Title V
CRIST ELECTRIC GENERATING
PLANT PERMIT APPLICATION
Volume V

EUS-5

SANDERS ENGINEERING & ANALYTICAL SERVICES, INC.

PARTICULATE EMISSIONS TEST REPORT
STEADY STATE OPERATIONS

FOR

GULF POWER COMPANY
Plant Crist, Unit 6
Pensacola, Florida

April 3, 1996

1568 LEROY STEVENS ROAD

MOBILE, ALABAMA 36695 • 205/633-4120

TEST REPORT CERTIFICATION

In regard to these tests, we certify that, to the best of our knowledge, all of the data regarding the testing performed by our agents is true and correct.

Date 4-9-96 Signature Edward K. Harris

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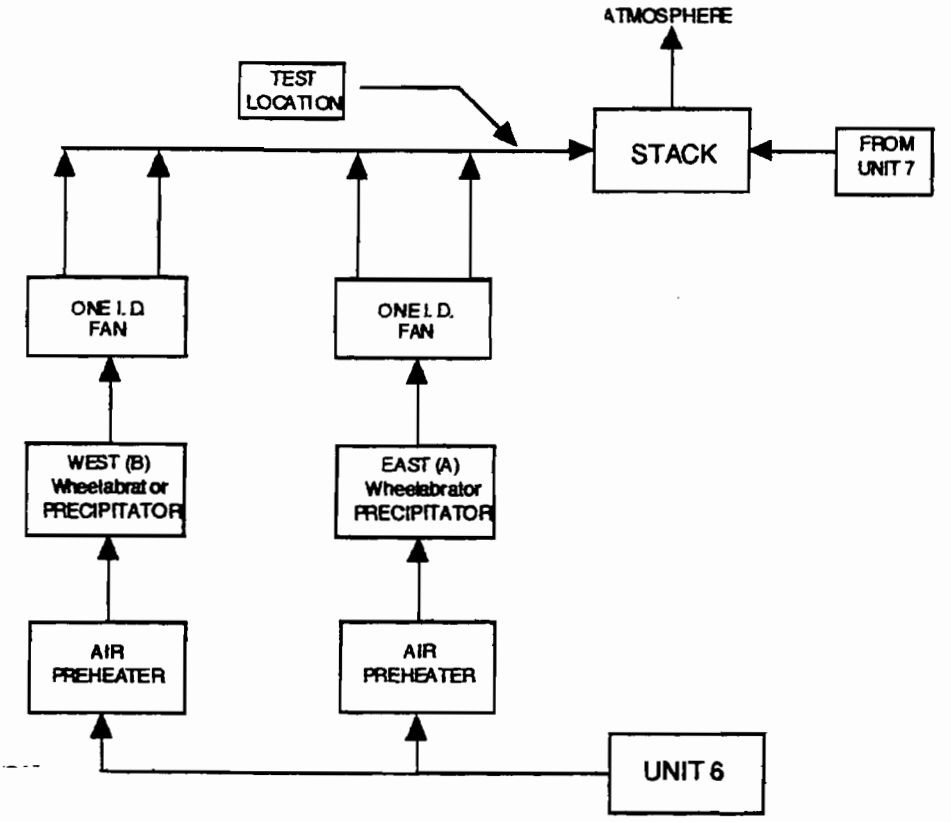
3. PROCESS DESCRIPTION

The process consists of a steam electric generating unit firing bituminous coal for the production of electric energy. The coal is received by barge, and loaded directly onto the conveyor feeding the plant, or onto the stockpile and later loaded onto the conveyor belt transporting the coal to the plant. The coal from the conveyor is loaded into bunkers capable of holding between 36 to 48 hours supply of coal. The coal is then fed to pulverizing mills before being fired in the unit through the burners. Upon combustion of the coal in the fire box, approximately 20 percent of the ash falls to the bottom of the boiler and is removed by the ash removal system. The remaining 80 percent exits with the flue gases through the heat exchange and economizer sections of the furnace, and is collected by electrostatic precipitators.

3.1. Source Air Flow

As shown in Figure 1, the flue gases exit the boiler and are separated into ducts A and B before entering air preheaters. They are then routed to a cold side ESP. The flue gases exiting the cold side ESP are exhausted through a stack into the atmosphere.

Figure 1. Air Flow Schematic



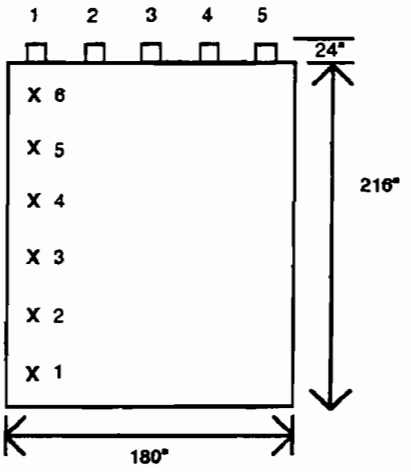
3.2. Operation During Testing

The average heat input during steady state operation, as based on F-factor calculations, was 3557 million BTU per hour resulting in the production of approximately 320 megawatts of electricity. Precipitator data supplied by Gulf Power personnel is given in Appendix D.

4. SAMPLE POINT LOCATION

The sample point locations and outlet duct schematic are presented in Figure 2. Method 1 was used for determination of the number and location of sampling points. The minimum number of points (25) required for rectangular stacks was met by sampling a total of 30 points.

Figure 2. Sample Point Locations

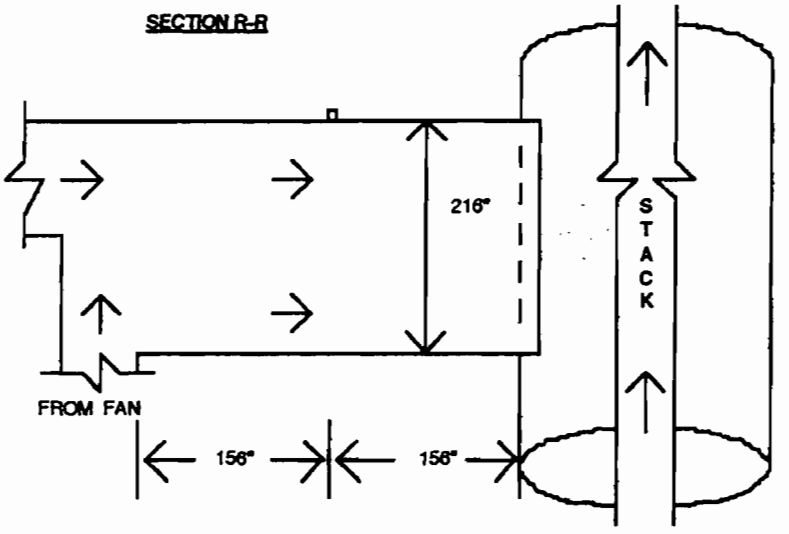


TRAVERSE POINTS

5 AXES
6 POINTS/AXIS
30 TOTAL POINTS

POINTS	DISTANCE FROM STACK WALL (Inches)
1	198.0
2	162.0
3	126.0
4	90.0
5	54.0
6	18.0

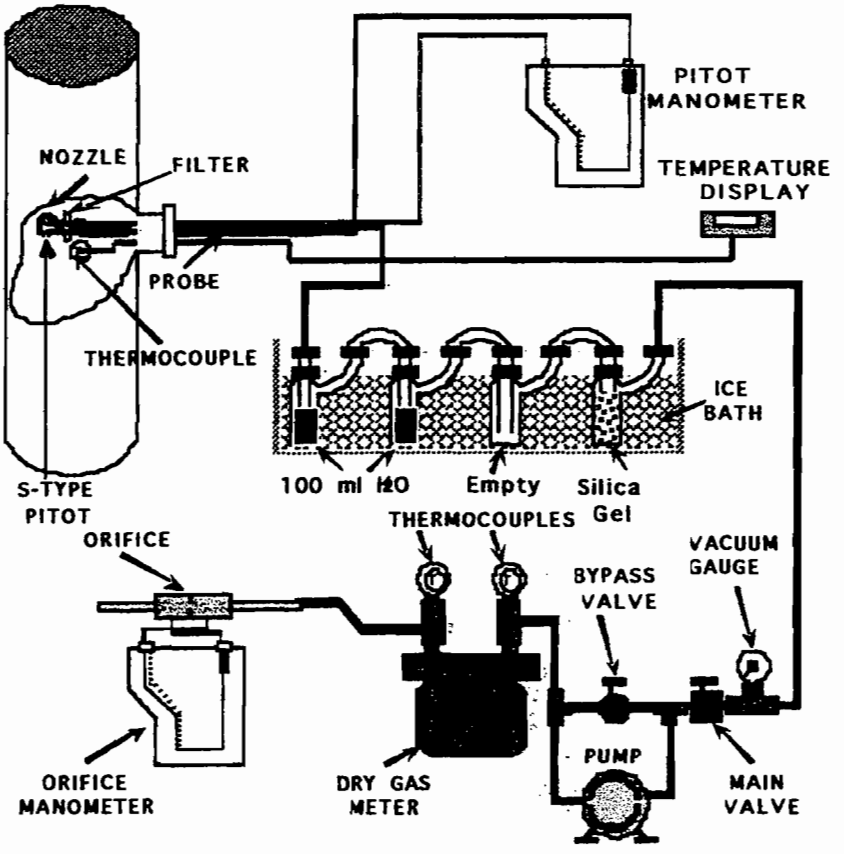
STACK AREA = 270.000 ft.^{2}



5. PARTICULATE SAMPLING PROCEDURE (EPA Method 17)

The sampling procedure utilized is that specified in **40 CFR, Part 60, Appendix A, Method 17,** as modified by the governing regulatory agency. A brief description of this procedure is as follows:

Figure 3. Particulate Sampling Train



The first impingers were partially filled with 100 milliliters of deionized water. The next impinger was left empty to act as a moisture trap. Preweighed 6 to 16 mesh indication silica gel was added to the last impinger. The sampling equipment manufactured by Lear Siegler (Model 100) or Sanders Engineering (Model 200) was assembled as shown in the attached drawing. The system was leak checked by plugging the inlet to the nozzle and pulling a 15 inch mercury vacuum. A leakage rate not in excess of 0.02 cubic feet per minute was considered acceptable.

The inside dimensions of the stack liner were measured and recorded. The required number of sampling points were marked on the probe for easy visibility. The range of velocity pressure, the percent moisture, and the temperature of the effluent gases were determined. From this data, the correct nozzle size and the nomograph multiplication factor were determined.

Crushed ice was placed around the impingers. The nozzle was placed on the first traverse point with the tip pointing directly into the gas stream. The pump was started immediately and the flow was adjusted to isokinetic sampling conditions. After the required time interval had elapsed, the probe was repositioned to the next traverse point and isokinetic sampling was re-established. This was performed for each point until the run was completed. Readings were taken at each point and recorded on the field data sheet. At the conclusion of each run, the pump was turned off and the final readings were recorded.

5.1. Particulate Sample Recovery

Care was exercised in moving the collection train to the sample recovery area to minimize the loss of collected sample, or the gain of extraneous particulate matter. The volume of water in the impingers was measured, the silica gel impinger was weighed and recorded on the field data sheet. The nozzle, and all sample-exposed surfaces were washed with reagent grade acetone into a clean sample container. A brush was used to loosen any adhering particulate matter and subsequent washings were placed into the container. The filter was carefully removed from the fritted support and placed in a clean separate sample container. A sample of the acetone used in the washing was saved for a blank laboratory analysis.

5.2. Particulate Analytical Procedures

The filter and any loose particulate matter were transferred from the sample container to a clean, tared weighing dish. The filter was placed in a desiccator for at least 24 hours and then weighed to the nearest 0.1 milligram until a constant weight was obtained. The original weight of the filter was deducted, and the weight gain was recorded to the nearest 0.1 milligram.

The wash solution was transferred to a clean, tared beaker. The solution was evaporated to dryness, desiccated to a constant weight, and the weight gain was recorded to the nearest 0.1 milligram.

APPENDIX A EQUATIONS AND FIELD DATA SHEETS

EQUATIONS

1. $$P_s = P_{bar} + \frac{P_g}{13.6}$$

2. $$P_m = P_{bar} + \frac{\overline{\Delta H}}{13.6}$$

3. $$V_s = K_p C_p \overline{\sqrt{\Delta P}} \sqrt{\frac{\overline{T_s}}{M_s P_s}}$$

4. $$V_{m(Std)} = K_1 V_m Y \left[\frac{P_{bar} + \frac{\overline{\Delta H}}{13.6}}{\overline{T_m}} \right]$$

5. $$V_{w(Std)} = 0.04707\, V_{lc}$$

6. $$B_{ws} = \frac{V_{w(Std)}}{V_{m(Std)} + V_{w(Std)}}$$

7. $$M_d = 0.44\,(\%CO_2) + 0.32\,(\%O_2) + 0.28\,(\%N_2 + \%CO)$$

8. $$M_s = M_d(1 - B_{ws}) + 18\,(B_{ws})$$

9. $$EA = \left[\frac{(\%O_2 - 0.5\,(\%CO))}{0.264\,(\%N_2) - ((\%O_2) - 0.5\,(\%CO))} \right] 100$$

10. $$Q_a = (V_s)\,(A_s)\,(60)$$

11. $$Q_s = Q_a\,(1-B_{ws})\,\frac{(528)}{\overline{T_s}}\,\frac{(P_s)}{29.92}$$

12. $$E_H = \left(\frac{PMR}{H_I}\right)$$

13. $$E = C_d\,F_{O_2}\left(\frac{20.9}{20.9 - \%O_2}\right)$$

14. $$C_s = 0.0154\,\frac{M_n}{V_{m(Std)}}$$

15. $$C_{50} = \frac{21\,C_s}{21 - [(1.5)\,(\%O_2) - 0.133\,(N_2) - 0.75\,(\%CO)]}$$

16. $$C_{12} = \frac{C_s\,(12)}{\%CO_2}$$

17. $$PMR = (C_s)\,(Q_s)\,\frac{(60)}{7000}$$

18. $$V_n = \left[(0.002669)\,(V_{lc}) + \frac{V_m Y}{\overline{T_m}}\left(p_{bar} + \frac{\overline{\Delta H}}{13.6}\right)\right]\frac{\overline{T_s}}{p_s}$$

19. $$I = \frac{100\,V_n}{(60)\,\emptyset\,V_s\,A_n}$$

NOMENCLATURE

A_n = Cross-sectional area of nozzel, ft^2

A_s = Cross sectional area of stack, ft^2

B_{ws} = Water vapor in the gas stream, proportion by volume (dimensionless)

C_p = Pitot tube coefficient (dimensionless) (0.84)

C_s = Particulate concentration, grains/SDCF

C_d = Particulate concentration, lbs/SDCF

C_{12} = Particulate concentration (C_s adjusted to 12% CO) grains/SDCF

C_{50} = Particulate concentration (C_s adjusted to 50% excess air) grains/SDCF

EA = Excess air, %

E = Emission in lb/mmBTU

E_H = Emission in lb/mmBTU, based on heat input

H_I = Total Heat Input, Million BTU per Hour (MMBTU/hr)

I = Percent of isokinetic sampling

K_1 = 17.64 °R/ inches Hg

K_p = Pitot tube constant,

$$85.49 \text{ ft/sec} \left[\frac{(\text{lb/lb-mole})(\text{in. Hg})}{(°\text{R})(\text{inc. } H_2O)} \right]^{\frac{1}{2}}$$

M_n = Total amount of particulate collected, mg

M_d = Molecular weight of stack gas; dry basis, lb/lb mole

M_s = Molecular weight of stack gas; wet basis, lb/lb mole

P_{bar} = Barometric pressure at the sampling site, in. Hg

NOMENCLATURE (continued)

P_m = Meter pressure, in. Hg

P_s = Absolute stack pressure, in. Hg

P_g = Stack static pressure, in. H_2O

PMR = Particulate mass rate, lb/Hr

Q_a = Volumetric flow rate ACFM

Q_s = Volumetric flow rate SDCFM

V_s = Average stack gas velocity, ft/sec

V_{lc} = Total volume of liquid collected in impingers & silica gel, ml

V_m = Volume of gas sample as measured by dry gas meter, ACF

$V_{m(std)}$ = Volume of gas sample measured by dry gas meter, corrected to standard conditions, SDCF

$V_{w(std)}$ = Volume of water vapor in gas sample, corrected to standard conditions, SCF

V_n = Volume collected at stack conditions through nozzle, ACF

Y = Dry gas meter calibration factor (dimensionless)

ΔH = Average pressure difference of orifice, in. H_2O

ΔP = Velocity head of stack gas, in. H_2O

$\overline{\sqrt{\Delta P}}$ = Average of square roots of the velocity pressure, in. H_2O

Ø = Total sampling time, minutes

$\%CO_2$, $\%O_2$, N_2, %CO - Number % by volume, dry basis, from gas analysis

F_{O_2} = Oxygen based F factor (9820 SDCF/mmBTU for bituminous coal)

T_s = Temperature of the stack, °R (° F + 460)

SANDERS ENGINEERING & ANALYTICAL SERVICES, Inc.

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use for flow rata runs 1, 2, 3

FIELD DATA SHEET

COMPANY GPCO DATE 4-3-96 DGM# S-101

PLANT Crist 1 OPERATOR ELM ΔHa 0.74 cu ft/min

UNIT #6 Steady State METHOD 17 PROBE N/A liner 21' length

	RUN 1	RUN 2	RUN 3
NOZZLE CALIBRATION PRE	.208 / .208 / .208 / .208 AVERAGE	.208 / .209 / .208 / .208 AVERAGE	.199 / .199 / .199 / .199 AVERAGE
NOZZLE CALIBRATION POST	.208 / .208 / .208 / .208 AVERAGE	.208 / .208 / .209 / .208 AVERAGE	.199 / .199 / .199 / .199 AVERAGE
FILTER NUMBER	1162	1163	1164
METER READING FINAL	605.020	648.978	695.100
METER READING INITIAL	565.000	608.100	~~654.900~~ 657.500
METER READING NET	40.020	40.878	37.600
LEAK CHECK SYSTEM Pre	15 in. Hg	15 in. Hg	15 in. Hg
LEAK CHECK SYSTEM Post	10 in. Hg	10 in. Hg	15 in. Hg
LEAK CHECK PITOT Pre	impact / static	impact / static	impact / static
LEAK CHECK PITOT Post	impact / static	impact / static	impact / static
LEAK CHECK cfm	0.000 / 0.000	0.000 / 0.000	0.000 / 0.000
VOLUME OF LIQUID WATER COLLECTED IMP. 1	166 / 100 / 66 NET	180 / 100 / 80 NET	172 / 100 / 72 NET
VOLUME OF LIQUID WATER COLLECTED IMP. 2	100 / 100 / 0 NET	100 / 100 / 0 NET	100 / 100 / 0 NET
VOLUME OF LIQUID WATER COLLECTED IMP. 3	0 / 0 / 0 NET	0 / 0 / 0 NET	0 / 0 / 0 NET
VOLUME OF LIQUID WATER COLLECTED IMP. 4	4496.0 / 1491.0 / 5.0 NET	1474.0 / 1460.0 / 14.0 NET	1510.0 / 4496.0 / 14.0 NET
TOTAL	71.0	94.0	86.0
GAS ANALYSIS O_2	5.5 %	5.5 %	5.3 %
GAS ANALYSIS CO_2	12.5 %	12.0 %	12.5 %
GAS ANALYSIS CO	-	-	-
STATIC	-0.50 in. H2O	-0.50 in. H2O	-0.50 in. H2O
BAROMETRIC	30.25 in. Hg	30.25 in. Hg	30.25 in. Hg

Port # / Point #	Time	Gas Meter Vol. (cu. ft.)	Vel. Head ΔP in. H_2O	Orifice Head ΔH in. H_2O	Temperature (F) Stack	Probe	Hot Box	Imp.	Gas Meter In	Gas Meter Out	Vac. in. H_g
5 - 1	8:08	565.000	1.25	1.42	334	N/A	N/A	49	69	70	5
2	:10	566.300	1.15	1.30	335			✓	70	69	5
3	:12	567.600	1.25	1.42	334			✓	70	70	5
4	:14	568.900	1.25	1.42	327			✓	70	70	5
5	:16	570.100	1.50	1.70	328			✓	71	70	5
6	:18	571.400	1.85	2.10	329			✓	71	71	6
4 - 1	8:20	573.000	1.10	1.25	334			✓	72	71	4
2	:22	574.200	1.25	1.44	336			52	72	72	5
3	:24	575.400	1.30	1.50	336			✓	73	72	5
4	:26	576.800	1.30	1.50	330			✓	72	72	5
5	:28	578.100	1.25	1.44	331			✓	73	73	5
6	:30	579.400	1.15	1.32	331			✓	73	73	5
3 - 1	8:33	580.690	1.35	1.56	334			✓	74	74	5
2	:35	582.000	1.05	1.21	337			✓	74	74	5
3	:37	583.200	1.35	1.57	336			✓	75	74	5
4	:39	584.500	1.15	1.33	331			56	75	75	5
5	:41	585.800	.95	1.10	331			✓	75	75	4
6	:43	586.900	1.10	1.27	332			✓	76	75	4.5
2 - 1	8:45	588.125	1.25	1.45	336			✓	76	76	5
2	:47	589.400	1.25	1.45	338			✓	76	76	5
3	:49	590.700	1.60	1.86	336			✓	76	76	6
4	:51	592.000	1.50	1.74	332			✓	77	77	6
5	:53	593.500	1.20	1.39	333			✓	77	77	5
6	:55	594.800	1.55	1.80	333			✓	77	78	6
1 - 1	:58	596.235	1.45	1.68	331			59	78	78	5
2	9:00	597.700	2.0	2.34	338			✓	78	78	8
3	:02	599.200	1.65	1.93	338			✓	78	78	7
4	:04	600.700	1.45	1.69	334			✓	79	79	6
5	:06	602.100	1.20	1.40	334			✓	79	79	6.5
6	:08	603.400	2.25	2.63	335			✓	79	79	8
Final	9:10	605.020	1.16								

Check Indicates Temperatures Meet Required Limits.

859,853

Company GPCO Date 4-3-96

Site Grist #6 Steady State Run # 1 Page 2 Of 4

FLOW RATA RUN 1 STARTS HERE

Port # / Point #	Time	Gas Meter Vol. (cu. ft.)	Vel. Head ΔP in. H_2O	Orifice Head ΔH in. H_2O	Temperature (F) Stack	Probe	Hot Box	Imp.	Gas Meter In	Gas Meter Out	Vac. in. H_g
1- 1	9:41	608.100	1.40	1.64	334	N/A	N/A	51	81	81	5
2	:43	609.400	2.0	2.36	342			✓	81	81	6
3	:45	611.000	1.60	1.89	334			✓	81	81	5
4	:47	612.600	1.40	1.65	336			✓	81	81	5
5	:49	613.900	1.45	1.71	335			✓	82	82	5
6	:51	615.400	2.25	2.66	336			✓	82	82	6
2- 1	9:53	617.075	1.27	1.50	342			✓	82	82	4
2	:55	618.500	1.27	1.50	343			✓	83	82	4.5
3	:57	619.600	1.40	1.65	343			53	82	82	5
4	:59	621.200	1.50	1.77	337			✓	83	82	5
5	10:01	622.500	1.25	1.47	337			✓	83	82	5
6	:03	623.900	1.45	1.71	337			✓	83	83	5
3 - 1	10:06	625.230	1.20	1.41	343			✓	83	83	3
2	:08	626.800	1.20	1.41	345			✓	83	82	4.5
3	:10	627.800	1.30	1.53	343			✓	83	83	5
4	:12	629.100	1.20	1.41	338			✓	83	82	5
5	:14	630.400	.90	1.06	338			✓	83	82	4
6	:16	631.600	1.15	1.36	338			✓	83	83	4
4- 1	10:19	632.875	1.10	1.30	345			✓	83	83	4
2	:21	634.200	1.31	1.54	346			✓	84	83	5
3	:23	635.500	1.23	1.45	346			56	84	84	5
4	:25	636.800	1.27	1.50	338			✓	84	84	5
5	:27	638.200	1.23	1.45	337			✓	84	84	5
6	:29	639.400	1.15	1.36	337			✓	84	84	5
5 - 1	:31	640.690	1.40	1.65	345			✓	85	84	5
2	:33	642.000	1.23	1.44	346			✓	85	84	5
3	:35	643.300	1.25	1.46	346			✓	85	84	5
4	:37	644.600	1.20	1.41	338			✓	85	84	5
5	:39	646.000	1.55	1.82	338			✓	85	85	6
6	:41	647.400	1.90	2.23	339			✓	85	85	6
End	10:43	648.978									

1.164

Check Indicates Temperatures Meet Required Limits.

Company GPCO 862,661 Date 4-3-96

Site Crist #6 S.S. Run # 2 Page 3 Of 4

Port # / Point #	Time	Gas Meter Vol. (cu. ft.)	Vel. Head ΔP in. H_2O	Orifice Head ΔH in. H_2O	Temperature (F) Stack	Probe	Hot Box	Imp.	Gas Meter In	Gas Meter Out	Vac. in. H_g
S-1	12:03	657.500	1.45	1.42	346	N/A	N/A	50	81	81	5
2	:05	658.800	1.24	1.22	351			✓	82	81	5
3	:07	659.950	1.16	1.14	351			✓	81	81	4
4	:09	661.160	1.21	1.19	342			✓	82	81	4
5	:11	662.300	1.43	1.40	343			✓	82	81	4.5
6	:13	663.800	2.0	1.96	343			✓	81	81	6
4-1	12:15	665.138	1.20	1.18	348			✓	81	81	4
2	:17	666.200	1.40	1.37	351			✓	81	81	4
3	:19	667.400	1.30	1.27	350			49	81	81	4
4	:21	668.800	1.40	1.37	344			✓	82	81	4
5	:23	670.000	1.25	1.23	343			✓	82	81	4
6	:25	671.100	1.24	1.21	344			52	82	81	4
3-1	12:28	672.470	1.30	1.27	350			✓	81	81	3
2	:30	673.600	1.12	1.09	351			✓	82	81	3
3	:32	674.800	1.26	1.23	350			✓	82	81	3
4	:34	676.000	1.22	1.19	346			✓	81	81	4
5	:36	677.150	0.99	.96	345			✓	81	81	4
6	:38	678.250	1.08	1.05	344			✓	82	81	4
2-1	12:41	679.315	1.25	1.22	350			✓	82	81	3
2	:43	680.500	1.32	1.29	351			✓	82	81	4
3	:45	681.700	1.50	1.46	349			✓	82	82	5
4	:47	682.900	1.60	1.56	344			✓	82	82	5
5	:49	684.500	1.25	1.22	344			57	83	83	5
6	:51	685.500	1.70	1.66	344			✓	83	83	5.5
1-1	12:53	687.074	1.26	1.23	345			✓	84	83	3.5
2	:55	688.100	1.95	1.90	351			✓	84	84	6
3	:57	689.700	1.60	1.56	348			✓	84	84	6
4	:59	691.000	1.40	1.37	344			59	85	84	5
5	13:01	692.400	1.23	1.20	345			✓	85	84	5
6	:03	693.600	2.30	2.25	346			✓	85	85	7
Final	13:05	695.100									

Check Indicates Temperatures Meet Required Limits.

8666.205

Company GPCO Date 4-3-96

Site Cristobal S.S. Run # 3 Page 4 Of 4

LABORATORY ANALYSIS & CHAIN OF CUSTODY

COMPANY/PLANT: GPCO /Crist

UNIT #: 6 DATE OF TEST: 4/3/96 TYPE OF TEST: ☐ M-5 ☒ M-17 ☐ OTHER ______

SAMPLE #	RELINQUISHED BY	RECEIVED BY	TIME	DATE	REASON FOR CHANGE
1162	EH	EH	7:15	4-5-96	Analysis
1163					
1164					

UNIT # 6 Steady State

RUN # 1	FILTER # 1162	BEAKER # 7 WASH (ML) 40
FINAL WEIGHT	123.4	69927.9
INITIAL WEIGHT	120.5	69925.3
DIFFERENCE	2.9	2.6
CORRECTED TOTAL WEIGHT		5.5
RUN # 2	FILTER # 1163	BEAKER # 10 WASH (ML) 40
FINAL WEIGHT	122.4	63816.4
INITIAL WEIGHT	120.2	63815.0
DIFFERENCE	2.2	1.4
CORRECTED TOTAL WEIGHT		3.6
RUN # 3	FILTER # 1164	BEAKER # 27 WASH (ML) 40
FINAL WEIGHT	122.7	68103.9
INITIAL WEIGHT	120.7	68102.5
DIFFERENCE	2.0	1.4
CORRECTED TOTAL WEIGHT		3.4
RUN # ____	FILTER # ____	BEAKER # ____ WASH (ML) ____
FINAL WEIGHT		
INITIAL WEIGHT		
DIFFERENCE		
CORRECTED TOTAL WEIGHT		

UNIT # ______

RUN # ____	FILTER # ____	BEAKER # ____ WASH (ML) ____
FINAL WEIGHT		
INITIAL WEIGHT		
DIFFERENCE		
CORRECTED TOTAL WEIGHT		
RUN # ____	FILTER # ____	BEAKER # ____ WASH (ML) ____
FINAL WEIGHT		
INITIAL WEIGHT		
DIFFERENCE		
CORRECTED TOTAL WEIGHT		
RUN # ____	FILTER # ____	BEAKER # ____ WASH (ML) ____
FINAL WEIGHT		
INITIAL WEIGHT		
DIFFERENCE		
CORRECTED TOTAL WEIGHT		
WASH SOLVENT BLANK (ML) ____		BEAKER # ____ WASH (ML) ____
FINAL WEIGHT		
INITIAL WEIGHT		
DIFFERENCE		
CORRECTION FACTOR (MG/ML)		

ALL WEIGHTS ARE IN MILLIGRAMS (MG)

APPENDIX B SAMPLE CALCULATIONS

Input and Constants

$$f := \frac{9820\ ft^3}{mm\ btu}$$

$pg := -(0.5\ in.\ H2O)$

$pbar := 30.25\ in.\ Hg.$

$\Delta havg := 1.574\ in.\ H2O$

$y := 1.038$

$tm := 74.4\ °F$

$o2 := 5.5$

$co2 := 12.5$

$vm := 40.02\ ft^3$

$vlc := 71.\ ml$

$theta := 60\ min$

$nozdia := 0.208\ in.$

$ts := 333.5\ °F$

$as := 270.\ ft^2$

$mn := 5.5\ mg$

$numberofpoints := 30$

$$sqrt\Delta p := 1.1621\ in.\ H2O^{0.5}$$

$$kp := \frac{85.49 \cdot 1\ ft \cdot 1 \left(\frac{lb\ in.\ Hg.}{lb\text{-}mole\ °R\ in.\ H2O}\right)^{0.5}}{1\ sec}$$

$cp := 0.84$

$$k1 := \frac{17.64\ °R}{in.\ Hg.}$$

$$ts = \frac{(ts + 460\ °F)\ °R}{°F}$$

793.5 °R

$$tm = \frac{(tm + 460\ °F)\ °R}{°F}$$

534.4 °R

n2 = 100 - o2 - co2

82.

$$an = \frac{nozdia^2\ 3.1416}{4\ (\frac{12\ in.}{ft})^2}$$

0.000235969 ft^2

Calculations

Equation 1

$$ps = pbar + \frac{pg}{\frac{13.6 \text{ in. } H2O}{1 \text{ in. Hg.}}}$$

30.2132 in. Hg.

Equation 2

$$pm = pbar + \frac{Ahavg}{\frac{13.6 \text{ in. } H2O}{\text{in. Hg.}}}$$

30.3657 in. Hg.

Equation 3

$$vmstd = \frac{k1 \; vm \; y \; (pbar + \frac{Ahavg}{\frac{13.6 \text{ in. } H2O}{\text{in. Hg.}}})}{tm}$$

41.638 ft^3

Equation 4

$$vwstd = \frac{0.04707 \; ft^3 \; vlc}{ml}$$

3.34197 ft^3

Equation 5

$$bws = \frac{vwstd}{vmstd + vwstd}$$

0.074299

Equation 6

$$md = \frac{(0.44\ co2 + 0.32\ o2 + 0.28\ n2)\ lb}{lb\text{–}mole}$$

$$\frac{30.22\ lb}{lb\text{–}mole}$$

Equation 7

$$ms = md\ (1 - bws) + \frac{bws\ 18\ lb}{lb\text{–}mole}$$

$$\frac{29.3121\ lb}{lb\text{–}mole}$$

Equation 8

$$vs = kp\ cp\ sqrt\Delta p\ \left(\frac{ts}{ms\ ps}\right)^{0.5}$$

$$\frac{78.9932\ ft}{sec}$$

Equation 9

$$qa = \frac{vs\ as\ 60\ sec}{min}$$

$$\frac{1.27969\ 10^{6}\ ft^{3}}{min}$$

Equation 10

$$qs = \frac{qa\ (1 - bws)\ 528\ °R\ ps}{ts\ 29.92\ in.\ Hg.}$$

$$\frac{795973.\ ft^{3}}{min}$$

Equation 11

$$cs = \frac{0.0154 \text{ gr mn}}{\text{mg vmstd}}$$

$$\frac{0.0020342 \text{ gr}}{\text{ft}^3}$$

Equation 12

$$pmr = \frac{cs \; qs \; 60 \text{ min}}{\text{hour} \; \frac{7000 \text{ gr}}{\text{lb}}}$$

$$\frac{13.8786 \text{ lb}}{\text{hour}}$$

Equation 13

$$e = \frac{cs \; f \; 20.9 \; 1 \text{ lb}}{(20.9 - o2) \; 7000 \text{ gr}}$$

$$\frac{0.00387286 \text{ lb}}{\text{mm btu}}$$

Equation 14

$$vn = \frac{ts \left(\frac{0.002669 \text{ in. Hg. ft}^3}{\text{ml } ^\circ\text{R}} \; vlc + \frac{vm \; y \; pm}{tm} \right)}{ps}$$

$$66.9697 \text{ ft}^3$$

Equation 15

$$i = \frac{100\ \%\ vn}{60\ sec\ theta\ vs\ an}{min}$$

99.8001 %

Equation 16

$$hi = \frac{pmr}{e}$$

$$3583.54\ \frac{mm\ btu}{hour}$$

APPENDIX C QUALITY CONTROL

INITIAL
METER CALIBRATION FORM - DGM

DATE: 12-05-95 Box No. S-101

Ref. DGM Ser. # 1044453 Calibrated By EDWARD HARRIS

RUN #	1	2	3	4	5
DELTA H (DGM)	0.50	1.00	1.50	2.00	3.00
Y (Ref. DGM)	1.014	1.014	1.014	1.014	1.014
Reference DGM					
Gas Vol. Initial	19.500	25.177	31.500	38.100	45.000
Gas Vol. Final	25.177	31.500	38.100	45.000	51.466
Meter Box DGM					
Gas Vol. Initial	24.400	30.000	36.261	42.805	49.615
Gas Vol. Final	30.000	36.261	42.805	49.615	56.004
Reference DGM Temp.	Avg.	Avg.	Avg.	Avg.	Avg.
Deg F Initial	66	67	67	67	67
Deg F Final	67	67	67	67	67
Meter Box DGM					
Temp. Initial In	66	67	68	69	69
Temp. Initial Out	66	67	68	69	69
Temp. Final In	66	67	69	69	69
Temp. Final Out	66	67	69	69	69
P Bar IN. Hg	30.08	30.08	30.08	30.08	30.08
Time (sec.)	873	688	582	525	404
Meter Calibration Factor (Y)	1.026	1.022	1.022	1.026	1.023
Qm (C.F.M.)	0.399	0.563	0.695	0.806	0.981
Km (Std Pressure)	0.727	0.726	0.730	0.733	0.730
DELTA Ha	1.77	1.78	1.75	1.73	1.75

Average Y (Meter Calibration Factor) 1.024
Average Km (Standard Pressure) 0.729
Average DELTA Ha of Orifice 1.755

Y= ≤ .03
Max & Min ≤ .02 from Avg
Final Avg within 5% of Initial Avg
ΔHa = Max & Min ≤ .2 from Avg

POST TEST QUALITY ASSURANCE

Date: 4/5/96 BOX #: **S-101**

Ref. Meter: 1044453 Calibrated By: **EDWARD HARRIS**

DRY GAS METER

	Unit	Run 1	Run 2	Run 3
FIELD METER ΔH	In. H_2O	1.50	1.50	1.50
Initial Gas Volume	$Ft.^3$	952.600	958.500	964.090
Final Gas Volume	$Ft.^3$	958.500	964.090	969.783
Initial Temp. In	°F	61	61	61
Initial Temp. Out	°F	61	60	61
Final Temp. In	°F	62	61	61
Final Temp. Out	°F	60	61	61
REF. METER Y	*Dimensionless*	1.014	1.014	1.014
Initial Gas Volume	$Ft.^3$	582.700	589.006	595.000
Final Gas Volume	$Ft.^3$	589.006	595.000	601.000
Initial Temp.	°F	58	58	58
Final Temp.	°F	58	58	58
Barometric Pressure	In. Hg	30.02	30.02	30.02
Time	sec	513	494	496
Meter Calibration Factor	*Dimensionless*	1.086	1.089	1.071
$\Delta H_@$	In. H_2O	1.460	1.498	1.506
Average Y	*Dimensionless*	1.082		
Initial Y	*Dimensionless*	1.038		
Percent Error	%	4.2	*(Allowed 5.0%)*	

DIFFERENTIAL PRESSURE GAUGE

Ref. Pressure In H_2O	Magnehelic Pressure In H_2O	Percent Error (+/- 5%)
0.5	0.5	0
1.0	1.0	0
1.5	1.5	0

TEMPERATURE SENSOR

Ref. Temp. (°F)	Thermocouple Temp.	Percent Error (Allowed 1.5% of Absolute)
310	310	0

ARENOID BAROMETER

Reference Barometer	Test Barometer	0.1 Diff. Allowed
30.02	30.02	0

MAGEHELIC CALIBRATION

BOX	2879	S-100	C-133	C-175	S-102	S-101	S-103
SER. NO.		91126AM 91	9126A M91	R90125 MR6	R74D	R22D	R20208 A617
RANGE	0-2	0-2	0-2	0-2	0-5	0-2	0-2
REFERENCE READING		FIELD DEVICE READING					
0.000		0.00	0.00	0.00	0.00	0.00	0.00
0.050							
0.150							
0.200							
0.250							
0.450							
0.50	0.50	0.51	0.50	0.51	0.51	0.50	0.50
1.00	0.99	1.01	0.98	1.01	1.01	0.98	1.01
1.30							
1.80	1.80	1.82	1.79	1.82	1.81	1.79	1.82
2.50							
4.50							
5.0							
9.0							
13.0							
22.0							

SIGNATURE: Edward F. Harris

DATE: 12-5-95

MAGEHELIC CALIBRATION
BOX #1

SER. NO.	10720-A868	R1061-6AG48	R5031-SEB76	R1062-9JA82	R1051-3MR42	R90124 RI119
RANGE	0-0.25	0-0.50	0-2	0-5	0-10	0-25
REFERENCE READING	FIELD DEVICE READING					
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.050	0.050					
0.150	0.150	0.140				
0.200	0.190					
0.250		0.250				
0.450		0.450				
0.50			0.50			
1.00			1.00			
1.30				1.30		
1.80			1.80			
2.50				2.50	2.48	
4.50				4.50		
5.0					5.0	5.0
9.0					9.02	
13.0						13.0
22.0						22.0

SIGNATURE: Edward L. Harris

DATE: 12/22/95

MAGEHELIC CALIBRATION
BOX #2

SER. NO.	10819-DR2	R1090-2AG18	R50315-EB93	R1062-9TA87	30830-AM79	R1072-2MC5
RANGE	0-0.25	0-0.50	0-2	0-5	0-10	0-25
REFERENCE READING	FIELD DEVICE READING					
0.000	0.000	0.000	0.00	0.00	0.0	0.0
0.050	0.050					
0.150	0.155	0.152				
0.200	0.205					
0.250		0.256				
0.450		0.456				
0.50			0.52			
1.00			1.04			
1.30				1.32		
1.80			1.83			
2.50				2.55	2.49	
4.50				4.50		
5.0					4.9	5.2
9.0					8.8	
13.0						12.9
22.0						22.0

SIGNATURE: Edward L Harris

DATE: 12/22/95

MAGEHELIC CALIBRATION
BOX #3

SER. NO.	R10908AG71 MRR1	R0112642	R10608CF20 CF20
RANGE	0-0.50	0-2.0	0-10
REFERENCE READING	FIELD DEVICE READING		
0.000	0.00	0.00	0.0
0.050			
0.150	0.149		
0.200			
0.250	0.240		
0.450	0.450		
0.50		0.50	
1.00		0.98	
1.50			
1.80		1.78	
2.50			2.5
4.50			
5.0			5.0
9.0			9.0
13.0			
22.0			

SIGNATURE: Edward L. Harris

DATE: 12/22/95

MAGEHELIC CALIBRATION
BOX #4

SER. NO.	R22D	R90051 6GT21	R90101 5CD102
RANGE	0-0.50	0-5	0-25
REFERENCE READING	FIELD DEVICE READING		
0.000	0.000	0.00	0.0
0.050			
0.150	0.151		
0.200			
0.250	0.251		
0.450	0.455		
0.50			
1.00			
1.30		1.27	
1.80			
2.50		2.52	
4.50		4.55	
5.0			5.0
9.0			
13.0			13.0
22.0			21.6

SIGNATURE: Edward L Harris

DATE: 12/22/95

TEMPERATURE CALIBRATIONS - DEGREES FAHRENHEIT

REFERENCE DEVICE READING*	0 DEG. F	210 DEG.	420 DEG.	630 DEG.	840 DEG.	1050 DEG.	1260 DEG.	1470 DEG.	1680 DEG.	1900 DEG.
2879	0	217	421	630	839	1050	1260	1471	1681	1900
METER BOX #1 C-133 11580	0	212	423	635	842	1053	1264	1475	1679	1910
METER BOX #2 C-175 15962	0	211	423	627	839	1052	1265	1475	1687	1903
METER BOX #5 S-100 15751	2	211	417	628	844	1062	1279	1491	1698	1907
METER BOX #6 S-101 15751	0	210	419	628	839	1058	1255	1473	1691	1900
PORTABLE THERMOCOUPLE # 2 (Blue)	2	209	415	628	837	1053	1260	1468	1679	1908
PORTABLE THERMOCOUPLE # 2 (Green)	2	211	417	627	842	1058	1273	1484	1688	1896
PINK T140293	-1	208	415	624	840	1056	1272	1482	1687	1894
PORTABLE THERMOCOUPLE (Yellow)	0	210	419	632	840	1050	1259	1470	1680	1901
PORTABLE THERMOCOUPLE T-105998 (Black)	1	209	416	625	839	1055	1270	1481	1684	1891
METER BOX S-102	-2	209	417	625	837	1049	1259	1462	1658	1890
METER BOX S-103	4	215	423	632	844	1057	1266	1471	1667	1895

DATE: 12-05-95 **SIGNATURE:** Edward L. Harris

* Reference Device is an Omega Engineering CL505-A calibrated reference thermocouple-potentiometer system.

SANDERS ENGINEERING & ANALYTICAL SERVICES, Inc.

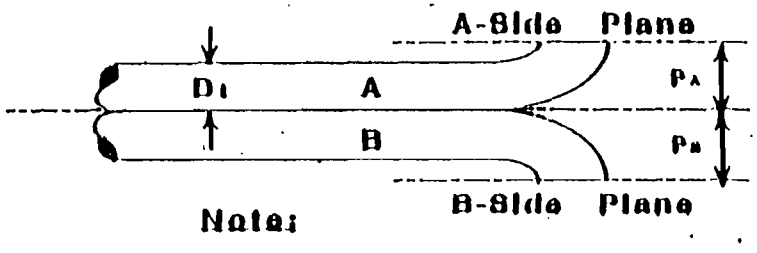
1566 Leroy Stevens Rd. Mobile, AL 36695

Office: (205) 633-4120
FAX#: (205) 633-2285

The Pitot used was within the following geometric specifications:

D_t between 0.48 and 0.95 cm (3/16 and 3/8 in.)

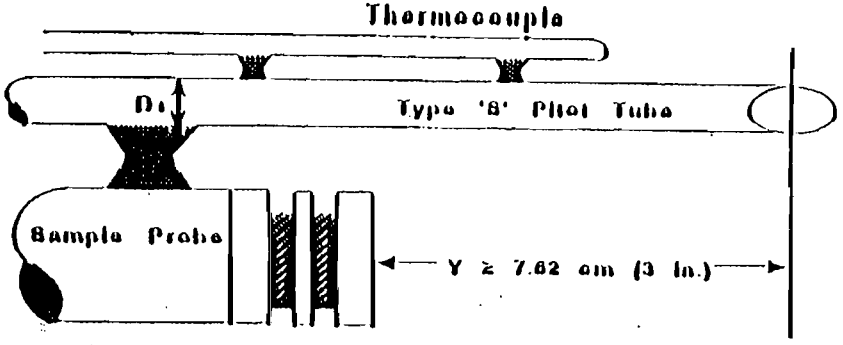
C_p = 0.84



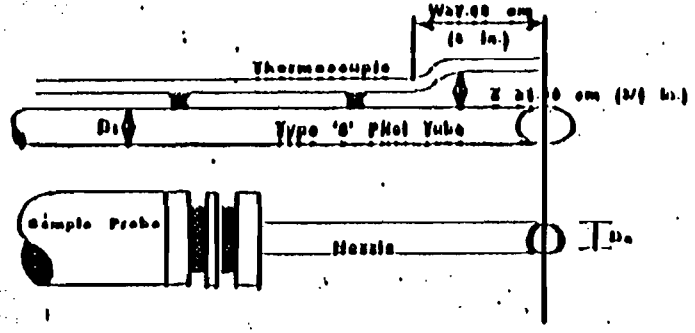
Note:

1.05 $D_t \leq 1.50\ D_t$

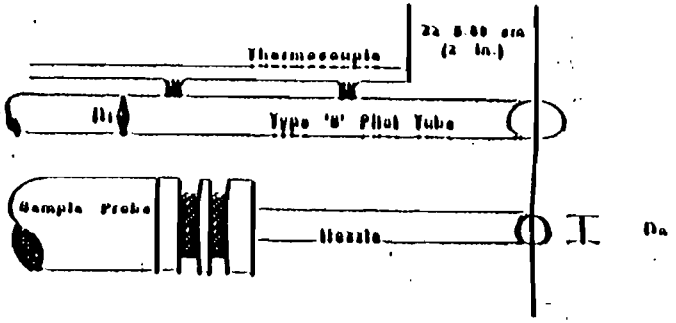
$P_A = P_B$



Minimum pitot-sample probe separation needed to prevent interference



OR



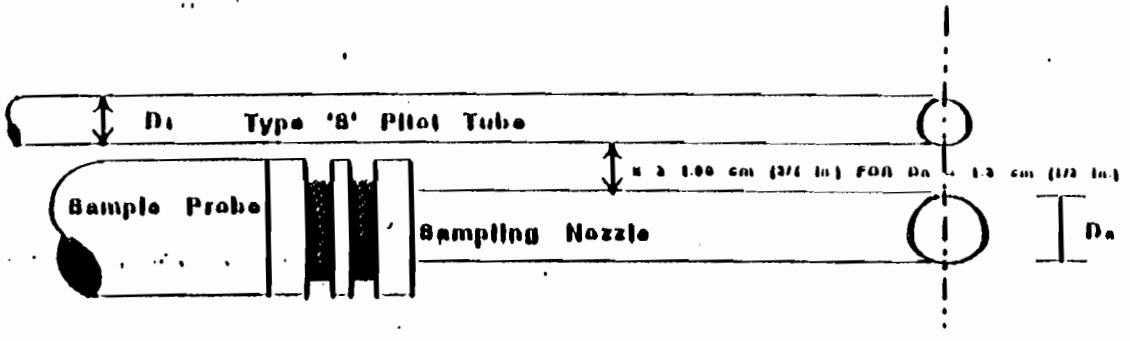
Proper thermocouple placement to prevent interference.

SANDERS ENGINEERING &
ANALYTICAL SERVICES, Inc.

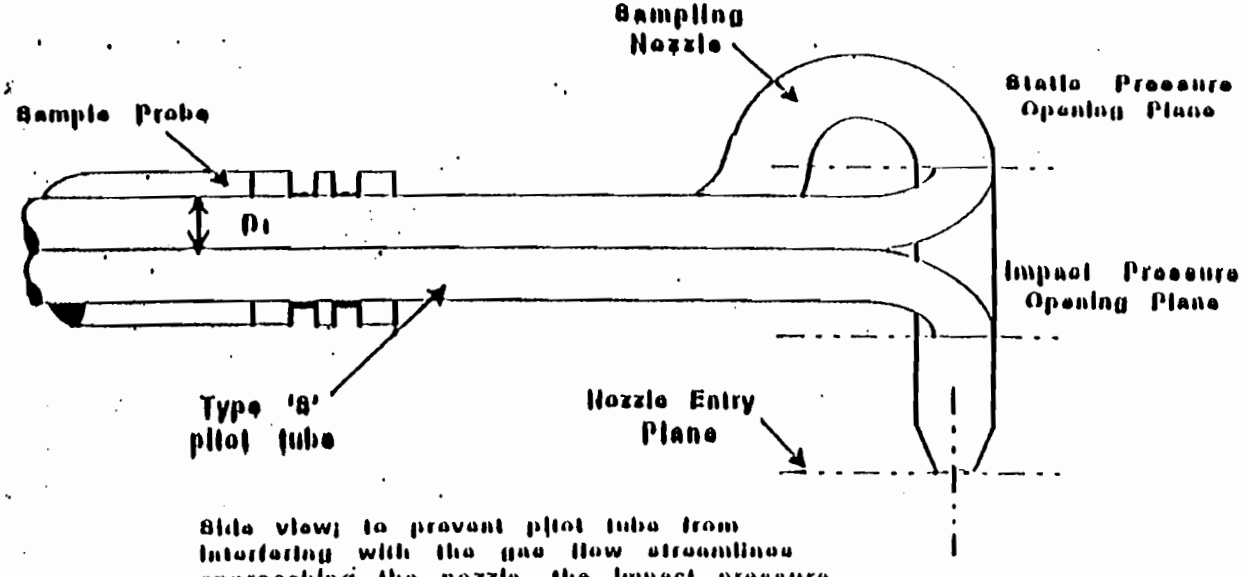
1568 Leroy Stevens Rd.
Mobile, Al. 36606

Office: (205) 633-4120
FAX#: (205) 633-2285

Proper pitot tube-sampling nozzel configuration to prevent aero-dynamic interferance; buttonhook type nozzle; centers of nozzle and pitot opening aligned; Di between 0.48 and 0.95 cm (3/16 and 3/8 in.)



Bottom view showing minimum pitot/nozzle separation



Side view; to prevent pitot tube from interfering with the gas flow streamlines approaching the nozzle, the impact pressure opening plane of the pitot tube shall be even with or above the nozzle entry plane.

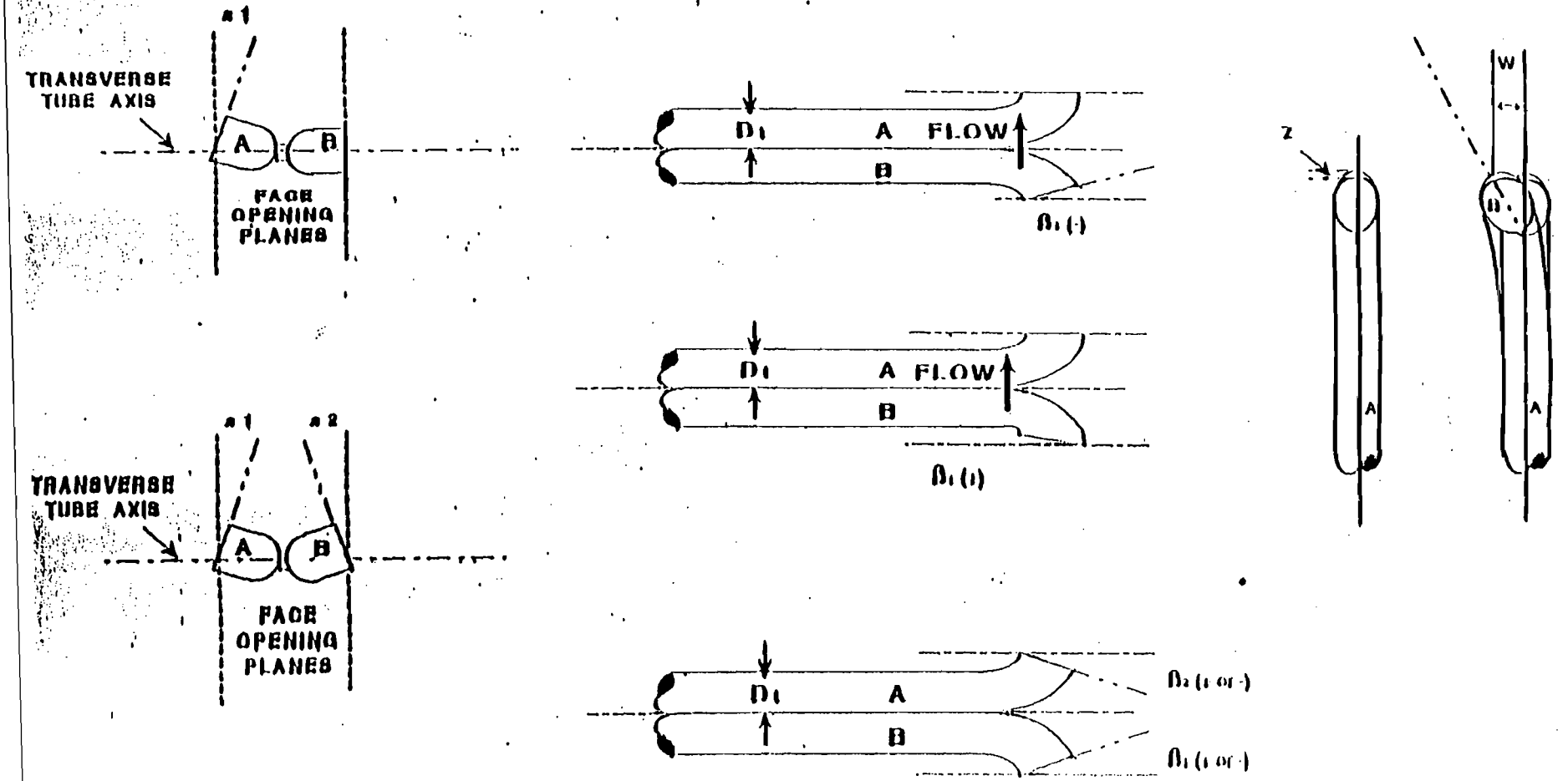
Best Available Copy

SANDERS ENGINEERING &
ANALYTICAL SERVICES, Inc.

1568 Leroy Stevens Rd.
Mobile, AL 36695

Office: (205) 633-1120
FAX#: (205) 633-2286

Types of face-opening misalignment that can result from field use or improper construction of type 'S' pitot tubes. These will not affect the baseline value of $C_{p(s)}$ so long as α_1 and $\alpha_2 < 10°$, β_1 and $\beta_2 < 5°$, $z = 0.32$ cm (1/8 in.)



