P.O. Box 078768, West Palm Beach, FL 33407-0768
5500 Village Blvd.

FPL

RECEIVED
APR 26 1991
DER - BAQM

April 22, 1991

Mr. Charles M. Collins
State of Florida Department of Environmental Regulation
Central Florida District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803

RE: **Orimulsion Test Burn**
Sanford Plant Unit No. 4
Continuous Emissions Monitor - Oxygen

Dear Mr. Collins:

As I discussed by telephone with Gary Kuberski of your staff on April 11, 1991, due to certain discrepancies observed during the stack emissions testing being conducted by Entropy Environmentalists, Inc., on April 10, 1991 FPL decided to replace the oxygen continuous emissions monitor (CEM). A new monitor was flown in by Spectrum Systems and installed on April 11th. On April 12th, after obtaining waiver from Mr. Kuberski from the five-day notification requirement, certification of the new CEM was started and will continue for 168 hours of operation. Upon completion, a new certification report will be prepared and submitted to you for your files.

Please note that the previously certified O_2 CEM has been left in operation, concurrently with the new one, until certification of said new CEM is completed. At that time, the old CEM will be removed.

Please call me at (407) 697-6926 if you have any questions.

Sincerely,

Elsa A. Bishop
Senior Environmental Coordinator
Florida Power & Light Company

EAB:jm

cc: Cindy Phillips - DER/Tall
Gary Kuberski - DER/Orlando

FPL

P.O. Box 078768, West Palm Beach, FL 33407-0768
5500 Village Blvd.

April 22, 1991

Mr. A. Alexander, Deputy Assistant Secretary
State of Florida Department of Environmental Regulation
Central Florida District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803

RE: **Sanford Plant, Unit No. 4**
Orimulsion Test Burn
Fuel Analysis - As Received

Dear Mr. Alexander:

As required in specific condition No. 7e of the Department permit authorizing the Orimulsion Test Burn at FPL's Sanford Unit No. 4, enclosed please find a copy of the analysis of Orimulsion fuel received at the Jacksonville terminal on April 4, 1991.

Please call me at (407) 697-6926 if you have any questions.

Sincerely,

Elsa A. Bishop
Senior Environmental Coordinator
Florida Power & Light Company

EAB:jm

Enclosure

cc: Cindy Phillips - DER/Tall

RECEIVED

APR 15 1991

ENV. PERMITTING

POWER RESOURCES CENTRAL LABORATORY
FLORIDA POWER AND LIGHT COMPANY
STATE OF FLORIDA LABORATORY CERTIFICATION NUMBERS:
DRINKING WATER CERTIFICATION NUMBER: 56275
ENVIRONMENTAL CHEMISTRY CERTIFICATION NUMBER: E56078

AS-RECEIVED - PSN ORIMULSION

VESSEL: FRONT CONDOR (DELIVERY #6)

DATE COLL'D: 04-04-91 DATE REC'D: 04-08-91 DATE REPORTED: 04-08-91

	ANALYTICAL METHOD	RESULT
DENSITY @60F, g/cm3	(ASTM D-4052)	1.0105 *
DENSITY @60F, lbs/BBL		354.187 *
BTU/LB	(ASTM D-240)	12956 *
MBTU/BBL		4589 *
MBTU/TON		25912 *
% SULFUR	(ASTM D-1552)	2.8 *
VISCOSITY @ 30.6C, mPAS SHEAR RATE = 139.1	(ASTM D-4684)	559 *
% WATER	(ASTM D-95)	28 *
% SEDIMENT	(ASTM D-473)	0.22
% ASH	(ASTM D-482)	0.22
% ASPHALTENES	(IP-143)	8.5
VANADIUM (MG/KG)		253
SODIUM (MG/KG)		59
IRON (MG/KG)		7
NICKEL (MG/KG)		66
MAGNESIUM (MG/KG)		281
POUR POINT, F		36
SO2 (LBS/MILLION BTU)		4.3 *
% CARBON, (BY WEIGHT)		60.87
% HYDROGEN, (BY WEIGHT)		7.74
% NITROGEN, (BY WEIGHT)		0.59 **
% OXYGEN, (BY DIFFERENCE)		<0.01

COMMENTS: * WITNESSED BY THOMAS HAWES FOR CALEB BRETT.
** ANALYSIS PERFORMED BY SCHWARZKOPF LABORATORY

COPIES TO:

- J. ALCANTARA, PSN/PLT
- R. ALLEN, JEN/NP
- E. BISHOP, JEN/NP
- E. CALLANDER, FR/GO
- D. CHRISTIAN, JPE/EDO
- M. HALPIN, PSN/PLT
- D. KNUTSON, PRS/EDO
- R. LIPPMAN, FR/GO
- M. MILLARES, JPE/EDO
- J. NORMAN, PRS/EDO
- K. OLEN, JRD/NP
- J. POCE, FR/GO
- R. RUHLMAN, PSN/PLT
- B. STUART, PSN/PLT
- G. TABOR, FR/GO
- R. YOUNG, PSN/PLT

ANALYZED BY: Harrison / J. Urice

CERTIFIED BY: K McConnell DATE: 4/11/91

P.O. Box 078768, West Palm Beach, FL 33407-0768
5500 Village Blvd.

FPL

FEDERAL EXPRESS

April 17, 1991

Ms. Cindy Phillips
State of Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32301

RE: **Sanford Plant, Unit No. 4**
Orimulsion Test Burn
Weekly Compliance Reports - April 8-14, 1991

Dear Ms. Phillips:

As required by the specific conditions of the Department's permit and Order authorizing the Orimulsion Test Burn, enclosed please find the compliance reports for the week of April 8-14, 1991 as follows:

Required in Specific Condition No.	Report Title
8h & 8i (Order Condition No. 15)	Burn Schedule/Fuel Usage/Full Power Burn Days
8j (Order Condition No. 15)	Daily Opacity Logs
8j (Order Condition No. 15)	Summary - Opacity CEM 6-min. Averages
(Order Condition No. 18)	Opacity Research Status Report

For your convenience, we have compiled all the above reports into one booklet. This format will be repeated for each reporting cycle throughout the Orimulsion Test Burn.

If you have any questions, please call me at (407) 697-6926.

