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Pensacola, Florida 32520

Tel 850.444.6111

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SEP 14 2011

DIVISION OF AIR
RESOURCE MANAGEMENT



September 12, 2011

Jeff Koerner
Office of Permitting and Compliance
Florida Department of Environmental Protection
2600 Blair Stone Road
Mail Stop 5500
Tallahassee, Florida 32399-2400

Subject: ***Gulf Power Company Crist Plant (Air Permit No.0330045-034-AC)***
Sulfuric Acid Mist Summary Report

Dear Mr. Koerner:

Attached please find the Sulfuric Acid Mist Summary report for Gulf Power's Plant Crist, located in Pensacola, FL. Gulf Power believes that the attached report demonstrates reasonable assurance that the flue gas desulfurization system provides adequate compliance with the plant's SAM emission cap.

Should you have any questions regarding the report please feel free to contact me at 850.444.6144.

Sincerely,

A handwritten signature in cursive script that reads "Greg Terry".

Greg Terry, P.E.
Air Quality Programs Supervisor
Gulf Power Environmental Affairs

cc: Rick Bradburn-FDEP Northwest District
Jim Vick-Gulf Power
Dwain Waters- Gulf Power
Terry Wright-Gulf Power
John Dominey-Gulf Power
Rusty Meharg-Gulf Power
Dwain Waters- Gulf Power
Robert Jernigan-Gulf Power




Gulf Power Crist Plant Sulfuric Acid Mist Summary Report

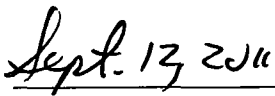
CERTIFICATION BY RESPONSIBLE OFFICIAL

“I, the undersigned, am the responsible official, as defined in Chapter 62-210.200, F.A.C., for the Title V source for which this report is being submitted. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made and data contained in this report are true, accurate and complete.”

Responsible Official Signature:



Michael Burroughs
Vice-President and SPO



Date: 9/12/2011

Gulf Power Company Plant Crist Sulfuric Acid Mist Summary Report

Background

On May 3, 2010, Gulf Power Company's Plant Crist was issued a final air construction permit (Permit Number 0330045-034-AC) which authorizes, among other permissions, a higher sulfur coal blend to be burned in units 4-7. The construction permit also established a sulfuric acid mist (SAM) emissions cap. In order to fire the higher sulfur coal blend, which was limited to a sulfur content of less than 3.30 lbm SO₂/mmbtu, or 2.1% sulfur by weight, Plant Crist permanently installed a fully functional hydrated lime injection (HLI) system. The SAM emissions cap was set at 165.5 tons during any consecutive 12 month period by the permit.

Specific Conditions 2 and 11 outline the SAM compliance assurance and monitoring requirements. Compliance is demonstrated through the application of equations in the Electric Power Research Institute's (EPRI) 2010 publication, *Estimating Total Sulfuric Acid Emissions from Stationary Power Plants, Version 2010a*. The EPRI document delineates the steps required to calculate the SAM emissions from power plants under different operating conditions based off of fuel specifications, sulfur dioxide emissions, and equipment reduction factors.

Specific Conditions 6, 7, 8, 9, and 10 of the construction permit outline the SAM performance testing requirements. The permit requires testing at the outlet of the flue gas desulfurization (FGD) common stack, under various load ranges, and performance tests on specific pieces of equipment in the flue gas train. Most notably, the control efficiencies of the HLI system and FGD are to be determined. These tests were to be run within 90 days of the first firing of the high sulfur coal blend.

Gulf Power contracted Particulate Control Technology, Inc. (PCT) to perform the preliminary tests on the FGD and the HLI system. PCT was onsite testing on April 5, 2011, at which time 24 test runs were completed at the outlet of the FGD stack, 12 runs with the HLI system off, and 12 runs with the HLI system on. Due to unit outages, only units 5 and 7 were online at the time, so the tested load was 60% of the total. From this testing, Gulf Power determined that at 60% load, the FGD resulted in approximately 90% reduction of SAM, while the HLI system resulted in very little added benefit, approximately 6% reduction beyond the FGD.

