output (minimum)	0-10 mV
Minimum detectable sensitivity	20 ppm
Rise time, 90 percent (maximum)	30 seconds
Fall time, 90 percent (maximum)	30 seconds
Zero drift (maximum)	10% in 8 hours
Span drift (maximum)	10% in 8 hours
Precision (maximum)	±2% of full scale
Noise (maximum)	±1% of full scale
Linearity (maximum deviation)	2% of full scale
Interference rejection ratio	CO_2 - 1000:1; H_2O - 500:1

B. Definitions of Performance Specifications.

1. Range - The minimum and maximum measurement limits.

2. Output - Electrical signal which is proportional to the measurement; intended for connection to readout or data processing devices. Usually expressed as millivolts or milliamps full scale at a given impedance.

3. Full Scale - The maximum measuring limit for a given range.

4. Minimum Detectable Sensitivity - The smallest amount of input concentration that can be detected as the concentration approaches zero.

5. Accuracy - The degree of agreement between a measured value and the true value; usually expressed as ± percent

of full scale.

6. Time to 90 Percent Response - The time interval from a step change in the input concentration at the instrument inlet to a reading of 90 percent of the ultimate recorded concentration.

7. Rise Time (90 Percent) - The interval between initial response time and time to 90 percent response after a step increase in the inlet concentration.

8. Fall Time (90 Percent) - The interval between initial response time and time to 90 percent response after a step decrease in the inlet concentration.

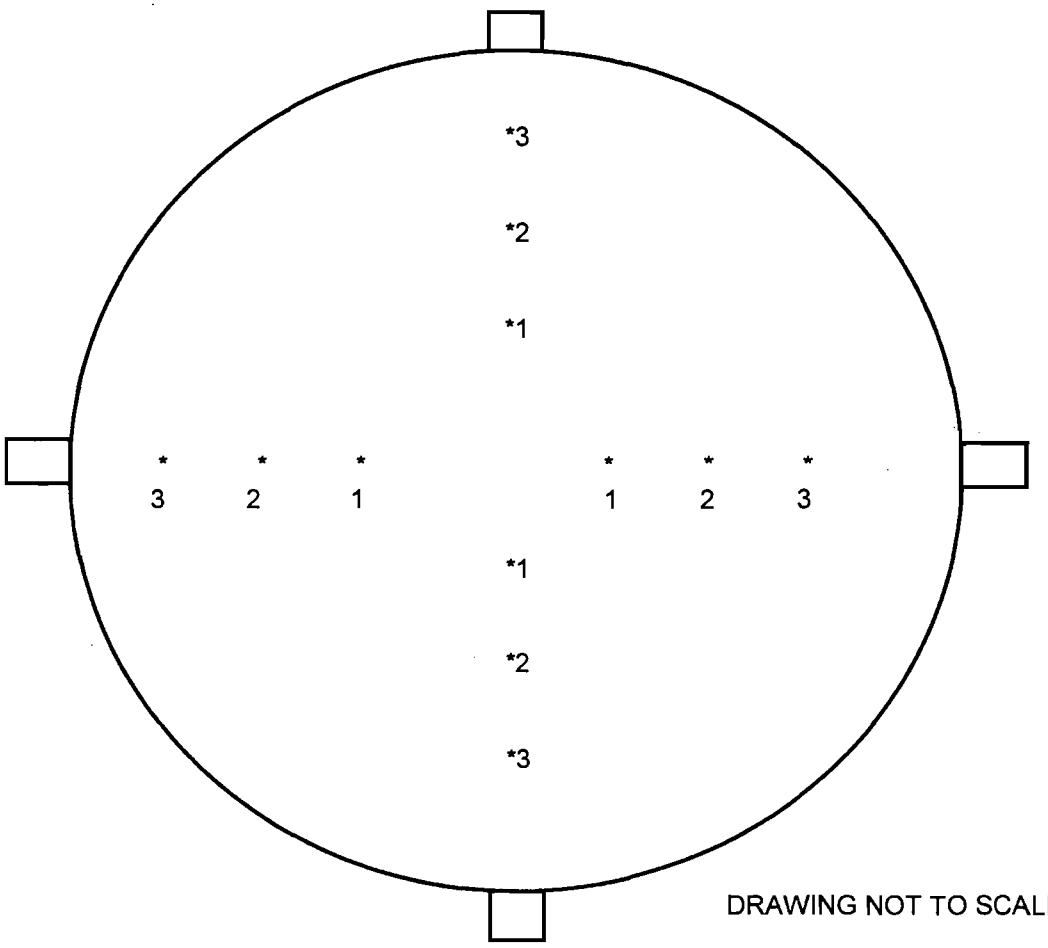
9. Zero Drift - The change in instrument output over a stated time period, usually 24 hours, of unadjusted continuous operation when the input concentration is zero; usually expressed as percent full scale.

10. Span Drift - The change in instrument output over a stated time period, usually 24 hours, of unadjusted continuous operation when the input concentration is a stated upscale value; usually expressed as percent full scale.

11. Precision - The degree of agreement between repeated measurements of the same concentration, expressed as the average deviation of the single results from the mean.

12. Noise - Spontaneous deviations from a mean output not caused by input concentration changes.

13. Linearity - The maximum deviation between an actual instrument reading and the reading predicted by a straight line drawn between upper and lower calibration points.



DRAWING NOT TO SCALE

POINTS	DISTANCE FROM INSIDE WALL
1)	87.024 "
2)	42.924 "
3)	12.936 "

STACK AREA = 471.435 sq ft
STACK DIAMETER = 24.50 '

St. Johns River Power Park
Unit 2

GCI

APPENDIX

NOMENCLATURE

A	=	cross-sectional area of stack, (ft^2)
acf	=	actual cubic feet
acfm	=	actual cubic feet per minute
A_n	=	cross-sectional area of nozzle, (ft^2)
B_{ws}	=	water vapor in the gas stream, proportion by volume
C_a	=	acetone blank residue concentration, mg/mg
C_p	=	pitot tube coefficient, dimensionless
$C_{p(s)}$	=	type S pitot tube coefficient, dimensionless
$C_{p(std)}$	=	standard pitot tube coefficient; use 0.99
C_s	=	concentration of particulate matter in stack gas, dry basis, corrected to standard conditions, (gr/dscf)
D_e	=	equivalent diameter
D_l	=	dust loading per heat input, (lb/mmBtu)
dscf	=	dry standard cubic feet
dscm	=	dry standard cubic meters
fps	=	feet per second
gms	=	grams
gm-mole	=	gram-mole
grs	=	grains
ΔH	=	orifice pressure drop in inches water, average
hr	=	hour
I	=	percent of isokinetic sampling
In. Hg	=	inches mercury
L	=	length.
L_1	=	Individual leakage relate observed during the leak-check conducted prior to the first component change, (ft^3/min)
L_a	=	maximum acceptable leakage rate for either a pretest leak-check or for a leak-check following a component change; equal to 0.00057 m^3/min (0.020 cfm) or 4 percent of the average sampling rate, whichever is less
lbs	=	pounds
lb-mole	=	pound-mole
L_i	=	Individual leakage rate observed during the leak-check conducted prior to the "i^{th}" component change (i = 1, 2, 3..n), (cfm)
L_p	=	leakage rate observed during the post-test leak-check, (cfm)
%M	=	percent moisture by volume
m_a	=	mass of residue of acetone after evaporation, mg
M_d	=	molecular weight of stack gas, dry basis, (lb/lb-mole)
mmBtu	=	million Btu
m_n	=	total amount of particulate matter collected, mg
M_s	=	molecular weight of stack gas, wet basis, (lb/lb-mole)
M_w	=	molecular weight of water, (18.0 lb/lb-mole)
n	=	total number of traverse points
P_b	=	barometric pressure at the sampling site, (in Hg)
P_f	=	static pressure in flue in inches water, average
P_g	=	stack static pressure, (in. Hg)
P_s	=	absolute stack gas pressure, (in. Hg)
P_{std}	=	standard absolute pressure, (29.92 in. Hg)
Q_{sd}	=	dry volumetric stack gas flow rate corrected to standard conditions, (dscf/hr)
R	=	ideal gas constant, $\{21.85\ [(\text{in Hg})\ (ft^3)] / [(°R)\ (\text{lb-mole})]\}$
$\sqrt{\Delta P}$	=	square root of velocity head in inches water, average
scf	=	standard cubic feet
scm	=	standard cubic meters
T	=	sensitivity factor for differential pressure gauges

T_m	=	absolute average DGM temperature, (°R)
T_s	=	absolute average stack gas temperature, (°R)
T_{std}	=	standard absolute temperature, (528 °R)
V_a	=	volume of acetone blank, ml
V_{aw}	=	volume of acetone used in wash, ml
V_l	=	volume of condensate through the impingers, ml
V_{lc}	=	total volume of liquid collected in impingers and silica gel, ml
V_m	=	volume of gas sample as measured by dry gas meter, (dcf)
$V_{m(std)}$	=	volume of gas sample measured by the dry gas meter, corrected to standard conditions, (dscf)
V_o	=	volume of flue gas at actual conditions in cubic feet per minute
$V_{w(std)}$	=	volume of water vapor in the gas sample, corrected to standard conditions, (scf)
V_{wc}	=	volume of water condensed in impingers corrected to standard conditions
V_{wsg}	=	volume of water collected in silica gel corrected to standard conditions
V_s	=	average stack gas velocity, (ft/sec)
W	=	width
W_a	=	weight of residue in acetone wash, mg
W_d	=	weight of dust collected per unit volume, (lb/dscf)
W_g	=	weight of dust collected in grams
W_h	=	weight of dust collected per unit volume, (lb/hr), dry basis
W_p	=	weight of dust collected in pounds
W_s	=	weight of dust collected per unit volume, (gr/dscf)
W_{sg}	=	weight gain of impinger silica gel in grams
Y	=	dry gas meter calibration factor
$*_a$	=	density of acetone, mg/ml
*	=	total sampling time, min
$*_1$	=	sampling time interval, from the beginning of a run until the first component change, min
*i	=	sampling time interval, between two successive component changes, beginning with the interval between the first and second changes, min
$*_p$	=	sampling time interval, from the final (n^{th}) component change until the end of the sampling run, min
13.6	=	specific gravity of mercury
60	=	sec/min
100	=	conversion to percent

CO CALCULATION
(CO_2 Based)

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

lb/mmBtu = lb/dscf x f-factor x $\frac{100}{\%CO_2}$

lb/hour = lb/dscf x dscfm x 60 min./hr

H_2SO_4 ~~Particulate~~ Field Data Sheet

Client: JEA - SJRPP						Date: 12-18-00				Orsat Analysis			
Project No: 00-			Operator: stiles							CO_2%	+O_2	O_2%	
Sampling Location: Unit 2 stack						Run No: 1				13.8	19.6	5.8	
Filter No: na			Acetone No: ~~blk~~ na			Condensate: 55.1 ml or (g)				13.8	19.6	5.8	
Barometric Pressure: 29.36			Static Pressure: -.60			Probe Number:				13.8	19.6	5.8	
Nozzle Diameter: .187			Nozzle Number: 19			Pitot Number:							
Meter Corr.Factor: .988			Pitot Coefficient: .84			Meter No: 3A				RM: 8			Sil.Gel
Sample Pt. Time: 5 min.			Meter Orifice: 3.29149			Date Calibrated: 9-6-00				Flue Area: 471.4 ft²			328g
Assumed % Moisture: 12			Delta H @: 1.852			Leak Test Initial: .000 @ 16" Hg				Final: .000 @ 2" Hg (1 min.)			
Saturated Gas Stream: Y or (N)			impinger box # 1C										

Sample Point	Delta P	Sq.Rt. Delta P	Delta H	Temperature (Degrees Fahrenheit) Stack	Probe 223-273	Imp.Out < 68	Oven 223-273	Meter In	Meter Out	Vac. Pr. (in.Hg)	Dry Gas Meter Reading (Cubic Feet)
Start Time: 09:06									Initial DGM Reading:		894.942
D 1	1.15	1.072	1.15	138	256	65	256	82	79	1.8	898.144
2	1.25	1.118	1.26	139	249	62	248	90	78	1.9	901.291
3	1.20	1.095	1.21	138	252	62	250	89	80	1.9	904.342
C 1	1.35	1.162	1.36	138	252	67	248	90	80	2.0	907.679
2	1.25	1.118	1.28	137	251	65	249	96	80	2.0	910.790
3	.97	.985	.99	138	250	64	248	97	81	1.4	913.715
B 1	1.15	1.072	1.18	137	248	68	248	90	82	1.6	916.750
2	1.25	1.118	1.30	139	247	67	246	97	82	1.9	919.909
3	.98	.990	1.02	138	241	67	243	98	83	1.2	922.751
A 1	1.10	1.049	1.14	138	249	63	246	92	83	1.3	925.576
2	1.20	1.095	1.25	138	246	63	243	98	83	1.8	928.564
3	.97	.985	1.01	137	244	56	244	99	84	1.4	931.422
Stop Time: 10:23											
avg's.		1.072	1.18	138				87			36.480

	init.	final	gn.
imp. # 1	698.0	702.2	4.2
2	722.4	762.7	40.3
3	627.3	637.9	10.6
4	816.0	848.8	32.8

note: used std. RMS type smplg. train w/filter bypass & glassware in place of RMS filter location.

Particulate Field Data Sheet

Client: JEA - SJRPP						Date: 12-18-00			Orsat Analysis		
Project No: 00 -						Operator: Stiles			CO_2%	$+O_2$	O_2%
Sampling Location: Unit 2 stack						Run No: 2			13.8	19.4	5.6
Filter No: na			Acetone No: na			Condensate: 69.8 ml or (g)			13.8	19.4	5.6
Barometric Pressure: 29.36			Static Pressure: -.60			Probe Number:			13.8	19.4	5.6
Nozzle Diameter: .187			Nozzle Number: 19			Pitot Number:					
Meter Corr.Factor: .988			Pitot Coefficient: .84			Meter No: 3A			RM: 8		Sil.Gel
Sample Pt. Time: 5 min.			Meter Orifice: 3.29149			Date Calibrated: 9-6-00			Flue Area:	ft.^{2}	30.2 g
Assumed % Moisture: 12			Delta H @: 1.852			Leak Test Initial: .004@11"Hg			Final: .001@2"Hg		(1 min.)
Saturated Gas Stream: Y or (N)			impinger box # 4A			std. RM8 train					

Sample Point	Delta P	Sq.Rt. Delta P	Delta H	Temperature (Degrees Fahrenheit) Stack	Probe 223-273	Imp.Out < 68	Oven 223-273	Meter In	Meter Out	Vac. Pr. (in.Hg)	Dry Gas Meter Reading (Cubic Feet)
Start Time: 11:24									Initial DGM Reading:		941.430
A1	1.35	1.162	1.40	139	239	43	na	80	80	2.0	944.800
2	1.10	1.049	1.14	138	263	44		88	79	1.5	947.812
3	.96	.980	1.00	138	261	52		91	79	1.3	950.598
B1	1.25	1.118	1.30	138	242	52		92	79	1.8	953.754
2	1.15	1.072	1.19	138	256	52		95	80	1.6	956.767
3	1.05	1.025	1.09	139	243	55		96	81	1.4	959.653
C1	1.20	1.095	1.25	142	246	55		90	81	1.6	962.728
2	1.15	1.072	1.19	143	268	53		97	82	1.6	965.800
3	.96	.980	1.00	143	270	54		97	82	1.2	968.550
D1	1.35	1.162	1.40	145	244	53		94	82	2.0	971.931
2	1.25	1.118	1.29	142	251	53		98	83	1.8	975.061
3	.99	.995	1.02	141	256	54		98	84	1.3	977.863
		1.069	1.19	141				87			36.433
Stop Time: 12:38											
avg's.											

	init.	final	gn.
imp.#1	689.2	717.5	28.3
2	727.1	766.2	39.1
3	618.4	620.8	2.4
4	815.5	845.7	30.2

std. RM8 sampling system.