APPENDIX D OPERATIONAL DATA

CRIST UNIT 6 COMPLIANCE TEST
DATA SHEET

RUN# 1
TYPE steadystate
LOAD 320

PASS ____ FAIL ____
P.E.R. ____

DATE 7-3-96
START TIME 0808
STOP TIME 0910
WEATHER Clear
AMBIENT TEMP 70°

AIR/GAS TEMPERATURES (DEG. F)

PT. 1 6A AH INLET AIR	82
PT. 2 6A AH OUTLET AIR	598
PT. 3 6B AH INLET AIR	85
PT. 4 6B AH OUTLET AIR	586
PT. 5 LH ECONO OUT GAS	702
PT 6 RH ECONO OUT GAS	733
PT 7 LH AH OUTLET GAS	336
PT. 8 RH AH OUTLET GAS	366

DAMPER POSITIONS

SUPERHEAT/REHEAT	65/35
6A F.D. FAN INLET	75
6B F.D. FAN INLET	82
6A I.D. FAN INLET	53
6B I.D. FAN INLET	58
6A HOT AIR RECIRC.	0
6B HOT AIR RECIRC.	0

DRAFT INDICATION (IN. OF H2O)

6A F.D. FAN DISCHARGE	14.0
6B F.D. FAN DISCHARGE	14.5
6A AH GAS DIFF.	10.2
6B AH GAS DIFF.	10.0
FURNACE PRESSURE	-.7
WINDBOX PRESSURE	7.5
FURNACE GAS	2.5
ECONO INLET GAS	2.5
ECONO OUTLET PSI	7.0
I.D. DUCT PRESSURE	20.2
6 A I.D. SUCTION	22
6 B I.D. SUCTION	20

OPACITY

6 MINUTE AVG.	1.50
6A INSTANT.	0
6B INSTANT.	10
6A O2	4.0
6B O2	3.25
STACK O2	3.8
SO2 CHART	1.58

FAN AMPS

6A I.D. FAN	420
6B I.D. FAN	415
6A F.D. FAN	283.0/293.0/286.5
6B F.D. FAN	210.4/216.8/209.8
6A HAR FAN	0
6B HAR FAN	0

BAROMETER	30.20
CONDENSER VAC	27.20
BACKPRESSURE	2.50
6A/6B COND IN	82 / 83
6A/6B COND OUT	106 / 105

SUPERHEAT TEMPERATURE	1000
REHEAT TEMPERATURE	1000
THROTTLE PRESSURE	2375
FEEDWATER FLOW (MLBPHR)	2.15
TOTAL AIR FLOW "	2.45
STEAM FLOW "	2.3
CONDENSATE FLOW "	1.8
GV SETTER POSITION	824

PULVERIZER READINGS

	MILL AMPS	PA FAN AMPS	COAL FLOW	P.A. FLOW	MILL DIFF.	MILL TEMP
6A	55	90	65	140	9	150
6B	52	112	65	130	9	155
6C	56	96	66	140	9	155
6D	56	110	65	140	10	155

PULVERIZER DAMPER POSITIONS (%)

	HOT AIR DAMPER	PRIMARY FLOW DAMPER	AIR REGISTERS
6A	80	55	29 77 74 50
6B	60	66	29 77 74 50
6C	70	55	33 76 76 30
6D	84	63	32 73 74 51

0808

0910

COMMENTS

0808	0910
A-765857	A-766532
B-440470	B-441147
C-642731	C-643436
D-593586	D-894571

CRIST UNIT 6 COMPLIANCE TEST
DATA SHEET

RUN # 2
TYPE Steady State
LOAD 320

PASS ____ FAIL ____
P.E.R. ____

DATE 4-3-96
START TIME 0941
STOP TIME 1043
WEATHER clear
AMBIENT TEMP 70

AIR/GAS TEMPERATURES (DEG. F)

PT. 1 6A AH INLET AIR	82
PT. 2 6A AH OUTLET AIR	598
PT. 3 6B AH INLET AIR	85
PT. 4 6B AH OUTLET AIR	582
PT. 5 LH ECONO OUT GAS	702
PT. 6 RH ECONO OUT GAS	733
PT. 7 LH AH OUTLET GAS	336
PT. 8 RH AH OUTLET GAS	366

DAMPER POSITIONS

SUPERHEAT/REHEAT	70	30
6A F.D. FAN INLET	73	
6B F.D. FAN INLET	80	
6A I.D. FAN INLET	53	
6B I.D. FAN INLET	58	
6A HOT AIR RECIRC.	0	
6B HOT AIR RECIRC.	0	

OPACITY

6 MINUTE AVG.	150
6A INSTANT.	0
6B INSTANT.	10
6A O2	4.0
6B O2	3.0
STACK O2	3.8
SO2 CHART	1.58

BAROMETER	30.80
CONDENSER VAC	27.55
DRUM PRESSURE	
AH/GE COND IN	82 / 83
AH/GE COND OUT	106 / 105

DRAFT INDICATION (IN. OF H2O)

6A F.D. FAN DISCHARGE	12.5
6B F.D. FAN DISCHARGE	15.
6A AH GAS DIFF.	12.5
6B AH GAS DIFF.	10.0
FURNACE PRESSURE	0
WINDBOX PRESSURE	.7,5
FURNACE GAS	.5
ECONO INLET GAS	3.0
ECONO OUTLET PSI	4.0
I.D. DUCT PRESSURE	22.5
6 A I.D. SUCTION	22.0
6 B I.D. SUCTION	20.5

FAN AMPS

6A I.D. FAN	425
6B I.D. FAN	410
6A F.D. FAN	283.0 293.0 286.5
6B F.D. FAN	210.4 216.8 209.8
6A HAR FAN	—
6B HAR FAN	—

SUPERHEAT TEMPERATURE	1000
REHEAT TEMPERATURE	1000
THROTTLE PRESSURE	2375
FEEDWATER FLOW (MLBPHR)	2.15
TOTAL AIR FLOW "	2.45
STEAM FLOW "	2.3
CONDENSATE FLOW "	1.9
GV SETTER POSITION	824

PULVERIZER READINGS

	MILL AMPS	PA FAN AMPS	COAL FLOW	P.A. FLOW	MILL DIFF.	MILL TEMP
6A	55	90	65	140	9	165
6B	50	110	64	130	9	170
6C	54	95	66	140	9	165
6D	54	105	65	140	10	170

PULVERIZER DAMPER POSITIONS (%)

	HOT AIR DAMPER	PRIMARY FLOW DAMPER	AIR REGISTERS
6A	81	56	29 77 75 50
6B	60	66	29 77 75 50
6C	73	55	34 76 76 30
6D	81	62	32 73 74 51

COMMENTS

A	766840	767503
B	441455	442118
C	643756	644446
D	894883	895555

CRIST UNIT 6 COMPLIANCE TEST

DATA SHEET

RUN # 3
TYPE Steady State
LOAD 320

PASS ____ FAIL ____
P.E.R. ____

DATE 4-3-96
START TIME 1203
STOP TIME 1305
WEATHER Clear
AMBIENT TEMP 70°

AIR/GAS TEMPERATURES (DEG. F)

PT. 1 6A AH INLET AIR	93
PT. 2 6A AH OUTLET AIR	610
PT. 3 6B AH INLET AIR	93
PT. 4 6B AH OUTLET AIR	597
PT. 5 LH ECONO OUT GAS	701
PT 6 RH ECONO OUT GAS	731
PT 7 LH AH OUTLET GAS	345
PT. 8 RH AH OUTLET GAS	376

DAMPER POSITIONS

SUPERHEAT/REHEAT	75/25
6A F.D. FAN INLET	71
6B F.D. FAN INLET	79
6A I.D. FAN INLET	54
6B I.D. FAN INLET	58
6A HOT AIR RECIRC.	0
6B HOT AIR RECIRC.	0

OPACITY

6 MINUTE AVG.	1.7
6A INSTANT.	.02
6B INSTANT.	.06
6A O2	2.9
6B O2	2.8
STACK O2	3.8
SO2 CHART	2.9/2.8

BAROMETER	30.20
CONDENSER VAC	27.20
BACKPRESSURE	3.00
6A/6B COND IN	111/88
6A/6B COND OUT	110/88

DRAFT INDICATION (IN. OF H2O)

6A F.D. FAN DISCHARGE	12.5
6B F.D. FAN DISCHARGE	15
6A AH GAS DIFF.	12.5
6B AH GAS DIFF.	10.5
FURNACE PRESSURE	0
WINDBOX PRESSURE	+7.5
FURNACE GAS	-7
ECONO INLET GAS	2.7
ECONO OUTLET PSI	7.0
I.D. DUCT PRESSURE	19.
6A I.D. SUCTION	24
6B I.D. SUCTION	20

FAN AMPS

6A I.D. FAN	4.20
6B I.D. FAN	4.10
6A F.D. FAN	283.0 293.0 286.5
6B F.D. FAN	210.4 216.8 209.8
6A HAR FAN	0
6B HAR FAN	0

SUPERHEAT TEMPERATURE	1000
REHEAT TEMPERATURE	1000
THROTTLE PRESSURE	2375
FEEDWATER FLOW (MLBPHR)	2.2
TOTAL AIR FLOW "	2.4
STEAM FLOW "	2.3
CONDENSATE FLOW "	1.8
GV SETTER POSITION	824

PULVERIZER READINGS

	MILL AMPS	PA FAN AMPS	COAL FLOW	P.A. FLOW	MILL DIFF.	MILL TEMP
6A	53	90	65	140	9	165
6B	50	112	64	130	9	170
6C	53	97	66	140	9	170
6D	53	112	65	140	10	170

PULVERIZER DAMPER POSITIONS (%)

	HOT AIR DAMPER	PRIMARY FLOW DAMPER	AIR REGISTERS
		56	
6A	76	56	32 76 79 50
6B	58	65	29 77 75 50
6C	73	55	34 76 76 30
6D	80	62	32 74 74 51

1305

COMMENTS A-768332 A 768998
B-442948 B 443617
C-645311 C 646007
D-896396 D 897074

Hourly Emission Measurement Summary
Gulf Power Company
Crist Unit 6
Pensacola, Florida

Today's Date: 04/03/96 — Report Date: 04/03/96
Today's Time: 14:45:49 — Report Hour: 08 - 09

Opacity Percent	01-06	1.5	31-36	1.5
	07-12	1.5	37-42	1.5
	13-18	1.5	43-48	1.5
	19-24	1.5	49-54	1.5
	25-30	1.5	55-60	1.5

Hourly Averages	SO2	NOX	CO2
Measured	633.0 ppm	287.2 ppm	12.3 %
Bias Adjusted	645.0 ppm	287.2 ppm	12.3 %
Rate	1.5 lb/mmbtu	0.5 lb/mmbtu	
Bias Adjusted	1.5 lb/mmbtu	0.5 lb/mmbtu	
3 Hr Avg			
Mass Emissions	5062.0 lb/mmbtu		337.7 ton/hr
Bias Adjusted	5462.3 lb/hr		357.6 ton/hr
Bias Factor	1.019	1.000	1.000
Source	1	1	1
Heat Input	3291.8		
Load Range	9.4		
Zero Calibration	3.2 ppm	0.7 ppm	0.0 %
Expected Value	0.0 ppm	0.0 ppm	0.0 %
Span Calibration	2681.6 ppm	896.6 ppm	16.5 %
Expected Value	2632.9 ppm	896.6 ppm	17.0 %

Hourly Averages	Flow	Gross Generation	Opacity
Measured	48174000 scfh	319.6 MWge	
Bias Adjusted	51016266 scfh		
Bias Factor	1.059		
Source	1		
Zero Calibration	-1.3 scfh		0.0 %
Expected Value	0.0 scfh		0.0 %
Span Calibration	851.5 scfh		49.0 %
Expected Value	875.0 scfh		47.4 %

Instrument Status		
	Opacity Monitor	Normal
	SO2 Analyzer	Normal
	NOX Analyzer	Normal
	CO2 Analyzer	Normal
	Flow Monitor	Normal

Legend

** Excess Emissions	## Insufficient Data
!! Fans Off	$$ Boiler Off

Hourly Emission Measurement Summary
Gulf Power Company
Crist Unit 6
Pensacola, Florida

Today's Date: 04/03/96 — Report Date: 04/03/96
Today's Time: 14:49:47 — Report Hour: 09 - 10

Opacity Percent				
01-06	1.6	31-36	1.6	
07-12	1.5	37-42	1.5	
13-18	1.5	43-48	1.5	
19-24	1.5	49-54	1.5	
25-30	1.5	55-60	1.5	

Hourly Averages	SO2	NOX	CO2
Measured	627.7 ppm	292.1 ppm	12.3 %
Bias Adjusted	639.6 ppm	292.1 ppm	12.3 %
Rate	1.5 lb/mmbtu	0.5 lb/mmbtu	
Bias Adjusted	1.5 lb/mmbtu	0.5 lb/mmbtu	
3 Hr Avg			
Mass Emissions	5043.4 lb/mmbtu		339.3 ton/hr
Bias Adjusted	5442.2 lb/hr		359.3 ton/hr
Bias Factor	1.019	1.000	1.000
Source	1	1	1
Heat Input	3307.4		
Load Range	9.4		
Zero Calibration	3.2 ppm	0.7 ppm	0.0 %
Expected Value	0.0 ppm	0.0 ppm	0.0 %
Span Calibration	2681.6 ppm	896.6 ppm	16.5 %
Expected Value	2632.9 ppm	896.6 ppm	17.0 %

Hourly Averages	Flow	Gross Generation	Opacity
Measured	48402000 scfh	318.3 MWge	
Bias Adjusted	51257718 scfh		
Bias Factor	1.059		
Source	1		
Zero Calibration	-1.3 scfh		0.0 %
Expected Value	0.0 scfh		0.0 %
Span Calibration	851.5 scfh		49.0 %
Expected Value	875.0 scfh		47.4 %

Instrument Status		
	Opacity Monitor	Normal
	SO2 Analyzer	Normal
	NOX Analyzer	Normal
	CO2 Analyzer	Normal
	Flow Monitor	Normal

Legend

** Excess Emissions	## Insufficient Data
!! Fans Off	$$ Boiler Off

Hourly Emission Measurement Summary
Gulf Power Company
Crist Unit 6
Pensacola, Florida

Today's Date: 04/03/96 — Report Date: 04/03/96
Today's Time: 14:53:01 — Report Hour: 10 - 11

Opacity Percent				
	01-06	1.5	31-36	1.5
	07-12	1.5	37-42	1.7
	13-18	1.5	43-48	1.5
	19-24	1.5	49-54	1.5
	25-30	1.5	55-60	1.5

Hourly Averages	SO2	NOX	CO2
Measured	626.7 ppm	288.5 ppm	12.3 %
Bias Adjusted	638.6 ppm	288.5 ppm	12.3 %
Rate	1.5 lb/mmbtu	0.5 lb/mmbtu	
Bias Adjusted	1.5 lb/mmbtu	0.5 lb/mmbtu	
3 Hr Avg			
Mass Emissions	5038.5 lb/mmbtu		339.5 ton/hr
Bias Adjusted	5437.1 lb/hr		359.5 ton/hr
Bias Factor	1.019	1.000	1.000
Source	1	1	1
Heat Input	3309.5		
Load Range	9.4		
Zero Calibration	3.2 ppm	0.7 ppm	0.0 %
Expected Value	0.0 ppm	0.0 ppm	0.0 %
Span Calibration	2681.6 ppm	896.6 ppm	16.5 %
Expected Value	2632.9 ppm	896.6 ppm	17.0 %

Hourly Averages	Flow	Gross Generation	Opacity
Measured	48432000 scfh	317.8 MWge	
Bias Adjusted	51289488 scfh		
Bias Factor	1.059		
Source	1		
Zero Calibration	-1.3 scfh		0.0 %
Expected Value	0.0 scfh		0.0 %
Span Calibration	851.5 scfh		49.0 %
Expected Value	875.0 scfh		47.4 %

Instrument Status		
	Opacity Monitor	Normal
	SO2 Analyzer	Normal
	NOX Analyzer	Normal
	CO2 Analyzer	Normal
	Flow Monitor	Normal

Legend		
	** Excess Emissions	## Insufficient Data
	!! Fans Off	$$ Boiler Off

Hourly Emission Measurement Summary
Gulf Power Company
Crist Unit 6
Pensacola, Florida

Today's Date: 04/03/96 — Report Date: 04/03/96
Today's Time: 14:59:00 — Report Hour: 11 - 12

Opacity Percent				
	01-06	1.6	31-36	1.6
	07-12	1.7	37-42	1.7
	13-18	1.7	43-48	1.7
	19-24	1.5	49-54	1.8
	25-30	1.4	55-60	1.6

Hourly Averages	SO2	NOX	CO2
Measured	628.7 ppm	288.5 ppm	12.3 %
Bias Adjusted	640.6 ppm	288.5 ppm	12.3 %
Rate	1.5 lb/mmbtu	0.5 lb/mmbtu	
Bias Adjusted	1.5 lb/mmbtu	0.5 lb/mmbtu	
3 Hr Avg			
Mass Emissions	5043.9 lb/mmbtu		338.8 ton/hr
Bias Adjusted	5442.6 lb/hr		358.8 ton/hr
Bias Factor	1.019	1.000	1.000
Source	1	1	1
Heat Input	3302.5		
Load Range	9.4		
Zero Calibration	3.2 ppm	0.7 ppm	0.0 %
Expected Value	0.0 ppm	0.0 ppm	0.0 %
Span Calibration	2681.6 ppm	896.6 ppm	16.5 %
Expected Value	2632.9 ppm	896.6 ppm	17.0 %

Hourly Averages	Flow	Gross Generation	Opacity
Measured	48330000 scfh	317.6 MWge	
Bias Adjusted	51181470 scfh		
Bias Factor	1.059		
Source	1		
Zero Calibration	-1.3 scfh		0.0 %
Expected Value	0.0 scfh		0.0 %
Span Calibration	851.5 scfh		49.0 %
Expected Value	875.0 scfh		47.4 %

Instrument Status		
	Opacity Monitor	Normal
	SO2 Analyzer	Normal
	NOX Analyzer	Normal
	CO2 Analyzer	Normal
	Flow Monitor	Normal

Legend		
	** Excess Emissions	## Insufficient Data
	!! Fans Off	$$ Boiler Off

Hourly Emission Measurement Summary
Gulf Power Company
Crist Unit 6
Pensacola, Florida

Today's Date: 04/03/96 — Report Date: 04/03/96
Today's Time: 15:07:42 — Report Hour: 12 - 13

Opacity Percent				
01-06	1.6	31-36	1.7	
07-12	1.8	37-42	1.8	
13-18	1.9	43-48	1.9	
19-24	1.9	49-54	1.9	
25-30	1.8	55-60	1.9	

Hourly Averages	SO2	NOX	CO2
Measured	631.4 ppm	288.7 ppm	12.3 %
Bias Adjusted	643.4 ppm	288.7 ppm	12.3 %
Rate	1.5 lb/mmbtu	0.5 lb/mmbtu	
Bias Adjusted	1.5 lb/mmbtu	0.5 lb/mmbtu	
3 Hr Avg			
Mass Emissions	5041.7 lb/mmbtu		337.2 ton/hr
Bias Adjusted	5440.6 lb/hr		357.1 ton/hr
Bias Factor	1.019	1.000	1.000
Source	1	1	1
Heat Input	3286.9		---
Load Range	9.4		
Zero Calibration	3.2 ppm	0.7 ppm	0.0 %
Expected Value	0.0 ppm	0.0 ppm	0.0 %
Span Calibration	2681.6 ppm	896.6 ppm	16.5 %
Expected Value	2632.9 ppm	896.6 ppm	17.0 %

Hourly Averages	Flow	Gross Generation	Opacity
Measured	48102000 scfh	317.1 MWge	
Bias Adjusted	50940018 scfh		
Bias Factor	1.059		
Source	1		
Zero Calibration	-1.3 scfh		0.0 %
Expected Value	0.0 scfh		0.0 %
Span Calibration	851.5 scfh		49.0 %
Expected Value	875.0 scfh		47.4 %

Instrument Status		
	Opacity Monitor	Normal
	SO2 Analyzer	Normal
	NOX Analyzer	Normal
	CO2 Analyzer	Normal
	Flow Monitor	Normal

Legend

** Excess Emissions	## Insufficient Data
!! Fans Off	$$ Boiler Off

Hourly Emission Measurement Summary
Gulf Power Company
Crist Unit 6
Pensacola, Florida

Today's Date: 04/03/96 — Report Date: 04/03/96
Today's Time: 15:18:35 — Report Hour: 13 - 14

Opacity Percent				
	01-06	1.8	31-36	1.9
	07-12	1.8	37-42	1.9
	13-18	1.9	43-48	1.9
	19-24	1.9	49-54	1.9
	25-30	1.9	55-60	1.9

Hourly Averages	SO2	NOX	CO2
Measured	637.2 ppm	288.5 ppm	12.4 %
Bias Adjusted	649.3 ppm	288.5 ppm	12.4 %
Rate	1.5 lb/mmbtu	0.5 lb/mmbtu	
Bias Adjusted	1.5 lb/mmbtu	0.5 lb/mmbtu	
3 Hr Avg			
Mass Emissions	5124.2 lb/mmbtu		342.4 ton/hr
Bias Adjusted	5529.5 lb/hr		362.6 ton/hr
Bias Factor	1.019	1.000	1.000
Source	1	1	1
Heat Input	3337.2		
Load Range	9.3		
Zero Calibration	3.2 ppm	0.7 ppm	0.0 %
Expected Value	0.0 ppm	0.0 ppm	0.0 %
Span Calibration	2681.6 ppm	896.6 ppm	16.5 %
Expected Value	2632.9 ppm	896.6 ppm	17.0 %

Hourly Averages	Flow	Gross Generation	Opacity
Measured	48444000 scfh	316.0 MWge	
Bias Adjusted	51302196 scfh		
Bias Factor	1.059		
Source	1		
Zero Calibration	-1.3 scfh		0.0 %
Expected Value	0.0 scfh		0.0 %
Span Calibration	851.5 scfh		49.0 %
Expected Value	875.0 scfh		47.4 %

Instrument Status		
	Opacity Monitor	Normal
	SO2 Analyzer	Normal
	NOX Analyzer	Normal
	CO2 Analyzer	Normal
	Flow Monitor	Normal

Legend		
	** Excess Emissions	## Insufficient Data
	!! Fans Off	$$ Boiler Off

Best Available Copy

4th

START

RUN / Steady State

```
                                                                          SIGNAL SCALES
 AC Amps       229.02  Qtime        2  IE-On        1  BC Sts     OFF   AC Amps      400
 AC Volts      399.12  Qlevel       0  IE-Off       0  BCmA        20   AC Volts     575
 DCmA          1160.8  Sback        7  % Bkq        0  BCHnt        0   DCmA        2000
 DCKV           61.18  Stime        2  Maxchk      ON  BCHld        0   DCKV         120
 Spks/Min         .00  Framp        6                  BCAlq       IV
 Degs On       103.54  Sramp       10  EMS Blk     ON  BCQch       10   Status      2000
 KWatt Pwr       91.4  % Sbk       30  EMStim       3  IBCmin     100   # Scans      192
                       % Dft       25  PUR%         0  IBCinc      10   On/Off        ON
                       % Max      150  Trpsav      ON  BC Mode   IDLE   FEP #          1
                                                                        Precip     UNIT1
                       Imax       225  Smode     kVmA                   Limits      0001
 BC Setpt.        225  Ilim       225  kVSPK       20
 Iems             225  mAmax     1250
                       kVmax       65  mAspks/m     0  Onset     21.6
 Next Screen.......    uvtAC       50  kVspks/m     0  nkVhi     86.1     PARAMETERS
 Last Screen.......    uvtDC       12  Arcs         0  nkVlo     49.4     AVC # IRB-5B
 Help..............    uvDly       30  Manual     OFF  okVhi       .0     Version  55
 Main Menu.........                    Scn Errs  0000  fkVlo       .0
                                 08:22:33 04/03/96
 Messages:

 PERIODIC SCAN COMPLETE ON FRONT END # 2
F1-MNU  F2-HLP  F3-EMS  F4-AVC  F5-ALM  F6-AUX  F7-RAP  F8-V1  F9-NEXT  F10-LAST
```

```
                                                                          SIGNAL SCALES
 AC Amps       227.45  Qtime        2  IE-On        1  BC Sts     OFF   AC Amps      400
 AC Volts      392.35  Qlevel       0  IE-Off       0  BCmA        20   AC Volts     575
 DCmA          1176.5  Sback        7  % Bkq        0  BCHnt        0   DCmA        2000
 DCKV           61.65  Stime        2  Maxchk      ON  BCHld        0   DCKV         120
 Spks/Min         .00  Framp        6                  BCAlq       IV
 Degs On       103.05  Sramp       10  EMS Blk     ON  BCQch       10   Status      2000
 KWatt Pwr       [illegible]  % Sbk       30  EMStim       3  IBCmin     100   # Scans       [illegible]
```

```
/               3 x Max   ~150 Trpsav  ~  ON BC Mode__IDLE 3FEP #_____ 1 /
/               3                                            3Precip__ UNIT1 /
/               3 Imax   ~225 Smode   %kVmA                  3Limits____0001 /
/ BC Setpt.    225 3 Ilim  ~225 kVSPK  ~  20                \\\\\\\\\\\\\\\\/
/ Iems         225 3 mAmax  1250                             /000000000000000/
/                / kVmax   ~  65 mAspks/m   0 Onset   21.6 /0             0/
/ Next Screen..... % uvtAC  ~  50 kVspks/m   0 nkVhi   86.1 /0 PARAMETERS  0/
/ Last Screen..... % uvtDC  ~  12 Arcs       0 nkVlo   48.9 /0 AVC # TRB-5B0/
/ Help............ % uvDly  ~  30 Manual   OFF okVhi     .0 /0 Version  55 0/
/ Main Menu....... %              Scn Errs 0000 fkVlo     .0 /000000000000000/
/\\\\\\\\\\\\\\\\\\/\\\\\\\\\\\\\\09:31:05 04/03/96\\\\\\\\\\\\/////////////////
 Messages:

 PERIODIC SCAN COMPLETE ON FRONT END # 2
F1-MNU  F2-HLP  F3-EMS  F4-AVC  F5-ALM  F6-AUX  F7-RAP  F8-VI  F9-NEXT  F10-LAST
09:42:57 04/03/96  HIGH HOPPER LEVEL ON # LV-A50 *** ALARM RESET ***


09:43:01 04/03/96  HIGH HOPPER LEVEL ON # LV-A50 *** ALARM DETECTED ***


09:46:08 04/03/96  HIGH HOPPER LEVEL ON # LV-A13 *** ALARM DETECTED ***


09:57:42 04/03/96  HIGH HOPPER LEVEL ON # LV-A14 *** ALARM DETECTED ***


/ ______________________________________________________________________________/
/                B                                           SIGNAL SCALES /
/ AC Amps__229.02 3 Qtime  ~  2 IE-On   ~  1 BC Sts  ~OFF  AC Amps___ 400 /
/ AC Volts__387.84 3 Qlevel ~  0 IE-Off  ~  0 BCmA   ~  20  AC Volts__ 575 /
/ DCmA     1168.6 3 Sback  ~  7 x Bkg   ~  0 BCHnt  ~   0  DCmA______2000 /
/ DCkV      60.24 3 Stime  ~  2 Maxchk  ~ ON BCHld  ~   0  DCkV_______ 120 /
/ Spks/Min    .00 3 Framp  ~  6            BCAlg  ~  IV ZDDDDDDDDDDDDDD4/
/ Degs On__103.10 3 Sramp  ~ 10 EMS Blk ~ ON BCQch  ~  10 3Status____2000 /
/ KWatt Pwr  88.8 3 x Sbk  ~ 30 EMStim  ~  3 IBCmin ~ 100 3# Scans___ 236 /
/                 3 x Dft  ~ 25 PUR%    ~  0 IBCinc ~  10 3On/Off___ ~ ON /
/                 3 x Max  ~150 Trpsav  ~ ON BC Mode__IDLE 3FEP #______ 1 /
/                 3                                        3Precip__ UNIT1 /
/                 3 Imax  ~225 Smode   %kVmA               3Limits____0001 /
/ BC Setpt.   225 3 Ilim  ~225 kVSPK  ~  20                \\\\\\\\\\\\\\\\/
/ Iems        225 3 mAmax  1250                            /000000000000000/
/               / kVmax  ~  65 mAspks/m   0 Onset   21.6 /0             0/
/ Next Screen.... % uvtAC ~ 50 kVspks/m   0 nkVhi   86.1 /0 PARAMETERS   0/
/ Last Screen.... % uvtDC ~ 12 Arcs       0 nkVlo   48.9 /0 AVC # TRB-5B0/
/ Help........... % uvDly ~ 30 Manual   OFF okVhi     .0 /0 Version  55 0/
/ Main Menu...... %            Scn Errs 0000 fkVlo     .0 /000000000000000/
/\\\\\\\\\\\\\\\\\\/\\\\\\\\\\\\\\10:12:39 04/03/96\\\\\\\\\\\\/////////////////
Messages: ALARMS PENDING IN SYSTEM !!!
DRY CONTACT - START IS NOW CLOSED
PERIODIC SCAN COMPLETE ON FRONT END # 2
F1-MNU  F2-HLP  F3-EMS  F4-AVC  F5-ALM  F6-AUX  F7-RAP  F8-VI  F9-NEXT  F10-LAST

10:32:15 04/03/96  HIGH HOPPER LEVEL ON # LV-A13 *** ALARM RESET ***


10:45:02 04/03/96  HIGH HOPPER LEVEL ON # LV-A24 *** ALARM DETECTED ***


 ______________________________________________________________________________
                 3                                          SIGNAL SCALES /
/ AC Amps   225.88 3 Qtime  ~  2 IE-On   ~  1 BC Sts  ~OFF  AC Amps__ 400 /
```

Run1 Steady State END 4th

5th START

(RUN2 Steady State)

Stop 2

Best Available Copy

```
[ DCKV        61.18 3 Stime     ~   2 Maxchk   ~  ON BCHld    ~   0  DCKV          120 [
[ Spks/Min      .00 3 Framp     ~   6             BCAlq      ~  IV ZDDDDDDDDDDDDDD4[
[ Degs On    106.17 3 Sramp     ~  10 EMS Blk  ~  ON BCQch    ~  10 3Status      2000 [
[ KWatt Pwr    89.6 3 x Sbk     ~  30 EMStim   ~   3 IBCmin   ~ 100 3# Scans      218 [
[                   3 x Dft     ~  25 FOR%     ~   0 IBCinc   ~  10 3On/Off    ~   ON [
[                   3 x Max     ~ 150 Trpsav   ~  ON BC Mode   IDLE 3FEP #          1 [
[                   3                                               3Precip     UNIT1 [
[                   3 Imax      ~ 225 Smode     ~kVmA               3Limits      0000 [
[ BC Setpt.     225 3 Ilim      ~ 225 kVSPK    ~  20                \\\\\\\\\\\\\\\\[
[ Iems          225 3 mAmax     ~1250                               [000000000000000[
[                   [ kVmax     ~  65 mAspks/m    0 Onset      21.6 [0             0[
[ Next Screen.....~[ uvtAC      ~  50 kVspks/m    0 nkVhi      85.6 [0 PARAMETERS  0[
[ Last Screen.....~[ uvtDC      ~  12 Arcs        0 nkVlo      49.4 [0 AVC # TRB-5B0[
[ Help............~[ uvDly      ~  30 Manual     OFF okVhi       .0 [0 Version   55 0[
[ Main Menu.......~[                  Scn Errs 0000 fkVlo        .0 [000000000000000[
[\\\\\\\\\\\\\\\\\\\[\\\\\\\\\\\\\\11:03:30 04/03/96\\\\\\\\\\\\\[[[[[[[[[[[[[[[[
 Messages: ALARMS PENDING IN SYSTEM !!!

 PERIODIC SCAN COMPLETE ON FRONT END # 2
F1-MNU  F2-HLP  F3-EMS  F4-AVC  F5-ALM  F6-AUX  F7-RAP  F8-VI  F9-NEXT  F10-LAST


[                                                                                  [
[                   B                                               SIGNAL SCALES [
[ AC Amps     64.31 3 Qtime     ~   2 IE-On    ~   1 BC Sts   ~ OFF  AC Amps      400 [
[ AC Volts   263.82 3 Qlevel    ~   0 IE-Off   ~   0 BCmA     ~  20  AC Volts     575 [
[ DCmA        203.9 3 Sback     ~   7 x Bkq    ~  .0 BCHnt    ~   0  DCmA        2000 [
[ DCKV        61.18 3 Stime     ~   2 Maxchk   ~  ON BCHld    ~   0  DCKV         120 [
[ Spks/Min    42.00 3 Framp     ~   6             BCAlq      ~  IV ZDDDDDDDDDDDDDD4[
[ Degs On     72.79 3 Sramp     ~  10 EMS Blk  ~  ON BCQch    ~  10 3Status      2000 [
[ KWatt Pwr    17.0 3 x Sbk     ~  30 EMStim   ~   3 IBCmin   ~ 150 3# Scans      191 [
[                   3 x Dft     ~  25 FOR%     ~   0 IBCinc   ~  10 3On/Off    ~   ON [
[                   3 x Max     ~ 150 Trpsav   ~  ON BC Mode   IDLE 3FEP #          1 [
[                   3                                               3Precip     UNIT1 [
[                   3 Imax      ~ 183 Smode     ~kVmA               3Limits      0000 [
[ BC Setpt.     183 3 Ilim      ~ 183 kVSPK    ~  20                \\\\\\\\\\\\\\\\[
[ Iems           75 3 mAmax     ~ 850                               [000000000000000[
[                   [ kVmax     ~  70 mAspks/m   34 Onset      25.4 [0             0[
[ Next Screen.....~[ uvtAC      ~  50 kVspks/m    8 nkVhi      73.9 [0 PARAMETERS  0[
[ Last Screen.....~[ uvtDC      ~  12 Arcs        9 nkVlo      59.3 [0 AVC # TRA-1A0[
[ Help............~[ uvDly      ~  30 Manual     OFF okVhi       .0 [0 Version   55 0[
[ Main Menu.......~[                  Scn Errs 0002 fkVlo        .0 [000000000000000[
[\\\\\\\\\\\\\\\\\\\[\\\\\\\\\\\\\\11:27:20 04/03/96\\\\\\\\\\\\\[[[[[[[[[[[[[[[[
 Messages:
 OAT CONTACT - START IS NOW CLOSED

F1-MNU  F2-HLP  F3-EMS  F4-AVC  F5-ALM  F6-AUX  F7-RAP  F8-VI  F9-NEXT  F10-LAST

11:58:44 04/03/96  HIGH HOPPER LEVEL ON # LV-A24 *** ALARM RESET ***


                                                                                   [
[                   B                                               SIGNAL SCALES [
[ AC Amps     51.76 3 Qtime     ~   2 IE-On    ~   1 BC Sts   ~ OFF  AC Amps      400 [
[ AC Volts   252.55 3 Qlevel    ~   0 IE-Off   ~   0 BCmA     ~  20  AC Volts     575 [
[ DCmA        117.6 3 Sback     ~   7 x Bkq    ~   0 BCHnt    ~   0  DCmA        2000 [
[ DCKV        47.06 3 Stime     ~   2 Maxchk   ~  ON BCHld    ~   0  DCKV         120 [
[ Spks/Min    49.00 3 Framp     ~   6             BCAlq      ~  IV ZDDDDDDDDDDDDDD4[
[ Degs On     64.83 3 Sramp     ~  10 EMS Blk  ~  ON BCQch    ~  10 3Status      2000 [
[ KWatt Pwr    13.1 3 x Sbk     ~  30 EMStim   ~   3 IBCmin   ~ 150 3# Scans       98 [
[                   3 x Dft     ~  25 FOR%     ~   0 IBCinc   ~  10 3On/Off    ~   ON [
[                   3 x Max     ~ 150 Trpsav   ~  ON BC Mode   IDLE 3FEP #          1 [
[                   3                                               3Precip     UNIT1 [
[                   3 Imax      ~ 183 Smode     ~kVmA               3Limits      0000 [
```

Steady State

SYRRT RUN 3 Steady State

Best Available Copy

```
[ Lems____ __  75 3 mAmax____ 850                      [0000000000000000[
  ______________ [ PVmax___   70 mAspks/m_  22 Onset____25.4 [0               0[
[ Next Screen..... [ uvtAC___  50 kVspks/m_  27 nkVhi____72.9 [0 PARAMETERS   0[
[ Last Screen..... [ uvtDC___  12 Arcs______   9 nkVlo____60.2 [0 AVC # TRA-1A 0[
[ Help............ [ uvDly___  30 Manual___ OFF okVhi____  .0 [0 Version   55 0[
[ Main Menu....... [              Scn Errs_0002 fkVlo____  .0 [0000000000000000[
[\\\\\\\\\\\\\\\\\\[\\\\\\\\\\\\\\13:03:22 04/03/96\\\\\\\\\\\\\\[[[[[[[[[[[[[[[[[[
 Messages:

 PERIODIC SCAN COMPLETE ON FRONT END # 2
F1-MNU  F2 HLP  F3-EMS  F4-AVC  F5-ALM  F6-AUX  F7-RAP  F8-VI  F9-NEXT  F10-LAST
```

Stop Run 3

```
13:28:08 04/03/96  HIGH HOPPER LEVEL ON # LV-A24 *** ALARM DETECTED ***

13:28:26 04/03/96  HIGH HOPPER LEVEL ON # LV-A24 *** ALARM RESET ***

13:28:29 04/03/96  HIGH HOPPER LEVEL ON # LV-A24 *** ALARM DETECTED ***

13:28:34 04/03/96  HIGH HOPPER LEVEL ON # LV-A24 *** ALARM RESET ***
```

SANDERS ENGINEERING & ANALYTICAL SERVICES, INC.

PARTICULATE EMISSIONS TEST REPORT
SOOT BLOWING OPERATIONS

FOR

GULF POWER COMPANY
Plant Crist, Unit 6
Pensacola, Florida

April 2, 1996

1568 LEROY STEVENS ROAD

MOBILE, ALABAMA 36695 • 205/633-4120

TEST REPORT CERTIFICATION

In regard to these tests, we certify that, to the best of our knowledge, all of the data regarding the testing performed by our agents is true and correct.

Date 4-9-96 Signature Edward L. Harris

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1. INTRODUCTION

Sanders Engineering & Analytical Services, Inc. (SEAS) performed particulate emissions testing during soot blowing operations at Gulf Power Company, Plant Crist, Unit 6, located in Pensacola, Florida. The testing was conducted on April 2, 1996. The testing was performed in accordance with the applicable U.S. EPA procedures specified at **40 CFR, Part 60, Appendix A, Methods 1, 2, 3, 4, and 17**.

The purpose of the test was to demonstrate compliance with the rules and regulations of the Florida Department of Environmental Protection, and to meet the necessary requirements contained in the permit to operate issued by the Florida Department of Environmental Protection.

The test was conducted by Mr. Edward Harris, Mr. Robert Gunn and Mr. Dean Holmes of Sanders Engineering & Analytical Services, Inc., and was coordinated with Mr. John McPherson of Gulf Power Company. The Florida Department of Environmental Protection was notified so their representative could be present to observe the testing.

The test was conducted in accordance with the guidelines of the Florida Department of Environmental Protection. Further discussion of the test methods are included later in the report.

2. SUMMARY AND DISCUSSION OF RESULTS

The results of the particulate emissions test for the soot blowing runs, along with the results of the computations, are summarized in Table I. The equations used in the calculations of the results, along with the completed field data sheets for the testing, are presented in Appendix A. The sample calculations of the first run are presented in Appendix B. The quality control checks of the equipment used in the sampling program are included in Appendix C.

The results of the testing indicate the particulate emission rate during soot blowing for Plant Crist, Unit 6, is 0.005 LBS/MMBTU. The applicable Florida Department of Environmental Protection rules and regulations require an emission rate of no greater than 0.30 LBS/MMBTU. The results of the testing indicate that the unit is in compliance with the particulate emission condition of the permit to operate issued by the Florida Department of Environmental Protection.

TABLE I. PARTICULATE EMISSIONS TEST RESULTS
GULF POWER COMPANY
PLANT CRIST, UNIT 6 - SOOT BLOWING
4/2/96

Title of Run		RUN 1	RUN 2	RUN 3
Sampling Time -Start	Military	10:49	12:25	14:08
Sampling Time -Stop	Military	11:53	13:29	14:11
F Factor	SDCF/MMBTU	9820	9820	9820
Plant Load	Megawatts	320.0	320.0	320.0
Static Pressure	In. H2O	-0.50	-0.50	-0.50
Barometric Pressure	In. Hg	30.20	30.20	30.20
Average dH	In. H20	1.383	1.539	1.270
Meter correction		1.038	1.038	1.038
Avg. Meter Temp.	Deg. F	64.3	71.3	77.4
% O2	%	6.3	6.9	6.9
%CO2	%	12.0	12.0	11.5
Volume Metered	ACF	37.715	39.685	36.500
Volume Water	Ml	73.0	68.5	75.0
Sampling Time	Minutes	60	60	60
Nozzle Diameter	Inches	0.206	0.208	0.199
Avg. Stack Temp.	Deg. F	344.4	347.9	347.5
Area of Stack	Sq. Feet	270.0000	270.0000	270.0000
Wt. of Part.	Mg.	6.0	9.1	5.2
Number of Points		30	30	30
Avg. Sqrt dP	In. H20	1.1251	1.1602	1.1427

RESULTS OF COMPUTATIONS

		RUN 1	RUN 2	RUN 3	Average
Volume of Gas Sampled	SDCF	39.911	41.460	37.671	
H2O vapor in Gas Stream	PERCENT	7.9	7.2	8.6	7.9
Avg. Stack Gas Velocity	FT/SEC	77.2	79.6	78.7	78.5
Volumetric Flow Rate	SDCFM	762,017	788,667	768,818	773,167
Volumetric Flow Rate	SWCFM	827,622	850,002	840,865	839,496
Volumetric Flow Rate	ACF/M	1,250,753	1,290,164	1,275,559	1,272,159
Particulate Conc.	Grs/SDCF	0.002	0.003	0.002	0.003
Particulate Conc.	Grs/ACF	0.001	0.002	0.001	0.002
Particulate Mass Rate	Lb/Hr	15.1	22.8	14.0	17.3
Particulate Mass Rate	Lb/MMBtu	0.005	0.007	0.004	0.005
Heat Input	MMBTU/Hr	3252.45	3227.87	3146.62	3208.98
Percent of Isokinetic	%	101.9	100.3	102.1	

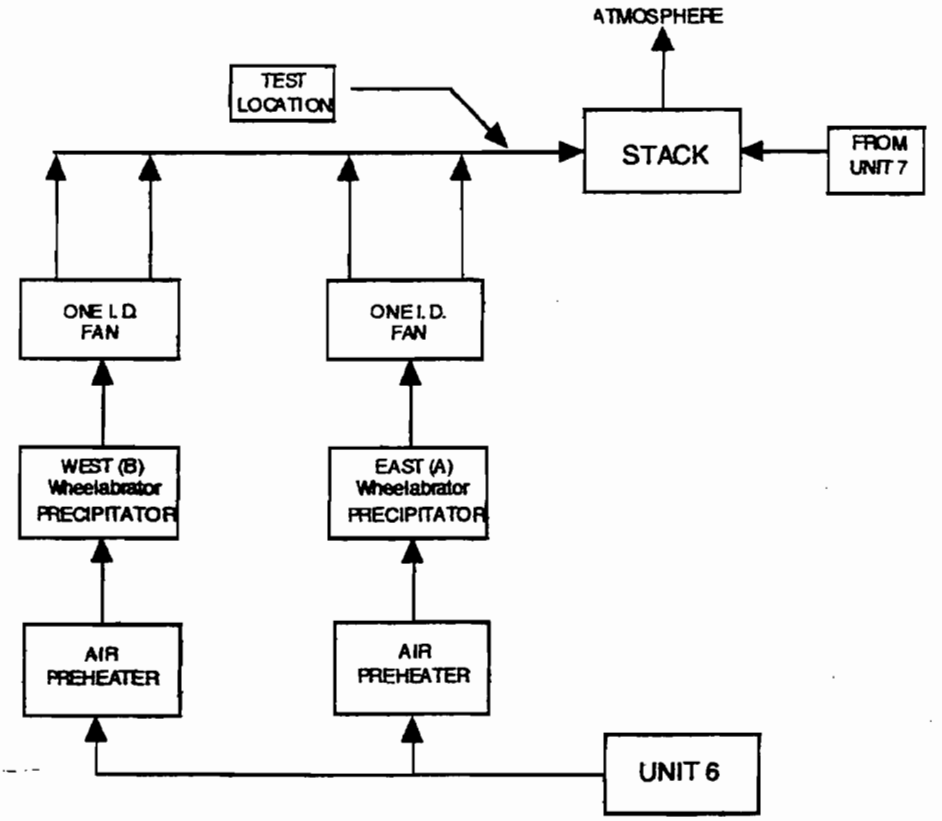
3. PROCESS DESCRIPTION

The process consists of a steam electric generating unit firing bituminous coal for the production of electric energy. The coal is received by barge, and loaded directly onto the conveyor feeding the plant, or onto the stockpile and later loaded onto the conveyor belt transporting the coal to the plant. The coal from the conveyor is loaded into bunkers capable of holding between 36 to 48 hours supply of coal. The coal is then fed to pulverizing mills before being fired in the unit through the burners. Upon combustion of the coal in the fire box, approximately 20 percent of the ash falls to the bottom of the boiler and is removed by the ash removal system. The remaining 80 percent exits with the flue gases through the heat exchange and economizer sections of the furnace, and is collected by electrostatic precipitators.

3.1. Source Air Flow

As shown in Figure 1, the flue gases exit the boiler and are separated into ducts A and B before entering air preheaters. They are then routed to a cold side ESP. The flue gases exiting the cold side ESP are exhausted through a stack into the atmosphere.

Figure 1. Air Flow Schematic



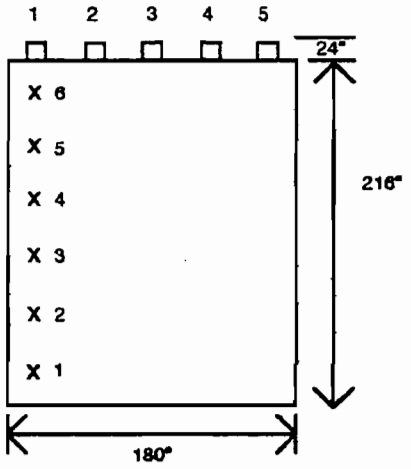
3.2. Operation During Testing

The average heat input during soot blowing operation, as based on F-factor calculations, was 3208.98 million BTU per hour resulting in the production of approximately 320 megawatts of electricity. Precipitator data supplied by Gulf Power personnel is given in Appendix D.

4. SAMPLE POINT LOCATION

The sample point locations and outlet duct schematic are presented in Figure 2. Method 1 was used for determination of the number and location of sampling points. The minimum number of points (25) required for rectangular stacks was met by sampling a total of 30 points.

Figure 2. Sample Point Locations

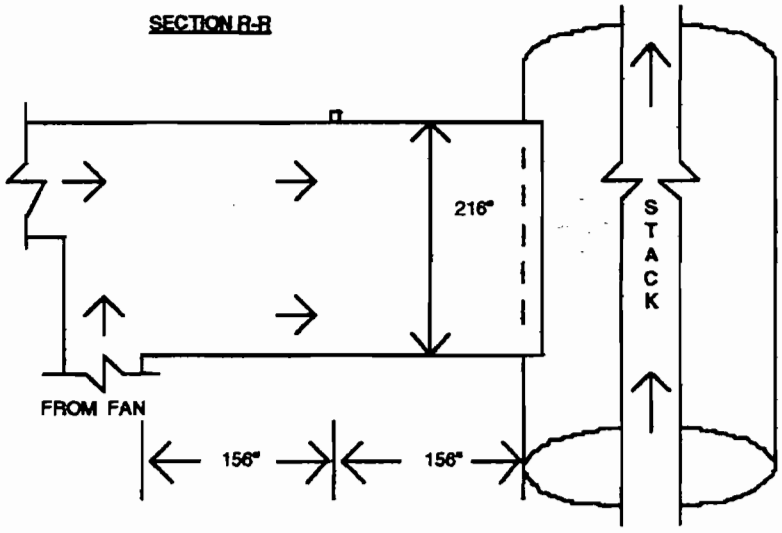


TRAVERSE POINTS

5 AXES
6 POINTS/AXIS
30 TOTAL POINTS

POINTS	DISTANCE FROM STACK WALL (inches)
1	198.0
2	162.0
3	126.0
4	90.0
5	54.0
6	18.0

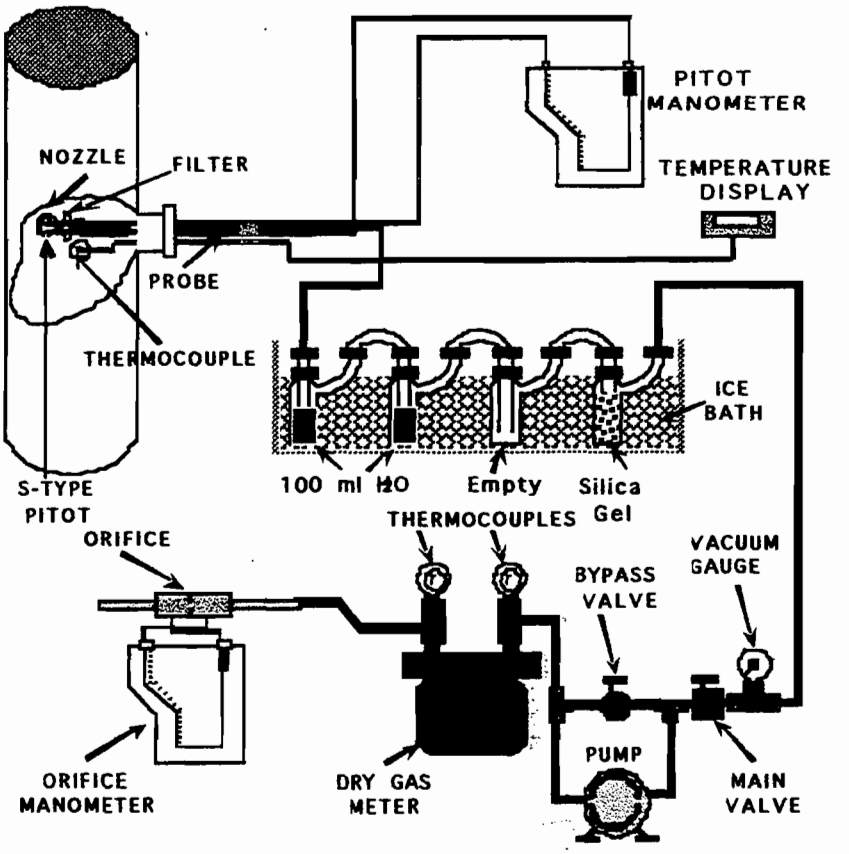
STACK AREA = 270.000 ft^2



5. PARTICULATE SAMPLING PROCEDURE (EPA Method 17)

The sampling procedure utilized is that specified in **40 CFR, Part 60, Appendix A, Method 17**, as modified by the governing regulatory agency. A brief description of this procedure is as follows:

Figure 3. Particulate Sampling Train



The first impingers were partially filled with 100 milliliters of deionized water. The next impinger was left empty to act as a moisture trap. Preweighed 6 to 16 mesh indication silica gel was added to the last impinger. The sampling equipment manufactured by Lear Siegler (Model 100) or Sanders Engineering (Model 200) was assembled as shown in the attached drawing. The system was leak checked by plugging the inlet to the nozzle and pulling a 15 inch mercury vacuum. A leakage rate not in excess of 0.02 cubic feet per minute was considered acceptable.

The inside dimensions of the stack liner were measured and recorded. The required number of sampling points were marked on the probe for easy visibility. The range of velocity pressure, the percent moisture, and the temperature of the effluent gases were determined. From this data, the correct nozzle size and the nomograph multiplication factor were determined.

Crushed ice was placed around the impingers. The nozzle was placed on the first traverse point with the tip pointing directly into the gas stream. The pump was started immediately and the flow was adjusted to isokinetic sampling conditions. After the required time interval had elapsed, the probe was repositioned to the next traverse point and isokinetic sampling was re-established. This was performed for each point until the run was completed. Readings were taken at each point and recorded on the field data sheet. At the conclusion of each run, the pump was turned off and the final readings were recorded.

5.1. Particulate Sample Recovery

Care was exercised in moving the collection train to the sample recovery area to minimize the loss of collected sample, or the gain of extraneous particulate matter. The volume of water in the impingers was measured, the silica gel impinger was weighed and recorded on the field data sheet. The nozzle, and all sample-exposed surfaces were washed with reagent grade acetone into a clean sample container. A brush was used to loosen any adhering particulate matter and subsequent washings were placed into the container. The filter was carefully removed from the fritted support and placed in a clean separate sample container. A sample of the acetone used in the washing was saved for a blank laboratory analysis.

5.2. Particulate Analytical Procedures

The filter and any loose particulate matter were transferred from the sample container to a clean, tared weighing dish. The filter was placed in a desiccator for at least 24 hours and then weighed to the nearest 0.1 milligram until a constant weight was obtained. The original weight of the filter was deducted, and the weight gain was recorded to the nearest 0.1 milligram.

The wash solution was transferred to a clean, tared beaker. The solution was evaporated to dryness, desiccated to a constant weight, and the weight gain was recorded to the nearest 0.1 milligram.

APPENDIX A EQUATIONS AND FIELD DATA SHEETS

EQUATIONS

1. $$P_s = P_{bar} + \frac{P_g}{13.6}$$

2. $$P_m = P_{bar} + \frac{\overline{\Delta H}}{13.6}$$

3. $$V_s = K_p C_p \overline{\sqrt{\Delta P}} \sqrt{\frac{\overline{T_s}}{M_s P_s}}$$

4. $$V_{m(Std)} = K_1 V_m Y \left[\frac{P_{bar} + \frac{\overline{\Delta H}}{13.6}}{\overline{T_m}} \right]$$

5. $$V_{w(Std)} = 0.04707\, V_{lc}$$

6. $$B_{ws} = \frac{V_{w(Std)}}{V_{m(Std)} + V_{w(Std)}}$$

7. $$M_d = 0.44\,(\%CO_2) + 0.32\,(\%O_2) + 0.28\,(\%N_2 + \%CO)$$

8. $$M_s = M_d(1 - B_{ws}) + 18\,(B_{ws})$$

9. $$EA = \left[\frac{(\%O_2 - 0.5\,(\%CO))}{0.264\,(\%N_2) - ((\%O_2) - 0.5\,(\%CO))} \right] 100$$

10. $$Q_a = (V_s)(A_s)(60)$$

11. $$Q_s = Q_a\,(1-B_{ws})\,\frac{(528)}{\overline{T_s}}\,\frac{(P_s)}{29.92}$$

12. $$E_H = \left(\frac{PMR}{H_I}\right)$$

13. $$E = C_d\,F_{O_2}\left(\frac{20.9}{20.9 - \%O_2}\right)$$

14. $$C_s = 0.0154\,\frac{M_n}{V_{m(Std)}}$$

15. $$C_{50} = \frac{21\,C_s}{21 - [(1.5)\,(\%O_2) - 0.133\,(N_2) - 0.75\,(\%CO)]}$$

16. $$C_{12} = \frac{C_s\,(12)}{\%CO_2}$$

17. $$PMR = (C_s)\,(Q_s)\,\frac{(60)}{7000}$$

18. $$V_n = \left[(0.002669)\,(V_{lc}) + \frac{V_m Y}{\overline{T_m}}\left(p_{bar} + \frac{\overline{\Delta H}}{13.6}\right)\right]\frac{\overline{T_s}}{P_s}$$

19. $$I = \frac{100\,V_n}{(60)\,\emptyset\,V_s\,A_n}$$

NOMENCLATURE

A_n = Cross-sectional area of nozzel, ft^2

A_s = Cross sectional area of stack, ft^2

B_{ws} = Wator vapor in the gas stream, proportion by volume (dimensionless)

C_p = Pitot tube coefficient (dimensionless) (0.84)

C_s = Particulate concentration, grains/SDCF

C_d = Particulate concentration, lbs/SDCF

C_{12} = Particulate concentration (C_s adjusted to 12% CO) grains/SDCF

C_{50} = Particulate concentration (C_s adjusted to 50% excess air) grains/SDCF

EA = Excess air, %

E = Emission in lb/mmBTU

E_H = Emission in lb/mmBTU, based on heat input

H_I = Total Heat Input, Million BTU per Hour (MMBTU/hr)

I = Percent of isokinetic sampling

K_1 = 17.64 °R/ inches Hg

K_p = Pitot tube constant,

$$85.49 \text{ ft/sec} \left[\frac{(\text{lb/lb-mole})(\text{in. Hg})}{(^\circ\text{R})(\text{inc. } H_2O)} \right]^{\frac{1}{2}}$$

M_n = Total amount of particulate collected, mg

M_d = Molecular weight of stack gas; dry basis, lb/lb mole

M_s = Molecular weight of stack gas; wet basis, lb/lb mole

P_{bar} = Barometric pressure at the sampling site, in. Hg

NOMENCLATURE (continued)

P_m = Meter pressure, in. Hg

P_s = Absolute stack pressure, in. Hg

P_g = Stack static pressure, in. H_2O

PMR = Particulate mass rate, lb/Hr

Q_a = Volumetric flow rate ACFM

Q_s = Volumetric flow rate SDCFM

V_s = Average stack gas velocity, ft/sec

V_{lc} = Total volume of liquid collected in impingers & silica gel, ml

V_m = Volume of gas sample as measured by dry gas meter, ACF

$V_{m(std)}$ = Volume of gas sample measured by dry gas meter, corrected to standard conditions, SDCF

$V_{w(std)}$ = Volume of water vapor in gas sample, corrected to standard conditions, SCF

V_n = Volume collected at stack conditions through nozzle, ACF

Y = Dry gas meter calibration factor (dimensionless)

ΔH = Average pressure difference of orifice, in. H_2O

ΔP = Velocity head of stack gas, in. H_2O

$\overline{\sqrt{\Delta P}}$ = Average of square roots of the velocity pressure, in. H_2O

Ø = Total sampling time, minutes

$\%CO_2$, $\%O_2$, N_2, %CO - Number % by volume, dry basis, from gas analysis

F_{O_2} = Oxygen based F factor (9820 SDCF/mmBTU for bituminous coal)

T_s = Temperature of the stack, °R (° F + 460)

SANDERS ENGINEERING & ANALYTICAL SERVICES, Inc.
1568 Leroy Stevens Rd.
Mobile, AL 36695
Office: (205) 633-4120
FAX#: (205) 633-2285

AREA = 270 ft²

FIELD DATA SHEET

COMPANY GPCO DATE 4-2-96 DGM# S-101

PLANT Crist OPERATOR ERM ΔHa 0.74 cu. ft./min.

UNIT #6 SOOT BLOW METHOD 17 PROBE N/A liner 21' length

	RUN 1	RUN 2	RUN 3
NOZZLE CALIBRATION PRE	.206 .206 .206 .206	.209 .208 .208 .208	.199 .199 .199 .199
NOZZLE CALIBRATION POST	.206 .206 .206 .206	.208 .209 .208 .208	.199 .199 .199 .199
AVERAGE	.206 .206	.208 .208	.199 .199
FILTER NUMBER	1337	1338	1339
METER READING FINAL	473.065	514.585	553.500
METER READING INITIAL	432.500 435.350	474.900	517.000
METER READING NET	37.715	39.685	36.500
LEAK CHECK SYSTEM Pre	20 in. Hg	15 in. Hg	15 in. Hg
LEAK CHECK SYSTEM Post	15 in. Hg	20 in. Hg	10. in. Hg
LEAK CHECK PITOT Pre	impact / static	impact / static	impact / static
LEAK CHECK PITOT Post	impact / static	impact / static	impact / static
LEAK CHECK SYSTEM Pre	0.010 cm	0.005 cm	0.000 cm
LEAK CHECK SYSTEM Post	0.005 cm	0.005 cm	0.000 cm
VOLUME OF LIQUID WATER COLLECTED IMP. 1 FINAL	166	160	166
VOLUME OF LIQUID WATER COLLECTED IMP. 2 FINAL	100	100	100
VOLUME OF LIQUID WATER COLLECTED IMP. 3 FINAL	0	0	[illegible]
VOLUME OF LIQUID WATER COLLECTED IMP. 4 FINAL	1482.0	1460.0	1491.0
VOLUME OF LIQUID WATER COLLECTED IMP. 1 INITIAL	100	100	100
VOLUME OF LIQUID WATER COLLECTED IMP. 2 INITIAL	100	100	100
VOLUME OF LIQUID WATER COLLECTED IMP. 3 INITIAL	0	0	0
VOLUME OF LIQUID WATER COLLECTED IMP. 4 INITIAL	1475.0	1451.5	1482.0
VOLUME OF LIQUID WATER COLLECTED IMP. 1 NET	66	60	66
VOLUME OF LIQUID WATER COLLECTED IMP. 2 NET	0	0	0
VOLUME OF LIQUID WATER COLLECTED IMP. 3 NET	0	0	0
VOLUME OF LIQUID WATER COLLECTED IMP. 4 NET	7.0	8.5	9.0
TOTAL	73.0	68.5	75.0
GAS ANALYSIS O_2	6.3 %	6.9 %	6.9 %
GAS ANALYSIS CO_2	12.0 %	12.0 %	11.5 %
GAS ANALYSIS CO	-	-	-
STATIC	-0.50 in. H2O	-0.50 in. H2O	-0.50 in. H2O
BAROMETRIC	30.20 in. Hg	30.20 in. Hg	30.20 in. Hg

Port # / Point #	Time	Gas Meter Vol. (cu. ft.)	Vel. Head ΔP in. H_2O	Orifice Head ΔH in. H_2O	Temperature (F) Stack	Probe	Hot Box	Imp.	Gas Meter In	Gas Meter Out	Vac. in. H_g
1-1	10:49	435.3500	1.20	1.28	337	N/A	N/A	49	61	61	2
2	:51	436.650	1.50	1.62	345			✓	60	61	3
3	:53	437.900	1.20	1.30	342			✓	61	61	3
4	:55	439.200	1.25	1.35	339			✓	61	61	3
5	:57	440.400	1.30	1.40	340			✓	61	61	3
6	:59	441.700	2.10	2.27	341			✓	61	61	5
2-1	11:02	443.270	1.0	1.08	346			✓	62	61	2
2	:04	444.300	1.30	1.40	347			53	62	62	2.5
3	:06	445.600	1.25	1.35	346			✓	63	62	2.5
4	:08	446.800	1.47	1.59	341			✓	63	62	3
5	:10	448.200	1.30	1.40	341			✓	63	62	3
6	:12	449.500	1.70	1.84	342			✓	63	63	3.5
3-1	11:15	450.965	1.25	1.35	347			✓	64	64	2.5
2	:17	452.200	1.15	1.25	348			55	64	64	2.5
3	:19	453.400	1.20	1.30	347			✓	65	64	2.5
4	:21	454.600	1.15	1.25	345			✓	65	65	3
5	:23	455.900	.95	1.03	344			✓	65	65	2
6	:25	456.900	.84	.91	343			✓	65	65	2
4-1	11:28	458.000	1.10	1.19	348			✓	65	65	2
2	:30	459.000	1.15	1.25	350			✓	65	65	2.5
3	:32	460.400	1.15	1.25	349			✓	67	66	2.5
4	:34	461.500	1.20	1.30	343			57	67	66	3
5	:36	462.800	1.20	1.30	343			✓	67	67	3
6	:38	463.950	1.10	1.19	344			✓	67	67	3
5-1	11:41	465.171	1.40	1.52	346			✓	68	67	3
2	:43	466.500	1.20	1.30	349			✓	68	67	3
3	:45	467.650	1.25	1.35	348			✓	68	67	3
4	:47	469.000	1.15	1.26	344			✓	68	67	3
5	:49	470.200	1.45	1.59	343			✓	68	67	3
6	:51	471.500	1.85	2.03	345			✓	68	67	5
Final	11:53	473.065									

Check Indicates Temperatures Meet Required Limits.

Company GPCO Date 4-2-96

Site Crist #6 Run # 1 Page 2 Of 4

Port # / Point #	Time	Gas Meter Vol. (cu. ft.)	Vel. Head ΔP in. H_2O	Orifice Head ΔH in. H_2O	Temperature (F) Stack	Probe	Hot Box	Imp.	Gas Meter In	Gas Meter Out	Vac. in. H_g
S-1	12:25	474.900	1.45	1.64	350	N/A	N/A	53	68	68	5
2	:27	476.300	1.20	1.36	352			✓	68	68	4
3	:29	477.500	1.24	1.40	352			✓	69	69	4
4	:31	478.900	1.10	1.24	348			✓	69	68	4
5	:33	480.100	1.25	1.41	349			✓	69	69	4
6	:35	481.400	1.80	2.04	350			53	69	69	5
4-1	12:38	482.895	1.05	1.19	352			✓	69	69	3
2	:40	484.200	1.30	1.47	352			✓	70	69	4
3	:42	485.350	1.25	1.41	352			✓	70	70	4
4	:44	486.600	1.25	1.41	347			✓	71	70	4
5	:46	488.100	1.15	1.30	347			✓	71	70	4
6	:48	489.200	1.20	1.36	347			✓	71	70	4
3-1	12:51	490.380	1.35	1.53	350			✓	72	71	4
2	:53	491.700	1.25	1.41	350			✓	71	71	4
3	:55	493.000	1.25	1.41	349			✓	71	71	4
4	:57	494.300	1.35	1.53	347			✓	72	71	5
5	:59	495.600	.95	1.07	347			55	72	71	4
6	13:01	496.700	1.20	1.36	346			✓	72	72	4
2-1	:04	497.960	1.35	1.53	348			✓	72	72	5
2	:06	499.200	1.20	1.36	350			✓	73	72	4
3	:08	500.500	1.50	1.70	349			✓	73	73	5
4	:10	501.900	1.70	1.93	345			✓	73	73	5.5
5	:12	503.400	1.25	1.41	346			✓	74	73	5
6	:14	504.700	1.65	1.87	346			✓	74	73	5
1-1	13:17	506.180	1.29	1.46	343			57	74	73	3
2	:19	507.300	1.80	2.04	348			✓	74	73	6
3	:21	508.800	1.70	1.93	348			✓	74	73	6
4	:23	510.350	1.42	1.61	343			✓	74	73	5.5
5	:25	511.700	1.05	1.20	342			✓	74	73	4
6	:27	512.900	2.25	2.58	343			✓	74	73	6
Final	13:29	514.585									

K=1.148

Check Indicates Temperatures Meet Required Limits.

Company GPCO 850,002 Date 4-2-96

Site Crist #6 Run # 2 Page 3 Of 4

K=.962

Port # / Point #	Time	Gas Meter Vol. (cu. ft.)	Vel. Head ΔP in. H_2O	Orifice Head ΔH in. H_2O	Temperature (F) Stack	Probe	Hot Box	Imp.	Gas Meter In	Gas Meter Out	Vac. in. H_g
1- 1	14:08	517.000	1.20	1.15	339	N/A	N/A	50	74	74	4
2	:10	518.200	2.0	1.92	349			✓	74	74	6
3	:12	519.500	1.65	1.58	350			✓	74	74	5
4	:14	521.000	1.40	1.34	346			✓	75	75	5
5	:16	522.400	1.35	1.29	345			✓	75	75	4
6	:18	523.500	2.20	2.11	346			✓	76	76	6
2- 1	14:20	525.035	1.25	1.20	350			51	76	76	3
2	:22	526.300	1.25	1.20	352			✓	76	76	3
3	:24	527.400	1.50	1.44	350			✓	77	76	4.5
4	:26	528.700	1.40	1.35	346			✓	77	76	4.5
5	:28	530.000	1.25	1.20	345			✓	77	76	4
6	:30	531.100	1.50	1.44	345			✓	77	77	4.5
3 - 1	14:33	532.370	1.30	1.25	349			✓	77	77	4
2	:35	533.550	1.05	1.01	350			55	77	77	4
3	:37	534.700	1.35	1.30	349			✓	78	77	4
4	:39	535.800	1.30	1.25	345			✓	78	77	4
5	:41	537.100	.85	.82	345			✓	78	77	4
6	:43	538.100	1.10	1.06	345			✓	78	78	4
4- 1	14:46	539.245	1.0	.96	350			✓	79	78	4
2	:48	540.400	1.20	1.15	351			✓	79	79	4
3	:50	541.500	1.10	1.06	352			✓	79	79	4
4	:52	542.600	1.35	1.30	347			✓	79	79	5
5	:54	543.900	1.20	1.15	346			✓	80	79	5
6	:56	545.200	.70	.67	347			59	80	79	3
5 - 1	14:59	546.063	1.40	1.35	350			✓	80	80	4
2	:01	547.200	1.25	1.20	351			✓	80	79	4
3	:03	548.400	1.27	1.22	350			✓	80	79	4
4	:05	549.750	1.15	1.11	345			✓	80	79	4
5	:07	550.850	1.25	1.20	344			✓	80	79	4
6	:09	551.950	1.90	1.83	345			✓	80	79	5
Final	14:11	553.500									

Check Indicates Temperatures Meet Required Limits.