A subsequent meeting was held on April 29, 2011 between Gulf Power Environmental Affairs and the Department, in which the air construction permit for the high sulfur coal blend was reviewed. On May 11, 2011, Gulf Power requested the following strategy be incorporated into the high sulfur coal blend construction permit:

1. An extension to the 90 day test period and removal over various load conditions from the testing requirements;
2. Testing would be conducted at the outlet of the FGD stack with the HLI system on and off and submit a report within 45 days;
3. If the removal efficiencies meet "reasonable assurance" for compliance cap demonstration without the Hydrated Lime Injection System, Gulf will elect to operate the HLI System as necessary. Gulf Power further proposes to continue the test program with quarterly acid mist emissions testing at the scrubber stack

until the Crist Unit 6 SCR comes on line in the Spring of 2012. At that time, Gulf will meet the testing provisions as outlined in the SCR Air Construction Permit (0330045-028-AC) and will finalize the parametric model to demonstrate "reasonable assurance" to the 165.5 ton acid mist emissions cap.

On May 18, 2011 Gulf Power received a response to the May 11 request in which the Department approved Gulf's request. The deadline to perform the testing was extended to July 31, 2011, with report submitted 45 days later. Additionally, the test scope was reduced to full load conditions with the HLI system on and off at the FGD stack outlet.

Test Results

Pursuant to the May 18, 2011 approval letter, which can be found in Attachment 1, Gulf Power conducted 2 sets of SAM emissions tests at the outlet of the FGD stack. Sanders Engineering & Analytical Services, Inc. (Sanders) was contracted to execute the updated testing plan.

On May 24, 2011, Sanders conducted 6 SAM test runs at the outlet of the FGD stack with units 5, 6, and 7 online at greater than 92% of total plant heat input demonstrated from the most recent particulate compliance tests. The first 3 runs were conducted with the HLI system in service, and the last 3 with the HLI system out of service. An analysis of Sanders data and the calculated EPRI fuel based SAM emission rate prior to reductions from the FGD or HLI can be found below in Table 1. Table 2 contains the operational data required in Specific Condition 8 of the construction permit. The complete Sanders test data can be found in Attachment 2.

Table 1.
Analysis of Sanders May 24, 2011 SAM Testing

Parameter	Eng Units	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
Run Start Time	hh:mm	8:35	10:15	11:35	13:45	15:22	16:45
Run End Time	hh:mm	9:35	11:10	12:30	14:50	0.7	17:50
HLI System Status	On/Off	On	On	On	Off	Off	Off
Sulfuric Acid Emission Concentration	ppm	2.15	3.48	0.418	0.326	0.107	0.159
Sulfuric Acid Emission Rate	lbm/hr	87.66	138.39	17.07	12.82	4.27	6.41
EPRI Calculated SAM Rate	lbm/hr	90.2	90.2	90.2	89.8	89.8	89.8
FGD SAM Reduction	%	NA	NA	NA	85.7	95.2	92.9
HLI and FGD SAM Reduction	%	2.8	-53.4	81.1	NA	NA	NA