H_2SO_4 ~~Particulate~~ Field Data Sheet

Client: JEA - SJRPP						Date: 12-18-00				Orsat Analysis			
Project No: 00-				Operator: stiles						CO_2%	+O_2	O_2%	
Sampling Location: Unit 2 stack						Run No: 3				13.6	19.6	6.0	
Filter No: na			Acetone No: na			Condensate: 61.7 ml or (g)				13.6	19.6	6.0	
Barometric Pressure: 29.36			Static Pressure: -.60			Probe Number:				13.6	19.6	6.0	
Nozzle Diameter: .187			Nozzle Number: 19			Pitot Number:							
Meter Corr.Factor: .988			Pitot Coefficient: .84			Meter No: 3A				RM: 8		Sil.Gel	
Sample Pt. Time: 5 min.			Meter Orifice: 3.29149			Date Calibrated: 9-6-00				Flue Area:	ft.^{2}	34.4 g	
Assumed % Moisture: 12			Delta H @: 1.852			Leak Test Initial: .002@10"Hg				Final: .000@2"Hg (1 min.)			
Saturated Gas Stream: Y or (N)			impinger # 4B										

Sample Point	Delta P	Sq.Rt. Delta P	Delta H	Temperature (Degrees Fahrenheit) Stack	Probe 223-273	Imp.Out < 68	Oven 223-273	Meter In	Meter Out	Vac. Pr. (in.Hg)	Dry Gas Meter Reading (Cubic Feet)	
Start Time: 13:17									Initial DGM Reading:		988.643	
D1	1.25	1.118	1.29	142	270	53	na	84	81	2.0	991.773	
2	1.15	1.072	1.19	143	268	47		93	81	2.0	995.184	
3	1.00	1.000	1.03	142	263	55		94	81	1.5	998.047	final DGM
											998.013	init DGM
C1	1.30	1.140	1.34	143	241	53		90	81	2.0	1.115	
2	1.20	1.095	1.23	142	247	55		96	81	1.9	4.177	
3	1.10	1.049	1.13	143	252	59		98	82	1.8	7.234	
B1	1.25	1.118	1.29	142	264	57		91	82	1.9	10.342	
2	1.20	1.095	1.23	143	252	58		98	82	1.9	13.404	
3	1.05	1.025	1.08	142	243	64		99	83	1.7	16.384	
A1	1.30	1.140	1.34	142	248	61		91	83	2.0	19.571	
2	1.20	1.095	1.23	143	243	56		99	84	2.0	22.600	
3	.97	.985	1.00	142	235	56		99	84	1.5	1,025.412	
			±								3	
Stop Time: 14:34												
avg's.		1.078	1.20	142				88			36.803	

* performed lk. ck. @ end of 1st port

imp. #	init.	final	gn.	
1	692.0	714.3	22.3	61.7
2	720.9	756.3	35.4	
3	622.5	626.5	4.0	
4	814.7	849.1	34.4	

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9.39404
27.399

JEA - SJRPP
SJRPP
Jacksonville, Florida
Unit 2 Outlet
Run 1

Time	CO2	CO
12/19/00 10:25	13.77	365.79
12/19/00 10:26	13.77	414.54
12/19/00 10:27	13.67	576.24
12/19/00 10:28	13.70	525.88
12/19/00 10:29	13.68	537.57
12/19/00 10:30	13.76	535.38
12/19/00 10:31	13.68	638.14
12/19/00 10:32	13.68	469.34
12/19/00 10:33	13.74	406.01
12/19/00 10:34	13.68	410.73
12/19/00 10:35	13.65	354.98
12/19/00 10:36	13.66	430.78
12/19/00 10:37	13.73	585.47
12/19/00 10:38	13.71	554.62
12/19/00 10:39	13.76	294.19
12/19/00 10:40	13.72	261.20
12/19/00 10:41	13.68	289.13
12/19/00 10:42	13.67	467.04
12/19/00 10:43	13.69	368.28
12/19/00 10:44	13.73	384.08
12/19/00 10:45	13.71	409.39
12/19/00 10:46	13.72	716.08
	13.71	454.31

JEA - SJRPP
SJRPP
Jacksonville, Florida
Unit 2 Outlet
Run 2

Time	CO2	CO
12/19/00 11:07	13.44	422.28
12/19/00 11:08	13.49	609.91
12/19/00 11:09	13.58	482.41
12/19/00 11:10	13.50	271.76
12/19/00 11:11	13.48	335.29
12/19/00 11:12	13.53	471.13
12/19/00 11:13	13.48	443.69
12/19/00 11:14	13.60	442.04
12/19/00 11:15	13.54	471.60
12/19/00 11:16	13.53	414.63
12/19/00 11:17	13.59	306.33
12/19/00 11:18	13.59	338.35
12/19/00 11:19	13.59	366.60
12/19/00 11:20	13.54	451.47
12/19/00 11:21	13.57	632.68
12/19/00 11:22	13.52	346.83
12/19/00 11:23	13.51	395.07
12/19/00 11:24	13.54	636.15
12/19/00 11:25	13.55	511.00
12/19/00 11:26	13.51	352.23
12/19/00 11:27	13.50	305.45
12/19/00 11:28	13.55	275.24
	13.53	421.91

JEA - SJRPP
SJRPP
Jacksonville, Florida
Unit 2 Outlet
Run 3

Time	CO2	CO
12/19/00 11:48	13.35	261.62
12/19/00 11:49	13.42	268.82
12/19/00 11:50	13.44	378.94
12/19/00 11:51	13.42	377.52
12/19/00 11:52	13.56	336.28
12/19/00 11:53	13.41	323.31
12/19/00 11:54	13.45	344.29
12/19/00 11:55	13.51	470.23
12/19/00 11:56	13.54	349.61
12/19/00 11:57	13.44	303.09
12/19/00 11:58	13.37	258.24
12/19/00 11:59	13.56	220.69
12/19/00 12:00	13.43	253.08
12/19/00 12:01	13.41	486.65
12/19/00 12:02	13.47	542.53
12/19/00 12:03	13.50	344.50
12/19/00 12:04	13.67	312.13
12/19/00 12:05	13.64	238.04
12/19/00 12:06	13.58	198.03
12/19/00 12:07	13.62	258.20
12/19/00 12:08	13.64	312.37
12/19/00 12:09	13.70	308.68
	13.51	324.86

JEA - SJRPP
SJRPP
Jacksonville, Florida
Unit 2 Outlet
Run 4

Time	CO2	CO
12/19/00 12:25	13.84	338.84
12/19/00 12:26	13.86	154.30
12/19/00 12:27	13.84	115.87
12/19/00 12:28	13.73	207.65
12/19/00 12:29	13.68	549.01
12/19/00 12:30	13.70	331.71
12/19/00 12:31	13.59	360.91
12/19/00 12:32	13.72	381.23
12/19/00 12:33	13.78	332.54
12/19/00 12:34	13.76	228.86
12/19/00 12:35	13.73	269.24
12/19/00 12:36	13.73	319.47
12/19/00 12:37	13.74	308.81
12/19/00 12:38	13.75	268.52
12/19/00 12:39	13.78	353.47
12/19/00 12:40	13.64	421.58
12/19/00 12:41	13.69	311.65
12/19/00 12:42	13.78	388.56
12/19/00 12:43	13.70	433.63
12/19/00 12:44	13.68	217.86
12/19/00 12:45	13.74	248.37
12/19/00 12:46	13.62	199.30
	13.73	306.42

JEA - SJRPP
SJRPP
Jacksonville, Florida
Unit 2 Outlet
Run 5

Time	CO2	CO
12/19/00 13:07	13.41	174.20
12/19/00 13:08	13.35	166.90
12/19/00 13:09	13.36	183.46
12/19/00 13:10	13.49	135.37
12/19/00 13:11	13.42	239.70
12/19/00 13:12	13.37	251.64
12/19/00 13:13	13.37	262.37
12/19/00 13:14	13.42	226.32
12/19/00 13:15	13.44	223.57
12/19/00 13:16	13.52	320.00
12/19/00 13:17	13.48	340.50
12/19/00 13:18	13.51	325.23
12/19/00 13:19	13.60	406.23
12/19/00 13:20	13.49	315.59
12/19/00 13:21	13.38	324.02
12/19/00 13:22	13.47	243.10
12/19/00 13:23	13.48	232.88
12/19/00 13:24	13.45	213.61
12/19/00 13:25	13.35	158.20
12/19/00 13:26	13.37	137.01
12/19/00 13:27	13.44	129.93
12/19/00 13:28	13.42	306.89
	13.44	241.67

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SJRPP
Jacksonville, Florida
Unit 2 Outlet
Run 6

Time	CO2	CO
12/19/00 13:47	13.66	202.90
12/19/00 13:48	13.75	210.38
12/19/00 13:49	13.74	235.14
12/19/00 13:50	13.66	266.99
12/19/00 13:51	13.72	202.54
12/19/00 13:52	13.69	250.28
12/19/00 13:53	13.65	268.07
12/19/00 13:54	13.61	183.51
12/19/00 13:55	13.62	231.53
12/19/00 13:56	13.79	333.04
12/19/00 13:57	13.76	464.86
12/19/00 13:58	13.68	178.53
12/19/00 13:59	13.68	120.98
12/19/00 14:00	13.65	129.85
12/19/00 14:01	13.65	147.75
12/19/00 14:02	13.67	173.37
12/19/00 14:03	13.68	272.30
12/19/00 14:04	13.88	343.86
12/19/00 14:05	13.91	406.04
12/19/00 14:06	13.78	376.50
12/19/00 14:07	13.73	278.24
12/19/00 14:08	13.68	209.15
	13.71	249.35

JEA - SJRPP
SJRPP
Jacksonville, Florida
Unit 2 Outlet
Run 7

Time	CO2	CO
12/19/00 14:25	13.64	322.75
12/19/00 14:26	13.55	269.86
12/19/00 14:27	13.48	205.08
12/19/00 14:28	13.47	255.37
12/19/00 14:29	13.36	239.39
12/19/00 14:30	13.35	278.50
12/19/00 14:31	13.50	335.34
12/19/00 14:32	13.47	133.92
12/19/00 14:33	13.54	171.57
12/19/00 14:34	13.56	210.95
12/19/00 14:35	13.58	282.72
12/19/00 14:36	13.64	402.34
12/19/00 14:37	13.65	513.77
12/19/00 14:38	13.60	247.88
12/19/00 14:39	13.56	285.11
12/19/00 14:40	13.57	235.12
12/19/00 14:41	13.61	209.77
12/19/00 14:42	13.68	262.58
12/19/00 14:43	13.55	194.14
12/19/00 14:44	13.59	189.52
12/19/00 14:45	13.64	313.95
12/19/00 14:46	13.58	265.56
12/19/00 14:47	13.55	205.81
12/19/00 14:48	13.57	334.88
	13.55	265.24

JEA - SJRPP
SJRPP
Jacksonville, Florida
Unit 2 Outlet
Run 8

Time	CO2	CO
12/19/00 15:02	13.67	286.10
12/19/00 15:03	13.70	210.94
12/19/00 15:04	13.75	219.48
12/19/00 15:05	13.79	298.06
12/19/00 15:06	13.64	450.52
12/19/00 15:07	13.89	280.58
12/19/00 15:08	13.62	183.81
12/19/00 15:09	14.09	457.08
12/19/00 15:10	14.13	412.31
12/19/00 15:11	14.09	245.57
12/19/00 15:12	13.79	334.91
12/19/00 15:13	13.86	332.67
12/19/00 15:14	13.86	308.38
12/19/00 15:15	13.99	226.74
12/19/00 15:16	13.91	182.63
12/19/00 15:17	13.78	168.95
12/19/00 15:18	13.84	364.31
12/19/00 15:19	13.82	384.28
12/19/00 15:20	13.81	206.66
12/19/00 15:21	13.92	230.53
12/19/00 15:22	13.89	273.88
12/19/00 15:23	13.87	196.32
	13.85	284.30

JEA - SJRPP
SJRPP
Jacksonville, Florida
Unit 2 Outlet
Run 9

Time	CO2	CO
12/19/00 15:50	14.27	526.25
12/19/00 15:51	14.23	546.48
12/19/00 15:52	14.12	373.03
12/19/00 15:53	14.14	329.56
12/19/00 15:54	14.26	370.88
12/19/00 15:55	14.15	252.18
12/19/00 15:56	14.03	152.02
12/19/00 15:57	14.06	231.19
12/19/00 15:58	14.13	160.43
12/19/00 15:59	13.62	215.20
12/19/00 16:00	13.70	281.14
12/19/00 16:01	13.56	244.87
12/19/00 16:02	13.66	192.92
12/19/00 16:03	13.60	183.81
12/19/00 16:04	13.62	150.03
12/19/00 16:05	13.60	174.50
12/19/00 16:06	13.60	244.81
12/19/00 16:07	13.63	268.15
12/19/00 16:08	13.67	270.36
12/19/00 16:09	13.66	322.90
12/19/00 16:10	13.66	262.17
12/19/00 16:11	13.66	247.17
	13.85	272.73

JEA - SJRPP
SJRPP
Jacksonville, Florida
Unit 2 Outlet
Run 10

Time	CO2	CO
12/19/00 16:32	13.75	255.26
12/19/00 16:33	13.80	153.71
12/19/00 16:34	13.75	148.37
12/19/00 16:35	13.78	225.28
12/19/00 16:36	13.87	453.26
12/19/00 16:37	13.91	473.67
12/19/00 16:38	13.81	334.34
12/19/00 16:39	13.71	171.39
12/19/00 16:40	13.73	242.82
12/19/00 16:41	13.77	173.42
12/19/00 16:42	13.74	276.42
12/19/00 16:43	13.70	267.07
12/19/00 16:44	13.68	232.63
12/19/00 16:45	13.77	209.77
12/19/00 16:46	13.79	192.82
12/19/00 16:47	13.72	191.93
12/19/00 16:48	13.74	140.69
12/19/00 16:49	13.81	189.13
12/19/00 16:50	13.87	282.18
12/19/00 16:51	13.88	368.96
12/19/00 16:52	13.82	272.90
12/19/00 16:53	13.79	192.97
	13.78	247.68