Company GPCO Date 4-2-96

Site Crist #6 Run # 3 Page 4 Of 4

LABORATORY ANALYSIS & CHAIN OF CUSTODY

COMPANY/PLANT: Gulf Power Co., Plant Crist

UNIT #: 6 DATE OF TEST: 4/2-3/96 TYPE OF TEST: ☐ M-5 ☒ M-17 ☐ OTHER ____

SAMPLE #	RELINQUISHED BY	RECEIVED BY	TIME	DATE	REASON FOR CHANGE
1337	EPH	JW	9:40	4/2/96	Analysis
1338					
1339					

UNIT # 6 (Soot Blowing)

RUN # 1	FILTER # 1337	BEAKER # 20 WASH (ML) 35
FINAL WEIGHT	125.2	64143.4
INITIAL WEIGHT	120.6	64142.0
DIFFERENCE	4.6	1.4
CORRECTED TOTAL WEIGHT		6.0
RUN # 2	FILTER # 1338	BEAKER # 24 WASH (ML) 39
FINAL WEIGHT	130.5	68128.5
INITIAL WEIGHT	123.7	68126.2
DIFFERENCE	6.8	2.3
CORRECTED TOTAL WEIGHT		9.1
RUN # 3	FILTER # 1339	BEAKER # 30 WASH (ML) 46
FINAL WEIGHT	126.9	67078.5
INITIAL WEIGHT	122.0	67078.2
DIFFERENCE	4.9	0.3
CORRECTED TOTAL WEIGHT		5.2
RUN # ____	FILTER # ____ N/A	BEAKER # ____ WASH (ML) ____
FINAL WEIGHT		
INITIAL WEIGHT		
DIFFERENCE		
CORRECTED TOTAL WEIGHT		

UNIT # ____

RUN # ____	FILTER # ____	BEAKER # ____ WASH (ML) ____
FINAL WEIGHT		
INITIAL WEIGHT		
DIFFERENCE		
CORRECTED TOTAL WEIGHT		
RUN # ____	FILTER # ____	BEAKER # ____ WASH (ML) ____
FINAL WEIGHT		
INITIAL WEIGHT		
DIFFERENCE		
CORRECTED TOTAL WEIGHT		
RUN # ____	FILTER # ____	BEAKER # ____ WASH (ML) ____
FINAL WEIGHT		
INITIAL WEIGHT		
DIFFERENCE		
CORRECTED TOTAL WEIGHT		
WASH SOLVENT BLANK (ML) ____		BEAKER # ____ WASH (ML) ____
FINAL WEIGHT		
INITIAL WEIGHT		
DIFFERENCE		
CORRECTION FACTOR (MG/ML)		

ALL WEIGHTS ARE IN MILLIGRAMS (MG)

APPENDIX B SAMPLE CALCULATIONS

Input and Constants

$$f := \frac{9820\ ft^3}{mm\ btu}$$

$pg := -(0.5\ in.\ H2O)$

$pbar := 30.2\ in.\ Hg.$

$\Delta havg := 1.383\ in.\ H2O$

$y := 1.038$

$tm := 64.3\ °F$

$o2 := 6.3$

$co2 := 12.$

$vm := 37.715\ ft^3$

$vlc := 73.\ ml$

$theta := 60\ min$

$nozdia := 0.206\ in.$

$ts := 344.4\ °F$

$as := 270.\ ft^2$

$mn := 6.\ mg$

$numberofpoints := 30$

$$sqrt\Delta p := 1.1251\ (in.\ H2O)^{0.5}$$

$$kp := \frac{85.49\ 1\ ft\ 1\ \left(\frac{lb\ in.\ Hg.}{lb\text{-}mole\ °R\ in.\ H2O}\right)^{0.5}}{1\ sec}$$

$cp := 0.84$

$$k1 := \frac{17.64\ °R}{in.\ Hg.}$$

$$ts = \frac{(ts + 460\ °F)\ °R}{°F}$$

804.4 °R

$$tm = \frac{(tm + 460\ °F)\ °R}{°F}$$

524.3 °R

$$n2 = 100 - o2 - co2$$

81.7

$$an = \frac{nozdia^2\ 3.1416}{4\left(\frac{12\ in.}{ft}\right)^2}$$

0.000231453 ft^2

Calculations

Equation 1

$$ps = pbar + \frac{pg}{\frac{13.6 \text{ in. } H2O}{1 \text{ in. Hg.}}}$$

30.1632 in. Hg.

Equation 2

$$pm = pbar + \frac{\Delta havg}{\frac{13.6 \text{ in. } H2O}{\text{in. Hg.}}}$$

30.3017 in. Hg.

Equation 3

$$vmstd = \frac{k1 \; vm \; y \; (pbar + \frac{\Delta havg}{\frac{13.6 \text{ in. } H2O}{\text{in. Hg.}}})}{tm}$$

39.9114 ft^3

Equation 4

$$vwstd = \frac{0.04707 \; ft^3 \; vlc}{ml}$$

3.43611 ft^3

Equation 5

$$bws = \frac{vwstd}{vmstd + vwstd}$$

0.0792689

Equation 6

$$md = \frac{(0.44\ co2 + 0.32\ o2 + 0.28\ n2)\ lb}{lb\text{–}mole}$$

$$\frac{30.172\ lb}{lb\text{–}mole}$$

Equation 7

$$ms = md\ (1 - bws) + \frac{bws\ 18\ lb}{lb\text{–}mole}$$

$$\frac{29.2071\ lb}{lb\text{–}mole}$$

Equation 8

$$vs = kp\ cp\ sqrtAp\ \left(\frac{ts}{ms\ ps}\right)^{0.5}$$

$$\frac{77.2037\ ft}{sec}$$

Equation 9

$$qa = \frac{vs\ as\ 60\ sec}{min}$$

$$\frac{1.2507\ 10^{6}\ ft^{3}}{min}$$

Equation 10

$$qs = \frac{qa\ (1 - bws)\ 528\ °R\ ps}{ts\ 29.92\ in.\ Hg.}$$

$$\frac{762016.\ ft^{3}}{min}$$

Equation 11

$$cs = \frac{0.0154\ gr\ mn}{mg\ vmstd}$$

$$\frac{0.00231513\ gr}{\frac{3}{ft}}$$

Equation 12

$$pmr = \frac{cs\ qs\ 60\ min}{hour\ \frac{7000\ gr}{lb}}$$

$$\frac{15.1214\ lb}{hour}$$

Equation 13

$$e = \frac{cs\ f\ 20.9\ 1\ lb}{(20.9 - o2)\ 7000\ gr}$$

$$\frac{0.00464924\ lb}{mm\ btu}$$

Equation 14

$$vn = \frac{ts\left(\frac{0.002669\ in.\ Hg.\ ft^3}{ml\ °R}\ vlc + \frac{vm\ y\ pm}{tm}\right)}{ps}$$

$$65.5342\ ft^3$$

Equation 15

$$i = \frac{100\ \%\ vn}{60\ sec\ theta\ vs\ an} \quad \text{min}$$

101.874 %

Equation 16

$$hi = \frac{pmr}{e}$$

$$3252.45\ \frac{mm\ btu}{hour}$$

APPENDIX C QUALITY CONTROL

INITIAL
METER CALIBRATION FORM - DGM

DATE: 12-05-95 Box No. S-101

Ref. DGM Ser. # 1044453 Calibrated By EDWARD HARRIS

RUN #	1	2	3	4	5
DELTA H (DGM)	0.50	1.00	1.50	2.00	3.00
Y (Ref. DGM)	1.014	1.014	1.014	1.014	1.014
Reference DGM					
Gas Vol. Initial	19.500	25.177	31.500	38.100	45.000
Gas Vol. Final	25.177	31.500	38.100	45.000	51.466
Meter Box DGM					
Gas Vol. Initial	24.400	30.000	36.261	42.805	49.615
Gas Vol. Final	30.000	36.261	42.805	49.615	56.004
Reference DGM Temp.	Avg.	Avg.	Avg.	Avg.	Avg.
Deg F Initial	66	67	67	67	67
Deg F Final	67	67	67	67	67
Meter Box DGM					
Temp. Initial In	66	67	68	69	69
Temp. Initial Out	66	67	68	69	69
Temp. Final In	66	67	69	69	69
Temp. Final Out	66	67	69	69	69
P Bar IN. Hg	30.08	30.08	30.08	30.08	30.08
Time (sec.)	873	688	582	525	404
Meter Calibration Factor (Y)	1.026	1.022	1.022	1.026	1.023
Qm (C.F.M.)	0.399	0.563	0.695	0.806	0.981
Km (Std Pressure)	0.727	0.726	0.730	0.733	0.730
DELTA Ha	1.77	1.78	1.75	1.73	1.75

Average Y (Meter Calibration Factor	1.024
Average Km (Standard Pressure)	0.729
Average DELTA Ha of Orifice	1.755

Y= ≤ .03
Max & Min ≤ .02 from Avg
Final Avg within 5% of Initial Avg
ΔHa = Max & Min ≤ .2 from Avg

POST TEST QUALITY ASSURANCE

Date: 4/5/96 BOX #: S-101

Ref. Meter: 1044453 Calibrated By: EDWARD HARRIS

DRY GAS METER

	Unit	Run 1	Run 2	Run 3
FIELD METER ΔH	In. H_2O	1.50	1.50	1.50
Initial Gas Volume	$Ft.^3$	952.600	958.500	964.090
Final Gas Volume	$Ft.^3$	958.500	964.090	969.783
Initial Temp. In	°F	61	61	61
Initial Temp. Out	°F	61	60	61
Final Temp. In	°F	62	61	61
Final Temp. Out	°F	60	61	61
REF. METER Y	*Dimensionless*	1.014	1.014	1.014
Initial Gas Volume	$Ft.^3$	582.700	589.006	595.000
Final Gas Volume	$Ft.^3$	589.006	595.000	601.000
Initial Temp.	°F	58	58	58
Final Temp.	°F	58	58	58
Barometric Pressure	In. Hg	30.02	30.02	30.02
Time	sec	513	494	496
Meter Calibration Factor	*Dimensionless*	1.086	1.089	1.071
$\Delta H_@$	In. H_2O	1.460	1.498	1.506
Average Y	*Dimensionless*	1.082		
Initial Y	*Dimensionless*	1.038		
Percent Error	%	4.2	*(Allowed 5.0%)*	

DIFFERENTIAL PRESSURE GAUGE

Ref. Pressure In H_2O	Magnehelic Pressure In H_2O	Percent Error (+/- 5%)
0.5	0.5	0
1.0	1.0	0
1.5	1.5	0

TEMPERATURE SENSOR

Ref. Temp. (°F)	Thermocouple Temp.	Percent Error (Allowed 1.5% of Absolute)
310	310	0

ARENOID BAROMETER

Reference Barometer	Test Barometer	0.1 Diff. Allowed
30.02	30.02	0

POST TEST QUALITY ASSURANCE

Date: 4/5/96 BOX #: **S-101**

Ref. Meter: 1044453 Calibrated By: **EDWARD HARRIS**

DRY GAS METER

	Unit	Run 1	Run 2	Run 3
FIELD METER ΔH	In. H_2O	1.50	1.50	1.50
Initial Gas Volume	$Ft.^3$	952.600	958.500	964.090
Final Gas Volume	$Ft.^3$	958.500	964.090	969.783
Initial Temp. In	°F	61	61	61
Initial Temp. Out	°F	61	60	61
Final Temp. In	°F	62	61	61
Final Temp. Out	°F	60	61	61
REF. METER Y	*Dimensionless*	1.014	1.014	1.014
Initial Gas Volume	$Ft.^3$	582.700	589.006	595.000
Final Gas Volume	$Ft.^3$	589.006	595.000	601.000
Initial Temp.	°F	58	58	58
Final Temp.	°F	58	58	58
Barometric Pressure	In. Hg	30.02	30.02	30.02
Time	sec	513	494	496
Meter Calibration Factor	*Dimensionless*	1.086	1.089	1.071
$\Delta H_@$	In. H_2O	1.460	1.498	1.506
Average Y	*Dimensionless*	1.082		
Initial Y	*Dimensionless*	1.038		
Percent Error	%	4.2	*(Allowed 5.0%)*	

DIFFERENTIAL PRESSURE GAUGE

Ref. Pressure In H_2O	Magnehellc Pressure In H_2O	Percent Error (+/- 5%)
0.5	0.5	0
1.0	1.0	0
1.5	1.5	0

TEMPERATURE SENSOR

Ref. Temp. (°F)	Thermocouple Temp.	Percent Error (Allowed 1.5% of Absolute)
310	310	0

ARENOID BAROMETER

Reference Barometer	Test Barometer	0.1 Diff. Allowed
30.02	30.02	0

MAGEHELIC CALIBRATION

BOX	2879	S-100	C-133	C-175	S-102	S-101	S-103
SER. NO.		91126AM 91	9126A M91	R90125 MR6	R74D	R22D	R20208 A617
RANGE	0-2	0-2	0-2	0-2	0-5	0-2	0-2
REFERENCE READING		FIELD DEVICE READING					
0.000		0.00	0.00	0.00	0.00	0.00	0.00
0.050							
0.150							
0.200							
0.250							
0.450							
0.50	0.50	0.51	0.50	0.51	0.51	0.50	0.50
1.00	0.99	1.01	0.98	1.01	1.01	0.98	1.01
1.30							
1.80	1.80	1.82	1.79	1.82	1.81	1.79	1.82
2.50							
4.50							
5.0							
9.0							
13.0							
22.0							

SIGNATURE: Edward F. Harris

DATE: 12-5-95

MAGEHELIC CALIBRATION
BOX #1

SER. NO.	10720-A868	R1061-6AG48	R5031-SEB76	R1062-9JA82	R1051-3MR42	R90124 RI119
RANGE	0-0.25	0-0.50	0-2	0-5	0-10	0-25
REFERENCE READING	FIELD DEVICE READING					
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.050	0.050					
0.150	0.150	0.140				
0.200	0.190					
0.250		0.250				
0.450		0.450				
0.50			0.50			
1.00			1.00			
1.30				1.30		
1.80			1.80			
2.50				2.50	2.48	
4.50				4.50		
5.0					5.0	5.0
9.0					9.02	
13.0						13.0
22.0						22.0

SIGNATURE: Edward L. Harris

DATE: 12/22/95

MAGEHELIC CALIBRATION
BOX #2

SER. NO.	10819-DR2	R1090-2AG18	R50315-EB93	R1062-9TA87	30830-AM79	R1072-2MC5
RANGE	0-0.25	0-0.50	0-2	0-5	0-10	0-25
REFERENCE READING	FIELD DEVICE READING					
0.000	0.000	0.000	0.00	0.00	0.0	0.0
0.050	0.050					
0.150	0.155	0.152				
0.200	0.205					
0.250		0.256				
0.450		0.456				
0.50			0.52			
1.00			1.04			
1.30				1.32		
1.80			1.83			
2.50				2.55	2.49	
4.50				4.50		
5.0					4.9	5.2
9.0					8.8	
13.0						12.9
22.0						22.0

SIGNATURE: Edward L Harris

DATE: 12/22/95

MAGEHELIC CALIBRATION
BOX #3

SER. NO.	R10908AG71 MRR1	R0112642	R10608CF20 CF20
RANGE	0-0.50	0-2.0	0-10
REFERENCE READING	FIELD DEVICE READING		
0.000	0.00	0.00	0.0
0.050			
0.150	0.149		
0.200			
0.250	0.240		
0.450	0.450		
0.50		0.50	
1.00		0.98	
1.50			
1.80		1.78	
2.50			2.5
4.50			
5.0			5.0
9.0			9.0
13.0			
22.0			

SIGNATURE: Edward L. Harris

DATE: 12/22/95

MAGEHELIC CALIBRATION
BOX #4

SER. NO.	R22D	R90051 6GT21	R90101 5CD102
RANGE	0-0.50	0-5	0-25
REFERENCE READING	FIELD DEVICE READING		
0.000	0.000	0.00	0.0
0.050			
0.150	0.151		
0.200			
0.250	0.251		
0.450	0.455		
0.50			
1.00			
1.30		1.27	
1.80			
2.50		2.52	
4.50		4.55	
5.0			5.0
9.0			
13.0			13.0
22.0			21.6

SIGNATURE: Edward L. Harris

DATE: 12/22/95

TEMPERATURE CALIBRATIONS - DEGREES FAHRENHEIT

REFERENCE DEVICE READING*	0 DEG. F	210 DEG.	420 DEG.	630 DEG.	840 DEG.	1050 DEG.	1260 DEG.	1470 DEG.	1680 DEG.	1900 DEG.
2879	0	217	421	630	839	1050	1260	1471	1681	1900
METER BOX #1 C-133 11580	0	212	423	635	842	1053	1264	1475	1679	1910
METER BOX #2 C-175 15962	0	211	423	627	839	1052	1265	1475	1687	1903
METER BOX #5 S-100 15751	2	211	417	628	844	1062	1279	1491	1698	1907
METER BOX #6 S-101 15751	0	210	419	628	839	1058	1255	1473	1691	1900
PORTABLE THERMOCOUPLE # 2 (Blue)	2	209	415	628	837	1053	1260	1468	1679	1908
PORTABLE THERMOCOUPLE # 2 (Green)	2	211	417	627	842	1058	1273	1484	1688	1896
PINK T140293	-1	208	415	624	840	1056	1272	1482	1687	1894
PORTABLE THERMOCOUPLE (Yellow)	0	210	419	632	840	1050	1259	1470	1680	1901
PORTABLE THERMOCOUPLE T-105998 (Black)	1	209	416	625	839	1055	1270	1481	1684	1891
METER BOX S-102	-2	209	417	625	837	1049	1259	1462	1658	1890
METER BOX S-103	4	215	423	632	844	1057	1266	1471	1667	1895

DATE: 12-05-95 **SIGNATURE:** Edward L. Harris

* Reference Device is an Omega Engineering CL505-A calibrated reference thermocouple-potentiometer system.

SANDERS ENGINEERING & ANALYTICAL SERVICES, Inc.

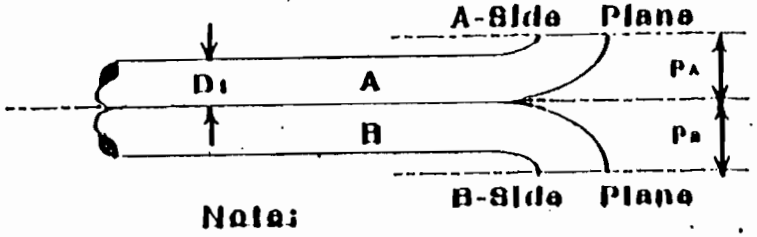
1568 Leroy Stevens Rd.
Mobile, AL 36606

Office: (205) 633-4120
FAX#: (205) 633-8206

The Pitot used was within the following geometric specifications:

D_t between 0.48 and 0.95 cm (3/16 and 3/8 in.)

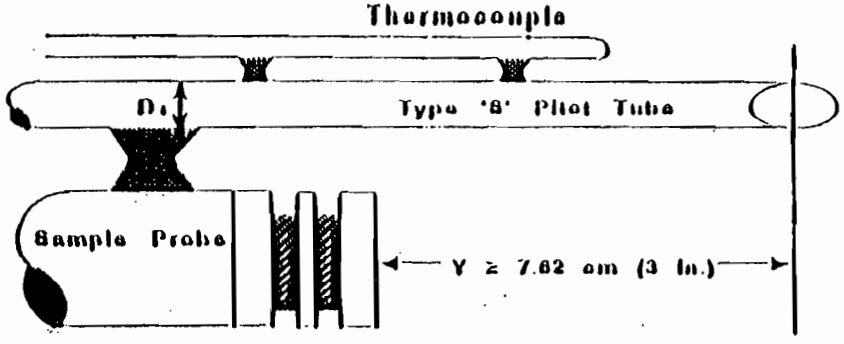
C_p = 0.84



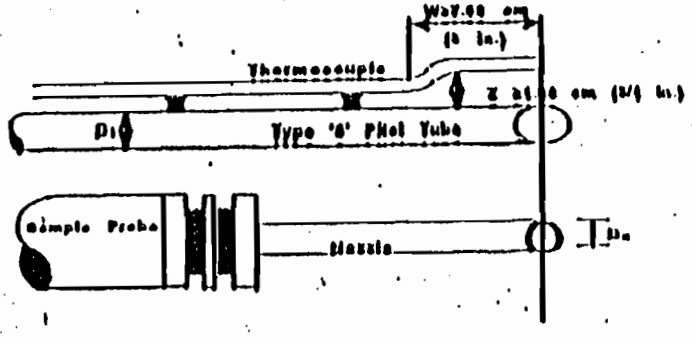
Note:

$1.05\ D_t \leq 1.50\ D_t$

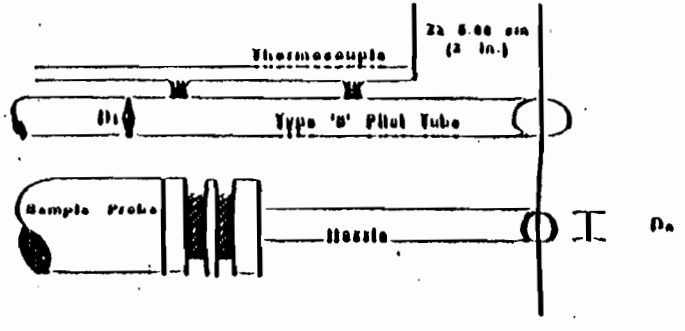
$P_A = P_B$



Minimum pitot-sample probe separation needed to prevent interference



OR



Proper thermocouple placement to prevent interference.

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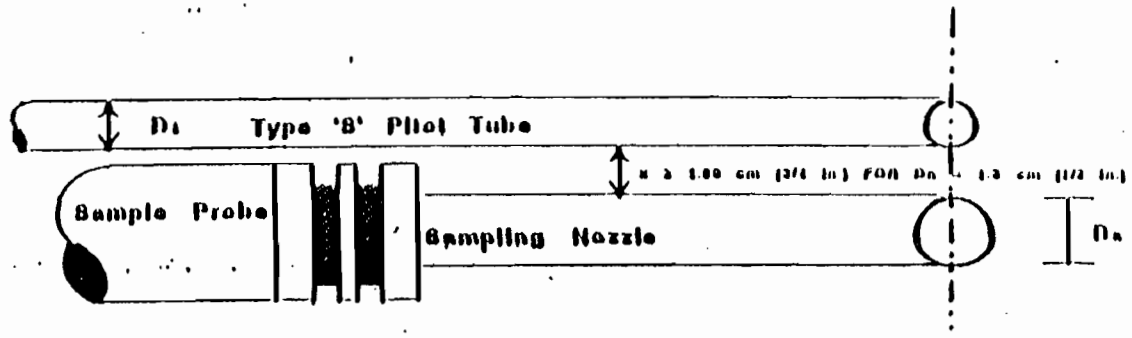
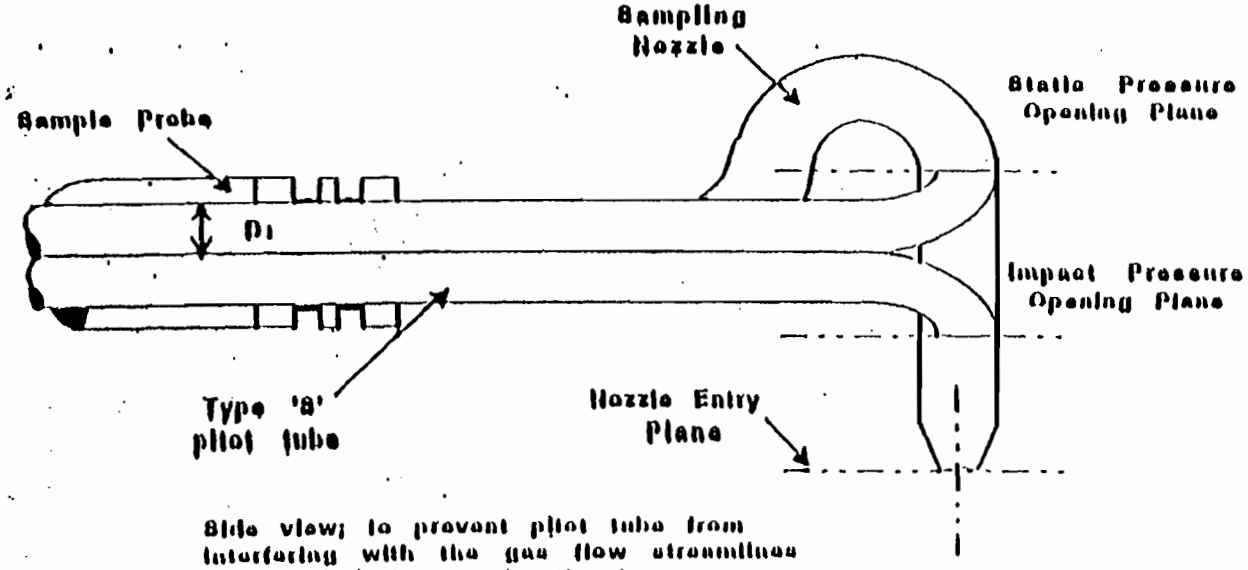
1666 Leroy Stevens Rd. Office: (205) 633-4120
Mobile, Al. 36606 FAX#: (205) 633-2205

Proper pilot tube-sampling nozzel configuration to prevent aero-dynamic interference; buttonhook type nozzle; centers of nozzle and pilot opening aligned; Di between 0.48 and 0.95 cm (3/16 and 3/8 in.)



Bottom view showing minimum pitot/nozzle separation



Side view; to prevent pitot tube from interfering with the gas flow streamlines approaching the nozzle, the impact pressure opening plane of the pitot tube shall be even with or above the nozzle entry plane.

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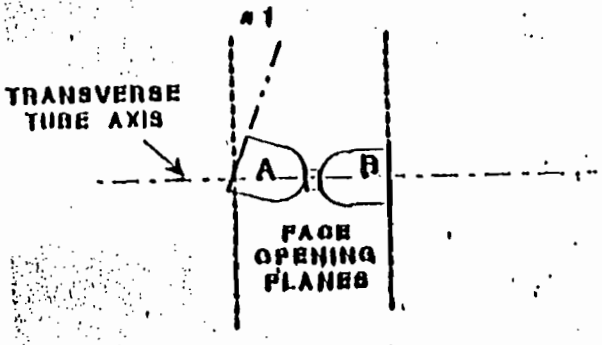
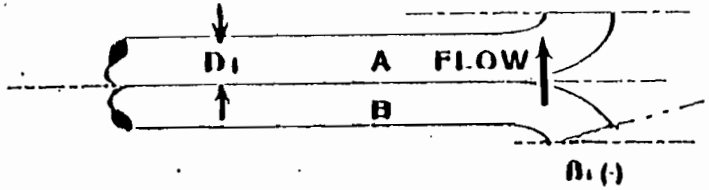
SANDERS ENGINEERING &
ANALYTICAL SERVICES, Inc.

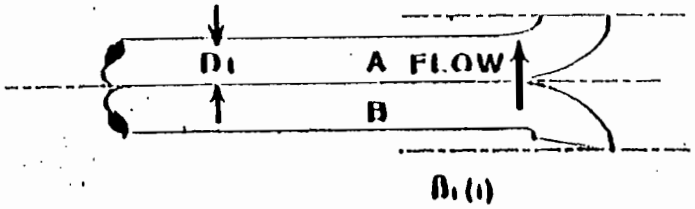
1568 Leroy Stevens Rd.
Mobile, Al. 36695

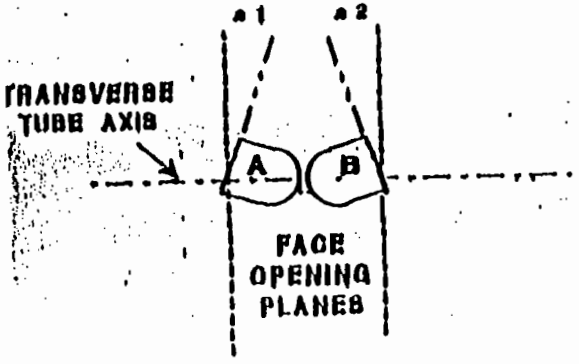
Office: (205) 633-4120
FAX#: (205) 633-8285

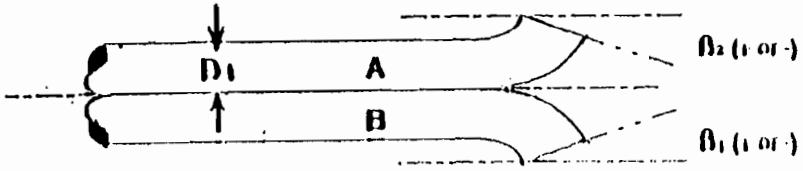
Types of face-opening misalignment that can result from field use or improper construction of type 'S' pitot tubes. These will not affect the baseline value of Cp(s) so long as α_1 and $\alpha_2 \leq 10°$, β_1 and $\beta_2 \leq 5°$, $z \leq 0.32$ cm (1/8 in.)

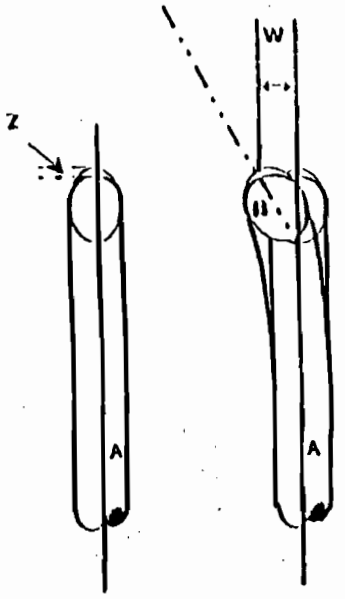












APPENDIX D OPERATIONAL DATA

Best Available Copy

CRIST UNIT 6 COMPLIANCE TEST DATA SHEET

RUN # 1
TYPE Soot Blow
LOAD 320

PASS ____ FAIL ____
P.E.R. ____

DATE 3/2/95
START TIME ~~0850~~ 1049
STOP TIME 1153
WEATHER CLEAR
AMBIENT TEMP - 66°F

AIR/GAS TEMPERATURES (DEG. F)

PT. 1 6A AH INLET AIR	81
PT. 2 6A AH OUTLET AIR	~~607~~ 618
PT. 3 6B AH INLET AIR	79 84
PT. 4 6B AH OUTLET AIR	~~617~~ 608
PT. 5 LH ECONO OUT GAS	~~743~~ 723
PT. 6 RH ECONO OUT GAS	~~783~~ 742
PT. 7 LH AH OUTLET GAS	~~347~~ 339
PT. 8 RH AH OUTLET GAS	~~376~~ 376

DAMPER POSITIONS

SUPERHEAT/REHEAT	75/25
6A F.D. FAN INLET	70
6B F.D. FAN INLET	78
6A I.D. FAN INLET	51
6B I.D. FAN INLET	54
A HOT AIR RECIRC.	0
6B HOT AIR RECIRC.	0

DRAFT INDICATION (IN. OF H2O)

6A F.D. FAN DISCHARGE	14
6B F.D. FAN DISCHARGE	14
6A AH GAS DIFF.	12.5
6B AH GAS DIFF.	11.5
FURNACE PRESSURE	0
WINDBOX PRESSURE	6.8
FURNACE GAS	-.6
ECONO INLET GAS	3
ECONO OUTLET PSI	5.9
I.D. DUCT PRESSURE	21.5
6 A I.D. SUCTION	24
6 B I.D. SUCTION	21

O2 CAPACITY

6 MINUTE AVG.	1.5
6A INSTANT.	1.4
6B INSTANT.	1.5
6A O2	~~4.7~~ 4.5
6B O2	~~2.8~~ 3.0
STACK O2	3.8
SO2 CHART	1.49

BAROMETER	30.08
CONDENSER VAC	2805
FEEDWATER PRESSURE	2.03
6A/6B COND IN	79/~~80~~ 79
6A/6B COND OUT	~~100~~/102

FAN AMPS

6A I.D. FAN	460
6B I.D. FAN	430
6A F.D. FAN	(1) 271 (2) 278 (3) 273
6B F.D. FAN	(1) 215 (2) 223 (3) 219
6A HAR FAN	0
6B HAR FAN	0

SUPERHEAT TEMPERATURE	995
REHEAT TEMPERATURE	995
THROTTLE PRESSURE	2400
FEEDWATER FLOW (MLBPHR)	2.25
TOTAL AIR FLOW "	2.5
STEAM FLOW "	2.35
CONDENSATE FLOW "	1.95
GV SETTER POSITION	0820

PULVERIZER READINGS

	MILL AMPS	PA FAN AMPS	COAL FLOW	P.A. FLOW	MILL DIFF.	MILL TEMP
6A	50	93	66	140	10.5	165
6B	51	99	52	130	7	170
6C	53	94	68	140	9	165
6D	51	105	67	140	10.2	170

PULVERIZER DAMPER POSITIONS (%)

	HOT AIR DAMPER	PRIMARY FLOW DAMPER	AIR REGISTERS			
6A	80	62	32	34	58	59
6B	55	58	32	32	58	64
6C	75	56	29	30	58	63
6D	80	65	31	31	50	65

Re. 1049 1153

		START	~~STOP~~ Start	Stop
COMMENTS COAL INT.	A	~~784323~~	754649	755428
	B	~~433~~210	434426	435062
	C	~~629~~630	631113	631910
	D	~~884~~705	885628	886389

DISREGARD A Feeder Plugged @ 0857hr.

Best Available Copy

CRIST UNIT 6 COMPLIANCE TEST
DATA SHEET

RUN # 2
TYPE Soot Blow
LOAD 320

PASS ______ FAIL ______
P.E.R. ______

DATE 4-2-96
START TIME 1225
STOP TIME 1329
WEATHER CLEAR
AMBIENT TEMP - 66°

AIR/GAS TEMPERATURES (DEG. F)

PT. 1 6A AH INLET AIR	87
PT. 2 6A AH OUTLET AIR	616
PT. 3 6B AH INLET AIR	88
PT. 4 6B AH OUTLET AIR	602
PT. 5 LH ECONO OUT GAS	732
PT. 6 RH ECONO OUT GAS	747
PT. 7 LH AH OUTLET GAS	350
PT. 8 RH AH OUTLET GAS	376

DAMPER POSITIONS

SUPERHEAT/REHEAT	60/40
6A F.D. FAN INLET	70
6B F.D. FAN INLET	80
6A I.D. FAN INLET	56
6B I.D. FAN INLET	60
6A HOT AIR RECIRC.	0
6B HOT AIR RECIRC.	0

OPACITY

6 MINUTE AVG.	1.7
6A INSTANT.	1.4
6B INSTANT.	1.4
6A O2	4.7
6B O2	3.3
STACK O2	4.2
SO2 CHART	1.45
BAROMETER	30.09
CONDENSER VAC	27.80
BACK PRESSURE	2.29
6A/6B COND IN	83/83
6A/6B COND OUT	105/104

DRAFT INDICATION (IN. OF H2O)

6A F.D. FAN DISCHARGE	13
6B F.D. FAN DISCHARGE	14
6A AH GAS DIFF.	11.5
6B AH GAS DIFF.	11
FURNACE PRESSURE	0
WINDBOX PRESSURE	7
FURNACE GAS	-.5
ECONO INLET GAS	2.2
ECONO OUTLET PSI	5.9
I.D. DUCT PRESSURE	21.8
6 A I.D. SUCTION	23
6 B I.D. SUCTION	21

FAN AMPS

6A I.D. FAN	460
6B I.D. FAN	420
6A F.D. FAN	264/274/268
6B F.D. FAN	217/224/218
6A HAR FAN	0
6B HAR FAN	0

SUPERHEAT TEMPERATURE	1000
REHEAT TEMPERATURE	995
THROTTLE PRESSURE	2375
FEEDWATER FLOW (MLBPHR)	2.15
TOTAL AIR FLOW "	2.45
STEAM FLOW "	2.3
CONDENSATE FLOW "	1.9
GV SETTER POSITION	820

PULVERIZER READINGS

	MILL AMPS	PA FAN AMPS	COAL FLOW	P.A. FLOW	MILL DIFF.	MILL TEMP
6A	51	93	68	144	10.2	165
6B	50	105	54	135	7.2	170
6C	54	97	70	145	8.8	168
6D	52	113	68	142	10	170

PULVERIZER DAMPER POSITIONS (%)

	HOT AIR DAMPER	PRIMARY FLOW DAMPER	AIR REGISTERS
6A	78	60	32 34 58 59
6B	54	56	32 32 56 64
6C	75	55	29 30 58 63
6D	80	64	31 31 50 65

START
Coal INT @ 12%

END
@ 1329

COMMENTS

	START	END
A	755923	756516
B	435466	935950
C	632416	633026
D	886873	887456

CRIST UNIT 6 COMPLIANCE TEST
DATA SHEET

Run # 3
TYPE Sootblow
LOAD 320

PASS ____ FAIL ____
P.E.R. ____

DATE 4-2-96
START TIME 1416
STOP TIME 1511
WEATHER CLEAR
AMBIENT TEMP - 66°

AIR/GAS TEMPERATURES (DEG. F)

PT. 1 6A AH INLET AIR	90
PT. 2 6A AH OUTLET AIR	610
PT. 3 6B AH INLET AIR	92
PT. 4 6B AH OUTLET AIR	594
PT. 5 LH ECONO OUT GAS	736
PT 6 RH ECONO OUT GAS	746
PT 7 LH AH OUTLET GAS	350
PT. 8 RH AH OUTLET GAS	375

DAMPER POSITIONS

SUPERHEAT/REHEAT	62/38
6A F.D. FAN INLET	70
6B F.D. FAN INLET	80
6A I.D. FAN INLET	54
6B I.D. FAN INLET	58
6A HOT AIR RECIRC.	0
6B HOT AIR RECIRC.	0

OPACITY

6 MINUTE AVG.	1.9
6A INSTANT.	1.9
6B INSTANT.	1.9
6A O2	3.3
6B O2	3.25
STACK O2	4.2
SO2 CHART	1.99

BAROMETER	30.06
CONDENSER VAC	27.6°
BACKPRESSURE	2.46
6A/6B COND IN	84/84
6A/6B COND OUT	106/107

DRAFT INDICATION (IN. OF H2O)

6A F.D. FAN DISCHARGE	13
6B F.D. FAN DISCHARGE	14
6A AH GAS DIFF.	10.5
6B AH GAS DIFF.	10
FURNACE PRESSURE	0
WINDBOX PRESSURE	7
FURNACE GAS	-.4
ECONO INLET GAS	2
ECONO OUTLET PSI	6
I.D. DUCT PRESSURE	21.5
6A I.D. SUCTION	22.5
6B I.D. SUCTION	20.5

FAN AMPS

6A I.D. FAN	460
6B I.D. FAN	420
6A F.D. FAN	266/273/268
6B F.D. FAN	216/222/215
6A HAR FAN	0
6B HAR FAN	0

SUPERHEAT TEMPERATURE	1000
REHEAT TEMPERATURE	1000
THROTTLE PRESSURE	2375
FEEDWATER FLOW (MLBPHR)	2.15
TOTAL AIR FLOW "	2.45
STEAM FLOW "	2.3
CONDENSATE FLOW "	1.9
GV SETTER POSITION	820

PULVERIZER READINGS

	MILL AMPS	PA FAN AMPS	COAL FLOW	P.A. FLOW	MILL DIFF.	MILL TEMP
6A	52	92	70	145	10	165
6B	49	109	54	130	7	170
6C	54	98	70	145	8.5	170
6D	52	112	68	144	10.5	170

PULVERIZER DAMPER POSITIONS (%)

	HOT AIR DAMPER	PRIMARY FLOW DAMPER	AIR REGISTERS
6A	78	62	32 34 59 59
6B	52	57	32 32 58 64
6C	75	57	30 30 58 63
6D	82	64	31 31 50 65

COAL INT. @ 1422

@ 1511

COMMENTS

A	757066	757626
B	436399	436857
C	633587	634160
D	887991	888541

Hourly Emission Measurement Summary
Gulf Power Company
Crist Unit 6
Pensacola, Florida

Today's Date: 04/03/96 — Report Date: 04/02/96
Today's Time: 15:22:59 — Report Hour: 09 - 10

Opacity Percent				
	01-06	1.4	31-36	1.5
	07-12	1.4	37-42	1.5
	13-18	1.4	43-48	1.5
	19-24	1.5	49-54	1.5
	25-30	1.4	55-60	1.5

Hourly Averages	SO2	NOX	CO2
Measured	608.9 ppm	208.7 ppm	12.4 %
Bias Adjusted	620.5 ppm	208.7 ppm	12.4 %
Rate	1.4 lb/mmbtu	0.3 lb/mmbtu	
Bias Adjusted	1.5 lb/mmbtu	0.3 lb/mmbtu	
3 Hr Avg			
Mass Emissions	3858.3 lb/mmbtu		269.7 ton/hr
Bias Adjusted	4163.8 lb/hr		285.7 ton/hr
Bias Factor	1.019	1.000	1.000
Source	1	1	1
Heat Input	2629.6		
Load Range	8.1		
Zero Calibration	2.6 ppm	0.8 ppm	0.0 %
Expected Value	0.0 ppm	0.0 ppm	0.0 %
Span Calibration	2679.8 ppm	892.0 ppm	16.6 %
Expected Value	2632.9 ppm	896.6 ppm	17.0 %

Hourly Averages	Flow	Gross Generation	Opacity
Measured	38172000 scfh	273.4 MWge	
Bias Adjusted	40424148 scfh		
Bias Factor	1.059		
Source	1		
Zero Calibration	-1.4 scfh		0.0 %
Expected Value	0.0 scfh		0.0 %
Span Calibration	861.5 scfh		49.0 %
Expected Value	875.0 scfh		47.4 %

Instrument Status		
	Opacity Monitor	Normal
	SO2 Analyzer	Normal
	NOX Analyzer	Normal
	CO2 Analyzer	Normal
	Flow Monitor	Normal

Legend

** Excess Emissions
Insufficient Data
!! Fans Off
$$ Boiler Off

Hourly Emission Measurement Summary
Gulf Power Company
Crist Unit 6
Pensacola, Florida

Today's Date: 04/03/96 — Report Date: 04/02/96
Today's Time: 15:25:57 — Report Hour: 10 - 11

Opacity Percent	01-06	1.5	31-36	1.5
	07-12	1.5	37-42	1.5
	13-18	1.5	43-48	1.5
	19-24	1.5	49-54	1.5
	25-30	1.5	55-60	1.6

Hourly Averages	SO2	NOX	CO2
Measured	625.2 ppm	272.2 ppm	12.7 %
Bias Adjusted	637.1 ppm	272.2 ppm	12.7 %
Rate	1.4 lb/mmbtu	0.4 lb/mmbtu	
Bias Adjusted	1.5 lb/mmbtu	0.4 lb/mmbtu	
3 Hr Avg			
Mass Emissions	4175.2 lb/mmbtu		291.2 ton/hr
Bias Adjusted	4505.7 lb/hr		308.4 ton/hr
Bias Factor	1.019	1.000	1.000
Source	1	1	1
Heat Input	2838.4		
Load Range	8.9		
Zero Calibration	2.6 ppm	0.8 ppm	0.0 %
Expected Value	0.0 ppm	0.0 ppm	0.0 %
Span Calibration	2679.8 ppm	892.0 ppm	16.6 %
Expected Value	2632.9 ppm	896.6 ppm	17.0 %

Hourly Averages	Flow	Gross Generation	Opacity
Measured	40230000 scfh	302.7 MWge	
Bias Adjusted	42603570 scfh		
Bias Factor	1.059		
Source	1		
Zero Calibration	-1.4 scfh		0.0 %
Expected Value	0.0 scfh		0.0 %
Span Calibration	861.5 scfh		49.0 %
Expected Value	875.0 scfh		47.4 %

Instrument Status		
	Opacity Monitor	Normal
	SO2 Analyzer	Normal
	NOX Analyzer	Normal
	CO2 Analyzer	Normal
	Flow Monitor	Normal

Legend

** Excess Emissions	## Insufficient Data
!! Fans Off	$$ Boiler Off

Hourly Emission Measurement Summary
Gulf Power Company
Crist Unit 6
Pensacola, Florida

Today's Date: 04/03/96 — Report Date: 04/02/96
Today's Time: 15:29:16 — Report Hour: 11 - 12

Opacity Percent				
	01-06	1.5	31-36	1.5
	07-12	1.5	37-42	1.5
	13-18	1.5	43-48	1.5
	19-24	1.5	49-54	1.5
	25-30	1.5	55-60	1.5

Hourly Averages	SO2	NOX	CO2
Measured	626.2 ppm	333.5 ppm	12.8 %
Bias Adjusted	638.1 ppm	333.5 ppm	12.8 %
Rate	1.4 lb/mmbtu	0.5 lb/mmbtu	
Bias Adjusted	1.4 lb/mmbtu	0.5 lb/mmbtu	
3 Hr Avg			
Mass Emissions	4383.3 lb/mmbtu		307.6 ton/hr
Bias Adjusted	4730.2 lb/hr		325.8 ton/hr
Bias Factor	1.019	1.000	1.000
Source	1	1	1
Heat Input	2998.6		
Load Range	9.4		
Zero Calibration	2.6 ppm	0.8 ppm	0.0 %
Expected Value	0.0 ppm	0.0 ppm	0.0 %
Span Calibration	2679.8 ppm	892.0 ppm	16.6 %
Expected Value	2632.9 ppm	896.6 ppm	17.0 %

Hourly Averages	Flow	Gross Generation	Opacity
Measured	42168000 scfh	318.2 MWge	
Bias Adjusted	44655912 scfh		
Bias Factor	1.059		
Source	1		
Zero Calibration	-1.4 scfh		0.0 %
Expected Value	0.0 scfh		0.0 %
Span Calibration	861.5 scfh		49.0 %
Expected Value	875.0 scfh		47.4 %

Instrument Status		
	Opacity Monitor	Normal
	SO2 Analyzer	Normal
	NOX Analyzer	Normal
	CO2 Analyzer	Normal
	Flow Monitor	Normal

Legend		
	** Excess Emissions	## Insufficient Data
	!! Fans Off	$$ Boiler Off

Hourly Emission Measurement Summary
Gulf Power Company
Crist Unit 6
Pensacola, Florida

Today's Date: 04/03/96 — Report Date: 04/02/96
Today's Time: 15:31:24 — Report Hour: 12 - 13

Opacity Percent				
01-06	1.5	31-36	1.5	
07-12	1.7	37-42	1.5	
13-18	1.8	43-48	1.8	
19-24	1.7	49-54	1.7	
25-30	1.6	55-60	1.8	

Hourly Averages	SO2	NOX	CO2
Measured	616.3 ppm	328.6 ppm	12.6 %
Bias Adjusted	628.0 ppm	328.6 ppm	12.6 %
Rate	1.4 lb/mmbtu	0.5 lb/mmbtu	
Bias Adjusted	1.4 lb/mmbtu	0.5 lb/mmbtu	
3 Hr Avg			
Mass Emissions	4339.2 lb/mmbtu		304.6 ton/hr
Bias Adjusted	4682.4 lb/hr		322.5 ton/hr
Bias Factor	1.019	1.000	1.000
Source	1	1	1
Heat Input	2968.9		
Load Range	9.4		
Zero Calibration	2.6 ppm	0.8 ppm	0.0 %
Expected Value	0.0 ppm	0.0 ppm	0.0 %
Span Calibration	2679.8 ppm	892.0 ppm	16.6 %
Expected Value	2632.9 ppm	896.6 ppm	17.0 %

Hourly Averages	Flow	Gross Generation	Opacity
Measured	42414000 scfh	317.2 MWge	
Bias Adjusted	44916426 scfh		
Bias Factor	1.059		
Source	1		
Zero Calibration	-1.4 scfh		0.0 %
Expected Value	0.0 scfh		0.0 %
Span Calibration	861.5 scfh		49.0 %
Expected Value	875.0 scfh		47.4 %

Instrument Status		
	Opacity Monitor	Normal
	SO2 Analyzer	Normal
	NOX Analyzer	Normal
	CO2 Analyzer	Normal
	Flow Monitor	Normal

Legend		
	** Excess Emissions	## Insufficient Data
	!! Fans Off	$$ Boiler Off

Hourly Emission Measurement Summary
Gulf Power Company
Crist Unit 6
Pensacola, Florida

Today's Date: 04/03/96 — Report Date: 04/02/96
Today's Time: 15:33:49 — Report Hour: 13 - 14

Opacity Percent				
	01-06	1.6	31-36	1.9
	07-12	1.5	37-42	1.7
	13-18	1.7	43-48	1.7
	19-24	1.9	49-54	1.9
	25-30	1.9	55-60	2.0

Hourly Averages	SO2	NOX	CO2
Measured	609.6 ppm	326.3 ppm	12.6 %
Bias Adjusted	621.2 ppm	326.3 ppm	12.6 %
Rate	1.4 lb/mmbtu	0.5 lb/mmbtu	
Bias Adjusted	1.4 lb/mmbtu	0.5 lb/mmbtu	
3 Hr Avg			
Mass Emissions	4270.2 lb/mmbtu		303.0 ton/hr
Bias Adjusted	4608.2 lb/hr		320.9 ton/hr
Bias Factor	1.019	1.000	1.000
Source	1	1	1
Heat Input	2953.8		
Load Range	9.4		
Zero Calibration	2.6 ppm	0.8 ppm	0.0 %
Expected Value	0.0 ppm	0.0 ppm	0.0 %
Span Calibration	2679.8 ppm	892.0 ppm	16.6 %
Expected Value	2632.9 ppm	896.6 ppm	17.0 %

Hourly Averages	Flow	Gross Generation	Opacity
Measured	42198000 scfh	317.5 MWge	
Bias Adjusted	44687682 scfh		
Bias Factor	1.059		
Source	1		
Zero Calibration	-1.4 scfh		0.0 %
Expected Value	0.0 scfh		0.0 %
Span Calibration	861.5 scfh		49.0 %
Expected Value	875.0 scfh		47.4 %

Instrument Status		
	Opacity Monitor	Normal
	SO2 Analyzer	Normal
	NOX Analyzer	Normal
	CO2 Analyzer	Normal
	Flow Monitor	Normal

Legend

** Excess Emissions	## Insufficient Data
!! Fans Off	$$ Boiler Off

Hourly Emission Measurement Summary
Gulf Power Company
Crist Unit 6
Pensacola, Florida

Today's Date: 04/03/96 — Report Date: 04/02/96
Today's Time: 15:35:44 — Report Hour: 14 - 15

Opacity Percent				
01-06	2.0	31-36	2.0	
07-12	2.0	37-42	2.0	
13-18	1.9	43-48	2.0	
19-24	1.9	49-54	2.0	
25-30	1.9	55-60	2.0	

Hourly Averages	SO2	NOX	CO2
Measured	608.3 ppm	326.5 ppm	12.6 %
Bias Adjusted	619.9 ppm	326.5 ppm	12.6 %
Rate	1.4 lb/mmbtu	0.5 lb/mmbtu	
Bias Adjusted	1.4 lb/mmbtu	0.5 lb/mmbtu	
3 Hr Avg			
Mass Emissions	4254.4 lb/mmbtu		302.5 ton/hr
Bias Adjusted	4591.3 lb/hr		320.4 ton/hr
Bias Factor	1.019	1.000	1.000
Source	1	1	1
Heat Input	2949.2		
Load Range	9.4		
Zero Calibration	2.6 ppm	0.8 ppm	0.0 %
Expected Value	0.0 ppm	0.0 ppm	0.0 %
Span Calibration	2679.8 ppm	892.0 ppm	16.6 %
Expected Value	2632.9 ppm	896.6 ppm	17.0 %

Hourly Averages	Flow	Gross Generation	Opacity
Measured	42132000 scfh	317.6 MWge	
Bias Adjusted	44617788 scfh		
Bias Factor	1.059		
Source	1		
Zero Calibration	-1.4 scfh		0.0 %
Expected Value	0.0 scfh		0.0 %
Span Calibration	861.5 scfh		49.0 %
Expected Value	875.0 scfh		47.4 %

Instrument Status		
	Opacity Monitor	Normal
	SO2 Analyzer	Normal
	NOX Analyzer	Normal
	CO2 Analyzer	Normal
	Flow Monitor	Normal

Legend

** Excess Emissions	## Insufficient Data
!! Fans Off	$$ Boiler Off

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```
                                                                                SIGNAL SCALES
AC Amps___    59.61  3 Utime____   2 IE-On____    1 BC Sts___ OFF   AC Amps____  400
AC Volts__232.25  3 Qlevel___   0 IE-Off___    0 BCmA_____  20   AC Volts___  575
DCmA__        180.2  3 Sback       7.x Bko        0 BCHnt___    0   DCmA_______ 2000
DCKV          47.53  3 Stime       2 Maxchk      ON BCHid___    0   DCKV_______  120
Spks/Min      52.00  3 Framp       6                BCAlq____  10
Dens On       57.56  3 Sramp      10 EMS BIP     ON BCWch      10   3Status     2000
kWatt Pwr      11.8  3 x Sbk      30 EMStim       3 IBCmin__  150   3% Scans___   98
                     3 x Off      25 FOK%         0 IBCinc     10   3On/Off___    ON
                     3 x Max     150 Trpsav      ON BC Mode  IDLE   3EP #_____     1
                     3                                              3recip     UNIT1
                     3 Imax      183 Smode     KVmA                 3Limits___  0000
OC Setpt.       183  3 Ilim      183 KVSPK       20
Loss                 3 mAmax     850
                     7 KVmax      70 mAspks/m     4 Onset      25.4
Next Screen......  7 OvtAC      50 KVspks/m    48 nKVhi      67.3   PARAMETERS
Last Screen......  7 OvtDC      12 Arcs         9 nKVlo      53.2   AVC # TRA-1A
Help.............  7 OvDly      30 Manual___ OFF oKVhi        .0   Version  .85
Main Menu........  7                  Scn Errs 0002 fKVlo        .0
                                   14:10:01 04/02/96
Messages:

F1-MNU  F2-HLP  F3-EMS  F4-AVC  F5-ALM  F6-AUX  F7-RAP  F8-VI  F9-NEXT  F10-LAST
```

END OF 2ND RUN

Sootblo

Gr 6.96r3

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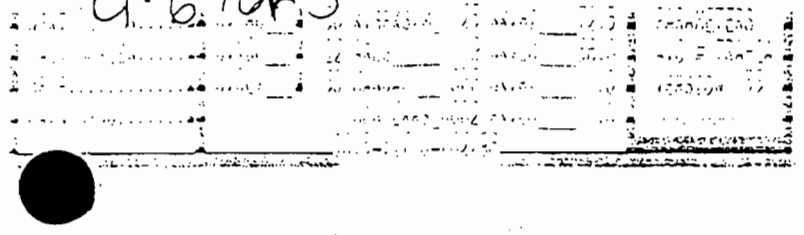
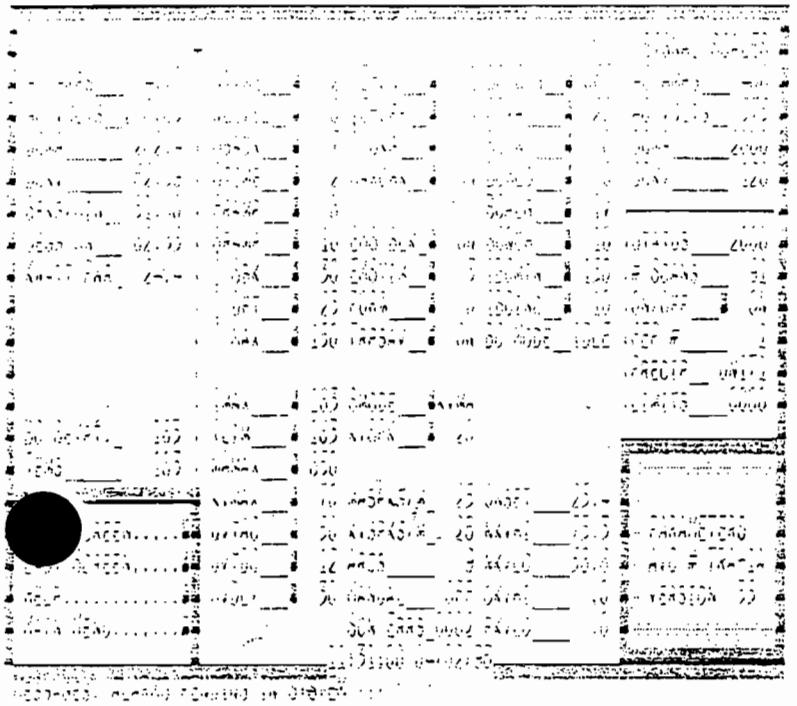
PRECIPITATOR

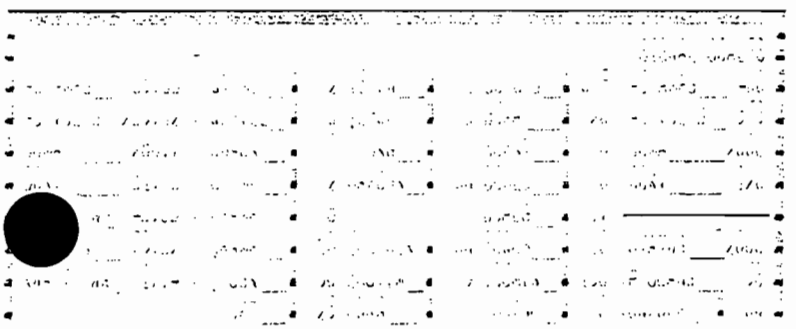
1ST RUN

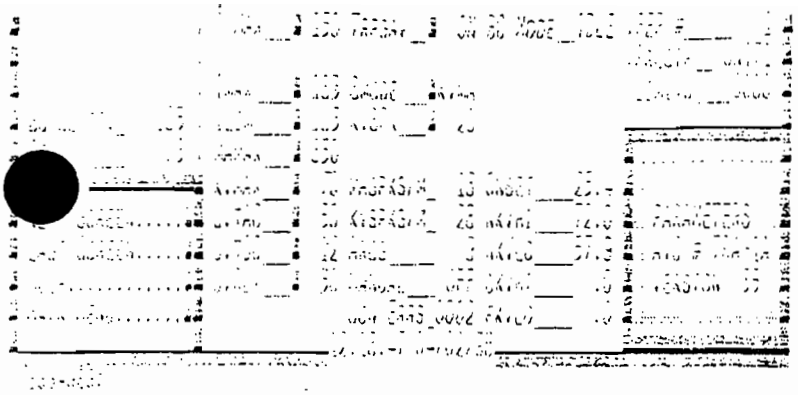
INITIAL PRNT SCREEN

Sootblow









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FINAL PRINT SCREEN
1 sootblow

Best Available Copy

0	02	2000	ON	*				
IRA-3A	76.86	193.92	305.9	40.47	0	62.11	75	1
0	00	2000	ON	*				
IRA-3B	76.86	196.18	298.0	40.00	0	64.54	75	1
0	02	2000	ON	*				
IRB-3A	76.86	196.18	298.0	39.53	0	63.20	75	1
0	02	2000	ON	*				
IRB-3B	76.86	193.92	313.7	39.06	0	62.89	75	1
0	02	2000	ON	*				
IRA-4A	72.16	175.88	305.9	39.53	0	61.88	75	1
0	00	2000	ON	*				
IRA-4B	75.29	187.16	274.5	37.65	0	61.47	75	1
0	02	2000	ON	*				
IRB-4A	75.29	193.92	305.9	37.65	0	60.58	75	1
0	02	2000	ON	*				
IRB-4B	75.29	184.90	274.5	37.65	0	59.71	75	1
0	02	2000	ON	*				
IRA-5A	225.88	383.33	1168.6	64.00	0	107.39	225	1
0	03	2000	ON	*				
IRA-5B	225.88	381.08	1152.9	60.71	0	110.65	225	1
0	03	2000	ON	*				
IRB-5A	225.88	408.14	1184.3	60.24	0	110.67	225	1
0	03	2000	ON	*				
IRB-5B	227.45	405.88	1152.9	60.24	0	103.61	225	1
0	03	2000	ON	*				

*

*

"A" MAPPERS

*

AUXILIARY SYSTEMS STATUS

*

*

DFA-1 OFF DFA-2 OFF DSA-1 ON DSA-2
OFF DSA-3 OFF *
DSA-4 OFF DSA-5 OFF CSA-1 OFF CSA-2
OFF

START 2ND RUN Sootblow

SIGNAL SCALES

Amps	105.10	3 Qtime	2	1E-On	1	BC Sts	OFF	AC Amps	400
Volts	317.94	3 Qlevel	0	1E-Off	0	BCmA	20	AC Volts	575
mA	313.7	3 Sback	7	x Bkg	0	BCHnt	0	DCmA	2000
kV	64.00	3 Stime	2	Maxchk	UN	BCHld	0	DCkV	120
ks/Min	93.00	3 Framp	6			BCAlg	IV		
ge Un	90.08	3 Sramp	10	EMS Blk	UN	BCQch	10	3Status	2000
Att Pwr	33.4	3 x Sbk	30	EMStim	3	IBCmin	150	3# Scans	24
		3 x Dft	25	PUR%	0	IBCinc	10	3On/Off	UN
		3 x Max	150	Trpsav	UN	BC Mode	IDLE	3FEP #	1
		3						3Precip	UNIT1
		3 lmax	183	Smode	kVmA			3Limits	0000
Setpt.	183	3 Ilim	183	kVSPk	20				
ge	183	3 mAmax	850						
		/ kVmax	/0	mAspks/m	23	Unset	25.4		
	en.....	% uvtAC	50	kVspks/m	20	nkVhi	/9.1	0 PARAMETERS	
t Screen.....	%	uvtDC	12	Arcs	9	nkVlo	59.8	0 AVC # IRA-1A	
p.....	%	uvDly	30	Manual	OFF	okVhi	.0	0 Version	55
n Menu.....	%			Scn Errs	0002	fkVlo	.0		

12:43:15 04/02/96

sages:

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```
                                                                    SIGNAL SCALES
  Amps___  59.61 3 Qtime___~    2 IE-On___~     1 BC Sts__~ OFF  AC Amps___   400
  Volts__232.25 3 Qlevel__~    0 IE-Off__~     0 BCmA_____~  20  AC Volts__  575
  DCmA_______  188.2 3 Sback____~   7 x Bkg_____~   0 BCHnt___~   0  DCmA_______2000
  DCkV_______  47.53 3 Stime____~   2 Maxchk___~  ON BCHld_____~  0  DCkV________ 120
  Spks/Min___  52.00 3 Framp____~   6                BCAlq____~  IV
  Deqs On____  57.56 3 Sramp____~  10 EMS Blk__~  ON BCQch_____~ 10  Status______2000
  KWatt Pwr     13.8 3 x Sbk____~  30 EMStim___~   3 IBCmin__~ 150  # Scans___    98
                     3 x Dft____~  25 FUR%_____~   0 IBCinc___~  10  On/Off____~   ON
                     3 x Max____~ 150 Irpsav___~  ON BC Mode__IDLE  FEP #______     1
                     3                                               Precip__ UNIT1
                     3 Imax_____~ 183 Smode____ %kVmA                Limits______0000
  BC Setpt.      183 3 Ilim_____~ 183 KVSPK____~  20
  Iems            75 3 mAmax____~ 850
                       kVmax____~  70 mAspks/m    4 Unset_____ 25.4
  Next Screen.....     uvtAC____~  50 kVspks/m   48 nkVhi_____67.3   PARAMETERS
  Last Screen.....     uvtDC____~  12 Arcs_____   9 nkVlo_____53.2   AVC # IRA-1A
  Help............     uvDly____~  30 Manual___ OFF okVhi______  .0  Version   55
  Main Menu.......                    Scn Errs_0002 fkVlo______  .0
                                 14:10:01 04/02/96
Messages:

F1-MNU  F2-HLP  F3-EMS  F4-AVC  F5-ALM  F6-AUX  F7-RAP  F8-VI  F9-NEXT  F10-LAST
```

END OF 2ND RUN

Sootblow

BEST AVAILABLE COPY

3RD RUN START! Sootblow

```
                                                                                    SIGNAL SCALES
AC Amps      117.65  3 Wtime        2 IE-On         1 BC Sts     OFF   AC Amps       400
AC Volts     324.71  3 Wlevel       0 IE-Off        0 BCmA        20   AC Volts      575
DCmA          360.8  3 Sback        7 x Bkg         0 BCHnt        0   DCmA         2000
DCkV          65.41  3 Stime        2 Maxchk       ON BCHld        0   DCkV          120
Spks/Min      46.00  3 Framp        6               BCAlg         1V   ZDDDDDDDDDDDDDD4
Degs On       93.88  3 Sramp       10 EMS Blk      ON BCWch       10   3Status      2000
KWatt Pwr      38.2  3 x Sbk       30 EMStim        3 1BCmin     150   3# Scans       27
                     3 x Dft       25 PUR%          0 1BCinc      10   3On/Off        ON
                     3 x Max      150 Trpsav       ON BC Mode   IDLE   3FEP #          1
                     3                                                 3Precip     UNIT1
                     3 Imax       183 Smode      kVmA                  3Limits      0000
BC Setpt.       183  3 Ilim       183 kVSPK        20                  \\\\\\\\\\\\\\\\
[...]ame        183  3 mAmax      850                                  [000000000000000
                     [ kVmax       70 mAspks/m     23 Onset     25.4   [0              0
[N]ext Screen.....%  uvtAC         50 kVspks/m     23 nkVhi     80.0   [0 PARAMETERS   0
Last Screen.....%    uvtDC         12 Arcs          9 nkVlo     58.8   [0 AVC # TRA-1A 0
Help............%    uvDly         30 Manual      OFF okVhi       .0   [0 Version   55 0
Main Menu.......%                     Scn Errs   0002 tkVlo       .0   [000000000000000
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\14:29:17 04/02/96\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
 Messages: ALARMS PENDING IN SYSTEM !!!


F1-MNU  F2-HLP  F3-EMS  F4-AVC  F5-ALM  F6-AUX  F7-RAP  F8-VI  F9-NEXT  F10-LAST
 4:36:18 04/02/96  HIGH HOPPER LEVEL ON # LV-B13 *** ALARM RESET ***


14:48:47 04/02/96  HIGH HOPPER LEVEL ON # LV-A12 *** ALARM RESET ***
```

*	IRA 4A	225.88	378.82	1129.4	63.06	0	112.23	225	1	0
0	2000	ON	*							
*	IRA-4B	227.45	396.86	1168.6	59.29	1	111.93	225	1	0
2	2000	ON	*							
*	IRB-4A	225.88	423.92	1152.9	60.71	0	113.31	225	1	0
	2000	ON	*							
	IRB-4B	225.88	396.86	1051.0	60.71	0	105.98	225	1	0
2	2000	ON	*							
*	IRA-5A	225.88	387.84	1152.9	62.12	0	109.47	225	1	0
3	2000	ON	*							
*	IRA-5B	225.88	383.33	1160.8	61.18	0	113.48	225	1	0
3	2000	ON	*							
*	IRB-5A	229.02	401.37	1176.5	59.29	0	111.72	225	1	0
3	2000	ON	*							
*	IRB-5B	230.59	403.63	1168.6	60.24	0	106.35	225	1	0
3	2000	ON	*							

```
*-------- ----------------------------------------------------------------------------------------
-------------------------*
*
                         *
*                                                              "A" RAPPERS
                         *
*                                                          AUXILIARY SYSTEMS STATUS
                         *
*
                         *
*    DPA-1            OFF      DPA-2            OFF
______________________________________________________________________________________
/                      E                                                SIGNAL SCALES [
/ AC Amps     117.22 3 Qtime___~   2 IE-On____~   1 BC Sts__~OFF  AC Amps___  400 [
  AC Volts_  333.73 3 Qlevel_~     0 IE-Off_~     0 BCmA____~ 20  AC Volts_   575 [
  DCmA        376.5 3 Sback___~    7 x Bkg__~     0 BCHnt___~  0  DCmA______2000 [
/ DCkV_____   66.35 3 Stime___~    2 Maxchk__~   ON BCHld___~  0. DCkV_______ 120 /
/ Spks/Min    48.00 3 Framp__~     6                BCAlq___~ IV ZDDDDDDDDDDDDDD4[
/ Degs On     94.31 3 Sramp___~   10 EMS Blk_~   ON BCOch   ~ 10 3Status____2000 [
/ KWatt Pwr    39.8 3 x Sbk___~   30 EMStim_~     3 IBCmin__~150 3# Scans___   90 [
/              ... 3 x Off___~   25 PUR%____~    0 IBCinc__~ 10 3On/Off___~  ON /
/                   3 x Max___~150 Irpsav__~   ON BC Mode IDLE 3FEP #______    1 /
/                   3                                           3Precip  UNIT1 /
/                   3 Imax____~183 Smode___ KVmA                3Limits____0000 /
/ BC Setpt.     183 3 Ilim____~183 KVSPK___~ 20                \\\\\\\\\\\\\\\\/
/ Tems           75 3 mAmax___~850                            [000000000000000/
/ ..............    / KVmax___~   70 mAspks/m_  26 Onset__   25.4 [0             0/
/ Next Screen..... 7 uvtAC__~   50 KVspks/m_  22 nkVhi_____81.4 [0 PARAMETERS  0[
/ Last Screen..... 7 uvtDC___~  12 Arcs_____    9 nkVlo     60.2 [0 AVC # IRA-1A0/
/ Help............ 7 uvDly__~   30 Manual ___ OFF okVhi______ .0 [0 Version  55 0[
/ Main Menu....... 7               Scn Errs 0002 fkVlo       .0 [000000000000000/
/\\\\\\\\\\\\\\\\\\\\\/\\\\\\\\\\\\\\\15:29:13 04/02/96\\\\\\\\\\\\\\/[[[[[[[[[[[[[[[[
 Messages: ALARMS PENDING IN SYSTEM !!!


F1-MNU  F2-HLP  F3-EMS  F4-AVC  F5-ALM  F6-AUX  F7-RAP  F8-VI  F9-NEXT  F10-LAST
```

3RD
RUN
STOP
Sootblow

SANDERS ENGINEERING & ANALYTICAL SERVICES, INC.