Table 2.
Plant Crist May 24, 2011 Operational Parameters

Parameter	Eng Units	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
Run Start Time	hh:mm	8:35	10:15	11:35	13:45	15:22	16:45
Run End Time	hh:mm	9:35	11:10	12:30	14:50	16:27	17:50
Unit 5 Load	MW	77.6	78.1	78.1	78.0	78.1	78.1
Unit 5 Coal Flow	kibm/hr	68.4	68.2	68.1	68.5	67.7	68.7
Unit 5 Opacity	Instant %	7.3	7.3	7.0	7.8	7.1	7.0
Unit 5 Urea Flow	gal/hr	45.6	46.3	46.0	46.2	46.2	46.0
Unit 6 Load	MW	318.6	318.2	318.3	317.9	318.7	319.1
Unit 6 Coal Flow	kibm/hr	266.8	266.3	263.8	265.7	266.6	266.7
Unit 6 Opacity	Instant %	5.2	5.0	5.2	5.2	5.3	5.4
Unit 6 Urea Flow	gal/hr	152.5	152.1	152.6	152.0	153.1	153.7
Unit 7 Load	MW	498.0	498.7	497.5	489.5	489.9	492.0
Unit 7 Coal Flow	kibm/hr	409.7	410.9	410.6	404.0	404.8	404.1
Unit 7 Opacity	Instant %	3.4	3.3	3.9	3.4	3.3	3.3
Unit 7NH3 Flow	lbm/hr	627.4	578.6	562.7	562.8	575.3	610.1
HLI Injection Rate	lbm/hr	189.2	203.9	207.2	0.0	0.0	0.0
Plant Wide Test Heat Input	mmbtu/hr	8,882.0	8,882.0	8,882.0	8,935.0	8,935.0	8,935.0
Plant Wide Particulate Test Heat Input	mmbtu/hr	9,640.0	9,640.0	9,640.0	9,640.0	9,640.0	9,640.0
Test Percent of Total Heat Input	%	92.1	92.1	92.1	92.7	92.7	92.7
Fuel SO2 Rate	lbm/mmbtu	1.9	1.9	1.9	1.9	1.9	1.9
FGD Outlet CEMs SO2 Rate	lbm/mmbtu	0.02	0.02	0.02	0.02	0.02	0.02

As can be seen by the results in Table 1, runs 1 and 2 should be treated as anomalous after comparison to the EPRI predicted SAM emissions. However, runs 4, 5, and 6, show that the FGD, with no HLI system operation, achieved between 85 and 95% reduction from the EPRI calculated SAM rate similar to the 60% load test on April 5, 2011 by PCT.

A second set of SAM tests were conducted on July 29, 2011 to confirm the May results. Similar to the May testing, Sanders performed 6 test runs, the first 3 with the HLI system in service, the second with the HLI system out of service; however, due to load constraints, the total load during the tests ranged from approximately 85 to 95% of plant heat input with all 4 units online. In addition, Sanders collected SO2 data to confirm a mass balance and to compare results with the stack CEM system. Table 3 presents the analysis and comparison between the Sanders SAM results to the EPRI calculated SAM rates and the Sanders SO2 results to the FGD CEMS SO2 system. Table 4 displays the operational data, as required by Specific Condition 8 of the construction permit, and the Sanders data can be found in Attachment 2.

Table 3.
Analysis of Sanders July 29, 2011 SAM Testing

Parameter	Eng Units	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
Run Start Time	hh:mm	10:05	11:40	13:22	15:05	16:20	17:40
Run End Time	hh:mm	11:17	12:50	14:29	16:10	17:29	18:48
HLI System Status	On/Off	On	On	On	Off	Off	Off
Sulfuric Acid Emission Concentration	ppm	0	0	0	0	0	0
Sulfuric Acid Emission Rate	lbm/hr	0	0	0	0	0	0
EPRI Calculated SAM Rate	lbm/hr	116.6	106.9	111.0	114.7	124.7	125.9
FGD SAM Reduction	%	NA	NA	NA	100	100	100
HLI and FGD SAM Reduction	%	100	100	100	NA	NA	NA
Sanders SO2 Emission Concentration	ppm	10.742	12.709	15.966	8.375	11.304	13.459
Sanders SO2 Emission Rate	lbm/hr	254.63	315.03	401.62	212.59	297.25	361.32
CEMS SO2 Emission Concentration	ppm	10.96	13.649	16.087	7.707	10.961	11.875