JEA - SJRPP
SJRPP
Jacksonville, Florida
Unit 2 Outlet
Run11

Time	CO2	CO
12/19/00 17:19	13.75	255.63
12/19/00 17:20	13.89	470.83
12/19/00 17:21	13.84	434.31
12/19/00 17:22	13.83	322.18
12/19/00 17:23	13.78	322.53
12/19/00 17:24	13.68	273.96
12/19/00 17:25	13.68	146.79
12/19/00 17:26	13.75	182.54
12/19/00 17:27	13.77	276.20
12/19/00 17:28	13.69	262.60
12/19/00 17:29	13.77	276.95
12/19/00 17:30	13.78	221.21
12/19/00 17:31	13.77	298.52
12/19/00 17:32	13.79	408.87
12/19/00 17:33	13.72	287.94
12/19/00 17:34	13.67	228.04
12/19/00 17:35	13.70	257.42
12/19/00 17:36	13.72	336.54
12/19/00 17:37	13.67	244.82
12/19/00 17:38	13.78	224.92
12/19/00 17:39	13.74	278.11
12/19/00 17:40	13.81	295.23
	13.75	286.64

JEA - SJRPP
SJRPP
Jacksonville, Florida
Unit 2 Outlet
Run12

Time	CO2	CO
12/19/00 17:59	13.72	372.85
12/19/00 18:00	13.68	306.87
12/19/00 18:01	13.81	309.38
12/19/00 18:02	13.80	311.77
12/19/00 18:03	13.66	313.95
12/19/00 18:04	13.71	317.82
12/19/00 18:05	13.68	303.92
12/19/00 18:06	13.71	342.90
12/19/00 18:07	13.71	394.16
12/19/00 18:08	13.64	314.31
12/19/00 18:09	13.62	243.91
12/19/00 18:10	13.58	215.80
12/19/00 18:11	13.54	189.81
12/19/00 18:12	13.47	158.69
12/19/00 18:13	13.60	257.78
12/19/00 18:14	13.70	364.86
12/19/00 18:15	13.63	324.54
12/19/00 18:16	13.59	322.09
12/19/00 18:17	13.55	238.90
12/19/00 18:18	13.62	245.10
12/19/00 18:19	13.62	241.36
12/19/00 18:20	13.63	216.96
12/19/00 18:21	13.63	262.04
	13.65	285.64

Co Cal Sheet 1

Client	SJRPP	Test Date	12/19/00
	Jacksonville	Project #	00-131
Source Identification	2	Operator	Teague

Calibration Data For Sampling Runs: 1- Gas Type: CO Span: 2000	Cylinder Number	Cylinder Value % or PPM	Analyzer Response	Absolute Difference % or PPM	Difference % of Span	
Zero Gas		**0.00**	2.00	2.00	0.10	
Low-Range Gas		**0.00**	0.00	0.00	0.00	
Mid-Range Gas		**508.60**	504.80	-3.80	-0.19	
High-Range Gas		**1079.40**	1070.34	-9.06	-0.45	

Run #: 1 Gas Type: CO Span: 2000	Analyzer Response	Initial Values		Final Values		
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	Drift % of Span
Zero Gas	2.00	3.10	0.06	4.00	0.10	0.05
Upscale Gas	504.80	501.90	-0.15	503.20	-0.08	0.07

Run #: 2 Gas Type: CO Span: 2000	Analyzer Response	Initial Values		Final Values		
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	Drift % of Span
Zero Gas	2.00	4.00	0.10	4.20	0.11	0.01
Upscale Gas	504.80	503.20	-0.08	500.00	-0.24	-0.16

Run #: 3 Gas Type: CO Span: 2000	Analyzer Response	Initial Values		Final Values		
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	Drift % of Span
Zero Gas	2.00	4.20	0.11	3.10	0.06	-0.06
Upscale Gas	504.80	500.00	-0.24	497.40	-0.37	-0.13

Run #: 4 Gas Type: CO Span: 2000	Analyzer Response	Initial Values		Final Values		
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	Drift % of Span
Zero Gas	2.00	3.10	0.06	4.70	0.14	0.08
Upscale Gas	504.80	497.40	-0.37	498.20	-0.33	0.04

Co Cal Sheet 2

Client	SJRPP	Test Date	12/19/00
	Jacksonville	Project #	00-131
Source Identification	2	Operator	Teague

Run #: 5		Initial Values		Final Values		
Gas Type: CO	Analyzer	System	System	System	System	
Span: 2000	Response	Response	Cal. Bias % of Span	Response	Cal. Bias % of Span	Drift % of Span
Zero Gas	2.00	4.70	0.14	2.90	0.05	-0.09
Upscale Gas	504.80	498.20	-0.33	500.20	-0.23	0.10

Run #: 6		Initial Values		Final Values		
Gas Type: CO	Analyzer	System	System	System	System	
Span: 2000	Response	Response	Cal. Bias % of Span		Cal. Bias % of Span	Drift % of Span
Zero Gas	2.00	2.90	0.05	1.70	-0.02	-0.06
Upscale Gas	504.80	500.20	-0.23	501.40	-0.17	0.06

Run #: 7		Initial Values		Final Values		
Gas Type: CO	Analyzer	System	System	System	System	
Span: 2000	Response	Response	Cal. Bias % of Span	Response	Cal. Bias % of Span	Drift % of Span
Zero Gas	2.00	1.70	-0.02	3.80	0.09	0.11
Upscale Gas	504.80	501.40	-0.17	507.20	0.12	0.29

Run #: 8		Initial Values		Final Values		
Gas Type: CO	Analyzer	System	System	System	System	
Span: 2000	Response	Response	Cal. Bias % of Span	Response	Cal. Bias % of Span	Drift % of Span
Zero Gas	2.00	3.80	0.09	4.00	0.10	0.01
Upscale Gas	504.80	507.20	0.12	502.70	-0.11	-0.23

$$\text{System Calibration Bias} = \frac{\text{System Cal. Response - Analyzer Cal. Response}}{\text{Span}} \times 100$$

$$\text{Drift} = \frac{\text{Final System Cal. Response - Initial System Cal. Respons}}{\text{Span}} \times 100$$

Co Cal Sheet 3

Client	SJRPP	Test Date	12/19/00
	Jacksonville	Project #	00-131
Source Identification	2	Operator	Teague

Run #:	9		Initial Values		Final Values		
Gas Type:	CO	Analyzer	System	System	System	System	
Span:	2000	Response	Response	Cal. Bias % of Span	Response	Cal. Bias % of Span	Drift % of Span
Zero Gas		2.00	4.00	0.10	4.90	0.15	0.05
Upscale Gas		504.80	502.70	-0.11	508.10	0.17	0.27

Run #:	10		Initial Values		Final Values		
Gas Type:	CO	Analyzer	System	System	System	System	
Span:	2000	Response	Response	Cal. Bias % of Span		Cal. Bias % of Span	Drift % of Span
Zero Gas		2.00	4.90	0.15	4.20	0.11	-0.04
Upscale Gas		504.80	508.10	0.17	505.10	0.02	-0.15

Run #:	11		Initial Values		Final Values		
Gas Type:	CO	Analyzer	System	System	System	System	
Span:	2000	Response	Response	Cal. Bias % of Span	Response	Cal. Bias % of Span	Drift % of Span
Zero Gas		2.00	4.20	0.11	3.00	0.05	-0.06
Upscale Gas		504.80	505.10	0.02	502.61	-0.11	-0.12

Run #:	12		Initial Values		Final Values		
Gas Type:	CO	Analyzer	System	System	System	System	
Span:	2000	Response	Response	Cal. Bias % of Span	Response	Cal. Bias % of Span	Drift % of Span
Zero Gas		2.00	3.00	0.05	2.60	0.03	-0.02
Upscale Gas		504.80	502.61	-0.11	500.70	-0.21	-0.10

$$\text{System Calibration Bias} = \frac{\text{System Cal. Response - Analyzer Cal. Response}}{\text{Span}} \times 100$$

$$\text{Drift} = \frac{\text{Final System Cal. Response - Initial System Cal. Response}}{\text{Span}} \times 100$$

Co2 Cal Sheet 1

Client	SJRPP	Test Date	12/19/00
	Jacksonville	Project #	00-131
Source Identification	2	Operator	Teague

Calibration Data For Sampling Runs: 1- Gas Type: CO2 Span: 20	Cylinder Number	Cylinder Value % or PPM	Analyzer Response	Absolute Difference % or PPM	Difference % of Span	
Zero Gas		**0.00**	0.05	0.05	0.25	
Low-Range Gas				0.00	0.00	
Mid-Range Gas		**11.13**	11.06	-0.07	-0.35	
High-Range Gas		**18.06**	18.10	0.04	0.20	

Run #: 1 Gas Type: CO2 Span: 20	Analyzer Response	Initial Values		Final Values		Drift % of Span
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	
Zero Gas	0.05	0.09	0.20	0.07	0.10	-0.10
Upscale Gas	11.06	11.00	-0.30	11.10	0.20	0.50

Run #: 2 Gas Type: CO2 Span: 20	Analyzer Response	Initial Values		Final Values		Drift % of Span
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	
Zero Gas	0.05	0.07	0.10	0.08	0.15	0.05
Upscale Gas	11.06	11.10	0.20	11.04	-0.10	-0.30

Run #: 3 Gas Type: CO2 Span: 20	Analyzer Response	Initial Values		Final Values		Drift % of Span
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	
Zero Gas	0.05	0.08	0.15	0.09	0.20	0.05
Upscale Gas	11.06	11.04	-0.10	11.08	0.10	0.20

Run #: 4 Gas Type: CO2 Span: 20	Analyzer Response	Initial Values		Final Values		Drift % of Span
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	
Zero Gas	0.05	0.09	0.20	0.12	0.35	0.15
Upscale Gas	11.06	11.08	0.10	11.10	0.20	0.10

Co2 Cal Sheet 2

Client	SJRPP	Test Date	12/19/00
	Jacksonville	Project #	00-131
Source Identification	2	Operator	Teague

Run #:	5		Initial Values		Final Values		
Gas Type:	CO2	Analyzer	System	System	System	System	
Span:	20	Response	Response	Cal. Bias % of Span	Response	Cal. Bias % of Span	Drift % of Span
Zero Gas		0.05	0.12	0.35	0.09	0.20	-0.15
Upscale Gas		11.06	11.10	0.20	11.05	-0.05	-0.25

Run #:	6		Initial Values		Final Values		
Gas Type:	CO2	Analyzer	System	System	System	System	
Span:	20	Response	Response	Cal. Bias % of Span		Cal. Bias % of Span	Drift % of Span
Zero Gas		0.05	0.09	0.20	0.12	0.35	0.15
Upscale Gas		11.06	11.05	-0.05	11.09	0.15	0.20

Run #:	7		Initial Values		Final Values		
Gas Type:	CO2	Analyzer	System	System	System	System	
Span:	20	Response	Response	Cal. Bias % of Span	Response	Cal. Bias % of Span	Drift % of Span
Zero Gas		0.05	0.12	0.35	0.13	0.40	0.05
Upscale Gas		11.06	11.09	0.15	11.04	-0.10	-0.25

Run #:	8		Initial Values		Final Values		
Gas Type:	CO2	Analyzer	System	System	System	System	
Span:	20	Response	Response	Cal. Bias % of Span	Response	Cal. Bias % of Span	Drift % of Span
Zero Gas		0.05	0.13	0.40	0.14	0.45	0.05
Upscale Gas		11.06	11.04	-0.10	11.09	0.15	0.25

$$\text{System Calibration Bias} = \frac{\text{System Cal. Response - Analyzer Cal. Response}}{\text{Span}} \times 100$$

$$\text{Drift} = \frac{\text{Final System Cal. Response - Initial System Cal. Response}}{\text{Span}} \times 100$$

Co2 Cal Sheet 3

Client	SJRPP	Test Date	12/19/00
	Jacksonville	Project #	00-131
Source Identification	2	Operator	Teague

Run #:	9		Initial Values		Final Values		
Gas Type:	CO2	Analyzer	System	System	System	System	
Span:	20	Response	Response	Cal. Bias % of Span	Response	Cal. Bias % of Span	Drift % of Span
Zero Gas		0.05	0.14	0.45	0.12	0.35	-0.10
Upscale Gas		11.06	11.09	0.15	11.14	0.40	0.25

Run #:	10		Initial Values		Final Values		
Gas Type:	CO2	Analyzer	System	System	System	System	
Span:	20	Response	Response	Cal. Bias % of Span		Cal. Bias % of Span	Drift % of Span
Zero Gas		0.05	0.12	0.35	0.10	0.25	-0.10
Upscale Gas		11.06	11.14	0.40	11.16	0.50	0.10

Run #:	11		Initial Values		Final Values		
Gas Type:	CO2	Analyzer	System	System	System	System	
Span:	20	Response	Response	Cal. Bias % of Span	Response	Cal. Bias % of Span	Drift % of Span
Zero Gas		0.05	0.10	0.25	0.10	0.25	0.00
Upscale Gas		11.06	11.16	0.50	11.04	-0.10	-0.60

Run #:	12		Initial Values		Final Values		
Gas Type:	CO2	Analyzer	System	System	System	System	
Span:	20	Response	Response	Cal. Bias % of Span	Response	Cal. Bias % of Span	Drift % of Span
Zero Gas		0.05	0.10	0.25	0.11	0.30	0.05
Upscale Gas		11.06	11.04	-0.10	11.02	-0.20	-0.10

$$\text{System Calibration Bias} = \frac{\text{System Cal. Response - Analyzer Cal. Response}}{\text{Span}} \times 100$$

$$\text{Drift} = \frac{\text{Final System Cal. Response - Initial System Cal. Response}}{\text{Span}} \times 100$$

Grace Consulting, Inc.
EPA Method 5
522 Series Meter Box Calibration
Calibration Orifice Method
English Meter Box Units, English K' Factor

Date:	9/6/00
Model:	Apex
Serial:	3A

Barometric Pressure:	29.4	(in Hg)
Theoretical Critical Vacuum:	13.87	(in Hg)

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

DRY GAS METER READINGS							Critical Orifice Readings			AMBIENT TEMPERATURE		
dH (in H2O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Temp Initial (deg F)	Temp Final (deg F)	Orifice Serial #	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	Initial (deg F)	Final (deg F)	Average (deg F)
0.62	10	879.423	884.017	4.594	78	80	48	0.3449	20	79	79	79
1.1	10	884.017	890.15	6.133	80	82	55	0.4595	20	79	79	79
1.9	10	890.15	898.115	7.965	82	84	63	0.5958	18	79	80	79.5
3.6	10	898.115	909.025	10.91	84	84	73	0.8215	16	80	80	80
5.6	10	909.025	922.585	13.56	84	89	81	1.0185	15	80	80	80

CORRECTED VOLUME	
DRY GAS METER Vm(std) (cu ft)	ORIFICE Vcr(std) (cu ft)
4.427	4.368
5.895	5.819
7.643	7.541
10.495	10.393
13.048	12.886

DRY GAS METER CALIBRATION FACTOR Y	
Value	Variation
0.987	-0.001
0.987	-6E-04
0.987	-0.001
0.990	0.0027
0.988	-1E-04
Average 0.988	

ORIFICE CALIBRATION FACTOR dH@	
Value (in H20)	Variation (in H20)
1.828	-0.024
1.827	-0.025
1.879	0.027
1.875	0.022
1.897	0.045
Average 1.852	

Orifice for Calc.
3.29149

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

For Orifice Calibration Factor dH@, the orifice differential pressure in inches of H20 that equates to 0.75 cfm of air at 68 F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +-0.2.