PARTICULATE EMISSIONS TEST REPORT
STEADY STATE OPERATIONS

FOR

GULF POWER COMPANY
Plant Crist, Unit 7
Pensacola, Florida

December 7, 1994

1568 LEROY STEVENS ROAD

MOBILE, ALABAMA 36695 • 205/633-4120

SANDERS ENGINEERING & ANALYTICAL SERVICES, INC.

1568 LEROY STEVENS ROAD MOBILE ALABAMA 36695 • 205 / 633-4120

ENVIRONMENTAL ENGINEERING
AIR & WATER QUALITY MODELING
ENVIRONMENTAL ASSESSMENTS
PSD ANALYSIS
EMERGENCY RESPONSE MONITORING

AMBIENT AIR MONITORING
CONTINUOUS IN-STACK MONITORING
SOURCE TESTING
VISIBLE EMISSIONS TESTING
CONSULTING SERVICES

TEST REPORT CERTIFICATION

In regard to this test, we certify that, to the best of our knowledge, all of the data regarding the testing performed by our agents is true and correct.

Sanders Engineering & Analytical Services, Inc.

Dated: 12-19-94

By: Joseph C. Sanders

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FIGURE 3. PARTICULATE SAMPLING TRAIN (EPA Method 17) 8

1. INTRODUCTION

Sanders Engineering & Analytical Services, Inc. (SEAS), performed a particulate emissions test at Gulf Power Company, Plant Crist, Unit 7, located in Pensacola, Florida. The test was conducted on December 7, 1994, during steady state operations. The testing was performed in accordance with the applicable U.S. EPA procedures specified at **40 CFR, Part 60, Appendix A, Methods 1, 2, 3, 4 and 17**.

The purpose of the test was to demonstrate compliance with the rules and regulations of the Florida Department of Environmental Protection, and to meet certain requirements contained in the permit to operate issued by the Florida Department of Environmental Protection.

The test was conducted by Mr. Jack Covington, Mr. Dean Holmes, and Mr. John Wilson of Sanders Engineering & Analytical Services, Inc., and was coordinated with Ms. Kristie Drury of Gulf Power Company. The Florida Department of Environmental Protection was notified so that a representative could be present to observe the testing.

The test was conducted in accordance with the rules and regulations of the Florida Department of Environmental Protection. Further discussion of the test methods are included later in the report.

2. SUMMARY AND DISCUSSION OF RESULTS

The results of the particulate emissions test for the steady state runs, along with the results of the computations are summarized in Table I. The completed field data sheets for the particulate testing are presented in Appendix A. The equations used in the calculations of the results, along with the sample calculations of the first run, are presented in Appendix B. The quality control checks of the equipment used in the sampling program are included in Appendix C. The operational data taken during the performance of the test is included in Appendix D.

The results of the testing indicate the particulate emission rate during steady state operations for Plant Crist, Unit 7, is 0.037 LBS/MMBTU. The applicable Florida Department of Environmental Protection rules and regulations require an emission rate of no greater than 0.10 LBS/MMBTU. The results of the testing indicate that the unit is in compliance with the particulate emission condition of the permit to operate issued by the Florida Department of Environmental Protection.

TABLE I
PARTICULATE EMISSIONS TESTING
GULF POWER COMPANY
PLANT CRIST, UNIT 7, STEADY STATE
12-07-94

Title of Run		Run 1	Run 2	Run 3
F Factor	SDCF/MMBTU	9820.00	9820.00	9820.00
Static Pressure	IN. H2O	1.30	1.30	1.30
Barometric Pressure	In. Hg.	30.30	30.30	30.30
Average ΔH	In. H2O	1.066	1.091	1.192
Meter Correction		0.990	0.990	0.990
Avg Meter Temp.	DEG F	77.9	81.6	81.4
% O2	%	4.8	4.9	4.8
% CO2	%	14.0	13.5	13.5
Volume Metered	ACF	32.050	32.740	33.825
Volume Water	ML	76.4	62.5	63.6
Sampling Time	MINUTES	60	60	60
Nozzle Diameter	INCHES	0.184	0.184	0.189
Avg. Stack Temp.	DEG F	321.0	327.8	327.5
Area Of Stack	SQ. FEET	375.000	375.000	375.000
Wt. Of Part.	MG	54.7	33.2	38.1
Number Of Points		30	30	30
Avg. Sqrt. ΔP	In. H2O	1.129	1.142	1.132

RESULTS OF COMPUTATIONS

		RUN 1	RUN 2	RUN 3	AVERAGE
Sample Time	Military	0939-1043	1118-1222	1238-1342	
Volume of Gas Sampled	SDCF	31.610	32.074	33.157	32.280
Molecular Wt. Of St. Gas	LB/LB-MOLE	29.16	29.32	29.33	29.27
H2O Vapor in Gas Stream	PERCENT	10.2	8.4	8.3	9.0
Avg Stack Gas Velocity	FT/SEC	76.1	77.1	76.4	76.5
Volumetric Flow Rate	SDCFM	1055700	1082400	1073500	1070533
Volumetric Flow Rate	ACFM	1712000	1735400	1718400	1721933
Particulate Conc.	GRS/SDCF	0.027	0.016	0.018	0.020
Particulate Conc.	GRS/ACF	0.016	0.010	0.011	0.012
Particulate Mass Rate	LB/HR	241.1	147.9	162.8	183.9
Emission Rate	LBS/MMBTU	0.049	0.029	0.032	0.037
Heat Input	MMBTU/HR	4968.69	5062.81	5052.48	5027.99
Percent of Isokinetic		101.39	100.34	99.13	

3. PROCESS DESCRIPTION

The process consists of a steam electric generating unit firing bituminous coal for the production of electric energy. The coal is received by barge, and loaded directly onto the conveyor feeding the plant, or onto the stockpile and later loaded onto the conveyor belt transporting the coal to the plant. The coal from the conveyor is loaded into bunkers capable of holding between 36 to 48 hours supply of coal. The coal is then fed to pulverizing mills before being fired in the unit through the burners. Upon combustion of the coal in the fire box, approximately 20 percent of the ash falls to the bottom of the boiler and is removed by the ash removal system. The remaining 80 percent exits with the flue gases through the heat exchange and economizer sections of the furnace, and is collected by electrostatic precipitators.

3.1. Source Air Flow

As shown in Figure I, the flue gases exit the boiler and are separated into ducts A and B before entering air preheaters. They are then routed to a cold side ESP. The flue gases exiting the cold side ESP are exhausted through a stack into the atmosphere.

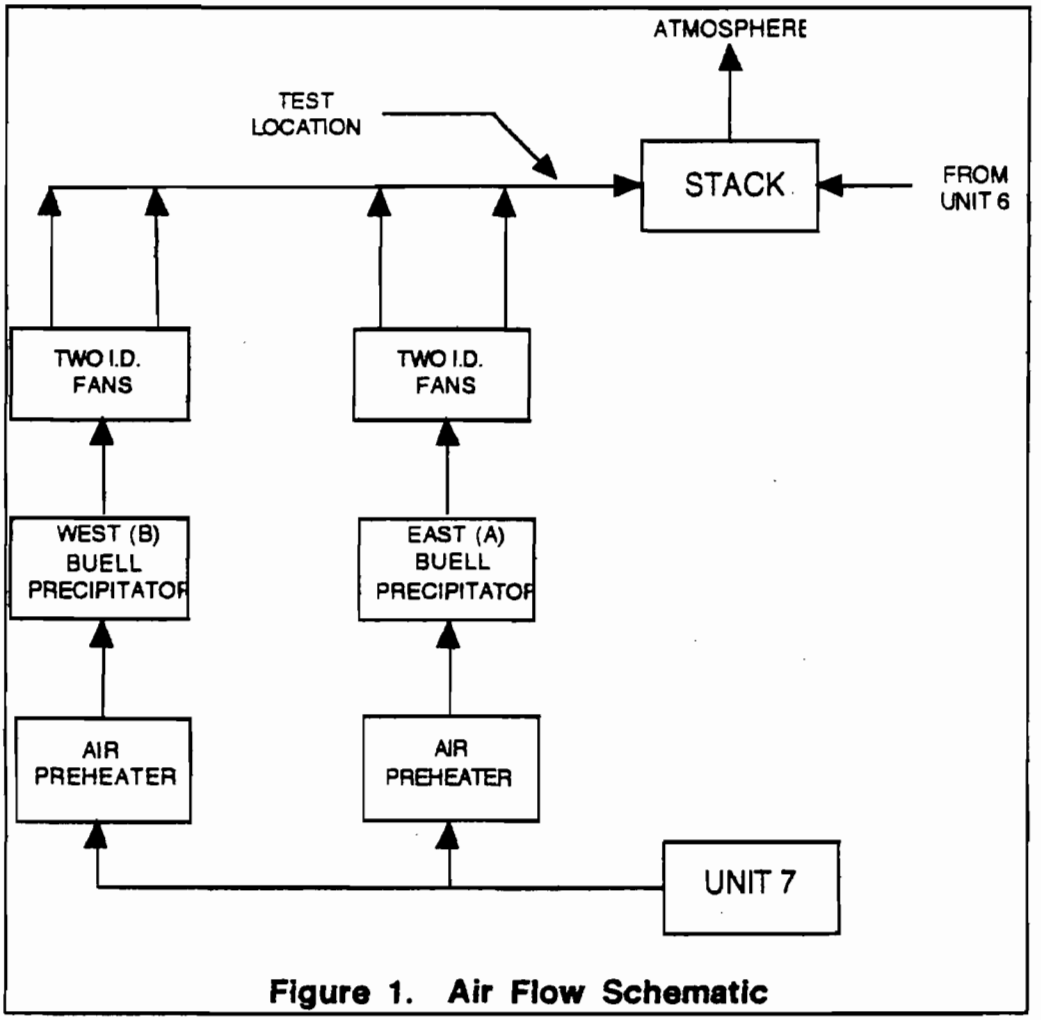


Figure 1. Air Flow Schematic

3.2. Operation During Testing

The approximate heat input average during steady state operation, as based on F-factor calculations, was 5027.99 million BTU per hour resulting in the production of approximately 495 megawatts of electricity. Precipitator data supplied by Gulf Power personnel is given in Appendix D.

4. SAMPLE POINT LOCATIONS

The sample point locations and outlet duct schematic are presented in Figure 2. Method 1 was used for determination of the number and location of sampling points. The minimum number of points (25) required for rectangular stacks was met by sampling a total of 30 points.

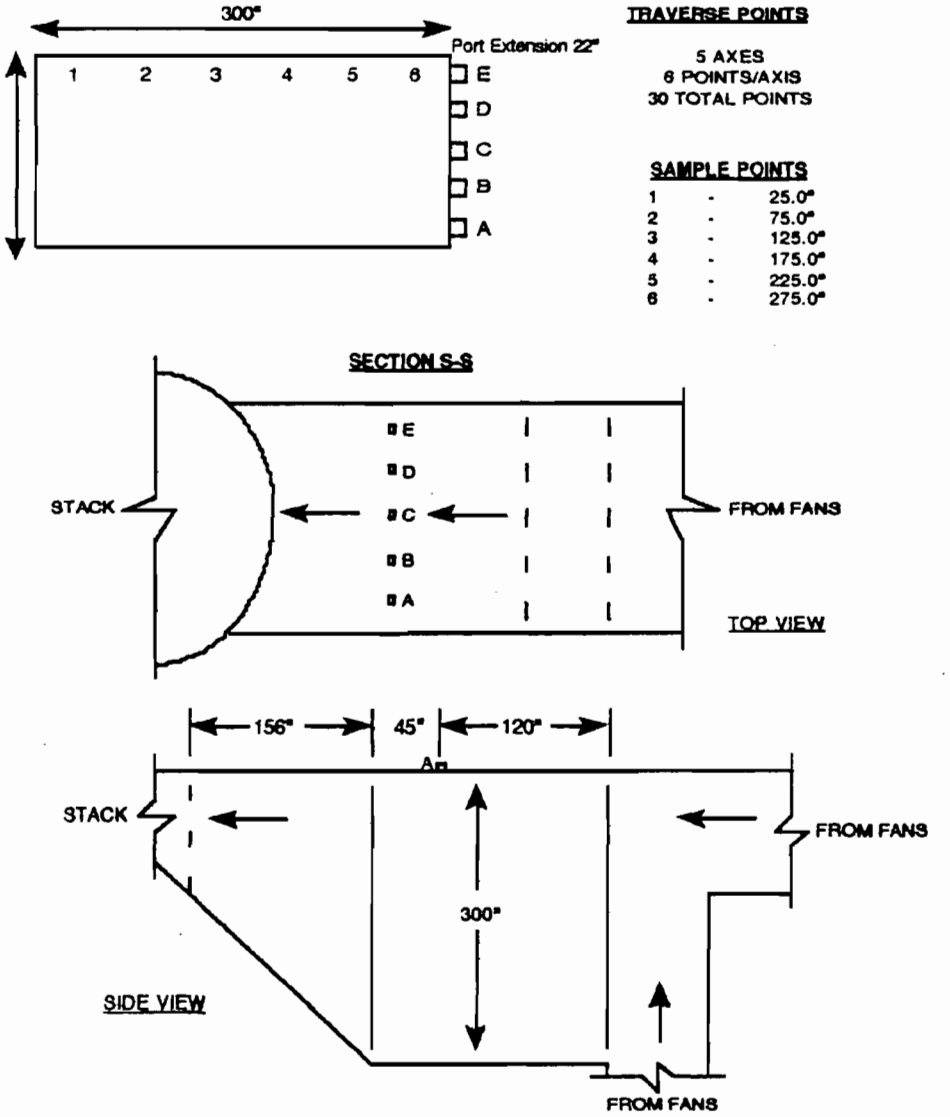


Figure 2. Sample Point Locations

5. PARTICULATE SAMPLING PROCEDURE (EPA Method 17)

The sampling procedure utilized is that specified in **40 CFR, Part 60, Appendix A, Method 17,** as modified by the governing regulatory agency. A brief description of this procedure is as follows:

The first impingers were partially filled with 100 milliliters of deionized water. The next impinger was left empty to act as a moisture trap. Preweighed 6 to 16 mesh indication silica gel was added to the last impinger. The sampling equipment manufactured by Lear Siegler (Model 100) or Sanders Engineering (Model 200) was assembled as shown in the attached drawing. The system was leak checked by plugging the inlet to the nozzle and pulling a 15 inch mercury vacuum. A leakage rate not in excess of 0.02 cubic feet per minute was considered acceptable.

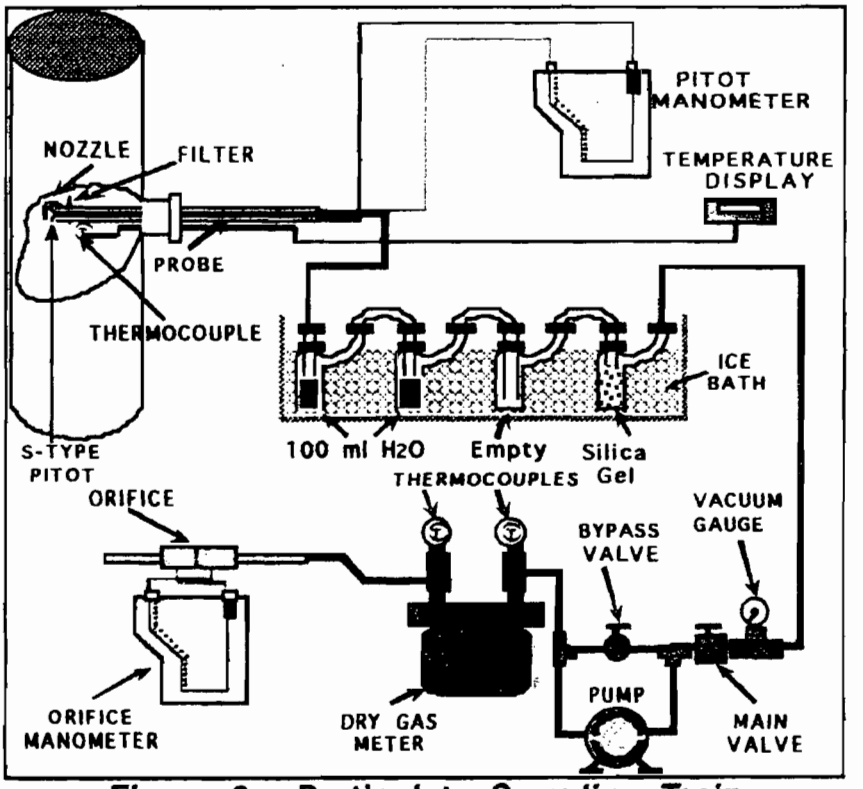


Figure 3. Particulate Sampling Train (EPA Method 17)

The inside dimensions of the stack liner were measured and recorded. The required number of sampling points were marked on the probe for easy visibility. The range of velocity pressure, the percent moisture, and the temperature of the effluent gases were determined. From this data, the correct nozzle size and the nomograph multiplication factor were determined.

Crushed ice was placed around the impingers. The nozzle was placed on the first traverse point with the tip pointing directly into the gas stream. The pump was started immediately and the flow was adjusted to isokinetic sampling conditions. After the required time interval had elapsed, the probe was repositioned to the next traverse point and isokinetic sampling was re-established. This was performed for each point until the run was completed. Readings were taken at each point and recorded on the field data sheet. At the conclusion of each run, the pump was turned off and the final readings were recorded.

5.1. Particulate Sample Recovery

Care was exercised in moving the collection train to the sample recovery area to minimize the loss of collected sample, or the gain of extraneous particulate matter. The volume of water in the impingers was measured, the silica gel impinger was weighed and recorded on the field data sheet. The nozzle, and all sample-exposed surfaces were washed with reagent grade acetone into a clean sample container. A brush was used to loosen any adhering particulate matter and

subsequent washings were placed into the container. The filter was carefully removed from the fritted support and placed in a clean separate sample container. A sample of the acetone used in the washing was saved for a blank laboratory analysis.

5.2. Particulate Analytical Procedures

The filter and any loose particulate matter were transferred from the sample container to a clean, tared weighing dish. The filter was placed in a desiccator for at least 24 hours and then weighed to the nearest 0.1 milligram until a constant weight was obtained. The original weight of the filter was deducted, and the weight gain was recorded to the nearest 0.1 milligram.

The wash solution was transferred to a clean, tared beaker. The solution was evaporated to dryness, desiccated to a constant weight, and the weight gain was recorded to the nearest 0.1 milligram.

A P P E N D I X A PARTICULATE FIELD DATA SHEETS

SANDERS ENGINEERING & ANALYTICAL SERVICES, Inc.
1568 Leroy Stevens Rd.
Mobile, AL 36695
Office: (205) 633-4120
FAX#: (205) 633-2285

FIELD DATA SHEET

COMPANY G/C River Co DATE 12-7-94 DGM# 5-1050
PLANT Coal #7 OPERATOR JC ΔHa 2.5 cu ft/min.
UNIT 7 METHOD 17 PROBE NA liner 21' length

	RUN 1 Steady State	RUN 2	RUN 3
NOZZLE CALIBRATION PRE	183 / 184 / 184 / 184 AVERAGE	183 / 185 / 184 / 184 AVERAGE	~~189~~ 185 / ~~189~~ 189 / ~~190~~ 190 / ~~189~~ 189 AVERAGE
NOZZLE CALIBRATION POST	183 / 184 / 184 / 184 AVERAGE	183 / 184 / 184 / 184 AVERAGE	185 / 189 / 190 / 189 AVERAGE
FILTER NUMBER	1116	1117	1118
METER READING FINAL	110.450	44.140	78.825
METER READING INITIAL	78.400	11.400	45.000
METER READING NET	32.050	32.740	33.825
LEAK CHECK SYSTEM Pre	✓ in. Hg	✓ in. Hg	✓ in. Hg
LEAK CHECK SYSTEM Post	18 in. Hg	15 in. Hg	15 in. Hg
LEAK CHECK PITOT Pre	~~impact~~ / ~~static~~	impact / ~~static~~	~~impact~~ / static
LEAK CHECK PITOT Post	~~impact~~ / ~~static~~	~~impact~~ / ~~static~~	~~impact~~ / ~~static~~
LEAK CHECK SYSTEM Pre	✓ cfm	✓ cfm	/ cfm
LEAK CHECK SYSTEM Post	.010 cfm	.010 cfm	.008 cfm
VOLUME OF LIQUID WATER COLLECTED IMP. 1 FINAL	146	153	156
VOLUME OF LIQUID WATER COLLECTED IMP. 1 INITIAL	100	100	100
VOLUME OF LIQUID WATER COLLECTED IMP. 1 NET	46	53	56
VOLUME OF LIQUID WATER COLLECTED IMP. 2 FINAL	100	100	100
VOLUME OF LIQUID WATER COLLECTED IMP. 2 INITIAL	100	100	100
VOLUME OF LIQUID WATER COLLECTED IMP. 2 NET	0	0	0
VOLUME OF LIQUID WATER COLLECTED IMP. 3 FINAL	0	0	0
VOLUME OF LIQUID WATER COLLECTED IMP. 3 INITIAL	0	0	0
VOLUME OF LIQUID WATER COLLECTED IMP. 3 NET	0	0	0
VOLUME OF LIQUID WATER COLLECTED IMP. 4 FINAL	1586.4	1044.5	1594.0
VOLUME OF LIQUID WATER COLLECTED IMP. 4 INITIAL	1576.0	1035.0	1586.4
VOLUME OF LIQUID WATER COLLECTED IMP. 4 NET	10.4	9.5	7.6
VOLUME OF LIQUID WATER COLLECTED TOTAL	76.4	62.5	63.6
GAS ANALYSIS O_2	4.8	4.9	4.6
GAS ANALYSIS CO_2	14.0	13.5	13.5
GAS ANALYSIS CO			
STATIC in. H2O	+1.3	1.3	1.3
BAROMETRIC in. Hg	30.30	30.30	30.30

PORT # / POINT #	TIME	GAS METER VOL. (cu. ft.)	VEL. HEAD ΔP in. H_2O	ORIFICE HEAD ΔH in. H_2O	TEMPERATURE °F STACK	PROBE	HOT BOX	IMP.	GAS METER IN	GAS METER OUT	VAC. in. H_g
1- 6	9:39	78.400	1.42	1.42	300			66	71	70	7
5	:41	79.500	1.52	1.19	310			✓	71	70	8
4	:43	80.800	1.52	1.19	318			✓	71	70	6
3	:45	81.900	3.10	2.43	311			✓	72	70	6
2	:47	83.200	2.22	1.74	324			✓	73	70	8
1	:49	84.200	3.30	2.59	350			✓	73	70	~~8~~ 11
2- 6	9:52	86.500	1.37	1.08	302			55	74	71	7
5	:54	87.700	1.25	.98	310			✓	74	71	7
4	:56	88.88	1.12	.88	319			✓	76	71	6
3	:58	90.500	2.15 ~~1.66~~	1.68	318			✓	76	71	9
2	10:00	91.100	1.99	1.56	324			✓	76	72	9
1	:02	92.500	2.10	1.65	349			✓	76	72	9
3- 6	10:05	93.800	.67	.53	300			54	76	72	6
5	:07	94.600	.96	.75	312			✓	77	73	6
4	:09	95.500	.93	.73	320			✓	77	73	6
3	:11	96.500	1.00	.79	319			✓	77	73	7
2	:13	97.500	1.35	1.06	336			✓	78	73	8
1	:15	98.500	1.90	1.49	349			✓	78	73	8
4- 6	10:18	99.735	1.07	.84	304			56	78	73	8
5	:20	100.300	1.17	.92	317			✓	78	73	8
4	:22	101.200	.95	.74	321			✓	79	75	8
3	:24	102.750	1.08	.84	317			✓	79	75	8
2	:26	103.800	.77	.60	339			✓	79	75	8
1	:28	104.500	.68	.53	350			✓	80	75	7

CHECK INDICATES TEMPERATURES MEET REQUIRED LIMITS.

COMPANY Gulf Pwr. Co DATE 12-7-94

SITE Crist 7 RUN # 1 PAGE ____ OF ____

PORT # / POINT #	TIME	GAS METER VOL. (cu. ft.)	VEL. HEAD ΔP in. H_2O	ORIFICE HEAD ΔH in. H_2O	TEMPERATURE °F						VAC. in. H_g
					STACK	PROBE	HOT BOX	IMP.	GAS METER IN	GAS METER OUT	
5-6	10:31	105.340	1.03	.81	305			58	79	76	8
5	:33	106.200	1.06	.83	313			✓	79	76	8
4	:35	107.350	.67	.53	320			✓	79	76	8
3	:37	108.500	.82	.64	316			✓	79	76	8
2	:39	108.500	.60	.47	314			✓	79	76	8
1	:41	109.600	.62	.49	345			✓	79	76	8
	:43	110.450									
			1.1288	1.07	321.3				74.6		

CHECK INDICATES TEMPERATURES MEET REQUIRED LIMITS.

COMPANY G.A.F. Corp. C. DATE 12-1-54

SITE Unit 2 RUN # 1 PAGE ____ OF ____

PORT # / POINT #	TIME	GAS METER VOL. (cu.ft.)	VEL. HEAD ΔP in. H_2O	ORIFICE HEAD ΔH in. H_2O	TEMPERATURE °F STACK	PROBE	HOT BOX	IMP.	GAS METER IN	GAS METER OUT	VAC. in. H_g
1- 6	11:18	11.400	1.68	~~1.18~~ 1.32	308			66	80	79	8
5	:20	12.650	1.57	1.24	314			✓	80	79	7
4	:22	13.900	1.38	1.09	323			✓	81	79	7
3	:24	14.990	3.12	2.47	321			✓	81	80	10
2	:26	16.650	2.35	1.86	328			✓	81	80	9
1	:28	18.200	3.75	2.97	354			✓	82	80	12
2- 6	11:31	19.950	1.42	~~[illegible]~~ 1.13	305			✓ 50	82	80	7
5	:33	21.000	1.32	1.05	313			✓	82	80	7
4	:35	22.150	1.13	.89	322			✓	83	80	7
3	:37	23.200	1.90	1.51	323			✓	83	80	7
2	:39	24.500	1.85	1.46	328			✓	83	80	9
1	:41	25.800	2.30	1.82	352			✓	84	80	10
3- 6	:44	27.200	.60	.48	304			✓ 51	84	80	5
5	:46	27.900	.92	.73	314			✓	84	80	7
4	:48	28.900	.92	.73	323			✓	84	81	7
3	:50	29.900	.96	.76	323			✓	84	81	7
2	:52	30.900	1.38	1.09	346			✓	84	81	8
1	:54	31.900	1.92	1.52	355			✓	84	81	10
4- 6	11:57	33.110	1.06	.84	355			✓	84	81	10
5	:59	34.100	1.15	.91	319			✓	84	81	8
4	:01	35.300	1.02	.80	325			✓	84	81	8
3	:03	36.150	1.06	.84	323			✓	84	81	8
2	:05	37.100	.86	.68	335			✓	84	81	7
1	:07	38.070	.82	.65	354			✓	84	81	7
				28.84	7828				3916		

CHECK INDICATES TEMPERATURES MEET REQUIRED LIMITS.

COMPANY G.H. River ____ DATE 12-7-94

SITE Crist 2 ____ RUN # 2 ____ PAGE ____ OF ____

PORT # / POINT #	TIME	GAS METER VOL. (cu.ft.)	VEL. HEAD ΔP in.H_2O	ORIFICE HEAD ΔH in. H_2O	TEMPERATURE °F STACK	PROBE	HOT BOX	IMP.	GAS METER IN	GAS METER OUT	VAC. in. H_g
5-6	12:10	38.900	.96	.76	308			51	83	80	8
5	:12	39.800	1.04	.82	325			✓	83	80	8
4	:14	40.700	.80	.63	320			✓	83	80	8
3	:16	41.600	.82	.65	322			✓	83	80	8
2	:18	42.500	.67	.53	337			✓	83	80	8
1	:20	43.300	.63	.50	353			✓	83	80	8
	:22	44.140									
			1.1213	1.041	327.7					81.57	

CHECK INDICATES TEMPERATURES MEET REQUIRED LIMITS.

COMPANY GA Power Co DATE 12-7-94

SITE Crist 7 RUN # 2 PAGE ____ OF ____

PORT # / POINT #	TIME	GAS METER VOL. (cu.ft.)	VEL. HEAD ΔP in. H_2O	ORIFICE HEAD ΔH in. H_2O	TEMPERATURE °F STACK	PROBE	HOT BOX	IMP.	GAS METER IN	GAS METER OUT	VAC. in. H_g
1- 6	12:38	45.000	1.50	1.32	305			62	81	80	8
5	:40	46.300	1.69	1.49	315			✓	81	80	8
4	:42	47.500	1.56	1.38	324			✓	82	80	8
3	:44	48.900	3.22	2.84	324			✓	82	80	8
2	:46	50.600	2.32	2.04	335			✓	83	80	10
1	:48	52.350	3.20	2.82	356			✓	82	80	12
2- 6	:50	53.900	1.35	1.19	307			✓60	82	80	8
5	:52	55.100	1.32	1.16	313			✓	83	80	8
4	:54	56.300	1.22	1.08	324			✓	83	80	8
3	:56	57.300	2.05	1.81	324			✓	83	80	9
2	:58	58.650	2.05	1.81	336			✓	83	80	9
1	13:00	60.500	2.22	1.95	356			✓	82	80	9
3- 6	13:03	61.500	.66	.58	306			✓59	83	80	6
5	:05	62.400	.92	.81	306			✓	83	80	6
4	:07	63.300	.82	.72	325			✓	83	80	7
3	:09	64.200	.92	.81	325			✓	83	80	7
2	:11	65.140	1.04	.92	347			✓	83	80	7
1	:13	65.900	1.9	1.68	357			✓	83	80	11
4- 6	:17	67.400	1.06	.93	307			✓	83	80	8
5	:19	68.200	1.06	.93	320			✓	83	80	8
4	:21	69.300	.92	.81	328			✓	83	80	8
3	:23	70.300	.96	.84	326			✓	83	80	8
2	:25	71.300	.73	.64	326			✓	83	80	8
1	:27	72.200	.92	.81	356			✓	83	80	8

CHECK INDICATES TEMPERATURES MEET REQUIRED LIMITS.

COMPANY [illegible] DATE 12-7-84

SITE [illegible] RUN # 3 PAGE ____ OF ____

3137 3848 3903

PORT # / POINT #	TIME	GAS METER VOL. (cu.ft.)	VEL. HEAD ΔP in.H_2O	ORIFICE HEAD ΔH in. H_2O	TEMPERATURE °F: STACK	PROBE	HOT BOX	IMP.	GAS METER: IN	GAS METER: OUT	VAC. in. H_g
5-6	13:30	73.215	.97	.86	310			59	82	80	9
5	:32	74.150	.77	.86	323			✓	82	80	9
4	:34	75.350	.77	.68	327			✓	82	80	9
3	:36	76.250	.82	.72	325			✓	82	80	9
2	:38	77.000	.72	.63	340			✓	82	80	9
1	:40	77.950	.72	.63	353			✓	82	80	9
	:42	78.825									
			1.1315	1.19	3225					8125	

CHECK INDICATES TEMPERATURES MEET REQUIRED LIMITS.

COMPANY Ga. G/P Power Co DATE 12-2-94

SITE Crist 7 RUN # 3 PAGE ____ OF ____

Best Available Copy

LABORATORY ANALYSIS & CHAIN OF CUSTODY

COMPANY/PLANT: Gulf Power Co.

UNIT #: 7 DATE OF TEST: 12/6-7/92 TYPE OF TEST: ☐ M-5 ☒ M-17 ☐ OTHER _____

SAMPLE #	RELINQUISHED BY	RECEIVED BY	TIME	DATE	REASON FOR CHANGE
3 FH- U7-5A					
3 WH U7-5B					
3 FH- U7-5B					
3 FH- U7-5A					

UNIT # 7 Dec 6, 1992

RUN # 1	FILTER # 1113	BEAKER # 4 WASH (ML) 42
FINAL WEIGHT	155.1	68024.9
INITIAL WEIGHT	120.1	68020.0
DIFFERENCE	35.0	4.9
CORRECTED TOTAL WEIGHT		39.9
RUN # 2	FILTER # 1114	BEAKER # 5 WASH (ML) 22
FINAL WEIGHT	142.1	64607.1
INITIAL WEIGHT	119.5	64603.8
DIFFERENCE	22.6	4.3
CORRECTED TOTAL WEIGHT		26.9
RUN # 3	FILTER # 1112	BEAKER # 32 WASH (ML) 28
FINAL WEIGHT	143.6	64731.8
INITIAL WEIGHT	121.7	64724.1
DIFFERENCE	21.9	7.7
CORRECTED TOTAL WEIGHT		29.6
RUN # _____	FILTER # _____	BEAKER # _____ WASH (ML) _____
FINAL WEIGHT		
INITIAL WEIGHT		
DIFFERENCE		
CORRECTED TOTAL WEIGHT		

UNIT # 7 Dec 7, 1992

RUN # 1	FILTER # 1116	BEAKER # 7 WASH (ML) 22
FINAL WEIGHT	168.4	60031.1
INITIAL WEIGHT	121.5	60023.3
DIFFERENCE	46.9	7.8
CORRECTED TOTAL WEIGHT		54.7
RUN # 2	FILTER # 1117	BEAKER # 30 WASH (ML) 20
FINAL WEIGHT	149.7	67093.4
INITIAL WEIGHT	122.4	67079.5
DIFFERENCE	27.3	13.9
CORRECTED TOTAL WEIGHT		33.2
RUN # 3	FILTER # 1118	BEAKER # 40 WASH (ML) 20
FINAL WEIGHT	155.5	67690.7
INITIAL WEIGHT	119.9	67688.2
DIFFERENCE	35.6	2.5
CORRECTED TOTAL WEIGHT		38.1
WASH SOLVENT BLANK (ML) 50		BEAKER # 17 WASH (ML) 50
FINAL WEIGHT		68324.1
INITIAL WEIGHT		68324.1
DIFFERENCE		0.0
CORRECTION FACTOR (MG/ML)		0.00

ALL WEIGHTS ARE IN MILLIGRAMS (MG)

A P P E N D I X B EQUATIONS AND SAMPLE CALCULATIONS

EQUATIONS

1. $$P_s = P_{bar} + \frac{P_g}{13.6}$$

2. $$P_m = P_{bar} + \frac{\overline{\Delta H}}{13.6}$$

3. $$V_s = K_p C_p \overline{\sqrt{\Delta P}} \sqrt{\frac{\overline{T_s}}{M_s P_s}}$$

4. $$V_{m(Std)} = K_1 V_m Y \left[\frac{P_{bar} + \frac{\overline{\Delta H}}{13.6}}{\overline{T_m}} \right]$$

5. $$V_{w(Std)} = 0.04707 V_{lc}$$

6. $$B_{ws} = \frac{V_{w(Std)}}{V_{m(Std)} + V_{w(Std)}}$$

7. $$M_d = 0.44 (\%CO_2) + 0.32 (\%O_2) + 0.28 (\%N_2 + \%CO)$$

8. $$M_s = M_d(1 - B_{ws}) + 18 (B_{ws})$$

9. $$EA = \left[\frac{(\%O_2 - 0.5 (\%CO))}{0.264 (\%N_2) - ((\%O_2) - 0.5 (\%CO))} \right] 100$$

10. $$Q_a = (V_s)\,(A_s)\,(60)$$

11. $$Q_s = Q_a\,(1\text{-}B_{ws})\,\frac{(528)}{\overline{T_s}}\,\frac{(P_s)}{29.92}$$

12. $$E_H = \left(\frac{PMR}{H_I}\right)$$

13. $$E = C_d\,F_{O_2}\,\left(\frac{20.9}{20.9 - \%O_2}\right)$$

14. $$C_s = 0.0154\,\frac{M_n}{V_{m(Std)}}$$

15. $$C_{50} = \frac{21\,C_s}{21 - [(1.5)\,(\%O_2) - 0.133\,(N_2) - 0.75\,(\%CO)]}$$

16. $$C_{12} = \frac{C_s\,(12)}{\%CO_2}$$

17. $$PMR = (C_s)\,(Q_s)\,\frac{(60)}{7000}$$

18. $$V_n = \left[\,(0.002669)\,(V_{lc}) + \frac{V_m Y}{\overline{T_m}}\,\left(p_{bar} + \frac{\overline{\Delta H}}{13.6}\right)\right]\,\frac{\overline{T_s}}{p_s}$$

19. $$I = \frac{100\,V_n}{(60)\,\emptyset\,V_s\,A_n}$$

NOMENCLATURE

A_n = Cross-sectional area of nozzel, ft^2

A_s = Cross sectional area of stack, ft^2

B_{ws} = Wator vapor in the gas stream, proportion by volume (dimensionless)

C_p = Pitot tube coefficient (dimensionless) (0.84)

C_s = Particulate concentration, grains/SDCF

C_d = Particulate concentration, lbs/SDCF

C_{12} = Particulate concentration (C_s adjusted to 12% CO) grains/SDCF

C_{50} = Particulate concentration (C_s adjusted to 50% excess air) grains/SDCF

EA = Excess air, %

E = Emission in lb/mmBTU

E_H = Emission in lb/mmBTU, based on heat input

H_I = Total Heat Input, Million BTU per Hour (MMBTU/hr)

I = Percent of isokinetic sampling

K_1 = 17.64 °R/ inches Hg

K_p = Pitot tube constant,

$$85.49 \text{ ft/sec} \left[\frac{(\text{lb/lb-mole})(\text{in. Hg})}{(°\text{R})(\text{inc. } H_2O)} \right]^{\frac{1}{2}}$$

M_n = Total amount of particulate collected, mg

M_d = Molecular weight of stack gas; dry basis, lb/lb mole

M_s = Molecular weight of stack gas; wet basis, lb/lb mole

P_{bar} = Barometric pressure at the sampling site, in. Hg

NOMENCLATURE (continued)

P_m = Meter pressure, in. Hg

P_s = Absolute stack pressure, in. Hg

P_g = Stack static pressure, in. H_2O

PMR = Particulate mass rate, lb/Hr

Q_a = Volumetric flow rate ACFM

Q_s = Volumetric flow rate SDCFM

V_s = Average stack gas velocity, ft/sec

V_{lc} = Total volume of liquid collected in impingers & silica gel, ml

V_m = Volume of gas sample as measured by dry gas meter, ACF

$V_{m(std)}$ = Volume of gas sample measured by dry gas meter, corrected to standard conditions, SDCF

$V_{w(std)}$ = Volume of water vapor in gas sample, corrected to standard conditions, SCF

V_n = Volume collected at stack conditions through nozzle, ACF

Y = Dry gas meter calibration factor (dimensionless)

ΔH = Average pressure difference of orifice, in. H_2O

ΔP = Velocity head of stack gas, in. H_2O

$\overline{\sqrt{\Delta P}}$ = Average of square roots of the velocity pressure, in. H_2O

Ø = Total sampling time, minutes

$\%CO_2$, $\%O_2$, N_2, %CO - Number % by volume, dry basis, from gas analysis

F_{O_2} = Oxygen based F factor (9820 SDCF/mmBTU for bituminous coal)

T_s = Temperature of the stack, °R (° F + 460)

Input and Constants

$$f := \frac{9820\ ft^3}{mm\ btu}$$

$pg := 1.3\ in.\ H2O$

$pbar := 30.3\ in.\ Hg.$

$\Delta havg := 1.066\ in.\ H2O$

$y := 0.99$

$tm := 77.9\ °F$

$o2 := 4.8$

$co2 := 14.$

$vm := 32.05\ ft^3$

$vlc := 76.4\ ml$

$theta := 60\ min$

$nozdia := 0.184\ in.$

$ts := 321.\ °F$

$as := 375.\ ft^2$

$mn := 54.7\ mg$

$numberofpoints := 30$

$sqrt{\Delta p} := 1.129\ in.\ H2O^{0.5}$

$$kp := \frac{85.49 \cdot 1\ ft \cdot 1 \left(\frac{lb\ in.\ Hg.}{lb\text{-}mole\ °R\ in.\ H2O}\right)^{0.5}}{1\ sec}$$

$cp := 0.84$

$$k1 := \frac{17.64\ °R}{in.\ Hg.}$$

$$ts = \frac{(ts + 460\ °F)\ °R}{°F}$$

781. °R

$$tm = \frac{(tm + 460\ °F)\ °R}{°F}$$

537.9 °R

n2 = 100 - o2 - co2

81.2

$$an = \frac{nozdia^2\ 3.1416}{4\ \left(\frac{12\ in.}{ft}\right)^2}$$

0.000184656 ft^2

Calculations

Equation 1

$$ps = pbar + \frac{pg}{\frac{13.6 \text{ in. } H2O}{1 \text{ in. Hg.}}}$$

30.3956 in. Hg.

Equation 2

$$pm = pbar + \frac{\Delta havg}{\frac{13.6 \text{ in. } H2O}{\text{in. Hg.}}}$$

30.3784 in. Hg.

Equation 3

$$vmstd = \frac{k1 \; vm \; y \; (pbar + \frac{\Delta havg}{\frac{13.6 \text{ in. } H2O}{\text{in. Hg.}}})}{tm}$$

31.61 ft^3

Equation 4

$$vwstd = \frac{0.04707 \; ft^3 \; vlc}{ml}$$

3.59615 ft^3

Equation 5

$$bws = \frac{vwstd}{vmstd + vwstd}$$

0.102145

Equation 6

$$md = \frac{(0.44\ co2 + 0.32\ o2 + 0.28\ n2)\ lb}{lb\text{–}mole}$$

$$\frac{30.432\ lb}{lb\text{–}mole}$$

Equation 7

$$ms = md\ (1 - bws) + \frac{bws\ 18\ lb}{lb\text{–}mole}$$

$$\frac{29.1621\ lb}{lb\text{–}mole}$$

Equation 8

$$vs = kp\ cp\ sqrt\Delta p\ \left(\frac{ts}{ms\ ps}\right)^{0.5}$$

$$\frac{76.1025\ ft}{sec}$$

Equation 9

$$qa = \frac{vs\ as\ 60\ sec}{min}$$

$$\frac{1.71231\ 10^{6}\ ft^{3}}{min}$$

Equation 10

$$qs = \frac{qa\ (1 - bws)\ 528\ °R\ ps}{ts\ 29.92\ in.\ Hg.}$$

$$\frac{1.05589\ 10^{6}\ ft^{3}}{min}$$

Equation 11

$$cs = \frac{0.0154 \text{ gr mn}}{\text{mg vmstd}}$$

$$\frac{0.0266491 \text{ gr}}{\frac{3}{\text{ft}}}$$

Equation 12

$$pmr = \frac{cs \; qs \; 60 \text{ min}}{\text{hour} \; \frac{7000 \text{ gr}}{\text{lb}}}$$

$$\frac{241.188 \text{ lb}}{\text{hour}}$$

Equation 13

$$e = \frac{cs \; f \; 20.9 \; 1 \text{ lb}}{(20.9 - o2) \; 7000 \text{ gr}}$$

$$\frac{0.0485307 \text{ lb}}{\text{mm btu}}$$

Equation 14

$$vn = \frac{ts \left(\frac{0.002669 \text{ in. Hg. ft}^3}{\text{ml } ^\circ\text{R}} \; vlc + \frac{vm \; y \; pm}{tm} \right)}{ps}$$

$$51.2827 \text{ ft}^3$$

Equation 15

$$i = \frac{100\ \%\ vn}{60\ sec\ theta\ vs\ an}$$

$$\frac{}{min}$$

101.369 %

Equation 16

$$hi = \frac{pmr}{e}$$

$$\frac{4969.8\ mm\ btu}{hour}$$

A P P E N D I X C QUALITY CONTROL

INITIAL
METER CALIBRATION FORM - DGM

DATE: 06-16-94 Box No. S-100

Ref. DGM Ser. # 1044456 Calibrated By JACK COVINGTON

RUN #	1	2	3	4	5
DELTA H (DGM)	0.50	1.00	1.50	2.00	3.00
Y (Ref. DGM)	0.985	0.985	0.985	0.985	0.985
Reference DGM					
Gas Vol. Initial	198.000	205.700	214.200	225.700	236.500
Gas Vol. Final	205.300	213.600	223.000	235.600	242.700
Meter Box DGM					
Gas Vol. Initial	187.520	195.170	203.650	215.090	225.830
Gas Vol. Final	194.778	203.050	212.418	224.920	231.960
Reference DGM Temp.	Avg.	Avg.	Avg.	Avg.	Avg.
Deg F Initial	93	93	94	95	95
Deg F Final	93	94	95	95	94
Meter Box DGM					
Temp. Initial In	94	97	95	99	97
Temp. Initial Out	93	94	95	98	93
Temp. Final In	97	95	100	97	98
Temp. Final Out	94	95	96	93	93
P Bar IN. Hg	30.15	30.15	30.15	30.15	30.15
Time (sec.)	1044	832	756	737	380
Meter Calibration Factor (Y)	0.992	0.988	0.989	0.990	0.990
Qm (C.F.M.)	0.398	0.540	0.660	0.761	0.925
Km (Std Pressure)	0.707	0.678	0.677	0.676	0.673
DELTA Ha	1.70	1.85	1.85	1.85	1.89

Average Y (Meter Calibration Factor 0.990
Average Km (Standard Pressure) 0.682
Average DELTA Ha of Orifice 1.825

Y= ≤ .03
Max & Min ≤ .02 from Avg
Final Avg within 5% of Initial Avg
ΔHa = Max & Min ≤ .2 from Avg

FINAL
METER CALIBRATION FORM - DGM

DATE: 12-10-94 Box No. S-100

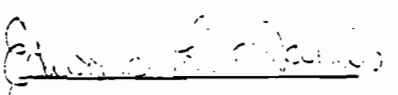
Ref. DGM Ser. # 1044456 Calibrated By JACK COVINGTON

RUN #	1	2	3
DELTA H (DGM)	1.5	1.5	1.5
Y (Ref. DGM)	0.985	0.985	0.985
Reference DGM			
Gas Vol. Initial	38.900	45.300	52.900
Gas Vol. Final	45.300	52.900	60.700
Meter Box DGM			
Gas Vol. Initial	96.960	103.375	111.000
Gas Vol. Final	103.375	111.000	118.800
Reference DGM Temp.	Avg.	Avg.	Avg.
Deg F Initial	60	60	60
Deg F Final	62	63	63
Meter Box DGM			
Temp. Initial In	60	60	60
Temp. Initial Out	60	60	60
Temp. Final In	62	63	66
Temp. Final Out	62	63	64
P Bar IN. Hg	30.14	30.14	30.14
Time (sec.)	575	675	710
Meter Calibration Factor (Y)	0.979	0.978	0.983
Qm (C.F.M.)	0.672	0.679	0.662
Km (Std Pressure)	0.712	0.719	0.701
DELTA Ha	1.90	1.86	1.95

Average Y (Meter Calibration Factor)	0.980
Initial Y (Meter Calibration Factor)	0.990
Percent Error	1.01%
Average Km (Standard Pressure)	0.710
Average DELTA Ha of Orifice	1.90

MAGEHELIC CALIBRATION

BOX	460	100	133	2879	173	175	S101	S-318
SER. NO.	91127W W137	91126A M91	R32D	R33D	R20208 A617	R90125 MR6	R22D	R74D
RANGE	0-2	0-2	0-2	0-2	0-2	0-2		0-5
REFERENCE READING	FIELD DEVICE READING							
0.000						0.00	0.0	
0.050								
0.150								
0.200								
0.250								
0.450								
0.50	0.50	0.50	0.48	0.52		0.50	0.5	
1.00	1.02	1.00	0.96	1.02		0.98	0.98	
1.30								
1.80	1.86	1.80	1.70	1.86		1.80	1.8	
2.50								
4.50								
5.0								
9.0								
13.0								
22.0								

SIGNATURE: 

DATE: 

MAGEHELIC CALIBRATION

BOX #1

SER. NO.	10720-AB68	R1061-3AG48	R5031-SE376	R1062-9JA82	R1051-3MR42	R90124 RI119
RANGE	0-0.25	0-0.50	0-2	0-5	0-10	0-25
~~REFERENCE~~ READING	FIELD DEVICE READING					
0.000	0.00	0.000	0.00	0.00	0.0	0.0
0.050	0.050					
0.150	0.150	0.150				
0.200	0.200					
0.250		0.250				
0.450		0.450				
0.50			0.49			
1.00			0.99			
1.30				1.30		
1.80			1.80			
2.50				2.40	2.5	
4.50				4.50		
5.0					5.0	5.0
9.0					9	
13.0						13.0
22.0						22.0

SIGNATURE: Edward F Harris

DATE: 5/16/94

MAGEHELIC CALIBRATION
BOX #2

SER. NO.	10819-DF2	R1090-2AG18	R50315-EB93	R1062-9TA87	30830-AM79	R1072-2MC5
RANGE	0-0.25	0-0.50	0-2	0-5	0-10	0-25
REFERENCE READING	FIELD DEVICE READING					
0.000	0.000					
0.050	0.051					
0.150	0.158	0.152				
0.200	0.206					
0.250		0.250				
0.450		0.456				
0.50			0.51			
1.00			1.01			
1.30				1.31		
1.80			1.83			
2.50				2.52	2.5	
4.50				4.50		
5.0					5.0	5.0
9.0					9.0	
13.0						12.6
22.0						21.5

SIGNATURE: [signature]

DATE: [illegible]

MAGEHELIC CALIBRATION
BOX #3

SER. NO.	R900723M RR	IR01126 LC2	R10608 CF20
RANGE	0-0.50	0-2	0-10
REFERENCE READING		FIELD DEVICE READING	
0.000	0.00	0.00	0.0
0.050			
0.150	0.15		
0.200			
0.250	0.250		
0.450	0..45		
0.50		0.50	
1.00		1.00	
1.30			
1.80		1.80	
2.00			2.0
4.50			
5.0			5.0
9.0			9.0
13.0			
22.0			

SIGNATURE: Edward L. Harris

DATE: 10/1/94

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MAGEHELIC CALIBRATION

BOX #5

SER. NO.	R90072 3MRR1	R90100 3CD87	R90111 9RR106
RANGE	0-0.50	0-5	0-25
REFERENCE READING	FIELD DEVICE READING		
0.000	0.00	0.00	0.0
0.050			
0.150	0.153		
0.200			
0.250	0.254		
0.450	0.458		
0.50			
1.00			
1.30		1.32	
1.80			
2.50		2.51	
4.50		4.56	
5.0			5.0
9.0			
13.0			12.8
22.0			21.9

SIGNATURE: _____

DATE:

TEMPERATURE CALIBRATIONS - DEGREES FAHRENHEIT

REFERENCE DEVICE READING*	0 DEG. F	210 DEG.	420 DEG.	630 DEG.	840 DEG.	1050 DEG.	1260 DEG.	1470 DEG.	1680 DEG.	1900 DEG.
2879	1	211	421	631	839	1050	1260	1470	1680	1900
METER BOX #1 C-133 11580	0	214	423	632	850	1060	1267	1479	1690	1910
METER BOX #3 C-173 S11-24										
METER BOX #2 C-175 15962	0	212	418	626	843	1058	1251	1470	1684	1909
METER BOX #4 D-460 15751	0	207	414	624	838	1055	1271	1484	1689	1898
METER BOX #5 S-100 15751	0	206	413	623	838	1055	1271	1484	1689	1899
METER BOX #6 S-101 15751	0	212	422	635	836	1056	1265	1471	1690	1909
METER BOX #7 S-318 15751										
PORTABLE THERMOCOUPLE # 2 (Blue)	2	210	416	625	839	1055	1270	1480	1684	1890
PORTABLE THERMOCOUPLE # 2 (Green)	2	210	417	626	840	1057	1272	1483	1687	1893
PINK T83658	1	210	418	629	844	1062	1278	1489	1695	1903

DATE: 6-16-94 SIGNATURE: [signature]

* Reference Device is an Omega Engineering CL505-A calibrated reference thermocouple-potentiometer system.

SANDERS ENGINEERING & ANALYTICAL SERVICES, Inc.

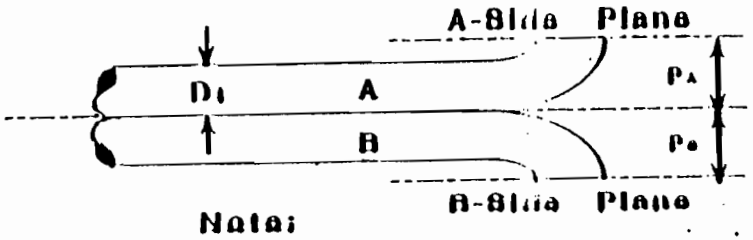
1588 Leroy Stevens Rd.
Mobile, Al. 36695

Office: (205) 633-4120
FAX#: (205) 633-2285

The Pitot used was within the following geometric specifications:

D_t between 0.48 and 0.95 cm (3/16 and 3/8 in.)

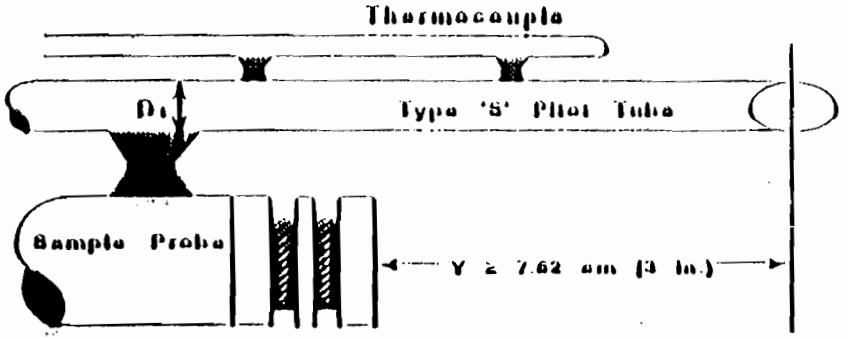
C_p = 0.84



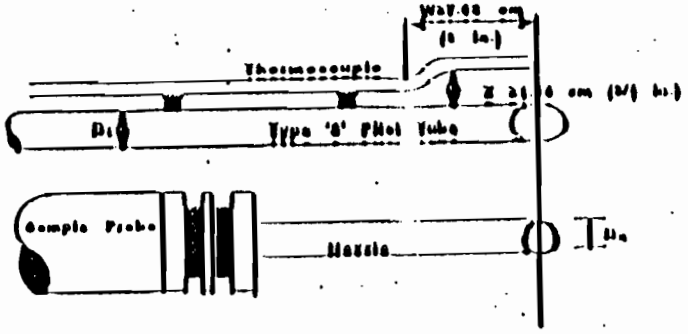
Note:

$1.05\ D_t \leq 1.50\ D_t$

$P_A = P_B$



Minimum pitot-sample probe separation needed to prevent interference



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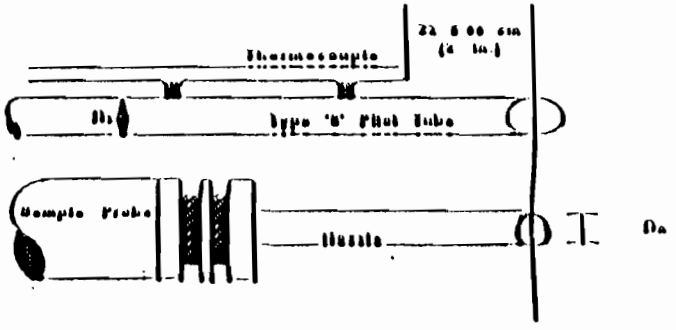

Proper thermocouple placement to prevent interference.