Table 4.
Plant Crist July 29, 2011 Operational Parameters

Parameter	Eng Units	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
Run Start Time	hh:mm	10:05	11:40	13:22	15:05	16:20	17:40
Run End Time	hh:mm	11:17	12:50	14:29	16:10	17:29	18:48
Unit 4 Load	MW	76.7	72.7	76.7	76.7	76.3	76.3
Unit 4 Coal Flow	klbm/hr	58.8	53.2	57.7	57.9	57.8	57.6
Unit 4 Opacity	Instant %	2.7	2.4	3.2	2.6	2.6	2.8
Unit 4 Urea Flow	gal/hr	45.9	45.9	46.7	46.5	46.5	46.4
Unit 5 Load	MW	74.6	75.1	75.4	75.5	75.7	76.2
Unit 5 Coal Flow	klbm/hr	56.1	56.0	56.1	56.1	56.1	56.7
Unit 5 Opacity	Instant %	11.3	10.6	10.0	10.4	10.2	10.6
Unit 5 Urea Flow	gal/hr	45.0	45.3	45.7	45.7	45.5	45.6
Unit 6 Load	MW	150.6	179.8	184.3	215.1	259.9	260.2
Unit 6 Coal Flow	klbm/hr	152.9	174.0	176.9	197.8	233.6	232.8
Unit 6 Opacity	Instant %	4.9	4.5	4.6	4.6	5.2	5.3
Unit 6 Urea Flow	gal/hr	25.8	43.3	44.9	64.0	93.1	93.2
Unit 7 Load	MW	496.3	496.2	495.1	491.3	489.2	487.6
Unit 7 Coal Flow	klbm/hr	454.1	454.3	453.3	450.9	450.8	449.6
Unit 7 Opacity	Instant %	2.0	1.9	1.9	2.1	2.0	1.9
Unit 7 NH3 Flow	lbm/hr	547.9	529.4	520.8	534.2	538.4	549.2
HLI Injection Rate	lbm/hr	157.5	172.4	145.0	0.0	0.0	0.0
Plant Wide Test Heat Input	mmbtu/hr	8,237.3	8,397.4	8,485.9	8,802.7	9,070.3	9,162.2
Plant Wide Particulate Test Heat Input	mmbtu/hr	9,640.0	9,640.0	9,640.0	9,640.0	9,640.0	9,640.0
Test Percent of Total Heat Input	%	85.4	87.1	88.0	91.3	94.1	95.0
Fuel SO2 Rate	lbm/mmbtu	2.44	2.57	2.61	2.42	2.23	2.29
FGD Outlet CEMs SO2 Rate	lbm/mmbtu	0.04	0.04	0.05	0.03	0.04	0.04

The results from the July 29, 2011 testing indicate that reduction of SAM in the flue gas is independent of HLI operation. During runs 1, 2, and 3, the HLI system was in service, and the combination of the HLI system and FGD yielded 100% removal of SAM. Similarly, in runs 4, 5, and 6, when the HLI was out of service, the FGD also yielded 100% removal of SAM.

In order to verify the SAM testing results, Sanders performed analysis of SO2 during the 6 runs of the July 29, 2011 testing. As seen in Table 3, Sanders' calculated SO2 concentration

parallels the CEMS SO₂ trends throughout the 6 test runs. Also, Sanders' SO₂ rates follow the same trends as CEMS.

Conclusion

The April 5, 2011, May 24, 2011, and July 29, 2011 testing all results in the same conclusion: The FGD alone reduces SAM emissions from Plant Crist by at least 85%, while the HLI system grants improved performance of approximately 6%. It should be noted that these results were consistent with 3 different operating conditions using 2 different testing contractors. In light of the established removal efficiencies for the HLI system and FGD, Gulf Power believes that the FGD alone meets "reasonable assurance" for compliance with the 165.5 tons SAM per consecutive 12 months, and therefore requests to operate the HLI system only as necessary.

As outlined in Gulf Power's May 11, 2011 letter, Gulf requests that Plant Crist perform quarterly SAM tests at the outlet of the FGD stack until Unit 6's SCR comes online in the spring of 2012, beginning with testing in the 4th Quarter of 2011. The quarterly testing will be performed at a minimum of 90% load from available units (units online at the scheduled time of testing) with the HLI system out of service. After the Unit 6 SCR is placed in service, Plant Crist will execute the testing matrix as originally required by the higher sulfur coal blend air construction permit or revise the test condition in a revision to the permit as suggested in the May 18, 2011 FDEP letter.