SIGNED: Joshua Nichols Date: 9-7-00

$$V_{m(std)} = 17.64\,(V_m)\frac{P_b + \frac{\Delta H}{13.6}}{t_m + 460}$$

$$V_{cr(std)} = K'\frac{P_b\theta}{\sqrt{t_{amb} + 460}}$$

$$Y = \frac{V_{cr(std)}}{V_{m(std)}}$$

$$\Delta H_@ = \Delta H\left(\frac{.75\theta}{V_{cr(std)}}\right)^2$$

Grace Consulting, Inc.
EPA Method 5
Post Test Calibration
Calibration Orifice Method
English Meter Box Units, English K' Factor

Date:	12/28/00
Model:	Apex
Serial:	3A

Barometric Pressure:	29.56	(in Hg)
Theoretical Critical Vacuum:	13.94	(in Hg)

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

DRY GAS METER READINGS							Critical Orifice Readings					
										AMBIENT TEMPERATURE		
dH (in H2O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Temp Initial (deg F)	Temp Final (deg F)	Orifice Serial #	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	Initial (deg F)	Final (deg F)	Average (deg F)
1.8	10	869.245	876.910	7.665	66	67.5	63	0.5958	12	63	62	62.5
1.8	10	876.910	884.560	7.650	67.5	70.5	63	0.5958	12	62	63	62.5
1.8	10	884.560	892.222	7.662	70.5	71	63	0.5958	12	63	63	63

CORRECTED VOLUME	
DRY GAS METER Vm(std) (cu ft)	ORIFICE Vcr(std) (cu ft)
7.622	7.705
7.574	7.705
7.561	7.701

DRY GAS METER CALIBRATION FACTOR Y	
Value	Variation
1.011	-0.005
1.017	0.0017
1.018	0.003

ORIFICE CALIBRATION FACTOR dH@	
Value (in H20)	Variation (in H20)
1.706	-0.001
1.706	-0.001
1.707	0.001

Average	1.016

Average	1.706

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

For Orifice Calibration Factor dH@, the orifice differential pressure in inches of H20 that equates to 0.75 cfm of air at 68 F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +-0.2.

SIGNED:_____ Date:_____

$$V_{m(std)} = 17.64 (V_m) \frac{P_b + \frac{\Delta H}{13.6}}{t_m + 460}$$

$$V_{cr(std)} = K' \frac{P_b \theta}{\sqrt{t_{amb} + 460}}$$

$$Y = \frac{V_{cr(std)}}{V_{m(std)}}$$

$$\Delta H_@ = \Delta H \left(\frac{.75\theta}{V_{cr(std)}} \right)^2$$

PITOT CALIBRATION

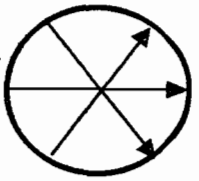
Pitot Tube Assembly		Post Calibration	
Pitot #	new	Visual Inspection	OK
Pitot Coefficient:	0.84	Recalibrated	N/A
		Adjusted Cp	N/A

Grace Consulting,Inc.

Nozzle Calibration Sheet

Date: 9/6/00

Nozzle No.	Measurement A	Measurement B	Measurement C	Average Measurement
1	0.183	0.181	0.181	0.182
2	0.182	0.179	0.180	0.180
3	0.359	0.357	0.359	0.358
4	0.236	0.239	0.237	0.237
5	0.491	0.492	0.490	0.491
6	0.498	0.494	0.495	0.496
8	0.496	0.495	0.495	0.495
11	0.166	0.164	0.164	0.165
13	0.235	0.235	0.238	0.236
14	0.366	0.364	0.367	0.366
15	0.245	0.248	0.245	0.246
18	0.180	0.181	0.182	0.181
19	0.189	0.183	0.189	0.187
22	0.367	0.365	0.364	0.365
23	0.367	0.365	0.366	0.366
25	0.361	0.358	0.358	0.359
27	0.355	0.355	0.355	0.355
29	0.294	0.295	0.294	0.294
30	0.302	0.304	0.305	0.304
31	0.241	0.242	0.241	0.241
33	0.179	0.180	0.180	0.180
35	0.293	0.293	0.291	0.292
36	0.295	0.292	0.294	0.294
39	0.369	0.366	0.366	0.367
40	0.295	0.294	0.295	0.295
42	0.172	0.172	0.170	0.171
43	0.123	0.122	0.125	0.123
52	0.290	0.288	0.287	0.288
55	0.245	0.247	0.247	0.246
61	0.496	0.496	0.494	0.495
75	0.362	0.365	0.365	0.364
81	0.369	0.368	0.371	0.369
86	0.308	0.308	0.307	0.308
88	0.366	0.367	0.366	0.366
90	0.496	0.499	0.496	0.497
94	0.370	0.367	0.369	0.369
115	0.168	0.167	0.168	0.168
123	0.365	0.366	0.366	0.366
A1	0.181	0.181	0.182	0.181
A2	0.180	0.181	0.181	0.181
A22	0.255	0.256	0.254	0.255
A3	0.495	0.498	0.495	0.496
A41	0.358	0.355	0.358	0.357



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.: PO 6893
Project No.: 12-33764-004

Customer
ST JOHNS RIVER POWER PARK

OPERATIONS DEPT BLDG 1
11201 NEW BERLIN RD
JACKSONVILLE FL 32226

ANALYTICAL INFORMATION

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

Cylinder Number: AAL1215 **Certification Date:** 4/19/99 **Exp. Date:** 4/27/2001
Cylinder Pressure*:** 1948 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ACCURACY**	TRACEABILITY
CARBON DIOXIDE	5.14	%	+/- 1%	Direct NIST and NMi
CARBON MONOXIDE	508.6	PPM	+/- 1%	Direct NIST and NMi
NITRIC OXIDE	250.8	PPM	+/- 1%	Direct NIST and NMi
SULFUR DIOXIDE *	876.17	PPM	+/- 1%	Direct NIST and NMi
NITROGEN - OXYGEN FREE		BALANCE		
TOTAL OXIDES OF NITROGEN	250.8	PPM		Reference Value Only

*** Do not use when cylinder pressure is below 150 psig.
** Analytical accuracy is based on the requirements of EPA Protocol 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 5000	7/13/01	ALM048844	5.032 %	CARBON DIOXIDE
NTRM 1680	8/01/02	ALM024750	474.0 PPM	CARBON MONOXIDE
NTRM1686	2/01/03	ALM004655	495.3 PPM	NO/N2
NTRM 1682	4/05/01	ALM043939	972.0 PPM	SULFUR DIOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
VARIAN GC/3400/0160-CO2	03/25/99	GC / TCD
VARIAN/3400/16804-CO	03/30/99	GC
FTIR System/8220/AAB9400252	04/16/99	Scott Enhanced FTIR
FTIR System/8220/AAB9400252	04/16/99	Scott Enhanced FTIR

ANALYZER READINGS

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

CARBON DIOXIDE

First Triad Analysis
Date:04/19/99 Response Unit:AREA
Z1 = 0.0000 R1 = 332192 T1 = 337886
R2 = 330859 Z2 = 0.0000 T2 = 338660
Z3 = 0.0000 T3 = 339155 R3 = 330992
Avg. Concentration: 5.140 %

Calibration Curve
Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.99999
Constants: A = 0.00
B = 1.00 C = 0.00
D = 0.00 E = 0.00

CARBON MONOXIDE

First Triad Analysis
Date:04/19/99 Response Unit:AREA
Z1 = 0.0000 R1 = 1632.0 T1 = 1755.0
R2 = 1632.0 Z2 = 0.0000 T2 = 1752.0
Z3 = 0.0000 T3 = 1752.0 R3 = 1632.0
Avg. Concentration: 509.1 PPM

Second Triad Analysis
Date:04/27/99 Response Unit: AREA
Z1 = 0.0000 R1 = 1632.0 T1 = 1749.0
R2 = 1632.0 Z2 = 0.0000 T2 = 1749.0
Z3 = 0.0000 T3 = 1749.0 R3 = 1632.0
Avg. Concentration: 508.6 PPM

Calibration Curve
Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.99999
Constants: A = 0.00
B = 1.00 C = 0.00
D = 0.00 E = 0.00

NITRIC OXIDE

First Triad Analysis
Date:04/20/99 Response Unit:PPM
Z1 = 0.0898 R1 = 495.24 T1 = 250.82
R2 = 495.32 Z2 = 0.2328 T2 = 250.75
Z3 = 0.2026 T3 = 250.43 R3 = 495.33
Avg. Concentration: 250.7 PPM

Second Triad Analysis
Date:04/27/99 Response Unit: PPM
Z1 = 0.2549 R1 = 494.69 T1 = 250.65
R2 = 495.53 Z2 = 0.2835 T2 = 250.82
Z3 = 0.1236 T3 = 251.16 R3 = 495.68
Avg. Concentration: 250.9 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
1760 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.: PO 6893
Project No.: 12-33764-004

Customer
ST JOHNS RIVER POWER PARK

OPERATIONS DEPT BLDG 1
11201 NEW BERLIN RD
JACKSONVILLE FL 32226

ANALYTICAL INFORMATION

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

Cylinder Number: AAL1215 **Certification Date:** 4/19/99 **Exp. Date:** 4/27/2001
Cylinder Pressure*:** 1948 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:04/20/99	Response Unit:PPM		Date:04/27/99	Response Unit: PPM		Concentration = A + Bx + Cx2 + Dx3 + Ex4	
Z1 = 0.4120	R1 = 970.42	T1 = 875.17	Z1 = 0.0720	R1 = 494.69	T1 = 970.61	r = 0.99999	
R2 = 973.23	Z2 = 1.0400	T2 = 876.99	R2 = 495.53	Z2 = 0.6190	T2 = 871.94	Constants:	A = 0.00
Z3 = 1.5180	T3 = 876.21	R3 = 972.35	Z3 = 0.7810	T3 = 973.45	R3 = 496.68	B = 1.00	C = 0.00
Avg. Concentration:	876.1	PPM	Avg. Concentration:	972.0	PPM	D = 0.00	E = 0.00

APPROVED BY: B.M. Becton
B.M. Becton

RATA CLASS

Dual-Analyzed Calibration Standard

Installed 8/17/00

Scott Specialty Gases
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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 Protocol 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)

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

CARBON DIOXIDE

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 %

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

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

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

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

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

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

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

APPROVED BY: B. M. Becton

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

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

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 %

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

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

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

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

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

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

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)

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 = 3043.8	Z1 = -0.415	R1 = 3138.4	T1 = 3047.4	r = 0.999990	
R2 = 3128.7	Z2 = 0.5359	T2 = 3044.1	R2 = 3126.8	Z2 = 4.9264	T2 = 3045.6	Constants:	A = 0.000000
Z3 = 3.1523	T3 = 3042.9	R3 = 3129.6	Z3 = 4.6126	T3 = 3048.2	R3 = 3127.7	B = 1.000000	C = 0.000000
Avg. Concentration:	3043.	PPM	Avg. Concentration:	3047.	PPM	D = 0.000000	E = 0.000000

APPROVED BY: B. M. Becton

SJRPP

00-131

Unit 2 stack H_2SO_4

12/19/00

$\frac{25 \times .02}{47.4} = .0105$ barium normality

Run No.	Vol. aliquot	Vol. sample	mls to titrate
Blank	25ml	1,000	0.0/0.0
1	25	295 ml	9.5/8.8/9.9/9.8
2	25	360ml	4.7/5.4/5.4
3	25	385ml	6.0/5.7/5.7

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • TEL: 630-953-9300 FAX: 630-953-9306

SINCE 1908®

SGS Member of the SGS Group (Société Générale de Surveillance)

1908-1998 *90 Years Committed To Excellence*

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 752
HENDERSON, KY 42419
TEL: (502) 827-1187
FAX: (502) 826-0719

December 28, 2000

ST. JOHNS RIVER POWER PARK
11201 NEW BERLIN RD
JACKSONVILLE FL 32226

Sample identification by
SJRPP

ID# 121700-2
Date: 12/17/00
Time: 16:20
Burn Date: 12/18/00
P.O. #2312

Kind of sample reported to us Coal/Pet Coke Blend

Sample taken at -----

Sample taken by -----

Date sampled December 17, 2000

Date received December 22, 2000

Analysis Report No. 63-33745

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	11.05	xxxxx		
% Ash	6.46	7.26		
Btu/lb	11981	13469	MAF	14523
% Sulfur	0.63	0.71		

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Henderson Laboratory

MEMBER ACIL

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • TEL: 630-953-9300 FAX: 630-953-9306

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ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 752
HENDERSON, KY 42419
TEL: (502) 827-1187
FAX: (502) 826-0719

December 28, 2000

ST. JOHNS RIVER POWER PARK
11201 NEW BERLIN RD
JACKSONVILLE FL 32226

Sample identification by
SJRPP

ID# 121700-3
Date: 12/17/00
Time: 23:50
Burn Date: 12/18/00
P.O. #2312

Kind of sample reported to us	Coal/Pet Coke Blend
Sample taken at	-----
Sample taken by	-----
Date sampled	December 17, 2000
Date received	December 22, 2000

Analysis Report No. 63-33746

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	10.71	xxxxx		
% Ash	8.20	9.18		
Btu/lb	11703	13107	MAF	14432
% Sulfur	0.68	0.76		

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Henderson Laboratory

MEMBER ACIL

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • TEL: 630-953-9300 FAX: 630-953-9306

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ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 752
HENDERSON, KY 42419
TEL: (502) 827-1187
FAX: (502) 826-0719

December 28, 2000

ST. JOHNS RIVER POWER PARK
11201 NEW BERLIN RD
JACKSONVILLE FL 32226

Sample identification by
SJRPP

ID# 121800-1
Date: 12/18/00
Time: 03:50
Burn Date: 12/19/00
P.O. #2312

Kind of sample reported to us Coal/Pet Coke Blend

Sample taken at -----

Sample taken by -----

Date sampled December 18, 2000

Date received December 22, 2000

Analysis Report No. 63-33747

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	10.71	xxxxx		
% Ash	9.05	10.13		
Btu/lb	11613	13006	MAF	14472
% Sulfur	0.69	0.77		

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Henderson Laboratory

MEMBER ACIL

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • TEL: 630-953-9300 FAX: 630-953-9306

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ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 752
HENDERSON, KY 42419
TEL: (502) 827-1187
FAX: (502) 826-0719

December 28, 2000

ST. JOHNS RIVER POWER PARK
11201 NEW BERLIN RD
JACKSONVILLE FL 32226

Sample identification by
SJRPP

ID# 121800-2
Date: 12/18/00
Time: 16:15
Burn Date: 12/19/00
P.O. #2312

Kind of sample reported to us Coal/Pet Coke Blend

Sample taken at -----

Sample taken by -----

Date sampled December 18, 2000

Date received December 22, 2000

Analysis Report No. 63-33748

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	10.53	xxxxx		
% Ash	5.91	6.61		
Btu/lb	12214	13651	MAF	14617
% Sulfur	0.72	0.81		

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Henderson Laboratory

MEMBER ACIL

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • TEL: 630-953-9300 FAX: 630-953-9306