Sincerely,

Elsa A. Bishop
Senior Environmental Coordinator
Florida Power & Light Company

EAB:jm

Enclosure

cc: Mr. A. Alexander - DER/Orlando (w/o encl.)

P.O. Box 078768, West Palm Beach, FL 33407-0768
5500 Village Blvd.

FPL

FEDERAL EXPRESS

April 17, 1991

Mr. A. Alexander, Deputy Assistant Secretary
State of Florida Department of Environmental Regulation
Central Florida District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32802

RE: **Sanford Plant, Unit No. 4**
Orimulsion Test Burn
Weekly Compliance Reports - April 8-14, 1991

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Senior Environmental Coordinator
Florida Power & Light Company

EAB:jm

Enclosure

cc: Cindy Phillips - DER/Tall (w/o encl.)

FPL SANFORD PLANT
WEEKLY ORIMULSION SUMMARY

WEEK ENDING **04/14/91**

ORIMULSION HEAT VALUE 4.572

#6 OIL HEAT VALUE 6.322

DAY	DATE	ORIMULSION BBLS BURNED	FULL POWER BURN DAYS	#6 OIL BBLS BURNED
MONDAY	04/08/91	16825	0.8	0
TUESDAY	04/09/91	15062	0.7	0
WEDNESDAY	04/10/91	16268	0.8	0
THURSDAY	04/11/91	16385	0.8	0
FRIDAY	04/12/91	14767	0.7	0
SATURDAY	04/13/91	0	0.0	4050
SUNDAY	04/14/91	0	0.0	66
TOTALS	⇨	79307	3.7	4116

Unit operated on 100% oil to accomodate system electrical demand requirements

Temporary 80% thru 5/31/91

Sanford PLANT

DAILY OPACITY EMISSIONS REPORT

Form 4954 (Non-Stocked) Rev. 2/84

UNIT NO. MON 4 (80% Orimulsion) DATE: APR 8 1991

SIX MINUTE INTERVALS											Six Minute Intervals > 80%		
Time	1	2	3	4	5	6	7	8	9	10		This Hour	Last 24 Hours
12MN	81 C2	91 C2	94 C2	91 C2	82 C2		85 C2	87 C2		83 C2	12MN	8	8
1AM									85 C2	85 C2	1AM	2	10
2	83 C2	82 C2	81 C2	81 C2							2	4	14
3											3		
4											4		
5							82 C2	80 C2	86 C2	81 C2	5	4	18
6			81 C2	80 C2	82 C2	83 C2	84 C2				6	5	23
7	82 C2										7	1	24
8											8		
9											9		
10											10		
11											11		
12N											12N		
1P											1P		
2								93 C2	88 C2		2	2	26
3											3		
4											4		
5											5		
6											6		
7						C4 95	C4 100*	C4 89	C4 95	C488	7	5	31
8	C481		C497		C485	C4 90	C488	C484			8	6	37
9									C485	C493	9	2	39
10	C483	C488	C485					C490	C484	C486	10	6	45
11	C484							C290	C290	C287	11	4	49

A MALFUNCTION

MALFUNCTION

* 1 Monitor Out of Service
* 2 Burner Problem
* 3 Control Problem
* 4 Other

Document chart lab will provide reason codes

B START-UP/SHUT-DOWN

1 Start-Up
2 Shut-Down

C LOAD CHANGE/SOOT-BLOWING

*1 Rapid Load Change
2 Soot-blowing
3 Liming Boiler
4 Cleaning Air Pre-heater

A rapid load change is defined as a change that occurs at the rate of 0.5% per minute or more and exceeds 10% of the units rated capacity and occurs when the unit is operating at greater than 10% of rated capacity, excluding startup and shutdown.

INSTRUCTIONS

Fill in the opacity and reason code or codes in the appropriate box whenever the opacity exceeds 20% for any 6 minute period on the recorder. Example: 50A3 indicates an opacity reading of 50% attributed to control problems.

Use the comment column where additional explanation is appropriate.

Tempor[illegible] 80% thru 5/31/91

Sanford PLANT

DAILY OPACITY EMISSIONS REPORT

Form 4954 (Non-Stocked) Rev. 2/84

UNIT NO. TUE APR DATE 9 1991

4 (80% Orimulsion)

SIX MINUTE INTERVALS

Time	1	2	3	4	5	6	7	8	9	10
12MN	c295									
1AM	c2(81)	c284	c286	-			c289	c293	c286	c299
2	c286	c292	c282	c298	c297	c287	c296	c293		c298
3	c286	c284	c292		c287	c287	c284		c281	
4	c283		c281		c292	c288	c290	c284	c295	c288
5	c280	c286								
6										
7			c287	c282	80 c2	80 c2				
8		81 c2								
9										
10										
11						85 c2	85 c2	82 c2	84 c2	86 c2
12N	96 c2	96 c2	94 c2					83 c2		
1P										
2				80 A3						
3										
4			86 A2							
5										
6										
7										
8										
9										
10										
11										

Six Minute Intervals > 80%

	This Hour	Last 24 Hours
12MN	1	1
1AM	7	8
2	9	17
3	7	24
4	8	32
5	2	34
6		
7	4	38
8	1	39
9		
10		
11	5	44
12N	4	48
1P		
2	1	49
3		
4	1	50
5		
6		
7		
8		
9		
10		
11		

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Temporary 80% thru 5/31/91

WED APR 10 1991

Sanford PLANT

DAILY OPACITY EMISSIONS REPORT

Form 4954 (Non-Stocked) Rev. 2/84

UNIT NO.	DATE
4 (80% Orimulsion)	

SIX MINUTE INTERVALS											Six Minute Intervals > 80%		
Time	1	2	3	4	5	6	7	8	9	10		This Hour	Last 24 Hours
12MN			97 C2	83 C2		91 C2	90 C2	97 C2	98 C2	100 C2	12MN	7	7
1AM	100 C2						82 C2				1AM	2	9
2		84 C2	92 C2	100 C2	86			90 C2		85 C2	2	6	15
3	80 C2		82 C2	84 C2	96 C2	99 C2	90 C2	87 C2	86 C2	90 C2	3	9	24
4	85 C2	81 C2	83 C2								4	3	27
5			81 C2								5	1	28
6	84 C2		80 C2	82 C2	83 C2	81 C2		80 C2	91 C2	89 C2	6	8	36
7											7		
8											8		
9											9		
10											10		
11											11		
12N											12N		
1P											1P		
2											2		
3											3		
4									C2 85		4	1	37
5		C2 84		C2 81	C2 91		C2 87				5	4	41
6											6		
7											7		
8											8		
9											9		
10											10		
11			C2 C4 86	C2 C4 90	C2 C4 98	C2 C4 100	C2 C4 100	C2 C4 96	C2 C4 90	C2 C4 96	11	8	49

