Florida Department of

Memorandum

Environmental Protection

5/1 - 10 A
DAN T - CLAIR - AL -
WILLARD

To: Clair Fancy

From: Willard Hanks

Subject: Okeelanta Power L.P.
AC50-219413/PSD-FL-196

Date: April 29, 1997

This cogeneration facility is permitted to burn biomass (bagasse and wood chips), No. 2 oil and coal. Emissions are controlled by the use of a SNCR for NOx, ESPs for PM, carbon injection for mercury, and the use of low sulfur (0.7%) coal for SO2.

Key events in the permit for Okeelanta Power L.P.'s 74.9 MW cogeneration facility near Pahokee, Florida are:

- Application (Flo-Energy, Inc.) received on September 30, 1992.

- Application complete on February 18, 1993.

- DEP Intent issued June 3, 1993. Permit issued on September 27, 1993. Original expiration date was July 1, 1996.

- Facility burned fuel oil during October, 1995.

- Facility burned biomass during February, 1996.

- Permit amended February 20, 1996, to limit MSW (yard waste) to 30%.

- Initial compliance tests conducted in May, 1996.

- On April 7, 1996, the permittee requested, and on June 14, 1996, the Department approved additional time (until April 1, 1997) for the simultaneous operation of the cogeneration and sugar mill boilers. Time needed to connect bagasse feed system from the sugar mill to the cogeneration facility.

- On May 13, 1996, the permittee requested permission to burn tire derived fuel (TDF). On January 22, 1997, the Department approved a test burn of TDF.

- On December 18, 1996, the permittee requested the sulfuric acid mist (SAM) standard and test method be deleted because of problems (ammonia interference) with the test method. On April 18, 1997, the Department approved another procedure to determine compliance with the SAM standard.

- PBCPHU sent a warning notice dated February 11, 1997, for exceedances in mercury, carbon monoxide, visible emissions, and other operation items.

- On ~~May~~ March 3, 1997, the permittee requested additional time for simultaneous operation of the cogeneration and sugar mill boilers because of bagasse feed connection problems between the plants. The Department issues an Intent to approve the additional time (until April 1, 1998) on March 20, 1997.

- On April 23, 1997, permittee requested more time to do the TDF test burn. The Department will process this request in May.

- During April, 1997, their environmental engineer said a request to address the mercury, sulfur dioxide and carbon monoxide emissions was being prepared.

The plant has had problems. Among them were:

- The fans had to be relocated to after the electrostatic precipitator because of abrasion.

- The feed (wood chips) and ash contained higher metal content than allowed. Better monitoring of the fuel quality seems to have corrected this.

- Emissions of some pollutants exceeded the permit standards. Changing the test method for SAM, which was biased by the ammonia interference, should allow the plants to comply with the SAM standard. The engineer will request a permit modification for some other pollutants.

- The bagasse feed system from the sugar mill to the cogeneration boilers has mechanical problems. The permittee is still working on this.

The situation at Osceola Power L.P. is similar.

OKEELANTA POWER LIMITED PARTNERSHIP

Flo-Sun, Inc.
U.S. Generating Company

RECEIVED
MAR 31 1997
BUREAU OF
AIR REGULATION

March 25, 1997

State of Florida
Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Attn: Mr. A.A. Linero, P.E.
Administrator
New Source Review Section

Re: Okeelanta Cogeneration Plant
DRAFT Permit Amendment No. 0990332-004-AC
AC50-219413, PSD-FL-196B

Dear Mr. Linero:

Okeelanta Power has reviewed your letter of December 24, 1996 and encloses the following information regarding sulfuric acid mist emission tests.

1. Okeelanta Power test results for boilers A, B and C using Method 8.
2. Okeelanta Power test results for boilers A, B and C using Modified Method 8 concurrently with Method 8.
3. A Project Overview Discussion by Clean Air Engineering which reviews problems with Method 8 at the facility.
4. A Clean Air Engineering letter dated 12/19/95 which discusses similar problems with Method 8 at the Indiantown Cogeneration Plant.
5. A certificate of analysis for iso-Propyl Alcohol used by Clean Air Engineering during the sulfuric acid mist emission tests.