SINCE 1908®

SGS Member of the SGS Group (Société Générale de Surveillance)

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ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 752
HENDERSON, KY 42419
TEL: (502) 827-1187
FAX: (502) 826-0719

December 28, 2000

ST. JOHNS RIVER POWER PARK
11201 NEW BERLIN RD
JACKSONVILLE FL 32226

Sample identification by
SJRPP

ID# 121800-3
Date: 12/18/00
Time: 23:15
Burn Date: 12/19/00
P.O. #2312

Kind of sample reported to us Coal/Pet Coke Blend

Sample taken at -----

Sample taken by -----

Date sampled December 18, 2000

Date received December 22, 2000

Analysis Report No. 63-33749

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	11.25	xxxxx		
% Ash	7.16	8.07		
Btu/lb	11935	13448	MAF	14629
% Sulfur	1.40	1.58		

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Henderson Laboratory

MEMBER ACIL

H2804 Run # 1

Enertec NTDAHS®
Average Values Report
12/18/00 10:37

Company: St. Johns Unit 2
Plant:
City/St:
Source: Unit 2

Period Start: 12/18/00 09:06
Period End: 12/18/00 10:24
Validation Type: 1/1 min
Averaging Period: 1/1 min
Type: Rolling Avg

Period Start	Average 2Stk_kscfh kscfh	Average 2Unit_Load MW
12/18/00 09:06	96102.0	678.2
12/18/00 09:07	96120.0	677.2
12/18/00 09:08	96102.0	675.7
12/18/00 09:09	96102.0	675.8
12/18/00 09:10	96102.0	674.1
12/18/00 09:11	96114.0	675.7
12/18/00 09:12	96114.0	674.8
12/18/00 09:13	96120.0	676.0
12/18/00 09:14	96120.0	675.6
12/18/00 09:15	96120.0	676.7
12/18/00 09:16	96114.0	676.2
12/18/00 09:17	96120.0	676.4
12/18/00 09:18	95646.0	677.1
12/18/00 09:19	95484.0	677.6
12/18/00 09:20	95496.0	679.5
12/18/00 09:21	95484.0	679.3
12/18/00 09:22	95472.0	680.6
12/18/00 09:23	95370.0	681.2
12/18/00 09:24	95370.0	683.0
12/18/00 09:25	95352.0	680.6
12/18/00 09:26	95328.0	680.2
12/18/00 09:27	95328.0	678.2
12/18/00 09:28	95328.0	676.9
12/18/00 09:29	95328.0	675.8
12/18/00 09:30	95484.0	676.2
12/18/00 09:31	95526.0	675.1
12/18/00 09:32	95538.0	676.0
12/18/00 09:33	95274.0	675.3
12/18/00 09:34	95034.0	674.9
12/18/00 09:35	95022.0	673.9
12/18/00 09:36	95022.0	673.5
12/18/00 09:37	94866.0	675.5
12/18/00 09:38	94794.0	676.0
12/18/00 09:39	94782.0	676.8
12/18/00 09:40	94794.0	676.3
12/18/00 09:41	94782.0	676.5
12/18/00 09:42	94758.0	676.3
12/18/00 09:43	94770.0	676.4
12/18/00 09:44	94758.0	677.7
12/18/00 09:45	94980.0	678.6
12/18/00 09:46	95232.0	680.2
12/18/00 09:47	95220.0	680.4
12/18/00 09:48	95238.0	681.6
12/18/00 09:49	95328.0	678.8
12/18/00 09:50	95340.0	680.1
12/18/00 09:51	95328.0	678.8
12/18/00 09:52	95220.0	679.1
12/18/00 09:53	95106.0	677.6

12/18/00 09:54	95088.0	678.6
12/18/00 09:55	95064.0	677.8
12/18/00 09:56	95004.0	678.6
12/18/00 09:57	95034.0	678.8
12/18/00 09:58	95022.0	678.5
12/18/00 09:59	94926.0	677.2
12/18/00 10:00	94884.0	675.9
12/18/00 10:01	94860.0	675.5
12/18/00 10:02	94770.0	674.3
12/18/00 10:03	94740.0	673.0
12/18/00 10:04	94746.0	671.5
12/18/00 10:05	94770.0	671.1
12/18/00 10:06	94596.0	671.1
12/18/00 10:07	94536.0	672.4
12/18/00 10:08	94536.0	673.1
12/18/00 10:09	94788.0	673.7
12/18/00 10:10	95022.0	674.8
12/18/00 10:11	95034.0	674.9
12/18/00 10:12	95034.0	677.2
12/18/00 10:13	95034.0	678.5
12/18/00 10:14	95046.0	680.2
12/18/00 10:15	95034.0	679.5
12/18/00 10:16	95022.0	679.5
12/18/00 10:17	95262.0	680.5
12/18/00 10:18	95340.0	680.0
12/18/00 10:19	95328.0	681.5
12/18/00 10:20	95418.0	678.5
12/18/00 10:21	95514.0	678.8
12/18/00 10:22	95496.0	677.0
12/18/00 10:23	95430.0	677.7
Final Average*	**95268.1**	**677.1**
Maximum*	**96120.0**	**683.0**
Minimum*	**94536.0**	**671.1**

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

JEA #2 H2SO4

Enertec NTDAHS®
Average Values Report
12/18/00 13:16

Company: St. Johns Unit 2
Plant:
City/St:
Source: Unit 2

Period Start: 12/18/00 11:24
Period End: 12/18/00 12:39
Validation Type: 1/1 min
Averaging Period: 1/1 min
Type: Rolling Avg

Period Start	Average 2Stk_kscfh kscfh	Average 2Unit_Load MW
12/18/00 11:24	95274.0	674.7
12/18/00 11:25	95574.0	676.2
12/18/00 11:26	95574.0	677.7
12/18/00 11:27	95562.0	678.1
12/18/00 11:28	95508.0	677.5
12/18/00 11:29	95364.0	676.4
12/18/00 11:30	95340.0	677.5
12/18/00 11:31	95340.0	677.7
12/18/00 11:32	95106.0	677.8
12/18/00 11:33	95118.0	676.9
12/18/00 11:34	95118.0	675.3
12/18/00 11:35	95154.0	675.1
12/18/00 11:36	95166.0	675.0
12/18/00 11:37	95166.0	674.2
12/18/00 11:38	95232.0	673.4
12/18/00 11:39	95430.0	672.4
12/18/00 11:40	95430.0	671.3
12/18/00 11:41	95430.0	670.1
12/18/00 11:42	95886.0	668.8
12/18/00 11:43	95910.0	669.0
12/18/00 11:44	95934.0	669.0
12/18/00 11:45	95982.0	670.5
12/18/00 11:46	96090.0	671.2
12/18/00 11:47	96090.0	672.9
12/18/00 11:48	96102.0	672.1
12/18/00 11:49	96168.0	674.0
12/18/00 11:50	96426.0	674.6
12/18/00 11:51	96438.0	677.1
12/18/00 11:52	96426.0	678.4
12/18/00 11:53	96186.0	678.3
12/18/00 11:54	96174.0	678.8
12/18/00 11:55	96174.0	679.1
12/18/00 11:56	96174.0	679.7
12/18/00 11:57	95910.0	678.8
12/18/00 11:58	95910.0	677.7
12/18/00 11:59	95922.0	676.4
12/18/00 12:00	95958.0	677.0
12/18/00 12:01	95958.0	675.2
12/18/00 12:02	95970.0	675.6
12/18/00 12:03	95892.0	675.0
12/18/00 12:04	95880.0	674.0
12/18/00 12:05	95856.0	671.2
12/18/00 12:06	95736.0	670.4
12/18/00 12:07	95628.0	668.8
12/18/00 12:08	95616.0	669.7
12/18/00 12:09	N/A	669.4
12/18/00 12:10	N/A	670.0
12/18/00 12:11	N/A	668.7

12/18/00 12:12	N/A	670.0
12/18/00 12:13	N/A	670.2
12/18/00 12:14	N/A	670.1
12/18/00 12:15	N/A	670.0
12/18/00 12:16	N/A	670.8
12/18/00 12:17	N/A	672.8
12/18/00 12:18	N/A	675.5
12/18/00 12:19	95472.0	677.7
12/18/00 12:20	95262.0	678.2
12/18/00 12:21	95262.0	679.9
12/18/00 12:22	95220.0	679.4
12/18/00 12:23	95244.0	678.6
12/18/00 12:24	95154.0	676.7
12/18/00 12:25	95166.0	676.1
12/18/00 12:26	95166.0	675.0
12/18/00 12:27	95196.0	674.5
12/18/00 12:28	95274.0	672.3
12/18/00 12:29	95298.0	671.0
12/18/00 12:30	95298.0	668.4
12/18/00 12:31	95406.0	669.2
12/18/00 12:32	95748.0	668.9
12/18/00 12:33	95736.0	670.9
12/18/00 12:34	95736.0	670.9
12/18/00 12:35	95736.0	672.0
12/18/00 12:36	95736.0	673.5
12/18/00 12:37	95736.0	674.5
12/18/00 12:38	95736.0	673.9
Final Average*	**95644.1**	**674.0**
Maximum*	**96438.0**	**679.9**
Minimum*	**95106.0**	**668.4**

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

RUN #3 H2SO4

Enertec NTDAHS®
Average Values Report
12/18/00 14:47

Company: St. Johns Unit 2
Plant:
City/St:
Source: Unit 2

Period Start: 12/18/00 13:17
Period End: 12/18/00 14:37
Validation Type: 1/1 min
Averaging Period: 1/1 min
Type: Rolling Avg

Period Start	Average 2Stk_kscfh kscfh	Average 2Unit_Load MW
12/18/00 13:17	96618.0	675.9
12/18/00 13:18	96618.0	673.8
12/18/00 13:19	96618.0	673.2
12/18/00 13:20	96486.0	673.4
12/18/00 13:21	96354.0	673.1
12/18/00 13:22	96354.0	673.1
12/18/00 13:23	96366.0	673.2
12/18/00 13:24	96222.0	673.0
12/18/00 13:25	95826.0	673.3
12/18/00 13:26	95826.0	672.6
12/18/00 13:27	95736.0	673.0
12/18/00 13:28	95472.0	673.9
12/18/00 13:29	95472.0	672.7
12/18/00 13:30	95472.0	674.6
12/18/00 13:31	95472.0	674.5
12/18/00 13:32	95454.0	675.3
12/18/00 13:33	95460.0	674.2
12/18/00 13:34	95718.0	673.9
12/18/00 13:35	95946.0	674.6
12/18/00 13:36	95958.0	677.6
12/18/00 13:37	95958.0	677.8
12/18/00 13:38	96054.0	678.6
12/18/00 13:39	96090.0	677.5
12/18/00 13:40	96102.0	677.1
12/18/00 13:41	96144.0	676.5
12/18/00 13:42	96366.0	676.0
12/18/00 13:43	96354.0	676.1
12/18/00 13:44	96354.0	676.3
12/18/00 13:45	96186.0	676.5
12/18/00 13:46	96132.0	675.3
12/18/00 13:47	96132.0	676.2
12/18/00 13:48	96132.0	675.0
12/18/00 13:49	95778.0	675.0
12/18/00 13:50	95778.0	675.2
12/18/00 13:51	95778.0	676.4
12/18/00 13:52	95778.0	676.2
12/18/00 13:53	95394.0	677.0
12/18/00 13:54	95382.0	675.8
12/18/00 13:55	95382.0	676.3
12/18/00 13:56	95382.0	674.2
12/18/00 13:57	95142.0	676.1
12/18/00 13:58	95166.0	676.4
12/18/00 13:59	95166.0	675.6
12/18/00 14:00	95460.0	674.7
12/18/00 14:01	95736.0	675.3
12/18/00 14:02	95736.0	675.0
12/18/00 14:03	96000.0	677.1
12/18/00 14:04	96090.0	678.6

12/18/00 14:05	96090.0	676.3
12/18/00 14:06	96090.0	674.7
12/18/00 14:07	96078.0	674.8
12/18/00 14:08	96054.0	675.8
12/18/00 14:09	96042.0	675.6
12/18/00 14:10	96042.0	675.2
12/18/00 14:11	96042.0	674.0
12/18/00 14:12	96042.0	673.5
12/18/00 14:13	96066.0	673.2
12/18/00 14:14	96030.0	673.2
12/18/00 14:15	96042.0	672.9
12/18/00 14:16	96042.0	673.3
12/18/00 14:17	96228.0	671.5
12/18/00 14:18	96384.0	671.3
12/18/00 14:19	96384.0	671.5
12/18/00 14:20	96414.0	672.8
12/18/00 14:21	96438.0	672.0
12/18/00 14:22	96438.0	670.9
12/18/00 14:23	96438.0	670.5
12/18/00 14:24	96438.0	669.5
12/18/00 14:25	96450.0	672.2
12/18/00 14:26	96486.0	672.5
12/18/00 14:27	96486.0	673.9
12/18/00 14:28	96486.0	673.8
12/18/00 14:29	95988.0	675.2
12/18/00 14:30	95814.0	674.8
12/18/00 14:31	95826.0	674.9
12/18/00 14:32	95970.0	674.1
12/18/00 14:33	96000.0	673.5
12/18/00 14:34	95988.0	673.9
12/18/00 14:35	96000.0	675.0
12/18/00 14:36	96174.0	674.3
Final Average*	**96001.1**	**674.5**
Maximum*	**96618.0**	**678.6**
Minimum*	**95142.0**	**669.5**

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

ST. JOHNS RIVER POWER PARK
BOILER CONTROL ROOM DATA
UNIT # 2 DATE: 12-18-00

PARAMETER	UNITS	Readings (30 minute intervals)					
Person Recording Data		mgt	mgt	mgt	mgt	mgt	mgt
Time		0800	0830	0900	0930	1000	1030
Steam Flow	Lb/Hr x 10^6	4.7	4.7	4.81	4.77	4.74	4.77
Air Flow	%	63.1	62	61.8	62.1	62.1	62.2
Generator Load (Gross)	Megawatts	673	670	680	677	677	681
Boiler Themal Demand	Megawatts	684	683	684	683	683	684
O2 Flue gas	%	2.87	2.62	2.84	2.73	2.72	2.76
Fuel Flow	%	102.9	102.6	102.6	102.6	102.6	102.6
Coal Totalizer	Tons						
A		45	45	45	45	45	45
B		45	45	45	45	45.3	45
C		45	46	46	45.7	45.5	45
D		o/s	o/s	o/s	o/s	o/s	o/s
E		43.5	44	43.5	43.8	43.5	43.5
F		45	45	45.4	45.4	45.2	45
G		37	37	36.8	37.0	37.5	36.7