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Temporary 80% thru 5/31/91

Sanford PLANT

DAILY OPACITY EMISSIONS REPORT

Form 4954 (Non-Stocked) Rev. 2/84

UNIT NO. 4 (80% Orimulsion) | DATE THU APR 1 1991

SIX MINUTE INTERVALS											Six Minute Intervals > 80%		
Time	1	2	3	4	5	6	7	8	9	10		This Hour	Last 24 Hours
12MN	C-2 C-4 100	C-2 C-4 100	C-2 C-4 98	-	C-2 C-4 99	C-2 C-4 91				C-2 C-4 90	12MN	6	6
1AM	C-2 C-4 94	C-2 C-4 91	C-2 C-4 84			C-2 C-4 83	C-2 C-4 80		C-2 C-4 92		1AM	6	12
2	C-2 C-4 86	C-2 C-4 95	C-2 C-4 91	C-2 C-4 91	C-2 C-4 91	C-2 C-4 86	C-2 C-4 97	C-2 C-4 84	C-2 C-4 93	C-2 C-4 96	2	10	22
3	C-2 C-4 97	C-2 C-4 94	C-2 C-4 99	C-2 C-4 88							3	4	26
4											4		
5											5		
6				C-2 89	C-2 89						6	2	28
7			C-2 83	C-2 83	82 C-2	-				-	7	3	31
8											8		
9		98 C-2		83 C-2	-						9	2	33
10											10		
11	86 C-2	80 C-2			88 C-2	80 C-2					11	4	37
12N											12N		
1P											1P		
2						83 C-2			83 C-2		2	2	39
3			-					95 C-2			3	1	40
4	83 C-2	89 C-2	91 C-2								4	3	43
5		85 C-2									5	1	44
6								81 C-2			6	1	45
7											7		
8											8		
9											9		
10											10		
11											11		

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Temporary 80% thru 5/31/91

Sanford PLANT

DAILY OPACITY EMISSIONS REPORT

Form 4954 (Non-Stocked) Rev. 2/84

FR APR 12 1991

UNIT NO.	DATE
4 (80% Orimulsion)	

SIX MINUTE INTERVALS											Six Minute Intervals > 80%		
Time	1	2	3	4	5	6	7	8	9	10		This Hour	Last 24 Hours
12MN		100 C2	92 C2	91 C2	98 C2	92 C2	86 C2	80 C2		85 C2	12MN	8	8
1AM	C2 100	94 C2	95 C2								1AM	3	11
2				84 C2	95 C2	95 C2	86 C2	97 C2	85 C2	94 C2	2	7	18
3	98 C2	96 C2	84 C2	94 C2	87 C2	88 C2	93 C2	91 C2	82 C2	89 C2	3	10	28
4	C2 82						82 C2				4	2	30
5											5		
6									84 C2	86 C2	6	2	32
7	84										7		
8											8		
9											9		
10											10		
11											11		
12N									C1 81		12N	1	33
1P	C2 82	81 C2							C2 83		1P	3	36
2			C2 82							C2 82	2	2	38
3	82 C2										3	1	39
4			91 C2		97 C2				86 C2		4	3	42
5	98 C2										5	1	43
6	87 C2										6	1	44
7											7		
8											8		
9											9		
10											10		
11											11		

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Use the comment column where additional explanation is appropriate.

Document chart lab will provide reason codes

CONTINUOUS EMISSIONS MONITORING REPORT
FLORIDA POWER AND LIGHT
SANFORD PLANT
UNIT FOUR
OPACITY MONITOR
ORIMULSION TEST BURN PROJECT
APRIL 8-12, 1991

DATA COMPILED BY
SPECTRUM SYSTEMS INC.
PENSACOLA, FL

SECTION 1
SIX MINUTE OPACITY AVERAGES

The following data was compiled from a copy of the original strip chart recordings provided to Spectrum Systems Inc. by Florida Power and Light for unit four at the Sanford Plant. Hourly averages were obtained by taking the sum of the valid six minute averages and dividing by the number of valid averages. This gives a real average based on known good minutes. The squares on the data table that are blacked in are the six minute averages that were deemed invalid due to calibrations happening, or any reason causing the integrated output from the opacity monitor to go to zero while the unit is on-line.

Opacity Monitors Six Minute Averages, April 08, 1991.

SIX MINUTE PERIOD	:00-:06	:06-:12	:12-18	:18-:24	:24-:30	:30-:36	:36-:42	:42-:48	:48-:54	:54-:60	
HOUR OF DAY											HOUR AVERAGE
12: A.M.	81	91	94	91	82	76	85	87	78.5	82.5	84.80
1: A.M.	75	77	72.5	78	73	74.5	75	79.8	85	85	77.48
2: A.M.	82.5	82	81	81	74	66	68	68	71	75	74.85
3: A.M.	78	73	74.5	71	71	68	72	68	69	74.5	71.90
4: A.M.	78.5	77	75		71	75.5	75	74	76.5	76	75.39
5: A.M.	77.5	79	77.5	78.5	76.8	77	82	80	76	80.5	78.48
6: A.M.	78	78	81	80	82	83.5	84	79	77	78	80.05
7: A.M.	82	79.8	76	79.8	78	72	71	69	68.5	68.5	74.46
8: A.M.	68	68	67.5	67	67	66.5	66.5	66.5	66	66.5	66.95
9: A.M.	65.5	65.5	65.5	66	66	66	66	65.8	65.6	65.5	65.74
10: A.M.	65.3	65	65	65	65	64.5	74	73	72	74	68.28
11: A.M.	77	70	71	78	71	66	66	65.8	65.7	65.5	69.60
12: NOON	65	65	65	65	64.5	65	65	64.5		65	64.89
1: P.M.	65	65	65	65	65	64.5	64.5	64.5	64.5	64.5	64.75
2: P.M.	64.5	64.5	65	70.2	66	70.5	76	96	88.5	70	73.12
3: P.M.	64	63	64	70	73	66	64	63.5	63.5	63.5	65.45
4: P.M.	63	65	63	62.5	62.2	62	62	62	62	62	62.57
5: P.M.	62	61.8	61.5	61.2	61	61	61	61	61	61	61.25
6: P.M.	61	60.8	60.5	60.5	60.5	60	62	64.5	65	66	62.08
7: P.M.	66	66	66	74.5	78	95	100	89	95	87.5	81.70
8: P.M.	81	72	97.5		85	89.5	88	84	73.5	68	82.06
9: P.M.	64	66	71	71	67	67	70.5	71.5	85	93	72.60
10: P.M.	83	88	85	76	71	73	74	80	84	86	80.00
11: P.M.	84	76	70	70	70	70	70	90.5	90	87	77.75