If you have any questions please contact me at (561) 993-1003.

Sincerely,

J. M. M

James M. Meriwether
Environmental Manager

cc: David Knowles - FDEP/South District
Ajaya Satyal - PBCHD

cc: D. Buff, G.A.
K. Anderson, DEP
EPA
NPS
W. Harks, BAR

P.O. BOX 8 SOUTH BAY, FL 33493 561-993-1000 FAX 561-996-6596

RESULTS

Table 2-2:
Stack A - Sulfur Dioxide/Sulfuric Acid Mist (EPA Method 8), Runs 1, 2, 3

Run No.		**1**	**2**	**3**	**Average**
Date (1996)		May 11	May 12	May 12	
Start Time (approx.)		23:19	01:42	04:26	
Stop Time (approx.)		00:28	02:50	05:39	
Fuel Analysis					
F_d	Fuel factor (dscf/10^6Btu)	8,489	8,489	8,489	
Gas Conditions					
T_s	Temperature (°F)	331	328	327	**329**
B_{wo}	Moisture (volume %)	17.57	20.00	20.05	**19.21**
O_2	Oxygen (dry volume %)	6.3	5.8	6.0	**6.0**
CO_2	Carbon dioxide (dry volume %)	13.7	14.4	14.0	**14.0**
Volumetric Flow Rate					
Q_a	Actual conditions (acfm)	256,600	251,100	256,800	**254,800**
Q_{std}	Standard conditions (dscfm)	140,500	134,000	137,000	**137,200**
Sulfur Dioxide					
C	Concentration (ppm)	25.4	30.0	36.5	**30.6**
E	Emission rate (lb/hr)	35.64	40.07	49.89	**41.9**
E	Emission rate (lb/10^6Btu)	0.0514	0.0586	0.0723	**0.061**
Sulfuric Acid Mist					
C	Concentration (ppm)	3.9	3.7	4.0	**3.9**
E	Emission rate (lb/hr)	8.266	7.672	8.305	**8.08**
E	Emission rate (lb/10^6Btu)	1.19E-02	1.12E-02	1.20E-02	**1.2E-02**

RESULTS

Table 2-3:
Stack A - Sulfur Dioxide/Sulfuric Acid Mist (EPA Method 8), Runs 4, 5, 6

Run No.		4	5	6	Average
Date (1996)		May 29	May 30	May 30	
Start Time (approx.)		10:10	12:30	14:49	
Stop Time (approx.)		11:20	13:50	15:57	
Fuel Analysis					
F_d	Fuel factor (dscf/10^6Btu)	8,489	8,489	8,489	
Gas Conditions					
T_s	Temperature (°F)	332	342	343	**339**
B_{wo}	Moisture (volume %)	18.88	21.96	21.60	**20.81**
O_2	Oxygen (dry volume %)	5.7	6.1	5.6	**5.8**
CO_2	Carbon dioxide (dry volume %)	14.5	14.0	14.6	**14.4**
Volumetric Flow Rate					
Q_a	Actual conditions (acfm)	260,500	284,200	289,000	**277,900**
Q_{std}	Standard conditions (dscfm)	141,100	146,200	149,100	**145,500**
Sulfur Dioxide					
C	Concentration (ppm)	31.9	35.0	34.0	**33.7**
E	Emission rate (lb/hr)	44.97	51.03	50.60	**48.9**
E	Emission rate (lb/10^6Btu)	0.062	0.070	0.066	**0.07**
Sulfuric Acid Mist					
C	Concentration (ppm)	36.1	32.6	35.4	**34.7**
E	Emission rate (lb/hr)	77.71	72.77	80.69	**77.1**
E	Emission rate (lb/10^6Btu)	1.07E-01	9.95E-02	1.05E-01	**1.0E-01**