ST. JOHNS RIVER POWER PARK
BOILER CONTROL ROOM DATA

UNIT # 2 DATE: 12-18-00

PARAMETER	UNITS	Readings (30 minute intervals)					
Person Recording Data		MT	MT	MT	MT	MT	MT
Time		1100	1130	1200	1230	1300	1330
Steam Flow	Lb/Hr x 10^6	4.77	4.76	4.76	4.74	4.79	4.76
Air Flow	%	62.2	62	62.2	63.3	63.4	63.4
Generator Load (Gross)	Megawatts	677	677	674	678	678	677
Boiler Themal Demand	Megawatts	683	683	683	684	683	685
O2 Flue gas	%	2.63	2.85	2.64	2.71	2.53	2.61
Fuel Flow	%	102.6	102.6	102.6	102.6	102.6	102.6
Coal Totalizer	Tons						
A		45	45	45	45	45	45
B		45	45	45.1	45	44.3	45
C		46.1	45.5	46.1	45.5	45	45.5
D		o/s	o/s	o/s	o/s	o/s	o/s
E		43.5	43.5	43.8	43.5	43.5	43.5
F		45.5	45.4	45.4	45.3	44.5	45.2
G		36.7	36.7	36.6	36.6	37	36.9

ST. JOHNS RIVER POWER PARK
BOILER CONTROL ROOM DATA
UNIT # 2 DATE: 12-18-00

PARAMETER	UNITS	Readings (30 minute intervals)					
Person Recording Data		MT	MT	MT	MT	MT	
Time		1400	1430	1500	1530	1600	
Steam Flow	Lb/Hr x 10^6	4.77	4.78	4.78	4.79	4.74	
Air Flow	%	63.1	63.1	63.2	63.2	62.9	
Generator Load (Gross)	Megawatts	678	677	678	679	671	
Boiler Themal Demand	Megawatts	683	684	683	683	683	
O2 Flue gas	%	2.93	2.8	2.67	2.73	2.78	
Fuel Flow	%	102.6	102.5	102.5	102.5	102.5	
Coal Totalizer	Tons						
A		45	45	45	45	45	
B		44.1	44.6	45	45	45	
C		45	45	45	45.5	45.5	
D		0/s	0/s	0/s	0/s	0/s	
E		43.5	44	43.5	43.5	43.5	
F		44.3	44.3	44.3	45.2	45	
G		37	37	37	37	37	

ST. JOHNS RIVER POWER PARK
FLUE GAS DESULFURIZATION
OPERATIONAL PARAMETERS

Date: 12/15/00

UNIT # TWO

Initials: [illegible]

HOUR	PACKING DIFFERENTIAL PRESSURE (inches H2O column) A	B	C
0000			
0100			
0200			
0300			
0400			
0500			
0600			
0700			
0800	5.0	4.3	O/S
0900	5.0	4.3	O/S
1000	5.0	4.3	O/S
1100	5.0	4.3	O/S
1200	5.0	4.3	O/S
1300	5.0	4.3	O/S
1400	5.0	4.3	O/S
1500	5.0	4.3	O/S
1600	5.0	4.3	O/S
1700			
1800			
1900			
2000			
2100			
2200			
2300			

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

COMMENTS:

21.82
21.45

ST. JOHNS RIVER POWER PARK
BOILER CONTROL ROOM DATA

UNIT # 2 DATE: 12-19-00

PARAMETER	UNITS	Readings (30 minute intervals)					
Person Recording Data		MT	MT	MT	MT	MT	MT
Time		0800	0830	0900	0930	1000	1030
Steam Flow	Lb/Hr x 10^6	4.81	4.81	4.81	4.80	4.82	4.81
Air Flow	%	63.5	63.5	63.5	63.5	63.5	63.5
Generator Load (Gross)	Megawatts	678	681	683	684	684	682
Boiler Themal Demand	Megawatts	689	689	689	689	689	689
O2 Flue gas	%	2.71	2.69	2.8	2.8	2.76	2.78
Fuel Flow	%	103.8	103.8	103.8	103.8	103.8	103.8
Coal Totalizer	Tons						
A		45	45	45	45	45	45
B		45	45	45	45	45	45
C		45.5	45.5	46	46	45.5	45.7
D		o/s	o/s	o/s	o/s	o/s	o/s
E		42.5	42.5	42.5	43	43	43
F		45.3	45.2	45	45	45.1	45.3
G		40.5	41	40.5	40.5	40.7	40.7

ST. JOHNS RIVER POWER PARK
BOILER CONTROL ROOM DATA
UNIT # 2 DATE: 12-19-00

PARAMETER	UNITS	Readings (30 minute intervals)					
Person Recording Data		MT	MT	MT	MT	MT	MT
Time		1100	1130	1200	1230	1300	1330
Steam Flow	Lb/Hr x 10^6	4.81	4.81	4.81	4.78	4.82	4.81
Air Flow	%	63.5	63.5	63.5	63.7	63.7	63.7
Generator Load (Gross)	Megawatts	682	685	682	676	685	683
Boiler Themal Demand	Megawatts	689	690	689	689	690	689
O2 Flue gas	%	2.84	2.72	2.81	2.81	2.8	2.77
Fuel Flow	%	103.8	103.8	103.8	103.8	103.8	103.8
Coal Totalizer	Tons						
A		45	45	45	45	45	45
B		45	45	45	45	45.1	44.5
C		45.5	45.7	45.7	45.5	45.9	45.8
D		0/S	0/S	0/S	0/S	0/S	0/S
E		43	43	43	43	43	43
F		45	45.2	45.2	45.3	45.3	45.4
G		40.7	40.6	40.6	40.7	40.8	40.6

ST. JOHNS RIVER POWER PARK
BOILER CONTROL ROOM DATA
UNIT # 2 DATE: 12-15-00

PARAMETER	UNITS	Readings (30 minute intervals)					
Person Recording Data		MH	MH	MH	MH	MH	MH
Time		1400	1430	1500	1530	1600	1630
Steam Flow	Lb/Hr x 10^6	4.79	4.78	4.8	4.81	4.8	4.81
Air Flow	%	63.7	63.7	63.7	64	64	64
Generator Load (Gross)	Megawatts	682	680	682	684	690	689
Boiler Thermal Demand	Megawatts	689	688	689	688	680	682
O2 Flue gas	%	2.76	2.86	2.75	2.5	2.82	2.77
Fuel Flow	%	103.8	103.8	103.8	103.8	103.8	103.8
Coal Totalizer	Tons						
A		45	45	45	45	45	45
B		45	45	45	45.4	45	45
C		46	45.8	45.8	45.7	46	45.7
D		O/S	O/S	O/S	O/S	O/S	O/S
E		43	43	43	43	43	43
F		45.7	45.2	45	45	45	45
G		40.6	40.7	40	39.5	39.7	39.5

ST. JOHNS RIVER POWER PARK
BOILER CONTROL ROOM DATA
UNIT # 2 DATE: 12-19-00

PARAMETER	UNITS	Readings (30 minute intervals)					
Person Recording Data		~~mfp~~	~~mfp~~	EA	EA	EA	EA
Time		1700	1730	1800	1830	1900	1930
Steam Flow	Lb/Hr x 10^6	4.8	4.81	4.79	4.79	4.80	4.81
Air Flow	%	63.7	63.9	64	64	63	63.7
Generator Load (Gross)	Megawatts	682	682	679	682	681	683
Boiler Themal Demand	Megawatts	689	689	689	689	689	689
O2 Flue gas	%	2.68	2.71	2.80	2.70	2.75	2.7
Fuel Flow	%	103.8	103.8	103.79	103.79	103.79	103.79
Coal Totalizer	Tons						
A		45	45	45	45	45	45
B		45	45	45	45	45	45
C		45.6	46	46	45.5	45.5	45.5
D		0/3	0/3	0/3	0/3	0/3	0/3
E		43	42.5	43	43	43	43
F		45.2	45.4	45	45	45.5	45.4
G		39.5	39.5	39.5	39.5	39.5	39.1

ST. JOHNS RIVER POWER PARK
FLUE GAS DESULFURIZATION
OPERATIONAL PARAMETERS

Date: 12/19/00

UNIT # Two

Initials: LCS

HOUR	PACKING DIFFERENTIAL PRESSURE (inches H2O column) A	B	C
0000			
0100			
0200			
0300			
0400			
0500			
0600			
0700			
0800	4.9	4.1	
0900	4.9	4.1	
1000	5.0	4.2	
1100	5.0	4.2	
1200	5.0	4.2	
1300	5.0	4.1	
1400	5.0	4.1	
1500	4.9	4.1	
1600	5.0	4.1	
1700	5.0	4.2	
1800	5.0	4.2	
1900	5.0	4.2	
2000			
2100			
2200			
2300			

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

COMMENTS:

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # _____

Time: 08:00
Date: 12/4/00
Initials: R. R.

A (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamp	Sparks	COMMENTS
O/S 11						
12	20.0	12	38.8	51.0	~~0~~	
13	36	10	2.1	43.0	0	
14	203	12	40.8	51	0	
15	222	12	43.4	47	0	
O/S 16	~~180~~	~~10~~	~~38.9~~	~~39~~	~~0~~	
O/S 21						
O/S 22						
23	190	10	38.7	39	0	
O/S 24						
25	209	15	39.8	67	0	
26	226	15	41.9	67	0	
31	170	6.0	37.5	23	0	
32	214	15	40.0	67	0	
O/S 33	2					
34	210	15	39.9	67	0	
35	211	15	40.5	67	0	
36	208	15	41.9	67	0	
41	192	19	39.8	79	0	
42	199	20	34.7	79	0	
43	211	43	41.7	77	0	
44	195	20	38.6	83	0	
45	200	20	40.5	67	0	
46	192	20	38.4	83	0	
51	248	30	43.7	134	0	
52	231	30	41.9	130	0	
53	236	30	42.0	134	0	
54	215	30	39.0	126	0	
55	224	30	40.7	134	0	
O/S 56	~~244~~	~~35~~	~~42.3~~	~~168~~	~~0~~	
61	244	35	42.3	168	0	
62	252	35	42.3	158	0	
63	252	35	38	162	0	
64	219	35	40.5	158	0	
65	226	35	38.3	158	0	
66	225	35	41.0	154	0	
71	301	45	44.2	213	0	
72	243	45	40.5	217	0	
73	306	45	42.4	217	0	
74	162	18	33.0	71.0	0	
75	255	45	41.9	217	0	
76	282	45	41.8	217	0	

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # _____

Time: 08:00
Date: 12/19/00
Initials: R. Q.

B (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamps	Sparks	COMMENTS
11	196	12	38	47	0	
12	200	12	39.8	47	0	
O/S 13						
14	205	12	36.1	51	0	
15	205	12	41.0	47	0	
O/S 16						
21	204	15	38.1	63	0	
22	205	15	38.6	67	0	
O/S 23						
24	225	15	41.6	63	0	
25	219	16	42.8	67	0	
26	225	15	41.7	63	0	
31	204	15	39.4	63	0	
32	211	15	40.0	61	0	
33	198	10	40.3	43	0	
34	215	15	41.4	63	0	
35	216	15	41.6	67	0	
36	227	15	41.8	63	0	
41	189	20	36.4	79	0	
42	201	20	41.0	79	0	
43	215	20	42.3	79	0	
44	205	20	41.9	79	0	
45	211	20	41.5	79	0	
46	208	20	41.2	79	0	
51	201	30	36.7	130	0	
52	214	30	37.8	134	0	
O/S 53						
54	249	31	44.8	134	0	
55	249	30	44.1	134	0	
56	119	19	33.0	71.0	0	
61	204	35	35.6	158	0	
62	221	35	37.2	162	0	
63	248	35	43.9	162	0	
64	246	35	42.6	166	0	
65	248	35	44.4	162	0	
66	239	35	45.5	154	0	
71	216	45	36.5	213	0	
72	233	45	37.4	219	0	
73	238	45	43.1	201	0	
74	254	45	41.0	213	0	
75	295	45	41.8	217	0	
76	321	45	44.4	217	0	

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # _____

Time: 09:00
Date: 12/19/00
Initials: R. A.

A (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamps	Sparks	COMMENTS
OF 11						
12	200	12	38.9	51	0	
13	45.0	9	10	27		
14	205	12	40.9	55	0	
15	32	7	6.6	55	0	
OF 16						
OF 21						
OF 22						
23	191	10	38.8	39	0	
OF 24						
25	211	15	40.1	67	0	
26	226	15	41.9	67	0	
31	170	6	37.3	27	0	
32	213	15	40.1	67	0	
OF 33						
34	220	15	41.4	67	0	
35	212	15	40.7	67	0	
36	209	15	40.2	67	0	
41	209	20	41.4	83	0	
42	200	20	34.9	83	0	
43	218	20	42.9	79	0	
44	197	20	39.1	83	0	
45	202	20	39.3	83	0	
46	194	20	38.8	83	0	
51	256	30	44.1	134	0	
52	232	30	42.3	130	0	
53	239	30	42.5	132	0	
54	219	30	39.5	130	0	
55	222	30	40.7	134	0	
OF 56						
61	246	35	42.8	162	0	
62	244	35	42.7	158	0	
63	254	35	38.3	162	0	
64	222	35	40.8	158	0	
65	228	35	38.5	158	0	
66	228	35	41.7	154	0	
71	306	45	44.8	217	0	
72	246	45	40.8	219		
73	309	45	42.7	213		
74	164	18	33.2	71		
75	256	45	38.5	158		
76	296	45	42.2	217		

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # ____

Time: 09:00
Date: 12/14/10
Initials: R.R

B (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamp	Sparks	COMMENTS
11	252	21	42.8	98		
12	257	22	44.8	102		
13						
14	207	12	36.4	55		
15	204	12	40.8	47		
16						
21	256	25	43.1	122		
22	326	27	47.3	134		
23						
24	228	15	41.6	61.0		
25	218	15	43.0	63.0		
26	224	15	41.6	63.0		
31	303	25	45.9	118		
32	331	27	47.6	130		
33	239	18	43.1	86.0		
34	215	15	41.1	63.0		
35	219	15	41.7	67.0		
36	226	15	41.8	63.0		
41	261	36	44.1	166		
42	318	36	48.3	162		
43	332	36	48.4	166		
44	204	20	41.8	79.0		
45	211	20	41.7	67.0		
46	208	20	41.2	83.0		
51	252	45	41.9	217		
52	303	45	42.4	217		
53						
54	248	30	45.1	134		
55	249	30	44.2	134		
56	214	18	44.2	73		
61	234	45	38.7	213		
62	251	45	39.8	217		
63	324	45	46.7	217		
64	246	35	42.8	166		
65	247	35	44.8	158		
66	242	35	45.8	154		
71	217	45	36.6	217		
72	234	45	37.5	217		
73	237	45	43.0	201		
74	254	45	41.0	209		
75	246	45	41.9	217		
76	321	45	44.4	217		

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # _____

Time: 10:00
Date: 12/19/00
Initials: A.R

A (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamps	Sparks	COMMENTS
O/S 11						
12	200	12	39.1	49	0	
13	40	10	2.3	43	0	
14	204	12	40.8	55	0	
15	227	12	43.6	47	0	
O/S 16						
O/S 21						
O/S 22						
23	191	10	38.7	39	0	
O/S 24						
25	209	15	39.8	67	0	
26	226	15	42.0	67	0	
31	167	6	37.1	19	0	
32	212	15	39.7	67	0	
O/S 33						
34	214	15	40.8	67	0	
35	210	15	40.3	67	0	
36	214	15	40.2	67	0	
41	207	20	41.1	79	0	
42	197	20	34.4	77	0	
43	217	20	42.6	79	0	
44	195	20	38.8	83	0	
45	202	20	39.4	79	0	
46	193	20	38.6	83	0	
51	249	30	43.9	134	0	
52	231	30	42.0	130	0	
53	238	30	42.3	130	0	
54	218	30	39.4	130	0	
55	225	30	40.8	134	0	
O/S 56						
61	244	35	42.5	162	0	
62	242	35	42.3	154	0	
63	253	35	38.2	162	0	
64	220	35	40.5	158	0	
65	228	35	38.3	158	0	
66	228	35	41.6	154	0	
71	305	45	44.6	217	0	
72	246	45	40.8	219	0	
73	309	45	42.7	215	0	
74	163	18	33.1	71.	0	
75	256	45	42.1	217	0	
76	295	45	42.1	217	0	

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # _____

Time: 10.00
Date: 12/19/00
Initials: A.R.