Blackened squares indicate invalid or no data obtained for that time period.

Opacity Monitors Six Minute Averages, April 9, 1991.

SIX MINUTE PERIOD	:00–:06	:06–:12	:12–18	:18–:24	:24–:30	:30–:36	:36–:42	:42–:48	:48–:54	:54–:60	
HOUR OF DAY											HOUR AVERAGE
12: A.M.	95		71	71	72	72	71.5	71.5	71.5	73	74.28
1: A.M.	80.5	84	85.5	79.8	76.8	77	89	93	86	99	85.06
2: A.M.	84	92	81.5	98	97	87	96	93	77	98	90.35
3: A.M.	86	84	92		87	87	84	78	81	79	84.22
4: A.M.	83	77	80.2		92	88	90	84	95	88	86.36
5: A.M.	80	86.5	77.5	74	74	74	74	74	75	75	76.40
6: A.M.	75	75	75	75	76	76	76	75.5	75	74	75.25
7: A.M.	76	79	87	82	80	80	71	71	71	71	76.80
8: A.M.	71	81	74	71	70	71	71	74	71	69	72.30
9: A.M.	69	72	70	69	68.5	68.5	68.5	72	71	70	69.85
10: A.M.	69	70	70	71	70.5	69	68	70	70	68	69.55
11: A.M.	68	68	68.5	72	75	85	85	82	84	87	77.45
12: NOON	96	95.5	94		74	75	78	83	74	75	82.72
1: P.M.	75	70	70	70	70.5	70	70	70	70	70	70.55
2: P.M.	70.5	73	70	80	69.5	71	69	68	70.5	68.5	71.00
3: P.M.	68	68	68.5	68.5	69	69	69	69	70	70	68.90
4: P.M.	69	69	86	69	66.5	67	67	67	67	67	69.45
5: P.M.	67	67	66.5	66.5	67	67	67	69	67	67	67.10
6: P.M.	67	67	67	67	67	67	67	67	66.5	66.5	66.90
7: P.M.	68	68	68	68	68	68	68	68	66.5	66.5	67.70
8: P.M.	68	68	72		62	63	64	64	65	67	65.89
9: P.M.	65	65.5	64	61	60.5	62	63	62.5	63	64	63.05
10: P.M.	64	63	63	62	63	64	64	65	65	65	63.80
11: P.M.	65	65	65.5	65.5	65.5	66	66	66	66	66	65.65

Blackened squares indicate invalid or no data obtained for that time period.

Opacity Monitors Six Minute Averages, April 10, 1991.

SIX MINUTE PERIOD	:00-:06	:06-:12	:12-18	:18-:24	:24-:30	:30-:36	:36-:42	:42-:48	:48-:54	:54-:60	
HOUR OF DAY											HOUR AVERAGE
12: A.M.	72	76	96.5	82.5	79	91	89.5	97	98	100	88.15
1: A.M.	100	79	70	67.5	71	71	82.5	74	72	70	75.70
2: A.M.	74.5	84.5	92	100	85	66	78	90		85.5	83.94
3: A.M.	80	78	82.5	84	96	99	92	87	86	90	87.45
4: A.M.	85	81	83		68	69	68	70	69	74	74.11
5: A.M.	63	67	81	68	68.5	68.5	68.5	69	69.5	68.5	69.15
6: A.M.	84	78	80	82	83	81	76	80	91	89	82.40
7: A.M.	74.5	70	71	71.5	74.5	71	67	64	76	71	71.05
8: A.M.	69	73	61	60	72	73	64	66	62	62	66.20
9: A.M.	62	61.5	61	61	60.5	60.5	60.4	60	60	61.5	60.84
10: A.M.	61.5	61.5	61.5	61.5	61.5	61.5	61	66	66	62	62.40
11: A.M.	67	72	74	70	70	72.5	72.5	65	62	62	68.70
12: NOON	60.5	60.3	60		60	60	60	60	61	60	60.20
1: P.M.	60	60.5	60.5	60.5	60.5	60.5	76	73.5	66	62	64.00
2: P.M.	69	68	67	75	63	59	59	59	59	60	63.80
3: P.M.	60	59.5	59.5	60	60	59	59	59	59	59.5	59.50
4: P.M.	61	68	65	66.2	72	76.2	76	71	85	78	71.84
5: P.M.	78	83	77	80.5	81	74.5	86	73	65	65	76.30
6: P.M.	65	67	68.5	72	69.5	70	70	67	68	70	68.70
7: P.M.	66	67	70	69	68.5	69	65	67	68	68	67.75
8: P.M.	68	70	68		66	67	67	66.5	68.5	64.5	67.28
9: P.M.	65	67.5	68	68	69	64	62	62	62	63	65.05
10: P.M.	65	65	65.5	65	65	65.5	66	66	67	67	65.70
11: P.M.	67	67.5	86.5	89.5	97	100	100	96	90	96	88.95

Blackened squares indicate invalid or no data obtained for that time period.

Opacity Monitors Six Minute Averages, April 11, 1991.