Gulf Power also recommends establishing the FGD reduction factor used in EPRI's calculations at 90% SAM removal, as was seen in the April and May 2011 test runs. Based upon the results from each of the three testing events, the average SAM emission reduction attained by the FGD is 90%. Table 5, below, displays the SAM emissions based upon a 90% FGD control efficiency used in EPRI's emissions calculations from January to July 2011.

Table 5. Plant Crist SAM Emissions, January to July 2011

Month of 2011	SAM Emissions (tons)	Cumulative SAM Emissions (tons)
January	0.87	0.87
February	1.59	2.46
March	2.32	4.78
April	3.08	7.85
May	3.20	11.06
June	2.42	13.47
July	2.76	16.23

Plant Crist's year-to-date SAM emissions through July are 16.23 tons. If the highest emission rate seen yet, May's, is extrapolated from August to December, the annual SAM emission total is 32.2 tons, which yields a compliance margin of over 80% for 2011. Gulf will continue to use this matrix to demonstrate compliance to the SAM emissions cap until changes are needed pursuant the installation of the Crist Unit 6 SCR in 2012.

Attachment 1
FDEP May 18, 2011 Letter Of Authorization



Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

May 18, 2011

Electronically Sent – Received Receipt Requested

Mr. James Vick, Environmental Affairs Director
Gulf Power Company
One Energy Place, BIN 0328
Pensacola, FL 32520

Re: Project No. 0330045-034-AC
Amends Permit No. 0330045-029-AC
Crist Electric Generating Plant, Existing Units 4 – 7
Extension to Conduct Additional Sulfuric Acid Mist (SAM) Testing
Letter of Authorization

Dear Mr. Vick:

On May 11th, the Department received a request from Gulf Power Company for an extension to conduct additional stack tests to determine SAM emissions from existing Units 4 – 7. The plant recently installed a wet flue gas desulfurization (FGD) system to control sulfur dioxide (SO₂) emissions from Units 4 – 7. In addition, Unit 7 operates a selective catalytic reduction (SCR) system to reduce nitrogen oxides (NO_x) and the plant is authorized to install an SCR on Unit 6 as well. The catalysts in SCR systems have been shown to increase sulfur trioxide formation, which results in increased SAM emissions. Also, due to the successful installation and operation of the wet FGD system, Permit No. 0330045-029-AC authorized a higher sulfur coal blend for Units 4 – 7. This permit included an emissions cap to ensure that the project did not result in a significant increase in SAM emissions. Since hydrated lime injection (HLI) was added to reduce SAM emissions, the permit required performance tests to establish operating conditions (e.g., HLI rates) that would determine the estimated SAM emissions rates that would be used to show compliance with the emissions cap.

The plant conducted preliminary stack tests to determine the SAM emissions rates. These initial tests indicated 90% or more control of SAM emissions by the wet FGD system without any HLI. This was substantially confirmed by additional parametric tests on the system. This means that the plant may be able to comply with the SAM emissions cap without any HLI.

Condition 6 in Subsection 3A of Permit (0330045-029-AC) requires performance tests to determine SAM emissions at various load ranges with the HLI on and off. These tests are required to be conducted within 90 days of first firing the higher sulfur coal, which the permittee believes will expire on May 30th. In consideration of an extension to conduct these tests, the permittee agrees to:

- Test the scrubber outlet stack with and without HLI to establish full load removal efficiencies of the system and submit a report within 45 days. The preliminary schedule for this test is during June of 2011.
- Operate the HLI only as necessary if the performance tests provide “reasonable assurance” of compliance with the SAM emissions cap without HLI.
- Conduct quarterly SAM emissions tests at the scrubber stack until the SCR on Unit 6 commences operation in the Spring of 2012. At that time, Gulf will meet the testing provisions as outlined in Permit No. 0330045-

Letter of Authorization

028-AC for the Unit 6 SCR. This will provide the final parametric model to demonstrate “reasonable assurance” that the higher sulfur coal did not result in a significant emissions increase.