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Mobile, Al. 36695

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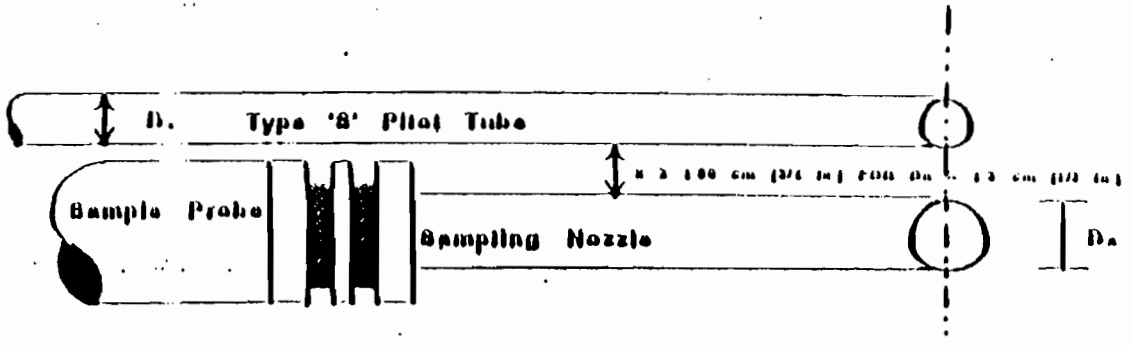
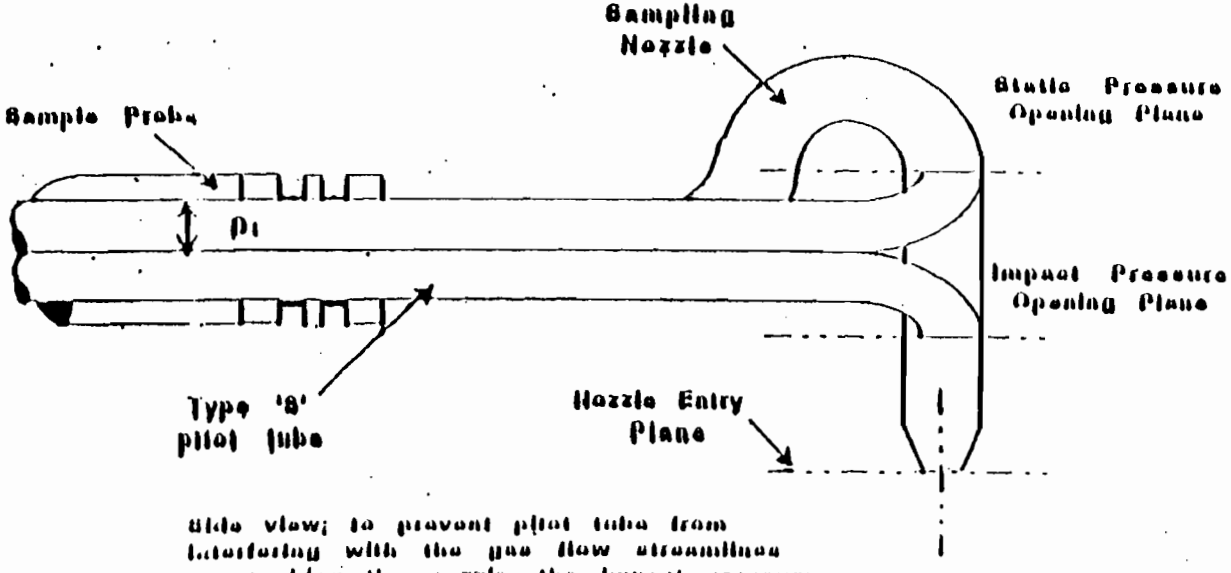
FAX#: (205) 633-2286

Proper pitot tube-sampling nozzel configuration to prevent aero-dynamic interferance; buttonhook type nozzle; centers of nozzle and pitot opening aligned; Di between 0.48 and 0.95 cm (3/16 and 3/8 in.)



Bottom view showing minimum pitot/nozzle separation



side view; to prevent pitot tube from interfering with the gas flow streamlines approaching the nozzle, the impact pressure opening plane of the pitot tube shall be even with or above the nozzle entry plane.

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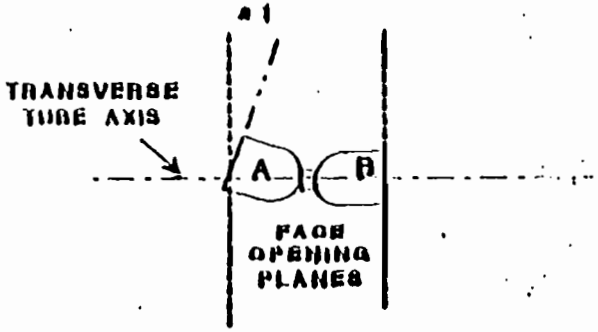
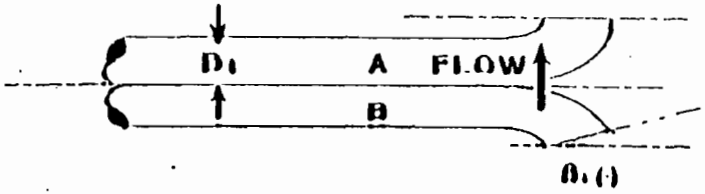
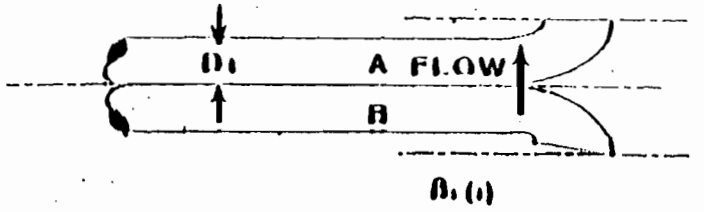
1668 Leroy Stevens Rd.
Mobile, AL 36695

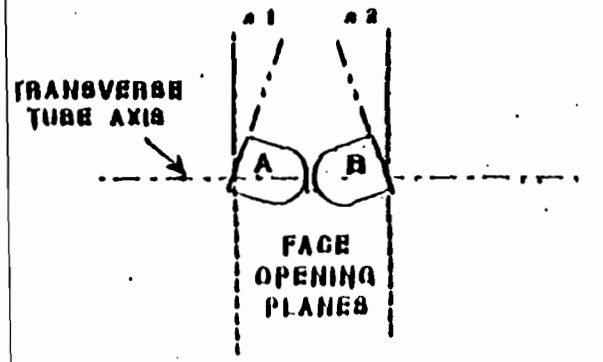
Office: (205) 633-1120
FAX: (205) 633-2288

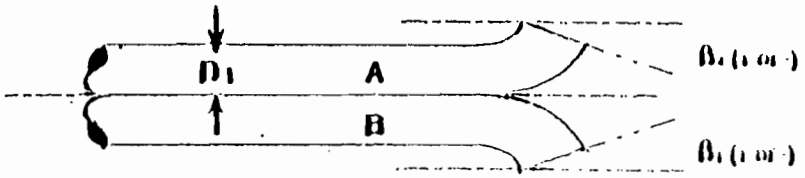
Types of face-opening misalignment that can result from field use or improper construction of type 'S' pitot tubes. These will not affect the baseline value of $C_p(s)$ as long as $\alpha 1$ and $\alpha 2 < 10°$, $\beta 1$ and $\beta 2 < 5°$, $z = 0.32$ cm (1/8 in.)

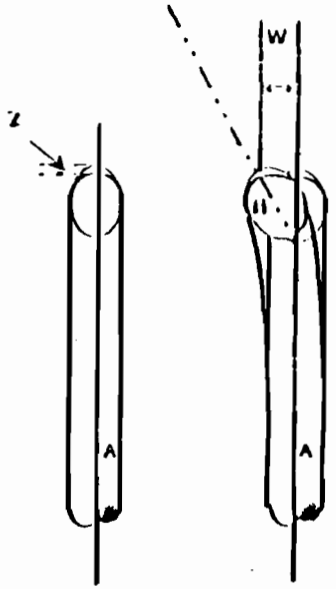












APPENDIX D OPERATIONAL DATA

CRIST ELECTRIC GENERATING PLANT
PARTICULATE COMPLIANCE TEST CHRONOLOGY
UNIT # 7
STEADY STATE CONDITIONS
December 7, 1994

RUN # 1	START	9:39 a.m.	No problems noted at beginning of run.
	STOP	10:43 a.m.	No problems noted at end of run.
RUN # 2	START	11:18 a.m.	No problems noted at beginning of run.
	STOP	12:22 p.m.	No problems noted at end of run.
RUN # 3	START	12:38 p.m.	No problems noted at beginning of run.
	STOP	1:42 p.m.	No problems noted at end of run.

CRIST ELECTRIC GENERATING PLANT
PARTICULATE COMPLIANCE TEST
SIX - MINUTE OPACITY AVERAGES
UNIT # 7
STEADY STATE CONDITIONS
December 7, 1994

TIME OF 6 MIN. AVERAGE	OPACITY (%)
(RUN # 1: 9:39 - 10:43)	(RUN # 1)
9:37 - 9:42	11.3
9:43 - 9:48	12.5
9:49 - 9:54	12.8
9:55 - 10:00	13.3
10:01 - 10:06	12.0
10:07 - 10:12	13.2
10:13 - 10:18	12.9
10:19 - 10:24	12.2
10:25 - 10:30	12.3
10:31 - 10:36	13.2
10:37 - 10:42	13.6
10:43 - 10:48	13.0
(RUN # 2: 11:18 - 12:22)	(RUN # 2)
11:13 - 11:18	12.0
11:19 - 11:24	12.2
11:25 - 11:30	12.9
11:31 - 11:36	13.2
11:37 - 11:42	12.1
11:43 - 11:48	12.4
11:49 - 11:54	12.2
11:55 - 12:00	14.9
12:01 - 12:06	13.0
12:07 - 12:12	13.7
12:13 - 12:18	12.2
12:19 - 12:24	13.8

CRIST ELECTRIC GENERATING PLANT
PARTICULATE COMPLIANCE TEST
SIX - MINUTE OPACITY AVERAGES
UNIT # 7
STEADY STATE CONDITIONS
December 7, 1994

(RUN # 3: 12:38 - 1:42)	(RUN # 3)
12:37 - 12:42	12.0
12:43 - 12:48	11.5
12:49 - 12:54	12.1
12:55 - 1:00	13.5
1:01 - 1:06	11.6
1:07 - 1:12	12.4
1:13 - 1:18	12.5
1:19 - 1:24	12.3
1:25 - 1:30	12.1
1:31 - 1:36	11.5
1:37 - 1:42	11.8

CRIST ELECTRIC GENERATING PLANT

PRECIPITATOR COMPLIANCE TEST READINGS

UNIT # 7 — STEAD STATE — RUN # 1
DATE 12/7/94 — START TIME 0935
LOAD 495 — FINISH TIME 1043

A PRECIPITATOR		PRIMARY AMPS	PRIMARY VOLTS	SECONDARY AMPS	SECONDARY VOLTAGE
START	1A	40	360	260	
	1B	45	330	340	
	1C	70	400	700	
	1D	80	370	680	
	1E	90	340	700	
	1F	85	390	660	
	1G	98	375	800	
	1H	88	370	780	
	1J	110	450	1000	
FINISH	1A	30	360	220	
	1B	55	350	320	
	1C	55	370	560	
	1D	70	350	585	
	1E	80	350	585	
	1F	80	350	640	
	1G	90	350	375	
	1H	89	350	600	
	1J	100	425	900	

COMMENTS : _____

CRIST ELECTRIC GENERATING PLANT

PRECIPITATOR COMPLIANCE TEST READINGS

UNIT # 7
DATE 12/7/04
LOAD

STEAD STATE

RUN # 1
START TIME 0935
FINISH TIME 1043

B PRECIPITATOR		PRIMARY AMPS	PRIMARY VOLTS	SECONDARY AMPS	SECONDARY VOLTAGE
START	2A	50	420	300	
	2B	50	320	260	
	2C	35	250	190	
	2D	100	330	680	
	2E	85	400	700	
	2F	105	400	960	
	2G	98	372	800	
	2H	100	373	940	
	2J	100	385	900	
FINISH	2A	50	420	300	
	2B	60	340	265	
	2C	80	360	530	
	2D	110	340	800	
	2E	70	380	900	
	2F	50	300	1230	
	2G	98	375	700	
	2H	100	375	920	
	2J	100	390	800	

COMMENTS : _____

CRIST ELECTRIC GENERATING PLANT

PRECIPITATOR COMPLIANCE TEST READINGS

UNIT # 7
DATE 12-7-94
LOAD 495

RUN # 2
START TIME 1118
FINISH TIME 1222

A PRECIPITATOR		PRIMARY AMPS	PRIMARY VOLTS	SECONDARY AMPS	SECONDARY VOLTAGE
START	1A	30	360	220	
	1B	55	350	320	
	1C	55	370	560	
	1D	70	350	585	
	1E	80	350	585	
	1F	80	350	640	
	1G	90	350	375	
	1H	89	350	600	
	1J	100	525	900	
FINISH	1A	35	340	200	
	1B	45	340	300	
	1C	50	340	280	
	1D	70	360	340	
	1E	90	340	600	
	1F	80	400	660	
	1G	90	375	760	
	1H	80	360	720	
	1J	95	425	900	

COMMENTS : _____

CRIST ELECTRIC GENERATING PLANT

PRECIPITATOR COMPLIANCE TEST READINGS

UNIT # 7
DATE 12-7-94
LOAD 495

RUN # 2
START TIME 1118
FINISH TIME 1222

B PRECIPITATOR		PRIMARY AMPS	PRIMARY VOLTS	SECONDARY AMPS	SECONDARY VOLTAGE
START	2A	50	420	300	
	2B	60	340	265	
	2C	80	360	530	
	2D	110	340	800	
	2E	70	380	900	
	2F	50	300	1230	
	2G	98	375	700	
	2H	100	375	920	
	2J	100	390	800	
FINISH	2A	40	380	280	
	2B	40	270	220	
	2C	70	350	540	
	2D	100	340	800	
	2E	60	350	520	
	2F	100	400	900	
	2G	100	375	800	
	2H	100	375	940	
	2J	100	400	900	

COMMENTS : _____

CRIST ELECTRIC GENERATING PLANT

PRECIPITATOR COMPLIANCE TEST READINGS

UNIT # 7
DATE 12-7-94
LOAD 495

STEAD STATE

RUN # 3
START TIME 1238
FINISH TIME 1342

A PRECIPITATOR		PRIMARY AMPS	PRIMARY VOLTS	SECONDARY AMPS	SECONDARY VOLTAGE
START	1A	35	340	200	
	1B	45	340	300	
	1C	50	340	280	
	1D	70	360	340	
	1E	90	340	600	
	1F	80	400	660	
	1G	90	375	760	
	1H	80	360	720	
	1J	95	425	900	

FINISH	1A	40	340	220	
	1B	45	340	240	
	1C	35	320	300	
	1D	55	340	420	
	1E	70	360	600	
	1F	70	380	520	
	1G	80	375	640	
	1H	70	340	620	
	1J	90	400	900	

COMMENTS : _____

CRIST ELECTRIC GENERATING PLANT

PRECIPITATOR COMPLIANCE TEST READINGS

UNIT # 7
DATE 12-7-94
LOAD 495

STEAD STATE

RUN # 3
START TIME 1238
FINISH TIME 1342

B PRECIPITATOR		PRIMARY AMPS	PRIMARY VOLTS	SECONDARY AMPS	SECONDARY VOLTAGE
START	2A	40	380	280	
	2B	40	270	220	
	2C	70	350	540	
	2D	100	340	800	
	2E	60	350	520	
	2F	100	400	900	
	2G	100	375	800	
	2H	100	375	940	
	2J	100	400	900	

FINISH	2A	40	400	340	
	2B	40	290	300	
	2C	70	300	220	
	2D	65	280	520	
	2E	60	350	500	
	2F	70	340	600	
	2G	60	300	400	
	2H	90	375	900	
	2J	100	400	900	

COMMENTS : _____

SANDERS ENGINEERING & ANALYTICAL SERVICES, INC.

PARTICULATE EMISSIONS TEST REPORT
SOOT BLOWING OPERATIONS

FOR

GULF POWER COMPANY
Plant Crist, Unit 7
Pensacola, Florida

September 26, 1995

1568 LEROY STEVENS ROAD

MOBILE, ALABAMA 36695 • 205/633-4120

SANDERS ENGINEERING & ANALYTICAL SERVICES, INC.

1568 LEROY STEVENS ROAD MOBILE, ALABAMA 36695 • OFFICE 334 / 633-4120
FAX 334 / 633-2285

ENVIRONMENTAL ENGINEERING
AIR & WATER QUALITY MODELING
ENVIRONMENTAL ASSESSMENTS
PSD ANALYSIS
EMERGENCY RESPONSE MONITORING

AMBIENT AIR MONITORING
CONTINUOUS IN-STACK MONITORING
SOURCE TESTING
VISIBLE EMISSIONS TESTING
CONSULTING SERVICES

REPORT CERTIFICATION

The sampling and analysis for this report was carried out under my direction and supervision.

Date: 10-3-95 Signature: _____
C. Jack Covington
Senior Environmental Specialist

I have reveiwed the testing details and results in this report and hereby certify that the test report is authentic and accurate to the best of my knowledge.

Date: 10-3-95 Signature: _____
Joseph C. Sanders
Manager

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1. INTRODUCTION

Sanders Engineering & Analytical Services, Inc. (SEAS), performed particulate emissions testing at Gulf Power Company, Plant Crist, Unit 7, located in Pensacola, Florida. The test was conducted on September 26, 1995, during soot blowing operations. The testing was performed in accordance with the applicable U.S. EPA procedures specified at **40 CFR, Part 60, Appendix A, Methods 1, 2, 3, 4, and 17**.

The purpose of the test was to demonstrate compliance with the rules and regulations of the Florida Department of Environmental Protection, and to meet certain requirements contained in the permit to operate issued by the Florida Department of Environmental Protection.

The test was conducted by Mr. Jack Covington, Mr. Edward Harris, Mr. John Wilson, and Mr. Dean Holmes of Sanders Engineering & Analytical Services, Inc., and was coordinated with Mr. John McPherson of Gulf Power Company. Mr. Louis Nichols of the Florida Department of Environmental Protection was also present to observe the testing.

The test was conducted in accordance with the rules and regulations of the Florida Department of Environmental Protection. Further discussion of the test methods are included later in the report.

2. SUMMARY AND DISCUSSION OF RESULTS

The results of the particulate emissions testing for the soot blowing runs, along with the results of the computations, are summarized in Table I. The equations used in the calculation of the results, along with the completed field data sheets, are presented in Appendix A. The sample calculations of the first run are presented in Appendix B. The quality control checks of the equipment used in the sampling program are included in Appendix C.

There were no problems encountered during the performance of the test. At the completion of each run, the filter and probe were removed to a clean, draft-free area for clean-up.

The results of the testing indicate the particulate emission rate during soot blowing for Plant Crist, Unit 7, is 0.027 LBS/MMBTU. The applicable Florida Department of Environmental Protection rules and regulations require an emission rate of no greater than 0.30 LBS/MMBTU. The results of the testing indicate that the unit is in compliance with the particulate emission condition of the permit to operate issued by the Florida Department of Environmental Protection.

TABLE I. PARTICULATE EMISSIONS TEST RESULTS
GULF POWER COMPANY
PLANT CRIST, UNIT 7, SOOT BLOWING
9/26/95

Title of Run		RUN 1	RUN 2	RUN 3
Sampling Time -Start	Military	0909	1044	1333
Sampling Time -Stop	Military	1014	1144	1436
F Factor	SDCF/MMBTU	9820	9820	9820
Static Pressure	In. H2O	1.60	1.60	1.60
Barometric Pressure	In. Hg	29.92	29.92	29.92
Average dH	In. H20	1.8	1.2	2.1
Meter correction		1.016	1.016	1.016
Avg. Meter Temp.	Deg. F	84.9	92.3	96.9
% O2	%	4.9	4.9	4.7
%CO2	%	12.0	12.0	12.0
Volume Metered	ACF	42.657	34.673	43.800
Volume Water	Ml	77.500	65.000	100.0
Sampling Time	Minutes	60	60	60
Nozzle Diameter	Inches	0.216	0.190	0.213
Avg. Stack Temp.	Deg. F	328.6	332.7	334.8
Area of Stack	Sq. Feet	375.0000	375.0000	375.0000
Wt. of Part.	Mg.	47.6	30.7	36.4
Number of Points		30	30	30
Avg. Sqrt dP	In. H20	1.1246	1.1522	1.1819

RESULTS OF COMPUTATIONS

		RUN 1	RUN 2	RUN 3	Average
Volume of Gas Sampled	SDCF	42.168	33.764	42.385	
H2O vapor in Gas Stream	PERCENT	8.0	8.3	10.0	8.8
Avg. Stack Gas Velocity	FT/SEC	76.6	78.8	81.2	78.9
Volumetric Flow Rate	SDCF/M	1,066,771	1,086,873	1,096,927	1,083,524
Volumetric Flow Rate	ACF/M	1,724,342	1,772,569	1,827,396	1,774,769
Particulate Conc.	Grs/SDCF	0.017	0.014	0.013	0.015
Particulate Conc.	Grs/ACF	0.011	0.009	0.008	0.009
Particulate Mass Rate	Lb/Hr	159.0	130.4	124.3	137.9
Particulate Mass Rate	Lb/MMBtu	0.032	0.026	0.024	0.027
Heat Input	F Factor MMBTU/Hr	4989.82	5083.84	5195.01	5089.56
Percent of Isokinetic	%	97.1	98.7	97.6	

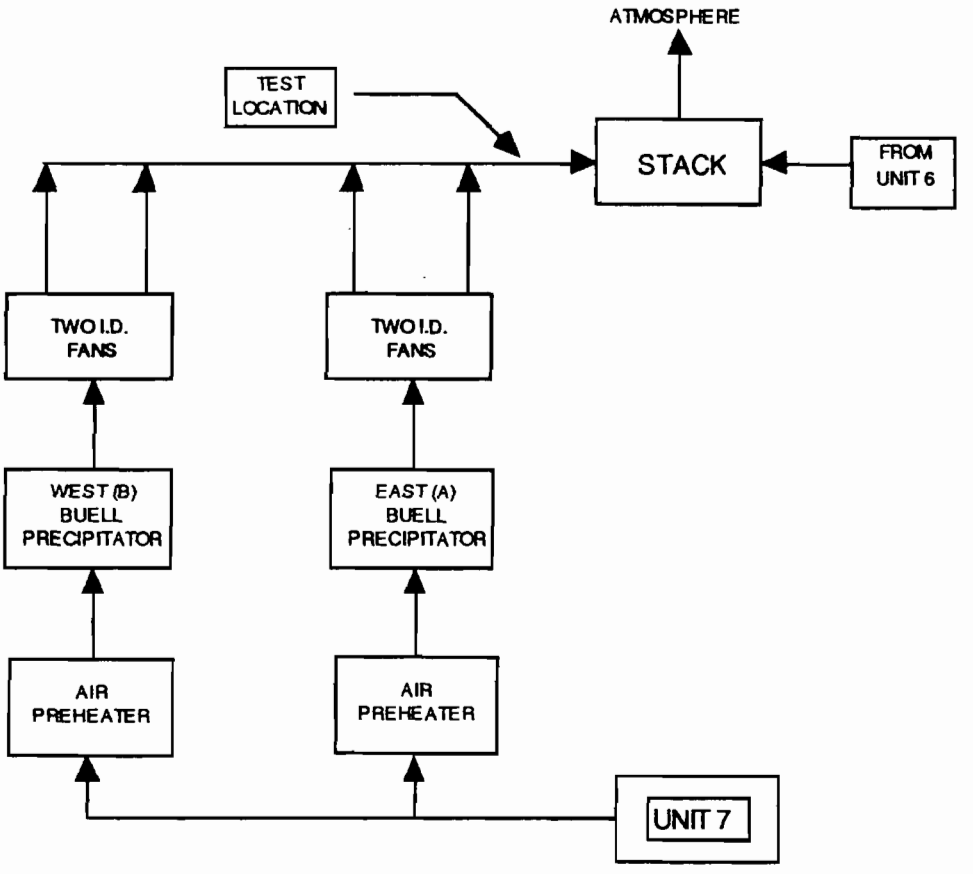
3. PROCESS DESCRIPTION

The process consists of a steam electric generating unit firing bituminous coal for the production of electric energy. The coal is received by either rail, truck, or barge, and loaded directly onto the conveyor feeding the plant, or onto the stockpile and later loaded onto the conveyor belt transporting the coal to the plant. The coal from the conveyor is loaded into bunkers capable of holding between 24 to 36 hours supply of coal. The coal is then fed to pulverizing mills before being fired in the unit through the burners. Upon combustion of the coal in the fire box, approximately 20 percent of the ash falls to the bottom of the boiler and is removed by the ash removal system. The remaining 80 percent exits with the flue gases through the heat exchange and economizer sections of the furnace, and is collected by electrostatic precipitators.

3.1. Source Air Flow

As shown in Figure I, the flue gases exit the boiler and are separated into ducts A and B before entering air preheaters. They are then routed to a cold side ESP. The flue gases exiting the cold side ESP are exhausted through a stack into the atmosphere.

Figure 1. Air Flow Schematic



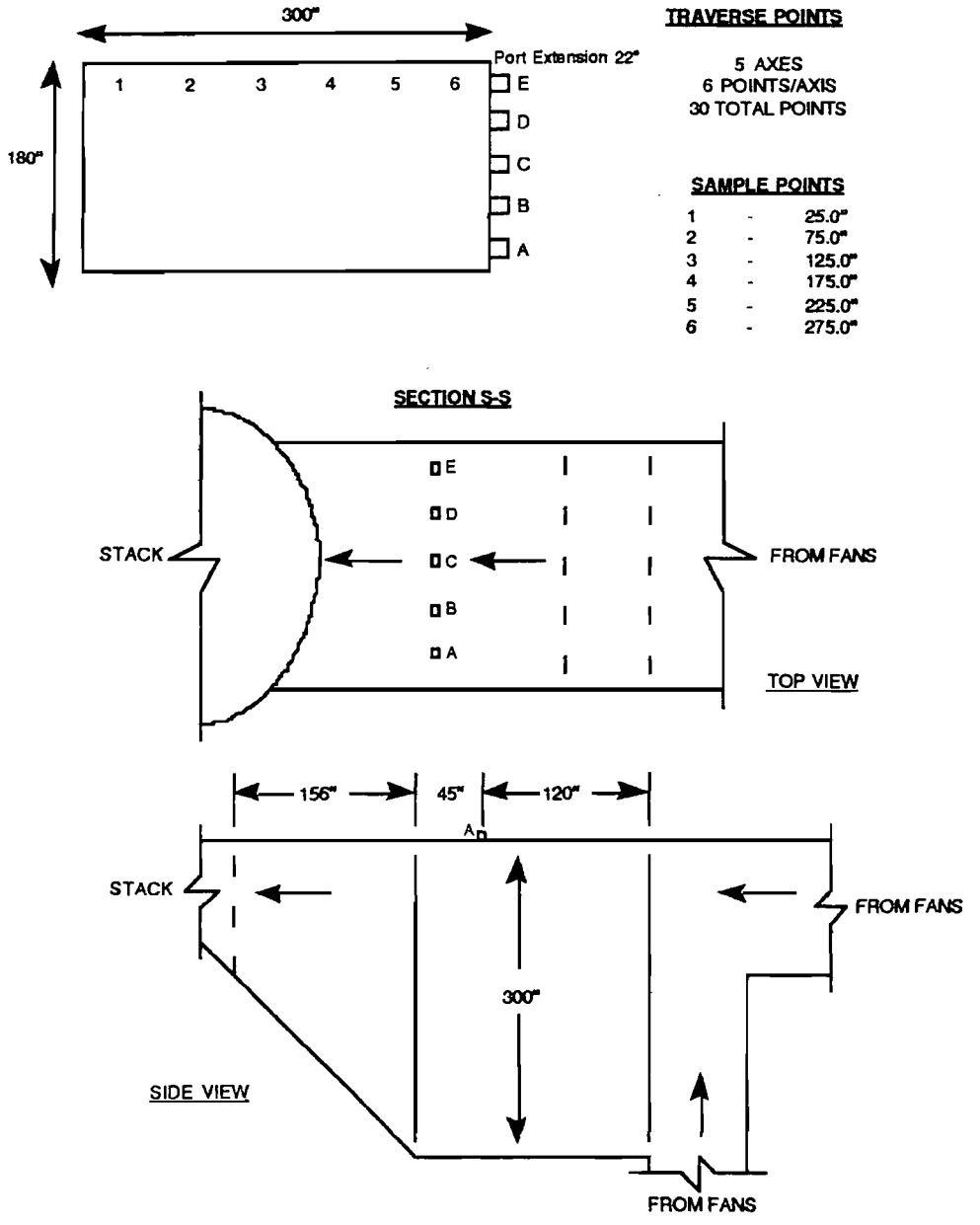
3.2. Operation During Testing

The approximate heat input average during soot blowing operation, as based on F-factor calculations, is 5089.56 million BTU per hour, resulting in the production of approximately 495 megawatts of electricity. Precipitator data supplied by Gulf Power personnel is given in Appendix D.

4. SAMPLE POINT LOCATION

The sample point locations and outlet duct schematic are presented in Figure 2. Method 1 was used for determination of the number and location of sampling points. The minimum number of points (25) required for rectangular stacks was met by sampling a total of 30 points.

Figure 2. Sample Point Locations

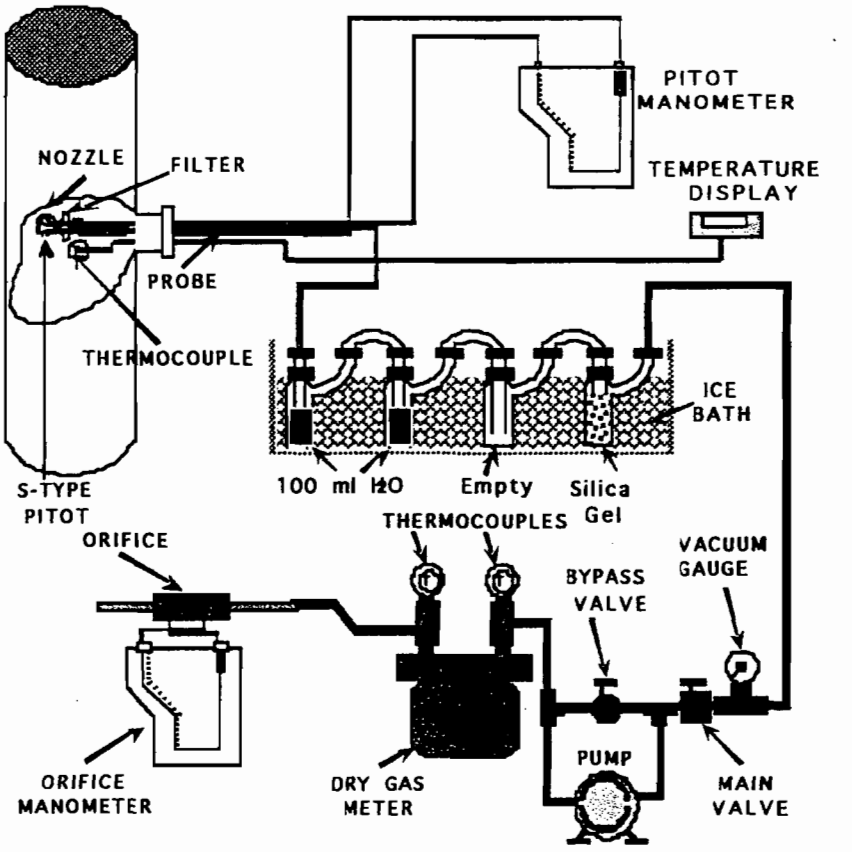


5. PARTICULATE SAMPLING PROCEDURE (EPA Method 17)

The sampling procedure utilized is that specified in **40 CFR, Part 60, Appendix A, Method 17**. A brief description of this procedure is as follows:

The first impingers were partially filled with 100 milliliters of deionized water. The next impinger was left empty to act as a moisture trap. Preweighed 6 to 16 mesh indication silica gel was added to the last impinger. The sampling equipment manufactured by Lear Siegler (Model 100) or Sanders Engineering (Model 200) was assembled as shown in the attached drawing. The system was leak checked by plugging the inlet to the nozzle and pulling a 15 inch mercury vacuum. A leakage rate not in excess of 0.02 cubic feet per minute was considered acceptable.

Figure 3. Particulate Sampling Train



The inside dimensions of the stack liner were measured and recorded. The required number of sampling points were marked on the probe for easy visibility. The range of velocity pressure, the percent moisture, and the temperature of the effluent

gases were determined. From this data, the correct nozzle size and the nomograph multiplication factor were determined.

Crushed ice was placed around the impingers. The nozzle was placed on the first traverse point with the tip pointing directly into the gas stream. The pump was started immediately and the flow was adjusted to isokinetic sampling conditions. After the required time interval had elapsed, the probe was repositioned to the next traverse point and isokinetic sampling was re-established. This was performed for each point until the run was completed. Readings were taken at each point and recorded on the field data sheet. At the conclusion of each run, the pump was turned off and the final readings were recorded.

5.1. Particulate Sample Recovery

Care was exercised in moving the collection train to the sample recovery area to minimize the loss of collected sample, or the gain of extraneous particulate matter. The volume of water in the impingers was measured, the silica gel impinger was weighed and recorded on the field data sheet. The nozzle, and all sample-exposed surfaces were washed with reagent grade acetone into a clean sample container. A brush was used to loosen any adhering particulate matter and subsequent washings were placed into the container. The filter was carefully removed from the fritted support and placed in a clean separate sample container. A sample of the acetone used in the washing was saved for a blank laboratory analysis.

5.2. Particulate Analytical Procedures

The filter and any loose particulate matter were transferred from the sample container to a clean, tared weighing dish. The filter was placed in a desiccator for at least 24 hours and then weighed to the nearest 0.1 milligram until a constant weight was obtained. The original weight of the filter was deducted, and the weight gain was recorded to the nearest 0.1 milligram.

The wash solution was transferred to a clean, tared beaker. The solution was evaporated to dryness, desiccated to a constant weight, and the weight gain was recorded to the nearest 0.1 milligram.

APPENDIX A EQUATIONS AND FIELD DATA SHEETS

EQUATIONS

1. $$P_s = P_{bar} + \frac{P_g}{13.6}$$

2. $$P_m = P_{bar} + \frac{\overline{\Delta H}}{13.6}$$

3. $$V_s = K_p C_p \overline{\sqrt{\Delta P}} \sqrt{\frac{\overline{T_s}}{M_s P_s}}$$

4. $$V_{m(Std)} = K_1 V_m Y \left[\frac{P_{bar} + \frac{\overline{\Delta H}}{13.6}}{\overline{T_m}} \right]$$

5. $$V_{w(Std)} = 0.04707\, V_{lc}$$

6. $$B_{ws} = \frac{V_{w(Std)}}{V_{m(Std)} + V_{w(Std)}}$$

7. $$M_d = 0.44\,(\%CO_2) + 0.32\,(\%O_2) + 0.28\,(\%N_2 + \%CO)$$

8. $$M_s = M_d(1 - B_{ws}) + 18\,(B_{ws})$$

9. $$EA = \left[\frac{(\%O_2 - 0.5\,(\%CO))}{0.264\,(\%N_2) - ((\%O_2) - 0.5\,(\%CO))} \right] 100$$

10. $$Q_a = (V_s)\,(A_s)\,(60)$$

11. $$Q_s = Q_a\,(1\text{-}B_{ws})\,\frac{(528)}{\overline{T_s}}\,\frac{(P_s)}{29.92}$$

12. $$E_H = \left(\frac{PMR}{H_I}\right)$$

13. $$E = C_d\,F_{O_2}\left(\frac{20.9}{20.9 - \%O_2}\right)$$

14. $$C_s = 0.0154\,\frac{M_n}{V_{m(Std)}}$$

15. $$C_{50} = \frac{21\,C_s}{21 - [(1.5)\,(\%O_2) - 0.133\,(N_2) - 0.75\,(\%CO)]}$$

16. $$C_{12} = \frac{C_s\,(12)}{\%CO_2}$$

17. $$PMR = (C_s)\,(Q_s)\,\frac{(60)}{7000}$$

18. $$V_n = \left[(0.002669)\,(V_{lc}) + \frac{V_m Y}{\overline{T_m}}\left(P_{bar} + \frac{\overline{\Delta H}}{13.6}\right)\right]\frac{\overline{T_s}}{p_s}$$

19. $$I = \frac{100\,V_n}{(60)\,\emptyset\,V_s\,A_n}$$

NOMENCLATURE

A_n = Cross-sectional area of nozzel, ft^2

A_s = Cross sectional area of stack, ft^2

B_{ws} = Wator vapor in the gas stream, proportion by volume (dimensionless)

C_p = Pitot tube coefficient (dimensionless) (0.84)

C_s = Particulate concentration, grains/SDCF

C_d = Particulate concentration, lbs/SDCF

C_{12} = Particulate concentration (C_s adjusted to 12% CO) grains/SDCF

C_{50} = Particulate concentration (C_s adjusted to 50% excess air) grains/SDCF

EA = Excess air, %

E = Emission in lb/mmBTU

E_H = Emission in lb/mmBTU, based on heat input

H_I = Total Heat Input, Million BTU per Hour (MMBTU/hr)

I = Percent of isokinetic sampling

K_1 = 17.64 °R/ inches Hg

K_p = Pitot tube constant,

$$85.49 \text{ ft/sec} \left[\frac{(\text{lb/lb-mole})\ (\text{in. Hg})}{(°R)\ (\text{inc. } H_2O)} \right]^{\frac{1}{2}}$$

M_n = Total amount of particulate collected, mg

M_d = Molecular weight of stack gas; dry basis, lb/lb mole

M_s = Molecular weight of stack gas; wet basis, lb/lb mole

P_{bar} = Barometric pressure at the sampling site, in. Hg

NOMENCLATURE (continued)

P_m = Meter pressure, in. Hg

P_s = Absolute stack pressure, in. Hg

P_g = Stack static pressure, in. H_2O

PMR = Particulate mass rate, lb/Hr

Q_a = Volumetric flow rate ACFM

Q_s = Volumetric flow rate SDCFM

V_s = Average stack gas velocity, ft/sec

V_{lc} = Total volume of liquid collected in impingers & silica gel, ml

V_m = Volume of gas sample as measured by dry gas meter, ACF

$V_{m(std)}$ = Volume of gas sample measured by dry gas meter, corrected to standard conditions, SDCF

$V_{w(std)}$ = Volume of water vapor in gas sample, corrected to standard conditions, SCF

V_n = Volume collected at stack conditions through nozzle, ACF

Y = Dry gas meter calibration factor (dimensionless)

ΔH = Average pressure difference of orifice, in. H_2O

ΔP = Velocity head of stack gas, in. H_2O

$\overline{\sqrt{\Delta P}}$ = Average of square roots of the velocity pressure, in. H_2O

Ø = Total sampling time, minutes

$\%CO_2$, $\%O_2$, N_2, %CO - Number % by volume, dry basis, from gas analysis

F_{O2} = Oxygen based F factor (9820 SDCF/mmBTU for bituminous coal)

T_s = Temperature of the stack, °R (° F + 460)

SANDERS ENGINEERING & ANALYTICAL SERVICES, Inc.
1568 Leroy Stevens Rd.
Mobile, AL 36695
Office: (205) 633-4120
FAX#: (205) 633-2285

FIELD DATA SHEET

COMPANY Gulf Power DATE 9-26-95 DGM# 5-105
PLANT Crist OPERATOR JC ΔHa .25 cu. ft./min.
UNIT 7 METHOD 17 PROBE NA liner 25' length

	RUN 1	RUN 2	RUN 3
NOZZLE CALIBRATION PRE	.215 .216 .216 .216 AVERAGE	.190 .190 .190 .190 AVERAGE	.212 .213 .213 .213 AVERAGE
NOZZLE CALIBRATION POST	.215 .216 .216 .216 AVERAGE	.190 .190 .190 .190 AVERAGE	.212 .213 .213 .213 AVERAGE
FILTER NUMBER	1282	1278	1281
METER READING FINAL	120.457	55.973	102.000
METER READING INITIAL	77.800	21.300	58.200
METER READING NET	42.657	34.673	43.800
LEAK CHECK SYSTEM Pre	✓ in. Hg	✓ in. Hg	✓ in. Hg
LEAK CHECK SYSTEM Post	18 in. Hg	18 in. Hg	19 in. Hg
LEAK CHECK PITOT Pre	impact ✓ static	impact static	impact static
LEAK CHECK PITOT Post	impact static ✓	impact static ✓	impact ✓ static
LEAK CHECK cfm	✓	✓	✓
LEAK CHECK cfm	.010	.011	.010
VOLUME OF LIQUID WATER COLLECTED IMP. 1	168 FINAL 100 INITIAL 68 NET	160 FINAL 100 INITIAL 60 NET	180 FINAL 100 INITIAL 80 NET
VOLUME OF LIQUID WATER COLLECTED IMP. 2	100 FINAL 100 INITIAL 0 NET	150 FINAL 100 INITIAL 0 NET	100 FINAL 100 INITIAL 0 NET
VOLUME OF LIQUID WATER COLLECTED IMP. 3	0 FINAL 0 INITIAL 0 NET	0 FINAL 0 INITIAL 0 NET	0 FINAL 0 INITIAL 0 NET
VOLUME OF LIQUID WATER COLLECTED IMP. 4	1545 FINAL 1535.0 INITIAL 9.5 NET	1460.0 FINAL 1455.0 INITIAL 5.0 NET	1464.0 FINAL 1444.0 INITIAL 20.0 NET
VOLUME OF LIQUID WATER COLLECTED TOTAL	77.5	65.0	100.0
GAS ANALYSIS O_2	4.9	4.9	4.7
GAS ANALYSIS CO_2	12.0	12.1	12.0
GAS ANALYSIS CO			
STATIC in. H2O	1.60	1.6	1.6
BAROMETRIC in. Hg	29.52	29.92	29.52

SO 1159160 SO 1067389

Port # / Point #	Time	Gas Meter Vol. (cu. ft.)	Vel. Head ΔP in. H_2O	Orifice Head ΔH in. H_2O	Temperature (F) Stack	Probe	Hot Box	Imp.	Gas Meter In	Gas Meter Out	Vac. in. H_g
1-1	9:09	72.500	1.80	~~5.34~~	350			66	81	80	14
2	11	79.850	2.40	3.18	330			✓	81	80	14
3	:13	82.450	2.1	4.1	323			✓	81	80	111
4	:15	83.950	1.6	2.13	325			✓	83	81	10
5	:17	85.650	1.6	2.13	320			✓	83	81	9
1	:19	87.100	1.75	1.88	320			✓	83	81	9
2-1	9:23	88.650	2.00	2.39	355			✓	83	81	12
2	:25	90.550	1.88	2.62	323			✓	83	81	12
3	:27	92.100	1.90	2.65	325			✓	83	81	12
4	:29	93.950	1.12	~~2.65~~ 1.58	327			✓	83	80	9
5	:31	95.200	1.15	1.60	316			✓	83	80	8
6	:33	96.500	1.27	1.77	316			✓	83	83	8
3-1	9:35	97.700	1.50	2.08	331			✓	81	83	8
2	:37	98.400	1.35	1.85	327			✓	85	83	9
3	:39	101.350	1.08	1.50	321			✓	85	84	5
4	:41	102.600	1.06	1.47	327			64	85	84	8
5	:43	103.900	.83	1.15	320			✓	85	84	8
6	:45	105.150	.70	.97	320			✓	90	84	6
4-1	9:49	106.100	.63	.87	356			✓	90	84	6
2	:51	107.300	.70	.98	331			✓	91	84	6
3	:53	108.300	.96	1.33	325			✓	90	85	6
4	:55	109.400	1.03	1.43	330			✓	90	85	8
5	:57	110.700	1.11	1.82	321			64	90	85	10
6	:59	112.200	1.03	1.43	316			✓	90	85	10
5-1	10:02	113.450	.53	.74	355			✓	90	84	6
2	:04	114.450	.74	1.03	330			✓	90	84	6
3	:06	115.600	.93	1.30	323			✓	90	84	9
4	:08	116.850	.80	1.14	330			✓	90	84	9
5	:10	117.850	1.06	1.48	321			✓	90	84	10
6	:12	119.350	1.03	1.43	320			✓	91	85	10
	10:14	120.450									
					328.4				84.8		

Check Indicates Temperatures Meet Required Limits.

1.124b

Company GAF Power Co Date 9-21-95

Site Cook Run # 1 Page ____ Of ____

1204
1205

Sw = 1,185,337 SD 1,086,847

Port # / Point #	Time	Gas Meter Vol. (cu. ft.)	Vel. Head ΔP in. H_2O	Orifice Head ΔH in. H_2O	Temperature (F) Stack	Probe	Hot Box	Imp.	Gas Meter In	Gas Meter Out	Vac. in. H_g
1-1	10:44	21.350	2.56	2.13	362			66	89	88	7
2	:46	22.700	2.45	2.04	332			✓	89	88	7
3	:48	24.350	4.0	3.30	332			✓	90	89	15
4	:50	26.050	1.82	1.52	330			✓	90	89	12
5	:52	28.050	1.73	1.44	320			✓	90	89	7
6	:54	29.350	1.45	1.21	320			✓	90	89	7
2-1	10:56	30.350	1.95	1.62	361			✓	92	90	8
2	:58	31.700	2.25	1.87	331			✓	92	90	8
3	11:00	33.250	2.10	1.75	330			✓	92	90	10
4	:02	34.650	1.32	~~1.10~~	330			56	93	90	7
5	:04	35.850	1.42	1.17	320			✓	93	91	7
6	:06	36.750	1.32	1.10	320			✓	93	90	7
3-1	:08	38.150	1.57	1.30	361			✓	94	90	7
2	:10	39.350	1.42	1.18	334			✓	94	91	7
3	:12	40.650	1.23	1.02	331			✓	94	90	7
4	:14	42.150	.92	.76	333			✓	94	90	7
5	:16	42.950	.96	.79	323			✓	94	90	6
6	:18	43.850	.77	.64	320			✓	94	91	6
4-1	11:20	44.850	.75	.62	333			✓	94	90	5
2	:22	45.750	.75	.61	330			✓	95	92	5
3	:24	46.650	1.12	.93	330			✓	95	92	5
4	:26	47.550	1.00	.83	334			✓	95	92	5
5	:28	48.350	1.40	1.16	325			✓	95	92	5
6	:30	49.500	1.03	.85	312			✓	93	93	7
5-1	11:32	50.850	.54	.45	361			✓	93	93	5
2	:34	51.400	.69	.57	335			✓	93	93	5
3	:36	52.200	.88	.73	330			✓	93	94	6
4	:38	53.000	.75	.62	330			✓	93	94	6
5	:40	54.600	1.02	.84	330			✓	93	94	6
6	:42	55.050	.92	.76	320			✓	93	94	6
	:44	55.933			~~320~~						
										92.3	
			1.522	1.16	332.7						

Check Indicates Temperatures Meet Required Limits.

Company Crisp Gulf Power Date 9-26-95

Site Crist 7 Run # 2 Page ____ Of ____

SW= 1,219,001 SD 1,097,157

Port # / Point #	Time	Gas Meter Vol. (cu. ft.)	Vel. Head ΔP in. H_2O	Orifice Head ΔH in. H_2O	Temperature (F) Stack	Probe	Hot Box	Imp.	Gas Meter In	Gas Meter Out	Vac. in. H_g
1-1	14:33	58.200	4.15	5.50	368			68	95	95	15
2	:35	60.200	2.75	3.64	334			66✓	95	95	15
3	:37	62.200	3.95	5.46	335			✓	95	95	15
4	:39	64.000	1.67	2.31	333			✓	95	95	15
5	:41	66.100	2.12	2.93	323			✓	95	95	15
6	:43	67.600	1.35	1.87	315			✓	95	95	10
2-1	13:46	69.200	2.10	2.91	315			64	95	95	10
2	:48	71.300	2.00	2.77	335			✓	95	95	10
3	:50	72.900	2.40	3.32	336			✓	96	95	10
4	:52	74.700	1.35	1.87	335			✓	97	95	12
5	:54	76.100	1.35	1.87	326			✓	98	95	12
6	:56	77.600	1.35	1.87	316			✓	98	95	10
3-1	13:58	79.200	1.42	1.96	366			58	98	95	10
2	14:01	80.700	1.56	2.16	339			✓	99	95	10
3	:03	82.100	1.12	1.55	337			✓	99	95	12
4	:05	83.800	1.00	1.38	338			✓	99	95	9
5	:07	85.100	.96	1.33	326			✓	99	95	9
6	:09	86.400	1.23	1.70	316			✓	99	95	9
4-1	14:12	87.600	.75	1.04	365			✓	99	95	8
2	:14	88.800	.87	1.20	339			✓	99	95	8
3	:16	89.900	1.02	1.41	335			✓	99	95	10
4	:18	91.300	1.12	1.55	335			✓	99	95	10
5	:20	92.460	1.23	1.70	328			✓	99	95	10
6	:22	94.000	1.32	1.82	315			✓	99	95	10
5-1	14:24	95.250	.54	.74	365			56	102	98	8
2	:26	96.250	.64	.89	338			✓	102	98	8
3	:28	97.200	.87	1.20	336			✓	102	98	8
4	:30	98.300	.67	.93	337			✓	102	98	8
5	:32	99.300	1.06	1.47	330			✓	102	98	8
6	:34	100.700	.88	1.22	320			✓	102	98	8
	14:36	102.000									

1.16592 8333 2.03 337.46 ✓ Check Indicates Temperatures Meet Required Limits. 96.93

Company Gulf Power Co Date 5-21-95

Site Crist 7 Run # 3 Page ____ Of ____

LABORATORY ANALYSIS & CHAIN OF CUSTODY

COMPANY/PLANT: GPCO / Crist

UNIT #: 7 DATE OF TEST: 9-26-95 TYPE OF TEST: ☐ M-5 ☒ M-17 ☐ OTHER ______

SAMPLE #	RELINQUISHED BY	RECEIVED BY	TIME	DATE	REASON FOR CHANGE
1282 : Wash					
1278 : Wash		KH	4:15pm	9-28-95	Analysis
1281 : Wash					

UNIT # 7 Soot Blow

RUN # 1	FILTER # 1282	BEAKER # 7 WASH (ML) 35
FINAL WEIGHT	161.5 mg	69930.1 mg
INITIAL WEIGHT	120.1 mg	69923.9 mg
DIFFERENCE	41.4	6.2
CORRECTED TOTAL WEIGHT		47.6
RUN # 2	FILTER # 1278	BEAKER # 8 WASH (ML) 30
FINAL WEIGHT	151.7 mg	67106.0 mg
INITIAL WEIGHT	123.8 mg	67103.2 mg
DIFFERENCE	27.9	2.8
CORRECTED TOTAL WEIGHT		30.7
RUN # 3	FILTER # 1281	BEAKER # 14 WASH (ML) 20
FINAL WEIGHT	155.2 mg	65625.7 mg
INITIAL WEIGHT	124.0 mg	65620.5 mg
DIFFERENCE	31.2	5.2
CORRECTED TOTAL WEIGHT		36.4
RUN # ____	FILTER # ____	BEAKER # ____ WASH (ML) ____
FINAL WEIGHT		
INITIAL WEIGHT		
DIFFERENCE		
CORRECTED TOTAL WEIGHT		

UNIT # ______

RUN # ____	FILTER # ____	BEAKER # ____ WASH (ML) ____
FINAL WEIGHT		
INITIAL WEIGHT		
DIFFERENCE		
CORRECTED TOTAL WEIGHT		
RUN # ____	FILTER # ____	BEAKER # ____ WASH (ML) ____
FINAL WEIGHT		
INITIAL WEIGHT		
DIFFERENCE		
CORRECTED TOTAL WEIGHT		
RUN # ____	FILTER # ____	BEAKER # ____ WASH (ML) ____
FINAL WEIGHT		
INITIAL WEIGHT		
DIFFERENCE		
CORRECTED TOTAL WEIGHT		
WASH SOLVENT BLANK (ML) ____		BEAKER # 10 WASH (ML) 110
FINAL WEIGHT		63813.1 mg
INITIAL WEIGHT		63813.1 mg
DIFFERENCE		0.0
CORRECTION FACTOR (MG/ML)		

ALL WEIGHTS ARE IN MILLIGRAMS (MG)

APPENDIX B SAMPLE CALCULATIONS

Input and Constants

$$f := \frac{9820\ ft^3}{mm\ btu}$$

$pg := 1.6\ in.\ H2O$

$pbar := 29.92\ in.\ Hg.$

$\Delta havg := 1.8\ in.\ H2O$

$y := 1.016$

$tm := 84.9\ °F$

$o2 := 4.9$

$co2 := 12.$

$vm := 42.657\ ft^3$

$vlc := 77.5\ ml$

$theta := 60\ min$

$nozdia := 0.216\ in.$

$ts := 328.6\ °F$

$as := 375.\ ft^2$

$mn := 47.6\ mg$

$numberofpoints := 30$

$$sqrt\Delta p := 1.1246\ in.\ H2O^{0.5}$$

$$kp := \frac{85.49 \cdot 1\ ft \cdot 1 \cdot \left(\frac{lb\ in.\ Hg.}{lb\text{–}mole\ °R\ in.\ H2O}\right)^{0.5}}{1\ sec}$$

$cp := 0.84$

$$k1 := \frac{17.64\ °R}{in.\ Hg.}$$

$$ts = \frac{(ts + 460\ °F)\ °R}{°F}$$

788.6 °R

$$tm = \frac{(tm + 460\ °F)\ °R}{°F}$$

544.9 °R

n2 = 100 - o2 - co2

83.1

$$an = \frac{\frac{nozdia^2\ 3.1416}{4}}{\left(\frac{12\ in.}{ft}\right)^2}$$

0.00025447 ft^2

Calculations

Equation 1

$$ps = pbar + \frac{pg}{\frac{13.6\ in.\ H2O}{1\ in.\ Hg.}}$$

30.0376 in. Hg.

Equation 2

$$pm = pbar + \frac{\Delta havg}{\frac{13.6\ in.\ H2O}{in.\ Hg.}}$$

30.0524 in. Hg.

Equation 3

$$vmstd = \frac{k1\ vm\ y\ (pbar + \frac{\Delta havg}{\frac{13.6\ in.\ H2O}{in.\ Hg.}})}{tm}$$

42.1642 ft^3

Equation 4

$$vwstd = \frac{0.04707\ ft^3\ vlc}{ml}$$

3.64793 ft^3

Equation 5

$$bws = \frac{vwstd}{vmstd + vwstd}$$

0.0796279

Equation 6

$$md = \frac{(0.44\ co2 + 0.32\ o2 + 0.28\ n2)\ lb}{lb\text{–}mole}$$

$$\frac{30.116\ lb}{lb\text{–}mole}$$

Equation 7

$$ms = md\ (1 - bws) + \frac{bws\ 18\ lb}{lb\text{–}mole}$$

$$\frac{29.1512\ lb}{lb\text{–}mole}$$

Equation 8

$$vs = kp\ cp\ sqrt\Delta p\ \left(\frac{ts}{ms\ ps}\right)^{0.5}$$

$$\frac{76.6407\ ft}{sec}$$

Equation 9

$$qa = \frac{vs\ as\ 60\ sec}{min}$$

$$\frac{1.72442\ 10^{6}\ ft^{3}}{min}$$

Equation 10

$$qs = \frac{qa\ (1 - bws)\ 528\ °R\ ps}{ts\ 29.92\ in.\ Hg.}$$

$$\frac{1.06681\ 10^{6}\ ft^{3}}{min}$$

Equation 11

$$cs = \frac{0.0154\ gr\ mn}{mg\ vmstd}$$

$$\frac{0.0173853\ gr}{ft^3}$$

Equation 12

$$pmr = \frac{cs\ qs\ 60\ min}{\frac{7000\ gr}{lb}\ hour}$$

$$\frac{158.973\ lb}{hour}$$

Equation 13

$$e = \frac{cs\ f\ 20.9\ 1\ lb}{(20.9 - o2)\ 7000\ gr}$$

$$\frac{0.0318583\ lb}{mm\ btu}$$

Equation 14

$$vn = \frac{ts\left(\frac{0.002669\ in.\ Hg.\ ft^3}{ml\ ^\circ R} + \frac{vlc}{tm}\right) vm\ y\ pm}{ps}$$

$$68.1838\ ft^3$$

Equation 15

$$i = \frac{100\ \%\ vn}{60\ sec\ theta\ vs\ an}$$

$$\frac{}{min}$$

97.1143 %

Equation 16

$$hi = \frac{pmr}{e}$$

$$4990.\ mm\ btu$$

$$\frac{}{hour}$$

APPENDIX C QUALITY CONTROL

INITIAL
METER CALIBRATION FORM - DGM

DATE: 06-16-95 Box No. S-100

Ref. DGM Ser. # 1044456 Calibrated By JACK COVINGTON

RUN #	1	2	3	4	5
DELTA H (DGM)	0.50	1.00	1.50	2.00	2.50
Y (Ref. DGM)	0.995	0.995	0.995	0.995	0.995
Reference DGM					
Gas Vol. Initial	9.300	43.750	56.850	62.600	90.800
Gas Vol. Final	42.950	56.300	62.000	90.200	100.000
Meter Box DGM					
Gas Vol. Initial	5.140	39.370	52.360	58.000	85.750
Gas Vol. Final	38.580	51.800	57.400	85.720	94.785
Reference DGM					
Temp.	Avg.	Avg.	Avg.	Avg.	Avg.
Deg F Initial	79	78	76	76	76
Deg F Final	78	77	76	76	77
Meter Box DGM					
Temp. Initial In	80	82	84	85	87
Temp. Initial Out	80	79	79	79	80
Temp. Final In	82	84	85	87	87
Temp. Final Out	79	79	79	80	80
P Bar IN. Hg	30.11	30.11	30.11	30.11	30.11
Time (sec.)	4927	1308	448	2095	628
Meter Calibration					
Factor (Y)	1.008	1.014	1.029	1.003	1.025
Qm (C.F.M.)	0.404	0.569	0.684	0.784	0.871
Km (Std Pressure)	0.728	0.724	0.710	0.705	0.700
DELTA Ha	1.69	1.70	1.77	1.80	1.82

Average Y (Meter Calibration Factor 1.016
Average Km (Standard Pressure) 0.713
Average DELTA Ha of Orifice 1.753

Y= ≤ .03
Max & Min ≤ .02 from Avg
Final Avg within 5% of Initial Avg
ΔHa = Max & Min ≤ .2 from Avg

MAGEHELIC CALIBRATION

BOX	460	2879	S-100	C-133	175	S-318	S-101	S-110
SER. NO.	91127W W137		91126AM 91	9126A M91	R90125 MR6	R74D	R22D	R20208 A617
RANGE	0-2	0-2	0-2	0-2	0-2	0-5	0-2	0-2
REFERENCE READING	FIELD DEVICE READING							
0.000	0.00		0.02	0.00	0.00	0.00	0.00	0.00
0.050								
0.150								
0.200								
0.250								
0.450								
0.50	0.50	0.51	0.50	0.50	0.50	0.49	0.50	0.50
1.00	1.00	1.02	1.00	0.99	1.00	1.01	1.00	1.00
1.30								
1.80	1.77	1.82	1.78	1.78	1.80	1.80	1.80	1.80
2.50								
4.50								
5.0								
9.0								
13.0								
22.0								

SIGNATURE: Edward F. Harris

DATE: 6/23/95

FINAL
METER CALIBRATION FORM - DGM

DATE: 09-29-95 Box No. S-100

Ref. DGM Ser. # 1044456 Calibrated By JACK COVINGTON

RUN #	1	2	3
DELTA H (DGM)	1.5	1.5	1.5
Y (Ref. DGM)	0.985	0.985	0.985
Reference DGM			
Gas Vol. Initial	25.400	32.500	40.200
Gas Vol. Final	32.500	40.200	46.600
Meter Box DGM			
Gas Vol. Initial	69.070	75.966	83.450
Gas Vol. Final	75.966	83.450	89.650
Reference DGM Temp.	Avg.	Avg.	Avg.
Deg F Initial	76	76	76
Deg F Final	77	77	78
Meter Box DGM			
Temp. Initial In	74	74	74
Temp. Initial Out	73	73	73
Temp. Final In	76	79	81
Temp. Final Out	76	79	79
P Bar IN. Hg	29.98	29.98	29.98
Time (sec.)	615	667	556
Meter Calibration Factor (Y)	1.007	1.009	1.013
Qm (C.F.M.)	0.673	0.673	0.670
Km (Std Pressure)	0.702	0.701	0.698
DELTA Ha	1.84	1.83	1.84

Average Y (Meter Calibration Factor)	1.010
Initial Y (Meter Calibration Factor)	1.016
Percent Error	0.59%
Average Km (Standard Pressure)	0.700
Average DELTA Ha of Orifice	1.84

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MAGEHELIC CALIBRATION

BOX #1

SER. NO.	10720-AB68	R1061-6AG48	R5031-SEB76	R1062-9JA82	R1051-3MR42	R90124 RI119
RANGE	0-0.25	0-0.50	0-2	0-5	0-10	0-25
REFERENCE READING	FIELD DEVICE READING					
0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.050	0.050					
0.150	0.150	0.140				
0.200	0.200					
0.250		0.250				
0.450		0.450				
0.50			0.51			
1.00			1.00			
1.30				1.30		
1.80			1.80			
2.50				2.49	2.5	
4.50				4.47		
5.0					5.0	5.0
9.0					9.1	
13.0						13.1
22.0						22.0

SIGNATURE: [illegible]

DATE: [illegible] Hann

Best Available Copy

MAGEHELIC CALIBRATION
BOX #2

SER. NO.	10819-DR2	R1090-2AG18	R50315-EB93	R1062-9TA87	30830-AM79	R1072-2MC5
RANGE	0-0.25	0-0.50	0-2	0-5	0-10	0-25
REFERENCE READING	FIELD DEVICE READING					
0.000	-0.008	0.000	0.00	0.00	0.0	0.0
0.050	0.055					
0.150	0.160	0.145				
0.200	0.210					
0.250		0.250				
0.450		0.450				
0.50			0.50			
1.00			1.00			
1.30				1.26		
1.80			1.80			
2.50				2.52	2.4	
4.50				4.55		
5.0					4.9	5.0
9.0					9.0	
13.0						12.9
22.0						21.8

SIGNATURE: [signature]

DATE: 6-23-15

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MAGEHELIC CALIBRATION

BOX #3

SER. NO.	R10908AG71 MRR1	R0112642	R10608CF20 CF20
RANGE	0-0.50	0-2.0	0-10
REFERENCE READING	FIELD DEVICE READING		
0.000	0.00	0.00	0.0
0.050			
0.150	0.15		
0.200			
0.250	0.245		
0.450	0.450		
0.50		0.50	
1.00		0.99	
1.50			
1.80		1.79	1.9
2.50			
4.50			
5.0			5.0
9.0			9.0
13.0			
22.0			

SIGNATURE:

DATE:

Best Available Copy

MAGEHELIC CALIBRATION

BOX #4

SER. NO.	R22D	R90051 6GT21	R90101 5CD102
RANGE	0-0.50	0-5	0-25
REFERENCE READING	FIELD DEVICE READING		
0.000	-0.010	0.00	0.0
0.050			
0.150	0.151		
0.200			
0.250	0.252		
0.450	0.458		
0.50			
1.00			
1.30		1.31	
1.80			
2.50		2.55	
4.50		4.58	
5.0			5.0
9.0			
13.0			13.2
22.0			21.9

SIGNATURE: _____

DATE: _____

TEMPERATURE CALIBRATIONS - DEGREES FAHRENHEIT

REFERENCE DEVICE READING*	0 DEG. F	210 DEG.	420 DEG.	630 DEG.	840 DEG.	1050 DEG.	1260 DEG.	1470 DEG.	1680 DEG.	1900 DEG.
2879	0	211	421	630	840	1050	1260	1470	1680	1900
METER BOX #1 C-133 11580	0	210	419	629	840	1052	1267	1479	1687	1893
METER BOX #2 C-175 15962	1	212	417	633	839	1052	1262	1471	1683	1904
METER BOX #4 D-460 15751	0	209	420	631	838	1047	1265	1476	1683	1893
METER BOX #5 S-100 15751	0	208	416	626	841	1059	1276	1489	1696	1905
METER BOX #6 S-101 15751	0	210	420	627	838	1051	1263	1473	1679	1899
PORTABLE THERMOCOUPLE # 1 (Yellow) T105998	1	209	416	625	839	1055	1270	1480	1684	1890
PORTABLE THERMOCOUPLE # 2 (Blue)	1	209	419	625	838	1051	1265	1471	1686	1900
METER BOX #7 S-110 15751	0	212	421	630	842	1053	1264	1477	1683	1905
PINK T140293	0	209	416	630	840	1056	1271	1482	1686	1893

DATE: 6-20-95 **SIGNATURE:** Edward L. Harris

* Reference Device is an Omega Engineering CL505-A calibrated reference thermocouple-potentiometer system.