RESULTS

Table 2-4:
Stack A - Sulfuric Acid Mist (Modified Method 8)

Run No.		1	2	3	Average
Date (1996)		May 29	May 30	May 30	
Start Time (approx.)		10:10	12:30	14:49	
Stop Time (approx.)		11:20	13:52	15:57	
Fuel Analysis					
F_d	Fuel factor (dscf/10^6Btu)	8,489	8,489	8,489	
Gas Conditions					
T_s	Temperature (°F)	334	344	345	**341**
B_{wo}	Moisture (volume %)	22.03	22.60	20.73	**21.79**
O_2	Oxygen (dry volume %)	5.6	6.0	5.8	**5.8**
CO_2	Carbon dioxide (dry volume %)	14.5	14.2	14.4	**14.4**
Volumetric Flow Rate					
Q_a	Actual conditions (acfm)	251,900	271,200	275,700	**266,300**
Q_{std}	Standard conditions (dscfm)	130,800	138,100	143,500	**137,500**
Sulfuric Acid Mist					
C	Concentration (ppm)	0.4	0.3	0.4	**0.4**
E	Emission rate (lb/hr)	0.8000	0.7000	0.8000	**0.767**
E	Emission rate (lb/10^6Btu)	1.14E-03	9.76E-04	1.07E-03	**1.1E-03**

RESULTS

Table 2-2:
Stack B - Sulfur Dioxide/Sulfuric Acid Mist (EPA Method 8), Runs 1, 2, 3

Run No.		1	2	3	Average
Date (1996)		May 15	May 16	May 16	
Start Time (approx.)		23:59	01:45	03:23	
Stop Time (approx.)		01:06	02:51	04:33	
Fuel Analysis					
F_d	Fuel factor (dscf/10^6Btu)	8,476	8,476	8,476	
Gas Conditions					
T_s	Temperature (°F)	291	292	294	292
B_{wo}	Moisture (volume %)	19.30	19.77	19.90	19.66
O_2	Oxygen (dry volume %)	5.8	5.5	5.9	5.7
CO_2	Carbon dioxide (dry volume %)	14.8	15.0	14.9	14.9
Volumetric Flow Rate					
Q_a	Actual conditions (acfm)	249,300	252,300	243,500	248,400
Q_{std}	Standard conditions (dscfm)	141,500	142,100	136,600	140,100
Sulfur Dioxide					
C	Concentration (ppm)	32.6	40.7	40.4	37.9
E	Emission rate (lb/hr)	49.97	63.92	59.41	57.8
E	Emission rate (lb/10^6Btu)	0.0691	0.0862	0.0856	0.080
Sulfuric Acid Mist					
C	Concentration (ppm)	8.6	8.6	7.8	8.3
E	Emission rate (lb/hr)	20.30	20.71	17.52	19.5
E	Emission rate (lb/10^6Btu)	0.0280	0.0279	0.0252	0.027

Table 2-3:
Stack B - Sulfur Dioxide/Sulfuric Acid Mist (EPA Method 8), Runs 5, 6, 7

Run No.		5	6	7	Average
Date (1996)		May 31	May 31	May 31	
Start Time (approx.)		15:21	17:34	20:14	
Stop Time (approx.)		16:36	19:23	21:27	
Fuel Analysis					
F_d	Fuel factor (dscf/10^6Btu)	8,476	8,476	8,476	
Gas Conditions					
T_s	Temperature (°F)	331	325	326	**327**
B_{wo}	Moisture (volume %)	24.19	22.66	22.46	**23.10**
O_2	Oxygen (dry volume %)	5.6	6.2	5.6	**5.8**
CO_2	Carbon dioxide (dry volume %)	14.6	14.2	14.7	**14.5**
Volumetric Flow Rate					
Q_a	Actual conditions (acfm)	278,900	266,800	273,500	**273,100**
Q_{std}	Standard conditions (dscfm)	141,200	139,000	142,700	**141,000**
Sulfuric Acid Mist					
C	Concentration (ppm)	29.7	53.1	46.4	**43.1**
E	Emission rate (lb/hr)	70.57	119.1	111.3	**100**
E	Emission rate (lb/10^6Btu)	9.64E-02	1.72E-01	1.51E-01	**1.4E-01**