Based on the information provided and the given circumstances, the Department approves your request. Specifically, the requirement to conduct the SAM emissions performance tests is extended through July 31, 2011. In addition, this test may be conducted only at full load with the HLI on and off. If lower load testing is not elected, then compliance with the SAM emissions cap must be conservatively demonstrated based on the full load data. As new SAM emissions and performance data become available, the permittee shall update and work with the Department’s Northwest District Office on the “reasonable assurance” methodology used to verify compliance with the SAM emissions cap. The SAM emissions performance tests are referenced in several permits as the projects were being constructed. At its option, Gulf Power may submit an application to clarify all SAM emissions performance tests in a single air construction permit to clarify the testing requirements and deadlines. The permittee will submit an application to revise the Title V air operation permit to incorporate the acid mist conditions after completing the tests required in Permit 0330045-028-AC for the Unit 6 SCR system.

The Department will consider this action final unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57, of the Florida Statutes (F.S.). Mediation under Section 120.573, F.S., will not be available for this proposed action.

A person whose substantial interests are affected by the proposed decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Department’s Office of General Counsel, MS #35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000. Petitions filed by the applicant or any of the parties listed below must be filed within 14 days of receipt of this notice. Petitions filed by any other person must be filed within 14 days of receipt of this proposed action. A petitioner must mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person’s right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C. A petition that disputes the material facts on which the Department’s action is based must contain the following information: (a) The name and address of each agency affected and each agency’s file or identification number, if known; (b) The name, address, and telephone number of the petitioner; the name, address and telephone number of the petitioner’s representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner’s substantial interests will be affected by the agency determination; (c) A statement of how and when each petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, as well as the rules and statutes which entitle the petitioner to relief; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency’s proposed action; and, (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency’s proposed action.

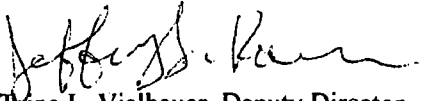
A petition that does not dispute the material facts upon which the permitting authority’s action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department’s final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the permitting authority on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Letter of Authorization

Any party to this order has the right to seek judicial review of it under Section 120.68, F.S., by the filing of a Notice of Appeal, under Rule 9.110 of the Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000; 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 thirty days from the date this notice is filed with the Clerk of the permitting authority.

Executed in Tallahassee, Florida.


For Trina L. Vielhauer, Deputy Director
Division of Air Resource Management

TLV/jfk

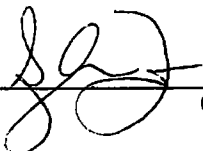
CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this authorization was sent by electronic mail (or a link to these documents made available electronically on a publicly accessible server) with received receipt requested before the close of business on 5/18/11 to the persons listed below.

Mr. James Vick, Gulf Power Company (jovick@southernco.com)
Mr. G. Dwain Waters, Gulf Power Company (gdwaters@southernco.com)
Mr. Gregory Terry, Gulf Power Company (gnterry@southernco.com)
Mr. Rick Bradburn, DEP NWD Office (rick.bradburn@dep.state.fl.us)
Ms. Kathleen Forney, EPA Region 4 (forney.kathleen@epa.gov)
Ms. Heather Abrams, EPA Region 4 (abrams.heather@epa.gov)
Ms. Vickie Gibson, DEP BAR Reading File (victoria.gibson@dep.state.fl.us)

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52(7), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.



(Clerk) 5/18/11
(Date)

Attachment 2
Sanders Test Report Data Sheets

**TABLE I. SULFURIC ACID EMISSIONS TEST RESULTS
GULF POWER COMPANY
PLANT CRIST COMBINED SCRUBBER STACK
PENSACOLA, FLORIDA**