SANDERS ENGINEERING &
ANALYTICAL SERVICES, Inc.

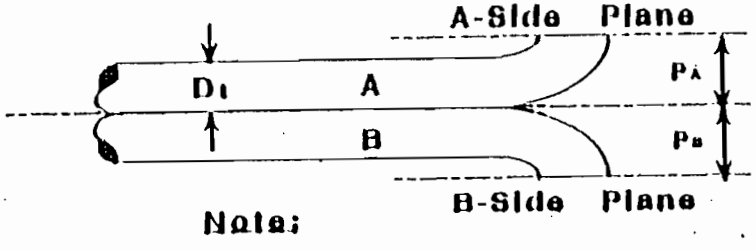
1568 Leroy Stevens Rd.
Mobile, AL 36695

Office: (205) 633-4120
FAX#: (205) 633-2285

The Pitot used was within the following geometric specifications:

D_t between 0.48 and 0.95 cm (3/16 and 3/8 in.)

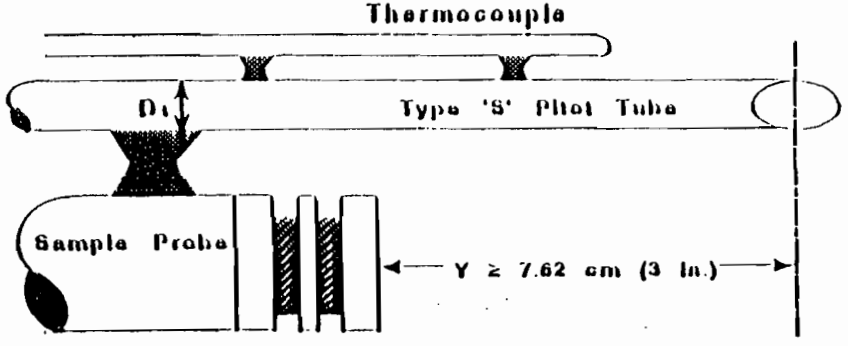
$C_p = 0.84$



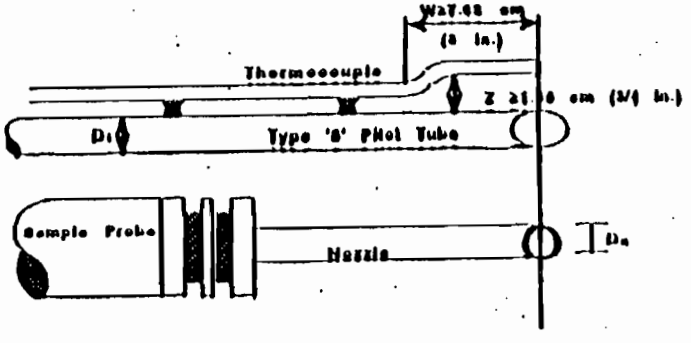
Note:

$1.05\ D_t \leq 1.50\ D_t$

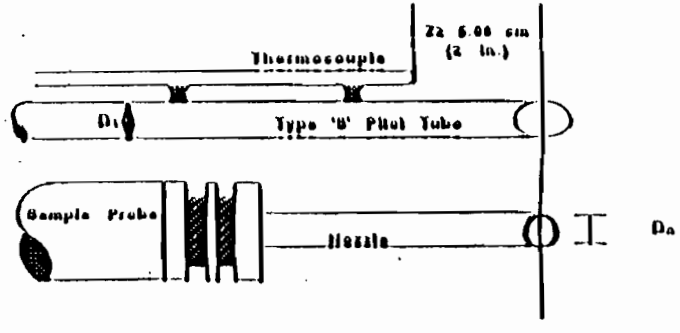
$P_A = P_B$



Minimum pitot-sample probe separation needed to prevent interference



OR



Proper thermocouple placement to prevent interference.

SANDERS ENGINEERING &
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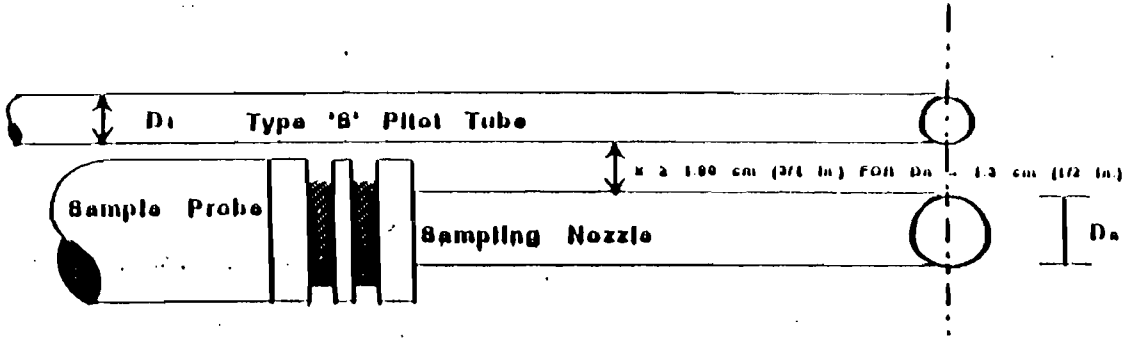
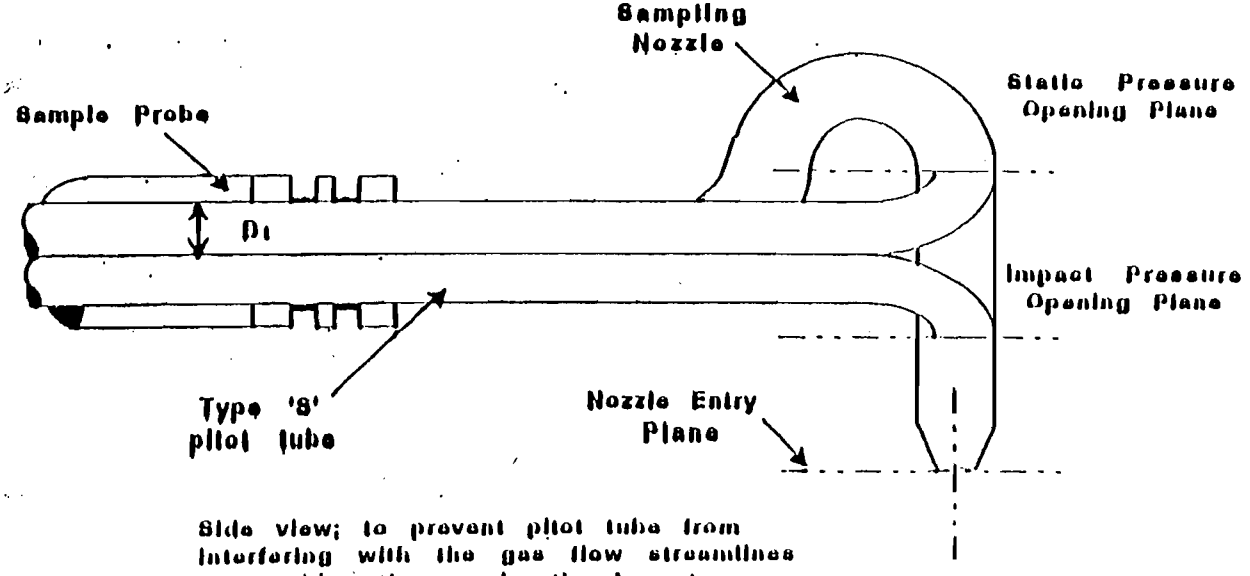
1568 Leroy Stevens Rd.
Mobile, AL 36695

Office: (205) 633-4120
FAX#: (205) 633-2285

Proper pitot tube-sampling nozzel configuration to prevent aero-dynamic interference; bottonhook type nozzle; centers of nozzle and pitot opening aligned; Di between 0.48 and 0.95 cm (3/16 and 3/8 in.)



Bottom view showing minimum pitot/nozzle separation



Side view; to prevent pitot tube from interfering with the gas flow streamlines approaching the nozzle, the impact pressure opening plane of the pitot tube shall be even with or above the nozzle entry plane.

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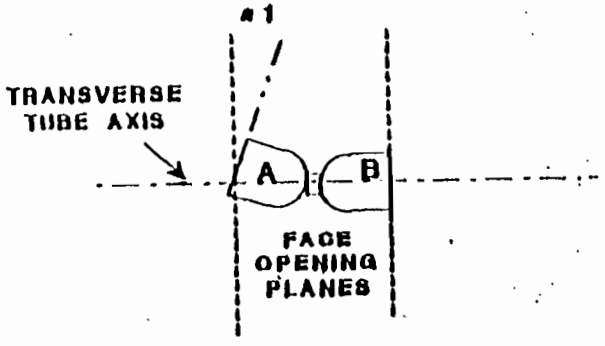
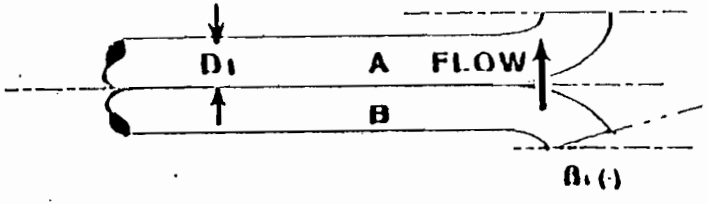
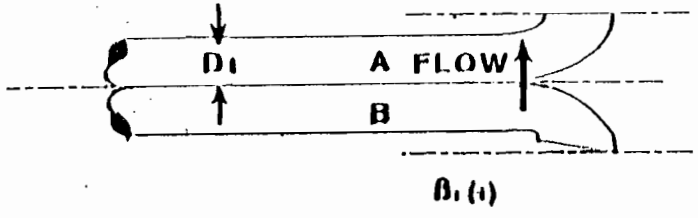
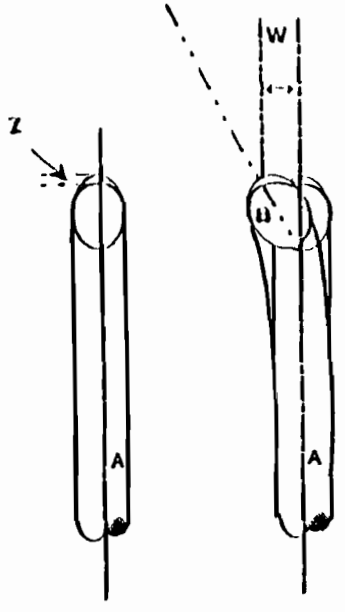
FAX#: (205) 633-2285

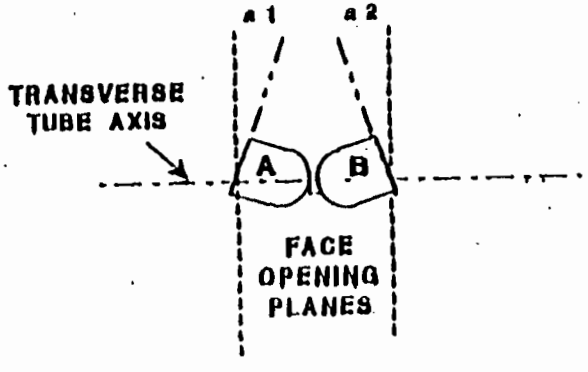
Types of face-opening misalignment that can result from field use or improper construction of type 'S' pitot tubes. These will not affect the baseline value of Cp(s) so long as $\alpha 1$ and $\alpha 2 \leq 10°$, $\beta 1$ and $\beta 2 \leq 5°$, $t \leq 0.32$ cm (1/8 in.)

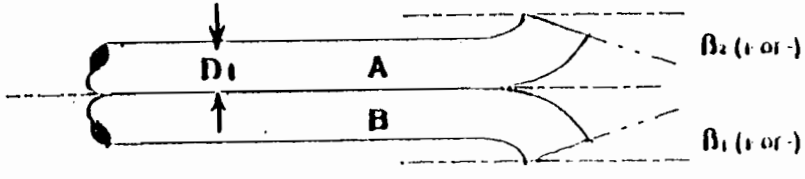












APPENDIX D OPERATIONAL DATA

CRIST ELECTRIC GENERATING PLANT
PARTICULATE COMPLIANCE TEST CHRONOLOGY
UNIT 7
SOOTBLOWING CONDITIONS
SEPTEMBER 26,1995

RUN #1	START	9:09 a.m.	No problems noted at beginning of run.
	STOP	10:14 a.m.	No problems noted at end of run.
RUN #2	START	10:44 a.m.	No problems noted at the beginning of run.
	STOP	11:44 a.m.	No problems noted at the end of the run.
RUN #3	START	13:33 p.m.	No problems noted at the beginning of run.
	STOP	14:36 p.m.	N o problems noted at the end of run.

CRIST ELECTRIC GENERATING PLANT
PARTICULATE COMPLIANCE TEST
SIX - MINUTE OPACITY AVERAGES
UNIT #7
SOOTBLOWING CONDITIONS
SEPTEMBER 26, 1995

TIME OF 6 MIN. AVERAGE	OPACITY (%)
RUN #1	**RUN #1**
8:07 - 8:12	8.6
8:13 - 8:18	9.1
8:19 - 8:24	8.8
8:25 - 8:30	8.2
8:31 - 8:36	9
8:37 - 8:42	8.2
8:43 - 8:48	9.2
8:49 - 8:54	8.3
8:55 - 9:00	8.1
9:01 - 9:06	9.5
9:07 - 9:12	8.6
9:13 - 9:18	9.2
RUN #2	**RUN #2**
9:43 - 9:48	9.1
9:49 - 9:54	8.5
9:55 - 10:00	8.6
10:01 - 10:06	7.7
10:07 - 10:12	8.9
10:13 - 10:18	8.3
10:19 - 10:24	8
10:25 - 10:30	7.6
10:31 - 10:36	7.9
10:37 - 10:42	7.9
10:43 - 10:48	7.6
RUN #3	**RUN #3**
12:31 - 12:36	7.8
12:37 - 12:42	8.3
12:43 - 12:48	7.7
12:49 - 12:54	7.8
12:55 - 13:00	7.3
13:01 - 13:06	9.2
13:07 - 13:12	8.6
13:13 - 13:18	8.5
13:19 - 13:24	8.8
13:25 - 13:30	8.5
13:31 - 13:36	8.6

Particulate Compliance Test — CRIST UNIT 7

Notes:

9-26-95
Sootblowing
START 909
CEMS Time 809

RUN #1:

@ Start: Coal scale Readings ✓
PRECIP READINGS ✓
Coal sample ✓
State Called ✓

STOP 1014
CEMS Time 914

@ END: Coal scale Readings ✓
PRECIP READINGS ✓
Coal sample ✓

Call Jerry Pepperton in LAB → FLY ASH SAMPLE ✓

Comments:

9-26-95
Sootblowing

RUN 2:

START 1044
CEMS Time 944

STOP 11:44
CEMS Time 10:44

9-26-95
Sootblowing

RUN 3

START 13:33
CEMS Time 12:33

STOP 14:36
CEMS Time 13:36

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UNIT UNIT 7 COMPLIANCE TEST

DATA SHEET

RUN # 1

TYPE [illegible]

LOAD [illegible]

PASS____ FAIL____

P.E.R.________

DATE [illegible]

START TIME [illegible]

STOP TIME 1014

WEATHER [illegible]

AMBIENT TEMP________

/GAS TEMPERATURES (DEG. F)

PT.1 7A SAPH INLET AIR	[illegible]
PT.2 7B SAPH OUTLET AIR	[illegible]
PT.3 7B SAPH INLET AIR	[illegible]
PT.4 7B SAPH OUTLET AIR	[illegible]
PT.5 LH ECONO OUT GAS	[illegible]
PT.6 RH ECONO OUT GAS	[illegible]
PT.7 7A SAPH OUT GAS	[illegible]
PT.8 7B SAPH OUT GAS	[illegible]
PT.17 7A PAH INLET AIR	[illegible]
PT.18 7A PAH OUTLET AIR	[illegible]
PT.19 7B PAH INLET AIR	[illegible]
PT.20 7B PAH OUTLET AIR	[illegible]
PT.21 7A PAH INLET GAS	[illegible]
PT.22 7A PAH OUTLET GAS	[illegible]
PT.23 7B PAH INLET GAS	[illegible]
PT.24 7B PAH OUTLET GAS	[illegible]

Unit 6 was off during test

#7 Duct work upstream of test ports has a hole in it.

FAN AMPS

7A F.D. FAN	[illegible]
7B F.D. FAN	[illegible]
7A I.D. FAN	[illegible]
7B I.D. FAN	[illegible]
7C I.D. FAN	[illegible]
7D I.D. FAN	340
7A P.A. FAN	150
7B P.A. FAN	175

7A FD DISCHARGE	[illegible]	(IN. OF H2O)
7B FD DISCHARGE	[illegible]	
FURNACE GAS	[illegible]	
ECON INLET	[illegible]	
ID DUCT SUCTION	17	
ECON OUTLET	[illegible]	
7A IDF SUCTION	[illegible]	
7B IDF SUCTION	[illegible]	
7C IDF SUCTION	13.5	
7D IDF SUCTION	18	
7A SAH GAS DIFF	[illegible]	
7B SAH GAS DIFF	[illegible]	
7A PAF DISCHARGE	[illegible]	
7B PAF DISCHARGE	[illegible]	
7A PAH GAS DIFF	[illegible]	
7B PAH GAS DIFF	[illegible]	

DAMPER POSITIONS (%)

7A FDF INLET VANE	65
7B FDF INLET VANE	70
7A IDF INLET VANE	50
7B IDF INLET VANE	[illegible]
7C IDF INLET VANE	[illegible]
7D IDF INLET VANE	[illegible]
7A PAF INLET VANE	[illegible]
7B PAF INLET VANE	[illegible]
7A PAH GAS DAMPER	[illegible]
7B PAH GAS DAMPER	[illegible]
SH/RH DAMPERS	[illegible]
SAH STEAM COILS	[illegible]
PAH STEAM COILS	[illegible]
CONDENSER VAC HP	[illegible]
CONDENSER VAC LP	[illegible]
COND INLET H2O	[illegible]
COND OUTLET H2O	[illegible]
THROTTLE PSI	[illegible]
SUPERHEAT TEMP	[illegible]
REHEAT TEMP	[illegible]

BEST AVAILABLE COPY

MAIN STEAM FLOW
[redacted] OW
[redacted] WATER FLOW 3.6
CONDENSATE FLOW 3.1

OPACITY 6 MIN AVG
OPACITY A INSTANT
OPACITY B INSTANT 14
7A 02 2.5
7B 02
STACK 02
SO2

PULVERIZER READINGS

	MILL AMPS	COAL FLOW	P.A. FLOW	MILL DIFF	MILL TEMP
7A				9	17
7B		68		10	
7C			165	9	
7D		72			
7E					162
7F			142		

PULVERIZER DAMPER POSITIONS (%)

	HOT AIR	P.A. FLOW
[redacted]		
[redacted]		
7C		
7D		
7E		
7F		

AIR REGISTERS

POSITIONER PERCENT

7A	54, 31, 33, 4[illegible]
7B	[illegible]
7C	45, 30, 34, 55
7D	115, 30, 30, [illegible]
7E	116, 30, [illegible]
7F	55, 31, 31, [illegible]

COMMENTS

BEST AVAILABLE COPY

CRIST ELECTRIC GENERATING PLANT
UNIT 7 COMPLIANCE TEST
PRECIPITATOR DATA SHEET

DATE _____
MW LOAD _____
WEATHER _____

RUN # 1
START TIME 915
STOP TIME 1014

CABINET	START/STOP PRIMARY AMPS		START/STOP PRIMARY VOLTS		START/STOP SECONDARY AMPS	
1A	20					
1B	60					
1C						
1D						
1E						
1F						
1G						
1H						
1J						
2A						
2B						
2C						
2D						
2E						
2F						
2G						
2H						
2J						

OPACITY START
6 MIN AVG .5
7A INST. _____
7B INST. _____
SO2 _____

OPACITY STOP
6 MIN AVG 8.6
7A INST. 14
7B INST. 14
SO2 1.5

COMMENTS _____

	START	STOP
PT. 7. 7A SAH OUTLET GAS TEMPERATURE	330	331
PT. 8. 7B SAH OUTLET GAS TEMPERATURE	312	315
PT. 22.7A PAH OUTLET GAS TEMPERATURE		341
PT. 24 7B PAH OUTLET GAS TEMPERATURE	332	336

30A91

T/R CONTROL PRECIPITATOR A

T/R	COMM LINK	T/R RATED KVA	T/R ACTUAL KVA	% MAX CURRENT		PRIMARY		SECONDARY	SPARKS per MINUTE	POR
				SET	OBS	VOLT	AMPS	MILLIAMPS		
7A-A	ON	90	90	100	13	357	30	186	18	OFF
7A-B	ON	90	90	100	19	365	47	270	30	OFF
7A-C	ON	90	90	100	33	352	61	466	33	OFF
7A-D	ON	90	90	100	56	394	90	793	3	OFF
7A-E	ON	90	90	100	40	327	85	560	6	OFF
7A-F	ON	90	90	100	42	361	74	597	0	OFF
7A-G	ON	90	90	100	40	348	73	560	0	OFF
7A-H	ON	90	90	100	50	369	84	700	9	OFF
7A-J	ON	90	90	100	73	457	104	1026	15	OFF

~~10:24~~:45 25-Sep-95
10:14

Run #1

STOP 10:14

T/R CONTROL PRECIPITATOR B

T/R	COMM LINK	T/R RATED KVA	T/R ACTUAL KVA	% MAX CURRENT		PRIMARY		SECONDARY	SPARKS per MINUTE	POR
				SET	OBS	VOLT	AMPS	MILLIAMPS		
7B-A	ON	90	90	100	23	411	50	326	24	OFF
7B-B	ON	90	90	100	38	365	76	532	0	OFF
7B-C	ON	90	90	100	57	382	86	802	9	OFF
7B-D	ON	90	90	100	76	361	130	1064	0	OFF
7B-E	ON	90	90	100	36	323	60	513	6	OFF
7B-F	ON	90	90	100	74	415	117	1045	3	OFF
7B-G	ON	90	90	100	54	336	94	765	0	OFF
7B-H	ON	90	90	100	62	348	100	877	0	OFF
7B-J	ON	90	90	100	68	378	96	952	0	OFF

10:25:09 25-Sep-95

10:14

Run # 1

STOP 10:14

Best Available Copy

UNIT 7 COMPLIANCE TEST

DATA SHEET

RUN # 2

TYPE [illegible]

LOAD 495

PASS ____ FAIL ____

P.E.R. ________

DATE 9-26-95

START TIME [illegible]

STOP TIME [illegible]

WEATHER clear

AMBIENT TEMP ________

GAS TEMPERATURES (DEG. F)

PT.1	7A SAPH INLET AIR	[illegible]
PT.2	7B SAPH OUTLET AIR	[illegible]
PT.3	7B SAPH INLET AIR	
PT.4	7B SAPH OUTLET AIR	[illegible]
PT.5	LH ECONO OUT GAS	[illegible]
PT.6	RH ECONO OUT GAS	[illegible]
PT.7	7A SAPH OUT GAS	33[illegible]
PT.8	7B SAPH OUT GAS	[illegible]
PT.17	7A PAH INLET AIR	132
PT.18	7A PAH OUTLET AIR	34[illegible]
PT.19	7B PAH INLET AIR	13[illegible]
PT.20	7B PAH OUTLET AIR	[illegible]
PT.21	7A PAH INLET GAS	703
PT.22	7A PAH OUTLET GAS	[illegible]
PT.23	7B PAH INLET GAS	697
PT.24	7B PAH OUTLET GAS	339

Unit 6 was off line during test, fan off

#7 ductwork upstream of test ports has a hole in it

(IN. OF H2O)

7A FD DISCHARGE	22
7B FD DISCHARGE	22
FURNACE GAS	7.5
ECON INLET	3.2
ID DUCT SUCTION	17
ECON OUTLET	6
7A IDF SUCTION	18
7B IDF SUCTION	18.5
7C IDF SUCTION	18
7D IDF SUCTION	18
7A SAH GAS DIFF	7.7
7B SAH GAS DIFF	7.8
7A PAF DISCHARGE	73
7B PAF DISCHARGE	76
7A PAH GAS DIFF	12
7B PAH GAS DIFF	[illegible]

FAN AMPS

7A F.D. FAN	[illegible]
7B F.D. FAN	[illegible]
7A I.D. FAN	[illegible]
7B I.D. FAN	[illegible]
7C I.D. FAN	365
7D I.D. FAN	[illegible]
7A P.A. FAN	172
7B P.A. FAN	175

DAMPER POSITIONS (%)

7A FDF INLET VANE	65
7B FDF INLET VANE	70
7A IDF INLET VANE	50
7B IDF INLET VANE	50
7C IDF INLET VANE	50
7D IDF INLET VANE	50
7A PAF INLET VANE	72
7B PAF INLET VANE	70
7A PAH GAS DAMPER	60
7B PAH GAS DAMPER	50
SH/RH DAMPERS	60/40
SAH STEAM COILS	0
PAH STEAM COILS	0
CONDENSER VAC HP	2.570
CONDENSER VAC LP	2.570
COND INLET H2O	90/90
COND OUTLET H2O	123/123
THROTTLE PSI	2400
SUPERHEAT TEMP	1000
REHEAT TEMP	1000

BEST AVAILABLE COPY

MAIN STEAM FLOW
FLOW
WATER FLOW
CONDENSATE FLOW

OPACITY 6 MIN AVG
OPACITY A INSTANT
OPACITY B INSTANT
7A 02
7B 02
STACK 02
SO2

PULVERIZER READINGS

	MILL AMPS	COAL FLOW	P.A. FLOW	MILL DIFF	MILL TEMP	Coal Scales
7A					153	
7B					153	
7C					153	999315
7D					160	
7E					170	
7F						

Start

PULVERIZER DAMPER POSITIONS (%)

	HOT AIR	P.A. FLOW
7D		
7C		45
7E		65
7F		70

AIR REGISTERS

POSITIONER PERCENT

7A	54	31	33	
7B	56	31		
7C		30		
7D		30		
7E	46	30		
7F	55	31		

COMMENTS

T/R CONTROL PRECIPITATOR A

T/R	COMM LINK	T/R RATED KVA	T/R ACTUAL KVA	% MAX CURRENT SET	% MAX CURRENT OBS	PRIMARY VOLT	PRIMARY AMPS	SECONDARY MILLIAMPS	SPARKS per MINUTE	POR
7A-A	ON	90	90	100	8	323	24	121	6	OFF
7A-B	ON	90	90	100	13	306	34	186	48	OFF
7A-C	ON	90	90	100	32	394	57	448	27	OFF
7A-D	ON	90	90	100	40	365	69	560	3	OFF
7A-E	ON	90	90	100	39	331	85	550	3	OFF
7A-F	ON	90	90	100	42	369	75	597	0	OFF
7A-G	ON	90	90	100	40	352	73	560	3	OFF
7A-H	ON	90	90	100	50	373	83	700	12	OFF
7A-J	ON	90	90	100	72	457	104	1017	18	OFF

~~10:56~~:13 25-Sep-95
10:46

Run #2
START 10:44

T/R CONTROL PRECIPITATOR B

T/R	COMM LINK	T/R RATED KVA	T/R ACTUAL KVA	% MAX CURRENT SET	% MAX CURRENT OBS	PRIMARY VOLT	PRIMARY AMPS	SECONDARY MILLIAMPS	SPARKS per MINUTE	POR
7B-A	ON	90	90	100	26	428	54	364	18	OFF
7B-B	ON	90	90	100	22	319	52	308	42	OFF
7B-C	ON	90	90	100	50	379	79	709	6	OFF
7B-D	ON	90	90	100	76	363	131	1064	0	OFF
7B-E	ON	90	90	100	36	327	59	504	39	OFF
7B-F	ON	90	90	100	58	386	97	821	3	OFF
7B-G	ON	90	90	100	54	340	94	765	0	OFF
7B-H	ON	90	90	100	62	352	101	877	0	OFF
7B-J	ON	90	90	100	68	382	96	952	0	OFF

~~10:56:~~32 25-Sep-95
10.46

Run #2
Sta.— 10.44

T/R CONTROL PRECIPITATOR A

T/R	COMM LINK	T/R RATED KVA	T/R ACTUAL KVA	% MAX CURRENT SET	% MAX CURRENT OBS	PRIMARY VOLT	PRIMARY AMPS	SECONDARY MILLIAMPS	SPARKS per MINUTE	POR
7A-A	ON	90	90	100	7	315	20	102	18	OFF
7A-B	ON	90	90	100	16	365	43	283	24	OFF
7A-C	ON	90	90	100	26	361	51	373	45	OFF
7A-D	ON	90	90	100	30	340	57	429	30	OFF
7A-E	ON	90	90	100	40	336	66	560	12	OFF
7A-F	ON	90	90	100	43	373	75	606	48	OFF
7A-G	ON	90	90	100	40	357	74	569	0	OFF
7A-H	ON	90	90	100	49	378	84	690	21	OFF
7A-J	ON	90	90	100	69	457	102	970	21	OFF

~~11:57~~:46 25-Sep-95

11:47

Run # 2

Stop 11:49

T/R CONTROL PRECIPITATOR B

T/R	COMM LINK	T/R RATED KVA	T/R ACTUAL KVA	% MAX CURRENT SET	% MAX CURRENT OBS	PRIMARY VOLTS	PRIMARY AMPS	SECONDARY MILLIAMPS	SPARKS per MINUTE	POR
7B-A	ON	90	90	100	24	424	52	336	9	OFF
7B-B	ON	90	90	100	30	348	62	420	48	OFF
7B-C	ON	90	90	100	49	369	77	690	30	OFF
7B-D	ON	90	90	100	76	369	130	1064	12	OFF
7B-E	ON	90	90	100	36	331	60	513	15	OFF
7B-F	ON	90	90	100	71	415	113	998	0	OFF
7B-G	ON	90	90	100	54	340	95	765	0	OFF
7B-H	ON	90	90	100	63	357	101	886	3	OFF
7B-J	ON	90	90	100	68	382	96	961	0	OFF

~~11:~~58:06 25-Sep-95

11:47

Run #2

STOP 11:44

BEST AVAILABLE COPY

RUN # 3
TYPE [illegible] Test
LOAD 495

DATA SHEET

PASS ____ FAIL ____
P.E.R. ____

DATE [illegible]5
START TIME 1333
STOP TIME [illegible]
WEATHER Clear
AMBIENT TEMP ____

/GAS TEMPERATURES (DEG. F)

PT.1	7A SAPH INLET AIR	118
PT.2	7B SAPH OUTLET AIR	717
PT.3	7B SAPH INLET AIR	113
PT.4	7B SAPH OUTLET AIR	~11
PT.5	LH ECONO OUT GAS	
PT.6	RH ECONO OUT GAS	
PT.7	7A SAPH OUT GAS	337
PT.8	7B SAPH OUT GAS	319
PT.17	7A PAH INLET AIR	138
PT.18	7A PAH OUTLET AIR	330
PT.19	7B PAH INLET AIR	
PT.20	7B PAH OUTLET AIR	
PT.21	7A PAH INLET GAS	
PT.22	7A PAH OUTLET GAS	
PT.23	7B PAH INLET GAS	735
PT.24	7B PAH OUTLET GAS	

Unit was off line during Test. Fans off

By Duct work upstream of Test ports has a hole in it.

FAN AMPS

7A F.D. FAN	[illegible]
7B F.D. FAN	[illegible]
7A I.D. FAN	[illegible]
7B I.D. FAN	
7C I.D. FAN	
7D I.D. FAN	
7A P.A. FAN	127
7B P.A. FAN	

7A FD DISCHARGE	22.5 (IN. OF H2O)
7B FD DISCHARGE	22.5
FURNACE GAS	.25
ECON INLET	3.5
ID DUCT SUCTION	17
ECON OUTLET	6
7A IDF SUCTION	18
7B IDF SUCTION	18.5
7C IDF SUCTION	18
7D IDF SUCTION	18
7A SAH GAS DIFF	.25
7B SAH GAS DIFF	
7A PAF DISCHARGE	
7B PAF DISCHARGE	
7A PAH GAS DIFF	
7B PAH GAS DIFF	

DAMPER POSITIONS (%)

7A FDF INLET VANE	65
7B FDF INLET VANE	70
7A IDF INLET VANE	
7B IDF INLET VANE	
7C IDF INLET VANE	
7D IDF INLET VANE	
7A PAF INLET VANE	
7B PAF INLET VANE	
7A PAH GAS DAMPER	
7B PAH GAS DAMPER	
SH/RH DAMPERS	40/60
SAH STEAM COILS	
PAH STEAM COILS	
CONDENSER VAC HP	
CONDENSER VAC LP	
COND INLET H2O	/
COND OUTLET H2O	/
THROTTLE PSI	2400
SUPERHEAT TEMP	
REHEAT TEMP	

BEST AVAILABLE COPY

MAIN STEAM FLOW	[illegible]
[illegible] FLOW	4[illegible]
[illegible] WATER FLOW	[illegible]
CONDENSATE FLOW	3.1

OPACITY 6 MIN AVG	[illegible]
OPACITY A INSTANT	[illegible]
OPACITY B INSTANT	[illegible]
7A 02	[illegible]
7B 02	[illegible]
STACK 02	[illegible]
SO2	[illegible]

Max [illegible]

PULVERIZER READINGS

	MILL AMPS	COAL FLOW	P.A. FLOW	MILL DIFF	MILL TEMP	Start	End	
7A	56	70	1[illegible]5	8	160	533705	5[illegible]2	697
7B	[illegible]	[illegible]	[illegible]	[illegible]	16[illegible]	98[illegible]3	98[illegible]	704
7C	[illegible]	66	[illegible]	[illegible]	[illegible]	001[illegible]	[illegible]	661
7D	5[illegible]	6[illegible]	1[illegible]5	[illegible]	[illegible]	15[illegible]9	15[illegible]39	
7E	[illegible]	7[illegible]	[illegible]	[illegible]	170	[illegible]6[illegible]6	1155[illegible]	
7F	[illegible]	7[illegible]	[illegible]	7	165	8[illegible]3	[illegible]38	

PULVERIZER DAMPER POSITIONS (%)

	HOT AIR	P.A. FLOW
7A	100[illegible]	[illegible]3[illegible]
7B	[illegible]	5[illegible]
7C	[illegible]	[illegible]
7D	[illegible]	[illegible]
7E	[illegible]	[illegible]
7F	[illegible]	7[illegible]

AIR REGISTERS

POSITIONER PERCENT

7A	54, 31, 34, 47
7B	56, 31, 30, 52
7C	45, 30, 30, 56
7D	46, 3[illegible], 3[illegible], [illegible]
7E	4[illegible], [illegible], 30, [illegible]5
7F	56, 3[illegible], 31, [illegible]8

COMMENTS ______________________________

T/R CONTROL PRECIPITATOR A

T/R	COMM LINK	T/R RATED KVA	T/R ACTUAL KVA	% MAX CURRENT SET	% MAX CURRENT OBS	PRIMARY VOLT	PRIMARY AMPS	SECONDARY MILLIAMPS	SPARKS per MINUTE	POR
7A-A	ON	90	90	100	4	331	19	74	6	OFF
7A-B	ON	90	90	100	15	369	40	214	30	OFF
7A-C	ON	90	90	100	18	348	39	261	24	OFF
7A-D	ON	90	90	100	43	386	74	606	12	OFF
7A-E	ON	90	90	100	39	344	85	550	12	OFF
7A-F	ON	90	90	100	42	373	75	597	6	OFF
7A-G	ON	90	90	100	40	357	74	569	0	OFF
7A-H	ON	90	90	100	46	369	78	644	24	OFF
7A-J	ON	90	90	100	65	449	95	905	18	OFF

~~13:45:~~33 25-Sep-95
13:35

Run # 3
START 1333

T/R CONTROL PRECIPITATOR B

T/R	COMM LINK	T/R RATED KVA	T/R ACTUAL KVA	% MAX CURRENT SET	% MAX CURRENT OBS	PRIMARY VOLT	PRIMARY AMPS	SECONDARY MILLIAMPS	SPARKS per MINUTE	POR
7B-A	ON	90	90	100	20	403	44	270	33	OFF
7B-B	ON	90	90	100	32	365	66	457	12	OFF
7B-C	ON	90	90	100	40	357	66	569	42	OFF
7B-D	ON	90	90	100	66	344	118	933	51	OFF
7B-E	ON	90	90	100	36	336	60	513	0	OFF
7B-F	ON	90	90	100	60	403	99	849	0	OFF
7B-G	ON	90	90	100	54	348	95	765	9	OFF
7B-H	ON	90	90	100	63	361	101	886	0	OFF
7B-J	ON	90	90	100	68	386	96	961	0	OFF

Run # 3

~~13:45~~:15 25-Sep-95

13:35

START 13:33

T/R CONTROL PRECIPITATOR A

T/R	COMM LINK	T/R RATED KVA	T/R ACTUAL KVA	% MAX CURRENT SET	% MAX CURRENT OBS	PRIMARY VOLT	PRIMARY AMPS	SECONDARY MILLIAMPS	SPARKS per MINUTE	POR
7A-A	ON	90	90	100	2	298	13	37	21	OFF
7A-B	ON	90	90	100	14	365	38	196	33	OFF
7A-C	ON	90	90	100	15	340	33	205	72	OFF
7A-D	ON	90	90	100	18	306	39	261	60	OFF
7A-E	ON	90	90	100	26	306	62	373	69	OFF
7A-F	ON	90	90	100	31	319	61	438	63	OFF
7A-G	ON	90	90	100	40	365	74	569	30	OFF
7A-H	ON	90	90	100	43	369	75	606	24	OFF
7A-J	ON	90	90	100	58	436	88	812	18	OFF

Run #3
Stop 1436

~~14:48:~~48 25-Sep-95
14:37

T/R CONTROL PRECIPITATOR B

T/R	COMM LINK	T/R RATED KVA	T/R ACTUAL KVA	% MAX CURRENT		PRIMARY		SECONDARY	SPARKS per MINUTE	POR
				SET	OBS	VOLT	AMPS	MILLIAMPS		
7B-A	ON	90	90	100	15	390	37	214	18	OFF
7B-B	ON	90	90	100	28	336	58	392	15	OFF
7B-C	ON	90	90	100	44	369	68	616	12	OFF
7B-D	ON	90	90	100	76	382	131	1073	3	OFF
7B-E	ON	90	90	100	36	344	60	513	6	OFF
7B-F	ON	90	90	100	68	428	109	961	9	OFF
7B-G	ON	90	90	100	54	352	95	765	0	OFF
7B-H	ON	90	90	100	63	365	101	886	0	OFF
7B-J	ON	90	90	100	68	386	96	961	0	OFF

Run #3

14:49:08 25-Sep-95

STOP 1436

PERMIT #: A 7-234356

EPA

VISIBLE EMISSION OBSERVATION FORM 1

Form Number | Page 1 of 2

Continued on VEO Form Number

Method Used (Circle One): Method 9 | 203A | 203B | Other: _____

Company Name: GULF POWER CRIST Electric GEN. PLANT

Facility Name: FLY ASH SILO "A"

Street Address: TEN MILE Rd.,

City: PENSACOLA | State: FL | Zip: 32514

Process: Fly Ash Collection Syst. | Unit #: A | Operating Mode: NORMAL

Control Equipment: BAGHOUSE | Operating Mode: NORMAL

Describe Emission Point: Nearest (west-most) Green Vent on Silo A

Height of Emiss. Pt. Start ≈230 End ≈230 | Height of Emiss. Pt. Rel. to Observer Start ≈75' End ≈75'

Distance to Emiss. Pt. Start ≈250 End ≈250 | Direction to Emiss. Pt. (Degrees) Start 20° End 20°

Vertical Angle to Obs. Pt. Start 16.7° End 16.7° | Direction to Obs. Pt. (Degrees) Start 20° End 20°

Distance and Direction to Observation Point from Emission Point: Start same End same

Describe Emissions: Start Light periodic puff End same

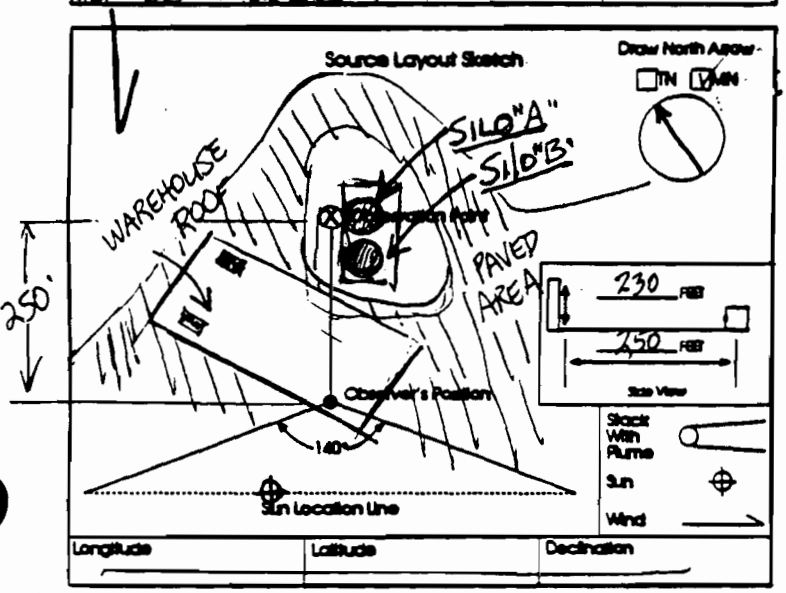
Emission Color: Start gray End gray | Water Droplet Plume: Attached ☐ Detached ☐ None ☑

Describe Plume Background: Start SKY End SKY

Background Color: Start BLUE End BLUE | Sky Conditions: Start CLEAR End CLEAR

Wind Speed: Start ~4.7 End 4.7 mph | Wind Direction: Start NE End NE

Ambient Temp.: Start 55°F End 50°F | Wet Bulb Temp. | RH Percent



Longitude | Latitude | Declination

Additional Information: Opacity Readings: MAX: 5 MIN: 0

Observation Date	Time Zone	Start Time	End Time
11/30/95	CST	1600	1700

Min \ Sec	0	15	30	45	Comments
1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	5	5	5	MAX READING: 5
5	0	0	0	0	MIN READING: 0
6	0	0	5	0	6 MIN. AVG.
7	0	0	0	5	(HIGHEST 24
8	5	0	0	0	CONSECUTIVE
9	0	0	0	5	READINGS: 1.46
10	0	0	0	0	
11	0	0	5	0	
12	0	5	0	5	
13	0	0	0	0	
14	0	0	0	5	
15	0	5	0	0	
16	0	0	0	0	
17	5	5	0	5	
18	0	0	0	0	
19	5	0	0	0	
20	0	0	0	0	
21	0	0	5	0	
22	0	0	0	0	
23	0	0	0	5	
24	0	0	5	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	5	0	0	0	

Observer's Name (Print): JOHN M. McPHERSON

Observer's Signature: [signature] Date: 11/30/95

Organization: GULF POWER CO

Certified By: EASTERN TECHNICAL ASSOC. Date: 11/15/95

VEOF1.1

Flyash VEO "A" (Nearest vent)

EPA

VISIBLE EMISSION OBSERVATION FORM 1

Form Number		Page 2 of 2
Continued on VEO Form Number		

Method Used (Circle One)
Method 9 203A 203B Other: _____

Company Name

Facility Name

Street Address

City | State | Zip

Process | Unit # | Operating Mode

Control Equipment | Operating Mode

Describe Emission Point

Height of Emiss. Pt. — Start / End
Height of Emiss. Pt. Rel. to Observer — Start / End
Distance to Emiss. Pt. — Start / End
Direction to Emiss. Pt. (Degrees) — Start / End

Vertical Angle to Obs. Pt. — Start / End
Direction to Obs. Pt. (Degrees) — Start / End
Distance and Direction to Observation Point from Emission Point — Start / End

Describe Emissions — Start / End
Emission Color — Start / End
Water Droplet Plume — Attached ☐ Detached ☐ None ☐

Describe Plume Background — Start / End
Background Color — Start / End
Sky Conditions — Start / End
Wind Speed — Start ~ / End
Wind Direction — Start / End
Ambient Temp. — Start / End
Wet Bulb Temp.
RH Percent

Source Layout Sketch

Draw North Arrow ☐TN ☐MN

X Observation Point

Observer's Position

140°

Sun Location Line

FEET

FEET

Side View

Stack With Plume

Sun

Wind

Longitude | Latitude | Declination

Additional Information

Observation Date	Time Zone	Start Time	End Time

Min \ Sec	0	15	30	45	Comments
1	5	5	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	5	
6	0	0	0	0	
7	0	0	0	0	
8	0	0	0	0	
9	0	0	0	0	
10	0	5	0	0	
11	0	5	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	5	0	0	
15	5	0	0	0	
16	0	0	5	0	
17	0	0	5	0	
18	0	0	0	0	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	5	0	5	
24	0	0	0	0	
25	0	0	5	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	5	0	0	0	
30	0	5	0	0	

Observer's Name (Print)

Observer's Signature | Date

Organization

Certified By | Date

PERMIT: AC17-234356

EPA

VISIBLE EMISSION OBSERVATION FORM 1

Form Number		Page 1 of 2
Continued on VEO Form Number		

Method Used (Circle One): (Method 9) 203A 203B Other: _____

Company Name: Gulf Power Crist Electric Gen. Plant
Facility Name: Fly Ash Silo "A"
Street Address: Ten Mile Rd.
City: Pensacola | State: FL | Zip: 32514

Process: Fly-Ash Collection Syst. | Unit #: "A" | Operating Mode: NORMAL
Control Equipment: BAGHOUSE | Operating Mode: NORMAL

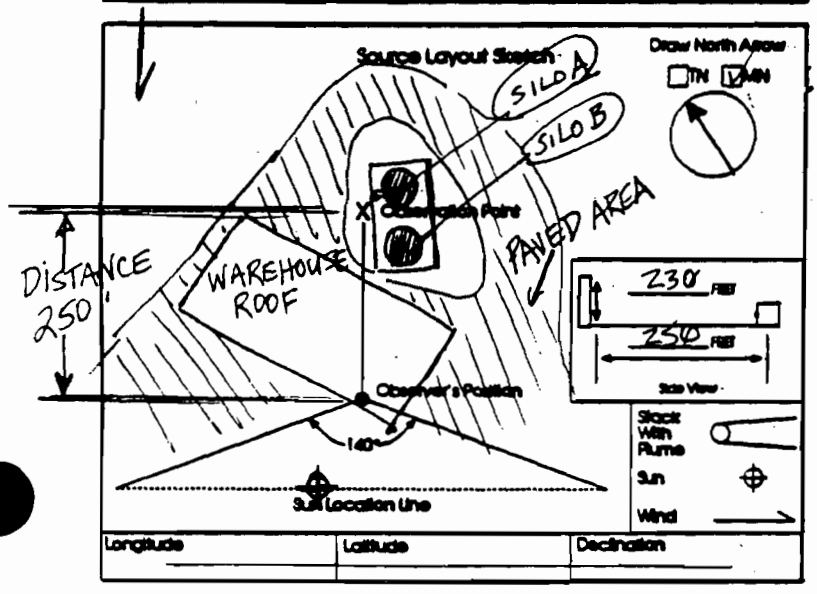
Describe Emission Point: Farthest (East-Most) GREEN VENT on SILO "A"

	Start	End
Height of Emiss. Pt.	≈230	≈230
Height of Emiss. Pt. Rel. to Observer	≈75'	≈75'
Distance to Emiss. Pt.	≈250	≈250
Direction to Emiss. Pt. (Degrees)	20°	20°
Vertical Angle to Obs. Pt.	16.7°	16.7°
Direction to Obs. Pt. (Degrees)	20°	20°
Distance and Direction to Observation Point from Emission Point	Same	Same

Describe Emissions: Start: Light Periodic Puff | End: Same
Emission Color: Start: Gray | End: Gray
Water Droplet Plume: Attached ☐ Detached ☐ None ☑

Describe Plume Background: Start: SKY | End: SKY

	Start	End
Background Color	BLUE	BLUE
Sky Conditions	CLEAR	CLEAR
Wind Speed	~4-7	4-7
Wind Direction	NE	NE
Ambient Temp.	55°F	50°F
Wet Bulb Temp.		
RH Percent		



Longitude | Latitude | Declination

Additional Information: Opacity Readings: MAX: 5 / MIN: 0
HIGHEST 24 consecutive: .63

Observation Date: 11/30/95 | Time Zone: CST | Start Time: 1600 | End Time: 1700

Min \ Sec	0	15	30	45	Comments
1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	MAX READING: 5
6	0	5	0	0	MIN READING: 0
7	0	0	5	0	HIGH 6 MIN.
8	0	0	0	0	AVG (CONSECUTIVE
9	0	5	0	0	24 readings)
10	0	0	0	0	= .63
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
15	0	0	0	0	
16	0	5	0	0	
17	0	0	0	0	
18	0	0	0	0	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	0	0	0	
24	0	0	5	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	0	0	

Observer's Name (Print): JOHN M. McPHERSON
Observer's Signature: John M. McPherson | Date: 11/30/95
Organization: Gulf Power Co.
Certified By: EASTERN TECHNICAL ASSOC. | Date: 11/15/95

VEOF1.1

FLY-ASH SILO "A" FARTHEST VENT

EPA

VISIBLE EMISSION OBSERVATION FORM 1

Form Number						Page 2 of 2
Continued on VEO Form Number						

Method Used (Circle One)
Method 9 203A 203B Other: _____

Company Name

Facility Name

Street Address

City | State | Zip

Process | Unit # | Operating Mode

Control Equipment | Operating Mode

Describe Emission Point

Height of Emiss. Pt. — Start | End
Height of Emiss. Pt. Rel. to Observer — Start | End
Distance to Emiss. Pt. — Start | End
Direction to Emiss. Pt. (Degrees) — Start | End

Vertical Angle to Obs. Pt. — Start | End
Direction to Obs. Pt. (Degrees) — Start | End
Distance and Direction to Observation Point from Emission Point — Start | End

Describe Emissions — Start | End
Emission Color — Start | End
Water Droplet Plume — Attached ☐ Detached ☐ None ☐

Describe Plume Background — Start | End
Background Color — Start | End
Sky Conditions — Start | End
Wind Speed — Start ~ | End
Wind Direction — Start | End
Ambient Temp. — Start | End
Wet Bulb Temp.
RH Percent

Source Layout Sketch

Draw North Arrow ☐TN ☐MN

X Observation Point

Observer's Position

140°

Sun Location Line

FEET

FEET

Side View

Stack With Plume

Sun

Wind

Longitude | Latitude | Declination

Additional Information

Observation Date	Time Zone	Start Time	End Time

Sec / Min	0	15	30	45	Comments
1	0	0	5	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	5	0	
7	0	0	0	0	
8	0	0	0	0	
9	0	0	0	0	
10	0	0	0	0	
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
15	0	0	0	0	
16	0	0	0	0	
17	0	0	0	0	
18	0	5	0	0	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	0	0	0	
24	0	0	0	5	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	0	0	

Observer's Name (Print)

Observer's Signature | Date

Organization

Certified By | Date

Permit = AC17-223356

EPA

VISIBLE EMISSION OBSERVATION FORM 1

Form Number		Page 1 of 2
Continued on VEO Form Number		

Method Used (Circle One): (Method 9) 203A 203B Other: _____

Company Name: Gulf Power Crist Electric Generating Plant
Facility Name: Fly Ash Silo "B"
Street Address: Ten Mile Rd., Pensacola 32514
City: Pensacola | State: FL | Zip: 32514

Process: Fly Ash Collection System B | Unit #: B | Operating Mode: Normal
Control Equipment: Baghouse | Operating Mode: Normal

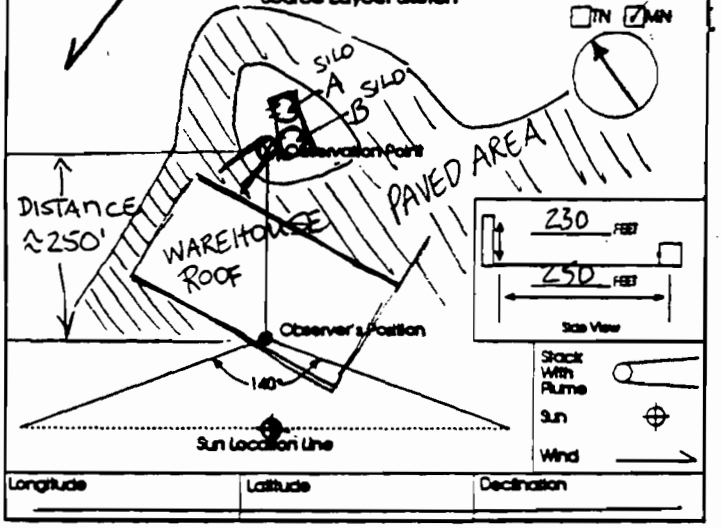
Describe Emission Point: Nearest (West-most) green vent on Silo "B"
Height of Emiss. Pt. Start: ≈230' End: ≈230' | Height of Emiss. Pt. Rel. to Observer Start: ≈75' End: ≈75'
Distance to Emiss. Pt. Start: 250' End: 250' | Direction to Emiss. Pt. (Degrees) Start: 330° End: 30°

Vertical Angle to Obs. Pt. Start: 16.7° End: 16.7° | Direction to Obs. Pt. (Degrees) Start: 30° End: 30°
Distance and Direction to Observation Point from Emission Point Start: Same End: Same

Describe Emissions Start: Light Periodic puff End: Same
Emission Color Start: Gray End: Gray | Water Droplet Plume: Attached ☐ Detached ☐ None ☑

Describe Plume Background Start: SKY End: SKY
Background Color Start: BLUE End: BLUE | Sky Conditions Start: CLEAR End: CLEAR
Wind Speed Start: ~4-7 End: 4-7 | Wind Direction Start: ENE End: NE
Ambient Temp. Start: ≈60° F End: ≈60° F | Wet Bulb Temp. | RH Percent

Source Layout Sketch — Draw North Arrow ☐TN ☑MN



Longitude | Latitude | Declination

Additional Information: opacity READINGS: MIN: 0 MAX: 5

Observation Date	Time Zone	Start Time	End Time
11/30/95	CST	1400hr.	1500hr.