RESULTS

Table 2-4:
Stack B - Sulfuric Acid Mist (Modified Method 8)

Run No.		1	2	3	Average
Date (1996)		May 31	May 31	May 31	
Start Time (approx.)		15:21	17:34	20:14	
Stop Time (approx.)		16:36	19:23	21:27	
Fuel Analysis					
F_d	Fuel factor (dscf/10^6Btu)	8,476	8,476	8,476	
Gas Conditions					
T_s	Temperature (°F)	333	325	326	**328**
B_{wo}	Moisture (volume %)	24.64	22.97	23.61	**23.74**
O_2	Oxygen (dry volume %)	5.5	6.0	6.0	**5.8**
CO_2	Carbon dioxide (dry volume %)	14.6	14.2	14.2	**14.3**
Volumetric Flow Rate					
Q_a	Actual conditions (acfm)	274,300	263,800	269,300	**269,100**
Q_{std}	Standard conditions (dscfm)	137,800	136,800	138,400	**137,700**
Sulfuric Acid Mist					
C	Concentration (ppm)	0.64	0.37	0.27	**0.43**
E	Emission rate (lb/hr)	1.487	0.8360	0.6099	**0.978**
E	Emission rate (lb/10^6Btu)	2.07E-03	1.21E-03	8.73E-04	**1.4E-03**

RESULTS

Table 2-2:
Stack C - Sulfur Dioxide/Sulfuric Acid Mist (EPA Method 8)

Run No.[1]	2	3	4	Average
Date (1996)	June 3	June 3	June 3	
Start Time (approx.)	19:02	21:03	22:59	
Stop Time (approx.)	20:16	22:13	00:10	
Fuel Analysis				
F_d Fuel factor (dscf/10^6Btu)	9,567	9,567	9,567	
Gas Conditions				
T_s Temperature (°F)	316	319	316	**317**
B_{wo} Moisture (volume %)	20.00	20.85	20.93	**20.59**
O_2 Oxygen (dry volume %)	6.8	6.6	6.8	**6.7**
CO_2 Carbon dioxide (dry volume %)	13.4	13.8	13.4	**13.5**
Volumetric Flow Rate				
Q_a Actual conditions (acfm)	286,500	284,600	282,300	**284,500**
Q_{std} Standard conditions (dscfm)	156,500	153,100	152,200	**153,900**
Sulfur Dioxide				
C Concentration (ppm)	20	10	19	**16**
E Emission rate (lb/hr)	31.13	15.78	28.81	**25.2**
E Emission rate (lb/10^6Btu)	0.0470	0.0240	0.0447	**0.039**
Sulfuric Acid Mist				
C Concentration (ppm)	37.3	15.5	18.2	**23.7**
E Emission rate (lb/hr)	90.49	37.26	42.89	**56.9**
E Emission rate (lb/10^6Btu)	1.40E-01	5.80E-02	6.81E-02	**8.9E-02**

[1] Run 1 conducted for diagnostic purpose.

RESULTS

Table 2-3: Stack C - Sulfuric Acid Mist (Modified Method 8)