B (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamps	Sparks	COMMENTS
11	194	12	37.6	47	0	
12	202	12	40.2	51	0	
13 OFF						
14	205	12	36.1	51	0	
15	201	12	40.5	47	0	
OFF 16	~~200~~	~~15~~	~~37.7~~	~~69~~	~~0~~	
21	202	15	37.7	67	0	
22	203	15	38.3	67	0	
OFF 23	2?					
24	220	15	41.4	63	0	
25	219	16	42.8	67	0	
26	224	15	41.6	59	0	
31	204	15	39.4	67	0	
32	212	15	40.0	59	0	
33	197	10	40.0	43	0	
34	212	15	40.8	63	0	
35	218	15	41.6	67	0	
36	225	15	41.5	63	0	
41	189	20	36.4	83	0	
42	201	20	41.1	79	0	
43	214	20	42.3	81	0	
44	204	20	41.7	79	0	
45	212	20	41.6	67	0	
46	209	20	41.3	79	0	
51	200	30	36.6	130	0	
52	215	30	37.9	134	0	
OFF 53	~~245~~	~~30~~	~~44.8~~	~~130~~		
54	245	30	44.8	130	0	
55	249	30	44.8	134	0	
56	108	6	25.8	27	0	
61	204	35	35.6	158	0	
62	220	35	37.1	158	0	
63	247	35	43.7	162	0	
64	246	35	42.6	166	0	
65	247	35	44.4	158	0	
66	239	35	45.3	164	0	
71	217	45	36.6	217		
72	234	45	37.6	217		
73	239	45	43.3	205		
74	254	45	48.5	247		
75	294	45	41.7	217		
76	321	45	44.4	217		

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # _____

Time: 11:00
Date: 12/19/00
Initials: R.R.

A (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamps	Sparks	COMMENTS
Of 11						
12	198	12	38.6	47	0	
13	48	8	9.3	23	0	
14	204	12	40.8	51	0	
15	217	12	42.3	47	0	
Of 16						
Of 21						
Of 22						
23	190	10	38.7	39	0	
Of 24						
25	212	15.0	41.1	71	0	
26	226	15.0	41.8	67	0	
31	167	6.0	36.5	19	0	
32	217	15	40.3	67	0	
Of 33	~~216~~	~~15~~	~~41.2~~	~~67~~	~~0~~	
34	216	15	41.2	67	0	
35	214	16	40.7	71	0	
36	212	15	40.1	67	0	
41	208	20	41.2	82	0	
42	200	20	34.8	79	0	
43	215	20	42.5	79	0	
44	196	20	39	83	0	
45	202	20	39.3	83	0	
46	193	20	38.5	79	0	
51	249	30	43.9	124	0	
52	231	30	42.1	130	0	
53	238	30	42.5	79	0	
54	217	30	39.4	126	0	
55	223	30	40.6	134	0	
Of 56	~~226~~	~~25~~	~~40.7~~	~~102~~	0	
61	246	35	42.7	162	0	
62	242	35	42.3	158	0	
63	254	35	38.2	162	0	
64	220	35	33.2	71.0	0	
65	226	35	38.3	158	0	
66	228	35	41.7	154	0	
71	304	45	44.5	217	0	
72	246	45	40.8	221	0	
73	307	45	42.6	213	0	
74	164	18	33.2	71.0	0	
75	256	45	42.1	217	0	
76	294	45	42.0	213	0	

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # _____

Time: 11.00
Date: 12/19/00
Initials: R. R.

B (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamps	Sparks	COMMENTS
11	198	12	38.3	47	0	
12	198	12	39.4	47		
13	~~203~~	~~12~~	~~35.6~~	~~55~~	0	
14	203	12	35.6	55	0	
15	201	12.0	40.7	47	0	
16	~~204~~	~~15~~	~~38.0~~	~~67~~	0	
21	204	15	38.0	67	0	
22	205	15	38.5	67	0	
23	~~212~~	~~15~~	~~40.0~~	~~63~~	0	
24	221	15	41.3	63	0	
25	214	15	42.6	67	0	
26	225	15	41.2	63	0	
31	204	15	39.4	67	0	
32	212	15	46.0	63	0	
33	195	10	39.8	43	0	
34	215	15	41.2	63	0	
35	215	15	67	41.3	0	
36	229	15	42.3	63	0	
41	189	20	36.5	83	0	
42	201	20	41.1	79	0	
43	214	20	42.2	79	0	
44	204	20	41.7	79	0	
45	212	20	41.5	79	0	
46	209	20	41.2	83	0	
51	202	30	36.9	134	0	
52	215	30	38.0	134	0	
53						
54	246	30	44.8	130	0	
55	249	30	44.1	134	0	
56	212	18	43.9	71.0	0	
61	204	35	35.6	158	0	
62	221	35	37.1	162	0	
63	248	35	44.1	158	0	
64	246	35	42.6	169	0	
65	248	35	44.4	158	0	
66	239	35	45.4	154	0	
71	216	45	36.5	213	0	
72	233	45	37.4	217	0	
73	237	45	43.0	201	0	
74	252	45	40.8	209	0	
75	244	45	41.8	217	0	
76	321	45	44.4	217	0	

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # _____

Time: 12:00
Date: 12/19/00
Initials: R. R.

A (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamps	Sparks	COMMENTS
0/S 11						
12	196	12.0	38.4	47	0	
13	46	10	2.9	43	0	
14	204	12	40.8	51.0	0	
15	219	12	42.8	47.0	0	
0/S 16						
0/S 21						
0/S 22						
23	188	10	38.3	43		
0/S 24						
25	209	15	40.8	67		
26	225	15	41.8	67		
31	168	6.0	36.8	23		
32	213	15	40.3	67		
0/S 33						
34	218	15	41.1	67		
35	211	15	40.5	67		
36	214	15	40.3	67		
41	208	20	41.2	83		
42	199	20	34.8	79		
43	216	20	42.6	75		
44	197	20	39.1	83		
45	202	20	39.3	83		
46	192	20	38.3	83		
51	248	30	43.2	134		
52	236	30	42.0	130		
53	239	30	42.5	134		
54	217	30	39.4	126		
55	223	30	40.7	134		
0/S 56						
61	245	35	42.6	158		
62	242	35	42.3	156		
63	254	35	38.3	162		
64	221	35	40.6	158		
65	228	35	38.5	158		
66	229	35	41.8	154		
71	305	45	44.6	217		
72	245	45	40.8	217		
73	307	45	42.7	213		
74	165	18	33.1	71		
75	256	45	42.2	217		
76	255	45	42.1	217		

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # _____

Time: 12:00
Date: 12/19/00
Initials: B.R.

B (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamps	Sparks	COMMENTS
11	193	12	37.6	47	0	
12	198	12	39.4	47	0	
13						
14	204	12	35.9	51	0	
15	202	12	40.5	47	0	
16						
21	203	15	38.0	63	0	
22	203	15	38.3	67	0	
23						
24	220	15	41.2	63	0	
25	214	15	42.5	67	0	
26	224	15	41.7	63	0	
31	205	15	39.5	61	0	
32	215	15	40.2	63	0	
33	195	10	40.0	43	0	
34	212	15	40.7	63	0	
35	217	15	41.6	67	0	
36	226	15	41.7	63	0	
41	190	20	36.7	83	0	
42	202	20	41.2	79	0	
43	214	20	42.0	79	0	
44	202	20	41.6	75	0	
45	211	20	41.4	79	0	
46	207	20	41.1	83	0	
51	201	30	36.7	130	0	
52	215	30	38.0	134	0	
53	~~248~~	~~31~~	~~44.8~~	~~134~~	~~0~~	
54	248	31	44.8	134	0	
55	249	30	44.2	134	0	
56	146	8.0	29.3	31.0	0	
61	205	35	35.7	158	0	
62	221	35	37.1	162	0	
63	248	35	43.7	162	0	
64	246	35	42.7	166	0	
65	247	35	44.4	158	0	
66	241	35	45.9	154	0	
71	216	45	36.5	213	0	
72	230	45	37.4	217	0	
73	237	45	43.1	203	0	
74	253	45	40.8	209	0	
75	294	45	41.8	217	0	
76	321	45	44.4	217	0	

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # _____

Time: 13:00
Date: __/__/__
Initials: _____

A (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamps	Sparks	COMMENTS
O/S 11	~~215~~	~~12~~	~~41.6~~	~~51~~	~~0~~	
12	193	12	38.0	47	0	
13	63	6	~~23.2~~	11.2~~3~~	113	
14	203	12	40.9	51	0	
15	47	8	42	47	111	
O/S 16						
O/S 21						
O/S 22						
23	188	10	38.2	39	0	
O/S 24						
25	207	15	40.1	67	0	
26	226	15	41.8	67	0	
31	165	6	36.9	23	0	
32	214	15	39.6	67	0	
33	219	15	41.7	67	0	
34	221	15	41.5	67	0	
35	213	15	40.3	67	0	
36	215	15	40.1	63	0	
41	207	20	41.0	83	0	
42	199	20	35.1	79	0	
43	217	20	42.6	79	0	
44	197	20	39.1	83	0	
45	203	20	39.4	79	0	
46	195	20	38.7	83	0	
51	247	30	43.7	134	0	
52	233	30	42.3	130	0	
53	240	30	42.6	134	0	
54	217	30	39.4	126	0	
55	224	30	40.7	134	0	
O/S 56	212	28	40.9	130	0	
61	248	35	42.9	162	0	
62	243	35	42.6	158	0	
63	253	35	38.2	162	0	
64	221	35	40.6	158	0	
65	226	35	38.3	158	0	
66	229	35	41.8	154	0	
71	305	45	44.7	217	0	
72	246	45	40.8	217	0	
73	307	45	42.6	213	0	
74	164	18	33.0	161	0	
75	256	45	42.1	217	0	
76	294	45	42.1	217	0	

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # _____

Time: 13:00
Date: __/__/__
Initials: _____

B (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamps	Sparks	COMMENTS
11	194	12	37.1	45	0	
12	195	12	39.2	47	0	
0/S 13	201	12	35.5	51	0	
14	200	12	39.5	57	0	
15	201	12	40.3	47	0	
0/S 16						
21	202	15	37.7	67	0	
22	203	15	38.3	67	0	
23	221	14	43.0	63	0	
24	223	15	41.5	61	0	
25	218	15	42.6	63	6	
26	220	15	41.1	59	6	
31	205	15	39.6	63	0	
32	215	15	40.3	63	0	
33	193	10	39.7	43	0	
34	215	15	41.2	63	0	
35	218	15	41.6	67	0	
36	228	15	41.2	63	0	
41	191	20	36.7	83	0	
42	201	20	41.3	79	0	
43	215	20	42.3	83	0	
44	205	20	41.9	79	0	
45	213	20	41.7	79	0	
46	211	20	40.9	79	0	
51	204	30	37.0	130	0	
52	216	30	38.0	134	0	
53 0/S	247	30	45.2	130	0	
54	252	30	44.5	134		
55	248	30	45.1	134	0	
56	215	6	44.6	71	0	
61	207	35	35.9	162	0	
62	221	35	37.3	162	0	
63	249	35	44.1	162	0	
64	247	35	42.8	166	0	
65	248	35	44.5	158	0	
66	242	35	45.8	154	0	
71	216	45	36.5	213	0	
72	233	45	37.5	217	0	
73	237	45	43.3	201	0	
74	253	45	41.0	209	0	
75	297	45	41.9	217	0	
76	323	45	44.6	215	0	

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # ____

Time: 14:00
Date: 12/19/00
Initials: R.R.

A (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamps	Sparks	COMMENTS
OC 11						
12	195	12	38.0	47	0	
13	58	6	14.0	43	109	
14	202	12	41.6	51	0	
15	224	12	42.2	47	88	
OC 16						
OC 21						
OC 22						
23	190	10	38.2	39	0	
OC 24						
25	207	15	40.3	67	0	
26	227	15	41.6	67	0	
31	165	6	36.9	23	0	
32	214	15	40.1	71	0	
OC 33						
34	217	15	41.3	67	0	
35	209	15	40.1	67	0	
36	211	15	40.2	67	0	
41	207	21	42.4	83	1	
42	201	20	35.1	79	0	
43	215	20	42.6	79	0	
44	197	20	39.2	83	0	
45	202	20	39.4	79	0	
46	193	20	38.6	83	0	
51	249	30	43.7	134	0	
52	234	30	42.4	130	0	
53	239	30	42.6	134	0	
54	219	30	39.6	130	0	
55	225	30	40.9	134	0	
OC 56	~~240~~	~~35~~	~~42.6~~	~~162~~	~~0~~	
61	247	35	42.9	162	0	
62	244	35	42.6	158	0	
63	254	35	38.3	162	0	
64	221	35	40.6	158	0	
65	228	35	38.5	156	0	
66	231	35	42.1	154	0	
71	307	45	44.8	217	0	
72	246	45	40.8	217	0	
73	309	45	42.8	213	0	
74	163	18	33.1	71	0	
75	257	45	42.1	217	0	
76	295	45	42.2	217	0	

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # _____

Time: 14:00
Date: 12/19/00
Initials: R.K

B (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamps	Sparks	COMMENTS
11	192	12	37.3	47	0	
12	195	12	39.1	47	0	
o/s 13						
14	202	12	35.5	55	0	
15	200	12	40.1	47	0	
o/s 16						
21	204	15	38.0	67	0	
22	204	15	38.4	67	0	
o/s 23						
24	220	15	41.5	63	0	
25	217	15	42.6	67	0	
26	221	15	41.1	63	0	
31	205	15	39.5	63	0	
32	215	15	40.3	63	0	
33	192	10	39.9	43	0	
34	215	15	40.9	63	0	
35	217	15	41.6	67	0	
36	225	15	41.9	63	0	
41	191	20	36.6	83	0	
42	202	20	41.1	79	0	
43	214	20	42.1	79	0	
44	205	20	41.9	79	0	
45	213	20	41.7	79	0	
46	209	20	41.4	83	0	
51	298	30	36.9	130	0	
52	215	30	38.0	134	0	
o/s 53						
54	252	30	45.1	134	0	
55	251	30	44.4	134	0	
56	214	18	44.4	71	24	
61	205	35	35.7	158	0	
62	221	35	37.2	158	0	
63	249	35	44.1	162	0	
64	246	35	42.8	169	0	
65	247	35	44.5	158	0	
66	242	35	45.8	150	0	
71	215	45	36.5	213	0	
72	234	45	35.7	217	0	
73	238	45	43.1	201	0	
74	255	45	41.1	213	0	
75	296	45	41.9	217	0	
76	322	45	44.6	217	0	

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # _____

Time: 15:00
Date: 12/19/00
Initials: R.R.