Title of Run		<u>RUN 1</u>	<u>RUN 2</u>	<u>RUN 3</u>	<u>RUN 4</u>	<u>RUN 5</u>	<u>RUN 6</u>
Date	Month:Day:Year	5/24/2011	5/24/2011	5/24/2011	5/24/2011	5/24/2011	5/24/2011
Sampling Time -Start	Military	0835	1015	1135	1345	1522	1645
Sampling Time -Stop	Military	0935	1110	1230	1450	1627	1750
Number of Ports	dimensionless	2	2	2	2	2	2
Number of Points per Port	dimensionless	5	5	5	5	5	5
Stack Static Pressure	Inches Water	-0.75	-0.75	-0.75	-0.75	-0.75	-0.75
Barometric Pressure	Inches Mercury	29.80	29.80	29.80	29.80	29.80	29.80
Standard Orifice Pressure ΔH@	Inches Water	1.756	1.756	1.756	1.756	1.756	1.756
Meter Correction Factor	dimensionless	0.985	0.985	0.985	0.985	0.985	0.985
Oxygen Concentration	Mole Percent O2	7.50	7.50	7.50	7.00	7.00	7.00
Carbon Dioxide Concentration	Mole Percent CO2	10.0	10.0	10.0	9.0	9.0	9.5
Volume of Gas Metered	Actual Cubic Feet	48.000	47.620	47.200	56.500	56.220	55.855
Volume of Water Collected	Milliliters	109.4	119.1	89.8	160.4	120.2	101.6
Sampling Time	Minutes	50	50	50	60	60	60
Nozzle Diameter	Inches	0.250	0.250	0.250	0.250	0.250	0.250
Area of Stack	Square Feet	962.113	962.113	962.113	962.113	962.113	962.113
Avg. Sqr. Root Velocity Pressure	Inches Water	0.9639	0.9508	0.9563	0.9501	0.9416	0.9436
Average Orifice Pressure (ΔH)	Inches Water	2.9	2.8	2.8	2.8	2.8	2.8
Average Stack Temperature	Degrees F	125	127	127	129	129	129
Average Meter Temperature	Degrees F	90	92	93	92	93	94
Final Volume of SO3/H2SO4 Solution	Milliliters	178.00	236.00	236.00	258.00	252.00	247.00
Normality of Titrant (BaCl2)	Equivalence/Liter	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Volume of Aliquot (H2SO4)	Milliliters	5.00	5.00	5.00	5.00	5.00	5.00
Volume of Titrant for H2SO4 Blank	Milliliters	0.00	0.00	0.00	0.00	0.00	0.00
Volume of Titrant For H2SO4 Aliquot	Milliliters	1.23	1.48	0.18	0.15	0.05	0.08

Calculations

		<u>RUN 1</u>	<u>RUN 2</u>	<u>RUN 3</u>	<u>RUN 4</u>	<u>RUN 5</u>	<u>RUN 6</u>
Standard Temperature (° F) =	68						
Standard Pressure (inches of Hg) =	29.92						
Volume of Gas Sampled	Standard Dry Cubic Feet	45.573	45.015	44.516	53.408	52.988	52.587
Molecular Wt. of Stack Gas (dry)	LB-LB-MOLE	29.90	29.90	29.90	29.72	29.72	29.80
Water vapor in Stack Gas	Percent	10.2	11.1	8.7	12.4	9.6	8.3
Average Stack Gas Velocity	Feet per second	57.3	56.7	56.8	57.1	56.3	56.2
Stack Gas Flow Rate	Actual Cubic Feet Per Minute	3,308,328	3,274,068	3,276,678	3,295,529	3,247,517	3,242,638
Stack Gas Flow Rate	Standard Wet Cubic Feet Per Minute	2,966,288	2,927,564	2,929,899	2,936,743	2,893,958	2,887,974
Stack Gas Flow Rate	Standard Dry Cubic Feet Per Minute	2,665,143	2,603,352	2,675,824	2,573,010	2,614,766	2,647,232
Isokinetic Rate	Percent	96.5	97.6	93.9	97.6	95.3	93.4
Post Test Meter Correction Check	dimensionless	1.01	1.01	1.01	1.01	1.02	1.02
Percent Difference	Allowed 5% Average	2.6	2.3	2.5	2.9	3.1	3.5
Concentration of Sulfuric Acid	Grains per Standard Dry Cubic Foot	0.004	0.006	0.001	0.001	0.000	0.000
Sulfuric Acid Emission Rate	Pounds per Hour	87.66	138.39	17.07	12.82	4.27	6.41
Sulfuric Acid Emission Rate	PPM	2.15	3.48	0.418	0.326	0.107	0.159