Run No.[1]		2	3	4	Average
Date (1996)		June 3	June 3	June 3	
Start Time (approx.)		19:07	21:03	22:59	
Stop Time (approx.)		20:16	22:14	00:10	
Fuel Analysis					
F_d	Fuel factor (dscf/10^6Btu)	9,567	9,567	9,567	
Gas Conditions					
T_s	Temperature (°F)	315	317	316	**316**
B_{wo}	Moisture (volume %)	20.83	19.81	18.14	**19.59**
O_2	Oxygen (dry volume %)	6.7	6.6	6.4	**6.6**
CO_2	Carbon dioxide (dry volume %)	13.4	13.6	13.7	**13.6**
Volumetric Flow Rate					
Q_a	Actual conditions (acfm)	282,800	284,900	280,500	**282,700**
Q_{std}	Standard conditions (dscfm)	152,900	155,500	156,600	**155,000**
Sulfuric Acid Mist					
C	Concentration (ppm)	0.5	0.3	0.3	**0.4**
E	Emission rate (lb/hr)	1.2249	0.6736	0.8062	**0.902**
E	Emission rate (lb/10^6Btu)	1.92E-03	1.03E-03	1.21E-03	**1.4E-03**

[1] Run 1 conducted for diagnostic purpose.

PROJECT OVERVIEW

DISCUSSION

Methodology

During this test program, Clean Air Engineering incorporated guidelines as stated in Title 40 of the Code of Federal Regulations, Parts 60 (40 CFR 60), 61 (40 CFR 61) and 51 (40 CFR 51). Additional guidelines were followed in accordance with applicable requirements and provisions of 40 CFR 60, Subpart Da. The specific testing followed procedures in EPA Methods 1, 2, 3, 3A, 4, 5, 7E, 8, 9, 10, 12, 13B, 18, 19, 25, 25A, 101A, 104, 108, 201A and the EPA Emissions Measurement Technicial Information Center (EMTIC) conditional test method CTM-012.

Fuel-Based Emission Rate Calculation

The emission rate of $lb/10^6Btu$ was calculated using a fuel factor (F_d) of 9,567 $dscf/10^6Btu$. This is an average of the 11 separate fuel samples collected by BPC during the test program. The results of the individual samples are contained in Appendix I.

Sulfuric Acid Mist

Based on experience gained during the Indiantown Cogeneration Project compliance test program in which a similar sampling situation was present, the following modifications to the sampling program were instituted.

Three EPA Method 8 runs were conducted simultaneously with three runs using Modified Method 8 procedures. This was due to a suspected positive bias caused by interferences in the flue gas resulting in the standard EPA Method 8 samples to be non-representative of the actual stack gas concentration of sulfuric acid mist.

CAE and Bechtel proposed a modification to the sampling procedure during the Indiantown Cogeneration compliance project to minimize the positive bias. Verbal agreement was recieved from the FDEP during that project to conduct the Modified Method 8 procedures concurrently with EPA Method 8 and submit both for review. The recommendation of the FDEP to perform additional Method 8 runs during the Indiantown Project was also followed during the Okeelanta test program.

The results of the modified runs are included in Table 2-3.

The modified sampling approach included the elimination of the analysis of the IPA impinger. In its place, the amount of filterable sulfate is considered to represent the sulfuric acid mist.

The following specific method alterations were followed in the modified runs.

1. A heated glass fiber filter was inserted between the probe and first impinger. This variance as allowed in paragraph 3 of section 1.2 of Method 8.

2. The train was operated according to standard Method 8 procedures.

3. At the completion of sampling, the probe and front-half glassware were rinsed with IPA. The filter was added to this rinse. These rinses were not mixed with the IPA from the first impinger.

4. The filter/probe rinse solution was analyzed for sulfate using standard Method 8 titration procedures.

5. The H_2SO_4 emissions were considered to be completely represented by the sulfate determined from the filter and probe wash.

The stated detection limit for EPA Method 8 is 0.015 ppm. However, the method was specifically developed for use at sulfuric acid plants at which the flue gas is dry and free from known interferents such as ammonia and chlorides. At a facility such as Okeelanta, the method detection limit would be expected to be much higher, primarily due to interference from the combination of high flue gas moisture (≈20%) and sulfur dioxide (SO_2).

Over the course of sampling, SO_2 is partially absorbed in the isopropanol (IPA) impinger. This absorption is enhanced as the aqueous component of the first impinger increases from the condensed flue gas moisture. The method calls for a post-sampling air purge of the sampling train to remove the absorbed SO_2 from the IPA. However, a small amount of SO_2 will always remain in this impinger after purging due to vapor-liquid equilibrium phenomena.