SIX MINUTE PERIOD	:00-:06	:06-:12	:12-18	:18-:24	:24-:30	:30-:36	:36-:42	:42-:48	:48-:54	:54-:60	
HOUR OF DAY											HOUR AVERAGE
12: A.M.	100	100	98		100	91	79		74	90	91.50
1: A.M.	94	91	84	75	72	83	80	78	92	76.5	82.55
2: A.M.	86	95	90	91	91	86	97	84	93.5	96	90.95
3: A.M.	97	94	99	88	78	77	76	74	74	74	83.10
4: A.M.	74	74	74		74.5	74.5	75	75	74.5	74.5	74.44
5: A.M.	74.5	74.5	74.5	74.5	74.5	74.5	74.5	74.5	74.5	74.5	74.50
6: A.M.	75	78	78	89	89	78	72	69.5	72	77	77.75
7: A.M.	79.8	78	83	83.5	82	73	72	72	71	71	76.53
8: A.M.	71	71	71	70.5	70.5	70.5	70	70	70	70	70.45
9: A.M.	72	98.5	77	81	78	79	71	70	70	70	76.65
10: A.M.	70	70	70	70	70	69.5	69.5	69	69	72	69.90
11: A.M.	86	80	77	76.5	88	80	73.5	69	68.5	68.5	76.70
12: NOON	68.5	68.5	68		68	68	68	68	68	68	68.11
1: P.M.	74	70	71	74	71	73	72	69	65	70	70.90
2: P.M.	74	68.5	75	76	76	83	77	74	83	69	75.55
3: P.M.	77	69	66	66	66	72	66	96	75	77	73.00
4: P.M.	83	89.5	91	71	71	68	73	69	63	62	74.05
5: P.M.	62	85	72.5	74	71	77	75	64	61	67	70.85
6: P.M.	63	67	70	70	73	71	68	80.5	64.5	62	68.90
7: P.M.	61.5	61	61	61	61	61	61	61	68	74	63.05
8: P.M.	61	65	73		61	60.5	60.4	60.2	61.2	61	62.59
9: P.M.	61	59	61	60	61	62	62	63	63	62.5	61.45
10: P.M.	63	63.2	63.6	64	64	64	64	64.5	64.5	65	63.98
11: P.M.	65	66	65	66	66	67	67	68	67	70	66.70

Blackened squares indicate invalid or no data obtained for that time period.

Opacity Monitors Six Minute Averages, April 12, 1991.

SIX MINUTE PERIOD	:00-:06	:06-:12	:12-18	:18-:24	:24-:30	:30-:36	:36-:42	:42-:48	:48-:54	:54-:60	
HOUR OF DAY											HOUR AVERAGE
12: A.M.	68	100	92	91	97.5	92	85.5	80	76	89	87.10
1: A.M.	100	99	95	72.5	74	72	73	71	74	72	80.25
2: A.M.	78	72	76	83.5	95.5	95	86	97	85	99	86.70
3: A.M.	98	96	84	94	87	87	93	91	82.5	89	90.15
4: A.M.	82				50	82	78	71	71	71	72.14
5: A.M.	71	71	72	72	72	72	71	71	71	71.5	71.45
6: A.M.	71.5	71.5	71.5	74	74	76	76	77	84	86	76.15
7: A.M.	84	73	77	76	74	67	66	66	66	66	71.50
8: A.M.	65	65	65	64.5	64	64	64	63	63.5	63.5	64.15
9: A.M.	65	65	65	65	64.5	64.2	64	64	64	64	64.47
10: A.M.	64	64	64	64	64	64	64	64	64	64	64.00
11: A.M.	63	63	63	63	63	63	62.5	62	62	62	62.65
12: NOON	62	62		39	67.5	76	77	78.5	80.5	71	68.17
1: P.M.	82	80	77	78	71	78	72.5	71	83	75	76.75
2: P.M.	70	82.5	67	66	66	67	68	69	92	82	72.95
3: P.M.	69.5	69.5	71	67	66	67	65	71	68	66	68.00
4: P.M.	67	68	91	66	97	75	74.5	63	88	71	76.05
5: P.M.	98	75	82	86	86	62	60	73	70	60	75.20
6: P.M.	87	74	61	57	57	56	56	56	55	55	61.40
7: P.M.	55	55	55	57	59	60.5	60	60	61	62	58.45
8: P.M.	63	63	64		41	65	65	65	66	66	62.00
9: P.M.	66	65	65	64	62	59.5	56	54	49	41	58.15
10: P.M.	39	52	62	2	1						31.20
11: P.M.			2								2.00

Blackened squares indicate invalid or no data obtained for that time period.

FPL

Inter-Office Correspondence

To: M.A. SMITH JEN/EDO

Date: April 17, 1991

From: M.P. HALPIN

Department: PSN/PLT

Subject: **ORIMULSION WEEKLY REPORT**

This is the seventh of a series of weekly reports detailing our efforts to reduce opacity while combusting orimulsion on Sanford Plant's Unit No. 4.

As previously reported, our findings on the magnesium to vanadium ratio and its correlation with opacity have been discussed with the fuel supplier, and a range of 1.20± .05 has been specified. We expect to receive this on our next shipment.

The only other area that appears to statistically affect opacity is excess air (air to fuel ratio) in the combustion process. Generally speaking, it appears that at low unit loads (50-60% and less) higher excess air than expected (based on our experience with oil and gas) is required to minimize opacity, whereas at high unit loads, lower excess air than expected is required to minimize opacity.

We are currently reviewing data to determine an "optimum" excess air vs. load curve with the desired outcome of minimizing opacity. it is anticipated that this curve should be developed within the next week.

Richard Shues for MPH

M.P. Halpin
Ops. Supt.

MPH/t

cc: PSN C-29

P.O. Box 078768, West Palm Beach, FL 33407-0768
5500 Village Blvd.

FPL

April 17, 1991

Mr. John Gray
C/O Pinnacle Company
5445-6 Delaney Avenue
Orlando, Florida 32801

RE: **Sanford Plant, Unit No. 4**
Orimulsion Test Burn
Weekly Opacity Reports - April 8-14, 1991

Dear Mr. Gray:

As was agreed during the meeting held on March 5, 1991 between representatives of the Gray family and of FPL, attached please find a copy of the Weekly Opacity Research Status Report relevant to the Orimulsion Test Burn at our Sanford Plant, Unit No. 4 for the week of April 8-14 , 1991. This is one of several reports submitted to the Florida DER on a weekly basis, as required by the Department's permit authorizing the Test Burn.