A (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamp	Sparks	COMMENTS
O/S 11						
12	195	12	38.6	47	0	
13	52	12	8.3	35	108	
14	203	12	40.5	53	0	
15	217	12	41.9	47	107	
O/S 16						
O/S 21						
O/S 22						
23	188	10	37.6	43	0	
O/S 24						
25	207	15	40.3	67	0	
26	225	15	42.2	67	0	
31	167	6	36.8	23	0	
32	215	15	40.4	67	0	
O/S 33						
34	218	15	41.3	67	0	
35	209	15	40.4	71	0	
36	211	15	40.3	63	0	
41	207	20	41.0	79	0	
42	199	20	34.8	79	0	
43	215	20	42.3	79	0	
44	197	20	39.1	83	0	
45	202	20	39.3	83	0	
46	193	20	38.4	79	0	
51	247	30	43.6	134	0	
52	232	30	42.2	130	0	
53	239	30	42.6	130	0	
54	218	36	39.4	130	0	
55	225	30	40.9	134	0	
O/S 56						
61	246	35	42.8	102	0	
62	244	35	42.6	158	0	
63	254	35	38.2	162	0	
64	220	35	40.6	158	0	
65	228	35	38.4	162	0	
66	231	35	42.1	154	0	
71	306	45	44.8	217	0	
72	246	45	40.8	217	0	
73	308	45	42.8	213	0	
74	161	18	33.1	75	0	
75	256	45	42.1	217	0	
76	296	45	42.2	217	0	

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # _____

Time: 15:00
Date: 12/19/00
Initials: R. R.

B (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamps	Sparks	COMMENTS
11	191	12	37.3	47	D	
12	198	12	39.0	47	0	
O/S 13						
14	201	12	35.4	55	0	
15	200	12	40.3	47	0	
16	211	12	41.6	51	0	
21	202	15	37.8	63	0	
22	202	15	38.1	67	0	
O/S 23	?					
24	222	15	41.5	63	0	
25	215	15	42.3	71	0	
26	220	15	41.2	63	0	
31	204	15	39.5	63	0	
32	214	15	40.2	63	0	
33	195	10	39.4	43	0	
34	217	15	41.5	63	0	
35	219	15	41.5	67	0	
36	226	15	41.8	67	0	
41	190	20	41.9	79	0	
42	202	20	41.2	79	0	
43	217	20	41.9	83	0	
44	204	20	41.9	79	0	
45	212	20	41.6	79	0	
46	208	20	41.2	83	0	
51	202	30	36.9	130	0	
52	215	30	38.0	134	0	
O/S 53	~~[illegible]~~	~~31~~	~~[illegible]~~	~~134~~	~~0~~	
54	247	31	45.1	134	0	
55	251	30	44.3	134	0	
56	106	7	44.4	71	0	
61	204	35	35.8	158	0	
62	221	35	37.2	162	0	
63	248	35	43.8	158	0	
64	246	35	42.8	166	0	
65	248	35	44.4	158	0	
66	242	35	45.9	154	0	
71	217	45	36.6	217	0	
72	234	45	37.6	217	0	
73	238	45	43.3	203	0	
74	255	45	41.1	209	0	
75	296	45	41.9	217	0	
76	323	45	44.5	217	0	

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # _____

Time: 16.00
Date: 12/19/08
Initials: R.R

A (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamp	Sparks	COMMENTS
O/S 11						
12	198	12	38.5	51	0	
13	43	9	7.1	19	111	
14	202	12	41.2	51	0	
15	219	12	4.8	48	87	
O/S 16						
O/S 21						
O/S 22						
23	189	10	38.6	39	0	
O/S 24						
25	208	15	39.9	67	0	
26	225	15	41.6	67	0	
31	165	6	36.8	19	0	
32	212	15	40.0	67	0	
O/S 33						
34	217	15	41.2	67	0	
35	209	15	40.0	71	0	
36	213	16	40.1	63	0	
41	208	20	41.0	83.0	0	
42	199	20	34.7	83	0	
43	217	20	42.6	79	0	
44	197	20	39.1	83	0	
45	201	20	39.3	83	0	
46	193	20	38.4	83	0	
51	247	30	43.7	134	0	
52	231	30	42.2	130	0	
53	240	30	42.6	134	0	
54	216	35	42.8	182	6	
55	224	30	40.8	134	0	
O/S 56						
61	246	35	42.8	162	0	
62	244	35	42.6	158	0	
63	254	35	38.2	162	0	
64	221	35	40.6	158	0	
65	228	35	38.4	158	0	
66	271	35	42.0	154	0	
71	307	45	44.8	213	0	
72	246	45	40.8	217	0	
73	309	45	42.8	213	0	
74	161	18	33.0	71	0	
75	256	45	42.1	217	0	
76	295	45	42.2	217		

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # _____

Time: 16.00
Date: 12/19/00
Initials: R. R

B (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamps	Sparks	COMMENTS
11	194	12	37.4	47	0	
12	195	12	39.0	47	0	
13						
14	201	12	38.6	51	0	
15	199	12	40.0	47	0	
16						
21	202	15	37.6	67	0	
22	204	15	38.3	67	0	
23						
24	217	15	42.6	67	0	
25	218	15	41.4	65	0	
26	224	15	41.6	63	0	
31	204	15	39.5	63	0	
32	212	15	40.1	59	0	
33	194	10	39.7	43	0	
34	215	15	41.3	63	0	
35	216	15	41.4	67	0	
36	224	15	41.5	63	0	
41	190	20	36.5	83	0	
42	202	20	41.2	79	0	
43	215	20	42.6	79	0	
44	204	20	41.7	79	0	
45	213	20	41.6	79	0	
46	209	20	41.3	79	0	
51	202	30	36.9	130	0	
52	215	30	38	130	0	
53	2					
54	246	30	45	130	0	
55	250	30	44.3	134	0	
56	214	18	44	71	0	
61	205	35	35.7	158	0	
62	224	35	37.2	158	0	
63	248	35	43.5	158	0	
64	246	35	42.7	166	0	
65	248	35	44.5	158	0	
66	241	35	45.8	154	0	
71	217	45	36.5	213	0	
72	234	45	37.6	217	0	
73	238	45	43.2	203	0	
74	255	45	41.0	213	0	
75	246	45	41.9	217	0	
76	322	45	45.5	217	0	

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # _____

Time: 17.00
Date: 12/ A/ 00
Initials: R. A

A (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamp	Sparks	COMMENTS
11						
12	215	12	41.6	51	0	
13	197	12	38.3	51	10	
14	202	12	41.4	51	0	
15	211	12	41.5	51	0	
16						
21						
22						
23	188	10	38.7	39	0	
24						
25	208	15	40.3	67	0	
26	225	15	41.8	67	0	
31	165	6	36.6	23	0	
32	217	15	40.4	63	0	
33						
34	218	15	41.2	67	0	
35	209	15	40.3	67	0	
36	212	15	40.0	67	0	
41	207	20	41.4	79	0	
42	200	20	34.8	83	0	
43	215	20	42.5	79	0	
44	196	20	39.1	83	0	
45	202	20	39.3	79	0	
46	193	20	38.5	83	0	
51	247	30	43.7	134	0	
52	231	30	42.1	130	0	
53	239	30	42.5	134	0	
54	217	30	39.4	108	0	
55	222	30	40.6	134	0	
56						
61	246	35	42.7	162	0	
62	244	35	42.6	162	0	
63	254	35	38.3	162	0	
64	222	35	40.8	158	0	
65	226	35	38.3	154	0	
66	231	35	41.4	154	0	
71	307	45	44.8	217	0	
72	245	45	40.8	217	0	
73	309	45	42.8	217	0	
74	164	18	33.1	71	0	
75	257	45	42.1	217	0	
76	296	45	423	217	0	

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # _____

Time: 17:00
Date: 12/19/00
Initials: R. R.

B (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamps	Sparks	COMMENTS
11	194	12	37.1	47	0	
12	198	12	39.1	47	0	
13						
14	201	12	35.5	51	6	
15	198	12	40.1	47	0	
16						
21	203	15	37.8	67	0	
22	204	15	38.4	71	0	
23						
24	221	15	41.4	63	0	
25	218	15	43.4	67	0	
26	227	15	41.2	61	0	
31	205	15	39.6	63	0	
32	215	15	40.4	63	0	
33	195	10	39.8	43	0	
34	213	15	41.0	63	0	
35	217	15	41.2	67	0	
36	225	15	41.6	63	0	
41	140	20	36.6	83	0	
42	202	20	41.2	79	0	
43	216	20	42.2	79	0	
44	204	20	41.8	79	0	
45	212	20	41.5	85	0	
46	210	20	41.5	79	0	
51	203	30	37	130	0	
52	216	30	38	134	0	
53						
54	248	30	45	134	0	
55	251	30	44.4	134	0	
56	209	18	44.3	71	0	
61	206	35	35.8	162	0	
62	221	35	37.2	158	0	
63	248	35	43.7	162	0	
64	246	35	42.7	166	0	
65	248	35	44.4	158	0	
66	241	35	45.6	154	0	
71	216	45	36.5	213	0	
72	233	45	37.4	217	0	
73	238	45	43.1	203	0	
74	254	45	41.9	213	0	
75	246	45	41.9	217	0	
76	321	45	44.4	217	0	

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # _____

Time: 18:00
Date: 12/19/00
Initials: R R.

A (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamps	Sparks	COMMENTS
11						
12	196	12	38.7	51	0	
13	49	9	10.3	15	116	
14	202	12	40.3	~~51~~	0	
15	217	12	42.0	51	116	
16						
21						
22						
23	189	10	38.6	39	0	
24						
25	208	15	40.5	65	0	
26	223	15	41.6	67	0	
31	~~189~~	~~16~~	41.1	67	0	
32	213	15	39.1	67	0	
33	~~208~~	~~15~~	~~41.6~~	~~67~~	~~0~~	
34	218	15	41.6	67	0	
35	209	15	40.2	71	0	
36	211	15	40.0	67	0	
41	208	20	41.2	83	0	
42	199	20	34.9	79	0	
43	216	20	42.5	79	0	
44	196	20	39.0	83	0	
45	202	20	39.2	83	0	
46	193	20	38.6	83	0	
51	248	30	43.7	134	0	
52	231	30	42.2	130	0	
53	239	30	42.6	134	0	
54	217	30	39.4	126	0	
55	222	30	40.7	134	0	
56						
61	246	31	42.8	162	0	
62	244	35	42.6	158	0	
63	254	35	38.3	168	0	
64	222	35	40.9	158	0	
65	226	35	38.3	158	0	
66	231	35	42.0	154	0	
71	306	45	44.9	217	0	
72	245	45	40.8	217	0	
73	310	45	42.9	213	0	
74	165	19	33.0	75	0	
75	257	45	42.2	217	0	
76	296	45	422	217	0	

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # ____

Time: 18:00
Date: 12/19/00
Initials: R.A.

B (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamps	Sparks	COMMENTS
11	192	12	37.5	47	0	
12	197	12	39.1	47	0	
13						
14	201	12	35	51	0	
15	200	12	40	47	0	
16						
21	204	15	38	67	0	
22	204	15	38	67	0	
23						
24	221	15	41	63	0	
25	218	15	42	71	0	
26	224	15	41	63	0	
31	204	15	39	67	0	
32	215	15	40	63	0	
33	197	10	39	43	0	
34	214	15	40	63	0	
35	221	15	41	67	0	
36	226	15	41	67	0	
41	191	20	36	83	0	
42	202	20	41	79	0	
43	214	20	42	79	0	
44	204	20	41	79	0	
45	213	20	41	79	0	
46	207	20	41	79	0	
51	202	30	37	130	0	
52	216	30	38	134	0	
53						
54	252	31	45	134	0	
55	251	30	44	134	0	
56	156	15	44	71	0	
61	206	35	35	162	0	
62	221	35	37	162	0	
63	248	35	43	158	0	
64	248	35	42	169	0	
65	248	35	44	158	0	
66	241	35	45	154	0	
71	215	45	36	213	0	
72	234	45	37	217	0	
73	238	45	43	201	0	
74	255	45	41	213	0	
75	295	45	41	217	0	
76	322	45	44	213	0	

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # 2

Time: 19:00
Date: 12/19/00
Initials: R.R.

A (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamps	Sparks	COMMENTS
11						
12	200	12	39	51	0	
13	53	12	8.9	27	108	
14	209	12	41	51	0	
15	222	12	42	47	79	
16						
21						
22						
23	191	10	39	39	0	
24						
25	209	15	40	67	0	
26	229	15	42	67	0	
31	168	6	37	23	0	
32	215	15	40	67	0	
33						
34	215	15	41	67	0	
35	212	15	40	67	0	
36	214	15	40	67	0	
41	208	20	41	83	0	
42	200	20	34	83	0	
43	218	20	42	79	0	
44	197	20	39	83	0	
45	202	20	39	79	0	
46	194	20	38	83	0	
51	248	30	44	134	0	
52	231	30	42	130	0	
53	240	30	42	134	0	
54	219	30	39	130	0	
55	225	30	40	134	0	
56						
61	246	35	42	102	0	
62	241	35	42	158	0	
63	255	35	38	189	0	
64	222	35	40	158	0	
65	228	35	38	162	0	
66	231	35	42	154	0	
71	307	45	44	217	0	
72	247	45	40	221	0	
73	310	45	42	213	0	
74	163	18	33	71	0	
75	257	45	42	217	0	
76	296	45	42	217	0	

ST. JOHNS RIVER POWER PARK
PRECIPITATOR ELECTRICAL DATA
HOURLY INTERVALS
UNIT # 2

Time: 19:00
Date: 12/19/00
Initials: R.R.

B (A/B)

Rectifier Set	AC Volts	AC Amps	DC Kv	DC Milliamps	Sparks	COMMENTS
11	194	12	37	47	0	
12	200	12	39	47	0	
13						
14	202	12	36	51	0	
15	200	12	40	47	0	
16						
21	205	15	38	67	0	
22	204	15	38	67	0	
23						
24	222	15	41	63	0	
25	217	15	42	67	0	
26	221	15	41	59	0	
31	206	15	41	63	0	
32	217	15	40	63	0	
33	195	10	39	43	0	
34	217	15	41	63	0	
35	219	15	41	67	0	
36	226	15	41	63	0	
41	190	20	36	83	0	
42	202	20	41	79	0	
43	215	20	42	79	0	
44	204	20	41	79	0	
45	213	20	41	79	0	
46	209	20	41	79	0	
51	202	30	37	130	0	
52	216	30	38	134	0	
53	2					
54	249	30	45	134	0	
55	251	30	44	134	0	
56	214	18	44	71	0	
61	205	35	35	158	0	
62	222	35	37	162	0	
63	250	35	44	162	0	
64	248	35	42	169	0	
65	248	35	44	156	0	
66	245	35	45	154	0	
71	217	45	36	213	0	
72	233	45	37	217	0	
73	239	45	43	203	0	
74	254	45	41	209	0	
75	297	45	42	217	0	
76	323	45	44	217	0	


GCI