Total Non-Methane Hydrocarbons

At the request of the U.S. Generating Company, concurrent EPA Method 25 and Method 25A samples were collected during the compliance test program. In addition, EPA Method 18 was used to determine methane concentrations. Although both EPA Methods (25 and 25A) yielded mass emission rates that are below permitted limits, the results of the EPA Method 18/25A sampling procedure are believed to be more representative of actual stack conditions.

The results of the EPA Method 25A sampling indicated that minimal hydrocarbons (≈ 4.6 ppm as carbon) were present in the stack gas. This was collaborated by the Method 18 results (≈ 2.5 ppm) which indicated methane (also measurable by Method 25A) was also present in the stack gas in minimal quantities.

Clean Air Engineering

Parkway West Industrial Park • 1601 Parkway View Drive • Pittsburgh, PA 15205
Phone 412/787-9130 • Fax 412/787-9138

MEMORANDUM

TO: Michelle Griffin
U.S. Generating
FAX: (301) 718-6917

FROM: Jim Wright
Technical Director
Clean Air Engineering
Phone: (412) 787-9130

DATE: 12/19/95

RE: Method 8 Testing Limitations

CC: Bill Harper
Bechtel
FAX: (301) 330-2581

I researched the problem we are currently encountering in measuring sulfuric acid mist (H_2SO_4) at the Indiantown facility. Based on the test results thus far, I do not believe that EPA Method 8 can be used to demonstrate compliance with the H_2SO_4 limit of 1 lb/hr (≈0.1ppm) without some alterations to the method.

The stated detection limit for Method 8 is 0.015 ppm. By itself, this should be low enough to demonstrate compliance with the facility's H_2SO_4 emissions limit. However, the method was specifically developed for use at sulfuric acid plants at which the flue gas is dry and free from known interferents such as ammonia and chlorides. At a facility such as Indiantown, the method detection limit would be expected to be much higher, primarily due to interference from the combination of flue gas moisture and sulfur dioxide (SO_2).

Over the course of sampling, SO_2 is partially absorbed in the isopropanol (IPA) impinger. This absorption is enhanced as the aqueous component of the first impinger increases from the condensed flue gas moisture. The method calls for a post-sampling air purge of the sampling train to remove the absorbed SO_2 from the IPA. However, a small amount of SO_2 will always remain in this impinger after purging due to vapor-liquid equilibrium phenomena.

CAE's experience has shown that, for a wet flue gas of ≈100 ppm SO_2, the amount of residual SO_2 left after purging equates to an in-stack bias of approximately 1 ppm. Thus, the potential positive bias in the method is significantly higher than the emissions limit itself. Furthermore, methodology modifications such as increased sample gas volume or increased analytical sensitivity will not improve this situation.

In order to circumvent this problem, I propose that the testing approach be modified to eliminate analysis of the IPA impinger. In its place, I recommend determining the amount of filterable sulfate and expressing this quantity as sulfuric acid mist. Since the flue gas temperature is relatively low (less than ≈180°F), any gaseous sulfur trioxide (SO_3) should already exist as condensed sulfuric acid, which is filterable. Thus, the amount of potential negative bias due to the modification should be negligible. This argument should help in obtaining agency approval for the modification.

The following specific method alterations are recommended:

1. Insert a heated glass fiber filter between the probe and first impinger. This variance as allowed in paragraph 3 of section 1.2 of Method 8.

2. Operate the train according to standard Method 8 procedures.

3. At the completion of sampling, rinse the probe and front-half glassware with IPA and add the filter to this rinse. Do not mix these rinses with the IPA from the first impinger.