Sincerely,

Elsa A. Bishop
Senior Environmental Coordinator
Florida Power & Light Company

EAB:jm

Enclosure

cc: Cindy Phillips - DER/Tall (w/o encl.)
Charles M. Collins - DER/Orlando (w/o encl.)
Sondra Gray - DeBary/Fla. (w/o encl.)

FPL

P.O. Box 078768, West Palm Beach, FL 33407-0768
5500 Village Blvd.

April 11, 1991

Mrs. Sondra Gray
37 Dirksen Drive
DeBary, Florida 32713

RE: **Sanford Plant, Unit No. 4**
Orimulsion Test Burn
Weekly Opacity Reports - April 1-7, 1991

Dear Mrs. Gray:

As was agreed during the meeting held on March 5, 1991 between representatives of the Gray family and of FPL, attached please find a copy of the Weekly Opacity Research Status Report relevant to the Orimulsion Test Burn at our Sanford Plant, Unit No. 4 for the week of April 1-7, 1991. This is one of several reports submitted to the Florida DER on a weekly basis, as required by the Department's permit authorizing the Test Burn.

Sincerely,

Elsa A. Bishop
Senior Environmental Coordinator
Florida Power & Light Company

EAB:jm

Enclosure

cc: Cindy Phillips - DER/Tall (w/o encl.)
Charles M. Collins - DER/Orlando (w/o encl.)
John Gray - Orlando/Fla. (w/o encl.)

FPL

Inter-Office Correspondence

To:	M.A. Smith JEN EDO	**Date:**	April 10, 1991
From:	M.P. Halpin	**Department:**	Sanford Plant
Subject:	**ORIMULSION WEEKLY REPORT**		

This is the sixth of a series of weekly reports detailing our efforts to reduce opacity while combusting Orimulsion on Sanford Plant's Unit No. 4.

The findings which were previously reported regarding the correlation between opacity and magnesium have been further investigated with our fuel supplier. According to the supplier, the magnesium is indeed a controllable parameter (with some limitations). In order to achieve a stable emulsification of the fuel, the manufacturer reports that magnesium must be added in at least a 1.1 to 1 ratio of magnesium to vanadium (respectively). They additionally report that occasional stability problems will develop with a 1.15 to 1 magnesium to vanadium ratio, and that generally speaking, the more magnesium added, the more stable the fuel and the less viscous.

Since Sanford Plant's combustion data represents a range of magnesium to vanadium ratios from 1.2 to 1 to 1.6 to 1, and since the opacity tends to increase with the higher magnesium, we currently plan to specify the next shipment to be 1.20 $\pm$ .05 magnesium to vanadium ratio.

This should confirm our analysis, however, the next shipment will not be available until approximately the fourth week in April (2-3 more weeks). The most recent shipment (received last week) was one of the higher magnesium contents we have received, and data will continue to be collected to validate our findings.

R. J. R... for M. Halpin

Mike Halpin
Operations Superintendent
Sanford Plant

dd

cc: PSN File C-29

P.O. Box 078768, West Palm Beach, FL 33407-0768
5500 Village Blvd.

FPL

RECEIVED
APR 12 1991
DER - BAQM

April 9, 1991

Mr. A. Alexander, Deputy Assistant Secretary
State of Florida
Department of Environmental Regulation
Central Florida District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803

RE: SO_2 Emissions
Analyses of Fuel Oil Fired
March, 1991 - Sanford Power Plant

Dear Mr. Alexander:

As required by the DER Air Operating Permits for the units at the above facilities, enclosed are the analyses of Fuel Oil Fired at Sanford Units 3 and 5 for the March, 1991 sampling period.

Due to the current Orimulsion Test Burn on Sanford Unit No. 4, no oil was fired in that unit during the March, 1991 sampling period. Please note that, as agreed to by FPL and as reflected in the Modified Order dated February 28, 1991 authorizing the Test Burn in Unit No. 4, Sanford Unit No. 5 was not operated at all during the March, 1991 sampling period whenever Orimulsion was being burned in Sanford Unit No. 4.

If you have any questions, please call me at (407) 697-6926.

Sincerely,

Elsa A. Bishop
Senior Environmental Coordinator
Florida Power & Light Company

EAB:jm

Enclosure

cc: Cindy Phillips - DER/Tall

FLORIDA POWER & LIGHT COMPANY
POWER RESOURCES CENTRAL LABORATORY

STATE OF FLORIDA LABORATORY CERTIFICATION NUMBERS
DRINKING WATER CERTIFICATION NUMBER: 56275
ENVIRONMENTAL CHEMISTRY CERTIFICATION NUMBER: E56078

SANFORD #3 PLANT
ANALYSES OF FUEL OIL FIRED
MARCH 1991

DATE SAMPLE RECEIVED AT LABORATORY	03-19-91
API GRAVITY	10.8
DENSITY, LB/GAL	8.281
DENSITY, LB/BBL	347.802
HEAT OF COMBUSTION, BTU/LB	18321
HEAT OF COMBUSTION, BTU/GAL	151715
HEAT OF COMBUSTION, MBTU/BBL	6372
WATER, % BY VOLUME	0.20
SEDIMENT, % BY WEIGHT	0.04
SULFUR, % BY WEIGHT	1.0
SULFUR DIOXIDE EQUIVALENT, LB/MBTU	1.09
ASH, % BY WEIGHT	0.04
PARTICULATE EQUIVALENT, LB/MBTU	0.02
VANADIUM IN ASH AS V2O5, % BY WEIGHT	10
VANADIUM IN OIL AS V2O5, PPM	36
VANADIUM IN OIL AS V, PPM	20
VISCOSITY, SSF @ 122F.	92
ASPHALTENES, % BY WEIGHT	2.9