Min \ Sec	0	15	30	45	Comments
1	0	0	0	0	
2	0	0	0	0	
3	0	0	5	5	
4	0	0	0	5	
5	0	0	5	5	
6	0	5	0	0	
7	0	0	0	0	
8	0	0	0	0	
9	0	5	5	0	
10	0	0	5	5	MAX reading = 5
11	0	0	5	5	min. reading = 0
12	5	0	5	0	HIGHEST 6 min
13	5	5	5	0	Avg = 2.29%
14	0	0	0	0	"opacity"
15	0	5	5	0	
16	0	0	0	0	
17	0	0	5	5	
18	0	0	5	0	
19	5	0	0	0	
20	0	0	0	5	
21	0	0	0	0	
22	0	0	0	5	
23	0	0	0	5	
24	0	0	0	5	
25	0	0	5	5	
26	0	5	0	0	
27	0	0	5	0	
28	0	0	0	0	
29	5	5	5	5	
30	0	0	5	0	

Observer's Name (Print): JOHN M. McPherson
Observer's Signature: John M. McPherson | Date: 11/30/95
Organization: GULF POWER Co.
Certified By: EASTERN Technical ASSOC. | Date: 11/15/95

VEO51.1

Unit 7
NEAREST VENT

EPA

VISIBLE EMISSION OBSERVATION FORM 1

Form Number							Page	of
Continued on VEO Form Number								

Method Used (Circle One)
Method 9 203A 203B Other: _____

Company Name		
Facility Name		
Street Address		
City	State	Zip

Process	Unit #	Operating Mode
Control Equipment		Operating Mode

Describe Emission Point			
Height of Emiss. Pt.		Height of Emiss. Pt. Rel. to Observer	
Start	End	Start	End
Distance to Emiss. Pt.		Direction to Emiss. Pt. (Degrees)	
Start	End	Start	End

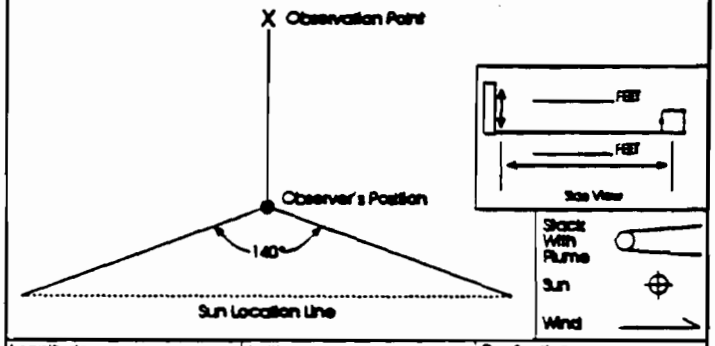
Vertical Angle to Obs. Pt.		Direction to Obs. Pt. (Degrees)	
Start	End	Start	End
Distance and Direction to Observation Point from Emission Point			
Start		End	

Describe Emissions			
Start		End	
Emission Color		Water Droplet Plume	
Start	End	Attached ☐	Detached ☐ None ☐

Describe Plume Background			
Start		End	
Background Color		Sky Conditions	
Start	End	Start	End
Wind Speed		Wind Direction	
Start ~	End	Start	End
Ambient Temp.		Wet Bulb Temp.	RH Percent
Start	End		

Source Layout Sketch

Draw North Arrow
☐TN ☐MN



Longitude	Latitude	Declination

Additional Information

Observation Date	Time Zone	Start Time	End Time

Min \ Sec	0	15	30	45	Comments
1	0	0	0	0	
2	0	5	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	5	0	0	5	
8	0	0	0	0	
9	0	0	0	0	
10	0	5	0	5	
11	5	0	0	0	
12	0	0	0	0	
13	0	0	5	5	
14	5	0	0	0	
15	0	0	0	0	
16	0	0	0	5	
17	0	0	0	5	
18	0	0	0	5	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	5	0	0	0	
24	0	0	0	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	0	0	

Observer's Name (Print)	
Observer's Signature	Date
Organization	
Certified By	Date

PERMIT # A017-234356

EPA

VISIBLE EMISSION OBSERVATION FORM 1

Form Number		Page 1 of 2
Continued on VEO Form Number		

Method Used (Circle One): Method 9 | 203A | 203B | Other: _____

Company Name: GULF POWER CRIST Electric Generating PLANT
Facility Name: FLY ASH SILO "B"
Street Address: Ten Mile Rd., Pensacola 32514
City: PENSACOLA | State: FL | Zip: 32514

Process	Unit #	Operating Mode
FLY ASH Collection System	B	NORMAL
Control Equipment		Operating Mode
BAGHOUSE		NORMAL

Describe Emission Point: Farthest (EAST-MOST) GREEN VENT ON SILO "B"

	Start	End
Height of Emiss. Pt.	≈230'	≈230'
Height of Emiss. Pt. Rel. to Observer	≈75'	≈75'
Distance to Emiss. Pt.	250'	250'
Direction to Emiss. Pt. (Degrees)	30°	30°

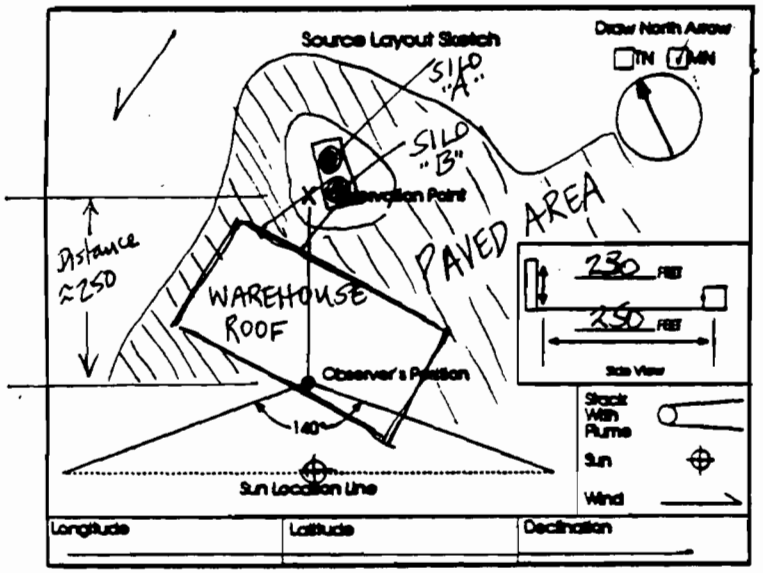
	Start	End
Vertical Angle to Obs. Pt.	16.7°	16.7°
Direction to Obs. Pt. (Degrees)	30°	30°

Distance and Direction to Observation Point from Emission Point: Start: Same | End: Same

Describe Emissions: Start: Light Periodic puff | End: Same
Emission Color: Start: gray | End: gray
Water Droplet Plume: Attached ☐ Detached ☐ None ☑

Describe Plume Background: Start: SKY | End: SKY

	Start	End
Background Color	BLUE	BLUE
Sky Conditions	CLEAR	CLEAR
Wind Speed	~4-7	4-7
Wind Direction	ENE	NE
Ambient Temp.	≈60°F	≈60°F
Wet Bulb Temp.		
RH Percent		



Longitude	Latitude	Declination

Additional Information:

Observation Date	Time Zone	Start Time	End Time
11/30/95	CST	1400	1500

Sec / Min	0	15	30	45	Comments
1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	5	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
8	0	0	0	0	
9	0	0	5	5	
10	0	0	0	0	
11	0	5	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
15	0	0	0	0	MAX READING: 5
16	0	0	0	5	MIN READING: 0
17	0	5	5	0	HIGHEST 6 MIN.
18	0	0	0	0	AVG. (24 CONSECUTIVE
19	0	5	0	0	READINGS) = .83
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	0	0	0	
24	0	0	0	0	
25	0	0	0	0	
26	0	0	5	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	5	0	
30	0	0	0	0	

Observer's Name (Print): JOHN McPHERSON
Observer's Signature: John McPherson | Date: 11/30/95
Organization: GULF POWER CO.
Certified By: EASTERN TECHNICAL ASSOC | Date: 11/15/95

BEST AVAILABLE COPY

EPA

E EMISSION OBSERVATION FORM 1

Form Number							Page	Of
Continued on VEO Form Number								

3 (Circle One)
d 9 203A 203B Other: _____

Name
me
dress
State Zip

Unit # Operating Mode
Equipment Operating Mode

be Emission Point

ght of Emiss. Pt. Height of Emiss. Pt. Rel. to Observer
nt End Start End
tance to Emiss. Pt. Direction to Emiss. Pt. (Degrees)
End Start End

to Obs. Pt. Direction to Obs. Pt. (Degrees)
Start End Start End
Distance and Direction to Observation Point from Emission Point
Start End

Describe Emissions
Start End
Emission Color Water Droplet Plume
Start End Attached ☐ Detached ☐ None ☐

Describe Plume Background
Start End
Background Color Sky Conditions
Start End Start End
Wind Speed Wind Direction
Start ~ End Start End
Ambient Temp. Wet Bulb Temp. RH Percent
Start End

Source Layout Sketch

Draw North Arrow
☐TN ☐MN

X Observation Point

Observer's Position

140°

Sun Location Line

FEET
FEET
Side View

Stack With Plume
Sun
Wind

Longitude Latitude Declination

Additional Information

Observation Date	Time Zone	Start Time	End Time
11/30/95	CST	1400	1500

Min \ Sec	0	15	30	45	Comments
1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
8	0	0	0	5	
9	0	0	0	0	
10	5	0	0	0	
11	0	0	0	0	
12	0	5	0	0	
13	0	0	0	0	
14	0	0	0	0	
15	0	0	0	0	
16	0	0	0	0	
17	0	0	0	0	
18	0	0	0	0	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	5	0	0	
24	0	0	0	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	5	0	

Observer's Name (Print)
Observer's Signature Date
Organization
Certified By Date

EUS-6

Crist Plant Units 1, 2, & 3 Startup Procedure

The steam generators for Crist Units 1, 2, & 3 are non-reheat, balanced draft, front wall fired boilers manufactured by Riley Stoker. Natural gas, #6 fuel oil, and distillate #2 fuel oil are all considered primary fuels. The normal startup procedures for Units 1, 2, & 3 are basically the same and are as follows:

Prior to startup, insure that all personnel and foreign material are out of the boiler and ductwork before the access and observation doors are closed and secured; this includes the Induced Draft (ID) fan and the Forced Draft (FD) fan and the pulverizers. Strictly follow the hold tag procedures to maintain the highest level of safety. Check the boiler valves to be in the startup position. Start the ID fan and the FD fan and establish an air flow of approximately two inches of water on the forced draft fan discharge. Engage the manual ignitors. Increase the fuel supply approximately 1/3 to 1/2 open. Insure that a stable flame has been established. As the firing process continues, the fuel is increased to continually raise the boiler steam pressure and temperature. When 600 psi steam pressure in the boiler is reached, and turbine conditions allow, start to roll and warm up the turbine and prepare to put the unit on-line. When the unit is on-line, which refers to the transmission of electrical power to the switchyard for power distribution, additional fuel guns are needed to maintain the proper steam flow to the turbine for minimum load. This process takes eight to twelve hours from the time when a fire is established in the boiler but is dictated directly by the ambient temperature, fuel quality, the number of equipment malfunctions encountered during startup, and the turbine warm-up conditions. Startup operations are complete when the plant laboratoryman checks the quality of the boiler water and its ancillary equipment and processes and releases the units for full boiler pressure operation and electrical generation.

Shutdown Procedures

Shutdown operations can be separated into two categories: emergency shutdown or normal shutdown. An emergency shutdown occurs when a piece of equipment fails or an electrical fault occurs within the system and causes the unit to trip off-line. At this point, all of the fuel is immediately taken out of the boiler. The unit is stabilized and, depending on what is at fault, the unit is either left down or the malfunction is corrected and the unit is brought back on-line. A normal controlled shutdown is usually brought about due to load demands within the Southern System and how the units are dispatched. When a unit is requested to shutdown by the Southern Company Central Dispatch Office, the fuel is slowly restricted to the boiler while the steam pressure is allowed to drop. When all of the fuel has been removed from the boiler, the ID and FD fans are left running to cool the boiler. An emergency shutdown typically takes from a half hour to several hours, depending on the nature of the emergency and whether the unit is placed back "on-line" after correcting the equipment malfunction. A typical normal shutdown takes approximately ten to twelve hours to cool down the boiler and shut down the fans. This depends on the ambient temperature and the number of equipment malfunctions encountered during shutdown.

Crist Units 4 & 5 Startup Procedure

The steam generators for Crist Units 4&5 are tangential fired, balanced draft, boilers manufactured by Combustion Engineering. The primary fuel is coal. Natural gas is a secondary fuel used for startup and can be used for load carrying capabilities. Distillate #2 fuel oil is also a secondary fuel used for startup and sometimes used for flame stabilization. The normal startup procedures for unit 4&5 are basically the same and are as follows:

Prior to startup, insure that all personnel and foreign materials are out of the boiler and ductwork before the access and observation doors are closed and secured; this includes the induced draft (ID) fan, the forced draft (F.) fan, and the pulverizers. Strictly follow the hold tag procedures to maintain the highest level of safety. Check that all boiler valves are in the startup position. Start the air preheaters. Set up the air heater sootblower steam header and blow the air heater sootblowers continuously while firing to maintain the cleanliness of the air heaters. Start the induced draft (ID) fan and the forced draft (FD) fan. Start the pilot oil torch blower. After the boiler is purged for 5 minutes, adjust air flow to approximately 25% of full load air flow. After the air flow has stabilized, the first oil guns or gas guns are placed into service. Establish a firing rate not to exceed 100 degrees rise per hour at the economizer outlet gas. Continue this for several hours until approximately 600 psi steam pressure in the boiler is achieved. At this point, the cold and hot precipitators are energized. At this point, if the turbine conditions allow, roll the turbine and start turbine warm-up sequence. Put in the pilot oil torches for the pulverizers you will need when you get on-line. Start the pulverizers and verify their operation. Continue to increase the boiler pressure and when turbine conditions allow, tie the unit on-line, which refers to the transmission of electrical power to the switchyard for power distribution. At this point, the coal pulverizers are placed in service and once the coal pulverizers are stable, the oil and/or gas is removed from service. The unit is slowly brought up to minimum load while increasing the coal firing rate. This process usually takes approximately eight to twelve hours from the time when a fire is established in the boiler but is dictated directly by the ambient temperature, fuel quality, the number of equipment malfunctions encountered during the startup, and the turbine warm-up conditions. Startup operations are complete when the plant laboratoryman checks the quality of the boiler water and its ancillary equipment and processes and releases the unit for full boiler pressure operation and electrical generation.

Shutdown Procedures

Shutdown operations can be separated into two categories: emergency shutdown or normal shutdown. An emergency shutdown occurs when a piece of equipment fails or an electrical fault occurs within the system which causes the unit to trip off-line. At this point, all of the fuel is immediately taken out of the boiler. The unit is stabilized and depending on what is at fault, the unit is either left down or the malfunction is corrected and the unit is brought back on-line. A normal controlled shutdown is usually due to load demands within the Southern System and how the units are dispatched. When a unit is requested to shut down by the Southern Company Central Dispatch Office, the fuel is slowly restricted to the boiler while the steam pressure is allowed to drop. When all of the fuel has been removed from the boiler, the ID and FD fans are left running to cool the boiler. When the temperature drops to approximately 100 to 125 degrees, the fans are shut down and the precipitator is taken out of service.

An emergency shutdown typically takes from half an hour to several hours, depending on the nature of the emergency and whether the unit is placed back "on line" after correcting the equipment malfunction. A typical normal shutdown takes approximately ten to twelve hours to cool down the boiler and shut down the fans and precipitator. This time period depends on the ambient temperature and the number of equipment malfunctions encountered during shutdown.

Crist Plant Unit 6 Startup Procedure

Crist Unit 6 steam generator is a front wall fired, balanced draft boiler manufactured by Foster Wheeler. The primary fuel is coal. The secondary fuel is natural gas and is used for startup and can be used for load carrying conditions. Distillate #2 fuel oil is also a secondary fuel for startup and sometimes used for flame stabilization. Normal startup procedure is as follows:

Prior to startup, insure that all personnel and foreign materials are out of the boiler and ductwork before the access and observation doors are closed and secured; this includes the induced draft (ID) fan, the forced draft (FD) fan, and the pulverizers. Strictly follow the hold tag procedures to maintain the highest level of safety. Check boiler valves to be in the startup position. Set superheat and reheat dampers at approximately 50% open position. Start the air preheaters. Start the induced draft (ID) fans and the forced draft (FD) fans and adjust air flow to a minimum of 25% of the full load air flow which is approximately 750,000 lbs./hr. Start the ignitor cooling air fan and the hot air recirculating fans. Set up the air heater sootblower steam header and blow air heaters continuously while firing to maintain the cleanliness of the air heaters. At this point, the superheat dampers are positioned at 100% open and the reheat dampers are closed. After the air flow has stabilized, the first oil guns or gas guns are placed in service. Establish a firing rate not to exceed 100 degrees F temperature rise per hour at the economizer outlet gas, and maintain during succeeding hours. At the end of the fifth hour, there will be approximately 400 psi of boiler pressure and it will be time to test the oil ignitors for the pulverizers that will be needed when the unit comes on-line to verify their operation. Once verified, the oil ignitors are removed from service and the cold precipitator is placed in service. When the boiler pressure reaches approximately 600 psi, start the first coal pulverizers and verify their operation. Continue to raise boiler steam pressure and temperature. When turbine conditions allow, tie the unit on-line, which refers to the transmission of electrical power to the switchyard for power distribution. At this point, the coal pulverizers are placed into service and once the coal pulverizers are stable, the oil and/or gas is removed from service. The unit is slowly brought to minimum load while increasing the coal firing rate. This process takes eight to twelve hours from the time when a fire is established in the boiler but is dictated directly by the ambient temperature, fuel quality, the number of equipment malfunctions encountered during startup, and the turbine warm up conditions. Startup operations are complete when the plant laboratoryman checks the quality of the boiler water and its ancillary equipment and processes and releases the unit for full boiler pressure operation and electrical generation.

Shutdown Procedures

Shutdown operations can be separated into two categories: emergency shutdown or normal shutdown. An emergency shutdown occurs when a piece of equipment fails or an electrical fault occurs within the system which causes the unit to trip off-line. At this point, all of the fuel is immediately taken out of the boiler. The unit is stabilized and, depending on what is at fault, the unit is either left down or the malfunction is corrected and the unit is brought back on line. A normal controlled shutdown is usually due to load demands within the Southern System and how the units are dispatched. When a unit is requested to shutdown by the Southern Company Central Dispatch Office, the fuel is slowly restricted to the boiler while the steam pressure is allowed to drop. When all of the fuel has been removed from the boiler, the ID and FD fans are left running to cool the boiler. When the temperature drops to approximately 100 to 125 degrees, the fans are shut down and the precipitator is taken out of service.

An emergency shutdown typically takes from half an hour to several hours, depending on the nature of the emergency and whether the unit is placed back "on line" after correcting the equipment malfunction. A typical normal shutdown takes approximately 10 to 12 hours to cool down the boiler and shut down the fans and precipitator. This time period depends on the ambient temperature and the number of equipment malfunctions encountered during shutdown.

Crist Plant Unit 7 Start-up Procedures

The steam generator for Crist Unit 7 is a front wall and rear wall fired, balanced draft boiler manufactured by Foster Wheeler. The primary fuel is coal. Natural gas is a secondary fuel used for startup and may also be used for load carrying capabilities. Distillate #2 fuel oil is also a secondary fuel used for startup and sometimes used for flame stabilization. The normal startup procedure is as follows:

> Prior to startup, insure that all personnel and foreign materials are out of the boiler and ductwork before the access and observation doors are closed and secured; this includes the induced draft (ID) fan and the forced draft (FD) fan and the pulverizers. Strictly follow the hold tag procedures to maintain the highest level of safety. Check boiler valves to be in the startup position. Set the superheat and reheat dampers at 50% open position. Normally, start all four ID fans and both FD fans on low speed. Start the secondary air preheaters and one ignitor cooling air fan. Set up the air heater sootblowing steam header and blow the air heater sootblowers continuously while firing to maintain the cleanliness of the air heaters. Position the superheat damper open at 100% and the reheat damper closed. Adjust the air flow to about 25% of the total full load air flow that is approximately 1,200,000 lbs./hr. After the air flow has stabilized, the first oil guns or gas guns are placed into service. Establish a firing rate not to exceed 100 degrees F temperature rise per hour at the economizer outlet gas, and maintain during succeeding hours. At the end of the fifth hour, there will be approximately 400 psi of boiler pressure and it will be time to test the ignitors for the pulverizers that will be needed when the unit comes on-line to verify their operation. Once verified, the oil ignitors are taken out of service and the cold precipitator is placed in service. When the boiler pressure reaches approximately 600 psi, start the first coal pulverizers and verify their operation. Continue to raise boiler pressure and when turbine conditions allow, tie the unit on-line, which refers to the transmission of electrical power to the switchyard for power distribution. At this point, the coal pulverizers are placed in service and once the coal pulverizers are stable, the oil and/or gas is removed from service. The unit is slowly brought to minimum load while increasing the coal firing rate. This process takes eight to twelve hours from the time when a fire is established in the boiler but is dictated directly by the ambient temperature, fuel quality, the number of equipment malfunctions encountered during startup, and the turbine warm up conditions. Startup operations are considered complete when the plant laboratoryman checks the quality of the boiler water and its ancillary equipment, and processes and releases the unit for full boiler pressure operation and electrical generation.

Shutdown Procedures

Shutdown operations can be separated into two categories: emergency shutdown or normal shutdown. An emergency shutdown occurs when a piece of equipment fails or an electrical fault occurs within the system that causes the unit to trip off-line, at which point all of the fuel is immediately taken out of the boiler. The unit is stabilized and, depending on what is at fault, the unit is either left down or the malfunction is corrected and the unit is brought back on-line. A normal controlled shutdown is usually due to load demands within the Southern System and how the units are dispatched. When a unit is requested to shutdown by the Southern Company Central Dispatch Office, the fuel is slowly restricted to the boiler while the steam pressure is allowed to drop. When all of the fuel has been removed from the boiler, the ID and FD fans are left running to cool the boiler. When the temperature drops to approximately 100 to 125 degrees, the fans are shut down and the precipitator is taken out of service.

An emergency shutdown typically takes from half an hour to several hours, depending on the nature of the emergency and whether the unit is placed back "on line" after correcting the equipment malfunction. A typical normal shutdown takes approximately ten to twelve hours to cool down the boiler and shut down the fans and precipitator. This time period depends on the ambient temperature and the number of equipment malfunctions encountered during shutdown.

EUS-10

ALTERNATIVE METHODS OF OPERATION
CRIST UNIT 1-2-3

1. **Unit is operated under normal conditions utilizing natural gas as the primary fuel with supplemental firing of "on specification" used oil at a rate to minimize emissions less than the applicable opacity standard. The amount of used oil to be consumed by the unit is estimated to be less than 10,000 gallons per year.**

2. **Unit is operated under normal conditions utilizing #2 fuel oil as the primary fuel with supplemental firing of "on specification" used oil at a rate to minimize emissions less than the applicable opacity standard. The amount of used oil to be consumed by the unit is estimated to be less than 10,000 gallons per year.**

3. **Unit is operated under normal conditions utilizing #6 fuel oil as the primary fuel with supplemental firing of "on specification" used oil at a rate to minimize emissions less than the applicable opacity standard. The amount of used oil to be consumed by the unit is estimated to be less than 10,000 gallons per year.**

4. **Unit is operated under normal conditions utilizing natural gas as the primary fuel with supplemental firing of any combination of the following fuels; #2 oil, #6 oil, as dictated by market and fuel availability demands.**

5. **Unit is operated under normal conditions utilizing #2 oil as the primary fuel.**

6. **Unit is operated under normal conditions utilizing #6 oil as the primary fuel.**

7. **Unit is operated under normal conditions utilizing natural gas as the primary fuel.**

ALTERNATIVE METHODS OF OPERATION
CRIST UNIT 4

1. **Unit is operated under normal conditions utilizing coal as the primary fuel with supplemental firing of "on specification" used oil at a rate to minimize emissions less than the applicable opacity standard. The amount of used oil to be consumed by the unit is estimated to be less than 50,000 gallons per year.**

2. **Unit is operated under normal conditions utilizing coal as the primary fuel with supplemental firing of "boiler chemical cleaning waste" at a rate of less than 50 gallons per minute to minimize emissions less than the applicable opacity standard.**

3. **Unit is operated under normal conditions utilizing coal as the primary fuel with supplemental firing of "oil contaminated soil" for energy recovery at a rate to minimize emissions less than the applicable opacity standard. The amount of "oil contaminated soil" is estimated to be less than 2500 cubic yards of soil per year.**

4. **Unit is operated under normal conditions utilizing coal as the primary fuel with supplemental firing of any combination of the following fuels; #2 oil, natural gas as dictated by market and fuel availability demands.**

5. **Unit is operated under normal conditions utilizing #2 oil as the primary fuel.**

6. **Unit is operated under normal conditions utilizing natural gas as the primary fuel.**

7. **Unit is operated under normal conditions utilizing subituminous coal as the primary fuel.**

8. **Unit is operated under normal conditions utilizing bituminous coal as the primary fuel.**

ALTERNATIVE METHODS OF OPERATION
CRIST UNIT 5

1. **Unit is operated under normal conditions utilizing coal as the primary fuel with supplemental firing of "on specification" used oil at a rate to minimize emissions less than the applicable opacity standard. The amount of used oil to be consumed by the unit is estimated to be less than 50,000 gallons per year.**

2. **Unit is operated under normal conditions utilizing coal as the primary fuel with supplemental firing of "boiler chemical cleaning waste" at a rate of less than 50 gallons per minute to minimize emissions less than the applicable opacity standard.**

3. **Unit is operated under normal conditions utilizing coal as the primary fuel with supplemental firing of "oil contaminated soil" for energy recovery at a rate to minimize emissions less than the applicable opacity standard. The amount of "oil contaminated soil" is estimated to be less than 2500 cubic yards of soil per year.**

4. **Unit is operated under normal conditions utilizing coal as the primary fuel with supplemental firing of any combination of the following fuels; #2 oil, natural gas as dictated by market and fuel availability demands.**

5. **Unit is operated under normal conditions utilizing #2 oil as the primary fuel.**

6. **Unit is operated under normal conditions utilizing natural gas as the primary fuel.**

7. **Unit is operated under normal conditions utilizing subituminous coal as the primary fuel.**

8. **Unit is operated under normal conditions utilizing bituminous coal as the primary fuel.**

ALTERNATIVE METHODS OF OPERATION
CRIST UNIT 6

1. **Unit is operated under normal conditions utilizing coal as the primary fuel with supplemental firing of "on specification" used oil at a rate to minimize emissions less than the applicable opacity standard. The amount of used oil to be consumed by the unit is estimated to be less than 50,000 gallons per year.**

2. **Unit is operated under normal conditions utilizing coal as the primary fuel with supplemental firing of "boiler chemical cleaning waste" at a rate of less than 50 gallons per minute to minimize emissions less than the applicable opacity standard.**

3. **Unit is operated under normal conditions utilizing coal as the primary fuel with supplemental firing of "oil contaminated soil" for energy recovery at a rate to minimize emissions less than the applicable opacity standard. The amount of "oil contaminated soil" is estimated to be less than 2500 cubic yards of soil per year.**

4. **Unit is operated under normal conditions utilizing coal as the primary fuel with supplemental firing of any combination of the following fuels; #2 oil, natural gas as dictated by market and fuel availability demands.**

5. **Unit is operated under normal conditions utilizing #2 oil as the primary fuel.**

6. **Unit is operated under normal conditions utilizing natural gas as the primary fuel.**

7. **Unit is operated under normal conditions utilizing subituminous coal as the primary fuel.**

8. **Unit is operated under normal conditions utilizing bituminous coal as the primary fuel.**

ALTERNATIVE METHODS OF OPERATION
CRIST UNIT 7

1. **Unit is operated under normal conditions utilizing coal as the primary fuel with supplemental firing of "on specification" used oil at a rate to minimize emissions less than the applicable opacity standard. The amount of used oil to be consumed by the unit is estimated to be less than 50,000 gallons per year.**

2. **Unit is operated under normal conditions utilizing coal as the primary fuel with supplemental firing of "boiler chemical cleaning waste" at a rate of less than 50 gallons per minute to minimize emissions less than the applicable opacity standard.**

3. **Unit is operated under normal conditions utilizing coal as the primary fuel with supplemental firing of "oil contaminated soil" for energy recovery at a rate to minimize emissions less than the applicable opacity standard. The amount of "oil contaminated soil" is estimated to be less than 2500 cubic yards of soil per year.**

4. **Unit is operated under normal conditions utilizing coal as the primary fuel with supplemental firing of any combination of the following fuels; #2 oil, natural gas as dictated by market and fuel availability demands.**

5. **Unit is operated under normal conditions utilizing #2 oil as the primary fuel.**

6. **Unit is operated under normal conditions utilizing natural gas as the primary fuel.**

7. **Unit is operated under normal conditions utilizing subituminous coal as the primary fuel.**

8. **Unit is operated under normal conditions utilizing bituminous coal as the primary fuel.**

9. **Unit is operated under normal conditions utilizing coal as the primary fuel with supplemental injection of ammonia at a rate of 25 to 40 pounds per hour as necessary to minimize emissions less than the applicable opacity standard.**

10. **Unit is operated under normal conditions utilizing coal as the primary fuel with supplemental injection of sulfur trioxide at a rate of 4 to 20 ppm as necessary to minimize emissions less than the applicable opacity standard.**

EUS-12

Florida Department of Environmental Protection

Lawton Chiles
Governor

Northwest District
160 Governmental Center
Pensacola, Florida 32501-5794

Virginia B. Wetherell
Secretary

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004501,02,03
Permit/Certification Number: AO17-249656
Date of Issue: May 19, 1994
Expiration Date: January 15, 1996
County: Escambia
Latitude/Longitude: 33°32'58"N/87°13'44"W
Project: Crist Boilers 1, 2, 3

This permit is issued under the provisions of Section 403.087, Florida Statutes, and Florida Administrative Code Rules 17-296, 17-297 and 17-4. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

Operation of Boilers 1, 2, and 3 with maximum rated heat inputs of 320, 320, and 550 MMBtu/hour, respectively. These boilers are primarily fueled with natural gas, with fuel oil as a standby fuel. Emissions are generally controlled by proper combustion; when operating with fuel oil, SO_2 emissions are controlled by the sulfur content of the fuel oil.

Operation of this source shall be consistent with the operation permit application dated April 15, 1994.

Located at the Crist Plant, Governor's Bayou, north of Pensacola.

Specific Condition No. 2 establishes maximum allowable operating and testing rates.

Specific Condition No. 6 establishes emission limits.

Specific Condition No. 7 establishes compliance testing requirements.

Specific Condition No. 9 requires submission of an annual operation report.

Specific Condition No. 10 requires submission of a Major Air Pollution Source Annual Operation Fee Form.

Specific Condition No. 11 requires submission of a Title V renewal application.

Printed on recycled paper.

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004501,02,03
Permit/Certification Number: AO17-249656
Date of Issue: May 19, 1994
Expiration Date: January 15, 1996

SPECIFIC CONDITIONS:

General

1. The attached General Conditions are part of this permit. (FAC Rule 17-4.160)

Operation

2. The maximum allowable operating rates are 320, 320, and 550 MMBtu heat input per hour for Boiler 1, 2, and 3, respectively. These are the operating rates at which compliance with standards shall be demonstrated. Testing of emissions shall be conducted with the sources operating at capacity. Capacity is defined as 90 to 100% of rated capacity. If it is impracticable to test at capacity, then sources may be tested at less than capacity; if the sources are tested at less than capacity, subsequent source operation is limited to 110% of the test load until a new test is conducted. Once a unit is so limited, then operation at higher capacity is allowed for no more than fifteen days for purposes of additional compliance testing to regain the rated capacity in the permit, with prior notification to the Department. (FAC Rule 17-4.070)

3. The maximum hours of operation are 24 hours/day, 7 days/week, and 52 weeks/year. The Permittee shall maintain an operation log available for Department inspection certifying the total hours of operation annually. (Application dated April 15, 1994)

4. The maximum sulfur content of the back up fuel oil is limited to that percentage necessary to meet the SO_2 emission limit of 1.98 lbs/MMBtu heat input. The Permittee shall maintain a log available for Department inspection of the fuel oil sulfur content. (FAC Rule 17-4.070)

5. Satisfactory ladders, platforms, and other safety devices as well as necessary parts shall be provided, maintained, and made available as necessary to facilitate compliance inspections. (FAC Rule 17-297.345)

Emissions

6. The maximum allowable emission limit for each pollutant is as follows:

Pollutant	FAC Rule	Allowable Emissions
VE	17-296.405	20% opacity*
PM	17-296.405	0.1 lb/MMBtu heat input
SO_2	17-296.405	1.98 lbs/MMBtu heat input

* except for one two-minute period/hour of up to 40% percent opacity

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004501,02,03
Permit/Certification Number: AO17-249656
Date of Issue: May 19, 1994
Expiration Date: January 15, 1996

SPECIFIC CONDITIONS:

Testing

7. Emissions tests for the following pollutants shall be performed between October 1 and November 30, in accordance with the test methods and frequency indicated, with notification to the Department 15 days prior to testing. The test results must provide reasonable assurance that the source is capable of compliance at the permitted maximum operating rate. For good cause, the Permittee may request an extension of a compliance test due date. However, inadequate planning of testing does not constitute good cause for an extension of the compliance test due date. The test report documentation must be submitted to the Department within 45 days after completion of testing.

Pollutant	Frequency	Test Method	Reference
VE	annually	DEP No. 9	FAC Rule 17-296.405
	annually during excess emissions when applicable	DEP No. 9	
PM	annually	EPA No. 5	FAC Rule 17-296.405
	annually during excess emissions when applicable	EPA No. 5	FAC Rule 17-296.405

No particulate emissions test is required in any year during which the specific source did not burn fuel oil for more than 400 hours other than during startup.

The VE test shall be for a duration of sixty minutes and shall be conducted during one of the P.M. test runs if a P.M. test is conducted. Test reports shall comply with F.A.C. Rule 17-297.570, Test Reports. The Department can require special compliance tests in accordance with F.A.C. Rule 17-297.340(2).

Administrative

8. Boilers 1, 2, 3, 4 and 5 use a common stack. Visible emissions violations from this stack shall be attributed to all boilers unless the opacity meter results identify the specific boiler causing the excess visible emissions.

9. An annual operation report [DEP Form 17-210.900(4) attached] shall be submitted by March 1 each year. The attached form shall be reproduced by the Permittee and used for future annual submittals. (FAC Rule 17-210.370)

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004501,02,03
Permit/Certification Number: AO17-249656
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Expiration Date: January 15, 1996

SPECIFIC CONDITIONS:

10. In accordance with F.A.C. Rule 17-213, a Major Air Pollution Source Annual Operation Fee Form [DEP Form 17-213.900(11) attached] must be completed and submitted with appropriate fee between January 15 and March 1 of each year. If the Department has not received the fee payment by March 1, the Department shall impose, in addition to the fee, a penalty of 50 percent of the amount of the fee, plus interest on such amount computed in accordance with s.220.807, Florida Statutes. The Department may revoke any major air pollution source operation permit if it finds that the permit holder has failed to pay timely and required annual operation license fee, penalty or interest. The attached form shall be reproduced by the Permittee and used for future annual submittals. The completed form and appropriate fees must be submitted to the Department of Environmental Protection, Title V (Facility I.D. Number), 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

11. An application to renew this permit shall be submitted as required for a Title V permit. (FAC Rule 17-210)

12. The permanent source identification numbers for these point sources are:

10PEN17004501 - Boiler 1
10PEN16004502 - Boiler 2
10PEN17004503 - Boiler 3

Please cite these numbers on all test reports and other correspondence specific to these permitted point sources. (FAC Rule 17-297.570)

13. The Department telephone number for reporting problems, malfunctions or exceedances under this permit is (904) 444-8300, day or night, and for emergencies involving a significant threat to human health or the environment is (904) 488-1320. For routine business, use telephone number (904) 444-8300 during normal working hours. (FAC Rule 17-210.700)

Expiration Date:

January 15, 1996

Issued this 19th day of May 1994.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

BOBBY A. COOLEY
District Director

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004501,02,03
Permit/Certification Number: AO17-249656
Expiration Date: January 15, 1996

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "permit conditions", and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, Florida Statutes. The Permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the Permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the Permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The Permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the Permittee to achieve compliance with the conditions of this permit, are required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The Permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of this permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and,

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004501,02,03
Permit/Certification Number: AO17-249656
Expiration Date: January 15, 1996

GENERAL CONDITIONS:

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the Permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the Permittee shall immediately provide the Department with the following information:

a. A description of and cause of noncompliance; and

b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. The Permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the Permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The Permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided however, the Permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-730.300, as applicable. The Permittee shall be liable for any noncompliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. The Permittee shall comply with the following:

a. Upon request, the Permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b. The Permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous

GENERAL CONDITIONS:

monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurement;
- the person responsible for performing the sampling or measurement;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

14. When requested by the Department, the Permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the Permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF PERMIT ISSUANCE

CERTIFIED MAIL

In the matter of an
Application for Permit
By:
M. L. Gilchrist
Manager of Fuel & Environmental Affairs
Gulf Power Company
Post Office Box 1151
Pensacola, Florida 32520-0328

DEP File No. AO17-249656
Escambia County

Enclosed is Permit Number AO17-249656 to operate Crist Boiler Units 1, 2 and 3, issued pursuant to Section 403.087, Florida Statutes.

A person whose substantial interests are affected by this permit may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee 32399-2400, within 14 days of receipt of this Permit. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this permit. Persons whose

substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 21 days of receipt of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes, and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

This permit is final and effective on the date filed with the Clerk of the Department unless a petition is filed in accordance with the above paragraphs or unless a request for extension of time in which to file a petition is filed within the time specified for filing a petition and conforms to Rule 17-103.070, F.A.C. Upon timely filing of a petition or a request for an extension of time this permit will not be effective until further Order of the Department.

When the Order (Permit) is final, any party to the Order has the right to seek judicial review of the Order pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date the Final Order is filed with the Clerk of the Department.

Executed in Pensacola, Florida.

State of Florida Department
of Environmental Protection

BOBBY A. COOLEY
District Director

160 Governmental Center
Pensacola, Florida 32501-5794
(904) 444-8300

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT ISSUANCE and all copies were mailed by certified mail before the close of business on MAY 20, 1994 to the listed persons.

FILING AND ACKNOWLEDGMENT FILED,
on this date, pursuant to §120.52(9),
Florida Statutes, with the designated
Department clerk, receipt of which is
hereby acknowledged.

5/20/94

Clerk Date

STATE OF FLORIDA
DEPARTMENT OF
ENVIRONMENTAL REGULATION

GULF POWER COMPANY
BOILER #1 - CRIST
ESCAMBIA COUNTY

OPERATION
PERMIT

NO. AO17-91467

DATE OF ISSUANCE

October 5, 1984

DATE OF EXPIRATION

September 1, 1989

Robert V. Kriegel
District Manager

DER FORM PERM 11-40

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

NORTHWEST DISTRICT
160 GOVERNMENTAL CENTER
PENSACOLA, FLORIDA 32501-5794

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

ROBERT V. KRIEGEL
DISTRICT MANAGER

PERMITTEE:

Gulf Power Company

I.D. Number: 10/17/0045/01
Permit/Certification Number: AO17-91467
Date of Issue: October 5, 1984

Expiration Date: September 1, 1989
County: Escambia
Latitude/Longitude: 33°33'58"N/87°13'44"W
Section/Township/Range: 25/1N/30W
Project: Boiler #1 - Crist

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rules 17-2 and 17-4. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the department and made a part hereof and specifically described as follows:

Operation of Boiler #1. Fueled with natural gas, with #6 fuel oil as a standby fuel. Maximum heat input is 320 million BTU/hour. Emits through a 450 foot high stack used in common by Boilers #1 through #5.

Located: Crist Plant, Governor's Bayou, Pensacola

PERMITTEE:
Gulf Power Company

I.D. Number: 10/17/0045/01
Permit/Certification Number: A017-91467
Date of Issue: October 5, 1984

Expiration Date: September 1, 1989

GENERAL CONDITIONS:

7. The permittee, by accepting this permit, specifically agrees to allow authorized department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information:

a. A description of and cause of noncompliance; and

b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

PERMITTEE:
Gulf Power Company

I.D. Number: 10/17/0045/01
Permit/Certification Number: AO17-91467
Date of Issue: October 5, 1984

Expiration Date: September 1, 1989

GENERAL CONDITIONS:

14. When requested by the department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the department, such facts or information shall be submitted or corrected promptly.

SPECIFIC CONDITIONS:

15. The maximum allowable heat input is 320 million BTU per hour. This is the heat input at which compliance with standards shall be demonstrated.

16. Particulates emissions shall be no greater than 0.1 pounds per million BTU of heat input. Sulfur oxide emissions shall be no greater than 1.88 pounds per million BTU of heat input. Visible emissions shall be no greater than 20% opacity except that 40% opacity shall be permissible for not more than two minutes in any one hour.

17. A particulates test is required to show continuing compliance with the standards of the Department. The test results shall show compliance at the permitted operating rate. Such test results shall be obtained once per year in accordance with Condition 18 and shall be submitted to: Department of Environmental Regulation, 160 Governmental Center, Pensacola, Florida 32501-5794. The Department shall be notified prior to testing to allow witnessing.

18. Stack testing is waived as long as fuel oil constitutes less than 10% of the annual heat input, and that continuous monitoring data show testing to be unncessary.

19. Boilers #1, #2, #3, #4 and #5 use a common stack. Visible emission violations from this stack shall be attributed to all boilers unless opacity meter results show the specific boiler causing the violation.

20. The following continuous monitoring record keeping and reporting is required:

A. A log shall be maintained showing daily entries (including "none" or "zero") of:

PERMITTEE:
Gulf Power Company

I.D. Number: 10/17/0045/01
Permit/Certification Number: AO17-91467
Date of Issue: October 5, 1984

Expiration Date: September 1, 1989

SPECIFIC CONDITIONS:

Expiration Date:

September 1, 1989

Issued this 5th day of Oct, 1984.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

ROBERT V. KRIEGEL
District Manager

BEST AVAILABLE COPY

CRIST 2

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

GULF POWER COMPANY
BOILER #2 - CRIST
ESCAMBIA COUNTY

OPERATION PERMIT

NO. AO17-91469

DATE OF ISSUANCE

October 4, 1984

Robert V. Kriegel
District Manager

DATE OF EXPIRATION

September 1, 1989

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

ORTHWEST DISTRICT

160 GOVERNMENTAL CENTER
PENSACOLA, FLORIDA 32501-5794

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

ROBERT V. KRIEGEL
DISTRICT MANAGER

PERMITTEE:

Gulf Power Company

I.D. Number: 10/17/0045/02
Permit/Certification Number: AO17-91469
Date of Issue: October 4, 1984

Expiration Date: September 1, 1989
County: Escambia
Latitude/Longitude: 33°33'58"N/87°13'44"W
Section/Township/Range: 25/1N/30W
Project: Boiler #2 - Crist

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rules 17-2 and 17-4. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the department and made a part hereof and specifically described as follows:

Operation of Boiler #2. Fueled with natural gas, with #6 fuel oil as a standby fuel. Maximum heat input is 320 million BTU/hour. Emits through a 450 foot high stack used in common by Boilers #1 through #5.

Located: Crist Plant, Governor's Bayou, Pensacola

PERMITTEE:
Gulf Power Company

I.D. Number: 10/17/0045/02
Permit/Certification Number: A017-91469
Date of Issue: October 4, 1984

Expiration Date: September 1, 1989

GENERAL CONDITIONS:

7. The permittee, by accepting this permit, specifically agrees to allow authorized department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information:

a. A description of and cause of noncompliance; and

b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

CRIST #2

PERMITTEE:
Gulf Power Company

I.D. Number: 10/17/0045/02
Permit/Certification Number: AO17-91469
Date of Issue: October 4, 1984

Expiration Date: September 1, 1989

GENERAL CONDITIONS:

14. When requested by the department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the department, such facts or information shall be submitted or corrected promptly.

SPECIFIC CONDITIONS:

15. The maximum allowable heat input is 320 million BTU per hour. This is the heat input at which compliance with standards shall be demonstrated.

16. Particulates emissions shall be no greater than 0.1 pounds per million BTU of heat input. Sulfur oxide emissions shall be no greater than 1.88 pounds per million BTU of heat input. Visible emissions shall be no greater than 20% opacity except that 40% opacity shall be permissible for not more than two minutes in any one hour.

17. A particulates test is required to show continuing compliance with the standards of the Department. The test results shall show compliance at the permitted operating rate. Such test results shall be obtained once per year in accordance with Condition 18 and shall be submitted to: Department of Environmental Regulation, 160 Governmental Center, Pensacola, Florida 32501-5794. The Department shall be notified prior to testing to allow witnessing.

18. Stack testing is waived as long as fuel oil constitutes less than 10% of the annual heat input, and that continuous monitoring data show testing to be unncessary.

19. Boilers #1, #2, #3, #4 and #5 use a common stack. Visible emission violations from this stack shall be attributed to all boilers unless opacity meter results show the specific boiler causing the violation.

20. The following continuous monitoring record keeping and reporting is required:

A. A log shall be maintained showing daily entries (including "none" or "zero") of:

PERMITTEE:
Gulf Power Company

I.D. Number: 10/17/0045/02
Permit/Certification Number: AO17-91469
Date of Issue: October 4, 1984

Expiration Date: September 1, 1989

SPECIFIC CONDITIONS:

Expiration Date:

September 1, 1989

Issued this 4th day of Oct, 1984.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

ROBERT V. KRIEGEL
District Manager

BEST AVAILABLE COPY

CRIST
3

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

GULF POWER COMPANY
BOILER #3 - CRIST
ESCAMBIA COUNTY

OPERATION PERMIT

NO. AO17-91470

DATE OF ISSUANCE

October 4, 1984

Robert V. Kriegel
District Manager

DATE OF EXPIRATION

September 1, 1989

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

NORTHWEST DISTRICT
160 GOVERNMENTAL CENTER
PENSACOLA, FLORIDA 32501-5794

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

ROBERT V. KRIEGEL
DISTRICT MANAGER

PERMITTEE:

Gulf Power Company

I.D. Number: 10/17/0045/03
Permit/Certification Number: AO17-91470
Date of Issue: October 4, 1984

Expiration Date: September 1, 1989
County: Escambia
Latitude/Longitude: 33°33'58"N/87°13'44"W
Section/Township/Range: 25/1N/30W
Project: Boiler #3 - Crist

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rules 17-2 and 17-4. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the department and made a part hereof and specifically described as follows:

Operation of Boiler #3. Fueled with natural gas, with #6 fuel oil as a standby fuel. Maximum heat input is 550 million BTU/hour. Emits through a 450 foot high stack used in common by Boilers #1 through #5.

Located: Crist Plant, Governor's Bayou, Pensacola

PERMITTEE:
Gulf Power Company

I.D. Number: 10/17/0045/03
Permit/Certification Number: AO17-91470
Date of Issue: October 4, 1984

Expiration Date: September 1, 1989

GENERAL CONDITIONS:

7. The permittee, by accepting this permit, specifically agrees to allow authorized department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information:

a. A description of and cause of noncompliance; and

b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

PERMITTEE:
Gulf Power Company

I.D. Number: 10/17/0045/03
Permit/Certification Number: AO17-91470
Date of Issue: October 4, 1984

Expiration Date: September 1, 1989

GENERAL CONDITIONS:

14. When requested by the department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the department, such facts or information shall be submitted or corrected promptly.

SPECIFIC CONDITIONS:

15. The maximum allowable heat input is 550 million BTU per hour. This is the heat input at which compliance with standards shall be demonstrated.

16. Particulates emissions shall be no greater than 0.1 pounds per million BTU of heat input. Sulfur oxide emissions shall be no greater than 1.88 pounds per million BTU of heat input. Visible emissions shall be no greater than 20% opacity except that 40% opacity shall be permissible for not more than two minutes in any one hour.

17. A particulates test is required to show continuing compliance with the standards of the Department. The test results shall show compliance at the permitted operating rate. Such test results shall be obtained once per year in accordance with Condition 18 and shall be submitted to: Department of Environmental Regulation, 160 Governmental Center, Pensacola, Florida 32501-5794. The Department shall be notified prior to testing to allow witnessing.

18. Stack testing is waived as long as fuel oil constitutes less than 10% of the annual heat input, and that continuous monitoring data show testing to be unncessary.

19. Boilers #1, #2, #3, #4 and #5 use a common stack. Visible emission violations from this stack shall be attributed to all boilers unless opacity meter results show the specific boiler causing the violation.

20. The following continuous monitoring record keeping and reporting is required:

A. A log shall be maintained showing daily entries (including "none" or "zero") of:

PERMITTEE:
Gulf Power Company

I.D. Number: 10/17/0045/03
Permit/Certification Number: A017-91470
Date of Issue: October 4, 1984

Expiration Date: September 1, 1989

SPECIFIC CONDITIONS:

Expiration Date:

September 1, 1989

Issued this 4th day of Oct, 1984.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

ROBERT V. KRIEGEL
District Manager

Florida Department of Environmental Regulation

Northwest District • 160 Governmental Center • Pensacola, Florida 32501-5794

Lawton Chiles, Governor

Carol M. Browner, Secretary

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004504 and 05
Permit/Certification Number: AO17-211303
Date of Issue: April 17, 1992

Expiration Date: April 1, 1997
County: Escambia
Latitude/Longitude: 30°33'57"N/87°13'29.5"W
Section/Township/Range: 25/1N/30W
Project: Crist Units No. 4 and No. 5
Coal Fired Boilers

This permit is issued under the provisions of Section 403.087, Florida Statutes, and Florida Administrative Code Rules 17-2 and 17-4. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

Operation of Crist Units No. 4 and No. 5, both coal fired boilers, generating 91 megawatts of electricity each. Particulate emissions from each Unit are controlled by hot side electrostatic precipitators manufactured by Buell Model BAL .2X34N333-4-3P followed by cold side electrostatic precipitators manufactured by Buell Model 1.1X48K33-1P. Sulfur dioxide emissions are controlled by the sulfur content of the coal used as fuel. Sulfur dioxide, nitrogen dioxide, oxygen and opacity are monitored by continuous emission monitors on each Unit.

Located at the east end of Pate Road, off Ten Mile Road, two miles east of State Road 292, north of Pensacola.

Specific Condition No. 7 requires logging excess emissions.
Specific Condition No. 8 requires keeping a maintenance log.
Specific Condition No. 9 requires submitting quarterly excess emissions reports.
Specific Condition No. 11 requires annual particulate emissions tests due before the end of September.
Specific Condition No. 12 requires maintenance of a QC program.
Specific Condition No. 14 requires reporting of excess emissions as soon as possible.
Specific Condition No. 15 requires actions taken upon particulate test failures.
Specific Condition No. 18 requires submittal of permit renewal application by February 1, 1997.

Recycled Paper

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004504 and 05
Permit/Certification Number: AO17-211303
Date of Issue: April 17, 1992

Expiration Date: April 1, 1997

SPECIFIC CONDITIONS:

1. The attached General Conditions are part of this permit.

2. The maximum allowable heat inputs are those heat inputs necessary to maintain electrical load output at 110% of the level at which the most recent successful particulate emissions compliance test was conducted for each unit. If the test was conducted at less than 90% of rated capacity of the unit, permittee may operate the unit at loads up to the rated capacity (91 megawatts for each unit) for purposes of preparation for testing for up to ten calendar days. The Department shall be advised in writing prior to each testing.

3. Particulate emissions shall not exceed 0.1 pounds per million Btu heat input.

4. Sulfur dioxide emissions shall not exceed 5.90 pounds per million Btu heat input.

5. Visible emissions shall not exceed 40% opacity.

6. Excess emissions are defined as:

   A. Any six-minute average for opacity which exceeds the standard.
   B. Any 24-hour average for sulfur dioxide which exceeds the standard.

7. A log shall be maintained showing the:

   A. Duration of excess visible emissions and their causes.
   B. Duration of excess SO_2 emissions.

8. A maintenance log of the continuous monitoring system shall be kept showing:

   A. Time out of service.
   B. Calibrations and adjustments.

9. A quarterly report of excess emissions shall be submitted within 30 days following the end of each calendar quarter. The report shall consist of each individual exceedance of opacity or SO_2 emissions (Specific Conditions 6 and 7) with duration, magnitude and cause. Any exceedance that is beyond the allowances of FAC Rule 17-2.250 shall be highlighted with note indicating compliance with Specific Condition 14 below.

10. Units 4 and 5 use a common stack (along with Units 1, 2 and 3). Visible emission violations from this stack shall be attributed to both Units unless opacity meter results show the specific Unit causing the violation.

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004504 and 05
Permit/Certification Number: AO17-211303
Date of Issue: April 17, 1992

Expiration Date: April 1, 1997

SPECIFIC CONDITIONS:

11. Particulate emissions tests are required to show continuing compliance with the standards of the Department. The test results must provide reasonable assurance that the source is capable of compliance at the permitted maximum operating rate. Tests shall be conducted in accordance with EPA methods 1, 2, 3 and 17. Such tests shall be conducted once per year before the end of September. Results shall be submitted to the Department within 45 days after testing. The Department shall be notified at least 15 days prior to testing to allow witnessing.

12. Continuous SO_2 emission monitoring 24-hour averages are required to demonstrate compliance with the standard of the Department (Specific Condition 4). A valid 24-hour average shall consist of no less than 18 hours of valid data capture per calendar day. In the event that valid data capture is not available, the permittee shall initiate as-fired fuel sampling to demonstrate compliance with the SO_2 emission standard. The as-fired fuel sampling shall be initiated no later than 36 hours after the permittee has verified the problem or no later than 36 hours after the end of the affected calendar day. Fuel sampling shall continue until such time as the valid data capture is restored. In lieu of as-fired fuel sampling the permittee may elect to demonstrate SO_2 emission compliance by the temporary use of a spare SO_2 emission monitor. The spare SO_2 emissions monitor must be installed and collecting data in the same time frame as required above for as-fired fuel sampling.

Maintain a QC program. As a minimum the QC program must include written procedures which should describe in detail complete, step-by-step procedures and operations for each of the following activities:

1. Calibration of CEMS.
2. CD determination and adjustment of CEMS.
3. Preventative maintenance of CEMS (including spare parts inventory).
4. Data recording, calculations and reporting.
5. Accuracy audit procedures including sampling and analysis methods.
6. Program of corrective action for malfunctioning CEMS.

13. Excess emissions as stated in Florida Administrative Code Rule 17-2.250 shall be allowed.

14. The Department shall be notified as soon as possible (by telephone) of excess emissions that are beyond the allowances of FAC Rule 17-2.250, such as:

A. Any soot blowing or load changes that cause excess visible emissions for a period longer than three hours, or that exceed 60% opacity (six minute average) more than four times in any one day.

B. Any malfunction that causes visible emissions for a period longer than two hour in any one day.

C. A 24-hour average of SO_2 emissions measured by the continuous monitor that exceeds the standard, or daily average SO_2 emissions measured by coal analysis (in the event the permittee chooses) that exceeds the standard.

Immediately upon notification of excess emissions that are beyond the allowances, the permittee shall take the necessary steps to determine the cause and arrange a meeting with the Department within 72 hours to discuss a settlement of the violation with corrective action to avoid recurrence.

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004504 and 05
Permit/Certification Number: AO17-211303
Date of Issue: April 17, 1992

Expiration Date: April 1, 1997

SPECIFIC CONDITIONS:

15. Immediately upon notification of a particulate test report that fails to demonstrate compliance with the particulate emission limit of 0.1 pounds per million Btu heat input, the permittee shall take necessary steps to determine the cause of the test failure and arrange a meeting with the Department within 72 hours to discuss a settlement of the violation and a schedule for retesting when the cause of the test failure has been determined and corrected.

16. An annual operation report (DER Form 17-1.202(6) attached) shall be submitted by March 1 each year. The attached form shall be reproduced by the permittee and used for future annual submittals.

17. An application to renew this permit shall be submitted prior to February 1, 1997.

18. The permanent source identification numbers for these point sources are:
10PEN17004504 Crist Unit No. 4, and
10PEN17004505 Crist Unit No. 5.
Please cite the appropriate number on all test reports and other correspondence specific to a permitted point source.

19. The Department telephone number for reporting problems, malfunctions or exceedances under this permit is (904) 436-8300, day or night, and for emergencies involving a significant threat to human health or the environment is (904) 488-1320. For routine business, telephone (904) 436-8364 during normal working hours.

Expiration date:

April 1, 1997

Issued this 17th day of April, 1992.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

ROBERT V. KRIEGEL
District Director

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004504 and 05
Permit/Certification Number: AO17-211303
Date of Issue: April 17, 1992

Expiration Date: April 1, 1997

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "permit conditions", and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, are required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004504 and 05
Permit/Certification Number: AO17-211303
Date of Issue: April 17, 1992

Expiration Date: April 1, 1997

GENERAL CONDITIONS:

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of this permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and,

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

a. A description of and cause of noncompliance; and

b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with Florida Rules of Civil Procedure and appropriate evidentiary rules.

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004504 and 05
Permit/Certification Number: AO17-211303
Date of Issue: April 17, 1992

Expiration Date: April 1, 1997

GENERAL CONDITIONS:

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-730.300, as applicable. The permittee shall be liable for any noncompliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurement;
- the person responsible for performing the sampling or measurement;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

14. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

NORTHWEST DISTRICT
160 GOVERNMENTAL CENTER
PENSACOLA, FLORIDA 32501-5794

ANNUAL OPERATION REPORT FORM FOR AIR EMISSIONS SOURCES

For each permitted emission point, please submit a separate report for calendar year 19___ prior to March 1st of the following year.

I GENERAL INFORMATION

1. Source Name: _____

2. Permit Number: _____

3. Source Address: _____

_____

4. Description of Source: _____

_____

II ACTUAL OPERATING HOURS: _____hrs/day _____days/wk _____wks/yr

III RAW MATERIAL INPUT PROCESS WEIGHT: (List separately all materials put into process and specify applicable units if other than tons/yr)

Raw Material	Input Process Weight
_____	_____tons/yr
_____	_____tons/yr
_____	_____tons/yr
_____	_____tons/yr
_____	_____tons/yr

IV PRODUCT OUTPUT (Specify applicable units)

_____

_____

_____

_____

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

NORTHWEST DISTRICT
160 GOVERNMENTAL CENTER
PENSACOLA, FLORIDA 32501-5794

APPLICATION FOR RENEWAL OF PERMIT TO OPERATE AIR POLLUTION SOURCE(S)

If major alterations have occurred, the applicant should complete the Standard Air Permit Application Form.

Source Type: _____ Renewal of DER Permit No. _____

Company Name: _____ County: _____

Identify the specific emission point source(s) addressed in this application (i.e., Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired):

_____

Source Location: Street: _____ City: _____

UTM: East _____ North _____

Latitude: __ __° __ __' __ __"N. Longitude: __ __° __ __' __ __"W.

1. Attach a check made payable to the Department of Environmental Regulation in accordance with operation permit fee schedule set forth in Florida Administrative Code Rule 17-4.05.

2. Have there been any alterations to the plant since last permitted? [ ] Yes [ ] No If minor alterations have occurred, describe on a separate sheet and attach.

3. Attach the last compliance test report required per permit conditions if not submitted previously.

4. Have previous permit conditions been adhered to? [ ] Yes [ ] No If no, explain on a separate sheet and attach.

5. Has there been any malfunction of the pollution control equipment during tenure of current permit? [ ] Yes [ ] No If yes, and not previously reported, give brief details and what action was taken on a separate sheet and attach.

6. Has the pollution control equipment been maintained to preserve the collection efficiency last permitted by the Department? [ ] Yes [ ] No

7. Has the annual operating report for the last calendar year been submitted? [ ] Yes [ ] No If no, please attach.

Gulf Power Company
500 Bayfront Parkway
Post Office Box 1151
Pensacola, FL 32520-1151
Telephone 904 444-6111

Gulf Power

the southern electric system

March 30, 1992

Mr. Ed K. Middleswart, P.E.
Florida Department of Environmental Regulation
Northwest District
160 Governmental Center
Pensacola, Florida 32501-5794

Dear Mr. Middleswart:

Please find enclosed three (3) copies of the renewal applications for the following Air Operating Permits:

Crist Unit 4 - AO17-134882
Crist Unit 5 - AO17-134883
Smith Unit 1 - AO03-134885
Smith Unit 2 - AO03-134887
Scholz Unit 1 - AO32-134888
Scholz Unit 2 - AO32-134889

As you may recall, on November 19, 1990 the Department granted a modification to the existing Crist Unit 4 and 5 Air Operating Permits to include new specific language for Conditions 17, 19, 22, 27, 28, 29, 30 and 31. These provisions were necessary from our agreement regarding the use of continuous emission monitoring for determination of SO_2 compliance at Plant Crist. At that time, it was discussed that these provisions would be available for Gulf's other coal-fired units should Gulf Power wish to pursue this option. Gulf Power hereby requests the same provisions be adopted for the Smith Electric Generating Plant and the Scholz Electric Generating Plant.

Additionally, Gulf Power wishes to apply for a reduction in permit application fees under Section 17-4.050(4)(a)3. Similar Source Fee for each facility referenced above. This provision allows for an applicant to apply for an operation permit for a group of similar air sources at the same facility, under the same application if each source utilize the same air emissions testing or monitoring requirements. The application fee under this provision require submittal of $2000 per facility for each permit renewal. Please find enclosed a check for a total of $6,000 for the above referenced facilities.

If you have any questions or need further information, please call me at (904) 444-6527.

Sincerely,

G. Dwain Waters
Senior Environmental Affairs Specialist

Enclosures

cc: Mr. J. A. Babbitt
Mr. M. L. Gilchrist
Mr. C. R. Lee
Mr. W. T. Lyford, III
Mr. P. Parker
Mr. J. O. Vick

received
10/8 Rc

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTE(
NOTICE OF PERMIT

Unit 6
Construction
Permit

In the matter of an
Application for Permit
By:
M. L. Gilchrist
Manager of Fuel and Environmental Affairs
Gulf Power Company
Post Office Box 1151
Pensacola, Florida 32520-0328

DEP File No. AC17-23401
Escambia County

Enclosed is Permit Number AC17-234016 to construct a replacement electrostatic precipitator for Crist Unit 6, issued pursuant to Section 403.087, Florida Statutes.

Any party to this Order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this Notice is filed with the Clerk of the Department.

Executed in Pensacola, Florida.

State of Florida Department
of Environmental Protection

BOBBY A. COOLEY
District Director

160 Governmental Center
Pensacola, Florida 32501-5794
(904) 436-8300

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of business on October 7, 1993 to the listed persons.

FILING AND ACKNOWLEDGMENT FILED,
on this date, pursuant to §120.52(11),
Florida Statutes, with the designated
Department clerk, receipt of which is
hereby acknowledged.

Clerk

10/7/93
Date

Florida Department of
Environmental Protection

Lawton Chiles
Governor

Northwest District
160 Governmental Center
Pensacola, Florida 32501-5794

Virginia B. Wetherell
Secretary

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004506
Permit/Certification Number: AC17-234016
Date of Issue: October 7, 1993
Expiration Date: December 1, 1994
County: Escambia
Latitude/Longitude: 30°33'57"N/87°13'29.5"W
Project: Electrostatic Precipitator, Crist 6

This permit is issued under the provisions of Section 403.087, Florida Statutes, and Florida Administrative Code Rules 17-296, 17-297 and 17-4. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

Construction of a replacement Electrostatic Precipitator (ESP), for Crist Unit No. 6. The new ESP will reduce PM emissions by 922 T/yr. The coal-fired power boiler (Crist No. 6) is used to supply steam for the generation of 320 MW of electricity.

Emissions of particulates will be controlled by the ESP, Wheelabrator model HaRDE. The ESP has a PM removal efficiency of 99.6% at full load flow conditions of 1,325,820 ACFM. Emissions of sulfur dioxide are controlled by the sulfur content of the coal. Continuous emissions monitoring systems for opacity, sulfur dioxide, nitrogen oxides and oxygen are installed. Collected fly ash and bottom ash generated by the combustion of fossil fuels are to be disposed of in an on-site permitted landfill.

Located: Gulf Power Crist Plant, Ten Mile Road, on Governor's Bayou, north of Pensacola.

Specific Condition No. 2 requires notification upon commencement of construction. Projects beyond one year require annual status reports.

Specific Condition No. 2 also requires notification and prior approval of any changes or revisions made during construction.

Specific Condition No. 18 requires submittal of certificate of completion of construction with appropriate fee within 75 days after completion of construction.

Specific Condition No. 18 also requires obtaining an operating permit before the expiration date (December 1, 1994) of this construction permit for continued operation.

Printed on recycled paper.

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004506
Permit/Certification Number: AC17-234016
Date of Issue: October 7, 1993
Expiration Date: December 1, 1994

SPECIFIC CONDITIONS:

1. The attached General Conditions are part of this permit.

2. The Department shall be notified upon commencement of construction. The Department shall be notified and prior approval shall be obtained of any substantial changes or revisions made during construction. Projects beyond one year require annual status reports.

3. The nameplate capacity is 320 MW net output of electricity based on the maximum fuel consumption of 3368 MBtu/hr input as measured by average fuel heating values. This is the operating rate at which compliance with standards shall be demonstrated. The maximum allowable heat input is that heat input necessary to maintain electrical load output at 110 percent of nameplate capacity or the level at which the most recent successful emissions compliance test was conducted. If the test was conducted at less than 90 percent of nameplate capacity of the unit, permittee may operate the unit at loads up to the nameplate capacity for purposes of preparation for testing for up to ten calendar days. The Department shall be advised in writing prior to each testing.

4. The Electrostatic Precipitator, and Crist Unit 6 may operate continuously, i.e., 8760 hrs/yr.

5. The manner, nature, volume and frequency of permitted emissions, applicable emissions limiting standards, if any, and allowable emissions are listed as per FAC Rule 17-210.300(2)(a):

Airborne Contaminant Emitted	FAC Rule	Allowable Emissions T/yr
PM	17-296.405(1)(b)	1475 [1]
SO_2	17-296.405(1)(c)2c	87035 [2]
Objectionable Odors	17-296.320(2)	None allowed off plant property
VE	17-296.405(1)(a)	40% opacity [3]

1 Based on steady-state operating parameters, application to construct and rule:
PM emissions shall not exceed 0.1 pounds per million Btu heat input.

2 Based on steady-state operating parameters, application to construct and rule:
SO_2 emissions shall not exceed 5.90 pounds per million Btu heat input.