4. Analyze the filter/probe rinse solution for sulfate using standard Method 8 titration procedures.

5. Consider the H_2SO_4 emissions to be completely represented by the sulfate determined from the filter and probe wash.

One potential problem with this approach may be in the generation of a positive bias due to the presence of non-sulfuric acid sulfates such as ammonium sulfate (note that this is a problem with the current approach as well.) If this problem is suspected, then it may be desirable to use a more sophisticated analytical approach (e.g., ion chromatography) to quantify the amount of ammonium ion present, and subtract this from the total sulfate.

I hope that this information helps to clarify the current situation and potential testing options. Please feel free to call me or Bob Preksta at (412) 787-9130 if you have any additional questions.

EM SCIENCE
CERTIFICATE OF ANALYSIS

Quality is good chemistry

EM SCIENCE
480 S. Democrat Road
Gibbstown, NJ 08027
Phone: 1-800-222-0342

NAME: iso-Propyl Alcohol (2-Propanol) OmniSolv(R)
ITEM NUMBER: PX1834-1
LOT NUMBER: 36038
FORMULA: $CH_3CHOHCH_3$
FORMULA WT: 60.10

Data Order No: 00008007

PROPERTY	LIMITS Min.	LIMITS Max.	RESULTS	UNITS
Assay (GC):	99.9		99.95	%
Capillary ECD responsive substances (as C6Cl6):			3.40	ppt
Capillary FID responsive substances (as decane):				ppb
Color (APHA):		10	<10	APHA
ECD responsive substances (as heptachlor epoxide):		2.0	0.50	ppt
Filtered for particulate matter:			Passes test.	
Fluorescence (as quinine base):		250	26.3	ppt
Form:			Clear liquid	
Infrared spectrum:			Conforms to standard.	
Refractive Index (n 25/D):			1.3782	
Residue after evaporation:		1	<0.1	ppm
Titratable acid:		0.2	0.08	µeq/g
UV Abs. at 204 nm:		1.00	0.492	AU
UV Abs. at 205 nm:		0.80	0.380	AU
UV Abs. at 210 nm:		0.35	0.122	AU
UV Abs. at 220 nm:		0.10	0.037	AU
UV Abs. at 230 nm:		0.05	0.016	AU
UV Abs. at 240 nm:		0.02	0.005	AU
UV Abs. at 260 nm:		0.005	<0.001	AU
UV Abs. at 300 nm:		0.005	<0.001	AU
UV Cut-off:		204	201.4	nm
Water (H2O):		0.05	0.014	%

Charles M. Wilson,
Quality Assurance Manager
Analysis Date: 02/08/96

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

December 24, 1996

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. James M. Meriwether
Environmental Manager
Okeelanta Power Limited Partnership
P.O. Box 8
South Bay, FL 33493

Re: DRAFT Permit Amendment No. 0990332-004-AC (AC50-219413), PSD-FL-196B
Okeelanta Cogeneration Plant

Dear Mr. Meriwether:

The Department has reviewed your application for a minor permit amendment to Specific Conditions No. 20 and No. 21 of the above referenced permit. We need additional information to process this request. Please provide the information requested below.

1. Summary of test results on this unit using Method 8.

2. Summary of test results on this unit using Modified Method 8.

3. Any technical articles to support your request that Method 8 is inappropriate for this facility.

The Department will resume processing this application after receipt of the requested information. If you have any questions on this matter, please call Al Linero or Willard Hanks at 904/488-1344.

Sincerely,

12/24

A. A. Linero, P.E.
Administrator
New Source Review Section

AAL/wh/hh

cc: Mr. Joe Kahn, SED
Mr. David Buff, KBN
Mr. David Knowles, FDEP/Ft. Myers
Mr. Jeff Korner, PBC

Is your RETURN ADDRESS completed on the reverse side?

SEND...

- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
James Meriwether, Env. Mgr
Okeelanta Power, LP
P O Box 8
South Bay, Fl 33493

4a. Article Number
P 265 659 117

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
12-30-96

5. Received By: *(Print Name)*

8. Addressee's Address *(Only if requested and fee is paid)*

6. Signature: *(Addressee or Agent)*
X

PS Form ...