COPIES TO: PSN PLANT MGR.
R N ALLEN - JEN/EDO
PLANT RESULTS DEPT
K WASHINGTON - PRS/EDO

ANALYZED BY: L. Harrison / J. Uzica

CERTIFIED BY: K. McDonnell

FLORIDA POWER & LIGHT COMPANY

POWER RESOURCES CENTRAL LABORATORY

MIAMI, FLORIDA

SANFORD #5 PLANT
ANALYSES OF FUEL OIL FIRED
MARCH 1991

DATE SAMPLE RECEIVED AT LABORATORY	03-20-91
API GRAVITY	10.8
DENSITY, LB/GAL	8.281
DENSITY, LB/BBL	347.802
HEAT OF COMBUSTION, BTU/LB	18187
HEAT OF COMBUSTION, BTU/GAL	150607
HEAT OF COMBUSTION, MBTU/BBL	6325
WATER, % BY VOLUME	1.0
SEDIMENT, % BY WEIGHT	0.07
SULFUR, % BY WEIGHT	0.97
SULFUR DIOXIDE EQUIVALENT, LB/MBTU	1.07
ASH, % BY WEIGHT	0.05
PARTICULATE EQUIVALENT, LB/MBTU	0.03
VANADIUM IN ASH AS V2O5, % BY WEIGHT	5
VANADIUM IN OIL AS V2O5, PPM	27
VANADIUM IN OIL AS V, PPM	15
VISCOSITY, SSF @ 122F	67
ASPHALTENES, % BY WEIGHT	2.4

COPIES TO: PSN PLANT MGR.
R N ALLEN - JEN/EDO
PLANT RESULTS DEPT
K WASHINGTON - PRS/EDO

ANALYZED BY: T. Hanson / J. Uzica

CERTIFIED BY: K. M. O'Donnell

FPL

P.O. Box 078768, West Palm Beach, FL 33407-0768
5500 Village Blvd.

April 8, 1991

Mr. A. Alexander, Deputy Assistant Secretary
State of Florida Department of Environmental Regulation
Central Florida District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803

RE: **Sanford Plant, Unit No. 4**
Orimulsion Test Burn
Fuel Analysis - As Received

Dear Mr. Alexander:

As required in specific condition No. 7e of the Department permit authorizing the Orimulsion Test Burn at FPL's Sanford Unit No. 4, enclosed please find a copy of the analysis of Orimulsion fuel received at the Jacksonville terminal on March 21, 1991.

Please call me at (407) 697-6926 if you have any questions.

Sincerely,

Elsa A. Bishop

Elsa A. Bishop
Senior Environmental Coordinator
Florida Power & Light Company

EAB:jm

Enclosure

cc: Cindy Phillips - DER/Tall

POWER RESOURCES CENTRAL LABORATORY
FLORIDA POWER AND LIGHT COMPANY
STATE OF FLORIDA LABORATORY CERTIFICATION NUMBERS:
DRINKING WATER CERTIFICATION NUMBER: 56275
ENVIRONMENTAL CHEMISTRY CERTIFICATION NUMBER: E56078

AS-RECEIVED - PSN ORIMULSION

VESSEL: FRONT CONDOR (DELIVERY #5)

DATE COLL'D: 03-21-91 DATE REC'D: 03-22-91 DATE REPORTED: 03-28-91

	ANALYTICAL METHOD	RESULT	
DENSITY @60F, g/cm3	(ASTM D-4052)	1.0103	*
DENSITY @60F, lbs/BBL		354.107	*
BTU/LB	(ASTM D-240)	12608	*
MBTU/BBL		4465	*
MBTU/TON		25216	*
% SULFUR	(ASTM D-1552)	2.8	*
VISCOSITY @ 30.4C, mPAS SHEAR RATE = 139.1	(ASTM D-4684)	437	*
% WATER	(ASTM D-95)	30	*
% SEDIMENT	(ASTM D-473)	0.37	
% ASH	(ASTM D-482)	0.16	
% ASPHALTENES	(IP-143)	8.1	
VANADIUM (MG/KG)		244	
SODIUM (MG/KG)		73	
IRON (MG/KG)		8	
NICKEL (MG/KG)		57	
MAGNESIUM (MG/KG)		279	
POUR POINT, F		33	
SO2 (LBS/MILLION BTU)		4.4	
% CARBON, (BY WEIGHT)		59.19	
% HYDROGEN, (BY WEIGHT)		7.44	
% NITROGEN, (BY WEIGHT)		0.59	**
% OXYGEN, (BY DIFFERENCE)		<0.01	

COMMENTS: * WITNESSED BY THOMAS HAWES FOR CALEB BRETT.
** ANALYZED BY SCHWARZKOPF LABORATORY.

COPIES TO:

J. ALCANTARA, PSN/PLT
R. ALLEN, JEN/NP
E. BISHOP, JEN/NP
E. CALLANDER, FR/GO
D. CHRISTIAN, JPE/EDO
M. HALPIN, PSN/PLT
D. KNUTSON, PRS/EDO
R. LIPPMAN, FR/GO
M. MILLARES, JPE/EDO
J. NORMAN, PRS/EDO
K. OLEN, JRD/NP
J. POCE, FR/GO
R. RUHLMAN, PSN/PLT
B. STUART, PSN/PLT
G. TABOR, FR/GO
R. YOUNG, PSN/PLT

ANALYZED BY: Y. Harrison / J. Price

CERTIFIED BY: K. M. O'Donnell DATE: 3/29/91

P.O. Box 078768, West Palm Beach, FL 33407-0768
5500 Village Blvd.

FPL

April 4, 1991

Mr. John Gray
C/O Pinnacle Company
5445-6 Delaney Avenue
Orlando, Florida 32801

RE: **Sanford Plant, Unit No. 4**
Orimulsion Test Burn
Weekly Opacity Reports - March 25-31, 1991

Dear Mr. Gray:

As was agreed during the meeting held on March 5, 1991 between representatives of the Gray family and of FPL, attached please find a copy of the Weekly Opacity Research Status Report relevant to the Orimulsion Test Burn at our Sanford Plant, Unit No. 4 for the week of March 25-31, 1991. This is one of several reports submitted to the Florida DER on a weekly basis, as required by the Department's permit authorizing the Test Burn.

Sincerely,

Elsa A. Bishop
Senior Environmental Coordinator
Florida Power & Light Company

EAB:jm

Enclosure

cc: Cindy Phillips - DER/Tall (w/o encl.)
Charles M. Collins - DER/Orlando (w/o encl.)
Sondra Gray - DeBary/Fla. (w/o encl.)