3 Department order dated May 12, 1988.

6. Excess emissions as stated in FAC Rule 17-210.700 shall be allowed. The steady-state hourly emission rate allowable for PM listed in Specific Condition #5 shall not apply during soot-blowing or load changes. However, PM emissions shall not exceed an average of 0.3 lb/MMBtu heat input (equivalent to 1011 lb/hr allowable emissions - steady state) during the 3 hour excess emissions period allowed by 17-210.700 (ref. FAC rule 17-210.700(3)).

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004506
Permit/Certification Number: AC17-234016
Date of Issue: October 7, 1993
Expiration Date: December 1, 1994

SPECIFIC CONDITIONS:

7. Excess emissions are defined as:

A. Any six-minute average for opacity which exceeds the standard.

B. Any 24-hour average for sulfur dioxide which exceeds the standard.

8. The Department shall be notified as soon as possible (by telephone) of excess emissions that are beyond the allowances of FAC Rule 17-210.700, such as:

A. Any soot blowing or load changes that cause excess visible emissions for a period longer than three hours, or that exceed 60 percent opacity (six minute average) more than four times in any one day.

B. Any malfunction that causes excess visible emissions for a period longer than two hours in any one day.

C. A 24-hour average of SO_2 emissions measured by the continuous monitor that exceeds the standard, or daily average SO_2 emissions measured by coal analysis (in the event the permittee chooses) that exceeds the standard.

Immediately upon notification of excess emissions that are beyond the allowances, the permittee shall take the necessary steps to determine the cause and arrange a meeting with the Department within 72 hours to discuss a settlement of the violation with corrective action to avoid recurrence.

9. A log shall be maintained showing the duration, magnitude and cause of excess visible emissions, and of excess SO_2 emissions.

10. A quarterly report of excess emissions shall be submitted within 30 days following the end of each calendar quarter. The report shall consist of each individual exceedance of opacity or SO_2 emissions (specific Conditions 7 and 8) with duration, magnitude and cause. Any exceedance that is beyond the allowances of FAC Rule 17-210.700 shall be highlighted with note indicating compliance with specific condition 8. A continuous emissions monitor quarterly summary report shall be submitted for each CEM.

11. A maintenance log of the continuous monitoring system shall be kept showing time out of service, and calibrations and adjustments.

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004506
Permit/Certification Number: AC17-234016
Date of Issue: October 7, 1993
Expiration Date: December 1, 1994

SPECIFIC CONDITIONS:

12. Emissions tests are required to show compliance with the standards of the Department. The test results must provide reasonable assurance that the source is capable of compliance at the permitted maximum operating rate. Tests shall be conducted in accordance with the table below. Such tests shall be scheduled within 30 days after construction is completed. The Department shall be notified at least 15 days prior to testing to allow witnessing. Results shall be submitted to the Department within 45 days after testing.

Pollutant	Test Method
PM	DEP method 1, 2, 3, and 17
VE	DEP method 9

The VE test shall be conducted during one of the PM test runs. Test reports shall comply with F.A.C. Rule 17-297.570, Test Reports. The Department can require special compliance tests in accordance with F.A.C. Rule 17-297.340(2). Other test methods and alternate compliance procedures may be used only after prior Departmental approval has been obtained in writing.

13. Immediately upon notification of a particulate test report that fails to demonstrate compliance with the particulate emission limit of 0.1 pounds per million Btu heat input, the permittee shall take necessary steps to determine the cause of the test failure and arrange a meeting with the Department within 72 hours to discuss a settlement of the violation and a schedule for retesting when the cause of the test failure has been determined and corrected.

14. Boilers No. 6 and 7 use a common stack. Visible emission violations from this stack shall be attributed to both boilers unless opacity meter results show the specific boiler causing the violation.

15. Continuous SO_2 emission monitoring 24-hour averages are required to demonstrate compliance with the standard of the Department (specific condition 5). A valid 24-hour average shall consist of no less than 18 hours of valid data capture per calendar day. In the event that valid data capture is not available, the permittee shall initiate as-fired fuel sampling to demonstrate compliance with the SO_2 emission standard. The as-fired fuel sampling shall be initiated no later than 36 hours after the permittee has verified the problem or no later than 36 hours after the end of the affected calendar day. Fuel sampling shall continue until such time as the valid data capture is restored. In lieu of as-fired fuel sampling the permittee may elect to demonstrate SO_2 emission compliance by the temporary use of a spare SO_2 emission monitor. The spare SO_2 emission monitor must be installed and collecting data in the same time frame as required above for as-fired fuel sampling.

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004506
Permit/Certification Number: AC17-234016
Date of Issue: October 7, 1993
Expiration Date: December 1, 1994

SPECIFIC CONDITIONS:

16. The permittee shall develop and implement a QC program. As a minimum, the QC program must include written procedures which should describe in detail complete, step-by-step procedures and operations for each of the following activities:

1. Calibration of CEMS.
2. Calibration Drift determination and adjustment of CEMS.
3. Preventive maintenance of CEMS (including spare parts inventory).
4. Data recording, calculations and reporting.
5. Accuracy audit procedures including sampling and analysis methods.
6. Program of corrective action for malfunctioning CEMS.

17. The applicant shall retain a Professional Engineer, registered in the State of Florida, for the inspection of the construction of this project. Upon completion the engineer shall inspect for conformity to the permit application and associated documents. A Certificate of Completion [Form DEP 17-1.202(3) attached] shall be submitted with the compliance test results and appropriate fee as application for an operation permit. These are to be submitted within 75 days after completion of construction. The permittee shall obtain an operating permit for this source before the expiration of this construction permit if the permittee desires to continue operation.

18. All fugitive dust generated at this site shall be adequately controlled.

19. The permanent source identification number for this point source is 10PEN17004506. Please cite this number on all test reports and other correspondence specific to this permitted point source.

20. The Department telephone number for reporting problems, malfunctions or exceedances under this permit is (904) 436-8300, day or night, and for emergencies involving a significant threat to human health or the environment is (904) 488-1320. For routine business, telephone (904) 436-8364 during normal working hours.

Expiration Date:

December 1, 1994

Issued this 7th day of October, 1993.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

BOBBY A. COOLEY
District Director

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004506
Permit/Certification Number: AC17-234016
Date of Issue: October 7, 1993
Expiration Date: December 1, 1994

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "permit conditions", and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, are required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of this permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and,

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004506
Permit/Certification Number: AC17-234016
Date of Issue: October 7, 1993
Expiration Date: December 1, 1994

GENERAL CONDITIONS:

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

a. A description of and cause of noncompliance; and

b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-730.300, as applicable. The permittee shall be liable for any noncompliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004506
Permit/Certification Number: AC17-234016
Date of Issue: October 7, 1993
Expiration Date: December 1, 1994

GENERAL CONDITIONS:

monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurement;
- the person responsible for performing the sampling or measurement;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

14. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

AIR EMISSIONS

State of Florida

Visible Emissions Observation Form

COMPLIANCE STATUS: YES | NO

Source/Process Information

FACILITY NAME

SOURCE NAME | PERMIT NO

LOCATION/ADDRESS

CONTACT | PHONE NO

PROCESS/PRODUCTION RATE

CONTROL EQUIPMENT | OPERATING MODE

FUEL TYPE/RATE | MATERIAL TYPE/RATE | PERMITTED RATE

DESCRIBE EMISSION POINT

HEIGHT ABOVE GROUND LEVEL ft | HEIGHT RELATIVE TO OBSERVER ft

Emissions Description

DESCRIBE EMISSIONS

START | END

PLUME COLOR | PLUME TYPE

WATER DROPLETS PRESENT? YES ☐ NO ☐ | IF YES, IS PLUME ATTACHED ☐ DETACHED ☐

Meteorological Information

BACKGROUND START | END | BACKGROUND COLOR START | END

SKY CONDITIONS/% CLOUD COVER START | END | AMBIENT TEMP START | END

WIND SPEED START | END | WIND DIRECTION START | END

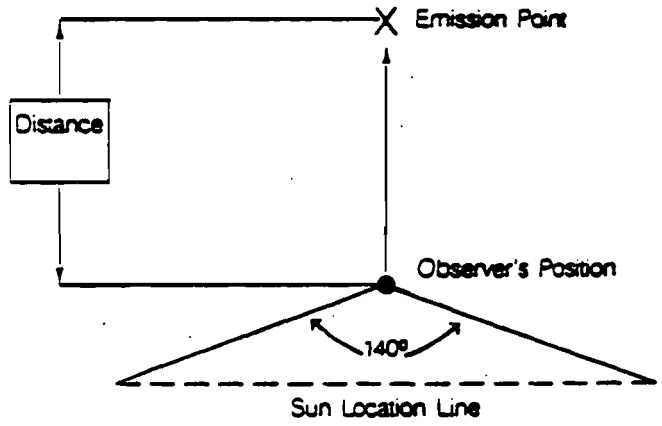
Observation Data, Site Diagram

Stack with Plume

Sun

Wind

Draw North Arrow



Opacity Readings

OBSERVATION DATE | START TIME | STOP TIME

MIN \ SEC	0	15	30	45	MIN \ SEC	0	15	30
1					31			
2					32			
3					33			
4					34			
5					35			
6					36			
7					37			
8					38			
9					39			
10					40			
11					41			
12					42			
13					43			
14					44			
15					45			
16					46			
17					47			
18					48			
19					49			
20					50			
21					51			
22					52			
23					53			
24					54			
25					55			
26					56			
27					57			
28					58			
29					59			
30					60			

Compliance Information

RANGE OF OPACITY READINGS MIN MAX

AVERAGE OF HIGHEST 24 CONSECUTIVE READINGS

SHORT TERM AVERAGE DATA

AVERAGING PERIOD _____ MINUTES ACTUAL AVERAGE _____ %

COMMENTS:

Certification Data, Signatures

OBSERVERS NAME

OBSERVERS SIGNATURE | DATE

ORGANIZATION

CERTIFIED BY | DATE

I HAVE RECEIVED A COPY OF THESE OBSERVATIONS. SIGNATURE | DATE

APS NUMBER:

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

AIR POLLUTION SOURCES
CERTIFICATE OF COMPLETION OF CONSTRUCTION*

PERMIT NO. _____ DATE: _____

Company Name: _____ County: _____

Source Identification(s): _____

Actual costs of serving pollution control purpose: $ _____

Operating Rates: _____ Design Capacity: _____

Expected Normal _____ During Compliance Test _____

Date of Compliance Test: _____ _____ (Attach detailed test report)

Test Results:	Pollutant	Actual Discharge	Allowed Discharge

Date plant placed in operation: _____

This is to certify that, with the exception of deviations noted**, the construction of the project has been completed in accordance with the application to construct and Construction Permit No. _____ dated _____.

A. Applicant:

_____ _____
Name of Person Signing (Type) Signature of Owner or Authorized Representative and Title

Date: _____ Telephone: _____

B. Professional Engineer:

_____ _____
Name of Person Signing (Type) Signature of Professional Engineer

_____ Floride Registration No. _____
Company Name

Date: _____

(Seal)

_____
Mailing Address

_____
Telephone Number

*This form, satisfactorily completed, submitted in conjunction with an existing application to construct permit and payment of application processing fee will be accepted in lieu of an application to operate.

**As built, if not built as indicated include process flow sketch, plot plan sketch, and updates of applicable pages of application form.

Florida Department of Environmental Regulation

Northwest District ● 160 Governmental Center ● Pensacola, Florida 32501-5794 ● 904-436-8300

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary
Robert Kriegel, Deputy Assistant Secretary

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004507
Permit/Certification Number: AO17-171806
Date of Issue: JUN 6 1990

Expiration Date: March 1, 1995
County: Escambia
Latitude/Longitude: 30°33'57"N/87°13'29.5"W
Section/Township/Range: 25/1N/30W
Project: Crist Boiler #7

This permit is issued under the provisions of Section 403.087, Florida Statutes, and Florida Administrative Code Rules 17-2 and 17-4. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

Operation of utility boiler (Crist #7) to supply steam for generation of 500 MW of electricity. This boiler is fueled with coal.

Emissions of particulates are controlled by an electro-static precipitator. Emissions of sulfur dioxide are controlled by the sulfur content of the coal. Continuous emissions monitoring system for opacity, sulfur dioxide, nitrogen oxides and oxygen is installed.

Located at Crist Plant, Governors Bayou, north of Pensacola.

The following specific conditions require timely action by the permittee during the life of this permit:

Condition 20 Logging excess emissions (each occurrence)
21 Logging CEM maintenance (each occurrence)
22 Excess emissions report (quarterly)
24 Annual particulates test (prior to end of September)
25 QC Program (within 90 days after permit issuance)
27 Report of excess emissions, not allowed (each occurrence)
28 Report of particulate stack test exceedence (each occurrence)
30 Apply for permit renewal (prior to January 1, 1995)

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004507
Permit/Certification Number: AO17--171806
Date of Issue: JUN 6 1990

Expiration Date: March 1, 1995

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "permit conditions", and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, are required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004507
Permit/Certification Number: A017-171806
Date of Issue: JUN 6 1990

Expiration Date: March 1, 1995

GENERAL CONDITIONS:

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of this permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and,

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

a. A description of and cause of noncompliance; and

b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with Florida Rules of Civil Procedure and appropriae evidentiary rules.

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004507
Permit/Certification Number: AO17-171806
Date of Issue: JUN 6 1990

Expiration Date: March 1, 1995

GENERAL CONDITIONS:

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-730.300, as applicable. The permittee shall be liable for any noncompliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurement;
- the person responsible for performing the sampling or measurement;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004507
Permit/Certification Number: A017-171806
Date of Issue: JUN 6 1990

Expiration Date: March 1, 1995

GENERAL CONDITIONS:

14. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SPECIFIC CONDITIONS:

15. The maximum allowable heat input is that heat input necessary to maintain electrical load output at 110 percent of the level at which the most recent successful particulate emissions compliance test was conducted. If the test was conducted at less than 90 percent of rated capacity of the unit, permittee may operate the unit at loads up to the rated capacity (500 megawatts) for purposes of preparation for testing for up to ten calendar days. The Department shall be advised in writing prior to each testing.

16. Particulate emissions shall not exceed 0.1 pounds per million Btu heat input.

17. Sulfur dioxide emissions shall not exceed 5.90 pounds per million Btu heat input.

18. Visible emissions shall not exceed 40 percent opacity.

19. Excess emissions are defined as:

A. Any six minute average for opacity which exceeds the standard.

B. Any 24 hour average for sulfur dioxide which exceeds the standard.

20. A log shall be maintained showing the:

A. Duration of excess visible emissions and their causes.

B. Duration of excess SO_2 emissions.

21. A maintenance log of the continuous monitoring system shall be kept showing:

A. Time out of service.

B. Calibrations and adjustments.

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004507
Permit/Certification Number: AO17-171806
Date of Issue: JUN 6 1990

Expiration Date: March 1, 1995

SPECIFIC CONDITIONS:

22. A quarterly report of excess emissions shall be submitted within 30 days following the end of each calendar quarter. The report shall consist of each individual exceedance of opacity or SO_2 emissions (Specific Conditions 19 and 20) with duration, magnitude and cause. Any exceedance that is beyond the allowances of FAC Rule 17-2.250 shall be highlighted with note indicating compliance with Specific Condition 27 below.

A continuous emission monitor quarterly summary report shall be submitted for each CEM.

23. Boilers #6 and #7 use a common stack. Visible emission violations from this stack shall be attributed to both boilers unless opacity meter results show the specific boiler causing the violation.

24. Particulate tests are required to show continuing compliance with the standards of the Department. The test results must provide reasonable assurance that the source is capable of compliance at the permitted maximum operating rate. Tests shall be conducted in accordance with EPA methods 1, 2, 3 and 17. Such tests shall be conducted once per year before the end of September. Results shall be submitted to the Department within 45 days after testing. The Department shall be notified at least 15 days prior to testing to allow witnessing.

25. Continuous SO_2 emission monitoring 24-hour averages are required to demonstrate compliance with the standard of the Department (Specific Condition 17). A valid 24-hour average shall consist of no less than 18 hours of valid data capture per calendar day. In the event that valid data capture is not available, the permittee shall initiate as-fired fuel sampling to demonstrate compliance with the SO_2 emission standard. The as-fired fuel sampling shall be initiated no later than 36 hours after the permittee has verified the problem or no later than 36 hours after the end of the affected calendar day. Fuel sampling shall continue until such time as the valid data capture is restored. In lieu of as-fired fuel sampling the permittee may elect to demonstrate SO_2 emission compliance by the temporary use of a spare SO_2 emission monitor. The spare SO_2 emission monitor must be installed and collecting data in the same time frame as required above for as-fired fuel sampling.

Develop and implement a QC program. As a minimum the QC program must include written procedures which should describe in detail, complete, step-by-step procedures and operations for each of the following activities:

1. Calibration of CEMS.
2. CD determination and adjustment of CEMS.
3. Preventive maintenance of CEMS (including spare parts inventory).

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004507
Permit/Certification Number: AO17-171806
Date of Issue: JUN 6 1990

Expiration Date: March 1, 1995

SPECIFIC CONDITIONS:

4. Data recording, calculations and reporting.
5. Accuracy audit procedures including sampling and analysis methods.
6. Program of corrective action for malfunctioning CEMS.

26. Excess emissions as stated in Florida Administrative Code Rule 17-2.250 shall be allowed.

27. The Department shall be notified as soon as possible (by telephone) of excess emissions that are beyond the allowances of FAC Rule 17-2.250, such as:

A. Any soot blowing or load changes that cause excess visible emissions for a period longer than three hours, or that exceed 60 percent opacity (six minute average) more than four times in any one day.

B. Any malfunction that causes excess visible emissions for a period longer than two hours in any one day.

C. A 24-hour average of SO_2 emissions measured by the continuous monitor that exceeds the standard, or daily average SO_2 emissions measured by coal analysis (in the event the permittee chooses) that exceeds the standard.

Immediately upon notification of excess emissions that are beyond the allowances, the permittee shall take the necessary steps to determine the cause and arrange a meeting with the Department within 72 hours to discuss a settlement of the violation with corrective action to avoid recurrence.

28. Immediately upon notification of a particulate test report that fails to demonstrate compliance with the particulate emission limit of 0.1 pounds per million Btu heat input, the permittee shall take necessary steps to determine the cause of the test failure and arrange a meeting with the Department within 72 hours to discuss a settlement of the violation and a schedule for retesting when the cause of the test failure has been determined and corrected.

29. An annual operation report (DER Form 17-1.202(6) attached) shall be submitted by March 1 each year. The attached form shall be reproduced by the permittee and used for future annual submittals.

30. The permanent source identification number for this point source is 10PEN17004507. Please cite this number on all test reports and other correspondence specific to this permitted point source.

31. An application to renew this permit shall be submitted prior to January 1, 1995.

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004507
Permit/Certification Number: AO17-171806
Date of Issue: JUN 6 1990
Expiration Date: March 1, 1995

SPECIFIC CONDITIONS:

32. The Department telephone number for reporting problems, malfunctions or exceedances under this permit is (904) 436-8300, day or night, and for emergencies involving a significant threat to human health or the environment is (904) 488-1320. For routine business, telephone (904) 436-8364 during normal working hours.

Expiration date:

March 1, 1995

Issued this 5th day of June, 1990.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

ROBERT V. KRIEGEL
Deputy Assistant Secretary

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF PERMIT ISSUANCE

CERTIFIED MAIL

In the matter of an
Application for Permit
By:
M. L. Gilchrist
Manager of Fuel & Environmental Affairs
Gulf Power Company
Post Office Box 1151
Pensacola, Florida 32520-0328

DEP File No. AO17-234356
Escambia County

_____/

Enclosed is Permit Number AO17-234356 to operate fly ash storage silos, pursuant to Section 403.087, Florida Statutes.

A person whose substantial interests are affected by this permit may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee 32399-2400, within 14 days of receipt of this Permit. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this permit. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of receipt of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes, and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

This permit is final and effective on the date filed with the Clerk of the Department unless a petition is filed in accordance with the above paragraphs or unless a request for extension of time in which to file a petition is filed within the time specified for filing a petition and conforms to Rule 17-103.070, F.A.C. Upon timely filing of a petition or a request for an extension of time this permit will not be effective until further Order of the Department.

When the Order (Permit) is final, any party to the Order has the right to seek judicial review of the Order pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date the Final Order is filed with the Clerk of the Department.

Executed in Pensacola, Florida.

State of Florida Department
of Environmental Protection

BOBBY A. COOLEY
District Director

160 Governmental Center
Pensacola, Florida 32501-5794
(904) 436-8300

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT ISSUANCE and all copies were mailed by certified mail before the close of business on August 2, 1993 to the listed persons.

FILING AND ACKNOWLEDGMENT FILED,
on this date, pursuant to §120.52(9),
Florida Statutes, with the designated
Department clerk, receipt of which is
hereby acknowledged.

Clerk Date

Florida Department of
Environmental Protection

Lawton Chiles
Governor

Northwest District
160 Governmental Center
Pensacola, Florida 32501-5794

Virginia B. Wetherell
Secretary

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004508
Permit/Certification Number: AO17-234356
Date of Issue: July 30,1 993
Expiration Date: July 1, 1998
County: Escambia
Latitude/Longitude: 30°33'54.5"N/87°13'41.5"W
Project: Fly Ash Storage Silos

This permit is issued under the provisions of Section 403.087, Florida Statutes, and Florida Administrative Code Rules 17-296, 17-297 and 17-4. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

Operation of two fly ash silos. Fly ash collection systems from precipitators on Boilers 4, 5, 6 & 7 to three transfer tanks are totally enclosed with no emission points. Three blowers pneumatically convey dry fly ash to two silos at a maximum solids rate of 150 tons per hour to either or both silos. A majority of the solids (99.4%) settle by gravity upon entering the silo(s). The residual particulate emissions are controlled by a baghouse on each silo. Each baghouse is a Pulse Jet Fabric Filter, model #100-WMWC-420 (IIG) manufactured by Flex-Kleen. Dry fly ash will be transported in closed tanker trucks away from the site or conditioned (12-15% water added) fly ash will be transported to an approved landfill area on company property.

Located: Approximately 3 miles northeast of SR 292 and Ten Mile Road intersection, north of Pensacola.

Specific Condition No. 4 requires annual visible emissions (VE) testing due before the end of March.

Specific Condition No. 7 require submittal of annual operation reports.

Specific Condition No. 8 requires submittal of annual operation fee.

Specific Condition No. 9 requires submittal of permit renewal application by May 1, 1998.

Printed on recycled paper.

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004508
Permit/Certification Number: AO17-234356
Date of Issue: July 30, 1993
Expiration Date: July 1, 1998

SPECIFIC CONDITIONS:

1. The attached General Conditions are part of this permit.

2. The maximum allowable operating rate is 150 tons of fly ash transported per hour. Compliance shall be demonstrated at an operating rate which typifies normal operation of the fly ash system. This operating rate may be lower than the maximum allowable operating rate. The Department may request that a special compliance test be conducted should test results not provide reasonable assurance that the source is in compliance.

3. Visible emissions shall not exceed 5% opacity.

4. Visible emissions tests are required to show continuing compliance with the Department. The test results must provide reasonable assurance that the source is capable of compliance at the permitted maximum operating rate. Tests shall be conducted in accordance with DEP method 9 (on each baghouse, on each vent ; 2 vents per baghouse). Such tests shall be conducted annually at 12-month intervals (± two months) before the end of March. Results shall be submitted to the Department within 45 days after testing. The Department shall be notified at least 15 days prior to testing to allow witnessing.

5. All fugitive dust generated at this site shall be adequately controlled.

6. This permit prohibits the discharge of liquid effluents or contaminated run-off from holding ponds or from your facility unless appropriately permitted or exempted in accordance with State rules and regulations.

7. An annual operation report (DEP Form 17-210.900(4) attached) shall be submitted by March 1 each year. The attached form shall be reproduced by the permittee and used for future annual submittals.

8. In accordance with F.A.C. Rule 17-213, a Major Air Pollution Source Annual Operation Fee Form [DEP Form 17-213.900(11) attached] must be completed and submitted with appropriate fee between January 15 and March 1 of each year. If the Department has not received the fee payment by March 1, the Department shall impose, in addition to the fee, a penalty of 50 percent of the amount of the fee, plus interest on such amount computed in accordance with s.220.807, Florida Statutes. The Department may revoke any major air pollution source operation permit if it finds that the permit holder has failed to pay timely and required annual operation license fee, penalty or interest. The attached form shall be reproduced by the permittee and used for future annual submittals. The completed form and appropriate fees must be submitted to the Department of Environmental Protection, Title V (Facility I.D. Number), 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

9. An application to renew this permit shall be submitted prior to May 1, 1998.

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004508
Permit/Certification Number: AO17-234356
Date of Issue: July 30, 1993
Expiration Date: July 1, 1998

SPECIFIC CONDITIONS:

10. The permanent source identification number for this point source is 10PEN17004508. Please cite this number on all test reports and other correspondence specific to the permitted point source.

11. The Department telephone number for reporting problems, malfunctions or exceedances under this permit is (904) 436-8300, day or night, and for emergencies involving a significant threat to human health or the environment is (904) 488-1320. For routine business, telephone (904) 436-8364 during normal working hours.

Expiration Date:

July 1, 1998

Issued this 30th day of July, 1993.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

BOBBY A. COOLEY
District Director

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004508
Permit/Certification Number: AO17-234356
Date of Issue: July 30, 1993
Expiration Date: July 1, 1998

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "permit conditions", and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, are required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of this permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and,

PERMITTEE:

Gulf Power Company

I.D. Number: 10PEN17004508
Permit/Certification Number: AO17-234356
Date of Issue: July 30, 1993
Expiration Date: July 1, 1998

GENERAL CONDITIONS:

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

a. A description of and cause of noncompliance; and

b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-730.300, as applicable. The permittee shall be liable for any noncompliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous

monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurement;
- the person responsible for performing the sampling or measurement;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

14. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

Best Available Copy

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

ORTHWEST DISTRICT
60 GOVERNMENTAL CENTER
PENSACOLA, FLORIDA 32501

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

ROBERT V. KRIEGEL
DISTRICT MANAGER

OCT 27 1981

Mr. George O. Layman
Director of Power Supply
Gulf Power Company
P. O. Box 1151
Pensacola, Florida 32520

Dear Mr. Layman:

Enclosed is Permit Number AC17-47675, dated OCT 27 1981, to construct a fly ash storage silo, issued pursuant to Section 403.087, Florida Statutes.

Should you object to this permit, including any and all of the conditions contained therein, you may file an appropriate petition for administrative hearing. This petition must be filed within 14 days of the receipt of this letter. Further, the petition must conform to the requirements of Section 28-5.201, Florida Administrative Code (see reverse). The petition must be filed with the Office of General Counsel, Department of Environmental Regulation, Twin Towers Office Building, 2600 Blair Stone Road, Tallahassee, Florida 32301.

If no petition is filed within the prescribed time, you will be deemed to have accepted this permit and waived your right to request an administrative hearing on this matter.

Acceptance of the permit constitutes notice and agreement that the Department will periodically review this permit for compliance, including site inspections where applicable, and may initiate enforcement action for violation of the conditions and requirements thereof.

Sincerely,

Thomas W. Moody

Thomas W. Moody, P.E.
Special Programs Supervisor

TWM:d
Enclosure

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

)RTHWEST DISTRICT
60 GOVERNMENTAL CENTER
PENSACOLA, FLORIDA 32501

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

ROBERT V. KRIEGEL
DISTRICT MANAGER

APPLICANT:

Gulf Power Company

CONSTRUCTION
PERMIT/CERTIFICATION
NO. AC17-47675

COUNTY: Escambia

PROJECT:
Fly Ash Storage Silo

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Chapter 17-4, Florida Administrative Code. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the approved drawing(s), plans, documents, and specifications attached hereto and made a part hereof and specifically described as follows:

To construct two Fly Ash Storage Silos. Fly ash collection systems from precipitators on boilers numbers 4, 5, 6 & 7 to three transfer tanks are totally enclosed with no emission points. Three blowers pneumatically convey dry fly ash to 2 silos at a maximum solids rate of 150 tons per hour to either silo or to both. The majority of the solids (99.4%) settles by gravity upon entering the silo, the residual particulates are controlled by a baghouse on each silo. Each baghouse is a Pulse Jet Fabric Filter - Model #100 - WMWC-420 (IIG) manufactured by Flex-Kleen. Dry fly ash will be transported in closed tanker trucks away from the site or conditioned (12-15% water added) fly ash will be transported to an approved landfill area on the site.

Location: Approximately 3 miles northeast of the intersection of SR 292 and 10 Mile Road north of Pensacola

Latitude: 30° 33' 54 1/2"N
Longitude: 87° 13' 41 1/2"W

PERMIT NO.: AC17-47675
APPLICANT: Gulf Power Company

SPECIFIC CONDITIONS:

13. The Department shall be notified within 15 days after initial startup of this source and prior to testing to allow witnessing of tests.

14. The Department shall be notified and prior approval shall be obtained of any changes or revisions made during construction.

15. The maximum allowable operating rate is 150 tons of fly ash transported per hour. This is the operating rate at which compliance with standards shall be demonstrated.

16. Visible emissions shall not exceed 5% opacity under normal operating conditions.

17. Visible emissions tests are required to show compliance with the standards of the Department. The test results must provide reasonable assurance that the source is capable of compliance at the permitted maximum operating rate. Tests shall be conducted in accordance with EPA Method 9. Such tests shall be scheduled within 30 days after construction is completed. Observations shall be made on both emission points of each silo while the specific silo is receiving the maximum loading rate, and each tested silo shall be at least 1/2 full at the time of compliance testing. The loading rate and silo level data shall be made a part of the test report.

18. The applicant shall retain the engineer of record for the inspection of the construction of this project. Upon completion the engineer shall inspect for conformity to the permit application and associated documents. A Certificate of Completion (Form DER 17-1.122(20) attached) shall be submitted with the compliance test results and a fee of $20 as an application for an operation permit. These are to be submitted within 75 days after completion of construction.

19. All fugitive dust generated at this site shall be adequately controlled.

20. This permit does not authorize any discharges of liquid effluents or contaminated runoff from this source.

PERMIT NO.: AC17-47675
APPLICANT: Gulf Power Company

Expiration Date:

February 1, 1983

Issued this 27th day of October, 1981.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

ROBERT V. KRIEGEL
District Manager

BEST AVAILABLE COPY

Post Office Box 1151
Pensacola, FL 32520
Telephone 904 444-6111

Gulf Power

August 24, 1993

Mr. Ed K. Middleswart, P.E.
Florida Department of Environmental Protection
Northwest District
160 Governmental Center
Pensacola, Florida 32501-5794

Dear Mr. Middleswart:

OIL CONTAMINATED MATERIALS

On August 18, 1993, Andy Allen of your staff and I discussed current regulations covering energy recovery of oil contaminated soils. Pursuant to those discussions, I agreed to document to the department Gulf's current understanding of recycling requirements and overview our present practices.

Recently, Gulf Power has made several notifications to the waste and air sections of FDEP regarding energy recovery operations concerning oil contaminated soils at Plants Smith and Scholz. Florida regulations currently exempt operations of this type for electric utility sources as long as the material is considered non-hazardous and the material is handled in a responsible manner. In lieu of continuing the process of making courteous notifications, the Department and Gulf have reached an agreement that no further notification is needed for small de-minus operations. Operations involving major cleanup operations will continue to be noticed by Gulf for monitoring purposes. For example, Gulf Power is preparing a Contamination Assessment Report (CAR) for a situation at Plant Smith. Energy recovery of this type of material will be managed on a case by case basis as part of an approved cleanup plan.

If you have any questions or need further information, please call me at (904) 444-6527.

Sincerely,

G. Dwain Waters
Senior Environmental Affairs Specialist

cc: Florida Department of Environmental Protection
Mike Kennedy

Gulf Power Company
M. L. Gilchrist
J. A. Tucker
J. O. Vick

EUS-14

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

345 COURTLAND STREET NE
ATLANTA GEORGIA 30365

PHASE I ACID RAIN PERMIT

Issued to: Gulf Power Company-Crist
Operated by: Gulf Power Company
Effective: January 1, 1995 to December 31, 1999

Summary of Previous Actions

This page will be replaced to document new EPA actions each time a new action is taken by the Agency. The following actions have been taken:

1. Draft permit, including SO_2 compliance plan, issued for public comment (See page 1)	July 16, 1993
2. SO_2 portion of permit finalized and issued	September 3, 1993
3. Permit revised to include a draft nitrogen oxides Compliance Plan for Units 6 and 7, issued for public comment on the NO_x portion only. (see page 4(a) and 5(a) and the NO_x compliance plan forms)	August 24, 1994
4. NO_x portion of permit finalized and issued	October 19, 1994
5. Permit revised to include a draft SO_2 Substitution Plan, issued for public comment on the proposed revision only (See page 5, 6, and 7)	November 4, 1994
6. SO_2 portion of permit revision finalized and issued	December 27, 1994

BEST AVAILABLE COPY

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

Plant Name: Crist
State: Florida
ORIS Code: 0641

7. Permit revised to activate the conditional SO_2 Substitution Plan for Units 4, 5, and 7, issued as an administrative amendment (See page 5, 6, and 7) — February 14, 1995

8. Permit administratively amended to change compliance dates for nitrogen oxides compliance plans [and to change requirements in NO_x averaging plans] consistent with 40 CFR part 76 (as promulgated on April 13, 1995) — June 22, 1995

9. Permit revised to include a draft nitrogen oxides Emissions Averaging Plan for Units 4, 5, and 6, issued for public comment on the NO_x portion only, consistent with 40 CFR part 76 (as promulgated on April 13, 1995) (see page 4(a), 6(a), and 7(a) and the NO_x compliance plan) — September 21, 1995

Present Action

10. NO_x portion of permit revised to reflect changes in the draft NO_x averaging plan for Units 4, 5, and 6, issued as a permit modification (see page 4(a), 6(a), and 7(a) and the NO_x compliance plan)

11. Permit revised to include a SO_2 reduced utilization plan for Units 4, 5, 6, and 7, issued as an administrative amendment (See page 3, 4, 5, 6, and 7 and the SO_2 compliance plan)

Bruce P. Miller for — 12/14/95

Signature *Date*

Winston A. Smith
Director, Air, Pesticides and Toxics Management Division
U.S. Environmental Protection Agency, Region 4
345 Courtland Street, N.E.
Atlanta, Georgia 30365
Telephone: (404) 347-3043 Facsimile: (404) 347-5207

Plant Name: Crist Electric Generating Plant
State: Florida
ORIS Code: 0641
Boiler ID#: 0006

Phase I SO_2 Allowance Allocation

	1995	1996	1997	1998	1999
Table 1 *40 CFR 73.10*	18,695	18,695	18,695	18,695	18,695
Phase I Extension *40 CFR 72.42*	*6,570	*6,570	0	0	0
Substitution *40 CFR 72.41*	N/A	N/A	N/A	N/A	N/A
Reduced Utilization *40 CFR 72.43*	0	N/A	N/A	N/A	N/A

Comments, notes and justifications regarding permit decisions, and changes made to the permit application forms during the review process:

See changes made to the Permit Application form on Statement of Basis, page 2.

Pursuant to 40 CFR 72.42 and the ranking of Phase I Extension Early Ranking applications determined by lottery on March 31, 1993, the Phase I Extension plan for Indianapolis Power and Light Company-Petersburg, naming this unit as a transfer unit, has not been approved. It was not approved because unallocated allowances did not remain in the Phase I Extension reserve at the time EPA acted on this plan.

* If Phase I Extension reserve allowances become available in the future, this application is eligible to receive the allocations specified above by administrative amendment to this permit if the Phase I Extension plan continues to meet the requirements of 40 CFR 72.42. Pursuant to 40 CFR 72.42 and the attached Phase I Extension Early Ranking application forms, this unit would have an Acid Rain emissions reduction requirement limiting SO_2 emissions to a maximum of 33,194 tons per year for 1997, 1998, and 1999. Corrections were made to the Phase I Extension application at steps 8, 36, and 39 pursuant to a letter from the designated representative, dated March 30, 1993. The corrections did not affect the number of allowances for which this unit would be eligible. (Continued on page 4)

* If Phase I Extension allowances became available for this unit prior to January 1, 1995, this unit will also receive an extension of the deadline for compliance with regulations implementing Section 407 of the Clean Air Act (nitrogen oxides).

R. SCOTT DAVIS — *Permit Reviewer*

R. Scott Davis — *Signature*

12-11-95 — *Date*

Plant Name: Crist Electric Generating Plant
State: Florida
ORIS Code: 0641
Boiler ID#: 0006

Comments, notes and justifications regarding permit decisions, and changes made to the permit application forms during the review process:

Consistent with the Partial Settlement Agreement in Environmental Defense Fund v. Carol M. Browner, No. 93-1203 (executed on May 4, 1994):

1. EPA approves a reduced utilization plan for this unit for 1995 that designates these Southern Company units (see attachments to plan dated October 16, 1995) as compensating units or sulfur free generators. This plan results in the use of improved unit efficiency measures or the shifting of electrical generation to account for underutilization of this unit. There is no allowance allocation for the use of this compliance measure.

R. SCOTT DAVIS — *Permit Reviewer*

R. Scott Davis — *Signature*

12-11-95 — *Date*

Plant Name: Crist
State: Florida
ORIS Code: 0641
Boiler ID#: 0006

NO_x Compliance Plan

EPA approves a nitrogen oxides emissions averaging plan for this unit for 1996-1999. For each year under the plan, this unit's actual annual average emission rate for NO_x shall not exceed the alternative contemporaneous annual emission limitation of 0.60 lbs/mmBtu, and this unit's actual annual heat input shall not be greater than the annual heat input limit of 13,451,097 mmBtu.

The other units designated in the plan are Crist Unit 4 and Unit 5, Scholz Unit 1 and Unit 2, Watson Unit 4 and Unit 5, and Daniel Unit 1 and Unit 2. Under the plan, the actual Btu-weighted annual average emission rate for the units in the plan shall be less than or equal to the Btu-weighted annual average rate for the same units had they each been operated, during the same period of time, in compliance with the applicable emission limitation in 40 CFR 76.5. If the designated representative demonstrates that the requirement of the prior sentence (as set forth in 40 CFR 76.11(d)(1)(ii)(A)) is met for a year under the plan, then this unit shall be deemed to be in compliance for that year with its alternative contemporaneous annual emission limitation and annual heat input limit.

R. SCOTT DAVIS — *Permit Reviewer*

R. Scott Davis — *Signature*

12-11-95 — *Date*

Plant Name: Crist Electric Generating Plant
State: Florida
ORIS Code: 0641
Boiler ID#: 0007

Phase I SO_2 Allowance Allocation

	1995	1996	1997	1998	1999
Table 1 *40 CFR 73.10*	30,846	30,846	30,846	30,846	30,846
Phase I Extension *40 CFR 72.42*	19,857	19,857	0	0	0
Substitution *40 CFR 72.41*	0	0	0	0	0
Reduced Utilization *40 CFR 72.43*	0	N/A	N/A	N/A	N/A

Comments, notes and justifications regarding permit decisions, and changes made to the permit application forms during the review process:

See changes made to the Permit Application form on Statement of Basis, page 2.

Pursuant to 40 CFR 72.42 and the ranking of Phase I Extension Early Ranking applications determined by lottery on March 31, 1993, the Phase I Extension plan for Virginia Electric & Power Company-Mount Storm, naming this unit as a transfer unit, has been approved. Pursuant to 40 CFR 72.42 and the attached Phase I Extension Early Ranking application forms, this unit has an Acid Rain emissions reduction requirement limiting SO_2 emissions to a maximum of 48,702 tons per year for 1997, 1998, and 1999. The Phase I Extension Early Ranking forms were modified to correct rounding errors at steps 35, 38, and 41 pursuant to a letter from the designated representative, dated March 11, 1993. This unit has also been granted an extension, until January 1, 1997, of the deadline for compliance with regulations implementing Section 407 of the Clean Air Act (nitrogen oxides).

Consistent with the Partial Settlement Agreement in Environmental Defense Fund v. Carol M. Browner, No. 93-1203 (executed on May 4, 1994):

1. EPA approves a substitution plan for this unit for 1995-1999 that designates Gulf Power Company-Scholz Unit 1 and Unit 2, Crist Unit 4 and Unit 5, and Lansing Smith Unit 1 and Unit 2 as substitution units.

2. EPA approves a reduced utilization plan for this unit for 1995 that designates these Southern Company units (see attachments to plan dated October 16, 1995) as compensating units or sulfur free generators. This plan results in the use of improved unit efficiency measures or the shifting of electrical generation to account for underutilization of this unit. There is no allowance allocation for the use of this compliance measure.

R. SCOTT DAVIS — *Permit Reviewer*

R. Scott Davis — *Signature*

12-11-95 — *Date*

Plant Name: Crist
State: Florida
ORIS Code: 0641
Boiler ID#: 0004

Phase I SO_2 Allowance Allocation

	1995	1996	1997	1998	1999
Table 1 *40 CFR 73.10*	N/A	N/A	N/A	N/A	N/A
Phase I Extension *40 CFR 72.42*	N/A	N/A	N/A	N/A	N/A
Substitution *40 CFR 72.41*	9,953	9,953	9,953	9,953	9,953
Reduced Utilization *40 CFR 72.43*	0	N/A	N/A	N/A	N/A

Comments, notes and justifications regarding permit decisions, and changes made to the permit application forms during the review process:

See changes made to the Permit Application form on Statement of Basis, page 2.

Consistent with the Partial Settlement Agreement in Environmental Defense Fund v. Carol M. Browner, No. 93-1203 (executed on May 4, 1994):

1. EPA approves a substitution plan for this unit for 1995-1999 in which it is designated as a substitution unit for Gulf Power Company-Crist Unit 7, a Phase I unit. This substitution unit will receive the allowances indicated above. In this plan, Crist Unit 5, Scholz Unit 1 and Unit 2, and Lansing Smith Unit 1 and Unit 2 are also designated as substitution units by the Phase I unit.

2. The value in step 3, column g, of the substitution plan for this unit reflects the lesser of (i) the unit's 1985 actual emission rate from NADB, (ii) the unit's 1985 allowable emission rate from NADB, (iii) the greater of the unit's 1989 or 1990 actual emissions rate, or (iv) the unit's most stringent federally enforceable or state enforceable emissions limitation for Phase I as of November 15, 1990.

3. EPA approves a reduced utilization plan for this unit for 1995 that designates these Southern Company units (see attachments to plan dated October 16, 1995) as compensating units or sulfur free generators. This plan results in the use of improved unit efficiency measures or the shifting of electrical generation to account for underutilization of this unit. There is no allowance allocation for the use of this compliance measure.

R. SCOTT DAVIS — *Permit Reviewer*

R. Scott Davis — *Signature*

12-11-95 — *Date*

Plant Name: Crist
State: Florida
ORIS Code: 0641
Boiler ID#: 0004

NO_x Compliance Plan

EPA approves a nitrogen oxides emissions averaging plan for this unit for 1996-1999. For each year under the plan, this unit's actual annual average emission rate for NO_x shall not exceed the alternative contemporaneous annual emission limitation of 0.60 lbs/mmBtu, and this unit's actual annual heat input shall not be greater than the annual heat input limit of 4,330,920 mmBtu. 494.4

The other units designated in the plan are Crist Unit 5 and Unit 6, Scholz Unit 1 and Unit 2, Watson Unit 4 and Unit 5, and Daniel Unit 1 and Unit 2. Under the plan, the actual Btu-weighted annual average emission rate for the units in the plan shall be less than or equal to the Btu-weighted annual average rate for the same units had they each been operated, during the same period of time, in compliance with the applicable emission limitation in 40 CFR 76.5. If the designated representative demonstrates that the requirement of the prior sentence (as set forth in 40 CFR 76.11(d)(1)(ii)(A)) is met for a year under the plan, then this unit shall be deemed to be in compliance for that year with its alternative contemporaneous annual emission limitation and annual heat input limit.

R. SCOTT DAVIS — *Permit Reviewer*

R. Scott Davis — *Signature*

12-11-95 — *Date*

Plant Name: Crist
State: Florida
ORIS Code: 0641
Boiler ID#: 0005

Phase I SO_2 Allowance Allocation

	1995	1996	1997	1998	1999
Table 1 *40 CFR 73.10*	N/A	N/A	N/A	N/A	N/A
Phase I Extension *40 CFR 72.42*	N/A	N/A	N/A	N/A	N/A
Substitution *40 CFR 72.41*	9,374	9,374	9,374	9,374	9,374
Reduced Utilization *40 CFR 72.43*	0	N/A	N/A	N/A	N/A

Comments, notes and justifications regarding permit decisions, and changes made to the permit application forms during the review process:

See changes made to the Permit Application form on Statement of Basis, page 2.

Consistent with the Partial Settlement Agreement in Environmental Defense Fund v. Carol M. Browner, No. 93-1203 (executed on May 4, 1994):

1. EPA approves a substitution plan for this unit for 1995-1999 in which it is designated as a substitution unit for Gulf Power Company-Crist Unit 7, a Phase I unit. This substitution unit will receive the allowances indicated above. In this plan, Crist Unit 4, Scholz Unit 1 and Unit 2, and Lansing Smith Unit 1 and Unit 2 are also designated as substitution units by the Phase I unit.

2. The value in step 3, column h, of the substitution plan for this unit reflects the lesser of (i) the unit's 1985 actual emission rate from NADB, (ii) the unit's 1985 allowable emission rate from NADB, (iii) the greater of the unit's 1989 or 1990 actual emissions rate, or (iv) the unit's most stringent federally enforceable or state enforceable emissions limitation for Phase I as of November 15, 1990.

3. EPA approves a reduced utilization plan for this unit for 1995 that designates these Southern Company units (see attachments to plan dated October 16, 1995) as compensating units or sulfur free generators. This plan results in the use of improved unit efficiency measures or the shifting of electrical generation to account for underutilization of this unit. There is no allowance allocation for the use of this compliance measure.

R. SCOTT DAVIS — *Permit Reviewer*

R. Scott Davis — *Signature*

12-11-95 — *Date*

Plant Name: Crist
State: Florida
ORIS Code: 0641
Boiler ID#: 0005

NO_x Compliance Plan

EPA approves a nitrogen oxides emissions averaging plan for this unit for 1996-1999. For each year under the plan, this unit's actual annual average emission rate for NO_x shall not exceed the alternative contemporaneous annual emission limitation of 0.60 lbs/mmBtu, and this unit's actual annual heat input shall not be greater than the annual heat input limit of 3,518,988 mmBtu.

The other units designated in the plan are Crist Unit 4 and Unit 6, Scholz Unit 1 and Unit 2, Watson Unit 4 and Unit 5, and Daniel Unit 1 and Unit 2. Under the plan, the actual Btu-weighted annual average emission rate for the units in the plan shall be less than or equal to the Btu-weighted annual average rate for the same units had they each been operated, during the same period of time, in compliance with the applicable emission limitation in 40 CFR 76.5. If the designated representative demonstrates that the requirement of the prior sentence (as set forth in 40 CFR 76.11(d)(1)(ii)(A)) is met for a year under the plan, then this unit shall be deemed to be in compliance for that year with its alternative contemporaneous annual emission limitation and annual heat input limit.

R. SCOTT DAVIS — *Permit Reviewer*

R. Scott Davis — *Signature*

12-11-95 — *Date*

United States
Environmental Protection Agency
Acid Rain Program

OMB No. 2060-0258
Expires 12-31-96

NOx Averaging Plan

Page 1

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12-11-95

For more information, see instructions and refer to 40 CFR 76.11

This submission is: ___ New X Revised

Page 1 of 1

STEP 1
Identify the units participating in this averaging plan by plant name, State, and boiler ID# from NADB. In column (a), fill in each unit's applicable emission limitation from 40 CFR 76.5, 76.6, or 76.7. In column (b), assign an alternative contemporaneous annual emissions limitation in lb/mmBtu to each unit. In column (c), assign an annual heat input limitation in mmBtu to each unit. Continue on page 3 if necessary

Plant Name	State	ID#	(a) Emission Limitation	(b) Alt. Contemp. Emission Limitation	(c) Annual Heat Input Limit
Watson	MS	4	.50	.57	12086872
Watson	MS	5	.50	.57	20127887
Daniel	MS	1	.45	.35	21244417
Daniel	MS	2	.45	.35	29987051
Crist	FL	4	.45	.60	4330920
Crist	FL	5	.45	.60	3518988
Crist	FL	6	.50	.60	13451097
Scholz	FL	1	.50	.70	723608
Scholz	FL	2	.50	.75	731528

STEP 2
Use the formula to enter the Btu-weighted annual emission rate averaged over the units if they are operated in accordance with the proposed averaging plan and the Btu-weighted annual average emission rate for the same units if they are operated in compliance with 40 CFR 76.5, 76.6, or 76.7. The former must be less than or equal to the latter

Btu-weighted annual emission rate averaged over the units if they are operated in accordance with the proposed averaging plan		Btu-weighted annual average emission rate for same units operated in compliance with 40 CFR 76.5, 76.6 or 76.7
.4720	≤	.4722

$$\frac{\sum_{i=1}^{n} (R_{Li} \times HI_i)}{\sum_{i=1}^{n} HI_i} \leq \frac{\sum_{i=1}^{n} (R_{ti} \times HI_i)}{\sum_{i=1}^{n} HI_i}$$

Where,

R_{Li} = Alternative contemporaneous annual emission limitation for unit i, in lb/mmBtu, as specified in column (b) of Step 1;

R_{ti} = Applicable emission limitation for unit i, in lb/mmBtu, as specified in column (a) of Step 1;

HI_i = Annual heat input for unit i, in mmBtu, as specified in column (c) of Step 1;

n = Number of units in the averaging plan

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Phase II Permit Application

For more information, see instructions and refer to 40 CFR 72.30 and 72.31 and Chapter 62-214, F.A.C.

This submission is: [X] New [ ] Revised

STEP 1
Identify the source by plant name, State, and ORIS code from NADB

Plant Name	State	ORIS Code
Crist	FL	641

STEP 2
Enter the boiler ID# from NADB for each affected unit, and indicate whether a repowering plan is being submitted for the unit by entering "yes" or "no" at column c. For new units, enter the requested information in columns d and e

a	b	c	d	e
Boiler ID#	Compliance Plan: Unit Will Hold Allowances in Accordance with 40 CFR 72.9(c)(1)	Compliance Plan: Repowering Plan	New Units: Commence Operation Date	New Units: Monitor Certification Deadline
1	Yes	No		
2	Yes	No		
3	Yes	No		
4	Yes	No		
5	Yes	No		
6	Yes	No		
7	Yes	No		
	Yes			
	Yes			
	Yes			
	Yes			
	Yes			

STEP 3
Check the box if the response in column c of Step 2 is "Yes" for any unit

[ ] For each unit that will be repowered, the Repowering Extension Plan form is included and the Repowering Technology Petition form has been submitted or will be submitted by June 1, 1997.

P. Name (from Step 1)

STEP 4
Read the standard requirements and certification, enter the name of the designated representative, and sign and date

Standard Requirements

Permit Requirements.

(1) The designated representative of each Acid Rain source and each Acid Rain unit at the source shall:
(i) Submit a complete Acid Rain part application (including a compliance plan) under 40 CFR part 72, Rules 62-214.320 and 330, F.A.C. in accordance with the deadlines specified in Rule 62-214.320, F.A.C.; and
(ii) Submit in a timely manner any supplemental information that the permitting authority determines is necessary in order to review an Acid Rain part application and issue or deny an Acid Rain permit.
(2) The owners and operators of each Acid Rain source and each Acid Rain unit at the source shall:
(i) Operate the unit in compliance with a complete Acid Rain part application or a superseding Acid Rain part issued by the permitting authority; and
(ii) Have an Acid Rain Part.

Monitoring Requirements.

(1) The owners and operators and, to the extent applicable, designated representative of each Acid Rain source and each Acid Rain unit at the source shall comply with the monitoring requirements as provided in 40 CFR part 75, and Rule 62-214.420, F.A.C.
(2) The emissions measurements recorded and reported in accordance with 40 CFR part 75 shall be used to determine compliance by the unit with the Acid Rain emissions limitations and emissions reduction requirements for sulfur dioxide and nitrogen oxides under the Acid Rain Program.
(3) The requirements of 40 CFR part 75 shall not affect the responsibility of the owners and operators to monitor emissions of other pollutants or other emissions characteristics at the unit under other applicable requirements of the Act and other provisions of the operating permit for the source.

Sulfur Dioxide Requirements.

(1) The owners and operators of each source and each Acid Rain unit at the source shall:
(i) Hold allowances, as of the allowance transfer deadline, in the unit's compliance subaccount (after deductions under 40 CFR 73.34(c)) not less than the total annual emissions of sulfur dioxide for the previous calendar year from the unit; and
(ii) Comply with the applicable Acid Rain emissions limitations for sulfur dioxide.
(2) Each ton of sulfur dioxide emitted in excess of the Acid Rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act.
(3) An Acid Rain unit shall be subject to the requirements under paragraph (1) of the sulfur dioxide requirements as follows:
(i) Starting January 1, 2000, an Acid Rain unit under 40 CFR 72.6(a)(2); or
(ii) Starting on the later of January 1, 2000 or the deadline for monitor certification under 40 CFR part 75, an Acid Rain unit under 40 CFR 72.6(a)(3).
(4) Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program.
(5) An allowance shall not be deducted in order to comply with the requirements under paragraph (1)(i) of the sulfur dioxide requirements prior to the calendar year for which the allowance was allocated.
(6) An allowance allocated by the Administrator under the Acid Rain Program is a limited authorization to emit sulfur dioxide in accordance with the Acid Rain Program. No provision of the Acid Rain Program, the Acid Rain permit application, the Acid Rain permit, or the written exemption under 40 CFR 72.7 and 72.8 and no provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization.
(7) An allowance allocated by the Administrator under the Acid Rain Program does not constitute a property right.

Nitrogen Oxides Requirements. The owners and operators of the source and each Acid Rain unit at the source shall comply with the applicable Acid Rain emissions limitation for nitrogen oxides.

Excess Emissions Requirements.

(1) The designated representative of an Acid Rain unit that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR part 77.
(2) The owners and operators of an Acid Rain unit that has excess emissions in any calendar year shall:
(i) Pay without demand the penalty required, and pay upon demand the interest on that penalty, as required by 40 CFR part 77; and
(ii) Comply with the terms of an approved offset plan, as required by 40 CFR part 77.

Recordkeeping and Reporting Requirements.

(1) Unless otherwise provided, the owners and operators of the source and each Acid Rain unit at the source shall keep on site at the source each of the following documents for a period of 5 years from the date the document is created. This period may be extended for cause, at any time prior to the end of 5 years, in writing by the Administrator or permitting authority:
(i) The certificate of representation for the designated representative for the source and each Acid Rain unit at the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with Rule 62-214.350, F.A.C.; provided that the certificate and documents shall be retained on site at the source beyond such 5-year period until such documents are superseded because of the submission of a new certificate of representation changing the designated representative;
(ii) All emissions monitoring information, in accordance with 40 CFR part 75;
(iii) Copies of all reports, compliance certifications, and other submissions and all records made or required under the Acid Rain Program; and,

Plant Name (from Step 1)

Recordkeeping and Reporting Requirements (cont.)

(iv) Copies of all documents used to complete an Acid Rain part application and any other submission under the Acid Rain Program or to demonstrate compliance with the requirements of the Acid Rain Program.

(2) The designated representative of an Acid Rain source and each Acid Rain unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR part 72 subpart I and 40 CFR part 75.

Liability.

(1) Any person who knowingly violates any requirement or prohibition of the Acid Rain Program, a complete Acid Rain part application, an Acid Rain part, or a written exemption under 40 CFR 72.7 or 72.8, including any requirement for the payment of any penalty owed to the United States, shall be subject to enforcement pursuant to section 113(c) of the Act.
(2) Any person who knowingly makes a false, material statement in any record, submission, or report under the Acid Rain Program shall be subject to criminal enforcement pursuant to section 113(c) of the Act and 18 U.S.C. 1001.
(3) No permit revision shall excuse any violation of the requirements of the Acid Rain Program that occurs prior to the date that the revision takes effect.
(4) Each Acid Rain source and each Acid Rain unit shall meet the requirements of the Acid Rain Program.
(5) Any provision of the Acid Rain Program that applies to an Acid Rain source (including a provision applicable to the designated representative of an Acid Rain source) shall also apply to the owners and operators of such source and of the Acid Rain units at the source.
(6) Any provision of the Acid Rain Program that applies to an Acid Rain unit (including a provision applicable to the designated representative of an Acid Rain unit) shall also apply to the owners and operators of such unit. Except as provided under 40 CFR 72.44 (Phase II repowering extension plans), and except with regard to the requirements applicable to units with a common stack under 40 CFR part 75 (including 40 CFR 75.16, 75.17, and 75.18), the owners and operators and the designated representative of one Acid Rain unit shall not be liable for any violation by any other Acid Rain unit of which they are not owners or operators or the designated representative and that is located at a source of which they are not owners or operators or the designated representative.
(7) Each violation of a provision of 40 CFR parts 72, 73, 75, 77, and 78 by an Acid Rain source or Acid Rain unit, or by an owner or operator or designated representative of such source or unit, shall be a separate violation of the Act.

Effect on Other Authorities. No provision of the Acid Rain Program, an Acid Rain part application, an Acid Rain part, or a written exemption under 40 CFR 72.7 or 72.8 shall be construed as:

(1) Except as expressly provided in title IV of the Act, exempting or excluding the owners and operators and, to the extent applicable, the designated representative of an Acid Rain source or Acid Rain unit from compliance with any other provision of the Act, including the provisions of title I of the Act relating to applicable National Ambient Air Quality Standards or State implementation Plans;
(2) Limiting the number of allowances a unit can hold; *provided*, that the number of allowances held by the unit shall not affect the source's obligation to comply with any other provisions of the Act;
(3) Requiring a change of any kind in any State law regulating electric utility rates and charges, affecting any State law regarding such State regulation, or limiting such State regulation, including any prudence review requirements under such State law;
(4) Modifying the Federal Power Act or affecting the authority of the Federal Energy Regulatory Commission under the Federal Power Act; or,
(5) Interfering with or impairing any program for competitive bidding for power supply in a State in which such program is established.

Certification

I am authorized to make this submission on behalf of the owners and operators of the Acid Rain source or Acid Rain units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Name M. L. Gilchrist	
Signature M. L. Gilchrist	Date 12/8/95

STEP 5 (optional)
Enter the source AIRS and FINDS identification numbers, if known

S
FINDS

BEST AVAILABLE COPY

United States
Environmental Protection Agency
Acid Rain Program

OMB No. 2060
Expires 6-

Certificate of Representation

For more information, see instructions and refer to 40 CFR 72.24

This submission is: ☐ New ☒ Revised

STEP 1
Identify the source by plant name, State, and ORIS code from NADB

Plant Name: Crist Electric Generating Plant — State: FL — ORIS Code: 641

STEP 2
Enter requested information for the designated representative

Name: Frederick D. Kuester

Address:
2992 West Beach Boulevard
P. O. Box 4079
Gulfport, MS 39502

Phone Number: (601) 865-5964 — Fax Number: (601) 865-5873

STEP 3
Enter requested information for the alternate designated representative (optional)

Name: M. L. Gilchrist

Address:
Gulf Power Company
P. O. Box 1151
Pensacola, FL 32520-0328

Phone Number: (904) 444-6236 — Fax Number: (904) 444-6705

STEP 4
Complete Step 5, read the certifications and sign and date

I certify that I was selected as the designated representative or alternate designated representative, as applicable, by an agreement binding on the owners and operators of the affected source and each affect unit at the source.

I certify that I have given notice of the agreement, selecting me as the designated representative or alte designated representative, as applicable for the affected source and each affected unit at the source identified in this certificate of representation, daily for a period of one week in a newspaper of general circulation in the area where the source is located or in a State publication designed to give general publ notice.

I certify that I have all necessary authority to carry out my duties and responsibilities under the Acid Ra Program on behalf of the owners and operators of the affected source and of each affected unit at the s and that each such owner and operator shall be fully bound by my actions, inactions, or submissions.

I certify that I shall abide by any fiduciary responsibilities imposed by the agreement by which I was sele as designated representative or alternate designated representative, as applicable.

I certify that the owners and operators of the affected source and of each affected unit at the source sh bound by any order issued to me by the Administrator, the permitting authority, or a court regarding the source or unit.

Where there are multiple holders of a legal or equitable title to, or a leasehold interest in, an affected uni where a utility or industrial customer purchases power from an affected unit under life-of-the-unit, firm p contractual arrangements, I certify that:

I have given a written notice of my selection as the designated representative or alternate designated representative, as applicable, and of the agreement by which I was selected to each owner and oper of the affected source and of each affected unit at the source; and

Allowances and the proceeds of transactions involving allowances will be deemed to be held or distributed in proportion to each holder's legal, equitable, leasehold, or contractual reservation or entitlement or, if such multiple holders have expressly provided for a different distribution of allowanc contract, that allowances and the proceeds of transactions involving allowances will be deemed to b or distributed in accordance with the contract.

The agreement by which I was selected as the alternate designated representative includes a procedure

BEST AVAILABLE COPY

Crist Electric Generating Plant
Plant Name (from Step 1)

Certificate - Page
Page 2 of 2

Certification

I am authorized to make this submission on behalf of the owners and operators of the affected source or affected units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Signature (designated representative) Frederick D Kuester	Date 12/21/94
Signature (alternate) [signature]	Date 12/21/94

STEP 5
Provide the name of every owner and operator of the source and each affected unit at the source. Identify the units they own and/or operate by boiler ID# from NADB. For owners only, identify each state or local utility regulatory authority with jurisdiction over each owner

Name Gulf Power Company					XX Owner	XX Operator
ID# 1	ID# 2	ID# 3	ID# 4	ID# 5	ID# 6	ID# 7
ID#	ID#	ID#	ID#	ID#	ID#	ID#
Regulatory Authorities Florida Public Service Commission						

Name					Owner	Operator
ID#	ID#	ID#	ID#	ID#	ID#	ID#
ID#	ID#	ID#	ID#	ID#	ID#	ID#
Regulatory Authorities						

Name					Owner	Operator
ID#	ID#	ID#	ID#	ID#	ID#	ID#
ID#	ID#	ID#	ID#	ID#	ID#	ID#
Regulatory Authorities						

Name					Owner	Operator
ID#	ID#	ID#	ID#	ID#	ID#	ID#