Domestic Return Receipt

Thank you for using Return Receipt Service.

P 265 659 117

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Sent to James Meriwether	
Street & Number Okeelanta Power	
Post Office, State, & ZIP Code South Bay Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 12-24-96 0990332-004-AC	

PS Form **3800**, April 1995

3755

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OKEELANTA POWER LIMITED PARTNERSHIP

Flo-Sun, Inc.
U.S. Generating Company

December 5, 1996

0990332-004-AC
PSD-FL-196 B?

State of Florida
Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Attn: Mr. Clair Fancy

Re: Okeelanta Power Limited Partnership
AC50-219413/PSD-FL-196
Sulfuric Acid Mist
Minor Permit Amendment

RECEIVED
MAIL ROOM
DEC 18 96

Dear Mr. Fancy:

Okeelanta Power Limited Partnership (OkPLP) is requesting the Florida Department of Environmental Protection (FDEP) to amend Specific Condition #21 of our PSD permit to delete Sulfuric Acid Mist (SAM) as an emission compliance test constituent. We also request FDEP to remove the emission limit for SAM from Specific Condition #20.

OkPLP is the owner of the Okeelanta Cogeneration Plant located in Palm Beach County - South Bay, Florida. The Okeelanta Cogeneration Plant is a 74.9 megawatt electric cogeneration facility which utilizes biomass (clean wood waste material and bagasse) as the primary fuel and No. 2 low sulfur fuel oil as startup and supplementary fuel. The facility is permitted to burn low sulfur coal as an alternative fuel, however, coal is not currently utilized as a plant fuel source.

The cogeneration plant consists of three ABB steam boilers with a design heat input for each boiler of 715 MMBtu/hr on biomass and 490 MMBtu/hr on fuel oil. Each boiler will produce approximately 455,400 lbs/hr steam at 1,500 psig and 975 degrees F. Particulate matter, nitrogen oxides, and mercury emissions from each boiler are controlled by electrostatic precipitators, selective non-catalytic reduction, and carbon injection, respectively.

The initial emission compliance tests were conducted in May and June 1996. During these stack tests several SAM tests were conducted using the permitted EPA Method 8. The erratic results of these tests were determined to be invalid due to probable interferences from urea and chlorides and high moisture content in the flue gas. The testing contractor,

* → 0990332-004 AC

P.O. BOX 8 SOUTH BAY, FL 33493 561-993-1000 FAX 561-996-6596

Clean Air Engineering, had experienced this problem before and recommended using a Modified Method 8. Three runs of Modified Method 8 were conducted in an attempt to achieve valid results. These results along with the initial test results were reported to the Department. Since Modified Method 8 was not an approved alternate method the test results were not accepted.

Due to problems with Method 8 at the Okeelanta Cogeneration Plant there is concerns about compliance with our current permit conditions. During subsequent discussions on this issue with Mr. Michael Harley (FDEP BAR) it was determined that the requirement to test for SAM may be deleted through a minor permit amendment. EPA Method 8 was developed for sulfuric acid plants where the flue gas is dry and free of interference and therefore not appropriate for a biomass fired facility.

In summary, OkPLP is withdrawing our previous request for approval of Modified Method 8 as an alternative procedure and now requests that a minor permit amendment be made to PSD-FL-196. Specifically, we are requesting that Specific Condition #21 of our PSD permit be amended to delete SAM as an emission compliance test constituent and also remove the emission limit for SAM from Specific Condition #20. I have enclosed a check in the amount of $250.00 to cover the processing fee.

If you have any question or require additional information please contact me at (561) 993-1003.

Sincerely,

James M. Meriwether
Environmental Manager

cc: David Knowles - FDEP/Ft. Myers
Ajaya Satyal - PBCHD
Michael Harley - FDEP/TLH
D. Space - OkPLP
G. Cepero - OC
J. Ketterling - USOSC
D. Beckham - USGen
D. Dee - L&P
cc: W. Hanks, BAR