FPL

Inter-Office Correspondence

To: M.A. Smith

Date: April 4, 1991

From: M.P. Halpin

Department: Sanford Plant

Subject: ORIMULSION AIR
OPERATING PERMIT

This is the fifth of a series of weekly reports detailing our efforts to reduce opacity while combusting Orimulsion on Sanford Plant's Unit No. 4.

As reported previously, a statistical analysis of the relationship between opacity and key operating parameters indicates that the strongest correlation exists between opacity and fuel flow. Further analysis has now been done on one relationship between opacity and each of the fuel constituents.

This most recent analysis focused on the following fuel parameters: ash, water, sulfur, vanadium, magnesium, hydrogen and carbon. Through the use of multiple regression with each of the above variables treated as independent and opacity as the dependent variable, the magnesium constituent was the only parameter which exhibited a strong correlation to opacity.

We now plan to discuss our findings with the fuel supplier to determine how much control they have over the magnesium quantity and what opportunities might exist for adjusting it as an aid to opacity minimization.

Michael P. Halpin
Operations Superintendent
Sanford Plant

MPH/dd

cc: PSN File C-29

Form 1008 (Stocked) Rev. 6/88

P.O. Box 078768, West Palm Beach, FL 33407-0768
5500 Village Blvd.

FPL

March 26, 1991

Ms. Cindy Phillips
State of Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32301

RE: **Sanford Plant, Unit No. 4**
Orimulsion Test Burn
SO_2 Excess Emissions Reports

Dear Ms. Phillips:

As you requested, attached please find copies of memos signed by R. T. Ruhlman, Sanford Plant Manager, stating that there were no exceedences of the Orimulsion Test Burn SO_2 limit during January and February, 1991. This report will be included in all monthly report booklets in the future.

If you have any questions, please call me at (407) 697-6926.

Sincerely,

Elsa A. Bishop
Senior Environmental Coordinator
Florida Power & Light Company

EAB:jm

Enclosure

cc: A. Alexander - DER/Orlando
Charles Collins - DER/ Orlando
W. H. Green - HBG&S
A. R. Morrison - HBG&S

FPL

Inter-Office Correspondence

To: M.A. Smith,PhD-Mgr FPL Env. Affairs **Date:** 3/22/91

From: R.T. Ruhlman **Department:** PSN/PLT

Subject: **SANFORD UNIT 4 ORIMULSION PROJECT MONTHLY SULFUR DIOXIDE EXCESS EMISSION REPORT**

During the month of January, 1991 sulfur dioxide emission did not exceed the 4.3 pounds per million BTU input allowed based on the continuous emission monitors.

R.T. Ruhlman
Plant Manager
Sanford Plant

RTR/t
PSN C-29.1

FPL

Inter-Office Correspondence

To: M.A. Smith,PhD-Mgr FPL Env. Affairs

Date: 3/22/91

From: R.T. Ruhlman

Department: PSN/PLT

Subject: **SANFORD UNIT 4 ORIMULSION PROJECT MONTHLY SULFUR DIOXIDE EXCESS EMISSION REPORT**

During the month of February, 1991 sulfur dioxide emission did not exceed the 4.3 pounds per million BTU input allowed based on the continuous emission monitors.

R.T. Ruhlman
Plant Manager
Sanford Plant

RTR/t
PSN C-29.1

FPL

P.O. Box 078768, West Palm Beach, FL 33407-0768
5500 Village Blvd.

March 22, 1991

Mr. A. Alexander, Deputy Assistant Secretary
State of Florida Department of Environmental Regulation
Central Florida District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32802

RE: **Sanford Plant, Unit No. 4**
Orimulsion Test Burn
SO_2 CEM

Dear Mr. Alexander:

As I discussed by phone on March 8, 1991 with Pius Sanabani of your staff, attached is a copy of a memo from the Spectrum Systems Engineer on site at our Sanford Plant, describing the circumstances which led to an outage of the sulfur dioxide continuous emissions monitor on that date.

Please call me at (407) 697-6926 if you have any questions.

Sincerely,

Elsa A. Bishop

Elsa A. Bishop
Senior Environmental Coordinator
Florida Power & Light Company

EAB:jm

Enclosure

cc: Cindy Phillips - DER/Tall
W. H. Green - HBG&S
A. R. Morrison - HBG&S

Elsa Bishop
Florida Power & Light Co.
5500 Village Blvd.
West Palm Beach, Fl

March 15, 1991

At approximately 11:00 p.m. on 3/7/91, the desiccant filter on the dilution air to the SO2 continuous emission monitor clogged up and the resulting back pressure blew the air line off. The lack of dilution air caused the SO2 readings on Unit 4 to read higher than normal.

At 6:00 a.m. 3/8/91 Mr. R. A. Davis was contacted by the plant Operating Superintendent of the problem and he responded immediately. At approximately 7:00 a.m. the filter had been changed and the SO2 continuous emission was back running normally. All subsequent calibrations of the SO2 monitor read normal with no adjustments needed. There were no ill effects to the monitor whatsoever. The total down time was 8 hours.

R. A. Davis, Spectrum Systems Site Engineer

P.O. Box 078768, West Palm Beach, FL 33407-0768
5500 Village Blvd.

March 27, 1991

Mrs. Sondra Gray
37 Dirksen Drive
DeBary, Florida 32713

RE: Sanford Plant, Unit No. 4
Orimulsion Test Burn
Weekly Opacity Reports - March 18-24, 1991

Dear Mrs. Gray:

As was agreed during the meeting held on March 5, 1991 between representatives of the Gray family and of FPL, attached please find a copy of the Weekly Opacity Research Status Report relevant to the Orimulsion Test Burn at our Sanford Plant, Unit No. 4 for the week of March 18-24, 1991. This is one of several reports submitted to the Florida DER on a weekly basis, as required by the Department's permit authorizing the Test Burn.

Please note that as you were previously informed, Sanford Unit 4 was taken off line on March 13, 1991 and returned to service on March 23, 1991.

Sincerely,

Elsa A. Bishop
Senior Environmental Coordinator
Florida Power & Light Company

EAB:jm

Enclosure

cc: Cindy Phillips - DER/Tall (w/o encl.)
Charles M. Collins - DER/Orlando (w/o encl.)
John Gray - Orlando/Fla. (w/o encl.)